SECTION 26 50 00

INTERIOR AND EXTERIOR LIGHTING FIXTURES

PART 1: GENERAL

1.1 This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 WORK INCLUDED:

A. Interior lighting fixtures and accessories
B. Exterior lighting fixtures and accessories
C. Emergency battery units
D. Emergency exit signs
E. Lamps
F. Ballasts
G. Lighting controls

1.3 REFERENCES

A. NEPA 101 - Code for Safety to Life from Fire in Buildings and Structures
B. NEMA WD1 - General-Purpose Wiring Devices
C. ANSI C82.1 - Specification for Fluorescent Lamp Ballasts
D. ANSI C82.4 - Specifications for High-Intensity-Discharge Lamp Ballasts (Multiple Supply Type)
E. NEMA LE - H-I-D Lighting System Noise Criterion (LS-NC) Ratings
F. UL 844 - Electric Lighting Fixtures for Use in hazardous (classified) Locations
G. UL 924 - Emergency Lighting and Power Equipment
H. UL 935 - Fluorescent-Lamp Ballasts
I. UL 1029 - High-Intensity-Discharge Lamp Ballasts
J. UL 1572 - High Intensity Discharge Lighting Fixtures
K. UL 1574 – Track Lighting Systems
L. IESNA – Lighting Handbook
M. NEMA WD 1 - General Color Requirements for wiring devices
N. NEMA LE 5B – Procedure for Determine Luminaire Efficacy Ratings for High-Intensity Discharge Industrial Luminaires
O. NFPA 70 – National Electrical Code
P. ASHRAE/IES 90.1 – Energy Standard for Buildings except Low-Rise Residential Buildings
Q. Standards for State-Funded Outdoor Lighting Fixture – Texas House Bill 916 (1999)
R. UT System OFPC – Security Planning and Design Guidelines (2002 release)

1.4 DESIGN CRITERIA

A. Lighting level design shall be per IESNA (Illuminating Engineering Society of North America) recommendation (unless otherwise noted).
B. The power consumption for interior and exterior lighting shall not exceed power allowance as per ASHRAE 90.1 latest revision (unless otherwise noted).

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE
A. Manufacturer Qualifications: A manufacturer that has been manufacturing emergency light fixtures for a period of at least 10 years.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Store products indoors in manufacturer's unopened packaging until ready for installation.

1.8 PROJECT CONDITIONS
A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2: PRODUCTS

2.1 This product section is intended to inform the PSP on the minimum standard of quality that should be incorporated in new designs. The PSP should evaluate these standards and incorporate or make additional requirements per project specific requirements. Where the PSP considers any requirement listed not to be applicable or incompatible with the project design intent should be discussed with UTA Office of Facilities Management.

2.2 MANUFACTURERS - INTERIOR
A. Energetic Lighting
B. Nicor Lighting
C. Requests for substitutions will be considered in accordance with provisions of Section 01 31 00.

2.3 2 X 2 RECESSED LED TROFFER (CLASSROOMS)
A. Energetic Ligthing
1. Model: ELYTD-2X2CD
2. Voltage: MVOLT

2.4 2 X 2 / 2 X 4 RECESSED LED TROFFER (CORRIDORS)
A. NICOR, Inc.
1. Model: T3C
2. Voltage: MVOLT

2.5 DOWNLIGHT
A. Lithonia
1. Model: 8HF
a. Lamp: Horizontal 2-Lamp, Twin Tube [13w][18w][26w]
b. Voltage: MVOLT
c. Ballast: Per manufacturer’s recommendations
d. Reflector: Semi-Specular [White]
e. Lens Type: No Lens
f. [Emergency PSDL3 DL battery pack with integral test switch]
g. [Electronic Dimming Ballast]

B. Gotham
1. Model: 8” EVO
2. Lamp: A Series LED
3. Color Temperature: 4100K; CRI = >83 4.
4. Lumens: [1800], [22], [29]
5. Trim Color: [Clear], [White]
6. Beam Spread: Very Narrow Distribution [VND], Narrow Distribution [ND], Medium Distribution [MD], and Wide Distribution [WD].
7. Voltage: 277
8. Driver: 0-10V Wallbox Dimmer [or Lutron Hi-Lume Dimming Driver.]

2.6 EXIT SIGNS: Coordinate location and sign types with Owner.

A. Acceptable Manufacturers
   1. Electrically Powered Signs
      a. Tamlite Lighting
   2. Other manufacturers equal in design and function will be considered upon A/E approval following substitution procedure in 16 01 00, and Division 1 for substitution requirement.

B. General Requirements
   1. Provide red LED with red diffuser exit signs at the locations per drawings. Exit signs shall have stencil face, 6" high red letters on white background, or as specified otherwise, with red Chevron type directional arrows as indicated on drawings.
   2. Battery backed exit signs shall be provided with integral battery-operated emergency power supply, including power failure relay, test switch, AC ON pilot light, battery, and fully-automatic charger. Provide test switch to manually transfer unit from normal supply to battery supply.
   3. Battery shall be sealed maintenance free, nickel cadmium type, 6 or 12 volts, 24-watt rated capacity, with 1½ hour minimum capacity to supply connected lamp load.
   4. Unit shall be 120 or 277 volt.

2.7 LAMPS

A. Acceptable Manufacturers
   1. General Electric Company
   2. Phillips Lighting Company
   3. Sylvania
   4. Other manufacturers equal in design and function will be considered upon A/E approval following substitution procedure in 16010, and Division 1 for substitution requirement.

B. General Requirements
   1. Lamps including linear fluorescent, compact fluorescent and HID shall be low mercury type and shall pass all federal TCLP (Toxicity Characteristic Leaching Procedure) test requirements in effect at the time of manufacture. All lamps shall be energy saving and rapid start type.
   3. Linear fluorescent lamps shall be T8 lamps. Compact lamps shall be twin or double twin tubes. All lamps for one project shall be provided by the same manufacturer with color temperature as indicated on drawings. Operation voltage and wattage shall be as indicated on drawings.
   4. Mercury vapor HID lamps shall not be used.
   5. Metal halide HID lamps shall be phosphor coated, suitable for the burning position required.
   6. High-pressure sodium HID lamps shall not be used.
   7. Maintenance Stock: Furnish a stock of replacement lamps in the original cartons or packing sleeves, amounting to 10% (but not less than 2 lamps in each case) of each type and size lamp used in each fixture type. Deliver replacement stock as directed to Owner's storage space.

2.8 BALLASTS

A. Acceptable Manufacturers
   1. Valmont
   2. Advance
   3. Magnetek
   4. Other manufacturers equal in design and function will be considered upon A/E approval following substitution procedure in 16 01 00, and Division 1 for substitution requirement.

B. General Requirements

All ballasts shall be UL listed and have the UL symbol on the label.
   1. Ballasts for fluorescent lamps
      a. Provide MVolt ballasts for all operations except for under-counter fixtures that shall be rated for 120V operation. Ballasts shall be electronic type, rapid start, and power factor of 95% or greater, suitable to operate at 60 Hz input frequency.

b. Electronic ballasts shall comply with all FCC and NEMA limits governing EMI and RFI, and shall have Total Harmonic Distortion (THD) of less than 20%.
c. Ballasts shall be Class P thermally protected.
d. Sound level criteria: Nominal 430 mA Lamps: Class A sound rated.
e. Electronic Dimming Ballasts: Compatible with lamp and dimming system, labeled for use and listed as compatible by dimmer manufacturer with a minimum full-to-10% dimming range.
f. Exterior Fluorescent Ballasts: Provide 0° starting rating.

2. Ballasts for Metal Halide lamps
   a. Metal Halide (MH) ballast shall be multi-tap encased and potted thermally protected high power factor of 95% or greater, constant wattage regulating, and autotransformer type. Ballast ambient operating temperature range shall be -20 to +130° F. Ballasts shall be compatible to the lamps chosen for specific burning position, and compensate for the loss in efficiency.
   b. Provide isolation mounting and insulation of MH ballasts to reduce sound transmission or radiation.
   c. Each MH ballast shall have a fast acting primary inline fuse built into the fixture assembly by the manufacturer.

2.9 LIGHTING CONTROL

A. Refer to Section 26 27 26 Wiring Devices and Floor Boxes for lighting switch, dimming control, and occupancy sensor.

2.10 MANUFACTURERS – EXTERIOR

2.11 PARKING LOT AND ROAD LUMINAIRES

A. Manufacturer: Cooper Lighting
B. Lamp: [250W], [400W] as required by the specific design for the specific application. Pulse Start MH or LED equivalent as approved by the Owner.
C. Voltage: Multi-Tap
D. Optics: Optical System Type III
E. Finish: RAL 9007 “Metallic Glossy”
F. Pole: Pole shall be Aluminum Round Tapered with a shaft diameter (at base) of 8”. The length of pole shall be [30’],[40’], [50’] as required by the specific design for the specific application. The base type shall be standard base type ‘A’. Pole shall be equipped with vibration dampers. The finish shall match the light fixtures in color and material. Pole shall hold 1 or 2 light fixtures and withstand wind speed (as required by IBC in this region).
G. Accessory: Upsweep Mounted for Round Pole, Matching Color and finish.
H. Performance: For roadway lighting, all exterior lighting designs shall seek to provide a minimum lighting level of 1’ candle utilizing a 4 to 1 uniformity ratio.

2.12 LIGHTED BOLLARDS

A. Manufacturer: KIM Lighting: High Performance Bollard
B. Model: B30-20L-4K-UV
C. Color: Platinum Silver (PS)

2.7 PEDESTRIAN LIGHTING

A. Manufacturer: ALA LLC
   1. Model: RGR1L-E-32LED 700MA-4K-ARF-R5-MVOLT-RPF-ARV-MD17-BL2-ANBK
   2. Lamp: 32 W LED 700MA
   3. Pole: Washington Series
   4. MODEL: PA W19-12-ANBK
   5. Height: 12’
   6. Color: ANBK (BLACK)

PART 3: EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION
A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION
A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

3.5 SCHEDULE
A. Exterior lighting shall provide the following light levels, or meet minimum IES Guidelines, whichever provides greater light levels:

EXTERIOR LIGHTING (Minimum Light Levels)	
•Building Entrances	5 foot-candles
•Building Exits (normally locked)	1 foot-candle
•Building Surrounds	1 foot-candle avg. 4:1 uniformity ratio
•Roadways	0.6 foot-candles avg. 4:1 ratio
•Landscaped Areas	0.3 foot-candles avg. 4:1 ratio
•Walkways	1 foot-candle avg. 4:1 uniformity ratio
•Surface Parking	2 fc avg., 4:1 uniformity (avg./min.)
•Covered Parking	10 fc avg., 4:1 uniformity (avg./min.)

END OF SECTION 26 50 00