

**LUMINAIRE, 150W HPS, 480V**  
**COBRA STYLE**

I. Quantity

The base bid shall include the indicated number of high pressure sodium (HPS) luminaires (150W) complete with high reactance ballast and 150 watt HPS lamps wired and erected as hereinafter specified.

II. Material

- a. Luminaire - The luminaires shall be suitable for attachment by means of a slip-fitter connection to a 2" IPS bracket. The slip-fitter shall include means for securely attaching the luminaire and shall also provide for adjustment of approximately 5 degrees above or below the horizontal.

Each luminaire shall be furnished with an internally mounted 480 volt ballast. The ballast shall be a high reactance, high power factor type, with power factor correcting capacitor. Power factor to be maintained at 80% or above thru lamp life. When operating within + or - 10% line voltage, lamp wattage must be maintained within the ANSI defined trapezoidal limits for the specified lamp. Ballast losses shall not exceed 30% of the rated lamp wattage.

The Ballast shall be copper wound and have Class H insulation system. Core laminations shall be M19 grade magnetic steel. Core-coil, starting aid and capacitor shall be capable of operating for a six month period during a short circuit failure, lamp open or end-of-life cycle without any measureable deterioration.

The starting circuit must provide a minimum starting pulse repetition rate of one pulse per cycle (symmetrical). The spike position must occur within a minimum of +20 degrees of the center of the open-circuit voltage waveform. The pulse peak voltage should be a maximum of 3000 volts. Pulses must be provided in the same polarity as the open circuit voltage.

Each luminaire shall be prewired with two (2) metal oxide varistors to limit surge voltages on equipment by diverting surge currents to ground. Each metal oxide device shall be installed between incoming leads and fixture ground. The varistors shall comply with the ANSI-IEEE standard C62.11-1987 and shall be capable of operation in an outdoor environment with a temperature range of -40 degrees C to 40 degrees C. The metal oxide shall have the following electrical ratings and characteristics:

1. Rating of 650 volts rms with MCOV of 540 volts rms.
2. An 8/20 micro seconds current wave of 5 KA shall have a maximum discharge voltage of 2.7 KV crest.
3. Duty cycle of 1.5 KA crest. High current short duration (HCSD) of 10 KA crest.

The starting circuit must provide a minimum starting pulse repetition rate of one pulse per half-cycle (symmetrical). The spike position must occur within a maximum of + or - 20 degrees of the center of the open-circuit voltage waveform. The pulse peak voltage should be a maximum of 3000 volts. Pulses must be provided in the same polarity as the open circuit voltage.

The starting circuit and ballast must be capable of starting and maintaining lamp burning in ambient temperatures as low as -20 degrees Fahrenheit. Ballast, starting circuit, and lamp socket shall be pre-wired and ready for installation; all of which shall be readily accessible for maintenance purposes. Each luminaire starting circuit and ballast shall be factory tested and matched to assure proper component tolerances and pulse parameters.

Each luminaire shall consist of an aluminum alloy housing forming the upper half of the assembly, a separate efficient inner reflector, and a heat resisting glass refractor mounted in a hinged holding ring. The lamp socket shall be adjustable to provide a variety of light patterns including I.E.S. II III IV and shall be factory set for Type III. The assembly shall be drip proof and bug proof. The entire unit shall be pre-wired and ready for installation. The nominal lamp voltage shall be 55 volts. The luminaire shall be an approved equal in appearance, quality and design Thomas & Betts #U-1150016 or Cooper #OU215SP83EU0286.

- b. Lamps - The High Pressure Sodium lamps to be furnished with the luminaire shall be 150 watt, with a rated life of 24,000 hours equal in quality, design and performance to General Electric Company's LU150.

### III. Installation

The luminaire shall be installed on the bracket as shown on the drawings and indicated in the field by the engineer. Orientation and leveling of the units shall be so as to provide for uniform appearance, maximum lighting efficiency and ease of maintenance.

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### IV. Information Required

Bidders shall also furnish complete performance data on the luminaires equipped with the lamp they propose to furnish. The data submitted shall contain at least the following information:

FAILURE TO FURNISH THE INFORMATION BELOW MAY RESULT IN REJECTION OF BID.

Isocandle Curves from Photometric Test

Utilization Curves

Isolux Lines of Horizontal Foot-candles from a single unit

Total Wattage of Fixture

Volt-Watt Traces

Lamp Trapezoid Traces

Drawings showing magnitude, shape, position and duration of starting pulse

Value of ballast losses

Ballast Open Circuit Voltage

V. Quotation

The complete 150 Watt High Pressure Sodium Luminaire with lamp shall be quoted as a unit price in the appropriate section of this document.