

SECTION 26 56 00 - EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 DESIGN REQUIREMENTS

- A. Meet light levels and uniformity ratios as recommended by IESNA recommended practice manual: Lighting for Exterior Environments (RP-33-99).
- B. All luminaries with more than 3500 initial lamp lumens must be full cut off.
- C. Exterior area and site lighting shall be included in campus exterior lighting wireless control system.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's product data with mounting type and installation instructions on each proposed type of luminary and accessories.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver lighting in factory-fabricated containers or wrappings, which properly protect luminaries from damage.
- B. Store lighting in original packaging. Store inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity, laid flat, and blocked off ground.
- C. Handle lighting carefully to prevent damage, breaking, and scoring of finishes. Do not install damaged units or components; replace with new.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. Open Parking Lots and Street Lighting:
 - a. Campus Standard Fixture – Gardco Form 10 Round LED Arm Mount:
 - 1) CA22L; light distribution depends on whether single or double configuration and location, use Q or 3 distribution; 277v, 110W LED, 3000K, 80 CRA, 0-10V dimming, wireless communication; finish to be campus standard color RAL7038. Pole: RA5, 30 ft high, fixed base, accommodates single or double configuration as required, finish color RAL7038
 - b. General Description: Pole mounted, aluminum type luminary (single and double-head), thirty (30) foot aluminum pole, both with optional color paint (RAL7038), DLC listed
 - 2. General Campus Lighting:
 - a. Campus Standard Fixture– Gardco Form 10 Round LED Post Top Mount:
 - 1) MP17L; P12 yoke fitter; light distribution depends on location, use Type 5 distribution; 277v, 70W LED, 3000K, 80 CRA, 0-10V dimming, wireless communication; finish to be campus standard color RAL7038. Pole: RA4, 10 ft high, fixed base, finish color – RAL7038.
 - b. General Description: Pole-mounted, aluminum type luminary with solid top (single head), ten (10) foot aluminum pole, both with optional color paint – RAL7038, DLC listed
 - 3. Exterior of Building Walls, Above Entries (Fixtures can be specified per building):
 - a. Primary Manufacturer – Philips Stonco LPW16 Small Wall Sconce

- b. General Description: Rectangular aluminum type, wall mounted small wall sconce, 12 inch, anodized, color bronze, 277 volt, 40W LED max, 4000K, DLC listed
 - c. Other fixtures as approved per location
 4. Exterior at Colonnades:
 - a. Primary Manufacturer – Philips Stonco LPW7 Small Wall Sconce;
 - b. General Description: Rectangular aluminum type, wall mounted small wall sconce 8 inch, anodized, color bronze, 277 volt, 14W LED max, 4000K, DLC listed
 - c. Other fixtures as approved per location
 5. Exterior at service yards:
 - a. Primary Manufacturer – Philips Stonco LPW32 Small Wall Sconce:
 - b. General Description: Wall mounted full cut-off, aluminum housing dark bronze finish, 12 inch, 277 volt, 71W LED max, 4000K, DLC listed
 - c. Fixture style as appropriate for location; Wall-PAK used only with prior approval
 6. Accent Lighting Near Walkways:
 - a. Primary Manufacturer – Gardco BR841 Bollard LED (head only)
 - 1) 8 inch diameter, campus standard finish – RAL 7038
 - b. General Description: Concrete bollard mounted (provided by others), cylindrical, aluminum luminary, 8 inch diameter, painted aluminum, 360 degree distribution, full cutoff, 277 volt, 26W LED max, DLC listed
 - c. Other fixtures as approved per location
 7. Landscape Areas:
 - a. Type GM2: Hydrel, PINE 9LED38, provide with stem.
 - b. General: Ground-mounted aluminum adjustable LED up light stemmed up in plant areas. Integral components including electrical parts, lamps, and optical assembly are totally enclosed, rain tight, dust tight, and corrosion resistant. Dark bronze baked enamel finish. Narrow Flood, 3000K., DLC listed
 8. Pole Bases:
 - a. Concrete pole bases shall be designed by Licensed Colorado Structural engineer for wind loading. Each pole base shall have its own ground rod banded to the base rebar.
 9. Parking Garage:
 - a. Primary Manufacture – Gardco “Garage Lighting – G3 LED”.
 - 1) G3 LED Standard Luminaire, Type 5 symmetrical distribution, 2 LED arrays, 73W max, 4000K, 75 CRI, UNIV (277V) volt, 0-10V dimming, wireless communication,
 - b. General Description – Surface mounted, die cast aluminum canopy, DLC listed.
 10. In grade well lights are prohibited.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions under which lighting is to be installed. Notify Contractor in writing of conditions detrimental to proper completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 INSTALLATION, GENERAL

- A. Install lighting at locations and heights as indicated, in accordance with manufacturer’s written instructions, applicable requirements of NEC, NECA’s “Standard of Installation,” NEMA standards, and with recognized industry practices to ensure that lighting fulfills requirements.
- B. Fasten luminaries securely to structural supports and ensure that luminaries are plumb and level.
- C. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer’s published torque tightening values for equipment connectors. Where manufacturer’s

torque requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and 486B, and the National Electrical Code (NEC).

- D. Grounding: Provide equipment-grounding connections for lighting as indicated. Tighten connections to comply with tightening torques specified in UL Standard 486A to assure permanent and effective grounds. Any connection below grade and not accessible shall be of CAD Weld type (non-reversible).

3.3 TESTING, CLEANING, AND CERTIFICATION

- A. Clean lighting of dirt and construction debris upon completion of installation. Clean fingerprints and smudges from lenses.
- B. Protect installed luminaries from damage during remainder of construction period.
- C. At Date of Final Completion, replace lamps in luminaries, which are observed to be noticeably dimmed after Contractor's use and testing, as judged by Engineer.
 - 1. a. Refer to Division 1 sections for the replacement/restoration of lamps in lighting where used for temporary lighting prior to Date of Final Completion.
- D. Upon completion of installation of lighting and after circuitry has been energized, apply electrical energy to demonstrate capability and compliance with requirements. Where possible, correct malfunctioning units at site, then re-test to demonstrate compliance; otherwise, remove and replace with new units and proceed with re-testing.

END OF SECTION 26 56 00