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## ARTICLE 14

### PERFORMANCE STANDARDS

#### **PART 1 14-100 GENERAL PROVISIONS**

##### **14-101 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 Sect. 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. Any use which is a lawful nonconforming use, and which on the effective date of this Ordinance complies with the applicable performance standards of this Article, shall continue to so comply. If, at such time, the operations of such lawful nonconforming use violate the specified standards, such operations shall not be varied or changed in such a way as to increase the degree of such violation.
4. The fact that the operations of a lawful existing use violate the applicable performance standards of this Article shall not of itself make such use subject to the requirements of Article 15 relating to nonconformities.

##### **14-102 Performance Standards Not Applicable**

The performance standards presented in this Article shall not apply to Group 1 special permit uses regardless of the zoning district in which such uses may be located. Group 1, Extraction and Excavation Uses, shall be subject to compliance with the performance standards presented in Sect. 8-105.

##### **14-103 Administration of Certain Performance Standards**

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

#### **PART 2 14-200 AIR POLLUTION STANDARD**

Any activity, operation or device which causes or tends to cause the release of air contaminants into the atmosphere shall comply with the rules and regulations of the State and the Fairfax County Air Pollution Control Ordinance.

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**PART 3 14-300 FIRE AND EXPLOSION HAZARD STANDARD**

All operations, activities and uses shall be conducted so as to comply with the Fire Prevention Code (Chapter 62 of The Code).

**PART 4 14-400 RADIATION HAZARD STANDARD**

All operations, activities and uses shall comply with the regulations of the U.S. Atomic Energy Commission set out in Chapter 1 of Title 10 of the Code of Federal Regulations which apply to byproduct material, source material and special nuclear material, as those terms are defined in section 11e., z., and aa. of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2014(e), (z), and (aa)).

No activity, operation or use shall cause radiation emissions which are in violation of the Radiation Health and Safety Act of 1968 (PL 90-602), as amended, or the implementing regulations of the Virginia Department of Health established pursuant thereto.

**PART 5 14-500 ELECTROMAGNETIC RADIATION AND INTERFERENCE STANDARD**

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 14-600 LIQUID AND SOLID WASTES STANDARD**

Any activity, operation or device which causes or tends to cause the discharge or other release of liquid or solid waste into public sanitary sewers, storm drains or public waters shall comply with applicable laws, rules and regulations governing such discharge or release, including but not limited to the Federal Water Pollution Control Act; the Virginia Water Control Law; and the Fairfax County Code 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 14-700 NOISE STANDARDS**

No use, operation or activity shall cause or create noise in excess of the sound levels prescribed in Chapter 108 of The Code.

**PART 8 14-800 EARTHBOURN VIBRATION STANDARDS**

**14-801 Required Performance Level**

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

**14-802 Method of Measurement**

1. Measurements shall be made at or beyond the adjacent lot line, nearest R 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

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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 vibrations which are continuous, or vibrations in discrete impulses more frequent than sixty (60) per minute. Discrete impulses which do not exceed sixty (60) per minute shall be considered impact vibrations.

**14-803 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 I 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 I  
MAXIMUM PERMITTED STEADY STATE VIBRATION LEVELS**

<b>Location (at Lot Line)</b>	<b>Maximum peak particle velocity inches per second</b>
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 PM and 7 AM, all of the permissible vibration levels indicated above in Table I for R districts shall be reduced to one-half (1/2) the indicated values.

**14-804 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 II 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.

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**TABLE II  
MAXIMUM PERMITTED STEADY STATE VIBRATION LEVELS**

<b>Location (at Lot Line)</b>	<b>Maximum peak particle velocity inches per second</b>
In a residential district	0.02
At or beyond adjacent lot lines, except a residential district	0.10
2. Impact vibrations shall be permitted at twice the values stated above.	
3. Between the hours of 8 PM and 7 AM, all of the permissible vibration levels indicated above in Table II for R districts shall be reduced to one-half (½) 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.	

**TABLE III  
REQUIRED PERFORMANCE STANDARDS  
(GROUP I OR GROUP II)**

	<b>ZONING DISTRICT</b>				
	<b>All R Districts</b>	<b>C-1 through C-4</b>	<b>C-5 through C-8</b>	<b>I-I through I-4</b>	<b>I-5 and I-6</b>
VIBRATION	I	I	I	I	II

**Note:** Required performance standards for uses in P Districts shall equate to those standards for uses in the most similar R, C or I District, as determined by the Zoning Administrator.

**PART 9    14-900    OUTDOOR LIGHTING STANDARDS**

**14-901    Purpose and Intent**

The purpose and intent of this Part is to establish outdoor lighting standards that reduce the impacts of glare, light trespass and overlighting; promote safety and security; and encourage energy conservation.

**14-902    Applicability and General Provisions**

1. Except as provided in Sect. 905 below, the Part shall apply to the installation of new outdoor lighting fixtures or the replacement of existing outdoor fixtures. Replacement of a fixture shall mean a change of fixture type or change to the mounting height or location of the fixture. Routine lighting fixture maintenance, such as changing lamps or light bulbs, ballast, starter, photo control, housing, lenses and other similar components,

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shall not constitute replacement and shall be permitted provided such changes do not result in a higher lumen output.

Outdoor lighting fixtures lawfully existing prior to June 17, 2003, that do not conform to the provisions of this Part shall be deemed to be a lawful nonconforming use and may remain. A nonconforming lighting fixture that is changed to or replaced by a conforming lighting fixture shall no longer be deemed nonconforming, and thereafter such lighting fixture shall be in accordance with the provisions of this Part.

Notwithstanding the above, for existing service stations, service station/mini-marts, vehicle sale, rental and ancillary service establishments and outdoor recreation/sports facilities that do not comply with the applicable maintained lighting levels specified in Sections 903 and 904 below, replacement of or the addition of new lighting fixtures may be permitted in accordance with the following:

- A. There may be a replacement of or the addition of new lighting fixtures to an existing service station or service station/mini mart canopy, display area of a vehicle sale, rental and ancillary service establishment or lighted playing field/court of an outdoor recreation/sports facility, only when the lighting fixture meets the provisions of this Part and such replacement or addition will not increase the noncompliance with the applicable maintained lighting level requirements of Sections 903 and 904 below.
  - B. A new canopy, display area or lighted field/court may be added to an existing service station, service station/mini-mart, vehicle sale, rental and ancillary service establishment or outdoor recreation/sports facility, provided the lighting for such new canopy, display area or playing field/court is in conformance with all the requirements of this Part.
2. Except as provided in Sections 904 and 905 below, all outdoor lighting fixtures shall comply with the following:
- A. Full cut-off lighting fixtures shall be mounted horizontal to the ground and shall be used for all walkway, parking lot, canopy and building/wall mounted lighting, and all lighting fixtures located within those portions of open-sided parking structures that are above ground. For the purposes of this provision, an open-sided parking structure shall be a parking structure which contains exterior walls that are not fully enclosed between the floor and ceiling. (Reference Plates 1 and 5 of Illustration 5 in Appendix 2)
  - B. Except for internally illuminated signs, the use of lighting fixtures, which are enclosed in clear or translucent white, off-white or yellow casing, shall not be permitted on the roofs of buildings or on the sides of canopies.
  - C. Lighting used to illuminate flags, statues, signs or any other objects mounted on a pole, pedestal or platform, spotlighting or floodlighting used for architectural or landscape purposes, shall consist of full cut-off or directionally shielded lighting fixtures that are aimed and controlled so that the directed light shall be substantially confined to the object intended to be illuminated. Directional control shields shall be used where necessary to limit stray light. In addition, such lighting shall be shielded to protect motorists and pedestrians from glare. (Reference Plates 2 and 3 of Illustration 5 in Appendix 2)

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- D. Internally illuminated signs, except those which bear a state or federal registered trademark, shall have an opaque background and translucent text and symbols, or shall have a translucent background that is not white, off-white or yellow in color. In addition, internally illuminated signs must comply with the provisions of Article 12.

All illuminated signage located on the sides of a canopy shall be internally illuminated or backlit.

- E. In addition to the above and Sect. 10-104, on lots which abut property that is residentially zoned and developed, vacant or homeowner's association open space, all outdoor lighting, to include light poles located on top of any parking deck or structure, shall be:

- (1) Mounted at a height which is measured from grade to the bottom of the lighting fixture, including the height of the parking deck or structure when located on top of a parking deck or parking structure, and is equal to or less than the value  $3 + (D/3)$ , where D is equal to the horizontal distance in feet from the light source to the nearest residential lot line extended vertically; or
- (2) Equipped with supplemental opaque shielding on the residential property side of the lighting fixture to reduce glare caused by direct light source exposure.

(Reference Plate 4 of Illustration 5 in Appendix 2)

- F. On all nonresidentially developed lots which contain a minimum of four (4) parking lot light poles, parking lot lighting levels for ground surface parking lots and the top levels of parking decks or parking structures shall be reduced by a least fifty (50) percent of full operational levels within thirty (30) minutes after the close of business. This reduced lighting level shall be achieved by extinguishing at least fifty (50) percent of the total number of pole mounted lamps, by dimming lighting levels to no more than fifty (50) percent of the levels used during business or activity hours, or by some combination thereof; provided, however, that this provision shall not require parking lot lighting levels to be reduced to less than 0.2 footcandles as measured horizontally at the surface on which the light pole is mounted.

- G. Lighting used for construction sites shall consist of the following:

- (1) All construction site lighting, with the exception of lighting that is used to illuminate the interiors of buildings under construction which is provided for in the following paragraph, shall use full cut-off or directionally shielded fixtures that are aimed and controlled so the directed light shall be substantially confined to the object intended to be illuminated. Directional control shields shall be used where necessary to limit stray light.



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- (2) Frosted light bulbs shall be used to light the ten (10) foot outermost perimeter area of the interiors of the buildings under construction which contain five (5) or more stories.

For the purposes of this provision, a building is no longer considered under construction once exterior walls and windows are installed and permanent lighting replaces temporary lighting as the primary source of light for the building.

- H. All outdoor lighting fixtures shall be aimed, located and maintained so as not to produce disability glare. (Reference Plate 5 of Illustration 5 in Appendix 2)
3. High intensity light beams in the form of outdoor search lights, lasers or strobe lights shall not be permitted.

### **14-903 Lighting Standards for Certain Commercial Uses**

In addition to Sect. 902 above, outdoor lighting fixtures associated with service stations, service station/mini-marts and vehicle sale, rental and ancillary service establishments shall be subject to the following:

1. Service station and service station/mini-mart canopy lighting shall not exceed a maintained lighting level of thirty (30) footcandles under the canopy as measured horizontally at grade. However, a higher or lower maintained lighting level, not to exceed fifty (50) footcandles, may be specified by the Board in conjunction with the approval of a special exception, development plan or proffered rezoning. All underside canopy lighting shall consist of full cut-off lighting fixtures.
2. Outdoor display area lighting used in conjunction with a vehicle sale, rental and ancillary service establishment shall not exceed a maintained lighting level of thirty (30) footcandles as measured horizontally at grade. However, a higher or lower maintained lighting level, not to exceed fifty (50) footcandles, may be specifically approved by the Board in conjunction with the approval of a special exception, development plan or proffered rezoning. For the purposes of this Part, outdoor display areas shall include all display/storage areas for vehicles offered for sale or rent and the associated travel lanes.
3. A photometric plan shall be required for these uses in accordance with one of the following:
  - A. As part of the submission of a Category 5 or 6 special exception, development plan or rezoning application for a service station, service station/mini-mart, or vehicle sale, rental and ancillary service establishment. A photometric plan shall be subject to approval by the Board in conjunction with a special exception, development plan or proffered rezoning and a photometric plan approved by the Board shall be submitted as part of a site plan submission for such use. Upon written request with justification, the Zoning Administrator may modify a submission requirement of Par. 4 below for a special exception, development plan or rezoning application if it is determined that the requirement is not necessary for an adequate review of the photometric plan.

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- B. As part of a site plan submission or as a separate submission, when site plan approval is not required. Upon written request with justification, the Director may modify a submission requirement of Par. 4 below if it is determined that the requirement is not necessary for an adequate review of the photometric plan. Such photometric plan shall be subject to review and approval by the Director.
- 4. A photometric plan shall be prepared by a lighting professional that is certified by the National Council on Qualifications for the Lighting Professions (NCQLP), or a State licensed professional engineer, architect, landscape architect or land surveyor and shall contain the following information:
    - A. Location and limits of the canopy or outdoor display area at a scale of not less than 1 inch equals fifty feet (1" = 50').
    - B. Location and height of all canopy lighting for service stations and service station/mini-marts and all pole, building or ground mounted lighting fixtures for an outdoor display area at a vehicle sale, rental and ancillary service establishments.
    - C. A photometric diagram showing predicted maintained lighting levels produced by the proposed lighting fixture facilities.
  - 5. When site plan approval is not required and the plan is submitted as a separate submission, five (5) copies of a photometric plan shall be submitted to the Director for review and approval and shall be subject to a fee as provided for in Article 17.

### **14-904 Outdoor Recreation/Sports Facility Lighting Requirements**

When an outdoor recreation/sports facility has illuminated playing fields/courts that, individually or cumulatively, exceed 10,000 square feet in area, and/or associated light poles that exceed 20 feet in height, the playing fields/courts shall be subject to the provisions of this Section. Other components of such facilities, to include, but not limited to, parking lots, administrative offices, restrooms, ticket sales, concession stands and bleachers or other spectator viewing areas, shall not be subject to this Section, but shall be subject to the provisions of Sect. 902 above. An outdoor recreation/sports facility that has illuminated playing fields/courts, either individually or cumulatively, that are 10,000 square feet or less in area and/or contain associated light poles 20 feet or less in height, shall not be subject to this Section. For the purposes of this Section, the perimeter area defined in Par. 2B below shall be included in the area of the playing field/court.

- 1. A sports illumination plan shall be required in accordance with one of the following:
  - A. As part of the submission of a Group 4, 5 or 6 special permit, Category 3 or 5 special exception, development plan or rezoning application for outdoor recreation/sports facilities. A sports illumination plan shall be subject to approval by either the BZA in conjunction with a special permit or the Board in conjunction with a special exception, development plan or proffered rezoning and a sports illumination plan approved by the BZA or Board shall be submitted as

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part of a site plan submission for such use. Upon a written request with justification, the Zoning Administrator may modify a submission requirement of Par. 2 below for a special permit, special exception, development plan or rezoning application if it is determined that the requirement is not necessary for an adequate review of the sports illumination plan.

- B. For an outdoor recreation/sports facility that is permitted by right in the zoning district in which located, as part of the site plan submission or as a separate submission, when site plan approval is not required. Upon a written request with justification, the Director may modify a submission requirement of Par. 2 below if it is determined that the requirement is not necessary for an adequate review of the sports illumination plan. Such sports illumination plan shall be subject to review and approval by the Director.
2. A sports illumination plan shall be prepared by a lighting professional that is certified by the National Council on Qualifications for the Lighting Professions (NCQLP) or a State licensed professional engineer, architect, landscape architect or land surveyor and shall contain the following information:
- A. The boundaries, dimensions and total land area of the outdoor recreation/sports facility property at a designated scale of not less than one inch equals fifty feet (1" = 50'). For proposed uses on large tracts of land where the lighted playing field/court occupies a small portion of the site, the boundaries, dimensions and total land area of just the lighted playing field/court with perimeter areas, as required by Par. 2B below, shall be provided, at a designated scale of not less than one inch equals fifty feet (1" = 50'), with a graphic that depicts the location of the fields/courts in relation to the perimeter lot lines of the entire property.
  - B. Location and limits of playing fields/courts, to include a perimeter area. For baseball/softball fields, the perimeter area shall extend thirty (30) feet in a direction perpendicular to the foul lines and away from the field. The perimeter area for rectangular playing fields, such as soccer, football, lacrosse and field hockey, shall extend twenty (20) feet from the side lines and thirty (30) feet from the end lines. The perimeter area for all other playing fields/courts shall extend ten (10) feet beyond the playing field/court boundary.
  - C. Location, height and illustration of each style of all pole, building, and ground mounted lighting fixtures for the playing field/court.
  - D. A photometric diagram showing predicted maintained lighting levels for the proposed playing field/court and associated perimeter area lighting.
3. The lighting for playing field/courts and associated perimeter areas shall comply with the maximum footcandle levels indicated for the specific uses listed in Table IV below, unless a lesser limit is specifically approved by the BZA in conjunction with the approval of a special permit, or by the board in conjunction with the approval of a special exception, development plan or proffered rezoning. Footcandle measurements shall be measured horizontally three (3) feet above grade level and shall represent maintained lighting levels. The Zoning Administrator shall determine maximum

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permitted lighting levels for outdoor recreation/sports facilities which are not listed in Table IV.

4. All playing field/court lighting fixtures shall use full cut-off or directionally shielded lighting fixtures, aimed toward the playing field/court and shielded in directions away from the playing field/court so as to minimize glare and light trespass onto adjacent properties.
5. The use of outdoor playing field/court lighting shall not be permitted between the hours of 11:00 PM and 7:00 AM, unless other hours are specifically approved by the BZA in conjunction with the approval of a special permit, or by the Board in conjunction with the approval of a special exception development plan or proffered rezoning.
6. When site plan approval is not required and the plan is submitted as a separate submission, five (5) copies of the plan shall be submitted to the Director for review and approval and shall be subject to a fee as provided for in Article 17.

**TABLE IV  
MAXIMUM PERMITTED LEVELS OF ILLUMINATION  
FOR OUTDOOR RECREATION/SPORTS FACILITY PLAYING  
FIELD/COURT**

<b>Recreation/Sport Facility Use</b>	<b>Specific Lighted Area</b>	<b>Footcandles*</b>
Archery Ranges		10
Baseball/Softball	Infield	60
	Outfield	40
Baseball (Professional)	Infield	150
	Outfield	100
Baseball Hitting Ranges		50
Basketball, Volleyball		30
Field Hockey, Football, Soccer, Lacrosse, Track & Field		50
Go-Cart Tracks		30
Golf Courses Fairways	Tee Boxes, Greens	5
		3
Golf Driving Ranges	Tee Boxes	20
	Fairways	3

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	Greens	5
Golf (Miniature)		20
Horse Riding Rings/Show Areas		30
Ice Skating, Ice Hockey, Roller Skating Rinks		50
Swimming Pools	Pool Surface	10
	Pool Deck	30
Tennis Courts (College/High School)		60
Tennis Courts (Recreational)		40
*Maintained Lighting Level		

### **14-905 Exemptions**

The following shall be exempt from the provisions of this Part, provided that such fixtures, except for those set forth in Paragraphs 1 and 2 below, do not cause disability glare:

1. Lighting fixtures and standards required by the Federal Communications Commission, Federal Aviation Administration, Federal and State Occupational Safety and Health Administrations, or other federal, state or county agencies, to include street lights within the public right-of-way.
2. Outdoor lighting fixtures required by law enforcement, fire and rescue, the Virginia Department of Transportation or other emergency response agencies to perform emergency or construction repair work, or to perform nighttime road construction on major thoroughfares.
3. Holiday lighting fixtures.
4. Neon lighting used to outline a structure.
5. Motion activated light fixtures located as follows:
  - A. On lots developed with single family dwellings when such lighting fixtures emit initial lighting levels of 6000 lumens or less, are extinguished within five (5) minutes upon cessation of motion and are aimed such that the lamp or light bulb portion of the lighting fixture is not visible at five (5) feet above the property boundary; or
  - B. On all other lots when such lighting fixtures are aimed such that the lamp or light bulb portion of the lighting fixture is not directly visible at five (5) feet above the property boundary.

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6. On lots developed with single family dwellings, outdoor lighting fixtures with initial light outputs of 2000 lumens or less shall not be subject to the provisions of Par. 2 of Sect. 902 above.