

**90% SUBMITTAL**

**LIGHTING DOCUMENTATION**

**FOR**

**75<sup>th</sup> Street West Roadway Widening Project  
From North of 20th Avenue to Manatee Avenue**

**Manatee County, Florida**

**County Project Number:  
6108260**

**Prepared For:**

**MANATEE COUNTY**



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

**July 2023**



**90% Submittal Roadway Lighting Documentation  
75<sup>th</sup> Street West Roadway Widening Project  
From North of 20<sup>th</sup> Avenue to Manatee Avenue  
Manatee County Project No. 6108260**

**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: Roadway Lighting Documentation  
75<sup>th</sup> Street West Roadway Widening Project  
Manatee County Project Number: 6108260  
Manatee County, Florida**

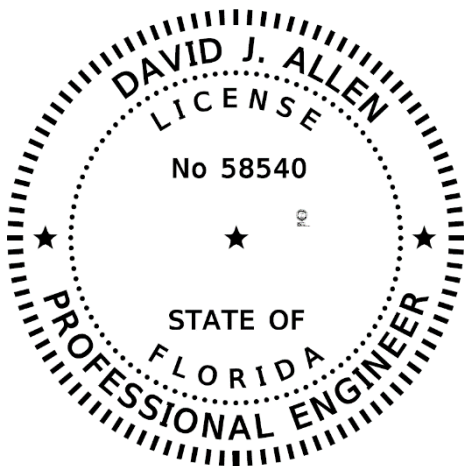
The engineering work represented by this document was performed through the following duly authorized engineering business:

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

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES



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## **1.0 Introduction**

Manatee County has contracted Stantec Consulting Services, Inc. to develop a roadway widening design for 75<sup>th</sup> Street West from north of 20<sup>th</sup> Avenue to Manatee Avenue. See graphic on the next page for the project location.





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## **2.0 Roadway and Intersection Lighting Analysis**

This Lighting Documentation has been prepared using the Visual 2020 and Roadway Tool 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**

Based on the typical section and the high number of residential units, the roadway lighting will need to be included on both sides of 75<sup>th</sup> Street with a low mounting height to decrease the amount of light trespass. Due to power lines along the west side of the road, it was decided through coordination with Manatee County and Florida Power and Light (FP&L) to have the roadway lighting be maintained by FP&L. Stantec Consulting Services, Inc. will provide a lighting design using FP&L material that includes pull boxes, light poles and luminaires. 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. Appendix C has emails of this correspondence. The County Contractor will use the Lighting Plans and material given by FP&L to install only the conduit and pull boxes. FP&L will come in afterwards and install the light poles, luminaires bracket arms, wiring, transformers etc. to complete the lighting system.



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Per request by Manatee County, the following lighting criteria is used for this project.

- Average horizontal initial intensity for the corridor: 1.0 foot-candle (1.25 foot-candles maximum)
- Uniformity ratios
  - Average/minimum: 4:1 or less
  - Maximum/minimum: 10:1 or less
- Veiling Luminance Ratio: 0.4:1 or less

In addition to the above, the following FDOT lighting criteria for the signalized intersections will be followed.

- Average horizontal initial intensity for signalized intersections: 1.5 foot-candles (1.0 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. The criteria were chosen as opposed to that of the new construction criteria requiring 3.0 foot-candles due to the residential nature of the corridor and the 1.0 foot-candle criteria being used for the corridor. Use of FDOT's "new construction" criteria would present a substantially brighter signalized intersection and be too bright for the corridor. Vertical analysis for the signalized intersections is included to provide 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 statistics zone limits for the roadway segments are from the stop bar of the previous signalized intersection to the stop bar of the next signalized intersection. The signalized intersections have their own statistics zone. Statistics zones for vertical analysis were also developed for



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each crosswalk. The Visual program lighting analysis results are shown in Table 1 on the next page. Appendix C has the Lighting Plan sheets with the analysis information referenced.

**Table 1: 75th Street West Roadway Lighting Analysis Summary**

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Intersection 1 - 75th and 18th	□	1.5 fc	3.0 fc	0.5 fc	6.0:1	3.0:1
Intersection 1 - NB vertical	◇	1.4 fc	1.4 fc	1.2 fc	1.2:1	1.2:1
Intersection 1 - SB vertical	◇	1.4 fc	1.5 fc	1.2 fc	1.3:1	1.2:1
Intersection 1 - WB vertical	◇	1.8 fc	2.2 fc	1.3 fc	1.7:1	1.4:1
Segment 1 (south of 18th Ave W) - NB	+	1.2 fc	2.3 fc	0.6 fc	3.8:1	2.0:1
Segment 1 (south of 18th Ave W) - SB	+	1.1 fc	1.8 fc	0.6 fc	3.0:1	1.8:1
Segment 2 (north of 18th Ave W) - NB	+	0.9 fc	2.6 fc	0.4 fc	6.5:1	2.3:1
Segment 2 (north of 18th Ave W) - SB	+	1.1 fc	2.4 fc	0.4 fc	6.0:1	2.8:1



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**APPENDIX A**  
**FP&L LIGHTING CATALOG**





# LED Lighting Solutions



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

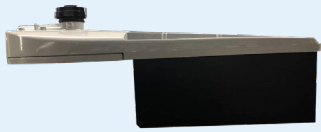
Safer. Smarter. More Vibrant Spaces.



FPL®

# 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)	B1-U0-G2	Upon Request	G5
								2,927 (rear shield)			
								1,878 (front shield)			
RSW-XL	Turtle Friendly Roadway	 (Gray shield facing coastal line)	6, 7	1	3	144/140	594nM (Amber)	6,111 (no shield)	B1-U0-G2	Upon Request	I4
								3,544 (rear shield)			
								2,706 (front shield)			
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
			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





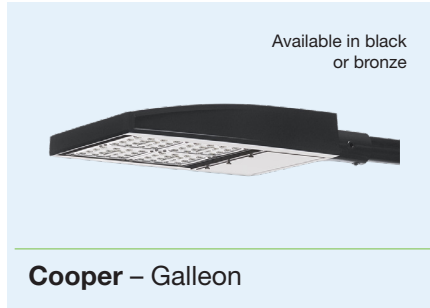
FPL®

# 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.*

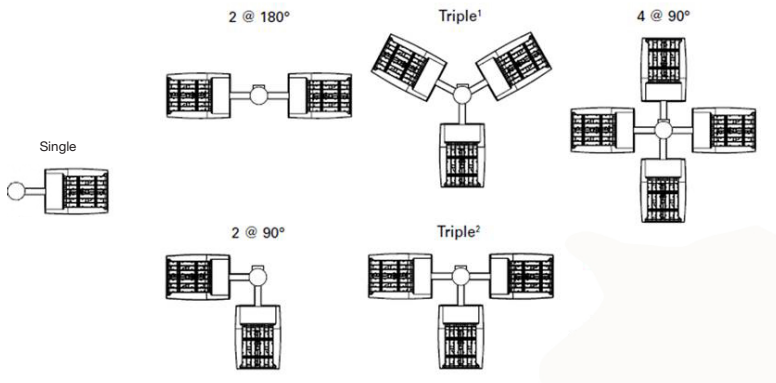
## AREA LIGHTING

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)	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_28665LUMENS.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.



FPL®

# 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)	B1-U0-G0	Upon Request	D10
								1,434 (rear shield)			
	816 (front shield)										
	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



**FPL**®

# 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



FPL®

# 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		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		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





FPL®

# 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





FPL®

# 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



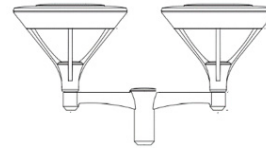
5

Style

Multiple Fixture  
Configurations  
Available

Color

Black  
Gray  
Bronze



6

Style

Decorative Double  
Modern Bracket  
Tenon Mounted Arm

Color

Black

# POLES

**Standard Concrete**



**1**

Tenon Mount  
20' (13' MH)  
35' (27'6" MH)

**Standard Black Fiberglass**



**2**

Tenon Mount  
13' (10' MH)  
20' (15'6" MH)

**Black Washington Concrete**



**3**

Tenon Mount  
23' (16' MH)

**Black Octagonal Concrete**



**4**

Tenon Mount  
37' (30' MH)

**Black or Green Washington Concrete**



**5**

Tenon Mount  
18.5' (14'6" MH)

**Standard Wood**



**6**

Arm Mount  
35' (29' MH)  
40' (33'6" MH)  
45' (38" MH)

**Standard Concrete**



**7**

Arm Mount  
30' (22'6" MH)  
35' (27'6" MH)  
40' (30" MH)  
45' (35' MH)

**Black Tapered Concrete**



**8**

Tenon Mount  
14'6" (10' MH)  
21'(15'6" MH)  
33' (24' MH)

**Grey Round Concrete Pole on Concrete Base**  
(Non-roadway Only)



**9**

22' pole  
25' MH

\*MH = Approximate Mounting Height



**90% Submittal Roadway Lighting Documentation**  
**75<sup>th</sup> Street West Roadway Widening Project**  
**From North of 20<sup>th</sup> Avenue to Manatee Avenue**  
**Manatee County Project No. 6108260**

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**APPENDIX B**  
**FP&L LIGHTING SPECIFICATIONS**

**SECTION H - STREET LIGHTING**

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

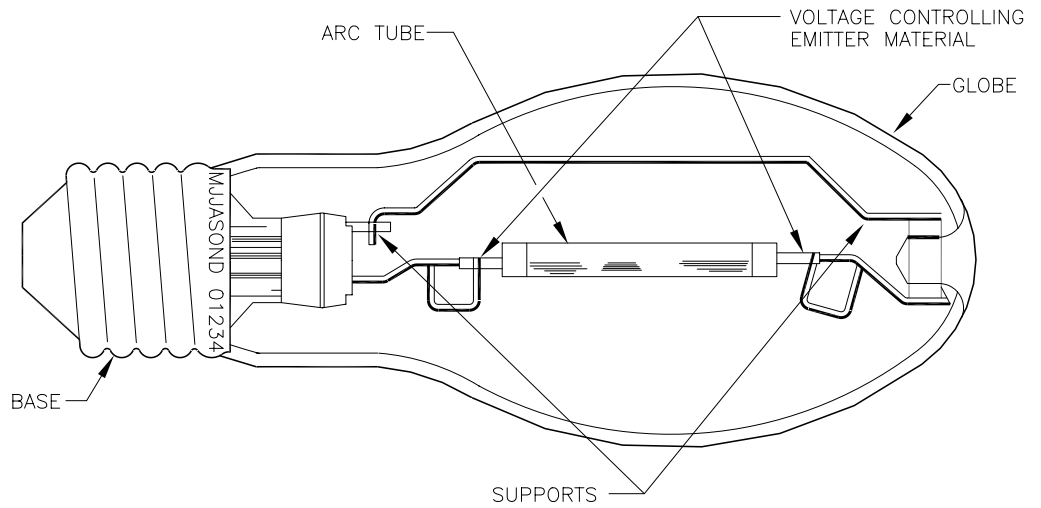
<b>H-2.0.1</b>	STREET LIGHT RELAMPING INFORMATION
<b>H-2.0.2</b>	STREET LIGHT RELAMPING INFORMATION
<b>H-3.0.0</b>	FUSING OF STREET LIGHT CIRCUITS
<b>H-3.0.1</b>	STRAIGHT SHEAR BOLT CONNECTOR INSTALLATION INSTRUCTIONS FOR STREET LIGHT INSTALLATIONS M&S 120-100-600 (#6-#1/0 TO #12-#6 CABLES)
<b>H-3.0.2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

<b>H-16.0.2</b>	<b>HOLOPHANE AND KING LED HOUSE SIDE LIGHT SHIELDS</b>
<b>H-16.0.3</b>	<b>HID HOUSE SIDE LIGHT SHIELDS</b>
<b>H-16.0.4</b>	<b>VANDAL SHIELDS</b>
<b>H-16.1.0</b>	CUTOFF COBRA HEAD LUMINAIRE WITH VANDAL SHIELD
<b>H-16.2.0</b>	DIRECTIONAL SECURITY LUMINAIRES WITH VANDAL SHIELD
<b>H-16.3.0</b>	TURTLE LIGHT SHIELDS
<b>H-16.4.0</b>	GE POST TOP TRADITIONAL ZERO CUTOFF WITH OPTICS AND SHIELD
<b>H-17.0.0</b>	<b>TYPICAL STREETLIGHT BRACKET MOUNTING</b>
<b>H-17.1.0</b>	OTHER STREET LIGHT BRACKETS
<b>H-17.1.1</b>	STREET LIGHT BRACKET DETAILS
<b>H-17.1.2</b>	STREET LIGHT BRACKET DETAILS
<b>H-17.1.3</b>	TENON MOUNT LONG ARM BRACKETS
<b>H-17.1.4</b>	TENON MOUNT SPOKE BRACKETS
<b>H-17.3.0</b>	STREET LIGHT 'ROADWAY' AND 'AREA' LIGHTING ASSEMBLIES (POLES/BRACKET/LUMINAIRE)
<b>H-17.4.0</b>	STREET LIGHT 'PENDANT' LIGHTING ASSEMBLIES (POLES/BRACKET/LUMINAIRE)
<b>H-17.5.0</b>	STREET LIGHT 'POST TOP' LIGHTING ASSEMBLIES (POLES/BRACKET/LUMINAIRE)
<b>H-17.6.0</b>	STREET LIGHT BRACKET WITH UNIVERSAL STYLE MOUNTING (FOR MOUNTING ON WOOD OR CONCRETE POLES)
<b>H-17.7.0</b>	FASTENER FOR MOUNTING STREET LIGHT BRACKETS
<b>H-17.8.0</b>	COBRA HEAD STYLE LUMINAIRE MOUNTING
<b>H-18.0.1</b>	LUMINAIRE IDENTIFICATION TAGS
<b>H-18.0.2</b>	LUMINAIRE IDENTIFICATION TAGS
<b>H-18.0.3</b>	LUMINAIRE IDENTIFICATION TAGS
<b>H-18.0.4</b>	HYBRID FIXTURE IDENTIFICATION TAG AND PLACEMENT
<b>H-18.0.5</b>	INSTALLATION OF TURTLE PLACARDS
<b>H-19.0.1</b>	TYPICAL DIRECTIONAL SECURITY LUMINAIRE INSTALLATION
<b>H-19.0.2</b>	TYPICAL DIRECTIONAL SECURITY LUMINAIRE INSTALLATION

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		

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



LAMP WATTAGE MUST MATCH LUMINAIRE WATTAGE!

NOTES:

- LUMINAIRE LAMP MARKER INDICATES LAMP WATTAGE AND TYPE. INSTALLED, SEE H-18.0.3
- 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.
- 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



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM

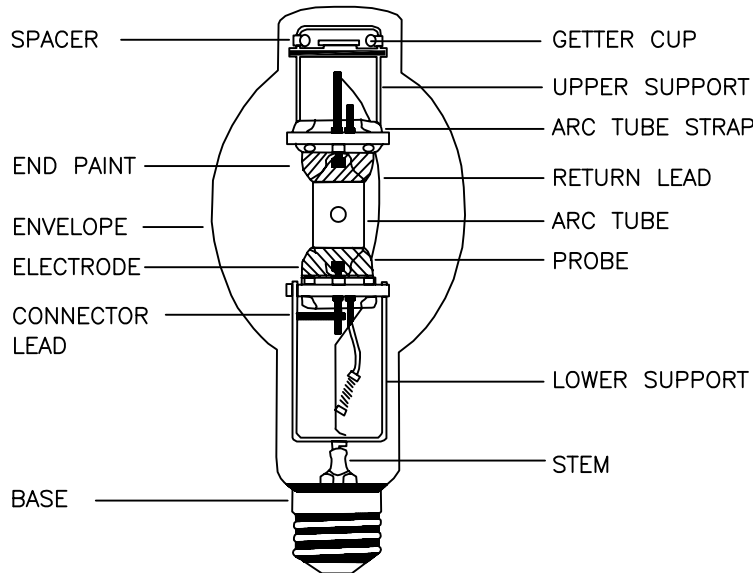
DRAWN BY: RAS

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

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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

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
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

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



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 EXPULSION 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.

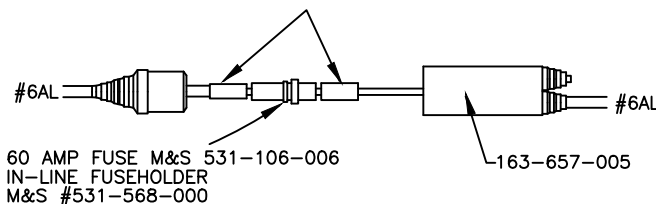
NOTE: IF METER IS ADDED TO A STREETLIGHT CIRCUIT, REMOVE ANY SECONDARY FUSES.

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

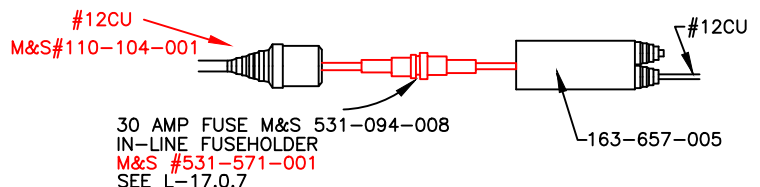


FIG. 2

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.SHOUH

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

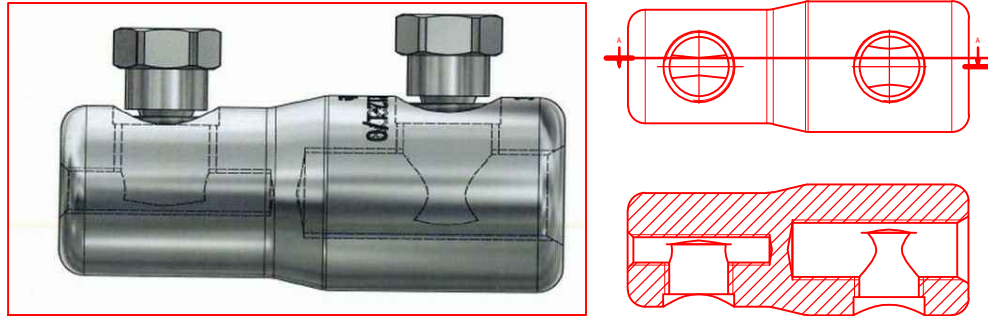
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

H-3.0.1

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



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

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

H



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



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: A. RODRIGUEZ

DRAWN BY: G. SANTANDER

DATE: 10/8/20

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

H

**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

**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"

H

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
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: SMS

DRAWN BY: E. SCHILLING

DATE: 5/29/03

APPROVED: J.J McEVoy

NO SCALE

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

**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"



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: DAVID CARROLL

DRAWN BY: G. SANTANDER

DATE: 2/12/20 APPROVED: RICK D. HUFF

NO SCALE

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

ENGINEERING MANAGER  
ENGINEERING DESIGN AND APPLICATIONS

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 VERO4SPL POLE	GREEN
172-330-050	3" OD X 3" TALL REPLACEMENT TENON FOR MOUNTING ON AN AMERON VERO4SPL 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 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



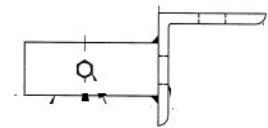
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172-330-006  
172-330-007



172-330-002  
172-330-009



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



174-100-007



172-330-008



172-340-061



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

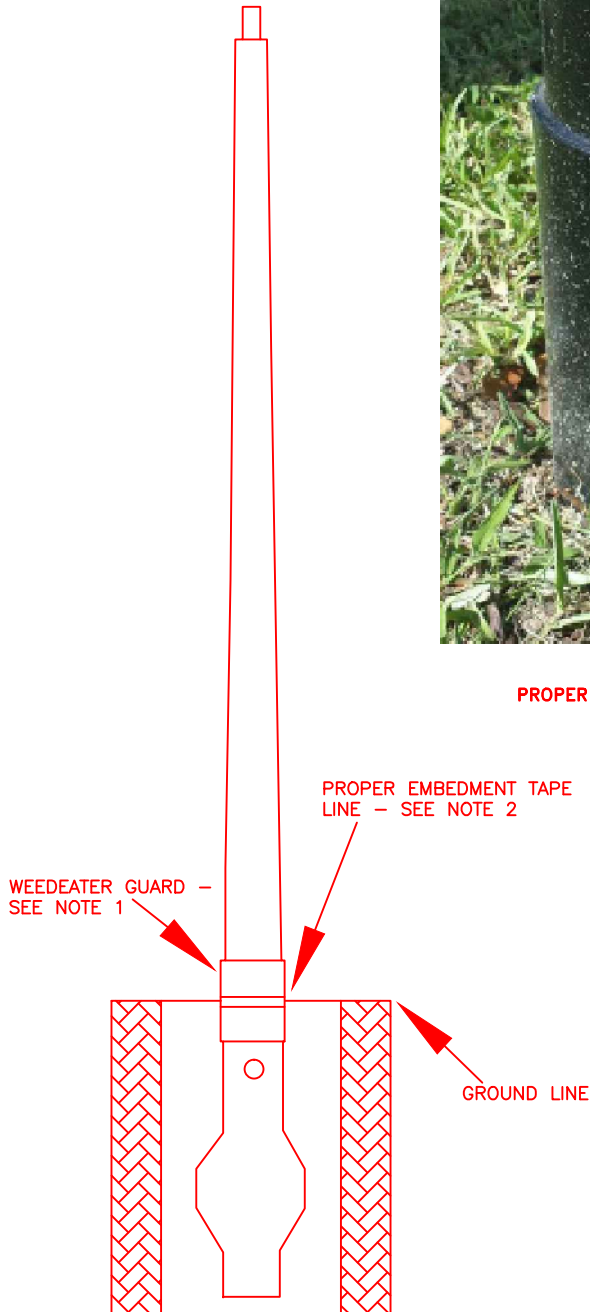


FIG.1  
FIBERGLASS POLE WITH  
WEEDEATER GUARD

**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

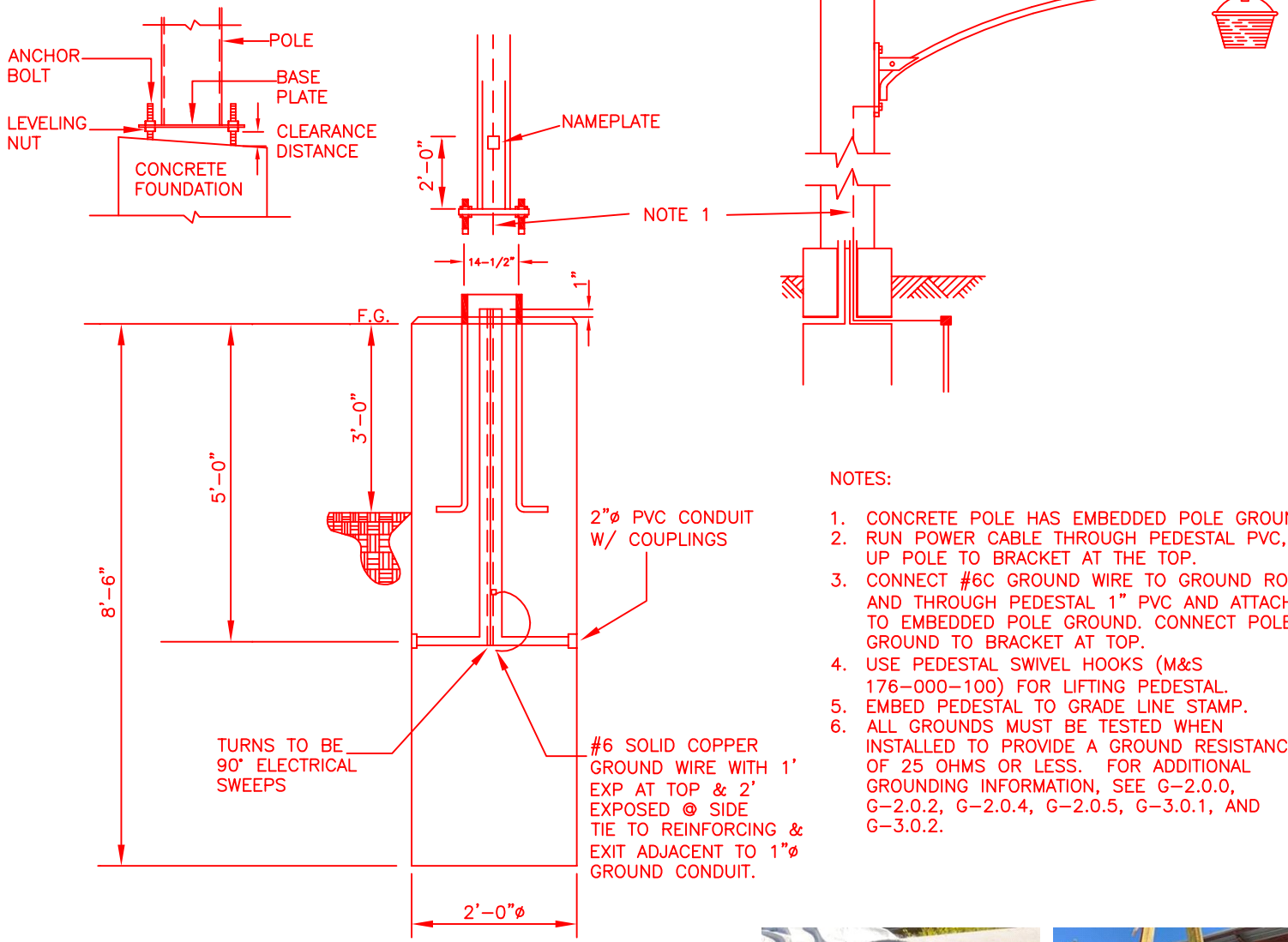
APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

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.

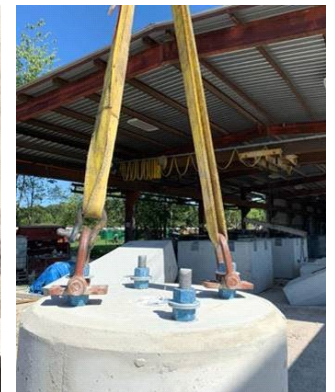
NOTE 5



PEDESTAL  
APPROXIMATE WEIGHT: 4000LBS



GRADE LINE STAMP



SWIVEL HOOKS - M&S 176-000-100



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. NINEZA

DATE: 4/14/21

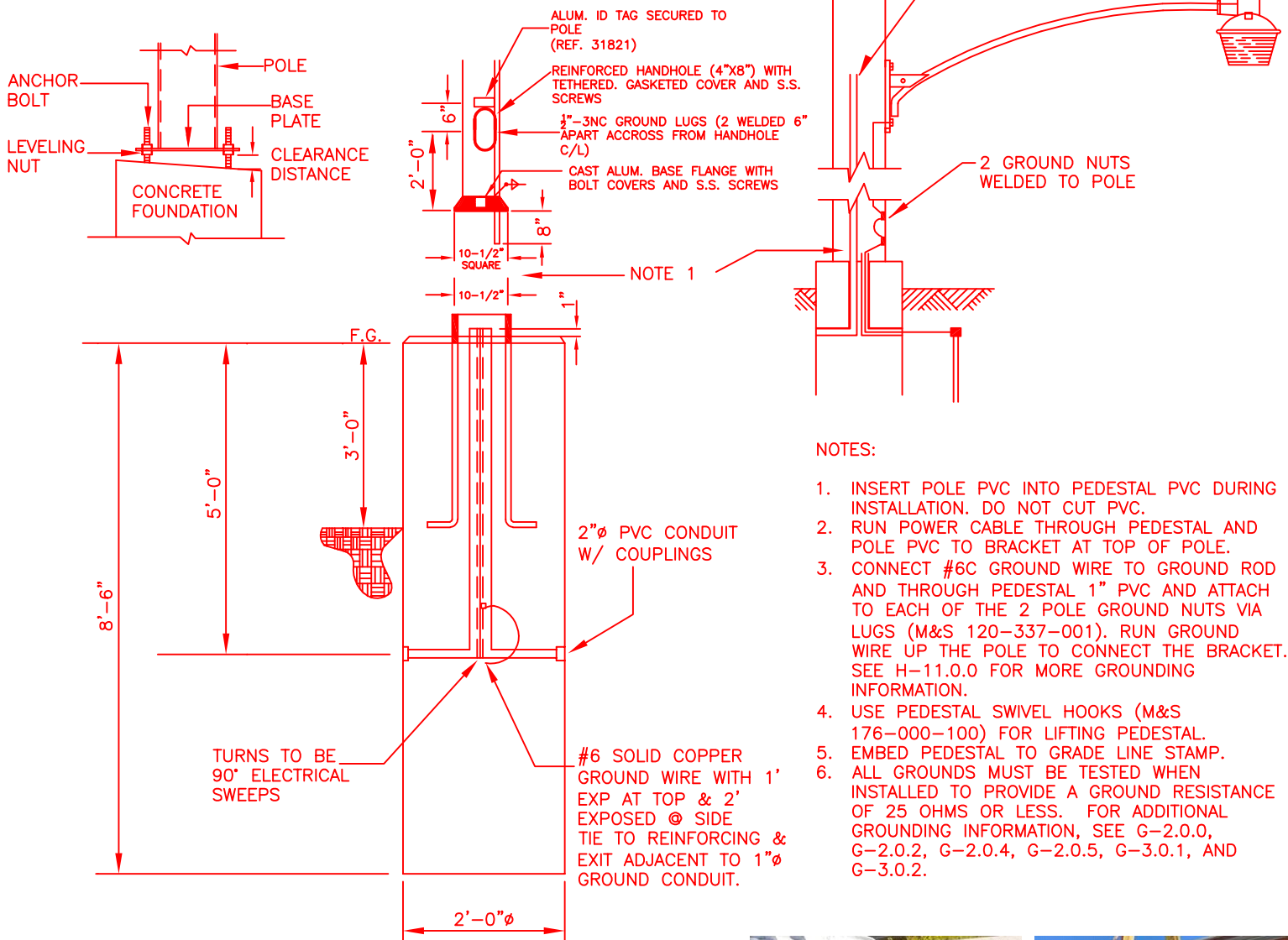
APPROVED: EVELYN M. ABRAHAM  
MANAGER OF ELECTRICAL STANDARDS

NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.



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.



PEDESTAL APPROXIMATE WEIGHT: 4000LBS



GRADE LINE STAMP



SWIVEL HOOKS - M&S 176-000-100

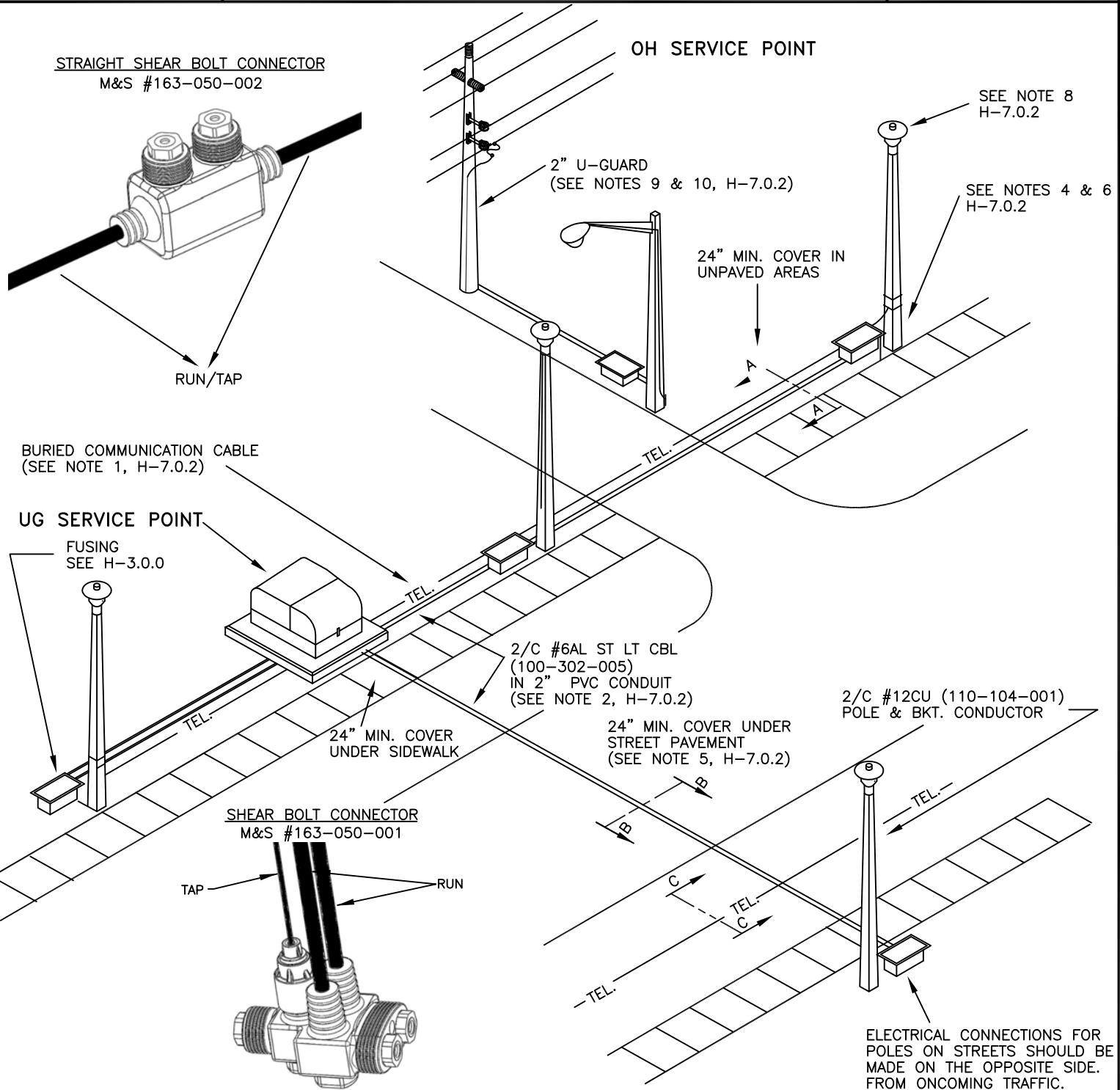


**F P L**  
OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL DRAWN BY: G. NINEZA

DATE: 4/14/21 APPROVED: EVELYN M. ABRAHAM NO SCALE  
MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.



**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



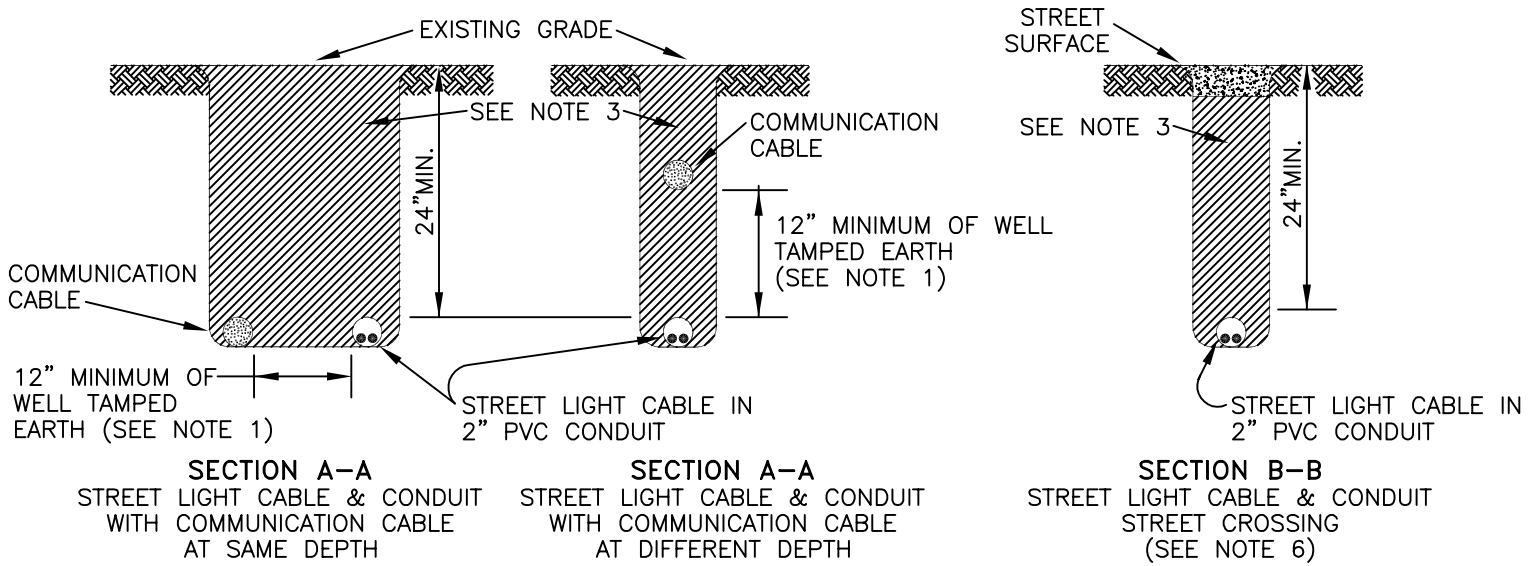
**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: JBM DRAWN BY: RAS

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

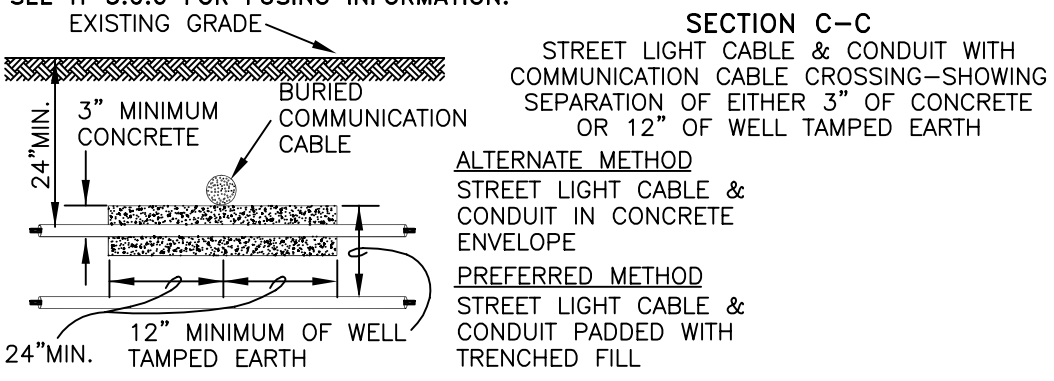
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

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	JJM
2	6/10/03	UPDATE DRAWING & TEXT	SMS	ELS	JJM
1	9/22/99	UPDATE DRAWING & TEXT	SMS	JES	JJM



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 PHOTOCCELL 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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

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

ORIGINATOR: JBM      DRAWN BY: RAS

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

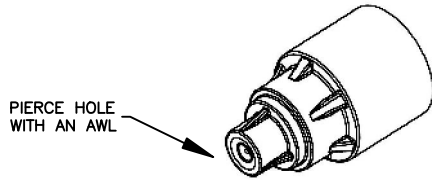
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES      NO SCALE

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

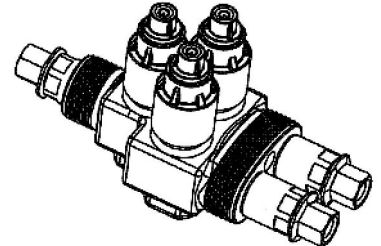
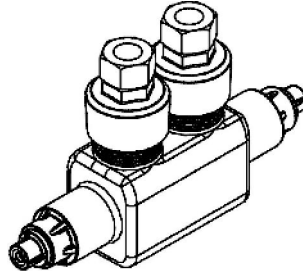
**STEP 1** LOOSEN, BUT DO NOT REMOVE THE SHEAR-HEAD BOLTS ON THE PORT/PORTS TO BE USED.

**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.



PIERCE HOLE WITH 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.

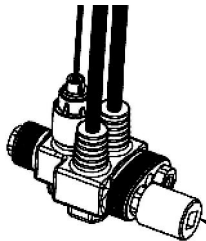


**STEP 4** WIPE THE CONDUCTOR CLEAN AND APPLY SILICON GREASE TO THE CABLE TO AID IN THE INSERTION PROCESS.

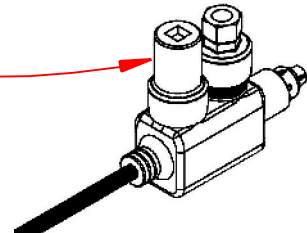
**STEP 5** MARK CABLE JACKET WITH VINYL TAPE OR GREASE PENCIL AT A DISTANCE OF 2-3/4" FROM THE END TO MAKE SURE THAT CONDUCTOR IS FULLY INSERTED.

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.

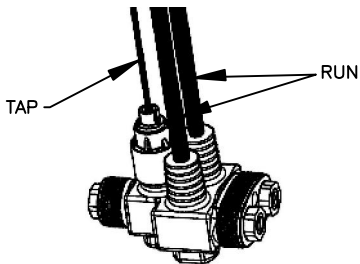


M&S# 594-955-002  
SIX POINT-3/4" SOCKET

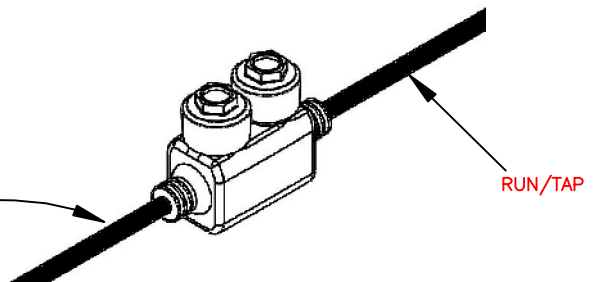


M&S# 594-955-004  
SIX POINT-1/2" SOCKET

**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.



RUN/TAP



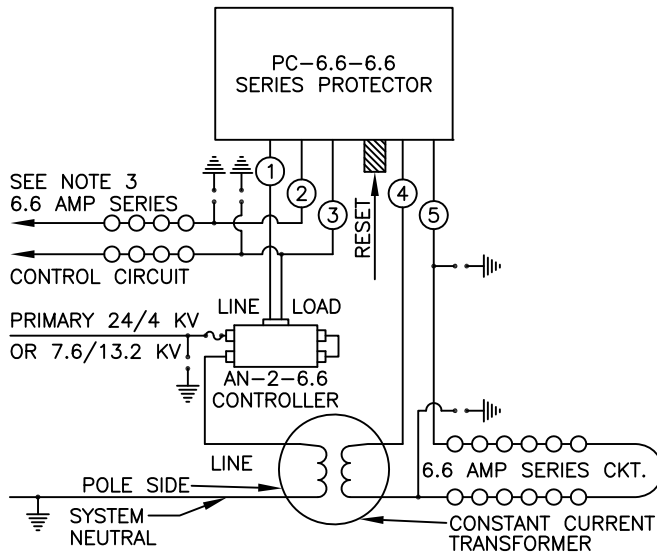
RUN/TAP



**OH & UG DISTRIBUTION SYSTEM STANDARDS**  
ORIGINATOR: ARR DRAWN BY: E.SCHILLING

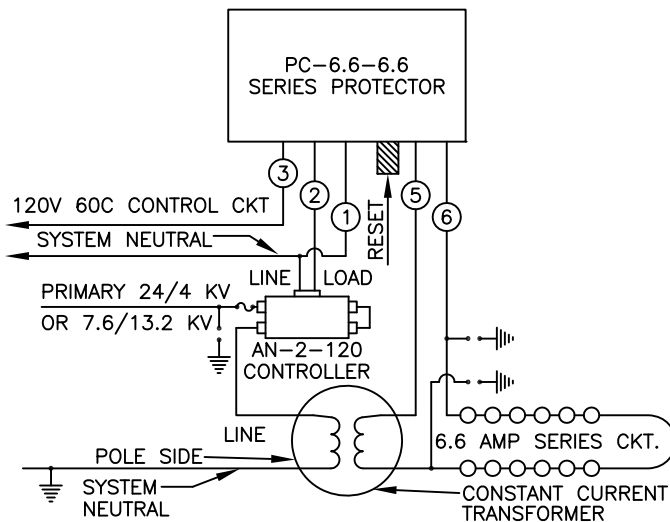
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1	2/18/11	UPDATE DRAWING	ARR	ELS	BXN
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

DATE: 12/20/10 APPROVED: BENNY NARANJO  
LEAD SUPERVISOR, UG PRODUCTS NO SCALE



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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM

DRAWN BY: RAS

DATE: 8/9/96

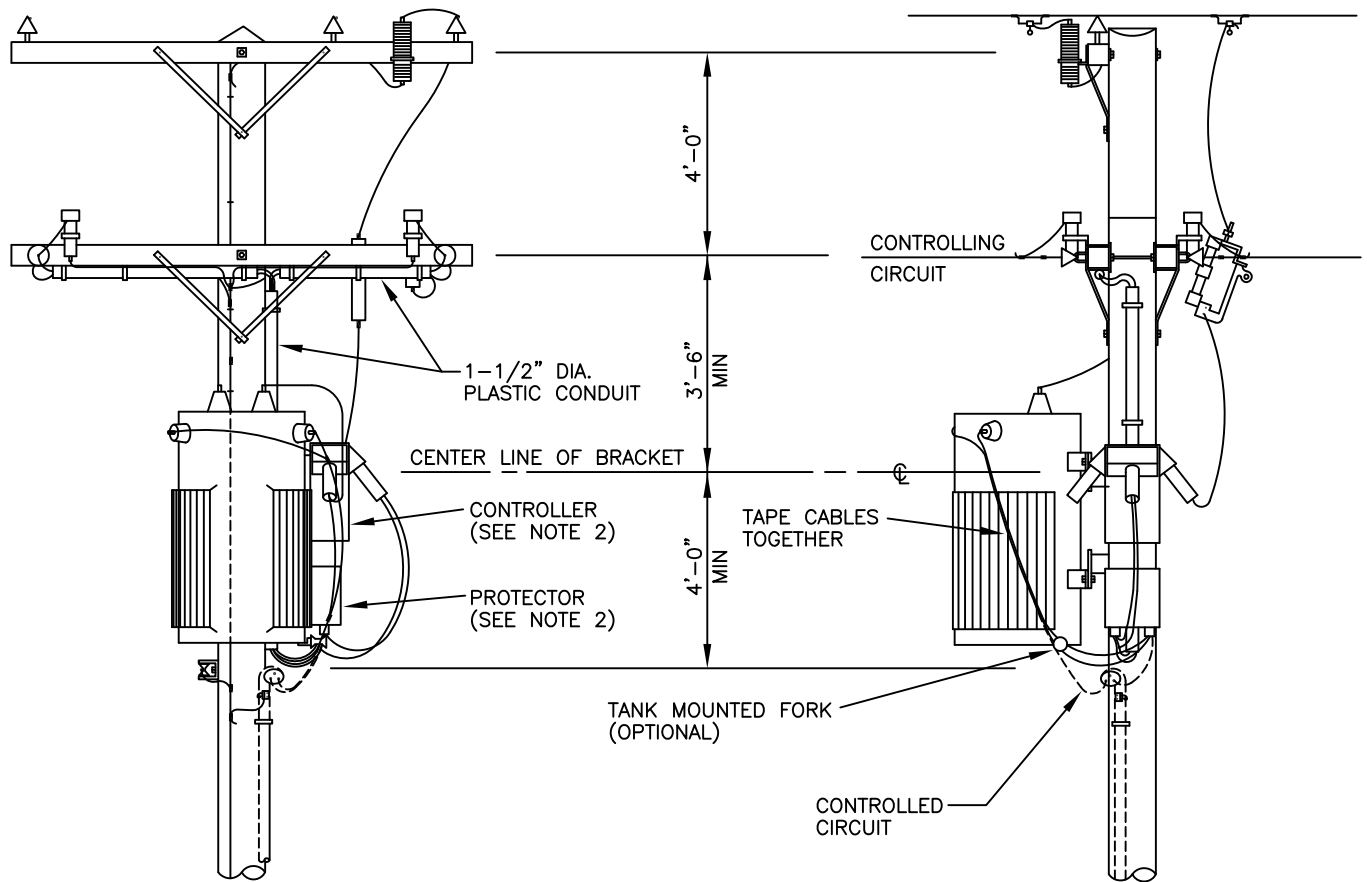
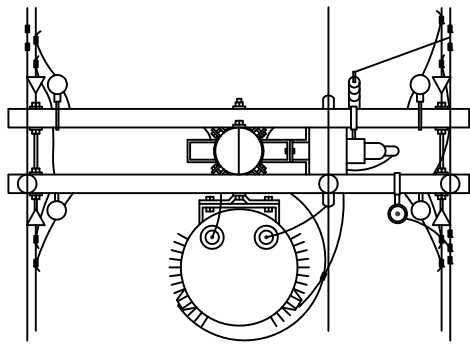
APPROVED: J.J McEVROY

NO SCALE

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

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





**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.



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: JBM

DRAWN BY: RAS

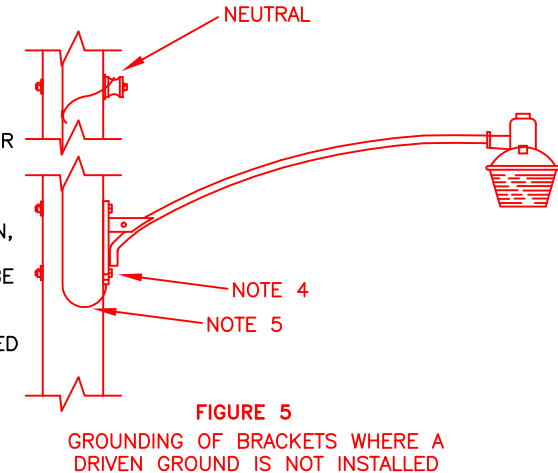
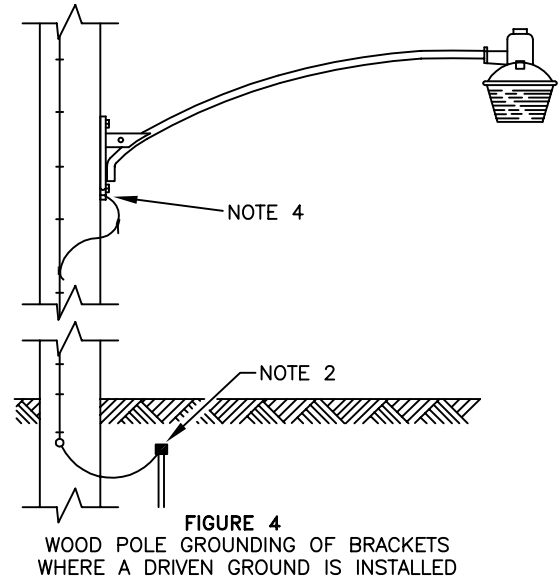
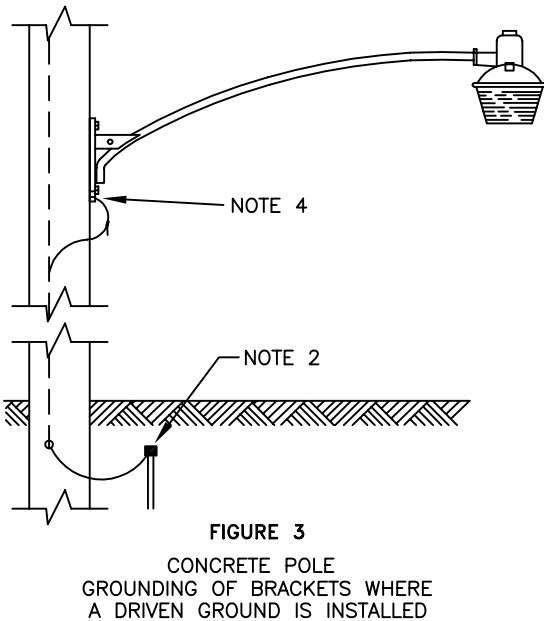
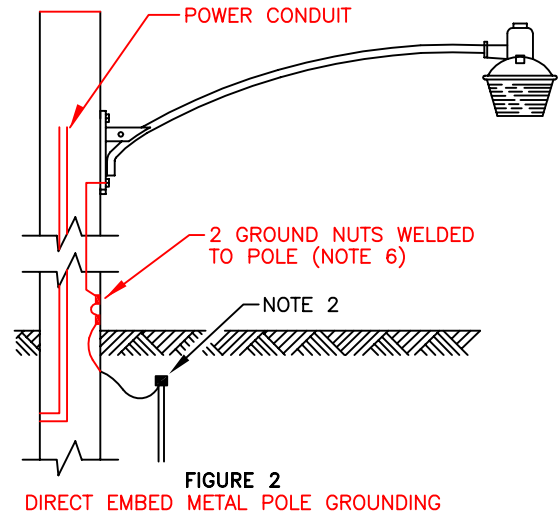
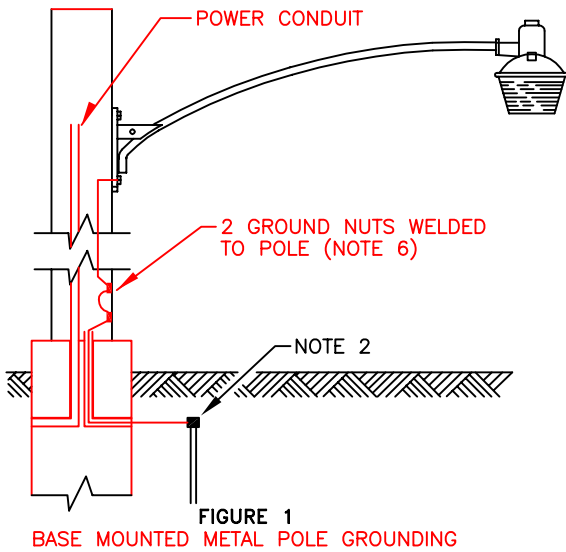
DATE: 8/9/96

APPROVED: J.J McEVOY

NO SCALE

SUPERVISOR, OH/UG PRODUCT  
SUPPORT SERVICES

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



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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

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
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

ORIGINATOR: ORIG.

DRAWN BY: DFTR

DATE: 8/09/96

APPROVED: J.J. MCEVOY

NO SCALE

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

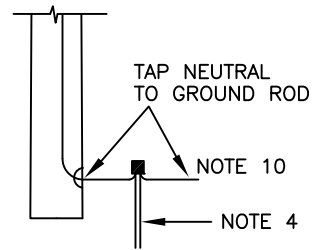
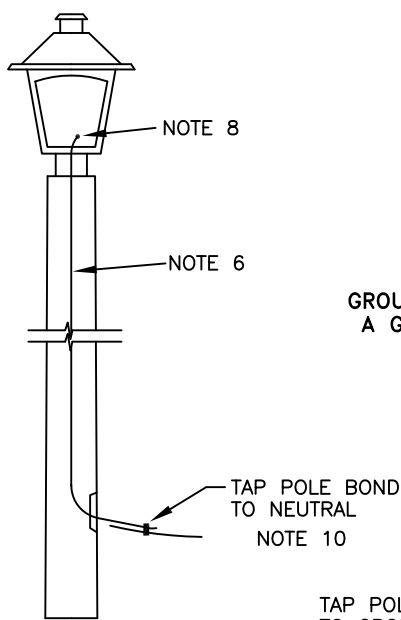
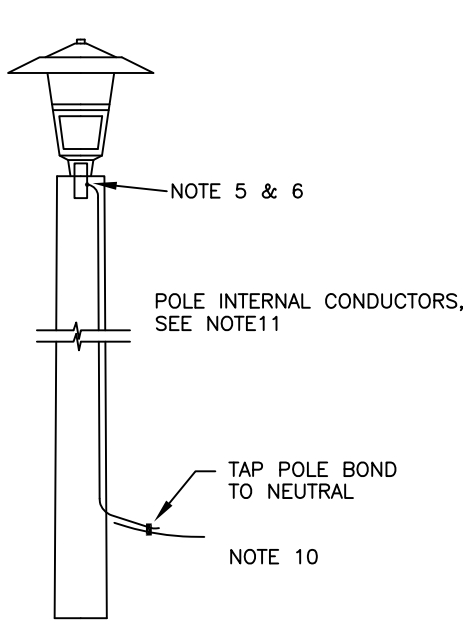


FIG. 3  
GROUNDING AT FIBERGLASS POLE WHERE  
A GROUND ROD HAS BEEN INSTALLED.  
SEE NOTE 7

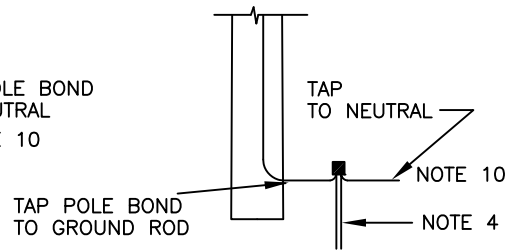


FIG. 4  
GROUNDING OF CONCRETE POLE WHERE  
A GROUND ROD HAS BEEN INSTALLED

FIG. 1  
GROUNDING OF CONCRETE POLE  
WITH EMBEDDED BOND WIRE

FIG. 2  
GROUNDING OF CONCRETE POLE  
WITHOUT EMBEDDED BOND WIRE

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.

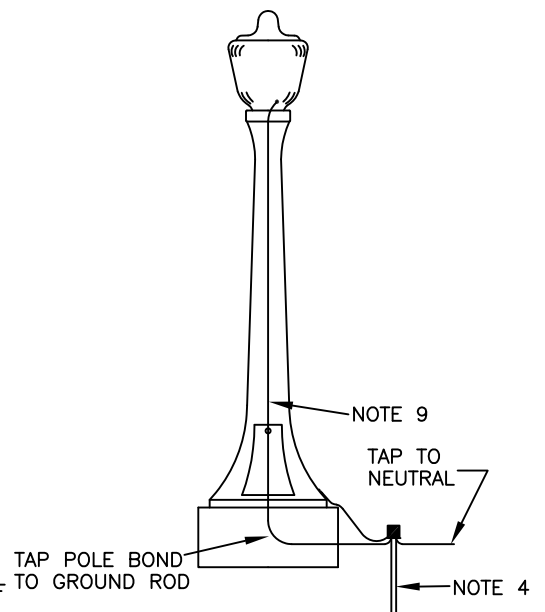


FIG. 5  
GROUNDING OF METAL POLE



F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: ARR

DRAWN BY: RAS

DATE: 9/30/94

APPROVED: R.J. SALESKY

NO SCALE

DIRECTOR, DISTRIBUTION ENGINEERING  
AND OPERATIONS SERVICES

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



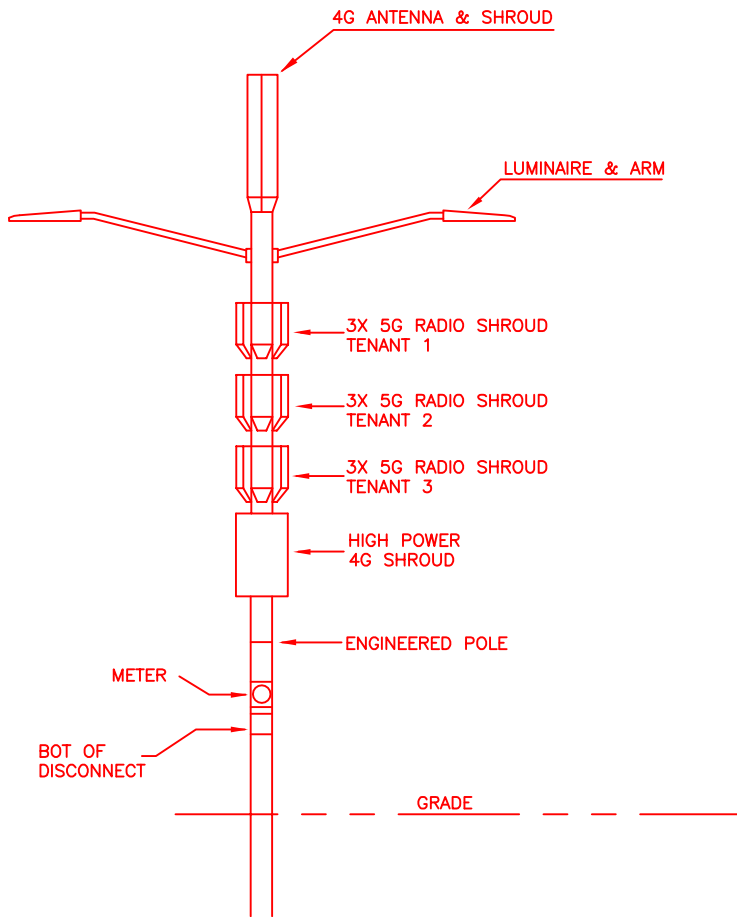


FIGURE 1



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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. NINEZA

DATE: 4/14/21

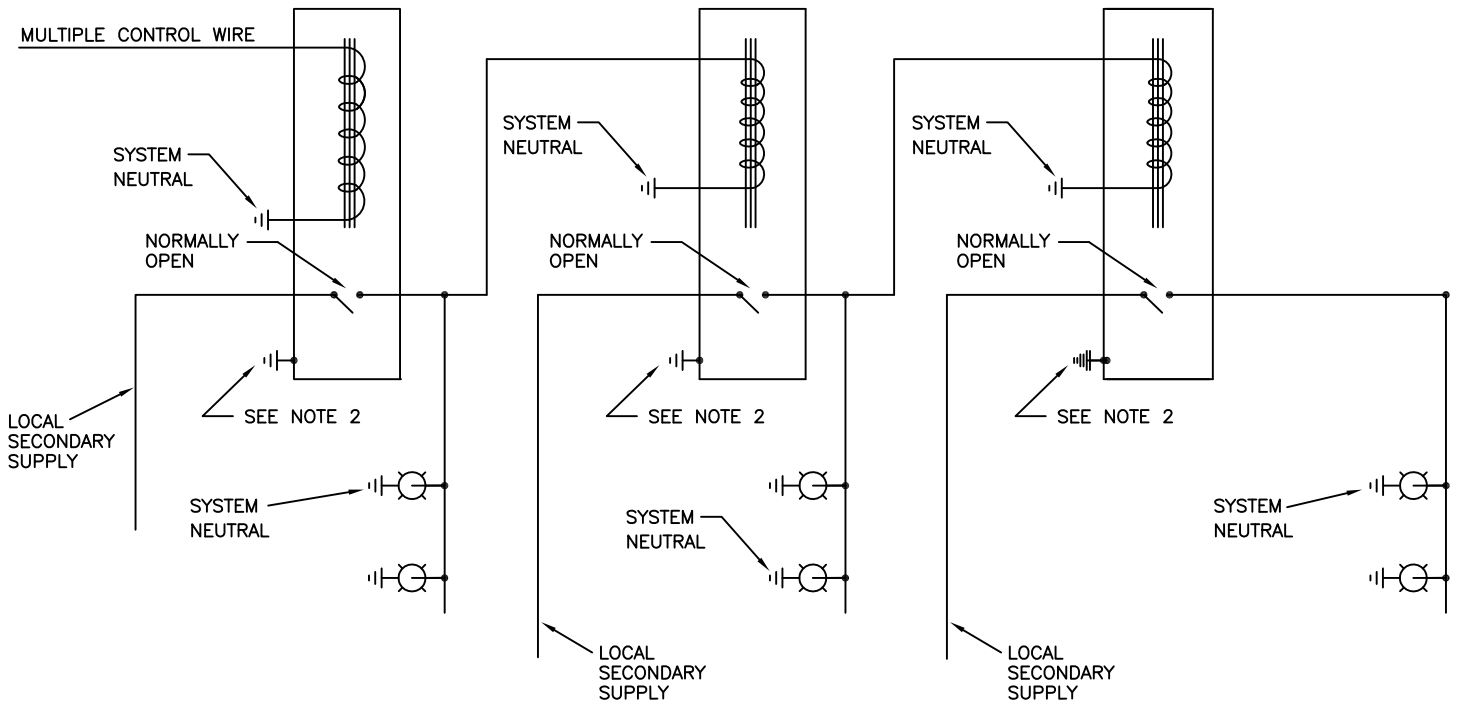
APPROVED: EVELYN M. ABRAHAM

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

H



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.



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: JBM

DRAWN BY: RAS

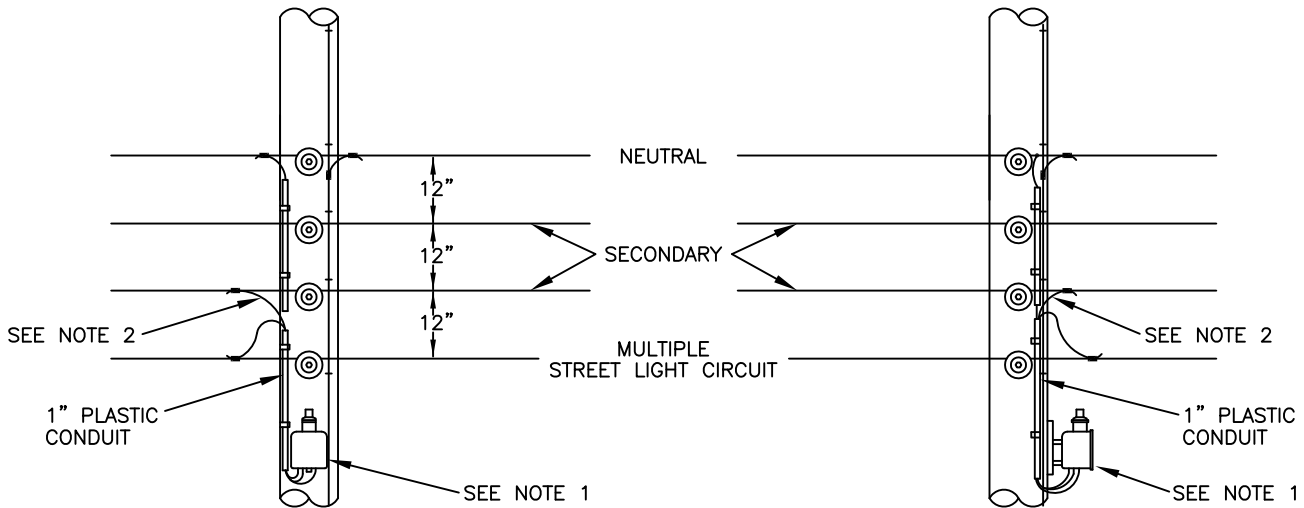
DATE: 8/9/96

APPROVED: J.J. McEVOY

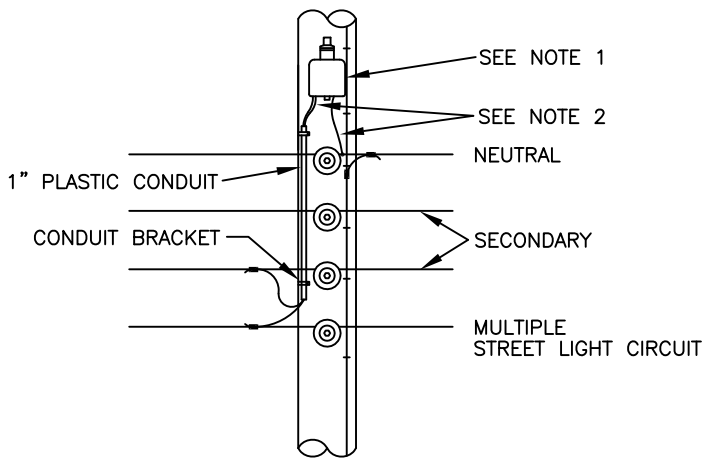
NO SCALE

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SUPPORT SERVICES

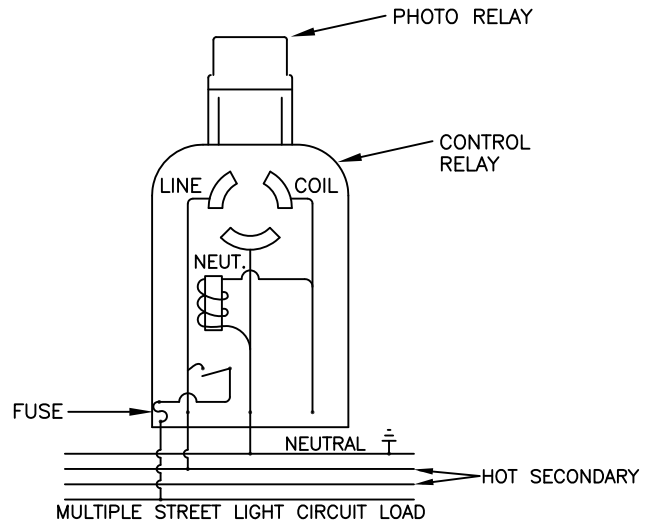
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
1	11/4/16	UPDATE TITLE	JCH	ELS	RDH
0	8/9/96	PLACED DRAWING IN REVISED FRAME	JBM	RAS	JJM



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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM

DRAWN BY: RAS

DATE: 8/9/96

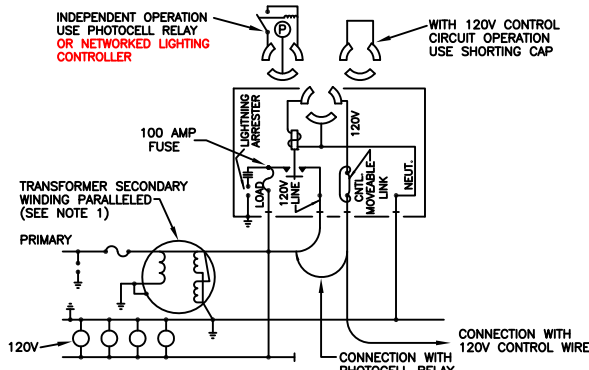
APPROVED: J.J McEVOY

NO SCALE

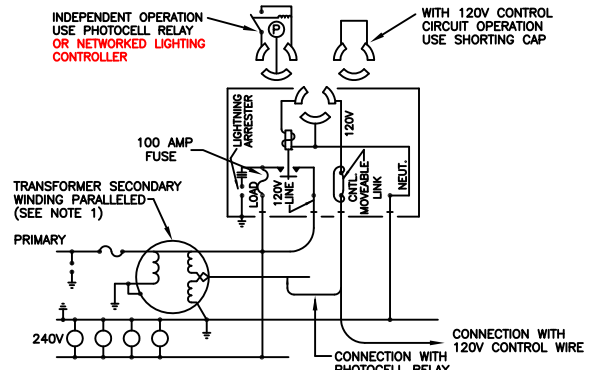
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

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

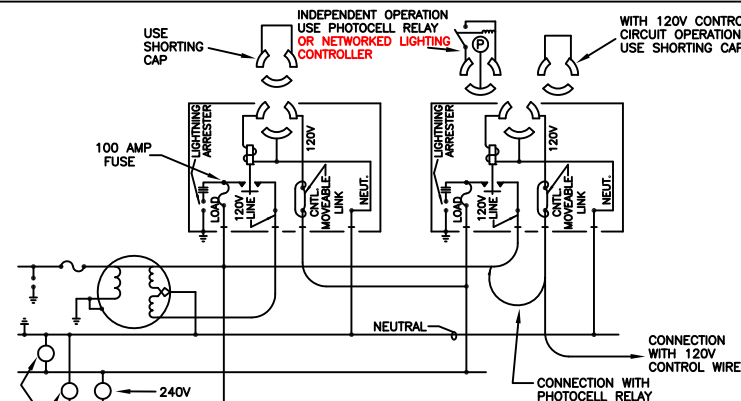
**GROUP CONTROLLED MULTIPLE STREET LIGHTING SERVICE FOR VARIOUS VOLTAGE CIRCUITS USING RELAY M&S #174-696-007 "FOR MAINTENANCE ONLY"**



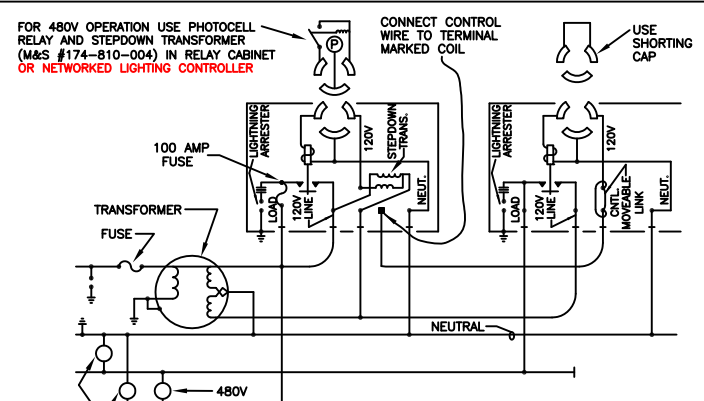
**FIGURE 1**  
**120 VOLTS (48 TO 100 AMPS) 2 WIRE**  
 (FOR LESS THAN 24 AMPERES USE RELAY M&S # 174-69200-1)  
 (FOR 24-48 AMPERES USE RELAY M&S # 174-65000-7)



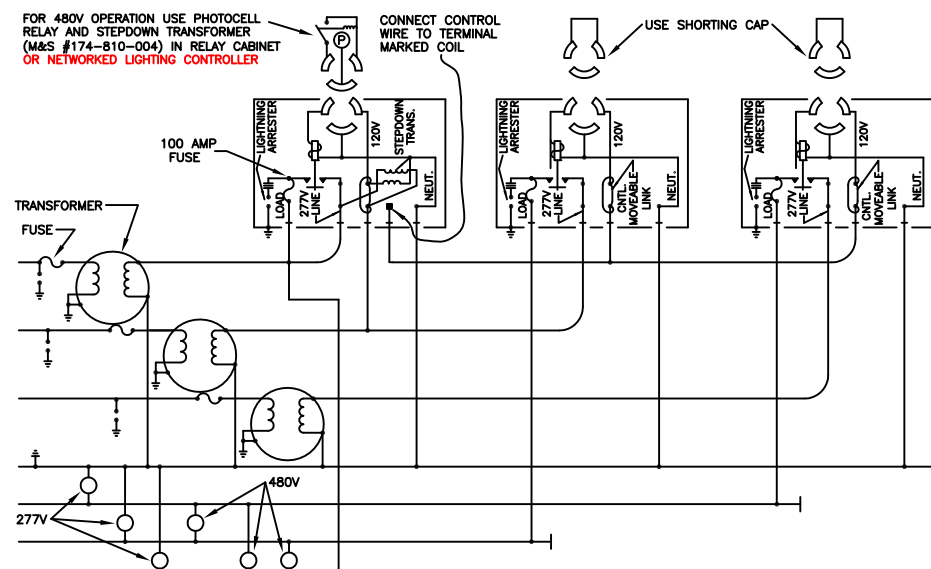
**FIGURE 2**  
**240 VOLTS (48 TO 100 AMPS) 2 WIRE**  
 (FOR LESS THAN 24 AMPERES USE RELAY M&S # 174-66000-2)  
 (FOR 24-48 AMPERES USE RELAY M&S # 174-65000-7)



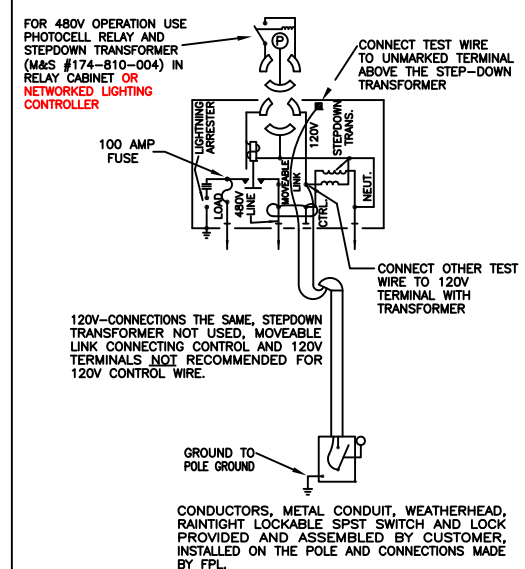
**FIGURE 3**  
**120/240 VOLT (96 TO 200 AMPS TOTAL BALANCED LOAD) 3 WIRE**  
 (FOR LESS THAN 96 AMPERES TOTAL BALANCED LOAD (48 AMPS MAX. PER LEG) USE RELAY M&S # 174-64800-2)



**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 NESCA.
  3. CUSTOMER TO PROVIDE MEANS TO SWITCH SERVICE TO THEIR FACILITIES.
  4. DRIVEN GROUNDS MUST NOT EXCEED 25 OHMS BY TEST.



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

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

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

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.

GREEN LED



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.



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

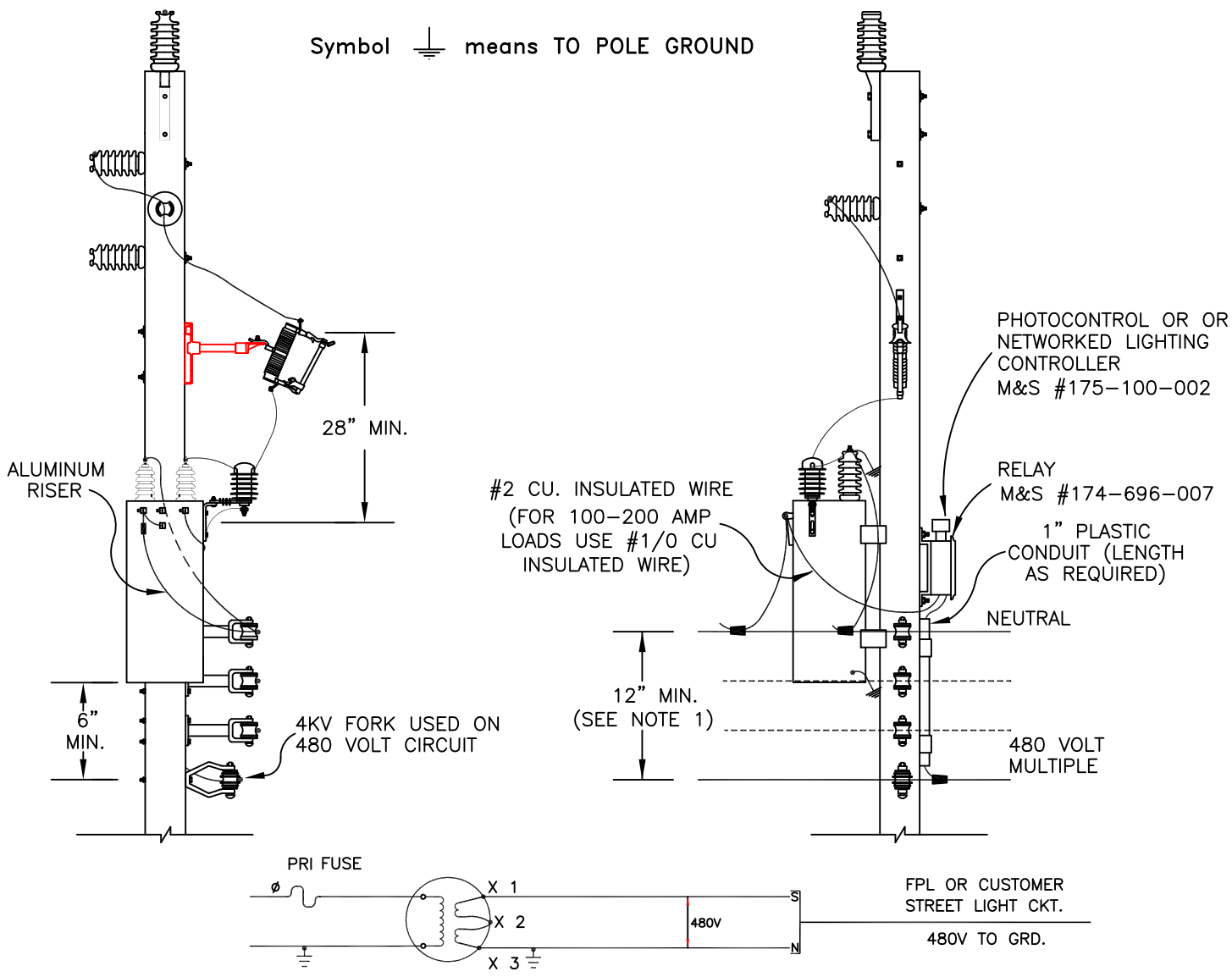
DATE: 7/16/19

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.



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



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM      DRAWN BY: DRM

DATE: 1/29/92      APPROVED: R.J. SALESKY      NO SCALE  
DIRECTOR, DISTRIBUTION ENGINEERING AND OPERATIONS SERVICES

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

FOR CIRCUITS UP TO 100 AMPS

120V NOT AVAILABLE

FOR 120V. OPERATION FROM SECONDARY USE PHOTOCELL RELAY

120V AVAILABLE

FOR 120V. CONTROL CIRCUIT OPERATION USE SHORTING CAP

FOR 480V OPERATION, USE PHOTOCELL RELAY OR NETWORKED LIGHTING CONTROLLER AND STEPDOWN TRANSFORMER (M&S #174-810-004) IN RELAY CABINET

POSITION OF MOVABLE LINK MUST BE FROM "CTRL" TERMINAL TO "480V LINE" TERMINAL FOR 480V. OPERATION. FOR 120 VOLT OPERATION FROM SECONDARY OR CONTROL CIRCUIT MOVABLE LINK MUST BE FROM "CTRL" TERMINAL TO "120V" TERMINAL.

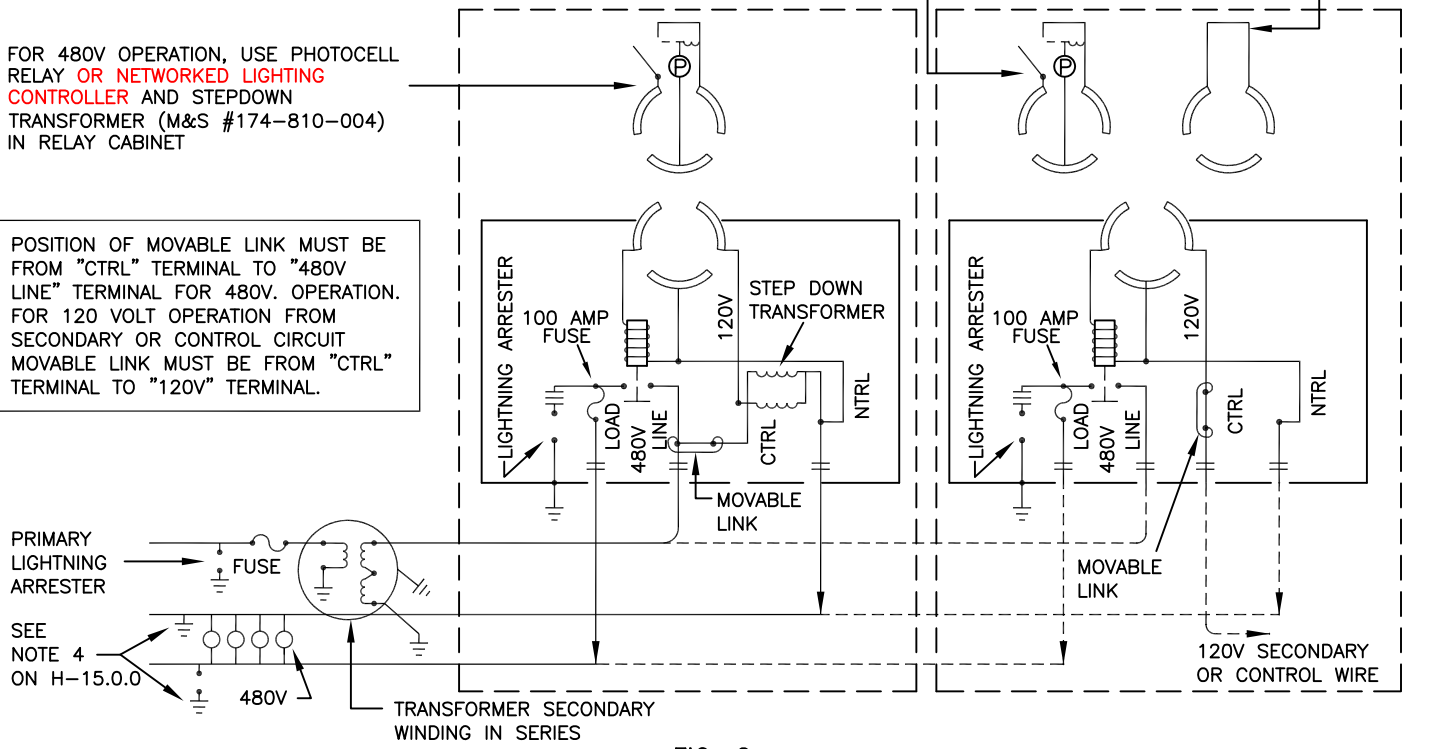


FIG. 2

FOR TOTAL BALANCED LOADS FROM 100 TO 200 AMPS

FOR 480V OPERATION, USE PHOTOCELL RELAY OR NETWORKED LIGHTING CONTROLLER AND STEPDOWN TRANSFORMER (M&S #174-810-004) IN RELAY CABINET

CONNECT CONTROL WIRE TO TERMINAL MARKED COIL

USE SHORTING CAP

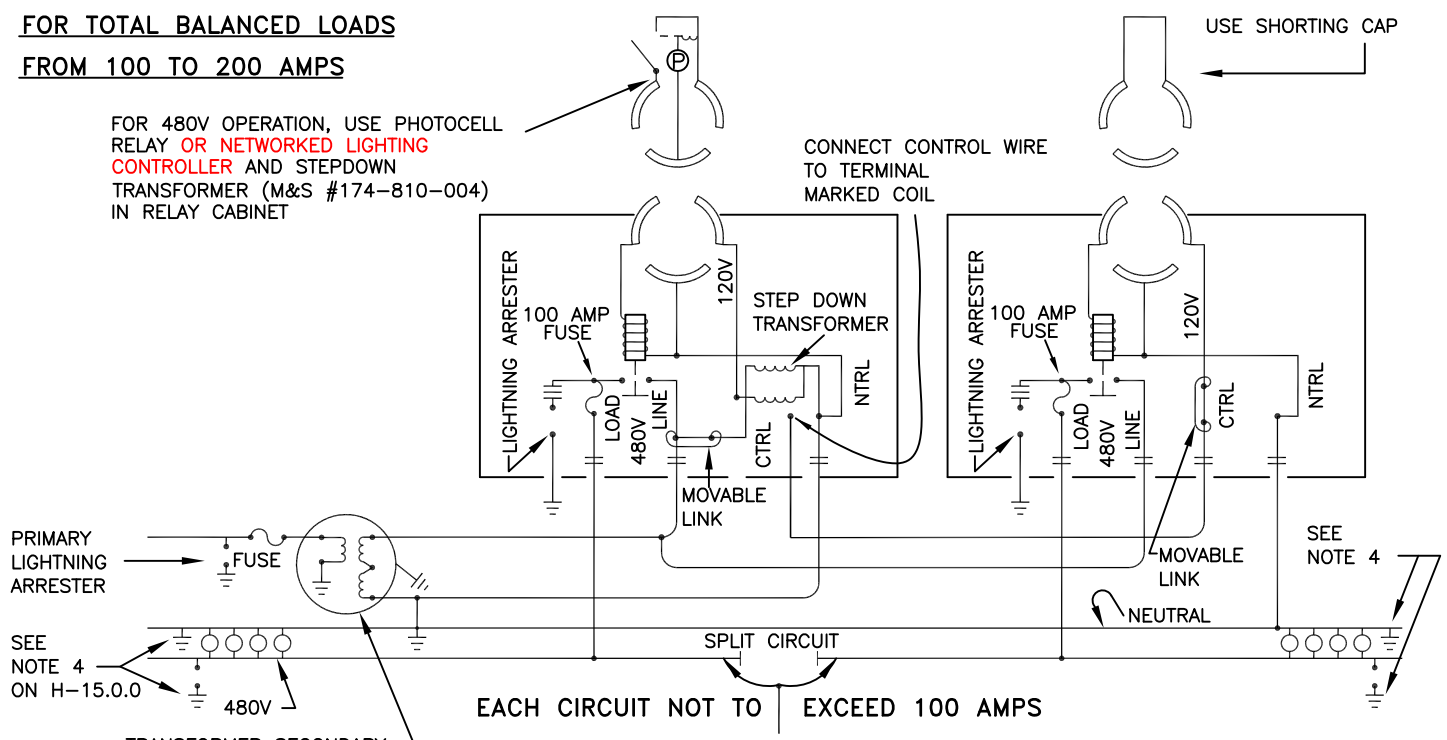


FIG. 3

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



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



MANUFACTURER	LUMINAIRE 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	LUMINAIRE 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



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 3/18/21

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

H



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 LABEL	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



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 3/18/21

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

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 LABEL	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



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 3/18/21

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

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

H



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 3/18/21

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

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



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

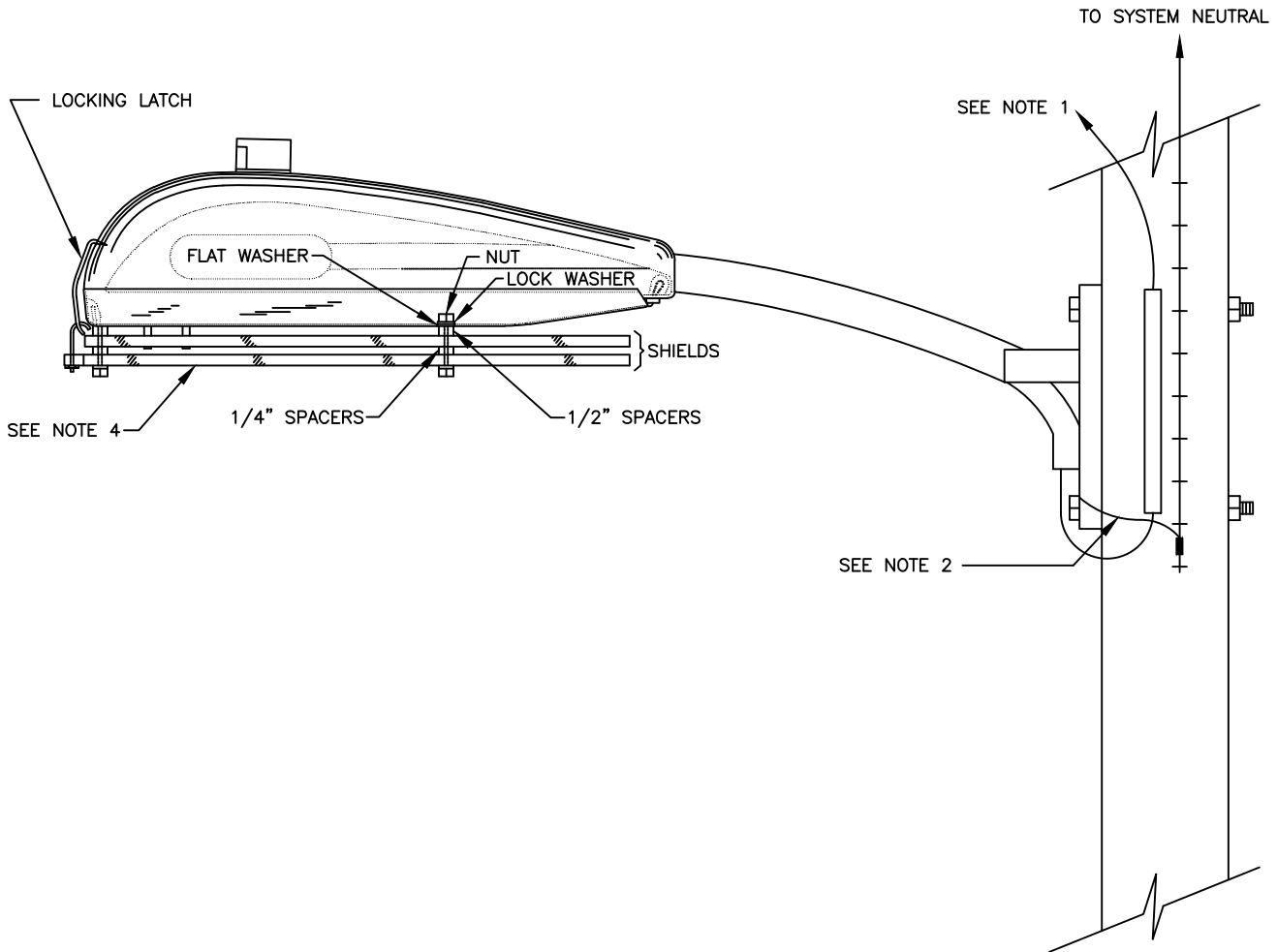
DATE: 3/18/21

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.



**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.

<u>M&amp;S:</u>	<u>DESCRIPTION:</u>
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

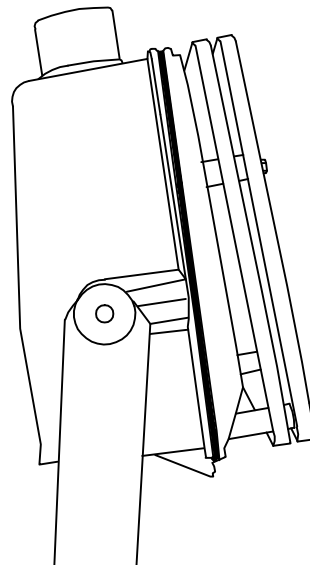
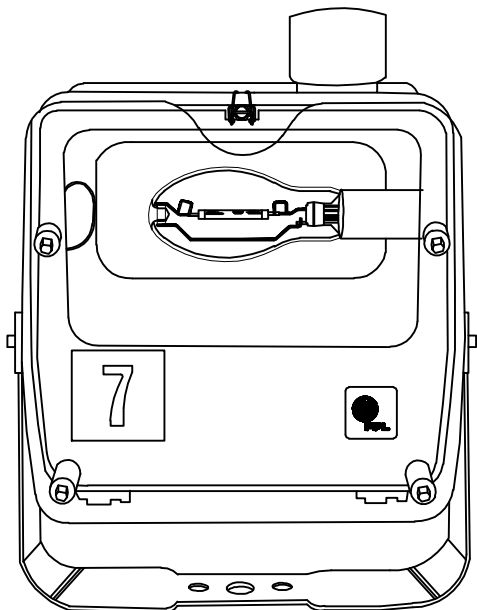
DRAWN BY: RAS

DATE: 8/9/96

APPROVED: J.J McEVROY

NO SCALE

SUPERVISOR, OH/UG PRODUCT  
SUPPORT SERVICES



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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: SMS

DRAWN BY: PRH

DATE: 9/28/99

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

NO SCALE

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

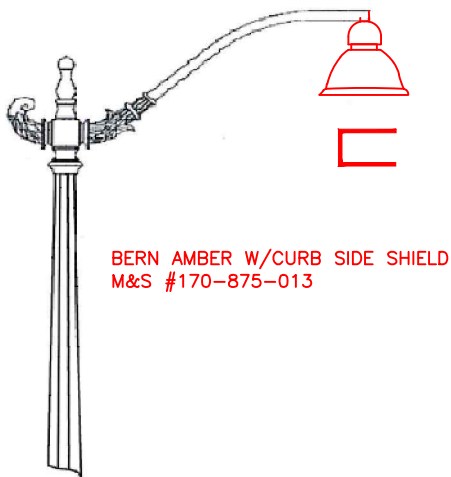


FIG. 1  
BERN CURB SIDE SHIELD

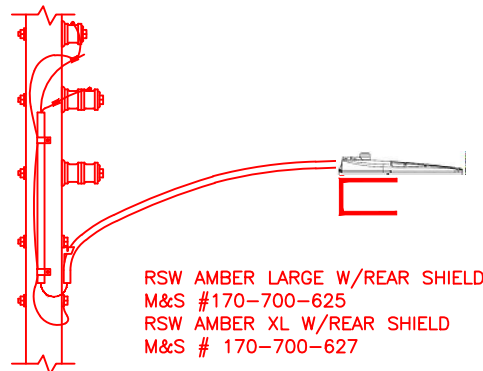


FIG. 2  
RSW REAR SHIELD

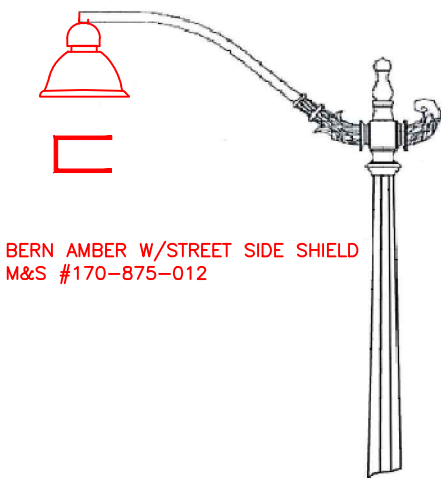


FIG. 3  
BERN STREET SIDE SHIELD

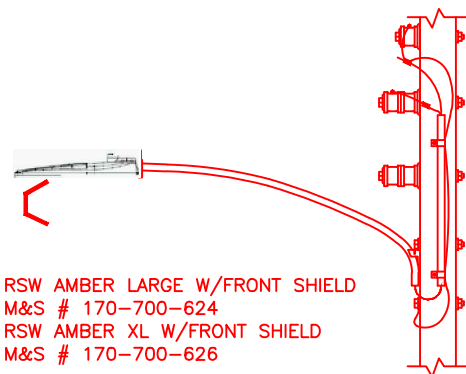


FIG. 4  
RSW FRONT SHIELD

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



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 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



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.



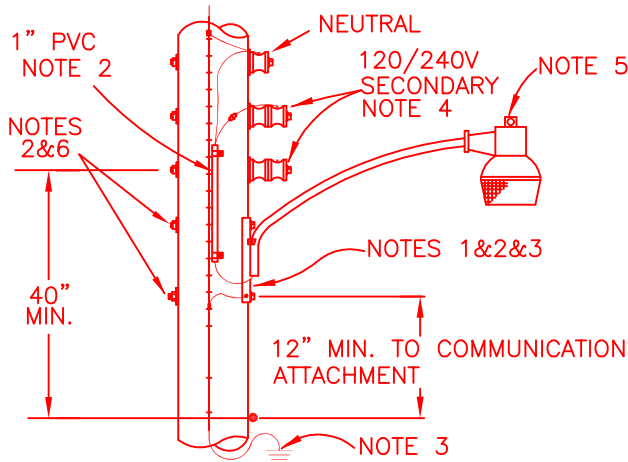


FIG. 1  
INDIVIDUAL CONTROL

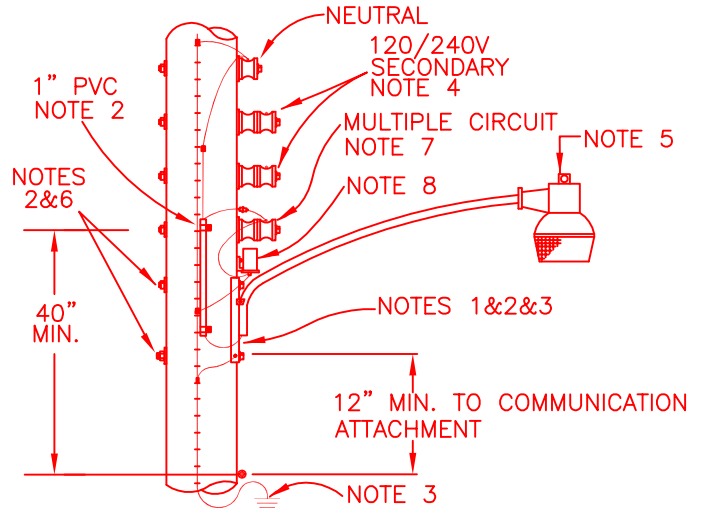


FIG. 2  
GROUP CONTROL

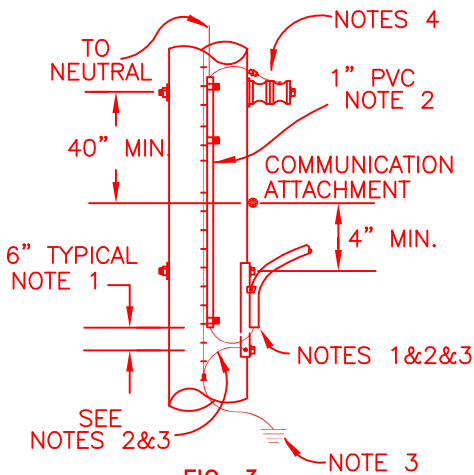


FIG. 3  
BRACKET BELOW COMMUNICATION  
ATTACHMENT WHERE CABLE MUST  
GO THRU COMMUNICATION  
SPACE

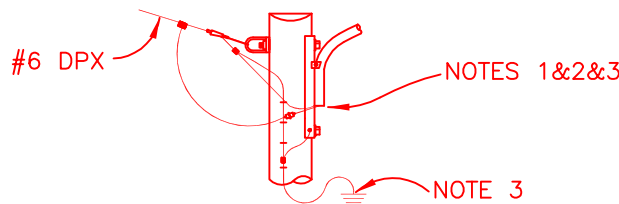


FIG. 4  
GROUP OR INDIVIDUAL CONTROL  
SERVED BY OVERHEAD CABLE

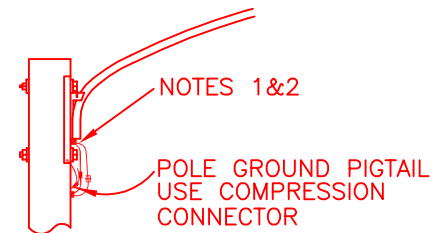


FIG. 5  
GROUP OR INDIVIDUAL CONTROL  
SERVED BY UNDERGROUND CABLE

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.

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
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

**F P L**

**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: JBM      DRAWN BY: RAS

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

SUPERVISOR, OH/UG PRODUCT  
SUPPORT SERVICES

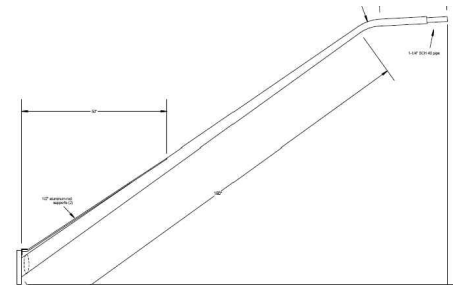
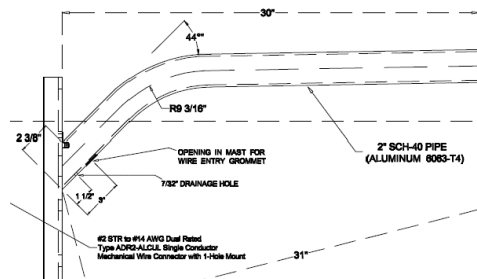
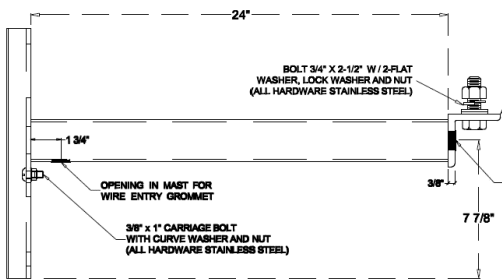
M&S NUMBER	BRACKET MOUNTING STYLE*	BRACKET TYPE OR USED WITH FIXTURE TYPE	BRACKET LENGTH	BRACKET MATERIAL	BRACKET COLOR	BRACKET RISE FROM CENTER OF MOUNTING PLATE	BRACKET RISE FROM TOP BOLT OF MOUNTING PLATE	HOLE SPACING FOR MOUNTING	SLIPFITTER SIZE
172-265-005	SIDE MOUNT (OCTAGONAL 37' ONLY)	AREA	1'-6"	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

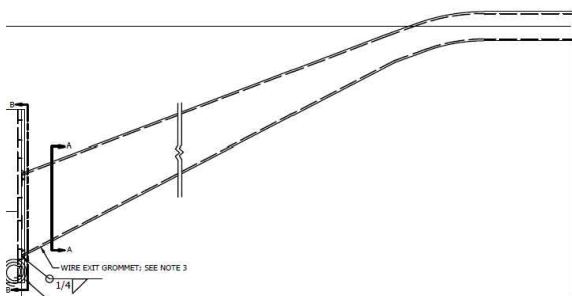
2FT SIDE MOUNT (172-201-050)

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)



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 4/26/19

APPROVED: RICK D. HUFF

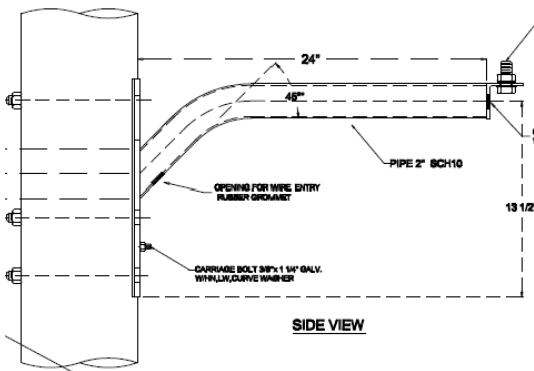
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MANAGER OF ELECTRICAL STANDARDS

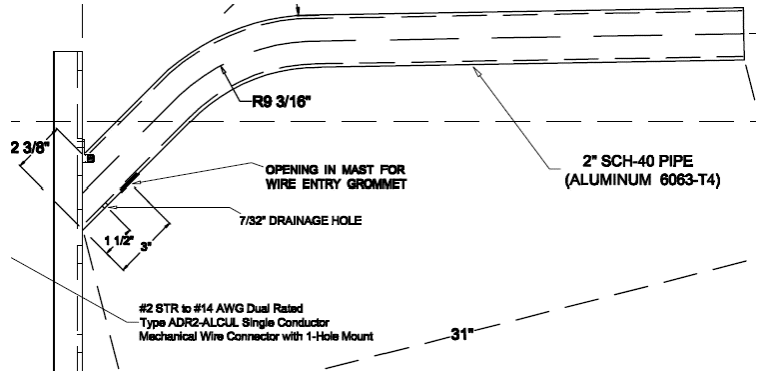
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2	3/6/21	UPDATE TABLE	DRC	GXS	RDH
1	8/24/20	UPDATE TABLE & ADD PICTURES	DRC	GXS	RDH

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"

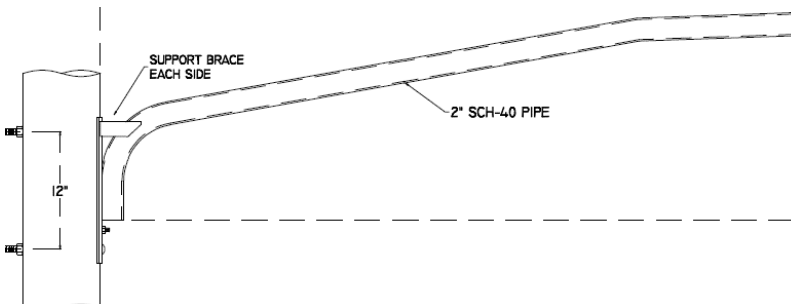
2FT SIDE MOUNT (172-201-019 & 172-201-078)



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



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



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 4/26/19

APPROVED: RICK D. HUFF

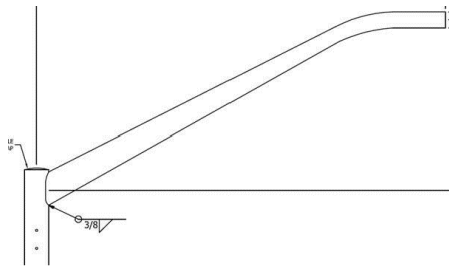
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MANAGER OF ELECTRICAL STANDARDS

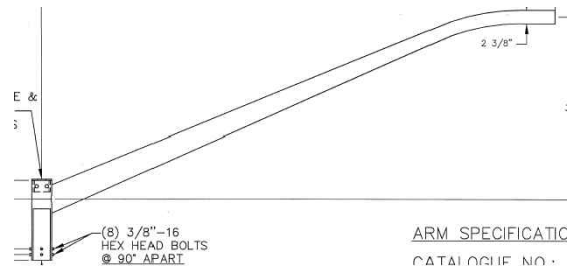
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.
2	3/6/21	UPDATE TABLE	DRC	GXS	RDH
1	8/24/20	UPDATE TABLE & ADD PICTURES	DRC	GXS	RDH

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

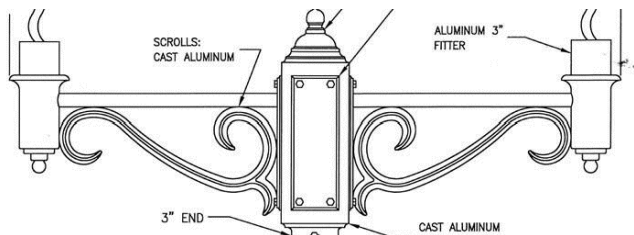
SINGLE ARM (172-265-002)



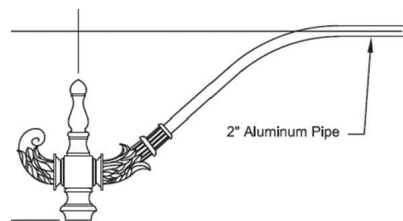
SINGLE ARM (172-265-001)



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



SINGLE ARM WEST LIBERTY



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 8/24/20

APPROVED: RICK D. HUFF

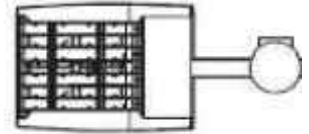
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NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

MANAGER OF ELECTRICAL STANDARDS

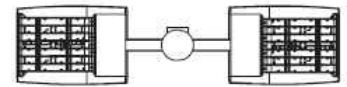
M&S NUMBER	BRACKET CONFIGURATION	BRACKET COLOR	BRACKET ARM LENGTH	BRACKET MOUNTING STYLE	BRACKET USED WITH FIXTURE TYPE	BRACKET MATERIAL	BRACKET RISE FROM TOP OF POLE	SLIPFITTER SIZE
172-330-010	SINGLE ARM	BRONZE	14"	FOR 3" OD X 3" TALL POLE TENON	GALLEON OR SHOEBOX	ALUMINUM	5.5"	2"
172-330-011	SINGLE 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"					
172-330-032	2 ARMS@180°		FOR 3" OD X 9" TALL POLE TENON					
172-330-035	3 ARMS@120°							
172-330-038	4 ARMS@90°							
172-330-041	2 ARMS@90°							
172-330-044	3 ARMS@90°							

SINGLE ARM



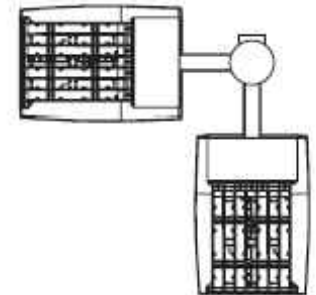
2 ARMS AT 180°

2 @ 180°



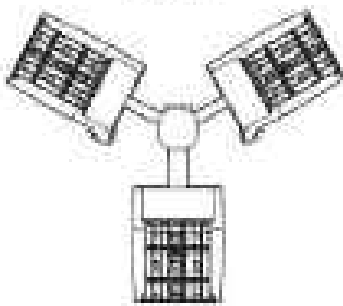
2 ARMS AT 90°

2 @ 90°



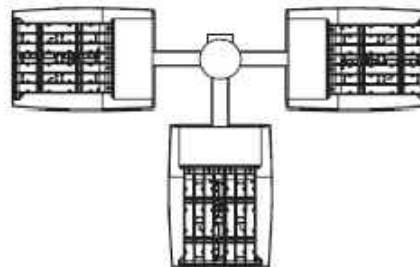
3 ARMS AT 120°

Triple<sup>1</sup>



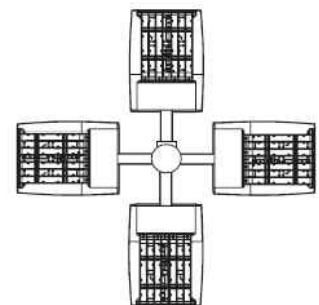
3 ARMS AT 90°

Triple<sup>2</sup>



4 ARMS AT 90°

4 @ 90°



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: D. CARROLL

DRAWN BY: G. SANTANDER

DATE: 8/24/20

APPROVED: RICK D. HUFF

NO SCALE

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

MANAGER OF ELECTRICAL STANDARDS

REFERENCE TABLES TO DETERMINE MATING OF APPROVED STREET LIGHT ASSEMBLIES (POLE/BACKET/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")									
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")		

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



F P L

OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

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

DATE: 3/14/19

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

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		
WOOD 35', 40', 45' (SIDE MOUNT)	6' BLACK SIDE MOUNT	
STANDARD CONCRETE 30', 35', 40', 45' (SIDE MOUNT)		

H



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 3/14/19

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

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

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		



**F P L**

**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

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

DATE: 3/14/19

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NO SCALE

MANAGER OF ELECTRICAL STANDARDS





FIGURE 1  
TOP VIEW

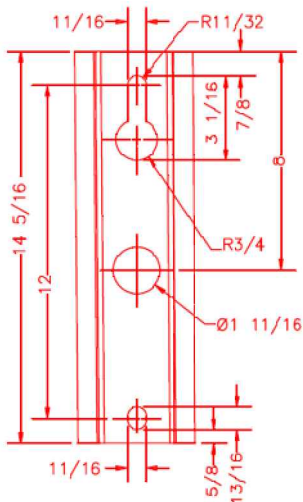


FIGURE 2  
BACK VIEW

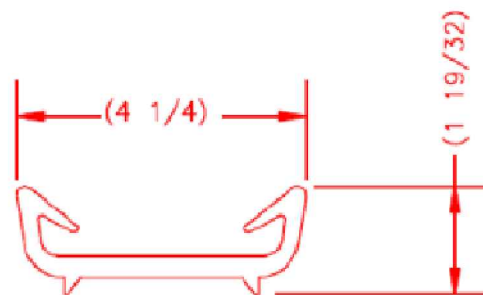


FIGURE 3  
TOP OR END VIEW

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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: TANN

DRAWN BY: E. SCHILLING

DATE: 10/26/19

APPROVED: RICK D. HUFF

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MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.



FIGURE 1

BOLT LENGTH IS DEPENDENT ON POLE TYPE AND SIZE

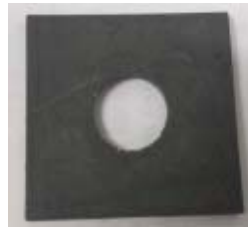
NOTE 4



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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 3/14/19

APPROVED: RICK D. HUFF

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MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.



FIGURE 1

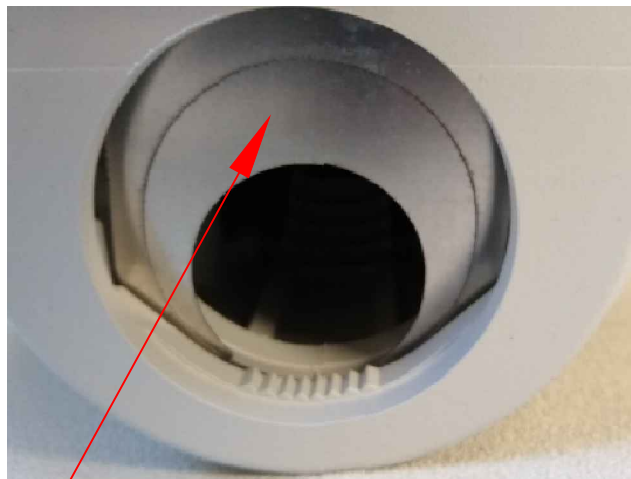


FIGURE 2

SEE NOTE 2

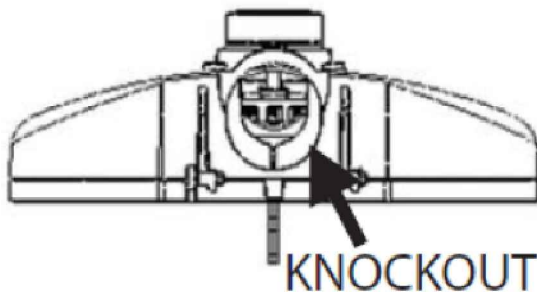


FIGURE 3

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, STRIKE WITH A HAMMER OR GRASP WITH PLIERS AND BREAK OFF.



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: TANN

DRAWN BY: E. SCHILLING

DATE: 10/26/19

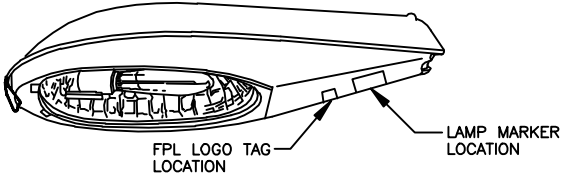
APPROVED: RICK D. HUFF

NO SCALE

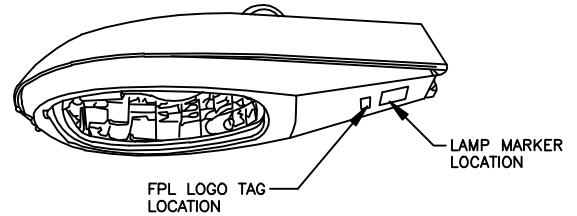
MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

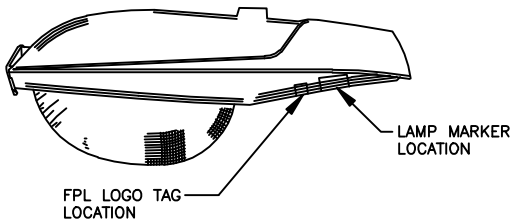
LAMP MARKER AND FPL LOGO TAG SHALL BE LOCATED ON THE LUMINAIRE AS SHOWN



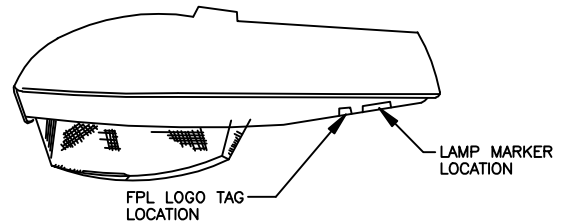
LARGE CUTOFF COBRA HEAD



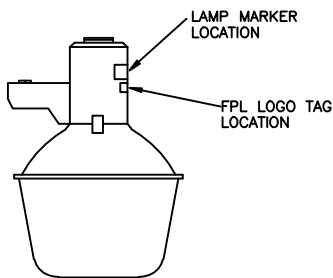
SMALL CUTOFF COBRA HEAD



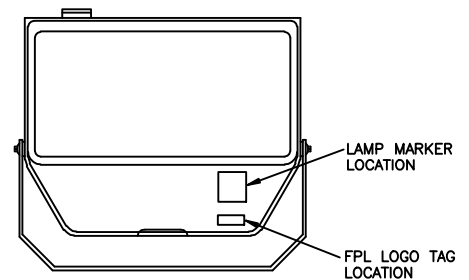
LARGE STANDARD COBRA HEAD



SMALL STANDARD COBRA HEAD



OPEN BOTTOM



DIRECTIONAL SECURITY

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



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM

DRAWN BY: RAS

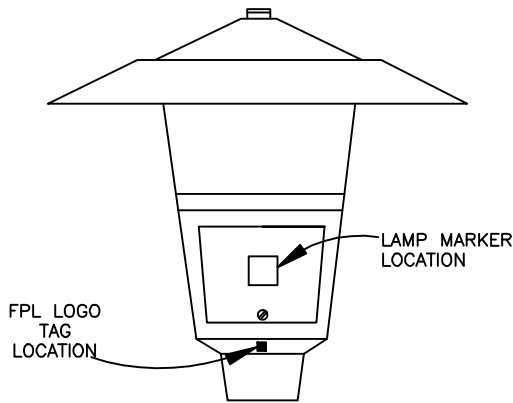
DATE: 8/09/96

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

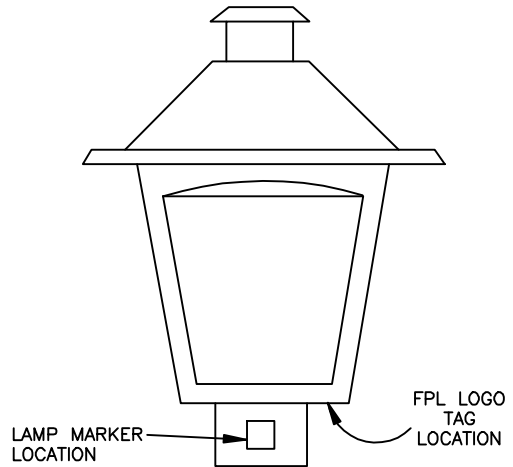
NO SCALE

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

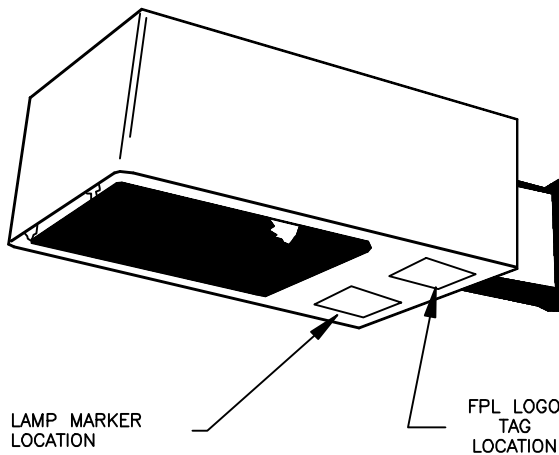
LAMP MARKER AND FPL LOGO TAG SHALL BE LOCATED ON THE LUMINAIRE AS SHOWN



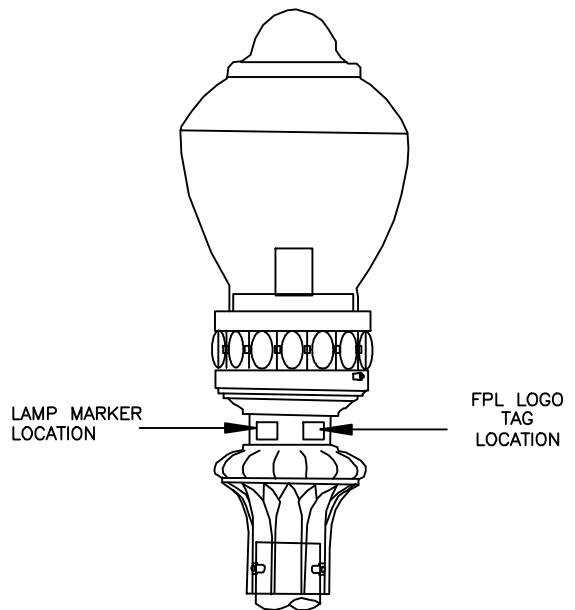
CONTEMPORARY POST TOP



TRADITIONAL POST TOP



SHOEBOX



ACORN

NOTES:

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



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM

DRAWN BY: RAS

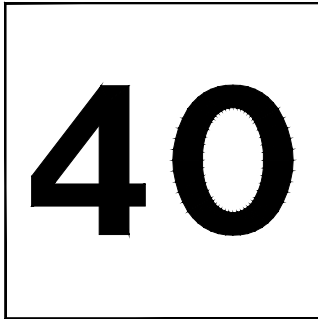
DATE: 8/09/96

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

NO SCALE

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

LAMP MARKER  
IDENTIFYING CODE  
FOR HID LAMP WATTAGE



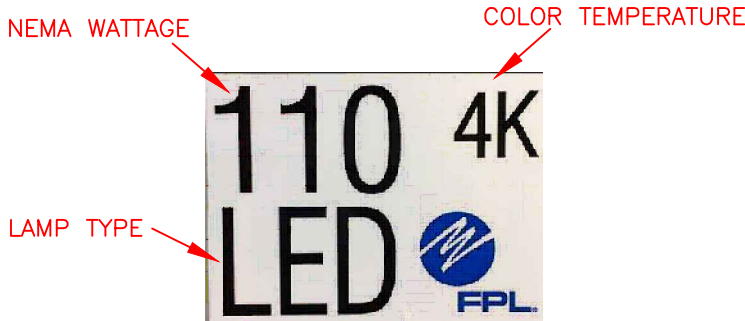
IDENTIFYING NUMERAL	LAMP WATTAGE
7	70
10	100
15	150
17	175
20	200
25	250
40	400
70	700
X1	1000

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



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

**F P L**  
OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: SMS

DRAWN BY: J.SHOUPE

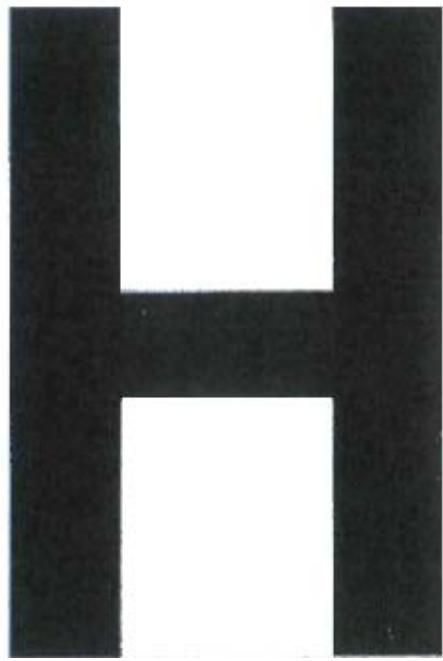
DATE: 10/8/99

APPROVED: J.J McEVOY

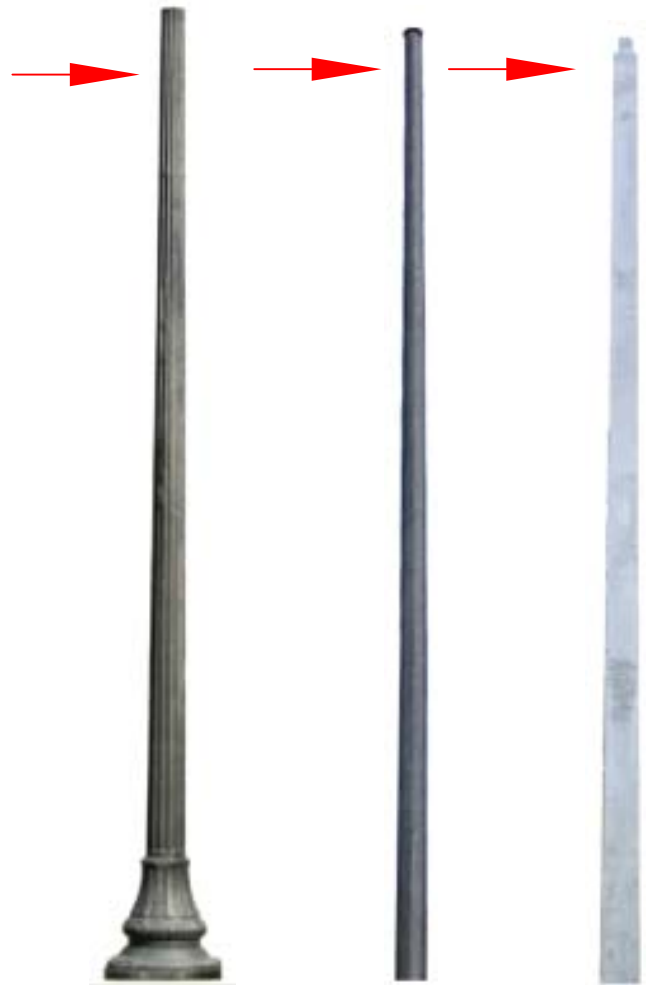
NO SCALE

SUPERVISOR, OH/UG PRODUCT  
SUPPORT SERVICES

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



FPL FIXTURE ONLY



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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 9/11/17

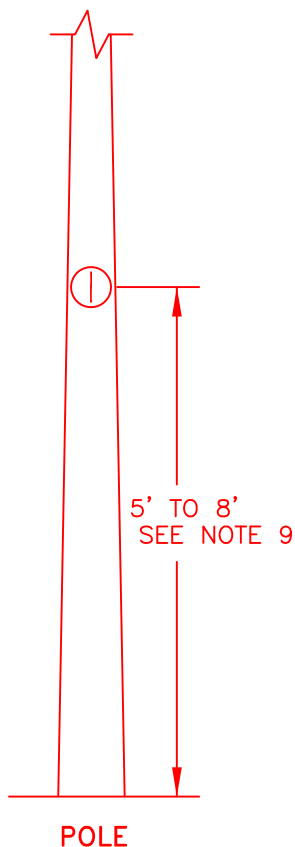
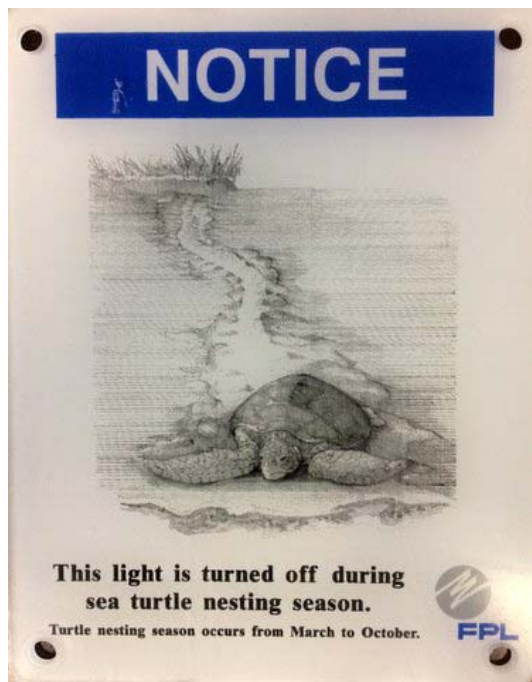
APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

H



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.



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

ORIGINATOR: J. TANN

DRAWN BY: E. SCHILLING

DATE: 11/1/16

APPROVED: RICK D. HUFF

NO SCALE

MANAGER OF ELECTRICAL STANDARDS

NO.	DATE	REVISION	ORIG.	DRAWN	APPR.



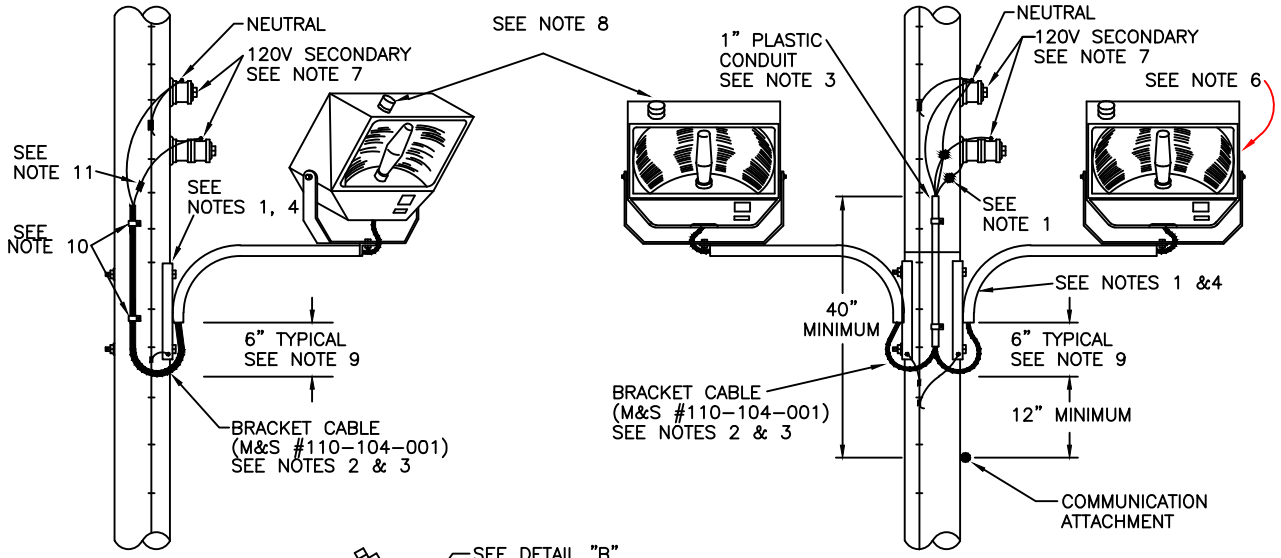


FIGURE 1  
INDIVIDUAL OR GROUP CONTROL

FIGURE 2  
INDIVIDUAL OR GROUP CONTROL

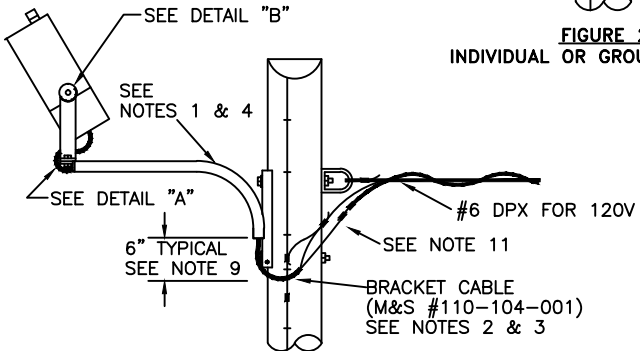
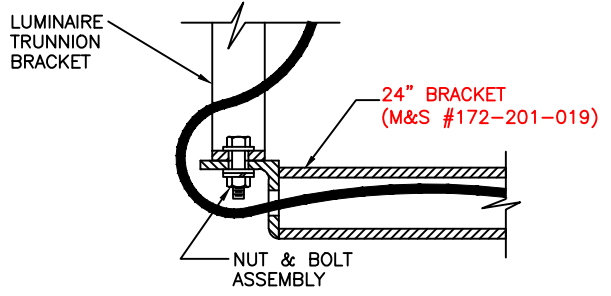
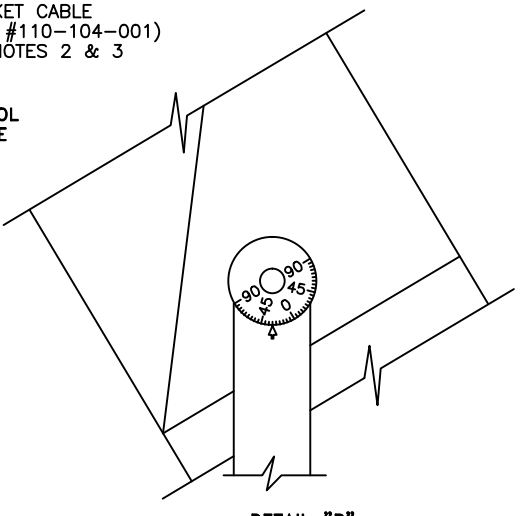


FIGURE 3  
INDIVIDUAL OR GROUP CONTROL  
SERVED BY OVERHEAD CABLE



DETAIL "A"



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

ALL NOTES ARE LOCATED ON H-19.0.2



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM DRAWN BY: RAS

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
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.

DATE: 8/9/96 APPROVED: J.J McEVROY NO SCALE  
SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

TABLE OF ANGLE SETTINGS												
		AIMING POINT IN FEET FROM BASE OF POLE										
		20	25	30	35	40	45	50	55	60	65	
MOUNTING HEIGHT IN FEET	20	45	38	34	30	27						ANGLE SETTING IN DEGREES
	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.



OH & UG DISTRIBUTION SYSTEM STANDARDS

ORIGINATOR: JBM

DRAWN BY: RAS

DATE: 6/23/08

APPROVED: J.J McEVOY

NO SCALE

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES

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



**90% Submittal Roadway Lighting Documentation**  
**75<sup>th</sup> Street West Roadway Widening Project**  
**From North of 20<sup>th</sup> Avenue to Manatee Avenue**  
**Manatee County Project No. 6108260**

---

**APPENDIX C**  
**FP&L CORRESPONDENCE**

## David Allen

---

**From:** Culling, Eric <Eric.Culling@fpl.com>  
**Sent:** Thursday, June 30, 2022 4:43 PM  
**To:** Coker, Gregory; David Allen  
**Cc:** Jeremy Runkle; Aaron Burkett  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question  
**Attachments:** FPL LED Lighting Catalog.pdf

David,

Please see attached our attached catalog of poles and fixtures. Aaron and I briefly spoke about this section of roadway and we welcome the opportunity to assist in anyway we can with new lighting.

Regards,

**Eric S. Culling**

Sr. Representative - LED Lighting Solutions  
FPL  
Mobile: 239-410-4763  
Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



To Report A Street Light Outage:  
[FPL Street Light Outage Reporting](#)  
For Emergencies Call: **1-800-226-3545**  
To View Latest FPL LED Fixture and Pole Catalog:  
[FPL LED Lighting Solutions](#)

---

**From:** Coker, Gregory <Gregory.Coker@fpl.com>  
**Sent:** Thursday, June 30, 2022 10:22 AM  
**To:** David Allen <David.Allen@cardno.com>  
**Cc:** Jeremy Runkle <jeremy.runkle@cardno.com>; Aaron Burkett <aaron.burkett@mymanatee.org>; Culling, Eric <Eric.Culling@fpl.com>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

David,

Per our discussion this morning, Manatee County typically prefers to install their own roadway lighting system on the opposite (east) side of the roadway away from existing FPL OE. In the case of this future road widening project, my guess is FPL will have to relocate its OE along the west ROW throughout the entire project limits. In doing so, my guess again is that FPL will be asked to remove all FPL lighting currently on the same west side OE pole line.


Eric,

If you feel FPLES might want to get involved in this project, please let us know. The project is in early design stages & will not be constructed for a couple / few years.

Many thanks for any feedback!

## Greg Coker

Contractor – Working on Behalf of  
Florida Power & Light  
Whitfield Service Center  
1253 12<sup>th</sup> Ave E | Palmetto, FL 34221  
813-422-8232 cell | Gregory.Coker@FPL.com

 Please contact me with any questions or concerns. If you cannot reach me, feel free to contact my Engineering Leader Ray Vargas at (o) 941-927-4262, (c) 941-266-3118 or [Ray.Vargas@fpl.com](mailto:Ray.Vargas@fpl.com).

Visit the new [FPL Project Portal](https://www.fpl.com/construction) at [FPL.com/construction](https://www.fpl.com/construction) to manage your FPL residential and commercial construction projects.

**FPL Electric Service Standards** <https://www.fpl.com/partner/builders/service-standards.html>

---

**From:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Sent:** Wednesday, June 29, 2022 9:35 AM  
**To:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>  
**Subject:** 75th Street Project - Luminaire question

Greg,

Cardno has been contracted by Manatee County to develop a roadway design along 75<sup>th</sup> Street from 20<sup>th</sup> Avenue to Manatee Avenue. There is existing roadway LED lighting on the power poles on the west side of the segment. Since the typical section is going to change, I have to run a lighting analysis. I would like to request a list of LED luminaires that FPL uses in Manatee County. On some other projects, I used 3000k color temperature. Does FPL have 3000k luminaires? We want to see if the new roadway can be lit on one side by FDOT lighting. If you are not sure of the luminaire types, please let me know who I can coordinate with for this information.

Please let me know if you have any questions.

Thanks.

David J Allen PE  
SENIOR PROJECT ENGINEER | SENIOR TRAFFIC ENGINEER  
CARDNO, NOW STANTEC



Direct +1 813 257 0005 Mobile +1 813 956 3496  
Address 3905 Crescent Park Drive , Riverview, Florida 33578  
Email [david.allen@cardno.com](mailto:david.allen@cardno.com) Web [www.cardno.com](http://www.cardno.com)

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## David Allen

---

**From:** David Allen  
**Sent:** Friday, August 5, 2022 9:13 AM  
**To:** Culling, Eric  
**Cc:** Jeremy Runkle; Aaron Burkett; Mark Modjeski; Howard Holley; Coker, Gregory  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

Eric,

I have a couple of questions for this project that will help me with my lighting analysis and design. The first couple of questions might be for Greg.

- The existing power poles run along the west side of 75<sup>th</sup> Street. These poles will need to be relocated due to the widening. What is your typical power pole spacing? The reason I am asking is that it will be desirable to have the luminaires mounted on those poles. I can use your spacing as a constant in my lighting analysis.
- When FPL relocate their poles due to widening, are the poles typically offset further back from the road or does the shift include parallel to the roadway shifts as well.
- What is your typical mounting height of luminaires mounted on your power poles?
- I want to confirm if it is possible that FPL can also furnish and install light poles on the east side as well. Based on the proposed typical sections, lighting will need to be installed on both sides of 75<sup>th</sup> Street to meet lighting criteria.
- Does FPL supply house side shield on the luminaires specified in the catalog? There are some residential units close to 75<sup>th</sup> Street within the project limits. It would be good to limit the light trespass.

If I have any additional questions that come up during my analysis, I will let you know. We will provide the layout for your review and comment for each project submittal.

Thanks.

David J Allen PE

SENIOR PROJECT ENGINEER | SENIOR TRAFFIC ENGINEER  
CARDNO, NOW STANTEC

Direct +1 813 257 0005 Mobile +1 813 956 3496  
Address 3905 Crescent Park Drive , Riverview, Florida 33578  
Email [david.allen@cardno.com](mailto:david.allen@cardno.com) Web [www.cardno.com](http://www.cardno.com)

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---

**From:** David Allen  
**Sent:** Thursday, June 30, 2022 4:59 PM  
**To:** Culling, Eric <Eric.Culling@fpl.com>; Coker, Gregory <Gregory.Coker@fpl.com>

**Cc:** Jeremy Runkle <jeremy.runkle@cardno.com>; Aaron Burkett <aaron.burkett@mymanatee.org>; Mark Modjeski <Mark.Modjeski@cardno.com>

**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

Thanks Eric. I will be in touch to discuss 75<sup>th</sup> Street in more detail.

**David J Allen PE**

SENIOR PROJECT ENGINEER | SENIOR TRAFFIC ENGINEER  
CARDNO, NOW STANTEC

Direct +1 813 257 0005 Mobile +1 813 956 3496  
Address 3905 Crescent Park Drive , Riverview, Florida 33578  
Email [david.allen@cardno.com](mailto:david.allen@cardno.com) Web [www.cardno.com](http://www.cardno.com)

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---

**From:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>

**Sent:** Thursday, June 30, 2022 4:43 PM

**To:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>; David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>

**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>

**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

David,

Please see attached our attached catalog of poles and fixtures. Aaron and I briefly spoke about this section of roadway and we welcome the opportunity to assist in anyway we can with new lighting.

Regards,

**Eric S. Culling**

Sr. Representative - LED Lighting Solutions

FPL

Mobile: 239-410-4763

Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



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[FPL Street Light Outage Reporting](#)

For Emergencies Call: **1-800-226-3545**

To View Latest FPL LED Fixture and Pole Catalog:

[FPL LED Lighting Solutions](#)



---

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**Sent:** Thursday, June 30, 2022 10:22 AM  
**To:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

David,

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Eric,

If you feel FPLES might want to get involved in this project, please let us know. The project is in early design stages & will not be constructed for a couple / few years.

Many thanks for any feedback!

## Greg Coker

Contractor – Working on Behalf of  
Florida Power & Light  
Whitfield Service Center  
1253 12<sup>th</sup> Ave E | Palmetto, FL 34221  
813-422-8232 cell | [Gregory.Coker@FPL.com](mailto:Gregory.Coker@FPL.com)



Please contact me with any questions or concerns. If you cannot reach me, feel free to contact my Engineering Leader Ray Vargas at (o) 941-927-4262, (c) 941-266-3118 or [Ray.Vargas@fpl.com](mailto:Ray.Vargas@fpl.com).

Visit the new [FPL Project Portal](https://www.fpl.com/construction) at [FPL.com/construction](https://www.fpl.com/construction) to manage your FPL residential and commercial construction projects.

**FPL Electric Service Standards** <https://www.fpl.com/partner/builders/service-standards.html>

---

**From:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Sent:** Wednesday, June 29, 2022 9:35 AM  
**To:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>  
**Subject:** 75th Street Project - Luminaire question

Greg,

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Please let me know if you have any questions.

Thanks.

**David J Allen PE**

SENIOR PROJECT ENGINEER | SENIOR TRAFFIC ENGINEER  
CARDNO, NOW STANTEC



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Address 3905 Crescent Park Drive , Riverview, Florida 33578  
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**From:** [Culling, Eric](#)  
**To:** [David Allen](#)  
**Cc:** [Jeremy Runkle](#); [Aaron Burkett](#); [Mark Modjeski](#); [Howard Holley](#); [Coker, Gregory](#)  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question  
**Date:** Friday, August 5, 2022 11:34:12 AM  
**Attachments:** [image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[image006.png](#)  
[image007.png](#)

---

David,

Please see below:

Regards,

**Eric S. Culling**  
Sr. Representative - LED Lighting Solutions  
FPL  
Mobile: 239-410-4763  
Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



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**Sent:** Friday, August 5, 2022 9:13 AM  
**To:** Culling, Eric <Eric.Culling@fpl.com>  
**Cc:** Jeremy Runkle <jeremy.runkle@cardno.com>; Aaron Burkett <aaron.burkett@mymanatee.org>; Mark Modjeski <Mark.Modjeski@cardno.com>; Howard Holley <Howard.Holley@cardno.com>; Coker, Gregory <Gregory.Coker@fpl.com>  
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**Sent:** Thursday, June 30, 2022 4:59 PM

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**Sent:** Thursday, June 30, 2022 4:43 PM

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**From:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>

**Sent:** Thursday, June 30, 2022 10:22 AM

**To:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>

**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>

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Many thanks for any feedback!

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**Sent:** Wednesday, June 29, 2022 9:35 AM  
**To:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>  
**Subject:** 75th Street Project - Luminaire question

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Cc: [Jeremy Runkle](#); [Aaron Burkett](#); [Mark Modjeski](#); [Howard Holley](#)  
Subject: RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question  
Date: Friday, August 5, 2022 12:09:15 PM  
Attachments: [image009.png](#)  
[image010.png](#)  
[image011.png](#)  
[image012.png](#)  
[image013.png](#)

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David,

**[SEE MY FEEDBACK IN GREEN.](#)**

-

Have a great weekend!

**Greg Coker**

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**To:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
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 Cc: [Jeremy Runkle](#)  
 Subject: RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question  
 Date: Tuesday, August 9, 2022 3:20:00 PM  
 Attachments: [image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[image006.png](#)  
[image007.png](#)

Eric,

I am preparing to do my lighting analysis for the above referenced project. I would like to request the ies for all the luminaires circled in red below.

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
Roadway	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
Roadway	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
Roadway	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
Roadway	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
Roadway	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

Thanks.

**David J Allen PE**  
 SENIOR PROJECT ENGINEER | SENIOR TRAFFIC ENGINEER  
 CARDNO, NOW STANTEC

Direct +1 813 257 0005 Mobile +1 813 956 3496  
 Address 3905 Crescent Park Drive , Riverview, Florida 33578  
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**From:** David Allen  
**Sent:** Friday, August 5, 2022 2:08 PM  
**To:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>; Howard Holley <[Howard.Holley@cardno.com](mailto:Howard.Holley@cardno.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

Thanks Eric for the quick reply.

**David J Allen PE**  
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---

**From:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Sent:** Friday, August 5, 2022 11:34 AM  
**To:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>; Howard Holley <[Howard.Holley@cardno.com](mailto:Howard.Holley@cardno.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

David,

Please see below:

Regards,

**Eric S. Culling**  
Sr. Representative - LED Lighting Solutions  
FPL  
Mobile: 239-410-4763  
Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



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[FPL Street Light Outage Reporting](#)  
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To View Latest FPL LED Fixture and Pole Catalog:  
[FPL LED Lighting Solutions](#)

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**Sent:** Friday, August 5, 2022 9:13 AM  
**To:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>; Howard Holley <[Howard.Holley@cardno.com](mailto:Howard.Holley@cardno.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

Eric,

I have a couple of questions for this project that will help me with my lighting analysis and design. The first couple of questions might be for Greg.

- The existing power poles run along the west side of 75<sup>th</sup> Street. These poles will need to be relocated due to the widening. What is your typical power pole spacing? The reason I am asking is that it will be desirable to have the luminaires mounted on those poles. I can use your spacing as a constant in my lighting analysis. **I will defer to Greg and/or Power Delivery regarding pole spacing for the proposed relocations.**
- When FPL relocate their poles due to widening, are the poles typically offset further back from the road or does the shift include parallel to the roadway shifts as well. **Again I will allow Power Delivery to comment**
- What is your typical mounting height of luminaires mounted on your power poles? **30'-35' is usually achievable. Depending on the type of pole and other equipment attached sometimes 25'.**
- I want to confirm if it is possible that FPL can also furnish and install light poles on the east side as well. Based on the proposed typical sections, lighting will need to be installed on both sides of 75<sup>th</sup> Street to meet lighting criteria. **Yes we should be able to. We would need to be provided a photometric or PDF drawing showing requested locations with pole/fixture/bracket specifications. That information would be submitted to our Lighting Design team who would then provide an initial design sketch for all underground services required to feed the new lighting as well as calculate installation costs if FPL is installing the conduit.**
- Does FPL supply house side shield on the luminaires specified in the catalog? There are some residential units close to 75<sup>th</sup> Street within the project limits. It would be good to limit the light trespass. **Yes we have house side shields for all fixtures available. If specified in the plans we will design the job to include the house side shields where shown. If after install a request can be made to install a shield at any time. Currently we are not charging for installation of shields after a job has been completed.**

If I have any additional questions that come up during my analysis, I will let you know. We will provide the layout for your review and comment for each project submittal.

Thanks.

**David J Allen PE**  
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---

**From:** David Allen  
**Sent:** Thursday, June 30, 2022 4:59 PM  
**To:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

Thanks Eric. I will be in touch to discuss 75<sup>th</sup> Street in more detail.

**David J Allen PE**  
SENIOR PROJECT ENGINEER | SENIOR TRAFFIC ENGINEER  
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---

**From:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Sent:** Thursday, June 30, 2022 4:43 PM  
**To:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>; David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

David,

Please see attached our attached catalog of poles and fixtures. Aaron and I briefly spoke about this section of roadway and we welcome the opportunity to assist in anyway we can with new lighting.

Regards,

**Eric S. Culling**  
Sr. Representative - LED Lighting Solutions  
FPL  
Mobile: 239-410-4763  
Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



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[FPL Street Light Outage Reporting](#)  
For Emergencies Call: **1-800-226-3545**  
To View Latest FPL LED Fixture and Pole Catalog:  
[FPL LED Lighting Solutions](#)

---

**From:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Sent:** Thursday, June 30, 2022 10:22 AM  
**To:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

David,

Per our discussion this morning, Manatee County typically prefers to install their own roadway lighting system on the opposite (east) side of the roadway away from existing FPL OE. In the case of this future road widening project, my guess is FPL will have to relocate its OE along the west ROW throughout the entire project limits. In doing so, my guess again is that FPL will be asked to remove all FPL lighting currently on the same west side OE pole line.

Eric,

If you feel FPLES might want to get involved in this project, please let us know. The project is in early design stages & will not be constructed for a couple / few



years.

Many thanks for any feedback!

**Greg Coker**

Contractor – Working on Behalf of  
Florida Power & Light  
Whitfield Service Center  
1253 12<sup>th</sup> Ave E | Palmetto, FL 34221  
813-422-8232 cell | Gregory.Coker@FPL.com



Please contact me with any questions or concerns. If you cannot reach me, feel free to contact my Engineering Leader Ray Vargas at (o) 941-927-4262, (c) 941-266-3118 or [Ray.Vargas@fpl.com](mailto:Ray.Vargas@fpl.com)

Visit the new [FPL Project Portal](https://www.fpl.com/construction) at [FPL.com/construction](https://www.fpl.com/construction) to manage your FPL residential and commercial construction projects.

FPL Electric Service Standards <https://www.fpl.com/partner/builders/service-standards.html>

---

**From:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Sent:** Wednesday, June 29, 2022 9:35 AM  
**To:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>  
**Subject:** 75th Street Project - Luminaire question

Greg,

Cardno has been contracted by Manatee County to develop a roadway design along 75<sup>th</sup> Street from 20<sup>th</sup> Avenue to Manatee Avenue. There is existing roadway LED lighting on the power poles on the west side of the segment. Since the typical section is going to change, I have to run a lighting analysis. I would like to request a list of LED luminaires that FPL uses in Manatee County. On some other projects, I used 3000k color temperature. Does FPL have 3000k luminaires? We want to see if the new roadway can be lit on one side by FDOT lighting. If you are not sure of the luminaire types, please let me know who I can coordinate with for this information.

Please let me know if you have any questions.

Thanks.  
**David J Allen PE**  
SENIOR PROJECT ENGINEER | SENIOR TRAFFIC ENGINEER  
CARDNO, NOW STANTEC



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From: [Natskakula, Amanda](#)  
To: [David Allen](#); [Jeremy Runkle](#)  
Cc: [Culling, Eric](#)  
Subject: RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question  
Date: Wednesday, August 10, 2022 5:11:00 PM  
Attachments: [image002.png](#)  
[image006.png](#)  
[image007.png](#)  
[image008.png](#)  
[image009.png](#)  
[image010.png](#)  
[Roadway 31,500L 3000K.ies](#)  
[Roadway 20,000L 3000K.ies](#)  
[Roadway 17,000L 3000K.ies](#)  
[Roadway 12,000L 3000K.ies](#)  
[Roadway 7,500L 3000K.ies](#)  
[Roadway 5,000L 3000K.ies](#)  
[Roadway 5,000L 3000K with House Side Shields.ies](#)  
[Roadway 7,500L 3000K with House Side Shields.ies](#)  
[Roadway 12,000L 3000K with House Side Shields.ies](#)  
[Roadway 17,000L 3000K with House Side Shields.ies](#)  
[Roadway 20,000L 3000K with House Side Shields.ies](#)  
[Roadway 31,500L 3000K with House Side Shields.ies](#)

---

Please find requested files attached.

*Thank you,*  
-----  
*Amanda Natskakula*  
*Business Analyst*  
*LED Lighting Solutions*  
*561-385-1475*



---

**From:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Sent:** Wednesday, August 10, 2022 5:05 PM  
**To:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>; Natskakula, Amanda <[Amanda.Natskakula@fpl.com](mailto:Amanda.Natskakula@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

Amanda,

Can you please pull the .IES files and send. Please note the request for only 3k files. Please include 3k house side shield options if available for each wattage range. The file will have HSS in the name I believe. Thank you.

Regards,

**Eric S. Culling**  
Sr. Representative - LED Lighting Solutions  
FPL  
Mobile: 239-410-4763  
Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



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**Sent:** Tuesday, August 9, 2022 3:21 PM  
**To:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>  
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		6, 7	1	3	263/260	4000K	31,500+	B3-U0-G5	Upon Request	P3

Thanks.

**David J Allen PE**

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**Sent:** Friday, August 5, 2022 2:08 PM

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**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>; Howard Holley <[Howard.Holley@cardno.com](mailto:Howard.Holley@cardno.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>

**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

Thanks Eric for the quick reply.

**David J Allen PE**

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**From:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>

**Sent:** Friday, August 5, 2022 11:34 AM

**To:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>

**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>; Howard Holley <[Howard.Holley@cardno.com](mailto:Howard.Holley@cardno.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>

**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

David,

Please see below:

Regards,

**Eric S. Culling**  
Sr. Representative - LED Lighting Solutions  
FPL  
Mobile: 239-410-4763  
Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



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For Emergencies Call: **1-800-226-3545**  
To View Latest FPL LED Fixture and Pole Catalog:  
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**Sent:** Friday, August 5, 2022 9:13 AM  
**To:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>; Howard Holley <[Howard.Holley@cardno.com](mailto:Howard.Holley@cardno.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

Eric,

I have a couple of questions for this project that will help me with my lighting analysis and design. The first couple of questions might be for Greg.

- The existing power poles run along the west side of 75<sup>th</sup> Street. These poles will need to be relocated due to the widening. What is your typical power pole spacing? The reason I am asking is that it will be desirable to have the luminaires mounted on those poles. I can use your spacing as a constant in my lighting analysis. **I will defer to Greg and/or Power Delivery regarding pole spacing for the proposed relocations.**
- When FPL relocate their poles due to widening, are the poles typically offset further back from the road or does the shift include parallel to the roadway shifts as well. **Again I will allow Power Delivery to comment**
- What is your typical mounting height of luminaires mounted on your power poles? **30'-35' is usually achievable. Depending on the type of pole and other equipment attached sometimes 25'.**
- I want to confirm if it is possible that FPL can also furnish and install light poles on the east side as well. Based on the proposed typical sections, lighting will need to be installed on both sides of 75<sup>th</sup> Street to meet lighting criteria. **Yes we should be able to. We would need to be provided a photometric or PDF drawing showing requested locations with pole/fixture/bracket specifications. That information would be submitted to our Lighting Design team who would then provide an initial design sketch for all underground services required to feed the new lighting as well as calculate installation costs if FPL is installing the conduit.**
- Does FPL supply house side shield on the luminaires specified in the catalog? There are some residential units close to 75<sup>th</sup> Street within the project limits. It would be good to limit the light trespass. **Yes we have house side shields for all fixtures available. If specified in the plans we will design the job to include the house side shields where shown. If after install a request can be made to install a shield at any time. Currently we are not charging for installation of shields after a job has been completed.**

If I have any additional questions that come up during my analysis, I will let you know. We will provide the layout for your review and comment for each project submittal.

Thanks.

**David J Allen PE**  
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---

**From:** David Allen  
**Sent:** Thursday, June 30, 2022 4:59 PM  
**To:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

Thanks Eric. I will be in touch to discuss 75<sup>th</sup> Street in more detail.

**David J Allen PE**

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---

**From:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Sent:** Thursday, June 30, 2022 4:43 PM  
**To:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>; David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

David,

Please see attached our attached catalog of poles and fixtures. Aaron and I briefly spoke about this section of roadway and we welcome the opportunity to assist in anyway we can with new lighting.

Regards,

**Eric S. Culling**  
Sr. Representative - LED Lighting Solutions  
FPL  
Mobile: 239-410-4763  
Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



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[FPL Street Light Outage Reporting](#)  
For Emergencies Call: **1-800-226-3545**  
To View Latest FPL LED Fixture and Pole Catalog:  
[FPL LED Lighting Solutions](#)

---

**From:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Sent:** Thursday, June 30, 2022 10:22 AM  
**To:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Aaron Burkett <[aaron.burkett@mymanatee.org](mailto:aaron.burkett@mymanatee.org)>; Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Subject:** RE: 75th Street Project - Manatee Ave to 20th Ave W - Bradenton / Manatee County Luminaire question

David,

Per our discussion this morning, Manatee County typically prefers to install their own roadway lighting system on the opposite (east) side of the roadway away from existing FPL OE. In the case of this future road widening project, my guess is FPL will have to relocate its OE along the west ROW throughout the entire project limits. In doing so, my guess again is that FPL will be asked to remove all FPL lighting currently on the same west side OE pole line.

Eric,

If you feel FPLES might want to get involved in this project, please let us know. The project is in early design stages & will not be constructed for a couple / few years.

Many thanks for any feedback!

**Greg Coker**

Contractor – Working on Behalf of  
Florida Power & Light  
Whitfield Service Center  
1253 12<sup>th</sup> Ave E | Palmetto, FL 34221  
813-422-8232 cell | [Gregory.Coker@FPL.com](mailto:Gregory.Coker@FPL.com)



Please contact me with any questions or concerns. If you cannot reach me, feel free to contact my Engineering Leader Ray Vargas at (o) 941-927-4262, (c) 941-266-3118 or [Ray.Vargas@fpl.com](mailto:Ray.Vargas@fpl.com)

Visit the new [FPL Project Portal](https://www.fpl.com/construction) at [FPL.com/construction](https://www.fpl.com/construction) to manage your FPL residential and commercial construction projects.

FPL Electric Service Standards <https://www.fpl.com/partner/builders/service-standards.html>

---

**From:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Sent:** Wednesday, June 29, 2022 9:35 AM  
**To:** Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>  
**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>  
**Subject:** 75th Street Project - Luminaire question

Greg,

Cardno has been contracted by Manatee County to develop a roadway design along 75<sup>th</sup> Street from 20<sup>th</sup> Avenue to Manatee Avenue. There is existing roadway LED lighting on the power poles on the west side of the segment. Since the typical section is going to change, I have to run a lighting analysis. I would like to request a list of LED luminaires that FPL uses in Manatee County. On some other projects, I used 3000k color temperature. Does FPL have 3000k luminaires? We want to see if the new roadway can be lit on one side by FDOT lighting. If you are not sure of the luminaire types, please let me know who I can coordinate with for this information.

Please let me know if you have any questions.

Thanks.

**David J Allen PE**  
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From: [Culling, Eric](#)  
To: [David Allen](#)  
Cc: [Mark Modjeski](#); [Howard Holley](#)  
Subject: RE: FPL Lighting Catalog question  
Date: Tuesday, November 1, 2022 5:12:45 PM  
Attachments: [image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[image006.png](#)  
[image007.png](#)  
[FPL DCS-H2.0.1 - Street Lighting Ver. 8.31.22.pdf](#)

---

David,

Attached is the most updated one provided by our Principal Business Analyst with naming nomenclature as part of the file name. Does this help?

Eric

---

**From:** David Allen <David.Allen@cardno.com>  
**Sent:** Tuesday, November 1, 2022 1:44 PM  
**To:** Culling, Eric <Eric.Culling@fpl.com>  
**Cc:** Mark Modjeski <Mark.Modjeski@cardno.com>; Howard Holley <Howard.Holley@cardno.com>  
**Subject:** RE: FPL Lighting Catalog question

Eric,

I am working on the 75<sup>th</sup> Street Lighting Plans where we are coordinating with FPL for the lighting. You provided me the above standards Section H of your design manual. Could I get the actual name and version date of your design manual for reference in the Lighting Plans?

Thanks.

**David J Allen PE**

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---

**From:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Sent:** Thursday, September 15, 2022 4:15 PM  
**To:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Cc:** Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>; Howard Holley <[Howard.Holley@cardno.com](mailto:Howard.Holley@cardno.com)>  
**Subject:** RE: FPL Lighting Catalog question

David,

We currently do not offer any frangible/transformer base poles. All poles on the catalog are direct buried concrete, fiberglass and wood. Wood poles would be fed with overhead. For the side without overhead we would probably

look to tie into existing pad mount transformers with underground conductor.

Please see attached our design manual that I do not believe I had sent you previously. This is a good resource that we are able to share with engineering firms doing work on behalf of our municipal customers.

Regards,

**Eric S. Culling**  
Sr. Representative - LED Lighting Solutions  
FPL  
Mobile: 239-410-4763  
Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



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[FPL Street Light Outage Reporting](#)  
For Emergencies Call: **1-800-226-3545**  
To View Latest FPL LED Fixture and Pole Catalog:  
[FPL LED Lighting Solutions](#)

---

**From:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>  
**Sent:** Thursday, September 15, 2022 4:04 PM  
**To:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>  
**Cc:** Mark Modjeski <[Mark.Modjeski@cardno.com](mailto:Mark.Modjeski@cardno.com)>; Howard Holley <[Howard.Holley@cardno.com](mailto:Howard.Holley@cardno.com)>  
**Subject:** FPL Lighting Catalog question

Eric,

I have a couple of questions

1. Below is a clip of the poles shown in the FPL Lighting Catalog. I notice that there are no poles with a frangible/transformer base. Are the light poles in the catalog the only options or is it possible to use a standard frangible base aluminum light pole when doing a design for roadway lighting system to be maintained by FPL. I am working on a Sarasota County new road project with lighting and they asked us to use FPL material based on an agreement they have with FPL.
2. For a roadway project where there are light poles on both sides of the road, does FPL go underground with the lighting conductors for the side of the road without overhead power line or will all lighting conductors be aerial?



**POLES**

<p>Standard Concrete</p>  <p>1</p>	<p>Standard Black Fiberglass</p>  <p>2</p>	<p>Black Washington Concrete</p>  <p>3</p>	<p>Black Octagonal Concrete</p>  <p>4</p>	<p>Black or Green Washington Concrete</p>  <p>5</p>
<p>Tenon Mount 20' (13' MH) 35' (27'6" MH)</p>	<p>Tenon Mount 13' (10' MH) 20' (15'6" MH)</p>	<p>Tenon Mount 23' (16' MH)</p>	<p>Tenon Mount 37' (30' MH)</p>	<p>Tenon Mount 18.5' (14'6" MH)</p>
<p>Standard Wood</p>  <p>6</p>	<p>Standard Concrete</p>  <p>7</p>	<p>Black Tapered Concrete</p>  <p>8</p>	<p>Grey Round Concrete Pole on Concrete Base <i>(Non-roadway Only)</i></p>  <p>9</p>	
<p>Arm Mount 35' (29' MH) 40' (33'6" MH) 45' (38" MH)</p>	<p>Arm Mount 30' (22'6" MH) 35' (27'6" MH) 40' (30" MH) 45' (35' MH)</p>	<p>Tenon Mount 14'6" (10' MH) 21' (15'6" MH) 33' (24' MH)</p>	<p>22' pole 25' MH</p>	

\*MH = Approximate Mounting Height

Thanks.

Thanks.

David J Allen PE

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From: [David Allen](#)  
To: [Culling, Eric](#); [Coker, Gregory](#)  
Cc: [Jeremy Runkle](#); [Brigitte Lapido-Loureiro](#); [Howard Holley](#)  
Subject: 75th Street Roadway Improvement (Manatee County CIP #6108260) - 60% submittal Lighting Plans  
Date: Tuesday, December 13, 2022 2:41:00 PM  
Attachments: [CIP#6108260\\_75thStW\\_60%Lighting.pdf](#)  
[image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)

---

Greg and Eric,

We submitted the 75<sup>th</sup> Street Improvements Plans to Manatee County near the end of November. I have attached our Lighting Plans for your comments. This is 60% and is subject to change based on County comments. If you would like to wait after the adjustments to the 60% submittal comments are incorporated, I can send the updated plans for comments and you can ignore this request. Please let me know if you want to wait. Otherwise, see below.

**Eric, the plan is to have FP&L install luminaires and bracket arms on the west side of 75<sup>th</sup> street and furnish and install complete FP&L light poles on the east. I have placed pull boxes and conduit for the east side only. If you need to connect for power from the west side to the east side using underground conduit, please provide the location(s) for those crossings and I can include them. Also, please let me know if any of the pull boxes need to be the larger 24-inch size. At the moment, they are the 17-inch size. I can provide labels specifying the size. As you can see, the Tabulation of Quantities for the contractor shows install only for the conduit and pull boxes. Please see the General Notes and let me know if anything notes need to be included/removed/revised. As mentioned, this is early in the design stage and FP&L does not need to generate their design yet. I am just looking for comments since this is one of my first FP&L plans.**

**Greg, my design shows the new power poles, on the west side, that are replacing the power poles being removed due to conflict with the roadway widening. If you are planning a different layout, please provide me your design so I can adjust my design. You will see there are three poles with a red circle. These poles do not have an existing pole in conflict, and I will need these additional poles to fill in a gap between power poles. This will allow better uniformity in the roadway illumination. Please let me know if it is possible to include these additional poles. If the location ids different, please let me know your locations and I can adjust my design. If it is not possible to add these poles, I will work on another option.**

Please let me know if you have any questions.

Thanks.

**David J Allen PE**

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To: [David Allen](#); [Coker, Gregory](#)  
Cc: [Jeremy Runkle](#); [Brigitte Lapido-Loureiro](#); [Howard Holley](#)  
Subject: RE: 75th Street Roadway Improvement (Manatee County CIP #6108260) - 60% submittal Lighting Plans  
Date: Tuesday, December 13, 2022 3:18:24 PM  
Attachments: [image007.png](#)  
[image008.png](#)  
[image009.png](#)  
[image010.png](#)  
[image011.png](#)  
[CIP#6108260\\_75thStW\\_60%Lighting Markup of General Notes.pdf](#)

---

David,

These plans look great and are exactly what we need for projects such as this. I have two small comments that I have made on the General Notes page attached.

- FPL will pull all wire
- Our catalog fixtures do not offer dimming capabilities.
  - We have multiple vendors that we can source the fixtures from. Not sure if notes need something saying an equivalent lumen output/type pattern fixture may be substituted based on manufacture availability.
- I suspect we may have a couple 24" handholes required for this project but would not know till we have received back the full circuit design sketch from our design team.
  - Once I have final approved plans, I can submit with the turn around being 4-6 weeks.

Please let me know if you have any additional questions at this time.

Regards,

**Eric S. Culling**

Sr. Representative - LED Lighting Solutions

FPL

Mobile: 239-410-4763

Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



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---

**From:** David Allen <David.Allen@cardno.com>

**Sent:** Tuesday, December 13, 2022 2:42 PM

**To:** Culling, Eric <Eric.Culling@fpl.com>; Coker, Gregory <Gregory.Coker@fpl.com>

**Cc:** Jeremy Runkle <jeremy.runkle@cardno.com>; Brigitte Lapido-Loureiro <brigitte.lapido-loureiro@cardno.com>; Howard Holley <Howard.Holley@cardno.com>  
**Subject:** 75th Street Roadway Improvement (Manatee County CIP #6108260) - 60% submittal Lighting Plans

Greg and Eric,

We submitted the 75<sup>th</sup> Street Improvements Plans to Manatee County near the end of November. I have attached our Lighting Plans for your comments. This is 60% and is subject to change based on County comments. If you would like to wait after the adjustments to the 60% submittal comments are incorporated, I can send the updated plans for comments and you can ignore this request. Please let me know if you want to wait. Otherwise, see below.

**Eric, the plan is to have FP&L install luminaires and bracket arms on the west side of 75<sup>th</sup> street and furnish and install complete FP&L light poles on the east. I have placed pull boxes and conduit for the east side only. If you need to connect for power from the west side to the east side using underground conduit, please provide the location(s) for those crossings and I can include them. Also, please let me know if any of the pull boxes need to be the larger 24-inch size. At the moment, they are the 17-inch size. I can provide labels specifying the size. As you can see, the Tabulation of Quantities for the contractor shows install only for the conduit and pull boxes. Please see the General Notes and let me know if anything notes need to be included/removed/revised. As mentioned, this is early in the design stage and FP&L does not need to generate their design yet. I am just looking for comments since this is one of my first FP&L plans.**

**Greg, my design shows the new power poles, on the west side, that are replacing the power poles being removed due to conflict with the roadway widening. If you are planning a different layout, please provide me your design so I can adjust my design. You will see there are three poles with a red circle. These poles do not have an existing pole in conflict, and I will need these additional poles to fill in a gap between power poles. This will allow better uniformity in the roadway illumination. Please let me know if it is possible to include these additional poles. If the location ids different, please let me know your locations and I can adjust my design. If it is not possible to add these poles, I will work on another option.**

Please let me know if you have any questions.

Thanks.

**David J Allen PE**

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From: [David Allen](#)  
To: [Culling, Eric](#); [Coker, Gregory](#)  
Cc: [Jeremy Runkle](#); [Brigitte Lapido-Loureiro](#); [Howard Holley](#)  
Subject: RE: 75th Street Roadway Improvement (Manatee County CIP #6108260) - 60% submittal Lighting Plans  
Date: Tuesday, December 13, 2022 4:07:00 PM  
Attachments: [image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[image006.png](#)

---

Eric,

I am glad to hear that I am going in the right direction with these plans. Thanks for the comments for the General Notes. I will get them incorporated. The dimming notes will be removed. That was information that got carried over from a a Manatee County project. Since the design is based on your luminaires, if I need to provide more or less illumination, I will use one of the other FP&L luminaire wattages in my design. The luminaires will be specified on the Lighting Data Table. No need for the dimming module or note for equivalent luminaires.

Thanks.

**David J Allen PE**

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---

**From:** Culling, Eric <Eric.Culling@fpl.com>  
**Sent:** Tuesday, December 13, 2022 3:18 PM  
**To:** David Allen <David.Allen@cardno.com>; Coker, Gregory <Gregory.Coker@fpl.com>  
**Cc:** Jeremy Runkle <jeremy.runkle@cardno.com>; Brigitte Lapido-Loureiro <brigitte.lapido-loureiro@cardno.com>; Howard Holley <Howard.Holley@cardno.com>  
**Subject:** RE: 75th Street Roadway Improvement (Manatee County CIP #6108260) - 60% submittal Lighting Plans

David,

These plans look great and are exactly what we need for projects such as this. I have two small comments that I have made on the General Notes page attached.

- FPL will pull all wire



- Our catalog fixtures do not offer dimming capabilities.
  - We have multiple vendors that we can source the fixtures from. Not sure if notes need something saying an equivalent lumen output/type pattern fixture may be substituted based on manufacture availability.
- I suspect we may have a couple 24" handholes required for this project but would not know till we have received back the full circuit design sketch from our design team.
  - Once I have final approved plans, I can submit with the turn around being 4-6 weeks.

Please let me know if you have any additional questions at this time.

Regards,

**Eric S. Culling**

Sr. Representative - LED Lighting Solutions

FPL

Mobile: 239-410-4763

Email: [Eric.Culling@FPL.Com](mailto:Eric.Culling@FPL.Com)



To Report A Street Light Outage:

[FPL Street Light Outage Reporting](#)

For Emergencies Call: **1-800-226-3545**

To View Latest FPL LED Fixture and Pole Catalog:

[FPL LED Lighting Solutions](#)

---

**From:** David Allen <[David.Allen@cardno.com](mailto:David.Allen@cardno.com)>

**Sent:** Tuesday, December 13, 2022 2:42 PM

**To:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>

**Cc:** Jeremy Runkle <[jeremy.runkle@cardno.com](mailto:jeremy.runkle@cardno.com)>; Brigitte Lapido-Loureiro <[brigitte.lapido-loureiro@cardno.com](mailto:brigitte.lapido-loureiro@cardno.com)>; Howard Holley <[Howard.Holley@cardno.com](mailto:Howard.Holley@cardno.com)>

**Subject:** 75th Street Roadway Improvement (Manatee County CIP #6108260) - 60% submittal Lighting Plans

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**Eric, the plan is to have FP&L install luminaires and bracket arms on the west side of 75<sup>th</sup> street and furnish and install complete FP&L light poles on the east. I have placed pull boxes and conduit for the east side only. If you need to connect for power from the west side to the east side using underground conduit, please provide the location(s) for those crossings and I can include them. Also, please let me know if any of the pull boxes need to be the larger 24-inch size. At the moment, they are the 17-inch size. I can provide labels specifying the size. As you can see, the Tabulation of Quantities for the contractor shows install only for the conduit and pull boxes. Please see the General Notes and let me know if anything notes need to be included/removed/revise. As mentioned, this is early in the design stage and FP&L does not need to generate their design yet. I am just looking for comments since this is one of my first FP&L plans.**

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Please let me know if you have any questions.

Thanks.

David J Allen PE

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From: [Coker, Gregory](#)  
To: [David Allen](#); [Culling, Eric](#)  
Cc: [Jeremy Runkle](#); [Brigitte Lapido-Loureiro](#); [Howard Holley](#)  
Subject: RE: 75th Street Roadway Improvement (Manatee County CIP #6108260) - 60% submittal Lighting Plans vs FPL Preliminary RGB's  
Date: Wednesday, December 14, 2022 12:26:57 PM  
Attachments: [image007.png](#)  
[image008.png](#)  
[image009.png](#)  
[image010.png](#)  
[image011.png](#)  
[RE 75th Street West Utility Coordination FPL FEEDBACK.msg](#)

---

David,

See attached preliminary FPL RGB's. Please review as necessary to see if your future lighting design needs to be adjusted to match the RGB's in terms of FPL pole locations. Unfortunately, the plans stationing is different on each plan set.

Many thanks for any feedback!

**Greg Coker**

Contractor – Working on Behalf of

**Florida Power & Light**

Whitfield Service Center

1253 12<sup>th</sup> Ave E | Palmetto, FL 34221

813-422-8232 cell | [Gregory.Coker@FPL.com](mailto:Gregory.Coker@FPL.com)



Please contact me with any questions or concerns. If you cannot reach me, feel free to contact my Engineering Leader Ray Vargas at (o) 941-927-4262, (c) 941-266-3118 or [Ray.Vargas@fpl.com](mailto:Ray.Vargas@fpl.com).

Visit the new [FPL Project Portal](#) at [FPL.com/construction](https://www.fpl.com/construction) to manage your FPL residential and commercial construction projects.

FPL Electric Service Standards <https://www.fpl.com/partner/builders/service-standards.html>

---

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**Sent:** Tuesday, December 13, 2022 2:42 PM

**To:** Culling, Eric <[Eric.Culling@fpl.com](mailto:Eric.Culling@fpl.com)>; Coker, Gregory <[Gregory.Coker@fpl.com](mailto:Gregory.Coker@fpl.com)>

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**Subject:** 75th Street Roadway Improvement (Manatee County CIP #6108260) - 60% submittal Lighting Plans

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Please let me know if you have any questions.

Thanks.

David J Allen PE

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From: [David Allen](#)  
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Cc: [Jeremy Runkle; Brigitte Lapido-Loureiro; Howard Holley](#)  
Subject: RE: 75th Street Roadway Improvement (Manatee County CIP #6108260) - 60% submittal Lighting Plans vs FPL Preliminary RGB's  
Date: Wednesday, December 14, 2022 1:07:00 PM  
Attachments: [image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[image006.png](#)

---

Thanks Greg. I will review and adjust my design where necessary. I will let you know if I have any questions or comments.

Thanks.

**David J Allen PE**

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**Sent:** Wednesday, December 14, 2022 12:18 PM  
**To:** David Allen <David.Allen@cardno.com>; Culling, Eric <Eric.Culling@fpl.com>  
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FPL Electric Service Standards <https://www.fpl.com/partner/builders/service-standards.html>

---

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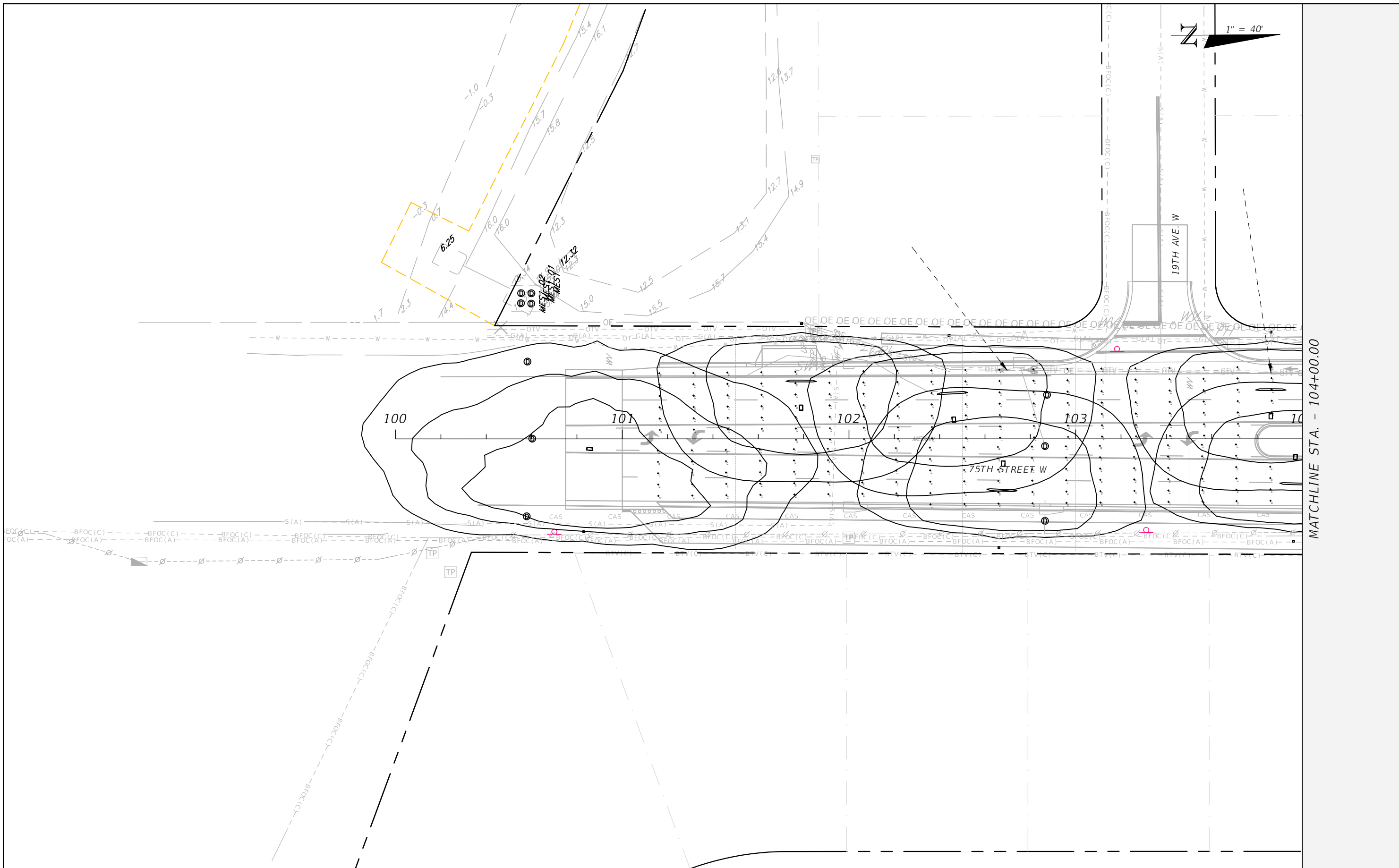




**90% Submittal Roadway Lighting Documentation**  
**75<sup>th</sup> Street West Roadway Widening Project**  
**From North of 20<sup>th</sup> Avenue to Manatee Avenue**  
**Manatee County Project No. 6108260**

---

**APPENDIX D**  
**LIGHTING PLANS WITH**  
**ANALYSIS OVERLAY**



MATCHLINE STA. - 104+00.00

REVISIONS	



DAVID J. ALLEN, P.E.  
 P.E. LICENSE NUMBER 58540  
 STANTEC  
 3905 CRESCENT PARK DRIVE  
 RIVERVIEW, FLORIDA 33578

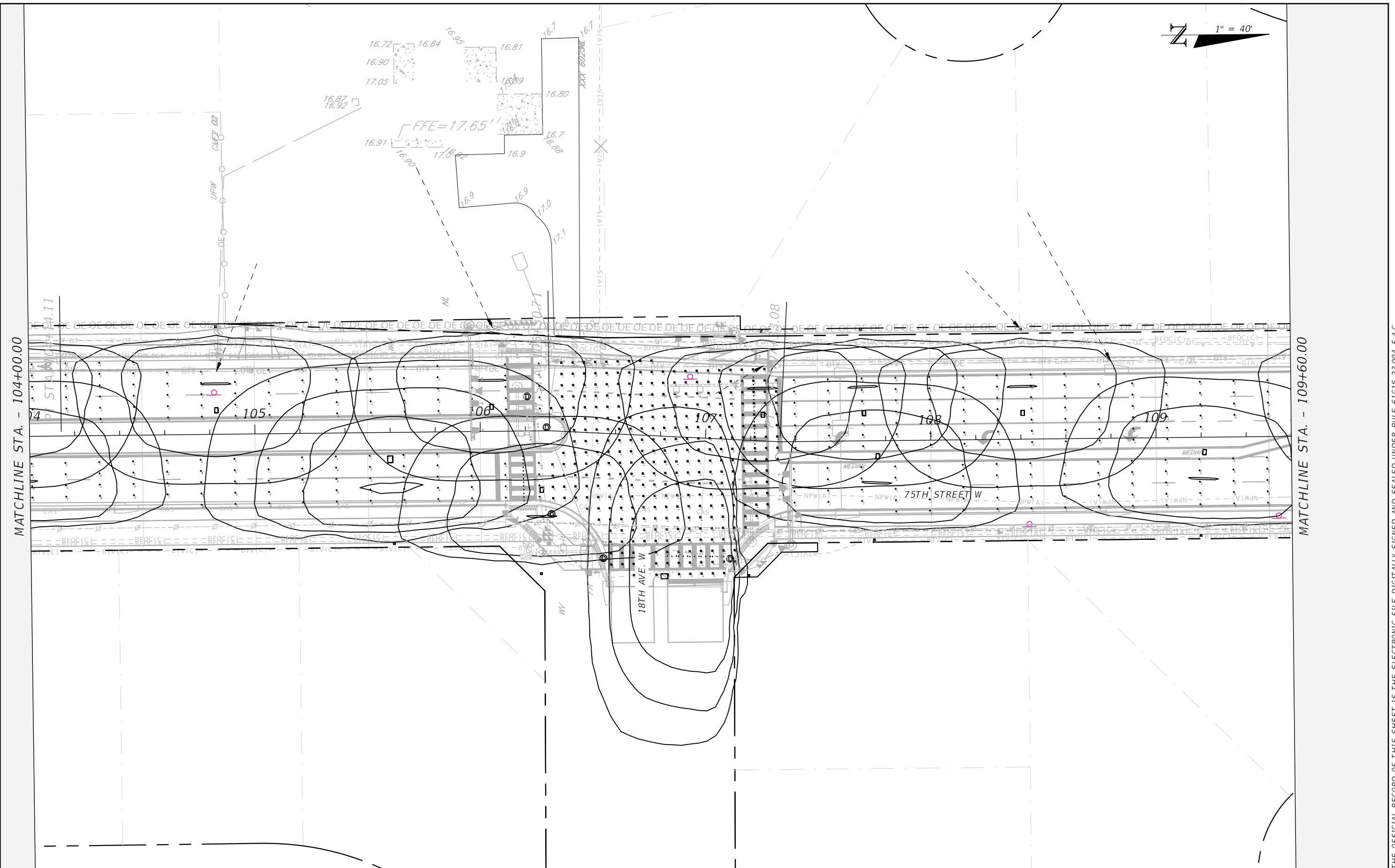
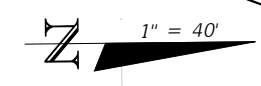


MANATEE COUNTY  
 PUBLIC WORKS  
 COUNTY PROJECT NO:  
 6108260

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

**LIGHTING PLAN (1)**

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MATCHLINE STA. - 109+60.00

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 STANTEC  
 3905 CRESCENT PARK DRIVE  
 RIVERVIEW, FLORIDA 33578



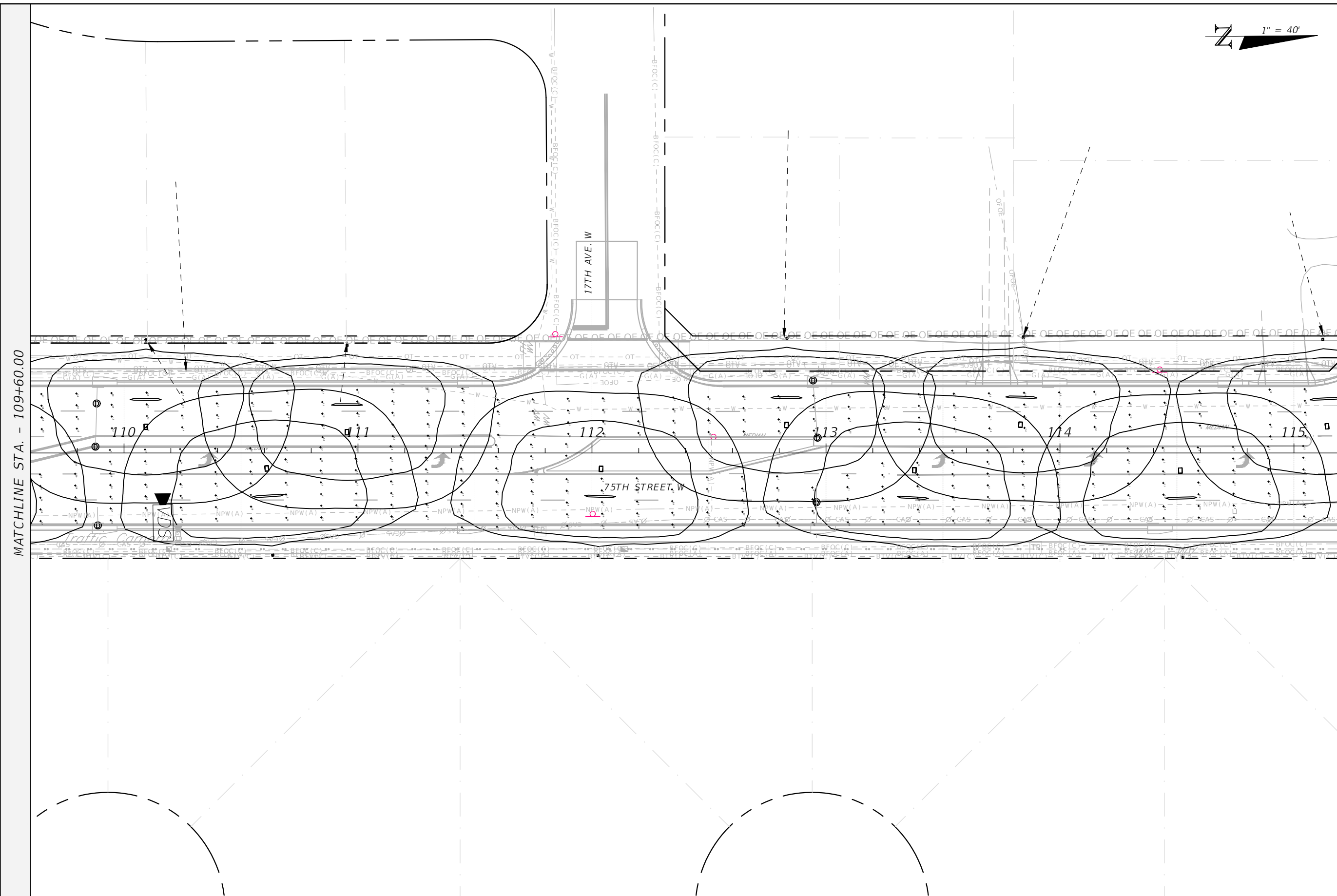
MANATEE COUNTY  
 PUBLIC WORKS  
 COUNTY PROJECT NO:  
 6108260

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

LIGHTING PLAN (2)

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N 1" = 40'



MATCHLINE STA. - 109+60.00

MATCHLINE STA. - 115+20.00

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STANTEC  
3905 CRESCENT PARK DRIVE  
RIVERVIEW, FLORIDA 33578

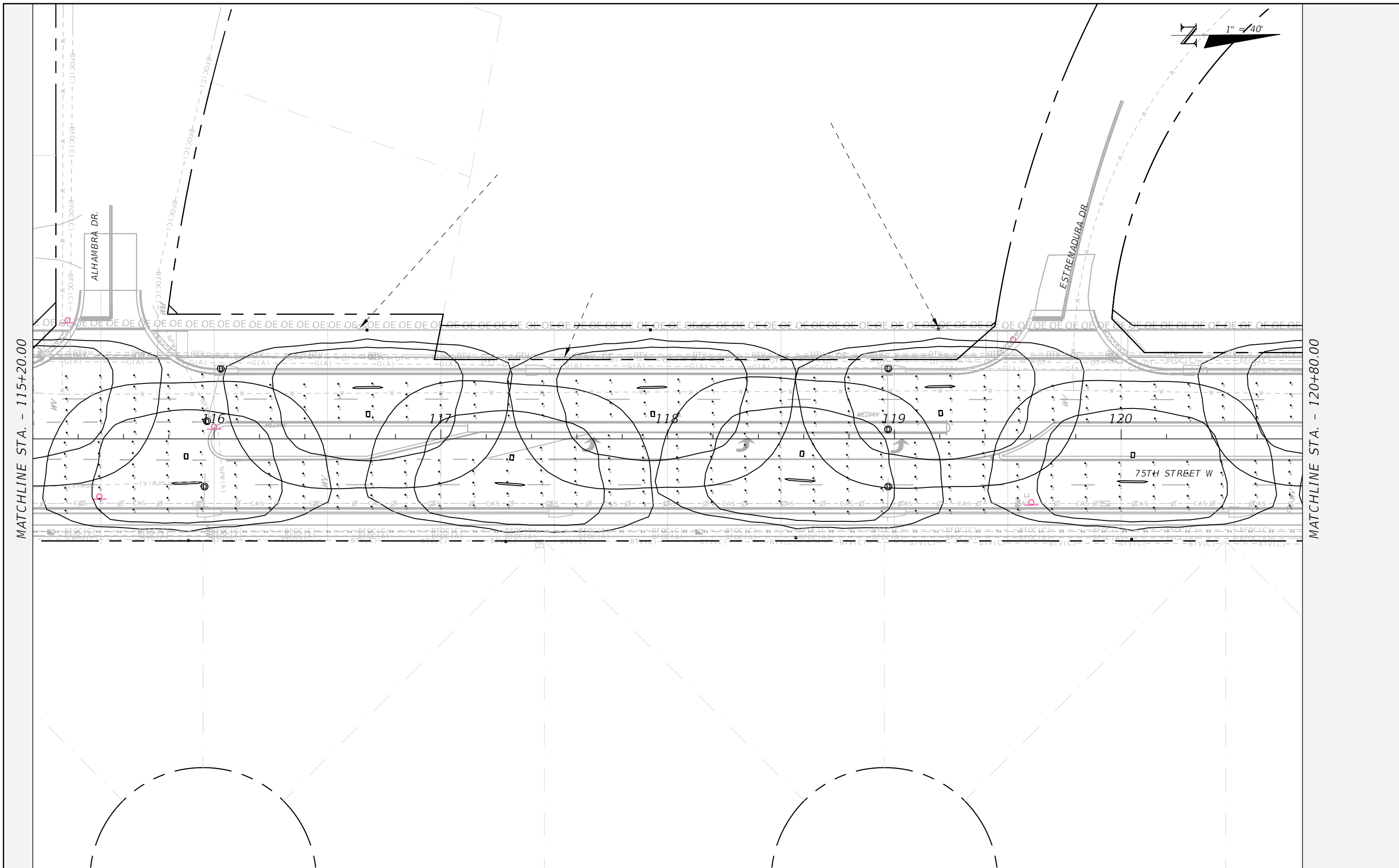


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PUBLIC WORKS  
COUNTY PROJECT NO:  
6108260

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

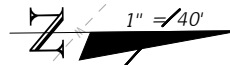
LIGHTING PLAN (3)

L-8



MATCHLINE STA. - 115+20.00

MATCHLINE STA. - 120+80.00



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NO.	DATE	DESCRIPTION



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 STANTEC  
 3905 CRESCENT PARK DRIVE  
 RIVERVIEW, FLORIDA 33578



MANATEE COUNTY  
 PUBLIC WORKS  
 COUNTY PROJECT NO:  
 6108260

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

LIGHTING PLAN (4)

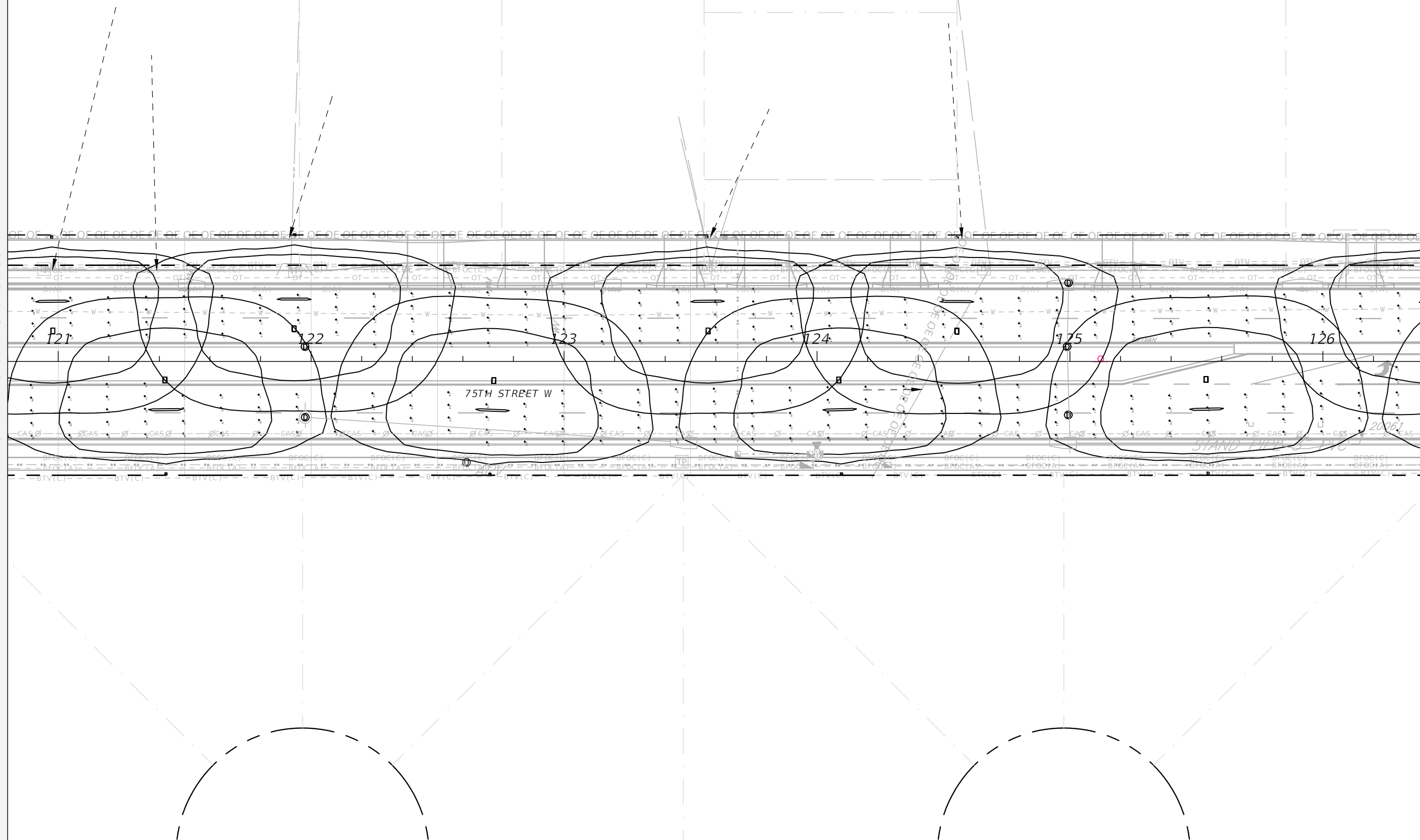
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N 1" = 40'

MATCHLINE STA. - 120+80.00

MATCHLINE STA. - 126+40.00



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MANATEE COUNTY  
 PUBLIC WORKS  
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 6108260

75TH STREET WEST FROM  
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LIGHTING PLAN (5)

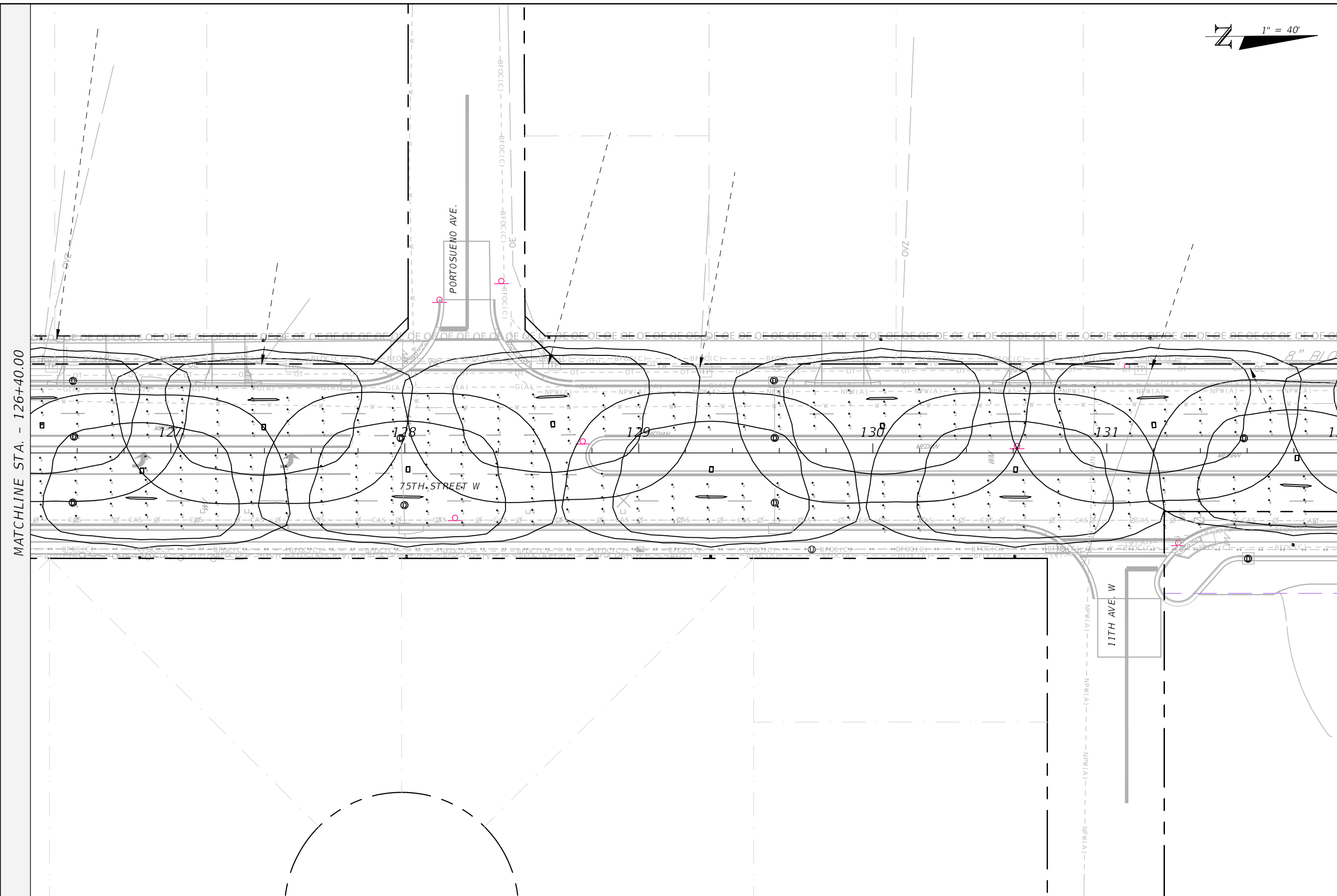
L-10

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N 1" = 40'

MATCHLINE STA. - 126+40.00

MATCHLINE STA. - 132+00.00



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 3905 CRESCENT PARK DRIVE  
 RIVERVIEW, FLORIDA 33578



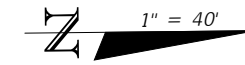
MANATEE COUNTY  
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 6108260

75TH STREET WEST FROM  
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LIGHTING PLAN (6)

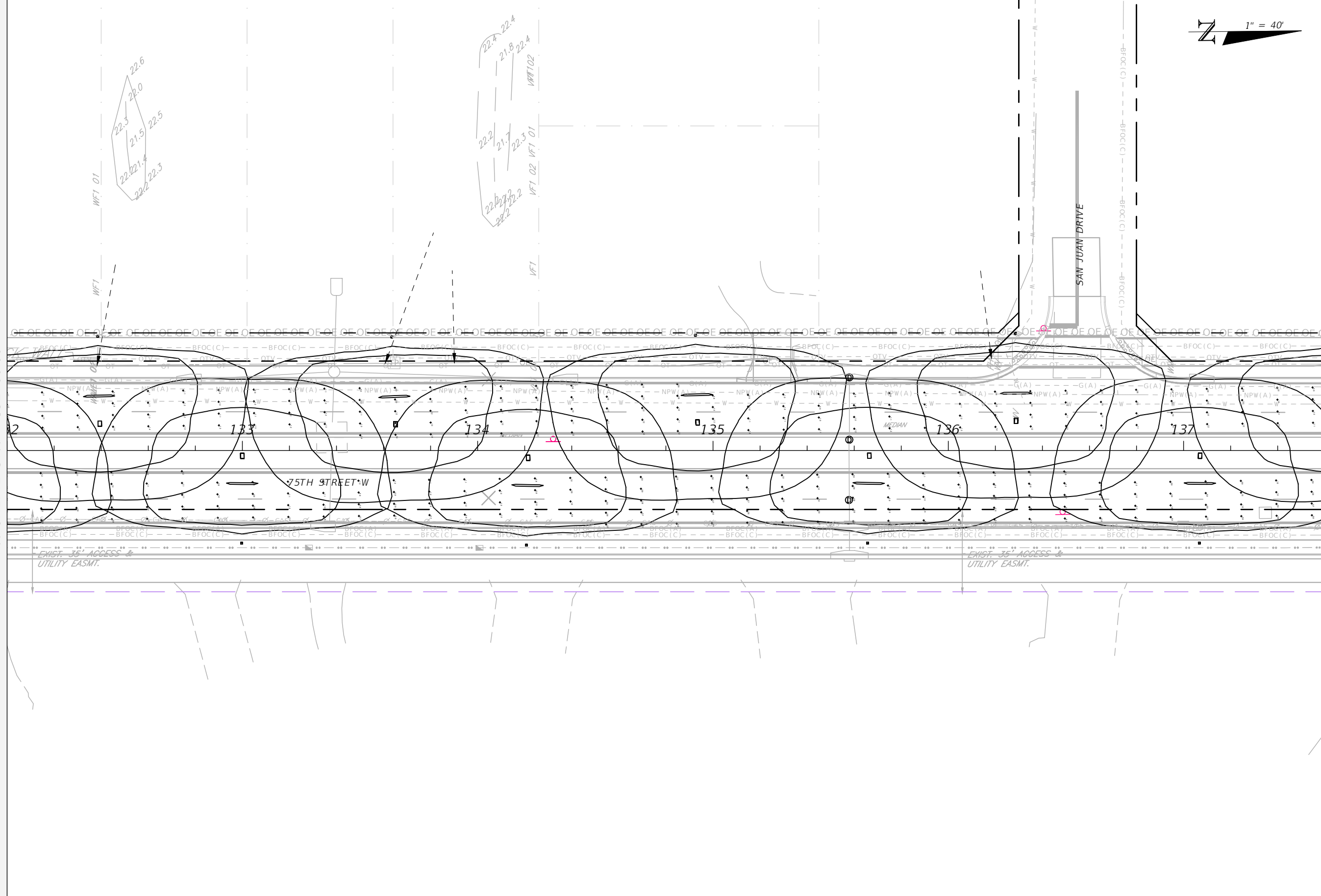
L-11

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MATCHLINE STA. - 137+60.00



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MANATEE COUNTY  
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 6108260

75TH STREET WEST FROM  
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LIGHTING PLAN (7)

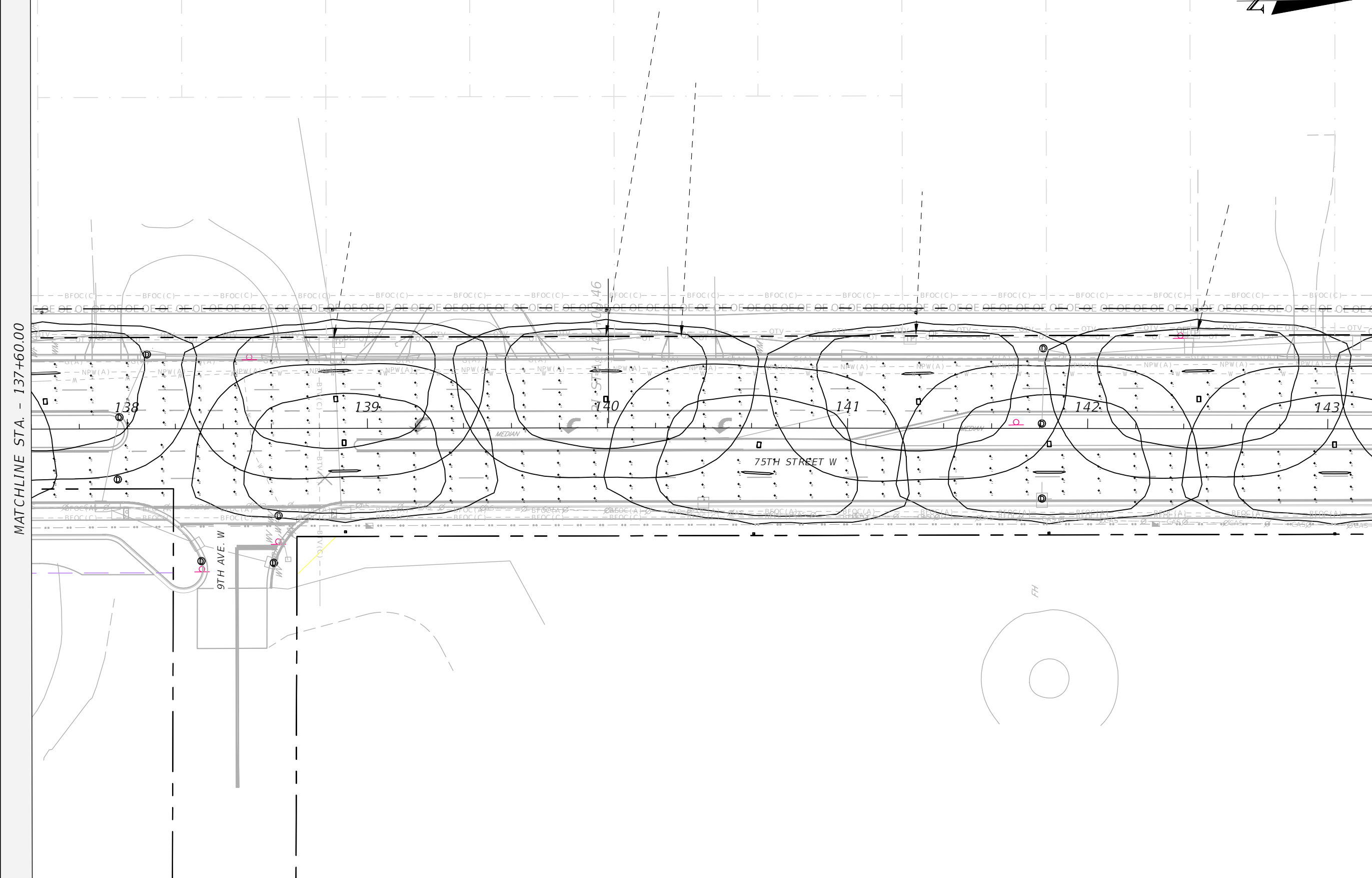
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N 1" = 40'

MATCHLINE STA. - 137+60.00

MATCHLINE STA. - 143+20.00



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MANATEE COUNTY  
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LIGHTING PLAN (8)

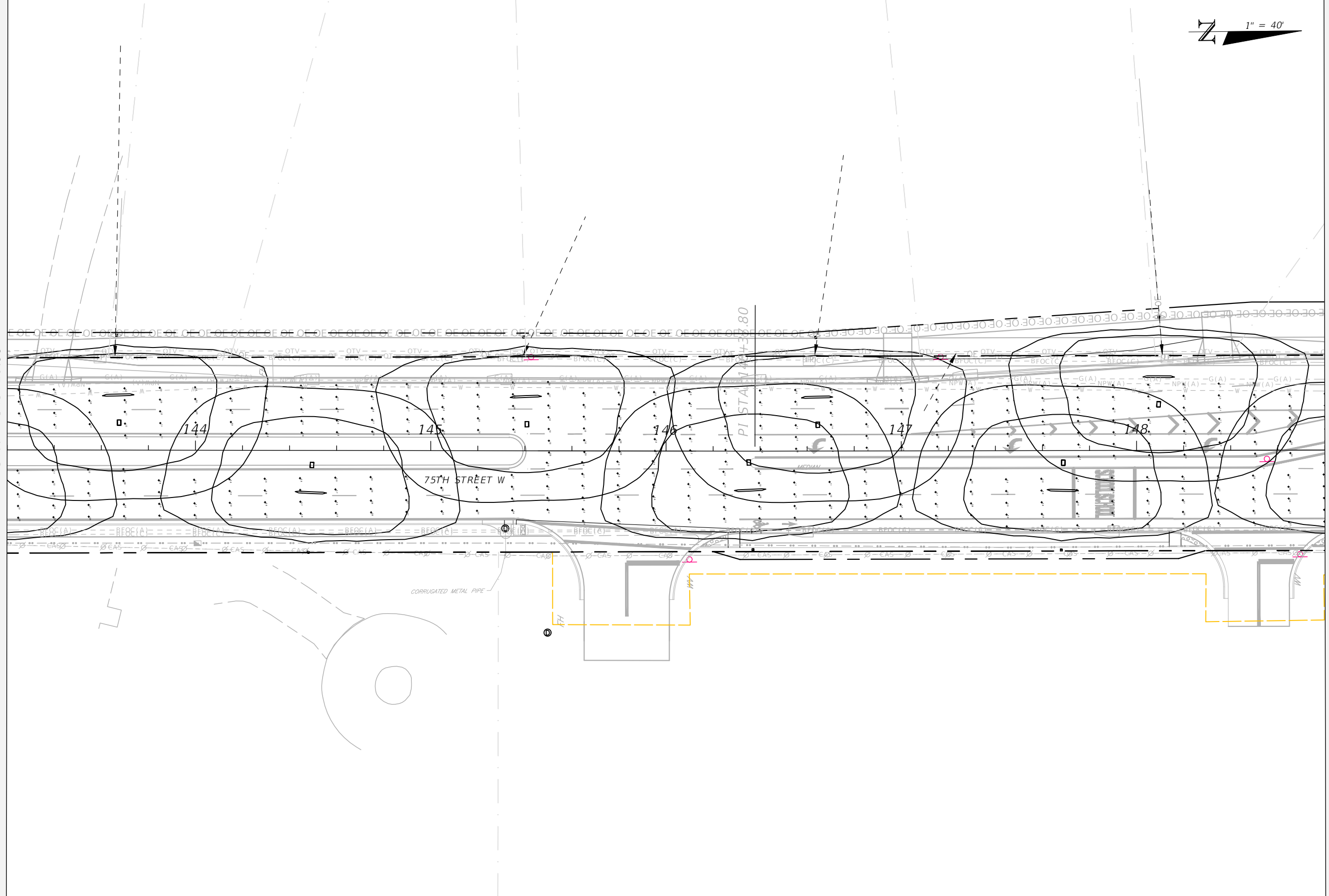
L-13

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N 1" = 40'

MATCHLINE STA. - 143+20.00

MATCHLINE STA. - 148+80.00



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 3905 CRESCENT PARK DRIVE  
 RIVERVIEW, FLORIDA 33578



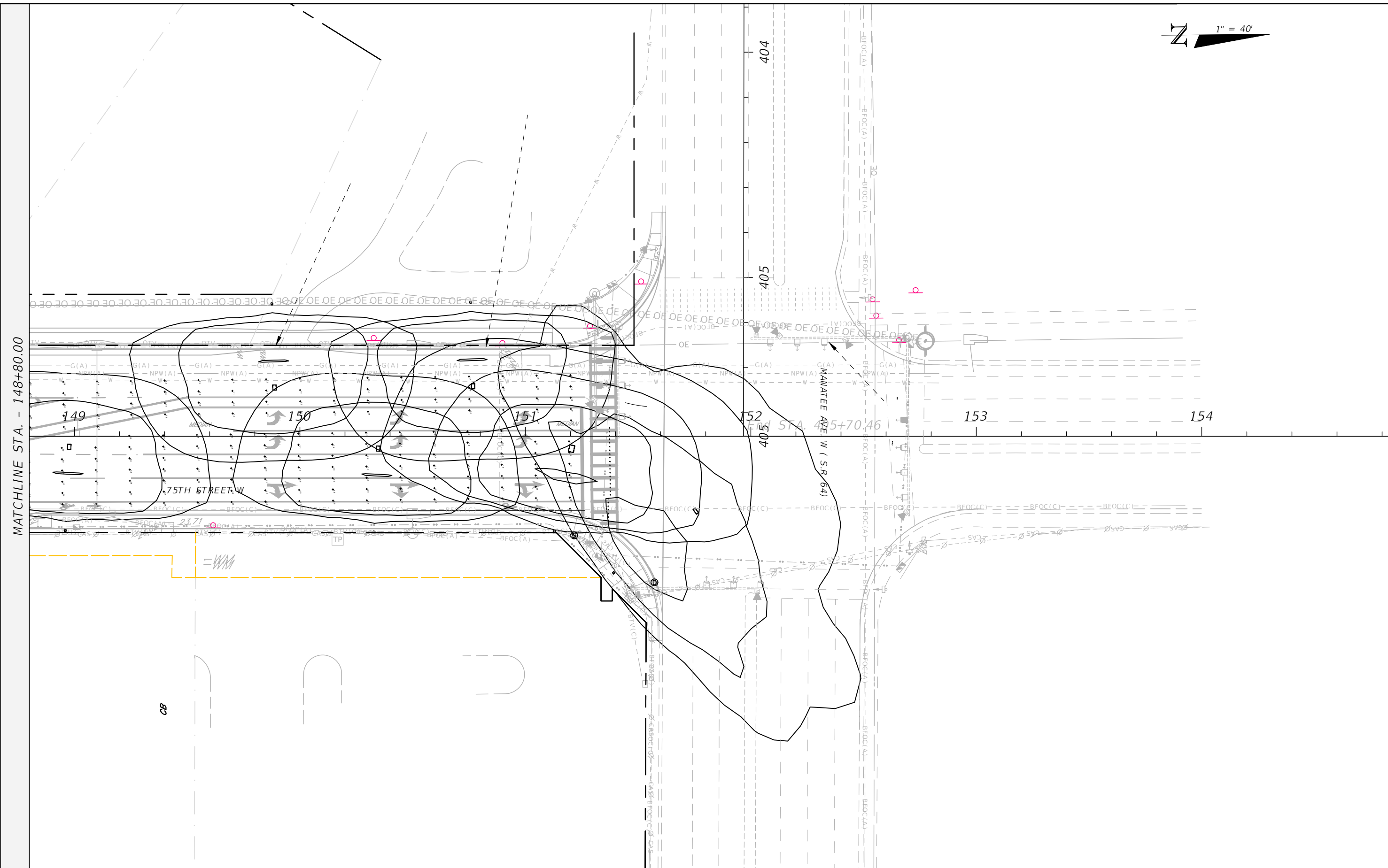
MANATEE COUNTY  
 PUBLIC WORKS  
 COUNTY PROJECT NO:  
 6108260

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

LIGHTING PLAN (9)

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

N 1" = 40'



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REVISIONS

NO.	DATE	DESCRIPTION



DAVID J. ALLEN, P.E.  
 P.E. LICENSE NUMBER 58540  
 STANTEC  
 3905 CRESCENT PARK DRIVE  
 RIVERVIEW, FLORIDA 33578



MANATEE COUNTY  
 PUBLIC WORKS  
 COUNTY PROJECT NO:  
 6108260

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

LIGHTING PLAN (10)