

SECTION 26 51 23 – SUBSTATION INTERIOR LIGHTING AND RECEPTACLES

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes the following:
 - 1. Interior lighting systems.
 - 2. Luminaries and fixtures.
 - 3. Receptacle power systems.
 - 4. All necessary mounting, wiring, and accessories.

1.02 RELATED REQUIREMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.
- B. Section 13 34 23.23 - Fabricated Substation Control Enclosures
- C. Section 23 75 00 – Substation Enclosure HVAC Equipment
- D. Section 26 24 16 - Panelboards
- E. Section 26 36 00 – Power Switching and Control Devices
- F. Section 33 72 33 36 – Cable Tray and Wireway for Utility Substations
- G. Section 33 72 33 33 – Raceway and Boxes for Utility Substations
- H. Section 33 72 33.16 - Relay Switchboards
- I. Section 33 72 43 11 - Substation Wire, Cable and Accessories

1.03 REFERENCE STANDARDS:

- A. Applicable Standards:
 - 1. American National Standard Institute (ANSI):
 - a. C81.61 - Bases for Electric Lamps
 - b. C81.62 - Electric Lamp Holders
 - 2. National Fire Protection Association (NFPA):
 - a. 70 - National Electrical Code (NEC).
 - b. 101 - Life Safety Code.

1.04 COMPLIANCE SUBMITTALS:

- A. Information for each light fixture, switch, receptacle, etc.
- B. In the event of a proposed substitution of the lighting fixture specified, the Contractor shall submit the following information to the Engineer for approval before an order is placed for such fixtures:
 - 1. A complete fixture description.
 - 2. A complete set of photometrics for proposed fixture.
 - 3. If required by the Engineer, operating sample units of fixtures proposed as substitutes to those specified.

1.05 QUALITY ASSURANCE:

- A. The Contractor shall furnish equipment and materials meeting the specified ratings and performance at the altitude and ambient temperatures specified.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

- A. Lamps:

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1. Appleton Electric Company.
2. Crouse-Hinds Company.
3. General Electric Company.
4. GTE Sylvania Inc.
5. Philips.
- B. Switches:
 1. Arrow Hart, Div. Crouse-Hinds Co.
 2. Bryant Electric Company.
 3. Hubbell Inc.
 4. Leviton Mfg. Co. Inc.
 5. Pass & Seymour Inc.
- C. Luminaries and Fixtures: As specified for each type.
- D. Receptacles - Miscellaneous Single and Duplex; Straight-blade:
 1. Arrow-Hart, Div. Crouse-Hinds Co.
 2. Bryant Electric Company.
 3. Hubbell Inc.
 4. Leviton Mfg. Co. Inc.

2.02 GENERAL REQUIREMENTS:

- A. All equipment and materials to bear UL label and conform to applicable standards.
- B. All necessary wiring and accessories for complete installation.
- C. Systems:
 1. 120/240V, single-phase, 3-wire system with identified grounded neutral and grounding conductor.

2.03 LUMINARIES:

- A. Emergency Light Fixtures Type L2:
 1. Rated 120V, 60 hertz, ac.
 2. Die-formed steel frame with a one-piece enameled, vented reflector.
 3. Provisions for 3/4-inch conduit stem mounting with swivel aligner attachment.
 4. Single 100-watt incandescent lamp.
 5. Day-Brite/Benjamin Electric Manufacturing Company, Catalog No. V7641-SHB-3/4, or approved equivalent.
- B. Emergency Light Fixtures Type L2HA:
 1. Similar to Fixture Type L2, except UL listed for use in Class I, Division 2, Group A hazardous areas, and being rated for 150W.
 2. Protected with a guard where fixture is used to light battery areas.
 3. Appleton Catalog No. AC2075, or approved equivalent.
- C. Control Building Exit Fixtures Type L5:
 1. Rated 120V, 60 hertz, ac.
 2. Cast-aluminum housing with fiberglass directional panels and plastic universal arrow single-face covers.
 3. Suitable for wall surface mounting.
 4. Supply with emergency power battery pack providing constant illumination
 5. Exit panels shall be red letters on a white background.
 6. Hubbell Catalog No. LED1EMRWW or approved equivalent.

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2.04 SWITCHES:

- A. All single-pole or three-way switches as indicated.
- B. Surface-Mounted, Tumbler, Self-Grounding, Heavy-Duty Switches:
 - 1. Rated 20 amperes at 120Vac.
 - 2. Gray toggle.
 - 3. FS and FD single or multiple gang boxes.
 - 4. Stainless-steel cover plates with matching countersunk screws.
 - 5. Locations as indicated.
 - 6. Leviton Manufacturing Company, "Industrial" specification grade.

2.05 RECEPTACLES:

- A. Straight blade, duplex.
 - 1. Rated 20 amperes at 125Vac, 2 pole, 3 wire, grounding type.
 - 2. Polarized, parallel blade, arc resistant, specification grade, NEMA Reference 5-20R.
 - 3. Ivory.
 - 4. FD malleable-iron single box surface-mount enclosure.
 - 5. Stainless-steel cover, brushed satin finish, with matching countersunk screws.
 - 6. Leviton Manufacturing Company No. 8300-I or approved equivalent receptacle.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Luminaries:
 - 1. Install as indicated including all necessary mounting and supporting materials.
 - 2. Shift location if necessary to avoid interference with piping or other apparatus or material, or if directed by the Engineer.
 - 3. Maintain the lighting system throughout the construction period, including replacement of burned-out lamps, repair of unoperable fixtures, and relocation of fixtures as directed by the Engineer.
 - 4. Prior to final acceptance, lighting system shall be fully checked. At this time, all defective lighting fixtures, ballasts, lamps, etc., shall be repaired or replaced.
- B. Switches:
 - 1. Mount 4 ft.-6 inches above floor, walkways, or finished grade unless otherwise indicated, including all necessary mounting and supporting materials.
 - 2. Install close to frame on lock or latch side when located near doors.
 - 3. Flush mount in finished areas and surface mount in all other areas unless otherwise indicated.
- C. Receptacles:
 - 1. Install as specified or indicated including all mounting and supporting materials.
 - 2. Install flush-mount receptacle outlets 1 ft.-0 inches above floor in finished rooms except as otherwise indicated.
 - 3. Install surface-mount receptacle outlets 3 ft.-0 inches above floor in all other areas except as otherwise indicated. Use FS and FD boxes.
 - 4. Shift location if necessary to avoid interference with other apparatus or material.
- D. Wiring:
 - 1. Each conduit shall contain no more than one conductor of each phase and one or more neutrals as necessary.

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2. Each receptacle circuit shall have an identified neutral and identified grounding conductor.
3. Use circuit numbers as indicated.
4. Use cable as specified in Section 33 72 43 11 for lighting and receptacle circuits.
5. Do not use wire smaller than No. 12 AWG.
6. Contractor shall size and install proper wire size, as required, such that the voltage drop from the power or lighting panel to the farthest light fixture or receptacle does not exceed 3%. Contractor shall be required to rewire circuits which exceed 3%.
7. Splice in boxes only with twist-on electrical connectors, pre-insulated closed end splices with free expanding spring to apply strong uniform holding power on all wire combinations. Acceptable manufacturers are as follows:
 - a. Minnesota Mining and Manufacturing (3M) Scotchlok.
 - b. Buchanan B Cap Connectors.
8. Install emergency lighting circuits in a separate conduit system.

END OF SECTION 26 51 23