1. Scope

1.1 This specification covers the requirements for furnishing and delivering end-mounted high-pressure sodium (HPS) "cobrahead" luminaires with integral ballasts and photoelectric control receptacles.

1.2 The luminaire, pre-assembled and ready to mount, shall be provided in a complete package including cutoff type flat glass refractor and attachment hardware, but not including lamp or photocontrol.

2. Classification

The requirements herein shall apply to HPS luminaires which are designed to utilize horizontal burning 100, 150, 200, 250 and 400 watt high-pressure sodium lamps.

3. Standards

Unless otherwise stated in this material standard, the luminaire shall comply with the latest revision of the following standards:

ANSI C136.2 Roadway Lighting Luminaires - Voltage Classification
ANSI C136.3 Roadway Lighting Equipment - Luminaire Attachments
ANSI C136.10 Roadway Lighting Equipment - Locking-type Photocontrol Devices and Mating Receptacles - Physical and Electrical Interchangeability and Testing
ANSI C136.11 Roadway Lighting Equipment - Multiple Sockets
ANSI Z55.1 Gray Finishes for Industrial Apparatus and Equipment
ANSI/IES RP-8 Practice for Roadway Lighting

4. Housing

4.1 The luminaire housing and door shall be die cast aluminum. The housing shall enclose the slipfitter, reflector, lamp socket, terminal board, capacitor, ballast components and starter circuit. The clamping and leveling adjustment hardware shall be of galvanized steel, stainless steel or other non-corrosive metal.

4.2 The housing shall be adequately enclosed to prevent entrance of birds in the ballast area and insects in the lamp area.

4.3 The housing shall be joined to the door by an integrally cast hinge pin at the mounting end with a positive spring loaded latch or a stainless steel bail at the latch end.

4.3.1 The hinge shall hold the lower housing fi rmly in place when closed and shall be designed so that the lower housing, when free swinging, will not accidentally disengage or cause the refractor to break or fall out.

4.3.2 The latch shall secure the lower housing to the upper one, permit access to the lamp and ballast compartment and be operable with protective gloves but without tools.

4.4 The color of the luminaire shall be light gray polyester powder coat fi nish. The coating needs to be applied only to the outside of the housing.

4.5 Materials and protective coatings used for the luminaire assembly, including but not limited to screws, bolts, latches, hinges, mounting assembly and refl ector shall individually and as a system be resistant to atmospheric conditions, including the corrosive and erosive action of conditions of service encountered in industrial and seaboard areas.

5. Slipfitter

5.1 Slipfitter shall be capable of accepting a 1-1/4" through 2" OD pipe tenon with maximum allowable insertion lengths of 7-1/2" and 10" respectively in accordance with Table 2 of ANSI C136.3, latest revision.

5.2 The slipfitter shall provide a shoulder or stop to limit the depth of insertion of the pipe tenon during installation.

5.3 The slipfitter shall have provisions for clamping the luminaire securely to the tenon and for leveling through no less than 3 degrees from the axis of the attachment with respect to the horizontal.

5.4 The slipfitter shall be equipped with a fixed-in-place wildlife guard capable of accepting both 1-1/4" and 2" tenons.

5.5 The slipfitter shall be secured to the mast arm by a minimum of 2 bolts or threaded studs for secure mounting.

6. Lamp Socket

6.1 The lamp socket shall be a mogul type 600 V classifi cation pulse rated, in compliance with the electrical and physical requirements of ANSI C136.11, latest revision.

6.2 The socket shall be adjustable horizontally and vertically to provide light patterns in accordance with ANSI/IES RP-8-1983 Appendix E. The lamp socket shall be positioned such that the lamp installation and removal can be accomplished in all possible socket light distribution positions. Suffi cient markings shall be present to allow for pre-setting the socket for specifi c light distribution patterns.

6.3 The socket screw shell and other metal parts shall be made of brass, bronze, copper, copper alloy, or stainless steel. Brass, bronze, copper or copper alloy screw shells shall be plated with nickel.

6.4 The socket body shall be made of glazed porcelain. The socket base shall be constructed in such a manner that socket contacts remain stationary. The center contact inside the socket ball shall be spring loaded to provide lamp gripping action and reduce lamp failures due to excessive vibration.

6.5 The socket shall include a lamp support/snubber/vibration damper to minimize lamp vibration.

7. Reflector

7.1 The reflector shall be constructed from aluminum and have a specular fi nish of the Alglas or Alzak* process, or District approved equivalent. (*Alzak fi nish a process of ALCOA). The refl ector shall be designed to provide IES Type III medium cutoff photometric pattern with adjustable lamp socket.

7.2 The reflector shall be secured to the fi xture housing so that it will not shift position or become loose when the fixture is opened or during shipping.

7.3 The reflector and lens shall be gasketed to provide a seal between the refl ector and lens. The gasket shall be made to prevent a joint gap over time.

8. Lens

8.1 The glass lens shall be made of fl at heat tempered glass for maximum resistance to thermal shock and impact.

8.2 The lens shall be secured to the lower housing by one or more movable support(s) so that it remains securely in place with the door open or closed and may be removed from the door while the door is open. The lens shall be removable without tools or with a blade-type screwdriver.

8.3 The lens shall fi t properly in the door so that any shifting of the lens will not allow the lens to fall out or allow bugs to enter the area between the lens and the refl ector.

8.4 The lens shall not fi t so tightly against the refl ector gasket that will allow the lens to break from the expansion and contraction from the heat generated by the luminaire.

8.5 Flat heat tempered glass replacement lenses shall be available for separate purchase from the manufacturer for a nominal fee.

9. Terminal Board

9.1 The terminal board shall be molded plastic, with protective barriers between each contact and the terminal board shall be mounted to the upper housing of the luminaire.

9.2 The terminal board supply connection point shall have a dead back stop to prevent over-insertion of incoming supply leads.

9.3 The terminal board shall be located so that there is adequate accessibility to it for connecting the supply leads when wearing gloves and without the removal or replacement of internal components.

9.4 Components shall be pre-wired to the terminal board requiring only supply power connections to clearly identified terminals. The wiring diagram shall be permanent, apparent, legible and affi xed inside the luminaire. The diagram shall indicate the ballast, socket, photoelectric receptacle, starter circuit and coded terminal connections.

9.5 The terminal board shall be pre-wired for 2-wire supply to serve the ballast and the photoelectric control.

10. Photoelectric Control Receptacle

10.1 The luminaire shall be provided with a locking type photoelectric control mounting receptacle in accordance with ANSI C136.10.

10.2 The photoelectric control shall be 3-pole 3-wire locking type and be pre-wired to the terminal board.

10.3 The electrical contacts of the receptacle shall be tin plated bronze. Plated steel contacts are not acceptable.

10.4 The photoelectric control shall be molded plastic and shall be capable of securely positioning the photoelectric control in any necessary direction.

11. Starter Circuit

11.1 The luminaire starter receptacle shall be a plug-in type, capable of accepting a two-terminal replacement plug-in starter or a three-terminal replacement plug-in starter and must meet or exceed ANSI standards.

11.2 Starting circuit shall be easily accessible for removal and replacement without disturbing other components and without the use of tools

12. Ballast

12.1 The ballast shall be a high power factor Constant Wattage Auto (CWA Auto-Regulator or Regulated) type or High Reactance Autotransformer (HX) type designated for a ± 10 percent line voltage variation

12.2 The ballast shall be pre-wired to the lamp socket and terminal board, requiring only connection of the power supply leads to the terminal. In the case of the 2-piece unit, the leads shall connect to the mount.

12.3 The wiring shall be color coded or otherwise labeled to indicate the supply lead connections.

12.4 A multi-volt ballast shall be furnished on all 100 watt and 150 watt luminaires: The ballast shall come set on the 120 V tap, all other luminaires shall be furnished with a 240 V ballast.

12.5 All ballasts shall be labeled and easily identifi able. Terminals shall be push-on type connections.

12.6 Ballasts shall be designed for the following nominal lamp voltage and wattage combinations:

Lamp Wattage	Lamp Voltage	Supply Voltage	Cat. ID Number
100	55	120 (multi-volt)	1001962
150	55	120 (multi-volt)	1001996
200	100	240	703745
250	100	240	703795
400	100	240	703753

13. Identification

13.1 Manufacturer shall permanently attach the following information to the inside wall of the upper or main housing:

1. Manufacturer name
2. Manufacturer catalog number and type
3. Date of manufacture (codes are not acceptable)
4. Lamp wattage
5. Lamp IES designation and type
6. Primary voltage
7. Primary current
8. Wiring diagram corresponding to the components and with the manufacturer's ballast installed

13.2 A 3" X 3" waterproof decal shall be placed on the bottom outside of each luminaire door near the lens to indicate the wattage of the unit. These decals shall be UV inhibited and resist cracking, peeling and fading for a period of 10 years.

13.3 The wattage decal shall be yellow with black numbers and numbered as follows: 10 for 100 watt units, 20 for 200 watt units, 25 for 250 watt units and 40 for 400 watt units.

13.4 The manufacturer shall install a permanently attached District serial number decal on the bottom outside of each luminaire door near the lens. The decal will be oriented so that the "S" is towards the latch end of the luminaire and the last digit of the decal is towards the hinge or bracket end. The District will supply these decals to the manufacturer.

14. Packaging

14.1 The luminaire shall be packaged in accordance with the manufacturer’s commercial practice to ensure safe delivery without damage.

14.2 The package shall be marked with the manufacturer's catalog number and the luminaire’s date of manufacture.

15. Warranty

The fixture and all of its components shall carry a minimum non-prorated 5 year warranty from date of installation.

Any fixture that fails during the warranty period, regardless of which component may have failed, will be returned to the factory for exchange. The replacement unit will carry its own new 5 year warranty from date of installation.

16. Evaluation of Bids

The following factors will be considered in the analysis and evaluation of bids and subsequent bid award:

1. 1) Luminaire price and escalation
2. 2) Lens price and escalation
3. 3) Delivery schedule
4. 4) Warranty
5. 5) Past performance of Bidder and product
6. 6) Adherence to Material Standard
7. 7) Product quality
8. 8) Convenience of maintenance

17. General Bidding Conditions

The attached General Bidding Conditions are made a part of this Material Standard.