

# Town of Brookhaven, New York, Exterior Lighting Standards

## ARTICLE XXXIX

Added 12-5-2006 by L.L. No. 29-2006, effective 6-13-2007

Amended 12-4-2007 by L.L. No. 25-2007; amendments effective 12-10-2007]

[Editor's Note: This local law provided that upon enactment of the code, the Town will distribute copies to agencies (state, federal, county, schools, and incorporated Villages) normally exempt from local zoning codes to ask that they conform to these standards.]

### § 85-463. Purpose.

- A. The general purpose of this article is to protect and promote the public health, safety and welfare, the quality of life, and the ability to view the night sky by establishing provisions and a process for review of exterior lighting.
- B. This article establishes provisions for exterior lighting in order to accomplish the following:
  - (1) To provide safe roadways for motorists, cyclists and pedestrians;
  - (2) To protect against direct glare and excessive lighting;
  - (3) To ensure that sufficient lighting can be provided where needed to promote safety and security;
  - (4) To prevent light trespass in all areas of the Town;
  - (5) To protect and reclaim the ability to view the night sky;
  - (6) To allow the flexibility in the style of lighting fixtures;
  - (7) To provide lighting guidelines;
  - (8) To discourage the wasting of energy used to produce excessive lighting;
  - (9) To provide assistance to property owners and occupants in bringing nonconforming lighting into conformance with this article.
  - (10) To minimize the impact of stray lighting on human health, habitat and environment.

### § 85-464. Definitions.

As used in this article, unless otherwise expressly stated, the following terms shall have the meanings indicated:

**AREA LIGHT** — A luminaire designed for illumination of a broad area. Area lights include, but are not limited to, streetlights, parking lot lights and yard lights over 1,800 (100 watts incandescent) lumens.

**AVERAGE HORIZONTAL FOOTCANDLE** — The average level of illuminance for a given situation measured at ground level with the light meter placed parallel to the ground.

**ESSENTIAL LIGHTING** — Lighting that is used for a specified period of time, which is necessary for a specific task or purpose while said task or purpose is actively being performed. This includes lighting that is necessary to promote public safety or facilitate public circulation.

**EXCESSIVE LIGHTING** — Illuminance levels beyond that which is required for safety, as is indicated on the Table of Limits of Illumination Levels (See Table 3 at the end of this chapter. **Editor's Note: See Attachment 9.** )

**EXTERIOR LIGHTING** — Temporary or permanent lighting equipment that is installed, located or used in such a manner with the intention to cause light rays to shine outdoors. Luminaires located indoors

that are intended to light something outside are considered exterior lighting for the purposes of this article.

**FIXTURE (ALSO CALLED "LUMINAIRE")** — The bulb, the assembly that holds the bulb (or lamp) in a lighting system, and the mounting apparatus, including reflecting elements, shielding elements, cover glass or lenses, the ballast, and the housing.

**FLOODLIGHT** — A fixture rated to produce over 1,800 lumens (100 watts incandescent), regardless of the number of bulbs, and is designed to flood an area with light.

**FOOTCANDLE (FC)** — The American unit of illuminance (the amount of light falling on a surface). One footcandle is approximately equal to the illuminance produced by a light source of one candle, measured on a surface one foot away from the source. Horizontal footcandles measure the illumination striking a horizontal plane. Footcandle values can be measured directly with certain handheld incident light meters.

**FULL CUTOFF (FCO)** — A classification for a luminaire designed and installed where no light is emitted at or above a horizontal plane running through the lowest point on the luminaire. In addition, the luminous intensity (as measured in candelas) emitted at any angle from 80° up to 90° cannot exceed a numerical value equal to 10% of the lumen rating of the lamp, as reported in a photometric report from the manufacturer as produced by an independent lab. A cutoff, or semi-cutoff, design allows a restricted amount of light emitted above the horizontal and a non-cutoff provides no restriction against light emitted above the horizontal.

**FULLY SHIELDED** — A luminaire constructed, lamped, and installed in such a manner that all light emitted by it, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal. A full cutoff fixture is also fully shielded, but without any restrictions on light distribution below the horizontal plane, and it can be identified without a manufacturer's report.

**GLARE** — Stray, unshielded light striking the eye that may result in: — A. Nuisance or annoyance, such as light falling across property lines; — B. Discomfort, such as bright light causing squinting of the eyes; — C. Disability, such as bright light reducing the ability of the eyes to see into shadows and visual performance; or — D. Distracting light which diverts the eye from a visual task.

**HID LIGHTING** — A family of bulb types known as "high intensity discharge," including high-pressure sodium, mercury vapor, and metal halide. These types require a warm-up time, usually require a ballast, and have a higher lumen output per watt than incandescent or halogen lamps.

**HOLIDAY LIGHTING** — Temporary lights used to celebrate holidays. Holiday lighting includes, but is not limited to, strings of small individual lights, illuminated menorahs, illuminated nativity scenes, illuminated candles, and various yard decorations seasonal in nature.

**IESNA** — Illuminating Engineering Society of North America (IES or IESNA), an organization that establishes updated standards and illumination guidelines for the lighting industry.

**IESNA RECOMMENDED PRACTICES** — The publications of the IESNA setting forth illuminance levels for different task areas, e.g., walkways, streets, sportslights, etc.

**ILLUMINANCE** — The density of light falling on any point of a surface, usually measured in footcandles in the United States. See "footcandle."

**LAMP** — The generic term for an artificial light source, to be distinguished from the whole assembly (see "fixture"); commonly referred to as the "light bulb."

**LIGHT** — The form of radiant energy acting on the retina of the eye to make sight possible.

**LIGHTING ASSEMBLY** — Any or all parts of a luminaire that function to produce light, including the bulb, assembly, ballast, mounting features and/or pole.

**LIGHT POLLUTION** — Any adverse effect of man-made light, including but not limited to glare, light trespass, skyglow, visual clutter, wasted energy due to excessive or unnecessary lighting, or any man-made light that unnecessarily diminishes the ability to view the night sky or is disruptive to flora and

fauna.

**LIGHT TRESPASS** — Light projected onto the property of another or into the public right-of-way when it is not required or permitted to do so.

**LUMEN** — A unit used to measure the actual amount of light that is produced by a bulb. The lumen quantifies the amount of light energy produced by a lamp at the lamp, not by the energy input, which is indicated by the wattage. For example, a seventy-five-watt incandescent lamp can produce 1,000 lumens while a seventy-watt high-pressure sodium lamp produces 6,000 lumens. Lumen output is listed by the manufacturer on the light bulb packaging.

**LUMINAIRE** — The complete lighting assembly (including the lamp, housing, ballasts, photocells, reflectors, lenses and shields), including the support assembly (pole or mounting bracket); a light fixture. For purposes of determining total light output from a luminaire or light fixture, lighting assemblies which include multiple unshielded or partially shielded lamps on a single pole or standard shall be considered as a single unit.

**LUMINANCE** — The brightness of a source of light.

**MOUNTING HEIGHT** — The distance from natural grade to the lowest light-emitting part of the luminaire.

**NONCONFORMING** — Lighting which does not meet the requirements and specifications contained herein. **[Added 12-4-2007 by L.L. No. 25-2007, effective 12-10-2007]**

**NONESSENTIAL LIGHTING** — Lighting which is unnecessary and not generally useful (e.g., decorative and landscape lighting). This includes lighting intended for a specific task or purpose when said task or purpose is not being actively performed (e.g., parking lot illumination and wall-mounted perimeter lights after business hours).

**PARTIALLY SHIELDED** — A luminaire which is not fully shielded but incorporates a partial shield around the lamp.

**PHOTOMETRICS** — Technical test reports that indicate light distribution and performance from a luminaire. Photometric reports may include candlepower distribution data, cutoff classifications, footcandle charts, etc. These are generally available from the luminaire manufacturers.

**SKYGLOW** — The overhead glow from light emitted sideways and upwards, including light reflected upward from the ground or other surfaces. Skyglow is caused by the reflection and scattering of various forms of light by dust, water, and other particles suspended in the atmosphere. Among other effects, skyglow reduces one's ability to view the night sky. Different sources of light, in equal quantities, can contribute differently to sky glow.

**TEMPORARY LIGHTING** — Lighting that is intended to be used for a specific event and removed within seven days thereafter.

**UNIFORMITY RATIO (U RATIO)** — A ratio that describes uniformity of illuminance across an area. The uniformity ratio may be a ratio of the maximum-to-minimum illuminance or the average-to-minimum illuminance. For example, if the Illuminating Engineering Society recommends an average-to-minimum ratio of 4:1 for a parking lot, the minimum illuminance should be no less than 1/4 of the average illuminance across the parking lot.

**UNSHIELDED FIXTURE** — A fixture which, as designed or installed, emits all or part of the light emissions above the lowest light emitting part of the fixture.

**REPAIR OF A LUMINAIRE OR SIGN** — Any service normally provided by a licensed electrician upon a luminaire or sign. Repair shall be considered to include replacement or modification of any of the following: poles, mounting arms, housings, hardware, wiring, ballasts, lenses, reflectors, diffusers, baffles, shields, sensors, switches, relays, power supplies, and lamp replacement modules which contain any of the items listed above. Replacement of a user-serviceable lamp will not by itself be considered a repair.

**§ 85-465. Applicability; nonconforming lighting; exceptions.**

- A. All exterior lighting, installed, replaced, altered, changed, repaired or relocated after the effective date of this article shall conform to the provisions established by this article except as provided hereto.
- B. Existing exterior lighting in conflict with this article shall be classified as "nonconforming." Except as provided elsewhere in this article, all exterior lighting existing or installed prior to the date of the adoption herein, which does not conform with the provisions of the article, shall be exempt, provided that the following requirements are met: **[Amended 12-4-2007 by L.L. No. 25-2007, effective 12-10-2007]**
- (1) Upon adoption of this article, with any installation, replacement, alteration, change, repair, or relocation of any nonconforming luminaire, such luminaire shall be brought in compliance with the terms of this article.
  - (2) To the extent that preexisting residential exterior floodlights can accommodate lamps of a total of less than 1,800 lumens (100 watt incandescent), said exterior lighting shall be equipped with a lamp or lamps of a total of less than 1,800 lumens (100 watt incandescent) per fixture and, to the extent possible, be angled downward, such that the center beam is not directed above a forty-five-degree angle measured from the vertical line drawn from the center of the lamp to the ground, and so as not to cause glare, light trespass, or beam spread beyond the intended target or across property lines. Operable photocells, motion sensors, timers that allow a light to go on at dusk and off by 11:00 p.m., as well as retrofit shields are encouraged to alleviate nuisance and disability glare.
  - (3) Lighting that is determined by municipal law enforcement to contribute to a condition of disabling or distracting glare into a public roadway may be ordered to be changed or removed at any time.
  - (4) Nonessential lighting can be ordered extinguished, including mobile or ground-mounted searchlights, laser light shows, decorative flashing, blinking, or tracing lights, exclusive of exempt holiday lighting.
- C. Exceptions.
- (1) Unshielded residential luminaires. Unshielded residential luminaires equal to one sixty-watt incandescent lamp per fixture, regardless of number of lamps, are allowed, provided light trespass limitations are met.
  - (2) Vehicular lights and all temporary emergency lighting needed by the fire, ambulance, police departments or other emergency services are exempt.
  - (3) Holiday exterior lighting. Holiday exterior lighting lit between October 15 and January 15 of the following year.
  - (4) Residential sensor-activated luminaires, provided:
    - (a) The luminaire is operational and located in such a manner, or shielded, to prevent glare and light trespass;
    - (b) The luminaire is set to only go on when activated and to go off within five minutes after activation has ceased; and
    - (c) The sensor shall not be triggered by activity off the property.
    - (d) The luminaire output, regardless of the number of lamps, does not exceed 1,800 lumens (100 watts incandescent).
  - (5) Illumination of signs permitted pursuant to the Town of Brookhaven Chapter 57A, Signs, and any amendments made hereto.
  - (6) In situations of lighted flags which are not illuminated with "downward" lighting, upward lighting may be used in the form of a single ground-mounted narrow cone spotlight which confines the illumination to the flag, provided the lumen output is no more than 1,300 lumens, regardless of

the number of lamps. The Town encourages the tradition of lowering flags at sunset to avoid the need for lighting.

- (7) Lighting of radio, communication and navigation towers is allowed, provided the owner or occupant demonstrates that the Federal Aviation Administration (FAA) regulations can only be met through the use of lighting that does not comply with this article, and that the provisions of this article are otherwise met to the fullest extent possible. Tower lighting shall not be permitted unless required by the FAA; in which case, required lighting shall be of the lowest allowed intensity and red, unless specifically forbidden under FAA requirements. Towers which are constructed no higher than 199 feet are preferable to avoid the need for FAA lighting.
- (8) Runway lighting. Lighting on any approved landing strip or runway, provided that the owner or occupant demonstrates that FAA regulations can only be met through the use of lighting that does not comply with this article.

**§ 85-466. Placement and height of fixtures for residential and nonresidential exterior lighting.**

- A. No residential or nonresidential luminaires shall be taller than 20 feet from the natural grade to the lowest light-emitting part of the fixture. Parking area lights are encouraged to be greater in number, lower in height and lower in light level, as opposed to fewer in number, higher in height and higher in light level.
- B. Luminaires for municipal playing fields and new municipal streetlights shall be exempt from the height restriction, provided all other provisions of this article are met.
- C. Privately owned or leased light fixtures located on public utility poles or located in the public right-of-way are prohibited.
- D. All exterior lighting rated to be lamped at 1,800 lumens (100 watts incandescent) and greater shall use full cutoff luminaires, as determined by photometry test or certified by the manufacturer, and installed as designed with the light source directed downward. All exterior lighting 1,800 lumens (100 watts incandescent) and less shall use fully shielded fixtures and shall be installed as designed.

**§ 85-467. Illumination levels and prohibited effects for residential and nonresidential exterior lighting.**

- A. All residential and nonresidential exterior lighting shall not cause light trespass and shall protect adjacent properties from glare and excessive lighting.
- B. All lighting in the Town of Brookhaven shall not exceed recommended light levels as listed in Table of Illumination Limits, Table 3. **Editor's Note: Table 3 is included at the end of this chapter (see Attachment 9).**
- C. All streetlight luminaries shall be full cutoff, except that a historic-style decorative luminaire may emit up to 2% of its total lumens above the horizontal plane; and **[Added 12-4-2007 by L.L. No. 25-2007, effective 12-10-2007]**
  - (1) For roadway lighting a determination is made that the purpose of the lighting installation or replacement cannot be achieved by installation of reflectorized roadway markers, lines, warnings, informational signs, or other passive means; and
  - (2) Adequate consideration has been given to conserving energy and minimizing glare, sky glow, and light trespass.

**§ 85-468. Illuminance and type of lamp for all nonresidential exterior lighting.**

- A. Permissible luminaire location and effects.
  - (1) No luminaire shall be located or concentrated so as to produce glare or direct illumination across the boundary property line, nor shall any such light be of such intensity as to create a nuisance or detract from the use and enjoyment of adjacent property. See Table 1 and Table 2 for setback, height, and maximum light output recommendations for guidance. **Editor's Note: Tables 1 and 2 are included at the end of this chapter (see Attachment 9).**
  - (2) The maximum illuminance at or beyond the property line that adjoins a residential parcel or public right-of-way may not exceed 0.05 fc horizontal on the ground or 0.05 fc vertical measured at a five-foot height above the ground, unless another applicable law supersedes. Maximum horizontal or vertical illuminance allowed between adjacent commercial properties is 0.1 fc.
- B. Permissible levels of illuminance.
  - (1) The average illuminance levels listed in the Illumination Levels for Various Common Tasks, as provided in Table 3, **Editor's Note: Table 3 is included at the end of this chapter (see Attachment 9).** shall not be exceeded for nonresidential exterior lighting unless otherwise specified or approved by the reviewing board, department, division or agency of the Town of Brookhaven.
  - (2) The Town of Brookhaven recognizes that not every situation will require lighting, including situations which may utilize the installation of reflectorized markers, lines, signs or other passive means, and excessive or unnecessary light shall be avoided.
  - (3) Illuminance level measurements for parking lots, sidewalks, and other walkways shall include light contributions from nearby side-mounted building lights, freestanding sidewalk lights affected by side-mounted building lights, and streetlights.
  - (4) In no instance may any lighted surface, as installed, except for municipal athletic fields, exceed the maximum values listed in Table 3 for the appropriate task, as measured horizontally or vertically by a light meter.
- C. High-pressure sodium, compact fluorescent, or low-pressure sodium shall be used for all light sources rated over 1,800 lumens (100 watts incandescent). Metal halide (MH) rated over 3,000K and mercury vapor (MV) light sources are not permitted.

**§ 85-469. General standards for nonresidential exterior lighting.**

- A. All exterior lighting shall be designed, located, and lamped in order to prevent:
  - (1) Overlighting;
  - (2) Energy waste;
  - (3) Glare;
  - (4) Light trespass; and
  - (5) Unnecessary skyglow.
- B. All conforming and nonconforming exterior lighting shall be turned off within 1/2 hour after the close of business and no later than 11:00 p.m. for those businesses that are closed to the public on or before 9:00 p.m. Lights that are controlled by photocells and timers are encouraged, as is the use of sensor-activated lights to replace existing lighting which may be needed for safety or emergency purposes. **[Amended 12-4-2007 by L.L. No. 25-2007, effective 12-10-2007]**
- C. Under-canopy lights, such as service station lighting, shall be full cutoff and fully recessed to prevent glare and light trespass. Illuminance levels at gas stations shall not exceed those established in Table 3. **Editor's Note: Table 3 is included at the end of this chapter (see Attachment 9).**
- D. Area exterior lights. All area exterior lights shall be full cutoff luminaries.
- E. After the adoption of this article, no person, firm, owner, tenant, person in possession, partnership,

corporation or other business entity shall install, replace, relamp, or repair any luminaire that lights a public right-of-way within the Town of Brookhaven, under the Town's jurisdiction, without first receiving prior written approval for such installation from the applicable board, department, division or agency of the Town of Brookhaven.

- F. Automatic teller machine (ATM) and other bank lighting shall be full cutoff and shall not cause glare or light trespass. Light levels shall not exceed those established by the New York State ATM Lighting Law as enacted in 2006.
- G. Unshielded wall packs and floodlights are prohibited.

#### **§ 85-470. Procedures for review of nonresidential exterior lighting.**

- A. Any application submitted to any board, department, division or agency of the Town of Brookhaven shall include exterior lighting plans, luminaire and controls specifications and additional documentation if any exterior lighting is to be used, regardless of whether the exterior lighting is preexisting or proposed, showing the following, in order to verify that exterior lighting conforms to the provisions of this article:
  - (1) Location of each current and proposed outdoor exterior lighting fixture indicated on a site plan.
  - (2) Type of luminaire equipment, including cutoff characteristics, indicating manufacturer and model number.
  - (3) Lamp source type, lumen output, and wattage.
  - (4) Mounting height indicated, with distance noted to nearest property line, for each proposed and existing luminaire.
  - (5) Shielding and all mounting details, including pole foundation description.
  - (6) Initial illuminance levels as expressed in footcandle measurements on a grid of the site showing footcandle readings in every five-foot square. The grid shall include light contributions from all sources (i.e., pole-mounted lights, wall-mounted lights, and signs, including streetlights).
  - (7) Statement of the proposed hours when each luminaire will be operated.
  - (8) Total exterior lighting lamp lumens for proposed property.
  - (9) Lighting manufacturer specifications ("cut sheets") with photographs of the fixtures, indicating the cutoff characteristics of the luminaire.
  - (10) Detailed IES formatted photometric data for each fixture at mounting height and lumens proposed. (Note: This is computer-generated data which is supplied by all manufacturers, describing the light output of a fixture, upon which lighting plans are based. This will allow the Planning Department to fully assess the suitability of a fixture in a lighting plan, should they wish to double check the submission.)
  - (11) Types of timing devices used to control on/off.
  - (12) If necessary, documentation by a licensed lighting engineer showing that the provisions can only be met with a design that does not comply with this article.
  - (13) Appropriate exterior lighting levels are dependent upon the general nature of the surroundings and the reviewing board, department, division or agency of the Town of Brookhaven may require more or less than those listed in Table 3 **Editor's Note: Table 3 is included at the end of this chapter (see Attachment 9).** which are based on the IESNA Recommended Practices Guidelines, RP 33 Lighting for Exterior Environments and RP 20 Lighting for Parking Lots.
- B. No exterior lighting shall be installed, replaced, altered, changed, repaired, relocated, enlarged, moved, improved, or converted unless it conforms to a lighting plan approved by the applicable

reviewing board, department, division or agency of the Town of Brookhaven.

- C. The following guidelines will be made available to applicants to facilitate compliance:
- (1) Illustrations of full cutoff and full shielded fixtures.
  - (2) Diagrams of generally acceptable and generally unacceptable light fixtures.
  - (3) Diagrams of recommended fixture placement in relation to the property line to control light trespass.
  - (4) Table for mounting height and maximum light output recommendations.
  - (5) Table of limits of illumination targets for various common tasks, including parking lots, gas stations, walkways, and signs.

#### **§ 85-471. Guidelines for Exterior Lighting.**

The Guidelines for Exterior Lighting as set forth at the end of this article, and any amendments thereto, are hereby incorporated and made part of this article.

#### **§ 85-472. Illegal exterior lighting.**

- A. The Chief Building Inspector shall cause a notice of such violation to be served on the owner or person in possession of the building, structure or lot where said exterior lighting is located or the lessee or tenant of the part of or of the entire building, structure or lot where said exterior lighting is located requiring such owner, person in possession, lessee or tenant to remove such illegal exterior lighting within 30 days. Such notice may be served personally or by certified mail, return receipt requested, and shall notify the owner, lessee or tenant that the failure to remove said exterior lighting may result in the issuance of an appearance ticket and/or an action in Supreme Court seeking the removal of said exterior lighting.
- B. Any person, firm, owner, tenant, person in possession, partnership, corporation or other business entity who fails to comply with a written order of the Chief Building Inspector of the Town of Brookhaven within 30 days from the date of notice or fails to comply with any lawful order, notice, directive, permit or certificate of the Chief Building Inspector made hereunder shall be deemed in violation of this article. Failure to comply may result in actions and proceedings, either legal or equitable, to enjoin, restrain or abate any violation of this article.
- C. All exterior lighting under the jurisdiction of the Town of Brookhaven that does not conform to these regulations shall be brought into compliance within 10 years of the effective date of the adoption of these regulations or when the light fixtures are removed or replaced, whichever occurs first. **[Added 12-4-2007 by L.L. No. 25-2007, effective 12-10-2007]**

#### **§ 85-473. Prohibited acts.**

It shall be unlawful for any person, firm, owner, tenant, person in possession, partnership, corporation or other business entity to install, alter, repair, move, equip, use or maintain any exterior lighting in violation of any of the provisions of this article, or to fail in any manner to comply with a notice, directive or order of the Chief Building Inspector of the Town of Brookhaven.

#### **§ 85-474. Penalties for offenses.**

Residential exterior lighting. Violation of any of the provisions of this article by any person, firm, owner, tenant, person in possession, partnership, corporation or other business entity related to residential exterior lighting shall be guilty of a violation, punishable by a fine not exceeding \$250 or imprisonment not to exceed 15 days, or both; a person, firm, owner, tenant, person in possession, partnership, corporation

or other business entity who violates this article, after being convicted of a violation of this article within the preceding year, shall be guilty of a violation, punishable by a fine not to exceed \$500 or imprisonment for a period not to exceed 15 days, or both; a person, firm, owner, tenant, person in possession, partnership, corporation or other business entity who violates this article, after being convicted two or more times of a violation of this article within the proceeding three-year period, shall be guilty of a misdemeanor and shall be punished by a fine not to exceed \$1,000 and/or imprisonment for a period not to exceed 30 days.

A. Nonresidential exterior lighting. Violation of any of the provisions of this article by any person, firm, owner, tenant, person in possession, partnership, corporation or other business entity related to nonresidential exterior lighting shall be guilty of a violation, punishable by a fine not exceeding \$500 or imprisonment not to exceed 15 days, or both; a person, firm, owner, tenant, person in possession, partnership, corporation or other business entity who violates this article, after being convicted of a violation of this article within the preceding year, shall be guilty of a violation, punishable by a fine not to exceed \$1,000 or imprisonment for a period not to exceed 15 days, or both; a person, firm, owner, tenant, person in possession, partnership, corporation or other business entity who violates this article, after being convicted two or more times of a violation of this article within the proceeding three-year period, shall be guilty of a misdemeanor and shall be punished by a fine not to exceed \$3,000 and/or imprisonment for a period not to exceed 30 days.

#### **§ 85-475. Severability.**

If any clause, sentence, paragraph or section of this article shall be adjudged by any court of competent jurisdiction to be invalid, such judgment shall not impair or invalidate the remainder hereof, but such adjudication shall be confined in its operation to the clause, sentence, paragraph or section directly involved in the controversy in which judgment shall have been rendered.

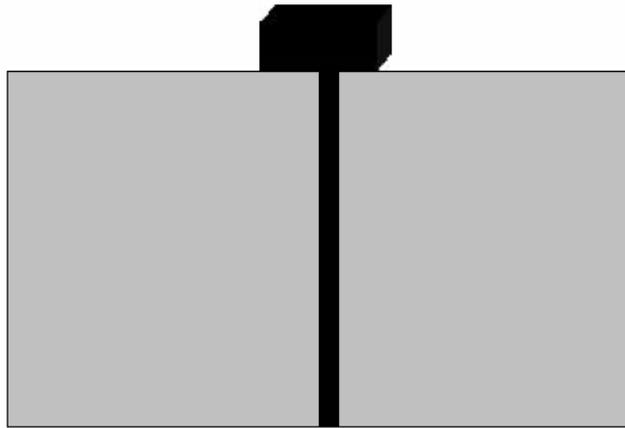
**ATTACHED:**

- (1) Illustrations of Full Cutoff and Full Shielded fixtures.
- (2) Diagrams of generally acceptable and generally unacceptable light fixtures.
- (3) Diagrams of recommended fixture placement in relation to the property line to control light trespass.
- (4) Table for mounting height and maximum light output recommendations.
- (5) Table of limits of illumination targets for various common tasks, including Parking Lots, Gas Stations, Walkways, and Signs.

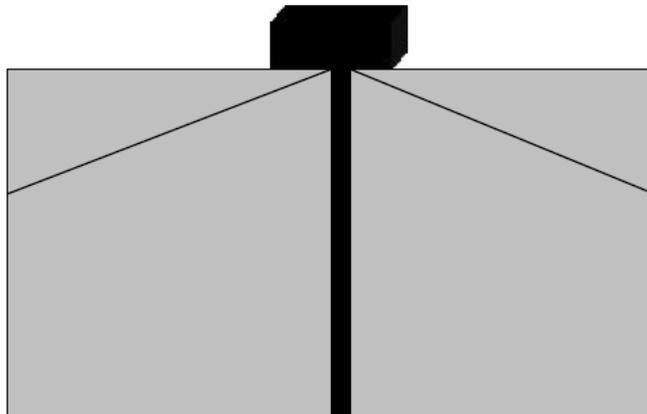
**Town of Brookhaven, New York  
Guidelines for Exterior Lighting**

**Figure 1**

**Fully Shielded Fixture:  
no light emitted below the lowest light emitting part of the fixture  
and no restriction as to amount at various angles below the horizontal.**



**Full Cutoff Fixture:  
additionally restricts the amount of light emitted in the “glare zone” (90-80 degrees below  
horizontal) to 10% of the total light output:**



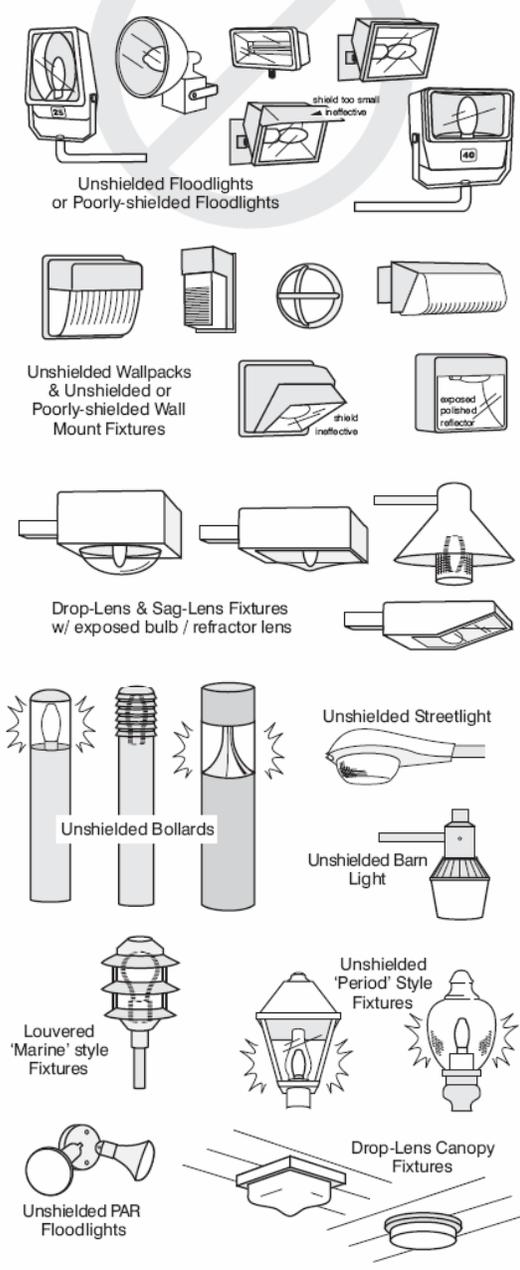
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**Figure 2**

**Examples of Acceptable / Unacceptable Lighting Fixtures**

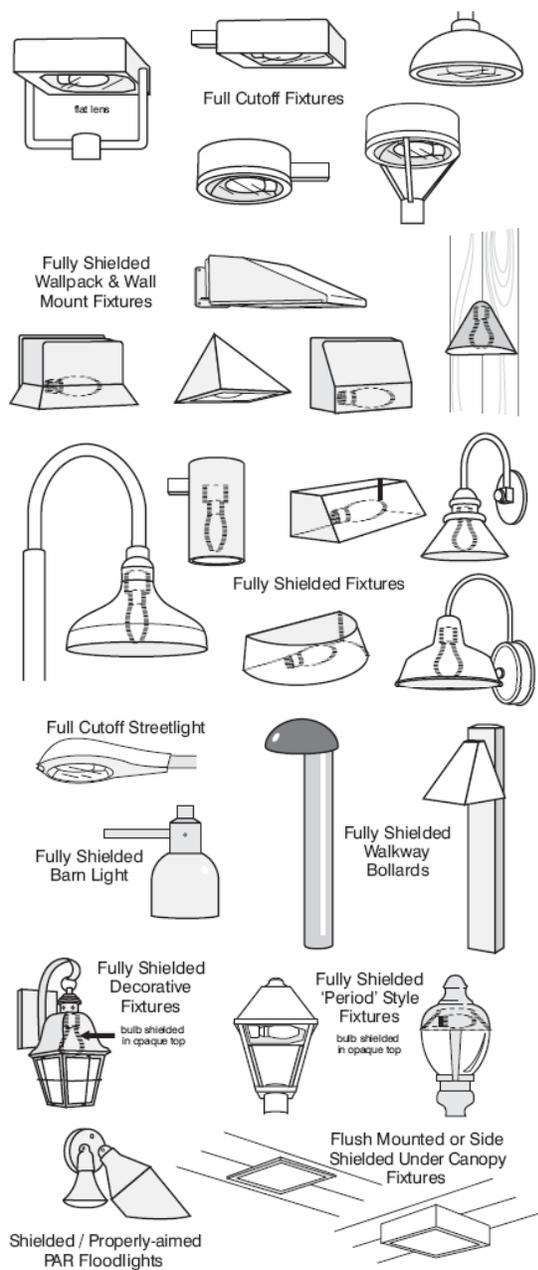
**Unacceptable / Discouraged**

Fixtures that produce glare and light trespass



**Acceptable**

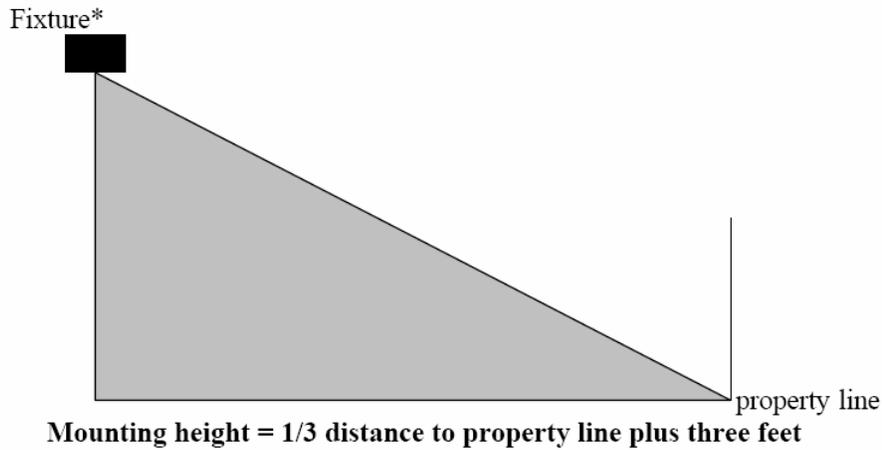
Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night



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**Figure 3: Calculating Fixture Height in relation to distance to property line.**

Without available photometric data to execute a lighting plan, Fixture Placement set-backs can help to reduce incidence of light trespass and glare across property lines.



A fully shielded or full cutoff fixture will generally contain light to a site to reduce light trespass if this formula is followed:

Divide the distance (D) to the property line by three and add three feet to equal the maximum Mounting Height (MH).

Formula: MH no greater than 1/3 Distance to Property line plus 3 feet (The Kennebunkport Formula)

For example:

Maximum Mounting Height	Distance to Property line
15	36
12	27
9	18
6	9

\*Assumes common full cutoff fixture. Asymmetrical "sharp cutoff" full cutoff fixtures that have steeper cutoff angles or shielding at the "house side" may be placed closer to property boundaries provided their cutoff angles do not result in light trespass and footcandle measurements can be provided on a lighting plan.

**Town of Brookhaven  
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**Table 1  
Limits of Illumination target areas for Parking Lots**

IESNA Document	Illuminance Levels						Uniformity		
	EMIN	EMAX	EAVE	EV-MIN	EV-AVE	ESC-MIN	MAX/MIN	AVE/MIN	MAX/AVE
<b>Lighting for Parking Facilities RP-20-98</b>									
<i>Medium</i>	0.6		2.4				20:1	4:1	
<i>Low</i>	0.2		0.8				20:1	4:1	
<i>High</i>	0.9		3.6				20:1	4:1	

Light levels indicated are for active use of the facility during open business hours:

- High: Large shopping Centers over 300,000 square feet of retail space.
- Medium: Community shopping centers between 5,000 and 299,000 square feet retail space
- Low: Neighborhood shopping retail of less than 5,000 square feet.

After hours, light levels may be cut by 50% or more.

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**Table 2  
Limits of Illumination for target areas:  
Car Dealerships, Sidewalks, Walkways, and Gas stations**

IESNA Document		Illuminance Levels					Uniformity			
		EMIN	EMAX	EAVE	EV-MIN	EV-AVE	ESC-MIN	MAX/MIN	AVE/MIN	MAX/AVE
<b>Lighting for Exterior Environments RP -33-99</b>										
<i>Sidewalks (Roadside) and Type A Bikeways</i>	Commercial Areas			1		2		10:1		
	Intermediate Areas			0.5		1		10:1		
	Residential Areas			0.2		0.5		10:1		
<i>Walkways Distant from Roadways and Type B Bikeways</i>	Commercial Areas			0.5		0.5		10:1		
	Intermediate Areas			0.5		1		10:1		
	Residential Areas			2		0.5		10:1		
<i>Car Dealerships</i>										
	<i>Secondary Business Districts</i>									
	Adjacent to roadway		5 - 10					5:1		
	Other rows		2.5 - 5					10:1		
	Entrances		2.5 - 5					5:1		
	Driveways		1 - 2					10:1		
<i>Service Stations or Gas Pump Area</i>										
	Approach			1.5 - 2						
	Driveways			1.5 - 2						
	Pump Island			5						
	Service Areas			2 - 3						

**Town of Brookhaven  
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**Table 3  
Limits of Illumination for Roadways**

IESNA Document			Illuminance Levels						Uniformity		
			EMIN	EMAX	EAVE	EV-MIN	EV-AVE	ESC-MIN	MAX/MIN	AVE/MIN	MAX/AVE
<b>Roadway Lighting ANSI-RP-8-00</b>											
	<i>Walkways/ Bikeways Mixed use</i>	High Pedestrian Conflict			2	1.0			4.0		
	<i>Walkways/ Bikeways Pedestrian use only</i>	High Pedestrian Conflict			1	0.5			4.0		
	<i>Walkways/ Bikeways Pedestrian use only</i>	Medium Pedestrian Conflict			0.5	0.2			4.0		
	<i>Collector (R2&amp;R3)</i>	High-Medium- Low Pedestrian Conflict			1.2 - 0.9 - 0.6				4.0		
	<i>Local</i>	High-Medium- Low Pedestrian Conflict			0.9 - 0.7 - 0.4				6.0		

## For reference: About Brookhaven

Note: The following information is not part of the Town Lighting Standards, but rather, is presented to give the reader who might be unfamiliar with the Town a feeling for its size and demographics.



The Town of Brookhaven is located in central Suffolk County, New York, USA, and stretches from the North Shore to the South Shore of Long Island. Brookhaven is part of the New York metropolitan area. The population of the town was 448,248 at the 2000 census.

The town has a total area of 323.5 square miles, making it the third largest town in New York in terms of total area. It borders Long Island Sound to the north, the towns of Riverhead and Southampton to the east, the towns of Smithtown and Islip to the west, and the Atlantic Ocean to the south.

As of the census of 2000, there were 448,248 people, 146,828 households, and 112,910 families residing in the town. The population density was 1,728.8 people per square mile (667.5/km<sup>2</sup>). There were 155,406 housing units at an average density of 599.4/sq mi (231.4/km<sup>2</sup>). The racial makeup of the town was 88.43% White, 4.33% Black or African American, 0.23% Native American, 2.90% Asian, 0.03% Pacific Islander, 2.21% from other races, and 1.87% from two or more races. Hispanic or Latino of any race were 8.04% of the population.

There were 146,828 households out of which 38.9% had children under the age of 18 living with them, 62.3% were married couples living together, 10.6% had a female householder with no husband present, and 23.1% were non-families. 17.9% of all households were made up of individuals and 7.2% had someone living alone who was 65 years of age or older. The average household size was 2.97 and the average family size was 3.37.

According to a 2006 estimate, the median income for a household in the town was \$73,566, and the median income for a family was \$84,705. Males had a median income of \$48,601 versus \$32,157 for females. The per capita income for the town was \$24,191. About 3.9% of families and 5.9% of the population were below the poverty line, including 6.5% of those under age 18 and 6.6% of those age 65 or over.

Brookhaven is divided into several incorporated villages and unincorporated hamlets, as listed below.

**Villages:** Belle Terre, Bellport, Lake Grove, Old Field, Patchogue, Poquott, Port Jefferson, Shoreham

**Hamlets:** Blue Point, Brookhaven, Calverton (part), Canaan Lake, Centereach, Center Moriches, Cherry Grove, Coram, Crystal Brook, Cupsogue Beach, Davis Park, East Moriches, East Patchogue, East Setauket, Eastport (part), East Shoreham, Farmingville, Fire Island Pines, Gordon Heights, Hagerman, Holbrook (part), Holtsville (part), Lake Ronkonkoma (part), Manorville, Mastic, Mastic Beach, Medford, Middle Island, Miller Place, Moriches, Mount Sinai, North Bellport, North Patchogue, Ocean Bay Park, Point of Woods, Port Jefferson Station, Ridge, Rocky Point, Ronkonkoma (part), Selden, Setauket, Shirley Southaven, Sound Beach, Stony Brook, Strongs Neck, Terryville, Upton, Wading River (part), Water Island, West Manor, Yaphank