



County of San Diego

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COUNTY OF SAN DIEGO STREET LIGHTING SPECIFICATIONS – REVISED Sept. 2021

Streetlight specifications contained in this document shall supersede, and or, be included as a supplement to the County Public Road Standards and should be referred to by County Planners as well as private developers, property owners and their consultants in the preparation of development plans.

All County of San Diego major roadways with pavement width of greater than 40 feet shall have 98-watt 4000 Kelvin LED fixtures installed.

All County of San Diego local roadways with pavement width of 40 feet or less shall have 35-watt 3000 Kelvin LED fixtures installed.

Note that all LED fixtures shall be rated at 4000 (+/- 250) Kelvin or 3000 (+/- 250) Kelvin. Fixtures shall meet Average Illumination requirements discussed in Table 4 of the current County of San Diego Public Road Standards.

1. Materials (General)

LAMP TYPE: LED (See Item 3)

LUMINAIRES: The County has approved a maximum Correlated Color Temperature (CCT) of 4000 Kelvin, +/-250 Kelvin and 3000 Kelvin, +/-250 Kelvin. A minimum 10-year warranty is required for the LED fixture and the photoelectric control (PEC). The County of San Diego requires a General Electric (GE) 98 watt 4000 K Evolve Scalable LED catalog number ERLH-0-11-B3-40-A-Gray or Leotek 35 watt 3000 K Scalable LED catalog number GCJO-15H-MV-WW-2R-GY-700 (or an approved equal). (See Attachment)

PHOTOCELLS/ADAPTIVE CONTROLS: Sun Tech Ell (Extra Long-Life Series)
PEC

CONCRETE POLE: Round concrete, gray color, anchor-base per County of San Diego Drawings E1 - E2. Direct-burial type may be considered on a case-by-case basis and **only with written approval from the County Traffic Engineer**. (See Item 11).

Streetlight poles: 35 Watt – 2B224

98 Watt – 2B226

Manufacturers: Ameron (or an approved equal)

MAST ARMS: 8-foot aluminum or steel. (See Item 13)

NON-STANDARD OR DECORATIVE LIGHTING: Other types and styles of poles and /or luminaires may be allowed **only with written approval from the County Traffic Engineer.**

2. Luminaires

Luminaires shall be completely assembled and made of die-cast aluminum or heavy gauge sheet aluminum with continuous concealed welds. Painted exterior surfaces shall be finished with a fused coating of electrostatically applied polyester powder paint or other ultraviolet inhibiting film. Color shall be aluminum gray.

Luminaires shall be furnished with an optical assembly removable without the use of special tools and shall include an integral twist-lock type receptacle for a photoelectric cell control in accordance with the latest EEI-NEMA standards that is adjustable with respect to north and pre-wired to the terminal board.

Luminaires shall be designed for horizontal mounting with a horizontal burning lamp. They shall have a slip-fitted mounting bracket capable of attaching to a two-inch (2") pipe without the need for special mounting parts. They shall be installed in a horizontal position with leveling and clamping to the mast arm pipe accomplished by tightening mounting bolts, which are externally or internally accessible. Bolts shall be minimum 5/8" x 2" size and either stainless steel or cadmium plated steel.

Both compartments shall be sealed with a heat-resisting gasket and shall be watertight. The optical assembly door shall be hinged on the long edge of the luminaire, and the hinge pins shall prevent the door from swinging free of the pins. The luminaire shall be constructed to provide the required light distribution, with the lower edge of the luminaire housing below the entire light source and lens. The Lens shall be a flat type unless approved by the engineer. The light distribution pattern and maximum weight (including ballast) shall be as follows:

<u>Light</u>	<u>Pattern</u>	<u>Net Weight</u>
35 Watt.	Asymmetric Medium	<30lbs
98 Watt	Asymmetric Medium	<30lbs

3. LED Lamp Type Fixtures

Energy consumed by each fixture shall be in the range of 25 watts to 35 watts and 98 watts to 112 watts for both respective 35 watt and 98 watt lamp types.

4. Photoelectric Control

The photoelectric control (PEC) shall consist of a photoelectric cell in a weather-proof housing which plugs into an EEL- NEMA twist-lock receptacle integral with the luminaire and shall be installed with the photocell window facing north.

5. Fuses

Fuses shall be 10 Amp 13/32" x 1 1/2" in-line type

The fuse shall be installed in the hot leg of the lighting conductor. The circuit shall be fused in the base of the pole – **not in the pull box**. A 240-volt installation requires each leg to be fused using a double fuse holder and two fuses of appropriate size as listed above.

6. Fuse holders

Fuse holders shall be completely waterproof, shall grip the fuse in the load side section when opened, and be able to take a 13/32" x 1 1/2" fuse, with crimp-type tubular terminals of a proper size for the cable

7. Wiring and Service Runs

Service runs shall be minimum #10 stranded THW copper wire (not aluminum). Wire shall conform to the applicable portion of ASTM B3 and B8. Size of wire shall be indicated on the "As Built" plans. Wire connectors shall be approved by the Engineer and shall bear the UL seal of approval. The installation procedure, connector size, and crimping tools shall conform to the manufacturer's recommendations.

Wire from the base of the pole to the luminaire shall be #10 THW. For 120-volt installations, the wires shall be black and white, with black being the hot wire.

For 240-volt installations, both wires shall be black, or black and red. Any ground wires shall be green and connected to the UFER ground, or a ground rod. No phase tape allowed. All UFER ground wire shall be a bare #4Cu x 15' installed below the foundation and **attached to an anchor bolt, using an approved clamp within the foundation**, and routed up to the hand hole access area. A properly installed ground rod may be installed using an approved bonding method instead of a ufer ground method. (See Regional Standard Drawing E-2 with nonmetallic conditions.)

Service runs parallel to the street shall be installed under the sidewalk where new sidewalk is being constructed or directly behind existing sidewalk. Voltage drop shall not exceed 5% for any circuit. Contractor is responsible for determining and calculating wire size. Wire installation shall NOT proceed until the contractor has received the Engineer agreement to the proposed wire size.

8. Splicing

Splices shall be permitted in pull boxes and lighting standard bases only. All splices shall be waterproofed with epoxy encapsulation or heat shrink tubing.

9. Conduit and Trench

All conduits shall be 1 inch (1") UL approved heavy wall polyvinyl chloride (PVC) Schedule 40. Conduit shall be encased in a minimum of 3 inches (3") of sand on all sides. The contractor may, at his expense, use conduit of a larger size, provided the larger size is used for the entire length of the runs between pull boxes. Reducing couplings shall not be allowed. Conduit duct seal shall be required on all unused conduits and on any Conduits larger than 1".

Conduit shall be laid to a depth of not less thirty inches (30"), but no more than forty-two inches (42") unless placed under sidewalk, in which case eighteen inches (18") shall be required. Conduit laid in open trench shall not be covered nor shall any trench or inspection hole be backfilled until accepted by the Engineer.

10. Pull Boxes

State No. 3-1/2 Pull Boxes (15 3/8" x 10 1/16") N09 BOX with N09R lid and anti-theft Penta Bolts in lids or equivalent shall be installed per CALTRANS Standard Plan ES-8 as follows:

- a) Within five feet (5') of each streetlight.
- b) Within three feet (3') of service point (NOTE: if streetlight is within ten feet (10') of the service point, only one pull box is required).
- c) At intervals of not more than 200 feet.

Any deviation from this requirement must receive **written approval from the County Traffic Engineer.**

The bottom of the pull box shall rest firmly on a six inch (6") thick bed of 1" crushed rock extending six inches (6") beyond the outside edges of the box. Pull boxes shall be installed behind sidewalk or five feet (5') behind the face of curb or dike, and where practical shall be installed with the short side parallel to the curb. They shall not be installed in any part of a driveway or other traveled way unless approved by the Engineer and meets Caltrans Standard Plans ES-8B. Pull box covers shall be inscribed "STREET LIGHTING" and shall be secured with two 3/8" by 2 1/4" stainless steel Penta Bolts. (Kit bolts (2) SS Penta with HNTE-E02 Nut)

11. Concrete Poles

All streetlight poles shall be anchor base. Direct-burial type may be considered on a case-by-case basis and **only with written approval from County Traffic Engineer.**

Concrete poles shall be tapered, centrifugally cast and pre-stressed. Poles shall be round, gray color, with black and white marble aggregate or natural exposed aggregate. Pole shape and color shall be uniform. Replacement poles shall match existing.

The ultimate strength of a pole shall be calculated in accordance with the latest revision of American Concrete Institute (A.C.I.) standard 318. Under working loads (including wind loading, as specified in the latest edition of AASHTO standards), the pole must not be stressed beyond the cracking strength. The pole and mast arm must be capable of handling the EPA and weight of the luminaire.

Aggregates shall conform to current requirements of ASTM C33, except that abrasion requirements therein shall not apply and that no more than seven percent (7%) shall pass a #100 mesh sieve. No dye or sealer shall be used.

The centrifugal casting process shall produce a center duct throughout the length of the pole, which shall be free from sharp projections or edges and shall be a minimum of 1-1/2" in diameter. All reinforcing steel shall have a minimum cover of 5/8" inches of concrete. After curing, the surface of the pole shall be treated to remove cement laitance and to develop the surface texture.

When finished, poles shall be without cracks or crazing and shall have a uniform surface (without objectionable mold marks) and texture throughout the entire length. Maximum deviation from string line at any point shall not exceed 0.03" per foot of length.

Hand-hole cover plates shall be aluminum and securing bolts shall be stainless steel tamper-proof bolts of the type installed with a penta-head wrench.

12. Installation

Installation shall be in accordance with Regional Standard Drawings E1 and E2. Streetlight poles shall be installed 7 feet (7') behind face of curb or berm unless otherwise shown on the plans or approved by the Engineer.

Anchor bolts shall be the type and size shown on Drawing E-1 and shall conform to the specifications of ASTM A 307 and be provided with two nuts and two washers each. Bolts, nuts, and washers shall be galvanized by the hot-dip process conforming to ASTM A 153 or cadmium plated with Type NS coating conforming to ASTM A 165. Direct burial poles may use 2-sack mix slurry backfill.

Plumbing of the standard shall be accomplished by adjusting the nuts on the anchor bolts before the foundation cap is placed. Shims or other similar devices for plumbing or raking will not be permitted. After plumbing the standard, anchor bolts shall be cut off 1/4" above the nuts and the exposed surfaces shall be repaired with a rust inhibitor.

Once the pole installation is complete, a 30x30x6 inch concrete foundation cap shall be installed at grade, with a 2% slope to curb or sidewalk unless alternate installation is approved by the engineer.

13. Mast Arms

Mast arms shall be two-inch (2") I.P.S. aluminum or galvanized steel and shall be self-supporting without braces, scrolls, or rods. Mounting shall be perpendicular to the street centerline unless otherwise directed by the Engineer. They shall have a minimum of six inches (6") of horizontal straight section at the end of the arm to mount a two-inch (2") I.P.S. slip fitter type luminaire mount.

Mast arms shall be 8 feet (8') long for the luminaire to overhang the street by one foot, unless otherwise specified in the plans. Mast arms shall be capable of handling the EPA and weight of the luminaire. Aluminum arms shall be corrosion resistant alloys such as Aluminum Association wrought alloys 6061 or 6062 or cast alloys 319 or 356.

All exposed hardware shall be stainless steel. All protected hardware, not visible after installation, shall be cast aluminum and/or stainless steel, hot-dipped galvanized, or cadmium plated steel.

14. Service Points

Service points must be in the County right-of-way. Service runs across private property are not allowed. To obtain service from SDG&E call (858) 564-1218. If existing service is from a power pole SDG&E must install a new underground service point at the customer's expense. In rare cases, an existing streetlight may be used for service hookup if approved by an Engineer and the applicant provides the voltage drop calculation showing that the existing circuit can handle the additional power load for the new streetlight without exceeding the 5% voltage drop threshold for the entire streetlight electric circuit.

15. Energizing and "As Built" Plans

Two (2) sets of "As Built" plans (see sample Page 8) must be submitted to the Engineer prior to energizing. "As Built" plans must include:

- a) LED type, wattage, and manufacturer of lights.
- b) Location of each light and service point.
- c) Location of conduit runs and pull boxes.
- d) Length of wire runs and size of wire.
- e) Voltage of system.
- f) Contractor name and date.

16. Guarantee

All installations are to be guaranteed for a period of one year from the date of acceptance by the County for maintenance.

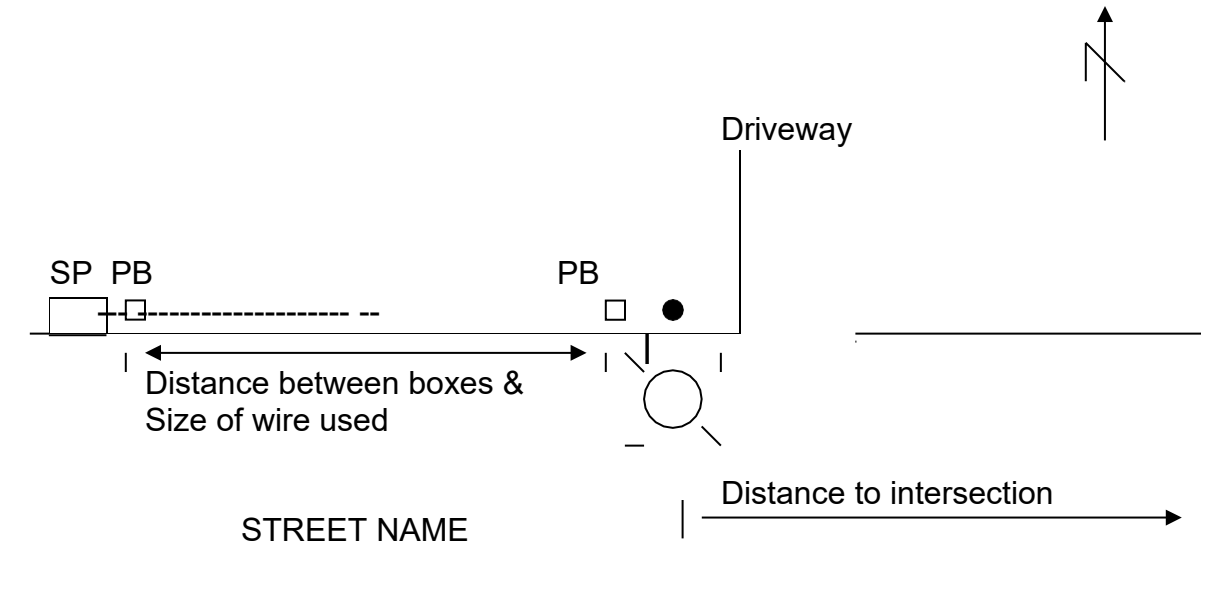
17. Other Notices

The term "Engineer" shall mean the County Traffic Engineer or their representative with the responsibility of enforcing County Standards.

For additional information on streetlight installation see:

- a) San Diego Regional Standard Drawings.
- b) Section 5.8 (Roadway Lighting) of Public Road Standards, County of San Diego, Department of Public Works.
- c) Special Provisions for Work Done Under Excavation Permits.
- d) Standard Specifications for Public Works Construction.
- e) Standard Special Provisions to the Standard Specifications.

SAMPLE "AS BUILT" DRAWING



STREETLIGHT 'AS BUILT' FOR LOCATION NAME/PROJECT #

{
VOLTAGE
LED TYPE, WATTAGE, MANUFACTURER
POLE MANUFACTURER, TYPE, NUMBER
WIRE TYPE AND SIZE
COMPANY NAME AND DATE OF AS BUILT

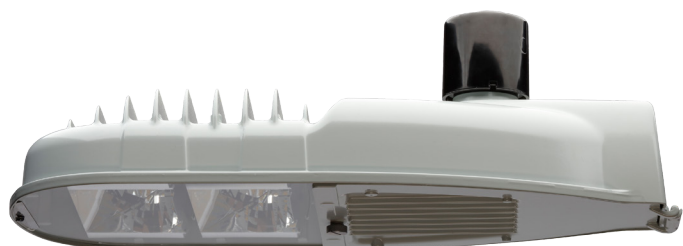
County of San Diego
ERLH011E340AGRAY



GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2



current
powered by GE



GE Evolve™ LED Roadway Lighting ERL1-ERLH-ERL2



The **Evolve** LED Roadway Luminaire is optimized for customers requiring a LED solution for local, collector and major roadways. GE's unique reflective optics are designed to optimize application efficiency and minimize glare. The modern design incorporates the heat sink directly into the unit for heat transfer to prolong LED life. This reliable unit has a 100,000 hour design life, significantly reducing maintenance needs and expense over the life of the fixture. This efficient solution lowers energy consumption compared to a traditional HID fixture for additional operating cost savings.

Features:

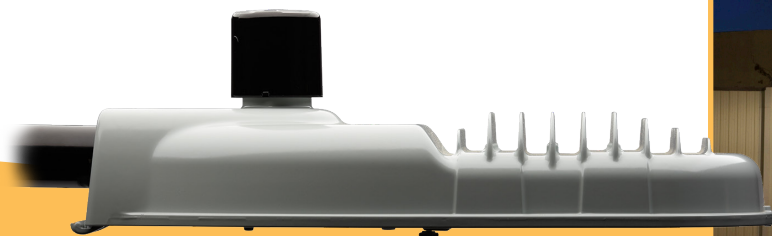
- Optimized roadway photometric distributions
- **Evolve**™ light engine consisting of reflective technology designed to optimize application efficiency and minimize glare
- 70 CRI at 2700K, 3000K and 4000K typical.
- -40°C to 50°C UL Ambient Typical.
- ULOR = 0 (zero uplight)
- Designed & Assembled in USA

Applications:

- Local Roadways
- Collector Roadways
- Major Roadway/Streets



Compatible with **LightGrid**™ Outdoor Wireless Control System



To learn more about **GE Evolve LED Roadway Lighting**, go to: www.currentbyge.com





Project name _____
Date _____
Type _____

Typical Specifications: ERL1-ERLH-ERL2

LED & Optical

- Output Range:** 1900 – 30000 lm
- Photometric Options:** Type II Narrow, Type II Wide, Type III, Type IV
- System Efficacy:** 100 - 145 LPW
- CCT:** 2700K, 3000K, 4000K; High brightness LEDs @ 70 CRI

Lumen Maintenance Tables

Projected Lxx per IES TM-21 at 25°C for reference:

ERL1 LUMEN OUTPUT CODES	LXX(10K)@HOURS		
	25,000 HR	50,000 HR	100,000 HR
02,03,04,05,06	L96	L95	L91
07,08,09	L95	L91	L84
10	L89	L80	L64

ERLH LUMEN OUTPUT CODES	LXX(10K)@HOURS		
	25,000 HR	50,000 HR	100,000 HR
10, 11	L97	L96	L94
13, 14	L95	L93	L88
15, 16	L94	L91	L85

ERL2 LUMEN OUTPUT CODES	LXX(10K)@HOURS		
	25,000 HR	50,000 HR	100,000 HR
16, 18, 19, 21, 23	L96	L94	L91
25, 27, 28	L95	L93	L88
30	L95	L93	L87

Note: Projected Lxx based on LM80 (10,000 hour testing). DOE Lighting Facts Verification Testing Tolerances apply to initial luminous flux and lumen maintenance measurements.

Electrical

- Input Voltage:** 120-277 volt and 347-480 volt
- Input Frequency:** 50/60Hz
- Power Factor (PF)*:** >90%
- Total Harmonic Distortion (THD)*:** <20%

*Power factor and THD tolerance exceptions: ERL1 "02" Lumen output: PF and THD within tolerances above only at 120 volt. ERL1 "03" Lumen output: @120 volt PF~0.89; @ 480 volt THD~26% ERL1 "04" Lumen output: @480 volt THD~22%

Ratings

- Surge Protection:** per ANSI C136.2-2015: (Driver Internal):
 - 6kV/3kA "Basic: (120 Strikes)" - Standard on ERL1 (02-06)
 - 10kV/5kA "Enhanced: (40 Strikes)" - Standard on ERL1 (07 - 10), ERLH, ERL2
- (Additional Separate Secondary SPD)**
 - 10kV/5kA "Enhanced: (40 Strikes)" - Option "R"
 - 20kV/10kA "Elevated" (40 Strikes) - Option "T"
- Safety:** UL/cUL Listed. UL 1598 listed, suitable for wet locations (UL) (cUL)
- Environmental:** Compliant with the materials restrictions of RoHS
- EMI:** Title 47 CFR Part 15 Class A
- Vibration:** 3G per ANSI C136.31-2010
- LM-79 testing in accordance with IESNA Standards
- Std. Optical enclosure rated per ANSI C136.25-2009:
 - ERL1/ERLH/ERL2 = IP65, Optional: IP66

Operating Temperature:

PRODUCT ID	LUMEN OUTPUT	AMBIENT READING
ERL1	02-10	-40°C to 50°C
ERLH	10-11	-40°C to 50°C
ERLH	13-16	-40°C to 45°C
ERL2	16-28	-40°C to 50°C
ERL2	30	-40°C to 45°C

Delayed start may be experienced < -35°C

Construction & Finish

- Housing:**
 - Die Cast Enclosure
 - Casting-integral heat sink for maximum heat transfer
- Lensing:** Impact resistant tempered glass, standard
- Paint:** Corrosion resistant polyester powder painted, minimum 2.0 mil. thickness.
 - Standard Colors: Dark Bronze, Black, & Gray
 - RAL & custom colors available
 - Optional coastal finish available.
- Weight:** 12.4lbs (5.6kg) – 24lbs (10.9kg)

Warranty

- System Warranty:** 5 Year Standard, 10 Year Optional

Controls

- Dimming:**
 - Standard: 0-10V; Optional: DALI (120-277V Only)
- Sensors:**
 - Photo electric sensors (PE) available.
- LightGrid™ compatible

Mounting

- Slipfitter with +/- 5 degree of adjustment for leveling.
- Integral die cast mounting pipe stop.
- Adjustable for 1.25 in. or 2 in. mounting pipe.

Suggested HID Replacement Lumen Levels

- ~4,000–5,000 lumens to replace 100W HPS Cobra-head
- ~7,000–8,800 lumens to replace 150W HPS Cobra-head
- ~8,500–11,500 lumens to replace 200W HPS Cobra-head
- ~11,500–14,000 lumens to replace 250W HPS Cobra-head
- ~21,000–30,000 lumens to replace 400W HPS Cobra-head

Note: Actual replacement lumens may vary based upon mounting height, pole spacing, design criteria, etc.

PREVIOUS	DESCRIPTION	CURRENT	DESCRIPTION
A1, B1	Extra Narrow/Narrow Asymmetric	A3	Type II Narrow
C1, E1	Asymmetric Short/Medium	B3	Type II Wide
D1, G1	Asymmetric Forward/Extra Wide	C3	Type III
F1	Asymmetric Wide	D3	Type IV
		E3	Type II Enhanced Back Light

**The information above is designed to provide a guideline to select the correct luminaire for a roadway application. The best and most accurate way to ensure the proper design is do a lighting layout Utilizing AGI.



E **R** **L** **H** **0** **11** **E3** **40** **A** **GRAY** **---**

PROD. ID	VOLTAGE	LUMEN OUTPUT	DISTRIBUTION*	CCT	CONTROLS	COLOR	OPTIONS
E = Evolve R = Roadway L = Local H = High Output	0 = 120-277V* 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 D = 347 H = 347-480* * Not available with Fusing. Must choose a discrete voltage with F option.	10 11 13 14 15 16 See Table	A3 = Type II Narrow B3 = Type II Wide C3 = Type III D3 = Type IV E3 = Type II Enhanced Back Light See Table *Nominal IES Type classing subject to typical variation, individual units may differ.	30 = 3000K 40 = 4000K <> Select 3000K CCT for IDA approved units.	A = ANSI C136.41 7-pin D = ANSI C136.41 7-pin with Shorting Cap E = ANSI C136.41 7-pin with non-Dimming PE Control.* *PE Control Only available for 120-277V or 480V Discrete. Not available for 347-480V or 347V Discrete. NOTE: Dimming controls wired for 0-10V standard unless DALI option "U" requested.	GRAY = Gray BLCK = Black DKBZ = Dark Bronze	A = 4 Bolt Slipfitter † F = Fusing G = Internal Bubble Level I = IP66 Optical L = Tool-Less Entry R = Secondary 10kV/5kA SPD U = DALI Programmable +^ X = Single Package # Y = Coastal Finish # XXX = Special Options † Contact manufacturer for Lead-Time. # "X" option provides single pack box per fixture. Std Packaging = 20 units per Magna pak container. * Recommended for installations within 750 ft. from the coast. Contact Factory for Lead-Time. + Compatible with LightGrid 2.0 nodes. ^ Not available in 347V, 480V or 347-480V.

LUMEN OUTPUT	DISTRIBUTION	TYPICAL INITIAL LUMENS		TYPICAL SYSTEM WATTAGE		BUG RATING		IES FILE NUMBER	
		4000K	3000K	120-277V	347-480V	4000K	3000K	4000K	3000K
10	A3	10000	9600	82	82	B2-U0-G2	B2-U0-G2	ERLH_10A340_IES	ERLH_10A330_IES
	B3					B2-U0-G2	B2-U0-G2	ERLH_10B340_IES	ERLH_10B330_IES
	C3					B2-U0-G3	B2-U0-G2	ERLH_10C340_IES	ERLH_10C330_IES
	D3					B1-U0-G3	B1-U0-G2	ERLH_10D340_IES	ERLH_10D330_IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_10E340_IES	ERLH_10E330_IES
11	A3	11500	11000	98	98	B3-U0-G3	B2-U0-G2	ERLH_11A340_IES	ERLH_11A330_IES
	B3					B3-U0-G3	B2-U0-G2	ERLH_11B340_IES	ERLH_11B330_IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_11C340_IES	ERLH_11C330_IES
	D3					B1-U0-G3	B1-U0-G2	ERLH_11D340_IES	ERLH_11D330_IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_11E340_IES	ERLH_11E330_IES
13	A3	13000	12500	111	111	B3-U0-G3	B3-U0-G3	ERLH_13A340_IES	ERLH_13A330_IES
	B3					B2-U0-G3	B2-U0-G3	ERLH_13B340_IES	ERLH_13B330_IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_13C340_IES	ERLH_13C330_IES
	D3					B2-U0-G3	B2-U0-G3	ERLH_13D340_IES	ERLH_13D330_IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_13E340_IES	ERLH_13E330_IES
14	A3	14000	13400	122	122	B3-U0-G3	B3-U0-G3	ERLH_14A340_IES	ERLH_14A330_IES
	B3					B2-U0-G3	B2-U0-G3	ERLH_14B340_IES	ERLH_14B330_IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_14C340_IES	ERLH_14C330_IES
	D3					B2-U0-G3	B2-U0-G3	ERLH_14D340_IES	ERLH_14D330_IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_14E340_IES	ERLH_14E330_IES
15	A3	15000	14400	136	136	B3-U0-G3	B3-U0-G3	ERLH_15A340_IES	ERLH_15A330_IES
	B3					B2-U0-G3	B2-U0-G3	ERLH_15B340_IES	ERLH_15B330_IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_15C340_IES	ERLH_15C330_IES
	D3					B2-U0-G3	B2-U0-G3	ERLH_15D340_IES	ERLH_15D330_IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_15E340_IES	ERLH_15E330_IES
16	A3	16000	15300	149	149	B3-U0-G3	B3-U0-G3	ERLH_16A340_IES	ERLH_16A330_IES
	B3					B3-U0-G3	B3-U0-G3	ERLH_16B340_IES	ERLH_16B330_IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_16C340_IES	ERLH_16C330_IES
	D3					B2-U0-G3	B2-U0-G3	ERLH_16D340_IES	ERLH_16D330_IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_16E340_IES	ERLH_16E330_IES

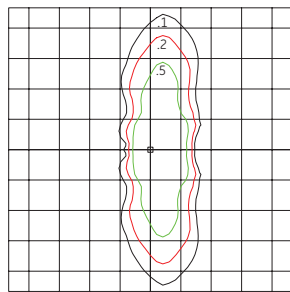
Photometrics:

Evolve™ LED Streetlight (ERLH)

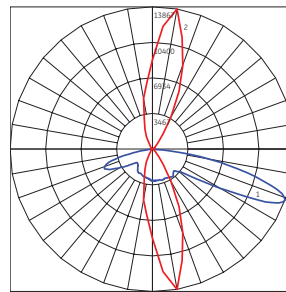
ERLH

Type II Narrow
(13A340)

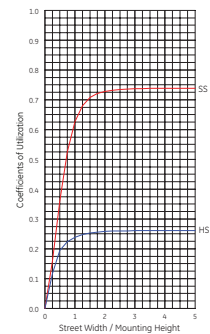
13,000 Lumens
4000K
ERLH_13A340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



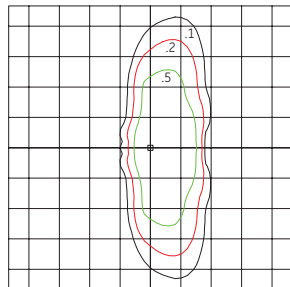
— Vertical plane through horizontal angle of Max. Cd at 80°
— Horizontal cone through vertical angle of Max. Cd at 69°



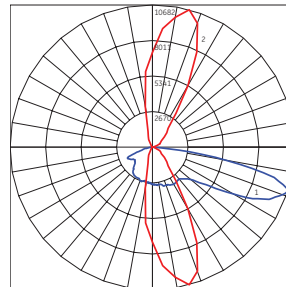
ERLH

Type II Wide
(13B340)

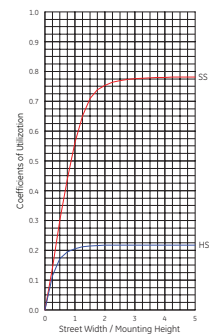
13,000 Lumens
4000K
ERLH_13B340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



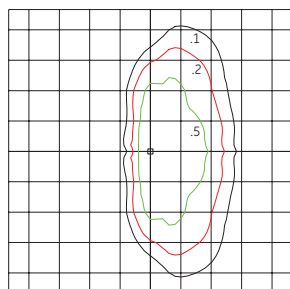
— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 72°



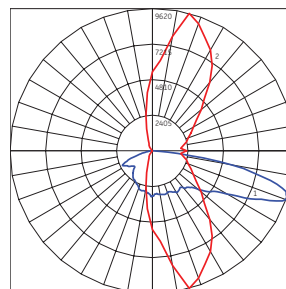
ERLH

Type III
(13C340)

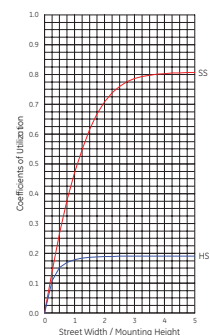
13,000 Lumens
4000K
ERLH_13C340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



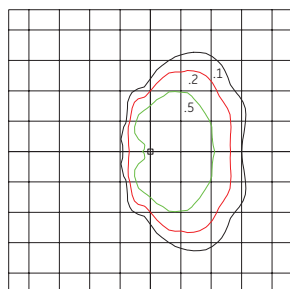
— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 71°



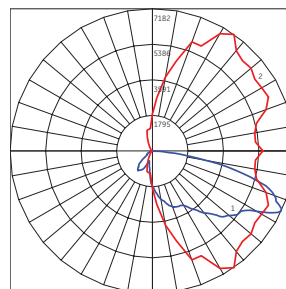
ERLH

Type IV
13D340

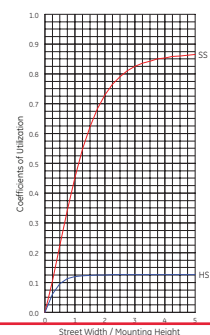
13,000 Lumens
4000K
ERLH_13D340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



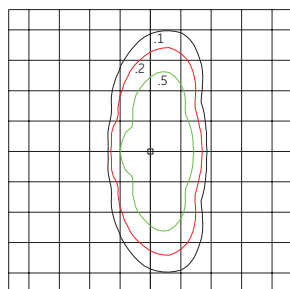
— Vertical plane through horizontal angle of Max. Cd at 55°
— Horizontal cone through vertical angle of Max. Cd at 65°



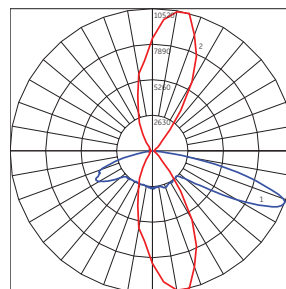
ERLH

Type II Enhanced Back Light
13E340

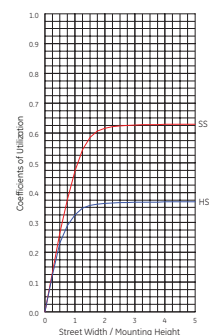
13,000 Lumens
4000K
ERLH_13E340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 69°



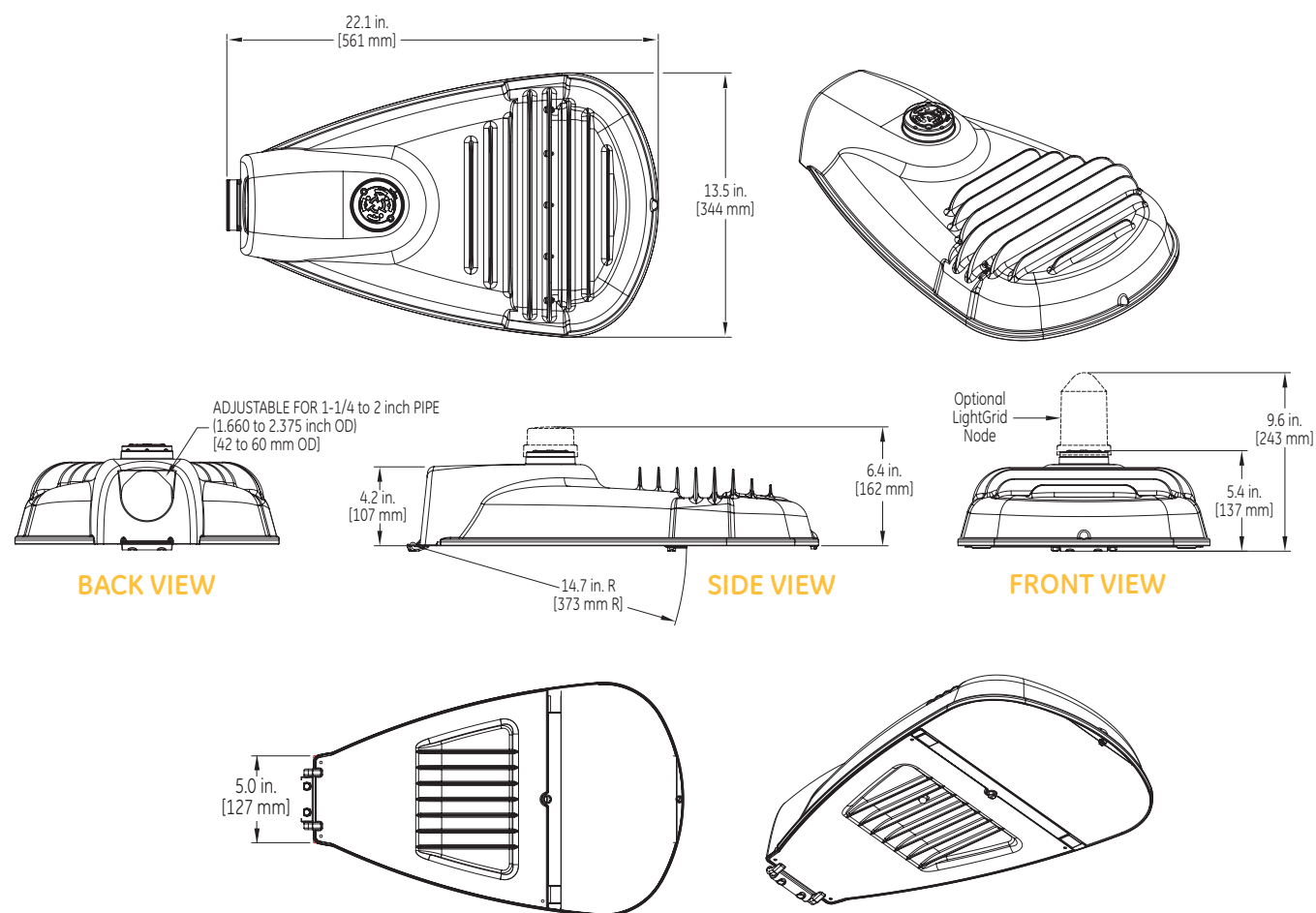
GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2

Product Dimensions:

Evolve™ LED Streetlight (ERLH)



DATA

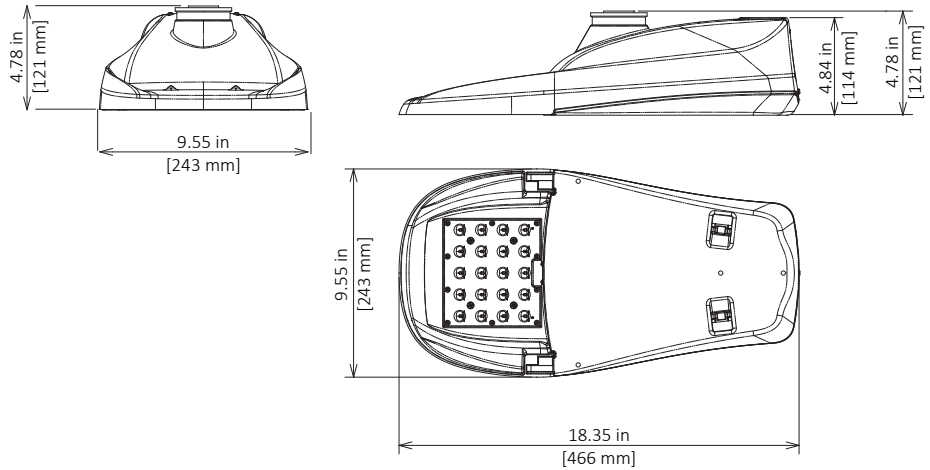
- Approximate net weight: 15.15 lbs (6.9 kgs) - 2 Bolt Slipfitter
- Approximate net weight: 15.85 lbs (7.2 kgs) - 4 Bolt Slipfitter
- Effective Projected Area (EPA): 0.5 sq ft max (0.046 sq m)

GreenCobra™ Jr. LED Street Light

GCJ H-Series Specification Data Sheet

Luminaire Data

Weight 7 lbs [3.2 kg]
EPA 0.39 ft²



Ordering Information

Sample Catalog No. GCJ1 20H MV NW 2R GY 580

Product	LED Code	Voltage	Color Temperature	Distribution	Finish ¹	GCJ0 Drive Current Code ²	Options
GCJ0	15H	MV 120-277V HV 347-480V	WW 3000K NW 4000K CW 5000K	2R Type 2 3 Type 3 4 Type 4 5 Type 5	GY Gray DB Dark Bronze BK Black	300 390 490 590 700	FDC ³ Fixed Drive Current FFA ⁴ Full Field Adjustability LPCR Less Photocontrol Receptacle PCR ⁵ ANSI 7-wire Photo-control Receptacle PCR7-CR ⁶ Control Ready 7-wire PC Receptacle
GCJ1	20H					350 450 530 580 700	WL Utility Wattage Label 4B 4-Bolt Mounting Bracket RWG Rubber Wildlife Guard SWTB Straight Wire Terminal Block
GCJ2	20H					700 830 900 1A	BBL Bubble Level

Notes:

- Gray, Black, and Dark Bronze standard. Consult factory for other finishes.
- Specified drive current code is the factory set maximum drive current. Field adjustable current selector enables standard dimming to lower wattage drive currents only. Consult factory if wattage limits require a special drive current.
- Non-field adjustable, fixed drive current. Specify required drive current code. Not available with PCR7-CR option.
- The FFA option enables full field adjustability from the specified drive current code to all drive currents available. This option is not DLC qualified.
- Field adjustable current selector included to enable standard dimming to lower wattage drive currents only. Field changeable connectors included to enable connection to PCR7 (wireless node dimming is disabled by default).
- Control-ready wired at factory for wireless node dimming. Supplied at maximum drive current. If a lower drive current is required, consult factory.
- Flush mounted house side shield. Shield cuts light off at 1/2 mounting height behind luminaire.
- Flush mounted cul-de-sac shield. Shield cuts light off at 1/2 mounting height behind luminaire and 1-1/2 mounting height on either side of luminaire.
- Specify Color (GY, DB, BK)
- Specify MV (120-277V) or HV (347-480V).

Accessories*

HSSGCJ ⁷	House Side Shield, Snap-On*
CSSGCJ ⁸	Cul-De-Sac Side Shield, Snap-On*
SPB ⁹	Square Pole Horizontal Arm Bracket
RPB ⁹	Round Pole Horizontal Arm Bracket
PTB ⁹	Pole Top Tenon Horizontal Arm Bracket
PTB2 ⁹	Pole Top Tenon Horizontal Arm Bracket (2@180°)
WB ⁹	Wall Horizontal Arm Bracket
BSK	Bird Deterrent Spider Kit
PC	Twist Lock Photocontrol
LLPC ¹⁰	Long-Life Twist Lock Photocontrol
SC	Twist Lock Shorting Cap

*Accessories are ordered separately and not to be included in the catalog number. For factory installed HSS, CSS specify as option in luminaire catalog number.

Luminaire Specifications

Housing

Die cast aluminum housing with universal two-bolt slip fitter mounts to 1-1/4" to 2" (1-5/8" to 2-3/8" O.D.) diameter mast arm. One-piece aluminum housing provides passive heat-sinking of the LEDs and has upper surfaces that shed precipitation. Four-bolt mounting bracket is available. Mounting provisions meet 3G vibration per ANSI C136.31-2010 Normal Application, Bridge & Overpass. Mounting has leveling adjustment from ± 5° in 2.5° steps. Electrical components are accessed without tools via a high-strength, non-conductive polycarbonate door with quick-release latches. Polycarbonate material meets UL 746C for outdoor usage. Available rubber wildlife guard (RWG option) conforms to mast arm with no gaps.

Light Emitting Diodes

Hi-flux/Hi-power white LEDs produce a minimum of 90% of initial intensity at 100,000 hours of life based on IES TM-21 (L90 ≥ 100k hours). LEDs are tested in accordance with IES LM-80 testing procedures. LEDs have correlated color temperature of 3000K (WW), 4000K (NW), or 5000K (CW) and 70 CRI minimum. LEDs are 100% mercury and lead free.

Field Adjustability

LED drive current can be changed in the field to adjust light output for local conditions (not available with PCR7-CR option). The specified drive current code will be the factory set maximum drive current and field adjustments can only be made to available lower wattage drive currents. Select the FFA option if full field adjustability to all available drive currents (700mA max or 1A max) is desired. The FFA option is not DLC qualified.

Quality Control

Every luminaire is performance tested before and after a 2-hour burn-in period. Assembled in the USA.

Optical Systems

Micro-lens optical systems produce IESNA Type 2, Type 3, Type 4, or Type 5 distributions and are fully sealed to maintain an IP66 rating. Luminaire produces 0% total lumens above 90° (BUG Rating, U=0). Optional house side shield cuts light off at 1/2 mounting height behind luminaire. Cul-de-sac shield provides back and side light control for end of cul-de-sac applications. Both shields are field installable without tools.

Electrical

Rated life of electrical components is 100,000 hours. Uses isolated power supply that is 1-10V dimmable. Power supply is wired with quick-disconnect terminals. Power supply features a minimum power factor of .90 and <20% Total Harmonic Distortion (THD). EMC meets or exceeds FCC CFR Part 15. Terminal block accommodates 6 to 14 gauge wire. Surge protection complies with IEEE/ANSI C62.41 Category C High, 20kV/10kA and ANSI C136.2-2015, 20kV/10kA.

Controls

3-Wire photocontrol receptacle is standard. ANSI C136.41 7-wire (PCR7) photocontrol receptacles is available. All photocontrol receptacles have tool-less rotatable bases. Wireless control module is provided by others.

Finish

Housing receives a durable, fade-resistant polyester powder coat finish with 3.0 mil nominal thickness. Finish tested to withstand 5000 hours in salt spray exposure per ASTM B117. Finish meets scribe creepage rating 8 per ASTM D1654. Finish tested 500 hours in UV exposure per ASTM G154 and meets ASTM D523 gloss retention.

Listings/Ratings/Labels

luminaires are UL listed for use in wet locations in the United States and Canada. DesignLights Consortium™ qualified product. Consult DLC QPL for Standard and Premium Classification Listings. International Dark Sky Association listed. Luminaire is qualified to operate at ambient temperatures of -40°C to 40°C. Assembled in the U.S.A

Photometry

luminaires photometrics are tested by certified independent testing laboratories in accordance with IES LM-79 testing procedures.

Warranty

10-year limited warranty is standard on luminaire and components.

Vandal Resistance

Housing and optics rated to IK10

Standards

Luminaire complies with:

ANSI: C136.2, C136.3, C136.10, C136.13, C136.15, C136.22, C136.31, C136.35, C136.37, C136.41, C62.41, C78.377, C82.77

Other: FCC 47 CFR, IEC 60598, ROHS II, UL 1449, UL 1598

Performance Data: 3000K (WW)

All data nominal. IES files for all CCTs available at leotek.com.

Product	LED Code	Drive Current Code	System Wattage (W)	Delivered Lumens (Lm) ¹	Efficacy (Lm/W)
GCJ0	15H	300 ²	15	1810	121
		390 ²	19	2280	120
		490 ³	24	2840	118
		590	30	3410	114
		700	35	3910	112
GCJ1	20H	350 ³	25	3040	122
		450	29	3470	120
		530	34	3980	117
		580	39	4470	115
		700	46	5130	112
GCJ2	20H	700	45	5020	112
		830	54	5780	107
		900	58	6120	106
		1A	68	6960	102

Notes:

1 Nominal lumens. Normal tolerance $\pm 10\%$ due to factors including distribution type, LED bin variance, and ambient temperatures.

2 DLC Approved only at 120VAC.

3 DLC Approved at 120-240VAC.

Performance Data: 4000K (NW) and 5000K (CW)

All data nominal. IES files for all CCTs available at leotek.com.

Product	LED Code	Drive Current Code	System Wattage (W)	Delivered Lumens (Lm) ¹	Efficacy (Lm/W)
GCJ0	15H	300 ²	15	2000	133
		390 ²	19	2490	131
		490 ³	24	3070	128
		590	30	3650	122
		700	35	4180	119
GCJ1	20H	350 ³	25	3240	130
		450	29	3720	128
		530	34	4320	127
		580	39	4850	124
		700	46	5510	120
GCJ2	20H	700	45	5430	121
		830	54	6210	115
		900	58	6630	114
		1A	68	7430	109

Notes:

1 Nominal lumens. Normal tolerance $\pm 10\%$ due to factors including distribution type, LED bin variance, and ambient temperatures.

2 DLC Approved only at 120VAC.

3 DLC Approved at 120-240VAC.

BUG Ratings: 3000K (WW)

All data nominal. IES files for all CCTs are available at leotek.com.

Product & LED Code	Drive Current Code	Type 2R	Type 3	Type 4	Type 5
		BUG Rating	BUG Rating	BUG Rating	BUG Rating
GCJ0 15H	300	B0 U0 G0	B1 U0 G1	B1 U0 G1	B1 U0 G0
	390	B1 U0 G0	B1 U0 G1	B1 U0 G1	B1 U0 G0
	490	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G0
	590	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G0
	700	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G1
GCJ1 20H	350	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G0
	450	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G0
	530	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G1
	580	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G1
	700	B1 U0 G1	B2 U0 G1	B2 U0 G1	B3 U0 G1
GCJ2 20H	700	B1 U0 G1	B1 U0 G1	B2 U0 G1	B3 U0 G1
	830	B1 U0 G1	B2 U0 G2	B2 U0 G1	B3 U0 G1
	900	B1 U0 G1	B2 U0 G2	B2 U0 G1	B3 U0 G1
	1A	B1 U0 G2	B2 U0 G2	B2 U0 G2	B3 U0 G1

BUG Ratings: 4000K (NW) and 5000K (CW)

All data nominal. IES files for all CCTs are available at leotek.com.

Product & LED Code	Drive Current Code	Type 2R	Type 3	Type 4	Type 5
		BUG Rating	BUG Rating	BUG Rating	BUG Rating
GCJ0 15H	300	B1 U0 G0	B1 U0 G1	B1 U0 G1	B1 U0 G0
	390	B1 U0 G0	B1 U0 G1	B1 U0 G1	B1 U0 G0
	490	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G0
	590	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G1
	700	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G1
GCJ1 20H	350	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G1
	450	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G1
	530	B1 U0 G1	B1 U0 G1	B1 U0 G1	B2 U0 G1
	580	B1 U0 G1	B1 U0 G1	B2 U0 G1	B3 U0 G1
	700	B1 U0 G1	B2 U0 G1	B2 U0 G1	B3 U0 G1
GCJ2 20H	700	B1 U0 G1	B2 U0 G1	B2 U0 G1	B3 U0 G1
	830	B1 U0 G1	B2 U0 G2	B2 U0 G1	B3 U0 G1
	900	B1 U0 G1	B2 U0 G2	B2 U0 G2	B3 U0 G1
	1A	B1 U0 G2	B2 U0 G2	B2 U0 G2	B3 U0 G1