

CITY OF OAKLAND

OUTDOOR LIGHTING STANDARDS

PART 1: GENERAL

The Public Works Agency (PWA) will continue to design, procure, install, maintain and operate the City street lights and pedestrian lights. The PWA-Electrical Services Division will enforce the Street Lighting Warrants (Warrants) and all Outdoor Lighting Standards (Standards) for City works and for private development projects on public right of ways or City properties. The PWA-Electrical Services Division will approve all street lights and outside area lighting design and specifications consistent with the Standards and the Warrants.

1.01 SECTION INCLUDES

A. Lighting Level Standards

The City of Oakland implements its street light level guidelines in the Warrants. These guidelines are in accordance with the Illumination Engineering Society (IES) lighting guidelines for all facilities, in the United States and worldwide. Adherence to the City of Oakland Street Lighting Warrants will have the effect of creating a more uniform light level, which will enhance visibility.

B. Lighting Design Guide

The Outdoor Lighting Standards will require a combination of good lighting design practice and energy-efficient, permanently installed lighting.

Glare: Use house-side shields. Outdoor lighting design will not introduce glare to pedestrians and drivers alike.

Safety: Safety lighting will be allowed for directional signs, stairs, steps, entrances and exits, walkways, roadways, parking lots, and other areas, which can be considered hazardous.

Security: Security lighting will be allowed for entrances, vulnerable low window areas of buildings, fences, alleys, and excavation routes.

Tree: Spacing from center of tree trunk to center of street light pole will be at least 20 feet.

C. Reduce Glare and Light Pollution

There are a number of outdoor lighting practices that limit up-light and light pollution. These initiatives are practiced for energy savings and safety reason, and they include the following actions:

1. Forbid the installation of luminaries with open bulbs.
2. Use up-light limiting shields to minimize up-light components. The shields will direct the lights to the roadways.
3. Use Light Emitting Diode (LED) up-light because it is not as powerful as other sources of light.
4. Use full-cut-off luminaries wherever such equipment is available. Use semi-cut-off luminaries if the full-cut-off luminaries are not available.
5. Forbid the lighting of building facade.
6. Forbid the use of decorating lighting, and lighting for signs, billboards, etc.

D. Lighting Equipment Guide

All lighting equipment used in the City of Oakland will be standardized for energy efficiency, low glare and light pollution features, and the effective operation and maintenance of the lighting system City-wide. Non-standard equipment will not be used. Expressed written permission from the PWA-Electrical Services Division Manager is required for the installation of any and all non-standard equipment on a case-by-case basis.

The following are standard equipment in the City of Oakland:

- Street lights will be mounted 30' high on a 28' 6" tall steel pole. Use full-cut-off fixtures for street lights. Holiday lighting outlet is allowed on street light pole at 18' elevation.
- Pedestrian lights will be mounted 15' 6" high on a 14' tall steel pole. Use semi-cut-off fixtures for pedestrian lights. A single 15A outlet for holiday lighting is allowed at 13' elevation.
- No other power outlets will be installed on City equipment or in the City right of way for any use.
- All street light poles will be standardized to three colors: Boxwood Green (RAL 6011), Teal Green (RAL 5020), and Dark Green (RAL 6009).

Limit the use of non-cut-off fixtures to:

- Historic areas designated on the State of California Historic Landmark Registry.
- Cases where new fixtures are added as infill to an existing ornamental district.

E. Lighting Equipment Not Allowed

The use of decorative lighting, landscape and building accent lighting, or floodlighting for appearance only will not be allowed.

The lighting equipment exceptions allowed in the City are as follows:

- Lighting for signs, billboards, archways, gateways, pedestals, and monuments that are down lights.
- Building facade lighting, and building spotlights that are down lights.
- Tree up-light that is Light Emitting Diode (LED) based.

Other forms of outdoor lights not specifically listed in Section D above.

F. Energy Efficient Lighting - Lamps

Use of efficient sources of light includes high-pressure sodium for street lights and pedestrian lights; fluorescent and compact fluorescent for industrial and commercial lighting; and LED up-lights for accent lighting as approved by the PWA-Electrical Services Division Manager. State of the Art Energy Efficient Light Sources is encouraged and will be considered.

G. Lighting Controls

Use photocells and time switches to control outdoor lights: Outdoor lights will be controlled automatically by photocell controllers, which incorporate a photoelectric cell and a relay. Photocell controllers can be used for all-night street lights, and can be connected in series with timer switches for partial-night operation of pedestrian lights or tunnel lights in order to implement energy conservation measures. Use of automated control measures including, but not limited to, electronic ballast dimming remote controls to turn off select street lighting will conserve equipment and energy resources.

H. Exterior Areas of Public Buildings

All exterior lights will have shields to prevent up-light. The use of exterior lights will be limited to the following applications:

- Use of fluorescent post-top lights along extended walks and drives.
- Use compact fluorescent wall bracket luminaires next to each door.
- Use of high-pressure sodium for security lights.
- Use of LED lights for accent and tree up-light.

I. Liaison with Other City Entities

The Public Work Agency will collaborate with the Port of Oakland and the Redevelopment Agency on lighting standards, energy efficiency issues, glare control and light polluting features on City streets and facilities, Port operations and areas of mutual jurisdiction.

J. Differences of Opinion

The PWA-Electrical Services Manager will be the designated staff to determine the application of these requirements pertaining to energy conservation, design, procurement, construction, operation and maintenance of all street lighting on City projects. The PWA-Electrical Services Division Manager will approve all matters relating to City street lighting and outdoor lighting, or make exception there-to. The PWA-Electrical Services Division Manager will make the final decision on all differences resulting from street lighting and outdoor lighting.

1.02 REQUIRED SUBMITTALS FOR APPROVAL OF STREET OR OUTDOOR LIGHTING

A. Product Data:

Submit catalog cuts, drawings, descriptive matter and lighting performance characteristics as required to completely define the materials and construction details employed, finishes applied, dimensions, hinging, latching and relamping provisions, and electrical characteristics.

B. Certified Products:

Use products listed and classified by Underwriters Laboratories, Inc. or other testing firm acceptable to the City as suitable for purpose specified and shown.

1.03 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of each luminaire.

B. Accurately record information on each luminaire.

PART 2: PRODUCTS

2.01 GENERAL

Include descriptions, typed letters, manufacturers' names and general characteristics. Manufacturers' names are for defining quality of construction only and do not limit other manufacturers' products.

A. High Pressure Sodium Street Lights: Luminaires shall be full-cut-off, high-pressure sodium.

B. Metal Parts of Fluorescent Fixtures: Reflectors shall be as indicated on schedule. Channels shall be steel with a baked enamel finish.

C. Metal Parts of Exterior Fixtures: Corrosion resisting metal, (non-ferrous or stainless steel) and in all cases suitable for outdoor service without tarnishing or other damage due to exposure; manufacturer's standard colors, unless specified otherwise; cadmium plate all metal parts concealed by canopies, including screws, plates and brackets.

D. Special Adapters, Plates, Brackets, and Anchors: Provide, where required by construction features of the building to suitably mount lighting fixtures, all such appurtenances and mounting methods approved by the City prior to fabrication and installation.

2.02 LAMPS

Provide lamps of sizes and types as specified in the plans and specifications or equal. Lamps shall meet the manufacturing and testing of the Illumination Engineering Society. Lamps shall be operating before final review of the work is requested.

2.03 FLUORESCENT FIXTURES

A. Lighting fixtures shall include wiring channel, end plates, end caps, side panels, top reflectors, bottom closures, lamp holders, lamps, ballasts, suspension stems, wiring and all other necessary materials and devices. The wiring channel, end plates, and other sheet steel enclosure components shall be cold-rolled carbon sheet steel of commercial quality not less than No. 20 USS gauge in thickness.

B. Wireway Channel Housings: Steel, not less than 20 gauge unless specified otherwise, fully enclosed, where mounted end-to-end, on fixtures where channel is exposed, internal type connection straps to prevent projections at connections. The ballasts and wiring shall be completely enclosed in the wiring channel and shall be accessible without the use of tools other than a common screwdriver or pliers. The ballast shall be replaceable without removing the fixture from its mounting. Lamps shall be replaceable without the use of tools and without the prior removal of other lamps and equipment.

C. Fixtures shall be completely assembled, wired and ready for connection to the outdoor lighting power distribution system.

2.04 BALLASTS

A. Solid-state, high frequency, electronic, as manufactured by Magnetek-Triad, Electronic Ballast Technology, Inc., or equal.

B. Have power factor above 90% and lamp current crest factor of 1.5 or less.

C. Be sound rated "A" and have FCC certification under part 18-15J and UL listing.

D. Have metal oxide varistor line transient protection.

E. Be potted in a steel case interchangeable with core and coil ballasts.

F. Have a 3-year warranty with a replacement allowance for labor.

2.05 HIGH INTENSITY DISCHARGE (HID) FIXTURES

A. The luminaires construction shall consist of a ballast aluminum housing and reflector system.

B. The luminaires are open, ventilated and filtered.

C. The light distribution pattern of the luminaires shall be suitable for a S/H ratio of approximately 1.8.

D. Ballasts shall operate at 120 or 240 volts and be designed specifically for use with lamps specified. Ballasts shall be fully encapsulated, regulating type with a maximum crest factor of 1.6. All HID ballast shall be fused for short circuit protection.

E. The lighting system shall consist of the type and manufacturer as shown on the drawings or approved equal. If other than the fixture shown is submitted, complete illumination calculations are required to show equality.

PART 3: EXECUTION

3.01 OUTDOOR INSTALLATION

- A. Install in accordance with manufacturers' instructions.
- B. Install lighting poles at locations indicated.
- C. Install poles plumb. Provide double nuts to adjust plumb. Grout around each base.
- D. Install lamps in each luminaire.
- E. Bond luminaires, metal accessories and metal poles to branch circuit equipment grounding conductor or provide supplementary grounding electrode at each pole as shown on the drawings.

3.04 FIELD QUALITY CONTROL

- A. Operate each luminaire after installation and connection. Inspect for improper connections and operation.
- B. Measure illumination levels to verify conformance with performance requirements.
- C. Take measurements during night sky, without moon or with heavy overcast clouds effectively obscuring moon.

3.05 ADJUSTING

- A. Aim and adjust luminaires to provide illumination levels and distribution indicated on the drawings.
- B. Relamp luminaires, which have failed lamps at Date of Substantial Completion.

3.06 CLEANING

- A. Clean electrical parts to remove conductive and deleterious materials.
- B. Remove dirt and debris from enclosure.
- C. Clean photometric control surfaces as recommended by manufacturer.
- D. Clean finishes and touch up damage.

3.07 DIFFUSERS AND ENCLOSURES

Install lighting fixture diffusers and enclosures only after construction work, painting and clean up are completed. Handle with clean white canvas gloves.

3.08 PHOTOCELLS

Outdoor fixtures shall be controlled by photocells and/or time clock as shown on the drawings.

3.09 CLEAN-UP

Clean lighting control elements, lamps, fixture interiors and exposed exterior surfaces thoroughly before requesting final inspection.