



# LEED

LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN



LEED was created to:

- Define “green building” by establishing a common standard of measurement
- Promote integrated, whole-building design practices
- Recognize environmental leadership in the building industry
- Stimulate green competition
- Raise consumer awareness of green building benefits
- Transform the building market

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, developed by the U.S. Green Building Council (USGBC), provides a list of standards for environmentally-sustainable construction.

The United States Green Building Council (USGBC) is a non-profit organization devoted to shifting the building industry towards sustainability, targeting how buildings are designed, built and operated. The USGBC is best known for the development of the Leadership in Energy and Environmental Design (LEED) rating system

LEED for New Construction Version 2.2

October 2005 - Revised EA section for projects registered after June 26th, 2007

### **Potential Technologies & Strategies:**

Adopt site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Minimize site lighting where possible and model the site lighting using a computer model. Technologies to reduce light pollution include full cutoff luminaires, low-reflectance surfaces and low-angles spotlights.

**LZ1 - Dark (Park and Rural Settings)**

Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.01 horizontal and vertical footcandles at the site boundary and beyond. Document that 0% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down).

**LZ2 - Low (Residential areas)**

Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.10 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 10 feet beyond the site boundary. Document that no more than 2% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public right-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

**LZ3 - Medium (Commercial/Industrial, High-Density Residential)**

Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.20 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 15 feet beyond the site. Document that no more than 5% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public right-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

**LZ4 - High (Major City Centers, Entertainment Districts)**

Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.60 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 15 feet beyond the site. Document that no more than 10% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public right-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

Lighting Zone	Lumens Permitted @ Or Above 90°
LZ1	0%
LZ2	2%
LZ3	5%
LZ4	10%

Lighting Zone	Initial FC Beyond Site Boundary
LZ1	0.01 Horizontal & Vertical
LZ2	0.01 within 10 FT
LZ3	0.01 within 15 FT
LZ4	0.01 within 15 FT

Lighting Zone	Initial FC @ Site Boundary
LZ1	0.01 Horizontal & Vertical
LZ2	0.10 Horizontal & Vertical
LZ3	0.20 Horizontal & Vertical
LZ4	0.60 Horizontal & Vertical

**Stated in Illuminating Engineering Society, IESNA TM-15-07**

"The previous cutoff classifications (full cutoff, cutoff, semi-cutoff, and non-cutoff are superseded by the **LCS** (Luminaire Classification System)"

**LCS** ratings are luminaire, optic system and lamp specific. Contact factory with specific project requirements.

**LCS** ratings include numerical quantification of **Backlight**, **Uplight**, and **Glare**



# BEACON DARK SKY LUMINAIRES

## LUMINAIRES: Florentine



LA VILLA



TIVOLI



ISCHIA



TREVISIO

Luminaire series	Cata Number	Dark Sky Optics	Notes	Optic
La Villa 24" 37"	LAV24	Yes	Direct	SR3 / SR5
	LAV37	YES	Direct	SR3 / SR5
Tivoli 24" 37"	TIV24	YES	Direct	SR3 / SR5
	TIV24	YES	Direct	SR3 / SR5
Ischia 20"	ISC20	YES	Direct	SR3 / SR5
Treviso 31"	TRE31	YES	Indirect	IND2 / IND5
	TRE31	YES	Direct	SR3 / SR5

## LUMINAIRES: Urban / Roadway



CAPITOL



MIRAMAR SS



MIRAMAR DS



MARITAS



CAMBRIDGE



METROPOLIS

Luminaire series	Cata Number	Dark Sky Optics	Notes	Optic
Capitol 20" 26" 30"	CAP20	Yes	Direct	SR3 / SR5, SPA5
	CAP26	Yes	Direct	SR3 / SR5, SPA5
	CAP30	Yes	Direct	SR3 / SR5, SPA5
Miramar SS 14" 21" 24"	MRSS14	No	—	—
	MRSS21	Yes	Direct	SR3 / SR5, SPA5
	MRSS24	Yes	Direct	SR3 / SR5, SPA5
Miramar DS 12" 18" 26"	MRDS12	No	—	—
	MRDS18	No	—	—
	MRDS26	Yes	Direct	SR3 / SR5, SPA5
Maritas 20" 30"	MAR20	Yes	Direct	SR3 / SR5, SPA5
	MAR30	Yes	Direct	SR3 / SR5, SPA5
Cambridge 24" 35"	CAM24	Yes	Direct	SR3 / SR5, SPA5
	CAM35	Yes	Direct	SR3 / SR5, SPA5
Metropolis 20" 35"	MET30	Yes	Direct	SR3 / SR5, SPA5
	MET35	Yes	Direct	SR3 / SR5, SPA5



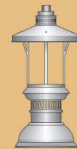
LUMINAIRES:  
Downtown



BOSTONIAN



TRADITIONAL



COAL MINERS



LA JOLLA



MAGNA



WATERFORD

Luminaire series	Cata Number	Dark Sky Optics	Notes	Optic
Bostonian 40"	BOS40	Yes	Direct	SR3 / SR5, SPA5
			Indirect	IND2 / IND5
Traditional 30"	TRA30	Yes	Direct	SR3 / SR5, SPA5
			Indirect	IND2 / IND5
Coal Miner 20" 25"	CMR20	No	—	—
	CMR25	Yes	Direct	SR3 / SR5, SPA5
La Jolla 20" 30"	LAJ20	No	—	—
	LAJ30	Yes	Direct	SR3 / SR5, SPA5
Magna 22" 30"	MAG22	No	—	—
	MAG30	Yes	Direct	SR3 / SR5, SPA5
Waterford 19" 28" 44"	WAT19	No	—	—
	WAT28	Yes	Direct	SR3 / SR5, SPA5
	WAT44	Yes	Direct	SR3 / SR5, SPA5

LUMINAIRES:  
Village



PIEDMONT



MEDITERRANEAN



LONDON



MONACO



PARK LANE

Luminaire series	Cata Number	Dark Sky Optics	Notes	Optic
Piedmont 36"	PED36	Yes	Direct	SR3 / SR5, SPA5
Mediterranean 34"	ME34	Yes	Direct	SR3 / SR5, SPA5
London 30"	LO30	Yes	Direct	SR3 / SR5, SPA5
Monaco 36"	MO36	Yes	Direct	SR3 / SR5, SPA5
Park Lane 37"	PL37	Yes	Direct	SR3 / SR5, SPA5

**Stated in Illuminating Engineering Society, IESNA TM-15-07**

"The previous cutoff classifications (full cutoff, cutoff, semi-cutoff, and non-cutoff are superseded by the **LCS** (Luminaire Classification System)"

**LCS** ratings are luminaire, optic system and lamp specific. Contact factory with specific project requirements.

**LCS** ratings include numerical quantification of **B**acklight, **U**plight, and **G**lare

# BEACON PRODUCTS OPTICAL SYSTEMS

## Beacon Products Optical Systems

Beacon Products LLC is one of the leading suppliers and manufacturers of high performance outdoor, pedestrian scale, as-well-as roadway and parking area lighting. BP is also well known for its customer-specific and project specific lighting solutions.

As an industry leader, BP is known for innovation, quality and service within the lighting industry. Thru innovative technologies, new products and user-oriented solutions, BP's high level of competence within the project sector is a decisive driving-force for architects, landscape architects, and lighting designers.

BP's optical systems today include Specular-Segmented reflectors, Spun and Polished - Anodized reflectors, Glass Refractors, and Indirect Reflector systems.

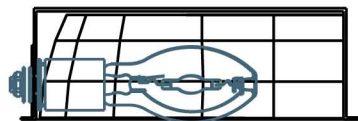
Engineering designs start with the newest lamps and light sources. These include the ceramic metal halide T-6 lamps and LEDs.

All optical systems are designed to optimize the performance of Compact Fluorescent, Metal Halide and High Pressure Sodium Lamps.

The latest developments by the BP engineering staff, now offers LED source options.

### SR3 - SR5

Segmented Reflector Type III Type V

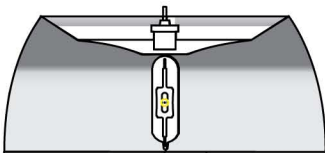


### SA5

Spun Aluminum Type V

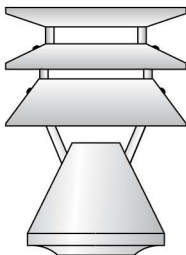


Designed to optimize the efficacy of the T-6 Ceramic Metal Halide as well as the ED-17, this reflector generates a Type V light distribution pattern.



### LVR

High Performance Cutoff Louvers Type V



**IND3 - IND5**

Indirect Type III and Type V



Visually hiding the source is desired by many lighting designers. Indirect lighting systems eliminate the harsh - bright spot of lamp and reflector image, thereby reducing the direct glare of a luminaire.

Originally designed for the Treviso Luminaire, this Indirect Reflector System has efficiencies that make it a viable option against the direct reflector system.

Now, with the new Treviso Indirect optical system, high efficiency can be combined with LEED Compliance/Dark Sky Friendly, and precise 'house-side' cutoff, all in one optical system.

The Treviso indirect system is available in a Type 5 or a Type 2 photometric distribution. It has the ability to accommodate the T-6, Ceramic Metal Halide and the ED-17 lamps.

**LED3 - LED5**

Indirect Type III and Type V



The newest addition to the Treviso optical options include a LED light engine. Both Type 5 or a Type 2 photometric distribution are available.

**GR3 - GR5**

Glass Refractor Type III Type V

