ARTICLE 10 OUTDOOR LIGHTING STANDARDS

10-1	Purpose
10-2	Applicability
10-3	Lighting Zones
10-4	Operating Hours
10-5	Light Sources and Fixture Shielding
10-6	Fixture Mounting Height and Equipment Finishes
10-7	Illuminance Levels
10-8	Lighting Standards Matrix
10-9	Non-Residential Driveways
10-10	Parking Canopies
10-11	Parking Structures
10-12	Gas Stations/Convenience Stores
10-13	Drive-Throughs
10-14	Banks/ATMs
10-15	Religious Facilities
10-16	Automotive Dealerships
10-17	Flagpole Lighting
10-18	Sportslighting For All Private and Public Facilities
10-19	Single Family Residences, Attached and Detached
10-20	Utility Exceptions
10-21	Other Exceptions
10-22	Equipment Substitutions or Alterations
10-23	Verification
10-24	Other Types of Lighting

ARTICLE 10-1 PURPOSE.

The purpose of these standards is to establish comprehensive provisions for outdoor lighting within the City of Goodyear. This document intends to achieve a fair balance between safety and aesthetics, to encourage designs that provide for the proper quality and quantity of nighttime illumination, while minimizing negative impacts on the surrounding neighborhoods and our night sky. Proper exterior lighting design creates lighting systems that are sensitive to the surrounding neighborhoods by confining the illumination as much as possible within the boundaries of the project site. It also provides appropriate quantities and uniformity of both horizontal and vertical illumination on the site. This will involve the use of not only the appropriate fixtures and light sources, but also proper placement and operating schedules.

The City of Goodyear recognizes the intentions of the Recommended Practices and Design Guidelines put forth by the Illuminating Engineering Society of North America (IESNA), and has incorporated those recommendations into these standards. Applicants may acquire more information by obtaining copies of the most recent IESNA publications.

ARTICLE 10-2 APPLICABILITY.

A. The requirements of Article 10 of this **Ordinance** apply to the development identified below, and approval of an Outdoor Lighting Plan is required prior to development of any outdoor lighting improvements associated with such development.

1. NEW DEVELOPMENT. All new residential and nonresidential development shall comply with the standards and requirements set forth in Article 10 of this **Ordinance**.

2. ADDITIONS, ALTERATIONS AND RESTORATION OF RESIDENTIAL AND NON-RESIDENTIAL CONSTRUCTIONS. **Building** additions, alterations, and/or restorations that meet one of the following criteria listed below shall comply with the standards and requirements set forth in Article 10 of this **Ordinance**.

   a. Additions, alterations, and/or restorations that will increase the square footage of the facility by 50% or more.

   b. Alterations, and/or restorations that involve work to 50% or more of the square 50% of the facility.

   c. Additions, alterations, and/or restorations the cost of which represents 50% or more of the value of the existing facility prior to such addition, alteration o restoration.

3. With respect to new construction of residential (attached and detached) and additions, alterations, and restorations of existing residential (attached and detached) only sections 10-19 through 10-24 of Article 10 apply.

B. APPLICATION REVIEW AND APPROVAL PROCESS

1. Applications for Outdoor Lighting Plan approval shall be processed and reviewed in accordance with the procedures generally described herein and more fully described in the **Administrative Process Manual** and in this **Ordinance**, and in the **Engineering Standards**.

   a. Applications for approval of an Outdoor Lighting Plan shall be filed with the Development Services Department on form(s) provided by the Development Services Department in conjunction with an application for Site Plan approval and shall include all of the information identified in the application form(s), in the **Administrative Process Manual**, in this **Ordinance**, in the **Engineering Standards**, and any other data that may be required by the **Zoning Administrator** that is needed for review of the application.

b. Applications shall be signed by the property owner(s) or an authorized agent of the property owner(s) and all applicable fees shall be paid when applications are submitted.

2. The Development Review **Committee** shall review the application submittal for compliance with the requirements of Article 10 of this **Ordinance**, any other applicable requirements in this **Ordinance**, applicable **Engineering Standards**, and applicable provisions in the **Goodyear City Code**. Following the completion of the **Committee**'s review, the **Zoning Administrator** shall approve, approve with conditions or deny the Outdoor Lighting Plan application.

3. The approval date of the Outdoor Lighting Plan Approval shall be the date on which the application was approved by the **Zoning Administrator**. Outdoor Lighting Plan approvals are tied to other development approvals, which will be identified in the notification of Outdoor Lighting Plan approval; and the Outdoor Lighting Plan approval expires if such related development approval expires.

C. COMPLIANCE

Construction plans for outdoor lighting installations shall conform to the development reflected in the Outdoor Lighting Plan as approved by the **Zoning Administrator** shall be submitted and approved as a condition precedent for the issuance of a **building** permit.

ARTICLE 10-3 LIGHTING ZONES.

In order to be more responsive to the special needs of different portions of the City, a system of four different lighting "zones" has been established based upon the current and/or planned Uses and ambient brightness of the area. Each "zone" will have different development requirements and lighting restrictions. The "zone" for a particular project shall be assigned by City Planning staff during the development review process.

ZONE 1. Low ambient light areas -- Rural residential areas or low density residential areas with limited commercial

ZONE 2. Medium ambient light areas -- Urban residential areas mixed with light commercial

ZONE 3. High ambient light areas -- Urban areas having both residential and commercial use and experiencing high levels of night time activity.

ZONE 4. Special light areas -- Downtown and other special areas requiring thematic lighting or extreme light levels due to the nature of the events taking place in these areas.

ARTICLE 10-4 OPERATING HOURS.

Depending upon the "zone" that a project site is to be located in, there will be different restrictions on the hours that the outdoor lighting may operate. Every project shall be encouraged to reduce as much as possible the amount of outdoor lighting that operates after 10:00 PM, while projects in certain lighting zones shall be required to turn off all non-security lighting (except for flagpole lighting) as follows:

ZONES 1 & 2. Security lighting only after 10:00 PM or within 1-hour after the close-of-business, whichever is later. All fixtures that are not Full-Cutoff shall be turned off at this time.

ZONE 3. All outdoor lighting shall be reduced by a minimum of 50% after 10:00 PM or within 1-hour after the close-of-business, whichever is later. All fixtures that are not Full-Cutoff shall be turned off at this time.

ARTICLE 10-5 LIGHT SOURCES AND FIXTURE SHIELDING.

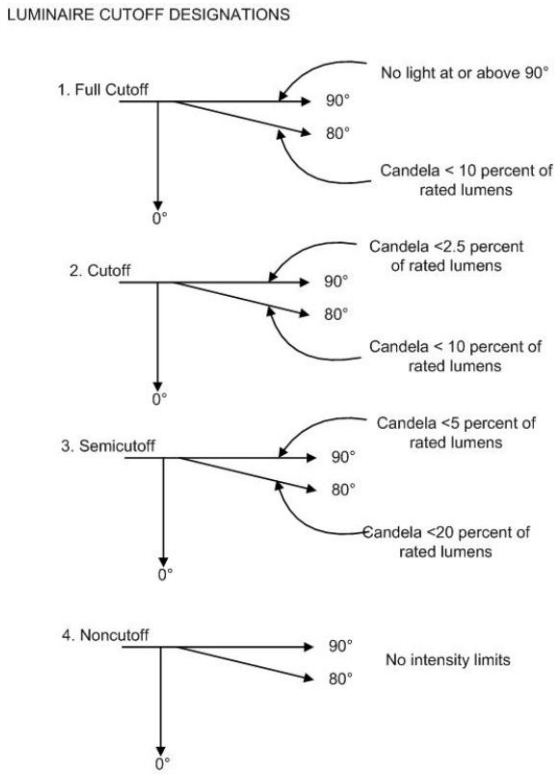
Mercury Vapor light sources shall not be allowed. Searchlights and strobe/ flashing lights are not allowed in any Zone without a separate permit, and the duration of the allowed use may be limited by Planning & Zoning staff. Lasers, exposed neon, and other intense linear light sources are not allowed in Zone 1, but are allowed in Zones 2 and 3 and subject to approval and stipulations by Planning & Zoning staff during the design review process. Lasers must be aimed at-or-below the horizontal plane and terminated on an opaque surface within the project site.

ZONE 1. Pole or wall-mounted fixtures shall be full-cutoff fixtures only. All perimeter fixtures shall possess house-side shielding Bollards shall be louvered and utilize coated lamps. All light sources shall have a color temperature of less than or equal to 3,200 Kelvin. Wall-mounted fixtures of greater than 1,800 lumens shall possess house-side shields. Uplighting fixtures shall not exceed 1,800 lumens.

ZONE 2. Pole or wall-mounted fixtures of less than or equal to 1,800 lumens may be Semi-Cutoff or Cutoff. All other pole or wall-mounted fixtures shall be Full-Cutoff. All perimeter fixtures shall possess house-side shielding. Bollards shall be louvered with coated lamps or of a type where the lamp is recessed and not directly visible. Wall-mounted fixtures of greater than 3,500 lumens shall possess house-side shields. Uplighting fixtures shall not exceed 3,500 lumens.

ZONE 3. Pole or wall-mounted fixtures of less than or equal to 3,500 lumens may be Semi-Cutoff or Cutoff. All other pole or wall-mounted fixtures shall be Full-Cutoff. All perimeter fixtures located within 30-feet of a single-family residential property line, excluding bollards, shall possess house-side shielding, and those fixtures that will also operate after 10:00 PM shall

possess external shielding to the satisfaction of Planning & Zoning staff. Bollards shall be louvered with coated lamps or of a type where the lamp is shielded and not directly visible. Wall-mounted fixtures of greater than 6,500 lumens shall possess house-side shields. Uplighting fixtures shall not exceed 6,500 lumens.



ARTICLE 10-6 FIXTURE MOUNTING HEIGHT AND EQUIPMENT FINISHES.

The mounting height of a fixture is to be measured from finished grade to the fixture lens or luminous opening. Pole bases shall be finished in a fashion other than exposed concrete (brushed finish, painted, etc.). No portion of any fixture that is attached to a wall that is common with another property shall be allowed to protrude above the top of the wall.

ZONE 1. Fixtures located within 30 feet of a residential property line shall not exceed 6 feet in height. All others shall not exceed 15 feet in height, and the pole color shall be dark and non-reflective (such as dark bronze or black).

ZONE 2. Fixtures located within 30 feet of a residential property line shall not exceed 6 feet in height. Fixtures located greater than 30 feet and less than or equal to 150 feet from a residential property line, and not blocked from direct view by a structure, shall not exceed 15 feet in height. All others shall not exceed 25 feet in height or the predominant height of the perimeter buildings (as determined by Planning & Zoning staff), whichever is less.

Pole color shall be dark and non-reflective (such as dark bronze or black, or as otherwise approved by Planning & Zoning staff).

ZONE 3. Fixtures located within 150 feet of a residential property line, and not blocked from direct view by a structure, shall not exceed 15 feet in height. All others shall not exceed 30 feet in height or the predominant height of the perimeter buildings (as determined by Planning & Zoning staff), whichever is less. Pole color to be approved by Planning & Zoning staff.

ARTICLE 10-7 ILLUMINANCE LEVELS.

Planning & Zoning staff shall place a limitation on the on-site horizontal average illuminance for all projects, and the perimeter vertical illuminance when the site is within 150 feet of a residential property line. On-site illuminance shall be based upon a "maintained" average horizontal value at finished grade, and the perimeter illuminance shall be based upon an "initial" maximum vertical value at 6 feet above finished grade. These illuminance limitations shall be different for each lighting "zone". The Light Loss Factor for all "initial" illuminance calculations shall be no less than 0.95. The Light Loss Factor for all "maintained" calculations shall be determined by the designer, and based upon the actual lamps selected and the projected operating conditions, to the satisfaction of Planning & Zoning staff.

ARTICLE 10-8 LIGHTING STANDARDS MATRIX

Lighting Zone	Operating Hours	Light Sources and Fixture Shielding	Mounting Height & Pole Color	On-Site and Perimeter Illuminance Levels	Uplighting
1 Low Ambient Light Areas	Security Lighting only after 10:00 PM. or 1-hour after Close of Business	Light Sources <= 3,200K. Full-Cutoff fixtures only. HSS on Perimeter Fixtures	6' height <= 30' from Residential Property Line. 15' height > 30'. Dark and Non-Reflective Colors.	1.50 FC Average 0.30 VFC Maximum	<= 1,800 Lumens Turn off at 10:00 PM. or 1-hour after Close of Business.
2 Medium Ambient Light Areas	Security Lighting only after 10:00 PM. or 1-hour after Close of Business	All Light Sources. Semi-Cutoff and Cutoff fixtures <= 1,800L. Full-Cutoff > 1,800L. HSS on Perimeter Fixtures	6' height <= 30' from Residential Property Line. >30' 15' ht. <=150' 25' height >150'. Dark and Non-Reflective Colors.	3.00 FC Average 0.80 VFC Maximum	<= 3,500 Lumens Turn off at 10:00 PM. or 1-hour after Close of Business.
3 High Ambient Light Areas	50% Reduction after 10:00 PM or 1-Hour after Close of Business	All Light Sources. Semi-Cutoff and Cutoff fixtures <= 3,500L. Full-Cutoff > 3,500L. HSS on Perimeter Fixtures External shielding after 10:00 PM.	15' height <=150' from Residential Property Line. 30' height >150'. Any Color, as approved by P & Z Staff	4.50 FC Average 1.50 VFC Maximum	<= 6,500 Lumens. Turn off at 10:00 PM. or 1-hour after Close of Business.
4 Special Light Areas	***	***	***	***	***

*** To be determined by Planning & Zoning Staff.

Kelvin (K) <= 3,200K = A light source with a color temperature of less than or equal to 3,200 degrees Kelvin ("warm" colored light).

Light Sources <= 1,800L = A light source which produces less than 1,800 initial Lumens.

Fixture Shielding HSS <= 25 feet = Fixtures located less than or equal to 25 feet from a residential property line shall possess a external shielding on the rear and sides of the fixture in order to prevent direct view of the fixture lens or lamp from a residential property line.

Mounting Height 15' <=150' = Mounting height of 15' or less when the fixture is located less than or equal to 150 feet from a residential property line.

Pole Color Dark = Dark, non-reflective colors such as Dark Bronze or Black.

Illuminance Levels On-site maintained horizontal average illuminance and perimeter initial vertical illuminance (spill light).

ARTICLE 10-9 NON-RESIDENTIAL DRIVEWAYS.

In order to maximize pedestrian safety, and to help improve emergency vehicle access, City sidewalks/paths that cross driveways shall be illuminated to a maintained average of not less than 1.0 footcandles. This lighting shall operate from dusk until dawn. This requirement shall be waived if a city streetlight is located within 20 feet of the driveway. The perimeter spill light limitation shall be waived within 20 feet of a driveway.

ARTICLE 10-10 PARKING CANOPIES.

Full-cutoff fixtures only in Zone 1. Non-cutoff fixtures are allowed in Zones 2, 3, and 4, but the fixtures must possess a diffusing lens and be located so that the sides of the canopy will block any direct view of the lens or fixtures from beyond the property lines.

ARTICLE 10-11 PARKING STRUCTURES.

ZONE 1. NOT ALLOWED.

ZONE 2. Interior fixtures and roof-top fixtures shall be full-cutoff and incorporated into the architecture of the structure. The interior fixtures shall be attached to the ceiling or mounted no lower than the bottom of the support beams. Roof-top fixtures shall be set-back a minimum of 25 feet from the perimeter, and shall not exceed 14 feet in mounting height.

ZONE 3. Fixtures shall be incorporated into the architecture of the structure. Interior fixtures visible from any residential properties shall be full-cutoff. All others may be semi-cutoff, cutoff, but shall possess diffusing lenses or shielding so that the lamp is not directly visible from off-site. Rooftop fixtures shall be full-cutoff, set-back a minimum of 25 feet from the perimeter, and shall not exceed 16 feet in mounting height.

ARTICLE 10-12 GAS STATIONS / CONVENIENCE STORES.

Fuel canopy fixtures shall be recessed into the canopy ceiling, with a lens that is flat and flush to the ceiling. The canopy light source shall be metal halide or any other source as approved by Planning & Zoning staff. In the event that the canopy is located within 150 feet of a residential property line, the canopy fascia shall be extended to a minimum depth of 12 inches below the canopy ceiling. Exposed light sources (such as neon or fluorescent) on the canopy are not allowed. Back-lighted fascias are not allowed in lighting zones 1 and 2. Maintained average horizontal illuminance at grade under the canopy shall be calculated separately from the rest of the site and shall not exceed 20.0 footcandles in Zones 1 and 2, and shall not exceed 30.0 footcandles in Zones 3 and 4.

ARTICLE 10-13 DRIVE-THROUGHS.

All fixtures are to be full-cutoff and either recessed into the canopy ceiling, or mounted so that the lowest portion of the fixture is higher than the canopy fascia. All non-security lighting is to be turned off by 10:00 PM or within 1-hour after close of business, whichever is later.

ARTICLE 10-14 BANKS/ATMs.

All fixtures for the ATM or teller areas shall be full-cutoff. The fixtures at drive-up canopies shall be either recessed into the canopy ceiling, or mounted so that the lowest portion of the fixture is higher than the canopy fascia. Maintained average horizontal illuminance at grade under the canopy or adjacent to the ATM shall be calculated separately from the rest of the site and shall not exceed 20.0 footcandles in Zones 1 and 2, and shall not exceed 30.0 footcandles in Zones 3 and 4.

ARTICLE 10-15 RELIGIOUS FACILITIES.

Metal halide lighting sources are not allowed in Zones 1 and 2, and all other light sources must have a color temperature of less than or equal to 3,200K. Any facility in any Zone that is located within 150 feet of a residential property line must utilize light sources with a color temperature of less than or equal to 3,200K. All non-security lighting shall be turned off within 1-hour after the completion of the last service/event. Any fixtures located within 30 feet of a residential property line shall be included in the fixtures being turned off. All non-security outdoor lighting shall be automatically controlled by the equivalent of a 7-day timer, and programmed so that the lighting only activates on evenings when the facility is actually in use. In the event that the parking lot is sized for peak usage (holidays, etc.), control of the lighting is to be divided into "Tiers", so that the parking lot lighting in the peak-usage areas only operates during those peak times of the year.

ARTICLE 10-16 AUTOMOTIVE DEALERSHIPS.

A minimum of 50% of the outdoor illumination shall be turned off within 1-hour after the close of business. All non-full-cutoff fixtures shall be automatically turned off at this time. All perimeter fixtures shall possess house-side shields. This Use is subject to all other applicable provisions of Article 10 except for the horizontal and vertical footcandle limitations.

ZONE 1. NOT ALLOWED.

ZONE 2. Maintained average illuminance at grade in the sales areas shall not exceed 40.0 footcandles. Other areas shall not exceed an average of 10.0 footcandles. Poles shall be a dark non-reflective color such as dark bronze or black. Under-canopy lighting shall be full-cutoff, or the canopy fascia shall be extended on all sides so that is lower than any portion of the fixture lens.

ZONE 3. Maintained average illuminance at grade in the sales areas shall not exceed 60.0 footcandles. Other areas shall not exceed an average of 10.0 footcandles.

ARTICLE 10-17 FLAGPOLE LIGHTING.

Flagpole uplighting in Zone 1 shall not exceed the equivalent of two fixtures of 1,800 initial lumens each per flagpole. Uplighting in all other Zones shall not exceed the equivalent of two fixtures of 6,500 initial lumens each per flagpole. Flagpole lighting may operate all night, but is to be turned off at dusk if the flag is lowered.

ARTICLE 10-18 SPORTSLIGHTING FOR ALL PRIVATE AND PUBLIC FACILITIES.

All sports, path and parking lot lighting are to be illuminated in conformance with this Ordinance and the Recommended Practices prepared by the Illuminating Engineering Society of North America (IESNA). All sports-fields shall utilize shielded luminaires from a list of manufacturers that have been pre-approved by the Planning & Zoning and Public Works departments. Luminaires on sports field poles with multiple cross-arms shall have a black exterior finish. All sport-courts shall be lighted with full-cutoff luminaires, and are to utilize "On" & "Off" push-buttons so that the lighting does not operate unless the courts are in actual use. All park luminaires shall be shielded and/or located so that no light source is directly visible from beyond the park property lines. Sports field poles are to be set-back a minimum of 50 feet from any residential property line or right-of-way. Initial vertical illuminance (spill light) shall be calculated along all park property lines at a height of 6 feet above finished grade. Automatic time-clocks or other programmable controllers are to turn off all non-security lighting at a curfew time to be determined by city staff.

Zone 1: "Dark Sky" Neighborhood Park or School.
Sports field lighting shall not exceed 80 feet in height. Path and parking lot lighting shall not exceed 16 feet in height. Sport courts shall not exceed 25 feet in height, and all fixtures shall possess 4-sided shielding/skirting. Sportslighting shall not operate after 10:30 PM. Spill light shall not exceed 0.80 footcandles at any point along a residential property line and 2.00 footcandles along any other property line.

Zone 2: "Standard" Neighborhood Park or Elementary/Middle School.
Sports field lighting shall not exceed 80 feet in height. Path and parking lot lighting shall not exceed 20 feet. Sport courts shall not exceed 25 feet in height. Sportslighting shall not operate after 10:30 PM. Spill light shall not exceed 1.0 footcandles at any point along a residential property line and 2.50 footcandles along any other property line.

Zone 3: "Regional" Neighborhood Park or High School.
Sports field lighting shall not exceed 90 feet in height. Path and parking lot lighting shall not exceed 25 feet. Sport courts shall not exceed 40 feet in height. Sportslighting shall not operate after 11:00 PM. Spill light shall not exceed 1.0 footcandles at any point along a residential property line and 2.50 footcandles along any other property line.

Zone 4: To be approved by Planning & Zoning staff.

ARTICLE 10-19 SINGLE FAMILY RESIDENCES, ATTACHED AND DETACHED.

A. RESIDENTIAL SPORT COURTS IN ALL ZONES. All fixtures shall be full-cutoff and must be turned off by 10:00 PM. Fixtures located within 20 feet of a property line must possess external house-side shielding. The mounting height of the fixtures shall not exceed 20 feet.

B. Mercury Vapor light sources are not allowed.

C. Motion sensor controlled fixtures are exempt from Sections D and E.

D. ZONE 1. All fixtures shall be shielded and/or located so that the light source is not directly visible from beyond any of the property lines. The mounting height of any fixture shall not exceed 15-feet from finished grade to the center of the fixture. Architectural and landscape uplighting shall be turned off by 10:00 PM. Vertical illuminance at any of the property lines shall not exceed 0.30 footcandles between the hours of 10:00 PM and 6:00 AM.

E. ZONES 2 & 3. All fixtures of > 1,200 lumens shall be shielded and/or located so that the light source is not directly visible from any of the property lines. The mounting height of any fixture shall not exceed 20-feet from finished grade to the center of the fixture. Vertical illuminance at any of the property lines shall not exceed 0.80 footcandles between the hours of 10:00 PM and 6:00 AM. All non-conforming fixtures shall be turned off between the hours of 10:00 PM and 6:00 AM.

ARTICLE 10-20 UTILITY EXCEPTIONS.

Electric utility leased lighting shall not exceed a mounting height of 20.5 feet in Zone 1 and 27.5 feet in Zone 2. The light sources utilized in Zone 1 shall not exceed a color temperature of 3,500 degrees Kelvin. Planning & Zoning staff, at its discretion, may approve the use of the equivalent of a "Half-Night Photocell" instead of a 10:00 PM timed shutdown.

ARTICLE 10-21 OTHER EXCEPTIONS.

Exceptions to any portion of Article 10 may be granted by the Community Development Director, and subject to appeal to the Planning and Zoning Commission and the City Council.

ARTICLE 10-22 EQUIPMENT SUBSTITUTIONS OR ALTERATIONS.

The outdoor lighting equipment installed at a project site (fixtures, lamps, poles, finishes, controls, etc.) and the locations thereof shall not be substituted or altered in any way from the approved plans (except for the use of alternate manufacturers already listed in the Fixture Schedule of the approved plans) without first submitting the change to Planning & Zoning staff and receiving written approval. Failure to comply with this Article can result in penalty action from the City, including a decline to issue the final Certificate of Occupancy or final Certificate of Completion until the project is brought into conformance with the approved plans, to the satisfaction of Planning & Zoning staff.

ARTICLE 10-23 VERIFICATION.

All outdoor lighting installations are subject to inspection/verification of the lighting equipment and illumination levels (adjusted for Light Loss Factors) by Planning & Zoning staff or their designee, prior to the issuance of the final Certificate of Occupancy or final Certificate of Completion. Installations that are determined by Planning and Zoning staff to not be in compliance with the approved plans shall be corrected and brought into compliance with the approved plans prior to the issuance of the final Certificate of Occupancy or final Certificate of Completion.

ARTICLE 10-24 OTHER TYPES OF LIGHTING.

All other types of outdoor lighting not specifically addressed in Article 10 shall be handled by Planning & Zoning staff as a Zone 4 Special Light Area.