

SECTION 26 50 00 - LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. **KROGER DIRECT BUY PROGRAM:** Owner supplied/Contractor installed.
 - a. The Kroger Company will supply the following items:
 - 1) Fluorescent Type Fixtures
 - 2) H.I.D. Type Fixtures
 - 3) Incandescent Type Fixtures
 - 4) Emergency lighting
 - 5) Lamps for lighting fixtures
 - b. Comply with requirements in Division 00 Section "General Conditions."
2. Contractor supplied items:
 - a. Lighting fixture support components, accessories and other items not provided by Owner necessary for a complete installation.
 - 1) Do not supply fixture support components for suspended lighting fixtures over island cases.
3. Contractor installed items:
 - a. General Lighting
 - b. Outdoor Lighting
 - c. Local Lighting
 - d. Emergency Lighting
 - e. Lamps for lighting fixtures
4. Contractor removal and disposal of fluorescent lamps.
5. Contractor removal and disposal of PCB containing lighting ballasts.

1.2 SUBMITTALS

- A. The Owner will provide the following submittals for the Contractor's review. The Contractor shall review and return submittals as specified in Division 00 Section "General Conditions."
1. Product Data: For each type of lighting fixture.
 2. Shop Drawings: Showing details of nonstandard or custom lighting fixtures.

3. Product Certificates: For each type of ballast for bi-level and dimmer-controlled fixtures, signed by product manufacturer.
- B. Landfill Records (For Fluorescent Lamp and Lighting Ballast Disposal): Indicate receipt and acceptance of hazardous wastes by a landfill facility with an EPA ID number licensed to accept hazardous wastes.

1.3 PERFORMANCE REQUIREMENTS

- A. Owner provided light fixtures will meet the following requirements:
 1. H.I.D. Ballasts: All H.I.D. fixtures and ballasts to be suitable for operation in 50 degrees C. ambient.
 2. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
 3. Incandescent Fixtures: Comply with UL 1598. Where LER (Luminaire Efficacy Rating) is specified, test according to NEMA LE 5A.
 4. Fluorescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.
 5. HID Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5B.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.
- C. Emergency Lighting Units: Self-contained units complying with UL 924.

PART 2 - PRODUCTS

2.1 INTERIOR LIGHTING

- A. Refer to Division 01 Section "Vendor Contact List" for Light Fixture and Lamp Package.

2.2 EXTERIOR LIGHTING

- A. Refer to Division 01 Section "Vendor Contact List" for Site Lighting Package.
- B. Wiring: Provide schedule 40 PVC conduit and Type XHHW wire for parking lot lighting system. Provide sealed conduit to prevent moisture penetration.
 1. Transition to rigid galvanized steel IMC just prior to emergence through grade.

2.3 EMERGENCY LIGHTING UNITS

- A. Refer to Division 01 Section "Vendor Contact List" for Light Fixture and Lamp Package.

2.4 LIGHTING FIXTURE SUPPORT COMPONENTS

- A. Comply with Division 20 Sections "Hangers and Supports for Facility Services" and "Vibration and Seismic Control for Facility Services" for steel channel and angle supports and cable strut support system building attachments.
- B. Single-Stem Hangers: **1/2-inch (13-mm)** steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.
- C. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, **12 gage (2.68 mm)**.
- D. Wire Rope: 7-by-19, diameter as indicated, made from stainless steel wire complying with ASTM A 492, Type 304 or galvanized steel complying with ASTM A 603.
 - 1. Wire-Rope Fittings: Connectors of types indicated, fabricated from stainless steel, and with capability to sustain, without failure, a load equal to minimum breaking strength of wire rope with which they are used.
 - a. Manufacturers:
 - 1) Duro Dyne Corporation.
 - 2) Gripple, Inc.
- E. Rod Hangers: **3/16-inch (5-mm)** minimum diameter, cadmium-plated, threaded steel rod.
- F. Lay In and Troffer Light Fixture Support Clips: Comply with NEC Article 410-16 "Means of Support"
 - 1. Provide for round or rectangular head tee bar.
 - 2. Basis of Design: ERICO International Corporation; Caddy #515; 800-853-0878.
- G. Comply with all local building codes "Means of Support."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify if PCB ballasts exist in light fixtures to be removed. If PCB light fixture ballasts exist, then follow requirements in PCB ballast handling and disposal requirements below.

3.2 INSTALLATION OF LIGHTING FIXTURES:

- A. Coordinate with other electrical work, as appropriate to properly interface installation of interior lighting fixtures with other work and to properly interface with project work phasing.

- B. Building Attachment: Fasten fixtures securely to building structure. Install hangers to top cord of joists/joist girder at panel points. Do not fasten hangers to metal deck. Where hangers do not align with structure, install steel angle, U-channel strut, or cable strut system sized to carry load of light fixture(s), spanning across a minimum of two structural members. Rest or bolt U-channel or angle to the top of the top cord of joists/joist girder at panel points and between flutes of steel deck. Install cable strut system over top cord of joists and between flutes of steel deck per manufacturer's written instructions. Length that cable strut may span over multiple structural members must be approved by manufacturer and Project Engineer.
- C. Install fixtures level and plumb.
- D. Install four support clips, one in each corner, to fixtures installed in tee-bar ceilings.

3.3 REUSE OF EXISTING LIGHTING FIXTURES

- A. Clean and relamp all fixtures to be reused.
- B. Repair damaged or inoperable fixtures.
- C. Provide quantities and types of damaged fixtures to Owner's Representative for replacement.

3.4 GROUNDING FOR EXTERIOR LIGHTING

- A. Ground metal poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
 - 1. Install grounding electrode for each pole, unless otherwise indicated.
 - 2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.
- B. Ground nonmetallic poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
 - 1. Install grounding electrode for each pole.
 - 2. Install grounding conductor and conductor protector.
 - 3. Ground metallic components of pole accessories and foundations.

3.5 REMOVAL OF FLUORESCENT LAMPS

- A. Fluorescent Lamp Removal: Remove fluorescent lamps in accordance with local or state regulations and Federal Regulation 40 CFR 273 and as follows:
 - 1. Do not break mercury containing fluorescent lamps or high intensity discharge lamps.
 - 2. Contain any lamp in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers and packages must remain closed and must lack evidence of leakage under reasonably foreseeable conditions.

3. Immediately clean up and place in a container any lamp that is broken and place in a container any lamp that shows evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous constituents to the environment. Containers must be closed, structurally sound, compatible with the contents of the lamps and must lack evidence of leakage, spillage of damage that could cause leakage or releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions.
4. Store lamps in containers or packages that prevent breakage and manage lamps in a way that prevents the release of any component of the lamp to the environment.
5. Dispose of fluorescent Lamps off site in accordance with EPA, DOT, and local regulations at a permitted site.

3.6 REMOVAL OF PCB CONTAINING LIGHTING BALLASTS

- A. PCB Ballast Handling And Disposal: Remove PCB containing ballast in accordance with local or state regulations and Federal Regulation 40 CFR 761 and as follows:
 1. General: High power factor fluorescent light ballasts manufactured before 1978 and some HID ballasts contain PCB compounds in their capacitors. Inspect ballasts in light fixtures to be removed and remove from the Project site.
 2. If the PCB content is not stated on the ballast label, the ballast shall be handled as a PCB ballast.
 3. Before removal, inspect PCB ballasts for leaks. If ballast appears to be leaking (evidenced by potting compound leaking out or by an oily film on the ballast surface) the ballast must be handled per EPA and requirements of authorities having jurisdiction. Remove the ballast from the fixture and placed in an approved drum. Wear protective gloves, eye protection, and protective clothing as necessary.
 - a. If the fixture has also been contaminated, clean to less than 10 micrograms/100 square centimeters contamination before disposal. Utilize an approved PCB abatement company for cleaning process.
 4. Do not expose PCBs to open flames or other high temperature sources since toxic decomposition by-products may be produced.
 5. Place ballasts in US DOT approved type 17C or type 17H drums(barrels).
 6. Place barrels in storage with the cover that came with the barrels, in location as designated by Owner. Do not place barrels where they are exposed to weather.
 7. Label and mark the PCB storage drums with EPA approved PCB labels and the storage area with signs, marks and lines to meet the regulations of authorities having jurisdiction.
 8. Provide approved PCB absorbent materials to be stored immediately adjacent to the drum storage area. Do not place loose absorbent material in the drums.
 9. Dispose of PCB containing light ballasts off site in accordance with EPA, DOT, and local regulations at a permitted site.

3.7 ADJUST AND CLEAN:

- A. Install parabolic fixtures w/ protective film. Remove protective film when building is dust free.
- B. Clean lighting fixtures of dirt and debris upon completion of installation.

- C. Protect installed fixtures from damage during remainder of construction period.

3.8 FIELD QUALITY CONTROL:

- A. At time of Substantial Completion, replace lamps in lighting fixtures which are observed to be noticeably dimmed or with black ends on tubes after Contractor's use and testing, as judged by The Owner's Representative.

END OF SECTION 26 50 00