ITEM # 1105510A – LED TRAFFIC SIGNAL LAMP UNIT RED 12”

ITEM # 1105511A – LED TRAFFIC SIGNAL LAMP UNIT RED 8”

ITEM # 1105513A – LED TRAFFIC SIGNAL LAMP UNIT GREEN 12”

ITEM # 1105514A – LED TRAFFIC SIGNAL LAMP UNIT GREEN 8”

ITEM # 1105515A – LED TRAFFIC SIGNAL LAMP UNIT YELLOW 12”

ITEM # 1105516A – LED TRAFFIC SIGNAL LAMP UNIT YELLOW 8”

ITEM # 1105517A – LED TRAFFIC SIGNAL LAMP UNIT GREEN ARROW 12”

ITEM # 1105518A – LED TRAFFIC SIGNAL LAMP UNIT BI-COLORED ARROW 12”

ITEM # 1105519A – LED TRAFFIC SIGNAL LAMP UNIT YELLOW ARROW 12”

ITEM # 1105522A – LED TRAFFIC SIGNAL LAMP UNIT RED ARROW 12”

ITEM # 1105525A – LED TRAFFIC SIGNAL LAMP UNIT green u-turn arrow 12”

ITEM # 1105526A – LED TRAFFIC SIGNAL LAMP UNIT yellow u-turn arrow 12”

ITEM # 1105527A – LED TRAFFIC SIGNAL LAMP UNIT red u-turn arrow 12”

*Replace* 11.05.01 – Description *with the following:*

This item shall consist of furnishing and installing a "LED TRAFFIC SIGNAL LAMP UNIT" of the type specified at locations specified in the Contract or as indicated by the Engineer.

11.05.02 – Materials *is supplemented as follows:*

*Replace* M.16.06-5 *with the following:*

Optical Unit, Light Emitting Diode:

**(a) General:**

Only Optical Units that meet the requirements contained herein supplied by the below manufacturers that have been tested by the Department’s Signal Lab will be accepted. Final approval for model numbers will be done at the time of the product data submittals.

Dialight

1501 Route 34 South

Farmingdale, NJ 07727

Leotek

726 South Hillview Drive

Milpitas, CA 95035

The materials for Light Emitting Diode (LED), Optical Unit, circular and arrow, shall meet the following requirements:

* The ITE Performance Specification for Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement for circular indications dated June 27, 2005.
* The ITE Performance Specification for Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement for arrow indications dated July 1, 2007.
* Section 4 Adjustable Traffic Signals and General Housing sections of the **Connecticut Department of Transportation (CTDOT) Functional Specifications for Traffic Control Equipment, current edition.** Where the CTDOT Functional Specifications conflict with this Special Provision or the 2005/2007 ITE Performance Specifications, this Special Provision and the 2005/2007 ITE Performance Specifications shall govern.
* Modules exceed ITE mandated light intensity specification for over 15 years. Specific model numbers ITE compliant listed with ETL Intertek.
* Military grade connectors.
* Modules shall be sealed against dust and moisture intrusion per Mil-Std-810F Method 506.4, Procedure 1 – Rain and Blowing Rain.
* LED unit shall have an incandescent appearance, not pixelated, when illuminated.
* 20-year design life conformal coated driver board.
* Non-electrolytic capacitors to prevent failure from drying out.
* Solid connection between driver board and LED light engine for enhanced corrosion resistance.
* Robust solder joints on the back of the printed circuit board.
* The LED unit shall have a manufacturer-provided warranty of 15 years from the date of delivery
* The LED unit for U-turn and bi-colored arrow indications shall have a manufacturer-provided warranty of 60 months from the date of delivery

The Optical unit shall have multiple LED light sources, a filtered power supply and a back cover, assembled into a sealed unit. The Optical Unit shall be certified as meeting the current ITE Specifications by Intertek Testing Services, Inc. (ITSNA, formerly ETL) or another organization currently recognized by the Occupational Safety and Health Administration (OSHA) as a Nationally Recognized Testing Laboratory (NRTL.) The Optical Unit shall perform to the requirements of the ITE Specification for a minimum of 15 years. The Optical Unit for bi-colored arrow indications shall perform to the requirements of the ITE Specification for a minimum of 60 months.

The Arrow Optical Unit shall be “Omni-Directional” so that it may be oriented in any configuration without degradation of performance.

**(b) Electrical Requirement:**

**Operating voltage:**

* 80 to 135 Volts AC with cutoff voltage (no visible indication) below 35Volts AC.

**Power requirements:**

* Circular Indications: 12-inch – no more than 13 Watts
* Circular Indications: 8-inch – no more than 7 Watts
* Arrows Indications: 12-inch – no more than 13 Watts

**Power Supply:**

* Fused and filtered to provide excess current protection and over voltage protection from electrical surges and transient voltages.

**(c) Photometric Requirement:**

**Beam Color:**

* Meet current ITE Specifications

**(d) Mechanical Requirements:**

**Diameter:**

* The Circular Optical Unit shall fit into standard 12-inch or 8-inch housing.
* The Arrow Optical Unit shall fit into 12-inch housings only.

**Enclosure:**

* Clear lens covers for all Red, Yellow and Green Circular Optical Units.
* Incandescent appearance, not pixelated, when illuminated.
* For Arrow Optical Units the arrow indication segment of the lens shall be clear.
* Enclosure sealed and waterproofed to eliminate dirt contamination and be suitable for

 installation in all weather conditions.

* Clearly mark on the housing the following information:
* Manufacturer & model number
* Date of manufacture
* The model number shall end with the number of LEDs used to comprise the unit as the last digits of the model number. For example, if the unit comprised of 3 LEDs and the model is x12y, then the new model number shall read x12y3.

**Operating temperature:**

* Meet current ITE Specification

**Wiring:**

LED lamps shall have **color coded 16 AWG wires** for identification of heads as follows:

|  |  |
| --- | --- |
| RED LED Lamps  | RED with WHITE neutral |
| YELLOW LED Lamps | YELLOW with WHITE neutral |
| GREEN LED Lamps | GREEN or Brown with WHITE neutral |
| RED LED ARROWS | RED/WHITE with WHITE neutral |
| YELLOW LED ARROWS | YELLOW/WHITE with WHITE neutral |
| GREEN LED ARROWS | GREEN/WHITE or BROWN/WHITE with WHITE neutral |
| GREEN/YELLOW LED ARROWS | GREEN/WHITE or BROWN/WHITE, YELLOW/WHITE, with WHITE neutral |

* Wires shall be terminated with a Block Spade, 6-8 stud/ 16-14 wire size.
* All Circular Optical Units shall be supplied with a minimum of 40-inch long pigtail and all Arrow Optical Units shall be supplied with a minimum 60-inch long pigtail.

11.05.03 – Construction Methods *is supplemented as follows:*

 The following methods shall apply where the contractor is required to retrofit the LED lamps to existing traffic signal heads.

* Replace terminal blocks.
* Wire nutting doghouse signals is not allowed. Pull new wire through hardware to top head.
* Clips holding lamps in place to be replaced in kind, with a minimum of two clips installed on opposite sides.
* Remove LED Optical Unit 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.

 The Contractor shall 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, the Contractor shall make all necessary corrections prior to leaving the signal in operation.

11.05.04 – Method of Measurement *is supplemented as follows*:

The quantity to be paid for under this item will be the number of completed, installed, and accepted LED TRAFFIC SIGNAL LAMP UNITS of the type specified.

11.05.05 – Basis of Payment *is supplemented as follows*:

This work will be paid for at the Contract unit price for each "LED TRAFFIC SIGNAL LAMP UNIT" of the type and size specified which price shall include all materials, lamp unit miscellaneous fittings, parts, terminal blocks, hardware and equipment, labor and work incidental thereto.

 Pay Item Pay Unit

 LED Traffic Signal Lamp Unit (Type) EA.