

TRAVERSE CITY PLANNING COMMISSION REGULAR MEETING

TUESDAY, December 13, 2016

7:00 P.M.

**Training Room
Governmental Center, 2nd Floor
400 Boardman Avenue
Traverse City, Michigan 49684**

Posted: 12/9/16

AGENDA

The City of Traverse City does not discriminate on the basis of disability in the admission or access to or treatment or employment in, its programs or activities. Penny Hill, Assistant City Manager, 400 Boardman Avenue, Traverse City, Michigan 49684, 922-4440, T.D.D., 922-4766, has been designated to coordinate compliance with the non-discrimination requirements. If you are planning to attend and you have a disability requiring any special assistance at the meeting and/or if you have any concerns, please immediately notify the ADA Coordinator.

Planning Commission
c/o Russell Soyring, Planning Director
400 Boardman Avenue, Traverse City, MI 49684
231-922-4778

- 1. CALL MEETING TO ORDER**
- 2. ROLL CALL**
- 3. ANNOUNCEMENTS**
- 4. OUTDOOR LIGHTING REGULATION PRESENTATION BY DR. JERRY DOBEK, SCIENCE AND ASTRONOMY INSTRUCTOR, NMC (Discussion)**
- 5. NORTHWESTERN REGIONAL AIRPORT COMMISSION LETTER REQUESTING AN OUTDOOR LIGHTING AMENDMENT AND POSSIBLE REZONING OF THREE PROPERTIES ADJACENT TO THE AIRPORT PARCEL (Discussion)**
- 6. PUBLIC COMMENT**
- 7. ADJOURNMENT**

Glaring Issues with Streetlights

The American Medical Association speaks out on new LED lighting.

THE WORLD IS ABOUT TO undergo a revolution in street lighting. Already about 10% of U.S. cities and towns have replaced their conventional streetlights, primarily high-pressure sodium lamps, with LED streetlights. This is a good thing. LEDs, or *light-emitting diodes*, are highly energy efficient, last for many years, reduce operating and maintenance costs, and are programmable, so they can be dimmed in off-peak hours such as 1 to 5 a.m.

So why are medical practitioners concerned?

It's all in the color of the light. Manufacturers characterize the hue of LEDs by matching their light's apparent color with what an iron poker would look like if it were heated to a specific high temperature. First-generation LEDs, which are still being widely installed, had a color temperature of 4000 kelvin, or 6740°F. (It's only a correlation; LEDs are cool to the touch.)

The issue is that 4000K LEDs produce 29% of their glow in blue wavelengths, and our eyes perceive the combined effect as a harsh white color. Most readers are already familiar with astronomers' aversion to bluer light. But those of us in medicine are worried, too. Short-wavelength blue light scatters more within the human eye than longer, "redder" wavelengths. This means that high blue content can trigger intense *disability glare*, in which stray light reduces our eyes' ability to resolve spatial detail. Such glare can present a hazard for drivers, especially older ones, whose eyes are less able to cope with poorly directed light. If blue-rich light shines in bedrooms at night, a circumstance common in urban areas, it can suppress production of the sleep-related hormone melatonin, resulting in sleep disorders and other health issues.



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A number of major U.S. cities, among them Brooklyn, Seattle, and Cambridge, Mass., have met with vocal citizen protests after implementing 4000K LED streetlights. In Davis, California, after residents complained about such newly installed lights, city officials went so far as to replace all of them with 3000K LEDs.

The slightly "yellower" 3000K LEDs emit only 21% of their light in the blue part of the spectrum, yet still appear very white to the human eye. In general, citizens like them much better, and they are just as efficient and no more costly than 4000K LEDs. So everybody wins.

As an elected member of the American Medical Association's Council of Science and Public Health, I proposed — together with Dr. George Brainard (Thomas Jefferson University) and Dr. Richard Stevens (University of Connecticut Health Center) — a report to advise municipalities on optimal LED street lighting to minimize human and natural health effects. The AMA released this

report in June. (It is available for free, after creating a username and password, at <http://is.gd/LEDlighting>.) The report builds on our 2012 report on "Human and Environmental Health Effects" (pre-viewed in *S&T*: Sept. 2011, p. 86).

It is possible to design lighting that enhances visibility without creating possibly dangerous glare, interrupting human circadian rhythm, or potentially interfering with the lives of nocturnal animals, including birds that migrate at night. I urge manufacturers to test their products on human subjects and verify that the lighting indeed improves visibility. Much street lighting in place today would fail this simple test. ♦

Mario Motta, M.D., is a cardiologist at the North Shore Medical Center in Salem, Mass., and an assistant clinical professor at the Tufts University School of Medicine. He is also an advanced amateur astronomer with a 32-inch reflector in his home observatory (S&T: May 2011, p. 32).

Search



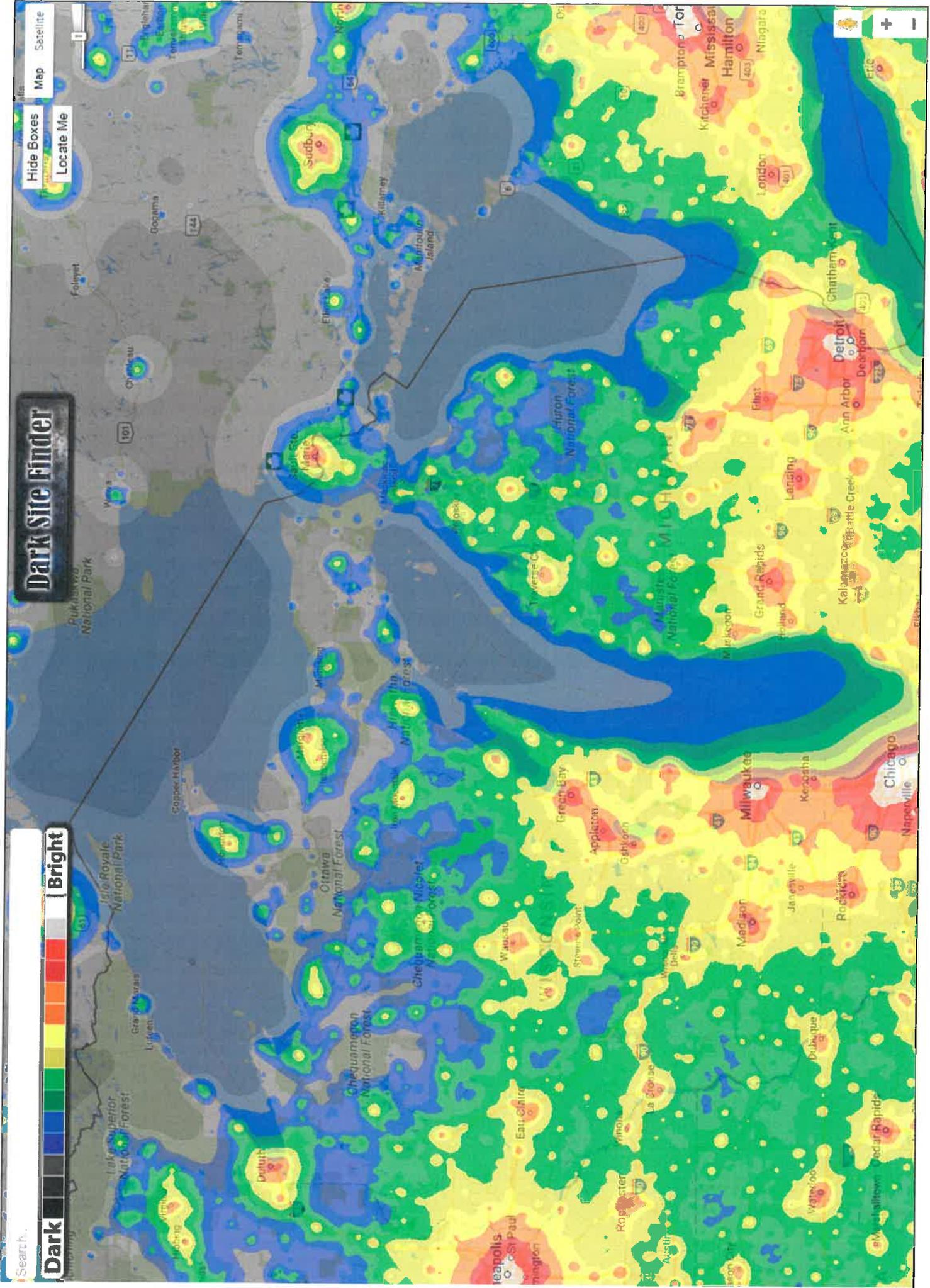
Dark Site Finder

Hide Boxes

Locate Me

Map

Satellite



GUIDELINES FOR GOOD EXTERIOR LIGHTING PLANS

Prepared by: The Dark Sky Society (<http://www.darksksociety.org/>) 2009

These guidelines have been developed in consultation with lighting professionals (with experience in developing good lighting plans) to aid communities wishing to control light pollution and preserve the night sky.

Outdoor lighting should be carefully designed with regard to placement, intensity, timing, duration, and color. Good lighting will:

- **Promote Safety**

“More light” is not necessarily “better”. If not designed and installed correctly, unsafe glare can result, reducing the effect of lighting which can contribute to accidents and hinder visibility. Lighting that is too bright interferes with the eye's ability to adapt to darker areas.

- **Save Money**

Adhering to professionally recommended light levels provides adequate illumination. Shielded fixtures with efficient light bulbs are more cost-effective because they use less energy by directing the light toward the ground. See this website for cost comparisons:
<http://www.netacc.net/~poulsen/lightcost.html>

- **Conserve Natural Resources**

Inappropriate or excessive lighting wastes our limited natural resources and pollutes the air and water by unnecessarily burning our limited supply of fossil fuels.

- **Be Better Neighbors**

Excessive or misdirected lighting can intrude on the privacy of others when light or glare trespasses over property lines.

- **Retain Community's Character and Reduce Skyglow**

Our clear view of the dark starry night sky is a resource to be preserved and protected. Stray and excessive lighting contributes to "light pollution", clutter, and unnatural "sky glow".

- **Protect Ecology of Flora and Fauna**

Research studies indicate that artificial night lighting disrupts the migrating, feeding, and breeding habits of many wildlife species, as well as growth patterns of trees. See references in [The Ecological Consequences of Artificial Night Lighting](#).

- **Reduce Health Risks**

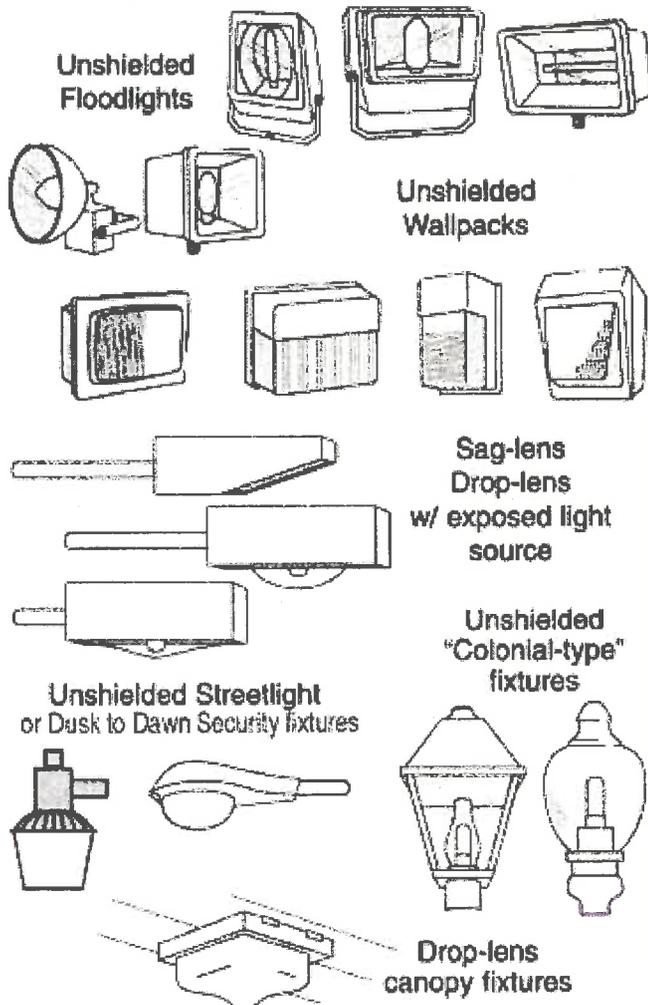
Light at night not only disrupts your sleep but also interferes with your circadian rhythms. Recent research indicates that intrusive lighting may reduce the production of melatonin, a beneficial hormone, and a resulting raise in the rates of breast and other cancers.

- Included:**
1. **Diagrams of Acceptable/Unacceptable Lighting Fixtures**
 2. **How to Develop an Acceptable Lighting Plan**
 3. **Definitions of Full Cut Off, Shielded, and RLM sign lighting Fixtures**
 4. **Lighting Plan Submissions**
 5. **Recommended Illumination Levels for various tasks**

UNSHIELDED FIXTURES

Unacceptable / Discouraged

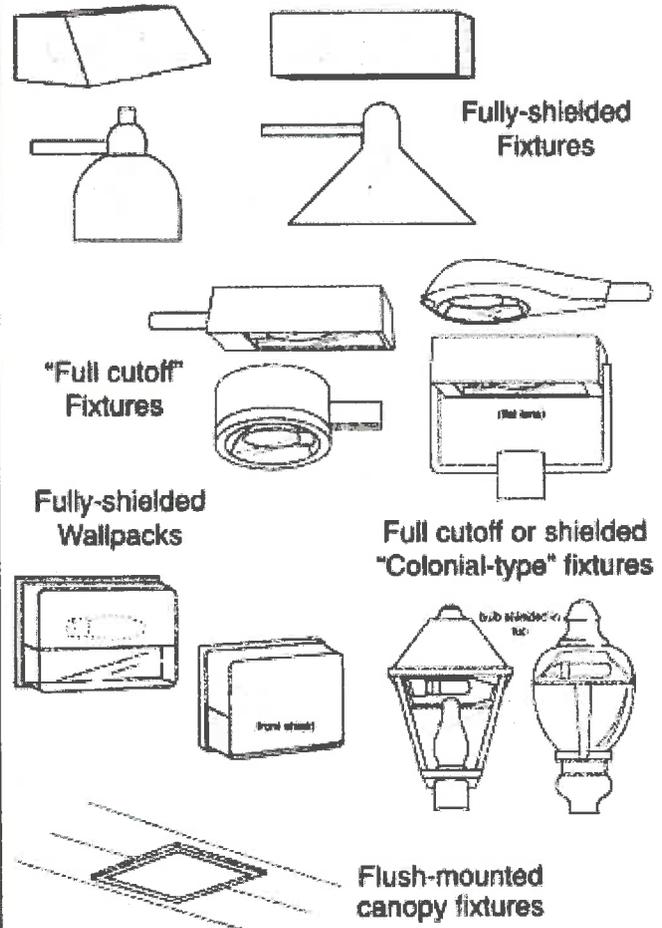
Fixtures that produce glare and light trespass



Full Cutoff and Fully Shielded Fixtures

Acceptable

Fixtures that shield the light source, to reduce glare and light trespass and to facilitate better vision at night.



Diagrams courtesy of Bob Crelin

*****Ask your local electrical suppliers for "full-cut off" or "fully shielded" light fixtures. Once you have selected fixtures which are compatible with your architecture and community, contact the manufacturer's representative to see a sample of the fixture(s) and to ask for a free lighting plan. If you have a CAD file, the plan can be easily provided in a short period of time. *****

Most lighting manufacturers have Application Departments which will execute free lighting plans to meet local lighting codes.

See this website for links to manufacturers:

<http://www.darksky.org/mc/page.do?sitePageId=56422&orgId=idsa>

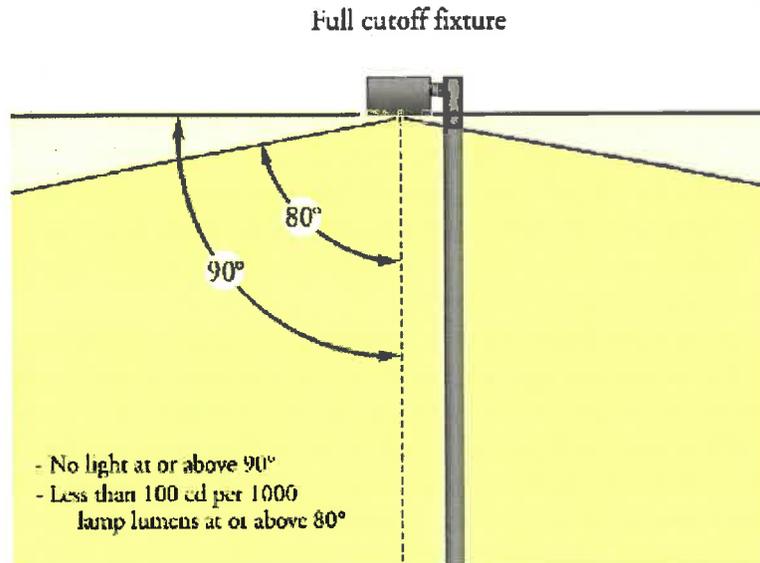
Sample of Web retailers:

www.starrynightlights.com and www.greenearthlighting.com

How to Develop an Acceptable Lighting Plan

- 1. Identify where as well as when lighting is needed. Confine and minimize lighting to the extent necessary to meet safety purposes.** Plans should define the areas for which illumination is planned. Itemizing each area (e.g. parking lot, doorways, walkways, signage, foliage) with the anticipated hours of use. Commercial outdoor lighting should be used for safe pedestrian passage and property identification, and lit during active business hours and shut off afterward.
- 2. Direct light downward by choosing the correct type of light fixtures.** (See Appendix 3). Specify IES (Illuminating Engineering Society) "Full Cut Off" designated or "fully shielded" fixtures, so that no light is emitted above the lowest light emitting part of the fixture. Top mounted sign lighting is recommended with "RLM" (dish) type shields, and aimed so that the light falls entirely on the sign and is positioned so that the light source (bulb) is not visible from any point off the property or into the roadway to reduce glare. For each one square foot of sign, usually no more than 200 lumens is necessary for good visibility.
- 3. Select the correct light source (bulb type).** Compact fluorescent (2300K) or High Pressure Sodium is recommended unless the light is motion sensor activated, in which case incandescent or the instant start compact fluorescent bulbs can be used. Metal Halide (due to its higher costs, energy use, impact on the environment, and greater contribution to "sky glow") is discouraged, as well as light sources rated over 3000 Kelvin; and outdated Mercury Vapor bulbs are prohibited.
- 4. Utilize "shut off" controls such as sensors, timers, motion detectors, etc.** Automatic controls turn off lights when not needed. All lights should be extinguished no later than one half hour after the close of business. Additional motion sensor activated lighting can be used for emergency access. Avoid "dusk-to-dawn" sensors without a middle of the night shut off control. Lights alone will not serve to "protect" property and are a poor "security" device. Examine other means of protecting property and to discourage criminal activity. Let your local police know that you have a "lights out" policy so that they can investigate if they see lights or activity after hours.
- 5. Limit the height of fixtures.** Locate fixtures no closer to the property line than four times the mounting height of the fixture, and not to exceed the height of adjacent structures. (Exceptions may be made for larger parking areas, commercial zones adjacent to highways, or for fixtures with greater cut off shielding behind the pole mount in commercial zones.)
- 6. Limit light crossing property lines, i.e. "light trespass".** Limit light to spill across the property lines. Light levels at the property line should not exceed 0.1 footcandles (fc) adjacent to business properties, and 0.05 fc at residential property boundaries. Utility leased floodlight fixtures mounted on public utility poles in the public right-of-way should not be used.
- 7. Use the correct amount of light.** Light levels and uniformity ratios should not exceed recommended values, per IESNA RP-33 or 20. (See Appendix 5, Recommended Illumination Levels for various tasks.) "Lumen cap" recommendations for areas to be illuminated are as follows: commercial properties in non-urban commercial zones = 25,000 lumens per acre; for projects in residential and LBO zones = 10,000 lumens per acre. For residential properties: for suburban: 50,000 lumens per acre cap, and in urban areas: 100,000.
- 8. Ask for Assistance** Your Planning Department and local lighting sales representatives can assist you in obtaining the necessary information for good lighting. For large projects over 15,000 lumens: greater energy conservation and control of light pollution, light trespass and glare, may be achieved with the help of a professional lighting designer with "dark sky" lighting plan experience.
- 9. A post installation inspection should be conducted to check for compliance.** Substitutions by electricians and contractors are common and should not be accepted. Final Approved Site Plans will not allow additional exterior fixtures or substitutes without reviews.
- 10. Design interior lighting so that it does not illuminate the outdoors.** Provide interior lighting photometrics for the building's perimeter areas, demonstrating that the interior lighting falls substantially within the building and not through the windows. After closing, interior lighting that extends outdoors needs to be extinguished by the use of shut off timers.

Definition of Acceptable Fixtures: "Full Cut Off", "Fully Shielded", and RLM shield.



- "Full Cut Off" fixtures are independently certified by the manufacturers, and do not allow light to be emitted above the fixture and the fixture reduces glare by limiting the light output to less than 10% at and below 10 degrees below the horizontal.
- If the manufacturer is unable to provide the "cut off" characteristics for a fixture (also called a "luminaire"), the following definition needs to be met, which can usually be determined by a visual inspection:

"Fully Shielded": a fixture constructed and installed in such a manner that all light emitted by it, either directly from the lamp (bulb) or a diffusing element, or indirectly by reflection or refraction from any part of the fixture, is projected below the horizontal. This can be determined by a "field test" or a visual assessment of an operating sample.

- Manufacturers and their representatives can provide photographs of light fixtures as "cut sheets" as well as literature confirming the independently tested "cut off" characteristics of their products. These IES files may be assessed for compliance in a computer program: <http://www.3dop.com/index1.html>
- Photometric layouts for different heights, light sources, and wattages, are also available as "IES" files, upon request or through manufacturers' websites.
- Fixtures must be installed properly, so that the bottom of the fixture is level with the ground. Exceptions are often given for sign lighting which requires vertical lighting:



"RLM" sign lighting shield:

Lighting Plan Submissions

The following information needs to be provided to your municipality's review board which will enable them to evaluate the Site Plan for proper exterior lighting:

The Lighting Plan should be depicted on a site plan, indicating the location of each current and proposed outdoor lighting fixture with projected hours of use. This plan will need to be stamped and certified by a licensed professional, such as an architect or engineer. Many lighting manufacturers can provide free photometric layouts on prepared site plans, to conform to your local requirements.

- (1) The lighting plan should include a KEY to the proposed lighting that provides the following information:
 - Type and number of luminaire equipment (fixtures), including the "cut off characteristics", indicating manufacturer and model number(s).
 - Lamp source type (bulb type, i.e. high pressure sodium), lumen output, and wattage.
 - Mounting height with distance noted to the nearest property line for each luminaire.
 - Types of timing devices used to control the hours set for illumination, as well as the proposed hours when each fixture will be operated.
 - Total Lumens for each fixture, and total square footage of areas to be illuminated. For projects that are in commercial zones, the lumens per net acre to be lit, need not exceed 25,000 lumens. For projects in residential or LBO zones: 10,000 lumens.
 - For all plans of more than three fixtures: A Calculation Summary indicating footcandle levels on the lighting plan, noting the maximum, average and minimum, as well as the uniformity ratio of maximum to minimum, and average to minimum levels*.
- (2) Lighting manufacturer-supplied specifications ("cut sheets") that include photographs of the fixtures, indicating the certified "cut off characteristics" of the fixture.
- (3) Footcandle Distribution, plotting the light levels in footcandles on the ground, at the designated mounting heights for the proposed fixtures. Maximum illuminance levels should be expressed in footcandle measurements on a grid of the site showing footcandle readings in every five or ten-foot square. The grid shall include light contributions from all sources (i.e. pole mounted, wall mounted, sign, and street lights.) Show footcandle renderings five feet beyond the property lines.*
- (4) If requested by the reviewing agency, a statement from a lighting professional that a plan, other than that set forth, is needed to meet the intent of these standards.
- (5) An environmental impact statement may be required as to the impact of the exterior lighting proposed on flora, fauna, and the night sky. Location of species sensitive to light at night or the proximity to nature preserves or astronomical observatories or "Dark Sky Parks", needs to be indicated.
- (6) On the Approved Plan it should be noted that no substitutions, additions, or changes may be made without prior approval by the governing authority.

* This information can be obtained from the manufacturer, your lighting supplier, or the manufacturer's representative.

Recommended Illumination Levels for various tasks*

I. Table of Limits of Illumination, measured in footcandles (fc) at ground level unless noted:

<u>Task Area</u>	<u>Avg.</u>	<u>Not to exceed:</u>
1. Active Building Entrance	2.0 fc	5 fc
Approach	0.2 fc	
2. Gas Station Approach		2 fc
3. Gas Station Pump Area		avg: 5 fc
4. Gas Station Service Area		avg: 3 fc
5. Sidewalks	0.2 fc	5 fc
6. Surface of signs		2 fc

II. Average/Minimum/Uniformity Ratio Limits for Parking Lots:

I. Public Parking Lots -- not to exceed:

<u>Average</u>	<u>Minimum</u>	<u>Uniformity Ratio (Max to Min/Avg to Min)</u>
0.8	0.2	20:1 / 4:1

II. Private Parking Lots -- not to exceed:

<u>Average</u>	<u>Minimum</u>	<u>Uniformity Ratio (Max to Min / Avg to Min)</u>
0.5	0.13	20:1 / 4:1

OR:

III. If illuminance grid lighting plans cannot be reviewed or if fixtures do not provide photometrics and bulbs are under 2000 lumens, use these guidelines:

1. Pole shall be no greater in height than four times the distance to the property line.
2. Maximum Lumen Levels for different fixture heights:

<u>Mounting Height (Feet)</u>	<u>Recommended Lumen Maximums</u>
6	500 - 1000 lumens
8	600 - 1,600 lumens
10	1,000 - 2,000 lumens
12	1,600 - 2,400 lumens

FOOTCANDLE: ("FC") – Is the basic unit of illuminance (the amount of light falling on a surface). Footcandle measurement is taken with a hand held light meter. One footcandle is equivalent to the illuminance produced on one square foot of surface area by a source of one candle at a distance of one foot. Horizontal footcandles measure the illumination striking a horizontal plane. Footcandle values can be measured directly with certain handheld incident light meters.

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 75-watt incandescent lamp can produce 1000 lumens while a 70-watt high-pressure sodium lamp produces 6000 lumens. Lumen output is listed by the manufacturer on the packaging.

*** IES, Recommended Practices, (RP-33-99): Lighting for Exterior Environments; and (RP-20):**

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

<http://www.iesna.org/shop/item-detail.cfm?ID=RP-33-99&storeid=1>

<http://www.iesna.org/shop/item-detail.cfm?ID=RP-20-98&storeid=1>

- A. Such enclosures shall be finished with the same materials and colors as the exterior finish of the principal structure or shall be concrete block or similar material.
- B. The enclosure shall be four-sided and constructed with an opaque gate constructed of wood or similar material, but not including chain link gates with plastic or vinyl type slats.
- C. Walls of the enclosure shall be a minimum of 6 feet in height.
- D. Interiors and exteriors of enclosures shall be kept clean and free of debris and clutter.

SECTION 517 LIGHTING

Purpose: These provisions are intended to control the use of outdoor, artificial illuminating devices emitting rays into the night sky that have a detrimental effect on the rural atmosphere and astronomical observations and that create glare. It is the intention of this section to:

- Encourage good lighting practices such that lighting systems are designed to conserve energy and money;
- Minimize glare;
- Protect the use and enjoyment of surrounding property; and
- Increase nighttime safety, utility, security, and productivity.

A. Applicability

(1) Generally

- (a) All outdoor, artificial illuminating devices shall be installed in conformance with the provisions of this section.
- (b) This section does not prevent the use of any material or method of installation not specifically addressed. In considering any deviation from the provisions of this section, the Zoning Administrator shall take into consideration any state-of-the-art technology that is consistent with the intent of this section as new lighting technology develops that is useful in reducing light above the horizontal plane.

(2) Exceptions

The following types of light fixtures shall be exempt from the provisions of this section:

- (a) Low-intensity residential decorative lighting: Residential decorative lighting including porch lights, low level lawn lights, seasonal light such as for Christmas decorating provided that if any such light is directed toward adjacent residential buildings or nearby land, or creates glare perceptible to persons operating motor vehicles on public ways, the luminaire shall be redirected or its light output controlled as necessary to eliminate such conditions.
- (b) Public street luminaires: Luminaires used for public street illumination may be installed up to the edge of any bordering property.
- (c) Emergency lighting: All temporary emergency lighting needed by the police, the fire departments, or other emergency services, as well as all vehicular luminaires, shall be exempt from the requirements of this section.
- (d) Nonconforming fixtures: All outdoor light fixtures legally installed prior to the adoption of this ordinance may remain unchanged, except that any replacement of the subject light fixtures shall be done in compliance with this article.
- (e) Neon lighting
- (f) Flag lighting: Luminaires used for the illumination of the flag of the United States of America shall be exempt from the requirements of this section.

B. Shielding and Filtration

- (1) All nonexempt outdoor lighting fixtures shall be hooded and/or louvered to provide a glare free area beyond the property line and beyond any public right-of-way line. Direct or directly reflected light shall be confined to the lot from which it originates. Lighting plans shall be designed so as to avoid the reflection of artificial lighting from rooftops.
- (2) All lighting fixtures shall have one hundred percent (100%) full cut-off and shall not emit any direct light above a horizontal plane through the lowest direct light emitting part of the luminaire, as may be certified by a photometric test. The intensity of light at any angle above a cutoff of seventy five (75) degrees shall be less than ten percent (10%) of the peak candela for the luminaire.
- (3) Light source locations shall be chosen to minimize the hazards of glare.
- (4) All poles or standards used to support outdoor lighting fixtures shall be anodized or otherwise coated to minimize glare from the light source.

C. Illumination

(1) Generally

Illumination levels within a site shall ensure that a site is adequately, but not excessively, lit at night. Where feasible, average lighting values of illuminated areas ranging from 0.5 to 1.5 foot candle are recommended. In order to ensure visibility, safety, and security, without unnecessarily contributing to light pollution and limiting enjoyment of the night sky, the following illumination standards shall apply.

(2) Illumination Levels

- (a) Average Illumination Levels. Average illumination levels of the illuminated area shall not exceed the levels set forth in Table 5-7 for any use permitted by this section.

Table 5-7
Average Illumination Standards

Area/Activity	Foot Candles
Main Parking Area	3.0
Peripheral Parking Area	2.0
Main Drive Areas	5.0
Directly below lighting fixture	20.0

- (b) Illumination at Property Line. Illumination levels at the property line shall not exceed the levels set forth in Table 5-8 for any use permitted by this section. The maximum illumination shall be measured at grade at the property line of the site.

Table 5-8
Illumination Standards at Property Line

Area/Activity	Foot Candles
Residential Zoning Districts	
Adjoining residential zoning district	0.2

Adjoining nonresidential zoning district	1.0
Nonresidential Zoning Districts	
Adjoining another nonresidential zoning district along an arterial	2.0
Adjoining another nonresidential zoning district along collector street	1.2
Adjoining another nonresidential zoning district along local street	1.0
Adjoining another nonresidential zoning district along property line	1.0
Adjoining residential zoning district along arterial	1.0
Adjoining residential zoning district along collector street	0.6
Adjoining residential zoning district along local street	0.4
Adjoining residential zoning district along property line	0.2
Outdoor Events	
Adjoining or within 1,000 feet of residential zoning district	10

(c) Exceptions to Average Illumination Levels. Automobile dealerships may be permitted a maximum average illumination level of ten (10) foot candles for paved display areas only. Gas stations may be permitted a maximum illumination level of ten (10) foot candles under a pump island canopy only, provided that all light fixtures under such canopy shall be fully recessed into the canopy structure or otherwise fully shielded.

D. Color Temperature

Color temperature is measured in Kelvin (K) temperature. In order to minimize negative impacts on circadian rhythms, melatonin production in humans and other animals, and astronomical observation, all proposed lamps shall emit light measuring 3,500 K or warmer (between 0 K and 3,500 K) on the Kelvin scale.

E. Prohibitions

(1) Mercury-Vapor Fixtures and Lamps

The installation of any mercury-vapor fixture or lamp for use as outdoor lighting is prohibited.

(2) Metal Halide Fixtures and Lamps

The installation of any metal-halide fixture or lamp for use as outdoor lighting is prohibited except as follows:

- (a) For outdoor recreation area and amusement area lighting, provided such are mounted at a sufficient height and are properly equipped with baffling and glare guards to meet the requirements of this section; and
- (b) For automobile and similar outdoor sales areas where a high level of color rendition is essential to the activity being conducted.

(3) Laser Source Light

The use of laser source light or any similar high-intensity light is prohibited.

(4) Searchlights

The operation of searchlights is prohibited.

(5) Certain Other Fixtures and Lamps

The installation of any outdoor lighting fixture or lamp is prohibited unless it complies with the shielding and illumination standards (§ 517.B. Shielding and Filtration and § 517.C. Illumination) of this article.

(6) Recreational Facilities

No outdoor recreational facility, public or private, shall be illuminated after 11:00 PM, unless otherwise permitted pursuant to a special use permit, except to conclude specific recreational or sporting events or any other activity conducted at a ball park, outdoor amphitheater, arena, or similar facility in progress prior to 11:00 PM.

(7) Outdoor Building or Landscaping Illumination

The unshielded outdoor illumination of any building, landscaping, signing, or other purpose is prohibited, except with incandescent fixtures of one hundred and fifty (150) watts or less, or low-pressure sodium fixtures.

F. Pole Height

Unless otherwise permitted by special use permit, the maximum height of any pole-mounted lighting fixture or lamp shall not exceed the maximum permitted height of the zoning district in which the fixture or lamp is located.

SECTION 521 STREET DESIGN AND TRANSPORTATION

Purpose: These regulations are designed to:

- Ensure that the design of streets conforms to the recommendations of the master plan;
- Provide for the safety of both vehicular and pedestrian traffic;
- Provide for livable residential and commercial environments;
- Provide economy of land use, construction, and maintenance;
- Provide safe and efficient access to property;
- Increase connectivity; and
- Reduce total impervious surface and associated stormwater runoff.

A. Applicability

This section applies to any application for development approval required by this ordinance or any request to construct, connect, expand or extend a private street.

B. General Requirements

All private, and to the extent possible, public roads or streets in the Township shall comply with the standards of this section. No parcels or lots shall be created by land divisions, subdivisions or condominium subdivisions unless street access is provided for in accordance with this ordinance.

C. Location and Arrangement – Conformity to Master Plan

The proposed street configuration shall conform to the various elements of the master plan and shall be considered in relation to the existing and planned major thoroughfares and collector streets, and such street configuration shall be placed in the location and with the width indicated on such plan.

D. Street Names

Road or street names shall not duplicate any existing road or street name in the county, except where a new road or street is a continuation of an existing street. Road or street names that may be spelled



29.00

ARTICLE XXIX

EXTERIOR LIGHTING REGULATIONS

29.10 DECLARATION OF POLICY AND INTENT:

The Whitewater Township Board of Trustees finds and declares that the naturally lit night sky is an important aspect of our environment and a resource which contributes significantly to our quality of life by contributing to the public peace and to the health, safety and welfare of the residents of Whitewater Township and to its visitors, that to preserve and protect this resource it is necessary, essential, a public purpose and municipal affair for the Township to regulate the use of outdoor light fixtures to minimize light pollution which has a detrimental effect on the environment, astronomical research, amateur astronomy, and general enjoyment of the night sky, and causes unnecessary and/or unwanted illumination of adjacent and even distant properties; that it is in the public interest to conserve electrical energy; and that is in the public interest to protect vehicular and pedestrian traffic from dangerous glare and light pollution in the night sky.

29.11 DEFINITIONS:

(1) Automatic Timing Device: a device which automatically turns on and off outdoor light fixtures or circuits. Photo-electric controls and motion detectors are not considered automatic timing devices for the purposes of this Article.

(2) Light Pollution: artificial light which causes a detrimental effect on the environment, astronomical observation, enjoyment of the naturally illuminated night sky or causes undesirable glare or unnecessary and/or unwanted illumination of adjacent or even distant properties.

(3) Outdoor Light Fixture: an illuminating device which is permanently installed outdoors, including, but not limited to, devices used to illuminate signs.

(4) Cut-off Shielding: a technique or method of construction which causes light emitted from an outdoor light fixture to be projected only below and imaginary horizontal plane passing through the fixture below the light source.

(5) Shielding: in general, a permanently installed, non-translucent shade, cowl, hood, baffle or other construction which limits, restricts or directs light or the visibility of a light source to meet the standards of this Article.

(6) Security Lighting: such lighting fixtures and/or practices intended to discourage intrusion on the premises by unwanted persons.

(7) Yard Lighting: such lighting fixtures and/or practices intended for the convenience, enjoyment and safety of a property owner or tenant or guest.

(8) Light Source: the bulb which creates the light.

(9) Motion Detector: a device triggered by motion and used to energize incandescent lights.

29.12 STANDARDS:**A. Commercial and Industrial Zones and Land Uses:**

All outdoor light fixtures and lighting practices shall conform with either standard No. 1 or No. 2 and with all of the remaining standards in this subsection:

(1) All outdoor light fixtures shall have full cut-off shielding such that no light is emitted above an imaginary horizontal plane passing through the fixture below the light source regardless of type or wattage, EXCEPT for gas lighting, glass tubes filled with Neon, Argon or Krypton, and small decorative fixtures such as porch lights.

(2) Baffles or shields shall be required as needed so that light sources are not visible beyond the property on which they are installed, so that direct light rays are not directed above a horizontal plane passing through the fixture, and also so that vehicular and pedestrian traffic are protected from unnecessary and dangerous glare and from the intense light of directly visible light sources.

(3) Exterior lighting should be designed and installed to conserve electrical energy by:

a. using fixtures with good optical control to distribute light in the most effective and efficient manner.

b. using the minimum amount of light to meet the lighting criteria for safety and visibility.

c. using low pressure sodium outdoor light fixtures where required and wherever else feasible.

d. energizing light fixtures only when necessary by means of automatic timing devices and through the use of motion detection devices on security lighting.

e. requiring that certain outdoor light fixtures be turned off between 11:00 p.m. and sunrise.

(4) Sodium light sources shall be used for street lighting, parking lot lighting, and for security lighting when such security lighting is not to be energized by motion detection devices. Where feasible, low-pressure sodium lighting is to be encouraged.

(5) All outdoor recreational facilities, including but not limited to tennis courts, baseball, football and softball fields, ski runs and trails, golf courses and driving ranges, shall be illuminated with fixtures equipped with full cut-off shielding as needed to direct and restrict light to the playing surface and playing air space as well as the immediate surrounding area and to eliminate glare in the night sky insofar as possible as well as unnecessarily reflected light in the immediate vicinity or on adjacent property.

(6) Floodlights shall be directed downward, shielded as necessary so that the light source is not visible from roads or adjacent property, and located and directed so that light is neither unnecessarily reflected onto adjacent property or into the night sky.

(7) In addition to fixture design and shielding, architectural and landscape design features may be incorporated into an outdoor lighting plan to meet the requirements and comply with the intent of this Article.

B. Residential and Recreational Zones and Land Uses:

All outdoor light fixtures and lighting practices shall conform with the following standards:

(1) All outdoor fixtures shall have full cut-off shielding such that no light is emitted above an imaginary horizontal plane passing through the fixture below the light source regardless of type or wattage, EXCEPT for gas lighting, glass tubes filled with Neon, Argon or Krypton, and small decorative fixtures such as porch lights.

29.13 REQUIREMENTS, LIMITATIONS AND PROHIBITIONS:

A. Commercial and Industrial Zones and Land Uses:

(1) Searchlights, lasers or other high-intensity light designed primarily to light the sky for advertising or entertainment purposes are prohibited as being contrary to the express intent of this Article.

(2) Off-premises advertising signs, if permitted, shall not be illuminated externally or internally unless expressly allowed as a condition of site plan approval.

(3) Advertising signs shall not be illuminated between one (1) hour after the close of business and one (1) hour before the opening of business on the following day except by special permission granted as a condition of site plan approval. All fixtures or circuits illuminating advertising signs shall be equipped with automatic timing device. If externally illuminated, all advertising, billboards, advertising kiosks and information boards shall be illuminated from the top downward with full cut-off shielding and such other shielding to direct the light on the sign or structure face only and shield the light source from view of vehicular and pedestrian traffic and adjacent property. If illuminated from the interior, signs, billboards, advertising kiosks and information boards, with the exception of theater marquee-type signs, shall have a dark background with lighter colored translucent (not transparent) lettering, logos and designs. Signs shall not incorporate any flashing or moving lights except as permitted under Article XXX, Sign Regulations.

(4) Quartz and mercury vapor lighting are prohibited because of the broad spectrum of visible light which these sources emit and because of the diffusive and reflective character of such light.

(5) All parking lots in Commercial and Industrial zones shall be illuminated only when in use during regular business hours and thereafter only until the public and employees have left the premises. Approved security lighting will be permitted.

(6) Entrance and traffic marker lights along access roads and drives, in parking lots and along pedestrian ways shall be sodium type and equipped with full cut-off shielding as well as shielding to keep the light source out of view of vehicular and pedestrian traffic.

(7) The use of non-conforming bulbs and fixtures in Commercial and Industrial zones shall not be permitted land use.

(8) Outdoor display areas including but not limited to automobile or equipment dealer display or storage lots may be illuminated during the hours the business is open to the public or until 11:00 p.m. Metal halide light sources may be used provided such fixtures are equipped with full cut-off shielding and project only the minimum amount of light necessary for good visibility.

(9) Lighting of building facades shall be from the top and directed downward with full cut-off shielding and additional shielding to keep the light source from the view of vehicular and pedestrian traffic and adjacent property.

(10) Security lighting shall be directed away from and/or shielded from road traffic and adjacent properties.

B. Residential and Recreational Zones and Land Uses:

(1) Residential security lighting shall be energized by motion detectors unless otherwise permitted as a condition of site plan or plot plan approval. Security lighting shall be directed away from and/or shielded from road traffic and adjacent properties.

(2) Residential yard lights shall be a sodium light source in a fixture with full cut-off shielding.

(3) Quartz and mercury vapor lighting are prohibited because of the broad spectrum of visible light which these sources emit and because of the diffusive and reflective character of such light.

29.14 APPROVED MATERIALS:

A. The provisions of this Article are not intended to prevent the use of any design, material or method of installation, even if not specifically prescribed by this Article, provided that such alternate has been approved by the Planning Commission and meets or exceeds the Illuminating Engineers Society (EIS) standards.

29.15 EXEMPTIONS:

The following uses and activities shall be exempt from these Exterior Lighting Regulations:

(1) Emergency equipment.

(2) Holiday decorations, provided that such decorative exterior lighting shall not include search lights, flood lights, stroboscopic lights, or lights which create glare or distractions potentially dangerous to vehicular or pedestrian traffic, or lights which create unnecessary and unwanted glare in the night sky.

(3) All outdoor light fixtures producing light directly by the combustion of fossil fuels, such as kerosene lanterns or gas lamps, are exempt from the requirements of this Article.

(4) Voluntary compliance with the intent of this Article at any facility exempt from this Article is encouraged.

29.16 RELIEF FROM EXTERIOR LIGHTING REGULATIONS:

Applications for relief from the regulations of this article may be made to the Whitewater Township Zoning Board of Appeals. Any ruling granting relief shall contain all conditions upon which said permit has been granted, including, but not limited to, the effective dates, times, locations and specifications of the lighting fixtures and plan permitted.

29.17 CONFLICTS:

Where any provision of the statutes, codes or laws of the United States of America or the State of Michigan or the County of Grand Traverse conflict with any of the provisions of this Article, the most restrictive shall apply unless otherwise required by law.

29.18 VIOLATION AND ENFORCEMENT:

(1) It shall be unlawful for any person to violate any of the provisions of this Article.

(2) Any person who shall violate any provision of this Article shall be subject to the penalties specified under Article XXI of this Ordinance.

(3) The Zoning Administrator or his agent is hereby empowered to enforce this Article.

(4) The Zoning Administrator or his agent shall notify each applicant for a Land Use Permit that compliance with the provisions and regulations of this Article is a condition of such Land User Permit.

29.19 SEVERABILITY:

If any provision, clause, sentence, sub-sentence, paragraph, section or part of this Article be adjudged by any court of competent jurisdiction to be invalid, such judgement shall not affect, impair or invalidate the remainder thereof, but shall be confined in its operation to the provision, clause, sentence, sub-sentence, paragraph, section or part thereof directly involved in the controversy in which said judgement shall have been rendered.



October 13, 2016

Mr. Russ Soyring
City Planner
City of Traverse City
400 Boardman Avenue
Traverse City, MI 49684

Dear Mr. Soyring:

The Northwestern Regional Airport Commission is requesting your follow up on the Planning Commission's approval of the site plan for the Costco development on South Airport Road. It is the Airport's request that staff place an amendment to Section 1348.09(d) on the next available Planning Commission agenda for consideration.

The proposed amendment as suggested at the meeting is as follows:

"Commercial and industrial outdoor lighting shall be designed so that the light intensity or brightness at any property line shall not exceed one (1) foot candle or cause glare onto neighboring properties except within driveways connecting to a street or private street."

Additionally, the Airport requests the Planning Commission to consider an amendment to the boundaries of the T District on the Zoning Map of the City to include all property currently owned by Grand Traverse and Leelanau Counties for operation of the Cherry Capital Airport. This amendment of the zoning map would be consistent with the recent amendments to the T District.

I have attached Exhibit A, which is a reflection of all of the property under the control of NRAC for operation of the Cherry Capital Airport. If you have any questions on which properties should be included within the T District that are not currently included in the T District or would like to discuss this, I would be happy to meet with you.

Ideally, we would like these two matters addressed at the same time. Please let me know if that is possible. Thank you for your consideration of these matters. If you have any question or concerns please call me at 231 947 2250.

Sincerely,



Kevin C. Klein, A.A.E.
Airport Director

Enc.

WOODLAWN

WOODWARD

FORESTLANE

BOON

GARFIELD

Runway

Runway

Traverse Motors

I to T

C-3 to T

C-3 to T

Bill Marsh

C-3

Legend

- OS Open Space District
- RC Residential Conservation District
- R-1a Single Family Dwelling District
- R-1b Single Family Dwelling District
- R-2 Two Family Dwelling District
- R-4 Multiple Family Dwelling District
- R-15 Multiple Family Dwelling District
- R-29 Multiple Family Dwelling District
- HR Hotel Resort District
- C-1 Office Service District
- C-2 Neighborhood Center District
- C-3 Community Center District
- C-4a Regional Center District
- C-4b Regional Center District
- C-4c Regional Center District
- T Transportation District
- I Industrial District
- GP Government/ Public District
- PR Planned Redevelopment District
- NMC-1 University District
- NMC-2 University District
- H-1 Hospital District
- H-2 Hospital District
- D-1 Development District
- D-2 Development District
- D-3 Development District
- R-1b / Mixed Use PUD - Morgan Farm Area
- Parcels



1 inch = 275 feet

This map is based on digital databases from the City of Traverse City. Traverse City cannot accept any responsibility for errors, omissions or positional accuracy.