

## ARTICLE 9

### PERFORMANCE STANDARDS

#### PART 1

#### 9-100

#### GENERAL PROVISIONS

#### 9-101

##### **Applicability**

1. No permitted, special permit or special exception use hereafter established, altered, modified or enlarged shall be operated or designed so as to conflict with the applicable performance standards established by this Article, except as qualified in Section 102 below.
2. Any existing use that complies with the applicable performance standards of this Article on the effective date of this Ordinance shall continue to so comply. If, at such time, the operations of any lawful existing use violate any of the applicable performance standards of this Article, such operations shall not be varied or changed in such a way as to increase the degree of such violation.
3. The fact that the operations of a lawful existing use violate the applicable performance standards of this Article shall not in and of itself make such use subject to the requirement of Article 10 relating to nonconformities.

#### 9-102

##### **Performance Standards Not Applicable**

The performance standards presented in Parts 7 and 8 of this Article shall not apply to Category 19 Special Exception uses (see Article 5) regardless of the zoning district in which such uses may be located. Category 19, Extraction Uses, shall be subject to compliance with the performance standards presented in Part 19 of Article 5.

#### 9-103

##### **Administration of Certain Performance Standards**

For the purpose of administering the required performance standards relative to Noise, Vibration and Glare, the standards are presented in two (2) basic groups, namely: Group I and Group II. Table I below sets forth the applicable performance standards that must be met in each zoning district.



**PART 5**

**9-500**

**ELECTROMAGNETIC RADIATION AND INTERFERENCE STANDARDS**

No activity, operation or use shall cause electromagnetic radiation interference that (a) adversely affects persons or the operation of any equipment across lot lines, and (b) is not in conformance with the regulations of the Federal Communications Commission.

**PART 6**

**9-600**

**LIQUID AND SOLID WASTES STANDARDS**

Any activity, operation or device which causes or tends to cause the discharge or other release of liquid or solid waste into public sanitary sewer, storm drains or public waters shall comply with applicable laws, rules and regulations governing such discharge or release, including but not limited to Federal Water Pollution Control Act, the Virginia Water Control Law and the Fauquier County regulation provisions on sewers and sewage disposal, pollution of state waters, maintenance and cleanliness of storm drainage facilities, garbage, trash and refuse, and erosion and sediment control.

**PART 7**

**9-700**

**NOISE STANDARDS**

**9-701**

**Required Performance Level**

No use, operation or activity shall cause or create noise in excess of the sound level prescribed below.

**9-702**

**Method of Measurement**

1. Noise shall be measured with a sound level meter, octave band analyzer and impact noise analyzer meeting the standards of the American National Standards Institute (ANSI S1.4-1961 and ANSI S1.11-1966). The instruments shall be set to the flat response weighing network and the meter to the slow response.
2. Sounds of short duration such as from forge hammers, punch presses and metal shears which cannot be measured accurately within the sound level meter shall be measured within the impact noise analyzer.
3. For the purpose of this Ordinance, impact noises shall be considered to be those noises whose peak values are more than 3dB higher than the values indicated on the sound level meter set to the slow response.

**9-703**

**Exemptions**

The following uses and activities shall be exempt from the noise level requirements:

1. Noises not directly under the control of the property owner.

2. Noises emanating from non-routine construction and maintenance activities between 8:00 A.M. and 7:00 P.M.
3. The noises of safety signals, warning devices and emergency pressure relief valves, whose frequency of operation does not exceed one per week, and any audible safety or warning devices required by law.
4. Transient noises of moving sources such as motor vehicles, airplanes and railroad trains, except where such transient noises are caused on the site and are a part of the operation of the use on the site.
5. Noises and activities directly associated with the safety warnings and training programs of the Fire and Rescue Services and Sheriff's Department.
6. Agricultural operations.

9-704

**Group I Noise Standards**

1. Uses subject to Group I standards shall not cause at any point on or beyond the boundary of the lot upon which the use is situated, noise resulting from any use, operation or activity which exceeds the maximum permitted sound level set forth in Table II below.

**TABLE II**

**Maximum Permitted Sound Pressure Level  
In or Adjacent to Residential Districts**

<u>Octave Band, Preferred Frequencies Cycles Per Second</u>	<u>Decibels Re: 0.0002 Microbar</u>
31.5	66
125	63
250	61
500	55
1000	48
2000	41
4000	34
8000	28

2. Impact noises shall not exceed the sound pressure levels set forth in Table III.

**TABLE III**

**Maximum Permitted Impact Noise Levels**

<u>Location (at Lot Line)</u>	<u>Maximum Permitted Peak Sound Pressure Level, Decibels</u>
In Residential Districts	80
At a Nonresidential Lot Line	90

3. Between the hours of 8:00 P.M. and 7:00 A.M., all permissible noise levels indicated in the previous tables for Residential Districts shall be reduced by 5 decibels.

**9-705**

**Group II Noise Standards**

1. Uses subject to Group II standards shall not cause at any point on or beyond the lot where such use is located, noise resulting from any use, operation or activity which exceeds the maximum permitted sound levels set forth in Table IV below.

**TABLE IV**

**Maximum Permitted Sound Pressure Level Beyond Nonresidential District Boundaries**

<u>Octave Band, Preferred Frequencies Cycles Per Second</u>	<u>Decibels Re: 0.0002 Microbar</u>
31.5	70
63	71
125	69
250	65
500	61
1000	57
2000	53
4000	49
8000	45

2. Impact noises shall not exceed the sound pressure level set forth in Table V.

**TABLE V**

**Maximum Permitted Impact Noise Levels**

<u>Location (at lot line)</u>	<u>Maximum Permitted Peak Sound Pressure Level, Decibels</u>
In Residential District	80
At a Nonresidential District Boundary Line	90
One Impact Noise Per Day, Beyond Lot Lines	120

3. Between the hours of 8:00 P.M. and 7:00 A.M., all of the permissible noise levels indicated in the previous tables for Residential Districts shall be reduced by 5 decibels.

**PART 8**

**9-800**

**EARTHBORN VIBRATION STANDARDS**

**9-801**

No use, operation or activity shall cause or create earthborn vibrations in excess of the peak particle velocities prescribed below.

**9-802**

1. Measurements shall be made at or beyond the adjacent lot line, nearest Residential District boundary line or nearest district boundary line as indicated below. Ground transmitted vibration shall be measured with a seismograph or complement of instruments capable of recording vibration displacement and frequency, particle velocity or acceleration simultaneously in three (3) mutually perpendicular directions.
2. The maximum particle velocity shall be the maximum vector sum of three (3) mutually perpendicular components recorded simultaneously. Particle velocity may also be expressed as 6.28 times the displacement in inches multiplied by the frequency in cycles per second.
3. For the purpose of this Ordinance, steady state vibrations are continuous or vibrations in discrete impulses more frequent than sixty (60) per minute shall be considered impact vibrations.

**9-803**

**Group I Vibration Standards**

1. Uses subject to Group I standards shall not cause steady state vibrations to exceed the maximum permitted particle velocities described in Table VI below. Where more than one set of vibration levels apply, the most restrictive shall govern. Readings may be made at points of maximum vibration intensity.

**TABLE VI**

**Maximum Permitted Steady State Vibration Levels**

<u>Location (at lot line)</u>	<u>Maximum Peak Particle Velocity Inches Per Second</u>
In a Residential District	0.02
At or Beyond Adjacent Lot Lines, Except a Residential District	0.05

2. Impact vibrations shall be permitted at twice the values stated above.
3. Between the hours of 8:00 P.M. and 7:00 A.M., all of the permissible vibration levels indicated above in Table VI for Residential Districts shall be reduced to one-half (1/2) the indicated values.

**9-804**

**Group II Vibration Standards**

1. Uses subject to Group II standards shall not cause steady state vibrations to exceed the maximum permitted particle velocities described in Table VII below. Where more than one set of vibration levels apply, the most restrictive shall govern. Readings may be made at points of maximum vibration intensity.

**TABLE VII**

**Maximum Permitted Steady State Vibration Levels**

<u>Location (at lot line)</u>	<u>Maximum Peak Particle Velocity Inches Per Second</u>
In a Residential District	0.02
At or Beyond Adjacent District Boundary Lines, Except a Residential District	1.10

2. Impact vibrations shall be permitted at twice the values stated above.
3. Between the hours of 8:00 P.M. and 7:00 A.M., all of the permissible vibration levels indicated above in Table VII for Residential Districts shall be reduced to one-half (1/2) the indicated values.
4. When the frequency of impacts does not exceed one (1) per day the maximum vibration level, measured across lot lines, shall not exceed 0.4 inches per second.

**PART 9**

**9-900**

**GLARE STANDARDS**

**9-901**

**Required Performance Level**

All uses, operations and activities shall be conducted so as to comply with the performance standards governing glare prescribed below.

**9-902**

**Method of Measurement**

Illumination levels shall be measured with a photoelectric photometer having a spectral response to that of the human eye, following the standard spectral luminous efficiency curve adopted by the International Commission on Illumination.

**9-903**

**General Requirements**

Uses subject to Group I and Group II standards shall not produce glare so as to cause illumination in Residential Districts in excess of 0.5 foot-candles. Flickering or intrinsically bright sources of illumination shall be controlled so as not to be a nuisance in Residential Districts.

**9-904**

**Group I or Group II Glare Standards**

Uses subject to Group I and Group II standards shall limit the use of light sources and illuminated surfaces which are located in or are within 500 feet of and visible from any Residential District so as to comply with the light intensities indicated in Table VIII below.

**TABLE VIII**

**Maximum Intensity of Light Sources**

<u>Source</u>	<u>Intensity</u>	
	<u>Group I</u>	<u>Group II</u>
Bare incandescent bulbs	15 watts	40 watts
Illuminated buildings	15 foot-candles	30 foot-candles
Back-lighted or luminous	150 foot-lamberts	240 foot-lamberts
Outdoor illuminated signs	25 foot-candles	50 foot-candles

**PART 10**

**9-1000**

**OUTDOOR LIGHT CONTROL**

**9-1001**

**Purpose and Intent**

The purposes of the outdoor lighting regulations are to protect dark skies, the general welfare by controlling the spillover of light onto adjacent properties, and the public safety by preventing glare from outdoor luminaries, and to limit the

intensity of light on certain adjacent areas, roadways and properties as provided herein.

**9-1002**

**Conformance with Applicable Codes and Ordinances**

All outdoor artificial illuminating devices shall be installed in conformance with the provisions of this Article, and applicable provisions of the Zoning Ordinance. Where there is conflict between the provisions of this Article and applicable provisions of the Zoning Ordinance, the most restrictive shall govern.

**9-1003**

**Approved Materials and Methods of Installation**

The provisions of this Article are not intended to prevent the use of any equipment, material or method of installation not specifically prescribed by this Article provided the alternative has been approved by the Zoning Administrator. The Zoning Administrator may approve any such alternative provided that the proposed design provides the approximate equivalence to the specific requirements of this Article.

**9-1004**

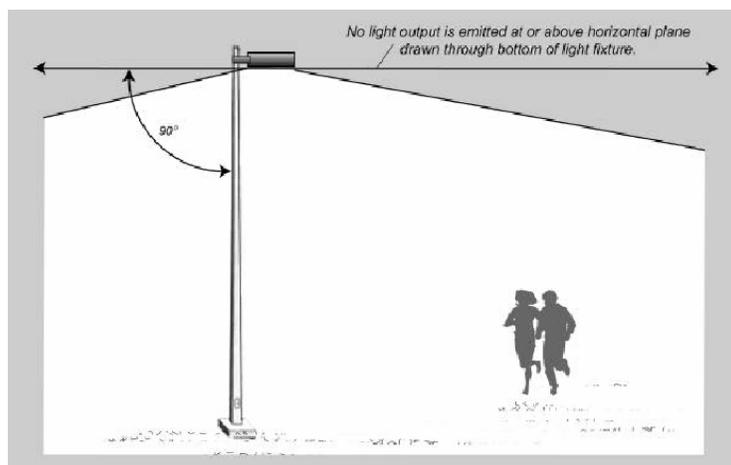
**Section Deleted.**

**9-1005**

**Shielding**

All outdoor light fixtures except those exempted by Section 9-1007 and those regulated by Section 9-1006.2 shall be fully shielded as identified in Section 9-1006. A fully shielded fixture must be a full cutoff luminaire or a decorative luminaire with full cutoff optics, and is defined as an outdoor lighting that is shielded or constructed so that all light emitted is projected below a horizontal plane running through the lowest part of the fixtures. The light source visibility shall be shielded from the adjoining property.

**Figure 1: Fully Shielded Outdoor Light Fixture**



Source: Fairfax County, Virginia Zoning Ordinance (June 2003)

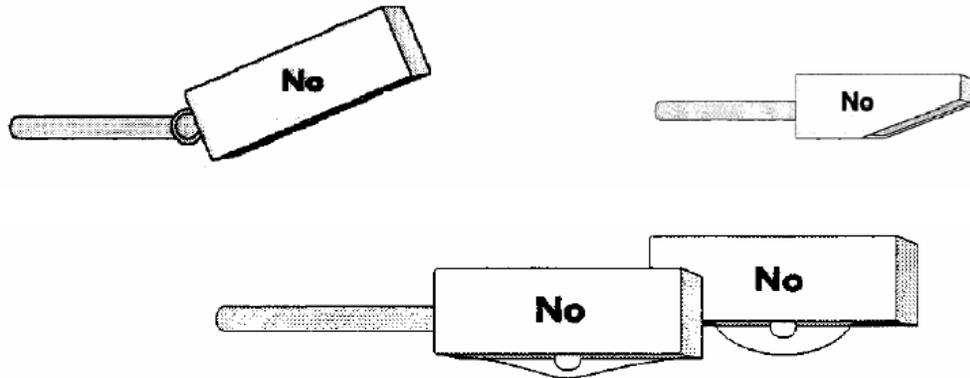
**Figure 2: Illustrations of Full Cut-Off Outdoor Light Fixtures**



Flat glass lens, eliminates or minimizes direct glare, no upward throw of light. The housing for these fixtures are 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 unlight at steeper mounting angles.



Known as just "Cutoff" Center "drop" or "sag" lens with or without exposed bulb, produces direct glare.

Source: The Hailey, Idaho Outdoor Lighting Ordinance provisions of the Zoning Ordinance, August 2002, Figure 1.

9-1006

**General Requirements for all Uses**

1. Public or Private Recreational Facilities. Outdoor nighttime recreational events have unique and site specific lighting needs. The regulations in this section are intended to permit adequate illumination for such events, while minimizing sky-glow, reducing glare and lighting spillover onto surrounding streets and properties.
  - a. Primary Playing Areas with the exception of residential accessory uses.
    - (1) Where playing fields or other recreational areas are to be illuminated, lighting fixtures shall be specified, mounted, and aimed so that their

beams fall within the primary playing area. Direct illumination shall be confined to within the property lines of the recreational use. Full light cutoff shall be required. No lighting shall be emitted above the horizontal plane of the luminaire, and the average maintained illumination levels must be within the parameters of the activity recommended by the Illumination Engineering Society of North America (IESNA).

- (2) A sports complex or athletic field lighting design plan shall be submitted, which demonstrates in detail the proposed lighting installation.
- b. For each athletic field or complex to be illuminated, a lighting design plan shall be submitted which demonstrates in detail the property lighting installation. The design plan shall include the lighting requirements for each sports field, the specifications and technical measures showing how those requirements will be achieved. Special tree planting and/or buffering to assist in light control and protection of adjacent properties and roadways shall be included. Parking lot lighting requirements are included in Section 9-1006 5., and entitled All Parking Lots, Loading and Display Areas.
- c. Outdoor recreational lighting is not permitted in the Rural Conservation (RC) Zoning Districts, or within 1,000 feet from the Rural Conservation (RC) zoning line.
- d. All applications for lighted outdoor recreational facilities shall include a computer generated light level grid in conjunction with a site plan for the proposed field and associated facilities.
- e. A certified lighting designer or manufacturer's representative shall evaluate the completed installation and shall certify that the installation meets the shielding, illumination and light standards contained herein.
- f. Event Hours. All events shall be scheduled so as to complete all activity before or as near to 11:00 p.m. as practical, but under no circumstances shall any illumination of the playing field, court or track be permitted after 11:00 p.m. except to conclude an event that was reasonably scheduled to conclude prior to 11:00 p.m. No event shall be permitted after 11:00 p.m., unless a valid permit is issued by the Director of Parks and Recreation in accordance with the Fauquier County Code.

All newly lighted fields, or existing fields being upgraded or refitted, (public or private) shall be equipped with override timing devices which will automatically cut off the lights to ensure curfew compliance.

- g. A modification, waiver or variation from the standards set forth in this article may be granted by the Board of Supervisors, with Planning Commission recommendation. Both the Board of Supervisors and the Planning Commission shall hold a public hearing on the proposed modification, waiver or variation.

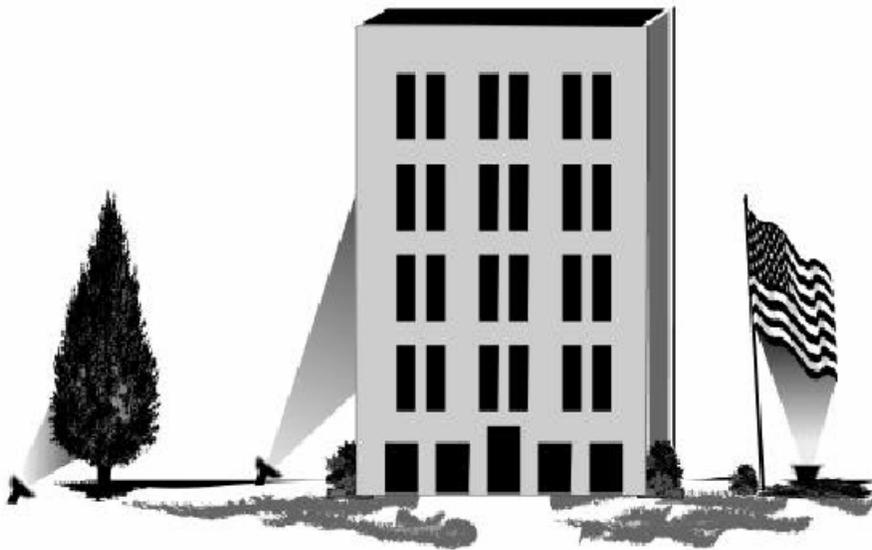
The Board of Supervisors may modify or waive any standard set forth in Article 9 for an individual case, and it may impose conditions on such a modification or waiver which it deems appropriate to further the purposes of these outdoor recreational lighting regulations, in either of the following circumstances:

- (1) Upon finding the strict application of the standard would not forward the purposes of this chapter, or that alternatives proposed by the applicant would satisfy the purposes of these outdoor lighting regulations at least to an equivalent degree.
- (2) Upon finding that any outdoor fixture, or system of outdoor fixtures, required for an athletic field cannot reasonably comply with the standard and provide safe and sufficient illumination of the field, as determined by the recommended practices adopted by the Illuminating Engineering Society of North America for that type of field or activity.

h. Required Notice for Public Hearing, Written Notice to Applicant/Owners and Written Notice to Adjacent Property Owners shall be in accord with Section 13-111 4. of the Zoning Ordinance for all requests to modify, waive or vary the light requirements as set forth in this section.

2. Outdoor lighting of buildings, landscaping, signs, flags, statues and other objects shall consist of full cut-off or directionally shielded lighting fixtures that are aimed and controlled so that the directed light shall be confined to the object intended to be illuminated. Directional control shields shall be used where necessary to limit stray light. No light from any illuminated sign shall cause or direct non-reflected light from the fixture to shine onto any adjoining property or public right-of-way.

**Figure 3: Architectural/Landscaping Lighting Examples**



Lighting used for architectural/landscaping lighting shall be aimed and controlled so that light is confined, as much as possible, to the objects that are intended to be lit.

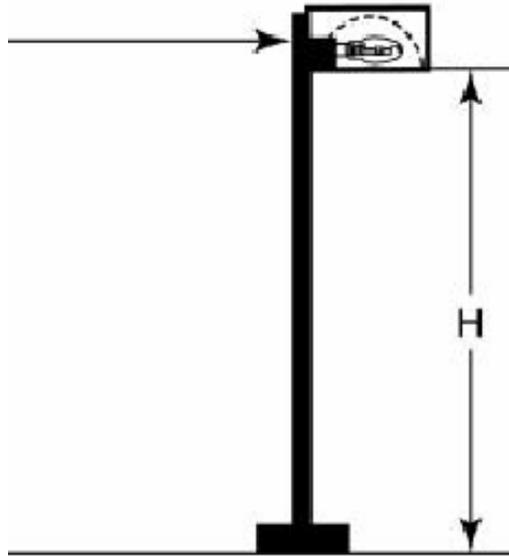
Source: Fairfax County, Va. Zoning Ordinance, June 2003, Illustration 4, Plate 2

3. All outdoor lighting fixtures, including display lighting, shall be turned off after the close of business, unless needed for safety or security, in which case the lighting shall be reduced to the minimum level necessary.
4. Outdoor Areas, including Parking Lots, Loading, Sales and Display Areas. This lighting requirement applies to townhouse and multi-family, educational, institutional, commercial recreation, public commercial business and retail, motor vehicle related, wholesaling, and limited and general industrial use categories identified within the Zoning Ordinance.
  - a. Lighting for all parking, display and loading areas shall not exceed an average horizontal illumination level of 2.5 footcandles. All lighting fixtures serving these areas shall be cut-off fixtures as defined by the Illuminating Engineering Society of North America (IESNA);
  - b. Maximum Mounting Height\*

Residential:	20 feet
Non-Residential:	25 feet

\*Height is measured from the ground surface to the bottom of the lighting fixture.

**Figure 4: Mounting Height**

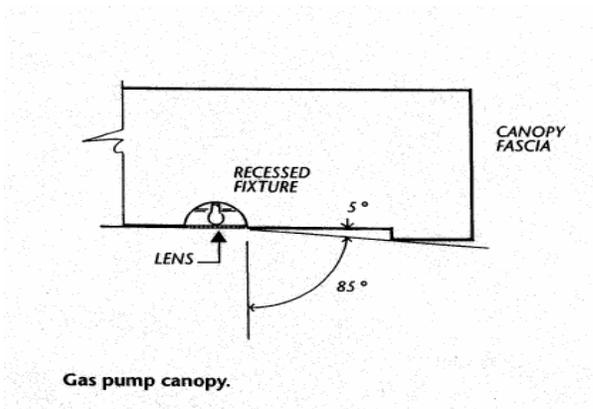


Source: Fairfax County, Va. Zoning Ordinance, June 2003, Illustration 4, Plate 4

5. Gasoline Station/Convenience Store Aprons and Canopies.

- a. The Lighting fixture bulbs shall be recessed into a canopy ceiling so that the bottom of the fixture is flush with the ceiling so that light is restrained to no more than 85 degrees from vertical as shown in Figure 5.

**Figure 5: Gasoline Station/Convenience Store Canopies**



Source: Outdoor Lighting Manual for Vermont Municipalities, Chittendon County Regional Planning Commission, May 1996, PTI Publications Center (Publication Order Number DG/95-308).

- b. As an alternative to recessed ceiling lights, indirect lighting may be used where the light is directed upward and then reflected down from the underside of the canopy. In this case, light fixtures shall be shielded so that direct illumination is focused exclusively on the underside of the canopy.

- c. Lights shall not be mounted on the top or sides (facial) of the canopy, and the sides of the canopy shall not be illuminated.
  - d. The lighting for new facilities (pump islands and under canopies) shall have a minimum of 1.0 footcandle at grade, and the average horizontal illumination cannot exceed 10 footcandles at grade level, subject to a uniformity ratio (ratio of average to minimum illuminance) no greater than 4:1. The standards herein are based on the Illuminating Engineering Society of North America (IESNA) RP-33, Lighting for Exterior Environments.
6. Mercury Vapor. The installation of mercury vapor fixtures is prohibited, except for agricultural buildings, paddocks and similar use areas in RA and RC zoning districts. For residential structures on agricultural property, lighting must be full cut-off fixtures, or retrofitted with, for example, the Hubble Sky Cap and illumination shielded downward.
  7. Spillover light, vertical or horizontal, from parking area luminaires onto public roads and property in residential or rural Rural Agricultural (RA) and Rural Conservation (RC) zoning districts shall not exceed one-half (1/2) footcandle at the property line.
  8. No growing lights shall be utilized in a greenhouse during non-daylight hours unless the light is completely screened so that no uplighting occurs and the light is not visible beyond property lines. Any interior or exterior lighting that is upgraded after approval of this regulation shall be brought into compliance with this requirement in conjunction with the upgrade.

**9-1007**

**Exemptions**

1. Nonconforming Fixtures. Outdoor light fixtures installed prior to the effective date of this Article are exempt from the provisions of this Article, provided, however, that no change in use, and no replacement, and structural alteration of outdoor light fixtures shall be made unless it thereafter conforms to the provisions of this Article. Replacement of a fixture shall mean a change of fixture type or change to the mounting height or location of a fixture. Routine lighting fixture maintenance, such as changing lamps or light bulbs, ballast, starter, photo control, housing, lenses and other similar components shall not constitute replacement and shall be permitted provided such changes do not result in a higher lumen output.
2. Lighting which is not subject to this chapter by state or federal law.
3. Roadway and Airport lighting and security lighting controlled and activated by motion sensor devices for a duration of fifteen (15) minutes or less.
4. Lighting of the United States of America or Commonwealth of Virginia flags and other non-commercial flags expressing constitutionally protected speech.

5. Temporary circus, fair, carnival, or civic uses.
6. Special Conditions. The Zoning Administrator may grant an exemption to the requirements of Section 9-1006 only upon a written finding that there are conditions warranting the exemption and that there are no conforming fixtures that would suffice.
7. Construction and Emergency Lighting. Lighting necessary for construction or emergencies is exempt from the provisions of this Article provided said lighting is temporary and is discontinued immediately upon completion of the construction work or abatement of the emergency necessitating said lighting.
8. Lighting associated with agricultural use structures, such as a barn, paddock area. Greenhouses, residential buildings and parking associated with a farm or other agricultural uses are not exempted from the lighting requirements contained herein.

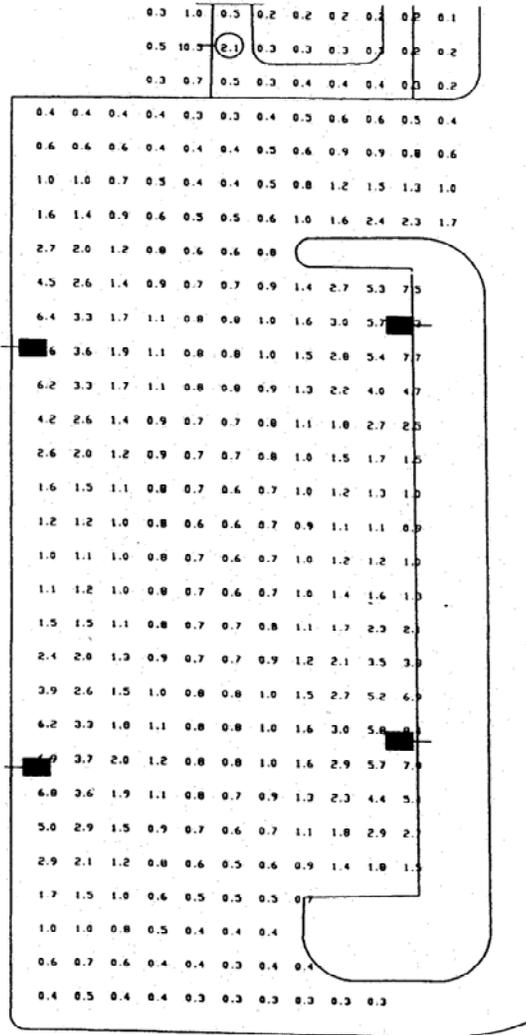
## **9-1008**

### **Applications**

1. Any person submitting a site plan or applying for a building, electrical or sign permit to install outdoor lighting fixtures shall as a part of said application submit evidence that the proposed work will comply with this Article.
2. The lighting plan application shall include at least the following:
  - a. A site plan drawn to scale showing building(s), landscaping, parking areas and proposed exterior lighting fixtures;
  - b. Location of all post, canopy, supports and light fixtures, including the height of each fixture, for any building, structure, parking, display and loading areas;
  - c. Specifications of the illuminating devices, lamps, supports, and other Devices, including designation as Illuminating Engineering Society of North America (IESNA) "cut-off" fixtures. This description may include but is not limited to manufacturers catalog cuts, and drawings including sections where required;
  - d. Plan shall show locations of all pole mounted and building mounted fixtures and a numerical 25 foot by 25 foot grid of lighting levels, in footcandles, that the fixtures will produce on the ground (photometric report). The photometric report will indicate the minimum and maximum footcandle levels within the lighted area of the site. The minimum (lowest number) is usually at the outer edges of the illuminated area or between two fixtures. The average light level is determined by adding the footcandle value of all the points in the grid and dividing by the total number of points.

This information is available from the manufacturer of the specified fixture. (Refer to Figure 6 for an example of this report style)

**Figure 6**  
**Computer Generated Light Level Grid Example for**  
**Parking Lot Lighting Plans**



Computer generated light level grid, with readings  
in tenths of footcandles.

3. The above required plans and descriptions shall be sufficiently complete to enable the Zoning Administrator to readily determine whether compliance with the requirements of this Article will be secured. If such plans and descriptions cannot enable this ready determination, by reason of the nature or configuration of the devices, fixtures or lamps proposed, the applicant shall submit evidence of compliance by certified test reports as performed by a recognized testing lab.

**9-1009**

**Issuance of Permit for Lighting on Private Property**

Prior to issuance of a building, electrical or sign permit, the Zoning Administrator shall determine that the submitted plans and details for said permit are in conformance with this Article. The stamping of the plans and the signature of the director or his designated representative and the date of the signature shall indicate that the plans are in conformance.

**9-1010**

**Amendment to Permit for Lighting on Private Property**

Should the applicant desire to substitute outdoor light fixtures or lamps to be installed on private property after a permit has been issued, the applicant shall submit all changes to the Zoning Administrator for approval, with adequate information to assure compliance with this Article.

**9-1011**

**Appeals**

Except for street lighting within the right-of-way and for temporary exemptions as provided in Section 9-1007.1-5, any applicant's appeal of the Zoning Administrator's decision shall be made to the Board of Zoning Appeals, and the procedures of the Zoning Ordinance and shall apply.

**9-1012**

**Requests for Temporary Exemptions**

1. Request. Any person may submit a written request on a form prepared by the Zoning Administrator for a temporary exemption to the requirements of this Article.

The Request for Temporary Exemption shall contain the following information:

- a. Specific exemptions requested.
- b. Type and use of exterior light involved.
- c. Duration of time for requested exemption.
- d. Type of lamp and calculated lumens.
- e. Total wattage of lamp or lamps.
- f. Proposed location of exterior light.
- g. Previous temporary exemptions, if any.
- h. Physical size of exterior light and type of shielding provided.

In addition to the above data, the Zoning Administrator may request any additional information which would enable a reasonable evaluation of the Request for Temporary Exemption.

The fee for a temporary exemption shall be as required for a variance to the Zoning Ordinance.

2. Appeal. The Zoning Administrator, within five (5) days from the date of the properly completed Request for Temporary Exemption, shall approve or reject in writing the Request. If rejected, the individual making the Request shall have the right of appeal to the Board of Zoning Appeals.