60% SUBMITTAL

LIGHTING DOCUMENTATION

FOR

Intersection Improvements Project
75th Street W at Manatee Avenue (SR 64)

Manatee County, Florida

County Project Number:
6108261

Prepared For:

MANATEE COUNTY

Prepared by:
Stantec Consulting Services, Inc.
380 Park Place Boulevard, Suite 300
Clearwater, Florida 33759
Project No. 238200272

July 2023

Professional Engineer Certification

I hereby certify that I am a registered professional engineer in the State of Florida practicing engineering with **Stantec Consulting Services, Inc.** with an office located at 3905 Crescent Park Drive, Riverview, Florida, 33578. I further certify that I have supervised the preparation of and approve the analysis, findings, opinions, conclusions, and technical advice hereby reported for:

PROJECT: Intersection Lighting Documentation
Intersection improvements Project
75th Street W at Manatee Avenue (SR 64)
Manatee County Project Number: 6108261
Manatee County, Florida

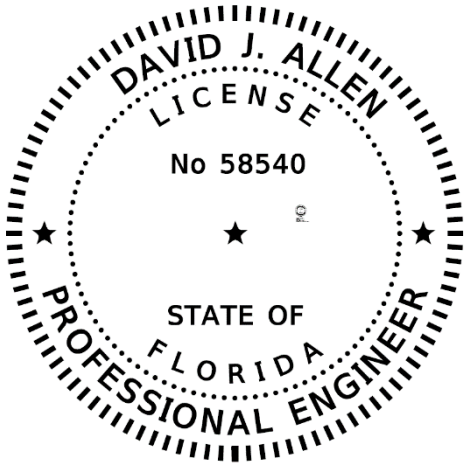
The engineering work represented by this document was performed through the following duly authorized engineering business:

Stantec Consulting Services, Inc.
3905 Crescent Park Drive
Riverview, Florida 33578
Telephone: (813) 664-4500

This report presents procedures, findings, and recommendations of a preliminary lighting design analysis for the above-referenced project. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation and traffic engineering as applied through professional judgment and experience.

Any engineering analysis, documents, conclusions or recommendations relied upon from other professional sources or provided with responsibility by the client are referenced accordingly in the following report.

FLORIDA REGISTERED ENGINEER:



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL

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1.0 Introduction

Manatee County has contracted Stantec Consulting Services, Inc. to develop an intersection improvement for 75th Street W at Manatee Avenue (SR 64). See graphic on the next page for the project location.


N
Manatee Avenue
75th Street W
Intersection:
75th Street W At
Manatee Avenue

2.0 Intersection Lighting Analysis

This Lighting Documentation has been prepared using the Visual 2020 lighting analysis software. Governing documents and design criteria are listed in Sections 2.1 and 2.2 below.

2.1 Lighting Analysis and Design Documents

The following serve as reference for this roadway lighting analysis.

- Manatee County Street Lighting Standard Design, 2014
- FP&L – Lighting Catalog
- FP&L – DCS-H2.0.1 Street Lighting Version 8.31.226
- AASHTO – Roadway Design Guide, 3rd Edition, 2006
- AASHTO – Roadway Lighting Design Guide, October 2018
- AASHTO – Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 5th Edition, 2010
- Florida Department of Transportation FDOT Design Manual (FDM), 2022
- Florida Department of Transportation Standard Plans, FY 2022-23

2.2 Lighting Design Criteria

There is existing FDOT roadway lighting located on the south side of Manatee Avenue (SR 64) on the east and west side of the intersection. Proposed FP&L roadway lighting has been designed under the goes with 75th Street W widening project. There is no existing lighting on the north leg of the intersection. Due to the power lines running on the west side of 75th Stret W and the need for a light pole for to achieve vertical illumination for the southbound approach, it was determined to have FP&L place a light pole in the NW corner and connect to the proposed FP&L lighting on the south leg. Any necessary adjustments for lighting along Manatee Avenue, will follow FDOT guidelines and utilize the existing lighting circuits. Therefore, no load centers are necessary. Appendix A and Appendix B contains the FP&L catalog and specifications respectively. Stantec Consulting Services, Inc. is in an ongoing correspondence with FP&L for review of the lighting design based on their material and specifications. The design for the adjustments on Manatee Avenue will use the Manatee County preferred luminaire. The GE Evolve cut sheets are located in Appendix C.

Since Manatee Avenue is a FDOT roadway, the following intersection lighting criteria is used for this project.

- Average horizontal initial intensity for signalized intersections: 3.0 foot-candles (1.5 foot-candles minimum)
- Uniformity ratios
  - Average/minimum: 4:1 or less
  - Maximum/minimum: 10:1 or less
- Average vertical initial intensity approaching crosswalks on main street only: 1.5 foot-candles (1.2 foot-candle minimum)

The horizontal illumination criteria used for the signalized intersections follows FDOT's retrofit criteria for signalized intersections. Vertical analysis for the signalized intersections is included. Vertical illumination provides pedestrian safety at night. The vertical analysis is based on Chapter 231 of the FDM for lighting retrofit criteria. The lighting analysis was performed using the Visual 2020 software program. The signalized intersections have their own statistics zone. Statistics zones for vertical analysis were also developed for each crosswalk. The Visual program lighting analysis results are shown in Table 1 on the next page. Appendix D has the Lighting Plan sheet with the analysis information referenced.

Table 1: 75th Street W at Manatee Avenue (SR 64) Intersection Lighting Analysis Summary

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Intersection 2 Manatee at 75th - Horizontal	■	1.6 fc	3.0 fc	0.5 fc	6.0:1	3.2:1
Intersection 2 Manatee at 75th - EB vertical	◇	1.5 fc	1.9 fc	0.9 fc	2.1:1	1.7:1
Intersection 2 Manatee at 75th - NB vertical	◇	1.8 fc	2.3 fc	0.7 fc	3.3:1	2.6:1
Intersection 2 Manatee at 75th - SB vertical	◇	1.6 fc	1.9 fc	0.9 fc	2.1:1	1.8:1
Intersection 2 Manatee at 75th - WB vertical	◇	1.3 fc	1.8 fc	0.8 fc	2.3:1	1.6:1

APPENDIX A
FP&L LIGHTING CATALOG

LED Lighting Solutions

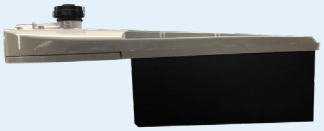
Roadway Lighting | Area Lighting | Pendant Lighting | Post Top Lighting | Brackets and Poles

Safer. Smarter. More Vibrant Spaces.

LED Lighting Solutions

Roadway Lighting

Feel Safe, Drive Safe



ATB2 – Turtle-friendly Amber

Shield facing coastal line

Cree – RSW Extra-large Turtle-friendly Amber

Roadway – LED 5,000 Lumens to 12,000 Lumens*

Roadway – LED 17,000 Lumens to 20,000 Lumens*

Roadway – LED 31,500 Lumens*

Available in black or gray

AEL – ATB2

**This is a non-representative image for the light. Installations in the field may be different.*

ROADWAY LIGHTING

Manufacturer	Style	Fixture	Pole Options	Bracket Options	Light Pattern	Line Watts/ NEMA Label	Color Temp	Lumens	Glare Rating (BUG)	.ies File	Billing Tier
ATB2	Turtle Friendly Roadway	 (Gray or Black)	6, 7	1	3	108/110	594nM (Amber)	5,408 (no shield) 2,927 (rear shield) 1,878 (front shield)	B1-U0-G2	Upon Request	G5
RSW-XL	Turtle Friendly Roadway	 (Gray) shield facing coastal line	6, 7	1	3	144/140	594nM (Amber)	6,111 (no shield) 3,544 (rear shield) 2,706 (front shield)	B1-U0-G2	Upon Request	I4
Roadway	5,000 LUMEN Roadway	 (Gray)	6, 7	1	3	42/40	3000K	5,000+	B1-U0-G1	Upon Request	C2
			6, 7	1	3	42/40	4000K	5,000+	B1-U0-G2	Upon Request	C2
	7,500 LUMEN Roadway	 (Gray)	6, 7	1	3	59/60	3000K	7,500+	B1-U0-G1	Upon Request	D2
			6, 7	1	3	59/60	4000K	7,500+	B1-U0-G2	Upon Request	D2
	12,000 LUMEN Roadway	 (Gray)	6, 7	1	3	93/90	3000K	12,000+	B2-U0-G3	Upon Request	F2
			6, 7	1	3	93/90	4000K	12,000+	B2-U0-G3	Upon Request	F2
	17,000 LUMEN Roadway	 (Gray)	6, 7	1	3	127/130	3000K	17,000+	B3-U0-G3	Upon Request	H2
			6, 7	1	3	127/130	4000K	17,000+	B2-U0-G3	Upon Request	H2
	20,000 LUMEN Roadway	 (Gray)	6, 7	1	3	161/160	3000K	20,000+	B3-U0-G4	Upon Request	J3
			6, 7	1	3	161/160	4000K	20,000+	B3-U0-G4	Upon Request	J3
	31,500 LUMEN Roadway	 (Gray)	6, 7	1	3	263/260	3000K	31,500+	B3-U0-G5	Upon Request	P3
			6, 7	1	3	263/260	4000K	31,500+	B3-U0-G5	Upon Request	P3
AEL	ATB2	 (Gray)	6, 7, 9	1, 5	4	121/120	3000K	16,427	B2-U0-G3	ATB2_P40X_MVOLT_R4_3K	H3
			6, 7, 9	1, 5	4	121/120	4000K	17,125	B2-U0-G3	ATB2_P40X_MVOLT_R4_4K	H3
			6, 7, 9	1, 5	4	186/190	4000K	25,839	B3-U0-G4	ATB2_P602_R4_RFD325843.ies	L3
			6, 7, 9	1, 5	4	264/260	3000K	32,450	B3-U0-G5	ATB2_P604_R4_3K	P3
			6, 7, 9	1, 5	4	264/260	4000K	33,910	B3-U0-G5	ATB2_P604_R4_4K	P3
		 (Black)	2,4,6,7,8*,9	1, 2, 5	4	121/120	4000K	17,125	B2-U0-G3	ATB2_P40X_MVOLT_R4_4K	H3
			2,4,6,7,8*,9	1, 2, 5	4	186/190	4000K	25,839	B3-U0-G4	ATB2_P602_R4_RFD325843.ies	L3
			2,4,6,7,8*,9	1, 2, 5	4	264/260	4000K	33,910	B3-U0-G5	ATB2_P604_R4_4K	P3

Note: All roadway fixtures are grey unless otherwise noted

Area Lighting

Inspiring Illumination

AEL – ATB2

Available in black or bronze

Cooper – Galleon

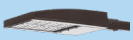
Flood – 15,000 Lumens*

Flood – 26,000 Lumens*

Flood – 48,000 Lumens*

**This is a non-representative image for the light. Installations in the field may be different.*

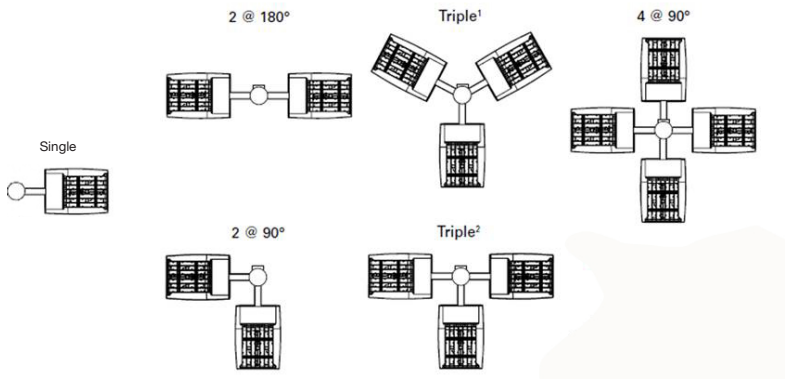
AREA LIGHTING

Manufacturer	Style	Fixture	Pole Options	Bracket Options	Light Pattern	Line Watts/ NEMA Label	Color Temp	Lumens	Glare Rating (BUG)	.ies File	Billing Tier
AEL	ATB2	 (Gray)	1, 9	1, 5	5	295/300	4000K	36,750	B5-U0-G4	ATB2-P605-R5-4K.ies	R3
Area Light	7,500 Lumen Area	 (Black)  (Bronze)	1, 4*, 8*, 9	Single, Double @ 90 deg or 180 deg, Triple @ 90 deg or 120 deg, and Quad available	4	59/60	4000K	7,500+	B2-U0-G2	GLANSA2A740UT4W-59W.ies	D3
	17,500 Lumen Area		1, 4*, 8*, 9		4	127/130	4000K	17,500+	B3-U0-G3	GLANSA3B740UT4W-127W.ies	H3
	30,000 Lumen Area		1, 4*, 8*, 9		4	246/245	4000K	30,000+	B3-U0-G5	GALNSA4D740UT4W-246W.ies	O4
	50,000 Lumen Area		1, 4*, 8*, 9		4	449/450	4000K	50,000+	B4-U0-G4	GALNSA9C740UT4W-449W.ies	AA5
	65,000 Lumen Area		1, 4*, 8*, 9		4	560/560	4000K	65,000+	B5-U0-G5	GALNSA9D740UT4W-560W.ies	EE5
Flood	15,000 Lumen Floodlight		6, 7	24" stand-off (2DS)	6x6	110/110	4000K	15,000+	N/A	EFM102_XX66740___-PRELIMINARY-FP&L_110W_17370LUMENS.ies	G3
	26,000 Lumen Floodlight		6, 7	24" stand-off (2DS)	6x6	195/195	4000K	26,000+	N/A	EFM102_XX66740___-PRELIMINARY-FP&L_195W_28665UMENS.ies	L3
	48,000 Lumen Floodlight		6, 7	24" stand-off (2DS)	6x6	348/350	4000K	48,000+	N/A	EFH102_XX66740___-PRELIMINARY-FP&L_348W_50400LUMENS.ies	U4

* Galleon pole options 1, 4
20' (13' MH) Standard concrete pole
35' (27'6" MH) Standard concrete pole applicable to all.

* Galleon pole option 8 black
33' (24' MH) available only

* Galleon configurations



Note: Glare (BUG) Ratings for UFLD are measured at 0° tilt.

Pendant Lighting

Functional Can Be Beautiful

Holophane – Bern

Holophane – Teardrop with deep skirt

Holophane – Teardrop (Memphis)

Turtle-friendly amber

Holophane – Bern

King – Harbor Side K366

PENDANT LIGHTING

Manufacturer	Style	Fixture	Pole Options	Bracket Options	Light Pattern	Line Watts/ NEMA Label	Color Temp	Lumens	Glare Rating (BUG)	.ies File	Billing Tier
Holophane	Bern		3, 4, 8	3	3	58/60	4000K	7,609	B1-U0-G1	GBLF3_P30_40K_ASY_BK_ RFD327869.ies	D10
		 (Turtle-friendly amber)	3, 4, 8	3	3	57/60	Amber	1,995 (no shield) 1,434 (rear shield) 816 (front shield)	B1-U0-G0	Upon Request	D10
	Teardrop w/deep skirt	 (Black)	3, 4, 8	3	3	144/140	4000K	16,578	B3-U0-G3	ISF 36774P15 ES2 P35S 40K XX SG 3 DS.ies	I9
	Teardrop (Memphis)	 (Black)	3, 4, 8	3	3	144/140	4000K	21,256	B2-U3-G4	ISF 33920P15 ES2 P35S 40K XX TG 3.ies	I9
King	Harbor Side K366		3, 4, 8	3	3	50/50	3000K	5,646	B2-U2-G2	0366PP4AC3X05030XXE(1).IES	D8
						90/90	3000K	9,291	B2-U3-G2	0366PP4AC3X09030XXE(1).IES	F8

Post Top Lighting

Making a Great First Impression

AEL – Contemporary (Contempo)

Cooper – Arbor

Cooper – Mesa

GE – EPTC

GE – Traditional Carriage (Town & Country) – No Side Panels

GE – Traditional Carriage (Town & Country) – W/Side Panels

Black/Black

Holophane – Granville

Green/Green

Holophane – Granville

Post Top Lighting

Making a Great First Impression

King – Victorian

King – Victorian (No Lens)

King – Vizcaya (No Lens)

POST TOP LIGHTING (Page 1 of 2)

Manufacturer	Style	Fixture	Pole Options	Bracket Options	Light Pattern	Line Watts/ NEMA Label	Color Temp	Lumens	Glare Rating (BUG)	.ies File	Billing Tier
AEL	Contemporary (Contempo)	 (Gray)	1 (20'), 2, 8	NA	3	38/40	3000K	3,358	B1-U3-G2	245L_P30_XX_30K_R3_RNA_FPD95.ies	C2
			1 (20'), 2, 8	NA	3	72/70	3000K	6,385	B2-U3-G2	245L_P55_XX_30K_R3_RNA_FPD95_SPECIAL.ies	E2
			1 (20'), 2, 8	NA	3	38/40	4000K	3,615	B1-U3-G2	245L_P30_XX_40K_R3_RNA_FPD95.ies	C2
			1 (20'), 2, 8	NA	3	72/70	4000K	6,874	B2-U3-G2	245L_P55_XX_40K_R3_RNA_FPD95_SPECIAL.ies	E2
Cooper	Arbor		1 (20'), 2**, 5, 8	NA or 6	3	48	3000K	4,173	B1-U0-G2	ARB-B2-LED-D1-T3-7030	D6
			1 (20'), 2**, 5, 8	NA or 6	3	48	4000K	4,534	B1-U0-G2	ARB-B2-LED-D1-T3-7040	D6
			1 (20'), 2**, 5, 8	NA or 6	3	99	3000K	7,779	B2-U0-G3	ARB-B3-LED-D1-T3-7030	G6
			1 (20'), 2**, 5, 8	NA or 6	3	99	4000K	8,451	B2-U0-G3	ARB-B3-LED-D1-T3-7040	G6
	Mesa	 (Black)	1 (20'), 2**, 5, 8, 9	NA or 6	3	75/80	4000K	7,456	B2-U0-G2	PMMSA2A740UT3-75W	E5
			1 (20'), 2**, 5, 8, 9	NA or 6	3	150/150	4000K	14,911	B3-U0-G3	PMMSA4A740UT3-150W PMMSA4A-740UT3-150W	J6
			1 (20'), 2**, 5, 8, 9	NA or 6	5	258	4000K	28,336	B5 U0 G4	PMMSA4D740U5WQ-258W	P6
GE	EPTC	 (Black)	1 (20'), 2, 8	NA or 6	3	65/70	4000K	7,300	B3-U0-G1	EPTC02_07A40_____.ies	E4
	Traditional Carriage (Town & Country) - No Side Panels	 (Black)	1 (20'), 2, 8	NA or 6	3	39/40	3000K	4,090	B1-U0-G2	EPTT01_F4BN30_____-120-277V.IES	C2
			1 (20'), 2, 8	NA or 6	3	39/40	4000K	4,110	B1-U0-G2	EPTT01_F4BN40_____-120-277V.IES	C2
			1 (20'), 2, 8	NA or 6	3	73/70	3000K	7,425	B2-U0-G2	EPTT01_F7DN30_____-120-277V.IES	E2
			1 (20'), 2, 8	NA or 6	3	73/70	4000K	7,660	B2-U0-G2	EPTT01_F7DN40_____-120-277V.IES	E2
	Traditional Carriage (Town & Country) - W/Side Panels	 (Black)	1 (20'), 2, 8	NA or 6	3	39/40	3000K	3,500	B1-U3-G3	EPTT01_F4BA30_____-120-277V.IES	C2
			1 (20'), 2, 8	NA or 6	3	39/40	4000K	3,600	B1-U3-G3	EPTT01_F4BA40_____-120-277V.IES	C2
			1 (20'), 2, 8	NA or 6	3	73/70	3000K	6,450	B2-U4-G3	EPTT01_F7DA30_____-120-277V.IES	E2
			1 (20'), 2, 8	NA or 6	3	73/70	4000K	6,750	B2-U4-G3	EPTT01_F7DA40_____-120-277V.IES	E2

**Also available in double bracket configuration*

***New construction only*

POST TOP LIGHTING (Page 2 of 2)

Manufacturer	Style	Fixture	Pole Options	Bracket Options	Light Pattern	Line Watts/ NEMA Label	Color Temp	Lumens	Glare Rating (BUG)	.ies File	Billing Tier
Holophane	Granville	 Black/Black	1, 5, 8*	NA or 4,6	3	39/40	3000K	5,190	B2-U4-G5	ISF 193553P6 GVD3_P20_30K_XXXX_GL3_FC.ies	C5
			1, 5, 8*	NA or 4,6	3	39/40	4000K	5,286	B2-U4-G5	ISF 193553P8 GVD3_P20_40K_XXXX_GL3_FC.ies	C5
			1, 5, 8*	NA or 4,6	3	60/60	3000K	7,811	B2-U4-G5	ISF 193553P10 GVD3_P30_30K_BK_FCVR_RFD325388.ies	D5
			1, 5, 8*	NA or 4,6	3	60/60	4000K	7,956	B2-U4-G5	ISF 193553P12 GVD3 _30_40K_BK_FCVR_325390.ies	D5
	Granville	 Green/Green	1, 5	NA or 4	3	39/40	3000K	5,190	B2-U4-G5	ISF 193553P6 GVD3_P20_30K_XXXX_GL3_FC.ies	C5
			1, 5	NA or 4	3	60/60	3000K	7,811	B2-U4-G5	ISF 193553P10 GVD3_P30_30K_BK_FCVR_RFD325388.ies	D5
King	Victorian		1, 2, 5, 8	NA	3	60	3000K	4,338	B1-U3-G1	0056TP4AR3X06030XXE.ies	D6
			1, 2, 5, 8	NA	3	100	3000K	6,311	B2-U3-G2	0056TP4AR3X10030XXE.ies	G6
	Victorian (No lens)		1, 2, 5, 8	NA	3	60	3000K	4,598	B1-U0-G1	0056TP4NL3X10030XXE.ies	D6
			1, 2, 5, 8	NA	3	100	3000K	6,731	B2-U0-G2	0100WP4NG3X04030XXE.ies	G6
	Vizcaya (No lens)		1, 2, 5, 8	N/A or 4, 6	3	40	3000K	4,190	B1-U0-G1	0100WP4NG3X04030XXE.ies	C5
			1, 2, 5, 8	N/A or 4, 6	3	60	3000K	5,986	B2-U0-G2	0100WP4NG3X06030XXE.ies	D5

**Also available in double bracket configuration*

***New construction only*

Brackets and Poles

Discover a New Road to Efficiency

BRACKETS (Page 1 of 2)

1

Style
Standard 2’, 6’, 8’, 12’ Side Mounted
Color
Silver

2

Style
Standard 8’ Side Mounted Arm or Standard 6’, 8’ Tenon Mounted Arm
Color
Black

For pole #4 only

3

Style
Decorative 6’ Single or Double, Tenon Mounted Arm or Decorative 48” Pedestrian Side Mounted Arm
Color
Black

Brackets and Poles

Discover a New Road to Efficiency

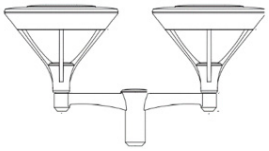
BRACKETS (Page 2 of 2)

4

Style
Decorative Double Bracket Tenon Mounted Arm
Color
Black Green

5

Style
Multiple Fixure Configurations Available
Color
Black Gray Bronze



6

Style
Decorative Double Modern Bracket Tenon Mounted Arm
Color
Black

POLES

1 Standard Concrete

Tenon Mount
20’ (13’ MH)
35’ (27’6” MH)

2 Standard Black Fiberglass

Tenon Mount
13’ (10’ MH)
20’ (15’6” MH)

3 Black Washington Concrete

Tenon Mount
23’ (16’ MH)

4 Black Octagonal Concrete

Tenon Mount
37’ (30’ MH)

5 Black or Green Washington Concrete

Tenon Mount
18.5’ (14’6” MH)

6 Standard Wood

Arm Mount
35’ (29’ MH)
40’ (33’6” MH)
45’ (38” MH)

7 Standard Concrete

Arm Mount
30’ (22’6” MH)
35’ (27’6” MH)
40’ (30’” MH)
45’ (35’ MH)

8 Black Tapered Concrete

Tenon Mount
14’6” (10’ MH)
21’(15’6” MH)
33’ (24’ MH)

9 Grey Round Concrete Pole on Concrete Base

(Non-roadway Only)

22’ pole
25’ MH

*MH = Approximate Mounting Height

APPENDIX B
FP&L LIGHTING SPECIFICATIONS

Last updated 5/28/2021

SECTION H - STREET LIGHTING

Note: Updated or new standards are de-noted with RED text in the table of content.

H-2.0.1	STREET LIGHT RELAMPING INFORMATION
H-2.0.2	STREET LIGHT RELAMPING INFORMATION
H-3.0.0	FUSING OF STREET LIGHT CIRCUITS
H-3.0.1	STRAIGHT SHEAR BOLT CONNECTOR INSTALLATION INSTRUCTIONS FOR STREET LIGHT INSTALLATIONS M&S 120-100-600 (#6-#1/0 TO #12-#6 CABLES)
H-3.0.2	FUSE HOLDERS FOR USE IN STREET LIGHTS INSTALLATIONS
H-4.0.0	STREET LIGHT POLE WEIGHTS AND SETTING DEPTHS
H-4.0.1	STREET LIGHT POLE DETAILS DECORATIVE CONCRETE AND WOOD
H-4.0.3	STREET LIGHT POLE REPLACEMENT TENONS AND ADAPTERS
H-4.1.0	FIBERGLASS POLE EMBEDMENT
H-4.2.0	CONCRETE PEDESTAL FOR 22FT CONCRETE BASE MOUNTED POLE
H-4.2.1	CONCRETE PEDESTAL FOR 22FT ALUMINUM BASE MOUNTED POLE
H 7.0.1	STREET LIGHT UNDERGROUND INSTALLATIONS
H-7.1.1	SHEAR HEAD BOLT CONNECTOR FOR ST LIGHT INSTALLATIONS
H-7.0.2	STREET LIGHT UNDERGROUND INSTALLATIONS
H-7.0.3	REPLACE ABOVE GROUND STREET LIGHT CONNECTION BOX WITH A BELOW GRADE HANDHOLE
H-8.0.0	WIRING DIAGRAM FOR CONSTANT CURRENT TRANSFORMER INSTALLATION ON WYE SYSTEM (REMOVE ONLY)
H-9.0.0	TRANSFORMER INSTALLATION SERIES STREET LIGHTING (REMOVE ONLY)
H-11.0.0	GROUNDING OF STREET LIGHT BRACKETS AND POLES
H-11.1.0	GROUNDING OF POST MOUNTED STREET LIGHTS
H-11.2.0	5G STREET LIGHT POLE GROUNDING
H-12.0.0	SCHEMATIC DIAGRAM OF TYPICAL CASCADED STREET LIGHTING SYSTEM (REMOVE ONLY)
H-13.0.0	120 VOLT GROUP CONTROLLED MULTIPLE STREET LIGHTING INSTALLATION (FOR MAINTENANCE ONLY)
H-14.0.0	GROUP CONTROLLED MULTIPLE STREET LIGHTING SERVICE FOR VARIOUS VOLTAGE CIRCUITS USING RELAY M&S NO. 174-696-007
H-14-1.0	STREET LIGHT SMART NODE INSTALLATION AND INITIAL OPERATION
H-15.0.0	TRANSFORMER INSTALLATION FOR STD 480 V. GROUP CONTROLLED MULTIPLE STREET LIGHTING SERVICE
H-15.0.1	WIRING DIAGRAM FOR STD 480 VOLT GROUP CONTROLLED MULTIPLE STREET LIGHTING SERVICE USING RELAY 174-696-007
H-16.0.0	AEL AND COOPER LED HOUSE SIDE LIGHT SHIELDS
H-16.0.1	CREE AND GE HOUSE SIDE LOGHT SHIELDS

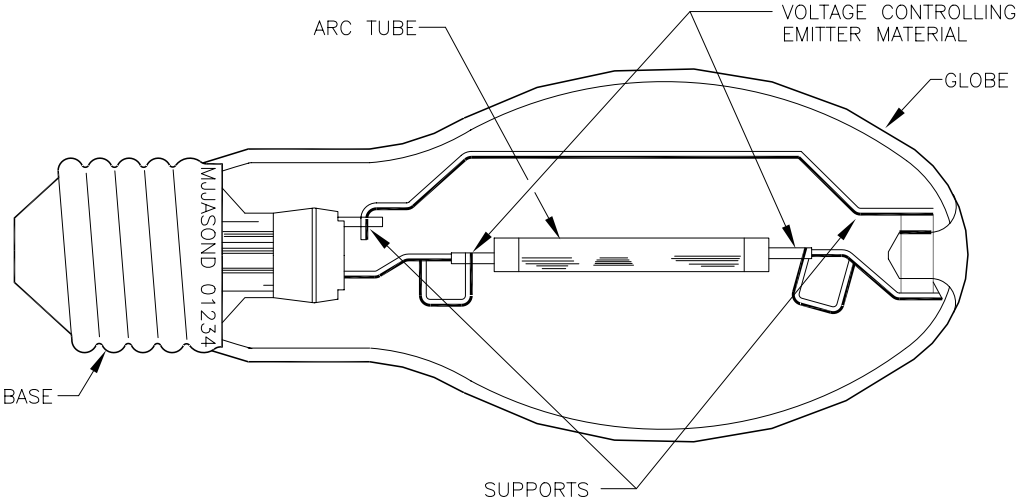
H-16.0.2	HOLOPHANE AND KING LED HOUSE SIDE LIGHT SHIELDS
H-16.0.3	HID HOUSE SIDE LIGHT SHIELDS
H-16.0.4	VANDAL SHIELDS
H-16.1.0	CUTOFF COBRA HEAD LUMINAIRE WITH VANDAL SHIELD
H-16.2.0	DIRECTIONAL SECURITY LUMINAIRES WITH VANDAL SHIELD
H-16.3.0	TURTLE LIGHT SHIELDS
H-16-4.0	GE POST TOP TRADITIONAL ZERO CUTOFF WITH OCTICS AND SHIELD
H-17.0.0	TYPICAL STREETLIGHT BRACKET MOUNTING
H-17.1.0	OTHER STREET LIGHT BRACKETS
H-17.1.1	STREET LIGHT BRACKET DETAILS
H-17.1.2	STREET LIGHT BRACKET DETAILS
H-17.1.3	TENON MOUNT LONG ARM BRACKETS
H-17.1.4	TENON MOUNT SPOKE BRACKETS
H-17.3.0	STREET LIGHT 'ROADWAY' AND 'AREA' LIGHTING ASSEMBLIES (POLES/BRACKET/LUMINAIRE)
H-17.4.0	STREET LIGHT 'PENDANT' LIGHTING ASSEMBLIES (POLES/BRACKET/LUMINAIRE)
H-17.5.0	STREET LIGHT 'POST TOP' LIGHTING ASSEMBLIES (POLES/BRACKET/LUMINAIRE)
H-17.6.0	STREET LIGHT BRACKET WITH UNIVERSAL STYLE MOUNTING (FOR MOUNTING ON WOOD OR CONCRETE POLES)
H-17.7.0	FASTENER FOR MOUNTING STREET LIGHT BRACKETS
H-17.8.0	COBRA HEAD STYLE LUMINAIRE MOUNTING
H-18.0.1	LUMINAIRE IDENTIFICATION TAGS
H-18.0.2	LUMINAIRE IDENTIFICATION TAGS
H-18.0.3	LUMINAIRE IDENTIFICATION TAGS
H-18.0.4	HYBRID FIXTURE IDENTIFICATION TAG AND PLACEMENT
H-18.0.5	INSTALLATION OF TURTLE PLACARDS
H-19.0.1	TYPICAL DIRECTIONAL SECURITY LUMINAIRE INSTALLATION
H-19.0.2	TYPICAL DIRECTIONAL SECURITY LUMINAIRE INSTALLATION

STREET LIGHT RELAMPING INFORMATION

H-2.0.1

HIGH PRESSURE SODIUM VAPOR								
INITIAL LUMEN RATING	6300	9500	16000	22000	50000	16000	22000	50000
LAMP DESIGNATION	CS70S62	C100S54	C150S63/EL	C200S66	C400S51	C150S55	C200S66	C400S51
ANSI CODE	S62ME-70	S54SB-100	S55SC-150	S55SC-200	S51WG-400	S55SC-150	S66MN-200	S51WA-400
LAMP WATTS	70	100	150	200	400	150	200	400
TOTAL OPERATING WATTS	85	121	176	238	466	199	253	490
TOTAL OPERATING VOLT-AMPS AT 120V	198.58	265.67	396	144	360	–	259.6	500.78
TOTAL OPERATING VOLT-AMPS AT 480V	–	–	–	–	–	240	296.7	555.89
STARTING AMPS AT 120V	2.0	2.9	4.5	2.1	3.9	–	.9	1.6
STARTING AMPS AT 480V	–	–	–	–	–	.3	.3	.5
OPERATING AMPS AT 120V	1.65	2.21	3.3	1.2	3	–	2.16	4.17
OPERATING AMPS AT 480V	–	–	–	–	–	.5	.61	1.16
INTERNAL TYPE BALLAST	REACTOR			AUTO-REGULATOR		MAGNETIC REGULATOR		

MULTIPLE RELAYS	
RELAY RATING	OPERATING CURRENT
30A	.060A
60A	.132A
100A	.132A



LAMP WATTAGE MUST MATCH LUMINAIRE WATTAGE!

NOTES:

1. LUMINAIRE LAMP MARKER INDICATES LAMP WATTAGE AND TYPE. INSTALLED, SEE H-18.0.3
2. THE BALLAST/LAMP ELECTRICAL DATA LISTED IS TYPICAL OF THAT OBTAINED UNDER CONTROLLED CONDITIONS AND WILL VARY DEPENDING ON LUMINAIRE STYLE, LAMP POSITION, LAMP VARIATIONS, AND THE MANUFACTURER.
3. MANUFACTURER HAS MARKED LAMP GLOBE SHOWING CAT. #, MFG. NAME, AND MFG. DATE. DEPENDING ON THE MANUFACTURER, THE MFG. DATE IS INDICATED BY WEEK/YEAR OR A LAMP DATE CODE.

PHILIPS LAMP DATE CODE

YEARS	CODE
1990-1999	YR/MO-DAY OF THE MONTH
2000-2009	MO/YR-DAY OF THE MONTH

MONTH OF MFG.				YR. OF MFG.	
JANUARY	A	JULY	G	9	1999
FEBRUARY	B	AUGUST	H	0	2000
MARCH	C	SEPTEMBER	J	1	2001
APRIL	D	OCTOBER	K	2	2002
MAY	E	NOVEMBER	L	3	2003
JUNE	F	DECEMBER	M	4	2004

EXAMPLE:
EO-2=MAY 2, 2000

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	9/28/99	UPDATE DRAWING (TEXT)	SMS	JES	JJM

ORIGINATOR: JBM

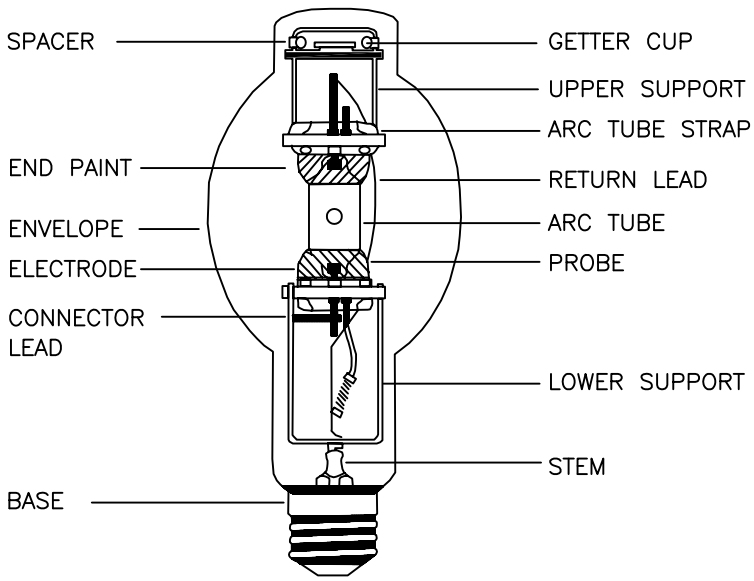
DRAWN BY: RAS

DATE: 8/09/96

APPROVED: J.J. MCEVOY
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

METAL HALIDE LAMPS – MAINTENANCE ONLY				
LAMP WATTAGE	100	175	250	400
INITIAL LUMEN RATING IN VERTICAL POSITION	8500	14400	22000	36000
INITIAL LUMEN RATING IN HORIZONTAL POSITION	8500	12800	20000	32000
LAMP DESIGNATION	M90TW-100	M57PE-175	M58PG-250	M59PJ-400
ANSI CODE	M-90	M-57	M-58	M-59
TOTAL OPERATING WATTS AT 120 V	122	206	288	450
TOTAL OPERATING WATTS AT 480 V	–	–	–	458
STARTING AMPS AT 120 V	1.9	1.6	2.0	3.5
STARTING AMPS AT 480 V	–	–	–	1.0
OPERATING AMPS AT 120 V	1.0	1.8	2.5	4.0
OPERATING AMPS AT 480 V	–	–	–	1.0
INTERNAL TYPE BALLAST	REACTOR	AUTO-REGULATOR		



LAMP WATTAGE MUST MATCH LUMINARIES WATTAGE!

NOTES:

1. LUMINARIES LAMP MARKER INDICATES LAMP WATTAGE AND TYPE. SEE H-18.0.3.
2. THE BALLAST/LAMP ELECTRICAL DATA LISTED IS TYPICAL OF THAT OBTAINED UNDER CONTROLLED CONDITIONS AND WILL VARY DEPENDING ON LUMINARIES STYLE, LAMP POSITION, LAMP VARIATIONS AND THE MANUFACTURER.
3. MANUFACTURER HAS MARKED LAMP WITH CATALOG NUMBER, MANUFACTURER NAME AND DATE OF MANUFACTURE. DEPENDING ON THE MANUFACTURER, THE DATE OF MANUFACTURER IS INDICATED BY WEEK/YEAR OR A LAMP DATE CODE. SEE H-2.0.1 FOR DATE CODE.

FPL

OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
3	11/4/16	UPDATE DRAWING AND TABLE	JCH	ELS	RDH
2	5/29/03	ADD 100 WATT MH INFORMATION	SMS	ELS	JJM
1	9/04/99	REDO ORIGINAL DRAWING COMPLETELY	SMS	JES	JJM
0	8/09/96	ORIGINAL DRAWING	JBM	RAS	JJM

ORIGINATOR: JBM

DRAWN BY: RAS

DATE: 8/9/96

APPROVED: J.J McEVOY

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

OVERHEAD 120-VOLT STREET LIGHT CIRCUITS

OVERHEAD 120-VOLT CIRCUITS WILL BE FUSED AT THE LIGHT POLE. (SEE H-17.0.0)

NO SECONDARY FUSING IS REQUIRED FOR OVERHEAD 120-VOLT CIRCUITS WITH INDIVIDUALLY CONTROLLED LUMINAIRES.

UNDERGROUND 120-VOLT STREET LIGHT CIRCUITS

UNDERGROUND 120-VOLT CIRCUITS WILL BE FUSED AT THE HAND HOLES (SEE H-7.0.1)

GROUP CONTROLLED 120-VOLT STREET LIGHT CIRCUITS (REMOVE ONLY)

THE RELAYS USED ONLY FOR GROUP CONTROLLED 120-VOLT CIRCUITS CONTAIN A LOAD SIDE FUSE. THESE RELAYS ARE TO BE REMOVED IF FOUND.

480-VOLT STREET LIGHT CIRCUITS (MAINTENANCE ONLY)

OVERHEAD AND UNDERGROUND 480-VOLT CIRCUITS WILL BE GROUP CONTROLLED USING RELAY 174-696-007. THIS RELAY MAY HAVE A CIRCUIT BREAKER OR A 100 AMP LOAD SIDE FUSE (531-081-000). A 150A RELAY (174-696-150) IS AVAILABLE FOR REPLACEMENT IF THE LOAD EXCEEDS THE CAPABILITY OF THE ORIGINAL RELAY. NEW 480V CIRCUITS ARE NOT TO BE INSTALLED, EXISTING 480V CIRCUITS SHOULD BE CONVERTED TO 120V CIRCUITS WHEN POSSIBLE.

EACH 480-VOLT LUMINAIRE WILL BE INDIVIDUALLY FUSED WITH AN IMPULSE FUSE (531-080-007). THIS FUSE COORDINATES WITH THE EXPLUSION ARRESTER (174-900-003) THAT IS INSTALLED ACROSS THE TERMINAL BLOCK. THIS FUSE IS TO BE INSTALLED IN THE BRACKET CABLE DRIP LOOP OF EACH LUMINAIRE IN FUSE HOLDER 531-570-004, 531-570-012 OR 531-571-001. SEE H-15.0.0 AND H-15.0.1 FOR ADDITIONAL INFORMATION.

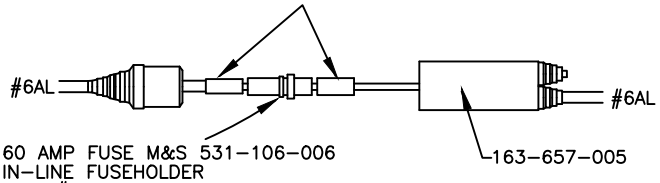
NOTE: IF METER IS ADDED TO A STREETLIGHT CIRCUIT, REMOVE ANY SECONDARY FUSES.

CUSTOMER OWNED LIGHTING CIRCUITS

WHEN A CUSTOMER STREET OR OUTDOOR LIGHTING CIRCUIT IS TO BE CONNECTED TO A FPL SERVICE POINT, THE CUSTOMER SHALL INSTALL A FUSED DISCONNECT DEVICE FOR EACH CIRCUIT. INSTALLATION OF THIS DISCONNECT DEVICE IS REQUIRED WHETHER THE CIRCUIT IS INDIVIDUAL OR GROUP CONTROLLED. THIS DISCONNECT DEVICE IS REQUIRED TO ISOLATE THE CUSTOMER'S CIRCUIT DURING MAINTENANCE, ISOLATE FPL'S SYSTEM FROM MALFUNCTIONING CUSTOMER EQUIPMENT AND TO COMPLY WITH APPLICABLE BUILDING CODE REQUIREMENTS. CUSTOMER IS REQUIRED TO PROVIDE RELAY IF USED.

INSTALLATION OF 60 AMP FUSE FOR #6AL RUNS

MAINTENANCE ONLY
(FOR 1/0AL RUNS, USE H-BLOCK CONNECTOR 103-070-229



SEE L-17.0.7

FIG. 1

CRIMP TOOL M&S #597-064-000

INSTALLATION OF 30 AMP FUSE CONNECTING #12CU TO #12CU

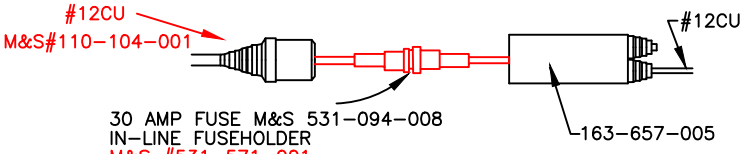


FIG. 2

FUSEHOLDER WITH CRIMPED #12CU

USING CRIMP TOOL (M&S #597-064-000), CRIMP #12CU THREE TIMES ON EACH SIDE OF THE FUSEHOLDER.

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
7	5/26/20	UPDATE NOTES	JDT	ELS	RDH
7	7/8/19	UPDATE NOTES	JDT	ELS	RDH
6	5/23/17	UPDATE NOTES	JCH	ELS	RDH
5	11/4/16	UPDATE NOTES	JCH	ELS	RDH
4	9/14/05	UPDATE NOTES	SMS	ELS	JJM

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: SMS DRAWN BY: J.SHOUP

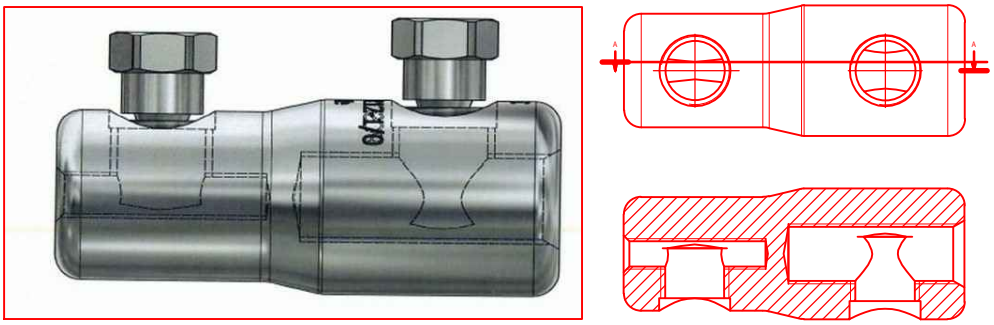
DATE: 9/28/99 APPROVED: J.J McEVOY NO SCALE

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

STRAIGHT SHEAR BOLT CONNECTOR FOR STREET LIGHT INSTALLATIONS (#6-#1/0 TO #12-#6 CABLES)

H-3.0.1

M&S# 120-100-600



STEP 1 REMOVE THE INSULATION FROM THE CONDUCTOR EQUAL TO CONNECTOR'S BORE. NOT REQUIRED IF BEING INSTALLED ON A FUSE HOLDER WITH A SOLID A PIGTAIL.

STEP 2 LOOSEN SHEAR BOLTS BY HAND ON THE CONNECTOR, "DO NOT REMOVE BOLTS".

STEP 3 BACK OFF ENOUGH TO GET THE CONDUCTOR OR FUSE PIN INTO CONNECTOR.

STEP 4 HAND TIGHTEN BOLTS SECURELY.

STEP 5 USING A BATTERY IMPACT WRENCH AND A 3/4 IMPACT SOCKET PROCEED TO SHEAR OFF BOLTS, AFTER SHEARING THE BOLTS CHECK FOR SHARP EDGES, DE-BURR WITH FILE IF NECESSARY.

STEP 6 INSULATE CONNECTOR AS SHOWN BELOW:

- APPLY TWO LAYERS 1/2 WRAP OF SELF BONDING RUBBER TAPE (M&S 532-130-016) OVER THE CONNECTORS AND CABLES.
- APPLY TWO LAYERS 1/2 WRAP OF VINYL ELECTRICAL TAPE (M&S 532-269-006) OVER THE PREVIOUS INSTALLED RUBBER TAPE.

MECA UNIT: SL-S-STRAIGHT-TAP-HH-FUSE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	10/20/20	UPDATE & ADD PICTURES	ARR	GXS	RDH

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: A. RODRIGUEZ DRAWN BY: G. SANTANDER

DATE: 9/24/20 APPROVED: RICK D. HUFF NO SCALE

MANAGER OF ELECTRICAL STANDARDS

FUSE HOLDERS FOR USE IN STREET LIGHT INSTALLATIONS

H-3.0.2

DUAL #8 - #12 AWG CRIMP FUSE HOLDER (531-571-001)

DUAL #6 WG PIGTAIL FUSE HOLDER (531-570-004).

FUSE HOLDER WITH ONE #6 AWG PIGTAIL AND ONE #8 - #12 AWG CRIMP (FOR RUNS THAT WILL ONLY NEED THE #12 AWG TO THE POLE/FIXTURE ON THE LOAD SIDE), M&S 531-570-012.

EXAMPLE SHOWING SHEARBOLT CONNECTOR ONLY ON PIGTAIL /LINE END OF FUSE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: A. RODRIGUEZ

DRAWN BY: G. SANTANDER

DATE: 10/8/20

APPROVED: RICK D. HUFF

MANAGER OF ELECTRICAL STANDARDS

NO SCALE

STREET LIGHT POLE DETAILS
FIBERGLASS AND STANDARD CONCRETE

H-4.0.0

FIBERGLASS POLES

LENGTH OF POLE AND FINISH	M&S NUMBER	ABOVE GRADE HEIGHT	BRACKET MOUNTING CONFIGURATION	APROXIMATE WEIGHT	MINIMUM SETTING DEPTH
10' CORAL GABLES	154-119-101	10' - 0"	TENON (3"OD X 3"T)		REMOVE ONLY
14' 6" ROUND TAPERED, BLACK SMOOTH	154-118-008	10' - 0"	TENON (3"OD X 3"T)	30.6 lbs.	4' - 6"
21' 0" ROUND TAPERED, BLACK SMOOTH	154-119-004	15' - 6"	TENON (3"OD X 3"T)	53 lbs.	5' - 6"
35' 0" SQUARE BRONZE	154-117-001	15' - 6"	TENON (3"OD X 4"T)		REMOVE ONLY

H

STANDARD CONCRETE POLES

LENGTH OF POLE AND FINISH	M&S NUMBER	ABOVE GRADE HEIGHT	BRACKET MOUNTING CONFIGURATION	APROXIMATE WEIGHT	MINIMUM SETTING DEPTH
20' TYPE 'O' NATURAL	152-220-000	13' - 0"	TENON (3"OD X 3"T)	782 LBS.	7' - 0"
35' TYPE 'O' NATURAL	152-225-001	27' - 6"	TENON (3"OD X 3"T)	2,243 LBS.	7' - 6"
30' TYPE 'SU' NATURAL	152-234-001	22' - 6"	BOLT-ON SIDE MOUNT (12" SEPARATION)	1,923 LBS.	7' - 6"
35' TYPE 'SU' NATURAL	152-239-002	27' - 6"	BOLT-ON SIDE MOUNT (12" SEPARATION)	2,243 LBS.	7' - 6"
40' TYPE 'IIIA' NATURAL	152-351-007	30' - 0"	BOLT-ON SIDE MOUNT (12" SEPARATION)	3,961 LBS.	10' - 0"
45' TYPE 'IIIA' NATURAL	152-352-003	35' - 0"	BOLT-ON SIDE MOUNT (12" SEPARATION)	4,835 LBS.	10' - 0"

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
8	12/28/20	UPDATE STREET LIGHT TABLE	DRC	GXS	RDH
7	5/16/20	UPDATE CHARTS	DRC	GXS	RDH
6	2/12/20	UPDATE CHARTS AND REMOVE CHARTS	DRC	GXS	RDH
5	6/6/17	UPDATE CHARTS AND ADD CHART	JCH	ELS	RDH
4	1/19/17	UPDATE CHARTS	JCH	ELS	RDH
3	1/9/07	UPDATE CHARTS	FLM	ELS	JJM

FPL

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: SMS

DRAWN BY: E. SCHILLING

DATE: 5/29/03

APPROVED: J.J McEVOY

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

STREET LIGHT POLE DETAILS
DECORATIVE CONCRETE AND WOOD

H-4.0.1

DECORATIVE CONCRETE POLES

LENGTH OF POLE AND FINISH	M&S NUMBER	ABOVE GRADE HEIGHT	BRACKET MOUNTING CONFIGURATION	APROXIMATE WEIGHT	MINIMUM SETTING DEPTH
18' - 6" WASHINGTON (BLACK)	152-230-005	15' - 0"	TENON (3"OD X 3"T)	1,100 LBS.	4' - 9"
18' - 6" WASHINGTON (GREEN)	152-231-508	15' - 0"	TENON (3"OD X 3"T)	1,100 LBS.	4' - 9"
18' - 6" WASHINGTON FLORIDIAN DOUBLE BKT (BLACK)	152-231-700	15' - 0"	TENON (3"OD X 7.25"T)	1,100 LBS.	4' - 9"
18' - 6" WASHINGTON FLORIDIAN DOUBLE BKT (GREEN)	152-231-710	15' - 0"	TENON (3"OD X 7.25"T)	1,100 LBS.	4' - 9"
23' - 0" WASHINGTON WEST LIBERTY DOUBLE BKT (BLACK)	152-231-800	16' - 0"	TENON (3"OD X 9"T)	2,444 LBS.	7' - 0"
17' - 3" VICTORIAN VEF (BLACK)	152-233-000	13' - 0"	TENON (3"OD X 3"T)	575 LBS.	REMOVE ONLY
17' - 3" VICTORIAN VEF (NATURAL)	152-233-100	13' - 0"	TENON (3"OD X 3"T)	575 LBS.	REMOVE ONLY
17' - 3" VICTORIAN VEF (GREEN)	152-233-200	13' - 0"	TENON (3"OD X 3"T)	575 LBS.	REMOVE ONLY
17' - 3" VICTORIAN VEF (BLACK)	152-233-300	13' - 0"	TENON (3"OD X 7.25"T)	575 LBS.	REMOVE ONLY
20' - 0" COLUMBIA (BLACK)	152-232-100	15' - 9"	TENON (3"OD X 9"T)	735 LBS.	REMOVE ONLY
37' - 0" OCTAGONAL (BLACK)	152-232-008	31' - 0"	TENON (3"OD X 9"T)	1,620 LBS.	6' - 0"
37' - 0" OCTAGONAL W/PEDESTRIAN PROVISION AT 16' (BLACK)	152-232-009	31' - 0"	TENON (3"OD X 9"T)	1,620 LBS.	6' - 0"
14' - 6" ROUND TAPERED, BLACK	152-232-210	10' - 0"	TENON (3"OD X 3"T)	559 lbs.	4' - 6"
21' - 6" ROUND TAPERED, BLACK	152-232-200	15' - 6"	TENON (3"OD X 3"T)	843 lbs.	6' - 0"
33' - 0" ROUND TAPERED, BLACK	152-232-220	24' - 0"	TENON (3"OD X 3"T)	1,627 lbs.	9' - 0"

WOOD POLES

LENGTH OF POLE AND FINISH	M&S NUMBER	ABOVE GRADE HEIGHT	BRACKET MOUNTING CONFIGURATION	APROXIMATE WEIGHT	MINIMUM SETTING DEPTH
40' CLASS 3 (TREATED FINISH)	151-189-001	33' - 6"	BOLT-ON SIDE MOUNT	1,470 LBS.	6' - 6"
45' CLASS 4 (TREATED FINISH)	151-192-002	38' - 0"	BOLT-ON SIDE MOUNT	1,536 LBS.	7' - 0"

H

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: DAVID CARROLL

DRAWN BY: G. SANTANDER

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	12/28/20	UPDATE STREET LIGHT TABLE	DRC	GXS	RDH

DATE: 2/12/20

APPROVED: RICK D. HUFF
ENGINEERING MANAGER
ENGINEERING DESIGN AND APPLICATIONS

NO SCALE

STREET LIGHT POLE REPLACEMENT TENONS AND ADAPTERS

H-4.0.3

M&S	DESCRIPTION	COLOR
172-382-030	GENERIC ADAPTER FOR CONVERTING A 4.5" OD X 4" TALL POLE TENON TO 3" OD X 4" TALL TENON	BLACK
172-382-031	GENERIC ADAPTER FOR CONVERTING A 4.5" SQUARE POLE TOP TO 3" OD X 4" TALL TENON	BRONZE
172-382-040	GENERIC ADAPTER FOR CONVERTING A 3.5" OD POLE TENON TO 3" OD POLE TENON	BLACK
172-382-041	GENERIC ADAPTER FOR CONVERTING A 4.5" SQUARE POLE TOP TO 3" OD X 4" TALL TENON	BLACK
172-340-061	ADAPTS A LED FLOODLIGHT W/ TRUNNION OR YOKE MOUNT TO 2" SLIP FILLER VERTICAL PIPE (E.G. BULLHORN)	GRAY
172-330-046	ADAPTS A 2" SPOKE BRACKET ARM TO A FLOODLIGHT W/TRUNNION MOUNT	BRONZE
172-330-047		BLACK
172-330-048		GRAY
172-330-055	3" OD X 3" TALL REPLACEMENT TENON FOR MOUNTING ON AN AMERON VERO OCTAGONAL MEO05.5 POLE	GREEN
172-330-003	3" OD X 7.25" TALL REPLACEMENT TENON FOR MOUNTING ON AN AMERON VICTORIAN II VEFO4 POLE	BLACK
172-330-004	3" OD X 3" TALL REPLACEMENT TENON FOR MOUNTING ON AN AMERON VER04SPL POLE	GREEN
172-330-050	3" OD X 3" TALL REPLACEMENT TENON FOR MOUNTING ON AN AMERON VER04SPL POLE	BLACK
172-330-001	ONE PIECE 3" OD X 3" TALL REPLACEMENT TENON FOR MOUNTING ON AN AMERON WASHINGTON 26ET14 POLE	BLACK
172-330-008	TWO PIECE 3" OD X 3" TALL REPLACEMENT TENON FOR MOUNTING ON AN AMERON WASHINGTON 26ET14 POLE	BLACK
172-330-002	3" OD X 7.25" TALL REPLACEMENT TENON FOR MOUNTING ON AN AMERON WASHINGTON 26ET14 POLE	BLACK
172-330-009	3" OD X 7.25" TALL REPLACEMENT TENON FOR MOUNTING ON AN AMERON WASHINGTON 26ET14 POLE	GREEN
172-330-060	3" OD X 7.25" TALL REPLACEMENT TENON FOR MOUNTING ON AN STRESSCRETE WASHINGTON KWC15 POLE	BLACK
172-330-061	3" OD X 7.25" TALL REPLACEMENT TENON FOR MOUNTING ON A STRESSCRETE WASHINGTON KWC15 POLE	GREEN
172-330-065	3" OD X 3" TALL REPLACEMENT TENON FOR MOUNTING ON A STRESSCRETE WASHINGTON KWH16 POLE	BLACK
172-330-005	ADAPTER FOR MOUNTING GE SHOEBOX ON A POLE WITH 3" OD X 3" TALL POLE TENON	BRONZE
172-330-006	ADAPTER FOR MOUNTING COOPER SHOEBOX ON A POLE WITH 3" OD X 3" TALL POLE TENON	BRONZE
172-330-007	ADAPTER FOR MOUNTING TWO COOPER SHOEBOX ON A POLE WITH 3" OD X 3" TALL POLE TENON	BRONZE
172-340-040	ADAPTER FOR MOUNTING AN AREA LIGHT ON A A SWITCH STRUCTURE, 8" TALL	GALVANIZED
172-340-000	QUAD BULLHORN FOR MOUNTING ON TOP OF A TYPE III-A SQUARE CONCRETE POLE WITH A 6-1/2" TOP WIDTH	GALVANIZED
174-100-007	FITTER FOR MOUNTING A HOLOPHANE BERN OR TEARDROP FIXTURE TO A 2" SLIP-FITTER BRACKET	BLACK
172-340-010	ADAPTER, 2" SLIP-FITTER, ARTICULATING, FOR MOUNTING A FLOODLIGHT AT VARIOUS ANGLES	BLACK

172-382-030
172-382-040

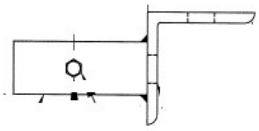
172-382-031
172-382-041

172-330-001
172-330-002
172-330-009
172-330-060
172-330-061
172-330-065

172-330-005
172-330-006
172-330-007

172-330-002
172-330-009

172-330-046
172-330-047
172-330-048



172-330-008

172-340-061

174-100-007

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. NINEZA

DATE: 5/24/21

APPROVED: EVELYN M. ABRAHAM
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

FIG.2
PROPER EMBEDMENT TO TAPE LINE

FIG. 3
POLE WEEDEATER GUARD WITH TAPE LINE

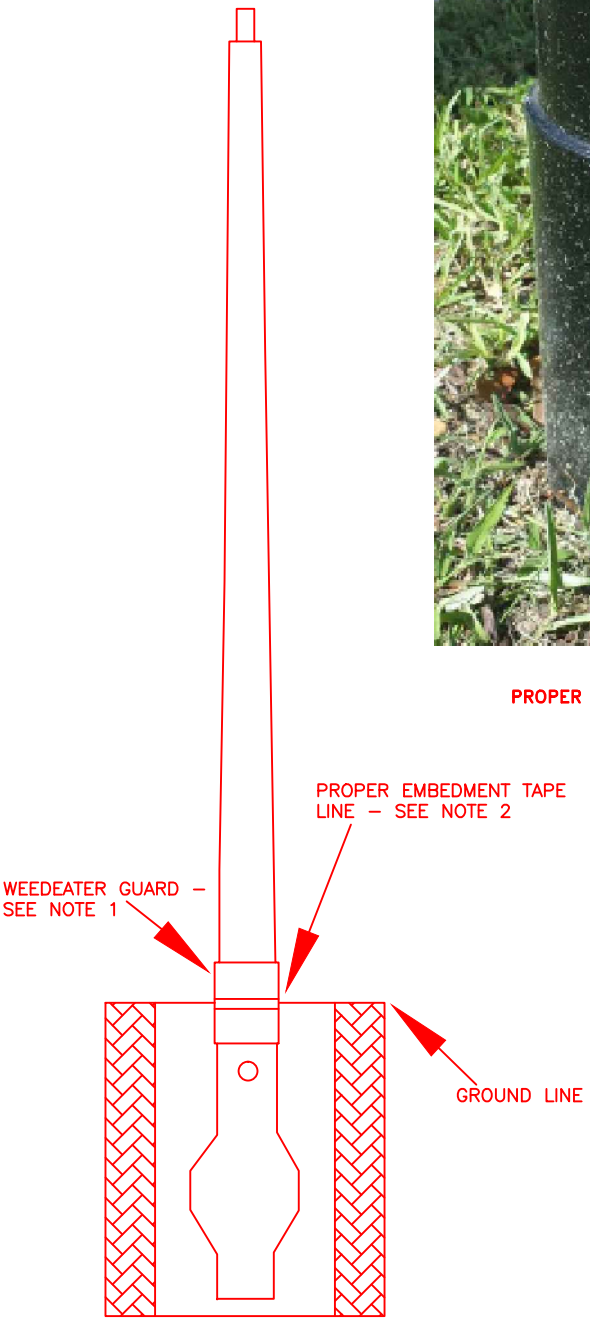


FIG.1
FIBERGLASS POLE WITH WEEDEATER GUARD

NOTES:

1. THE ALUMINUM SLEEVE COATED WITH BED LINER AND BONDED TO THE FIBERGLASS POLE TO PREVENT WEEDEATER DAMAGE.
2. EMBED THE FIBERGLASS POLE TO THE GROUND LINE TAPE. THE GROUND LINE TAPE IS HALFWAY BETWEEN THE WEEDEATER GUARD.

F P L
OH & UG DISTRIBUTION SYSTEM STANDARDS

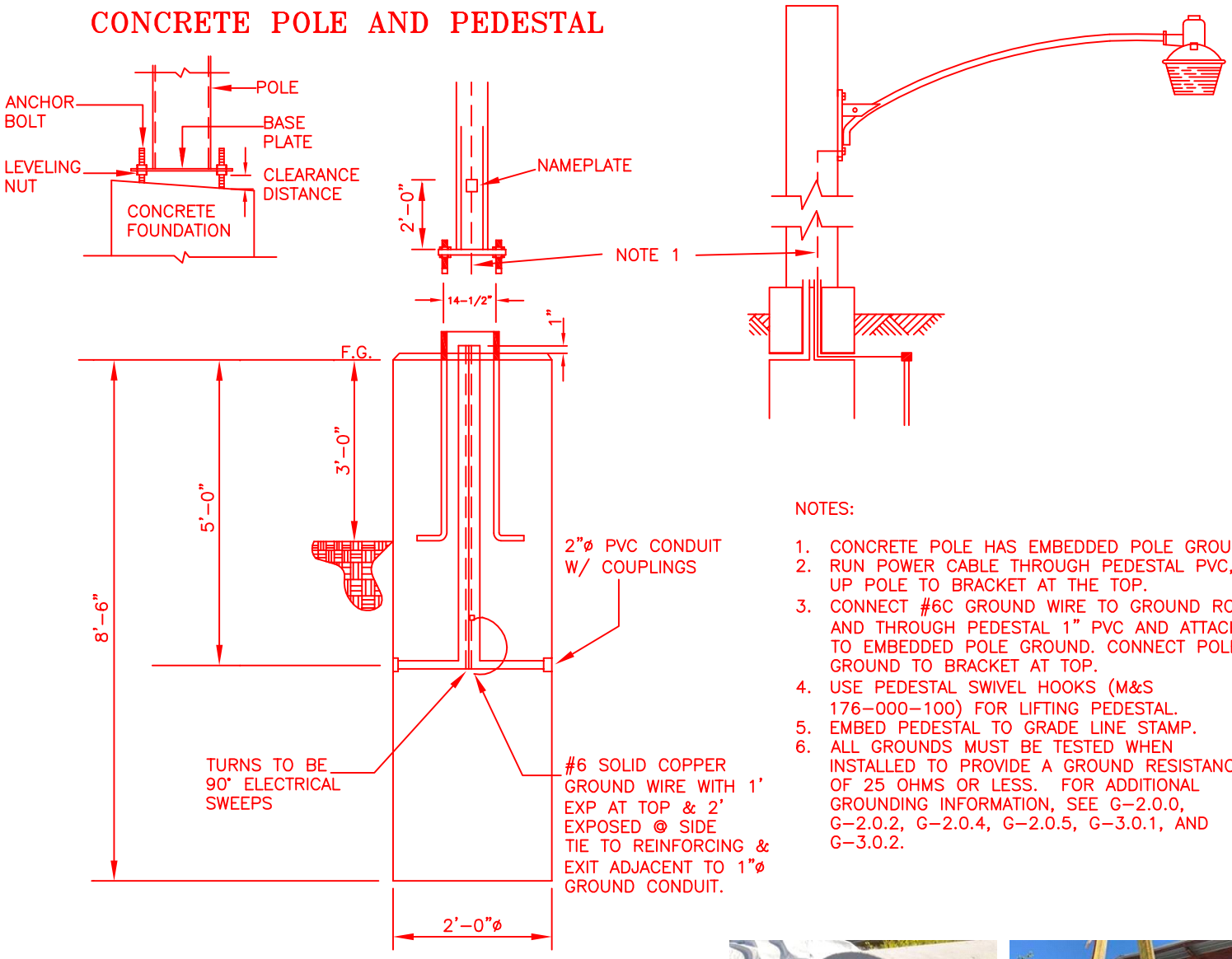
ORIGINATOR: D. CARROLL
DRAWN BY: E. SCHILLING
DATE: 5/22/20
APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS
NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

CONCRETE PEDESTAL FOR 22FT CONCRETE BASE MOUNTED POLE

H-4.2.0

CONCRETE POLE AND PEDESTAL



NOTES:

1. CONCRETE POLE HAS EMBEDDED POLE GROUND.
2. RUN POWER CABLE THROUGH PEDESTAL PVC, UP POLE TO BRACKET AT THE TOP.
3. CONNECT #6C GROUND WIRE TO GROUND ROD AND THROUGH PEDESTAL 1" PVC AND ATTACH TO EMBEDDED POLE GROUND. CONNECT POLE GROUND TO BRACKET AT TOP.
4. USE PEDESTAL SWIVEL HOOKS (M&S 176-000-100) FOR LIFTING PEDESTAL.
5. EMBED PEDESTAL TO GRADE LINE STAMP.
6. ALL GROUNDS MUST BE TESTED WHEN INSTALLED TO PROVIDE A GROUND RESISTANCE OF 25 OHMS OR LESS. FOR ADDITIONAL GROUNDING INFORMATION, SEE G-2.0.0, G-2.0.2, G-2.0.4, G-2.0.5, G-3.0.1, AND G-3.0.2.

NOTE 5

PEDESTAL
APPROXIMATE WEIGHT: 4000LBS

GRADE LINE STAMP

SWIVEL HOOKS – M&S 176-000-100

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. NINEZA

DATE: 4/14/21

APPROVED: EVELYN M. ABRAHAM
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

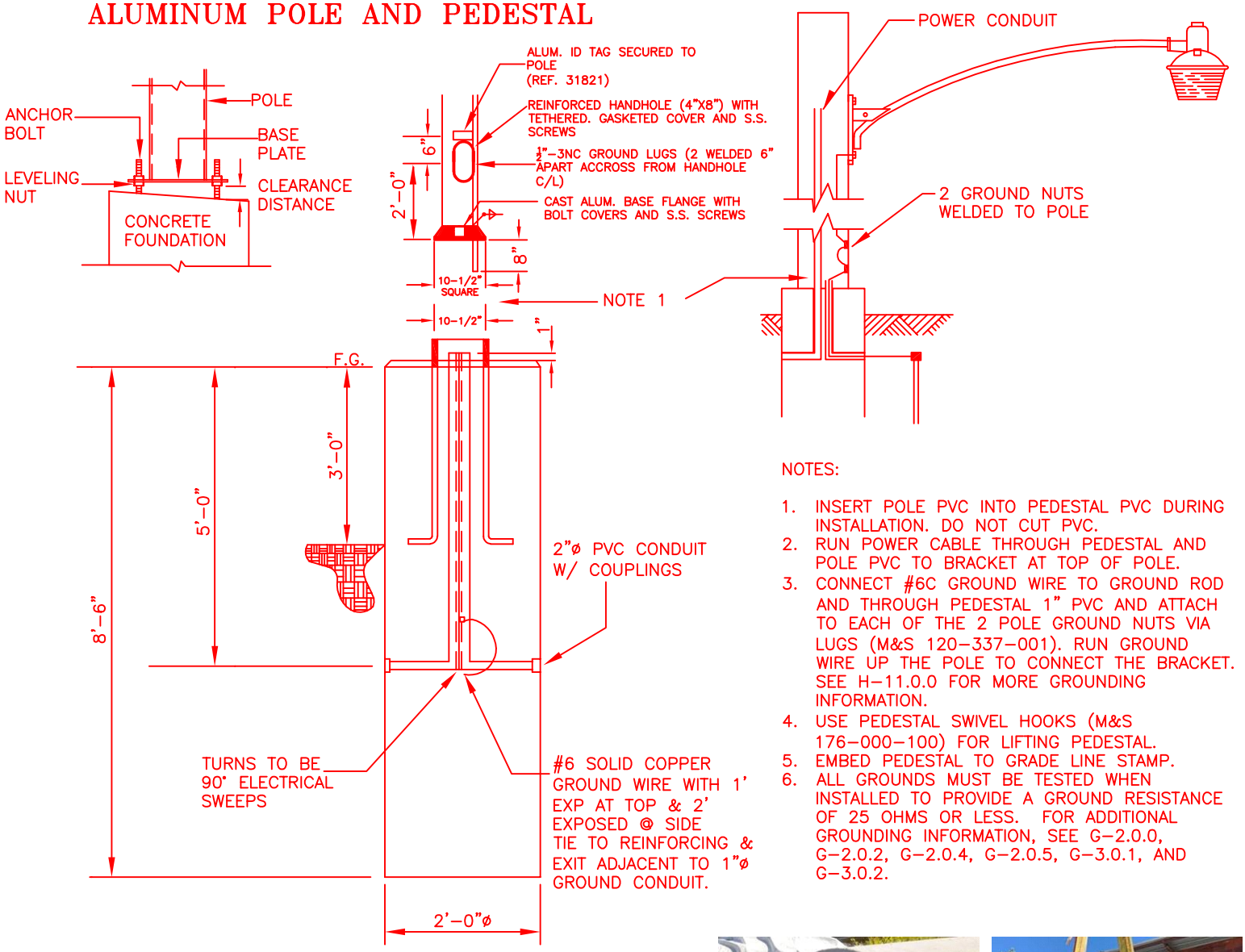
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

H

CONCRETE PEDESTAL FOR 22FT ALUMINUM BASE MOUNTED POLE

H-4.2.1

ALUMINUM POLE AND PEDESTAL



NOTES:

1. INSERT POLE PVC INTO PEDESTAL PVC DURING INSTALLATION. DO NOT CUT PVC.
2. RUN POWER CABLE THROUGH PEDESTAL AND POLE PVC TO BRACKET AT TOP OF POLE.
3. CONNECT #6C GROUND WIRE TO GROUND ROD AND THROUGH PEDESTAL 1" PVC AND ATTACH TO EACH OF THE 2 POLE GROUND NUTS VIA LUGS (M&S 120-337-001). RUN GROUND WIRE UP THE POLE TO CONNECT THE BRACKET. SEE H-11.0.0 FOR MORE GROUNDING INFORMATION.
4. USE PEDESTAL SWIVEL HOOKS (M&S 176-000-100) FOR LIFTING PEDESTAL.
5. EMBED PEDESTAL TO GRADE LINE STAMP.
6. ALL GROUNDS MUST BE TESTED WHEN INSTALLED TO PROVIDE A GROUND RESISTANCE OF 25 OHMS OR LESS. FOR ADDITIONAL GROUNDING INFORMATION, SEE G-2.0.0, G-2.0.2, G-2.0.4, G-2.0.5, G-3.0.1, AND G-3.0.2.

NOTE 5

PEDESTAL
APPROXIMATE WEIGHT: 4000LBS

GRADE LINE STAMP

SWIVEL HOOKS – M&S 176-000-100

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. NINEZA

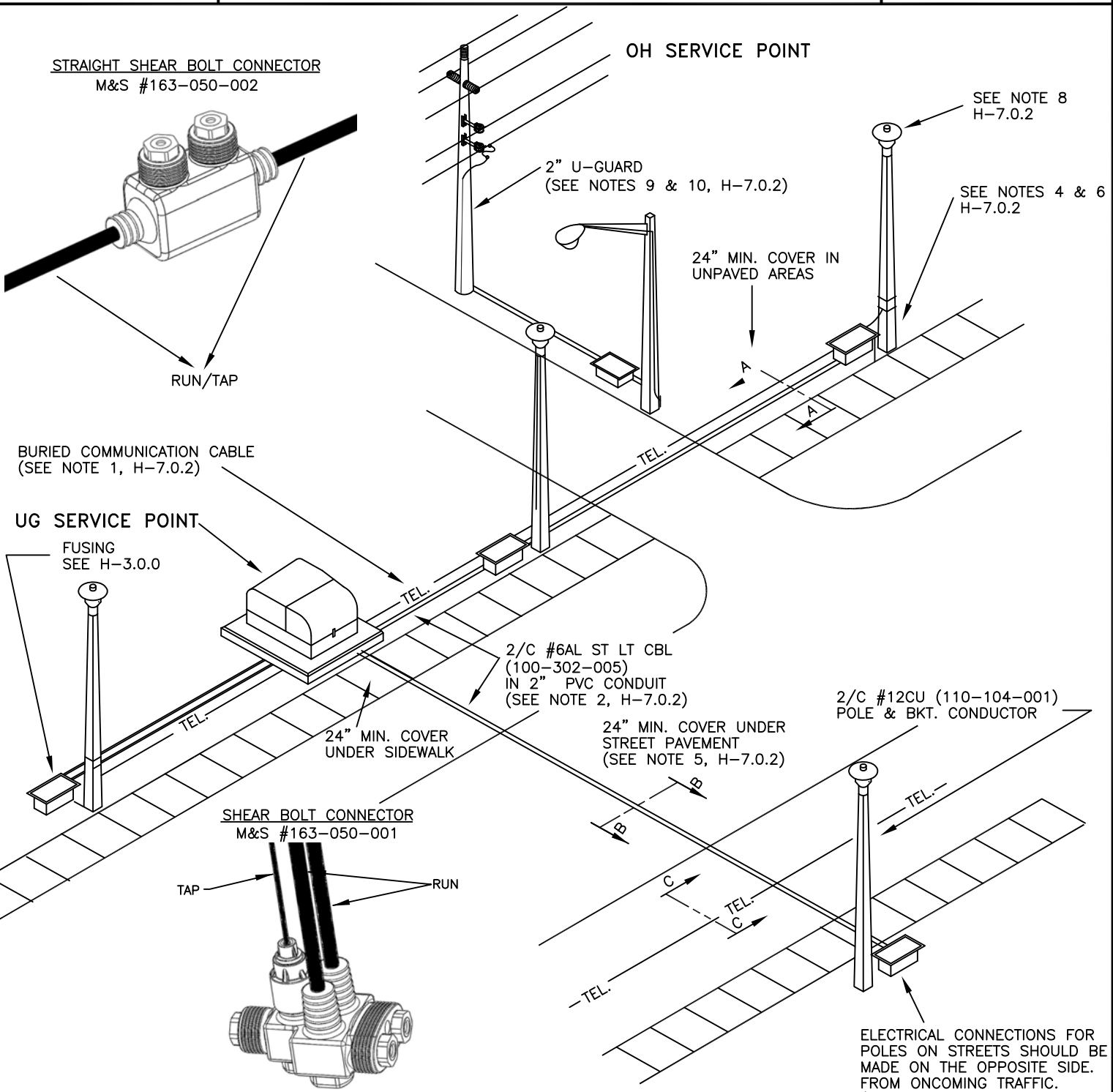
DATE: 4/14/21

APPROVED: EVELYN M. ABRAHAM
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

H



NOTES:

1. FOR #6 AL DPX OR #1/0 AL TPX RUNS, USE SHEAR BOLT CONNECTOR M&S 163-050-001 AND A SHORT 1/2" 6 POINT SOCKET (M&S #594-955-004) TO CONNECT #12CU CONDUCTORS TO FEED INDIVIDUAL LUMINAIRES.
2. FOR #4/0 AL TPX RUNS, USE SHEAR BOLT CONNECTORS AS SHOWN ON L-17.0.9.
3. FOR DIRECT FEED TO SINGLE STREET LIGHT, USE CONNECTOR M&S #163-050-002 AND A SHORT 3/4" 6 POINT SOCKET (M&S #594-955-002).
4. SEE H-7.1.1 FOR INSTALLATION DETAILS.

SUPERSEDES H-7.0.1 LAST REVISED ON 1-29-92

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
6	11/4/16	UPDATE DRAWING & TEXT	JCH	ELS	RDH
5	3/9/11	UPDATE DRAWING & TEXT	ARR	ELS	BXN
4	1/3/11	UPDATE TEXT	ARR	ELS	BXN
3	5/28/09	UPDATE TEXT	SMS	ELS	JNM
2	6/10/03	UPDATE DRAWING & TEXT	SMS	ELS	JJM
1	9/22/99	UPDATE DRAWING & TEXT	SMS	JES	JJM

FPL

OH & UG DISTRIBUTION SYSTEM STANDARDS

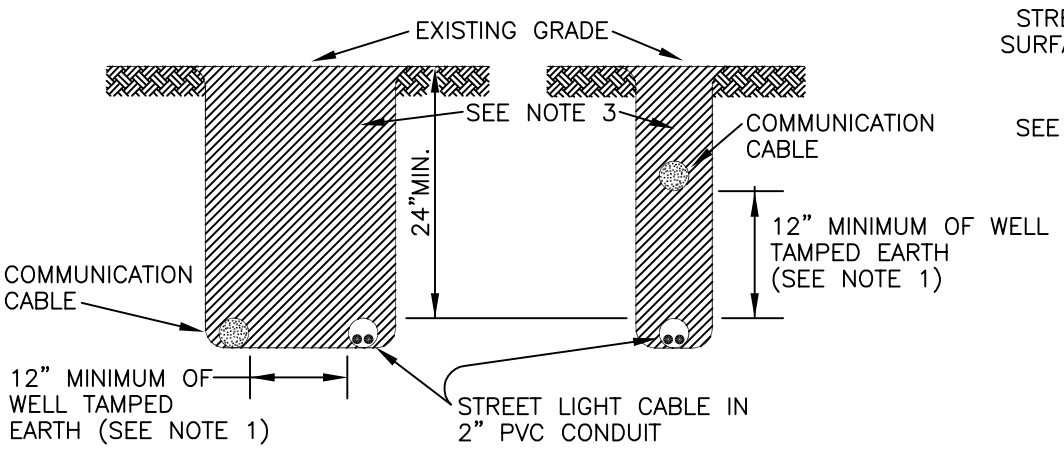
ORIGINATOR: JBM DRAWN BY: RAS

DATE: 1/29/92 APPROVED: J.J McEVOY NO SCALE

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

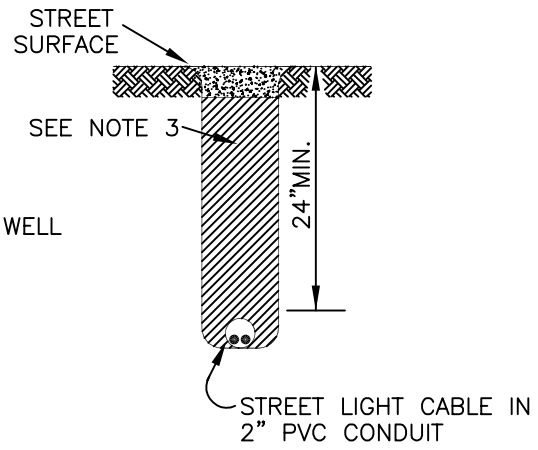
STREET LIGHT UNDERGROUND INSTALLATIONS

H-7.0.2



SECTION A–A
STREET LIGHT CABLE & CONDUIT WITH COMMUNICATION CABLE AT SAME DEPTH

SECTION A–A
STREET LIGHT CABLE & CONDUIT WITH COMMUNICATION CABLE AT DIFFERENT DEPTH

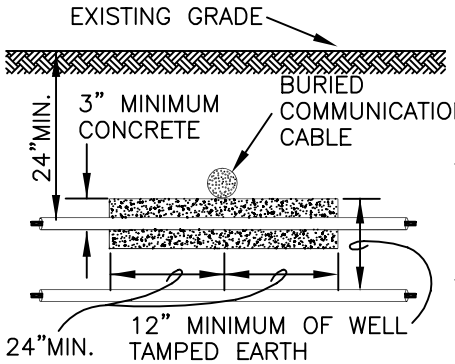


SECTION B–B
STREET LIGHT CABLE & CONDUIT STREET CROSSING (SEE NOTE 6)

H

NOTES:

1. A SEPARATION OF AT LEAST 12" IS REQUIRED BETWEEN STREET LIGHT CIRCUIT OF ANY VOLTAGE AND COMMUNICATION CABLE IN ANY DIRECTION.
2. THE CONDUCTOR OF THE 2/C #6AL STREET LIGHT CABLE (100–302–005) MARKED WITH RIBS IN THE INSULATION SHALL BE USED AS THE NEUTRAL CONDUCTOR.
3. SCRAP LUMBER, TRASH AND OTHER ORGANIC MATERIAL SHOULD BE ELIMINATED FROM ALL BACKFILL.
4. AT LEAST FOUR DRIVEN GROUNDS PER MILE, AS PER NESC. MUST BE INSTALLED. METAL STREETLIGHT POLES AND SERIES STREETLIGHT CIRCUITS HAVE A DRIVEN GROUND AT EACH POLE LOCATION.
5. INSTALLATION OF STREET LIGHT CABLE UNDER STREET PAVEMENT AS SHOWN IN SECTION B–B ABOVE MUST BE APPROVED BY THE AUTHORITY WHICH HAS JURISDICTION OVER THE ROADWAY.
6. DRIVEN GROUNDS MUST NOT EXCEED 25 OHMS BY TEST.
7. ST LIGHT HANDHOLES, TIER 15, CAN BE INSTALLED ON DRIVEWAY, PARKING LOT, AND OFF–ROADWAY APPLICATIONS SUBJECT TO OCCASIONAL NON–DELIBERATE HEAVY VEHICULAR TRAFFIC. EXAMPLE: SIDEWALKS IN RESIDENTIAL OR PUBLIC AREAS WHERE HEAVY VEHICLE TRAFFIC IS UNLIKELY, BUT MAY OCCUR. M&S# 162–304–001.
8. A PHOTOELECTRIC RELAY OR A NETWORKED LIGHTING CONTROLLER (SMART NODE) IS USED WITH INDIVIDUAL CONTROL. A SHORTING CAP IS REQUIRED ON STREETLIGHT FIXTURES HAVING PHOTOCELL SOCKETS, BUT WHICH ARE GROUP CONTROLLED.
9. RISER MUST EXTEND 40" ABOVE THE HIGHEST COMMUNICATION ATTACHMENT. THE TOP OF THE RISER SHOULD NOT BE HIGHER THAN 6" ABOVE THE NEUTRAL OR LOWER THAN 12" BELOW THE BOTTOM SECONDARY CONDUCTOR. ON A TRANSFORMER POLE WITH NO SECONDARY, RISER MAY TERMINATE 24" BELOW THE BOTTOM OF THE TRANSFORMER TANK.
10. U–GUARD RISER DOES NOT REQUIRE BONDING TO GROUND.
11. IF A SINGLE STREETLIGHT POLE IS LOCATED WITHIN 10' OF TRANSFORMER, A HANDHOLE IS NOT REQUIRED BUT CABLE MUST BE INSTALLED IN 2" PVC CONDUIT.
12. SEE H–3.0.0 FOR FUSING INFORMATION.



SECTION C–C
STREET LIGHT CABLE & CONDUIT WITH COMMUNICATION CABLE CROSSING–SHOWING SEPARATION OF EITHER 3" OF CONCRETE OR 12" OF WELL TAMPED EARTH

ALTERNATE METHOD
STREET LIGHT CABLE & CONDUIT IN CONCRETE ENVELOPE

PREFERRED METHOD
STREET LIGHT CABLE & CONDUIT PADDED WITH TRENCHED FILL

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
5	5/24/21	UPDATE NOTE 7	ARR	GXN	EMA
4	11/4/16	UPDATE DRAWING (NOTES)	JCH	ELS	RDH
3	6/10/03	UPDATE DRAWING (NOTES)	SMS	ELS	JJM
2	9/22/99	UPDATE DRAWING (NOTES)	SMS	JES	JJM
1	8/09/96	ADDED NOTE 15 AND REVISED NOTES 7&12	JBM	RAS	JJM

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM DRAWN BY: RAS

DATE: 9/30/94 APPROVED: J.J McEVOY

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

SHEAR HEAD BOLT CONNECTOR FOR ST LIGHT INSTALLATIONS

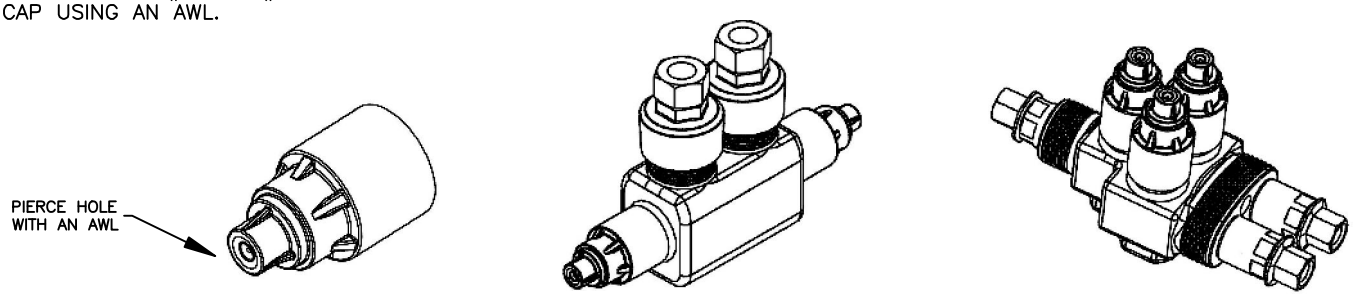
H-7.1.1

INSTALLATION INSTRUCTIONS FOR UNDERGROUND CONNECTORS
M&S #163-050-001 ("Y") & M&S #163-050-002 (STRAIGHT)

STEP 1 LOOSEN, BUT DO NOT REMOVE THE SHEAR-HEAD BOLTS ON THE PORT/PORTS TO BE USED.

STEP 2A FOR #1/0 CABLES REMOVE THE SEAL CAP.

STEP 2B FOR #12 TO #6 CABLES LEAVE THE SEAL CAP IN PLACE AND PIERCE A SMALL HOLE IN THE END OF THE SEAL CAP USING AN AWL.

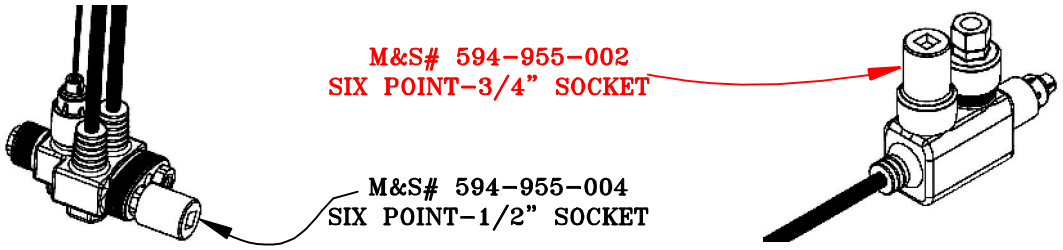


STEP 3 CUT THE END OF THE CABLES AT A SLIGHT ANGLE (NO MORE THAN 25°) TO FACILITATE THE INSERTION INTO THE PORT. DO NOT STRIP THE CABLE INSULATION.

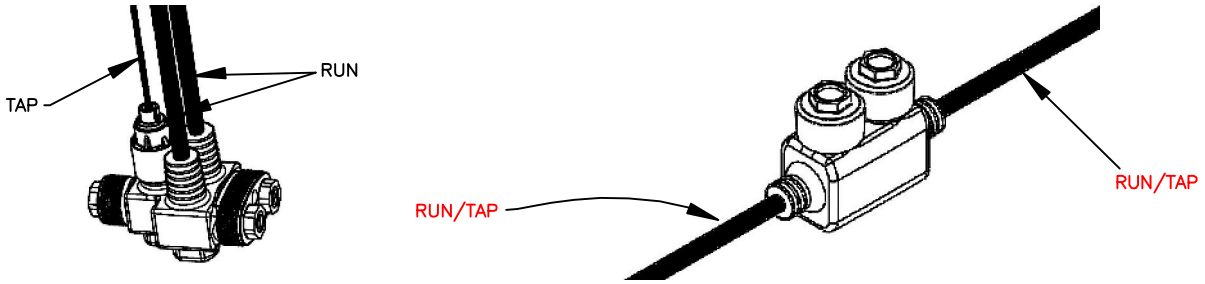
STEP 4 WIPE THE CONDUCTOR CLEAN AND APPLY SILICON GREASE TO THE CABLE TO AID IN THE INSERTION PROCESS.

STEP 5 MARK CABLE JACKET WITH VINYL TAPE OR GREASE PENCIL AT A DISTANCE OF 2-3/4" FROM THE END TO MAKE SURE THAT CONDUCTOR IS FULLY INSERTED.
INSERT THE CABLES AND "BUNDLE UP" THE CABLES UP TO 3 TIMES TO OBTAIN A PROPER CONNECTION BETWEEN THE SHEAR BOLTS AND THE TEETH ON THE CONNECTOR'S PORT.

STEP 6 HAND TIGHTEN THE SHEAR BOLTS ON THE USED PORTS. USE APPROPRIATE SHORT SIX-POINT INCH SOCKET ON A BATTERY OPERATED IMPACT DRIVER (MAKE SURE THE BATTERY IS FULLY CHARGED) TO AVOID ROUNDING THE SHEAR-HEADS. ENSURE THAT THE SOCKET FULLY ENGAGES THE SHEAR-HEAD EACH TIME.



STEP 7 ENSURE ALL SHEAR HEAD BOLTS ON USED PORTS HAVE BEEN "SHEARED OFF", THAT SEAL CAPS ARE NOT MISSING ON UNUSED PORTS AS WELL AS NO LOOSE SHEAR-HEAD BOLTS.



NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	3/1/11	UPDATE DRAWING	ARR	ELS	BXN
1	2/18/11	UPDATE DRAWING	ARR	ELS	BXN

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

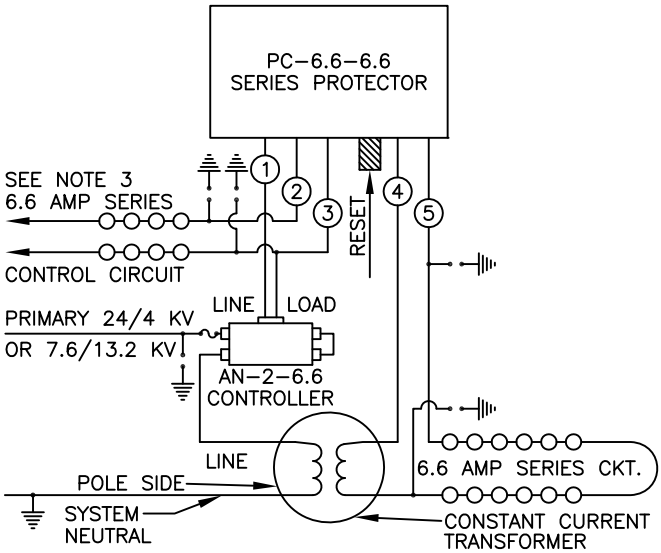
ORIGINATOR: ARR DRAWN BY: E.SCHILLING

DATE: 12/20/10 APPROVED: BENNY NARANJO
LEAD SUPERVISOR, UG PRODUCTS

NO SCALE

WIRING DIAGRAM FOR CONSTANT CURRENT TRANSFORMER INSTALLATION WYE SYSTEM (REMOVE ONLY)

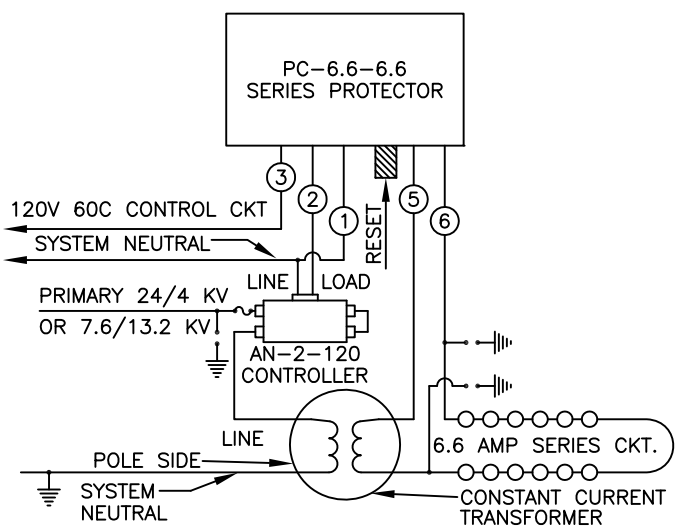
H-8.0.0



CONNECTIONS FOR TYPE PC-6.6-6.6 PROTECTIVE RELAY WITH 6.6 AMPERS SERIES CONTROL CIRCUIT RATING AND 6.6 AMPERE SERIES PROTECTED CIRCUIT RATING.

SERIES CIRCUIT CONTROLLED FROM AN INCANDESCENT SERIES CIRCUIT

FIGURE 1



CONNECTIONS FOR TYPE PC-120-6.6 PROTECTIVE RELAY WITH 120V 60-CYCLE CONTROL CIRCUIT RATING AND 6.6 AMPERE SERIES PROTECTED CIRCUIT RATING

SERIES CIRCUIT CONTROLLED FROM A MULTIPLE CIRCUIT OR PHOTOELECTRIC RELAY

FIGURE 2

NOTES:

1. THIS DRAWING SHOWS THE CONSTANT CURRENT TRANSFORMER CONNECTED TO A WYE PRIMARY SYSTEM, FOR A 2.4KV DELTA SYSTEM. BOTH PRIMARY LINE TAPS ARE MADE TO "LINE" SIDE OF THE CONTROLLER AND INSTEAD OF USING A JUMPER ON THE "LOAD" SIDE OF THE CONTROLLER THE TWO "LOAD" TERMINALS ARE CONNECTED TO THE "LINE" TERMINALS OF THE CONSTANT CURRENT TRANSFORMER.
2. FIVE-15 KW RO INCLUSIVE-USE 3 KV LIGHTNING ARRESTER; 20 KW AND LARGER-USE 10 KV RATED LIGHTNING ARRESTER; CONTROLLING CIRCUIT SHOULD USE THE SIZE ARRESTER CORRESPONDING TO ITS RO.
3. DO NOT USE A SERIES CIRCUIT WITH MERCURY VAPOR LAMPS TO CONTROL A CONSTANT CURRENT TRANSFORMER.
4. ON CIRCUITS WITH MERCURY VAPOR LAMPS THE PROTECTOR PICKUP CURRENT SHOULD HAVE A MINIMUM RATING OF 3 AMPERES FOR ARC RESTRIKE.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	11/4/16	UPDATE TITLE	JCH	ELS	RDH
0	8/9/96	PLACED DRAWING IN NEW FRAME	JBM	RAS	JJM

ORIGINATOR: JBM DRAWN BY: RAS

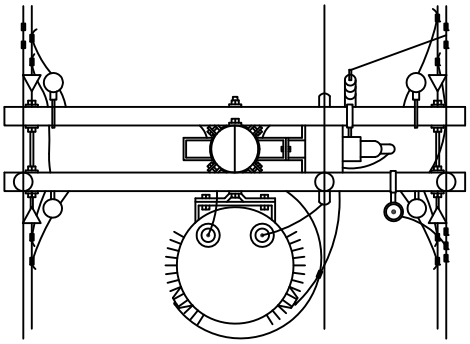
DATE: 8/9/96 APPROVED: J.J McEVOY NO SCALE

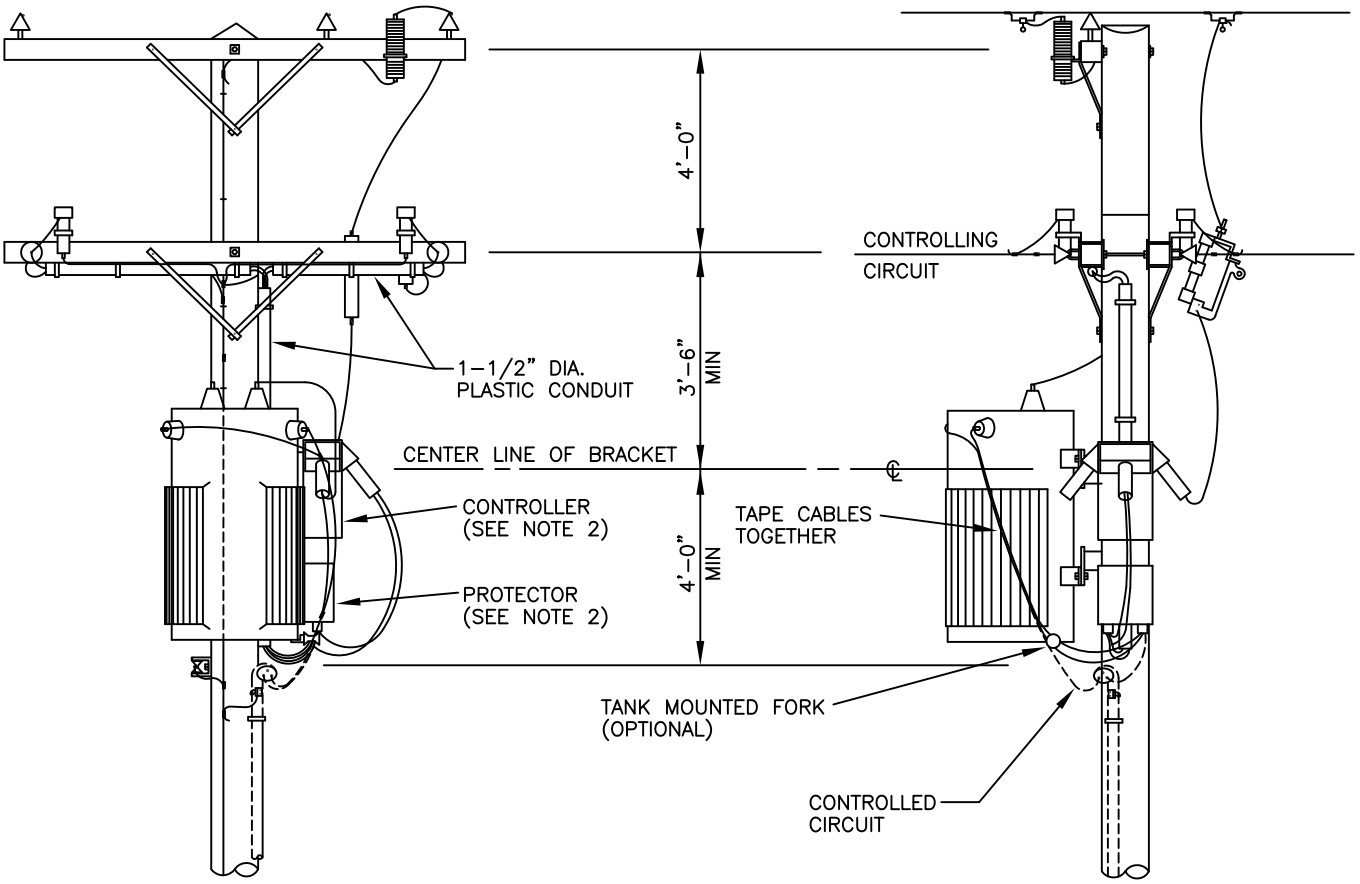
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

H

TRANSFORMER INSTALLATION SERIES STREET LIGHTING (REMOVE ONLY)

H-9.0.0





NOTES:

1. CONTROLLING AND/OR CONTROLLED CIRCUIT MAY BE UNDERGROUND.
2. USE VERTICAL ADAPTER PLATE TO MOUNT CONTROLLER. USE HORIZONTAL ADAPTER PLATE TO MOUNT PROTECTOR.
3. ALL SERIES LEADS TO BE #8, 5 KV RINJ CABLE.
4. SHOWN IS A SINGLE POLE SERIES CONTROLLER, FOR 3-POLE AND FOR MULTIPLE, SEE SHEET H-8.0.0.
5. FIVE - 15KW RO INCLUSIVE - USE 10 KV RATED LIGHTNING ARRESTER.
   20KW RO AND LARGER - USE 10 KV RATED LIGHTNING ARRESTER.
   CONTROLLING CIRCUIT SHOULD USE THE SIZE ARRESTER CORRESPONDING TO ITS RO.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	11/4/16	UPDATE TITLE	JCH	ELS	RDH
0	8/9/96	PLACE DRAWING IN REVISED FRAME	JBM	RAS	JJM

ORIGINATOR: JBM

DRAWN BY: RAS

DATE: 8/9/96

APPROVED: J.J McEVOY

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

GROUNDING OF STREET LIGHT BRACKETS AND POLES

H-11.0.0

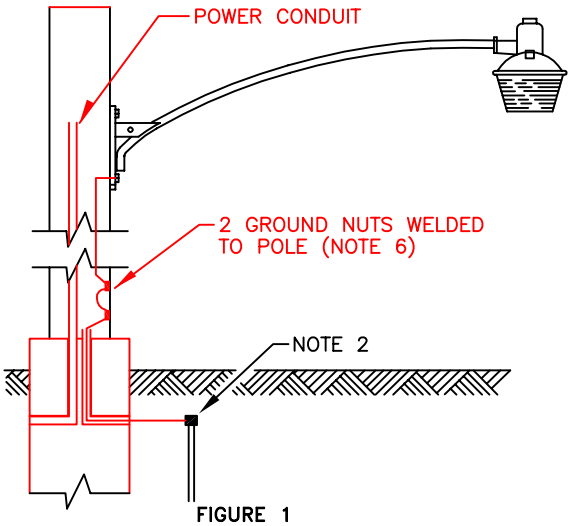


FIGURE 1
BASE MOUNTED METAL POLE GROUNDING

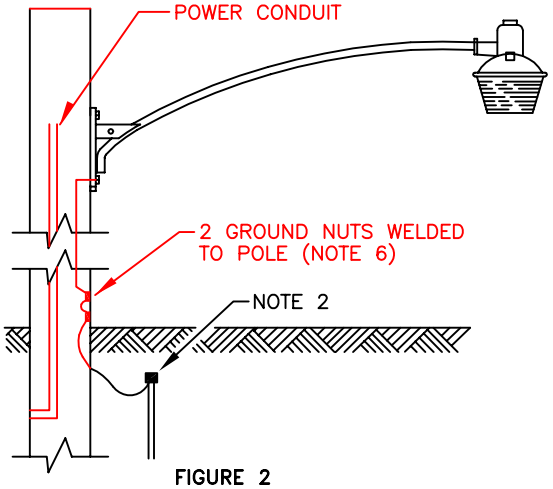


FIGURE 2
DIRECT EMBED METAL POLE GROUNDING

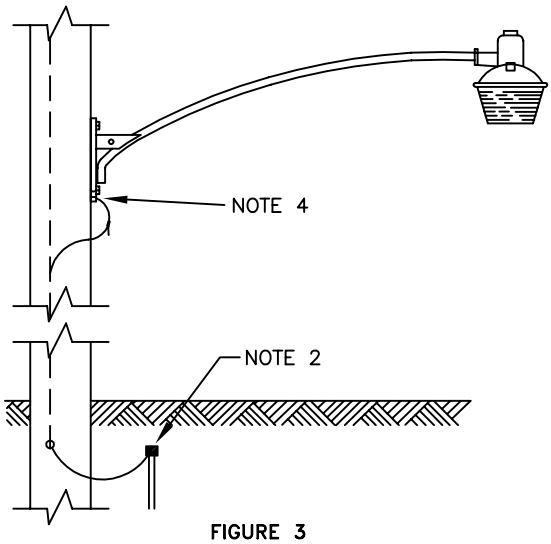


FIGURE 3
CONCRETE POLE
GROUNDING OF BRACKETS WHERE
A DRIVEN GROUND IS INSTALLED

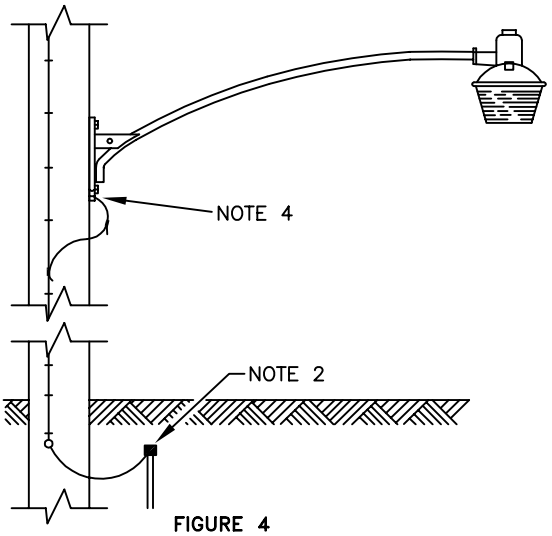


FIGURE 4
WOOD POLE GROUNDING OF BRACKETS
WHERE A DRIVEN GROUND IS INSTALLED

NOTES:

1. STREET LIGHT CIRCUITS MUST HAVE A MINIMUM OF FOUR DRIVEN GROUNDS PER MILE PER NESC REQUIREMENTS. DEDICATED STREETLIGHT POLES, METAL POLES AND SERIES CIRCUIT POLES MUST HAVE DRIVEN GROUNDS AT EACH POLE.
2. ALL GROUNDS MUST BE TESTED WHEN INSTALLED TO PROVIDE A GROUND RESISTANCE OF 25 OHMS OR LESS. FOR ADDITIONAL GROUNDING INFORMATION, SEE G-2.0.0, G-2.0.2, G-2.0.4, G-2.0.5, G-3.0.1, AND G-3.0.2.
3. GUYS ATTACHED TO SERIES CIRCUIT WOOD POLES WITHOUT NEUTRAL ARE TO BE INSULATED BY INSTALLING A FIBERGLASS GUY STRAIN INSULATOR AT THE POLE. ALL OTHER STREET LIGHT GUYS SHALL BE BONDED TO THE POLE GROUND.
4. ATTACH GROUND WIRE TO BRACKET USING EITHER THE LUG OR PIGTAIL LOCATED ON THE MOUNTING POLE.
5. DISTRIBUTION POLES, WHERE A DRIVEN GROUND DOESN'T EXIST, CONNECT GROUNDING POINT OF THE STREET LIGHT BRACKET TO THE SYSTEM NEUTRAL USING #6C.
6. METAL POLES SHOULD HAVE TWO 1/2"-13UNC TRANSFORMER LUGS (M&S 120-337-001) MATED TO TWO WELDED GROUND NUTS INSIDE OF THE POLE. THE #6 AWG SOLID COPPER GROUND WIRE SHOULD THEN BE CONNECTED TO EACH TRANSFORMER LUG. NEUTRAL TO BE BONDED TO GROUND WIRE.

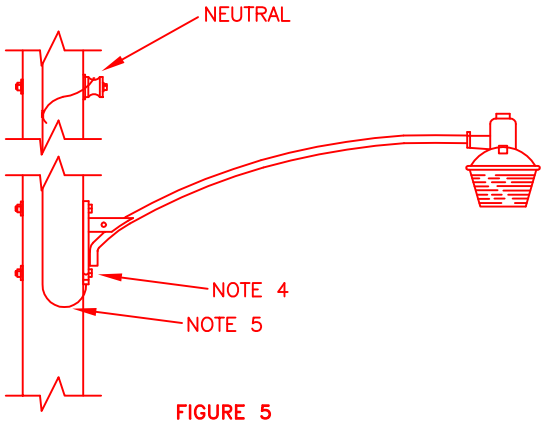


FIGURE 5
GROUNDING OF BRACKETS WHERE A
DRIVEN GROUND IS NOT INSTALLED

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
4	4/14/21	UPDATE NOTES,UPDATE TITLE & FIG 1 & 2	DRC	GXS	RDH
3	7/24/03	UPDATED DRAWING (REVISED NOTE 1)	SMS	ELS	JJM
2	6/10/03	UPDATED DRAWING (REVISED NOTE 2)	SMS	ELS	JJM
1	8/06/01	UPDATED DRAWING (REVISED NOTE 1)	SMS	JES	JJM
0	8/09/96	CHANGED PAGE FORMAT	JBM	RAS	JJM

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: ORIG. DRAWN BY: DFTR

DATE: 8/09/96 APPROVED: J.J. MCEVOY
SUPERVISOR, OH/UG PRODUCT
SUPPORT SERVICES

NO SCALE

H

GROUNDING OF POST MOUNTED STREET LIGHTS

H-11.1.0

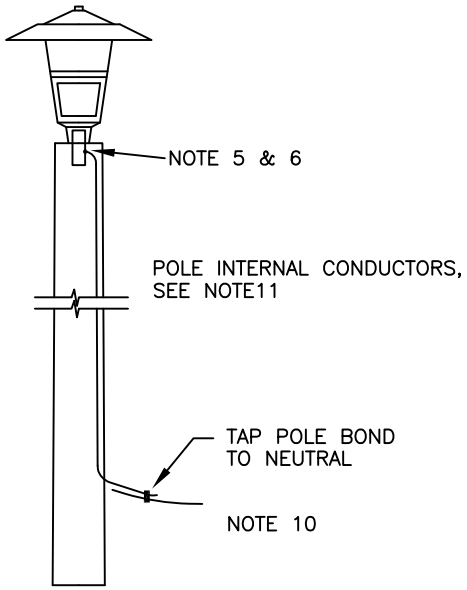


FIG. 1
GROUNDING OF CONCRETE POLE WITH EMBEDDED BOND WIRE

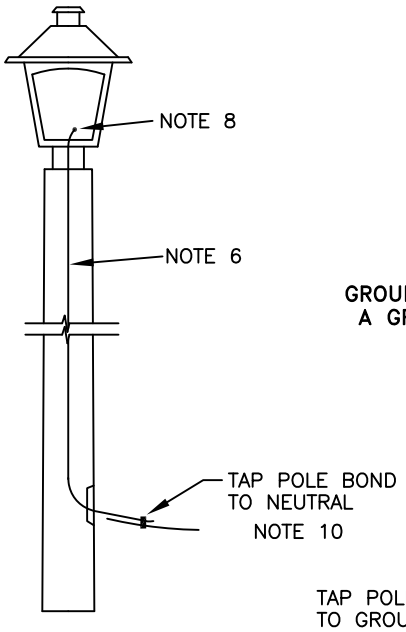


FIG. 2
GROUNDING OF CONCRETE POLE WITHOUT EMBEDDED BOND WIRE

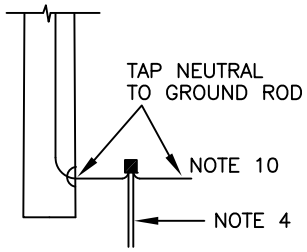


FIG. 3
GROUNDING AT FIBERGLASS POLE WHERE A GROUND ROD HAS BEEN INSTALLED. SEE NOTE 7

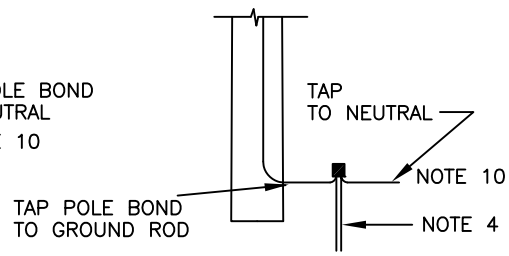


FIG. 4
GROUNDING OF CONCRETE POLE WHERE A GROUND ROD HAS BEEN INSTALLED

H

NOTES:

1. A DRIVEN GROUND WILL NO LONGER BE REQUIRED AT STREET LIGHT TERMINAL END POLES AND STREET LIGHT SERVICE POLES.
2. STREET LIGHT CIRCUITS MUST HAVE A MINIMUM OF FOUR DRIVEN GROUNDS PER MILE PER NESC REQUIREMENTS.
3. METAL POLES AND SERIES STREET LIGHT CIRCUITS MUST HAVE A DRIVEN GROUND AT EACH POLE LOCATION.
4. FOR ADDITIONAL GROUNDING INFORMATION, SEE G-2.0.2, G-3.0.1 AND G-3.0.2.
5. ON CONCRETE TYPE "O" POLES WHICH HAVE EMBEDDED POLE BONDS, THE MOUNTING TENON FOR THE LUMINAIRE IS ALREADY BONDED FROM MANUFACTURER TO THE POLE GROUND WIRE. A SEPARATE ATTACHMENT OF THE POLE BOND TO THE FIXTURE IS NOT REQUIRED.
6. IF CONCRETE POLES HAVE A MISSING OR DAMAGED POLE BOND, PULL A 1/C #12 CU WIRE (M&S #115-090-009) ALONGSIDE THE SUPPLY CONDUCTOR TO SERVE AS THE POLE GROUND.
7. FIBERGLASS POLES DO NOT REQUIRE A SEPARATE #12 CU WIRE RUN ALONGSIDE THE SUPPLY CONDUCTORS. A #12CU JUMPER WIRE SHALL BE RUN FROM THE FIXTURE GROUND SCREW (GREEN) TO THE NEUTRAL TERMINAL.
8. FIXTURE GROUND SCREW (GREEN) MUST BE CONNECTED TO GROUND OR NEUTRAL.
9. ON METAL POLES, THE GROUNDING LUG MAY BE WELDED OR BRAZED TO THE POLE, IF NOT PULL A SEPARATE 1/C #12CU WIRE (M&S #115-090-000) ALONGSIDE SUPPLY CONDUCTORS TO SERVE AS A POLE BOND.
10. ONLY INSULATED CONDUCTORS MAY BE CONNECTED TO MULTITAPS IN HANDHOLES.
11. CONDUCTORS PULLED INSIDE OF POLE SHALL BE 2/C #12 COPPER, NOT #6DPX. TRANSITION FROM #6 TO #12 SHALL BE MADE IN THE HAND HOLE OR CONNECTION BOX, REFERENCE DCS SECTION H-7.0.1.

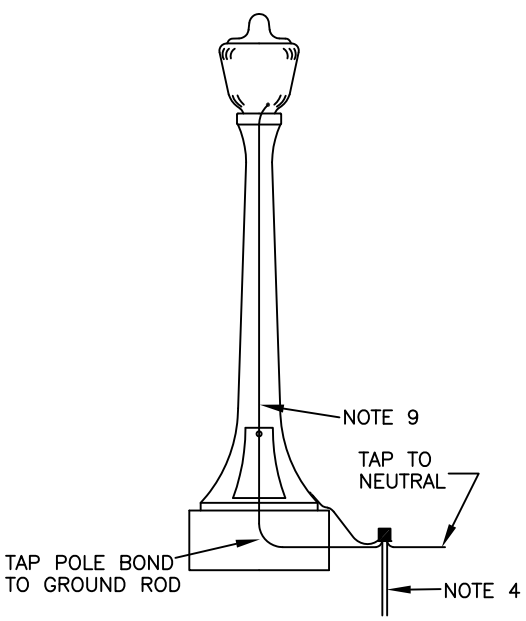


FIG. 5
GROUNDING OF METAL POLE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
4	7/15/19	UPDATE DRAWING (NOTES)	JDT	ELS	RDH
3	8/16/05	UPDATE DRAWING (NOTES)	SMS	ELS	JJM
2	6/10/03	UPDATE DRAWING (NOTES)	SMS	ELS	JJM
1	8/06/01	UPDATE DRAWING (NOTES)	SMS	JES	JJM
0	9/30/94	REVISED NOTES	JSB	RAS	RJS

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: ARR

DRAWN BY: RAS

DATE: 9/30/94 APPROVED: R.J. SALESKY
DIRECTOR, DISTRIBUTION ENGINEERING AND OPERATIONS SERVICES

NO SCALE

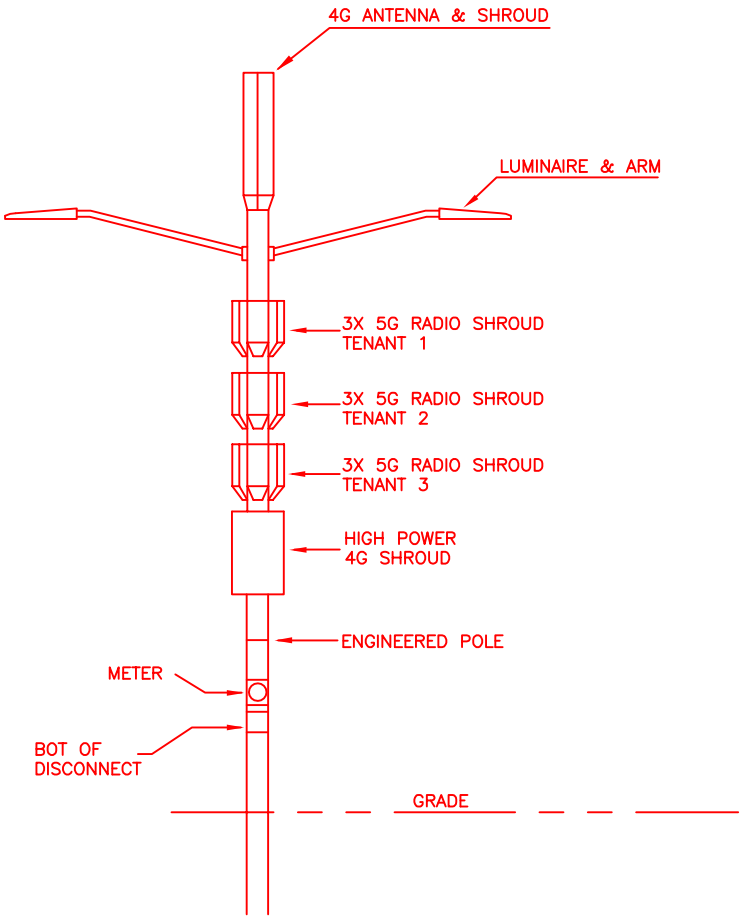


FIGURE 1

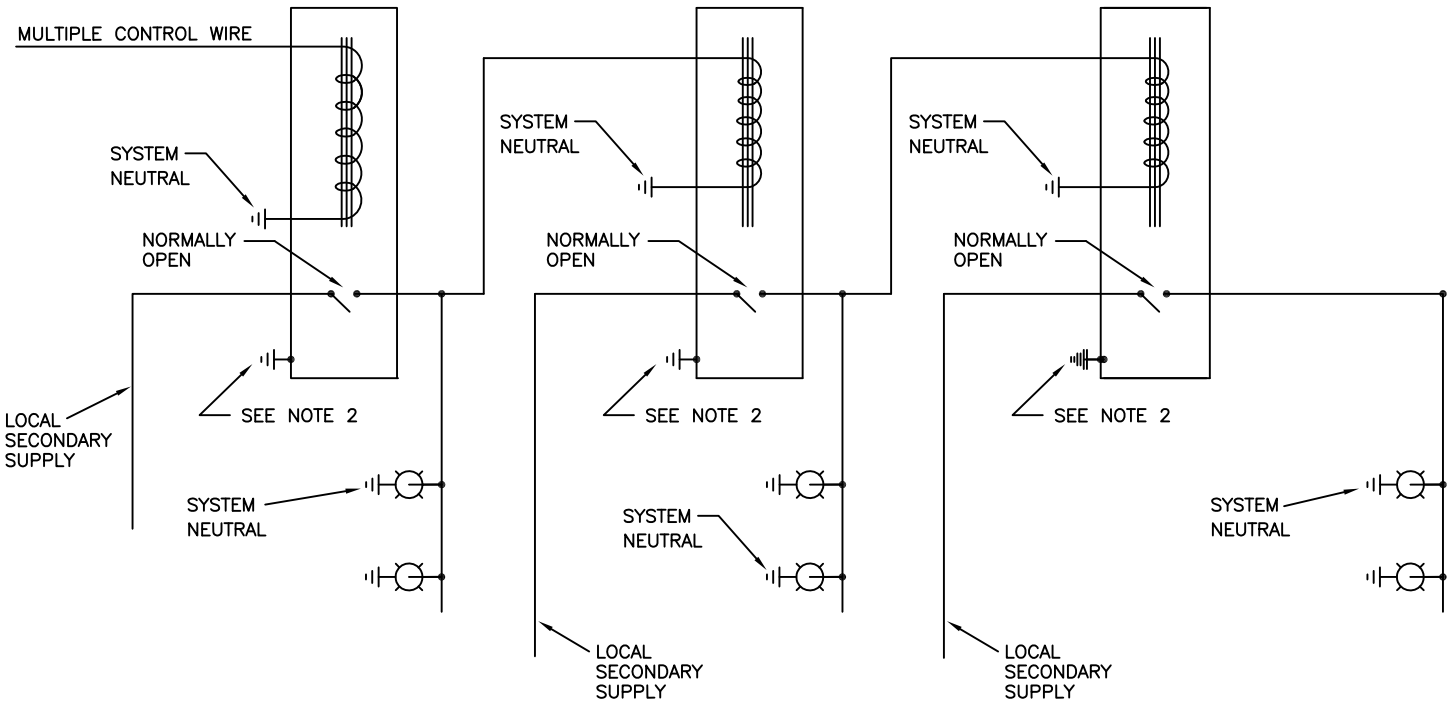
FIGURE 2

FIGURE 3

NOTES
1. 5G STREET LIGHT POLES CAN BE METAL, CONCRETE, OR FIBERGLASS. EVERY 5G STREET LIGHT POLE MUST HAVE A DRIVEN GROUND. REFER TO H-11.0.0 FOR MORE GROUNDING INFORMATION.
2. POLES SHALL HAVE A #6AWG SOLID COPPER GROUND CABLE INSTALLED INTERNAL TO THE POLE.
3. THE GROUND SHALL BE ATTACHED TO BOTH GROUND NUTS THAT ARE WELDED INTERNAL TO THE POLE VIA TWO 1/2" X 13UNC TRANSFORMER LUGS (M&S#120-337-001). SEE FIGURE 2
4. ALL ATTACHED ELECTRICAL EQUIPMENT (STREETLIGHT, 4G/5G CELLULAR RADIOS, 4G HIGH POWERED RADIO, CBRS AND/OR LAA TYPE RADIOS, FIBER OPTIC EQUIPMENT, ETC.) GROUNDS MUST BE ATTACHED OR BONDED TO THE GROUND CABLE VIA SPLIT GROUND NUTS, FLAT BARE GROUND NUTS, OR OTHER GROUNDING NUTS. SEE FIGURE 3.
5. THE GROUND CABLE MUST BE ATTACHED TO METER BOX AND LOAD CENTER.
6. THE NEUTRAL MUST BE ATTACHED OR BONDED TO GROUND INSIDE LOAD CENTER.
7. ALL EQUIPMENT POWER CABLES MUST BE ROUTED INSIDE 1" NON-CONDUCTIVE CONDUIT OR PVC.
8. ALL GROUNDS MUST BE TESTED WHEN INSTALLED TO PROVIDE A GROUND RESISTANCE OF 25 OHMS OR LESS. FOR ADDITIONAL GROUNDING INFORMATION, SEE G-2.0.0, G-2.0.2, G-2.0.4, G-2.0.5, G-3.0.1, AND G-3.0.2.

SCHEMATIC DIAGRAM OF TYPICAL CASCADED STREET LIGHTING SYSTEM (REMOVE ONLY)

H-12.0.0



CASCADED STREET LIGHTING SYSTEMS ARE NOT TO BE USED FOR NEW INSTALLATIONS

NOTES:

1. MULTIPLE TO MULTIPLE CONTROL SWITCH TO BE POLE MOUNTED AT SECONDARY LEVEL.
2. METAL CASES OF MULTIPLE RELAYS ARE TO BE GROUNDED.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	11/4/16	UPDATE TITLE	JCH	ELS	RDH
0	8/9/96	PLACED DRAWING IN REVISED FRAME	JBM	RAS	JJM

ORIGINATOR: JBM

DRAWN BY: RAS

DATE: 8/9/96

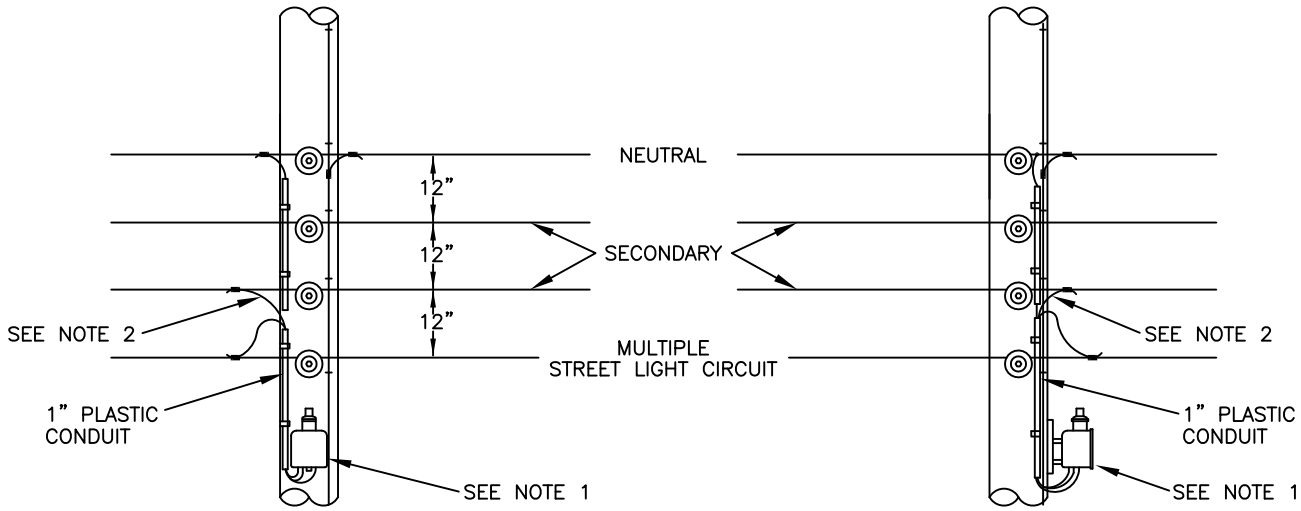
APPROVED: J.J McEVOY

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

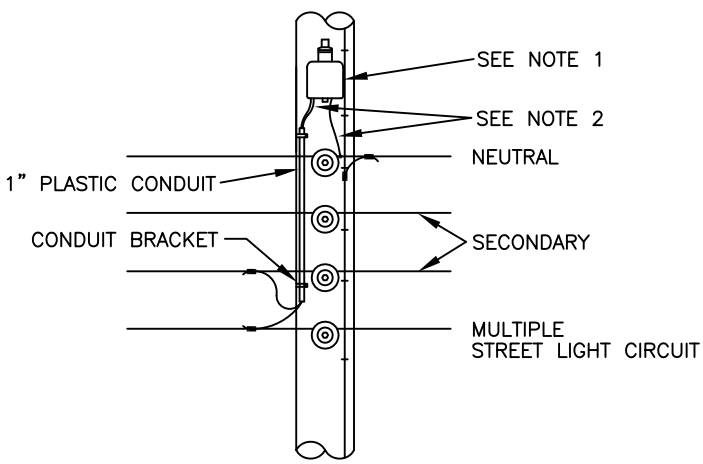
NO SCALE

120 VOLT GROUP CONTROLLED MULTIPLE STREET LIGHTING INSTALLATION (FOR MAINTENANCE ONLY)

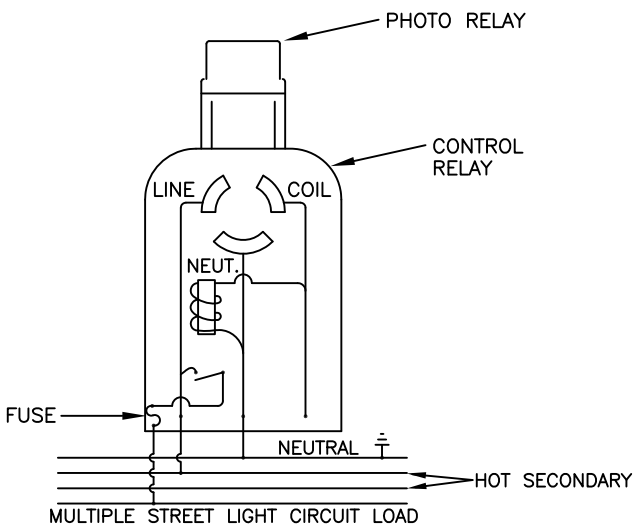
H-13.0.0



TYPICAL INSTALLATIONS WITH RELAY BELOW SECONDARY



TYPICAL INSTALLATION WITH RELAY ABOVE SECONDARY



SOCKET WIRING DIAGRAM

NOTES:

1. MOST PHOTO-ELECTRIC RELAYS AND NETWORKED LIGHTING CONTROLLERS REQUIRE AN UNOBSTRUCTED VIEW OF THE NORTH SKY. THEREFORE THE CONTROLLER CABINET MUST BE LOCATED ON THE POLE SUCH THAT THE TWIST LOCK RECEPTACLE MAY BE ORIENTED TO THE UNOBSTRUCTED NORTH. ARTIFICIAL ILLUMINATION IN EXCESS OF THE CONTROLLED CIRCUIT "OFF", THIS MUST BE AVOIDED BY SHIELDING OR RELOCATION OF THE UNIT.
2. CONDUCTOR SHOULD BE INSULATED #6 (MINIMUM) COPPER OR ALUMINUM CORRESPONDING TO THE MATERIAL OF THE SECONDARY.
3. GROUP CONTROL OF NEW 120 VOLT STREET LIGHTING INSTALLATIONS SHOULD ONLY BE USED WHERE INDIVIDUAL CONTROL IS NOT POSSIBLE.

CAUTION:
A STREET LIGHT CIRCUIT MAY BECOME ENERGIZED UPON CONNECTING A PHOTO RELAY.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	11/4/16	UPDATE NOTES	JCH	ELS	RDH
1	8/06/01	UPDATE DRAWING (TITLE CHANGE)	SMS	JES	JJM
0	8/09/96	CONVERTED TO CAD	JBM	RAS	JJM

ORIGINATOR: JBM

DRAWN BY: RAS

DATE: 8/9/96

APPROVED: J.J McEVOY
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

GROUP CONTROLLED MULTIPLE STREET LIGHTING SERVICE FOR VARIOUS VOLTAGE CIRCUITS USING RELAY M&S #174-696-007 "FOR MAINTENANCE ONLY"

H-14.0.0

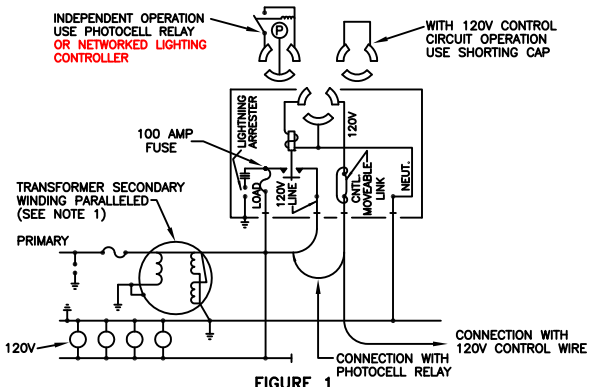


FIGURE 1
120 VOLTS (48 TO 100 AMPS) 2 WIRE
(FOR LESS THAN 24 AMPERES USE RELAY M&S # 174-69200-1)
(FOR 24-48 AMPERES USE RELAY M&S # 174-65000-7)

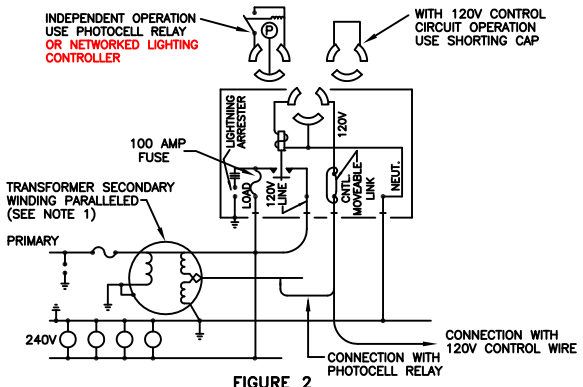


FIGURE 2
240 VOLTS (48 TO 100 AMPS) 2 WIRE
(FOR LESS THAN 24 AMPERES USE RELAY M&S # 174-66000-2)
(FOR 24-48 AMPERES USE RELAY M&S # 174-65000-7)

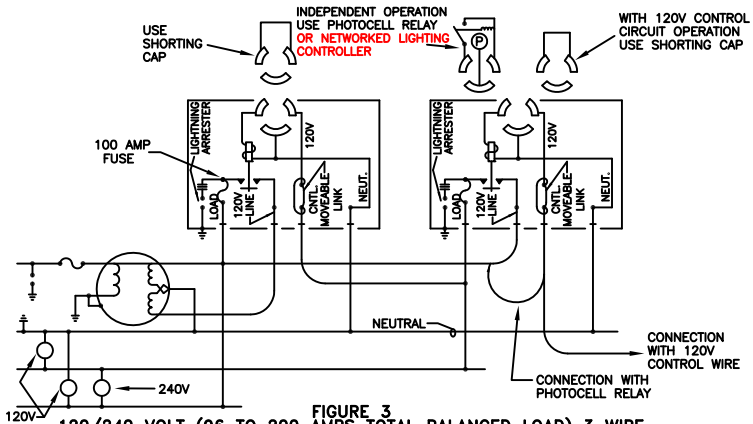


FIGURE 3
120/240 VOLT (96 TO 200 AMPS TOTAL BALANCED LOAD) 3 WIRE
(FOR LESS THAN 96 AMPERES TOTAL BALANCED LOAD (48 AMPS MAX. PER LEG) USE RELAY M&S # 174-64800-2)

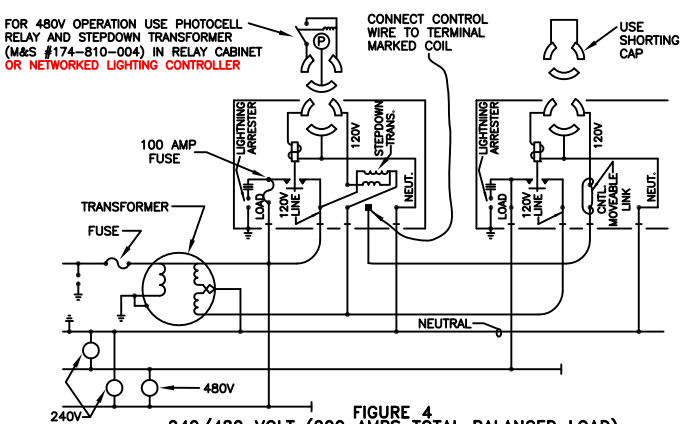


FIGURE 4
240/480 VOLT (200 AMPS TOTAL BALANCED LOAD) 3 WIRE

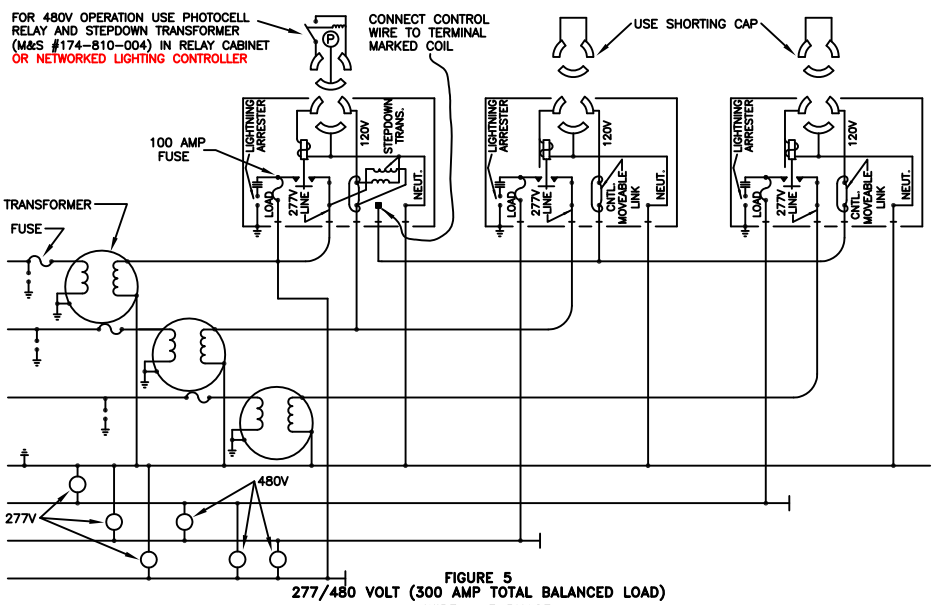


FIGURE 5
277/480 VOLT (300 AMP TOTAL BALANCED LOAD)
4 WIRE - 3 PHASE

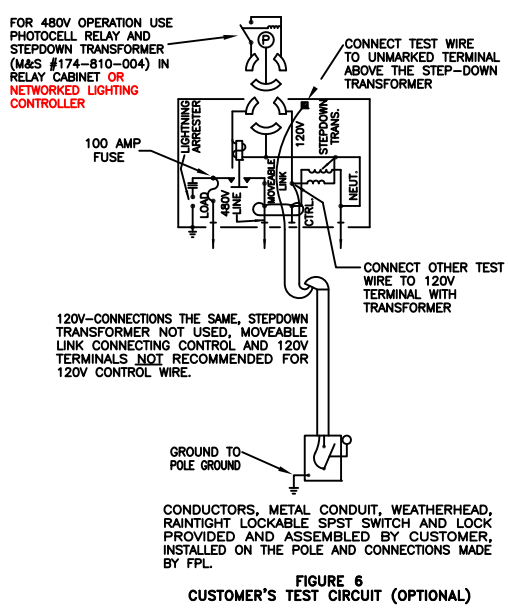


FIGURE 6
CUSTOMER'S TEST CIRCUIT (OPTIONAL)
480 VOLTS

NOTES:
1. IF THE TRANSFORMER SECONDARY WINDINGS ARE NOT PARALLELED, THE TRANSFORMER RATING WILL BE REDUCED 50%.
2. AT LEAST FOUR DRIVEN GROUNDS MUST BE INSTALLED PER MILE PER NESC.
3. CUSTOMER TO PROVIDE MEANS TO SWITCH SERVICE TO THEIR FACILITIES.
4. DRIVEN GROUNDS MUST NOT EXCEED 25 OHMS BY TEST.

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
3	11/4/16	UPDATE DRAWING	JCH	ELS	RDH
2	4/20/11	UPDATE TITLE	SMS	ELS	BXN
1	8/06/01	UPDATE DRAWING (TITLE & TEXT)	SMS	JES	JJM
0	8/09/96	CONVERTED TO CAD	JBM	RAS	JJM

FPL

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JMB DRAWN BY: RAS

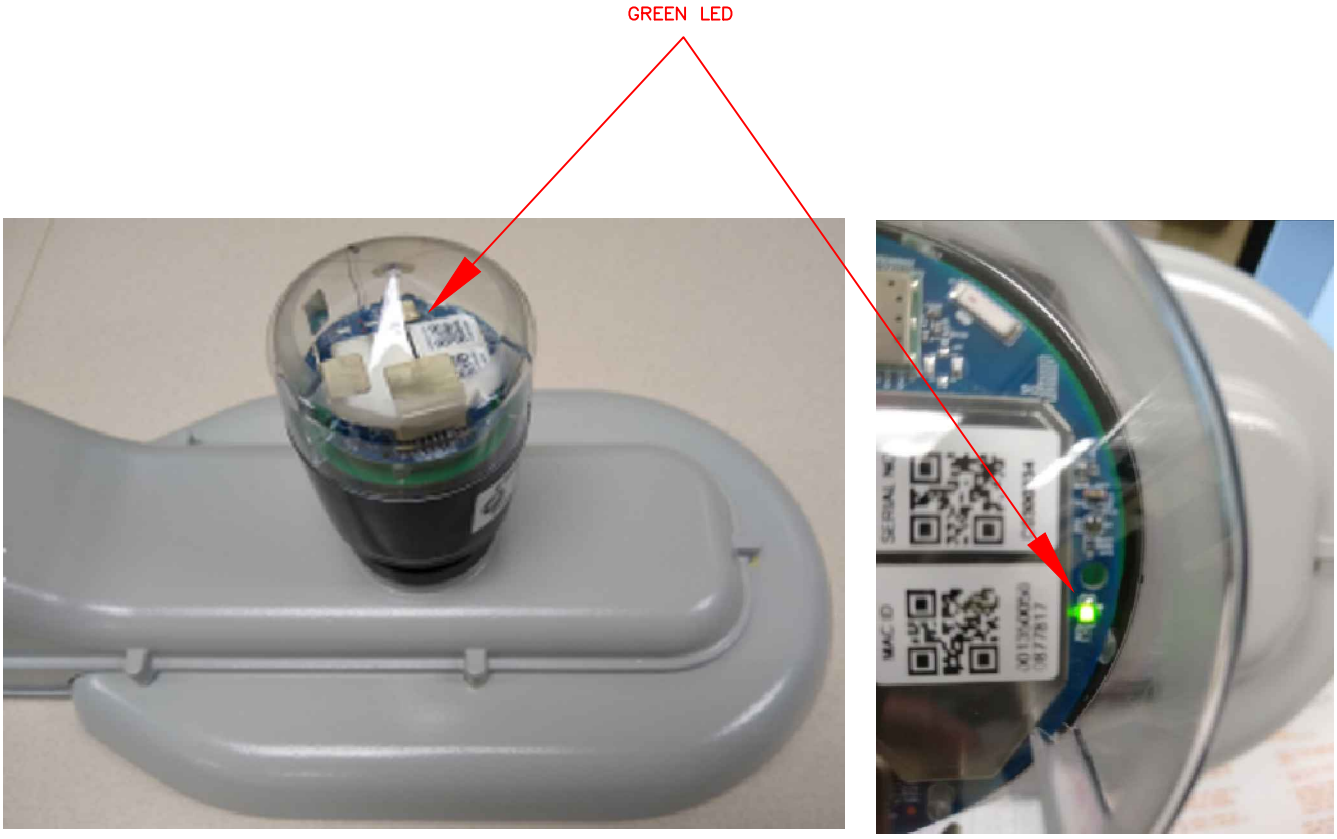
DATE: 8/9/96 APPROVED: J.J McEVOY NO SCALE

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

STREET LIGHT SMART NODE INSTALLATION AND INITIAL OPERATION

H-14.1.0

ONCE SMART NODE IS INSTALLED IN LUMINAIRE AND POWER IS APPLIED, THE LUMINAIRE SHOULD INITIALLY TURN ON, THEN AFTER A TIME WILL TURN OFF. VERIFY THAT THE GREEN LED IN THE SMART NODE STARTS BLINKING.



INSTALL INSTRUCTIONS:

1. TO INSTALL, LINE UP THE THREE POWER PRONGS (NOTE THAT ONE IS LARGER THAN THE OTHER TWO).
2. INSERT SMART NODE INTO PE SOCKET ON LUMINAIRE.
3. WHILE PRESSING DOWN, TWIST THE SMART NODE CLOCKWISE. THE SMART NODE SHOULD LOCK INTO PLACE AND CANNOT BE REMOVED IF PULLED UPWARD.

NOTE: ON SOME LUMINAIRES, IF ENOUGH TWISTING FORCE IS APPLIED, THE ENTIRE PE SOCKET MAY TURN. THIS IS OK.

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 7/16/19

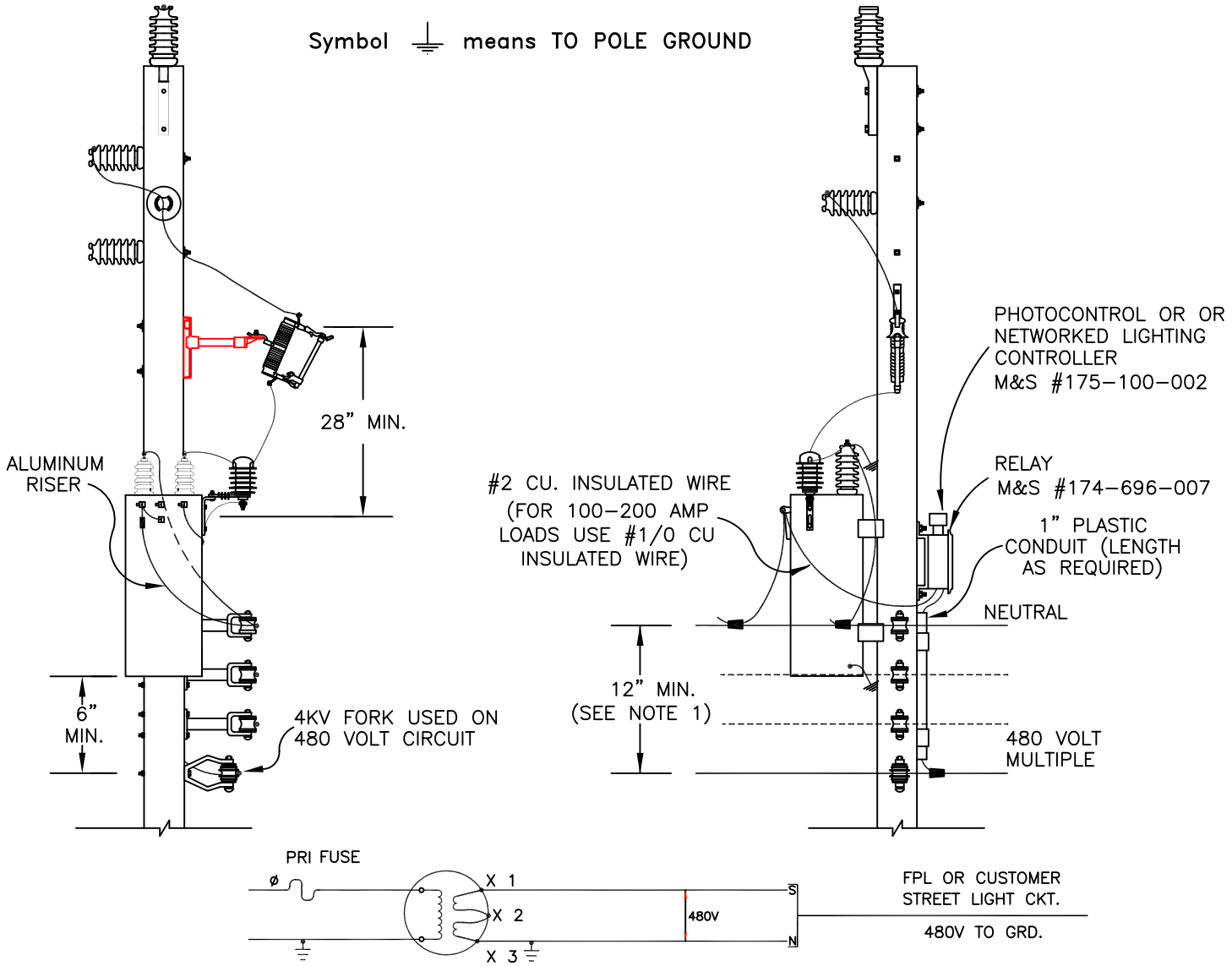
APPROVED: RICK D. HUFF

MANAGER OF ELECTRICAL STANDARDS

NO SCALE

TRANSFORMER INSTALLATION FOR STD. 480 VOLT GROUP CONTROLLED MULTIPLE STREET LIGHTING SERVICE "FOR MAINTENANCE ONLY"

H-15.0.0



TRANSFORMER SCHEMATIC

CAUTION: A STREET LIGHT CIRCUIT MAY BECOME ENERGIZED UPON INSTALLING PHOTOCONTROL.

NOTES:

1. LEAVE 36" BETWEEN NEUTRAL AND MULTIPLE IF SECONDARY IS ANTICIPATED.
2. IN SALT SPRAY AREAS BOND ALL STEEL PINS AND MOUNTING BRACKETS, USE SALT SPRAY ARRESTERS AND CUTOUTS AND INSTALL SALT SPRAY TYPE TRANSFORMER.
3. FOR TRANSFORMER FUSING, SEE TABLE ON SHEET I-19.0.0.
4. AT LEAST FOUR DRIVEN GROUNDS MUST BE INSTALLED PER MILE. A 650 VOLT SURGE ARRESTER (334-085-003) IS TO BE INSTALLED AT THESE LOCATIONS.
5. DRIVEN GROUNDS MUST NOT EXCEED 25 OHMS BY TEST,
6. RELAY 174-696-007 COMES WITH A 100 AMP LOAD SIDE FUSE. THE M&S NUMBER FOR A REPLACEMENT 100 AMP FUSE IS (531-081-000).

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
9	10/8/18	UPDATE BRACKET	DGY	ELS	RDH
8	6/7/17	UPDATE DRAWING	JCH	ELS	RDH
7	11/4/16	UPDATE DRAWING	JCH	ELS	RDH
6	4/20/11	UPDATE TITLE	ARR	ELS	BXN
5	8/16/05	UPDATE NOTES	SMS	ELS	JJM
4	8/06/01	(ADDED NOTE #6 AND SCHEMATIC)	SMS	JES	JJM
3	9/07/99	UPDATE DRAWING	SMS	JES	JJM

FPL

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM

DRAWN BY: DRM

DATE: 1/29/92

APPROVED: R.J. SALESKY
DIRECTOR, DISTRIBUTION ENGINEERING AND OPERATIONS SERVICES

NO SCALE

WIRING DIAGRAM FOR STD. 480 VOLT GROUP CONTROLLED MULTIPLE STREET LIGHTING SERVICE USING RELAY 174-696-007 "FOR MAINTENANCE ONLY"

H-15.0.1

FOR CIRCUITS UP TO 100 AMPS

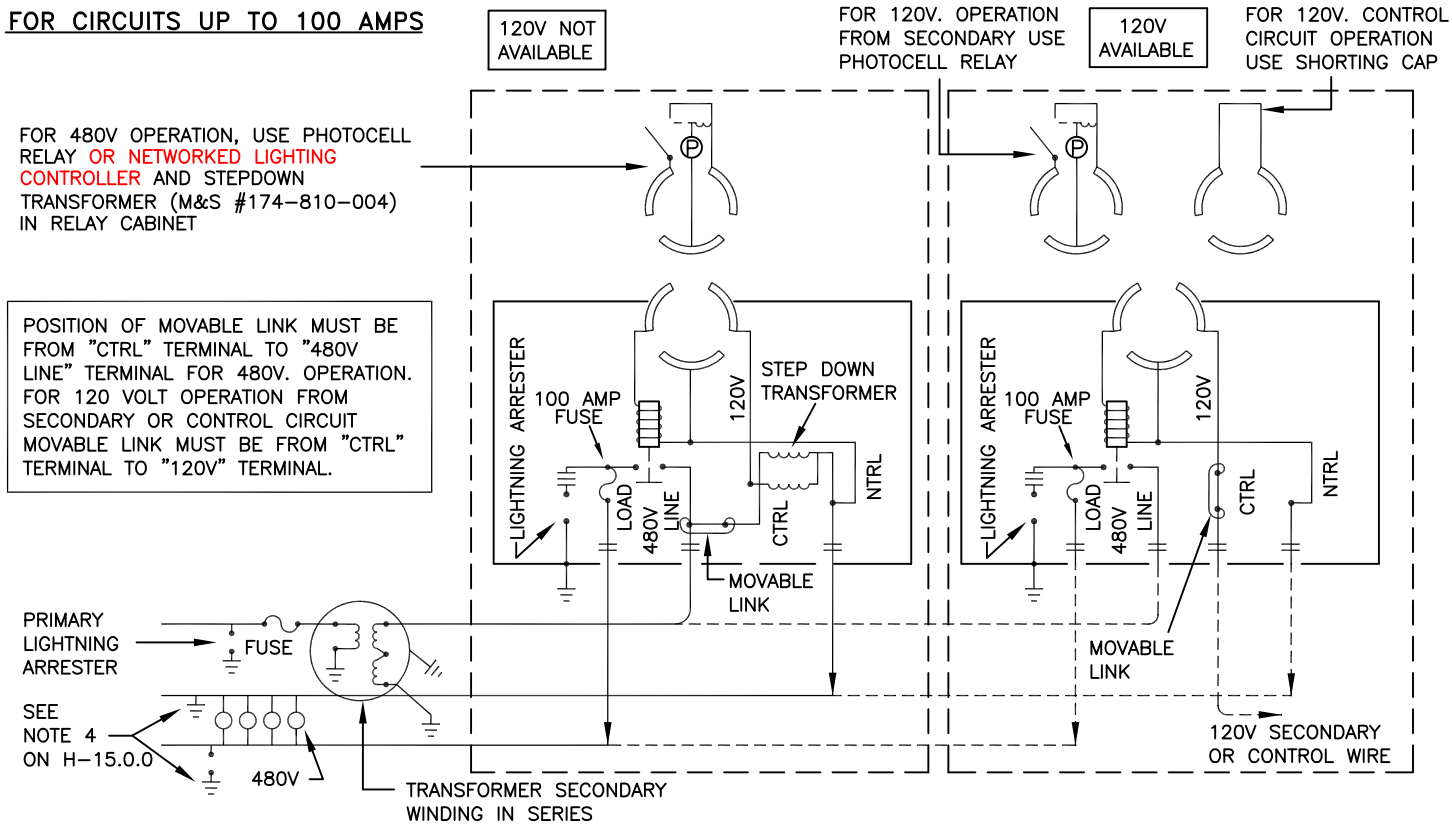


FIG. 2

FOR TOTAL BALANCED LOADS FROM 100 TO 200 AMPS

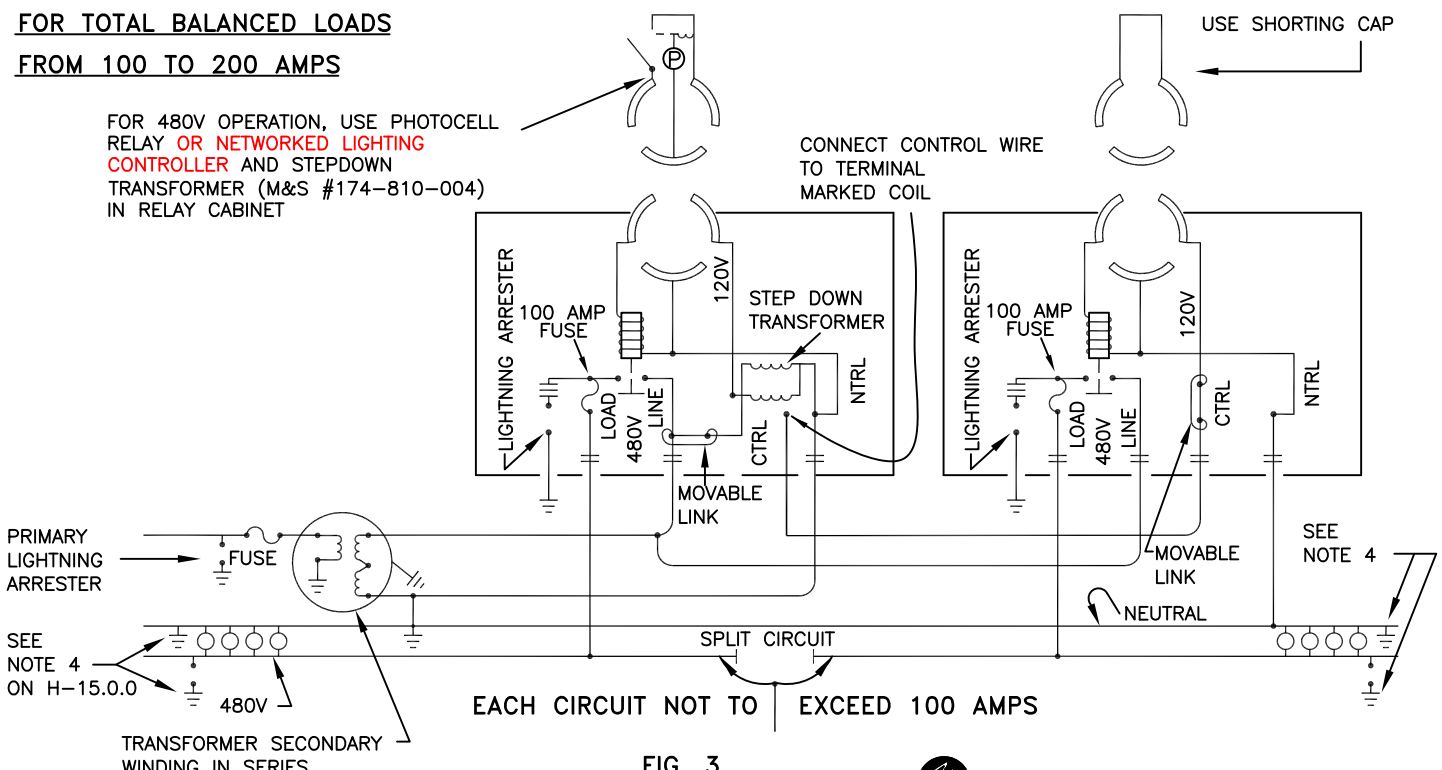


FIG. 3

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
4	11/4/16	UPDATE DRAWING	JCH	ELS	RDH
3	4/20/11	UPDATE TITLE	ARR	ELS	BXN
2	8/06/01	UPDATE DRAWING (TITLE & TEXT)	SMS	JES	JJM
1	9/04/99	UPDATE DRAWING (TEXT)	SMS	JES	JJM
0	6/30/93	ORIGINAL DRAWING	ARR	BAQ	RJS

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: ARR DRAWN BY: BAQ

DATE: 6/30/93 APPROVED: R.J. SALESKY NO SCALE

DIRECTOR, DISTRIBUTION ENGINEERING AND OPERATIONS SERVICES

H

AEL AND COOPER LED HOUSE SIDE LIGHT SHIELDS

H-16.0.0

MANUFACTURER	LUMINARE STYLE	LINE WATTS/NEMA LABEL	SHIELD TYPE	SHIELD PART NUMBER	SHIELD M&S
AEL	AMERICAN REVOLUTION	39/40 74/70	HOUSE SIDE SHIELD	RK247 AY LENS BLACK RFD246221	171-863-208
AEL	ATB2	138/140 133/130	HOUSE SIDE SHIELD (40 LED) BLACK	ATB2 LTS40 RFD245234	171-700-309
AEL	ATB2	138/140 133/130	HOUSE SIDE SHIELD (40 LED) WHITE	ATB2 LTS40 WH RFD317294	171-700-310
AEL	ATB2	274/270 268/270	HOUSE SIDE SHIELD (80 LED)	ATB2 LTS80 RFD245233	171-700-308
AEL	ATBL	259/260	HOUSE SIDE SHIELD	ATBL HSS RFD245232	171-700-307
AEL	ATBL	259/260	LIGHT TRESPASS SHIELD	ATBL LTS RFD302753	171-700-327
AEL	ATBM	118/120	HOUSE SIDE SHIELD	ATBM HSS RFD245231	171-700-306
AEL	ATBM	118/120	LIGHT TRESPASS SHIELD	ATBM LTS RFD302752	171-700-326
AEL	ATBS	40/40 47/50 76/80	HOUSE SIDE SHIELD	ATBS HSS RFD245178	171-700-303
AEL	ATBS	40/40 47/50 76/80	LIGHT TRESPASS SHIELD	ATBS LTS RFD302751	171-700-323
AEL	COMTEMPO	38/40 72/70	HOUSE SIDE SHIELD	RK11/245 HS RFD246224	171-861-204

MANUFACTURER	LUMINARE STYLE	LINE WATTS/NEMA LABEL	SHIELD TYPE	SHIELD PART NUMBER	SHIELD M&S
COOPER	GALLEON	113/110 225/230 445/450 558/560 333/330 501/500	HOUSE SIDE SHIELD	LS/HSS	171-550-205
COOPER	GALLEON	113/110 225/230 445/450 558/560	PERIMETER LIGHT SHIELD	LS/PFS	171-550-206
COOPER	NAVION	166/170 333/330	HOUSE SIDE SHIELD	LS/HSS	171-550-205
COOPER	UFLD	371/370	LIGHT SHIELD	TS2HW/NFFLD-AP	171-550-216
COOPER	UFLD	85/90 184/180	LIGHT SHIELD	TS2/UFLD-AP	171-550-218
COOPER	UFLD	50/50	LIGHT SHIELD	TS2LW/NFFLD-AP	171-550-219
COOPER	VERDEON	182/180 247/250	HOUSE SIDE SHIELD	HS-VERD	171-700-503
COOPER	VERDEON	182/180 247/250	VERTICAL GLARE SHIELD (FRONT OR BACK	VGS-F/B	171-700-504
COOPER	VERDEON	182/180 247/250	VERTICAL GLARE SHIELD (SIDE)	VGS-SIDE	171-700-505
COOPER	MESA	75/80 150/150	HOUSE SIDE SHIELD	LB/HSS-21	171-863-212

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 3/18/21

NO SCALE

APPROVED: RICK D. HUFF

MANAGER OF ELECTRICAL STANDARDS

CREE AND GE HOUSE SIDE LIGHT SHIELDS

H-16.0.1

MANUFACTURER	STYLE	LINE WATTS/NEMA LABEL	SHIELD TYPE	SHIELD PART NUMBER	HOUSE SHIELD M&S
CREE	OSQ MEDIUM	130/130 215/220	HOUSE SIDE SHIELD	OSQ-BLSMF	171-550-210
CREE	XSP1B-A	29/30 38/40 53/50	HOUSE SIDE SHIELD	XA-SP1BLS	171-700-001
CREE	XSP1 (XSPMD)	102/100	HOUSE SIDE SHIELD	XA-SP1BLS	171-700-001
CREE	XSP2 (XSPLG)	139/140	HOUSE SIDE SHIELD	XA-SP2BLS	171-700-004
CREE	RSWS	28/30 26/30 45/50 41/40	HOUSE SIDE SHIELD	RSW-BLSS	171-700-601
CREE	RSWS	28/30 26/30 45/50 41/40	FRONT SIDE SHIELD	RSW-FLSS	171-700-610
CREE	RSWS	28/30 26/30 45/50 41/40	CUL-DE-SAC SHIELD	RSW-CLSS	171-700-611
CREE	RSW LARGE AMBER (TURTLE)	92/90	FRONT SIDE SHIELD	RSW LARGE FRONT	171-700-624
CREE	RSW LARGE AMBER (TURTLE)	92/90	REAR SIDE SHIELD	RSW LARGE REAR	171-700-625
CREE	RSW XTRA LARGE AMBER (TURTLE)	142/140	FRONT SIDE SHIELD	RSW EXTRA LARGE FRONT	171-700-626
CREE	RSW XTRA LARGE AMBER (TURTLE)	142/140	REAR SIDE SHIELD	RSW EXTRA LARGE REAR	171-700-627

MANUFACTURER	LUMINARE STYLE	LINE WATTS/NEMA LABLE	SHIELD TYPE	SHIELD PART NUMBER	SHIELD M&S
GE	EASC	395/400 470/470	HOUSE SIDE SHIELD	ELS-EASX-RBL-DKBZ	171-550-225
GE	EFH1	150/150	HOUSE SIDE SHIELD	TSVDKBZ-EFH	171-550-215
GE	EPTC	83/80 65/70	HOUSE SIDE SHIELD	35-966710-13	171-863-226
GE	ERS2	157/160 193/190	HOUSE SIDE SHIELD	ELSHS-ERS2-GRAY	171-700-105
GE	POST TOP TRADITIONAL (WITH OR WITHOUT OPTICS)	39/40 73/70	HOUSE SIDE SHIELD	LSSX-TT	171-861-224

H

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

FPL

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 3/18/21

NO SCALE

APPROVED: RICK D. HUFF

MANAGER OF ELECTRICAL STANDARDS

HOLOPHANE AND KING LED HOUSE SIDE LIGHT SHIELDS

H-16.0.2

MANUFACTURER	STYLE	LINE WATTS/NEMA LABEL	SHIELD TYPE	SHIELD PART NUMBER	SHIELD M&S
HOLOPHANE	MONGOOSE	296/300	N/A	N/A	N/A
HOLOPHANE	GRANVILLE	39/40 60/60	HOUSE SIDE SHIELD (90 DEGREES)	GVDHSS90	171-863-258
HOLOPHANE	GRANVILLE	39/40 60/60	HOUSE SIDE SHIELD (120 DEGREES)	GVDHSS12	171-863-259
HOLOPHANE	GRANVILLE	39/40 60/60	HOUSE SIDE SHIELD (180 DEGREES)	GVDHSS18	171-863-260
HOLOPHANE	GRANVILLE (SILVER WITH LUNAR OPTICS	39/40 60/60	HOUSE SIDE SHIELD (90 DEGREES)	GVDHSL90	171-863-250
HOLOPHANE	GRANVILLE (SILVER WITH LUNAR OPTICS	39/40 60/60	HOUSE SIDE SHIELD (120 DEGREES)	GVDHSL12	171-863-251
HOLOPHANE	GRANVILLE (SILVER WITH LUNAR OPTICS	39/40 60/60	HOUSE SIDE SHIELD (180 DEGREES)	GVDHSL18	171-863-252
HOLOPHANE	BERN	58/60	N/A	N/A	N/A
HOLOPHANE	TEARDROP (WITH OR WITHOUT SKIRT)	144/140	HOUSE SIDE SHIELD (90 DEGREES)	LT3HSS90	171-875-013
HOLOPHANE	TEARDROP (WITH OR WITHOUT SKIRT)	144/140	HOUSE SIDE SHIELD (120 DEGREES)	LT3HSS120	171-875-014
HOLOPHANE	TEARDROP (WITH OR WITHOUT SKIRT)	144/140	HOUSE SIDE SHIELD (180 DEGREES)	LT3HSS180	171-875-015
HOLOPHANE	BERN AMBER (TURTLE)	56/60	FRONT OR REAR SHIELD	BERN	171-875-011

MANUFACTURER	LUMINARE STYLE	LINE WATTS/NEMA LABLE	SHIELD TYPE	SHIELD PART NUMBER	HOUSE SIDE SHIELD M&S
KING	K137 YARMOUTH	40/40 60/60	HOUSE SIDE SHIELD, 120 DEGREE, 3" TALL	K137P4NGHSS120/3	171-863-270
KING	K137 YARMOUTH	40/40 60/60	HOUSE SIDE SHIELD, 120 DEGREE, 6" TALL	K137P4NGHSS120/6	171-863-271
KING	K137 YARMOUTH	40/40 60/60	HOUSE SIDE SHIELD, 180 DEGREE, 3" TALL	K137P4NGHSS180/3	171-863-272
KING	K137 YARMOUTH	40/40 60/60	HOUSE SIDE SHIELD, 180 DEGREE, 6" TALL	K137P4NGHSS180/6	171-863-273

H

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 3/18/21

NO SCALE

APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

HID HOUSE SIDE LIGHT SHIELDS

H-16.0.3

MANUFACTURER	LUMINAIRE STYLE	LINE WATTS/NEMA LABEL	SHIELD TYPE	SHIELD PART NUMBER	SHIELD M&S
GE	GE LARGE COBRA HEAD (STANDARD AND CUTOFF)	200W 400W HPS	LIGHT SHIELD	ELS-M4TS008	171-715-000
CRS	GE SMALL COBRA HEAD (STANDARD AND CUTOFF)	70W 100W 150W HPS	SIDE/HOUSE SHIELD	LIGHT-SHLD-GE-SMCH-HS	171-720-000
CRS	GE LARGE COBRA HEAD (STANDARD AND CUTOFF)	200W 400W HPS	SIDE/HOUSE SHIELD	LIGHT-SHLD-GE-LGCH-HS	171-730-000
CRS	AEL SMALL COBRA HEAD (STANDARD AND CUTOFF)	70W 100W 150W HPS	SIDE/HOUSE SHIELD	LIGHT-SHLD-AEL-SMCH-HS	171-740-000
GE	GLASS ACORNS WITH MOGUL LAMP BASE	70W 100W 150W HPS 175W METAL HALIDE	LIGHT SHIELD	ILSHS-PT1MOG	171-760-000
GE	ACRYLIC ACORNS WITH MEDIUM LAMP BASE	100W METAL HALIDE	LIGHT SHIELD	ILSHS-PT1MED	171-761-000
COOPER	ACORNS WITH MOGUL LAMP BASE		HOUSE SIDE LIGHT SHIELD	AA2000	171-860-010
COOPER	ACORNS WITH MEDIUM LAMP BASE		HOUSE SIDE LIGHT SHIELD	AA2001	171-860-020

VANDAL SHIELDS

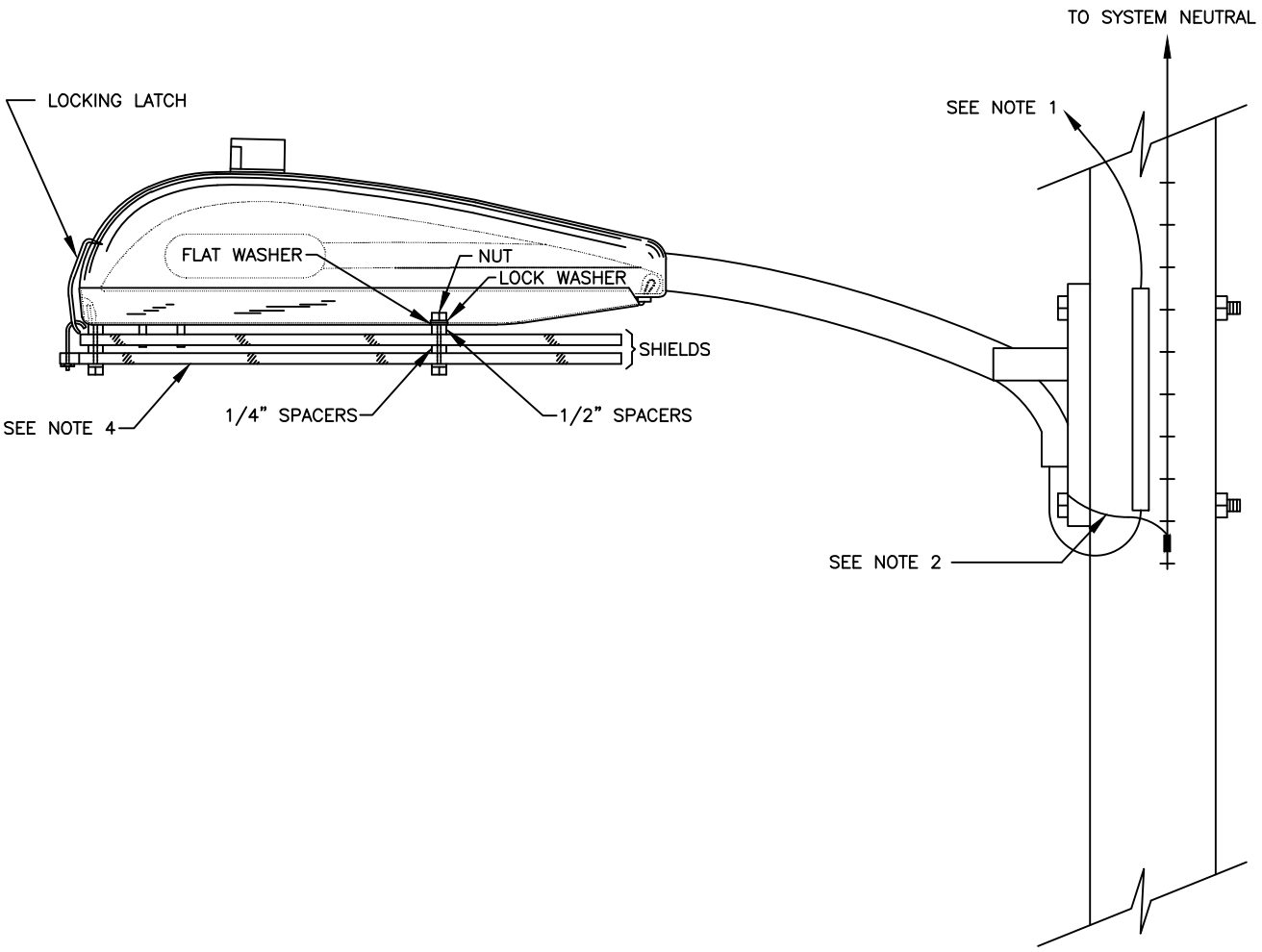
H-16.0.4

MANUFACTURER	LUMINAIRE STYLE	LINE WATTS/NEMA LABEL	SHIELD TYPE	SHIELD PART NUMBER	SHIELD M&S
CRS AND AERO	GE SMALL CUTOFF COBRAHEAD	70W 100W 150W HPS	VANDAL	AERO THERMATIC SHIELDS 0046-FL-200-FPL CRS FPLSH-S HLD	171-651-053
CRS	AEL SMALL CUTOFF COBRAHEAD	70W 100W 150W HPS	VANDAL	FPL-SCC-SHLD-AE	171-660-000
AERO	GE LARGE CUTOFF COBRAHEAD	200W 400W HPS	VANDAL	AERO THERMATIC SHIELDS 0046-FL-400-FPL	171-651-060
AERO	AEL LARGE CUTOFF COBRAHEAD	200W HPS	VANDAL	AERO THERMATIC SHIELDS 0046-FL-400-FPL	171-661-000
VANDAL SHIELD	GE DIRECTIONAL SECURITY	70W 100W 150W HPS	VANDAL	VANDAL SHIELD 0036-PF15-150-Y	171-651-258
AERO	GE LARGE CUTOFF COBRAHEAD	200W 400W HPS	VANDAL	AERO THERMATIC SHIELDS 0036-PF40-400	171-651-355
CRS AND AERO	CREE XSP1 (XSPMD) COBRAHEAD 170-700-001 170-700-002 170-700-003 170-700-004	29W 38W 53W 95W LED	VANDAL	AERO THERMATIC SHIELDS 0046-FL-200-FPL CRS FPLSL-S HLD	171-653-001
VANDAL SHIELD	CREE XSP2 (XSPLG) COBRAHEAD 170-700-005	139W LED	VANDAL	VANDAL SHIELD 0056-FL-XSP2-114	171-653-004
VANDAL SHIELD	COOPER NAVION 170-550-205 170-550-206	166W 333W LED	VANDAL	VANDAL SHIELD 0056-NVN-AF-EATON	171-653-102
VANDAL SHIELD	GE ERS2 170-700-105 170-700-106	157W 193W LED	VANDAL	VANDAL SHIELD 0056-ERS2-GE	171-653-104
VANDAL SHIELD	GE ERS4		VANDAL	VANDAL SHIELD 0056-FL-ERS4-114	171-653-105
VANDAL SHIELD	AEL ATBL	259W LED	VANDAL	VANDAL SHIELD 0056-ATBL-AEL	171-653-106
VANDAL SHIELD	AEL ATBM	118W LED	VANDAL	VANDAL SHIELD 0056-ATBM-AEL	171-653-107
VANDAL SHIELD	AEL ATB2	133W 268W LED	VANDAL	VANDAL SHIELD 0056-ATB2-AEL	171-653-108
VANDAL SHIELD	CREE RSW	28/30 26/30 45/50 41/40	VANDAL	VANDAL SHIELD 0056-RSWS-A-LED-FPL	171-653-109
COOPER LIGHTING	UFLD 170-550-219	50W	VANDAL	VSLW/NFFLD	171-653-110
COOPER LIGHTING	UFLD 170-550-217 170-550-218	85W 184W	VANDAL	VS/UFLD	171-653-111
COOPER LIGHTING	UFLD 170-550-216	371W	VANDAL	VSHW/NFFLD	171-653-112

H

CUTOFF COBRA HEAD LUMINAIRE WITH VANDAL SHIELD

H-16.1.0



H

NOTES:

1. ALL NOTES AND INSTALLATION INSTRUCTIONS APPLICABLE IN H-16.0.0 AND H-17.0.0 APPLY TO THE NEW VANDAL SHIELD FIXTURE INSTALLATIONS.

2. FOR GROUNDING DETAILS, SEE H-11.0.0.

3. BELOW ARE THE M&S NUMBERS FOR THE VANDAL SHIELDS.

M&S:	DESCRIPTION:
171-651-053	VANDAL SHIELD FOR SMALL (70 WATT TO 150 WATT HPSV) GE CUTOFF COBRA HEADS. VANDAL SHIELD TO BE MOUNTED ON LOWER HOUSING BY CREW.
171-651-060	VANDAL SHIELD FOR 200 WATT AND 400 WATT HPSV GE AND AMERICAN ELECTRIC CUTOFF COBRA HEADS. VANDAL SHIELD TO BE MOUNTED ON LOWER HOUSING BY CREW.

4. INSTALLATION INSTRUCTIONS ARE INCLUDED WITH THE VANDAL SHIELDS.

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
6	10/27/19	REMOVE TEXT	JCH	ELS	RDH
5	11/4/16	UPDATE NOTES	JCH	ELS	RDH
4	6/29/05	UPDATE NOTES	SMS	ELS	JJM
3	3/22/04	UPDATE NOTES	SMS	ELS	JJM
2	6/10/03	UPDATE NOTES	SMS	ELS	JJM
1	9/04/99	UPDATE DRAWING (TITLE)	SMS	JES	JJM
0	8/09/96	ORIGINAL DRAWING	JBM	RAS	JJM

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM DRAWN BY: RAS

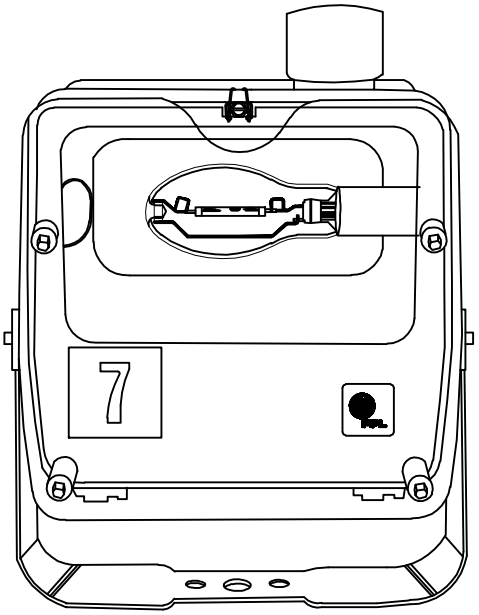
DATE: 8/9/96 APPROVED: J.J McEVOY

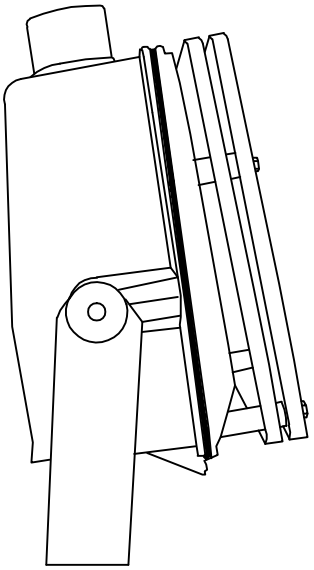
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

DIRECTIONAL SECURITY LUMINAIRES WITH VANDAL SHIELD

H-16.2.0





DIRECTIONAL SECURITY WITH VANDAL SHIELD	M&S
70 WATT	170-97110-1
200 WATT	170-97120-8
400 WATT	170-97130-5

NOTES:

1. SEE H-19.0.1 AND H-19.0.2 FOR INSTALLATION INSTRUCTIONS FOR DIRECTIONAL SECURITY LUMINAIRES.
2. A DIRECTIONAL SECURITY LUMINAIRE WITH A VANDAL SHIELD MUST BE ORDERED AND INSTALLED AS A COMPLETE UNIT. THIS VANDAL SHIELD CANNOT BE INSTALLED IN THE FIELD ON AN EXISTING LUMINAIRE.

FPL

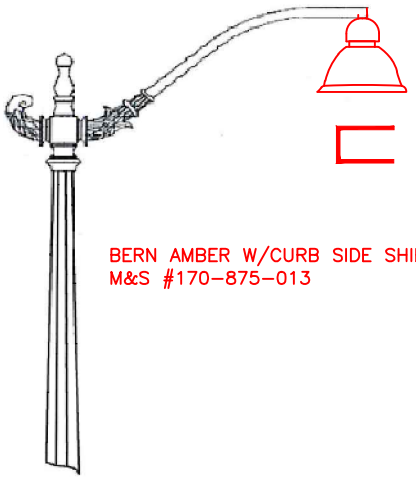
OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: SMS DRAWN BY: PRH

DATE: 9/28/99 APPROVED: J.J. MCEVOY NO SCALE

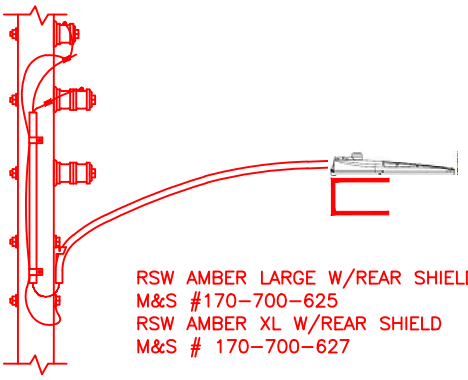
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.



BERN AMBER W/CURB SIDE SHIELD
M&S #170-875-013

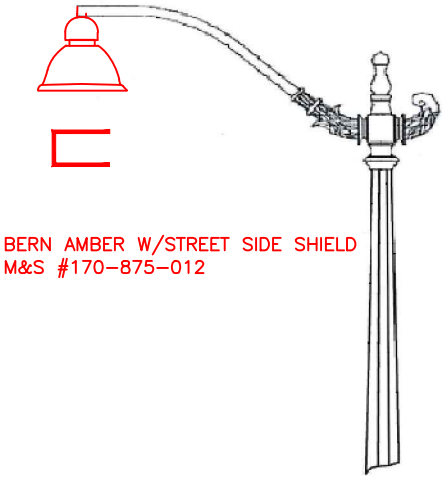
FIG. 1
BERN CURB SIDE SHIELD



RSW AMBER LARGE W/REAR SHIELD
M&S #170-700-625
RSW AMBER XL W/REAR SHIELD
M&S # 170-700-627

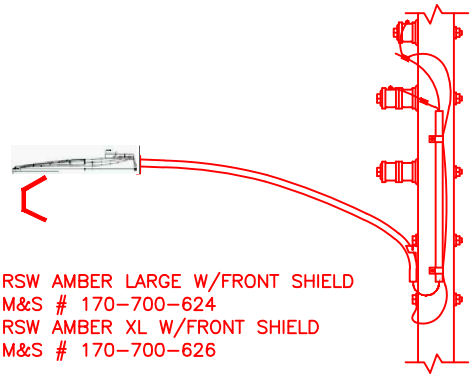
FIG. 2
RSW REAR SHIELD

BEACH



BERN AMBER W/STREET SIDE SHIELD
M&S #170-875-012

FIG. 3
BERN STREET SIDE SHIELD



RSW AMBER LARGE W/FRONT SHIELD
M&S # 170-700-624
RSW AMBER XL W/FRONT SHIELD
M&S # 170-700-626

FIG. 4
RSW FRONT SHIELD

FWC GUIDELINES REQUIRE THE AMBER LIGHT AND SHIELDING, SHIELDING IS NOT OPTIONAL

F P L
OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL
DRAWN BY: E. SCHILLING
DATE: 4/26/19
APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS
NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

GE POST TOP TRADITIONAL ZERO CUTOFF WITH OPTICS AND SHIELD

H-16.4.0

GE POST TOP TRADITIONAL WITH OPTICS

ONE PIECE OPTICS
M&S #171-861-230

GE POST TOP TRADITIONAL WITHOUT OPTICS (ZERO CUTOFF)

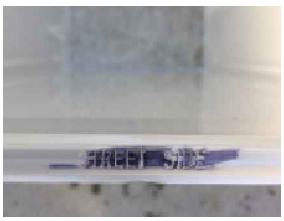
NOTES:

1. FIXTURE IS ONLY ZERO CUTOFF WITHOUT THE OPTICS
2. LOCATION OF STREET SIDE STAMP FOR ORIENTATION CIRCLED IN RED.

GE POST TOP TRADITIONAL WITH OPTICS AND HOUSE SIDE SHIELD

SHIELD M&S #171-861-224

STREET SIDE STAMPS



F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: E. SCHILLING

DATE: 5/16/2020

APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

TYPICAL STREET LIGHT BRACKET MOUNTING

H-17.0.0

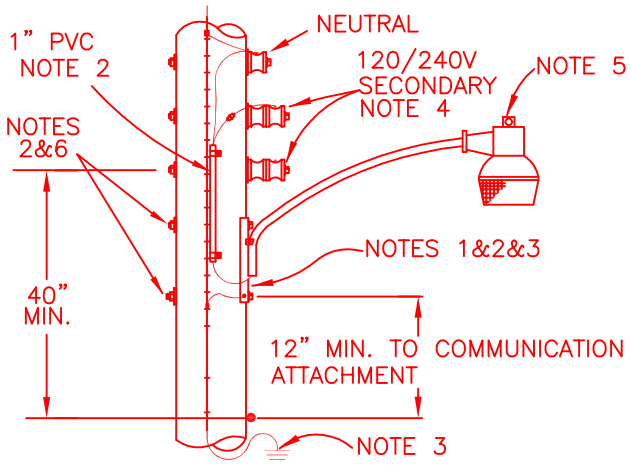


FIG. 1
INDIVIDUAL CONTROL

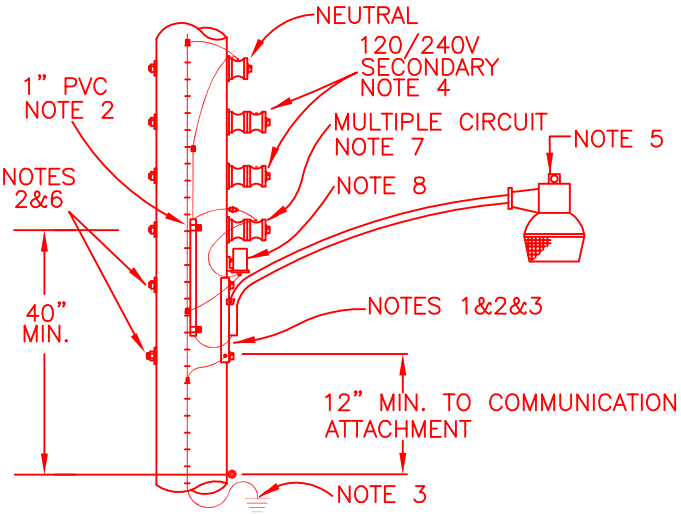


FIG. 2
GROUP CONTROL

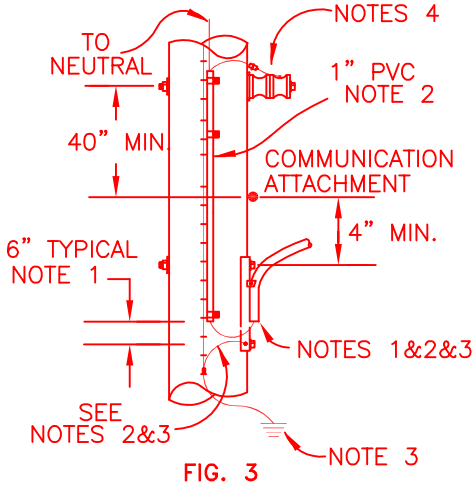


FIG. 3
BRACKET BELOW COMMUNICATION ATTACHMENT WHERE CABLE MUST GO THRU COMMUNICATION SPACE

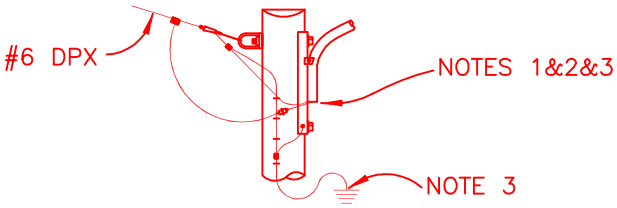


FIG. 4
GROUP OR INDIVIDUAL CONTROL SERVED BY OVERHEAD CABLE

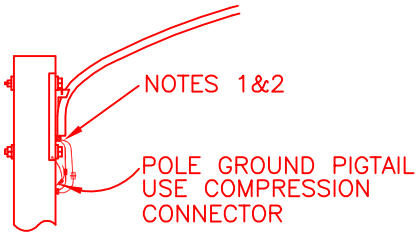


FIG. 5
GROUP OR INDIVIDUAL CONTROL SERVED BY UNDERGROUND CABLE

NOTES:

1. THE BRACKET/LUMINAIRE AND SURGE ARRESTOR MUST CLEAR SECONDARY CONDUCTORS BY 12" MINIMUM, PRIMARY CONDUCTORS BY 36" MINIMUM, TRANSMISSION CONDUCTOR (THRU 240KV) BY 120" MINIMUM AND COMMUNICATION ATTACHMENTS BY 12" MINIMUM.
2. SECURE BRACKET CABLE (#12 2/C CU) M&S 110-104-001 TO POLE EVERY 24" WITH CABLE CLIPS M&S 176-052-000 (WOOD POLES) AND MASONRY ANCHORS M&S 500-100-006 (CONCRETE POLES). FOR CABLE WITHIN AND BELOW COMMUNICATIONS SPACE, INSTALL IN 1" PVC, M&S 164-275-009 AND ATTACH USING BRACKET M&S 530-122- 008 EVERY 24".
3. GROUNDING OF STREET LIGHT BRACKETS SEE H-11.0.0.
4. THE STREET LIGHT CONDUCTORS (M&S #110-104-001) SHOULD BE WRAPPED AROUND THE LINE CONDUCTOR 2 OR 3 TURNS TO REDUCE POSSIBLE FAILURE DUE TO VIBRATION, USING CONNECTORS #103-070-211 OR #103-070-229.
5. A NETWORKED LIGHTING CONTROLLER (SMART NODE) IS INSTALLED ON LUMINAIRES WHICH ARE INDIVIDUALLY CONTROLLED. A SHORTING CAP IS INSTALLED ON LUMINAIRES WHICH ARE GROUP CONTROLLED.
6. FASTENERS FOR MOUNTING STREET LIGHT BRACKETS SEE H-17.7.0. LAG SCREWS FOUND IN THE FIELD SHOULD BE REMOVED AND REPLACED BY APPROVED HARDWARE OR BANDING.
7. USE 4KV FORK M&S 141-704-001 TO IDENTIFY 480V CIRCUITS.
8. AT LEAST FOUR 650V SURGE ARRESTERS (M&S 334-085-003), ALONG WITH DRIVEN GROUNDS, ARE TO BE INSTALLED PER MILE ON 480V CIRCUITS.

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
8	5/18/21	UPDATE ENTIRE DRAWING	DRC	GXS	EMA
7	10/27/19	UPDATE DRAWING AND RELOCATE TABLE	JCH	ELS	RDH
6	4/21/17	UPDATE DRAWING AND ADD TABLE	JCH	ELS	RDH
5	11/4/16	UPDATE NOTES	JCH	ELS	RDH
4	6/5/13	ADD LINE TO TABLE	JCH	ELS	WM
3	11/14/12	ADD NOTE 7	ARR	ELS	WM

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM DRAWN BY: RAS

DATE: 8/9/96 APPROVED: J.J McEVOY

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

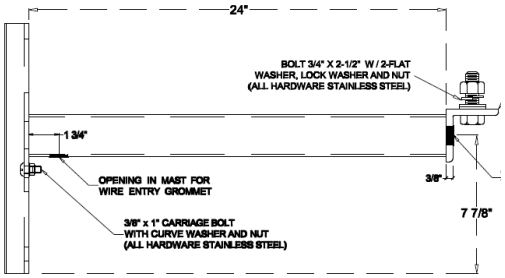
UNIVERSAL SIDE MOUNT BRACKETS

H-17.1.1

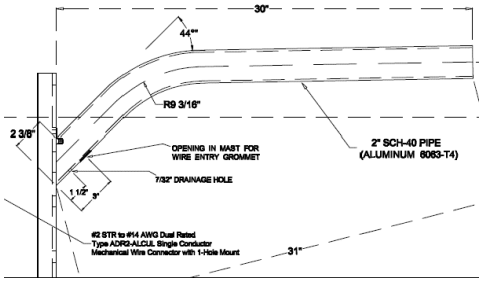
M&S NUMBER	BRACKET MOUNTING STYLE*	BRACKET TYPE OR USED WITH FIXTURE TYPE	BRACKET LENGTH	BRACKET MATERIAL	BRACKET COLOR	BRACKET RISE FROM CENTER OF MOUNTING PLATE	BRACKET RISE FROM TOP BOLT OF MOUNTING PLATE	HOLE SPACING FOR MOUNTING	SLIPFITTER SIZE
172-265-005	SIDE MOUNT (OCTAGONAL 37' ONLY)	AREA	1'-6"	ALUMINUM	BLACK	NONE	NONE	9.5" AND 12"	2"
172-281-101	CLAMP-ON	TEARDROP	4'-0"	ALUMINUM	BLACK	18"	18"	N/A	2"
172-201-050	UNIVERSAL SIDE MOUNT	DIRECTIONAL FLOOD	2'-0"	ALUMINUM	SHINY ALUMINUM	NONE	NONE	8" AND 12"	N/A
172-257-003	UNIVERSAL SIDE MOUNT	OPEN BOTTOM OR COBRAHEAD	2'-6"	ALUMINUM	SHINY ALUMINUM	7"	2"	8" AND 12"	2"
172-281-000	UNIVERSAL SIDE MOUNT	ROADWAY OR AREA	4'-0"	ALUMINUM	SHINY ALUMINUM	15"	9"	12"	2"
172-281-001	UNIVERSAL SIDE MOUNT	ROADWAY OR AREA	4'-0"	ALUMINUM	BLACK	15"	9"	12"	2"
172-281-004	UNIVERSAL SIDE MOUNT	TEARDROP	6'-0"	ALUMINUM	BLACK	36"	30"	12"	2"
172-281-010	UNIVERSAL SIDE MOUNT	ROADWAY OR AREA	6'-0"	ALUMINUM	SHINY ALUMINUM	36"	30"	12"	2"
172-257-006	UNIVERSAL SIDE MOUNT	ROADWAY OR AREA	8'-0"	ALUMINUM	SHINY ALUMINUM	32"	26"	12"	2"
172-257-007	UNIVERSAL SIDE MOUNT	ROADWAY OR AREA	8'-0"	ALUMINUM	BLACK	32"	26"	12"	2"
172-281-002	UNIVERSAL SIDE MOUNT	ROADWAY OR AREA	10'-0"	ALUMINUM	SHINY ALUMINUM	42	36"	12"	2"
172-281-003	UNIVERSAL SIDE MOUNT	ROADWAY OR AREA	10'-0"	ALUMINUM	BLACK	42"	36"	12"	2"
172-262-000	UNIVERSAL SIDE MOUNT	ROADWAY OR AREA	12'-0"	ALUMINUM	SHINY ALUMINUM	46"	40"	12"	2"
172-265-000	UNIVERSAL SIDE MOUNT	ROADWAY OR AREA	12'-0" (HI RISE)	ALUMINUM	SHINY ALUMINUM	84"	78"	12"	2"

* UNIVERSAL SIDE MOUNT - MAY BE SIDE MOUNTED ON BOTH WOOD AND CONCRETE

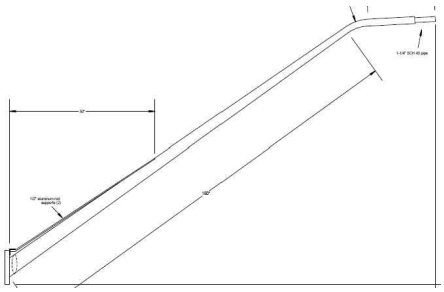
2FT SIDE MOUNT (172-201-050)



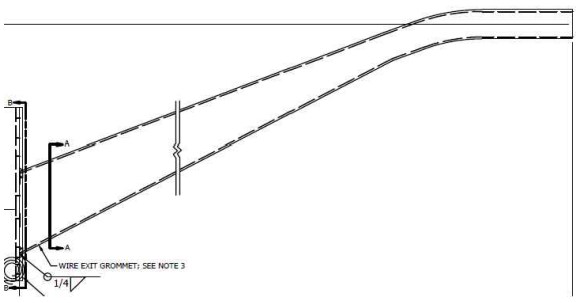
2FT 6IN SIDE MOUNT (172-257-003)



12FT HI-RISE (172-265-000)



6FT-12FT SIDE MOUNT (172-281-004, 172-281-010, 172-257-006, 172-257-007, & 172-262-000)



NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	3/6/21	UPDATE TABLE	DRC	GXS	RDH
1	8/24/20	UPDATE TABLE & ADD PICTURES	DRC	GXS	RDH

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OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 4/26/19

NO SCALE

APPROVED: RICK D. HUFF

MANAGER OF ELECTRICAL STANDARDS

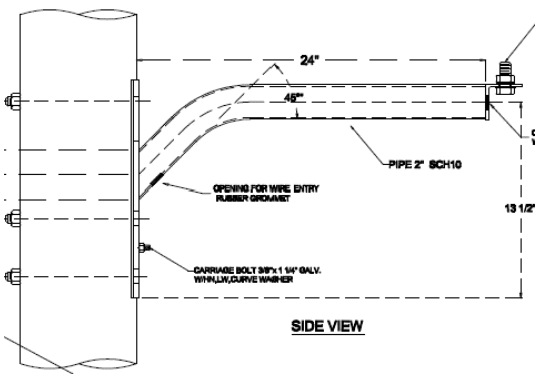
H

WOOD SIDE MOUNT BRACKETS

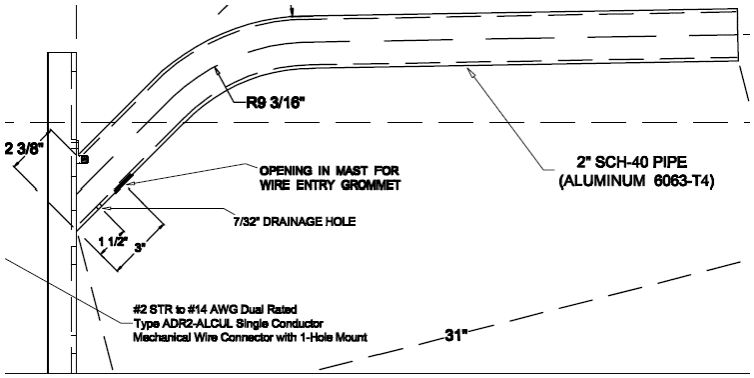
H-17.1.2

M&S NUMBER	BRACKET MOUNTING STYLE	BRACKET TYPE OR USED WITH FIXTURE TYPE	BRACKET LENGTH	BRACKET MATERIAL	BRACKET COLOR	BRACKET RISE FROM CENTER OF MOUNTING PLATE	BRACKET RISE FROM TOP BOLT OF MOUNTING PLATE	HOLE SPACING FOR MOUNTING	SLIPFITTER SIZE
172-201-019	SIDE MOUNT (WOOD ONLY)	DIRECTIONAL FLOOD	2'-0"	GALVANIZED STEEL	DULL GRAY	5"	1"	8"	N/A
172-201-078	SIDE MOUNT (WOOD ONLY)	DIRECTIONAL FLOOD	2'-0"	ZINC COATED STEEL	DULL GRAY	5"	1"	8"	N/A
172-203-003	SIDE MOUNT (WOOD ONLY)	OPEN BOTTOM OR COBRAHEAD	2'-6"	GALVANIZED STEEL	DULL GRAY	4"	0"	8"	2"
172-203-071	SIDE MOUNT (WOOD ONLY)	OPEN BOTTOM OR COBRAHEAD	2'-6"	ZINC COATED STEEL	DULL GRAY	4"	0"	8"	1-1/4"
172-205-006	SIDE MOUNT (WOOD ONLY)	OPEN BOTTOM OR COBRAHEAD	6'-0"	GALVANIZED STEEL	DULL GRAY	27"	21"	12"	2"
172-205-073	SIDE MOUNT (WOOD ONLY)	OPEN BOTTOM OR COBRAHEAD	6'-0"	ZINC COATED STEEL	DULL GRAY	27"	21"	12"	1-1/4"

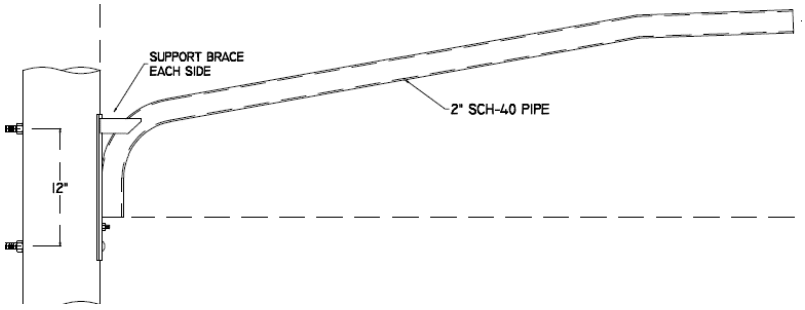
2FT SIDE MOUNT (172-201-019 & 172-201-078)



2FT 6IN SIDE MOUNT (172-203-003 & 172-203-071)



6FT SIDE MOUNT (172-205-006 & 172-205-073)



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OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 4/26/19

APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

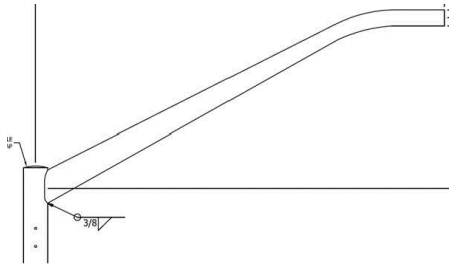
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	3/6/21	UPDATE TABLE	DRC	GXS	RDH
1	8/24/20	UPDATE TABLE & ADD PICTURES	DRC	GXS	RDH

TENON MOUNT LONG ARM BRACKETS

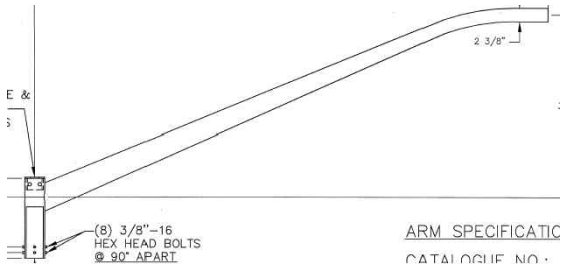
H-17.1.3

M&S NUMBER	BRACKET CONFIGURATION	BRACKET COLOR	BRACKET ARM LENGTH	BRACKET MOUNTING STYLE	BRACKET USED WITH FIXTURE TYPE	BRACKET MATERIAL	BRACKET RISE FROM TOP OF POLE	BRACKET RISE FROM CENTER OF ARM ATTACHMENT TO MOUNTING TENON	SLIPFITTER SIZE
172-265-002	SINGLE ARM	BLACK	68"	FOR 3" OD X 9" TALL POLE TENON	ROADWAY OR AREA	ALUMINUM	34"	24"	2"
172-282-001	SINGLE ARM (WEST LIBERTY)	BLACK	72"	FOR 3" OD X 9" TALL POLE TENON	TEARDROP OR DOMUS	ALUMINUM	42"	32"	2"
172-282-002	DUAL ARM (WEST LIBERTY)	BLACK	72" (EACH ARM)	FOR 3" OD X 9" TALL POLE TENON	TEARDROP OR DOMUS	ALUMINUM	42" (EACH ARM)	32" (EACH ARM)	2"
172-265-001	SINGLE ARM	BLACK	90"	FOR 3" OD X 9" TALL POLE TENON	ROADWAY OR AREA	ALUMINUM	42"	32"	2"
172-265-101	SINGLE ARM	NOT PAINTED	90"	FOR 3" OD X 9" TALL POLE TENON	ROADWAY OR AREA	ALUMINUM	42"	32"	2"
172-277-000	DUAL(FLORIDIAN)	BLACK	20" PER SIDE FROM POLE TENON	FOR 3" OD X 7.25" TALL POLE TENON	BLACK GRANVILLE	ALUMINUM	17"	12"	N/A
172-277-010	DUAL(FLORIDIAN)	GREEN	20" PER SIDE FROM POLE TENON	FOR 3" OD X 7.25" TALL POLE TENON	BLACK GRANVILLE	ALUMINUM	17"	12"	N/A

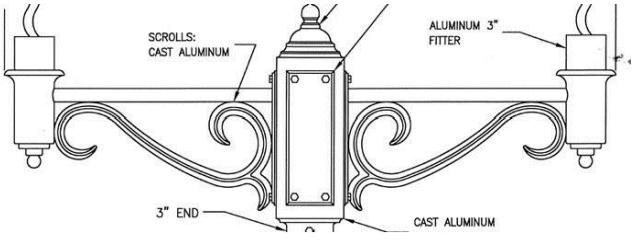
SINGLE ARM (172-265-002)



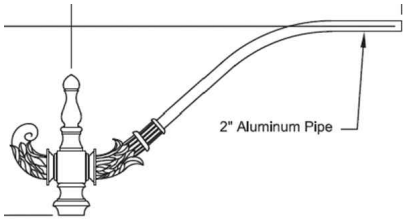
SINGLE ARM (172-265-001)



FLORIDIAN DUAL BRACKET (172-277-000 & 172-277-010 BLACK OR GREEN



SINGLE ARM WEST LIBERTY



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OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 8/24/20

APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

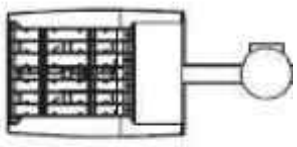
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	3/6/21	UPDATE TABLE	DRC	GXS	RDH

TENON MOUNT SPOKE BRACKETS

H-17.1.4

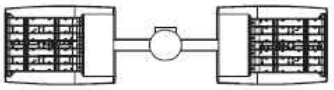
M&S NUMBER	BRACKET CONFIGURATION	BRACKET COLOR	BRACKET ARM LENGTH	BRACKET MOUNTING STYLE	BRACKET USED WITH FIXTURE TYPE	BRACKET MATERIAL	BRACKET RISE FROM TOP OF POLE	SLIPFITTER SIZE
172-330-010	SINGLE ARM	BRONZE	14"	FOR 3" OD X 3" TALL POLE TENON	GALLEON OR SHOEBOX	ALUMINUM	5.5"	2"
172-330-011	SINGLE ARM	BLACK						
172-330-012	SINGLE ARM	GRAY						
172-330-013	2 ARMS@180°	BRONZE						
172-330-014	2 ARMS@180°	BLACK						
172-330-015	2 ARMS@180°	GRAY						
172-330-016	3 ARMS@120°	BRONZE	20"					
172-330-017	3 ARMS@120°	BLACK						
172-330-018	3 ARMS@120°	GRAY						
172-330-019	4 ARMS@90°	BRONZE						
172-330-020	4 ARMS@90°	BLACK						
172-330-021	4 ARMS@90°	GRAY						
172-330-022	2 ARMS@90°	BRONZE						
172-330-023	2 ARMS@90°	BLACK						
172-330-024	2 ARMS@90°	GRAY						
172-330-025	3 ARMS@90°	BRONZE						
172-330-026	3 ARMS@90°	BLACK						
172-330-027	3 ARMS@90°	GRAY						
172-330-029	SINGLE ARM	BLACK	14"	FOR 3" OD X 9" TALL POLE TENON	GALLEON OR SHOEBOX	ALUMINUM	10.5"	2"
172-330-032	2 ARMS@180°							
172-330-035	3 ARMS@120°		20"					
172-330-038	4 ARMS@90°							
172-330-041	2 ARMS@90°							
172-330-044	3 ARMS@90°							

SINGLE ARM



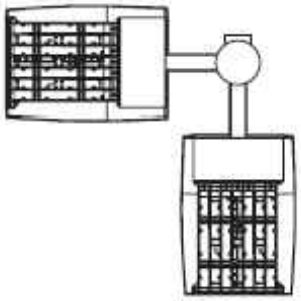
2 ARMS AT 180°

2 @ 180°

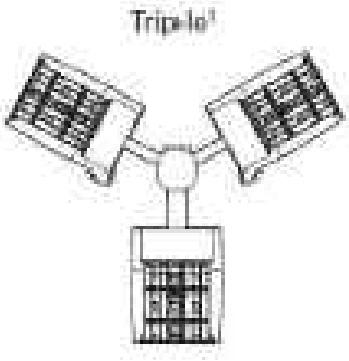


2 ARMS AT 90°

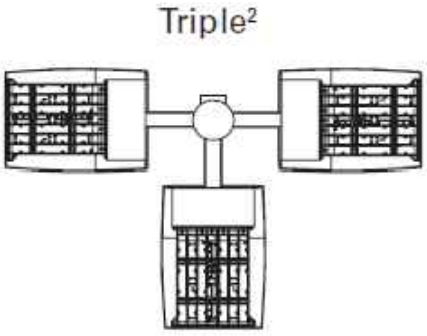
2 @ 90°



3 ARMS AT 120°

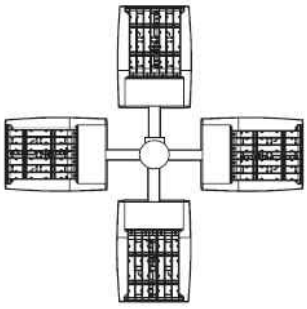


3 ARMS AT 90°



4 ARMS AT 90°

4 @ 90°



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OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 8/24/20

APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	3/6/21	UPDATE TABLE	DRC	GXS	RDH

STREET LIGHT 'ROADWAY' AND 'AREA' LIGHTING ASSEMBLIES (POLES/BRACKET/LUMINAIRE)

H-17.3.0

REFERENCE TABLES TO DETERMINE MATING OF APPROVED STREET LIGHT ASSEMBLIES (POLE/BRACKET/LUMINAIRE)

ROADWAY LIGHTING

POLES	BRACKETS	LUMINAIRES							
WOOD 35', 40', 45' (SIDE MOUNTED)	2.5', 4', 6', 8', 10', 12' (NOT PAINTED) SIDE MOUNT	CREE LEDWAY RED TURTLE	CREE RSW RSW AMBER	CREE XSP2	AEL ATBS	AEL ATBM	AEL ATBL	AEL ATB2 (GRAY)*	COOPER VERDEON
STANDARD CONCRETE 30', 35', 40', 45' (SIDE MOUNTED)									
WOOD 35', 40', 45' (SIDE MOUNTED)	4', 8', 10" BLACK SIDE MOUNT	AEL ATB2 (BLACK)							
STANDARD CONCRETE 30', 35', 40', 45' (SIDE MOUNTED)									
OCTAGONAL CONCRETE 37' (TENON MOUNT 3" X 9")	6', 8' BLACK TENON MOUNT								
ALSO AVAILABLE WITH PROVISION FOR PEDESTRIAN BKT @ 16' MOUNT	48" BLACK PEDESTRIAN SIDE MOUNT								

*NOTE: AEL ATB2 BRONZE IS ONLY AVAILABLE FOR HYBRIDS

AREA LIGHTING

POLES	BRACKETS	LUMINAIRES
WOOD 35', 40', 45' (SIDE MOUNTED)	2.5" SIDE MOUNT	COOPER FLOOD UFLD
STANDARD CONCRETE 30', 35', 40', 45' (SIDE MOUNTED)		
CONCRETE 20'*, 35' TENON MOUNT (3" X 3")	14' TENON MOUNT SINGLE OR DUAL ARM	COOPER GALLEON BLACK, BRONZE OR GRAY (NOTE: SELECT SAME COLOR FOR LUMINAIRE AND BRACKET)
BLACK ROUND TAPERED CONCRETE 14', 21', 33' TENON MOUNT (3" X 3")		
OCTAGONAL CONCRETE 37' TENON MOUNT (3" X 9")	14' TENON MOUNT SINGLE OR DUAL ARM	

*NOTE: THE 20' POLE IS RESTRICTED TO THE 113W ONLY.

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	3/6/21	UPDATE TABLES	DRC.	GXS	RDH
1	3/31/20	UPDATE TABLES	DRC.	ELS	RDH

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OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 3/14/19

APPROVED: RICK D. HUFF

MANAGER OF ELECTRICAL STANDARDS

NO SCALE

H

STREET LIGHT 'PENDANT' LIGHTING ASSEMBLIES (POLES/BRACKET/LUMINAIRE)

H-17.4.0

REFERENCE TABLES TO DETERMINE MATING OF APPROVED STREET LIGHT ASSEMBLIES (POLE/BRACKET/LUMINAIRE)

PENDANT LIGHTING

POLES	BRACKETS	LUMINAIRES
BLACK WASHINGTON 23' TENON MOUNT (3" X 9")	6' BLACK DECORATIVE WEST LIBERTY (SINGLE OR DUAL ARM) TENON MOUNT (3" X 9")	HOLOPHANE BERN, BERN AMBER, TEARDROP, TEARDROP W/SKIRT(DOMUS)
OCTAGONAL CONCRETE 37' TENON MOUNT (3" X 9") ALSO AVAILABLE WITH PROVISION FOR PEDESTRIAN BKT @ 16' MOUNT	48" BLACK PEDESTRIAN SIDE MOUNT (CLAMP-ON)	
WOOD 35', 40', 45' (SIDE MOUNT)	6' BLACK SIDE MOUNT	
STANDARD CONCRETE 30', 35', 40', 45' (SIDE MOUNT)		

H

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	3/6/21	UPDATE TABLE	DRC	GXS	RDH
1	3/31/20	UPDATE TABLE	DRC	ELS	RDH

FPL

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 3/14/19

APPROVED: RICK D. HUFF

MANAGER OF ELECTRICAL STANDARDS

NO SCALE

STREET LIGHT 'POST TOP' LIGHTING ASSEMBLIES (POLES/BRACKET/LUMINAIRE)

H-17.5.0

REFERENCE TABLES TO DETERMINE MATING OF APPROVED STREET LIGHT ASSEMBLIES (POLE/BRACKET/LUMINAIRE)

POST TOP LIGHTING

POLES	BRACKETS	LUMINAIRES			
CONCRETE 20' TENON MOUNT (3" X 3")	N/A	AEL TRADITIONAL AMERICAN REVOLUTION TENON MOUNT	AEL CONTEMPORARY TENON MOUNT	GE EPTC TENON MOUNT	COOPER MESA TENON MOUNT
BLACK ROUND TAPERED CONCRETE 14', 21', 33' TENON MOUNT (3" X 3")					
STANDARD BLACK FIBERGLASS 13', 20', 34' TENON MOUNT (3" X 3")					
WASHINGTON BLACK 18.5' TENON MOUNT (3" X 3")	N/A	N/A	N/A	N/A	

POST TOP LIGHTING

POLES	BRACKETS	LUMINAIRES		
CONCRETE 20', 35' TENON MOUNT (3" X 3")	N/A	ALL – HOLOPHANE GRANVILLE		
WASHINGTON BLACK 18.5' TENON MOUNT (3" X 3")	N/A	GRANVILLE BLACK/BLACK EPTC, MESA, K137	GRANVILLE BLACK/CLEAR EPTC, MESA, K137	GRANVILLE SILVER/CLEAR
WASHINGTON BLACK FOR DOUBLE BRACKET 18.5' TENON MOUNT (3" X 7.25")	FLORIDIAN DUAL BRACKET BLACK	GRANVILLE BLACK/BLACK, KING K137	GRANVILLE BLACK/CLEAR, KING K137	N/A
WASHINGTON BLACK 18.5' TENON MOUNT (3" X 3")	N/A	HOLOPHANE GRANVILLE GREEN/GREEN		
WASHINGTON GREEN FOR DOUBLE BRACKET 18.5' TENON MOUNT (3" X 7.25")	FLORIDIAN DUAL BRACKET GREEN			
BLACK ROUND TAPERED CONCRETE 14', 21' TENON MOUNT (3" X 3")	N/A	HOLOPHANE GRANVILLE BLACK/CLEAR AND BLACK/BLACK, KING K137		

H

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	3/6/21	UPDATE TABLES	DRC	GXS	RDH
1	3/31/20	UPDATE TABLES	DRC	ELS	RDH

FPL

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 3/14/19

APPROVED: RICK D. HUFF

MANAGER OF ELECTRICAL STANDARDS

NO SCALE

STREET LIGHT BRACKET WITH UNIVERSAL STYLE MOUNTING (FOR MOUNTING ON WOOD OR CONCRETE POLES)

H-17.6.0

FIGURE 1
TOP VIEW

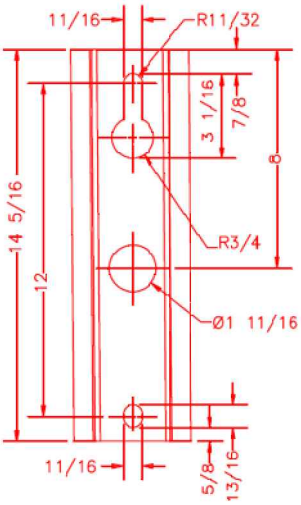


FIGURE 2
BACK VIEW

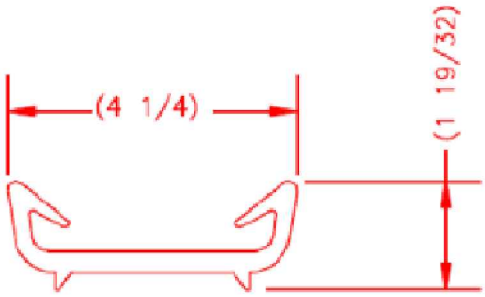


FIGURE 3
TOP OR END VIEW

NOTES:

1. STREET LIGHT BRACKETS WITH MOUNTING DETAIL AS NOTED BY FIGURES 1 THRU 3 ARE DESIGNED TO MOUNT ON BOTH WOOD POLES (CURVED SURFACES) AND CONCRETE POLES (FLAT SURFACES). THE BRACKETS ARE TYPICALLY REFERRED TO AS A 'UNIVERSAL' MOUNTING STYLE BRACKET.
2. FOR MOUNTING TO WOOD OR CONCRETE POLES, THE 'UNIVERSAL ' MOUNTING STYLE BRACKET SHALL UTILIZE APPROPRIATLY SIZED (I.E. LENGTH) 5/8" THRU BOLTS WITH A ROUND FLAT WASHER UNDER THE BOLT HEAD, A SQUARE FLAT WASHER ON THE BACK SIDE OF THE POLE, A DOUBLE COIL SPRING WASHER AND THE 5/8" NUT. USE OF LAG SCREWS IS NOT ALLOWED. REFERENCE DCS H-17.5.0 FOR ADDITIONAL BOLTING HARDWARE DETAIL.
3. THE BRACKET SHALL BE CONNECTED TO GROUND. REFERENCE DCS H-11.0.0.
4. THE BRACKET SHALL MEET PRIMARY AND SECONDARY CONDUCTOR CLEARANCE REQUIREMENTS. REFERENCE NOTES ON DCS H-17.7.0.

F P L
OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

ORIGINATOR: TANN
DRAWN BY: E. SCHILLING
DATE: 10/26/19
APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS
NO SCALE

FASTENER FOR MOUNTING STREET LIGHT BRACKETS

H-17.7.0

BOLT LENGTH IS DEPENDENT ON POLE TYPE AND SIZE

NOTE 4

FIGURE 1

NOTE 1

FIGURE 2
M&S #145-360-004

NOTE 2

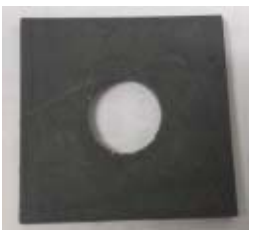


FIGURE 3
M&S #145-395-002

NOTE 3

FIGURE 4
M&S #145-374-005

FIGURE 5
LAG SCREWS ARE NOT ALLOWED FOR USE IN MOUNTING STREET LIGHT BRACKETS ONTO WOOD POLES.

FIGURE 6

ALWAYS INSTALL A LARGE FLAT WASHER UNDER THE BOLT HEAD

NOTES:

1. ROUND FLAT WASHER: SHALL BE INSTALLED UNDER THE HEAD OF THE FASTENER. FLAT WASHERS ACT TO DISTRIBUTE THE FORCE OF THE BOLT BY INCREASING THE SURFACE AREA UNDER TENSION.
2. SQUARE FLAT WASHER: SHALL BE INSTALLED AT THE THREADED END OF THE FASTENER.
3. DOUBLE COIL SPRING LOCK WASHER: SHALL BE INSTALLED BETWEEN THE SQUARE FLAT WASHER AND NUT FOR WOOD POLE INSTALLATIONS. A LOCK-WASHER CREATES COMPRESSION AND TENSION TO LOCK THE NUT IN PLACE. THE NUT SHALL BE TIGHTENED UNTIL THE DOUBLE COIL SPRING LOCK WASHER IS COMPRESSED OR FLAT. DO NOT OVER TIGHTEN THE NUT, AS IT WILL DEFORM THE BRACKET MOUNTING PLATE. HELPS TO KEEP NUT LOCKED IN PLACE AS WOOD POLE AGES.
4. MACHINE BOLTS: FOR NEW CONSTRUCTION, ALL STREET LIGHT BRACKETS MUST HAVE TWO MACHINE BOLTS FOR MOUNTING THE BRACKET, FOR BOTH WOOD AND CONCRETE POLES. LAG SCREWS ARE NOT ALLOWED FOR USE IN MOUNTING STREET LIGHT BRACKETS. FOR REPAIRING OF EXISTING FACILITIES OR IN SITUATIONS IN WHICH A SECOND MACHINE BOLT CANNOT BE INSTALLED FOR MOUNTING, AN ALTERNATE MOUNTING METHOD IS ACCEPTABLE, PROVIDED THAT MINIMUM CLEARANCES TO EXISTING PRIMARY, SECONDARY AND COMMUNICATIONS LINE ARE MET.
5. ALTERNATE MOUNTING METHOD: (ONLY ALLOWED IF NO SECOND MACHINE BOLT CAN BE INSTALLED). THE STREET LIGHT BRACKET SHALL HAVE A MINIMUM OF ONE MACHINE BOLT. THIS BOLT SHALL BE INSTALLED IN THE TOP MOUNTING HOLE OF THE STREET LIGHT BRACKET (MINIMUM CLEARANCES SHALL BE MAINTAINED). IT IS ACCEPTABLE FOR THE LOWER PORTION OF THE STREET LIGHT BRACKET TO BE BANDED TO THE POLE. SEE M-5.0.2 ON BANDING FOR FURTHER DETAIL.
6. LAG SCREWS FOUND IN THE FIELD SHOULD BE REMOVED AND REPLACED BY APPROVED HARDWARE OR BANDING.

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 3/14/19

APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

FIGURE 1

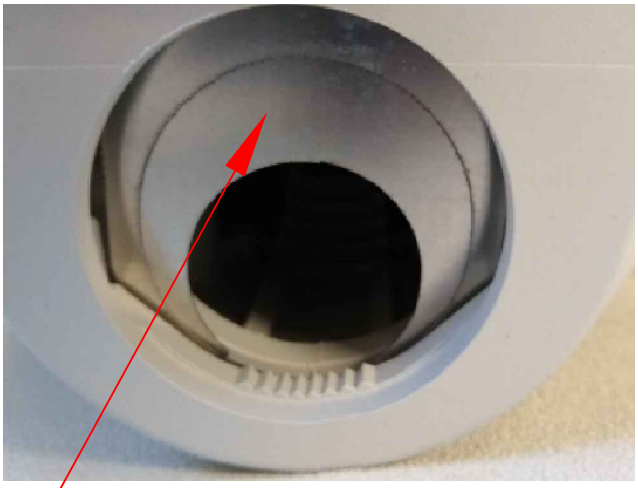


FIGURE 2

SEE NOTE 2

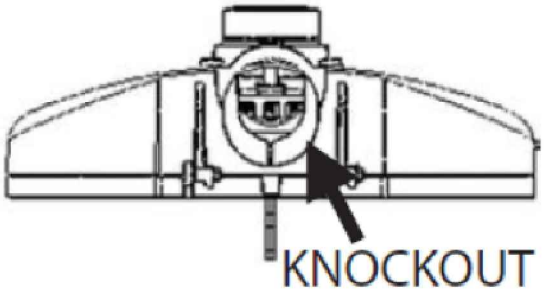


FIGURE 3

NOTES:

1. COBRA HEAD STYLE LUMINAIRES ARE DESIGNED TO INSTALL VIA A SLIP-FITTED MOUNT. THE LUMINAIRES ARE DESIGNED TO ACCOMMODATE MOUNTING TO A MAST ARM FROM 1-1/4" TO 2" DIAMETER.
2. SOME LUMINAIRES ARE FACTORY SET TO MOUNT TO A 1-1/4" MAST ARM. TO MOUNT TO A 2" MAST ARM, A MODIFICATION MUST BE MADE. THE REAR OPENING MUST BE ENLARGED. KNOCKOUTS ARE CAST-IN AROUND THE REAR OPENING FOR THIS PURPOSE. TO REMOVE THIS EXCESS MATERIAL, STRKE WITH A HAMMER OR GRASP WITH PLIERS AND BREAK OFF.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: TANN DRAWN BY: E. SCHILLING

DATE: 10/26/19 APPROVED: RICK D. HUFF NO SCALE

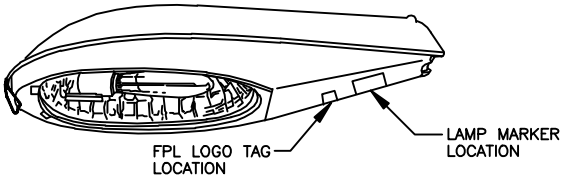
MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

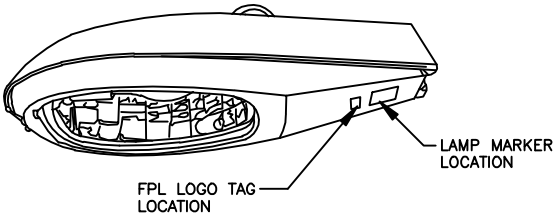
LUMINAIRE IDENTIFICATION TAGS

H-18.0.1

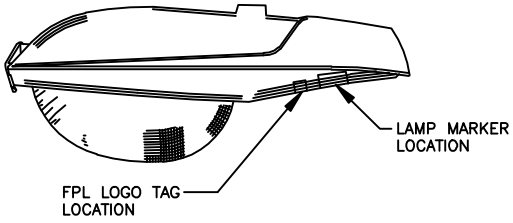
LAMP MARKER AND FPL LOGO TAG SHALL BE LOCATED
ON THE LUMINAIRE AS SHOWN



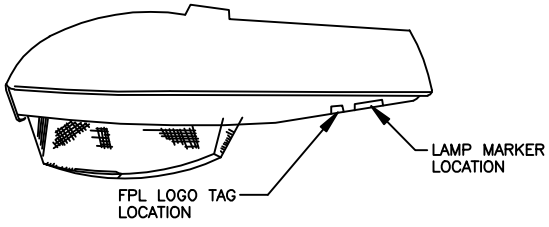
LARGE CUTOFF COBRA HEAD



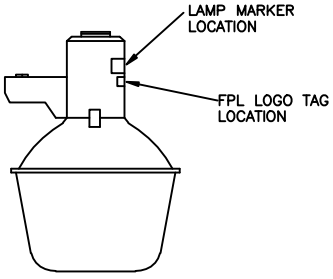
SMALL CUTOFF COBRA HEAD



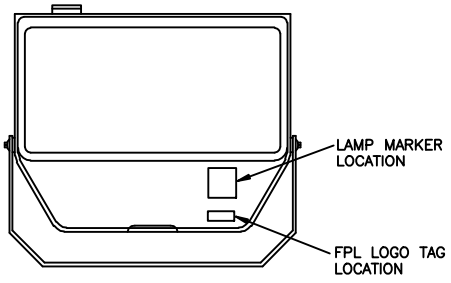
LARGE STANDARD COBRA HEAD



SMALL STANDARD COBRA HEAD



OPEN BOTTOM



DIRECTIONAL SECURITY

NOTE:
1. LAMP MARKER INDICATES LAMP WATTAGE AND TYPE. SEE H-18.0.3

F P L
OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	8/20/99	UPDATE DRAWING (NOTES)	SS	JES	JJM
0	8/09/96	ORIGINAL DRAWING	JBM	RAS	JJM

ORIGINATOR: JBM DRAWN BY: RAS

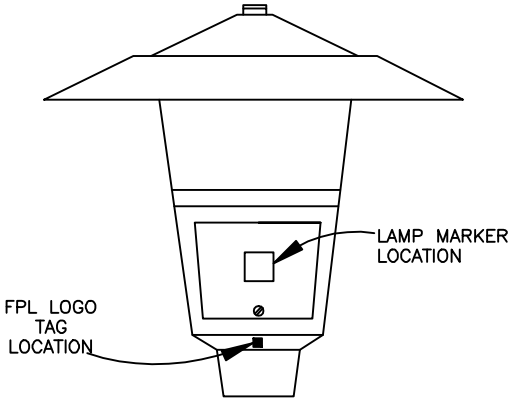
DATE: 8/09/96 APPROVED: J. McEVOY
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

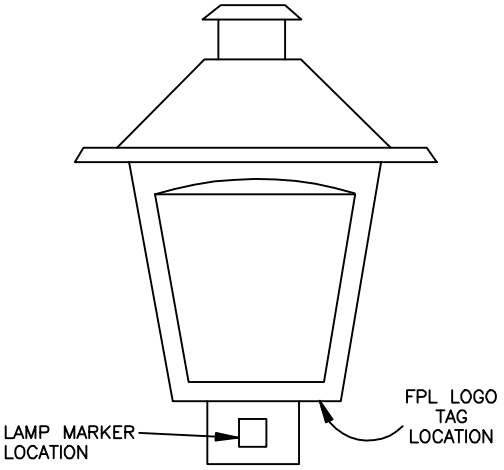
LUMINAIRE IDENTIFICATION TAGS

H-18.0.2

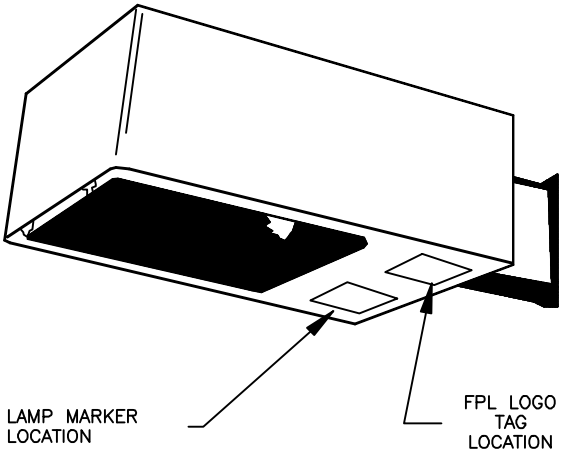
LAMP MARKER AND FPL LOGO TAG SHALL BE LOCATED ON THE LUMINAIRE AS SHOWN



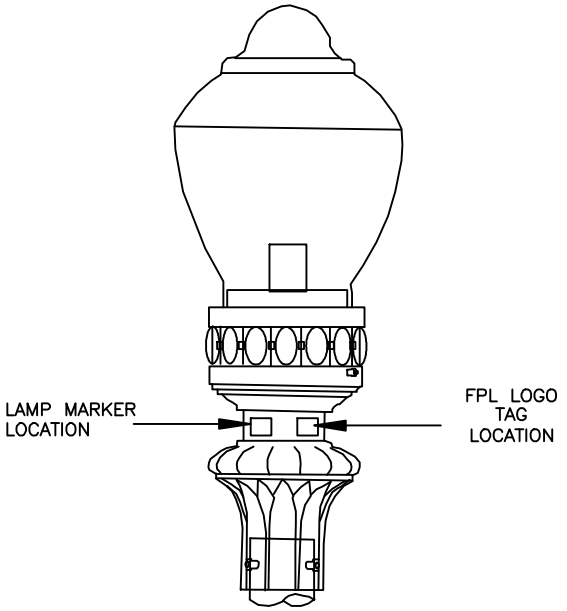
CONTEMPORARY POST TOP



TRADITIONAL POST TOP



SHOEBOX



ACORN

NOTES:
1. LAMP MARKER INDICATES LAMP WATTAGE AND TYPE. SEE H-18.0.3

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

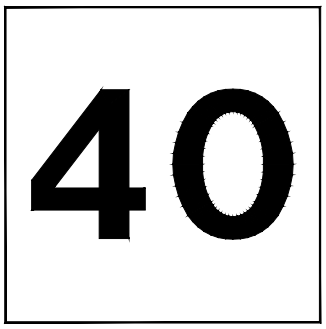
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	8/20/99	UPDATE DRAWING (TEXT & DRAWINGS)	SS	JES	JJM
0	8/09/96	ORIGINAL DRAWING	JBM	RAS	JJM

ORIGINATOR: JBM DRAWN BY: RAS

DATE: 8/09/96 APPROVED: J.J. MCEVOY
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

H

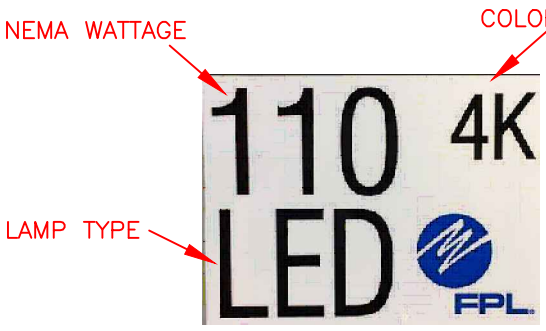


LAMP MARKER
IDENTIFYING CODE
FOR LAMP TYPE

BACKGROUND COLOR	LAMP TYPE
BLUE	MERCURY VAPOR
GOLD	HIGH PRESSURE SODIUM VAPOR
RED	METAL HALIDE
TAN	LOW PRESSURE SODIUM VAPOR

LAMP MARKER
IDENTIFYING CODE
FOR HID LAMP WATTAGE

IDENTIFYING NUMERAL	LAMP WATTAGE
7	70
10	100
15	150
17	175
20	200
25	250
40	400
70	700
X1	1000



FPL LOGO
TAG
M&S# 548-565-009

- NEMA WATTAGE IS AN ANSI STANDARD FOR LABELING THAT ROUNDS THE WATTAGE TO THE NEAREST 10. ACTUAL WATTAGE FOR THE SAMPLE FIXTURE ABOVE COULD RANGE FROM 105W-114W. THIS WILL BE SPECIFIED ON THE INTERNAL LABEL OF THE FIXTURE.
- FIXTURE MANUFACTURERS HAVE STARTED TO PUT THE M&S NUMBER ON A LABEL INSIDE THE FIXTURE.
- LED FIXTURE LABELS INCLUDE WATTAGE, COLOR TEMPERATURE, AND INDICATE THAT THE LIGHT IS AN LED

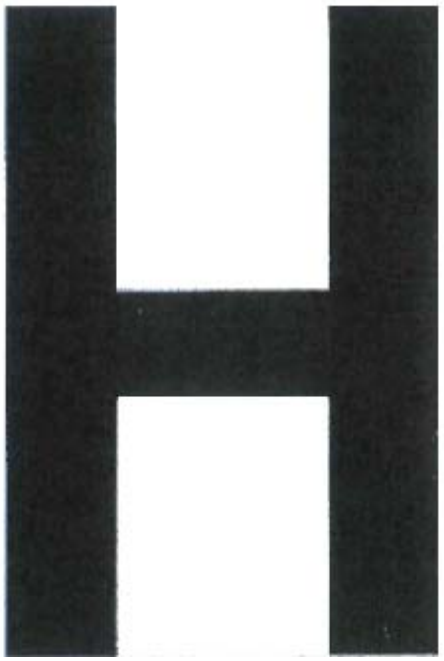
LIGHT EMITTING DIODE (LED)
MARKER IS BLACK ON WHITE WITH "LED" ON LABEL PER ANSI C136.15.
WATTAGE ON LABEL IS ANSI ROUNDED WATTAGE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	10/27/19	UPDATE DRAWING	JDT	ELS	RDH
1	10/24/16	UPDATE DRAWING	JCH	ELS	RDH

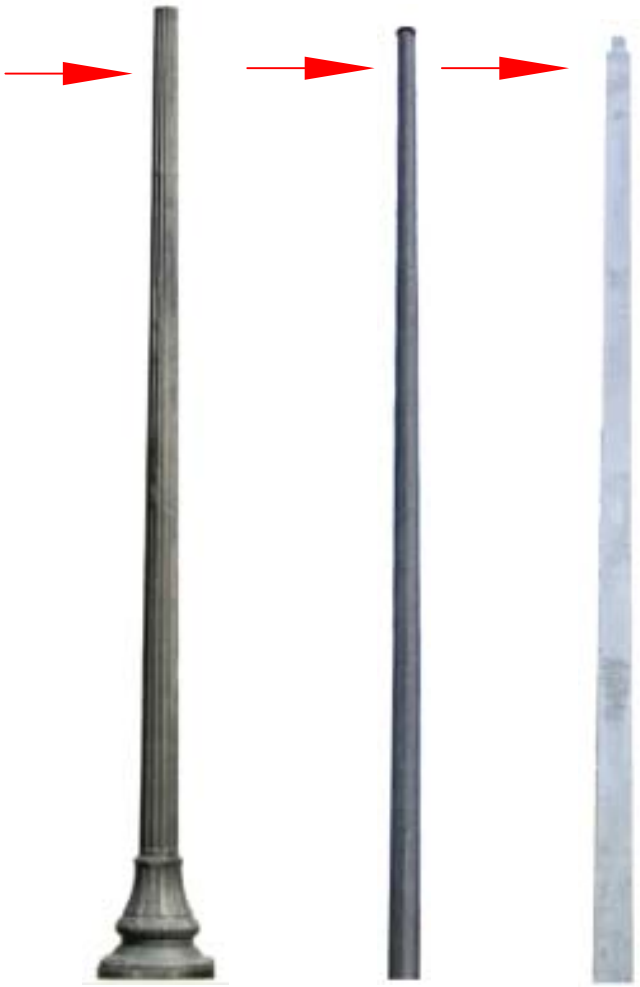
ORIGINATOR: SMS
DRAWN BY: J.SHOUP
DATE: 10/8/99
APPROVED: J.J McEVOY
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES
NO SCALE

HYBRID FIXTURE IDENTIFICATION TAG AND PLACEMENT

H-18.0.4



FPL FIXTURE ONLY



H

NOTES:

1. EVERY LUMINAIRE OWNED/INSTALLED/REPLACED BY FPL WHICH FALLS WITHIN THE HYBRID CATEGORY SHALL CARRY A HYBRID IDENTIFICATION TAG. THE TAG CONTAINS THE LETTER 'H' AND SMALLER TEXT UNDER THE 'H' STATING "FPL FIXTURE ONLY". THIS IDENTIFIES OWNERSHIP OF THE FIXTURE AND THAT IT FALLS WITHIN THE SCOPE OF A HYBRID AGREEMENT. FOR SMALL OR COBRA STYLE FIXTURES, THE 'H' TAG MAY BE PLACED ON THE SUPPORT ARM ADJACENT TO THE FIXTURE. FOR POST TOP STYLE FIXTURES, THE LABEL SHALL BE PLACED ON THE POLE, JUST BELOW THE FIXTURE.
2. NOTE: ONLY NEC LICENSED CONTRACTORS CAN WORK ON THESE HYBRID LIGHTS.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

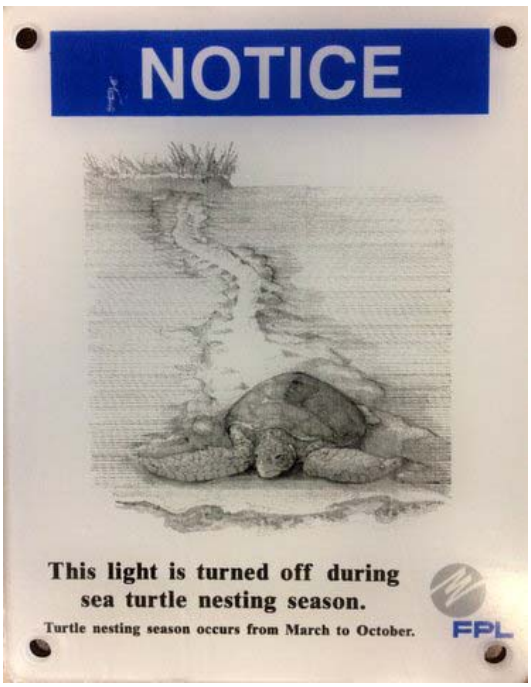
DRAWN BY: E. SCHILLING

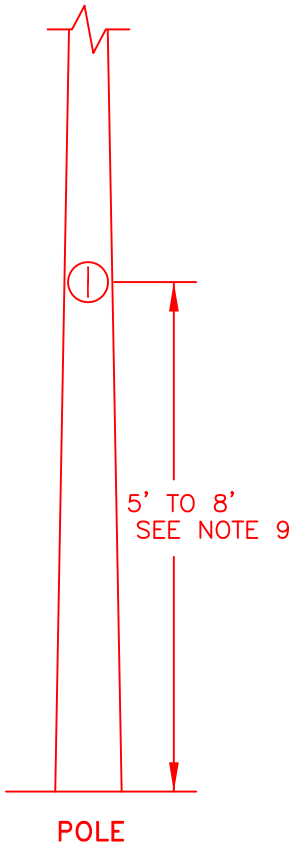
DATE: 9/11/17

APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.





NOTES:

1. TURTLE PLACARDS ARE USE TO INDICATE THAT LIGHT HAS BEEN TURNED OFF FOR TURTLE NESTING SEASON. REFER TO GOOGLE EC FOR SPECIFIC LIGHTS IDENTIFIED TO BE TURNED OFF DURING TURTLE NESTING SEASON.
2. SIGN/PLACARD ARE NAILED TO THE WOOD POLES WITH 2-1/2" ALUMINUM 8 GAUGE NAILS. (M&S #142-631-007). USE FIXTURE ADHESIVE (M&S #522-121-000) TO INSTALL THE SIGN/PLACARD ON CONCRETE POLES.

F P L
OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN
DRAWN BY: E. SCHILLING
DATE: 11/1/16
APPROVED: RICK D. HUFF
MANAGER OF ELECTRICAL STANDARDS
NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

TYPICAL DIRECTIONAL SECURITY LUMINAIRE INSTALLATION

H-19.0.1

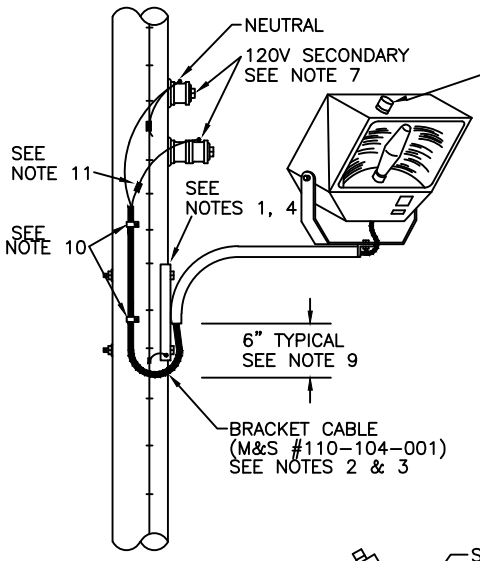


FIGURE 1
INDIVIDUAL OR GROUP CONTROL

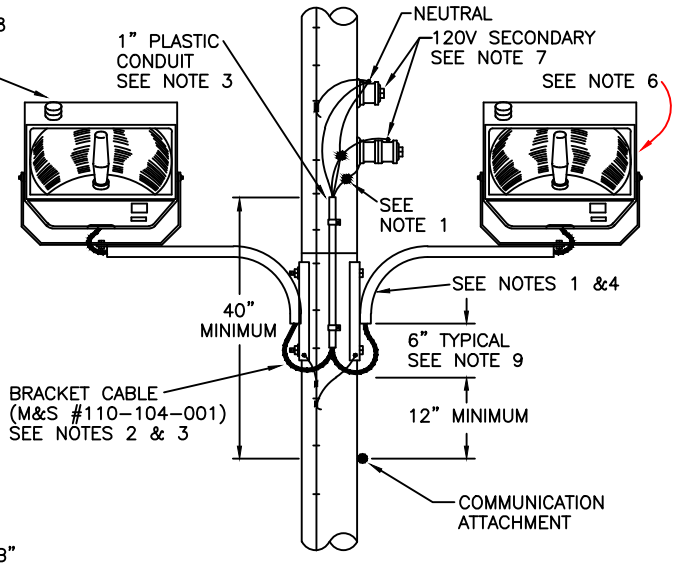


FIGURE 2
INDIVIDUAL OR GROUP CONTROL

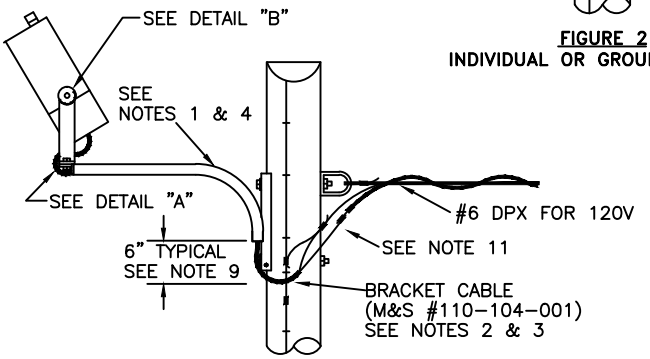
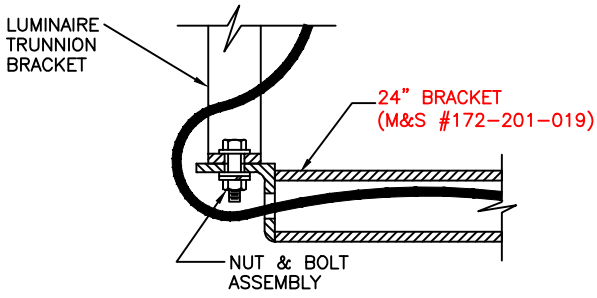
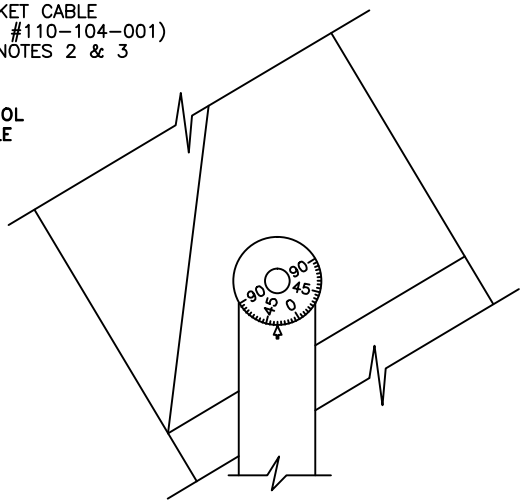


FIGURE 3
INDIVIDUAL OR GROUP CONTROL
SERVED BY OVERHEAD CABLE



DETAIL "A"



DETAIL "B"
REFER TO NOTES 5 & 6
AND TABLE OF ANGLE SETTINGS

ALL NOTES ARE LOCATED ON H-19.0.2

F P L
OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	10/27/19	UPDATE DRAWING	JDT	ELS	RDH
1	11/4/16	UPDATE DRAWING	JCH	ELS	RDH
0	8/9/96	CONVERTED TO CAD	JBM	RAS	JJM

ORIGINATOR: JBM
DRAWN BY: RAS
DATE: 8/9/96
APPROVED: J.J McEVOY
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES
NO SCALE

TYPICAL DIRECTIONAL SECURITY LUMINAIRE INSTALLATION

H-19.0.2

TABLE OF ANGLE SETTINGS

MOUNTING HEIGHT IN FEET	AIMING POINT IN FEET FROM BASE OF POLE										ANGLE SETTING IN DEGREES
	20	25	30	35	40	45	50	55	60	65	
20	45	38	34	30	27						
22	48	41	36	32	29	26					
24	50	44	39	34	31	28	26				
26	52	46	41	37	33	30	27	25			
28	54	48	43	39	35	32	29	27	25		
30	56	50	45	41	37	34	31	29	27	25	
32	58	52	47	42	39	35	33	30	28	26	
34	60	54	49	44	40	37	34	32	30	28	
36	61	55	50	46	42	38	36	33	31	29	
38	62	57	52	47	44	40	37	35	32	30	
40	63	58	53	49	45	42	39	36	34	32	
42	65	59	54	50	46	43	40	37	35	33	
44	66	60	56	52	48	44	41	39	36	34	

HOW TO USE THIS TABLE:

STEP 1: DETERMINE MOUNTING HEIGHT OF LUMINAIRE AND FIND AMOUNT (ROUNDED OFF) IN COLUMN "MOUNTING HEIGHT IN FEET",

STEP 2: DETERMINE DISTANCE FROM BASE OF POLE ON WHICH THE LUMINAIRE IS INSTALLED TO POINT ON GROUND WHERE THE MAXIMUM LIGHT OUTPUT IS DESIRED AND FIND AMOUNT (ROUNDED OFF) IN ROW "AIMING POINT IN FEET FROM BASE OF POLE".

STEP 3: FOLLOW THE ROW TO THE RIGHT OF THE AMOUNT FOUND IN STEP 1 AND INTERSECT WITH THE COLUMN CONTAINING THE AMOUNT FOUND IN STEP 2. OBTAIN "ANGLE SETTING IN DEGREES" AND SET ON LUMINAIRE ACCORDINGLY.

NOTES:

1. THERE ARE NO RESTRICTIONS AGAINST MOUNTING A STREET LIGHT BRACKET ABOVE OR BELOW SECONDARY, EXCEPT THAT THE BRACKET/LUMINAIRE MUST CLEAR SECONDARY CONDUCTORS BY 3" MINIMUM, PRIMARY CONDUCTORS BY 36" MINIMUM AND TRANSMISSION CONDUCTORS (THRU 240kV) BY 96" MINIMUM.
2. CABLE DRIP LOOPS MUST CLEAR COMMUNICATION ATTACHMENTS BY 12" MINIMUM.
3. VERTICAL CABLE RUNS OF MORE THAN 12", WITH THE 40" SPACE ABOVE A COMMUNICATION ATTACHMENT, ARE TO BE IN 1" PLASTIC CONDUIT. ANY SUCH RUNS BELOW A COMMUNICATION ATTACHMENT ARE ALSO TO BE IN CONDUIT. SECURE CONDUIT TO POLE USING BRACKET M&S #530-122-008 EVERY 24".
4. GROUND ALL BRACKETS (SEE H-11.0.0). BRACKETS MUST CLEAR COMMUNICATION ATTACHMENTS BY 4" MINIMUM (20" MINIMUM IF COMMUNICATION ATTACHMENT IS A CROSSARM).
5. THE DISTANCE FROM THE BASE OF THE POLE TO THE AIMING POINT SHOULD NOT EXCEED TWICE THE MOUNTING HEIGHT IN ORDER TO MAXIMIZE THE EFFECTIVENESS OF THE LIGHT.
6. WHEN SETTING THE DIRECTION OF THE LIGHT, USE ONE OF THE GIVEN ANGLES IN THE TABLE THAT CAN BE EASILY SET, USING THE DEGREE SETTING INDICATOR LOCATED ON THE SIDE OF THE LUMINAIRE.
7. BEFORE MAKING CONNECTIONS THE BRACKET CONDUCTORS (M&S #110-104-001) SHOULD BE WRAPPED AROUND THE LINE CONDUCTORS 2 OR 3 TURNS TO REDUCE POSSIBLE FAILURE DUE TO VIBRATION.
8. A PHOTOELECTRIC RELAY OR A NETWORKED LIGHTING CONTROLLER (SMART NODE) IS USED WITH INDIVIDUAL CONTROL ONLY. SHORTING CAP IS REQUIRED ON LUMINAIRE HAVING PHOTOCELL SOCKETS, BUT WHICH ARE GROUP CONTROLLED.
9. ALLOW A 6" CABLE DRIP LOOP AT THE BASE OF THE BRACKET WHEN CLEARANCE REQUIREMENTS CAN BE MET.
10. ON LONG RUNS, SECURE CABLE TO POLE EVERY 24" WITH CABLE CLIPS M&S #178-052-000 AND (ON CONCRETE POLES) MASONRY ANCHORS (M&S #500-100-006).
11. USE CONNECTORS M&S #103-070-211 AND #103-070-229 FOR CONNECTION OF STREET LIGHT CABLE TO SECONDARY.

F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	11/4/16	UPDATE DRAWING (NOTE #10)	JCH	ELS	RDH
1	8/06/01	UPDATE DRAWING (NOTE #10)	SMS	JES	JJM
0	8/09/96	PLACED DRAWING IN REVISED FRAME	JBM	RAS	JJM

ORIGINATOR: JBM

DRAWN BY: RAS

DATE: 6/23/08

APPROVED: J.J McEVOY

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

NO SCALE

APPENDIX C
FDOT LUMINAIRE CUT SHEETS

Evolve®

LED Roadway Lighting

ERLC-ERL1-ERLH-ERL2

GE current
a Daintree company

Evolve® LED Roadway Lighting

Cobra Head (ERLC)

Project Name _____

Date _____ Type _____

Notes _____

The **Evolve**® LED Roadway ERLC Luminaire is optimized utilizing advanced LED reflective optical system for local, collector and major roadways. The modern design incorporates the heat sink directly into the unit for heat transfer to prolong LED life.

CONSTRUCTION

Housing:	Aluminum die cast enclosure casting integral heat sink for maximum heat transfer
Lens:	Impact resistant tempered glass
Paint:	Corrosion resistant powder paint, ≥ 2.0 mil thickness (RAL & custom colors available) Standard = Black, Dark Bronze, Gray, White Optional = Coastal Finish
Weight:	8.5 lbs (5.6 kgs)

OPTICAL SYSTEM

Lumens:	2,000 - 7,000
Distribution:	Type II Narrow, II/III[3], III, V
Efficacy:	110-143 LPW
CCT:	2700K, 3000K, 4000K & 5000K
CRI:	≥ 70

ELECTRICAL

Input Voltage:	120-277V (no 347-480V)
Input Frequency:	50/60Hz
Power Factor:	≥ 90% at rated watts
Total Harmonic Distortion:	≤ 20% at rated watts

SURGE PROTECTION*

Standard	Optional
☐ 10kV/5kA	☐ Secondary 10kV/5kA (R Option) or ☐ Secondary 20kV/10kA (T Option)

*Per ANSI C136.2-2018

LUMEN MAINTENANCE

Projected Lxx per IES TM-21-11 at 25°C

Lumen Codes	Distributions	LXX(10K) @ Hours		
		25,000 HR	50,000 HR	60,000 HR
02 ,03, 04, 05	A5, B5, C5	L97	L93	L92
06	A5, B5, C5	L96	L91	L89
07	A5, B5, C5	L95	L89	L87

Lumen Codes	Distributions	LXX(10K) @ Hours		
		25,000 HR	50,000 HR	60,000 HR
02 ,03, 04, 05	V4	L96	L93	L93
06	V4	L94	L90	L88

Note: Projected Lxx based on LM80 (≥ 10,000 hour testing). Accepted Industry tolerances apply to initial luminous flux and lumen maintenance measurements.

RATINGS

Operating Temperature:	-40°C to 50°C
Vibration:	3G per ANSI C136.31-2018
LM-79:	Testing in accordance with IES Standards

CONTROLS

Dimming:	Standard - 0-10V ☐ Optional - DALI (Option U) ☐
Sensors:	Photo Electric Sensors (PE) available LightGrid Compatible

WARRANTY

☐ 5 Year (Standard) ☐ 10 Year (Optional)

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UL 1598 for WET LOCATIONS · IP66 · IK08 · CONTROLS ENABLED

Not all product variations listed on this page are DLC qualified. Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERLC)

Catalog Logic

Project Name ______
Date ______ Type ______
Notes ______

ERLC

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

PROD. ID	VOLTAGE	LUMENS	DISTRIBUTION	CCT	CONTROLS PER ANSI C136.41	COLOR	OPTIONS
E = Evolve	0 = 120-277[1]	02[2]	A5 = II Narrow	27 = 2700K[4]	A = 7-Pin Receptacle	BLCK = Black	B = Tether
R = Roadway	8 = 120-240[5]	03	B5 = Type II/III[3]	30 = 3000K[4]	D = 7-Pin Receptacle with Shorting Cap	DKBZ = Dark Bronze	C1 = Captive Door
L = Local		04	C5 = Type III	40 = 4000K	E = 7 Pin Receptacle with Long Life non-Dimming PE Control[5]	GRAY = Gray	F = Fusing
C = Compact	1 = 120	05	V4 = Type V	50 = 5000K		WHTE= White	G = Internal Bubble Level
	2 = 208	06			Note: 0-10V control standard unless DALI Option "U" requested		L = Tool-Less Entry
	3 = 240	07					M1 = MagnaPak[9]
	4 = 277						R = Secondary 10kV/5kA SPD
							T = Secondary 20kV/10kA SPD
							U = DALI Programmable[6]
							V1 = Field Adjustable Module[1,8]
							Y = Coastal Finish[7]
							XXX = Special Options

1 Not Available with Fusing
2 Lumen choice only offered for 120-240V
3 See ISO plots of the B5 Distribution
4 Select 2700K or 3000K CCT for IDA approved units
5 Only available with 02 Lumen Code
6 Compatible with LightGrid
7 Recommended for installations within 750 feet from coast. Lead time varies, check with factory.
8 Not available with DALI "U" option
9 Option M1 provides for MagnaPak – 40 Fixtures per MagnaPak Container. Single Pack box is standard

SUGGESTED HID REPLACEMENT

- Approximately 2,000 - 7,000 lumens to replace 50-100W HPS Cobra-head

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

Previous	Optical Pattern	Latest	New Optical Pattern
A3	Type II Narrow	A5	Type II Narrow
B3	Type II Wide	B5	Type II/III
C3	Type III	C5	Type III
N/A	Type V	V4	Type V

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

GE current
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Not all product variations listed on this page are DLC qualified. Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERLC)

Spec Tables

Project Name _____

Date _____ Type _____

Notes _____

LUMEN OUTPUT	DIST.	LUMENS			WATTAGE	BUG RATINGS		
		4000K/5000K	3000K	2700K	120-277V	4000K/5000K	3000K	2700K
02	A5	2000	1940	1760	15	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5	2000	1940	1760	15	B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5	2000	1940	1760	15	B1-U0-G1	B1-U0-G1	B1-U0-G1
	V4	1990	1950	1890	15	B1-U0-G0	B1-U0-G0	B1-U0-G0
03	A5	3000	2910	2640	22	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5	3000	2910	2640	22	B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5	3000	2910	2640	22	B1-U0-G1	B1-U0-G1	B1-U0-G1
	V4	3100	3030	2950	23	B1-U0-G0	B1-U0-G0	B1-U0-G0
04	A5	4000	3880	3520	28	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5	4000	3880	3520	28	B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5	4000	3880	3520	28	B1-U0-G1	B1-U0-G1	B1-U0-G1
	V4	4030	3940	3840	32	B2-U0-G0	B2-U0-G0	B2-U0-G0
05	A5	5000	4850	4400	36	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5	5000	4850	4400	36	B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5	5000	4850	4400	36	B1-U0-G2	B1-U0-G2	B1-U0-G1
	V4	5200	5090	4950	43	B2-U0-G1	B2-U0-G1	B2-U0-G1
06	A5	6000	5820	5280	46	B2-U0-G2	B1-U0-G1	B1-U0-G1
	B5	6000	5820	5280	46	B1-U0-G2	B1-U0-G2	B1-U0-G2
	C5	6000	5820	5280	46	B1-U0-G2	B1-U0-G2	B1-U0-G2
	V4	6350	6220	6050	55	B2-U0-G1	B2-U0-G1	B2-U0-G1
07	A5	7000	6790	6160	56	B2-U0-G2	B2-U0-G2	B2-U0-G2
	B5	7000	6790	6160	56	B1-U0-G2	B1-U0-G2	B1-U0-G2
	C5	7000	6790	6160	56	B1-U0-G2	B1-U0-G2	B1-U0-G2

For additional information on ERLC IES files, please click one of the following links:

Non-Shielded Shielded

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Evolve® LED Roadway Lighting

Cobra Head (ERLC)

Photometric Plots

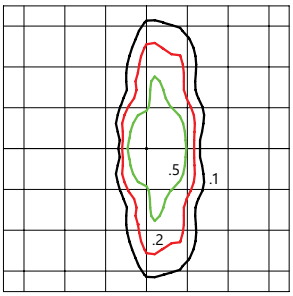
Project Name _____

Date _____ Type _____

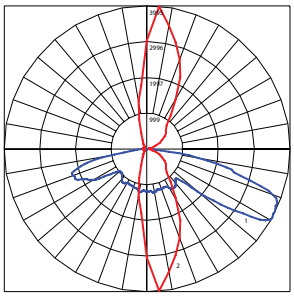
Notes _____

ERLC
Type II Narrow

5,000 Lumens
4000K
ERLC_05A540___.IES



- Mounting Height at 30'
- Initial Footcandle at Grade

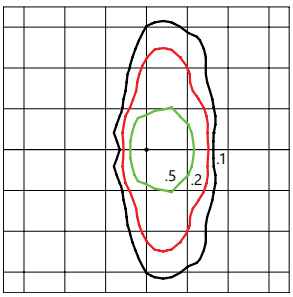


— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

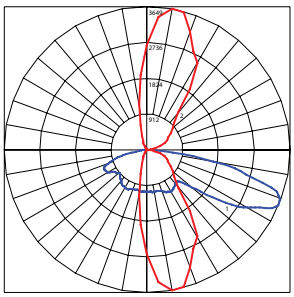
ERLC
Type II/III[3]

5,000 Lumens
4000K
ERLC_05B540___.IES

[3] This optic is designed to address a Roadway Photometric Application and may classify as Type II or III.



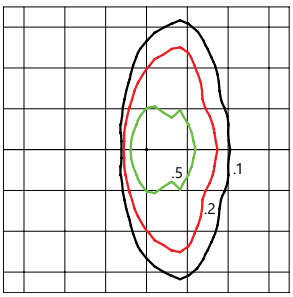
- Mounting Height at 30'
- Initial Footcandle at Grade



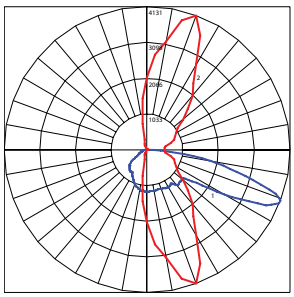
— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

ERLC
Type III

5,000 Lumens
4000K
ERLC_05C540___.IES



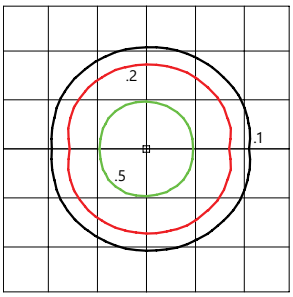
- Mounting Height at 30'
- Initial Footcandle at Grade



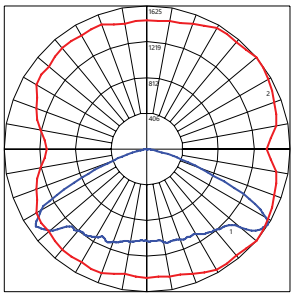
— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

ERLC
Type V

5,200 Lumens
4000K
ERLC_05V440___.IES



- Mounting Height at 30'
- Initial Footcandle at Grade



— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

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Evolve® LED Roadway Lighting

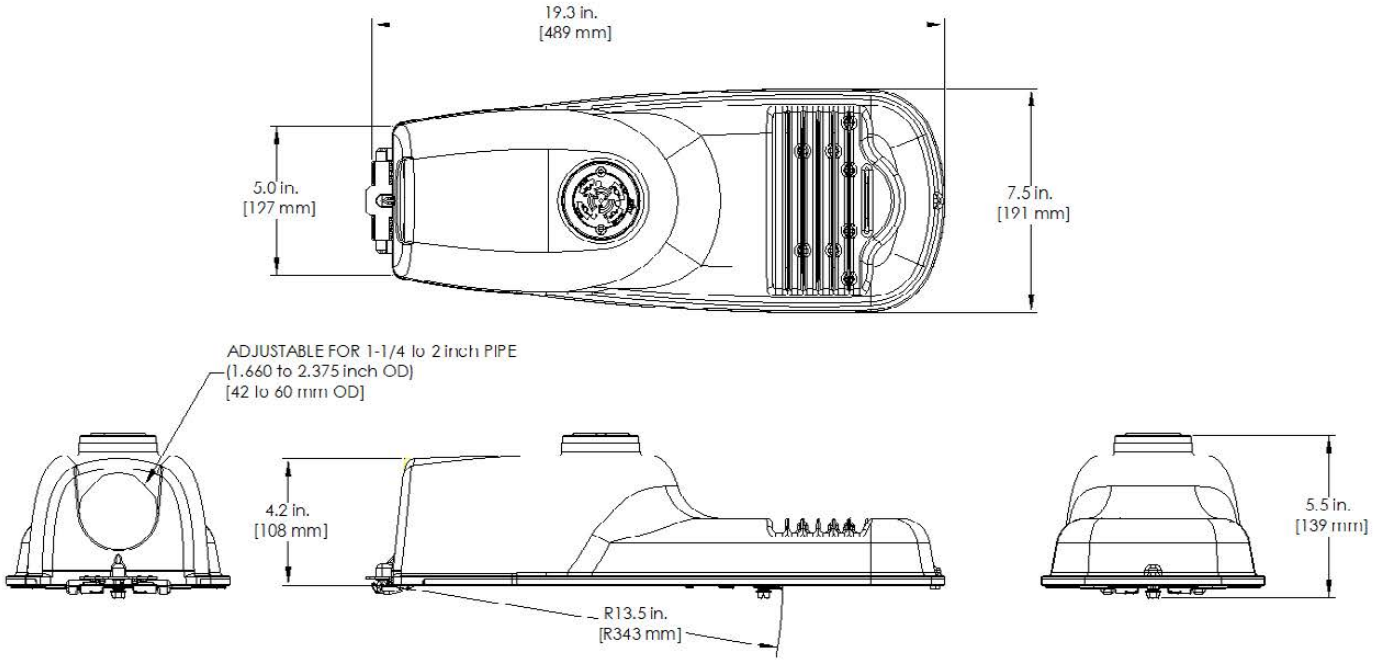
Cobra Head (ERLC)

Mounting & Accessories

Project Name _____

Date _____ Type _____

Notes _____



MOUNTING

- Adjustable for 1.25 to 2 in. nominal mounting pipe
- Integral diecast mounting pipe stop
- Slipfitter with +/- 5 degrees of leveling adjustment

EFFECTIVE PROJECTED AREA

- 0.3 sq ft max (0.029 sq m)

WEIGHT

- Approximate net weight: 8.5 lbs (3.8 kgs)

ACCESSORIES

SAP Number	Part Number	Description
93029237	PED-MV-LED-7	ANSI C136.41 Dimming PE, 120-277V
93029238	PED-347-LED-7	ANSI C136.41 Dimming PE, 347V
93029239	PED-480-LED-7	ANSI C136.41 Dimming PE, 480V
28299	PEC0TL	Standard 120-277V
XXXXXX	PECHTL	Standard 347-480V
73251	SCCL-PECTL	Shorting Cap

See pages 22 & 23 for more detailed information on ERLC Shields.

NETWORKED LIGHTING CONTROL

Current's **LightGrid™** Outdoor Lighting Control System is designed for Street and Roadway Applications. It enables remote monitoring, control, and asset management of a single fixture or a group of fixtures through a web enabled Central Management System.

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Evolve® LED Roadway Lighting

Cobra Head (ERL1)

Project Name _____

Date _____ Type _____

Notes _____

The **Evolve**® LED Roadway ERL1 Luminaire is optimized utilizing advanced LED reflective optical system for local, collector and major roadways. The modern design incorporates the heat sink directly into the unit for heat transfer to prolong LED life.

CONSTRUCTION

Housing:	Aluminum die cast enclosure casting integral heat sink for maximum heat transfer
Lens:	Impact resistant tempered glass
Paint:	Corrosion resistant powder paint, ≥ 2.0 mil thickness (RAL & custom colors available) Standard = Black, Dark Bronze, Gray, White Optional = Coastal Finish
Weight:	12.4 lbs (5.6kgs)

OPTICAL SYSTEM

Lumens:	2,000 - 10,000
Distribution:	Type II ,III, IV and Type II Narrow, and Type II Enhanced Backlight
Efficacy:	110-143 LPW
CCT:	2700K, 3000K, 4000K
CRI:	≥70

ELECTRICAL

Input Voltage:	120-277V or 347-480V
Input Frequency:	50/60Hz
Power Factor:	≥ 90% at rated watts
Total Harmonic Distortion:	≤ 20% at rated watts

SURGE PROTECTION*

Standard	Optional
☐ 10kV/5kA	☐ Secondary 10kV/5kA (R Option) or ☐ Secondary 20kV/10kA (T Option)

*Per ANSI C136.2-2018

LUMEN MAINTENANCE

Projected Lxx per IES TM-21-11 at 25°C

Lumen Codes	Distributions	LXX(10K) @ Hours		
		25,000 HR	50,000 HR	60,000 HR
02,03,04, 05,06	A3,B3,C3, D3,E3	L96	L95	L94
07,08,09	A3,B3,C3, D3,E3	L95	L91	L89
10	A3,B3,C3, D3,E3	L89	L80	L76

Note: Projected Lxx based on LM80 (≥ 10,000 hour testing). Accepted Industry tolerances apply to initial luminous flux and lumen maintenance measurements.

RATINGS

Operating Temperature:	-40°C to 50°C
Vibration:	3G per ANSI C136.31-2018
LM-79:	Testing in accordance with IES Standards

CONTROLS

Dimming:	Standard - 0-10V ☐ Optional - DALI (Option U) ☐
Sensors:	Photo Electric Sensors (PE) available LightGrid Compatible

WARRANTY

☐ 5 Year (Standard) ☐ 10 Year (Optional)

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UL 1598 for WET LOCATIONS · IP65 · IK08 · CONTROLS ENABLED

Not all product variations listed on this page are DLC qualified. Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERL1)

Catalog Logic

Project Name ______________________________

Date ______________ Type ______________

Notes ______________________________

ERL1

PROD. ID	VOLTAGE	LUMENS	DISTRIBUTION[3]	CCT	CONTROLS PER ANSI C136.41	COLOR	OPTIONS
E = Evolve	0 = 120-277[1]	02[2]	A3 = Type II Narrow	27 = 2700K[4]	A = 7-Pin Receptacle	BLCK = Black	A = 4 Bolt Slipfitter[6]
R = Roadway	H = 347-480[1]	03	B3 = Type II Wide	30 = 3000K[4]	D = 7-Pin Receptacle with Shorting Cap	DKBZ = Dark Bronze	B = Tether
L = Local		04	C3 = Type III	40 = 4000K	E = 7 Pin Receptacle with Long Life non-Dimming PE Control[5]	GRAY = Gray	F = Fusing
1 = Single Module	1 = 120	05	D3 = Type IV			WHTE= White	G = Internal Bubble Level
	2 = 208	06	E3 = Type II Enhanced Back Light		Note: 0-10V control standard unless DALI Option "U" requested		I = Optional IP66 Optical
	3 = 240	07					L = Tool-Less Entry
	4 = 277	08					R = Secondary 10kV/5kA SPD
	D = 347	09					T = Secondary 20kV/10kA SPD
	5 = 480	10					U = DALI Programmable[7,8]
							V1 = Field Adjustable Module[11]
							X = Single Pack[9]
							Y = Coastal Finish[10]
							XXX = Special Options

1 Not Available with Fusing
2 Lumen Choice Only Available in 120-277V
3 Nominal IES Type classing subject to typical variation, individual units may differ
4 Select 2700K or 3000K CCT for IDA approved units
5 PE Control Only available for 120-277V or Discrete 347V or 480V. Not available for 347-480V.
6 Lead time varies, Contact Factory
7 Compatible with LightGrid
8 Not available in 347V, 480V or 347-480V for Lumen Output Levels 07-10
9 Option provides single pack box per fixture. Standard packaging = 23 units per MagnaPak Container
10 Recommended for installations within 750 feet from coast. Lead time varies, check with factory.
11 Not available with DALI "U" option

SUGGESTED HID REPLACEMENT

- 4,000 - 5,000 lumens to replace 100W HPS Cobra-head
- 7,000 - 8,000 lumens to replace 150W HPS Cobra-head
- 8,500 - 11,500 lumens to replace 100W HPS Cobra-head

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

Previous	Optical Pattern	Latest	New Optical Pattern
A1, B1	Extra Narrow/ Narrow Asymmetric	A3	Type II Narrow
C1, E1	Asymmetric Short/ Medium	B3	Type II Wide
D1, G1	Asymmetric Forward/Extra Wide	C3	Type III
F1	Asymmetric Wide	D3	Type IV
N/A	N/A	E3	Type II Enhanced Back Light

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

GE current
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Not all product variations listed on this page are DLC qualified.
Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERL1)

Spec Tables

Project Name _____

Date _____ Type _____

Notes _____

LUMEN OUTPUT	DIST.	LUMENS			WATTAGE		BUG RATINGS		
		4000K	3000K	2700K	277V	480V	4000K	3000K	2700K
02	A3	2000	1900	1900	14	N/A	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	C3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	D3						B0-U0-G1	B0-U0-G1	B0-U0-G1
	E3						B1-U0-G1	B1-U0-G1	B1-U0-G1
03	A3	3000	2900	2800	22	26	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	C3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	D3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	E3						B1-U0-G1	B1-U0-G1	B1-U0-G1
04	A3	4000	3900	3800	31	34	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	C3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	D3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	E3						B1-U0-G1	B1-U0-G1	B1-U0-G1
05	A3	5000	4900	4700	39	43	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	C3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	D3						B1-U0-G1	B1-U0-G1	B1-U0-G1
	E3						B1-U0-G1	B1-U0-G1	B1-U0-G1
06	A3	6000	5800	5700	47	52	B2-U0-G2	B2-U0-G2	B2-U0-G2
	B3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	C3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2
07	A3	7000	6800	6600	58		B2-U0-G2	B2-U0-G2	B2-U0-G2
	B3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	C3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2
08	A3	8000	7800	7600	71		B2-U0-G2	B2-U0-G2	B2-U0-G2
	B3						B2-U0-G2	B2-U0-G2	B2-U0-G2
	C3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2
09	A3	9000	8800	8500	84		B2-U0-G2	B2-U0-G2	B2-U0-G2
	B3						B2-U0-G2	B2-U0-G2	B2-U0-G2
	C3						B2-U0-G2	B2-U0-G2	B1-U0-G2
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2
10	A3	9800	9600	9250	97		B2-U0-G2	B2-U0-G2	B2-U0-G2
	B3						B2-U0-G2	B2-U0-G2	B2-U0-G2
	C3						B2-U0-G2	B2-U0-G2	B2-U0-G2
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2

For additional information on ERL1 IES files, please click one of the following links:

Non-Shielded Shielded

GE current
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Evolve® LED Roadway Lighting

Cobra Head (ERL1)

Photometric Plots

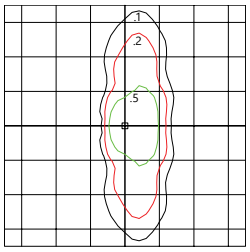
Project Name _____

Date _____ Type _____

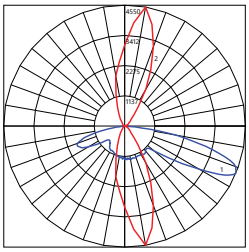
Notes _____

ERL1
Type II Narrow

5,000 Lumens
4000K
ERL1_05A340___.IES



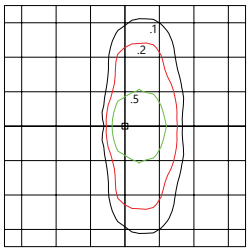
- Mounting Height at 30'
- Initial Footcandle at Grade



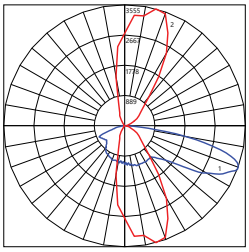
— Vertical plane at max Cd horiz. angle 80°
— Horizontal cone at max Cd vert. angle 67°

ERL1
Type II Wide

5,000 Lumens
4000K
ERL1_05B340___.IES



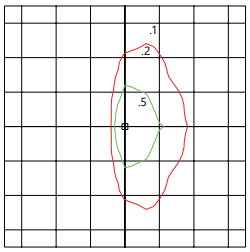
- Mounting Height at 30'
- Initial Footcandle at Grade



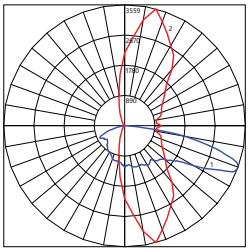
— Vertical plane at max Cd horiz. angle 75°
— Horizontal cone at max Cd vert. angle 69°

ERL1
Type III

5,000 Lumens
4000K
ERL1_05C340___.IES



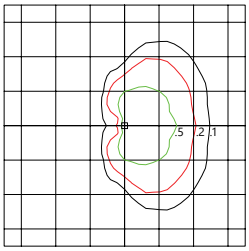
- Mounting Height at 30'
- Initial Footcandle at Grade



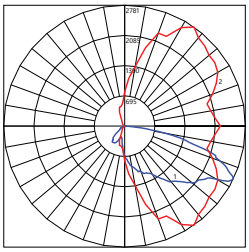
— Vertical plane at max Cd horiz. angle 75°
— Horizontal cone at max Cd vert. angle 70°

ERL1
Type IV

5,000 Lumens
4000K
ERL1_05D340___.IES



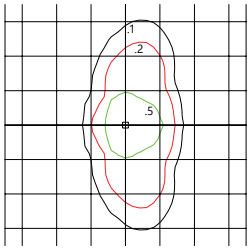
- Mounting Height at 30'
- Initial Footcandle at Grade



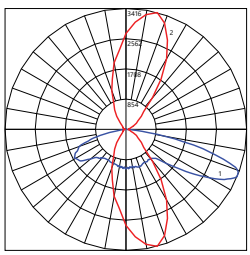
— Vertical plane at max Cd horiz. angle 55°
— Horizontal cone at max Cd vert. angle 64°

ERL1
Type II Enhanced Back Light

5,000 Lumens
4000K
ERL1_05E340___.IES



- Mounting Height at 30'
- Initial Footcandle at Grade



— Vertical plane at max Cd horiz. angle 75°
— Horizontal cone at max Cd vert. angle 67°

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Evolve® LED Roadway Lighting

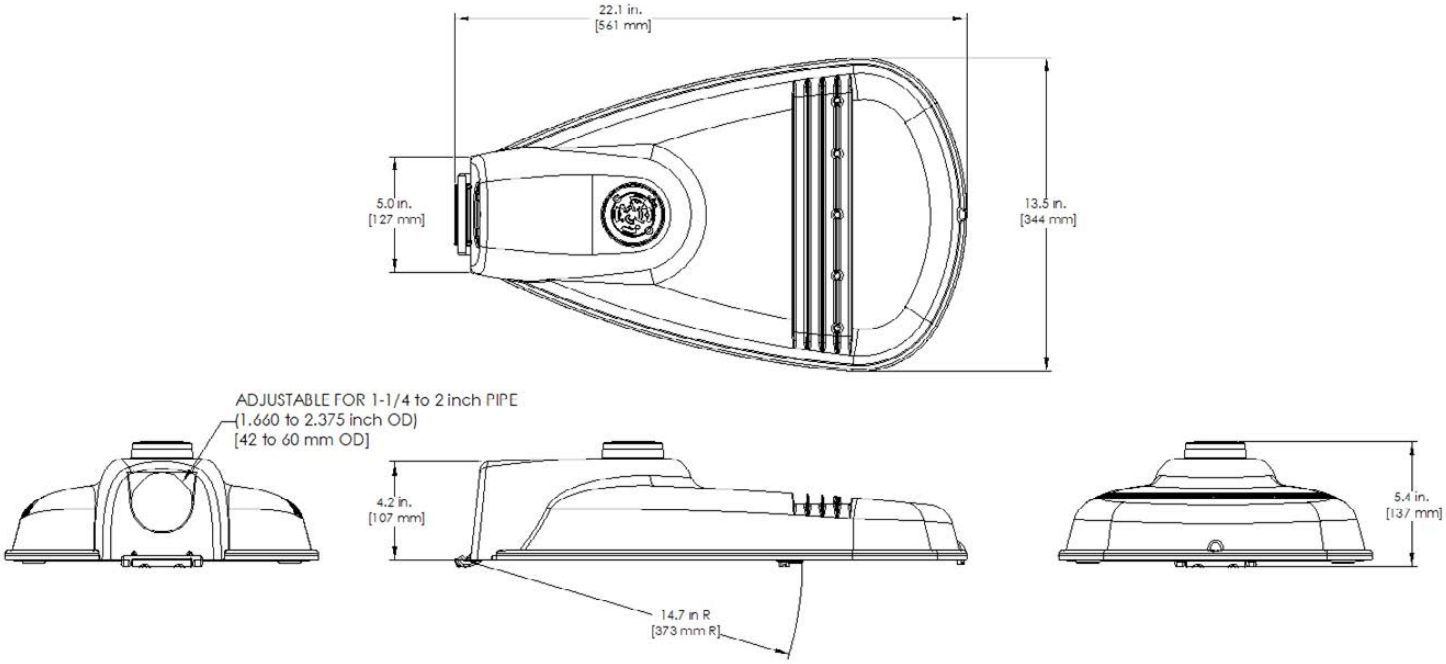
Cobra Head (ERL1)

Mounting & Accessories

Project Name _____

Date _____ Type _____

Notes _____



MOUNTING

- Adjustable for 1.25 to 2 in. nominal mounting pipe
- Integral diecast mounting pipe stop
- Slipfitter with +/- 5 degrees of leveling adjustment

EFFECTIVE PROJECTED AREA

- 0.5 sq ft max (0.046 sq m)

WEIGHT

- 12.4 lbs (5.6 kgs)

ACCESSORIES

SAP Number	Part Number	Description
93029237	PED-MV-LED-7	ANSI C136.41 Dimming PE, 120-277V
93029238	PED-347-LED-7	ANSI C136.41 Dimming PE, 347V
93029239	PED-480-LED-7	ANSI C136.41 Dimming PE, 480V
28299	PEC0TL	Standard 120-277V
XXXXXX	PECHTL	Standard 347-480V
73251	SCCL-PECTL	Shorting Cap

See pages 22 & 23 for more detailed information on ERL1 Shields.

NETWORKED LIGHTING CONTROL

Current's **LightGrid™** Outdoor Lighting Control System is designed for Street and Roadway Applications. It enables remote monitoring, control, and asset management of a single fixture or a group of fixtures through a web enabled Central Management System.

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Evolve® LED Roadway Lighting

Cobra Head (ERLH)

Project Name _____

Date _____ Type _____

Notes _____

The **Evolve**® LED Roadway ERLH Luminaire is optimized utilizing advanced LED reflective optical system for local, collector and major roadways. The modern design incorporates the heat sink directly into the unit for heat transfer to prolong LED life.

CONSTRUCTION

Housing:	Aluminum die cast enclosure casting integral heat sink for maximum heat transfer
Lens:	Impact resistant tempered glass
Paint:	Corrosion resistant powder paint, ≥ 2.0 mil thickness (RAL & custom colors available) Standard = Black, Dark Bronze, Gray, White Optional = Coastal Finish
Weight:	15.15 lbs (6.9 kgs) w/ 2 Bolt Slipfitter 15.85 lbs (7.2 kgs) w/ 4 Bolt Slipfitter

OPTICAL SYSTEM

Lumens:	10,000-16,000
Distribution:	Type II Narrow, Type II Wide, Type III, Type IV and Type II Enhanced Back Light
Efficacy:	110-143 LPW
CCT:	2700K, 3000K, 4000K
CRI:	≥70

ELECTRICAL

Input Voltage:	120-277V or 347-480V
Input Frequency:	50/60Hz
Power Factor:	≥ 90% at rated watts
Total Harmonic Distortion:	≤ 20% at rated watts

SURGE PROTECTION*

Standard	Optional
☐ 10kV/5kA	☐ Secondary 10kV/5kA (R Option) or ☐ Secondary 20kV/10kA (T Option)

*Per ANSI C136.2-2018

LUMEN MAINTENANCE

Projected Lxx per IES TM-21-11 at 25°C

Lumen Codes	Distributions	LXX(10K) @ Hours		
		25,000 HR	50,000 HR	60,000 HR
A3, B3, C3, D3, E3	10,11	L97	L96	L96
A3, B3, C3, D3, E3	13,14	L95	L93	L92
A3, B3, C3, D3, E3	15,16	L94	L91	L91

Note: Projected Lxx based on LM80 (≥ 10,000 hour testing). Accepted Industry tolerances apply to initial luminous flux and lumen maintenance measurements.

RATINGS

Operating Temperature:	ERLH Lumen outputs 10-11, 13 (-40°C to 50°C) ERLH Lumen outputs 14-16 (-40°C to 45°C)
Vibration:	3G per ANSI C136.31-2018
LM-79:	Testing in accordance with IES Standards

CONTROLS

Dimming:	Standard - 0-10V ☐ Optional - DALI (Option U) ☐
Sensors:	Photo Electric Sensors (PE) available LightGrid Compatible

WARRANTY

☐ 5 Year (Standard) ☐ 10 Year (Optional)

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UL 1598 for WET LOCATIONS · IP65 · IK08 · CONTROLS ENABLED

Not all product variations listed on this page are DLC qualified. Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERLH)

Catalog Logic

Project Name ______________________
Date ____________ Type ____________
Notes ______________________

ERLH

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

PROD. ID	VOLTAGE	LUMENS	DISTRIBUTION	CCT	CONTROLS PER ANSI C136.41	COLOR	OPTIONS
E = Evolve	0 = 120-277[1]	10	A3 = Type II Narrow	27 = 2700K[3]	A = 7-Pin Receptacle	BLCK = Black	A = 4 Bolt Slipfitter[5]
R = Roadway	H = 347-480[1]	11	B3 = Type II Wide	30 = 3000K[3]	D = 7-Pin Receptacle with Shorting Cap	DKBZ = Dark Bronze	B = Tether
L = Local		13	C3 = Type III	40 = 4000K	E = 7 Pin Receptacle with Long Life non-Dimming PE Control[5]	GRAY = Gray	F = Fusing
H = High Output	1 = 120	14	D3 = Type IV			WHTE= White	G = Internal Bubble Level
	2 = 208	15	E3 = Type II Enhanced Back Light		Note: 0-10V control standard unless DALI Option "U" requested		I = Optional IP66 Optical
	3 = 240	16					L = Tool-Less Entry
	4 = 277						R = Secondary 10kV/5kA SPD
	5 = 480						T = Secondary 20kV/10kA SPD
	D = 347						U = DALI Programmable[6,7]
							V1 = Field Adjustable Module[10]
							X = Single Pack[8]
							Y = Coastal Finish[9]
							XXX = Special Options

[1] Not Available with Fusing
[2] Nominal IES Type classing subject to typical variation, individual units may differ
[3] Select 2700K or 3000K CCT for IDA approved units
[4] PE Control Only available for 120-277V or Discrete 347V or 480V. Not available for 347-480V.
[5] Lead time varies, Contact Factory
[6] Compatible with LightGrid
[7] Not available in 347V, 480V or 347-480V for Lumen Output Levels 07-10
[8] Option provides single pack box per fixture. Standard packaging = 23 units per MagnaPak Container
[9] Recommended for installations within 750 feet from coast. Lead time varies, check with factory.
[10] Not available with DALI "U" option

SUGGESTED HID REPLACEMENT

- Approximately 8,500 -11,500 lumens to replace 200W HPS Cobra-head
- Approximately 11,500 -14,000 lumens to replace 250W HPS Cobra-head

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

Previous	Optical Pattern	Latest	New Optical Pattern
A1, B1	Extra Narrow/Narrow Asymmetric	A3	Type II Narrow
C1, E1	Asymmetric Short/ Medium	B3	Type II Wide
D1, G1	Asymmetric Forward/ Extra Wide	C3	Type III
F1	Asymmetric Wide	D3	Type IV
N/A	N/A	E3	Type II Enhanced Back Light

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

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Not all product variations listed on this page are DLC qualified.
Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERLH)

Spec Tables

Project Name _____

Date _____ Type _____

Notes _____

LUMEN OUTPUT	DISTRIBUTION	LUMENS			WATTAGE	BUG RATINGS		
		4000K	3000K	2700K	120-277V 347-480V	4000K	3000K	2700K
10	A3	10000	9600	9300	82	B2-U0-G2	B2-U0-G2	B2-U0-G2
	B3					B2-U0-G2	B2-U0-G2	B2-U0-G2
	C3					B2-U0-G3	B2-U0-G2	B2-U0-G2
	D3					B1-U0-G3	B1-U0-G2	B1-U0-G2
	E3					B3-U0-G3	B3-U0-G3	B3-U0-G3
11	A3	11500	11000	10700	98	B3-U0-G3	B2-U0-G2	B2-U0-G2
	B3					B3-U0-G3	B2-U0-G2	B2-U0-G2
	C3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	D3					B1-U0-G3	B1-U0-G2	B1-U0-G2
	E3					B3-U0-G3	B3-U0-G3	B3-U0-G3
13	A3	13000	12500	12100	111	B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	C3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	D3					B2-U0-G3	B2-U0-G3	B1-U0-G3
	E3					B3-U0-G3	B3-U0-G3	B3-U0-G3
14	A3	14000	13400	13000	122	B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	C3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	D3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	E3					B3-U0-G3	B3-U0-G3	B3-U0-G3
15	A3	15000	14400	13900	136	B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	C3					B2-U0-G3	B3-U0-G3	B2-U0-G3
	D3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	E3					B3-U0-G3	B3-U0-G3	B3-U0-G3
16	A3	16000	15300	14900	149	B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3					B3-U0-G3	B3-U0-G3	B2-U0-G3
	C3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	D3					B2-U0-G3	B2-U0-G3	B2-U0-G3
	E3					B3-U0-G3	B3-U0-G3	B3-U0-G3

For additional information on ERLH IES files, please click one of the following links:

Non-Shielded Shielded

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Evolve® LED Roadway Lighting

Cobra Head (ERLH)

Photometric Plots

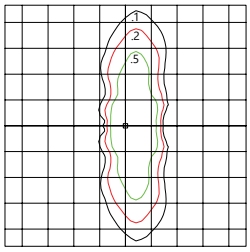
Project Name _____

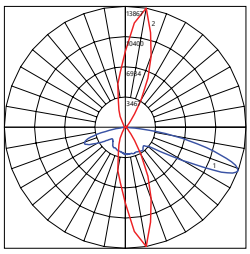
Date _____ Type _____

Notes _____

ERLH
Type II Narrow

13,000 Lumens
4000K
ERLH_13A340___.IES



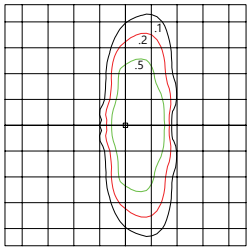


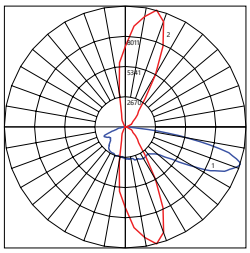
- Mounting Height at 30'
- Initial Footcandle at Grade

— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

ERLH
Type II Wide

13,000 Lumens
4000K
ERLH_13B340___.IES



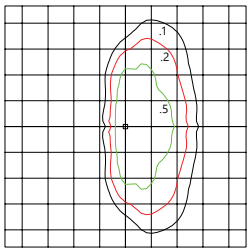


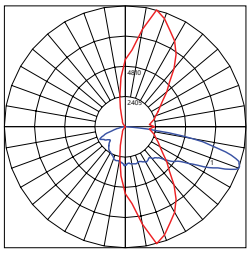
- Mounting Height at 30'
- Initial Footcandle at Grade

— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

ERLH
Type III

13,000 Lumens
4000K
ERLH_13C340___.IES



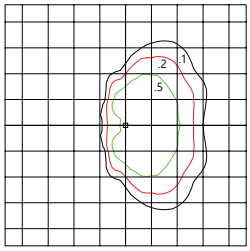


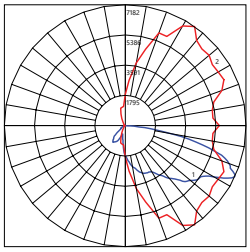
- Mounting Height at 30'
- Initial Footcandle at Grade

— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

ERLH
Type IV

13,000 Lumens
4000K
ERLH_13D340___.IES



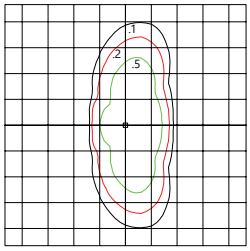


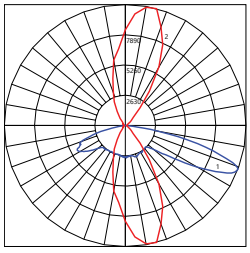
- Mounting Height at 30'
- Initial Footcandle at Grade

— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

ERLH
Type II Enhanced Back Light

13,000 Lumens
4000K
ERLH_13E340___.IES





- Mounting Height at 30'
- Initial Footcandle at Grade

— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

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Evolve® LED Roadway Lighting

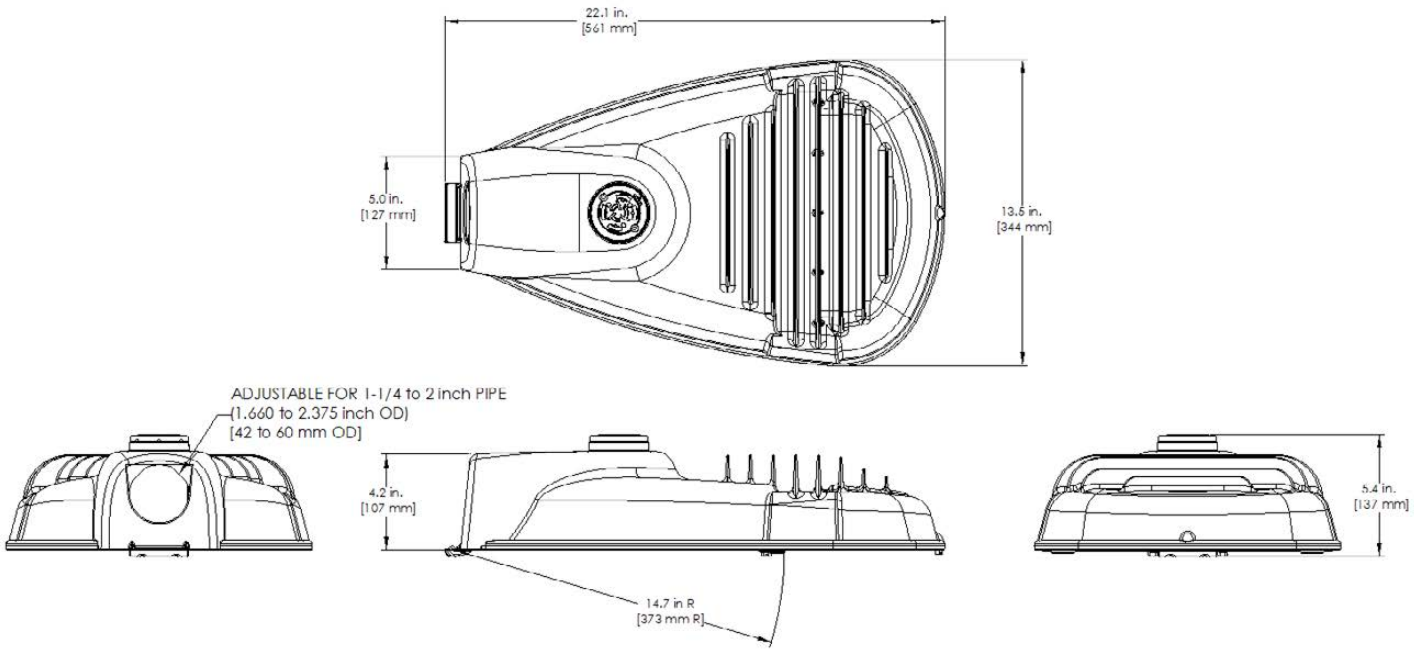
Cobra Head (ERLH)

Mounting & Accessories

Project Name _____

Date _____ Type _____

Notes _____



MOUNTING

- Adjustable for 1.25 to 2 in. nominal mounting pipe
- Integral diecast mounting pipe stop
- Slipfitter with +/- 5 degrees of leveling adjustment

EFFECTIVE PROJECTED AREA

- 0.5 sq ft max (0.046 sq m)

WEIGHT

- 15.15 lbs (6.9 kgs) w/ 2 Bolt Slipfitter
- 15.85 lbs (7.2 kgs) w/ 4 Bolt Slipfitter

ACCESSORIES

SAP Number	Part Number	Description
93029237	PED-MV-LED-7	ANSI C136.41 Dimming PE, 120-277V
93029238	PED-347-LED-7	ANSI C136.41 Dimming PE, 347V
93029239	PED-480-LED-7	ANSI C136.41 Dimming PE, 480V
28299	PEC0TL	Standard 120-277V
XXXXXX	PECHTL	Standard 347-480V
73251	SCCL-PECTL	Shorting Cap

See pages 22 & 23 for more detailed information on ERLH Shields.

NETWORKED LIGHTING CONTROL

Current's **LightGrid™** Outdoor Lighting Control System is designed for Street and Roadway Applications. It enables remote monitoring, control, and asset management of a single fixture or a group of fixtures through a web enabled Central Management System.

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Evolve® LED Roadway Lighting

Cobra Head (ERL2)

Project Name _____

Date _____ Type _____

Notes _____

The **Evolve**® LED Roadway ERL2 Luminaire is optimized utilizing advanced LED reflective optical system for local, collector and major roadways. The modern design incorporates the heat sink directly into the unit for heat transfer to prolong LED life.

CONSTRUCTION

Housing:	Aluminum die cast enclosure casting integral heat sink for maximum heat transfer
Lens:	Impact resistant tempered glass
Paint:	Corrosion resistant polyester powder paint, minimum ≥ 2.0 mil thickness (RAL & custom colors available) Standard = Black, Dark Bronze, Gray, White Optional = Coastal Finish
Weight:	24.0 lbs (10.9 kgs)

OPTICAL SYSTEM

Lumens:	16,000 - 30,000
Distribution:	Type II Narrow, II/III, III, V
Efficacy:	110-143 LPW
CCT:	2700K, 3000K, 4000K
CRI:	≥ 70

ELECTRICAL

Input Voltage:	120-277V or 347-480V
Input Frequency:	50/60Hz
Power Factor:	≥ 90% at rated watts
Total Harmonic Distortion:	≤ 20% at rated watts

SURGE PROTECTION*

Standard	Optional
☐ 10kV/5kA	☐ Secondary 10kV/5kA (R Option) or ☐ Secondary 20kV/10kA (T Option)

*Per ANSI C136.2-2018

LUMEN MAINTENANCE

Projected Lxx per IES TM-21-11 at 25°C

Lumen Codes	Distributions	LXX(10K) @ Hours		
		25,000 HR	50,000 HR	60,000 HR
16, 18, 19, 21, 23	A3,B3,C3, D3,E3	L96	L94	L94
25, 27, 28	A3,B3,C3, D3,E3	L95	L93	L92
30	A3,B3,C3, D3,E3	L94	L91	L90

Note: Projected Lxx based on LM80 (≥ 10,000 hour testing). Accepted Industry tolerances apply to initial luminous flux and lumen maintenance measurements.

RATINGS

Operating Temperature:	Lumen Output 16-28 (-40°C to 50°C) Lumen Output 30 (-40°C to 45°C)
Vibration:	3G per ANSI C136.31-2018
LM-79:	Testing in accordance with IES Standards

CONTROLS

Dimming:	Standard - 0-10V	☐
	Optional - DALI (Option U)	☐
Sensors:	Photo Electric Sensors (PE) available LightGrid Compatible	

WARRANTY

☐ 5 Year (Standard) ☐ 10 Year (Optional)

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UL 1598 WET LOCATIONS · IP65 · IK07 · CONTROLS ENABLED

Not all product variations listed on this page are DLC qualified. Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERL2)

Catalog Logic

Project Name ____________________
Date __________ Type __________
Notes ____________________

E R L 2

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

PROD. ID	VOLTAGE	LUMENS	DISTRIBUTION	CCT	CONTROLS PER ANSI C136.41	COLOR	OPTIONS
E = Evolve	0 = 120-277[1]	16	A3 = Type II Narrow[2]	27 = 2700K[3]	A = 7-Pin Receptacle	BLCK = Black	A = 4 Bolt Slipfitter[5]
R = Roadway	H = 347-480[1]	18	B3 = Type II Wide	30 = 3000K[3]	D = 7-Pin Receptacle with Shorting Cap	DKBZ = Dark Bronze	B = Tether
L = Local		19	C3 = Type III	40 = 4000K	E = 7 Pin Receptacle with Long Life non-Dimming PE Control[4]	GRAY = Gray	F = Fusing
2 = Double Module	1 = 120	21	D3 = Type IV			WHTE= White	G = Internal Bubble Level
	2 = 208	23	E3 = Type II Enhanced Back Light		Note: 0-10V control standard unless DALI Option "U" requested		I = Optional IP66 Optical
	3 = 240	25					L = Tool-Less Entry
	4 = 277	27					M1 = MagnaPak[9]
	5 = 480	28					R = Secondary 10kV/5kA SPD
	D = 347	30					T = Secondary 20kV/10kA SPD
							U = DALI Programmable[6]
							V1 = Field Adjustable Module[8]
							Y = Coastal Finish[7]
							XXX = Special Options

1 Not Available with Fusing
2 Nominal IES Type classing subject to typical variation, individual units may differ
3 Select 2700K or 3000K CCT for IDA approved units
4 PE Control Only available for 120-277V or Discrete 347V or 480V. Not available for 347-480V.
5 Lead time varies, Contact Factory
6 Compatible with LightGrid
7 Recommended for installations within 750 feet from coast. Lead time varies, check with factory.
8 Not available with DALI "U" option
9 Option M1 provides for MagnaPak – 20 Fixtures per MagnaPak Container. Single Pack box is standard

SUGGESTED HID REPLACEMENT

- Approximately 21,000 - 30,000 lumens lumens to replace 400W HPS Cobra-head

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

Previous	Optical Pattern	Latest	New Optical Pattern
A1, B1	Extra Narrow/Narrow Asymmetric	A3	Type II Narrow
C1, E1	Asymmetric Short/ Medium	B3	Type II Wide
D1, G1	Asymmetric Forward/ Extra Wide	C3	Type III
F1	Asymmetric Wide	D3	Type IV
N/A	N/A	E3	Type II Enhanced Back Light

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

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Not all product variations listed on this page are DLC qualified. Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERL2)

Spec Tables

Project Name _____

Date _____ Type _____

Notes _____

LUMEN OUTPUT	DIST.	LUMENS			WATTAGE		BUG RATINGS		
		4000K	3000K	2700K	277V	480V	4000K	3000K	2700K
16	A3	16000	15300	14900	120		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3						B3-U0-G3	B3-U0-G3	B2-U0-G3
	C3						B2-U0-G3	B2-U0-G3	B2-U0-G3
	D3						B2-U0-G3	B2-U0-G3	B2-U0-G3
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3
18	A3	18000	17300	16700	140		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3						B3-U0-G3	B3-U0-G3	B3-U0-G3
	C3						B2-U0-G3	B2-U0-G3	B2-U0-G3
	D3						B2-U0-G3	B2-U0-G3	B2-U0-G3
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3
19	A3	19000	18200	17700	149		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3						B3-U0-G3	B3-U0-G3	B3-U0-G3
	C3						B3-U0-G3	B2-U0-G3	B2-U0-G3
	D3						B2-U0-G3	B2-U0-G3	B2-U0-G3
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3
21	A3	21000	20100	19500	174	177	B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3						B3-U0-G3	B3-U0-G3	B3-U0-G3
	C3						B3-U0-G4	B3-U0-G3	B3-U0-G3
	D3						B2-U0-G3	B2-U0-G3	B2-U0-G3
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3
23	A3	23000	22100	21400	194	196	B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3						B3-U0-G3	B3-U0-G3	B3-U0-G3
	C3						B3-U0-G4	B3-U0-G4	B3-U0-G4
	D3						B2-U0-G4	B2-U0-G4	B2-U0-G3
	E3						B3-U0-G3	B3-U0-G3	B3-U0-G3
25	A3	25000	24000	23300	214		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3						B3-U0-G3	B3-U0-G3	B3-U0-G3
	C3						B3-U0-G4	B3-U0-G4	B3-U0-G4
	D3						B2-U0-G4	B2-U0-G4	B2-U0-G4
	E3						B4-U0-G4	B4-U0-G4	B4-U0-G4
27	A3	27000	25900	25100	237		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3						B3-U0-G4	B3-U0-G4	B3-U0-G3
	C3						B3-U0-G4	B3-U0-G4	B3-U0-G4
	D3						B2-U0-G4	B2-U0-G4	B2-U0-G4
	E3						B4-U0-G4	B4-U0-G4	B4-U0-G4
28	A3	28000	26900	26100	251		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B3						B3-U0-G4	B3-U0-G4	B3-U0-G4
	C3						B3-U0-G4	B3-U0-G4	B3-U0-G4
	D3						B2-U0-G4	B2-U0-G4	B2-U0-G4
	E3						B4-U0-G4	B4-U0-G4	B4-U0-G4
30	A3	30000	28800	27900	278		B4-U0-G4	B4-U0-G4	B3-U0-G3
	B3						B3-U0-G4	B3-U0-G4	B3-U0-G4
	C3						B3-U0-G4	B3-U0-G4	B3-U0-G4
	D3						B2-U0-G4	B2-U0-G4	B2-U0-G4
	E3						B4-U0-G4	B4-U0-G4	B4-U0-G4

For additional information on ERL2 IES files, please click one of the following links:

Non-Shielded Shielded

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Evolve® LED Roadway Lighting

Cobra Head (ERL2)

Photometric Plots

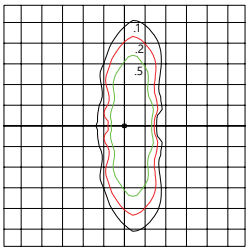
Project Name _____

Date _____ Type _____

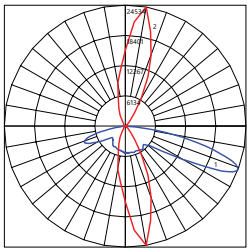
Notes _____

ERL2
Type II Narrow

23,000 Lumens
4000K
ERL2_23A340___.IES



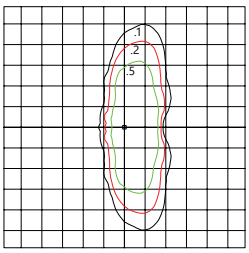
- Mounting Height at 30'
- Initial Footcandle at Grade



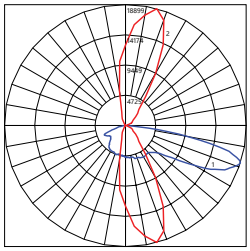
— Vertical plane at max Cd horiz. angle 80°
— Horizontal cone at max Cd vert. angle 69°

ERL2
Type II Wide

23,000 Lumens
4000K
ERL2_23B340___.IES



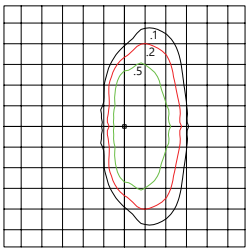
- Mounting Height at 30'
- Initial Footcandle at Grade



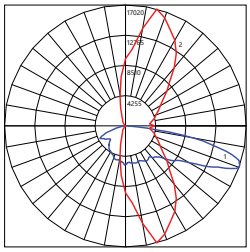
— Vertical plane at max Cd horiz. angle 75°
— Horizontal cone at max Cd vert. angle 72°

ERL2
Type III

23,000 Lumens
4000K
ERL2_23C340___.IES



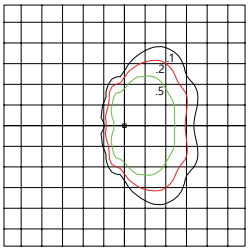
- Mounting Height at 30'
- Initial Footcandle at Grade



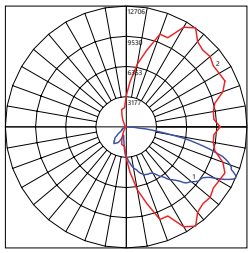
— Vertical plane at max Cd horiz. angle 75°
— Horizontal cone at max Cd vert. angle 71°

ERL2
Type IV

23,000 Lumens
4000K
ERL2_23D340___.IES



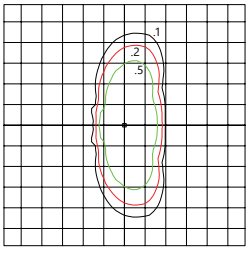
- Mounting Height at 30'
- Initial Footcandle at Grade



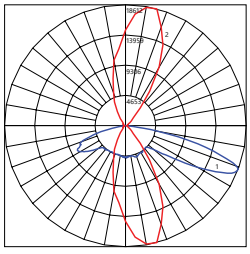
— Vertical plane at max Cd horiz. angle 55°
— Horizontal cone at max Cd vert. angle 65°

ERL2
Type IV

23,000 Lumens
4000K
ERL2_23E340___.IES



- Mounting Height at 30'
- Initial Footcandle at Grade



— Vertical plane at max Cd horiz. angle 75°
— Horizontal cone at max Cd vert. angle 69°

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Evolve® LED Roadway Lighting

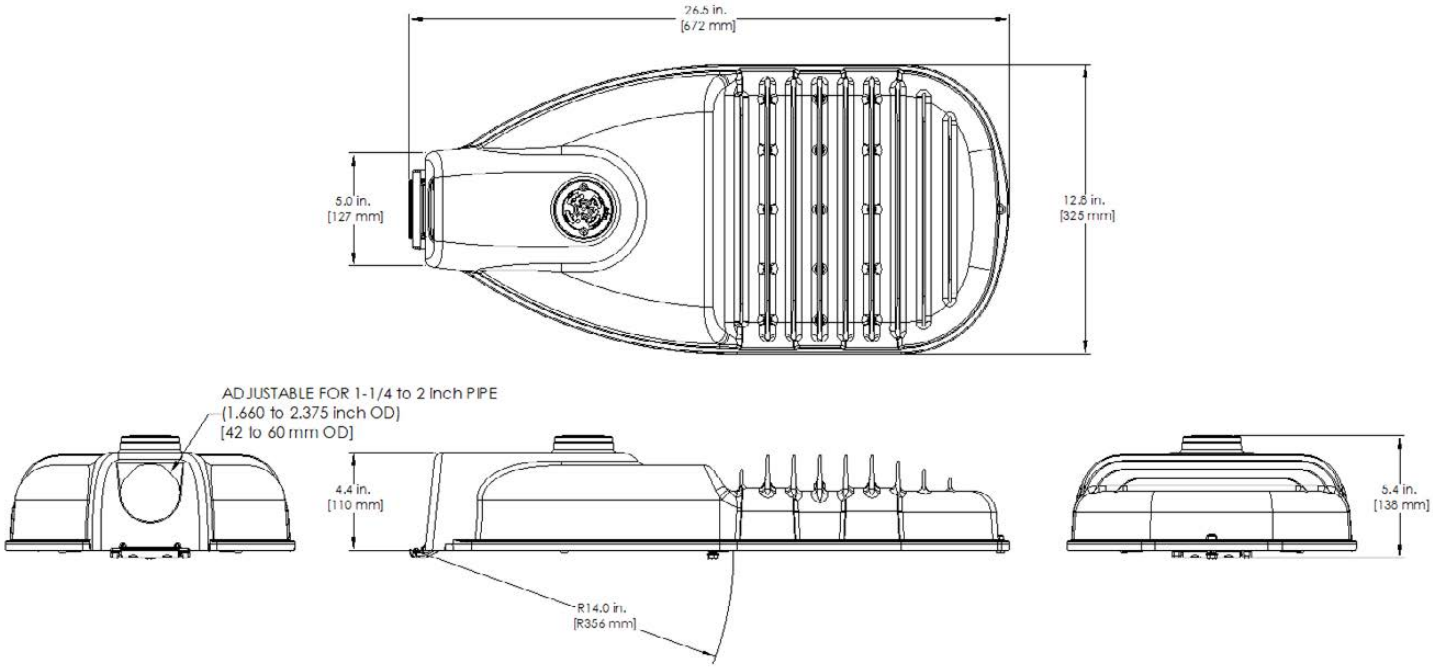
Cobra Head (ERL2)

Mounting & Accessories

Project Name _____

Date _____ Type _____

Notes _____



MOUNTING

- Adjustable for 1.25 to 2 in. nominal mounting pipe
- Integral diecast mounting pipe stop
- Slipfitter with +/- 5 degrees of leveling adjustment

EFFECTIVE PROJECTED AREA

- 0.57 sq ft max (0.053 sq m)

WEIGHT:

- 24.0 lbs (10.9 kgs)

ACCESSORIES

SAP Number	Part Number	Description
93029237	PED-MV-LED-7	ANSI C136.41 Dimming PE, 120-277V
93029238	PED-347-LED-7	ANSI C136.41 Dimming PE, 347V
93029239	PED-480-LED-7	ANSI C136.41 Dimming PE, 480V
28299	PEC0TL	Standard 120-277V
XXXXXX	PECHTL	Standard 347-480V
73251	SCCL-PECTL	Shorting Cap

See pages 22 & 23 for more detailed information on ERL2 Shields.

NETWORKED LIGHTING CONTROL

Current's **LightGrid™** Outdoor Lighting Control System is designed for Street and Roadway Applications. It enables remote monitoring, control, and asset management of a single fixture or a group of fixtures through a web enabled Central Management System.

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Evolve® LED Cobra Head
Shield Guide

Project Name _____

Date _____ Type _____

Notes _____

HOUSE SIDE SHIELDS

ERLC SHIELDS

Product Code:	93110037	Description:	ELSHS-ERLC-BLCK
Product Code:	93110038	Description:	ELSHS-ERLC-GRAY

ERL1 / ERLH SHIELDS

Product Code:	93024487	Description:	ELSHS-ERL1-BLCK
Product Code:	93046386	Description:	ELSHS-ERL1-GRAY
Product Code:	93068998	Description:	ELSHS-ERL1-DKBZ

ERL2 SHIELDS

Product Code:	93070722	Description:	ELSHS-ERL2-BLCK
Product Code:	93085564	Description:	ELSHS-ERL2-GRAY
Product Code:	93096747	Description:	ELSHS-ERL2-DKBZ

STREET SIDE SHIELDS

ERLC SHIELDS

Product Code:	93132372	Description:	ELSFS-ERLC-BLCK-10
Product Code:	93132373	Description:	ELSFS-ERLC-BLCK-15
Product Code:	93134760	Description:	ELSFS-ERLC-BLCK-20

ERL1 / ERLH SHIELDS

Product Code:	93092595	Description:	ELSFS-ERL1-BLCK-10
Product Code:	93108740	Description:	ELSFS-ERL1-GRAY-10
Product Code:	93092906	Description:	ELSFS-ERL1-BLCK-15
Product Code:	93105144	Description:	ELSFS-ERL1-GRAY-15
Product Code:	93088130	Description:	ELSFS-ERL1-BLCK-20
Product Code:	93088131	Description:	ELSFS-ERL1-GRAY-20

ERL2 SHIELDS

Product Code:	93132955	Description:	ELSFS-ERL2-BLCK-20
Product Code:	93132986	Description:	ELSFS-ERL2-GRAY-20

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Evolve® LED Cobra Head
Shield Guide

Project Name _____

Date _____ Type _____

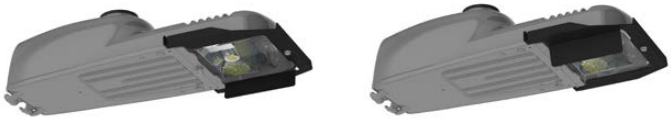
Notes _____

SIDE SHIELDS (L&R)

Shipped as a kit - L & R can be used independently

ERLC SHIELDS

Product Code:	93132374	Description:	ELS-ERLC-LEFTRIGHTSIDEKIT-BLCK-10



ERL1 / ERLH SHIELDS

Product Code:	93118695	Description:	ELS-ERL1H-LEFTRIGHTSIDEKIT-BLCK-10

ERL2 SHIELDS

Product Code:	93132989	Description:	ELS-ERL2-LEFTRIGHTSIDEKIT-BLCK-10

FOOTNOTES:

1) 10 = 1" Shield Depth; 15 = 1.5" Shield Depth; 20 = 2" Shield Depth
2) Black is recommended to reduce potential for glare coming off of the shield
3) Use "House Side" Shield to block light trespass behind the pole
4) Use "Street Side" / Front Shield to block light light trespass across the street

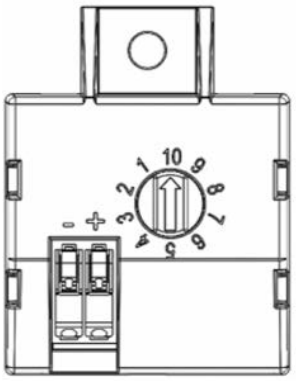
OLP3128 (Rev 05/25/21)

Evolve™ Field Adjustable Module

Module Evolve™ Réglable sur Chantier

Módulo ajustable de campo de Evolve™

(FAM)



BEFORE YOU BEGIN
AVANT DE COMMENCER
ANTES DE COMENZAR

Read these instructions completely and carefully.
Save these instructions for future use.
Lisez ces instructions entièrement et attentivement.
Conservez ces instructions pour usage futur.
Lea estas instrucciones completamente y con cuidado.
Guarde esta guía para uso futuro.

⚠ WARNING/AVERTISSEMENT/ADVERTENCIA		
RISK OF ELECTRIC SHOCK Disconnect power before service installation, or maintenance of the product.	**RISQUE D'ÉLECTROCUTION** Coupez l'alimentation avant l'installation ou un entretien de ce produit.	**RIESGO DE CHOQUE ELÉCTRICO** Desconecte la alimentación antes del mantenimiento o la instalación del producto.

⚠ CAUTION / ATTENTION / PRECAUCIÓN		
RISK OF INJURY Wear safety glasses and gloves during installation and servicing.	**RISQUE DE BLESSURE** Portez des lunettes de sécurité et des gants lors de l'installation et des entretiens.	**RIESGO DE LESIONES** Utilice gafas y guantes de seguridad durante la instalación y mantenimiento.

General/Généralités/Información General

The Field Adjustable Module (FAM) is a factory-installed voltage regulating device that is connected to the gray (-) and violet (+) 0-10V dimming leads of the LED driver. Manually dialing the switch allows the fixture to be dimmed in the field.

Le module réglable sur chantier (FAM) est un appareil de régulation de la tension installé en usine, qui est raccordé aux fils de gradation gris (-) et violet (+) 0 – 10V de gradation de l'alimentation LED. Un réglage manuel de l'interrupteur permet la gradation de l'appareil sur chantier.

El módulo ajustable de campo (FAM) es un dispositivo de regulación de voltaje instalado en fábrica que está conectado al cable de atenuación gris (-) y violeta (+) 0-10V del conductor del LED. La marcación manual del interruptor permite que la lámpara se atenúa en campo.

Position Posición	Dimming Voltage Tension de gradation Voltaje de atenuación (±0.1V)	% Output Power % Puissance de sortie % de potencia de salida (± 5%)
10	OPEN/ OUVERT/ ABIERTO	100%
9	OPEN/ OUVERT/ ABIERTO	100%
8	7.75	85%
7	6.59	71%
6	6.06	64%
5	5.50	58%
4	4.71	49%
3	4.49	47%
2	3.02	31%
1	3.01	30%

Adjusting The Output

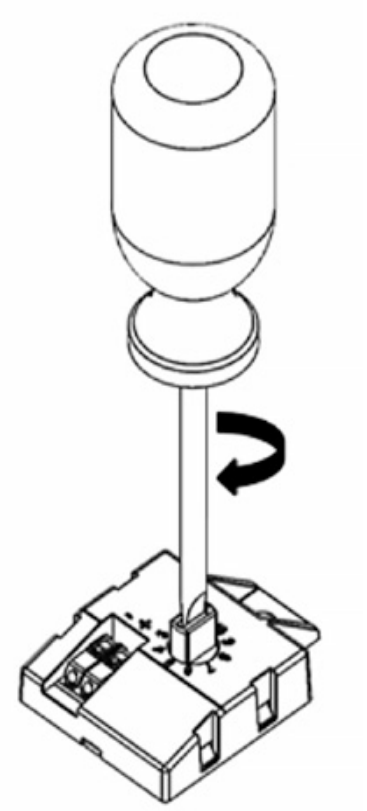
Rotate the actuator knob by hand or with a flat head screwdriver to adjust the light output based on the table. Position 10 is the factory default position and represents full brightness. Position 1 is the lowest brightness level.

Fixture % lumen output is approximately equal to % output power.

Actual Lumens = Rated Lumens x % Output Power

Example:
Rated Lumens = 15,000 lm
FAM Position = 7
% Output Power = 71%
Actual Lumens = 10,650 lm

Note: Specifications subject to change without notice. Actual performance may vary with application conditions. Circuit is protected up to 30V. FAM is not compatible with DALI control or GE Light Grid.



Réglage De La Sortie

Tournez le bouton de la commande à la main ou avec un tournevis plat pour régler l'intensité lumineuse basée sur le tableau. La position 10 est la position par défaut en usine et représente la luminosité maximum. La position 1 est le niveau de luminosité minimum.

L'intensité lumineuse de sortie de l'appareil en % est égale approximativement à la puissance de sortie en %.

Lumens actuels = Lumens Classés x % Puissance de sortie

Exemple:
Classe Lumens : 15.000 Lm
Position du FAM = 7
Puissance de sortie % = 71% Lumens actuels = 10.650 Lm

Remarque: Spécifications sujettes à modifications sans préavis. Les performances actuelles peuvent varier suivant les conditions de l'application. Le circuit est protégé jusque 30 V. FAM n'est pas compatible avec le contrôle DALI ou avec la LightGrid GE.

Ajuste De La Potencia De Salida

Gire la perilla actuador a mano o con un destornillador plano para ajustar la salida de luz basado en la tabla. La posición 10 es la posición predeterminada de fábrica y representa el brillo completo. La posición 1 es el nivel de brillo más bajo.

% de salida de lumen de la lampara es aproximadamente igual al % potencia de salida.

Lúmenes reales = lúmenes nominales multiplicado por % de potencia de salida

Ejemplo:
Lúmenes nominales = 15.000 lm
Posición del FAM = 7
% Potencia de salida = 71%
Lúmenes reales = 10.650 lm

Nota: Especificaciones sujetas a cambios sin previo aviso. Rendimiento real puede variar según las condiciones de aplicación. Circuito está protegido hasta 30V. FAM noes compatible con el control DALI (interfaz digital de alumbrado direccional) o con el GE Light Grid.

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APPENDIX D
LIGHTING PLANS WITH ANALYSIS OVERLAY

NOTES:

1. THE EXISTING PULL BOX ADJACENT TO THE RELOCATED LIGHT POLE SHALL BE REPLACED WITH A NEW PULL BOX. IDENTIFY THE EXISTING CONDUCTORS IN THE PULL BOX AND SPLICE THE RELOCATED LIGHT POLE'S BRANCH CONDUCTORS TO THE THE EXISTING LIGHTING CIRCUIT CONDUCTORS. EXISTING LIGHTING CIRCUIT CONDUCTORS SHALL REMAIN AND THE EXISTING LIGHTING CIRCUIT CONTINUITY.

2. THE EXISTING PULL BOX SHALL BE REPLACED WITH A NEW PULL BOX. IDENTIFY THE EXISTING CONDUCTORS IN THE PULL BOX AND SPLICE THE PROPOSED LIGHT POLE'S BRANCH CONDUCTORS TO THE THE EXISTING LIGHTING CIRCUIT CONDUCTORS. EXISTING LIGHTING CIRCUIT CONDUCTORS SHALL REMAIN AND THE EXISTING LIGHTING CIRCUIT CONTINUITY.

1" = 40'

N

FP&L TO INSTALL LIGHT POLE #42 AT STA. 152+99, 51.0' LT WITH LUMINAIRE (A)

5 LF 630-2-91
(17" X 30") 1 EA 635-2-30
30 LF 630-2-92
(17" X 30") 1 EA 635-2-30

630-2-92 120 LF
635-2-30 (17" X 30") 1 EA
630-2-92 155 LF (2 RUNS)

℄ OF CONST.

MANATEE AVE. W (S.R. 64)

322 323 324 325 326 327 328

1 CONDUIT RUN (LC)
2- #6
1- # 6 GRND
25 LF 630-2-11
123 LF 715-1-12

715-11-211 1 EA
EXISTING LIGHT POLE TO REMAIN POLE NO. FDOT-1

RELOCATE LIGHT POLE TO STA. 323+80, 51.5 RT POLE NO. FDOT-2 ON EXISTING CIRCUIT

1 EA 635-2-11
1 EA 715-68-000
1 EA 715-500-1

1 EA 635-2-11
REPLACE PULL BOX (SEE NOTE 1)

EXIST. R/W

75TH STREET W

PROPOSED FP&L LIGHT POLE UNDER THE 75TH STREET W LIGHTING PLANS

715-11-211 1 EA
EXISTING LIGHT POLE TO REMAIN POLE NO. FDOT-3

STA. 326+26, 49.7 RT POLE NO. FDOT-4 ON EXISTING CIRCUIT

635-2-11 1 EA
715-61-452 1 EA
715-500-1 1 EA

1 CONDUIT RUN (LC)
2- #6
1- # 6 GRND
155 LF 630-2-12
513 LF 715-1-12

1 EA 715-11-211
EXISTING LIGHT POLE TO REMAIN POLE NO. FDOT-4

1 EA 635-2-11
REPLACE PULL BOX (SEE NOTE 2)

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
NO.	DESCRIPTION	DATE	BY
----	----		

Stantec
STANTEC CONSULTING SERVICES, INC.

DAVID J. ALLEN, P.E.
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MANATEE COUNTY PUBLIC WORKS
COUNTY PROJECT NO: 6108261

75TH STREET WEST FROM 20TH AVENUE W. TO MANATEE AVENUE W. (SR 64)

LIGHTING PLAN

SHEET NO. L-7

Allen, David 7/14/2023 3:31:55 PM C:\Project_Files_Folder\75th St\acad\dwg\00000000000\Lighting\PLANLT01 - Manatee.dwg