ITEM # 1105510A LED TRAFFIC SIGNAL LAMP UNIT RED 12” (300mm)

ITEM # 1105511A LED TRAFFIC SIGNAL LAMP UNIT RED 8” (200mm)

ITEM # 1105513A LED TRAFFIC SIGNAL LAMP UNIT GREEN 12” (300mm)

ITEM # 1105514A LED TRAFFIC SIGNAL LAMP UNIT GREEN 8” (200mm)

ITEM # 1105515A LED TRAFFIC SIGNAL LAMP UNIT YELLOW 12” (300mm)

ITEM # 1105516A LED TRAFFIC SIGNAL LAMP UNIT YELLOW 8” (200mm)

ITEM # 1105517A LED TRAFFIC SIGNAL LAMP UNIT GREEN ARROW 12” (300mm)

ITEM # 1105518A LED TRAFFIC SIGNAL LAMP UNIT BI-COLORED ARROW 12” (300mm)

ITEM # 1105519A LED TRAFFIC SIGNAL LAMP UNIT YELLOW ARROW 12” (300mm)

ITEM # 1105522A LED TRAFFIC SIGNAL LAMP UNIT RED ARROW 12” (300mm)

Description:

This item shall consist of furnishing and installing a "LED TRAFFIC SIGNAL LAMP UNIT" of the type specified at locations shown on the plans or as indicated by the Engineer in conformity with these specifications.

Materials:

Sub Article 6 - 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 catalog cut submittals.

Duralight

Trastar, Inc.

860 N. Dorothy Dr., Suite 600

Richardson, TX 75081

 Dialight

1501 Foute 34 South

Farmingdale, NJ 07727

GE Lighting Solutions

Corporate Headquarters

1975 Noble Road Building338E

East Cleveland, OH 44112-6300

Leotek

726 South Hillview Drive

Milpitas, CA 95035

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

* 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 **Department of Transportation Functional Specifications for Traffic Control Equipment, current edition governs.** Where the Department of Transportation 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.

The Optical Unit shall have an Incandescent look and be made up of a smooth surfaced outer shell, multiple LED light sources, a filtered power supply and a backcover, assembled into a sealed unit. The Optical Unit shall be certified as meeting the 2005/2007 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 60 months.

A “Swing Test” will be performed by the Department to ensure no significant dimming or blanking occurs, until the lamp is obscured by the visor. All L.E.D Lamps may be subjected to further field testing for reliable operation.

The Arrow Optical Unit shall be “Omni-Directional” so that it may be oriented in a right, left or straight 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”, (300mm) - no more than 16 Watts

 Circular Indications: 8”, (200mm) - no more than 16 Watts

 Arrows Indications: 12”, (300mm) - no more than 16 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 2005/2007 ITE Specifications

(d) Mechanical Requirements:

 **Diameter:**

 The Circular Optical Unit shall fit into standard 12” (300mm) or 8” (200mm) housing.

 The Arrow Optical Unit shall fit 12” (300mm) housings only.

 **Enclosure:**

 Clear lens cover for all Red, Yellow and Green Circular Optical Units.

 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. Example, if the unit comprised of 3 LEDs and the model is

 x12y, then the new model number shall read x12y3.

 **Operating temperature:**

 Meet 2005/2007 ITE Specification

 **Wiring:** L.E.D. lamps shall have **color coded 16 AWG wires** for identification of heads as follows:

|  |  |
| --- | --- |
| RED L.E.D. Lamps  | RED with WHITE neutral |
| YELLOW L.E.D. Lamps | YELLOW with WHITE neutral |
| GREEN L.E.D. Lamps | GREEN or Brown with WHITE neutral |
| RED L.E.D. ARROWS | RED/WHITE with WHITE neutral |
| YELLOW L.E.D. ARROWS | YELLOW/WHITE with WHITE neutral |
| GREEN L.E.D. ARROWS | GREEN/WHITE or BROWN/WHITE with WHITE neutral |
| GREEN/YELLOW LE.D 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 40” pigtail and all Arrow

 Optical Units supplied with a minimum 60” pigtail.

Construction Methods:

 This method is applicable where the contractor is required to retrofit the LED lamps to existing traffic signal heads.

* Replace corroded 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.

 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 operation.

Method of Measurement:

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.

Basis of Payment:

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

 Pay Item Pay Unit

 LED Traffic Signal Lamp Unit (Type) EA.