**ITEM #1105414A—1 WAY, 1 SECTION TRAFFIC SIGNAL Polycarbonate**

**ITEM #1105415A—1 WAY, 3** **SECTION TRAFFIC SIGNAL Polycarbonate**

**ITEM #1105416A—1 WAY, 4 SECTION TRAFFIC SIGNAL Polycarbonate**

**ITEM #1105417A—1 WAY, 5 SECTION TRAFFIC SIGNAL Polycarbonate**

**Section 11.05—Traffic Signals** *is supplemented and amended as follows:*

**11.05.02—Materials:**

**Section M.16** – **Traffic Control Signals** *is supplemented and amended as follows:*

**M.16.06-2 – Traffic Control Signals:**

*Replace the last sentence with the following:*

All signal heads in this contract shall be of the same type unless otherwise noted on the plan.

**M.16.06-3 - Housing:**

*Replace the first paragraph with the following:*

 The signal head housing shall be made of ultraviolet and heat-stabilized polycarbonate. Signal head hardware provided shall be either span, mast arm, pole, or pedestal mounted as indicated on plans. The signal head housing shall be expansible type, for vertical mounting, substantially secured together in a watertight and rigid manner to form a unit of pleasing appearance.

*Delete the third paragraph and replace with the following:*

 There shall be a round opening in the top and bottom of each head to receive a 1.5 inch supporting pipe frame. The portion of the housing section around the opening shall be reinforced and serrated so that serrated fittings may be used to secure the housing. The top and bottom of the housing shall be reinforced with stiffening plates to improve durability. The top and bottom of the housing shall include such other openings as are necessary to accommodate fastening devices to hold sections together, and such openings shall not permit entrance of foreign particles. Each section shall be positively indexed with respect to an adjacent section to prevent misalignment. Each housing section shall be equipped with a door with an opening and fittings for the optical unit and visor. The door shall be arranged for easy access to the optical unit components and wiring. It shall be hinged on its left side at 2 points, so that the door cannot be removed without the use of tools and shall be provided with a simple, positive-acting door locking device made from stainless steel to assure tight closure. Neoprene or EPDM (ethylene propylene diene monomer) rubber gaskets shall be used on both the housing and the door to seal the interior and create a weather tight unit. The body and door of each housing section shall be of ultraviolet and heat resistant polycarbonate and shall be clean, smooth, and free from flaws, cracks, blow holes, or other imperfections. The door locking device and visor fastening screws shall be made of stainless steel. All other screws, nuts, washers, hinge pins, latch parts, clips and parts used in the assembly of the signal housing shall be made of stainless steel. Each section of the housing shall be provided a removable visor of the cap type, unless otherwise noted on the plan. The visor shall be constructed of polycarbonate have a minimum thickness of 0.1 inch. The visor mounting shall be of the twist-on type and secured to the signal by four equidistant flat tabs screwed to the signal head. The visor shall fit snugly against the door and shall not permit any perceptible filtration of light between the door and the visor.

**M.16.06-4 - Brackets:**

*Delete the second paragraph and replace the last paragraph with the following:*

 When indicated on the plans, a backplate constructed of ABS (acrylonitrile butadiene styrene) ultraviolet and heat resistant material, with a thickness of 0.1 inch shall be attached to the signal head housing. The backplate, per MUTCD, shall be pre-colored dull black throughout the thickness of the ABS material, to minimize light reflection and to increase contrast between the signal indication and its background.

 Backplates shall be 5 inches wide and louvered.

 Install a 2 inch wide fluorescent yellow retroreflective strip (Type XI sheeting) along the perimeter of the face of the backplate.

**M.16.06-5** - **Optical Unit** and **M.16.06-6** – **Lamp Socket**:

*Delete both articles in their entireties and replace with the following:*

**Optical Unit, Light Emitting Diode:**

**(a) General:**

 Only Optical Units that meet the requirements contained herein, supplied by the manufacturers noted below or approved equal, will be accepted. Final review of model numbers will be done at the time of the Product Data submittals.

|  |  |
| --- | --- |
| Dialight | Leotek |
| 1501 Route 34 South | 726 South Hillview Drive |
| Farmingdale, NJ 07727 | 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
* The ITE Performance Specification for Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement for arrow indications
* Military grade connectors
* 20 year design life conformal coated driver board
* Solid connection between driver board and LED light engine for enhanced corrosion resistance
* Robust solder joints on the back of the printed circuit board
* Exceed ITE mandated light intensity for over 15 years. Specific model numbers ITE compliant listed with ETL Intertek
* Sealed against dust and moisture intrusion per Mil-Std- MILSPEC-810 Method 506.4, Procedure 1 – Rain and Blowing Rain
* LED unit shall have an incandescent appearance, not pixelated, when illuminated
* Non-electrolytic capacitors to prevent failure from drying out
* 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

 Section 4, Adjustable Traffic Signals subsections General and Housing of the **Department of Transportation Functional Specifications for Traffic Control Equipment, current edition govern.** Where the Department of Transportation Functional Specifications conflict with this Special Provision or the ITE Performance Specifications, this Special Provision and the ITE Performance Specifications shall govern.

 The Optical Unit shall have an Incandescent look and be made up of a smooth surfaced outer shell. 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. The Optical Unit shall perform to the requirements of the ITE Specification for a minimum of 15 years.

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

**(b) Electrical Requirements:**

 **Operating voltage:**

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

 **Power requirements:**

* Circular Indications: 12 inches - no more than 13 Watts
* Circular Indications: 8 inches - no more than 7 Watts
* Arrows Indications: 12 inches - 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 housings. The Arrow Optical Unit shall fit 12 inch housings only

**Enclosure:**

* Clear lenses cover 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 and model number
	+ Date of manufacture
* The model number shall list the number of LEDs used to comprise the unit as the last digits of the model number. For example, if the unit is comprised of 3 LEDs and the model is x12y, then the new model number shall read x12y3

**Operating temperature:**

* Meet current ITE Specifications

**Wiring:** L.E.D. lamps shall have **color coded 16 AWG wires** for identification of signal 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 40 inch-long pigtail and all Arrow Optical Units shall be supplied with a minimum 60 inch-long pigtail

**M.16.06-8** **– Dual Color Fiber Optic Section:**

 *Delete the entire subarticle.*

**M.16.06-9** **– Painting:**

 *Replace with the following:*

 The housing, housing door, outside of visor, and the backplate shall be black, pre-colored opaque and permanently colored by the manufacturer throughout the thickness of the material.

 All brackets and hardware shall be painted black by the manufacturer.

 At intersections at Merritt Parkway interchanges, the housing, housing door, and the backplate shall be dark green, pre-colored opaque and permanently colored by the manufacturer throughout the thickness of the material.

 The visors per MUTCD shall be pre-colored opaque and permanently colored dull black to minimize light reflection and to increase contrast between the signal indication and its background.

**11.05.03** – **Construction Methods:**

 *Add the following paragraph:*

 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.