

ITEM 619.96---25 – SPEED DISPLAY TRAILER

1. DESCRIPTION:

- 1.01 Under this item the Contractor shall furnish, install, maintain, relocate, and remove an all LED, two digit, and trailer mounted speed display sign. The system shall be equipped with traffic radar operating in an “approach only” mode such that only the speeds of approaching vehicles will be displayed. The unit must be capable of displaying all speeds between ten miles per hour (10 MPH) and ninety-nine miles per hour (99 MPH). The system shall provide for the display of a static speed limit sign meeting the requirements of the National Manual on Uniform Traffic Control Devices (MUTCD) and NYS Supplement, mounted above, or adjacent to, the LED display.

2. MATERIALS:

2.01 Changeable Display:

- A. **Description:** The changeable display shall be mounted within a sign panel meeting the layout, text size, and reflectivity requirements of National MUTCD and NYS Supplement on a white background. The sign panel shall match the static sign panel described in Section 2.06. The text of the sign shall be “**Your Speed**”. The changeable display shall consist of an LED pixel matrix meeting the following requirements:

1. Two (2) Individual Characters are to be a minimum of (18 inches high each).
2. LED's shall be Amber colored (Florescent yellow optional)
3. Minimum of 4 LED's per pixel
4. LED Characters must be visible from 885 feet.
5. 100% Solid state configuration with no moving parts
6. The LED matrix shall have a protective cover such as Lexan or similar
7. Brightness control of the LED's which can be adjusted for daytime/nighttime use.

For the purposes of this specification, the “Display Panel” refers to the combination of the changeable changeable LED display and the sign panel it is mounted within.

- B. **Display Power Supply:** The power supply for the LED display is to be sufficient to operate the LED pixels for both daylight and nighttime conditions, be suitably regulated and temperature-stable and fully operational in the temperature range of -22°F to 150°F. In addition, the power supply shall satisfy the following requirements:

1. All wiring to be comprised of standardized wiring harnesses and locking connectors.
2. Self-contained 12 volt DC battery system operated with sufficient power to operate the sign for a period of 14 consecutive days before requiring a recharge.

2.02 Charging System:

- A. **Description:** The charging system is to be arranged in such a manner as to easily facilitate recharging of the battery system. The 110 volt AC charging system shall initiate charging automatically when 110 volt AC service is connected, and must be capable of completely charging the battery pack within a 72 hour time period. The recharging system is to be designed so that a fully charged unit can remain plugged-in without damaging the system. The trailer must also be equipped with a standard 110 volt AC receptacle as well as a temperature stable 110 volt AC battery trickle charger and ammeter. Incorporation of a solar

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2. MATERIALS: (cont'd)

2.02 Charging System: (cont'd)

powered option must include the necessary provisions to allow switching the recharging mode between the 110 volt AC and the solar panel with minimal effort. The solar powered option shall be fully integrated into the unit power system.

2.03 Display Control Unit

- A. **Description:** The display control unit shall be 100% solid state with no moving parts or switches, shall be operable in 0-95% non-condensing humidity conditions at temperatures from minus -22°F to 150°F, and shall include provision(s) for protection against damage should the 12 volt DC power source be incorrectly connected with the leads reversed.
- B. **Mounting:** The display control unit shall be mounted in such a manner as to minimize potential damage from the elements, including road salt and road spray. The LED display unit is to be contained in a vandal resistant housing.
- C. **Wiring:** The control unit shall contain all of the terminal connectors for the display panel wiring harnesses and the keyboard terminal harness.

2.04 Display Operating Software:

- A. **Description:** The display operating software shall provide for operator interaction with the sign system and must include industry standard levels of security and access. Password protection and/or access codes are to be included in order to limit access to the sign control menus to authorized persons.
- B. **Diagnostics:** The display operating software shall provide sufficient diagnostic monitoring for the following elements:
 - 1. LED Status – Including LED brightness (as % of maximum) for corresponding photocell ambient light levels.
 - 2. Sign Status – Diagnostic information on the power system and sign performance.
 - 3. Radar Status – Raw (serial) data from the radar unit for diagnostic purposes.
 - 4. Solar Status – System Diagnostic information (for units provided with a Solar Powered Option).
- C. **Main Menu:** The software shall provide full control of the LED display. The software and control keys shall include the ability to perform the following:
 - 1. User-defined “minimum” and “maximum” speed to display.
 - 2. Control of LED display to provide “Steady burn” and at least one “flash” mode.
 - 3. Allow for a minimum of two (2) “trigger” speeds to be preset. When the trigger speeds are reached, the display shall automatically switch to a user-set display mode, which may include, flash mode 1, flash mode 2, “Blank-out”, and displaying “XX”, as well as other display modes.

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2. MATERIALS: (cont'd)

2.04 Display Operating Software: (cont'd)

C. Main Menu: (cont'd)

4. Display control that allows the sign to be automatically powered up and down based on time and date or a 7-day programmable feature which allows pre-set control of the sign based on a 7 day repeating schedule.
5. A flashing strobe light shall **NOT** be allowed on the system.
6. Radar data logging capabilities must be incorporated into the system which allows, at a minimum, the collection of the following:
 - Average Speeds
 - Number of readings within specified ranges
 - Number of violations
 - Highest speeds

2.05 Case and Housings:

- A. The sign case and all housings on the Speed Display Trailer shall be of all aluminum construction and be fabricated to provided full protection from moisture intrusion to sensitive parts due to rain and snow, including road spray.
- B. The lens and/or cover of the LED displays are to be weather proof and provide full protection for the display unit. The lens and/or cover shall be modular and interchangeable. All cases and housings are to be vandal resistant and lockable.

2.06 Static Speed Limit Sign: The system shall provide for the display of a Regulatory static speed limit sign above, or adjacent to, the Display Panel. The speed limit sign shall be a minimum of 3 feet in width by 4 feet in height with interchangeable numerals to allow the display of speed limits ranging from forty-five miles per hour (45 MPH) to sixty-five miles per hour (65 MPH) in five miles per hour (5 MPH) increments. The mounting system for the interchangeable numerals shall be provided with vandal resistant connectors. The static speed limit sign shall comply with the provisions of National MUTCD and NYS Supplemental.

2.07 Sign Support Structure: The configuration of the sign support structure shall be such that the static sign and the Display Panel will remain in place during all weather conditions that the display trailer is likely to incur, including gusts up to 75 MPH. The static speed limit sign shall be affixed to the support with a positive connection, similar to a permanent roadside installation. The static speed limit sign and Display Panel must be mounted to meet the following minimum heights when the unit is fully deployed:

- a. Static Speed Limit above Display Panel:
Speed Limit – 7 feet – 6 inches Display Panel – 4 feet – 7 inches
- b. Static Speed Limit Adjacent to Display Panel:
Speed Limit – 5 feet – 6 inches Display Panel – 5 feet – 6 inches

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2. MATERIALS: (cont'd)

2.07 Sign Support Structure: (cont'd)

Note: Minimum heights are measured from the ground surface below the sign/panel to the bottom of each when mounted adjacent to the Display Panel; the static sign must be mounted on the left-side, as viewed by oncoming traffic. When the unit is fully deployed, the support structure shall be stabilized and locked into position.

2.08 Trailer:

- A. The trailer is to be constructed of rectangular structural tubing (ASTM A500-B) or welded steel channel (ASTM A36). The trailer shall be designed for safe transport at normal highway speeds of 55 MPH and shall be equipped for use on public highways in accordance with NYS Vehicle and Traffic Law.

Lights, reflectors, and splash guards shall be provided to comply with NYS regulations. Wiring shall be continuous with no splices, and shall be adequately secured approximately.

Every 18 inches with all connections to be made in a watertight junction box, using watertight light fixtures and watertight connections (Truck-Lite 50800/50400 or equal). Reflectors shall be mechanically fastened (not stick-on).

B. Stabilizing Outriggers:

Each corner of the trailer shall be fitted with screw leveling jacks to stabilize the trailer when in the display position.

3. CONSTRUCTION DETAILS:

- 3.01 The Contractor shall furnish, install, maintain, and relocate speed display trailers at the locations shown and for the usage indicated in the contract documents. When in use, the trailers shall be properly aligned to provide optimum viewing by approaching motorists.
- 3.02 The Contractor shall be responsible for maintenance, repair and relocation of the trailers until progress of work no longer requires their use, as determined by the Engineer. The trailers may be relocated in contracts with multiple work zones, AOB. The speed display shall only be displayed when directed by the Engineer. It is anticipated that the speed display will be in operation 35% of the time.
- 3.03 When not in operation, the speed display trailer shall be removed from the traffic control pattern and replaced with the appropriate static speed limit sign. The speed display trailer shall be stored behind guide rail or a minimum of 9 meters from the edge of pavement.

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4. METHOD OF MEASUREMENT:

- 4.01 Speed Display Trailers will be measured as the number of units furnished, installed, maintained, relocated, and removed in accordance with the plans, specifications and as directed by the Engineer. Relocations of Speed Display Trailers will not be measured as additional Speed Display Trailers for payment purposes.

5. BASIS OF PAYMENT:

- 5.01 The unit price shall include the cost of all labor, materials and equipment necessary to complete the work; including furnishing, installing, maintaining, relocating and removing Speed Display Trailers in accordance with the plans, specifications and as directed by the Engineer.
- 5.02 Seventy-five percent of the unit price shall be paid when each unit has been delivered to the job site and is operational; the balance shall be paid upon completion of the project or when the Engineer authorizes their removal.