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265600 - Exterior Lighting

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SECTION 26 5600 - EXTERIOR LIGHTING

PART 1 - GENERAL

- 1.1 See Chapter 5, Division 01, Section 017700.1.1.B.1.i Closeout Procedures - Project Record Documents for equipment list requirements for all equipment provided in this section.
- 1.2 Design Philosophy: The University intends that outside lighting accomplish several critical functions. First, site lighting must adequately illuminate buildings, pedestrian walkways, roads and parking areas. This illumination enhances security, reduces the risk of accidents and improves the overall safety of the campus. Site lighting should also enhance way-finding by making walkways, building entrances and other key features easily visible. Finally, exterior lighting should add to the visual appeal of the campus and its buildings and grounds.
- 1.3 Illumination Levels: The University will provide lighting only on approved and maintained pedestrian walkways and paths. Unapproved footpaths that are not maintained will not be lit.
 - A. For approved and maintained pedestrian walkways and paths, the minimum illumination level shall be 0.5 fc with a 4:1 illuminance uniformity ratio. DO NOT OVER ILLUMINATE.
 - B. Generally do not illuminate roadways, rather illuminate crosswalks and sidewalks. It is not necessary to achieve a standard along the center of the roadways, but crosswalks should be a minimum of 0.7 fc.
 - C. Achieve the necessary levels of illumination at the lowest reasonable levels of energy consumption
 - D. Strive for even levels of illumination along walkways, sidewalks, and parking lots. Center of roadways should have less illumination than the crosswalks. Varying levels of lighting along a pathway create areas that, while adequately lit, are perceived as being very dark by contrast with over-illuminated areas. In particular, fixtures that create glare by directing light into the eyes of pedestrians or drivers of vehicles are to be avoided.
 - E. Up-light pollution is generally not allowed with very limited exceptions. Full cutoff fixtures shall be used. Provide good color rendition.
- 1.4 Lighting Fixture Location:
 - F. Roadway Fixtures/Poles shall be located a minimum of (5') Five feet off the edge of pavement where ever possible.



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- G. Parking Lot Fixtures/Poles shall be located a minimum of (5') five feet off the edge of the pavement where ever possible.

- H. Walkways Fixtures/Poles, shall be located a minimum of (3') Feet off the edge of a paved walkway where ever possible.

PART 2 – PRODUCTS

2.1 Outdoor Fixtures: All lamp types will be LED type. Cobra head fixtures are not allowed, flood lights should be avoided, but when there is no alternative, they must be shielded to comply with Dark Sky standards. If only one or a few new fixtures are being installed, they should match the fixture type of the adjacent fixtures, and the lamp type should be consistent in color rendering with what most common in the area. If there is already a mixture or if many new fixtures are being installed then they should follow the types described below.

A. Walkway and Roadway outside of the campus core, all Parking Lot, Basketball/Volleyball Play Area Lighting; LED Light Fixtures.

- 1. Kim Lighting, Archetype, AR, LED, round aluminum tapered 20 ft pole, bronze finish, wattage depending upon spacing and configuration.
or Cooper Industries, Streetworks, Talon, TMU, LED, round aluminum tapered 20 ft pole, bronze finish, wattage depending upon spacing and configuration.

B. Flood Lighting; LED Flood Light Fixtures.

- 1. Cooper Lighting Streetworks, General Purpose Flood, LED wattage depending upon spacing and configuration.

C. Walkway and Roadway Lighting within the campus core; LED Light Fixtures.

- 1. For Core Campus - Sternberg LED Park Ridge series pole, 58W 12LED, 4500K, Type 3 LED with 1400mA, 120V-277V 90% minimum efficiency driver. Pole will be a Georgetown Series, 4"- 3" tapered with a 2" OD candy cane arm and a black finish, 18" aluminum shade with attached UV stabilized polycarbonate acorn globe. Globe shall be 12' above grade. 120V-277V electronic button photocell. Part #1A-1910-XRLED/5RLM18/R2/3400RT4-12AG/12L45T3-MDL14/PEC/BK
- 2. For other areas of campus - consistency with existing fixtures.

D. LED

E. Wall Lighting; LED or fluorescent lamps. Fixture must be rugged and vandal resistant, but easy to change out lamps. Lamps must be a common and readily available type.

- 1. Kenall Millenium Series – LED.

CHAPTER 5 – TECHNICAL CONSTRUCTION AND RENOVATION STANDARDS

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2. Stonco - Nytepro – LED.
 3. AccuLite Polaris Series – LED.
- F. Fiberglass Walklight (only as replacement for current fixture) Round tapered with hand hold. Pole top to have 3" OD x 3-1/2" long steel tenon. Pole to be direct buried to depth of 3' and be 14' above grade. A cable access hole must be provided 24" below finished grade. Whatley # TR34-14-DE-BLK-TXT-30-35.
- G. Pole Bases: Pole bases may be either pre-cast or cast in place concrete 24" diameter, set into the earth at least 60" and shall be no more than 6" above the finished grade on the high side of the slope, except when located in the paved area of a parking lot or driveway where it should be 36" above the finished pavement. The concrete base shall be round and shall have a 3/4" chamfer edge. Bolt pattern shall be as recommended by the pole manufactures. Grounding and conduit runs shall be provided in accordance with the current applicable codes, and shall be indicated on the project drawings.
- H. Ballasts:
Ballasts shall be multi tap for 120-208-240-277 volts and of non-PCB. All system components will be warranted for a period of two years from date of installation or four years when supplied as part of a registered system project, in accordance with the One Call Limited Warranty.
- I. Lamps:
If used in an open luminaire, the lamp must be rated Open Fixture (O) and incorporate a protective arc tube shroud. Performance shall be _____ initial lumens with a _____% maintenance factor. The lamp carries a two year replacement warranty (assuming 5000 avg. burn hrs./year), when part of a registered system project, in accordance with the "One Call" Limited Warranty.



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PART 3 - EXECUTION

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- 3.1 Circuit design. If multiple fixtures are fed by a single circuit, a photocell will be provided on each fixture for control. If a Master Photo Control is used on the system a manual override shall be provided in the main electrical room for maintains/testing purposes, this override switch shall be identified with laminated Red-white phenolic plates engraved with a minimum of 1/4-inch White letters stating manual override for walklight system. Dual 120 volt circuit design is preferred for walk light systems, place every other fixture on the opposite circuit, Under no circumstances will time clocks be used to control exterior light power systems.
- 3.2 The Sternberg fixture and pole indicated above shall be used on all new walkway and site lighting installations unless the designer is otherwise directed by the University.
- 3.3 Underground wiring of all walkway lighting shall be in a minimum of 1" PVC conduit buried according to NEC standards and to have a minimum conductor size of at least #10 wire, or larger if circuit line loss requires it.
- 3.4 Unique Solutions fixtures will be used for replacement of existing carriage lantern type fixtures when in areas that are not being converted to the Sternberg fixture. Whatley Round Tapered Fiberglass poles will be used with the Unique Solutions fixtures.
- 3.5 Wall Lighting in general, shall not be used on any new primary facilities construction/renovation unless directed otherwise by the Owner. If so directed LED fixtures shall be used.
- 3.6 In all cases, for underground wiring of parking lot lighting, no direct buried cable will be accepted as a method of wiring exterior lighting. At a minimum, PVC conduit of the required size with individual conductors shall be used.

END OF SECTION 26 5600