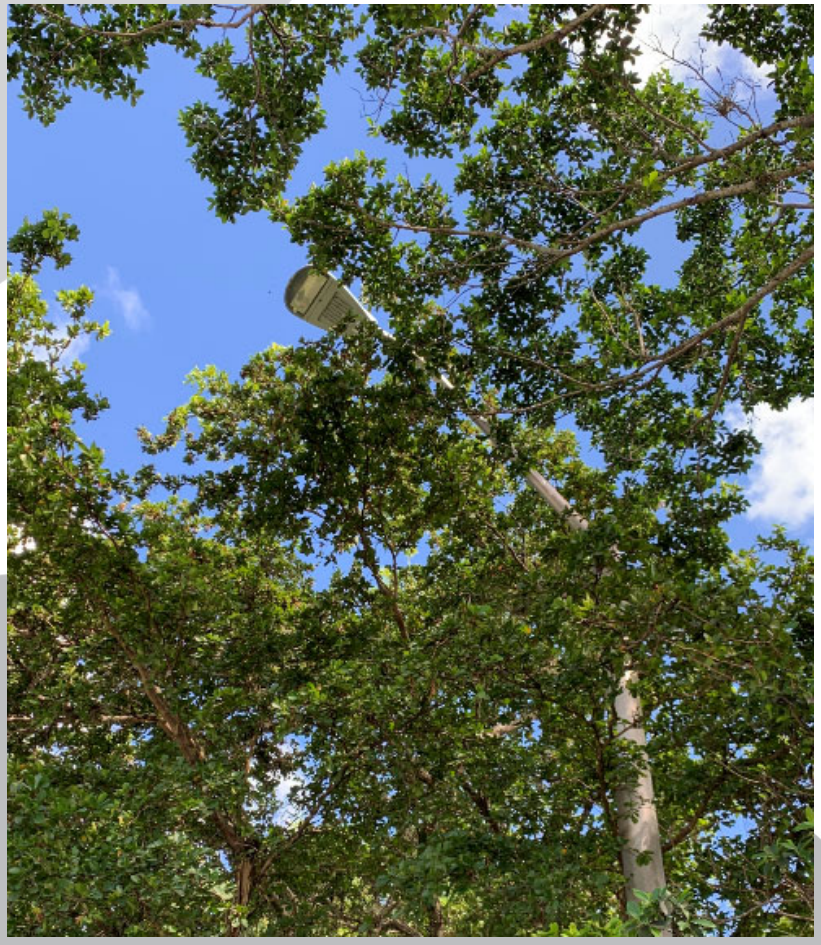
Town of Miami Lakes
Residential Roadway Lighting Systems



Prepared for:

Town of Miami Lakes

Prepared by:

Wood Environment & Infrastructure Solutions, Inc.
404 SW 140th Terrace
Gainesville, FL 32669

October 2019

Table of Contents

Executive Summary

Section 1.0 Scope and Technical Approach
- 1.1 Scope of Lighting Assessment
- 1.2 Recommended Illuminance Values

Section 2.0 Roadway Illuminance Values and Issues
- 2.1 Residential Roadway Fixture Types
- 2.2 Town Zone Numbers
- 2.3 Street Trees and Their Impact on Roadway Lighting Conditions
- 2.4 Zones 6, 7, and 8 – American Revolution Pole-Top 39-watt Fixture
- 2.5 Zone 6 - RSW Pole-Arm 45-watt Fixture
- 2.6 Zones 1 through 5 - Evolve Pole-Arm 32-watt Fixture
- 2.7 Zone 4 – Pole-Top 75-watt Screw in Lamp

Section 3.0 Recommendations

Appendix A Photographs
Appendix B Zone Map
Appendix C Existing Photometric Modelling
Appendix D Recommended Solutions
Appendix E Cutsheets

List of Acronyms

%	percent
fc	foot-candle
HID	high-intensity discharge
kW	kilowatt
kWh	kilowatts per hour
LED	light emitting diode
NA	not applicable
sq ft	square feet

Executive Summary

Wood Environmental & Infrastructure Solutions, Inc. (Wood) performed a roadway lighting assessment for the Town of Miami Lakes, Florida. Construction cost estimates and changes in energy usage are based on experience from similar projects. Results are expected to be accurate within +/- 30%. This report presents the findings of Wood's onsite roadway lighting assessment, results of photometric modelling of residential roadway fixtures and recommended solutions to correct lighting deficiencies.

Wood's assessment of the Town of Miami Lake's roadway lighting system found areas of low-light levels throughout their residentials areas. These low light levels can be attributed to the following causes:

- Insufficient maintenance of the town's tree canopy is causing significant shadows throughout its residential neighbourhoods. Fixtures are often located above trees, inside the tree canopy or behind trees which greatly decreases the ability of the lighting to reach the roadway and sidewalk as intended.
- Photometric modelling and field light level measurements show that even without the tree canopy the desired light levels would not be reached by the existing fixtures. The spacing of the existing fixtures is too great to meet the recommended light level of 0.4-foot candle (fc).

Wood presents two exterior lighting upgrade options in Section 3 of this report. Option 1 involves installing new light poles and fixtures to meet recommended light levels and would cost an estimated $3.2M. Option 2 involves replacing fixtures on existing poles with higher water fixtures. This option would increase light levels close to recommended light levels and would cost an estimated $1.0M.

Section 1.0 Scope and Technical Approach

1.1 Scope of Lighting Assessment

The scope of work for the lighting assessment included the following tasks:

Task 1 - Onsite assessment of the roadway lighting systems. A two-person team gathered the necessary onsite lighting details. Information gathered will include verification of LED upgrades, measurement of representative street light levels, and photographs. The onsite visit to assess roadway lighting conditions was performed on August 20-21, 2019.

Task 2 - Photometric study and drawings. Photometric modelling of representative roadway lighting will be developed to presented in the report and show areas of deficient light levels. Photometric modelling will be used to develop recommendations to correct deficiencies.

Task 3 - Roadway Lighting System Assessment Report. This report includes an inventory of new LED fixtures installed by FPL, list of deficient areas, recommendations for new LED fixtures in areas which are significantly under- or over-lit, and previously deficient areas that have improved with the LED installation. The report will be prepared based on available information and include a summary of observations, analysis, conclusions, photo documentation, recommended products cut-sheets, and cost estimates.

1.2 Recommended Illuminance Values

Table 1 presents recommend illuminance levels from the American Association of State Highway and Transportation Officials (AASHTO) Roadway Lighting Design Guide used in the Roadway Lighting Report prepared by ADA Engineering for the Town of Miami Lakes in 2012.

Table 1: Recommended Illuminance Values

Local Streets	Average Maintained Illuminance (fc)	Max Uniform Ratio (Average/Minimum)
Commercial Areas	0.8	6 to 1
Intermediate	0.7	6 to 1
Residential Areas	0.4	6 to 1
Minor Arterials		
Commercial Areas	1.4	4 to 1
Intermediate	1.0	6 to 1
Residential Areas	0.7	4 to 1
Sidewalks		
Commercial Areas	1.3	3 to 1
Intermediate	0.8	4 to 1
Residential Areas	0.4	6 to 1

The residential street in the Town of Miami Lakes is classified as Local Street – Residential. Our photometric design criteria used 0.4 fc which was also the recommended light level in the 2012 report.

Section 2.0 Roadway Illuminance Values and Issues

This section will discuss the findings from onsite audit and photometric analysis of the existing fixtures serving the residential areas of the Town of Miami Lakes. These fixtures were installed in 2017 as part of the Town's upgrade project which converted roadway lighting to LED fixtures.

2.1 Residential Roadway Fixture Types

There are four fixtures types used for roadway lighting in residential areas and these are presented in Table 2-1. Photographs of these fixtures are presented in Appendix A.

Table 2-1: Residential Roadway Lighting Fixtures

Fixture Type	Fixture Owner	Number of Fixtures	General Location	Typical Location
American Revolution 39-Watt 3000K	FPL	654	Zones 6, 7, and 8	14068 NW 88TH Pl
RSW 45-Watt 3000K	FPL	188	Zone 6	14921 NW 89TH Ct
Evolve LED 32W Type B	ToML	396	Zones 1, 2, 3, 4, and 5	14598 Mahogany Ct
75W Screw-In Lamp	ToML	40	Zone 4	7246 Jacaranda Ln

2.2 Town Zone Numbers

The zone numbers used in this report refer to the map provided in Appendix B, which shows the Town of Miami Lakes divided in eight zones. This Map was developed as part of the Town of Miami Lakes Asset Identification System.

2.3 Street Trees and Their Impact on Roadway Lighting Conditions

The residential areas of the Town of Miami Lakes generally have a healthy and attractive tree canopy. As with cities throughout the country balancing the aesthetic appeal of street trees with their negative impact on street lighting is a difficult task. Wood found many areas where tree shadows reduced lighting uniformity and visibility on the sidewalks and streets. Examples of areas where light fixtures are blocked by trees are presented in Appendix A. Balancing the preservation of trees for environmental benefits and the removal/pruning of trees for traffic safety is a delicate process. Governing bodies, planners, and the public must work together to reach consensus when managing such a sensitive issue.

The photometric analysis, presented in Section 2.4, shows that even without the tree canopy the roadway light levels in the residential areas would be significantly below recommended light levels. However, in many areas the existing tree canopy would make it impossible to meet desired light levels even with lighting upgrades. Wood recommends that the Town work with residents and the company that provides tree maintenance to come up with a plan that will improve roadway light levels and maintain the aesthetic value of the town's tree canopy. A much more aggressive program of tree pruning is required to prevent excessive shadows and raise light levels.

Light levels were most impacted in Zones 1, 2, 3, and 4 where the tree canopy is more mature. The residential areas in these zones were generally served by post-arm fixtures which were sometime located above or in the tree canopy. The post-top fixtures that are prevalent in Zones 6, 7, and 8 are mounted on lower poles and more likely to be under the tree canopy. Wood recommends that measures taken to reduce shadows caused by the tree canopy start in Zones, 1, 2, 3, and 4.

2.4 Zones 6, 7, and 8 – American Revolution Pole-Top 39-watt Fixture

The American Revolution Pole-Top 398-watt fixture is the most common type of residential roadway fixture in the Town of Miami Lakes. This decorative pole-top fixture is present throughout Zones 7 and 8, and located between NW 146rd St on North, Palmetto Frontage Rd on the East and South and NW 89th Ave on the West in Zone 6. The area served by these fixtures is classified as Local Street-Residential and the desired sustained light level is 0.4 fc with a minimum average-to-minimum uniformity ration of six.

These fixtures are typically 130 to 160 feet apart. Light levels measurements in the field ranged from 2.6 fc to 0 fc. Over half of the distance between the fixtures had a measured light level of 0.0 fc. Photometrics for these fixtures prepared by Wood are presented in Appendix C. The photometrics show that even with without the presence of the tree canopy the light level between the fixtures drops to 0.0 fc and the average light level is 0.2 fc.

Shadow from trees are a problem in many areas served by these fixtures. The tree canopy seemed to cause the most problems with reduced light levels in Zone 8. In some areas the light pole position between the sidewalk and residences which greatly reduces light levels on the roadway.

2.5 Zone 6 - RSW Pole-Arm 45-watt Fixture

These pole-arm fixtures are located in between Miami Lakes Drive on the north, NW 87 Avenue on the east, NW 92nd Avenue on the west, and to the south by NW 144 Terrace and 146th Street in Zone 6. The area served by these fixtures is classified as Local Street-Residential and the desired sustained light level is 0.4 fc with a minimum average-to-minimum uniformity ration of six.

These fixtures are typically 130 to 180 feet apart. Light levels measurements in the field ranged from 0.8 fc to 0.0 fc. Over half of the distance between the fixtures had a measured light level of 0.0 fc. Photometrics for these fixtures prepared by Wood are presented in Appendix C. The photometrics show that even with without the presence of the tree canopy the light level between the fixtures drops to 0.0 fc and the average light level is 0.3 fc.

The tree canopy in this area is less mature than other areas of the Town of Miami Lakes. Because these fixtures are on 30-ft poles with pole-arm fixtures, the light level reduction caused by the tree canopy is limited in this area.

2.6 Zones 1 through 5 - Evolve Pole-Arm 32-watt Fixture

These pole-arm fixtures are the main residential light fixture serving Zones 1 through 5. The area served by these fixtures is classified as Local Street-Residential and the desired sustained light level is 0.4 fc with a minimum average-to-minimum uniformity ration of six.

These fixtures are typically 200 to 300 feet apart. Light levels measurements in the field ranged from 3.4 fc to 0.0 fc. Over half of the distance between the fixtures had a measured light level of 0.0 fc. Photometrics for these fixtures prepared by Wood are presented in Appendix C. The photometrics show that even with without the presence of the tree canopy the light level between the fixtures drops to 0.0 fc and the average light level is 0.1 fc.

The tree canopy if these zones is thick on often located beneath the fixtures. This is causing substantial shadowing and reduction of light levels.

2.7 Zone 4 – Pole-Top 75-watt Screw in Lamp

These post-top fixtures were retrofit with 75-watt screw-in lamps as part of the 2017 LED lighting upgrades project. These fixtures are located in the northwest portion of Zone 4.

These fixtures are typically 200 to 250 feet apart. Light levels measurements in the field ranged from 1.6 fc to 0 fc. Most of the space between the fixtures had a measured light level of 0.0 fc. Photometrics for these fixtures prepared by Wood are presented in Appendix C. The photometrics show that even with without the presence of the tree canopy the light level between the fixtures drops to 0.0 fc and the average light level is 0.2 fc.

The tree canopy if the area served by these fixtures is thick on often located between the fixtures. This is causing substantial shadowing and reduction of light levels.

Section 3.0 Recommendations

Wood assessment of the residential roadway lighting in the Town of Miami Lakes identified problems with the tree canopy causing significant shadows on roadway and sidewalks, and light fixtures spaced too far apart to reach the recommended light level of 0.4 fc. The light levels in much of the space between fixtures drops to 0.0 fc either because existing fixtures are not strong enough, the poles are spaced too far apart, or because of shadows from the tree canopy.

Wood recommendations to address the problems identified in this report are as follow:

- Tree Canopy Maintenance: The first step the town should take is to greatly increase maintenance of the tree canopy with a concerted effort to reduce tree shadows reducing light from roadway fixtures. The town should include residents in the decision-making process to reduce public outcry regarding the increased pruning of tree canopy.

- Option 1: Install Additional Roadway Lighting: Wood did an analysis of the additional fixtures required to bring roadway light levels to the desired 0.4 fc (see Appendix D). Findings of this analysis include the following:
  - For each of the four fixture types used for residential roadway lighting the town would need to install approximately twice as many fixtures. For aesthetic reasons, the new fixtures added in Wood's analysis are the same as the existing fixtures for each deficient area (see Appendix E: Cutsheets for details).
  - The cost to install additional fixtures for all four fixture types is $3.2M.
  - The installation cost does not include energy usage of the new fixtures which would cost the town approximately $26K per year (assuming a cost of $0.12 per kWh). This option will increase energy usage associated with street lighting by approximately 100%.
  - The worst performing fixture used by the town is the 32-watt pole arm fixture in Zones 1, 2, 3, 4, and 5. It is recommended that fixture upgrades start in these Zones. The estimated costs associated with the recommended Option 1 upgrades in Zones 1-5 is $1.3M.

- Option 2: Replace Existing Fixtures with Higher Wattage Fixtures: Wood's analysis of replacing existing fixtures with high wattage fixtures brought light levels to within 10% of the desired light level of 0.4 fc (see Appendix D for details). Finding of this analysis include the following:
  - For aesthetic reasons, the replacement fixtures used in Wood's analysis are higher wattage versions of the existing fixtures (see Appendix E: Cutsheets for details).
  - The cost to replace existing fixtures with higher wattage fixtures for all four fixture types is estimated to be 1.0M.
  - The installation cost does not include the additional energy usage of the new fixtures which would cost the town approximately $22K per year (assuming a cost of $0.12 per kWh). This option will increase energy usage associated with street lighting by approximately 85%.
  - The worst performing fixture used by the town is the 32-watt pole arm fixture in Zones 1, 2, 3, 4, and 5. It is recommended that fixture upgrades start in these Zones. The estimated costs associated with the recommended Option 2 upgrades in Zones 1-5 is $366K.

Appendix A
Photographs

Photo 1: American Revolution 39-watt 3000K

Photo 2: American Revolution 39-watt 3000K

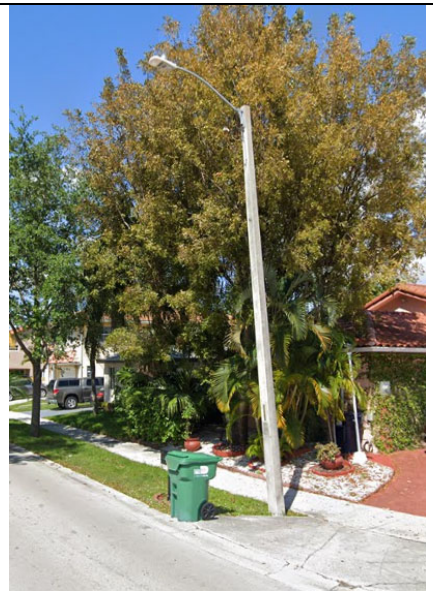


Photo 3: RSW 45-watt 3000K

Photo 4 RSW 45-watt 3000K

Photo 5: Evolve LED 32W Type B

Photo 6: Evolve LED 32W Type B

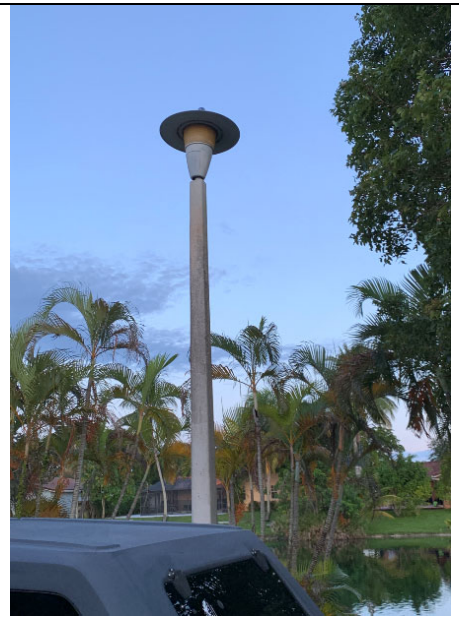


Photo 7: 75-watt Screw-In LED Lamp

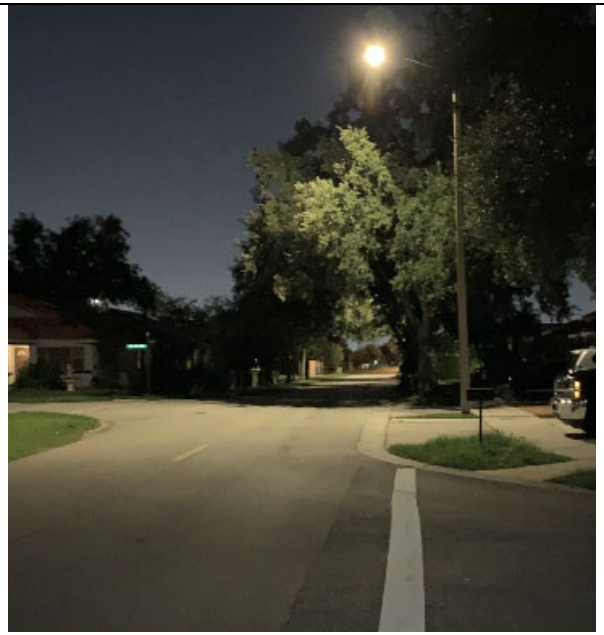


Photo 8: Residential Street with Shadows from Trees

Photo 9: Roadway Fixture Located Behind Tree, Zone 7

Photo 10: Roadway Fixture Located Behind Tree, Zone 8

Photo 11: Roadway Fixture Located Above Tree, Zone 3

Photo 12: Roadway Fixture Located Behind Tree, Zone 2

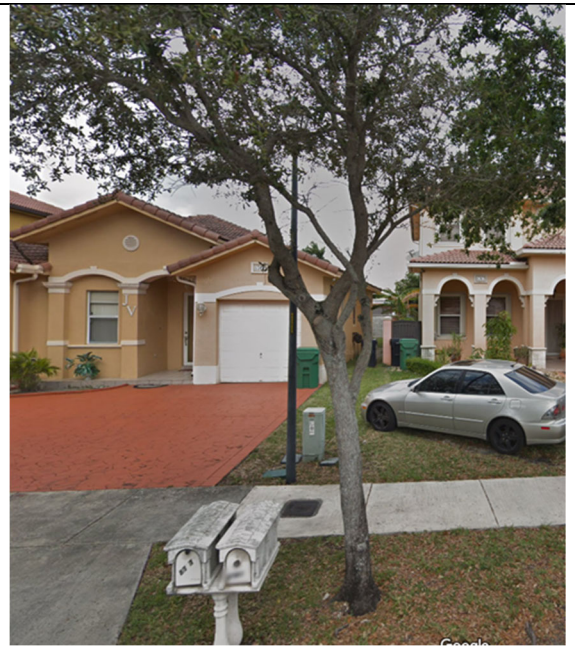


Photo 9: Roadway Fixture Located Behind Tree, Zone 6

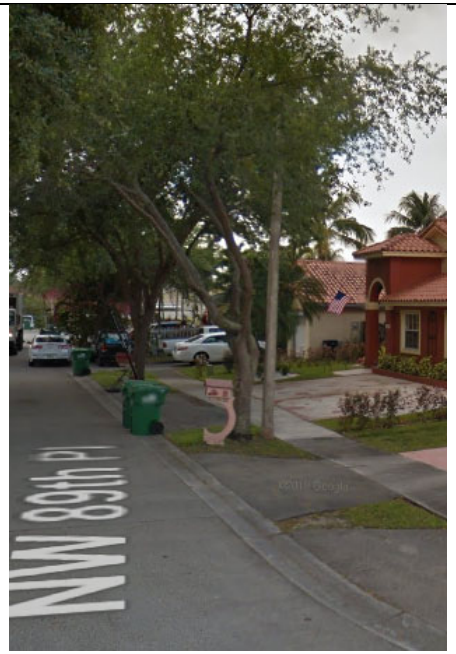


Photo 10: Roadway Fixture Located Behind Tree, Zone 6

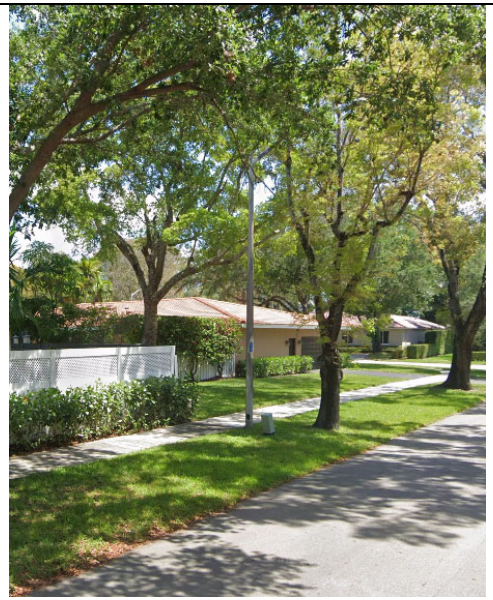


Photo 11: Roadway Fixture Located Above Tree, Zone 1

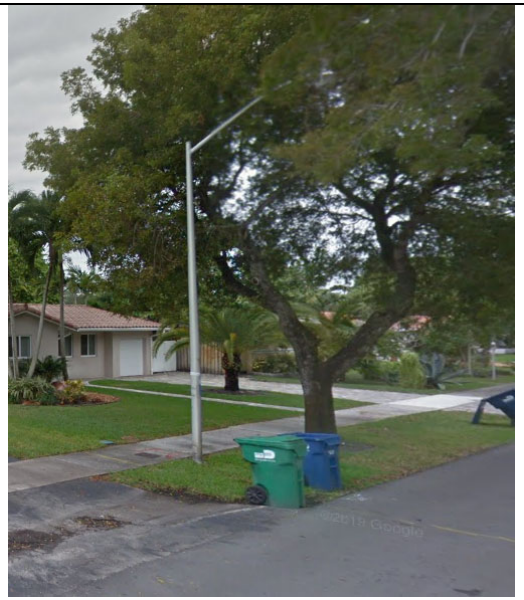
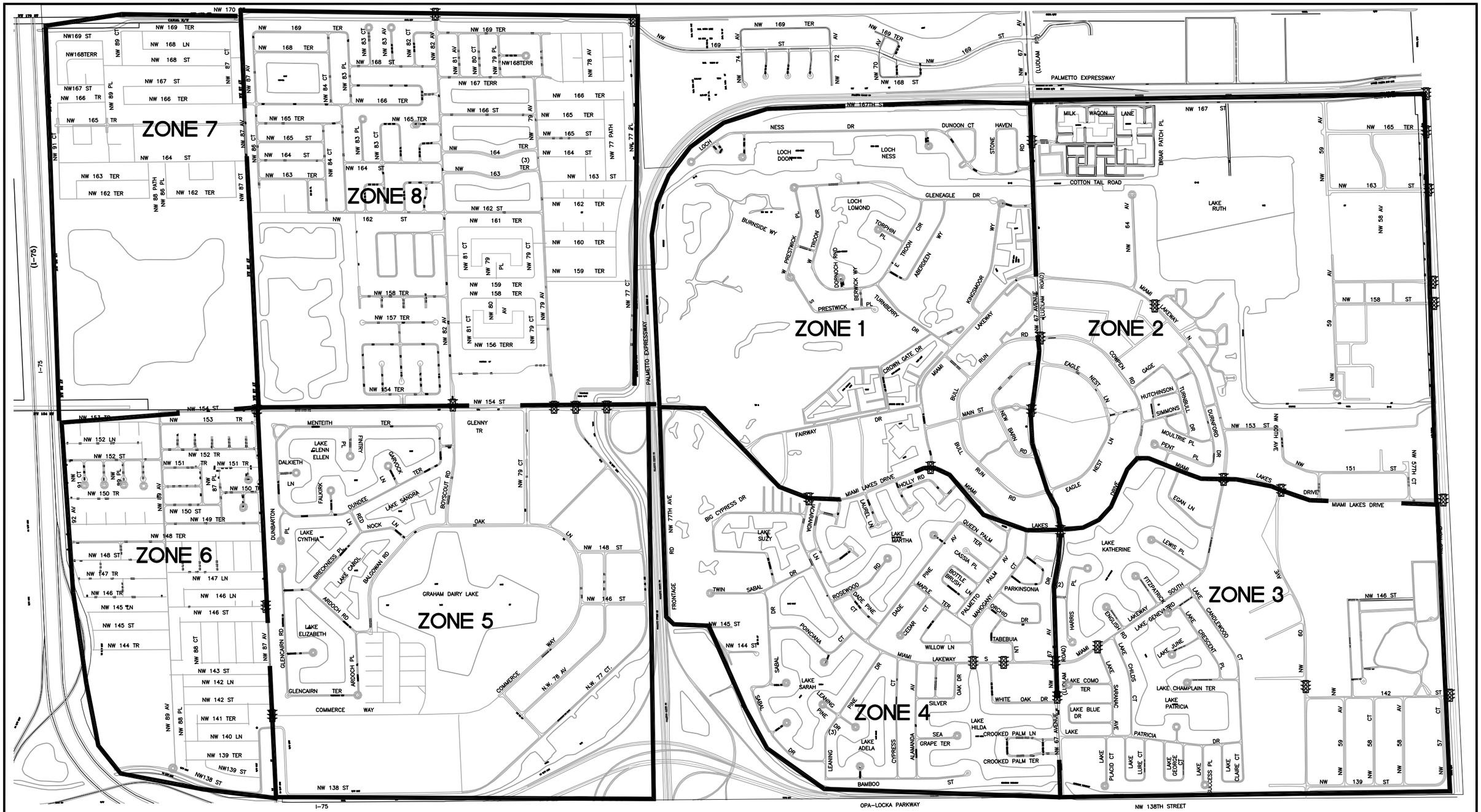


Photo 12: Roadway Fixture Located Behind Tree, Zone 4

Appendix B
Zone Map



TOWN OF MIAMI LAKES ZONE LIMITS

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

A·D·A ENGINEERING, INC.
8550 N.W. 33RD STREET · SUITE 101
DORAL, FLORIDA 33122
PHONE (305) 551-4608 · FAX (305) 551-8977
WWW.ADAENG.NET CA # 00003212
GUILLERMO E. SANTOS PEREZ, P.E.
P.E. LICENSE No. 70876

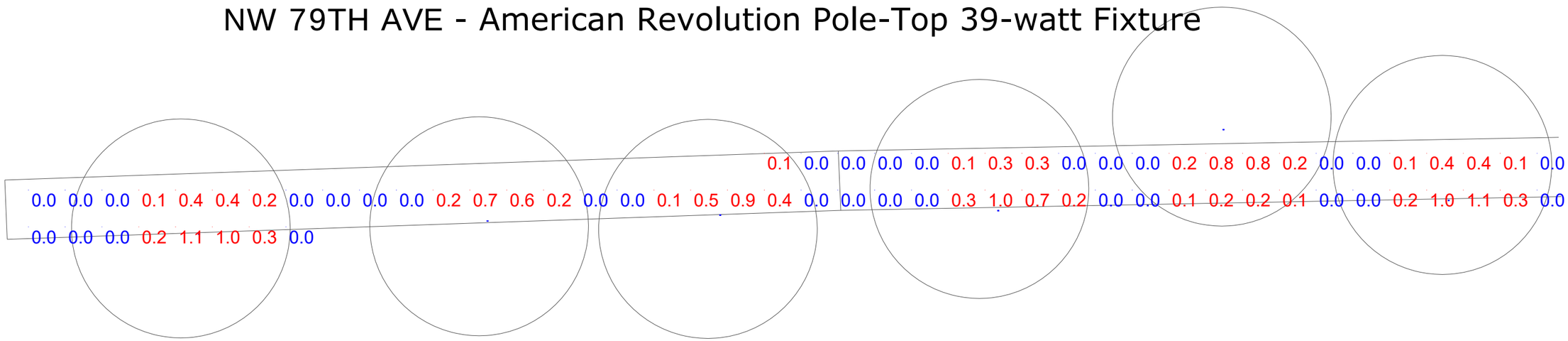
	NAME	DATE		NAME	DATE
DESIGNED BY			DRAWN BY		
CHECKED BY			CHECKED BY		

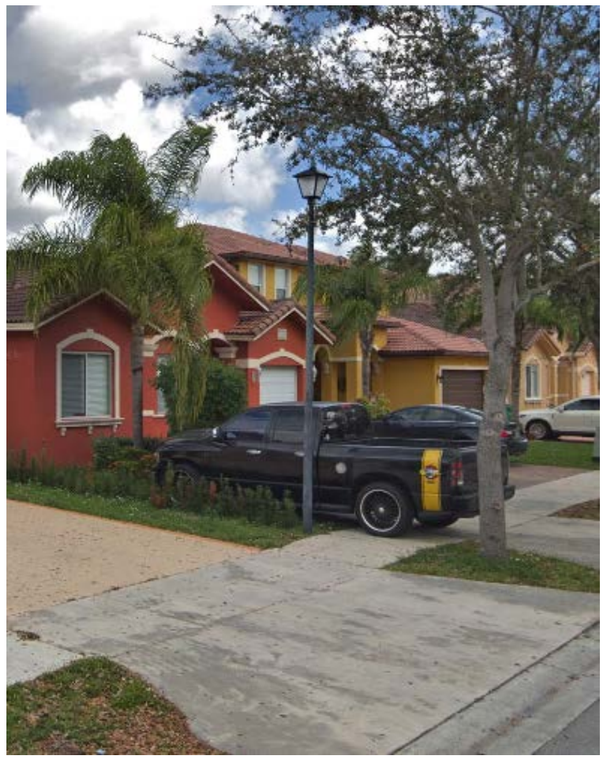
SUPERVISED BY: GUILLERMO E. SANTOS PEREZ

P:\ Projects C222\Miami Lakes C222-0112-01\Miami Lakes SIM\Lighting 16_Lighting Tags and Lighting Reports Mod 12-15-12 Lighting Report Zones.dwg Feb 18, 2013 - 9:12am GSANTOS

Appendix C
Existing Photometric Modelling

NW 79TH AVE - American Revolution Pole-Top 39-watt Fixture





POLES 130-160 FT APART

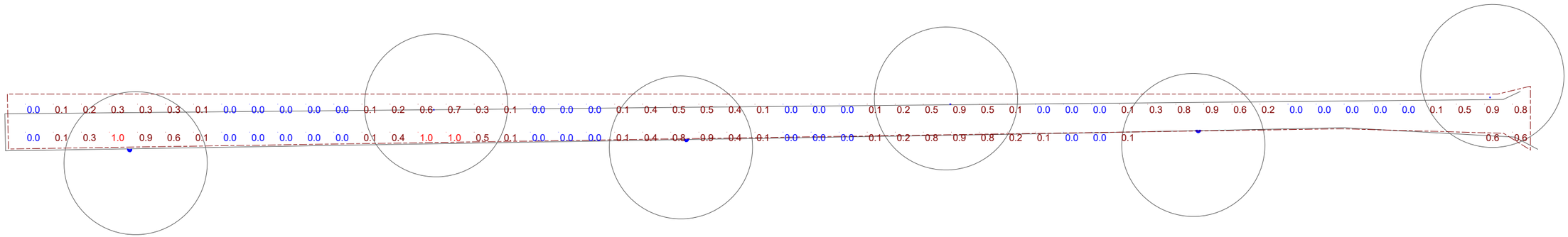
Statistics

Description	Symbol	Avg	Max	Min	Max / Min	Avg / Min
Calc Zone #1	+	0.2 fc	1.2 fc	0.0 fc	N/A	N/A

VISUAL

Designer
Date
9/18/2019
Scale
Not to Scale
Drawing No.
Summary

NW 147TH TERRACE - RSW Pole-Arm 45-watt Fixture



POLES 130-180 FT APART

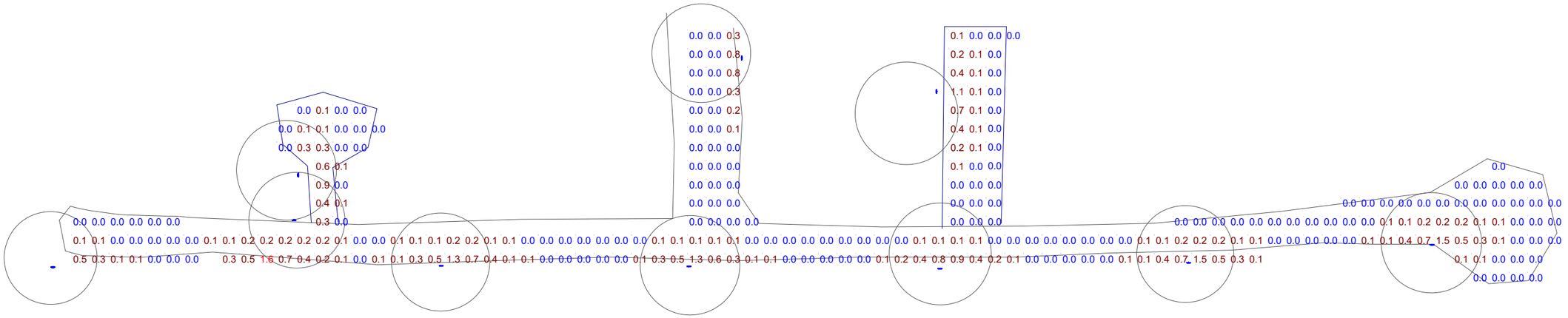
Statistics

Description	Symbol	Avg	Max	Min	Max / Min	Avg / Min
Calc Zone	+	0.3 fc	1.0 fc	0.0 fc	N/A	N/A

VISUAL

Designer	
Date	9/18/2019
Scale	Not to Scale
Drawing No.	
Summary	

Bamboo St. - Evolve Pole-Arm 32-watt Fixture



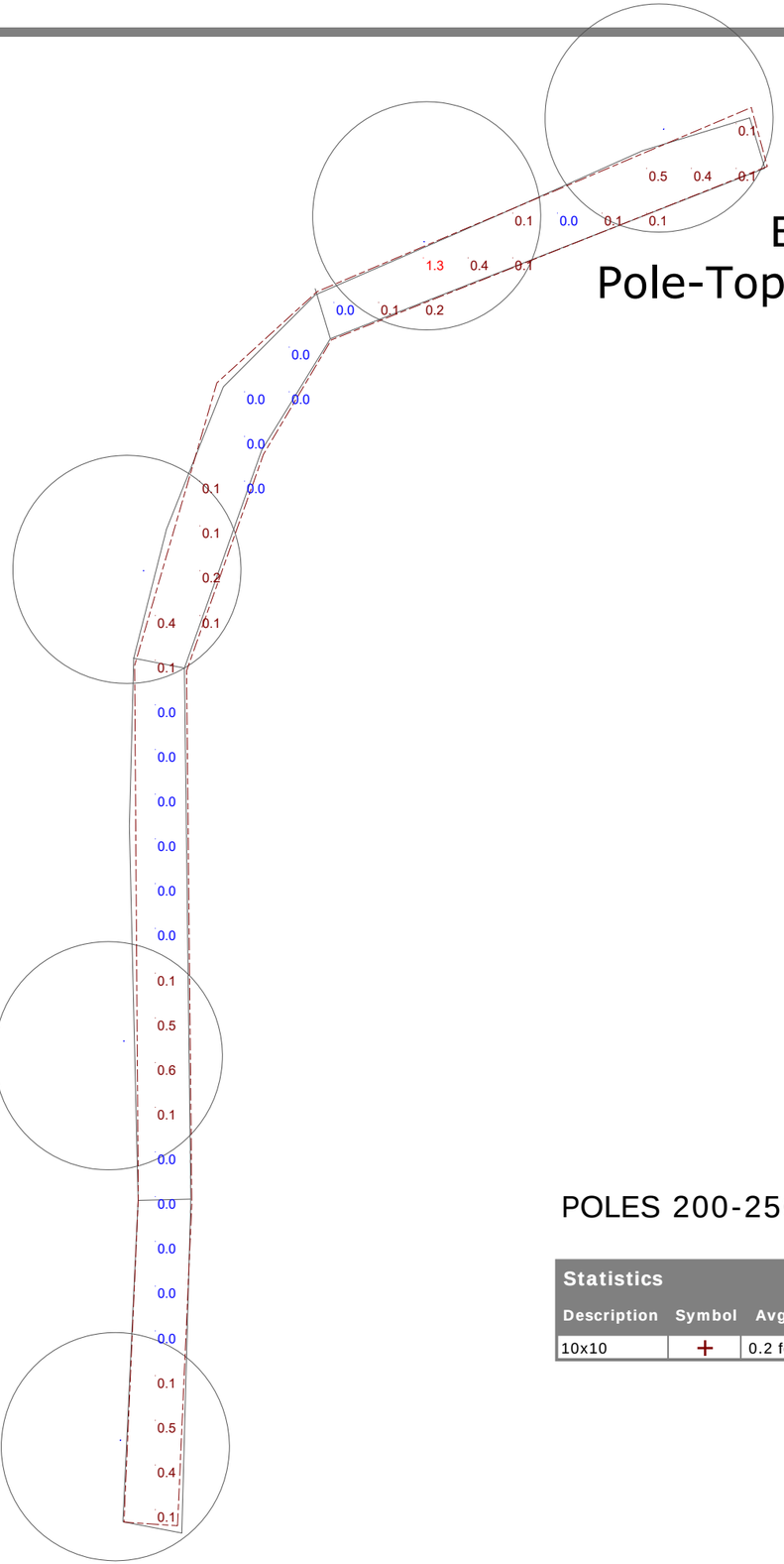
Representative photo

POLES 200 FT APART

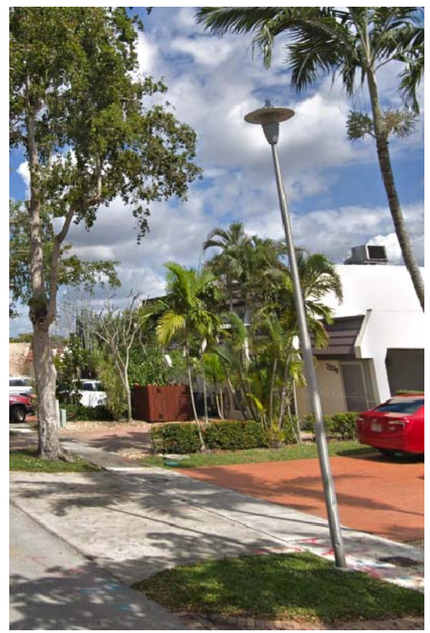
Statistics

Description	Symbol	Max	Min	Max / Min	Avg / Min	Avg
Calc Zone #1	+	1.8 fc	0.0 fc	N/A	N/A	0.1 fc

Designer	
Date	10/10/2019
Scale	Not to Scale
Drawing No.	
Summary	



Big Cypress Drive
Pole-Top 74-watt Screw in LED Lamp



POLES 200-250 FT APART

Statistics						
Description	Symbol	Avg	Max	Min	Max / Min	Avg / Min
10x10	+	0.2 fc	1.5 fc	0.0 fc	N/A	N/A

VISUAL

Designer	
Date	10/10/2019
Scale	Not to Scale
Drawing No.	
Summary	

Appendix D
Recommended Solutions

Option – 1
Installation of Additional Fixtures

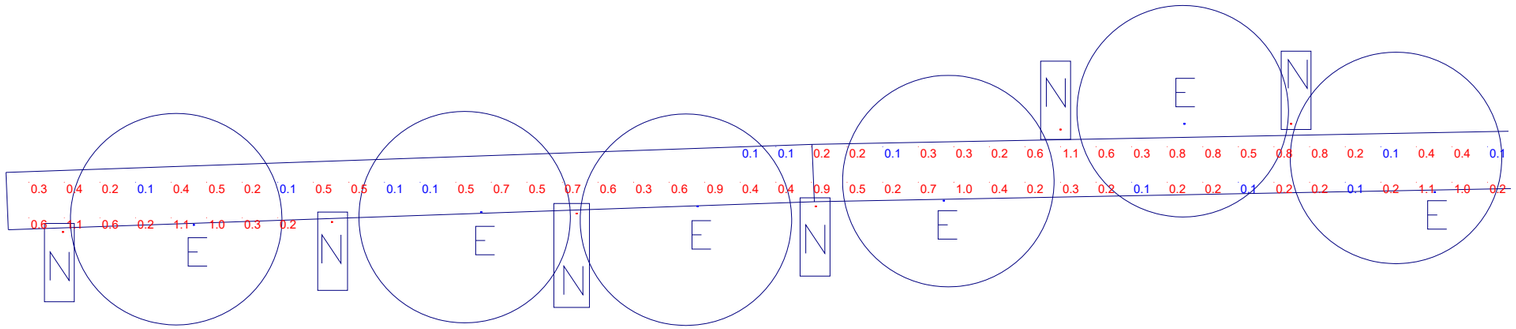
Lighting Calculation for:

Town of Miami Lakes Residential Street Lighting

$0.1200 per kWh Energy Cost

Location	ECM#	Usage Area Type (Choose from Menu)	Pre-Retrofit Equipment			Proposed Action (Choose from Menu)	Post-Retrofit Equipment						
			Fixture Type (Choose from Menu)	# of Fixtures	Ballast Code		Fixture Type (Choose from Menu)	# of Fixtures	Ballast Code	Installed Total Cost	Sum of Total Cost per Building	Sum of Peak kW Savings	Sum of Annual Energy Savings (kWh)
Existing LED Street Lighting													
American Revolution 39-Watt 3000K	L-01	Night	LED	654	LED PT AR 39w	DND	LED	654	LED PT AR 39w	$ -			
RSW 45-Watt 3000K	L-01	Night	LED	188	LED-PA RSW 45w	DND	LED	188	LED-PA RSW 45w	$ -			
Evolve LED 32W Type B	L-01	Night	LED	396	LED-PA 32w	DND	LED	396	LED-PA 32w	$ -			
75W Screw-In Lamp	L-01	Night	LED	40	LED-PT 75w Scrw	DND	LED	40	LED-PT 75w Scrw	$ -			
Proposed LED Street Lighting													
American Revolution 39-Watt 3000K	L-01	Night	LED		LED PT AR 39w	Install 1L Fixture	LED	654	LED PT AR 39w	$ 1,468,230			
RSW 45-Watt 3000K	L-01	Night	LED		LED-PA RSW 45w	Install 1L Fixture	LED	188	LED-PA RSW 45w	$ 510,420			
Evolve LED 32W Type B	L-01	Night	LED		LED-PA 32w	Install 1L Fixture	LED	396	LED-PA 32w	$ 1,168,200			
75W Screw-In Lamp	L-01	Night	LED		LED-PT 75w Scrw	Install 1L Fixture	LED	40	LED-PT 75w Scrw	$ 88,000			
				1,278				**2,556**			**$3,234,850**	**-49.64**	**-217,414**
				# of Fixtures				**# of Fixtures**			**Sum of Total Cost per Building**	**Sum of Peak kW Savings**	**Sum of Annual Energy Savings (kWh)**

NW 79TH - AMERICAN REVOLUTION POLE-TOP 39-WATT FIXTURE



LEGEND

E = EXISTING FIXTURES

N = NEW FIXTURES

NOTE: POLES 130-160 FT APART

Statistics

Description	Symbol	Avg	Max	Min	Max / Min	Avg / Min
Calc Zone #3	+	0.4 fc	1.1 fc	0.1 fc	11.0:1	4.0:1

VISUAL

Designer

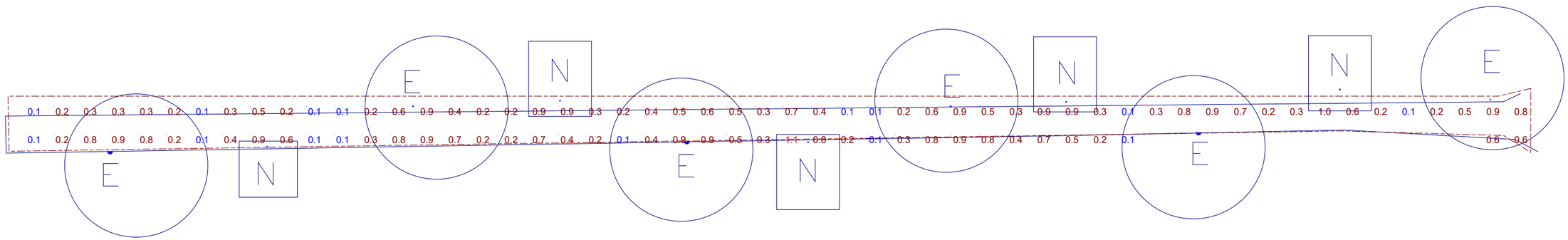
Date
10/11/2019

Scale
Not to Scale

Drawing No.

Summary

NW 147TH TERRACE - RSW POLE-ARM 45-WATT FIXTURE



LEGEND

E = EXISTING FIXTURES

N = NEWLY ADDED FIXTURES

NOTE: POLES 130-180FT APART

Statistics

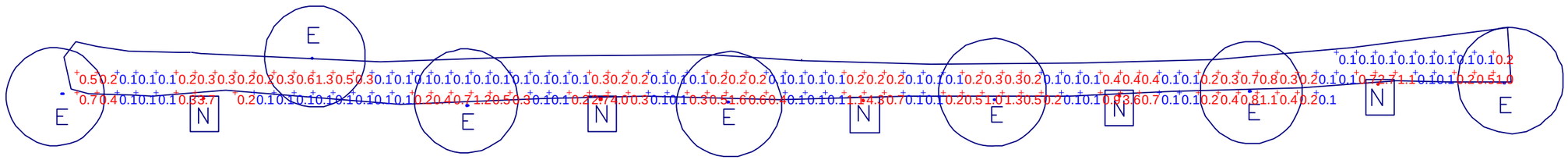
Description	Symbol	Avg	Max	Min	Max / Min	Avg / Min
Calc Zone	+	0.5 fc	1.1 fc	0.1 fc	11.0:1	5.0:1

VISUAL

Visual Lighting Software

Designer
Date
Oct 11 2019
Scale
Not to Scale
Drawing No.
Summary

BAMBOO ST. - EVOLVE POLE-ARM 32-WATT FIXTURE



LEGEND

E: EXISTING FIXTURE

N: NEW FIXTURE

POLES 200 FT APART

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #4	+	0.4 fc	4.3 fc	0.1 fc	43.0:1	4.0:1

Designer

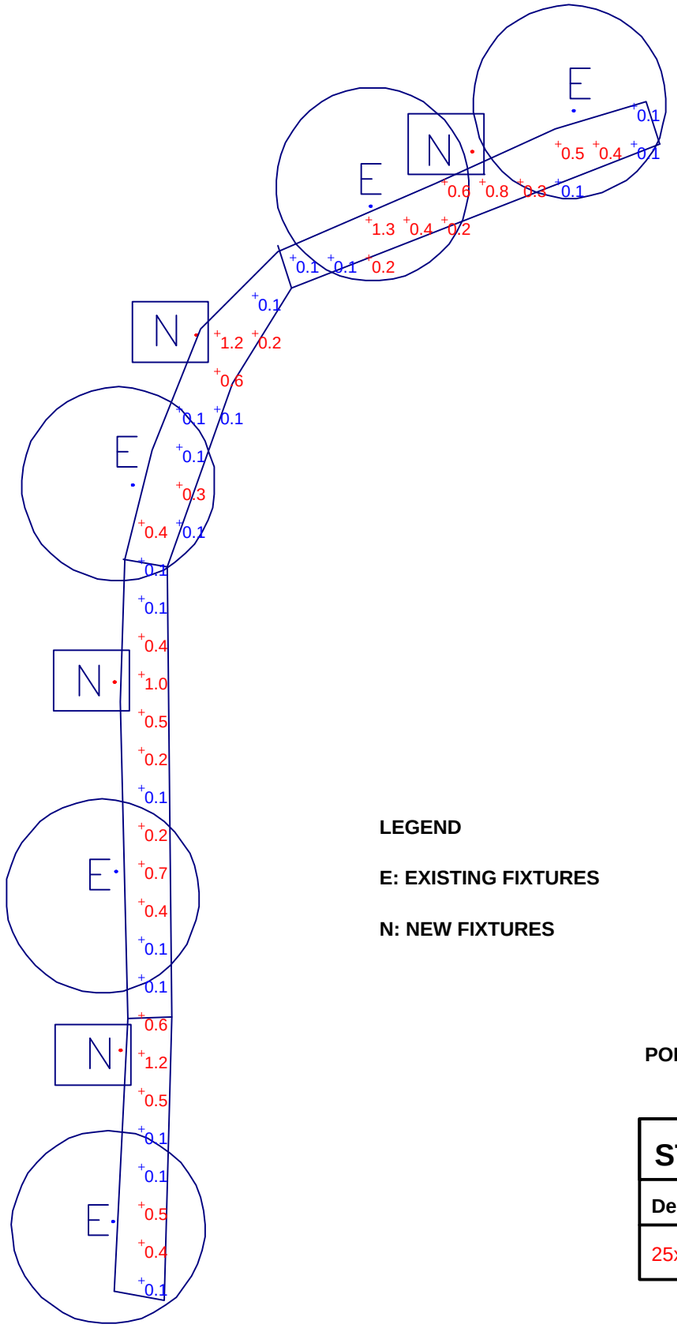
Date
Oct 11 2019

Scale
Not to Scale

Drawing No.

1 of 1

BIG CYPRESS DRIVE - POLE-TOP 74-WATT SCREW IN LED LAMP



LEGEND

E: EXISTING FIXTURES

N: NEW FIXTURES

POLES 200-250FT APART

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
25x25	+	0.4 fc	1.3 fc	0.1 fc	13.0:1	4.0:1

Designer

Date
Oct 11 2019

Scale
Not to Scale

Drawing No.

Option - 2
Replacement of Existing Fixtures

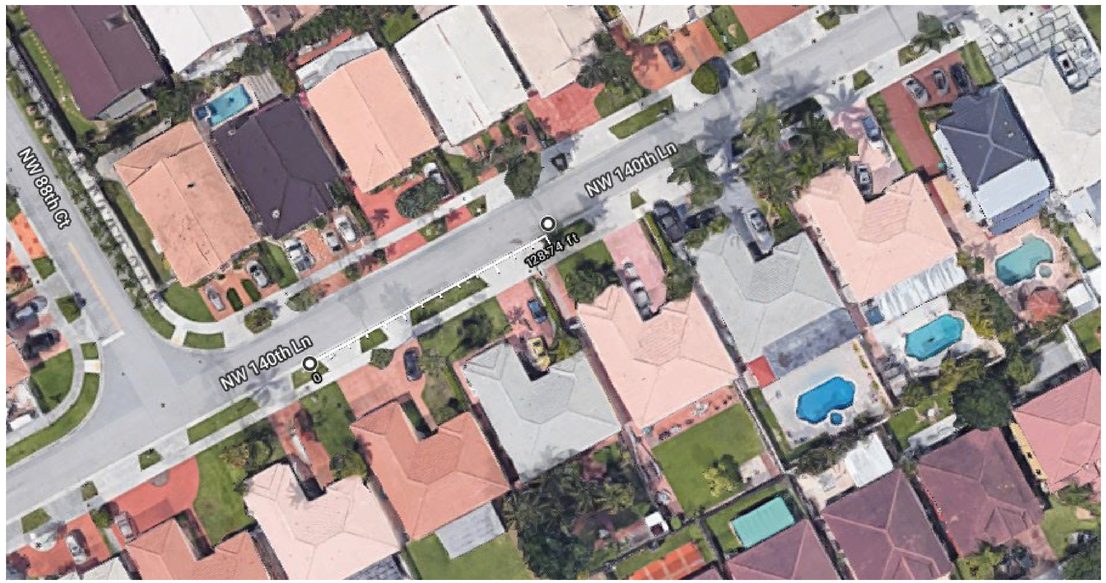
Lighting Calculation for: $0.1200 per kWh Energy Cost

Town of Miami Lakes Residential Street Lighting- Option 2

Location	ECM#	Usage Area Type (Choose from Menu)	Pre-Retrofit Equipment: Fixture Type (Choose from Menu)	Pre-Retrofit Equipment: # of Fixtures	Pre-Retrofit Equipment: Ballast Code	Proposed Action (Choose from Menu)	Post-Retrofit Equipment: Fixture Type (Choose from Menu)	Post-Retrofit Equipment: # of Fixtures	Post-Retrofit Equipment: Ballast Code	Post-Retrofit Equipment: Installed Total Cost	Post-Retrofit Equipment: Sum of Total Cost per Building	Post-Retrofit Equipment: Sum of Peak kW Savings	Post-Retrofit Equipment: Sum of Annual Energy Savings (kWh)
Existing LED Street Lighting													
American Revolution 39-Watt 3000K	L-01	Night	LED	654	LED PT AR 39w	Replace 1L Fixture	LED	654	LED PT AR 78w	$ 474,150			
RSW 45-Watt 3000K	L-01	Night	LED	188	LED-PA RSW 45w	Replace 1L Fixture	LED	188	LED PT AR 78w	$ 136,300			
Evolve LED 32W Type B	L-01	Night	LED	396	LED-PA 32w	Replace 1L Fixture	LED	396	LED-PA 52w	$ 366,300			
75W Screw-In Lamp	L-01	Night	LED	40	LED-PT 75w Scrw	Replace 1L Fixture	LED	40	LED PT AR 125w	$ 35,000			
				1,278				**1,278**			**$1,011,750**	**-41.63**	**-182,339**
				# of Fixtures				**# of Fixtures**			**Sum of Total Cost per Building**	**Sum of Peak kW Savings**	**Sum of Annual Energy Savings (kWh)**

PROPOSED PHOTOMETRIC LAYOUT FOR:

Wood PLC - Zone 6, 7 and 8 pole-top LED Fixtures AcroBrwEx 247L



(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

Wood PLC, - Zone 6, 7 and 8 pole-top LED Fixtures 247L_P55
P1279218
Miami Lakes FL

DRAWING	DATE	DRAWN BY	REVIEWED BY

Luminaire Schedule						
Symbol	Qty	Label	LLF	Description	Lum. Watts	Lum. Lumens
	7	247L_P55_XX_40K_R2_AY	0.630	247L P55 XX 40K R2 AY	78.2	7390

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Object_2_Top_1	Illuminance	Fc	0.39	0.6	0.2	2.0	3.0

IMPORTANT

Presentation plans only
Do not use for construction

AREA LAYOUT

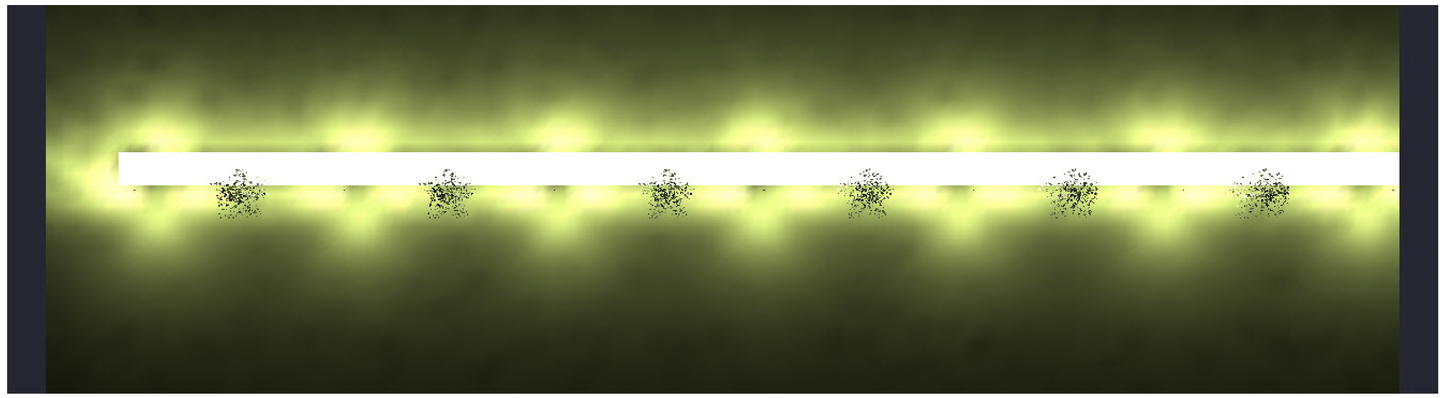
(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

Wood PLC, - Zone 6, 7 and 8 pole-top LED Fixtures 247L_P55
P1279218
Miami Lakes FL

DRAWING	DATE	DRAWN BY	REVIEWED BY



Luminaire Schedule						
Symbol	Qty	Label	LLF	Description	Lum. Watts	Lum. Lumens
	7	247L_P55_XX_40K_R2_AY	0.630	247L P55 XX 40K R2 AY	78.2	7390

Calculation Summary								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	FC Requirements
Object_2_Top_1	Illuminance	Fc	0.39	0.6	0.1	3.7	6.0	0.4 FC

RENDERING

(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

Wood PLC, - Zone 6, 7 and 8 pole-top LED Fixtures 247L_P55
P1279218
Miami Lakes FL

DRAWING	DATE	DRAWN BY	REVIEWED BY

1. DESCRIPTION OF PHOTOMETRIC DRAWING:
THE PURPOSE OF THE FOLLOWING DRAWING(S) IS TO CREATE A CLOSE REPRESENTATION OF FOOT-CANDLE READINGS THE CLIENT CAN EXPECT TO ACHIEVE AFTER THE FIXTURES HAVE BEEN INSTALLED. INCLUDED IN THIS SET OF DRAWING(S) WILL BE A FIXTURE LAYOUT, A LUMINAIRE SCHEDULE SHOWING THE TOTAL NUMBER OF FIXTURES REQUIRED (PER FIXTURE TYPE) AND LIGHT LOSS FACTOR USED FOR EACH FIXTURE AND A CALCULATION SCHEDULE SHOWING THE AVERAGE, MAXIMUM AND MINIMUM FOOT-CANDLE READINGS PER AREA.

2. FIELD VERIFICATION:
CALCULATIONS ARE PROVIDED USING INDUSTRY RECOGNIZED SOFTWARE AND ARE PROVIDED FORESTIMATION PURPOSES ONLY. HOWEVER, ACTUAL LIGHTING LEVELS WILL VARY DEPENDING ON FIELD CONDITIONS INCLUDING BUT NOT LIMITED TO ROOM CHARACTERISTICS AND TEMPERATURE. THE CALCULATIONS CORRESPOND TO THE INFORMATION PROVIDED TO ORION. ASSUMPTIONS MAY BE MADE FOR INFORMATION THAT IS NOT PROVIDED.IT IS THE RESPONSIBILITY OF THOSE USING THIS SERVICE TO VERIFY THAT OUR INPUT DATA IS CONSISTENT WITH ACTUAL FIELD CONDITIONS. CALCULATIONS ARE SUBJECT TO LIMITATIONS OF THE SOFTWARE. DUE TO THE ABOVE CONSIDERATIONS, ORION WILL NOT GUARANTEE THAT ACTUAL LIGHT LEVELS MEASURED IN THE FIELD WILL MATCH THE INITIAL CALCULATIONS. ALTHOUGH ALL EFFORTS HAVE BEEN MADE TO PLACE LIGHT FIXTURES FREE OF OBSTACLES WHEN PROVIDED WITH SUCH INFORMATION, IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY FIXTURE LOCATIONS ARE FREE OF ANY STEEL, HVAC, SPRINKLER SYSTEMS, ETC. IT IS ALSO THE CONTRACTORS RESPONSIBILITY TO MAKE SURE LIGHT FIXTURES ARE INSTALLED IN ACCORDANCE WITH LOCAL CODES, FM GLOBAL AND ESFR.

3. PERMITTING
IT IS THE RESPONSIBILITY OF THE LICENCED CONTRACTOR TO CONTACT THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) TO VERIFY ALL LOCAL CODES AND TO ENSURE COMPLIANCE OF THESE CODES.

4. IES FILES
IESNA STANDS FOR THE "ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA" AND BUILDING ACOUSTICS & LIGHTING LABS TESTS TO THEIR STANDARDS AS WELL AS MANY OTHERS. AN IES DATA FILE IS AN ELECTRONIC PHOTOMETRIC DATA FILE THAT CAN BE PUT INTO AN APPLICATION PROGRAM TO DETERMINE YOUR LUMINAIRES PERFORMANCE INSTANTLY. THESE STANDARDS ARE ESTABLISHED TO ENSURE THAT ALL THE INDEPENDENT LABORATORIES WILL GIVE COMPARABLE RESULTS. THUS ALLOWING MANUFACTURER A TO TEST WITH ONE LAB AND MANUFACTURER B TO TEST WITH ANOTHER LAB AND YOU CAN DIRECTLY COMPARE THE TWO RESULTING REPORTS IN AREAS OF EFFICIENCY, LIGHT DISTRIBUTI0N AND SO ON.

5. LIGHT METER VARIABLES
DUE TO THE FACT THAT LIGHT METERS ARE NOT ALL MADE BY THE SAME MANUFACTURER, YOU MAY SEE DIFFERENT READINGS DEPENDING ON THE LIGHT METER BEING USED. OTHER VARIABLES WHICH MAY CREATE DIFFERENT LIGHT READINGS THAN WHAT IS SHOWN ON THE PHOTOMETRIC LAYOUT MAY INCLUDE BUT ARE NOT LIMITED TO: SHADOWS PRODUCED BY FRAMING, HVAC, EVAPORATORS, ETC.

6. DEFINITION OF TERMS

EFFICACY
A MEASUREMENT OF HOW EFFECTIVE THE LIGHT SOURCE IS IN CONVERTING ELECTRICAL ENERGY TO LUMENS OF VISIBLE LIGHT. EXPRESSED IN LUMENS-PER-WATT (LPW) THIS MEASURE GIVES MORE WEIGHT TO THE YELLOW REGION OF THE SPECTRUM AND LESS WEIGHT TO THE BLUE AND RED REGION WHERE THE EYE IS NOT AS SENSITIVE.

LUMINAIRE EFFICIENCY
THE EFFICIENCY OF A LUMINAIRE OR FIXTURE IS THE PERCENTAGE OF THE TOTAL LUMENS PRODUCED THAT ARE DELIVERED BY THE FIXTURE.

FOOT CANDLES
A UNIT OF ILLUMINANCE OR INCIDENT LIGHT REFLECTING FROM A SURFACE. IT IS DEFINED AS THE AMOUNT OF LIGHT ON A ONE SQUARE FOOT SURFACE ONE FOOT FROM A STANDARD CANDLE. ONE FOOTCANDLE IS EQUAL TO ONE LUMEN PER SQUARE FOOT.

ILLUMINANCE
ILLUMINANCE IS THE TOTAL LUMINOUS FLUX INCIDENT ON A SURFACE, PER UNIT AREA.
IT IS A MEASURE OF HOW MUCH THE INCIDENT LIGHT ILLUMINATES THE SURFACE. ILLUMINANCE IS MEASURED IN FOOTCANDLES OR LUX.

LIGHT EMITTING DIODE (LED)
A SOLID THAT DIRECTLY CONVERTS ELECTRICAL IMPULSES INTO LIGHT.
LED'S ARE TEMPERATURE DEPENDANT, NOT ONLY FOR LONG LIFE, BUT SO THAT THE MAXIMUM LIGHT OUTPUT, QUALITY AND RELIABILITY OF THE DEVICE IS PRESERVED.

LIGHT LOSS FACTOR (LLF)
THE PRODUCT OF ALL FACTORS THAT CONTRIBUTE TO LOWERING THE ILLUMINATION LEVEL INCLUDING REFLECTOR DEGRADATION, DIRT, LAMP DEPRECIATION OVER TIME, VOLTAGE FLUCTUATIONS, ETC.

LUMENS
A MEASURE OF THE LUMINOUS FLUX OF LIGHT EMITTED BY A SOURCE. FOR EXAMPLE, A DINNER CANDLE PROVIDES ABOUT 12 LUMENS. A 60-WATT SOFT WHITE INCANDESCENT LAMP PROVIDES ABOUT 840 LUMENS.

LUMINAIRE
A COMPLETE LIGHTING UNIT CONSISTING OF A LAMP (OR LAMPS), BALLAST (OR BALLASTS) AS REQUIRED TOGETHER WITH THE PARTS DESIGNED TO DISTRIBUTE THE LIGHT, POSITION AND PROTECT THE LAMPS AND CONNECT THEM TO THE POWER SUPPLY. A LUMINAIRE IS OFTEN REFERRED TO AS A FIXTURE.

LUMINANCE
A MEASURE OF "SURFACE BRIGHTNESS" WHEN AN OBSERVER IS LOOKING IN THE DIRECTION OF THE SURFACE. IT IS MEASURED IN CANDELAS PER SQUARE METER (OR PER SQUARE FOOT) AND WAS FORMERLY REFERRED TO AS "PHOTOMETRIC BRIGHTNESS."

REFLECTANCE
THE RATIO OF LIGHT REFLECTED FROM A SURFACE TO THAT INCIDENT UPON IT.

WATTS
A UNIT OF ELECTRICAL POWER. LAMPS ARE RATED IN WATTS TO INDICATE THE RATE AT WHICH THEY CONSUME ENERGY.

SPEC SHEETS

American Revolution LED
Series 247L

PRODUCT OVERVIEW

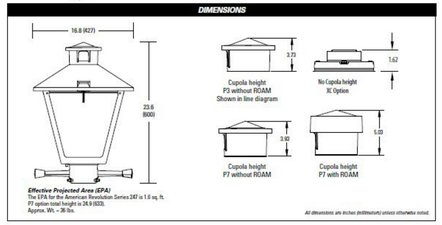
Features:

- Colonial LED lantern, replaces HID models up to 150W HPS for street and area lighting applications
- Ten (10) LED performance packages deliver just the right amount of light for any given application up to 8300 lumens
- Available in color temperature choices of 2700K, 3000K, 4000K, and 5000K
- Four (4) distinct light distribution options provide design flexibility, available in Type II, Type III, Type IV, and Type V
- Available with acrylic or polycarbonate lens
- Die-cast aluminum housing, engineered for sturdy lifelong performance
- Die-cast aluminum hood features a trigger latch (TL) option and captive thumb screws for fast, easy electrical and optical chamber access
- Housing is tenon pole-mounted on a 2-3/8" or 3" OD slip fitter and secured by three set screws
- Rated L70, LED life greater than 100,000 hours at 25°C
- Complies with all applicable ANSI C136 standards.
- CSA listed and suitable for up to 40° C ambient
- Surge protection device (standard) exceeds ANSI/IEEE C62.41-2002 Category C High (10kV/10kA) and ANSI C136.2-2015 Enhanced (10kV/5kA). 20KV Option exceeds ANSI/IEEE C62.41-2002 Category C High (10kV/10kA) and ANSI C136.2-2015 Extreme (20kV/10kA)
- Equipped with LED electronic 0-10V dimmable driver

Applications:

Streetscapes
Walkways
Pathways
Parks

DIMENSIONS



Effective Projected Area (EPA):
The EPA for the American Revolution Series 247 is 1.6 sq. ft.
P7 option total height is 24.6 (623).
Approx. Wt. – 36 lbs.

All dimensions are inches (millimeters) unless otherwise noted.

American Revolution LED
Series 247L

ORDERING INFORMATION

Example: 247L P30 AS 40K R3 AY

Series

247L	American Revolution LED

Performance Package

Package	Input Watts	Lumens (nominal)
P10	12	1,400
P15	18	2,000
P20	23	2,500
P25	33	3,400
P30	40	3,800
P35	33	3,700
P40	39	4,400
P45	46	5,000
P50	64	6,600
P55	77	7,500

Voltage

AS	120-277V
AH	347V, 480V

Color Temperature (CCT)

27K	2700K
30K	3000K
40K	4000K
50K	5000K

Distribution

R2	Type II
R3	Type III
R4	Type IV
R5	Type V

Optics

AY	Acrylic
PY	Polycarbonate

Options

Paint [1]	
(blank)	Black (standard)
GY	Gray
DDB	Dark Bronze
WH	White
BZ	Bronze

Controls:

(blank)	3-pin NEMA photocontrol (standard)
NR	No photocontrol receptacle
P7 [2]	7-pin NEMA photocontrol
PC1 [3,4]	(Solid State Long Life Photocontrol, 120-277V)
P34 [3,4]	(Solid State Long Life Photocontrol, 347V)
P48 [3,4]	(Solid State Long Life Photocontrol, 480V)
PCSS [3,4,7]	Solid state photocontrol, 120-277V (Not CSA Listed)
A0	Field adjustable output module
DALI	DALI driver (special request)
PND	Part night dimming
SH	Shorting cap
SHX [7]	Shorting cap (not CSA listed)

Miscellaneous:

SS	Stainless steel hardware
TL	Tool-less latch
NL1X1	1" x 1" NEMA label
NL2X2	2" x 2" NEMA label
XL	Not CSA Listed
LDR [5]	Ladder Rest
RCC [3,4]	RIDAM Cupola Cap
XC [6]	No Cupola
CR	Epoxy Pre-Coat Finish
20kV	20kV/10kA surge protection device
FPDxx	Factory programmable driver

House-Side Shields:

HSB	House Side Black
HSW	House Side White

Prewired leads:

L10	10'' prewire leads
L03	3ft prewire leads
L10	10ft prewired leads
L20	20ft prewire leads
L25	25ft prewire leads
L30	30ft prewire leads

Special Packaging

SSP	Sample pack (UPS)

Note: Check the OPTIONS MATRIX on Page 3 for compatibility & restrictions

American Electric Lighting
AEL Headquarters, 2025 Columbus Road, Granville, OH 43023
www.americanelectriclighting.com

Warranty Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/resources/terms-and-conditions
Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

Please contact your sales representative for the latest product information.

(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

Wood PLC, - Zone 6, 7 and 8 pole-top LED Fixtures 247L_P55
P1279218
Miami Lakes FL

DRAWING	DATE	DRAWN BY	REVIEWED BY

PROPOSED PHOTOMETRIC LAYOUT FOR:

Wood PLC - Zones 1 through 4 LED GE Evolve ERL1-06

"This is the main fixture for the residential areas in Zones 1, 2, 3, 4 and 5

(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

orion

Wood PLC, - Zones 1 through 4 LED GE Evolve ERL1-06
P1279218
Miami Lakes FL

DRAWING	DATE	DRAWN BY	REVIEWED BY
01	11/14/19	SWL	EWD

Luminaire Schedule					
Symbol	Qty	Label	LLF	Description	Lum. Watts
	5	ERL1_06A340_____-347-480V	0.700	ERL1_06A340_____-347-480V	52

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Object_3_Top_1	Illuminance	Fc	0.37	1.6	0.0	N.A.	N.A.

IMPORTANT

Presentation plans only
Do not use for construction

AREA LAYOUT

(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

Wood PLC, - Zones 1 through 4 LED GE Evolve ERL1-06
P1279218
Miami Lakes FL

DRAWING	DATE	DRAWN BY	REVIEWED BY
01	11/14/19	SWL	EWD

Luminaire Schedule						
Symbol	Qty	Label	LLF	Description	Lum. Watts	Arr. Lum. Lumens
	5	ERL1_06A340_____-347-480V	0.700	ERL1_06A340_____-347-480V	52	6000

Calculation Summary								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	FC Requirements
Object_3_Top_1	Illuminance	Fc	0.37	1.6	0.0	N.A.	N.A.	50 FC

RENDERING

(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

Wood PLC, - Zones 1 through 4 LED GE Evolve ERL1-06
P1279218
Miami Lakes FL

DRAWING	DATE	DRAWN BY	REVIEWED BY
01	11/14/19	SWL	EWD

1. DESCRIPTION OF PHOTOMETRIC DRAWING:
THE PURPOSE OF THE FOLLOWING DRAWING(S) IS TO CREATE A CLOSE REPRESENTATION OF FOOT-CANDLE READINGS THE CLIENT CAN EXPECT TO ACHIEVE AFTER THE FIXTURES HAVE BEEN INSTALLED. INCLUDED IN THIS SET OF DRAWING(S) WILL BE A FIXTURE LAYOUT, A LUMINAIRE SCHEDULE SHOWING THE TOTAL NUMBER OF FIXTURES REQUIRED (PER FIXTURE TYPE) AND LIGHT LOSS FACTOR USED FOR EACH FIXTURE AND A CALCULATION SCHEDULE SHOWING THE AVERAGE, MAXIMUM AND MINIMUM FOOT-CANDLE READINGS PER AREA.

2. FIELD VERIFICATION:
CALCULATIONS ARE PROVIDED USING INDUSTRY RECOGNIZED SOFTWARE AND ARE PROVIDED FORESTIMATION PURPOSES ONLY. HOWEVER, ACTUAL LIGHTING LEVELS WILL VARY DEPENDING ON FIELD CONDITIONS INCLUDING BUT NOT LIMITED TO ROOM CHARACTERISTICS AND TEMPERATURE. THE CALCULATIONS CORRESPOND TO THE INFORMATION PROVIDED TO ORION. ASSUMPTIONS MAY BE MADE FOR INFORMATION THAT IS NOT PROVIDED.IT IS THE RESPONSIBILITY OF THOSE USING THIS SERVICE TO VERIFY THAT OUR INPUT DATA IS CONSISTENT WITH ACTUAL FIELD CONDITIONS. CALCULATIONS ARE SUBJECT TO LIMITATIONS OF THE SOFTWARE. DUE TO THE ABOVE CONSIDERATIONS, ORION WILL NOT GUARANTEE THAT ACTUAL LIGHT LEVELS MEASURED IN THE FIELD WILL MATCH THE INITIAL CALCULATIONS. ALTHOUGH ALL EFFORTS HAVE BEEN MADE TO PLACE LIGHT FIXTURES FREE OF OBSTACLES WHEN PROVIDED WITH SUCH INFORMATION, IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY FIXTURE LOCATIONS ARE FREE OF ANY STEEL, HVAC, SPRINKLER SYSTEMS, ETC. IT IS ALSO THE CONTRACTORS RESPONSIBILITY TO MAKE SURE LIGHT FIXTURES ARE INSTALLED IN ACCORDANCE WITH LOCAL CODES, FM GLOBAL AND ESFR.

3. PERMITTING
IT IS THE RESPONSIBILITY OF THE LICENCED CONTRACTOR TO CONTACT THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) TO VERIFY ALL LOCAL CODES AND TO ENSURE COMPLIANCE OF THESE CODES.

4. IES FILES
IESNA STANDS FOR THE "ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA" AND BUILDING ACOUSTICS & LIGHTING LABS TESTS TO THEIR STANDARDS AS WELL AS MANY OTHERS. AN IES DATA FILE IS AN ELECTRONIC PHOTOMETRIC DATA FILE THAT CAN BE PUT INTO AN APPLICATION PROGRAM TO DETERMINE YOUR LUMINAIRES PERFORMANCE INSTANTLY. THESE STANDARDS ARE ESTABLISHED TO ENSURE THAT ALL THE INDEPENDENT LABORATORIES WILL GIVE COMPARABLE RESULTS. THUS ALLOWING MANUFACTURER A TO TEST WITH ONE LAB AND MANUFACTURER B TO TEST WITH ANOTHER LAB AND YOU CAN DIRECTLY COMPARE THE TWO RESULTING REPORTS IN AREAS OF EFFICIENCY, LIGHT DISTRIBUTI0N AND SO ON.

5. LIGHT METER VARIABLES
DUE TO THE FACT THAT LIGHT METERS ARE NOT ALL MADE BY THE SAME MANUFACTURER, YOU MAY SEE DIFFERENT READINGS DEPENDING ON THE LIGHT METER BEING USED. OTHER VARIABLES WHICH MAY CREATE DIFFERENT LIGHT READINGS THAN WHAT IS SHOWN ON THE PHOTOMETRIC LAYOUT MAY INCLUDE BUT ARE NOT LIMITED TO: SHADOWS PRODUCED BY FRAMING, HVAC, EVAPORATORS, ETC.

6. DEFINITION OF TERMS

EFFICACY
A MEASUREMENT OF HOW EFFECTIVE THE LIGHT SOURCE IS IN CONVERTING ELECTRICAL ENERGY TO LUMENS OF VISIBLE LIGHT. EXPRESSED IN LUMENS-PER-WATT (LPW) THIS MEASURE GIVES MORE WEIGHT TO THE YELLOW REGION OF THE SPECTRUM AND LESS WEIGHT TO THE BLUE AND RED REGION WHERE THE EYE IS NOT AS SENSITIVE.

LUMINAIRE EFFICIENCY
THE EFFICIENCY OF A LUMINAIRE OR FIXTURE IS THE PERCENTAGE OF THE TOTAL LUMENS PRODUCED THAT ARE DELIVERED BY THE FIXTURE.

FOOT CANDLES
A UNIT OF ILLUMINANCE OR INCIDENT LIGHT REFLECTING FROM A SURFACE. IT IS DEFINED AS THE AMOUNT OF LIGHT ON A ONE SQUARE FOOT SURFACE ONE FOOT FROM A STANDARD CANDLE. ONE FOOTCANDLE IS EQUAL TO ONE LUMEN PER SQUARE FOOT.

ILLUMINANCE
ILLUMINANCE IS THE TOTAL LUMINOUS FLUX INCIDENT ON A SURFACE, PER UNIT AREA. IT IS A MEASURE OF HOW MUCH THE INCIDENT LIGHT ILLUMINATES THE SURFACE. ILLUMINANCE IS MEASURED IN FOOTCANDLES OR LUX.

LIGHT EMITTING DIODE (LED)
A SOLID THAT DIRECTLY CONVERTS ELECTRICAL IMPULSES INTO LIGHT. LED'S ARE TEMPERATURE DEPENDANT, NOT ONLY FOR LONG LIFE, BUT SO THAT THE MAXIMUM LIGHT OUTPUT, QUALITY AND RELIABILITY OF THE DEVICE IS PRESERVED.

LIGHT LOSS FACTOR (LLF)
THE PRODUCT OF ALL FACTORS THAT CONTRIBUTE TO LOWERING THE ILLUMINATION LEVEL INCLUDING REFLECTOR DEGRADATION, DIRT, LAMP DEPRECIATION OVER TIME, VOLTAGE FLUCTUATIONS, ETC.

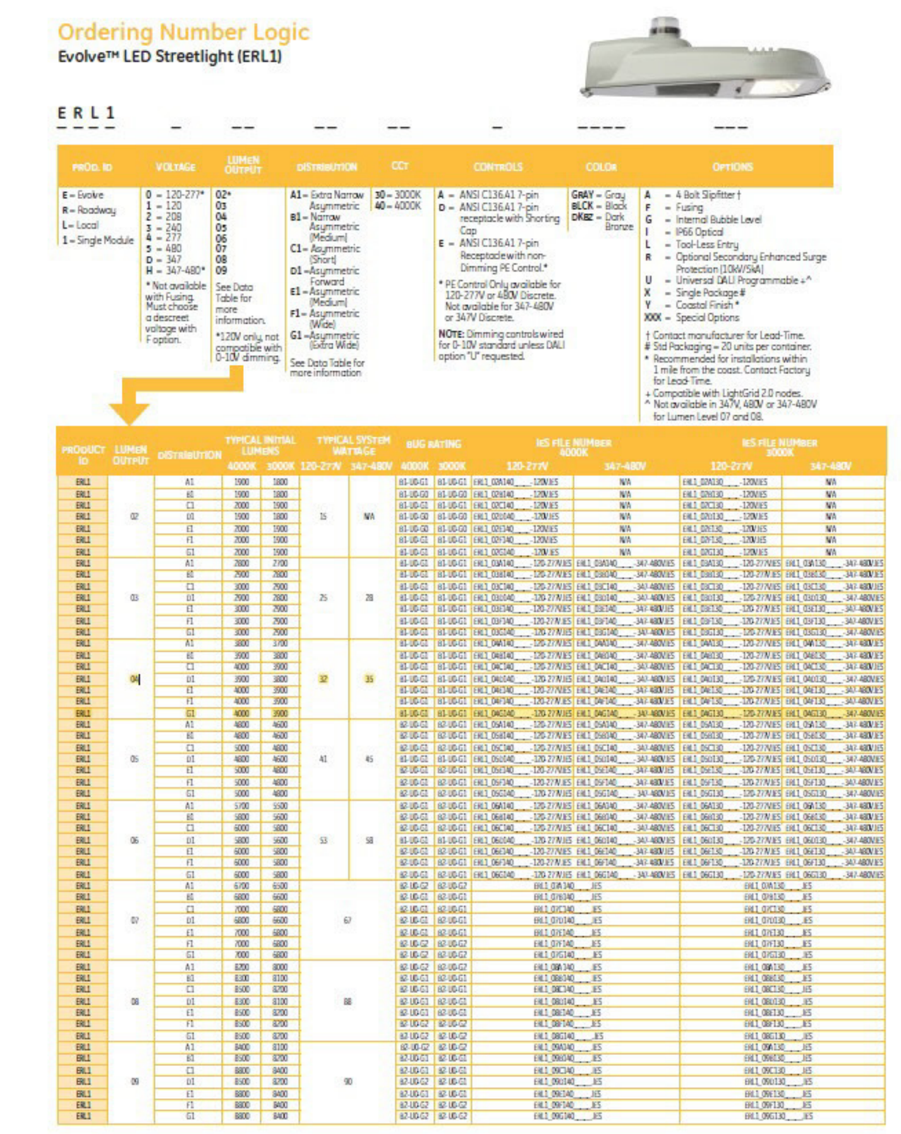
LUMENS
A MEASURE OF THE LUMINOUS FLUX OF LIGHT EMITTED BY A SOURCE. FOR EXAMPLE, A DINNER CANDLE PROVIDES ABOUT 12 LUMENS. A 60-WATT SOFT WHITE INCANDESCENT LAMP PROVIDES ABOUT 840 LUMENS.

LUMINAIRE
A COMPLETE LIGHTING UNIT CONSISTING OF A LAMP (OR LAMPS), BALLAST (OR BALLASTS) AS REQUIRED TOGETHER WITH THE PARTS DESIGNED TO DISTRIBUTE THE LIGHT, POSITION AND PROTECT THE LAMPS AND CONNECT THEM TO THE POWER SUPPLY. A LUMINAIRE IS OFTEN REFERRED TO AS A FIXTURE.

LUMINANCE
A MEASURE OF "SURFACE BRIGHTNESS" WHEN AN OBSERVER IS LOOKING IN THE DIRECTION OF THE SURFACE. IT IS MEASURED IN CANDELAS PER SQUARE METER (OR PER SQUARE FOOT) AND WAS FORMERLY REFERRED TO AS "PHOTOMETRIC BRIGHTNESS."

REFLECTANCE
THE RATIO OF LIGHT REFLECTED FROM A SURFACE TO THAT INCIDENT UPON IT.

WATTS
A UNIT OF ELECTRICAL POWER. LAMPS ARE RATED IN WATTS TO INDICATE THE RATE AT WHICH THEY CONSUME ENERGY.



SPEC SHEETS

(1) GENERAL NOTES
CONFIDENTIAL INFORMATION Please Note: This data is based upon certain specific assumed reflectances and characteristics of the proposed environment. Any deviation from these reflectances or assumed characteristics may affect the actual performance of the luminaries. Based on the factors, Orion Energy Systems, Inc. can not guarantee these results.

2) NO OBJECTS CONSIDERED IN CALCULATIONS UNLESS OTHERWISE NOTED ON THE PRINT.

3) STANDARD REFLECTION VALUES
CEILING: .8
WALLS: .5
FLOOR: .2
RACKING: .5

orion

Wood PLC, - Zones 1 through 4 LED GE Evolve ERL1-06
P1279218
Miami Lakes FL

DRAWING	DATE	DRAWN BY	REVIEWED BY
01	11/14/19	SWL	EWD

Appendix E
Cutsheets

Evolve™ LED Roadway Lighting

LED Roadway Luminaire (ERL1-ERLH-ERS1-ERS2)

current
powered by GE

Product Features

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 traditional HID fixture for additional operating cost savings.

Applications

- Designed to meet recommended luminance and illuminance requirements for local, collector and major roadway/street classifications.

Housing

- The modern design incorporates Casting-integral heatsink for maximum heat transfer.
- Meets 3G vibration per ANSI C136.31-2010.
- Die Cast Enclosure.

LED & Optical Assembly

- Evolve™ light engine consisting of reflective technology designed to optimize application efficiency and minimize glare.
- Utilizes high brightness LEDs, 70 CRI at 3000K and 4000K typical.
- LM-79 tests and reports in accordance with IESNA standards.

Lumen Maintenance

- Lumen Maintenance per TM21.

Ratings

- /c listed, suitable for wet locations per UL 1598.
- Std. Optical enclosure rated per ANSI C136.25-2009: ERL1 = IP65, ERS1-2 = IP66, ERLH = IP65.
- Upward Light Output Ratio (ULOR) = 0.
- Compliant with the material restriction requirements of RoHS.
- 3000k must be selected to meet IDA certification and approval - ERL1 and ERLH only.

Product ID	Lumen Output	Ambient Rating
ERL1	02-09	-40°C to 50°C
ERLH	10-11	-40°C to 50°C
ERLH	13-15	-40°C to 40°C
ERS1	10-15	-40°C to 50°C
ERS2	16-23	-40°C to 50°C
ERS2	25-28	-40°C to 40°C

Delayed start may be experienced <-35°C.

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.

Finish

- Corrosion resistant polyester powder paint, minimum 2.0 mil. thickness.
- Standard colors: Black, Gray and Dark Bronze.
- RAL & custom colors available.
- Optional coastal finish available.

Electrical

- 120-277 VAC and 347-480 VAC.
- System power factor is >90% and THD <20%.*
- Class "A" Sound rating.
- 0-10V dimming standard or DALI dimming available upon request for 120V-277V.
- Surge Protection per ANSI C136.2-2015:
  - Standard: 6kV/3kA "Basic: (120 Strikes)"
  - Optional Secondary: 10kV/5kA "Enhanced: (40 Strikes)"
- EMI: Title 47 CFR Part 15 Class A
- Photo electric sensors (PE) available.

** System power factor and THD is tested and specified at 120V input and maximum load conditions. THD<26% for 347/480V supply with 03 power level.*

Warranty

- 5 Year Standard
- 10 Year Optional

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
- ~21,000–28,000 lumens to replace 400W HPS Cobra-head

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

Ordering Number Logic

Evolve™ LED Streetlight (ERL1)

E R L 1 _ _ _ _   _   _ _   _ _   _ _   _   _ _ _ _   _ _ _

PROD. ID	VOLTAGE	LUMEN OUTPUT	DISTRIBUTION	CCT	CONTROLS	COLOR	OPTIONS
E = Evolve **R** = Roadway **L** = Local **1** = Single Module	**0** = 120-277* **1** = 120 **2** = 208 **3** = 240 **4** = 277 **5** = 480 **D** = 347 **H** = 347-480* * Not available with Fusing. Must choose a descreet voltage with F option.	**02*** **03** **04** **05** **06** **07** **08** **09** See Data Table for more information. *120V only, not compatible with 0-10V dimming.	**A1** = Extra Narrow Asymmetric **B1** = Narrow Asymmetric (Medium) **C1** = Asymmetric (Short) **D1** = Asymmetric Forward **E1** = Asymmetric (Medium) **F1** = Asymmetric (Wide) **G1** = Asymmetric (Extra Wide) See Data Table for more information	**30** = 3000K **40** = 4000K	**A** = ANSI C136.41 7-pin **D** = ANSI C136.41 7-pin receptacle with Shorting Cap **E** = ANSI C136.41 7-pin Receptacle 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** = Optional Secondary Enhanced Surge Protection (10kV/5kA) **U** = Universal DALI Programmable +^ **X** = Single Package # **Y** = Coastal Finish * **XXX** = Special Options † Contact manufacturer for Lead-Time. # Std Packaging = 20 units per container. * Recommended for installations within 1 mile from the coast. Contact Factory for Lead-Time. + Compatible with LightGrid 2.0 nodes. ^ Not available in 347V, 480V or 347-480V for Lumen Level 07 and 08.

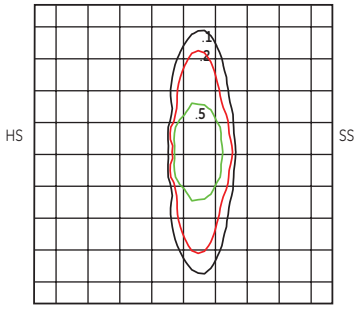
PRODUCT ID	LUMEN OUTPUT	DISTRIBUTION	TYPICAL INITIAL LUMENS		TYPICAL SYSTEM WATTAGE		BUG RATING		IES FILE NUMBER 4000K		IES FILE NUMBER 3000K	
			4000K	3000K	120-277V	347-480V	4000K	3000K	120-277V	347-480V	120-277V	347-480V
ERL1	02	A1	1900	1800	15	N/A	B1-U0-G1	B1-U0-G1	ERL1_02A140____-120V.IES	N/A	ERL1_02A130____-120V.IES	N/A
ERL1		B1	1900	1800			B1-U0-G0	B1-U0-G0	ERL1_02B140____-120V.IES	N/A	ERL1_02B130____-120V.IES	N/A
ERL1		C1	2000	1900			B1-U0-G1	B1-U0-G1	ERL1_02C140____-120V.IES	N/A	ERL1_02C130____-120V.IES	N/A
ERL1		D1	1900	1800			B1-U0-G0	B1-U0-G0	ERL1_02D140____-120V.IES	N/A	ERL1_02D130____-120V.IES	N/A
ERL1		E1	2000	1900			B1-U0-G0	B1-U0-G0	ERL1_02E140____-120V.IES	N/A	ERL1_02E130____-120V.IES	N/A
ERL1		F1	2000	1900			B1-U0-G1	B1-U0-G1	ERL1_02F140____-120V.IES	N/A	ERL1_02F130____-120V.IES	N/A
ERL1		G1	2000	1900			B1-U0-G1	B1-U0-G1	ERL1_02G140____-120V.IES	N/A	ERL1_02G130____-120V.IES	N/A
ERL1	03	A1	2800	2700	25	28	B1-U0-G1	B1-U0-G1	ERL1_03A140____-120-277V.IES	ERL1_03A140____-347-480V.IES	ERL1_03A130____-120-277V.IES	ERL1_03A130____-347-480V.IES
ERL1		B1	2900	2800			B1-U0-G1	B1-U0-G1	ERL1_03B140____-120-277V.IES	ERL1_03B140____-347-480V.IES	ERL1_03B130____-120-277V.IES	ERL1_03B130____-347-480V.IES
ERL1		C1	3000	2900			B1-U0-G1	B1-U0-G1	ERL1_03C140____-120-277V.IES	ERL1_03C140____-347-480V.IES	ERL1_03C130____-120-277V.IES	ERL1_03C130____-347-480V.IES
ERL1		D1	2900	2800			B1-U0-G1	B1-U0-G1	ERL1_03D140____-120-277V.IES	ERL1_03D140____-347-480V.IES	ERL1_03D130____-120-277V.IES	ERL1_03D130____-347-480V.IES
ERL1		E1	3000	2900			B1-U0-G1	B1-U0-G1	ERL1_03E140____-120-277V.IES	ERL1_03E140____-347-480V.IES	ERL1_03E130____-120-277V.IES	ERL1_03E130____-347-480V.IES
ERL1		F1	3000	2900			B1-U0-G1	B1-U0-G1	ERL1_03F140____-120-277V.IES	ERL1_03F140____-347-480V.IES	ERL1_03F130____-120-277V.IES	ERL1_03F130____-347-480V.IES
ERL1		G1	3000	2900			B1-U0-G1	B1-U0-G1	ERL1_03G140____-120-277V.IES	ERL1_03G140____-347-480V.IES	ERL1_03G130____-120-277V.IES	ERL1_03G130____-347-480V.IES
ERL1	04	A1	3800	3700	32	35	B1-U0-G1	B1-U0-G1	ERL1_04A140____-120-277V.IES	ERL1_04A140____-347-480V.IES	ERL1_04A130____-120-277V.IES	ERL1_04A130____-347-480V.IES
ERL1		B1	3900	3800			B1-U0-G1	B1-U0-G1	ERL1_04B140____-120-277V.IES	ERL1_04B140____-347-480V.IES	ERL1_04B130____-120-277V.IES	ERL1_04B130____-347-480V.IES
ERL1		C1	4000	3900			B1-U0-G1	B1-U0-G1	ERL1_04C140____-120-277V.IES	ERL1_04C140____-347-480V.IES	ERL1_04C130____-120-277V.IES	ERL1_04C130____-347-480V.IES
ERL1		D1	3900	3800			B1-U0-G1	B1-U0-G1	ERL1_04D140____-120-277V.IES	ERL1_04D140____-347-480V.IES	ERL1_04D130____-120-277V.IES	ERL1_04D130____-347-480V.IES
ERL1		E1	4000	3900			B1-U0-G1	B1-U0-G1	ERL1_04E140____-120-277V.IES	ERL1_04E140____-347-480V.IES	ERL1_04E130____-120-277V.IES	ERL1_04E130____-347-480V.IES
ERL1		F1	4000	3900			B1-U0-G1	B1-U0-G1	ERL1_04F140____-120-277V.IES	ERL1_04F140____-347-480V.IES	ERL1_04F130____-120-277V.IES	ERL1_04F130____-347-480V.IES
ERL1		G1	4000	3900			B1-U0-G1	B1-U0-G1	ERL1_04G140____-120-277V.IES	ERL1_04G140____-347-480V.IES	ERL1_04G130____-120-277V.IES	ERL1_04G130____-347-480V.IES
ERL1	05	A1	4800	4600	41	45	B2-U0-G1	B2-U0-G1	ERL1_05A140____-120-277V.IES	ERL1_05A140____-347-480V.IES	ERL1_05A130____-120-277V.IES	ERL1_05A130____-347-480V.IES
ERL1		B1	4800	4600			B2-U0-G1	B2-U0-G1	ERL1_05B140____-120-277V.IES	ERL1_05B140____-347-480V.IES	ERL1_05B130____-120-277V.IES	ERL1_05B130____-347-480V.IES
ERL1		C1	5000	4800			B2-U0-G1	B2-U0-G1	ERL1_05C140____-120-277V.IES	ERL1_05C140____-347-480V.IES	ERL1_05C130____-120-277V.IES	ERL1_05C130____-347-480V.IES
ERL1		D1	4800	4600			B1-U0-G1	B1-U0-G1	ERL1_05D140____-120-277V.IES	ERL1_05D140____-347-480V.IES	ERL1_05D130____-120-277V.IES	ERL1_05D130____-347-480V.IES
ERL1		E1	5000	4800			B2-U0-G1	B2-U0-G1	ERL1_05E140____-120-277V.IES	ERL1_05E140____-347-480V.IES	ERL1_05E130____-120-277V.IES	ERL1_05E130____-347-480V.IES
ERL1		F1	5000	4800			B2-U0-G1	B2-U0-G1	ERL1_05F140____-120-277V.IES	ERL1_05F140____-347-480V.IES	ERL1_05F130____-120-277V.IES	ERL1_05F130____-347-480V.IES
ERL1		G1	5000	4800			B2-U0-G1	B2-U0-G1	ERL1_05G140____-120-277V.IES	ERL1_05G140____-347-480V.IES	ERL1_05G130____-120-277V.IES	ERL1_05G130____-347-480V.IES
ERL1	06	A1	5700	5500	53	58	B2-U0-G1	B2-U0-G1	ERL1_06A140____-120-277V.IES	ERL1_06A140____-347-480V.IES	ERL1_06A130____-120-277V.IES	ERL1_06A130____-347-480V.IES
ERL1		B1	5800	5600			B2-U0-G1	B2-U0-G1	ERL1_06B140____-120-277V.IES	ERL1_06B140____-347-480V.IES	ERL1_06B130____-120-277V.IES	ERL1_06B130____-347-480V.IES
ERL1		C1	6000	5800			B2-U0-G1	B2-U0-G1	ERL1_06C140____-120-277V.IES	ERL1_06C140____-347-480V.IES	ERL1_06C130____-120-277V.IES	ERL1_06C130____-347-480V.IES
ERL1		D1	5800	5600			B1-U0-G1	B1-U0-G1	ERL1_06D140____-120-277V.IES	ERL1_06D140____-347-480V.IES	ERL1_06D130____-120-277V.IES	ERL1_06D130____-347-480V.IES
ERL1		E1	6000	5800			B2-U0-G1	B2-U0-G1	ERL1_06E140____-120-277V.IES	ERL1_06E140____-347-480V.IES	ERL1_06E130____-120-277V.IES	ERL1_06E130____-347-480V.IES
ERL1		F1	6000	5800			B2-U0-G1	B2-U0-G1	ERL1_06F140____-120-277V.IES	ERL1_06F140____-347-480V.IES	ERL1_06F130____-120-277V.IES	ERL1_06F130____-347-480V.IES
ERL1		G1	6000	5800			B2-U0-G1	B2-U0-G1	ERL1_06G140____-120-277V.IES	ERL1_06G140____-347-480V.IES	ERL1_06G130____-120-277V.IES	ERL1_06G130____-347-480V.IES
ERL1	07	A1	6700	6500	67		B2-U0-G2	B2-U0-G2	ERL1_07A140____.IES		ERL1_07A130____.IES	
ERL1		B1	6800	6600			B2-U0-G1	B2-U0-G1	ERL1_07B140____.IES		ERL1_07B130____.IES	
ERL1		C1	7000	6800			B2-U0-G1	B2-U0-G1	ERL1_07C140____.IES		ERL1_07C130____.IES	
ERL1		D1	6800	6600			B2-U0-G1	B2-U0-G1	ERL1_07D140____.IES		ERL1_07D130____.IES	
ERL1		E1	7000	6800			B2-U0-G1	B2-U0-G1	ERL1_07E140____.IES		ERL1_07E130____.IES	
ERL1		F1	7000	6800			B2-U0-G2	B2-U0-G2	ERL1_07F140____.IES		ERL1_07F130____.IES	
ERL1		G1	7000	6800			B2-U0-G2	B2-U0-G2	ERL1_07G140____.IES		ERL1_07G130____.IES	
ERL1	08	A1	8200	8000	88		B2-U0-G2	B2-U0-G2	ERL1_08A140____.IES		ERL1_08A130____.IES	
ERL1		B1	8300	8100			B2-U0-G1	B2-U0-G1	ERL1_08B140____.IES		ERL1_08B130____.IES	
ERL1		C1	8500	8200			B2-U0-G1	B2-U0-G1	ERL1_08C140____.IES		ERL1_08C130____.IES	
ERL1		D1	8300	8100			B2-U0-G1	B2-U0-G1	ERL1_08D140____.IES		ERL1_08D130____.IES	
ERL1		E1	8500	8200			B2-U0-G1	B2-U0-G1	ERL1_08E140____.IES		ERL1_08E130____.IES	
ERL1		F1	8500	8200			B2-U0-G2	B2-U0-G2	ERL1_08F140____.IES		ERL1_08F130____.IES	
ERL1		G1	8500	8200			B2-U0-G2	B2-U0-G2	ERL1_08G140____.IES		ERL1_08G130____.IES	
ERL1	09	A1	8400	8100	90		B2-U0-G2	B2-U0-G2	ERL1_09A140____.IES		ERL1_09A130____.IES	
ERL1		B1	8500	8200			B2-U0-G1	B2-U0-G1	ERL1_09B140____.IES		ERL1_09B130____.IES	
ERL1		C1	8800	8400			B2-U0-G1	B2-U0-G1	ERL1_09C140____.IES		ERL1_09C130____.IES	
ERL1		D1	8500	8200			B2-U0-G2	B2-U0-G1	ERL1_09D140____.IES		ERL1_09D130____.IES	
ERL1		E1	8800	8400			B2-U0-G1	B2-U0-G1	ERL1_09E140____.IES		ERL1_09E130____.IES	
ERL1		F1	8800	8400			B2-U0-G2	B2-U0-G2	ERL1_09F140____.IES		ERL1_09F130____.IES	
ERL1		G1	8800	8400			B2-U0-G2	B2-U0-G2	ERL1_09G140____.IES		ERL1_09G130____.IES	

Photometrics

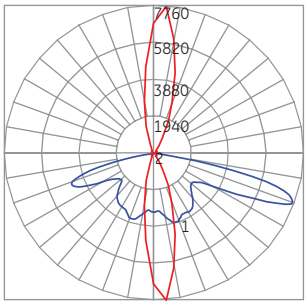
Evolve™ LED Streetlight (ERL1)

ERL1
Extra Narrow Asymmetric (08A1)

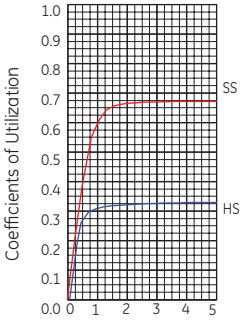
8,200 Lumens
4000K
ERL1_08A140_____.IES



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



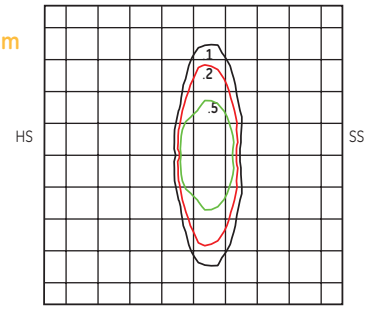
— Vertical plane through horizontal angle of maximum candlepower at 85°
— Vertical plane through horizontal angle of 70°



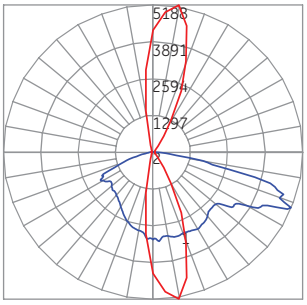
Street Width/Mounting Height

ERL1
Narrow Asymmetric Medium (08B1)

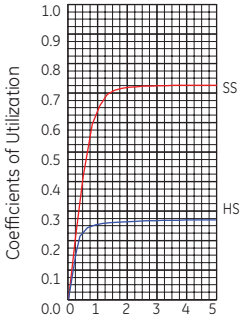
8,300 Lumens
4000K
ERL1_08B140_____.IES



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



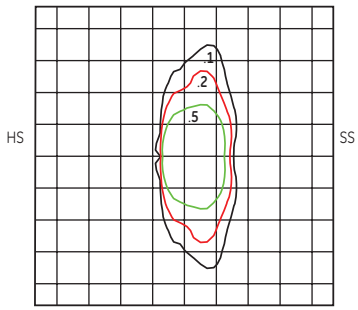
— Vertical plane through horizontal angle of maximum candlepower at 80°
— Vertical plane through horizontal angle of 68°



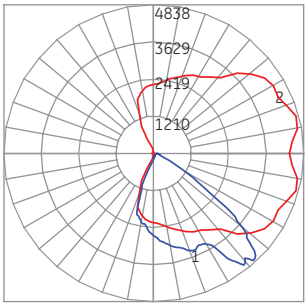
Street Width/Mounting Height

ERL1
Asymmetric Short (08C1)

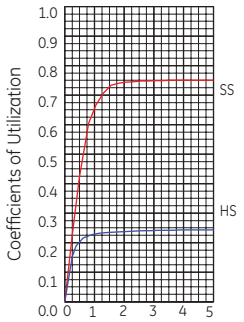
8,500 Lumens
4000K
ERL1_08C140_____.IES



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



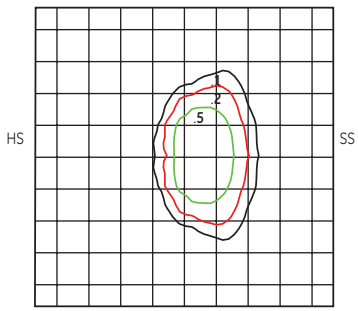
— Vertical plane through horizontal angle of maximum candlepower at 15°
— Vertical plane through horizontal angle of 42°



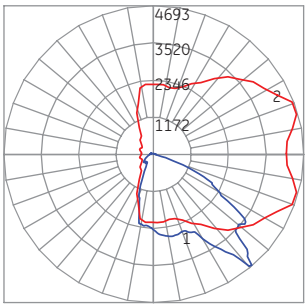
Street Width/Mounting Height

ERL1
Asymmetric Forward (08D1)

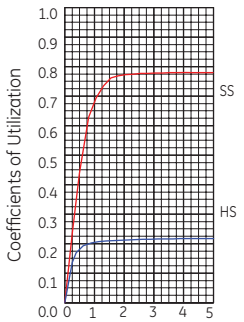
8,300 Lumens
4000K
ERL1_08D140_____.IES



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



— Vertical plane through horizontal angle of maximum candlepower at 15°
— Vertical plane through horizontal angle of 42°



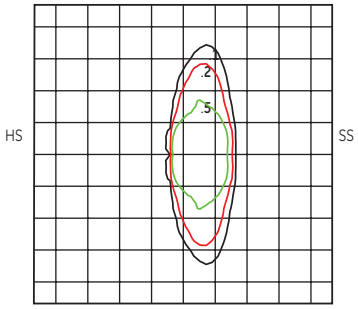
Street Width/Mounting Height

Photometrics

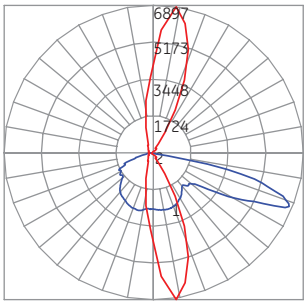
Evolve™ LED Streetlight (ERL1)

ERL1 Asymmetric Medium (08E1)

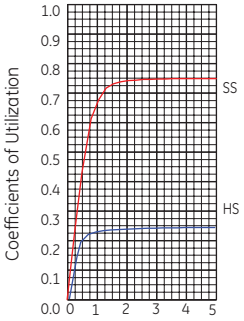
8,500 Lumens
4000K
ERL1_08E140_____.IES



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



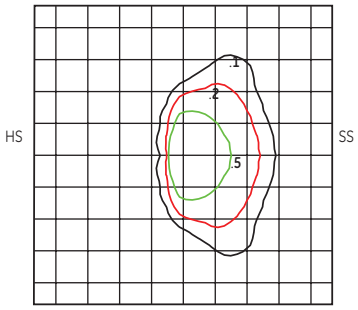
— Vertical plane through horizontal angle of maximum candlepower at 80°
— Vertical plane through horizontal angle of 69°



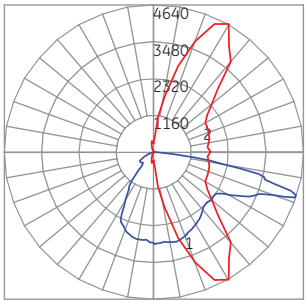
Street Width/Mounting Height

ERL1 Asymmetric Wide (08F1)

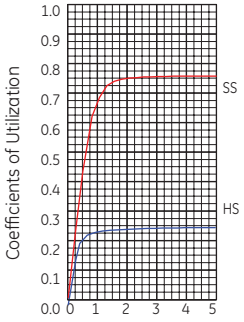
8,500 Lumens
4000K
ERL1_08F140_____.IES



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



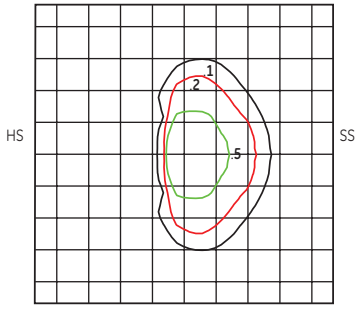
— Vertical plane through horizontal angle of maximum candlepower at 60°
— Vertical plane through horizontal angle of 73°



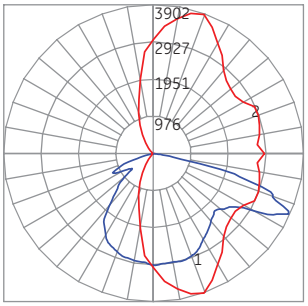
Street Width/Mounting Height

ERL1 Asymmetric Extra Wide (08G1)

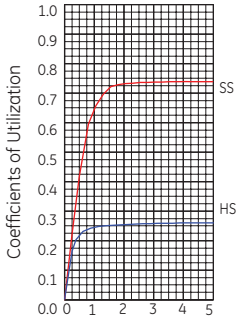
8,500 Lumens
4000K
ERL1_08G140_____.IES



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



— Vertical plane through horizontal angle of maximum candlepower at 70°
— Vertical plane through horizontal angle of 66°



Street Width/Mounting Height

Ordering Number Logic

Evolve™ LED Streetlight (ERLH)

E R L H — — — — — — — — — — — — — — — — — — —

PROD. ID	VOLTAGE	LUMEN OUTPUT	DISTRIBUTION	CCT	CONTROLS	COLOR	OPTIONS
E = Evolve **R** = Roadway **L** = Local **H** = High Output	**0** = 120-277* **1** = 120 **2** = 208 **3** = 240 **4** = 277 **5** = 480 **D** = 347 **H** = 347-480* * Not available with Fusing. Must choose a descreet voltage with F option.	**10** **11** **13** **14** **15** See Data Table for more information.	**A1** = Extra Narrow Asymmetric **B1** = Narrow Asymmetric (Medium) **C1** = Asymmetric (Short) **D1** = Asymmetric Forward **E1** = Asymmetric (Medium) **F1** = Asymmetric (Wide) **G1** = Asymmetric (Extra Wide) See Data Table for more information	**30** = 3000K **40** = 4000K	**A** = ANSI C136.41 7-pin **D** = ANSI C136.41 7-pin receptacle with Shorting Cap **E** = ANSI C136.41 7-pin Receptacle 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** = Optional Secondary Enhanced Surge Protection (10kV/5kA) **U** = Universal DALI Programmable +^ **X** = Single Package # **Y** = Coastal Finish * **XXX** = Special Options † Contact manufacturer for Lead-Time. # Std Packaging = 20 units per container. * Recommended for installations within 1 mile from the coast. Contact Factory for Lead-Time. + Compatible with LightGrid 2.0 nodes. ^ Not available at 347V, 480V or 347-480V.

PRODUCT ID	LUMEN OUTPUT	DISTRIBUTION	TYPICAL INITIAL LUMENS		TYPICAL SYSTEM WATTAGE	BUG RATING		IES FILE NUMBER	
			4000K	3000K		4000K	3000K	4000K	3000K
ERLH		A1	9500	9100		B3-U0-G2	B3-U0-G2	ERLH_10A140____.IES	ERLH_10A130____.IES
ERLH		B1	9800	9500		B3-U0-G1	B2-U0-G1	ERLH_10B140____.IES	ERLH_10B130____.IES
ERLH		C1	10000	9600		B2-U0-G1	B2-U0-G1	ERLH_10C140____.IES	ERLH_10C130____.IES
ERLH	10	D1	9800	9500	90	B2-U0-G2	B2-U0-G2	ERLH_10D140____.IES	ERLH_10D130____.IES
ERLH		E1	10000	9600		B2-U0-G2	B2-U0-G2	ERLH_10E140____.IES	ERLH_10E130____.IES
ERLH		F1	10000	9600		B2-U0-G2	B2-U0-G2	ERLH_10F140____.IES	ERLH_10F130____.IES
ERLH		G1	10000	9600		B2-U0-G2	B2-U0-G2	ERLH_10G140____.IES	ERLH_10G130____.IES
ERLH		A1	10900	10500		B3-U0-G2	B3-U0-G2	ERLH_11A140____.IES	ERLH_11A130____.IES
ERLH		B1	11200	10800		B3-U0-G2	B3-U0-G1	ERLH_11B140____.IES	ERLH_11B130____.IES
ERLH		C1	11500	11100		B3-U0-G2	B3-U0-G2	ERLH_11C140____.IES	ERLH_11C130____.IES
ERLH	11	D1	11200	10800	108	B2-U0-G2	B2-U0-G2	ERLH_11D140____.IES	ERLH_11D130____.IES
ERLH		E1	11500	11100		B3-U0-G2	B3-U0-G2	ERLH_11E140____.IES	ERLH_11E130____.IES
ERLH		F1	11500	11100		B3-U0-G2	B3-U0-G2	ERLH_11F140____.IES	ERLH_11F130____.IES
ERLH		G1	11500	11100		B3-U0-G2	B3-U0-G2	ERLH_11G140____.IES	ERLH_11G130____.IES
ERLH		A1	12300	11900		B3-U0-G2	B3-U0-G2	ERLH_13A140____.IES	ERLH_13A130____.IES
ERLH		B1	12700	12200		B3-U0-G2	B3-U0-G2	ERLH_13B140____.IES	ERLH_13B130____.IES
ERLH		C1	13000	12500		B3-U0-G2	B3-U0-G2	ERLH_13C140____.IES	ERLH_13C130____.IES
ERLH	13	D1	12700	12200	125	B3-U0-G2	B2-U0-G2	ERLH_13D140____.IES	ERLH_13D130____.IES
ERLH		E1	13000	12500		B3-U0-G2	B3-U0-G2	ERLH_13E140____.IES	ERLH_13E130____.IES
ERLH		F1	13000	12500		B3-U0-G2	B3-U0-G2	ERLH_13F140____.IES	ERLH_13F130____.IES
ERLH		G1	13000	12500		B3-U0-G2	B3-U0-G2	ERLH_13G140____.IES	ERLH_13G130____.IES
ERLH		A1	13300	12800		B3-U0-G3	B3-U0-G3	ERLH_14A140____.IES	ERLH_14A130____.IES
ERLH		B1	13700	13200		B3-U0-G2	B3-U0-G2	ERLH_14B140____.IES	ERLH_14B130____.IES
ERLH		C1	14000	13500		B3-U0-G2	B3-U0-G2	ERLH_14C140____.IES	ERLH_14C130____.IES
ERLH	14	D1	13700	13200	139	B3-U0-G2	B3-U0-G2	ERLH_14D140____.IES	ERLH_14D130____.IES
ERLH		E1	14000	13500		B3-U0-G2	B3-U0-G2	ERLH_14E140____.IES	ERLH_14E130____.IES
ERLH		F1	14000	13500		B3-U0-G2	B3-U0-G2	ERLH_14F140____.IES	ERLH_14F130____.IES
ERLH		G1	14000	13500		B3-U0-G2	B3-U0-G2	ERLH_14G140____.IES	ERLH_14G130____.IES
ERLH		A1	14200	13700		B3-U0-G3	B3-U0-G3	ERLH_15A140____.IES	ERLH_15A130____.IES
ERLH		B1	14700	14200		B3-U0-G2	B3-U0-G2	ERLH_15B140____.IES	ERLH_15B130____.IES
ERLH		C1	15000	14500		B3-U0-G2	B3-U0-G2	ERLH_15C140____.IES	ERLH_15C130____.IES
ERLH	15	D1	14700	14200	161	B3-U0-G2	B3-U0-G2	ERLH_15D140____.IES	ERLH_15D130____.IES
ERLH		E1	15000	14500		B3-U0-G2	B3-U0-G2	ERLH_15E140____.IES	ERLH_15E130____.IES
ERLH		F1	15000	14500		B3-U0-G2	B3-U0-G2	ERLH_15F140____.IES	ERLH_15F130____.IES
ERLH		G1	15000	14500		B3-U0-G2	B3-U0-G2	ERLH_15G140____.IES	ERLH_15G130____.IES

Ordering Number Logic

Evolve™ LED Streetlight (ERS1)

E R S 1 _ _ _ _ – _ _ – _ _ – _ _ – _ _ _ _ – _ _ _

PROD. ID	VOLTAGE	LUMEN OUTPUT	DISTRIBUTION	DRIVE CURRENT	CCT	CONTROLS	COLOR	OPTIONS
E = Evolve **R** = Roadway **S** = Scalable **1** = Single Module	**0** = 120-277* **1** = 120 **2** = 208 **3** = 240 **4** = 277 **5** = 480 **D** = 347 **H** = 347-480* * Not available with Fusing. Must choose a descreet voltage with F option.	**10** **11** **13** **14** **15** See Data Table for more information.	**A1** = Extra Narrow Asymmetric **B1** = Narrow Asymmetric (Medium) **C1** = Asymmetric (Short) **D1** = Asymmetric Forward **E1** = Asymmetric (Medium) **F1** = Asymmetric (Wide) **G1** = Asymmetric (Extra Wide) See Data Table for more information	**X** = Not Applicable	**30** = 3000K **40** = 4000K	**A** = ANSI C136.41 7-pin **D** = ANSI C136.41 7-pin receptacle with Shorting Cap **E** = ANSI C136.41 7-pin Receptacle 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	**F** = Fusing **G** = Internal Bubble Level **L** = Tool-Less Entry **R** = Optional Secondary Enhanced Surge Protection (10kV/5kA) **T** = 20kV/10kA Surge Protection per IEEE/ANSI C62.41.2-2002 † **U** = Universal DALI Programmable+^ **Y** = Coastal Finish* **XXX** = Special Options * Recommended for installations within 1 mile from the coast. Contact Factory for Lead-Time. + Compatible with LightGrid 2.0 nodes. ^Not available at 347V, 480V or 347-480V.

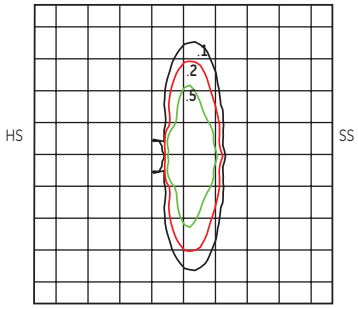
PRODUCT ID	LUMEN OUTPUT	DISTRIBUTION	TYPICAL INITIAL LUMENS		TYPICAL SYSTEM WATTAGE	BUG RATING		IES FILE NUMBER	
			4000K	3000K		4000K	3000K	4000K	3000K
ERS1	10	A1	9500	9200	90	B3-U0-G2	B3-U0-G2	ERS1_10A1X40_____.IES	ERS1_10A1X30_____.IES
ERS1		B1	9800	9500		B3-U0-G1	B2-U0-G1	ERS1_10B1X40_____.IES	ERS1_10B1X30_____.IES
ERS1		C1	10000	9600		B2-U0-G1	B2-U0-G1	ERS1_10C1X40_____.IES	ERS1_10C1X30_____.IES
ERS1		D1	9800	9500		B2-U0-G2	B2-U0-G2	ERS1_10D1X40_____.IES	ERS1_10D1X30_____.IES
ERS1		E1	10000	9600		B2-U0-G2	B2-U0-G2	ERS1_10E1X40_____.IES	ERS1_10E1X30_____.IES
ERS1		F1	10000	9600		B2-U0-G2	B2-U0-G2	ERS1_10F1X40_____.IES	ERS1_10F1X30_____.IES
ERS1		G1	10000	9600		B2-U0-G2	B2-U0-G2	ERS1_10G1X40_____.IES	ERS1_10G1X30_____.IES
ERS1	11	A1	10900	10500	108	B3-U0-G2	B3-U0-G2	ERS1_11A1X40_____.IES	ERS1_11A1X30_____.IES
ERS1		B1	11200	10800		B3-U0-G2	B3-U0-G1	ERS1_11B1X40_____.IES	ERS1_11B1X30_____.IES
ERS1		C1	11500	11100		B3-U0-G2	B3-U0-G2	ERS1_11C1X40_____.IES	ERS1_11C1X30_____.IES
ERS1		D1	11200	10800		B2-U0-G2	B2-U0-G2	ERS1_11D1X40_____.IES	ERS1_11D1X30_____.IES
ERS1		E1	11500	11100		B3-U0-G2	B3-U0-G2	ERS1_11E1X40_____.IES	ERS1_11E1X30_____.IES
ERS1		F1	11500	11100		B3-U0-G2	B3-U0-G2	ERS1_11F1X40_____.IES	ERS1_11F1X30_____.IES
ERS1		G1	11500	11100		B3-U0-G2	B3-U0-G2	ERS1_11G1X40_____.IES	ERS1_11G1X30_____.IES
ERS1	13	A1	12300	11900	125	B3-U0-G2	B3-U0-G2	ERS1_13A1X40_____.IES	ERS1_13A1X30_____.IES
ERS1		B1	12700	12200		B3-U0-G2	B3-U0-G2	ERS1_13B1X40_____.IES	ERS1_13B1X30_____.IES
ERS1		C1	13000	12500		B3-U0-G2	B3-U0-G2	ERS1_13C1X40_____.IES	ERS1_13C1X30_____.IES
ERS1		D1	12700	12200		B3-U0-G2	B2-U0-G2	ERS1_13D1X40_____.IES	ERS1_13D1X30_____.IES
ERS1		E1	13000	12500		B3-U0-G2	B3-U0-G2	ERS1_13E1X40_____.IES	ERS1_13E1X30_____.IES
ERS1		F1	13000	12500		B3-U0-G2	B3-U0-G2	ERS1_13F1X40_____.IES	ERS1_13F1X30_____.IES
ERS1		G1	13000	12500		B3-U0-G2	B3-U0-G2	ERS1_13G1X40_____.IES	ERS1_13G1X30_____.IES
ERS1	14	A1	13300	12800	139	B3-U0-G3	B3-U0-G3	ERS1_14A1X40_____.IES	ERS1_14A1X30_____.IES
ERS1		B1	13700	13200		B3-U0-G2	B3-U0-G2	ERS1_14B1X40_____.IES	ERS1_14B1X30_____.IES
ERS1		C1	14000	13500		B3-U0-G2	B3-U0-G2	ERS1_14C1X40_____.IES	ERS1_14C1X30_____.IES
ERS1		D1	13700	13200		B3-U0-G2	B3-U0-G2	ERS1_14D1X40_____.IES	ERS1_14D1X30_____.IES
ERS1		E1	14000	13500		B3-U0-G2	B3-U0-G2	ERS1_14E1X40_____.IES	ERS1_14E1X30_____.IES
ERS1		F1	14000	13500		B3-U0-G2	B3-U0-G2	ERS1_14F1X40_____.IES	ERS1_14F1X30_____.IES
ERS1		G1	14000	13500		B3-U0-G2	B3-U0-G2	ERS1_14G1X40_____.IES	ERS1_14G1X30_____.IES
ERS1	15	A1	14200	13700	161	B3-U0-G3	B3-U0-G3	ERS1_15A1X40_____.IES	ERS1_15A1X30_____.IES
ERS1		B1	14700	14200		B3-U0-G2	B3-U0-G2	ERS1_15B1X40_____.IES	ERS1_15B1X30_____.IES
ERS1		C1	15000	14500		B3-U0-G2	B3-U0-G2	ERS1_15C1X40_____.IES	ERS1_15C1X30_____.IES
ERS1		D1	14700	14200		B3-U0-G2	B3-U0-G2	ERS1_15D1X40_____.IES	ERS1_15D1X30_____.IES
ERS1		E1	15000	14500		B3-U0-G2	B3-U0-G2	ERS1_15E1X40_____.IES	ERS1_15E1X30_____.IES
ERS1		F1	15000	14500		B3-U0-G2	B3-U0-G2	ERS1_15F1X40_____.IES	ERS1_15F1X30_____.IES
ERS1		G1	15000	14500		B3-U0-G2	B3-U0-G2	ERS1_15G1X40_____.IES	ERS1_15G1X30_____.IES

Photometrics

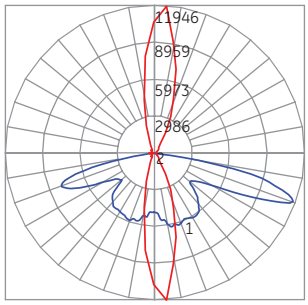
Evolve™ LED Streetlight (ERLH and ERS1)

ERLH and ERS1 Extra Narrow Asymmetric (15A1)

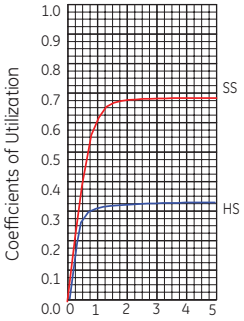
14,200 Lumens
4000K



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



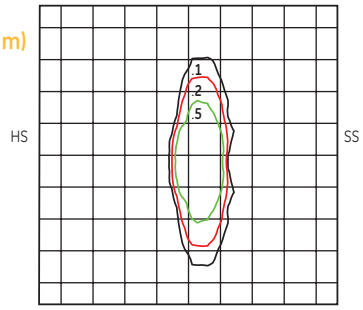
— Vertical plane through horizontal angle of maximum candlepower at 85°
— Vertical plane through horizontal angle of 71°



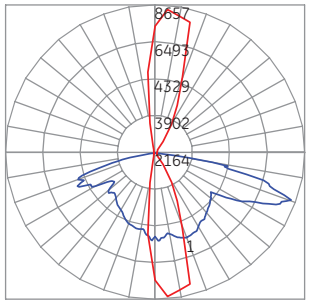
Street Width/Mounting Height

ERLH and ERS1 Narrow Asymmetric (Medium) (15B1)

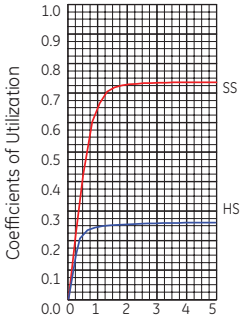
14,700 Lumens
4000K



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



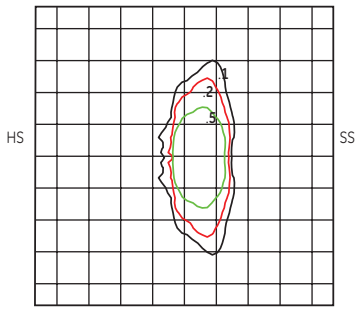
— Vertical plane through horizontal angle of maximum candlepower at 85°
— Vertical plane through horizontal angle of 71°



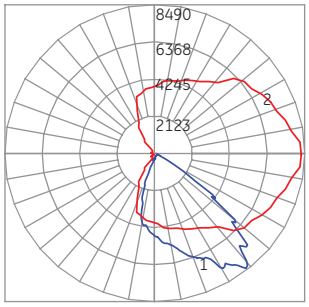
Street Width/Mounting Height

ERLH and ERS1 Asymmetric Short (15C1)

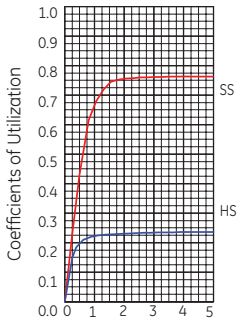
15,000 Lumens
4000K



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



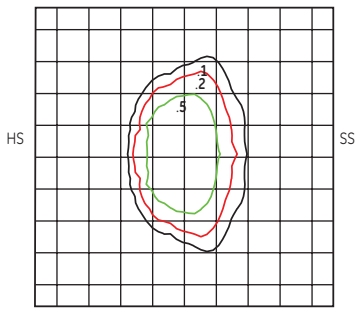
— Vertical plane through horizontal angle of maximum candlepower at 0°
— Vertical plane through horizontal angle of 38°



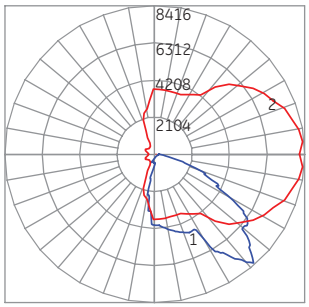
Street Width/Mounting Height

ERLH and ERS1 Asymmetric Forward (15D1)

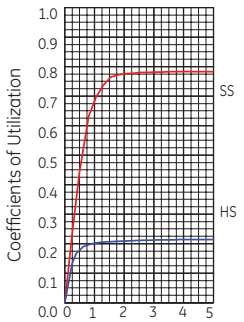
14,700 Lumens
4000K



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



— Vertical plane through horizontal angle of maximum candlepower at 5°
— Vertical plane through horizontal angle of 41°



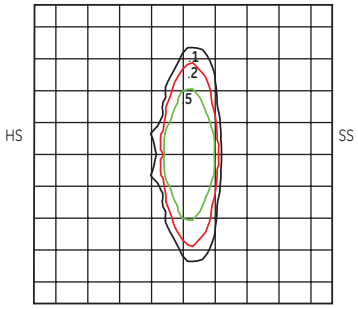
Street Width/Mounting Height

Photometrics

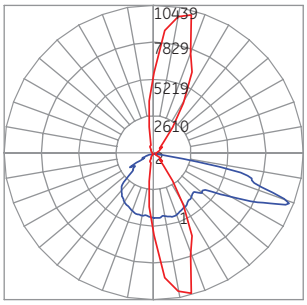
Evolve™ LED Streetlight (ERLH and ERS1)

ERLH and ERS1 Asymmetric Medium (15E1)

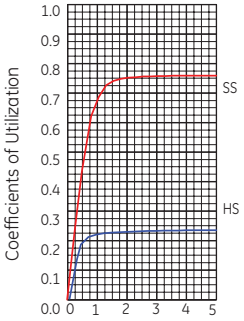
15,000 Lumens
4000K



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



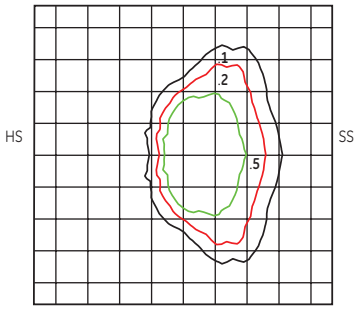
— Vertical plane through horizontal angle of maximum candlepower at 75°
— Vertical plane through horizontal angle of 70°



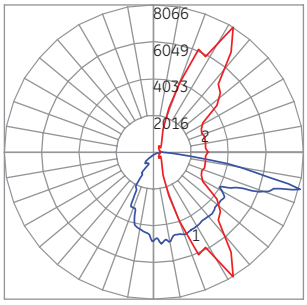
Street Width/Mounting Height

ERLH and ERS1 Asymmetric Wide (15F1)

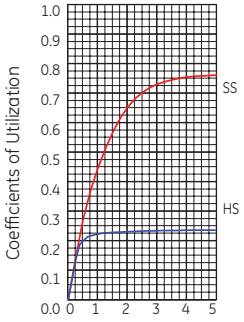
15,000 Lumens
4000K



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



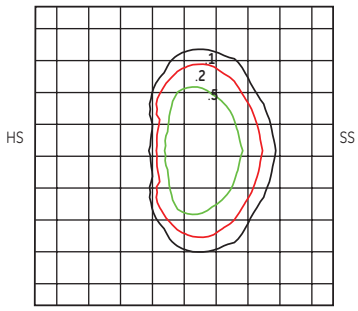
— Vertical plane through horizontal angle of maximum candlepower at 60°
— Vertical plane through horizontal angle of 75°



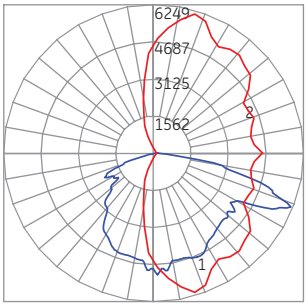
Street Width/Mounting Height

ERLH and ERS1 Asymmetric Extra Wide (15G1)

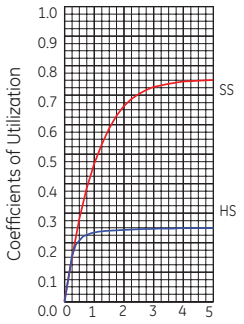
15,000 Lumens
4000K



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



— Vertical plane through horizontal angle of maximum candlepower at 75°
— Vertical plane through horizontal angle of 68°



Street Width/Mounting Height

Ordering Number Logic

Evolve™ LED Streetlight (ERS2)

E R S 2

_ _ _ _   _   _ _   _ _   _   _ _   _   _ _ _ _   _ _

PROD. ID	VOLTAGE	LUMEN OUTPUT	DISTRIBUTION	DRIVE CURRENT	CCT	CONTROLS	COLOR	OPTIONS
E = Evolve **R** = Roadway **S** = Scalable **2** = Double Module	**0** = 120-277* **1** = 120 **2** = 208 **3** = 240 **4** = 277 **5** = 480 **D** = 347 **H** = 347-480* * Not available with Fusing. Must choose a descreet voltage with F option.	**16** **18** **19** **21** **23** **25** **27** **28** See Data Table for more information.	**A1** = Extra Narrow Asymmetric **B1** = Narrow Asymmetric (Medium) **C1** = Asymmetric (Short) **D1** = Asymmetric Forward **E1** = Asymmetric (Medium) **F1** = Asymmetric (Wide) **G1** = Asymmetric (Extra Wide) See Data Table for more information	**X** = Not Applicable	**30** = 3000K **40** = 4000K	**A** = ANSI C136.41 7-pin **D** = ANSI C136.41 7-pin receptacle with Shorting Cap **E** = ANSI C136.41 7-pin Receptacle 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 **L** = Tool-Less Entry **R** = Optional Secondary Enhanced Surge Protection (10kV/5kA) **T** = 20kV/10kA Surge Protection per IEEE/ANSI C62.41.2-2002 † **U** = Universal DALI Programmable +^ **Y** = Coastal Finish* **XXX** = Special Options † Contact manufacturer for Lead-Time. * Recommended for installations within 1 mile from the coast. Contact Factory for Lead-Time. + Compatible with LightGrid 2.0 nodes. ^ Not available at 347V, 480V or 347-480V.

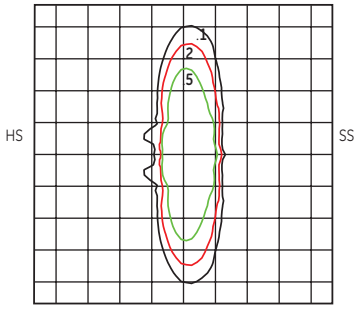
PRODUCT ID	LUMEN OUTPUT	DISTRIBUTION	TYPICAL INITIAL LUMENS		TYPICAL SYSTEM WATTAGE	BUG RATING		IES FILE NUMBER	
			4000K	3000K		4000K	3000K	4000K	3000K
ERS2	16	A1	15200	14700	132	B3-U0-G3	B3-U0-G3	ERS2_16A1X40_____.IES	ERS2_16A1X30_____.IES
ERS2		B1	15700	15100		B3-U0-G2	B3-U0-G2	ERS2_16B1X40_____.IES	ERS2_16B1X30_____.IES
ERS2		C1	16000	15400		B3-U0-G2	B3-U0-G2	ERS2_16C1X40_____.IES	ERS2_16C1X30_____.IES
ERS2		D1	15700	15100		B3-U0-G2	B3-U0-G2	ERS2_16D1X40_____.IES	ERS2_16D1X30_____.IES
ERS2		E1	16000	15400		B3-U0-G2	B3-U0-G2	ERS2_16E1X40_____.IES	ERS2_16E1X30_____.IES
ERS2		F1	16000	15400		B3-U0-G2	B3-U0-G2	ERS2_16F1X40_____.IES	ERS2_16F1X30_____.IES
ERS2		G1	16000	15400		B3-U0-G2	B3-U0-G2	ERS2_16G1X40_____.IES	ERS2_16G1X30_____.IES
ERS2	18	A1	17100	16500	157	B3-U0-G3	B3-U0-G3	ERS2_18A1X40_____.IES	ERS2_18A1X30_____.IES
ERS2		B1	17600	17000		B3-U0-G2	B3-U0-G2	ERS2_18B1X40_____.IES	ERS2_18B1X30_____.IES
ERS2		C1	18000	17400		B3-U0-G2	B3-U0-G2	ERS2_18C1X40_____.IES	ERS2_18C1X30_____.IES
ERS2		D1	17600	17000		B3-U0-G2	B3-U0-G2	ERS2_18D1X40_____.IES	ERS2_18D1X30_____.IES
ERS2		E1	18000	17400		B3-U0-G2	B3-U0-G2	ERS2_18E1X40_____.IES	ERS2_18E1X30_____.IES
ERS2		F1	18000	17400		B3-U0-G3	B3-U0-G2	ERS2_18F1X40_____.IES	ERS2_18F1X30_____.IES
ERS2		G1	18000	17400		B3-U0-G2	B3-U0-G2	ERS2_18G1X40_____.IES	ERS2_18G1X30_____.IES
ERS2	19	A1	18000	17300	162	B3-U0-G3	B3-U0-G3	ERS2_19A1X40_____.IES	ERS2_19A1X30_____.IES
ERS2		B1	18600	17900		B3-U0-G2	B3-U0-G2	ERS2_19B1X40_____.IES	ERS2_19B1X30_____.IES
ERS2		C1	19000	18300		B3-U0-G2	B3-U0-G2	ERS2_19C1X40_____.IES	ERS2_19C1X30_____.IES
ERS2		D1	18600	17900		B3-U0-G2	B3-U0-G2	ERS2_19D1X40_____.IES	ERS2_19D1X30_____.IES
ERS2		E1	19000	18300		B3-U0-G2	B3-U0-G2	ERS2_19E1X40_____.IES	ERS2_19E1X30_____.IES
ERS2		F1	19000	18300		B3-U0-G3	B3-U0-G3	ERS2_19F1X40_____.IES	ERS2_19F1X30_____.IES
ERS2		G1	19000	18300		B3-U0-G3	B3-U0-G2	ERS2_19G1X40_____.IES	ERS2_19G1X30_____.IES
ERS2	21	A1	20000	19300	193	B3-U0-G3	B3-U0-G3	ERS2_21A1X40_____.IES	ERS2_21A1X30_____.IES
ERS2		B1	20600	19900		B3-U0-G2	B3-U0-G2	ERS2_21B1X40_____.IES	ERS2_21B1X30_____.IES
ERS2		C1	21000	20300		B3-U0-G2	B3-U0-G2	ERS2_21C1X40_____.IES	ERS2_21C1X30_____.IES
ERS2		D1	20600	19900		B3-U0-G2	B3-U0-G2	ERS2_21D1X40_____.IES	ERS2_21D1X30_____.IES
ERS2		E1	21000	20300		B3-U0-G2	B3-U0-G2	ERS2_21E1X40_____.IES	ERS2_21E1X30_____.IES
ERS2		F1	21000	20300		B3-U0-G3	B3-U0-G3	ERS2_21F1X40_____.IES	ERS2_21F1X30_____.IES
ERS2		G1	21000	20300		B3-U0-G3	B3-U0-G3	ERS2_21G1X40_____.IES	ERS2_21G1X30_____.IES
ERS2	23	A1	21900	21100	219	B4-U0-G3	B3-U0-G3	ERS2_23A1X40_____.IES	ERS2_23A1X30_____.IES
ERS2		B1	22500	21700		B3-U0-G3	B3-U0-G2	ERS2_23B1X40_____.IES	ERS2_23B1X30_____.IES
ERS2		C1	23000	22200		B3-U0-G2	B3-U0-G2	ERS2_23C1X40_____.IES	ERS2_23C1X30_____.IES
ERS2		D1	22500	21700		B3-U0-G2	B3-U0-G2	ERS2_23D1X40_____.IES	ERS2_23D1X30_____.IES
ERS2		E1	23000	22200		B3-U0-G2	B3-U0-G2	ERS2_23E1X40_____.IES	ERS2_23E1X30_____.IES
ERS2		F1	23000	22200		B3-U0-G3	B3-U0-G3	ERS2_23F1X40_____.IES	ERS2_23F1X30_____.IES
ERS2		G1	23000	22200		B3-U0-G3	B3-U0-G3	ERS2_23G1X40_____.IES	ERS2_23G1X30_____.IES
ERS2	25	A1	23800	23000	243	B4-U0-G3	B4-U0-G3	ERS2_25A1X40_____.IES	ERS2_25A1X30_____.IES
ERS2		B1	24500	23600		B4-U0-G3	B3-U0-G3	ERS2_25B1X40_____.IES	ERS2_25B1X30_____.IES
ERS2		C1	25000	24100		B3-U0-G2	B3-U0-G2	ERS2_25C1X40_____.IES	ERS2_25C1X30_____.IES
ERS2		D1	24500	23600		B3-U0-G3	B3-U0-G3	ERS2_25D1X40_____.IES	ERS2_25D1X30_____.IES
ERS2		E1	25000	24100		B3-U0-G3	B3-U0-G3	ERS2_25E1X40_____.IES	ERS2_25E1X30_____.IES
ERS2		F1	25000	24100		B3-U0-G3	B3-U0-G3	ERS2_25F1X40_____.IES	ERS2_25F1X30_____.IES
ERS2		G1	25000	24100		B3-U0-G3	B3-U0-G3	ERS2_25G1X40_____.IES	ERS2_25G1X30_____.IES
ERS2	27	A1	25700	24800	275	B4-U0-G3	B4-U0-G3	ERS2_27A1X40_____.IES	ERS2_27A1X30_____.IES
ERS2		B1	26500	25600		B4-U0-G3	B4-U0-G3	ERS2_27B1X40_____.IES	ERS2_27B1X30_____.IES
ERS2		C1	27000	26000		B4-U0-G3	B4-U0-G3	ERS2_27C1X40_____.IES	ERS2_27C1X30_____.IES
ERS2		D1	26500	25600		B3-U0-G3	B3-U0-G3	ERS2_27D1X40_____.IES	ERS2_27D1X30_____.IES
ERS2		E1	27000	26000		B4-U0-G3	B4-U0-G3	ERS2_27E1X40_____.IES	ERS2_27E1X30_____.IES
ERS2		F1	27000	26000		B4-U0-G4	B4-U0-G3	ERS2_27F1X40_____.IES	ERS2_27F1X30_____.IES
ERS2		G1	27000	26000		B4-U0-G3	B4-U0-G3	ERS2_27G1X40_____.IES	ERS2_27G1X30_____.IES
ERS2	28	A1	26600	25600	280	B4-U0-G3	B4-U0-G3	ERS2_28A1X40_____.IES	ERS2_28A1X30_____.IES
ERS2		B1	27400	26400		B4-U0-G3	B4-U0-G3	ERS2_28B1X40_____.IES	ERS2_28B1X30_____.IES
ERS2		C1	28000	26900		B4-U0-G3	B4-U0-G3	ERS2_28C1X40_____.IES	ERS2_28C1X30_____.IES
ERS2		D1	27400	26400		B3-U0-G3	B3-U0-G3	ERS2_28D1X40_____.IES	ERS2_28D1X30_____.IES
ERS2		E1	28000	26900		B4-U0-G3	B4-U0-G3	ERS2_28E1X40_____.IES	ERS2_28E1X30_____.IES
ERS2		F1	28000	26900		B4-U0-G4	B4-U0-G3	ERS2_28F1X40_____.IES	ERS2_28F1X30_____.IES
ERS2		G1	28000	26900		B4-U0-G4	B4-U0-G3	ERS2_28G1X40_____.IES	ERS2_28G1X30_____.IES

Photometrics

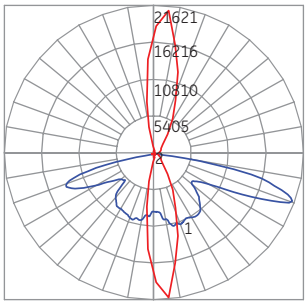
Evolve™ LED Streetlight (ERS2)

ERS2 Extra Narrow Asymmetric (27A1)

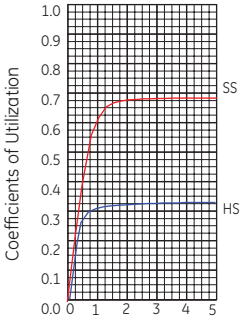
25,700 Lumens
4000K
ERS2_27A1X40____.IES



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



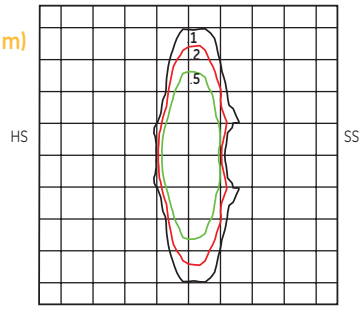
— Vertical plane through horizontal angle of maximum candlepower at 85°
— Vertical plane through horizontal angle of 71°



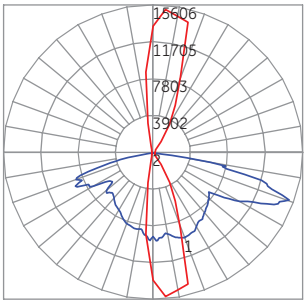
Street Width/Mounting Height

ERS2 Narrow Asymmetric (Medium) (27B1)

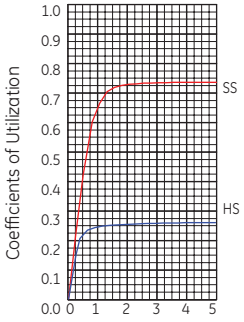
26,500 Lumens
4000K
ERS2_27B1X40____.IES



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



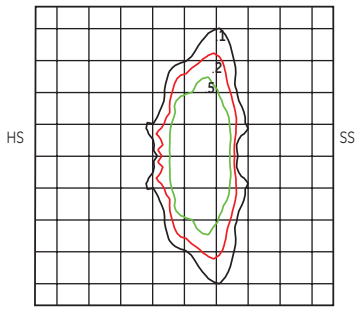
— Vertical plane through horizontal angle of maximum candlepower at 85°
— Vertical plane through horizontal angle of 71°



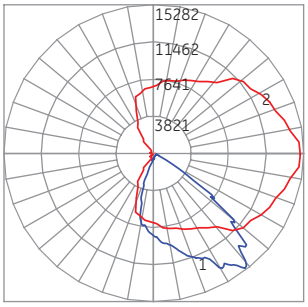
Street Width/Mounting Height

ERS2 Asymmetric Short (27C1)

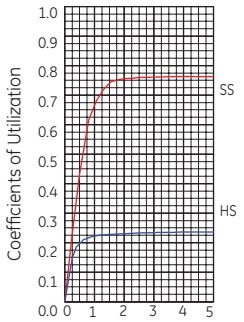
27,000 Lumens
4000K
ERS2_27C1X40____.IES



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



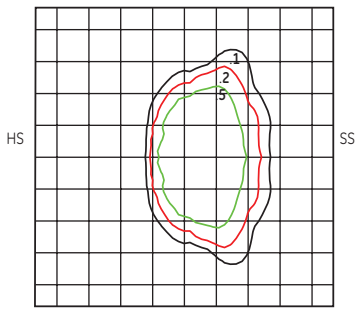
— Vertical plane through horizontal angle of maximum candlepower at 0°
— Vertical plane through horizontal angle of 38°



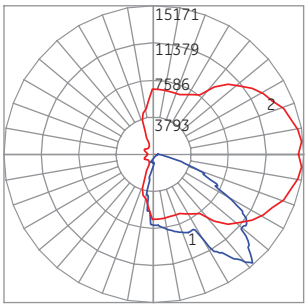
Street Width/Mounting Height

ERS2 Asymmetric Forward (27D1)

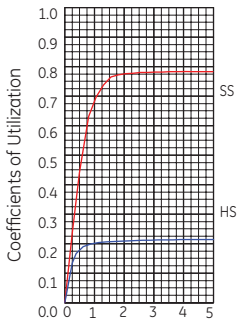
26,500 Lumens
4000K
ERS2_27D1X40____.IES



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



— Vertical plane through horizontal angle of maximum candlepower at 5°
— Vertical plane through horizontal angle of 41°



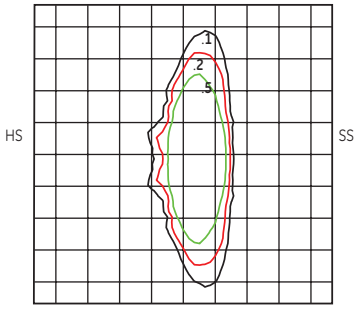
Street Width/Mounting Height

Photometrics

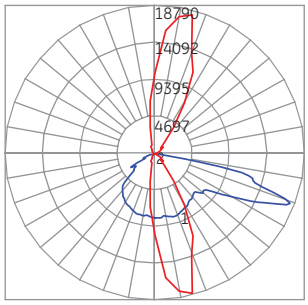
Evolve™ LED Streetlight (ERS2)

ERS2 Asymmetric Medium (27E1)

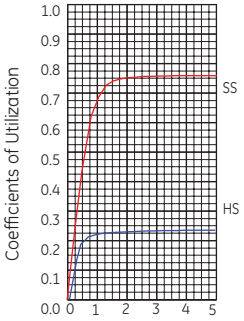
27,000 Lumens
4000K
ERS2_27E1X40____.IES



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



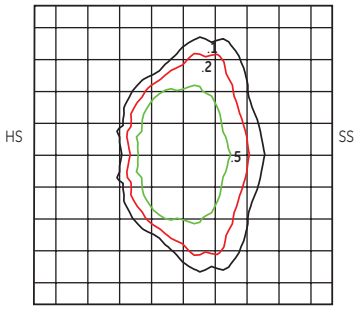
— Vertical plane through horizontal angle of maximum candlepower at 75°
— Vertical plane through horizontal angle of 70°



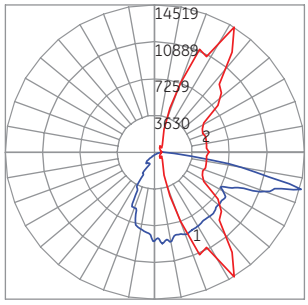
Street Width/Mounting Height

ERS2 Asymmetric Wide (27F1)

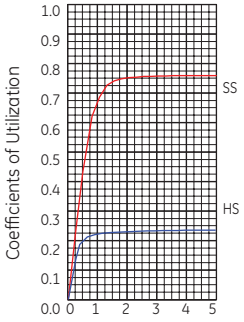
27,000 Lumens
4000K
ERS2_27F1X40____.IES



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



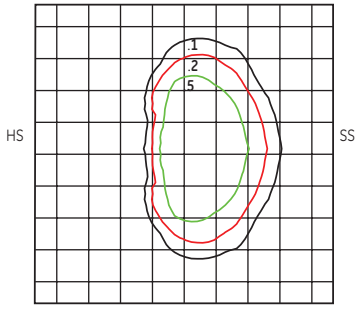
— Vertical plane through horizontal angle of maximum candlepower at 60°
— Vertical plane through horizontal angle of 75°



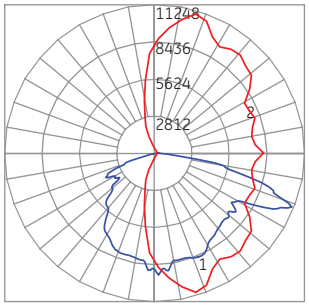
Street Width/Mounting Height

ERS2 Asymmetric Extra Wide (27G1)

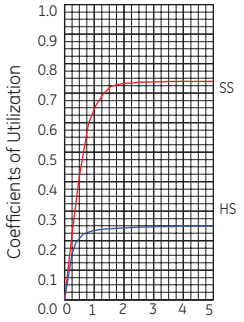
27,000 Lumens
4000K
ERS2_27G1X40____.IES



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



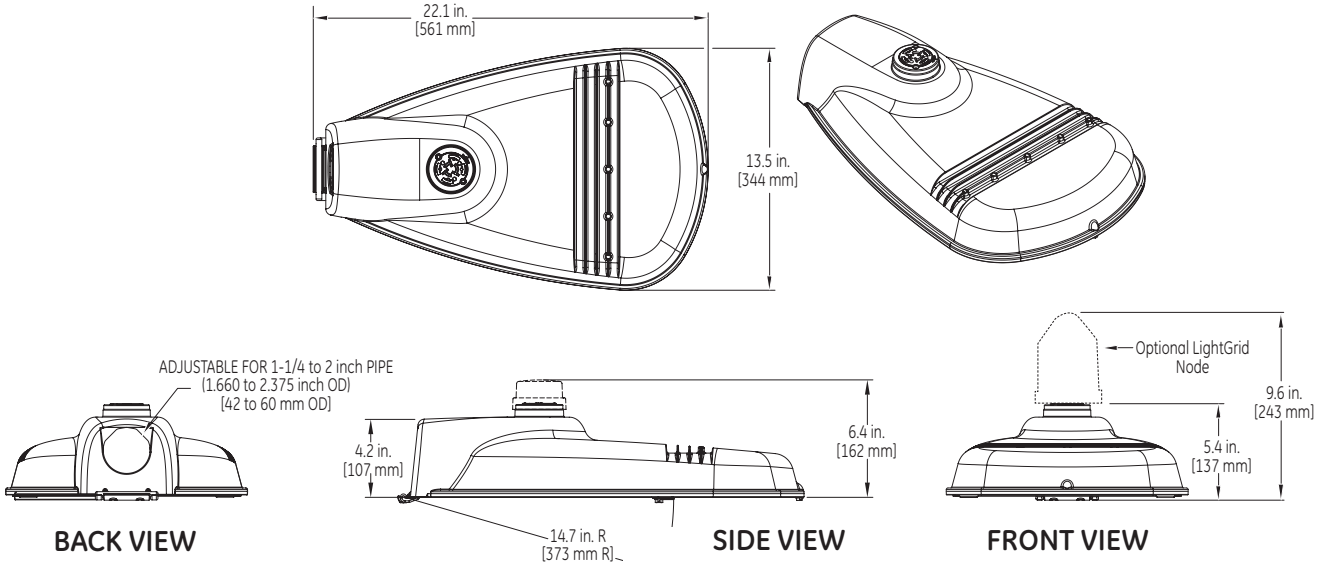
— Vertical plane through horizontal angle of maximum candlepower at 75°
— Vertical plane through horizontal angle of 68°

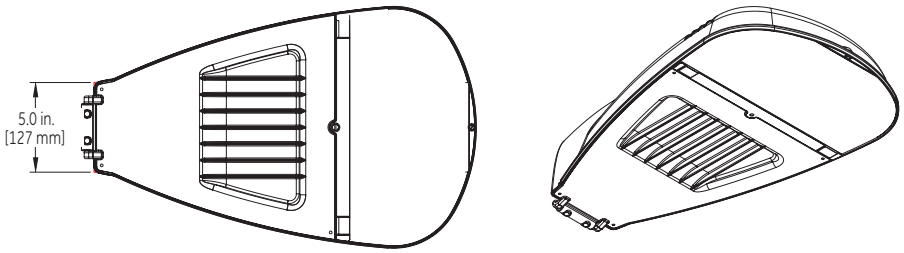


Street Width/Mounting Height

Product Dimensions

Evolve™ LED Streetlight (ERL1)



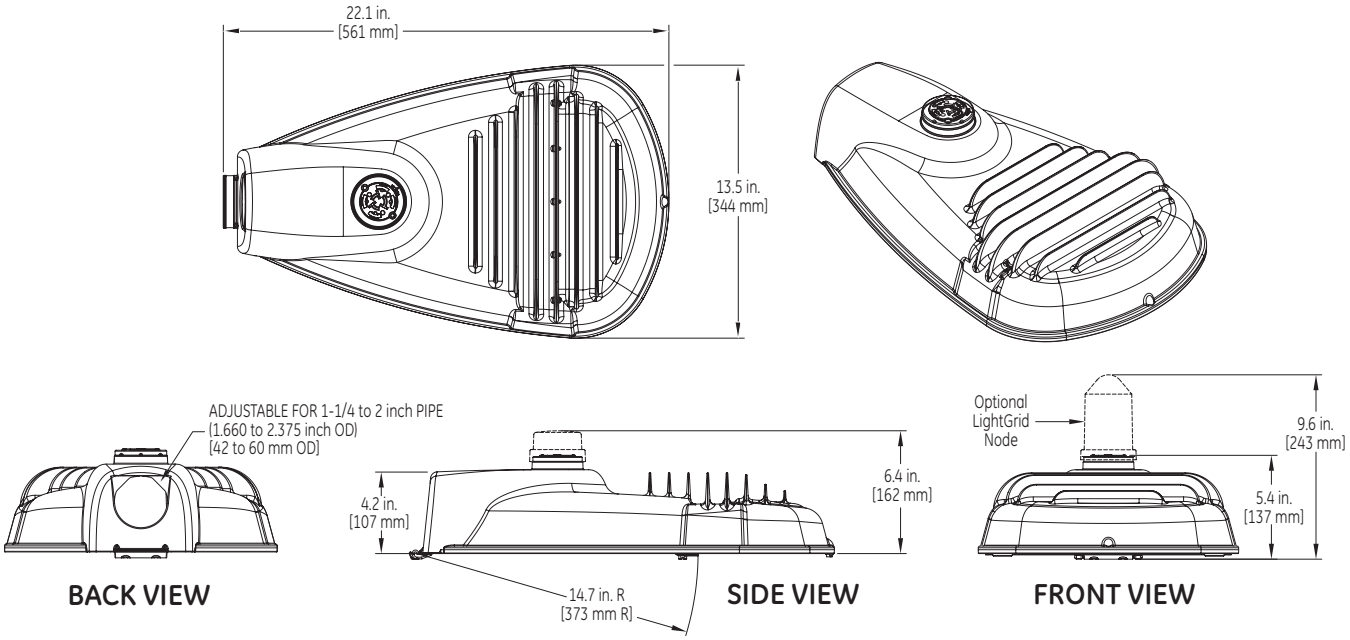


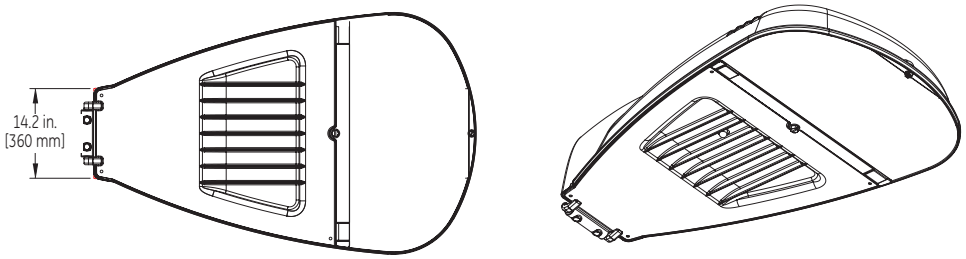
DATA

- Approximate net weight: 12.4 lbs (5.6 kgs) - Without XFMR
- Approximate net weight: 15.5 lbs (7 kgs) - With XFMR
- Effective Projected Area (EPA): 0.5 sq ft max (0.046 sq m)

Product Dimensions

Evolve™ LED Streetlight (ERLH)



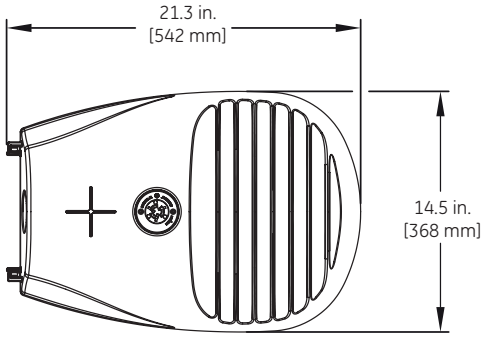


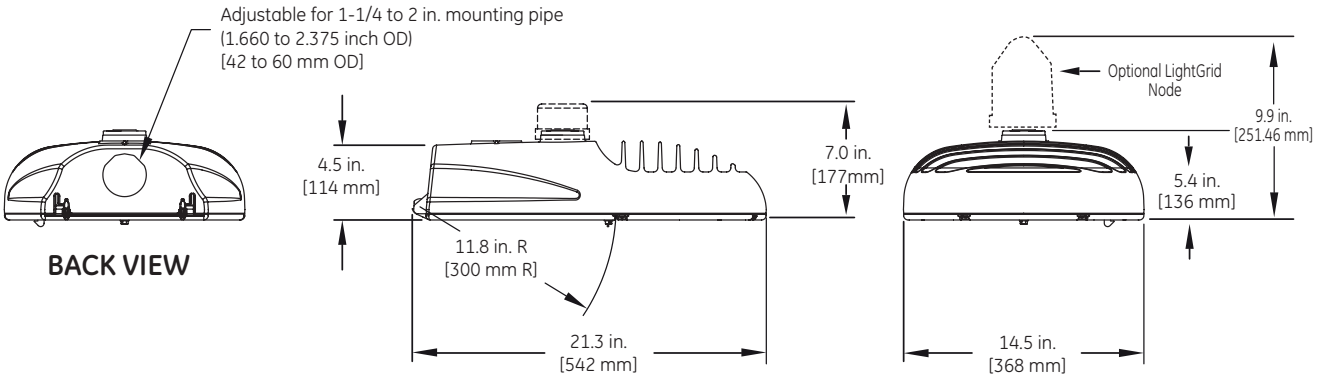
DATA

- 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)

Product Dimensions

Evolve™ LED Streetlight (ERS1)





BACK VIEW

SIDE VIEW

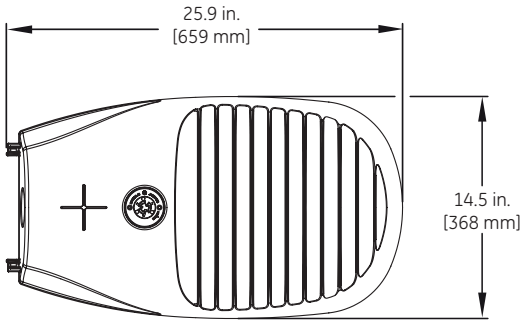
FRONT VIEW

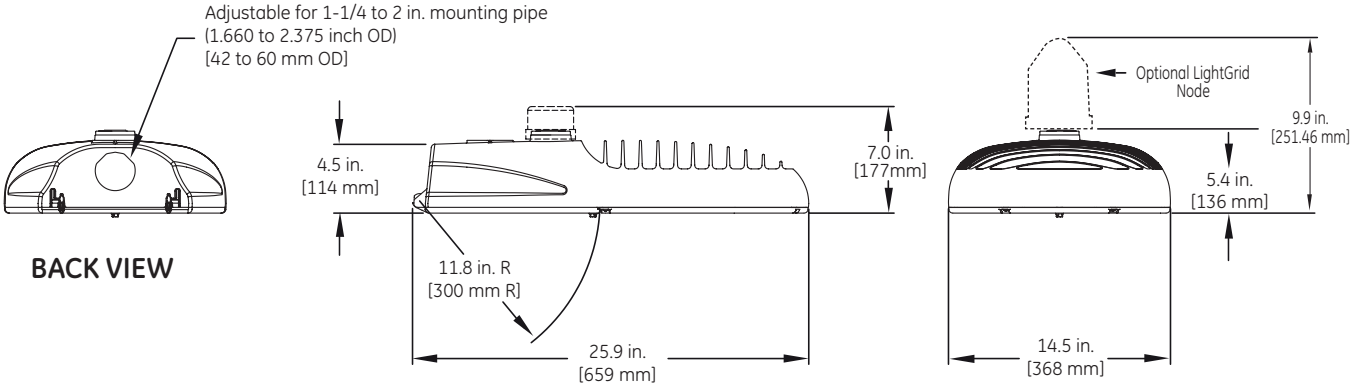
DATA

- Approximate net weight: 20 lbs (9.1 kgs) to 25 lbs (11.4 kgs)
- Effective Projected Area (EPA): 0.5 sq ft max (0.046 sq m)

Product Dimensions

Evolve™ LED Streetlight (ERS2)





BACK VIEW

SIDE VIEW

FRONT VIEW

DATA

- Approximate net weight: 25 lbs (11.4 kgs) to 29 lbs (13.2 kgs)
- Effective Projected Area (EPA): 0.7 sq ft max (0.065 sq m)

current powered by GE

www.currentbyge.com

OLP3105 (Rev 09/21/16)

American Revolution LED
Series 247L

PRODUCT OVERVIEW

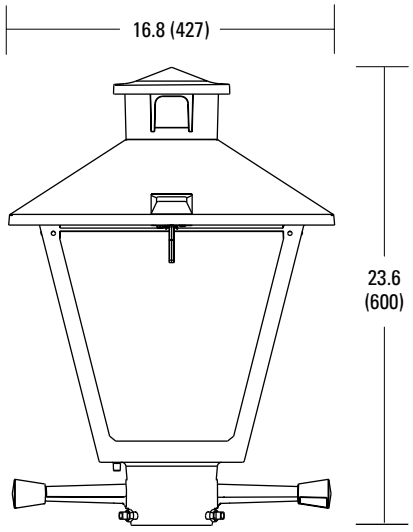
Features:

- Die-cast aluminum housing and hood for long-life performance
- Die-cast trigger latch (TL) and captive thumb screws option available for easy access to internal components
- Optical assembly designed for maximum performance, available in Type II, Type III and Type V
- Hinged hood and captive thumb screws provision afford quick, easy access to electrical and optical area for servicing
- Slipfitter with three set screws allows secure installation to pole sizes 2-3/8" or 3" O.D.
- Surge protection device (standard) exceeds ANSI C62.41 Category C1 criteria (surge tested at 10kV/5kA)
- Complies with ANSI: C136.2, C136.10, C136.15
- CSA listed and suitable for up to 30°C ambient
- Rated L70, LED life greater than 100,000 hours at 25°C
- Replaces up to 150W HPS light source incumbant models
- LED electronic 0V-10V dimmable driver
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

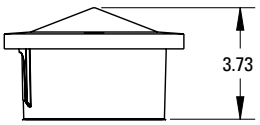
Applications:

Streetscapes
Walkways
Pathways
Parks

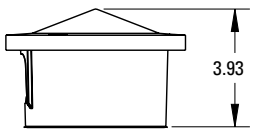
DIMENSIONS



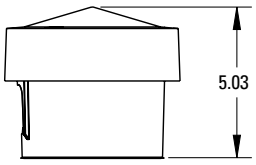
Effective Projected Area (EPA)
The EPA for the American Revolution Series 247 is 1.6 sq. ft.
P5 or P7 option total height is 24.9 (633).
Approx. Wt. = 36 lbs.



Cupola height
P3 without ROAM
Shown in line diagram



Cupola height
P5/P7 without ROAM



Cupola height
P5/P7 with ROAM

All dimensions are inches (millimeters) unless otherwise noted.

American Revolution LED
Series 247L

ORDERING INFORMATION

Example: 247L 20LEDE70 MVOLT 4K R3 AY

Series

247L	American Revolution LED

Performance Package

20LEDE10	20 Chips, 1050 mA Driver, 72 input watts
20LEDE70	20 Chips, 700 mA Driver, 45 input watts
10LEDE10	10 Chips, 1050 mA Driver, 38 input watts
10LEDE70	10 Chips, 700 mA Driver, 25 input watts
10LEDE53	10 Chips, 525 mA Driver, 18 input watts
10LEDE35	10 Chips, 350 mA Driver, 13 input watts

Voltage

MVOLT	Multi-volt, 120-277V
347	347V
480	480V

Color Temperature (CCT)

3K	3000K
4K	4000K
5K	5000K

Distribution

R2	Type II
R3	Type III
R5	Type V

Optics

AY	Acrylic
PY	Polycarbonate

Options

Paint [1]

(blank)	Black (standard)
GY	Gray
DDB	Dark Bronze
WH	White
BZ	Bronze

Photocontrol

(blank)	3 pin NEMA Photocontrol Receptacle (standard)
NR [2]	No Photocontrol Receptacle
P5 [3]	5 pin NEMA Photocontrol Receptacle (dimmable driver included)
P7 [3]	7 pin NEMA Photocontrol Receptacle (dimmable driver included)
PCLL [4,5]	Solid State Long Life Photocontrol
PCSS [4,5,6]	Not CSA Listed Solid State Long Life Photocontrol (120-277V)

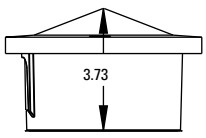
Miscellaneous

SS	Stainless steel hardware
NL	NEMA Label
XL	Not CSA Listed
TL	Tool-less Entry
LDR [7]	Ladder Rest
SH	Shorting Cap
SHX [6]	Not CSA Listed Shorting Cap
HSB	House Side Shield Black
HSW	House Side Shield White
CR	Enhanced Corrosion Resistant Finish
RCC [8]	ROAM Dimming Node Cupola Cover

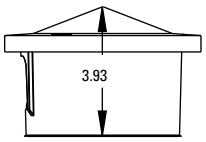
Accessories

RNC57 [3]	ROAM Dimming Node Cupola Cover

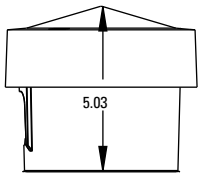
Cupola size based on type of control and receptacle



P3 Receptacle Selection
Non-ROAM Control
Blank



P5/P7 Receptacle Selection
Non-ROAM Control
P5 or
P7



P5/P7 Receptacle Selection
ROAM Control
RCC is required with:
P5 + RCC or
P7 + RCC

Notes:

1. Other colors available, please contact factory
2. PC and SH not available with NR option
3. Taller cupola cover (RCC) is required when used with ROAM or other similar wireless monitoring control systems
4. Standard failure mode="Fail On"
5. Photocontrols supplied with ANSI Standard Turn-On levels
6. XL option is required
7. Ships with unit, field installed
8. Required when using ROAM or other similar wireless monitoring control systems

American Electric Lighting
AEL Headquarters, 3825 Columbus Road, Granville, OH 43023
www.americanelectriclighting.com

Warranty Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx
Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

Please contact your sales representative for the latest product information.

OPERATING CHARACTERISTICS

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

		TOTAL LUMENS											
LED Quantity, mA, CCT	**Input Watts**	**R2-AY**	**LPW**	**R3-AY**	**LPW**	**R5-AY**	**LPW**	**R2-PY**	**LPW**	**R3-PY**	**LPW**	**R5-PY**	**LPW**
20LEDE10 3K	73	5,495	75	5,553	76	6,068	83	5,156	71	5,210	71	5,694	78
20LEDE10 4K	73	5,900	81	5,962	82	6,516	89	5,451	75	5,576	76	6,111	84
20LEDE10 5K	73	5,937	81	5,999	82	6,556	90	5,568	76	5,626	77	6,149	84
20LEDE70 3K	46	4,103	89	4,147	90	4,531	99	3,848	84	3,889	85	4,249	92
20LEDE70 4K	46	4,407	96	4,453	97	4,867	106	4,115	89	4,164	91	4,545	99
20LEDE70 5K	46	4,434	96	4,481	97	4,897	106	4,140	90	4,184	91	4,573	99
10LEDE10 3K	39	2,936	75	2,967	76	3,242	83	2,779	71	2,808	72	3,068	79
10LEDE10 4K	39	3,153	81	3,187	82	3,482	89	2,959	76	2,990	77	3,267	84
10LEDE10 5K	39	3,173	81	3,206	82	3,504	90	2,981	76	3,011	77	3,292	84
10LEDE70 3K	26	2,115	81	2,137	82	2,336	90	2,012	77	2,034	78	2,223	86
10LEDE70 4K	26	2,271	87	2,295	88	2,508	96	2,106	81	2,128	82	2,326	89
10LEDE70 5K	26	2,285	88	2,309	89	2,523	97	2,126	82	2,148	83	2,347	90
10LEDE53 3K	19	1,662	87	1,681	88	1,836	97	1,561	82	1,578	83	1,724	91
10LEDE53 4K	19	1,785	94	1,804	95	1,972	104	1,670	88	1,688	89	1,845	97
10LEDE53 5K	19	1,796	95	1,816	96	1,984	104	1,683	89	1,702	90	1,859	98
10LEDE35 3K	14	1,150	82	1,162	83	1,270	91	1,079	77	1,090	78	1,191	85
10LEDE35 4K	14	1,234	88	1,248	89	1,364	97	1,162	83	1,175	84	1,284	92
10LEDE35 5K	14	1,243	89	1,256	90	1,372	98	1,165	83	1,177	84	1,287	92

American Electric Lighting®
AEL Headquarters, 3825 Columbus Road, Granville, OH 43023
www.americanelectriclighting.com

Warranty Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx
Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

Please contact your sales representative for the latest product information.

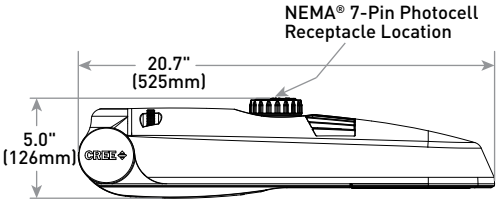
RSW Series

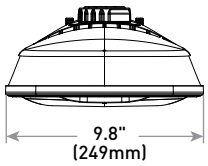
RSW™ LED Street Luminaire – Small

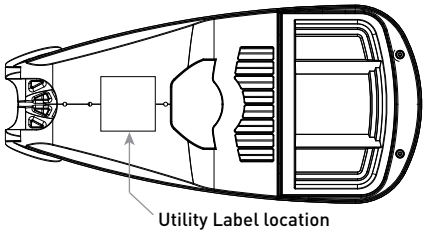
Product Description

The Cree® RSW Series, utilizing WaveMax® Technology, will transform the way utilities and municipalities light their residential streets. With the first viable LED streetlight at warm CCT, the RSW Series delivers up to 127 LPW, enhanced visual comfort with reduced glare and high color contrast leading to improved overall illumination using less energy. The RSW Series provides warm, inviting dark sky friendly lighting that makes good economic sense.

Applications: Residential roads, collector roads, parking lots, and general area spaces







Performance Summary

Utilizes Cree WaveMax® Technology
Assembled in the U.S.A. of U.S. and imported parts
Initial Delivered Lumens: Up to 5,000
Efficacy: Up to 127 LPW
CRI: Minimum 70 CRI (3000K, 4000K & 5000K); 80 CRI (2700K, 3000K, 4000K & 5000K)
CCT: 2700K, 3000K, 4000K, 5000K
Limited Warranty†: 10 years

† See http://lighting.cree.com/warranty for warranty terms

Accessories

Field-Installed	
Backlight Control Shield RSW-BLSS - Provides 1 mounting height cutoff - 0.5" (13mm) 301 stainless steel construction - Refer to initial delivered lumen tables for lumen output	**Cul-De-Sac Shield** RSW-CLSS - Provides backlight and sidelight control - 0.5" (13mm) 301 stainless steel construction - Lumen multiplier: 0.77
Bird Guard RSW-BRDGRDS - 5052-H32 aluminum construction	**Front Light Shield** RSW-FLSS - Provides front light control - 0.5" (13mm) 301 stainless steel construction - Lumen multiplier: 0.87

Weight*
9.4 lbs. (4.3kg)

* RSW-BLSS, RSW-CLSS, or RSW-FLSS Accessories: add 0.4 lbs. (0.2kg)

Ordering Information

Example: RSWS-A-HT-2ME-3L-27K8-UL-GY-N

RSWS	A	HT				UL		N	
Product	**Version**	**Mounting**	**Optic**	**Lumen Package****	**CCT/CRI**	**Voltage**	**Color Options**	**Utility Label/Receptacle**	**Options**
RSWS Small	**A**	**HT** Horizontal Tenon	**2LG*** Type II Long **2ME*** Type II Medium **3ME*** Type III Medium	**3L** 3,000 lumens **5L** 5,000 lumens	**27K8** 2700K, 80 CRI **30K7** 3000K, 70 CRI **30K8** 3000K, 80 CRI **40K7** 4000K, 70CRI **40K8** 4000K, 80 CRI **50K7** 5000K, 70CRI **50K8** 5000K, 80CRI	**UL** Universal 120-277V	**BK** Black **BZ** Bronze **GY** Grey	**N** **Utility Label and NEMA® 7-Pin Photocell Receptacle** - External wattage label per ANSI C136.15 - 7-pin receptacle per ANSI C136.41 - Factory connected 0-10V dim leads - Photocell or shorting cap by others	**Q4/Q3/Q2/Q1** **Field Adjustable Output** - Must select Q4, Q3, Q2, or Q1 - Offers full range lumen adjustability - Includes wattage label for setting selected - Refer to pages 5 & 6 for power and lumen values - Luminaire may also be dimmed through 7-Pin receptacle with use of dimming control by others - Refer to dimming spec sheet for dimming multipliers **SS** **Stainless Steel Bolts** **X3/X2/X1** **Locked Lumen Output** - Must select X3, X2, or X1 - Lumen output is permanently locked to the setting selected - Includes wattage label for setting selected - Refer to pages 5 & 6 for power and lumen values - Dimming is only available through 7-Pin receptacle with use of dimming control by others - Refer to dimming spec sheet for dimming multipliers

* Available with Backlight Shield when ordered with field-installed accessory (see table above)

** Lumen Package codes identify approximate light output only. Actual lumen output levels vary depending on CCT and optic selection. Refer to Initial Delivered Lumen tables for specific lumen values

Rev. Date: V14 03/21/2019

US: lighting.cree.com T (800) 236-6800 F (262) 504-5415

Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

Product Specifications

CREE WAVEMAX® TECHNOLOGY

Featuring up to 90% optical efficiency and precise control, Cree WaveMax® Technology provides unmatched comfort and decreased LED source luminance by smoothly spreading brightness over a broader area. When integrated with luminous surfaces made of a polymer medium engineered with DiamondFacet™ optical elements, extremely high efficacy luminaires are the result – ultimately creating more visually comfortable and appealing environments while exceeding illumination performance.

CONSTRUCTION & MATERIALS

- Housing constructed of high strength, lightweight bulk molding compound for long weathering and durability
- UV stabilized polymeric door with handle pocket for tool-less entry
- Straight in wiring to terminal block for power input (#6-#14 AWG)
- Optic box and driver enclosure inside optic box meet IP66 requirements
- Mounts on 1.25" (32mm) IP, 1.66" (42mm) O.D. or 2" (51mm) IP, 2.375" (60mm) O.D. horizontal tenon (minimum 8" [203mm] in length) and is adjustable +/- 5˚ in 2.5˚increments to allow for fixture leveling (two axis T-level included)
- Luminaire secures with two grade 5 steel mounting bolts w/clear zinc clad finish standard; optional 316 stainless steel mounting bolts available with SS option
- Comes standard with Utility Label per ANSI C136.15 and 7-pin NEMA® Photocell Receptacle per ANSI C136.41
- **Weight:** 9.4 lbs. (4.3kg); add 0.4 lbs. (0.2kg) for RSW-BLSS, RSW-CLSS, or RSW-FLSS accessories

ELECTRICAL SYSTEM

- **Input Voltage:** 120-277V, 50/60Hz
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- Integral 10kV surge suppression protection standard
- When code dictates fusing, a slow blow fuse or type C/D breaker should be used to address inrush current
- **10V Source Current:** 0.15mA
- **Operating Temperature Range:** -40˚C - +50˚C (-40˚F - + 122˚F)

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for wet locations
- Certified to ANSI C136.31-2001, 3G bridge and overpass vibration standards
- Meets CALTrans 611 Vibration testing
- 10kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Meets FCC Part 15, Subpart B, Class A standards for conducted and radiated emissions
- Meets Buy American requirements within ARRA
- RoHS compliant. Consult factory for additional details
- Dark Sky Friendly, IDA Approved when ordered with 27K or 30K CCT
- DLC and DLC Premium qualified versions available. Please refer to https://www.designlights.org/search/ for most current information
- ⚠ **CA RESIDENTS WARNING:** Cancer and Reproductive Harm – www.p65warnings.ca.gov

Electrical Data*

Lumen Package	CCT/CRI	System Watts 120-277V	Utility Label Wattage	Efficacy	Total Current (A)			
					120V	208V	240V	277V
3L	27K8	32	30	103	0.27	0.16	0.14	0.13
	30K7	28	30	118	0.23	0.14	0.12	0.11
	30K8	31	30	106	0.25	0.15	0.13	0.12
	40K7	26	30	127	0.21	0.13	0.11	0.10
	40K8	29	30	114	0.24	0.14	0.13	0.11
	50K7	26	30	127	0.21	0.13	0.11	0.10
	50K8	28	30	118	0.23	0.14	0.12	0.11
5L	27K8	53	50	94	0.44	0.26	0.23	0.20
	30K7	45	50	111	0.37	0.22	0.20	0.18
	30K8	51	50	98	0.42	0.25	0.22	0.20
	40K7	41	40	122	0.34	0.20	0.18	0.16
	40K8	47	50	106	0.39	0.23	0.20	0.18
	50K7	41	40	122	0.34	0.20	0.18	0.16
	50K8	45	50	111	0.37	0.22	0.20	0.18

* Electrical data at 25˚C (77˚F). Actual wattage may differ by +/- 10% when operating between 120-277V +/- 10%

RSWS Series Ambient Adjusted Lumen Maintenance[1]

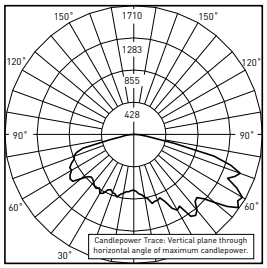
Ambient	Initial LMF	25K hr Projected[2] LMF	50K hr Projected[2] LMF	75K hr Projected[2] LMF	100K hr Calculated[3] LMF
5˚C (41˚F)	1.04	1.03	1.02	1.02	1.02
10˚C (50˚F)	1.03	1.02	1.01	1.01	1.01
15˚C (59˚F)	1.02	1.01	1.00	1.00	1.00
20˚C (68˚F)	1.01	1.00	0.99	0.99	0.98
25˚C (77˚F)	1.00	0.98	0.98	0.98	0.97

[1] Lumen maintenance values at 25˚C (77˚F) are calculated per TM-21 based on LM-80 data and in-situ luminaire testing. Luminaire ambient temperature factors (LATF) have been applied to all lumen maintenance factors. Please refer to the Temperature Zone Reference Document for outdoor average nighttime ambient conditions.
[2] In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT] i.e. the packaged LED chip)
[3] In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT] i.e. the packaged LED chip)

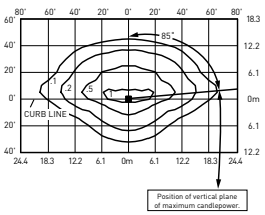
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/street-and-roadway/rsw-series

2LG



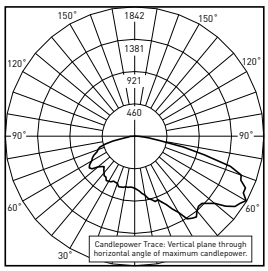
UL Verification Services Test Report #:
11624878.01
RSWS-A-**-2LG-3L-30K7-UL-GY-N
Initial Delivered Lumens: 3,294



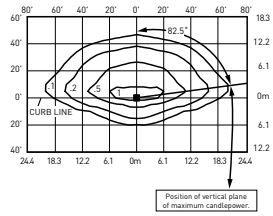
RSWS-A-**-2LG-3L-30K7-UL-GY-N
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 3,300
Initial FC at grade

Type II Long Distribution			
Lumen Package	CRI	2700K/3000K/4000K/5000K	
		Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
3L	All	3,300	B1 U0 G1
5L	All	5,000	B1 U0 G1

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt



CESTL Test Report #: 11675461.06
RSWS-A-**-2LG-3L-30K7-UL-GY-N
w/RSW-BLSS
Initial Delivered Lumens: 3,080

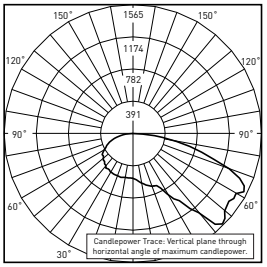


RSWS-A-**-2LG-3L-30K7-UL-GY-N
w/RSW-BLSS
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 3,050
Initial FC at grade

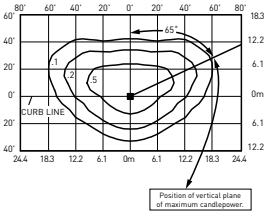
Type II Long w/BLS Distribution			
Lumen Package	CRI	2700K/3000K/4000K/5000K	
		Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
3L	All	3,050	B1 U0 G1
5L	All	4,630	B1 U0 G1

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

2ME



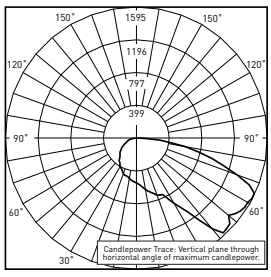
UL Verification Services Test Report #:
11644102.09
RSWS-A-**-2ME-3L-30K7-UL-GY-N
Initial Delivered Lumens: 3,251



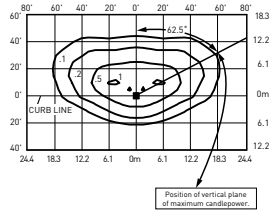
RSWS-A-**-2ME-3L-30K7-UL-GY-N
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 3,300
Initial FC at grade

Type II Medium Distribution			
Lumen Package	CRI	2700K/3000K/4000K/5000K	
		Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
3L	All	3,300	B1 U0 G1
5L	All	5,000	B1 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt



CESTL Test Report #: 11675461.02
RSWS-A-**-2ME-3L-30K7-UL-GY-N
w/RSW-BLSS
Initial Delivered Lumens: 2,975



RSWS-A-**-2ME-3L-30K7-UL-GY-N
w/RSW-BLSS
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 3,050
Initial FC at grade

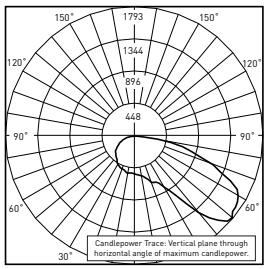
Type II Medium w/BLS Distribution			
Lumen Package	CRI	2700K/3000K/4000K/5000K	
		Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
3L	All	3,050	B1 U0 G1
5L	All	4,630	B1 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

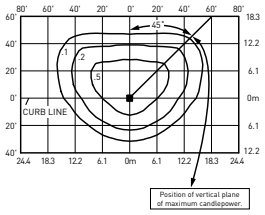
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/street-and-roadway/rsw-series

3ME



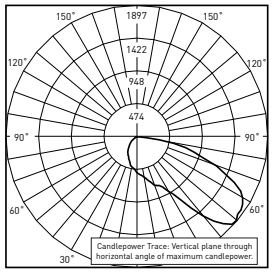
UL Verification Services Test Report #: 11644102.08
RSWS-A-**-3ME-3L-30K7-UL-GY-N
Initial Delivered Lumens: 3,399



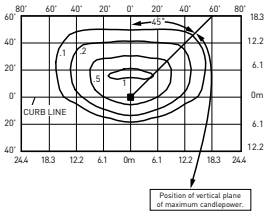
RSWS-A-**-3ME-3L-30K7-UL-GY-N
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 3,300
Initial FC at grade

Type III Medium Distribution			
Lumen Package	CRI	2700K/3000K/4000K/5000K	
		Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
3L	All	3,300	B1 U0 G1
5L	All	5,000	B1 U0 G1

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt



CESTL Test Report #: 11675461.01
RSWS-A-**-3ME-3L-30K7-UL-GY-N w/RSW-BLSS
Initial Delivered Lumens: 3,113



RSWS-A-**-3ME-3L-30K7-UL-GY-N w/RSW-BLSS
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 3,050
Initial FC at grade

Type III Medium w/BLS Distribution			
Lumen Package	CRI	2700K/3000K/4000K/5000K	
		Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
3L	All	3,050	B1 U1 G1
5L	All	4,630	B1 U1 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

Luminaire EPA

Horizontal Tenon Mount – Weight: 9.4 lbs. (4.3kg); RSW-BLSS, RSW-CLSS, or RSW-FLSS Accessories: add 0.4 lbs. (0.2kg)					
Luminaire	Single	2 @ 90°	2 @ 180°	3 @ 90°	4 @ 90°
Tenon Configuration If used with Cree tenons, please add tenon EPA with luminaire EPA					
	PD-1H4; PT-1H	PD-2H4(90); PT-2H(90)	PD-2H4(180); PT-2H(180)	PD-3H4(90); PT-3H(90)	PD-4H4(90); PT-4H(90)
Standard Luminiare	0.61	0.89	1.22	1.50	1.78
Luminiare w/RSW-BLSS, RSW-CLSS or RSW-FLSS Accessory	0.61	1.25	1.22	1.85	2.49

Tenon EPA

Part Number	EPA
PD Series Tenons	0.09
PT Series Tenons	0.10
WM-2L	0.13
XA-TMDA8	0.19

Tenons and Brackets* (must specify color)

Square Internal Mount Horizontal Tenons (Aluminum)
- Mounts to 4" (102mm) square aluminum or steel poles
PD-1H4 – Single
PD-2H4(90) – 90° Twin
PD-2H4(180) – 180° Twin
PD-3H4(90) – 90° Triple
PD-4H4(90) – 90° Quad

Wall Mount Brackets
- Mounts to wall or roof
WM-2L – Extended Horizontal

Round External Mount Horizontal Tenons (Aluminum)
- Mounts to 2.375"-3" (60-76mm) O.D. round aluminum or steel poles or tenons
PT-1H – Single
PT-2H(90) – 90° Twin
PT-2H(180) – 180° Twin
PT-3H(90) – 90° Triple
PT-4H(90) – 90° Quad

Direct Arm Pole Adaptor Bracket
- Mounts to 3-6" (76-152mm) round or square aluminum or steel poles
XA-TMDA8

* Refer to the Bracket and Tenons spec sheet for more details

Field Adjustable Output (Q4/Q3/Q2/Q1) Option Description:

The Field Adjustable Output option enables the street and area luminaire within the RSW Series on this page to be tuned to the exact needs of a particular application through multiple levels of adjustment. When ordered with the Q option, the luminaire will be shipped from the factory at the selected lumen output, will be fully adjustable between the outputs, and will include a wattage label that indicates the wattage of the luminaire at the selected lumen output (Rounded to nearest 10 watts per ANSI C136.15-2015.). Additional dimming functionality is available when a dimming control (by others) is used in the 7-Pin receptacle.

Locked Lumen Output (X3/X2/X1) Option Description:

The Locked Lumen Output option on this page permanently locks the lumen output on the RSW Series street and area luminaire to the setting selected. When ordered with the X option, the luminaire will be shipped from the factory at the lumen output setting selected, and will include a wattage label that indicates the wattage of the setting selected. When this option is selected, the luminaire output is not able to be adjusted in the field except if a dimming control (by others) is used in the 7-Pin receptacle.

Q & X Option Power & Lumen Data – 3L

Q Option Setting	X Option Setting	CCT/CRI	System Watts†	Label Wattage	Lumen Values†		Optics Qualified on DLC QPL	
			120-277V		2LG, 2ME & 3ME	w/BLS	Standard	Premium
Q4 (Full Power)	N/A (Full Power)	27K8	32	30	3,300	3,050	2LG, 2ME, 3ME	
		30K7	28	30				2LG, 2ME, 3ME
		30K8	31	30			2LG, 2ME, 3ME	
		40K7	26	30				2LG, 2ME, 3ME
		40K8	29	30				2LG, 2ME, 3ME
		50K7	26	30				2LG, 2ME, 3ME
		50K8	28	30				2LG, 2ME, 3ME
Q3	X3	27K8	26	30	2,756	2,547	2LG, 2ME, 3ME	
		30K7	23	20				2LG, 2ME, 3ME
		30K8	25	30			2LG, 2ME, 3ME	
		40K7	21	20				2LG, 2ME, 3ME
		40K8	23	20				2LG, 2ME, 3ME
		50K7	21	20				2LG, 2ME, 3ME
		50K8	23	20				2LG, 2ME, 3ME
Q2	X2	27K8	20	20	2,169	2,004	2LG, 2ME, 3ME	
		30K7	17	20				2LG, 2ME, 3ME
		30K8	19	20			2LG, 2ME, 3ME	
		40K7	16	20				2LG, 2ME, 3ME
		40K8	18	20				2LG, 2ME, 3ME
		50K7	16	20				2LG, 2ME, 3ME
		50K8	17	20				2LG, 2ME, 3ME
Q1	X1	27K8	15	20	1,633	1,509	2LG (120V), 2ME (120V), 3ME (120V)	
		30K7	13	10				2LG (120V), 2ME (120V), 3ME (120V)
		30K8	15	20			2LG (120V), 2ME (120V), 3ME (120V)	
		40K7	12	10				2LG (120V), 2ME (120V), 3ME (120V)
		40K8	14	10				2LG (120V), 2ME (120V), 3ME (120V)
		50K7	12	10				2LG (120V), 2ME (120V), 3ME (120V)
		50K8	13	10				2LG (120V), 2ME (120V), 3ME (120V)

† Electrical and lumen data at 25°C (77°F). Actual wattage and lumen output may differ by +/-10% when operating between 120-277V +/-10%

Field Adjustable Output (Q4/Q3/Q2/Q1) Option Description:

The Field Adjustable Output option enables the street and area luminaire within the RSW Series on this page to be tuned to the exact needs of a particular application through multiple levels of adjustment. When ordered with the Q option, the luminaire will be shipped from the factory at the selected lumen output, will be fully adjustable between the outputs, and will include a wattage label that indicates the wattage of the luminaire at the selected lumen output (Rounded to nearest 10 watts per ANSI C136.15-2015.). Additional dimming functionality is available when a dimming control (by others) is used in the 7-Pin receptacle.

Locked Lumen Output (X3/X2/X1) Option Description:

The Locked Lumen Output option on this page permanently locks the lumen output on the RSW Series street and area luminaire to the setting selected. When ordered with the X option, the luminaire will be shipped from the factory at the lumen output setting selected, and will include a wattage label that indicates the wattage of the setting selected. When this option is selected, the luminaire output is not able to be adjusted in the field except if a dimming control (by others) is used in the 7-Pin receptacle.

Q & X Option Power & Lumen Data – 5L

Q Option Setting	X Option Setting	CCT/CRI	System Watts†	Label Wattage	Lumen Values†		Optics Qualified on DLC QPL	
			120-277V		2LG, 2ME & 3ME	w/BLS	Standard	Premium
Q4 (Full Power)	N/A (Full Power)	27K8	53	50	5,000	4,630	2LG, 2ME, 3ME	
		30K7	45	50				2LG, 2ME, 3ME
		30K8	51	50			2LG, 2ME, 3ME	
		40K7	41	40				2LG, 2ME, 3ME
		40K8	47	50			2LG, 2ME, 3ME	
		50K7	41	40				2LG, 2ME, 3ME
		50K8	45	50			2LG, 2ME, 3ME	
Q3	X3	27K8	49	50	4,654	4,310	2LG, 2ME, 3ME	
		30K7	41	40				2LG, 2ME, 3ME
		30K8	46	50			2LG, 2ME, 3ME	
		40K7	38	40				2LG, 2ME, 3ME
		40K8	43	40			2LG, 2ME, 3ME	
		50K7	38	40				2LG, 2ME, 3ME
		50K8	41	40			2LG, 2ME, 3ME	
Q2	X2	27K8	42	40	4,105	3,801	2LG, 2ME, 3ME	
		30K7	36	40				2LG, 2ME, 3ME
		30K8	40	40			2LG, 2ME, 3ME	
		40K7	33	30				2LG, 2ME, 3ME
		40K8	38	40			2LG, 2ME, 3ME	
		50K7	33	30				2LG, 2ME, 3ME
		50K8	36	40				2LG, 2ME, 3ME
Q1	X1	27K8	36	40	3,617	3,350	2LG, 2ME, 3ME	
		30K7	30	30				2LG, 2ME, 3ME
		30K8	34	30			2LG, 2ME, 3ME	
		40K7	28	30				2LG, 2ME, 3ME
		40K8	32	30			2LG, 2ME, 3ME	
		50K7	28	30				2LG, 2ME, 3ME
		50K8	30	30				2LG, 2ME, 3ME

† Electrical and lumen data at 25°C (77°F). Actual wattage and lumen output may differ by +/-10% when operating between 120-277V +/-10%

US: lighting.cree.com T (800) 236-6800 F (262) 504-5415 **Canada: www.cree.com/canada** T (800) 473-1234 F (800) 890-7507

480Vac Metal Halide & HPS
80W LED Replacement Lamp

• Built-in Surge Suppressors & Protection •
• Bright • High CRI • High Lumen Output •
• Suitable for Open & Enclosed Fixtures •
• High Power Factor • Self Ballasted •
• Rated Life 50,000 Hours (*) •

RoHS · 5 YEARS WARRANTY · CE · LM79 LM80 TESTED · 20KV 10KA

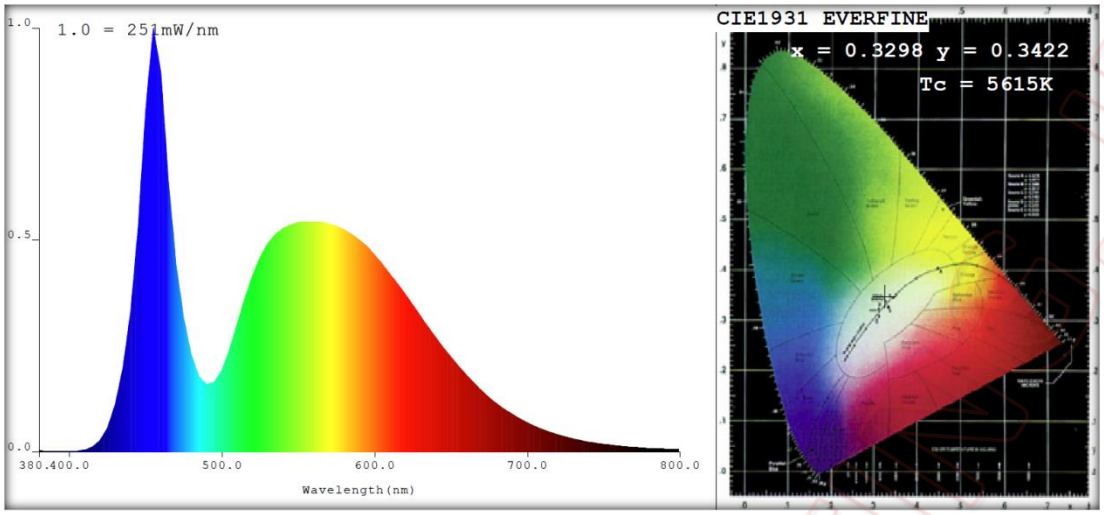
208V – 277V – 347V – 480V

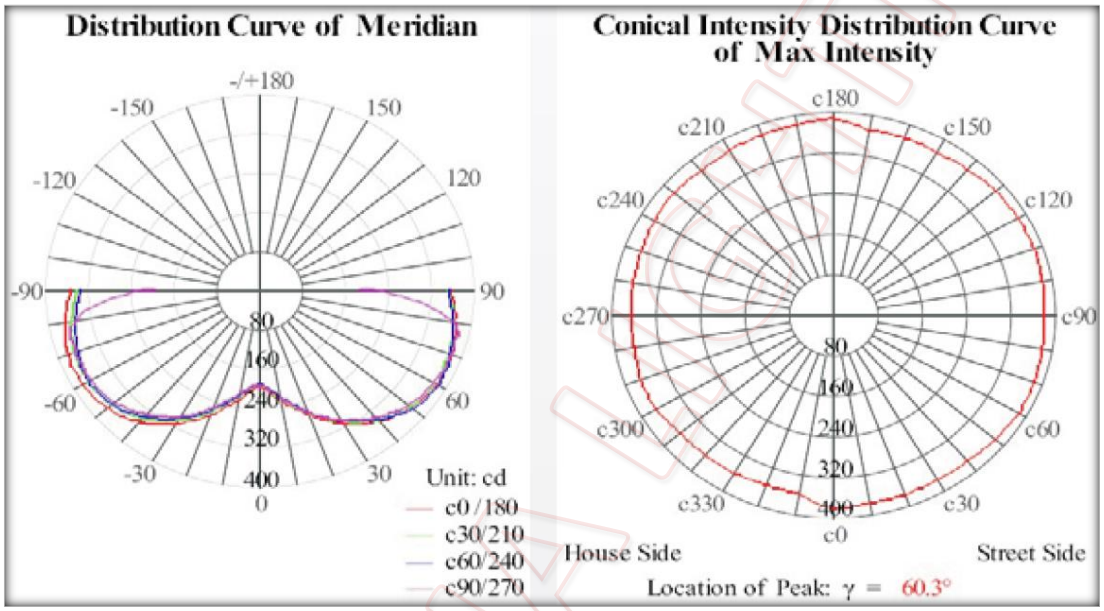
Available in:
CCT 5,500K ±10% (CW) for MH Replacement
CCT 3,000K ±10% (WW) for HPS Replacement
• Simple Installation • High Lumen per Watt • Rugged Design •

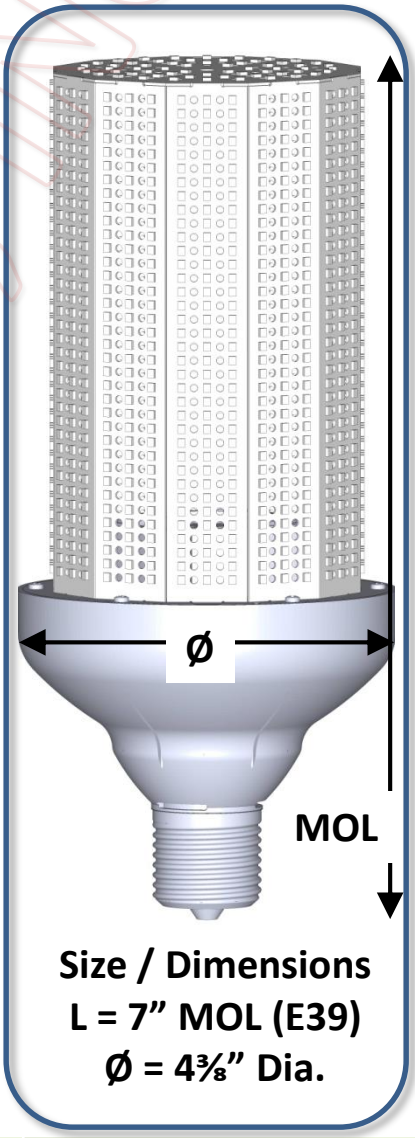
Model	Product	Size	Power	Flux	Equivalent
CL-80W11H-55K-E39	LED Lamp 80W 360° 55K MH Replacement	Ø4⅜ x 7”	80W Max.	11,000 Lumen	320W MH
CL-80W11H-30K-E39	LED Lamp 80W 360° 30K HPS Replacement	Ø4⅜ x 7”	80W Max.	10,100 Lumen	320W HPS

• 208-480Vac ~50/60Hz • PF > 0.9 • Med. (E26) or Mogul (E39) Lamp Base • ~125 lm/W • CRI >75 •
•(*) Rated Life 50,000 Hrs. (L_{70} B_{50}) at $T_{[A]}$ 25°C Max. • CCT 5500K (55K) or 3000K (30K) ±10% •

80W Cluster LED Lamp







Size / Dimensions
L = 7” MOL (E39)
Ø = 4⅜” Dia.

Model	Product	Power	Equivalent
CL-80W11H-xxK-E39	Cluster LED Bulb	80W	320W MH/HPS
Input Voltage	**Power/Power Factor**	**Efficacy**	**Flux**
208-480Vac ~50/60Hz	80W Max. P.F. ≈ 0.97	~135 lm/W	11,000 Lumen (CW) 10,100 Lumen (WW)
Color Rendering	**Color Temperature**	**Beam Angle**	**Life**
CRI ÷ 75~80	30K ÷ CCT 3,000K ±10% 55K ÷ CCT 5,500K ±10%	360°	5-Years / 50,000 Hours (L_{70} B_{50}) $T_{[A]}$ 25°C Max.