

**ITEM 026080**

**Item 0260802 - TRAFFIC SIGNAL, 1 WAY, 12", 3 SECTION SPAN WIRE**

**Item 0260804 - TRAFFIC SIGNAL, 2 WAY, 12", 3 SECTION SPAN WIRE**

**Item 0260806 - TRAFFIC SIGNAL, 3 WAY, 12", 3 SECTION SPAN WIRE**

**Item 0260807 - TRAFFIC SIGNAL, 4 WAY, 12", 3 SECTION SPAN WIRE**

**Item 0260809 - TRAFFIC SIGNAL, 1 WAY, 12", 3 SECTION MAST ARM**

**Item 0260811 - TRAFFIC SIGNAL, 2 WAY, 12", 3 SECTION MAST ARM**

**Item 0260813 - TRAFFIC SIGNAL, 3 WAY, 12", 3 SECTION MAST ARM**

**Item 0260815 - TRAFFIC SIGNAL, 4 WAY, 12", 3 SECTION MAST ARM**

**Item 0260817 - TRAFFIC SIGNAL, 1 WAY, 12", 3 POLE MOUNTED**

**Item 0260819 - TRAFFIC SIGNAL, 1 WAY, 12", 3 SECTION PEDESTAL MOUNTED**

**Item 0260821 - TRAFFIC SIGNAL, 1 WAY, 12", 1 SECTION**

**Item 0260823 - TRAFFIC SIGNAL, 1 WAY, 12", 1 SECTION GREEN ARROW**

**Item 0260825 - TRAFFIC SIGNAL, 1 WAY, 12", 1 SECTION YELLOW ARROW**

**Item 0260827 - TRAFFIC SIGNAL, 1 WAY, 12", 1 SECTION BI-COLORED ARROW**

**DESCRIPTION**

This item shall consist of furnishing and installing Light Emitting Diode (LED) traffic control signals, of the type specified, at the location shown on the plans or indicated by the Engineer and in conformity with these specifications.

**REFERENCED ITEMS**

None

**REQUIRED SUBMITTALS**

Material Certificate of Compliance:

Submit 5 copies of material certificate of compliance for the traffic signal and all associated hardware in accordance with the contract general requirements.

Shop Drawings:

Submit 5 copies of shop drawings for the traffic signal and all associated hardware in accordance with the contract general requirements.

**MATERIALS**

The materials for this work shall conform to the State of Connecticut Department of

Transportation Standard Specifications for Roads, Bridges and Incidental Construction (Form 816) Article M.16.06 amended as follows:

**Optical Unit:**

The materials for the Light Emitting Diode (LED) Traffic Signal shall conform to the requirements of The State of Connecticut Department of Transportation, Standard Specifications for Roads, Bridges and Incidental Construction, Form 816 supplemented as follows:

The LED traffic signal lamp shall be the extended view (non-blanking) type. The lamp shall be made up of a smooth surfaced outer shell, multiple LED light sources, a filtered power supply and a back cover, assembled into a sealed unit. Each LED light source shall be mounted on a temperature resistant positioning plate. The mechanical alignment and assembly mechanism must ensure that each LED is retained in a pre-determined position. Red and yellow LED indications shall be Indium Gallium Phosphide (AlInGaP) type. Green indications shall be Indium Gallium Nitride (GaN) type. LED lamps shall be warranted for a minimum of five years.

(a) Mechanical Requirements:

Diameter:

The LED traffic signal unit shall fit into standard 12" or 8" housing.

Enclosure materials:

UV (Ultraviolet) stabilized polycarbonate backcover.

Clear lens cover.

Operating temperature:

-40 degrees Fahrenheit to 165 degrees Fahrenheit.

The lamp unit shall be sealed and waterproofed to eliminate dirt contamination and be suitable for installation in all weather conditions.

Each lamp unit shall have the following information clearly marked on the housing:

- Manufacturer & model number
- Date of manufacture
- The words "EXTENDED VIEW"

(b) Parallel Circuits:

Red, Green and Yellow Units:

12" Unit shall be comprised of minimum 6 parallel circuits.

8" Unit shall be comprised of minimum 3 parallel circuits.

Arrow Units:

One burned out LED shall not affect more than 5 percent of the total circuit.

(c) Optical Requirement:

Beam Color:

Shall meet ITE Specifications.

Beam Intensity:

Red, Green, Green Arrow, Yellow Arrow, Red Arrow and Bicolored Arrow shall meet ITE specifications.

12" and 8" Yellow:

The intensity shall be twice the ITE requirement for reds.

The intensity shall not degrade by more than 10% per year.

Each LED lamp shall be extended view (non-blanking). It shall have a vertical cone of view which remains visible at department approved distance for a 55 mph approach speed during windy conditions, until obscured by the visor.

Each LED lamp shall be capable of flash operation with no restrictions or degradation of performance.

(d) Electrical Requirement:

Operating voltage:

89 to 135 Volts AC

Green LED shall not illuminate with an input voltage less than 35 volts.

Power requirements:

Circular Indications 12" - 14 to 39 Watts

Circular Indications 8" - 12 to 19 Watts

Arrows 12" - 6 to 10 Watts

A filtered power supply shall be engineered to protect the LED's from electrical surges and transient voltages.

The optical unit shall be warranted by the manufacturer for a period of five (5) years.

### **CONSTRUCTION METHODS**

This work shall conform to the requirements of Section 11.05.03 of Form 816 supplemented as follows:

All Mast Arm mounted signal heads shall be rigid mount unless otherwise shown on the plans or indicated by the Engineer.

Where the contractor is required to retrofit LED lamps to existing traffic signal heads the following work shall be performed:

- Remove standard lens, gasket, incandescent lamp and reflector from housing.
- Install new gasket on the lamp.
- Insert lamp and gasket in housing and tighten holding screws.
- Make sure that the orientation of the lamp unit is proper. Circular indications that have an identification mark (such as an arrow) on the top of the lens, shall be installed with that mark at the 12 O'clock position.

Measure the off-state voltage of all green indications, with the lamp loads attached. An abnormally high reading may indicate a high impedance neutral or a defective load switch. If this condition exists make all necessary corrections prior to leaving the signal in proper operation.

### **METHOD OF MEASUREMENT**

The quantity to be paid for under this item will be the number of completed, installed and accepted traffic signal units of the type specified.

### **BASIS OF PAYMENT**

This work will be paid for at the Contract price each for "Traffic Signal" of the type specified which price shall include all materials, housing, brackets, conduit, visors, tunnel visors, louvers, back plates, optical unit, lamp socket, lens, mountings, balance adjuster, paint, painting and necessary equipment, tools, labor and work incidental thereto.

No direct payments will be made for furnishing and installing visors or lenses required on existing traffic signals, but the cost thereof shall be included in the costs of the various traffic signal items.

<u>PAY ITEM</u>	<u>DESCRIPTION</u>	<u>PAY UNIT</u>
0260802	Traffic Signal, 1 Way, 12", 3 Section Span Wire	EA
0260804	Traffic Signal, 2 Way, 12", 3 Section Span Wire	EA
0260806	Traffic Signal, 3 Way, 12", 3 Section Span Wire	EA
0260807	Traffic Signal, 4 Way, 12", 3 Section Span Wire	EA
0260809	Traffic Signal, 1 Way, 12", 3 Section Mast Arm	EA
0260811	Traffic Signal, 2 Way, 12", 3 Section Mast Arm	EA
0260813	Traffic Signal, 3 Way, 12", 3 Section Mast Arm	EA
0260815	Traffic Signal, 4 Way, 12", 3 Section Mast Arm	EA
0260817	Traffic Signal, 1 Way, 12", 3 Pole Mounted	EA
0260819	Traffic Signal, 1 Way, 12", 3 Section Pedestal Mounted	EA
0260821	Traffic Signal, 1 Way, 12", 1 Section	EA
0260823	Traffic Signal, 1 Way, 12", 1 Section Green Arrow	EA
0260825	Traffic Signal, 1 Way, 12", 1 Section Yellow Arrow	EA
0260827	Traffic Signal, 1 Way, 12", 1 Section Bi-Colored Arrow	EA