

**S.C. ELECTRIC COOPERATIVE'S
SPECIFICATIONS FOR COBRA HEAD STYLE LIGHTING FIXTURE**

1.0 SCOPE

1.1 This specification covers the electrical and mechanical characteristics of High Pressure Sodium (HPS) and Metal Halide (MH) roadway lighting fixtures of the wattages specified on Attachment A

1.2 All characteristics, definitions, and terminology, except as specifically covered in this specification shall be in accordance with the latest revision of the following ANSI, ASTM and UL standards:

1.2.1 ANSI C.82 Ballast Standards

1.2.2 ANSI C.84.1

1.2.3 ANSI C.13.32 Standard for Roadway Lighting Equipment

1.2.4 ASTM B-117 Corrosion Standard

1.2.5 ANSI C136.10-1988 Photoelectric Control Mounting Specifications

1.2.6 ANSI C136.33

1.2.7 ANSI/UL 1029

1.3 In addition to the above requirements, the fixture shall also meet the requirements of the Rural Utility Service (RUS) and be listed as part of the List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers, Bulletin 202-1.

2.0 CONSTRUCTION

2.1 The applicable Fixture Wattage (100, 150, 175, 250, 400, 1,000) and Type (HPS, MH) shall be specified in **ATTACHMENT A**.

2.2 The fixture shall be a heavy-duty utility grade, mechanically and electrically.

2.3 The fixture housing shall be manufactured of high quality die-cast aluminum.

2.4 The internal compartment of the fixture shall be designed and manufactured for improved corrosion resistance, water, and animal protection such as fauna guard.

2.5 All exterior surfaces shall be smooth and free of burs.

2.6 The fixture housing color shall have a painted ANSI gray finish.

2.7 Painted surfaces shall be free from voids, runs, and scratches.

2.8 All conductors inside the fixture shall be neatly trained and secured with tie-wraps on conductors as needed to prevent pinch points on conductors.

2.9 The optical portion of the fixture shall be enclosed and gasketed, securely bonded making a positive seal, to prevent contaminants from entering the optical department.

2.10 The fixture shall have a minimum IP (Ingress Protection) rating of 54.

2.11 Housing door holder/hinges shall be designed for tool-less entry, maintain positive control of door and refractor holder to housing base so as not to allow the accidental disengagement of either.

3.0 REFRACTOR

3.1 The refractor lens shall be of tempered thermal and shock resistant glass or acrylic as specified on Attachment A. Glass only above 250W.

3.2 The refractor lens shall provide a photometric distribution range and cutoff performance as specified in **Attachment A**.

3.3 The refractor lens shall be secured with retainer latches to prevent accidental disengagement from the door.

3.4 The lens will be installed in manner that supports the fixture integrity requirements as specified in section 2.3 of this Specification.

4.0 REFLECTOR

4.1 The reflector shall be hydro-formed or formed anodized aluminum and finished with clear (ALZAK®) or equivalent finish.

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

5.0 PHOTOMETRIC DISTRIBUTION

5.1 The fixture shall produce a standard IES TYPE III distribution pattern unless otherwise specified in **ATTACHMENT A**.

6.0 BALLAST

6.1 The fixture ballast shall be a multi-tap (120/208/240/277 volts) High Power Factor (HPF) 60 Hz CWA type.

6.2 The ballast shall contain all copper windings.

6.3 The ballast shall be pre-wired for 120-volt operation.

6.4 The ballast will be rated a minimum of 10KV BIL.

6.5 All ballast must meet the latest edition of the referenced ANSI standards.

7.0 STARTER CIRCUIT – HPS FIXTURES ONLY

7.1 The fixture shall be provided with a Universal plug-in type starter circuit receptacle that will meet ANSI C136.33 and which will accept independent HPS replacement starters.

- 7.2 Each fixture will be provided with a starter circuit.
- 7.3 The starter circuit shall be encapsulated.
- 7.4 The starter circuit shall indicate the manufacturer name, rated lamp wattage, and rated lamp voltage.
- 7.5 The starter circuit shall be internal to the fixture but separate from the ballast.

8.0 TERMINAL BLOCKS, CONNECTORS, AND WIRING

- 8.1 Fixtures shall have marked terminal blocks that will accept #14 up to #6 AWG copper or aluminum conductors.
- 8.2 The terminal board shall be constructed of porcelain or a durable plastic material with non-corrosive connections.
- 8.3 Terminal blocks shall be clearly designated and marked 'N' for neutral and 'L1' and 'L2' for supply leads.
- 8.4 All internal wiring shall be stranded awg. Cu. color coded as specified in the National Electric Code and shall have a temperature rating of 200 degree C:
 - 8.4.1 Equipment Ground – GREEN
 - 8.4.2 Neutral – WHITE
 - 8.4.3 Supply Leads – BLACK, RED
- 8.5 Tap connections internal to the fixture shall be made by connectors and clearly labeled.
- 8.6 Wire nuts are prohibited inside of the fixture housing.

9.0 PHOTOCONTROL RECEPTACLE

- 9.1 Photocontrol receptacle shall be wired for multi-volt operation.
- 9.2 All fixtures shall be equipped with a 3-pole, 3-wire twist-lock type receptacle.
- 9.3 Photocontrol receptacle terminals shall be phosphor bronze alloy.
- 9.4 The receptacle shall meet the applicable provisions of ANSI C136.10, or the latest revision thereof.

10.0 LAMP SOCKET

- 10.1 Lamp sockets shall be permanently marked or have a label on or near the socket indicating the wattage and source of the fixture.
- 10.2 Lamp socket shall be a mogul type base, unless specified otherwise on attachment A, made of glazed porcelain, 600-volt and fully insulated.
- 10.3 The socket shall have nickel-plated brass contacts.
- 10.4 The center contact of the socket shall be a spring-loaded nickel-plated copper alloy or nickel plated stainless steel.

10.5 The socket shall be 4KV (minimum) impulse rated and so indicated on the socket.

10.6 The lamp socket shall meet the requirements of ANSI C136.11, or the latest revision thereof.

11.0 FIXTURE LAMP

11.1 The fixture WILL NOT be furnished with a lamp unless specified otherwise on Attachment A.

12.0 LIGHTNING PROTECTION

12.1 The fixture shall be equipped with a 180-Joule (minimum) MOV lightning arrester.

13.0 WIRING DIAGRAMS

13.1 Each fixture shall be provided with at least one wiring diagram.

13.2 One wiring diagram shall include ballast, socket, photoelectric receptacle, starter circuit and coded terminal block connections.

13.3 All Wiring diagrams shall be securely affixed to the inside of the fixture housing in an area where it can be easily read.

14.0 FIXTURE IDENTIFICATION

14.1 Fixture shall have a wattage label visible from the ground when installed.

14.2 All labels shall be a NEMA type, wattage/type, according to ANSI C136.15.

14.3 Each fixture shall be provided with a permanent nameplate or sticker of mylar material with permanent pressure sensitive acrylic adhesive backing (3M468 Industrial Standard type material or equivalent) to provide the following information:

14.3.1 Manufacturer's name and catalog number.

14.3.2 Manufacturer's date code must be numeric i.e. (3/2002 or 3/02).

14.3.3 Ballast type.

14.3.4 Lamp type, wattage and voltage.

15.0 HARDWARE

15.1 External latches shall be stainless steel or aluminum. Stainless steel threaded fasteners are to be avoided because of the electrolytic action that takes place between the two dissimilar metals. Threaded fasteners and washers shall be corrosion resistant carbon steel capable of withstanding ASTM B-117 salt fog test without red running rust.

15.2 All other hardware shall be corrosive resistant.

16.0 MOUNTING

16.1 The fixture shall be equipped to accommodate a 1¼" to 2" diameter mounting arm.

16.2 The mounting assembly shall secure the fixture to the mast arm as to withstand 3G in three planes.

16.3 The mounting assembly shall provide a positive mast arm/pipe stop.

16.4 The mounting assembly shall provide a means for fixture leveling.

17.0 WARRANTY

17.1 The fixture and all of its components shall carry a minimum five-year warranty.

17.2 The paint finish shall have a 1 year (minimum) adhesion warranty to cover flaking, bubbling and cracking.

17.3 Any fixture that does not meet the requirements and/or specifications shall be returned to the supplier and replaced by the supplier at no cost to the purchaser.

17.4 No changes or modifications to fixtures outside the scope of this specification shall be implemented without the approval of a written description of the proposed variations submitted by the manufacturer.

ATTACHMENT A

Selected Options for Cobra Head Fixture

_____ Electric Cooperative, Inc. Date: _____

- I. Fixture Wattage
 - 100 150
 - 250 175
 - 400
 - 1,000

- II. Fixture Type
 - High Pressure Sodium
 - Metal Halide

- III. Photometric Distribution Range – Medium unless specified otherwise below:
 - Long
 - Short

- IV. Photometric Distribution Cutoff – Semi Cutoff unless specified otherwise below:
 - Non Cutoff
 - Full Cutoff

- V. Photometric Distribution Pattern – IES Type III is standard unless specified otherwise below:
 - IES Type I
 - IES Type II
 - IES Type IV
 - IES Type V

- VI. Refractor – Glass Only above 250W
 250W and Below
 - Acrylic
 - Glass

- VII Lamp Included
 - Yes
 - No

- VIII Lamp Socket Type – Mogul base unless specified otherwise below:
 - Medium

- IX. Shipping:

Ship to _____ warehouse in _____, SC to attention of
_____, Phone # _____.