ITEM 645.80000115 – RADAR SPEED DISPLAY ASSEMBLY (120V AC)
ITEM 645.80000215 – RADAR SPEED DISPLAY ASSEMBLY (SOLAR)

DESCRIPTION
This work shall consist of furnishing and installing a Radar Speed Display Assembly in accordance with the contract documents or directions of the Engineer. All material and labor required to provide a complete functioning system are to be included. All provisions of Sections 645 and 680 of the New York State Department of Transportation Standard Specifications shall apply except as modified below:

Assembly in this specification includes:
The scope of this specification includes, but is not limited to, excavation, disposal, concrete foundation, transformer base, traffic signal pole, controller cabinet, control systems, conduit, an all LED two digit Radar Speed Feedback display sign, mounting brackets, power service, power disconnect, communications device(s), control systems, work pad, topsoil, and any required adjustments to utilities, incidental components to complete the system, and site restoration.

MATERIALS
All provisions of Sections 709-01, 715, 723, 724 and 730 shall apply to this specification except as modified below:

Radar equipment and host cabinet:
The local equipment controlling the components of the Radar Speed Display shall be contained in a controller cabinet constructed out of aluminum and be as lightweight as possible (the cabinet shall be lockable, watertight, vandal and tamper resistant). The dimensions shall be sufficient to house the controller, communication components, toggle switch, radar gun, and batteries for back-up power supply. All components shall be designed to operate under ambient temperature conditions from -40 degrees Fahrenheit to $\geq +130$ degrees Fahrenheit for up to 24 hours per day.

Speed Display:
The driver feedback speed display shall have the capability to display the approaching vehicle speed in increments of 1 MPH. The driver feedback display shall utilize numeric characters, 12 inches (minimum) in height. The LEDs luminous intensity shall be controlled automatically to optimize lighting intensity for daytime, nighttime, and adverse weather conditions. The speed limit display shall be readable from at least 400 feet away in all lighting conditions. The driver feedback speed display and sign shall conform to the requirements of the MUTCD and provide for the feedback display on the lower portion and shall have “YOUR SPEED” printed in 4 inch high black letters on a yellow background above the display on the sign face.

Controls:
The minimum PC system requirements shall be Windows 7 unless otherwise specified in the Contract Documents. The system shall have the capability to remotely turn the display on and off during the programmed times through the use of a wireless modem. A direct land-line modem shall also be provided when specified in the Contract Documents. The communication option(s) shall be capable of data transfer to include updates.
Emergency shutoff:
One toggle-type power switch, for either the AC or solar power source, shall be provided for emergency shutoff at the local cabinet on the pole.

Software:
The controller software shall be programmable and capable of creating and preloading a single computer-controlled schedule of operation for the display for a minimum of one year. The operator must be provided the ability to remotely and independently activate and deactivate the system during the programmed times. The software shall provide a method to remotely upload schedules to the display. In addition, the software shall allow for remotely retrieving information, such as the status of the display and direct control of display functions such as test patterns, lighting controls, and grid voltages (for 120V AC electric power source).

Power Supply:
The power supply shall be either Solar or 120 V AC, meet all applicable codes and be capable of operating the system for 24 hours per day, with 10 days of battery backup for solar power source.

Solar Power (as applicable) shall include the following:

1. One solar (330 watt min) panel array with a bracket for mounting to the top of the pole.

2. Flexible, liquid tight conduit shall be utilized from the solar panel to the weatherhead on the pole or as instructed by the solar panel manufacturer’s instructions.

Electrical Power (as applicable) shall include the following:
The system shall operate on a 120 V AC. The AC input terminals shall be equipped with a 210 J (joule) capacity power line surge suppressor and shall have noise blanking capability.

Where required by the utility company, a meter shall be included.

CONSTRUCTION DETAILS
All provisions of Sections 645 and 680 shall apply to this specification except as modified below:

Electrical and communication shall be run in separate conduits.

The Contractor shall submit to the Engineer, at least two weeks before installation, detailed specifications, parts lists, manufacturer’s cut sheets, instruction sheets, and wiring diagrams for the equipment to be installed. The Engineer will submit the documents to the Regional Traffic Engineer for review. The Contractor must receive approval from the Engineer, prior to any installation of any of the components of the Radar Speed Display Assembly.
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The Contractor shall place and orient the radar speed display assembly and its Radar Speed Feedback display sign in such a manner as to optimize viewing and detection angles using the manufacturer’s recommendations and instructions for installation and as approved by the Engineer.

If the Engineer determines that the unit is not functioning properly, the Contractor shall secure the services of the manufacturer’s representative for the installation and testing and if necessary, for the orientation of the Radar Speed Display Assembly components, to include orienting the solar panel array for optimum performance.

Where new work is to meet existing materials, the Contractor’s methods shall provide for neat lines, being careful not to damage the material to remain. The restoration of disturbed areas shall utilize material and workmanship of like-kind-quality commensurate with preexisting conditions.

METHOD OF MEASUREMENT
This work will be measured as the number of complete functioning Radar Speed Display Assemblies satisfactorily furnished and installed.

BASIS OF PAYMENT
The unit price bid shall include the cost of furnishing all labor, materials, equipment and incidentals necessary to satisfactorily complete the work. The signs (other than the driver feedback speed display sign) shown in the associated details will be paid for separately.