

## **CHAPTER 14 - OUTDOOR LIGHTING PROVISIONS**

**SEC. 14.0 PURPOSE.** The purpose of this chapter is to protect our dark skies, by establishing procedures and standards that minimize light pollution, reduce glare and light trespass, and conserve energy and resources by controlling the artificial illuminating devices emitting rays into the night sky which have a detrimental effect on the rural atmosphere and astronomical observations, or which would otherwise be offensive to neighboring and near-by properties.

**SEC. 14.1 CONFORMANCE WITH APPLICABLE CODES.**

- A. All outdoor artificial illuminating devices (luminaires) shall be installed and utilized in conformance with the provisions of this Chapter, and all other ordinances and building codes of the Town of Cave Creek. The Town of Cave Creek shall be considered to be an Environmental Zone "E1" as defined by the (CIE) and the (IESNA).
- B. In the event of a conflict between State or Federal law, and the requirements of these outdoor lighting provisions, the most restrictive shall govern.

**SEC.14.2 DEFINITIONS.** For the purpose of this chapter the following terms shall have the following definitions:

- A. CIE. Commission Internationale de l'Éclairage.
- B. Eye Illuminance. The illuminance level (lux/footcandle) measured at the eye in a plane perpendicular to the line-of-sight when measured from a point sixty six (66) inches above grade.
- C. Fossil Fuel Light. Light produced directly or indirectly by the combustion of natural gas or other utility-type fossil fuels.
- D. Footcandle (fc). A unit of illuminance equal to one (1) lm/ft<sup>2</sup> (lumen / sq. ft.) or 10.76 lx (lux) or the same as one international candle on a surface one (1) foot away. A unit equivalent to the illumination produced by a source of one candle at a distance of one (1) foot.
- E. Fully Shielded (Full Cut-Off). Means the fixture shall be shielded so that light rays emitted by the fixture, either directly from the lamp or indirectly from the fixture, are projected below a horizontal plane running through the lowest point on the fixture where light is emitted.
- F. IESNA. Illuminating Engineering Society of North America.

- G. Installed. The initial installation of outdoor light fixtures as defined herein, on or after the effective date of this chapter.
- H. Luminaire (Light Fixture). Means a complete lighting unit consisting of a lamp or lamps and ballast(s) (when applicable) together with the parts designed to distribute the light, to position and protect the lamps, and to connect the lamps to the power supply for:
  - 1. Buildings, structures, and architectural features.
  - 2. Recreational areas.
  - 3. Parking lot lighting.
  - 4. Landscape lighting.
  - 5. Signage (advertising or others).
  - 6. Street lighting.
  - 7. Building overhangs and open canopies.
  - 8. Product display area lighting.
  - 9. Walkways
  - 10. Arenas, stables and corrals.
- I. Spill Light. The amount of light that illuminates beyond the range or primary area that the fixture is intended to light.

**SEC. 14.3 GENERAL REQUIREMENTS.**

- A. Shielding. All outdoor light fixtures, except those exempt from this chapter, shall be fully shielded as required in **Table 23** of this section so that the bulb or light source from the fixture is not visible from an adjoining property or from the street view when viewed horizontally to the fixture.
- B. Buildings and Structures. All lighting fixtures for buildings, structures and canopies shall comply with the following requirements.
  - 1. The architectural use of light bars shall be prohibited and the application of lighting to architectural features, including but not limited to building facade lighting, shall be minimized, with all light directed downward.
  - 2. Maximum height of light standards (poles), including the fixture, shall be ten (10) feet except as otherwise specifically provided in this Ordinance. Height is measured from grade to top of fixture.

3. Overhead lighting used to light building overhangs and open canopies shall be fully recessed within the overhang or canopy. The maximum lighting intensity (eye illumination levels) under the canopy shall be no greater than 2 lux (0.2fc) when measured directly under the overhang or canopy or greater than 1.0 lux (0.10 fc) when measured at the property line.
4. Outdoor lighting in Commercial Core Zoning Districts shall be turned off one-half (1/2) hour after the close of business(es) or at such time as the last employee leaves the business premises, whichever is later.

**REQUIREMENTS FOR SHIELDING**

FIXTURE LAMP TYPE <sup>1</sup>	SHIELDING <sup>5</sup>
Low Pressure Sodium <sup>2</sup>	Fully
High Pressure Sodium	Fully
Metal Halide / Warm Halide	Fully
Fluorescent <sup>3</sup>	Fully
Incandescent <sup>4</sup>	Fully
Fossil Fuel	None
Glass Tubes filled with Neon, Argon, Krypton <sup>6</sup>	None
Other Lamp Types	As Approved By The Town Of Cave Creek
<p>FOOTNOTES:</p> <ol style="list-style-type: none"> <li>1. Glass, acrylic, or translucent enclosures of the light source satisfy these filter requirements except quartz glass.</li> <li>2. This is the preferred lamp type to minimize undesirable light into the night sky affecting astronomical observations.</li> <li>3. Warm White and Natural Lamps are preferred to minimize detrimental effects.</li> <li>4. For the purpose of this Chapter, quartz halogen lamps shall not be considered an incandescent light source.</li> <li>5. Or current IESNA guidelines; whichever is more restrictive.</li> <li>6. Permitted only in Commercial Zoning Districts; prohibited in all residential zones.</li> </ol>	

**TABLE 23**

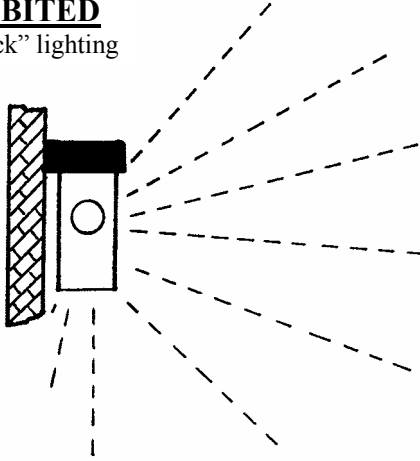
- C. Security Lighting. Security lighting may be permitted, subject to the following requirements:
1. Building or wall mounted fixtures shall be fully shielded and shall not exceed a maximum mounting height of ten (10) feet. The maximum height of lighting standards (poles), including the fixture, used for security purposes, shall be ten (10) feet measured from grade to top of fixture.
  2. Motion sensor/detector light fixtures that are fully shielded are the preferred type for security lighting.
- D. Parking Lot Lighting. The Town does not require the lighting of parking lots. The use of short bollard style fully shielded light fixtures is preferred to that of overhead lighting. Parking lot lighting must meet the following requirements:
1. Within the Commercial Core zoning district the maximum lighting intensity (eye illumination levels) of the parking areas shall be 2.0 lux (0.20 fc), as measured within the parking lot and at the property line. However, if the commercial zoning district abuts a residential zoning district the maximum lighting intensity (eye illumination levels) in the parking area shall be 1.0 lux (0.10 fc) measured at the property line. Within the Commercial Buffer the maximum lighting intensity (eye illumination levels) in the parking area shall be 1.0 lux (0.10 fc) measured at the property line.
  2. The maximum height of parking lot lighting standards (poles), including the fixture, shall be ten (10) feet within the interior of the parking lot and ten (10) feet at or along the perimeter of the parking lot.
  3. All parking lot lighting shall be turned off one-half ( $\frac{1}{2}$ ) hour after the close of the business(es) or at such time as the last employee leaves the business premises, whichever is later.
- E. Outdoor Signage. All exterior lighting fixtures used to illuminate an outdoor advertising sign shall be mounted on the top of the sign structure, shall be fully shielded and directed downward and shall not interfere with driver visibility on adjacent streets.

- F. Light Trespass: Light trespass beyond the property line shall be prohibited in all zoning districts.
- G. Preferred Light Source. Low-pressure sodium lamps are the preferred light source for minimizing adverse effects on astronomical observations. However, the light sources specified in **Table 23** are also permitted.
- H. Ambient and Landscape Lighting. Ambience lighting is permitted subject to the following requirements:
1. Short bollard style light fixtures or low wattage string lighting of specimen trees is preferred to that of building lighting.
  2. The maximum lighting intensity (eye illumination levels) of ambience lighting should not exceed 0.5 lux (0.05 fc).
  3. All outdoor ambience lighting fixtures shall be turned off one-half (½) hour after the close of the business(es) or at such time as the last employee leaves the business premises, whichever is later. The ambient and landscape lighting used for single residential homes should be shut off by 11:00 PM.
- I. Recreational Facilities.
1. No outdoor recreational facility, public or private, or outdoor arenas, stables or corrals shall be illuminated after 10:30 P.M.
  2. Additionally, the maximum height of lighting standards (poles), including the fixture, shall not exceed a height of twelve (12) feet for all public or private residential corrals, stables, paddocks, and barns. For arenas and exercise areas a photometric study that includes a lux/footcandle grid that demonstrates adequate intensities and uniformity as well as the maximum lighting intensity (eye illumination levels) measured at the property lines shall be required. The fixtures shall be directed downward, fully shielded, aimed to prevent light spillage onto adjacent properties, and in compliance with all other requirements of this Chapter. In no case shall any recreational lighting standard exceed a height of twenty (20) feet and only if supported by a photometric study.

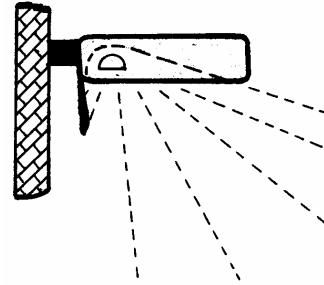
**SEC. 14.4 DESIGN STANDARDS.**

- A. All light fixtures shall be “fully shielded” fixtures that prevent light from reflecting upward or sideways (greater than ninety (90) degrees) becoming nuisance lighting to neighbors, creating “hot spots” on the structures to which they are mounted or creating light pollution on adjacent properties.
- B. Fixtures shall be directed downward and aimed on the targeted areas to maximize their effectiveness and minimize the total number of lighting fixtures.
- C. The following illustrations are intended to identify basic lighting fixture styles and are for illustrative purposes only. Fixtures similar to those labeled as prohibited are also prohibited by this Ordinance.

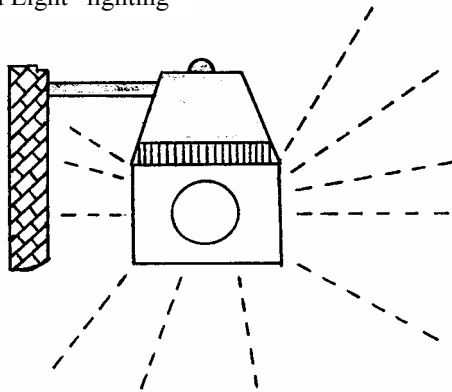
**PROHIBITED**  
"Wall Pack" lighting



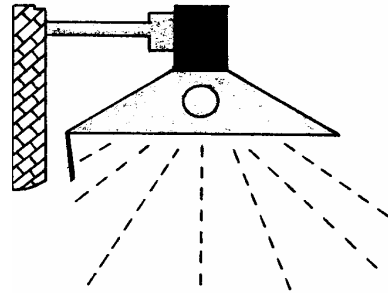
**ALLOWED**  
"Shoe Box" lighting



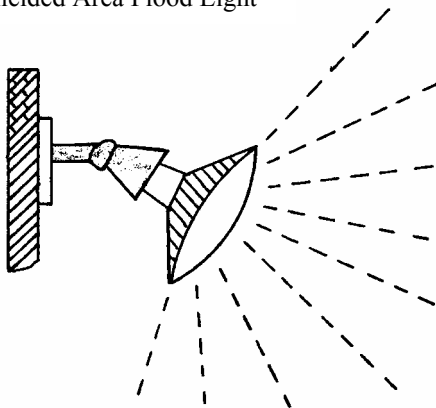
**PROHIBITED**  
"Yard Light" lighting



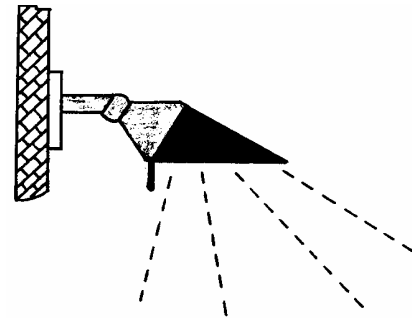
**ALLOWED**  
"Opaque Reflector" lighting



**PROHIBITED**  
"Unshielded Area Flood Light"



**ALLOWED**  
"Fully Shielded Area Flood Light"



**EXHIBIT 4**

## **SEC. 14.5 PROHIBITIONS**

- A. Searchlights. The operation of searchlights, for advertising purposes is prohibited. Searchlights are permitted for safety search and rescue purposes authorized by local fire, police or government agencies.
- B. Specialty Lighting. Intermittent, flickering or flashing lights are prohibited, except for holiday lighting that complies with Section 14.6.C of this Ordinance.
- C. Mercury Vapor and Quartz-Halogen. The installation of mercury vapor or quartz halogen fixtures is prohibited. At such time as existing mercury vapor and quartz halogen fixtures must be replaced lighting fixtures that comply with the requirements of this Chapter shall be installed.
- D. Signage. Bottom mounted outdoor light fixtures and internally illuminated signs are prohibited.
- E. Security lighting. Dusk-to-dawn lights are prohibited. Unshielded wall-pack type fixtures are prohibited.
- F. Landscaping. Unshielded floodlight or spot light fixtures are prohibited.
- G. Floodlighting: Building mounted floodlights used for area lighting and/ or yard security lighting are prohibited unless the floodlight fixture is fully shielded, directed downward, and does not cause or create spill lighting.

## **SEC. 14.6 EXEMPTIONS.**

- A. Federal and State Facilities. Facilities and lands owned, operated or protected by the U.S. Federal Government or the State of Arizona are exempted by law from the requirements of this Chapter. Voluntary compliance is encouraged.
- B. Holiday Lights. Low wattage outdoor lighting fixtures for traditional holiday decorations, except for floodlights or spotlights, is allowed.
- C. Landscape Lighting. Landscape accent lighting consisting of low voltage light fixtures and/or incandescent bulbs thirty-five (35) watts or less are exempt from the requirements of this Ordinance provided they are shielded.

## **SEC. 14.7 PROCEDURES FOR COMPLIANCE.**

- A. Time Limitations. When an application for a change in use, an expansion, modification, or structural alteration to a building or site, that has existing legal non-conforming outdoor lighting, is submitted to the Town all exterior lighting fixtures shall be brought into conformance with the provisions of this Chapter prior to issuance of required permits.
- B. Application.
1. Any applicant for a building or use permit as required by the Town who intends to install outdoor lighting fixtures shall, as a part of said application, submit evidence that the proposed lighting will comply with the requirements of this Chapter.
  2. All other individuals intending to install outdoor lighting fixtures shall submit an application to the Building Department providing evidence that the proposed work will comply with the requirements of this Chapter. Landscape lighting or decorative lighting consisting of low voltage light fixtures and/or incandescent bulbs thirty-five (35) watts or less may be exempt from the requirements of this paragraph.
- C. Contents of Application. The application shall include the following information as required by paragraph B of this Section. Additional information shall be required in the reasonable discretion of the Zoning Administrator.
1. Plans indicating the proposed luminaire location on the building and the site (if applicable), and the type of illuminating devices, fixtures, lamps, supports, other devices, the aiming angles and a statement of the proposed hours when the luminaries will be on and when they will be extinguished.
  2. Manufacturer's catalog cut sheets and drawings that describe the illuminating devices, fixtures, lamps, lumen outputs and wattages, supports, and other devices, etc.
  3. For commercial uses and for all lighted parking lots, arenas and exercise areas a photometric study that includes a lux/foot candle grid that demonstrates adequate intensities and uniformity as well as the maximum lighting intensity (eye illumination levels) measured at the property lines.

- D. Issuance of Permit. Upon compliance with the requirements of this chapter, the Building Department shall issue a permit for installation of the outdoor lighting fixtures, to be installed per the approved application. If the application is part of a building permit application, the building permit will be issued provided that the application complies with the requirements of this Chapter and other Town regulations.