



May 4, 2017

TO: Peter Joseph, Town Manager

FROM: Donna Larson, Town Planner

**RE: Lighting standards for athletic fields
Noise standards**

RSU 5 submitted an application to the Planning Board to develop lighting standards for athletic fields. The Town currently has lighting standards in Section 521 of the Ordinance, but they are geared towards parking lots. Athletic field lighting is very different. The poles are much higher, the lights brighter and frequency of use is intermittent. Because this type of lighting is so specialized, the Planning Board hired lighting specialist Larry Bartlett to provide background information, develop standards and to answer technical questions.

The proposal allows athletic fields to be lighted in the V-1 District only as an accessory use to a public or private school. Because of the high level of lighting, it intentionally was set up to have limited applicability.

The Planning Board held three meetings and one site walk in developing these standards. At the first meeting, Larry Bartlett made a presentation on athletic field lighting. Much of the presentation was focused on the difference between LED lighting and metal halide lighting. After that presentation and with information submitted to the RSU it was clear that the only way the lighting could be contained and not spill over to adjacent properties was by using LED fixtures. The Board also learned that LED fixtures could be pre-set to offer different levels of lighting for different purposes. It was made clear that the initial cost of LED lights is 20-25% higher than metal halide, but that the maintenance costs are significantly lower, the light is more uniform and the lighting levels can be raised or lowered. Based on the information presented to the Board, LED lights are the only way that the standards can be met.

At the second meeting, the Board reviewed draft standards. Two major issues emerged. The first was whether the average limit of lighting should be 30 footcandles (fc) or 50 fc. The Board held a site walk one evening and visited Morse HS in Bath that has a maximum level of 33 fc and Yarmouth HS that has an average of 50 fc. This gave the Board a much better idea of what the levels of lighting look like. No athletic fields in Maine are lighted with LED lights. The compromise was that games could be played at 50 fc and all other times such as practices the lighting would be at 30 fc. Before and after the game would also be 30 fc. These variations were proposed to limit the high levels of lights for the surrounding neighborhoods.

The other issue is whether to allow "ball tracker lights". These are lights that shine up and out and are there to fill lighting gaps so that the ball doesn't "go dark" or "get lost". Freeport's lighting standards require that all lights be shielded so that the source of the light isn't visible and that lights don't allow light to go above 75 degrees nadir. In simple terms, that prohibits lights from shining directly upward. In talking with the manufacturing rep who is designing the system, ball trackers are only recommended for football. There is minimal information on ball trackers. There is the perception that ball trackers make playing safer, but no scientific information was offered to back that up. The proposed standards allow the ball tracker (or uplights) but only for football and only during games.

The new standards limit the level of lighting at the property line, and along pathways, sidewalk etc. They also require that the lighting be tested after installation and after 100 hours of use as the lights can shift with high winds.

The Planning Board held a public hearing on May 3, 2017. Every property owner in the V-1 District was contacted. Neighbors expressed concerns about the high level of lighting and the intrusion it would have on the quiet and dark enjoyment of their property. The RSU wanted fewer restrictions on the deciding what level of lighting to use. In the end, the Board unanimously agreed to the standards being proposed.

Approved motion

Be it ordered that the Freeport Planning Board recommends the Town Council adopts the proposed amendments to Sec. 407 – the Village 1 District and Sec. 521 Lighting with the changes discussed as the amendments will keep Freeport's economy "strong and stable by providing a diversity of goods and services that attracts visitors and sustains residents. The proposed amendments will allow a project to be built that makes the school system stronger and that draws visitors to the town. Limitations have been added to the proposal to minimize the impact on neighboring properties.

The Board also made a change to Section 515-Noise of the Zoning Ordinance. The proposed amendment prohibits amplification of any sounds for athletic events in the Village 1 District after 10PM. The amendment is based on a recommendation from the adjacent neighborhood. The Board unanimously approved the following motion.

Approved motion

Be it ordered that the Freeport Planning Board recommends the Town Council adopts the proposed amendments to Sec. 515, Noise as the amendment is consistent with the Comprehensive Plan by keeping village neighborhoods a desirable place to live. The amendment provides protection to an existing neighborhood while at the same time allowing facilities that enhance the school system.

Section 515. Noise Regulation

A. Noise is required to be muffled so as not to be objectionable due to intermittence, beat frequency or shrillness. The average dba count resulting from any activity shall not exceed at any point on or beyond the lot line the maximum levels as set forth in the following table:

District	Average dba (day-night)
1. Resource Protection I and II, Island, Rural Residential I & II	55 - 45
2. Medium Density Residential I & II	60 - 50
3. Medium Density	65 - 55
4. Village I and Village II	70 - 55
5. Village Commercial I, II and III, Commercial I, II and III, Marine Waterfront and Local Business	75 - 55
6. Industrial I, II	85 - 60

The average dba count for any activity shall be computed based on samples taken during hours of operation at intervals over a 24-hour period. Daytime hours extend from 6:00 a.m. to 8:00 p.m.

- B. During the peak activity of 60 minutes in a 24-hour period, a noise may not exceed these average dba counts by more than 15 dba in any zone.**
- C. If a lot abuts a district requiring a lower noise level, the maximum permitted level for that lot shall be reduced by 5 dba; however, the volume of sound shall not exceed 60 dba or whichever is lower at lot boundaries adjacent to residential districts.**

D. Athletic events in the Village 1 (V-1) District shall not use amplification for any reason after 10PM, except as allowed in Sec. 515. E below.

~~E.~~ For activities of a temporary nature unable to meet these requirements, a special permit must be obtained from the Codes Enforcement Officer. The noise standards shall not apply to the temporary use of such machinery as chain saws, lawn mowers and snowmobiles.

Be it ordered that the Freeport Planning Board recommends the Town Council adopts the proposed amendments to Sec. 515, Noise as the amendment is consistent with the Comprehensive Plan by keeping village neighborhoods a desirable place to live. The amendment provides protection to an existing neighborhood while at the same time allowing facilities that enhance the school system.

Lighting Standards for Athletic Facilities in the Village 1 District

- 1. Allow lighting as an accessory use to the use of "Public or Private Schools" in the Village 1 District. Make that use subject to the standards below (proposed Sec. 521B)**

Section 407. Village I - "V-I"

A. Purpose:

It is the Intent of this District to begin the transition from the Village Commercial Districts to the neighboring residential districts and to encourage a high density of residential development.

B. Permitted Uses:

- 1. Single Family Dwelling**
- 2. Two-Family Dwelling**

The following uses are subject to subdivision review

- 3. Subdivisions for one-family, two-family, or multiple family dwellings. Any such subdivision must be designed as a Village Open Space Subdivision.**
 - a. Buildings in existence prior to January 22, 2013 shall not be subject to the provisions of Section 407.D.2, 4 and 6 below provided the provisions of section 407.E.4 below are met {Amended, Effective 01/22/13}**

The following uses are subject to site review regardless of size:

- 4. Multi-Family Dwelling**
 - a. Buildings in existence prior to January 22, 2013 shall not be subject to the provisions of Section 407.C.5 below provided the provisions of section 407.E.4 below are met {Amended, Effective 01/22/13}**
- 5. Religious Institution**
- 6. Public or Private School**
 - a. Athletic field lighting subject to the standards of Sec.521B**

- 2. Add the following standards to Section 521 Proposed lighting standards for athletic fields in the Village 1 District. Existing Sec 521 becomes Sec. 521A Exterior Lighting**

Section 521A. Exterior Lighting

Section 521 B – Athletic Field Lighting in the Village 1 district

- A. No lights shall be placed in view of any public roadway or street so that its beams or rays are directed at any portion of the roadway when the light is of such brilliance and so positioned as to impair the vision of the driver of any motor vehicle upon said roadway**
- B. No rotating or flashing lights or signals, except safety signaling devices as required by law, are permitted.**
- C. Any lights that are directed upward are only allowed during regular season football games including playoffs; not during other sports, practices of any sports, other events or before or after games.**
- D. All athletic field lights shall be dimmed to the level of lighting allowed in Sec. 521.G.5.a of this section before any regular season games including playoffs and as soon as the game is over. Athletic field lighting shall be turned on no more than 30 minutes before a regularly scheduled game and turned off no later than 30 minutes after a game is over.**
- E. Any building, sidewalk, pathways or parking lot lighting that is illuminated solely for events at an athletic field shall be turned on no more than one hour before a game begins and shut off no more than one hour after a game is finished. Lighting on poles shall be no higher than 15 feet and all lights shall be fully shielded.**
- F. When site plan review is required, the applicant shall submit plans for all proposed exterior lighting, drawn at a scale of at least one inch equals eighty (80) feet. These plans shall include the location, type of lighting equipment, manufacturer's specification sheets and point-by-point calculated illuminance values noted on a thirty (30) foot grid (maximum).**
- G. The following design standards shall be followed by the Project Review Board to provide for the public health, safety and general welfare.**
- 1. The height of freestanding lighting poles shall be the minimum height that allows for the lighting standards of this Section 521 B to be met. In no case shall the height of freestanding lighting poles exceed eighty (80) feet.**
 - 2. All lights shall be aimed, and shall have shielding as necessary, to provide a beam cut-off such that the intensity of light emitted at any angle higher than 80 degrees above nadir does not exceed 50% of the maximum candlepower emitted from the light.**
 - 3. Freestanding lights shall be so located and protected as to avoid being easily damaged by vehicles.**
 - 4. Lighting fixtures shall be selected and installed to meet the standards of the Illuminating Engineering Society of North America (IESNA). The following lighting criteria shall not be exceeded:**
 - a. Athletic fields shall be lighted not to exceed the following illuminance performance standards:**

	<u>Average footcandles regular season games including playoffs</u>	<u>Average footcandles practice times, before and after games, special events</u>	<u>Max-to-min Uniformity at 50 fc</u>
<u>Football</u>	<u>50</u>	<u>30</u>	<u>2.0 to 1</u>
<u>Lacrosse</u>	<u>50</u>	<u>30</u>	<u>2.0 to 1</u>
<u>Soccer</u>	<u>50</u>	<u>30</u>	<u>2.0 to 1</u>
<u>Field Hockey</u>	<u>50</u>	<u>30</u>	<u>2.0 to 1</u>

- b. The maximum luminance level at grade along the property line shall be no more than 0.1 footcandles.
 - c. All lights shall be aimed, and shall have shielding as necessary, to prevent light of any intensity of more than 12,000 candela from being aimed at or beyond property lines.
 - d. If LED lights are used, the minimum allowable color shall be 75 CRI.
 - e. The light emitted higher than 90 degrees above nadir shall be limited to 10% of the total light emitted.
5. Following the completion of the installation of any athletic field lighting and after 100 hours of usage thereafter, luminance measurements shall be recorded by the applicant to demonstrate conformance with the lighting standards of this Section. Measurements shall be taken at three (3) feet above grade to confirm that the criteria listed above has been met. Where elements of non-conformance are found to exist, the applicant shall take all necessary actions to correct the deficiencies at the applicant's expense.

Draft motion:

Be it ordered that the Freeport Planning Board recommends the Town Council adopts the proposed amendments to Sec. 407 – the Village 1 District and Sec. 521 Lighting with the changes discussed as the amendments will keep Freeport's economy "strong and stable by providing a diversity of goods and services that attracts visitors and sustains residents. The proposed amendments will allow a project to be built that makes the school system stronger and that draws visitors to the town. Limitations have been added to the proposal to minimize the impact on neighboring properties.