

ARTICLE 4

Chapter 9-20 OUTDOOR LIGHTING

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Section 9-20-010 Purpose. The purpose of this Chapter is to protect and promote the health, safety, and welfare of City residents and businesses by regulating the design and installation of lighting fixtures to achieve the following objectives:

- A. To protect against direct glare and excessive lighting;
- B. To provide safe roadways for motorists, cyclists, and pedestrians;
- C. To protect and reclaim the ability to view the night sky and help to preserve the quality of life for residents and visitors of the city;
- D. To prevent light pollution and light trespass in all areas of the city;
- E. To promote energy conservation by installing efficient and cost effective lighting;
- F. To ensure that sufficient lighting can be provided where needed to promote safety and security by eliminating shadows and blinding glare;
- G. To allow for flexibility in the style of lighting fixtures;
- H. To provide lighting guidelines;
- I. To provide assistance to property owners and occupants in bringing non-conforming lighting into conformance with this chapter;
- J. To work with other County jurisdictions as well as the State to meet the purposes of this chapter;
- K. To provide a superior aesthetic and design quality of lighting and fixtures; and

- L. To eliminate the over illumination of commercial sites.

Section 9-20-020 Scope. All outdoor/exterior lighting shall be in compliance with the regulations established by this Chapter and any other Chapters of this Title. These regulations shall apply to all outdoor lighting including, but not limited to, buildings and structures, recreational areas, parking lots, landscaping, streets, and signage.

Section 9-20-030 Definitions. As used in this chapter:

A. Exterior Lighting means temporary or permanent lighting that is installed, located, or used in such a manner to cause light rays to shine outside. Fixtures that are installed indoors that are intended to light something outside are considered exterior lighting for the intent of this chapter.

B. Fixture means the assembly that holds the lamp in a lighting system including the elements designed to give light output control, such as a reflector or mirror, the refractor or lens, the ballast, the housing, and the attachment parts.

C. Foot-Candle means illuminance produced on a surface one foot from a uniform point source of one candela, measured by a light meter.

D. Flood Light means light that generally produces from 1,000 to 1,800 lumens and is designed to flood a well-defined area with light.

E. Full Cut-Off Fixtures means fixtures that are designed or shielded in such a manner that all light rays emitted by the fixture, either directly from the lamps or indirectly from the fixture, are projected below a horizontal plane running through the lowest point on the fixture where light is emitted.

F. Glare means intense light that results in discomfort and/or a reduction of visual performance and visibility.

G. Illuminance means density of luminous flux incident on a surface. A typical unit of measurement is foot-candle or lux. For the purposes of this chapter, all units of illuminance shall be measured in foot-candles.

H. Illumination Ratio for the purposes of this chapter, "illumination ratio" means the relationship between the maximum illumination value observed to the average of all illumination values observed.

I. Lamp means the source of electric light: the bulb and its housing as a part of the luminaire, also referred to as a light source.

J. Light means the form of radiant energy acting on the retina of the eye to make sight possible.

K. Light Pollution means any adverse effect of man-made light including, but not limited to, light trespass, up-lighting, the uncomfortable distraction to the eye, or any man-made light that diminishes

the ability to view the night sky, reducing the general quality of life and the reasonable enjoyment of property for the community; often used to denote urban sky glow.

L. Light Trespass means light falling where it is not wanted or needed, such as a light on a property that shines onto the property of others.

M. Lighting means any or all parts of a luminaire that function to produce light.

N. Lumen means unit of luminous flux equal to the light emitted in a unit solid angle by a uniform point source of one candle intensity. One foot-candle is equal to one lumen per square foot. One lux is equal to one lumen per square meter.

O. Luminaire means the complete lighting unit, including the lamp, the fixture, and other parts.

P. Wall Pack means a light or grouping of lights mounted to the exterior of a building designed or implemented to provide illumination to an area near the building.

Section 9-20-040 Design Standards.

A. Recreational Lighting.

1. The following standards apply to the lighting of all non-residential outdoor recreational facilities except baseball, softball, soccer, volleyball, football fields, driving ranges, outdoor arenas and amphitheatres, or other field recreational facilities.

(a) The height of any light source shall not exceed 20 feet to the top of the luminaire or pole, whichever is higher, as depicted in Figure 9-20-1.

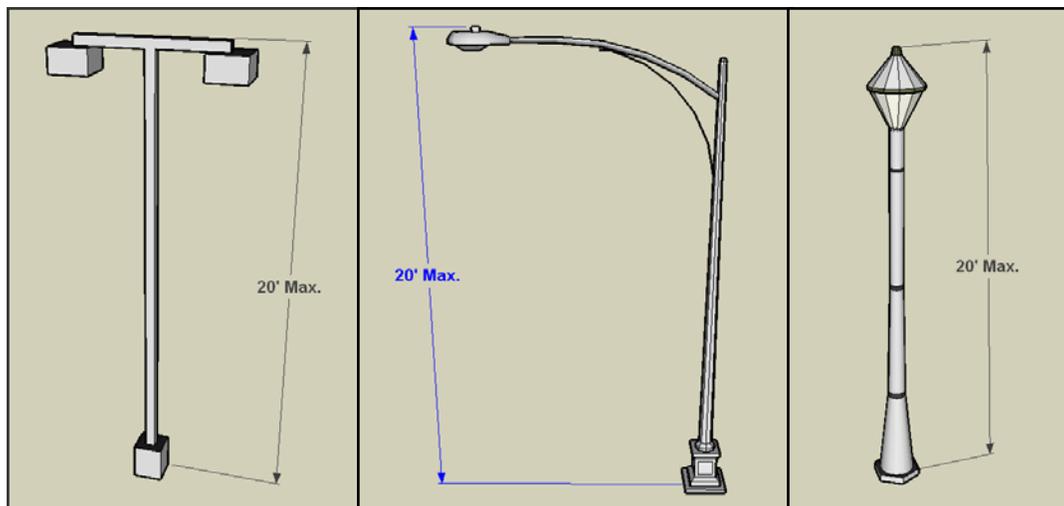


Figure 9-20-1 Typical Maximum Height Determination Methods for Lighting

(b) All lighting or illumination units or sources shall be hooded or shielded so as to allow no light trespass onto any adjacent lot or real property. Lights or illuminating

units shall not direct light, either directly or through a reflecting device, upon any adjacent real property.

2. All of the recreational lighting excepted from the above standards shall meet the following standards:

(a) All metal halide lamps shall be filtered by glass, acrylic, or translucent enclosures.

(b) No lighting of 150 watts or greater shall be used after 10:30 p.m.

B. Sign Lighting. Although signage is strongly encouraged to be back lit whenever possible, external lighting of the face of signs, when implemented, shall be placed above the sign, facing downward toward the sign, and shielded in a manner that the lamp shall not be visible from any adjacent lot or real property. Lamp visibility shall be considered as if the glass or globe of the fixture was not present. External lighting for signage should not produce more than 0.5 foot-candles of light reflection from the sign. Also see Section 9-26-080 of this title.

C. Security, Landscaping, Architectural, and Other Lighting. All outdoor lights shall be shielded to reduce light trespass to permissible levels.

D. Other Pole-Mounted Lighting for Parking, etc. All lights mounted on poles eight feet or greater in height shall be directed down perpendicular to the ground. The lamp shall be shielded so that it will not be visible from any adjacent real property. Lamp visibility shall be considered as if the glass or globe of the fixture was not present. Pole lighting should only be implemented for parking areas and other vehicular circulation features.

E. Street Pole-Mounted Lighting. All lights mounted on poles eight feet or greater in height shall be directed down perpendicular to the ground. The light source shall be full cut-off fixtures.

F. Searchlights. The operation of searchlights may be allowed subject to the following conditions:

1. Searchlights may only be operated between the hours of 7 a.m. to 11 p.m.;

2. Searchlights may be used for Special Events only, see section 9-26-110;

3. Searchlights shall not be operated on residentially zoned properties; and

4. Searchlights shall not be limited by this chapter in any way when in operation by public safety personnel during times of training or emergency.

G. Exterior Lighting. All exterior lighting, including public street lighting as applicable, shall meet the following design criteria:

1. Background spaces like parking lots shall be illuminated as unobtrusively as possible to meet the functional needs of safe circulation and protection of people and property.

Foreground spaces, such as building entrances and outside seating areas, shall utilize local lighting that defines the space without glare.

2. Light sources shall be full cut-off fixtures to minimize the potential for glare and unnecessary diffusion on adjacent property.

3. All outdoor light not necessary for security purposes shall be reduced, activated by motion sensors devices, or turned off during non-operation hours.

4. Light fixtures used to illuminate flags, statues, or any other object-mounted on a pole, pedestal, or platform shall use a narrow cone beam or light that will not produce illumination of 0.2 foot-candles or greater above the object being lit. All such lights shall be recessed such that the surface of the globe is flush with the finished grade or object's base in which the light is mounted.

5. For upward-directed architectural, landscape, and decorative lighting direct light emissions shall not exceed 0.1 foot-candles at the building roof line.

6. Light fixtures shall be located, whenever possible, on the interior of parking areas with light directed such that only the parking areas receive direct light. Wall pack lighting to be located on building facades shall be implemented only for the illumination of building entrance areas and directed such that only the area around building entrances is illuminated.

7. Maximum pole height is 20 feet except as provided in Section 9-20-090.

H. Number of Primary Lighting Poles. The maximum number of primary light poles to be implemented on a site shall be limited to a ratio of one pole for not less than 10,000 square feet of gross site area. If additional lighting is necessary, a bollard or pedestrian scale light pole of not more than eight feet in height may be used.

I. Light Pole Spacing. Light poles shall be spaced such that overlap in the areas of direct lighting is eliminated.

J. Wall Packs. The implementation of wall pack lighting should be stringently avoided with the exception of sites which are incorporating existing lights on existing structures.

K. Bollards. The use of bollard-style lighting should be the primary illumination source for all pedestrian walkways and areas as well as buildings entry areas.

L. Colors.

1. Light Color. Site lighting is strongly encouraged to be a white light.

2. Pole Colors. Site lighting poles shall be black in color. The Planning Commission may permit colors other than black for lighting poles upon establishing findings that the color: 1) will architecturally match the colors of the building(s) on the site to a greater extent than black; and 2)

will less dramatically detract from the appearance of the building(s) on the site than will black poles.

3. Uniformity. All site lighting poles shall be of the same color throughout any one site or development.

M. Light Pole Placement. Site lighting is strongly encouraged to be placed on the site such that the poles do not line the exterior of the site but rather are placed towards the interior of the site to reduce the number of poles on a site and to allow the inherent grade area coverage of the light to be maximized.

Section 9-20-050 Design Suggestions. There are many ways to adequately illuminate a site without reducing the aesthetics or safety of the site. Examples of alternative methods strongly encouraged by this chapter are the use of bollards, tear drop lights, lower poles, and downward facing gooseneck lights.

Section 9-20-060 Security. Sufficient lighting should be provided to protect persons and property as well as to allow for proper function of surveillance equipment. Security lighting plans shall utilize shielded fixtures; no flood lights shall be permitted. All security lighting shall be implemented with motion detectors that shall not turn on unless an intruder is within five feet of the property and automatically turns off the lights after a maximum period of 15 minutes. No security lighting shall be permitted with any off-site light trespass.

Section 9-20-070 Illumination Standards.

A. Illumination Ratios. For the purpose of this section, the illumination ratio shall be the direct comparison between the maximum illumination reading at any one point on a site and the average of all illumination readings throughout the same site. This arrangement, although not typical of ratio comparisons established elsewhere, is done in an effort to achieve an even and appropriate amount of illumination while maintaining night sky visibility, reducing light pollution, and providing for general safety throughout Draper City.

B. Intensities. All uses which require a lighting plan to be submitted for review according to this chapter shall maintain compliance with the illumination found in Tables 9-20-1 and 9-20-2.

Table 9-20-1 Illumination Standards¹

| Uses | Max. Illumination | Max. Average Illumination | Max. Illumination Ratio (Max:Ave) |
|-------------------------------------|-------------------|---------------------------|-----------------------------------|
| Gas Stations/ Convenience Stores | 10.0 | 5.0 | 2.5:1 |
| Restaurants | 8.0 | 5.0 | 2.5:1 |
| Auto Dealerships | 25.0 | 15.0 | 5:1 |
| Canopies | 15.0 | 10.0 | 2:1 |
| Building Entrance Areas | 8.0 | 5.0 | 2:1 |
| Site Boundary ² | 0.2 | 0.1 | N/A |
| Pedestrian Areas | 7.0 | 4.0 | 3:1 |

| | | | |
|---------------------------------------|------|------|-------|
| Security Lighting ³ | 15.0 | 10.0 | 3:1 |
| Hospital | 5.0 | 3.0 | 2.5:1 |
| Bank | 5.0 | 3.0 | 2.5:1 |
| Hotel/Motel | 8.0 | 4.0 | 3:1 |
| Medical Service | 5.0 | 3.0 | 2.5:1 |
| Office | 5.0 | 3.0 | 2.5:1 |
| Retail | 10.0 | 6.0 | 2:1 |
| Church or Place of Worship | 5.0 | 3.0 | 2.5:1 |
| Pre-School & Day Care ⁴ | 8.0 | 4.0 | 3:1 |
| Multi-Family Residential Developments | 8.0 | 4.0 | 2.5:1 |
| Other Uses ⁵ | 8.0 | 5.0 | 2.5:1 |

¹ All readings measured in foot-candles.

² Unless more tightly restricted by Section 9-20-090.

³ All lighting to meet the terms of Section 9-20-060 or must conform to standard site illumination.

⁴ Such uses in residential zones may be required to maintain lower illumination levels to mitigate light impacts on neighboring properties.

⁵ All other uses that require a lighting plan not otherwise identified in Table 9-20-1.

C. After Hours Intensities. Sites which require a site lighting plan and which are to contain a use or uses which is not open to their patronage 24 hours per day shall also be required to submit a site lighting plan which details the illumination to be on the site during closed periods. After hours illumination plans shall conform to at least the following standards:

1. Illumination Reduction. The after hours lighting plan shall meet each of the applicable standards outlined in Table 9-20-2.

Table 9-20-2 After Hours Illumination Standards¹

| Uses | Max. Illumination | Max. Average Illumination | Max. Illumination Ratio (Max:Ave) |
|-------------------------------------|-------------------|---------------------------|-----------------------------------|
| Gas Stations/ Convenience Stores | 5.0 | 2.5 | 2.5:1 |
| Restaurants | 4.0 | 2.5 | 2.5:1 |
| Auto Dealerships | 15.0 | 10.0 | 5:1 |
| Canopies | 10.0 | 5.0 | 2:1 |
| Building Entrance Areas | 4.0 | 2.5 | 2:1 |
| Site Boundary ² | 0.2 | 0.1 | N/A |
| Pedestrian Areas | 7.0 | 4.0 | 3:1 |
| Security Lighting ³ | 15.0 | 10.0 | 3:1 |
| Hospital | 5.0 | 3.0 | 2.5:1 |
| Bank | 5.0 | 3.0 | 2.5:1 |
| Hotel/Motel | 8.0 | 4.0 | 3:1 |
| Medical Service | 3.0 | 2.0 | 2.5:1 |
| Office | 3.0 | 2.0 | 2.5:1 |
| Retail | 5.0 | 3.0 | 2:1 |
| Church or Place of Worship | 3.0 | 2.0 | 2.5:1 |
| Pre-School & Day | 4.0 | 2.5 | 3:1 |

| | | | |
|---------------------------------------|-----|-----|-------|
| Care ⁴ | | | |
| Multi-Family Residential Developments | 8.0 | 4.0 | 2.5:1 |
| Other Uses ⁵ | 6.0 | 3.5 | 2.5:1 |

¹ All readings measured in foot-candles.

² Unless more tightly restricted by Section 9-20-090.

³ All lighting to meet the terms of Section 9-20-060 or must conform to standard site illumination.

⁴ Such uses in residential zones may be required to maintain lower illumination levels to mitigate light impacts on neighboring properties.

⁵ All other uses that require a lighting plan not otherwise identified in Table 9-20-1.

2. **Lighting Reduction.** The after hours lighting plan shall also demonstrate a reduction in the number of lighting sources that are on during after hours times. The reduction in the number of lighting sources shall reduce the lighting sources in use by at least one-third.

3. **Alterations.** The Planning Commission may approve an increase in the number of lighting sources remaining lit or the illumination level during after hours times upon establishing the finding that such an alteration is necessary to maintain the security of the site. Said alterations shall only be allowed to the minimum number of light fixtures necessary to remain lit to maintain adequate security for the site.

Section 9-20-080 Buffering. Any lighting implemented as a part of a plan as required by this chapter along a property line shared with a residential use or zone shall conform to the following standards.

1. The maximum illumination at any point along the property line shall be 0.2 foot-candles.
2. No lighting source shall be located within 20 feet of the shared property line. If the site area immediately adjacent to the property line is a pedestrian area or landscaped buffer area, bollard-style lighting may be used for illumination of these areas.
3. No lamp shall be visible from the adjacent property when standing on the shared property line. Lamp visibility shall be considered as if the glass or globe of the fixture was not present.

Section 9-20-090 Staged Lighting. For the purposes of this section, staged lighting shall refer only to the heights of the light poles, allowing greater heights towards the interior of large parking areas in an effort to minimize the amount and impact of site lighting required. Sites which incorporate 100 or more parking spaces in any one parking area may be designed to include staged lighting systems. Larger commercial developments which include multiple buildings, uses, and/or parking areas may, as approved by the Planning Commission, also implement staged lighting.

A. **Pole Heights.** Sites desiring to implement staged lighting shall not have pole heights exceeding the following, as depicted in Figure 9-20-2:

1. The outer-most row(s) of lights may not have poles exceeding 15 feet in height, typically measured.
2. The second outer-most row of lights may not have poles exceeding 20 feet in height, typically measured.

3. The third outer-most row of lights may not have poles exceeding 25 feet in height, typically measured.

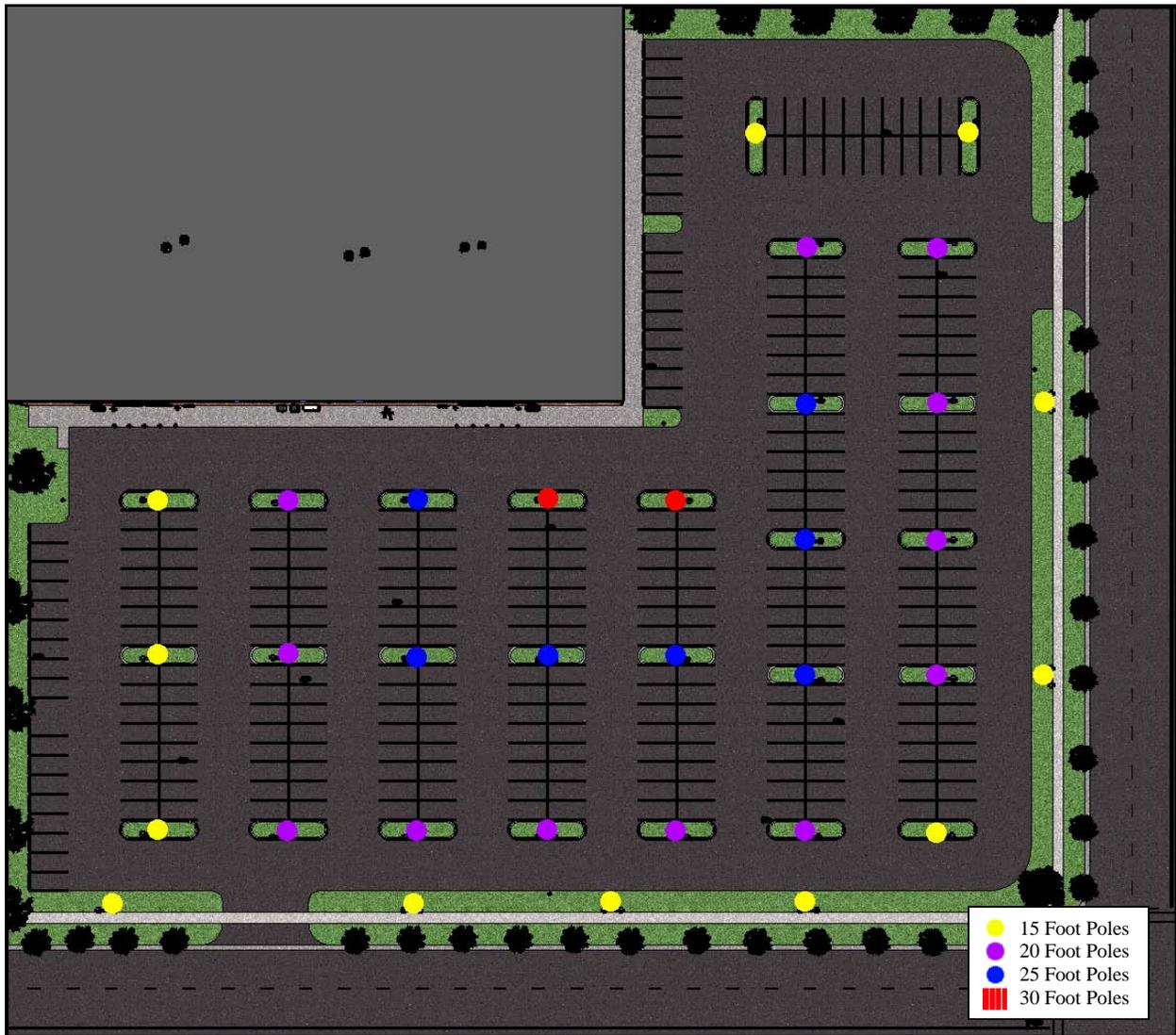


Figure 9-20-2 Staged Lighting Example

*** Note: This example does not accurately represent the number of light poles possible, possible pole locations, nor compliance with site design criteria for landscaping, lot coverage, parking, etc.

4. The fourth outer-most row of lights, and all subsequent rows may not have poles exceeding 30 feet in height, typically measured.

B. Buildings. Where buildings are located or proposed to be located between the boundary of the property and the outer-most row of site lighting, the outer-most row of lights may be considered a subsequent inner row for all poles where the building is between the light and the property line so long as the height of that outer-most row of lights does not exceed the height of the building. Subsequent lighting rows may then increase in height as typical for inner rows.

C. Photometrics. The photometric requirements for a site shall not be adjusted for any site incorporating staged lighting.

D. Bollards. Sites which are proposed to include a staged lighting plan are strongly encouraged to incorporate bollard style lighting to illuminate building entrance areas and pedestrian areas away from parking area lighting.

E. Boundaries. Sites with a staged lighting plan shall have a maximum of 0.0 foot-candles illumination at any point along the boundary line of the site.

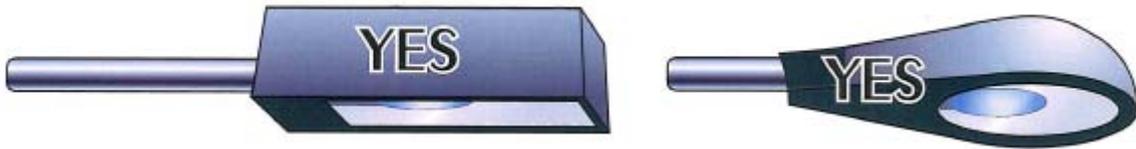
Section 9-20-100 Required Submittals. All new construction or reconstruction which is subject to staff design review and/or site plan approval shall submit an outdoor lighting plan and lighting study for the entire site which indicates how the standards of this ordinance are to be met as determined by the Zoning Administrator and/or Planning Commission, as required. All outdoor lighting plans must include at least:

1. The general layout of the site including buildings, pedestrian areas, parking areas, and site features to be implemented or preserved as natural;
2. Illumination readings for the site, spaced no greater than five feet apart, depicting what can be expected at the finished grade of the site;
3. Location of all proposed lighting sources whether free standing or building mounted;
4. Design details and quantities for each lighting source type proposed to be implemented on the site;
5. Design details, including full dimensioning, for all pole and mounting systems to be implemented on the site;
6. Illumination readings measured along the boundary line of the site, spaced no greater than five feet apart regardless of site size, as can be expected at the finished grade;
7. Tabular information declaring the maximum, minimum, average, and ratio illumination readings for at least general site areas, canopy areas, site boundary, pedestrian areas, and building entrance areas; and
8. Complete and clear identification of all aspects of a staged lighting proposal for the site, as applicable.

Appendix A
Allowed Lighting Types

Figure 1

What is a true Full Cut Off Lighting Fixture?



Flat glass lens, eliminates or minimizes direct glare with no upward thrown light. The housing for these fixtures is available in many styles.



Same fixture as above, mounted incorrectly defeating the horizontal mounting design. The fixture now produces direct glare and can also produce upward thrown light, sometimes at steep mounting angles.



Known as "cut off," center drop or sag lens with or without exposed bulbs still produces direct glare.

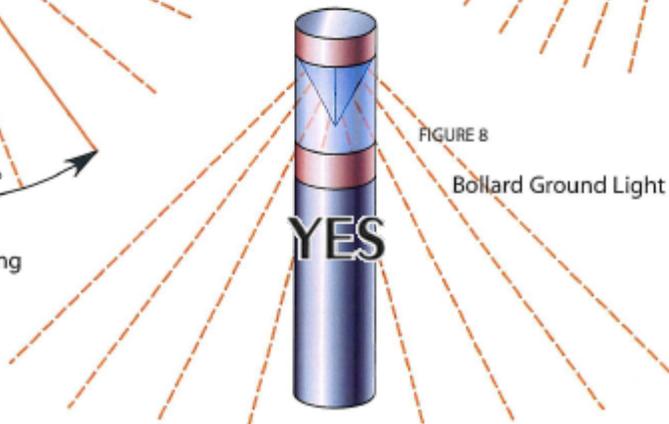
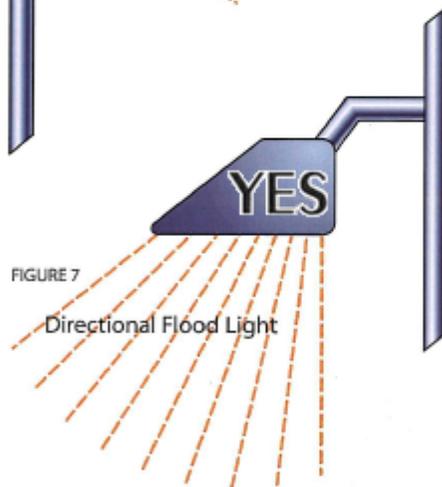
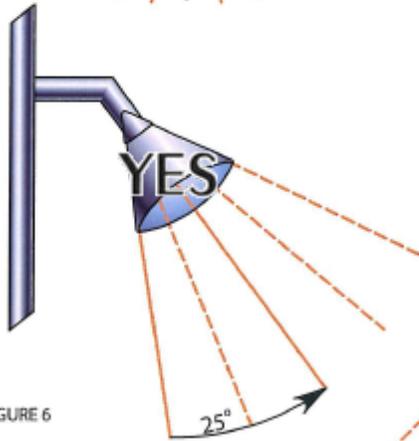
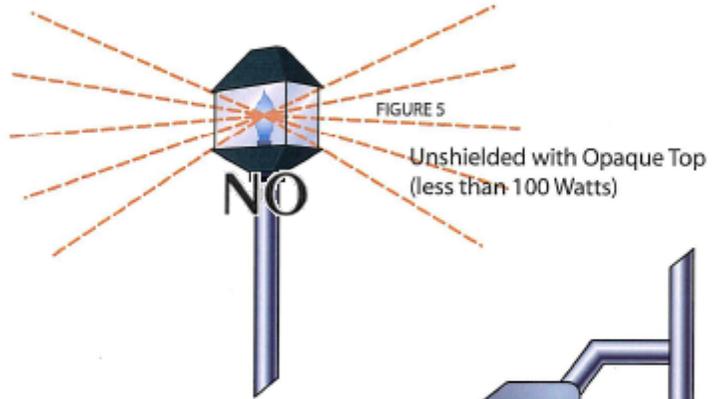
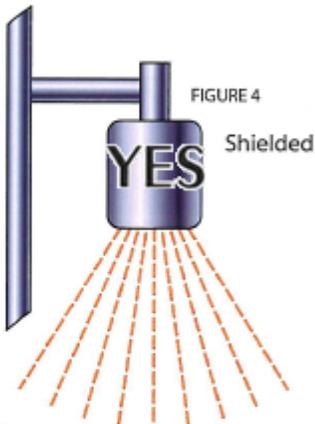
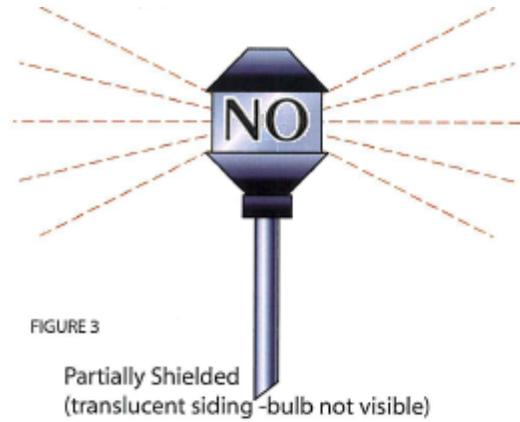
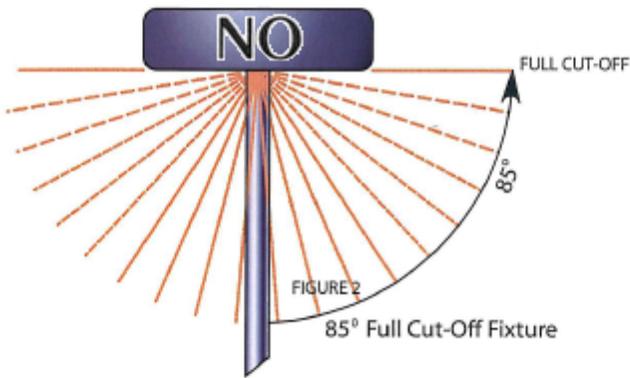


Forward-Throw Style. Exposed bulb in forward direction produces some direct glare.



Appendix B

Allowed Illumination Styles



Appendix C

Example of Lighting Uses



Examples of full cut off lighting and bollard lighting to light walkways

Title 9 Chapter 20 Code Amendments

9-20 amended

per Ordinance No. 795

01/15/08