



Rio Arriba
Board of County Commissioners

RIO ARRIBA COUNTY BOARD OF COMMISSIONERS
Rio Arriba County Night Sky Protection Ordinance
2009-02

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AN ORDINANCE 2009-02 COMPILING, AMENDING, ADOPTING, RESTATING AND SUPPLEMENTING STANDARDS FOR OUTDOOR LIGHTING REGULATIONS THROUGHOUT RIO ARRIBA COUNTY; SETTING FORTH PERFORMANCE STANDARDS FOR OUTDOOR LIGHTING IN RIO ARRIBA COUNTY; PROVIDING FOR ADMINISTRATION FOR THE ORDINANCE; AND PROVIDING FOR PENALTIES FOR VIOLATIONS

WHEREAS, this Ordinance will supplement Ordinance No. 2000-01 which provides standards for all development within Rio Arriba County with respect to outdoor lighting, protecting and preserving the night sky in conjunction with the New Mexico Night Sky Protection Act.

WHEREAS, this Ordinance will, with respect to outdoor lighting which are under general safety and quality of life considerations, will provide additional guidelines in order to protect the health, safety and welfare of the residents of Rio Arriba County.

ARTICLE 1. GENERAL PROVISIONS

Section 1. Short Title. This Ordinance shall be referred to as the Night Sky Protection Ordinance 2009-02.

Section 2. Interpretation.

In the interpretation and application of this Ordinance all provisions shall be:

1. Considered as minimum requirements
2. Liberally construed in favor of the County
3. Deemed neither to limit nor repeal any other powers granted under State statutes.
4. Not deemed to repeal or limit any other ordinances or regulations adopted by the County unless expressly so stated herein.

In this document the 2009-02 Night Sky Protection Ordinance shall be referred to as "Ordinance". The State of New Mexico shall be referred to as the "State". Rio Arriba County shall be referred to as the "County".

Section 3. Purpose.

The purpose of the Night Sky Protection Act [74-12-1 to 74-12-10 NMSA 1978] is to regulate outdoor night lighting fixtures to preserve and enhance the State's dark sky while promoting safety, conserving energy and preserving the environment for astronomy. Another purpose of the this Ordinance is to protect and promote the public health, safety and welfare, the quality of life, and the ability to view the night sky, by establishing regulations and a process for review of exterior lighting. This Ordinance establishes standards for exterior lighting in order to accomplish the following:

RIO ARRIBA
CLERK
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BY: [signature]

P.O. Box 127 * Tierra Amarilla, New Mexico 87575 * Phone (505) 588-7254 * Fax (505) 588-7819
Española Annex * 1122 Industrial Park Road * Espanola, New Mexico 87532 * Phone (505) 753-2992 * Fax (505) 753-9397

1. To prevent light trespass in all areas of the County, which includes neighbor-to-neighbor trespass, business to residence trespass or any variation of light trespass.
2. To minimize the effects of direct glare and excessive lighting.
3. To promote energy efficient and cost effective lighting in all areas of the County.
4. To reduce light pollution.
5. To allow for flexibility in the style of lighting fixtures.
6. To balance the nighttime use and enjoyment of property while minimizing the degradation of the nighttime visual environment, and thereby help preserve the quality of life in Rio Arriba County.
7. To work with other jurisdictions within Rio Arriba County to meet the purpose of this Ordinance.
8. To work with electric providers to protect the night sky and health and safety of Rio Arriba County citizens.
9. To comply with the Rio Arriba County Comprehensive Plan Goal 7, Strategy 44: “To adopt a Night Sky Ordinance with specific lighting guidelines and regulations to include requirements on lighting standards such as shielding, pole heights, lighting types, and hours of operation pursuant to the NM Sky Protection Act.”

Section 4. Applicability.

1. This Ordinance is in addition to and supplements the New Mexico Night Sky Protection Act, which, among other things, outlawed the sale and/or use of mercury vapor outdoor lighting and required shielding of outdoor lighting fixtures installed after January 1, 2000, (except specified low wattage lighting that is to be shielded with this Ordinance for Rio Arriba County).
2. All outdoor lighting fixtures installed on private and public property in Rio Arriba County after the effective date of this Ordinance shall be in compliance with this Ordinance. This Ordinance does not apply to interior lighting.
3. All outdoor lighting fixtures existing and legally installed and operative before the effective date of this Ordinance are exempt from these requirements. These lights are to be amortized within ten (10) years or when existing lighting luminaries or fixtures become inoperable which ever come first, their replacements are subject to all the provisions of this Ordinance and the New Mexico Night Sky Protection Act.
4. Compliance with this Ordinance shall be administered by the County Planning and Zoning Department.
5. In the event of a conflict with any other section of this article, the more stringent requirement shall apply.
6. All governmental agencies, Federal, State or County – including their security facilities which operate within the limits of Rio Arriba County should experience no difficulty meeting the requirements of this Ordinance and are encouraged by the County to comply with its provisions.
7. All electric providers shall be required to follow this Ordinance for installation of new or replacement of old luminaries. All electric providers must shield or replace all existing non-conforming luminaries within ten (10) years from the date of this ordinance.

ARTICLE 2. DEFINITIONS

For the purpose of this Ordinance, the following words shall have the following meaning.
For words not listed, the generally accepted definition as found in a dictionary shall suffice.

Accent lighting - Means directional lighting which emphasizes a particular object or draws attention to a particular area.

Aeronautical Light - Any luminous sign or signal specially provided as an aid to navigation.

Canopy Lights - Canopy lights, such as service station lighting or covered entries, shall be fully recessed or fully shielded so as to ensure that no light source is visible from or causes glare on public rights of way or adjacent properties.

Disabling Glare - Means lighting that impairs visibility and creates a potentially hazardous situation for either pedestrians or motorists.

Footcandle (fc) - The American unit used to measure the total amount of light cast on a surface (illuminance). One footcandle is equivalent to the illuminance produced by a source of one candle at a distance of one foot. For example, the full moon produces .01 fc (fc are measured with a light meter). One footcandle is approximately equal to ten (10) lux, the metric unit also used to measure illuminance.

Glare - Stray light striking the eye that may result in; a nuisance or annoyance glare such as light shining into a window; discomfort glare such as bright light causing squinting of the eyes, disabling glare, or reduction in visual performance.

Horizontal Footcandle - The amount of light measured on a horizontal surface.

IESNA - Illuminating Engineering Society of North America (IES or IESNA). The professional society of lighting engineers.

Lamp or Bulb - The generic term for an artificial light source, to be distinguished from the whole assembly (see Luminaries).

LED – Light Emitting Diode, A light-emitting diode is a semiconductor device that emits visible light when an electric current passes through it. Light Emitting Diodes are solid state devices and do not require heating of a filament to create light. Most LED light bulbs can reduce electrical consumption by 90% compared to the electrical consumption of conventional incandescent light bulb.

Light - The form of radiant energy that is capable of exciting the retina of the eye to make sight possible.

Lighting - Any or all parts of a luminaire that function to produce light.

Light Pollution - Any adverse effect of artificial night light including, but not limited to, discomfort to the eye or diminished vision due to glare, light trespass, and including general sky glow caused by the scattering of artificial light in the atmosphere resulting in decreased ability to see the natural night sky.

Light Trespass - means light emitted by a luminaire that shine beyond the property on which the luminaire is installed.

Lumen - The unit used to quantify the amount of light energy produced by a lamp at the lamp. Lumen output of most lamps is listed on the packaging. For example, a 60-watt incandescent lamp produces 950 lumens while a 55-watt sodium low-pressure produces 8000 lumens.

Luminaire(s) or Fixture - A complete lighting unit, consisting of a lamp/bulb or lamps, together with the parts required to distribute the light, to position and protect the lamps, and to connect the lamps to the power supply.

Non-Essential Lighting - All exterior lighting not deemed to be ‘essential lighting’. ‘Essential lighting’ constitutes exterior lighting in those areas where circulation is difficult, including stairways, building entrances and loading docks, and areas where pedestrians and vehicles might be in close proximity, including parking lots, connecting roads between parking lots, and areas designated for the loading of people or goods, provided that light levels in these areas do not exceed the IESNA-recommended lighting levels.

Outdoor Lighting - The nighttime illumination of an outside area or object by any man-made device located outdoors that produces light by any means.

Permitted Lamp Types - Incandescent, Fluorescent, Metal Halide, High Pressure Sodium, Low Pressure Sodium,

Permitted Luminaire Types - Cut off luminaires, Semi-cut-off luminaires must be shielded, and Floodlights on timers not to exceed (12) twelve minutes.

Shielding - means no light rays are emitted by a fixture above the horizontal plane running through the lowest point of the fixture where light is emitted.

Skyglow - The overhead glow from light emitted sideways and upwards. Skyglow is caused by the reflection and scattering of light by dust, water vapor and other particles suspended in the atmosphere.

Spotlight or Floodlight - Means any lamp that incorporates a reflector or a refractor to concentrate the light output into a directed beam in a particular direction.

Temporary Lighting - Lighting to be used for a special event for seven days or less, and temporary construction lighting.

Wall Wash - The reflectivity of artificial lighting from the exterior surface of a building or structure.

ARTICLE 3. TECHNICAL STANDARDS

The following lights that exceed the brightness limitations contained herein are exempt from the provisions of this Ordinance:

1. All existing lights as of the date of this Ordinance (until date of amortization).
2. Traffic control signals and devices.
3. Street and road lights installed prior to the effective date of this Ordinance.
4. Temporary emergency lighting (i.e. fire, police, repair workers).
5. Moving vehicle lights.
6. Navigation lights (i.e. airports, heliports, radio/television towers).
7. Seasonal decorations with individual lights in place no longer than 60 days.
8. Sports-field outdoor lighting sites existing at the date of passage of this Ordinance (i.e. ball fields, football, soccer, etc). Any new County sports lighting installations (or any over-all, complete replacement of luminaires or fixtures at existing sites) are to be shielded or hooded within the spirit of this Ordinance.
9. Other special situations approved by the County for temporary or periodic events (i.e. rodeos, revivals, fairs, fiestas, carnivals, night-time construction).
10. Security lights of any wattage that are controlled by a motion-sensor switch and which do not remain on longer than 12 minutes after activation.

Section 1. General Standards.

1. Outdoor lighting must be shielded and aimed downward. Examples of acceptable and unacceptable light shielding and hooding are shown in Figure 1, attached.
2. The shield must mask the direct horizontal surface of light source. The light must be aimed to insure that the illumination is only pointing downward onto the ground surface, with no escaping light permitted to contribute to sky glow by shining upward into the sky, or creating wall wash.
3. Any bright light shining onto adjacent property or streets which would result in a disability glare shall not be permitted.
4. Light trespass beyond property boundaries or above the horizontal plane shall be considered non-complaint.

5. Existing fixtures may be adapted to comply with this Ordinance by adding a properly designed shield, or by pointing any upward-mounted, shielded fixture downward toward the ground surface.
6. All outdoor lighting fixtures shall be designed, installed, located and maintained such that glare onto adjacent properties or streets shall be minimized and all direct illumination kept within the boundaries of the fixture owner's property.
7. Accent lighting, when so approved, shall be directed downward onto the building or object and not toward the sky or onto adjacent properties. Direct light emissions shall not be visible above the roofline (gutter line) or beyond the building edge.
8. Agricultural or government installation light fixtures are limited to 50,000 lumens and must be shielded from dispersing upward rays.

Section 2. Illuminance and Type of Lamp.

1. Illuminance levels for parking lots, sidewalks, and other walkways affected by side-mounted building lights, and freestanding sidewalk lights (not streetlights) shall not exceed illuminance levels listed in the most current IESNA Recommended Practices. Rio Arriba County recognizes that not every such area will require lighting.
2. Above ground parking lot lighting shall not exceed an overall average illumination of 1.5 footcandles. Interior parking structure lighting shall not exceed the minimum security illumination levels listed in the most current IESNA Recommended Practices.
3. The use of lighting for exterior wall washing is limited for residences, condominiums and apartments as listed in the following table; the use of recessed eave lighting to achieve wall washing is preferred, and wall washing should strive for uniform illumination distribution. The maximum average illumination limits for wall washing are:
 - Dark colored exterior surfaces: 1.0 footcandles
 - Light colored exterior surfaces: 0.5 footcandles
 Illuminance measurements of indirect light creating wall wash shall be measured with an illuminance meter four feet from ground level with the meter held horizontally and touching the wall surface.
4. Streetlights shall be high-pressure sodium or metal halide, unless otherwise determined that another type is more efficient. Streetlights along residential streets shall be limited to a seventy (70) watt high-pressure sodium (hps) light with a lumen output of six thousand four hundred (6,400). Street lights along non-residential streets or at intersections shall be limited to one hundred (100) watts hps, with a lumen output of nine thousand five hundred (9,500), except that lights at major intersections on State highways shall be limited to two hundred fifty (250) watts hps, with a lumen output of twenty-eight thousand five hundred (28,500). If a light type other than high-pressure sodium or metal halide is permitted, then the equivalent output shall be the limit for the other light type. For more information see Tables 1, 3.
5. For more information on luminaire mounting height and lumen output, see recommendation chart; Table 2.

ARTICLE 4. PROCEDURES

Section 1. Submittals.

1. Applications for all development permits shall provide evidence of compliance with this ordinance to include the following submittals.
2. Plans indicating the location, type, and height of luminaries including both building and ground-mounted fixtures.

3. A description of luminaries, including lamps, poles or other supports and shielding devices, which may be provided as catalogue illustrations from the manufacturer.
 4. Ganging of individual luminaries to achieve more than allowed lumens in a specific area is prohibited. They may be ganged on a single standard only if focused downward on different surfaces.
 5. Fixture photometric data, such as that furnished by the manufacturer, showing the downward on different surfaces.
 6. Signed lighting affidavit by applicant insuring compliance with this Ordinance.
 7. Additional information as may be required by the County Planning Department in order to determine compliance with this Ordinance.
8. Deviation from requirements of this Ordinance may be warranted in cases where it is proven the deviation will provide even more security for personal property, business inventory, agricultural produce or livestock.
 9. The lighting deviation application shall contain a detailed site plan showing the location and type of lighting fixtures and the lumens/wattage deviations for each fixture sought by the applicant, in addition, the site plan shall show the locations of all buildings, public streets and roadways and other structures located within two hundred (200) feet of the property.
 10. The Planning Director shall review the requested deviation. The Planning Director may grant the application, with or without conditions, if the Director determines that the General Standards of Section VI are met.

Section 2. Appeals.

1. The Rio Arriba County Planning and Zoning Committee by written notice of appeal filed with the Planning Director within ten (10) calendar days following written notification to the applicant of the Director's determination. Appeals from determinations of the Planning and Zoning Committee shall follow the appeal procedure of the County's Zoning Ordinance as amended from time to time.

Section 3. Warning and Disclaimer. This Ordinance shall not create liability on the part of the County or on any officer or employee thereof for any damages that result from reliance on this Ordinance or any administrative decision lawfully made thereunder.

Section 4. Enforcement and Penalties for Violation.

If the Zoning Administrator finds that any provision of this Article is being violated, the Zoning Administrator shall give notice by hand delivery or by mail, of such violation to the owner and/or to the occupant of such premises, demanding that the violation be abated within thirty (30) days of the date of hand delivery or of the date of mailing of the notice. The Planning and Zoning Department Staff shall be available to assist in working with the violator to correct said violation. If the violation is not abated within the thirty (30) day period, the Zoning Administrator may institute actions and proceedings, either legal or equitable, to enjoin, restrain or abate any violations of this Article. Penalties for violation can be found in the Rio Arriba County Design and Development Regulation System Ordinance 2000-01, Article III Enforcement, Section I.

Section 7. Severability.

The provisions of this Ordinance are severable and if any paragraph, section, subsection, or part of this Ordinance is held to be invalid, unenforceable, unconstitutional, or inapplicable to any person or circumstance, such illegality, invalidity, unconstitutionality, inapplicability shall not affect or impair the remainder of this Ordinance.

Section 8. Effective Date.

The provisions of this Ordinance shall become effective thirty (30) days after published unless otherwise provided by law. After passage and at least annually thereafter, presentations of this Ordinance will be made through Jemez Mountain Electric, Kit Carson Electric and Northern Rio Arriba Electric Cooperative, Inc. to registered County electricians, builders, architects, developers, Neighborhood Associations and ranching industry, and any other groups that should be interested in the preservation of Rio Arriba's dark skies beauty.

REVIEWED, APPROVED AND ADOPTED ON THIS 25th day of SEPTEMBER 2008.

**THE BOARD OF COUNTY COMMISSIONERS
OF RIO ARRIBA COUNTY, NEW MEXICO**



Alfredo L. Montoya
Alfredo L. Montoya, Chairman
Commissioner, District II

Elias Coriz
Elias Coriz
Commissioner, District I

Felipe D. Martinez
Felipe D. Martinez
Commissioner, District III

ATTEST:

J. Fred Vigil
J. Fred Vigil, County Clerk

CERTIFICATE OF FILING

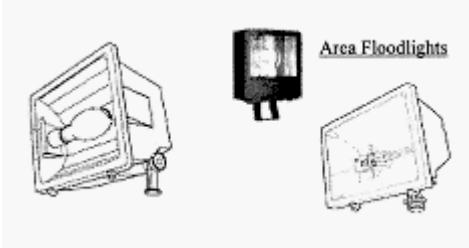
I, J. Fred Vigil, County Clerk, do hereby certify that the foregoing Ordinance designated as Ordinance 2008-02 was filed in my office on the 30th day of April 2008 in Book Number 531, pages 6790.

J. Fred Vigil
J. Fred Vigil, County Clerk

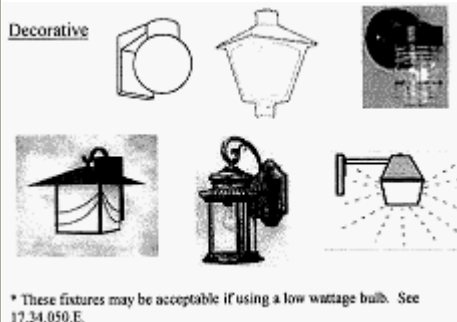
RIO ARRIBA
J. FRED VIGIL, COUNTY CLERK
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Book 531 Page 6790
7 of 13
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BY: SARA LEWIS

Figure 1

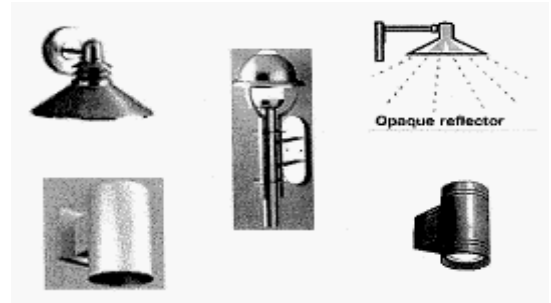
The following figures illustrate examples of generally acceptable and generally unacceptable types of outdoor lighting fixtures. Note that even those types of fixtures shown as “acceptable” must be installed and aimed properly to comply with this chapter.

<p>Unacceptable</p>  <p>Area Floodlights</p>	<p>Acceptable</p>  <p>* Hooded type floodlights still require proper aiming to prevent glare and light trespass</p>
<p>Unacceptable</p>  <p>Spotlights</p> <p>* Without shielding, these types of fixture spray uncontrolled light.</p>	<p>Acceptable</p>  <p>* Proper aiming is required to prevent glare and light trespass.</p> <p>Flood light with hood</p>
<p>Unacceptable</p>  <p>Wall Packs</p> <p>* Such fixture may be acceptable using only low output lamps (under 1,000 lumens). See 17.34.050.E.</p> <p>Figure 1 (continued)</p>	<p>Acceptable</p> 

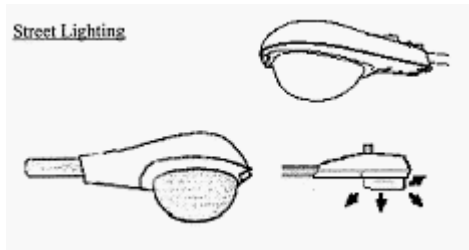
Unacceptable



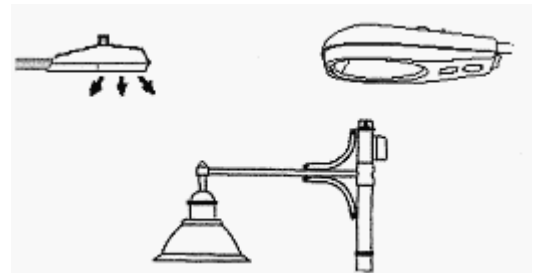
Acceptable



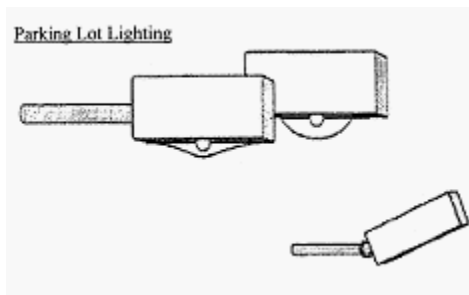
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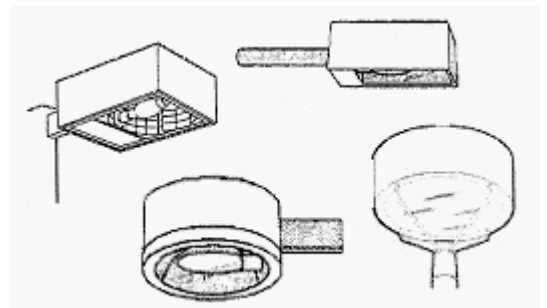
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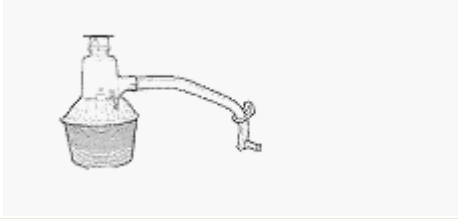


Table 1

Bulbs Lawful
In Rio Arriba County

Wattage of Bulb Allowed
(At or Below 2,200
Lumens Limit for Residential and
Commercial Lights)*

Incandescent	150 Watts
High Pressure Sodium	35 Watts
Low Pressure Sodium	18 Watts
Metal Halide	39 Watts
Halogen	100 Watts
Quartz	100 Watts
Florescent	30 Watts
Mercury Vapor**	Unlawful in New Mexico
*Agricultural and Government Lights are Limited to 50,000 Lumens.	
** Grandfathered in New Mexico Until the Bulb/Luminaire Must Be Replaced.	
See State of New Mexico, 44th Legislature, 1st Session, Laws 1999, Chapter 197, House Bill 39, As Amended, Signed April 6, 1999.	

Table 2 lists the maximum lumen levels standards at various heights above ground level. It provides specific examples listing the common types of lighting sources, lumen levels, and permitted mounting heights.

Table 2: Mounting height/ lamp output recommendations mounting height (feet) maximum lumens.

Mounting Height (feet)	Maximum Lumens
6	1,000
8	600 to 1,600
10	1,000 to 2,000
12	1,600 to 2,400
16	2,400 to 6,000
20	4,000 to 8,000
24	6,000 to 9,000
28	8,000 to 12,000
32	9,000 to 24,000
36	12,000 to 28,000
40	16,000 to 32,000

Table 3

Initial rated light output of various lamps.

(Information from Sylvania #PL-150, General Electric #9200 and Phillips #SG-100 large lamp catalogs. Other brand names with equal qualities will suffice, listed below are only suggestions).

Lamp Type	Lamp Wattage	Initial Lumen Output
INCANDESCENT LAMP (FROSTED) (Syl.)	25	235
INCANDESCENT LAMP (FROSTED) (Syl.)	40	375
INCANDESCENT LAMP (FROSTED) (Syl.)	60	890
INCANDESCENT LAMP (FROSTED) (Syl.)	100	1690
INCANDESCENT LAMP (FROSTED) (Syl.)	150	2850
INCANDESCENT FLOOD OR SPOT (G.E.)	75	765
INCANDESCENT FLOOD OR SPOT (G.E.)	120	1500
INCANDESCENT FLOOD OR SPOT (G.E.)	150	2000
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	42	665
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	52	885
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	72	1300
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	300	6000
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	500	10500
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	1000	21000
QUARTZ HALOGEN MINI FLOOD OR SPOT (G.E.)	20	260
(12 volt MR-16 type)		
QUARTZ HALOGEN MINI FLOOD OR SPOT (G.E.)	42	630
(12 volt MR-16 type)		
QUARTZ HALOGEN MINI FLOOD OR SPOT (G.E.)	50	895
(12 volt MR-16 type)		
QUARTZ HALOGEN MINI FLOOD OR SPOT (G.E.)	75	1300
(12 volt MR-16 type)		
FLUORESCENT LAMP (Phillips)	7	400
FLUORESCENT LAMP (Phillips)	6	600
FLUORESCENT LAMP (Phillips)	13	900
FLUORESCENT LAMP (Phillips)	22	1200
FLUORESCENT LAMP (Phillips)	28	1600
FLUORESCENT LAMP (G.E. cool white)	40	3150
LOW PRESSURE SODIUM LAMP (Phillips)	18	1800

Table 3 (continued)

Lamp Type	Lamp Wattage	Initial Lumen Output
LOW PRESSURE SODIUM LAMP (Phillips)	35	4800
LOW PRESSURE SODIUM LAMP (Phillips)	55	8000
LOW PRESSURE SODIUM LAMP (Phillips)	90	13500
LOW PRESSURE SODIUM LAMP (Phillips)	135	22500
LOW PRESSURE SODIUM LAMP (Phillips)	180	33000
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	35	2250
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	50	4000
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	70	6400
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	100	9500
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	150	16000
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	250	27500
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	400	50000
METAL HALIDE LAMP (Coated) (G.E.)	32	2500
METAL HALIDE LAMP (Coated) (Venture)	50	3400
METAL HALIDE LAMP (Coated) (G.E.)	100	9000
METAL HALIDE LAMP (Coated) (G.E.)	175	15750
METAL HALIDE LAMP (Coated) (G.E.)	250	20500
METAL HALIDE LAMP (Coated) (G.E.)	400	36000
LIGHT EMITTING DIODE	11	900
LIGHT EMITTING DIODE	13	600
LIGHT EMITTING DIODE	1.9	350
LIGHT EMITTING DIODE	11.9	200