

CONSTRUCTION STANDARD SPECIFICATION

SECTION 16514

HIGH INTENSITY DISCHARGE (HID) LUMINAIRES

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PART 1 - GENERAL

1.01 SUMMARY

This specification covers high intensity discharge (HID) luminaires. The preferred HID luminaire for indoor use and for building-related exterior lighting shall be the metal-halide "white light" unit, with pulse-start lamp and ballast, lamp explosion protection features, and premium color-corrected lamp. Luminaire design, lamp wattage, and ballast voltage will be dependent on building layout, required illumination level, and electrical power availability. Sodium-based HID luminaires shall not be used indoors. The preferred HID luminaire for exterior use as security lighting and parking lot lighting shall be the high pressure sodium unit, with full cutoff photometrics and minimum power level needed in accordance with the New Mexico Night Sky Protection Act (74-12, NMSA 1978).

1.02 QUALITY ASSURANCE

The latest issue of the following specifications and standards at the time of contract award form a part of this Section:

- A. National Electric Code (NEC) (NFPA 70).
- B. Illuminating Engineering Society of North America (IESNA) Handbook.
- C. Certified Ballast Manufacturers Standards (CBM)
- D. American National Standards Institute (ANSI):
 - ANSI C78.380 - 1984 Electric Lamps - High Intensity Discharge Lamps - Method of Designation
 - ANSI C78.1300 Series Specifications for Metal-Halide and High-Pressure Sodium Lamps
 - ANSI C82.4 - 1985 Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps (Multiple-Supply Type)
 - ANSI C82.5 - 1983 Reference Ballasts for High-Intensity Discharge Lamps

PART 2 - PRODUCTS

2.01 GENERAL

- A. All materials shall be as specified herein "or approved equal", unless substitutions are specifically forbidden in the Drawings. Any substitute HID fixture submitted by the contractor shall not only be similar in appearance to the specified fixture, but also shall have a coefficient of utilization and isolumen distribution curve within 10 percent or better of the specified fixture. In addition, the contractor shall submit manufacturer's photometric data to substantiate equivalent coefficients of utilization, isolumen curves, and zonal lumen distribution for the installation in question.
- B. All units approved shall bear a Nationally Recognized Testing Laboratory (NRTL) approval label and be NRTL listed for the application.
- C. Luminaires shall be of commercial grade.

2.02 BALLASTS

- A. Ballasts shall be in a separate compartment from the lamps and shall be encapsulated for quiet operation. For a modular "shoebox" type luminaire, a ballast may be considered to be in a separate compartment if it is outside the lamp reflector assembly and shielded or well ventilated against the lamp's heat load.
- B. Ballasts shall be of the pulse-start, energy-efficient regulator type, unless specifically shown otherwise in the contract documents. The ballast shall have the following characteristics as listed in the CBM Standards:
 - 1. The ballast shall be manufactured to the ANSI C82.4 and ANSI C82.5 standards and operate the lamp within the limits of the ANSI voltage-wattage trapezoid.
 - 2. The ballast shall be designed to accommodate +/- 10% variation in line voltage and have a power factor of 0.9 or better.
 - 3. The ballast shall be multi-tapped for either 120v, 208v, 277v, or 480v line power unless otherwise shown in the contract documents.
 - 4. The ballast shall be rated for the ambient conditions expected for the luminaire's mounting location, such as (but not limited to) cold-weather operation.

2.03 LUMINAIRE ASSEMBLIES

- A. The HID luminaire shall be a complete, coordinated assembly of ballast, igniter if any, ballast housing, reflector, diffuser or lens, heat removal louver or shield as required, wiring compartment, mounting device and hardware (unless remote mounted ballast is specified). All components shall be connected by secure mechanical means to reduce vibration noise and to prevent detachment of any components due to shock or vibration.
- B. Lay-in, Recessed, or Surface-Mounted Low-Bay Type Fixtures

1. Luminaires for recessed or surface ceiling mounting shall include, as a Type A or B submittal, complete dimensions, the details of mounting and hardware to include seismic protective features, door construction and access if any, suspensions and latching, lens type and thickness if any, ballast and lamp location, and heat removal provisions or heat shield if required.
2. Lay-in type fixtures shall have seismic clips to secure them to T-bars.
3. Where a plastic lens is specified, the lens shall be 0.4" thick acrylic and shall be mounted in the door in such a manner that the lens cannot fall due to vibration or sudden opening of the door. In addition, the plastic lens shall be protected against, and shall offer protection against, catastrophic lamp failure.
4. The door shall have a positive hinge and latch with a light-leak gasket.

C. High-bay Type Fixtures

1. Luminaires for suspended mounting shall include, as a Type A or B submittal, overall dimensions, details of mounting and hardware to include seismic protective features, lens type and thickness if any, remote ballast provisions if any, and power conductor type and connections. The preferred power conductor connection method is by NEMA L5 or L7 series twist-lock plug-and-cord, with mating receptacle mounted on structure or the fixture anchor point.
2. High bay fixtures shall be mounted from cast wiring boxes with hangers. The fixture mounting device shall be of the compression 3/4" conduit type with set screw. Gravity type hanger hubs on fixture are not acceptable.
3. High bay fixtures shall have a partially-reflective, tempered glass, acrylic, or polycarbonate reflector with approximately 20% uplight. The reflector shall have an opening at the top to allow heat removal by convection. A similar glass, acrylic, or polycarbonate lens shall enclose the lower opening of the reflector bell, and shall be rated as protection against catastrophic failure of the lamp.

D. Exterior Fixtures

1. Luminaires for exterior mounting on a building shall include, as a Type A or B submittal, complete dimensions, the details of mounting and hardware to include weather protection features, door construction and access if any, suspensions and latching, lens type and thickness, ballast and lamp location, lamp shield if necessary, and heat removal provisions or heat shield if required.
2. Fixtures for exterior use shall comply with the provisions of the New Mexico Night Sky Protection Act.
3. Fixtures for exterior use shall have individual and integral photocell controls, unless the building's exterior lighting circuit is so controlled as a separate system.

2.04 LAMPS

- A. High intensity discharge lamps shall be metallic halide or high-pressure sodium as defined by the IESNA and as specified on the construction drawings. Mercury-vapor lamps shall not be used. Lamps shall be manufactured and listed by the manufacturer to ANSI C78-1300 series standards.
 - 1. Lamp bases shall be of the mogul screw type for lamps over 250 watts, and of the intermediate screw type for smaller wattages. Lamp bases and sockets shall prevent inadvertent use of pulse-start lamps with conventional ballasts and vice versa.
 - 2. Lamp bulbs shall be of the BT, ED, and E shape, of either clear or diffuse material. MHID lamps shall have provisions to limit the effects of catastrophic failure of the capsule.
 - 3. The lamp shall meet all of the requirements of the ANSI C78.380 and ANSI C78.1300 Series Standards.
 - 4. The ballast and luminaire in which the lamp is used shall be approved for the application by the lamp manufacturer.
 - 5. Metal halide lamps shall be mounted on their vertical axis for maximum efficiency, unless specified otherwise in the contract drawings. Lamps shall be rated for their mounting position.
- B. Lamps shall be of standard manufacture, such as those manufactured by GE, Philips, Sylvania, or equal. All lamps provided for a single project shall be from a single manufacturer and lot so as to minimize objectionable variations in lamp color and performance. If non-standard lamps are used, a stamped or engraved label with the lamp ordering information shall be permanently attached to the luminaire, and the Contractor shall identify the lamp by this ordering information on the submittals.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All luminaires shall be connected to the building ground system.
- B. Connect ballast transformer taps, if provided, to maintain ballast voltage within manufacturer's recommended tolerance for the installation being provided.
- D. Ballasts shall be securely fastened to the luminaire housing for good thermal contact and to prevent vibration.

- END OF SECTION -