

10 LIGHTING *[Expands Z-3.11]*

10.1 PURPOSE AND APPLICABILITY

The standards set forth in this section are designed to achieve several purposes. It is the intent of this section to:

- Minimize light pollution, glare and light trespass.
- Conserve energy and resources while maintaining night-time safety and utility.
- Curtail the degradation of the night-time visual environment.

10.2 GENERAL DESIGN REQUIREMENTS

10.2.1 DISTRICT LIGHTING STANDARDS IN FOOTCANDLES (FC)

	R/A, OS, SR4, SR6, GR6, MHR	UR, RMX	GC, NMX, CCMX, ICD	NC, HC, LI, HI, IMX
Light Trespass Off Property ¹	1	1	1	1
Maximum On-Site Lighting ²	n/a	10	10	10
Outside Sales Areas ³	n/a	10	20	20

¹This requirement shall only apply to light trespass from non-residential properties onto residential properties and shall be measured as the maximum point of illuminance at the property line.

²This shall be measured as the maximum point of illuminance on the property.

³This shall be measured as the average point of horizontal illuminance, provided that in all districts the maximum uniformity ratio shall be 4:1 minimum to average.

10.2.2 CONTROL OF GLARE – LUMINAIRE DESIGN FACTORS

- A. Other than floodlights, flood lamps, and spotlights all outdoor lighting fixtures of more than 1,000 lumens shall be full-cutoff type fixtures. Any fixture that is not full-cut off shall be a directional fixture (such as flood lights) and may be used provided they shall be aimed and fully shielded.
- B. The mounting height of all outdoor lighting, except outdoor sports field lighting and outdoor performance area lighting shall not exceed 30 feet above finished grade.
- C. Non-cutoff decorative post-mounted fixtures equipped with a solid top and mounted 16 feet or less above ground and other non-cutoff dusk to dawn utility type fixtures mounted 25 feet or less may be used.
- D. All metal halide, mercury vapor, fluorescent, and other white-colored light source lamps used in non-cutoff fixtures (excluding flood lights) shall be coated with an internal white frosting inside the outer lamp envelope.
- E. All metal halide fixtures equipped with a medium base socket must utilize either an internal refractive lens or a wide-body refractive globe so that light rays emitted by the light fixture are projected below the horizontal plane passing through the lowest point on the fixture from which light is emitted.

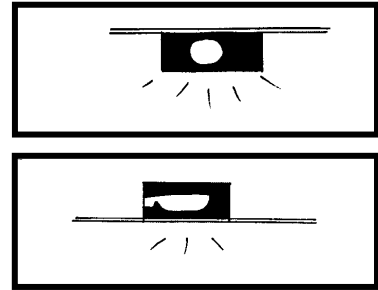
10.3 ADDITIONAL REQUIREMENTS FOR SPECIFIC USES AND AREAS**10.3.1 OUTDOOR DISPLAY AREAS**

All light fixtures shall meet the IESNA definition of full cutoff fixtures. Forward throw fixtures (type IV light distribution, as defined by the IESNA) are required within 25 feet of any public street right-of-way. Alternatively, directional fixtures (such as flood lights) may be used provided they shall be aimed and fully shielded.

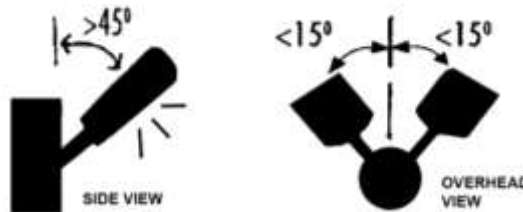
10.3.2 LIGHTING FOR VEHICULAR CANOPIES

Lighting under vehicular canopies shall be designed so as not to create glare off-site. Acceptable methods include one or more of the following:

- A. Recessed fixture incorporating a lens cover that is either recessed or flush with the bottom surface of the vehicular canopy.
- B. Surface mounted fixture incorporating a flat lens that provides a cutoff or shielded light distribution.
- C. Other method approved by the Administrator.

**10.3.3 SECURITY LIGHTING**

- A. Motion activated security lights; unshielded flood and spotlights, with 45 watts or less, installed for security and activated by motion sensor, are permitted. These unshielded lights must be mounted and aimed in a manner that minimizes up-lighting and light trespass.
- B. All floodlights shall be installed such that the fixture shall be aimed down at least 45 degrees from vertical flood lights and shall be positioned such that any such fixture located within 50 feet of a public street right-of-way is mounted and aimed perpendicular to the right-of-way, with a side-to-side horizontal aiming tolerance not to exceed 15 degrees from perpendicular to the right-of-way.



- C. All flood or spot lamps emitting 1,000 or more lumens shall be aimed at least 60 degrees down from horizontal or shielded such that the main beam from the light source is not visible from adjacent properties or the public street right-of-way.
- D. Landscape and decorative lighting using incandescent lighting of 40 watts or less is permitted, provided that the light is installed and aimed to prevent lighting build up and light trespass and shielded to prevent view from the public right of way.

- E. Area “dusk to dawn” open-bottom lights, with photosensors that automatically turn the light on and off at certain levels of ambient illumination, are permitted. These lights must be full cutoff.

10.3.4 OUTDOOR RECREATIONAL LIGHTING

- A. Lights shall be shielded and positioned so as not to shine onto adjacent properties.
- B. All fixtures used for event lighting shall be fully shielded or be designed or provided with Manufacturer’s Glare Control Package, so as to minimize up-light, spill-light, and glare.
- C. Fixtures for outdoor recreational facilities must not exceed 80 feet in mounting height (this includes bases and/or other mounting structures) above finished grade.
- D. Fixtures shall be designed and aimed so that their beams fall within the primary playing area and the immediate surroundings, so that off-site direct illumination is significantly restricted (spillover levels at the property line must not exceed 2 footcandles).

10.3.5 BUILDING FAÇADE LIGHTING

Floodlights, spotlights, or any other similar lighting shall not be used to illuminate buildings or other site features unless approved as an integral architectural element on the development plan. On-site lighting may be used to accent architectural elements but not used to illuminate entire portions of building(s) or sign(s). Where accent lighting is used, the maximum illumination on any vertical surface or angular roof surface shall not exceed 5.0 average maintained footcandles. Building facade and accent lighting will not be approved unless the light fixtures are carefully selected, located, aimed, and shielded so that light is directed only onto the building facade and spillover light is minimized.

10.4 EXEMPTIONS AND PROHIBITIONS

10.4.1 EXEMPTIONS

- A. All temporary emergency lighting needed by the Police or Fire Departments or other emergency services, as well as all vehicular luminaires, shall be exempt from the requirements of this ordinance.
- B. All hazard warning luminaires required by Federal regulatory agencies are exempt from the requirements of this article, except that all luminaires used must be red and must be shown to be as close as possible to the federally required minimum lumen output requirement for the specific task.
- C. Individual residential lighting that is not part of a site plan or subdivision plan for street or other common or public area outdoor lighting.
- D. Lighting associated with landscape/holiday/festive/temporary uses.
- E. Lighting of public art that has been permitted or otherwise approved by the city.
- F. Other Municipal or State lighting installed for the benefit of public health, safety, and welfare.
- G. All fixtures installed or temporarily used by public agencies, their agents, or contractors for the purpose of illuminating public streets.

- H. Lighting of US Flags provided the flag standard does not exceed the maximum permitted building height for that district.

10.4.2 PROHIBITIONS

- A. **Laser Source Light:** The use of laser source light or any similar high intensity light for outdoor advertising or entertainment is prohibited.
- B. **Searchlights:** The operation of searchlights for advertising purposes is prohibited.
- C. **Flashing Lights:** Lights that flash, move, revolve, rotate, scintillate, blink, flicker, vary in intensity or color, or use intermittent electrical pulsation are prohibited.
- D. **Awning and Canopy Lighting:** Awnings and canopies used for building accents over doors, windows, and etc. shall not be internally lit (i.e. from underneath or behind) so as to visually turn a translucent material into an internally illuminated material. Lighting may be installed under canopies that light the sidewalk, or downlights onto the architectural features of a building.

10.5 ADMINISTRATION

10.5.1 LIGHT MEASUREMENT TECHNIQUE

Light level measurements shall be made at the property line of the property upon which the light to be measured is being generated. If measurement on private property is not possible or practical, light level measurements may be made at the boundary of the public street right-of-way that adjoins the property of the complainant or at any other location on the property of the complainant. Measurements shall be made at finished grade (ground level), with the light-registering portion of the meter held parallel to the ground pointing up. The meter shall have cosine and color correction and have an accuracy tolerance of no greater than plus or minus 5%. Measurements shall be taken with a light meter that has been calibrated within the year. Light levels are specified, calculated and measured in footcandles (FC).

10.5.2 COMPLIANCE

- A. While not required to be provided with the submission of the site plan, projects may be required to provide the following information upon request by the Administrator:
 1. Point-by-point footcandle arrays in a printout format indicating the location and aiming of illuminating devices. The printout shall indicate compliance with the maximum maintained footcandles required by this ordinance.
 2. Description of the illuminating devices, fixtures, lamps, supports, reflectors, poles, raised foundations and other devices (including but not limited to manufacturers or electric utility catalog specification sheets and/or drawings, and photometric report indicating fixture classification [cutoff fixture, wall pack, flood light, etc.]).

If the Administrator does not request lighting information to be included for review with a site plan, this shall not relieve the applicant from compliance with the standards in Chapter 10.

10.5.3 NONCONFORMING LIGHTING

Any nonconforming lighting fixture lawfully in place or approved by the city prior to the adoption of this ordinance shall be exempt from these requirements. Routine maintenance,

including changing the lamp, ballast, starter, photo control, lens, and other required components, is permitted for all existing fixtures. At the time that a nonconforming fixture, which was installed prior to the adoption of this ordinance, is replaced, moved, upgraded, or otherwise changed, the fixture must be replaced by either:

- A.** The same type of fixture that emits an equal or less amount of lumens as the original fixture; allows the trespassing of an equal or less amount of light onto neighboring properties; and restricts uplighting to an equal or less amount than the original fixture, or
- B.** A fixture that is in compliance with this ordinance.

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