

Street & Security Lighting – General Discussion

All Street & Security Lights are provided on a rental basis to either government or private customers who request where, how many and what size lights are to be installed. CUC's involvement is to make available a power supply for the lights (underground or overhead), install, maintain, and if necessary take down.

All new and replacement luminaires will be light emitting diode (LED) fixtures. All existing high pressure sodium (HPS) fixtures are to be replaced on a program basis.

The standard luminaires for street lighting are:

| New LED Fixture | Existing HPS Fixture |
|-----------------|----------------------|
| 53 Watt | 100 Watt |
| 137 Watt | 250 Watt |
| 207 Watt | 400 Watt |

The mounting arrangements are:

- (1) 53 W LED with a 4 or 8 foot arm (Drawing 14-3)
- (2) 137 W LED with an 8 foot arm on a wood pole and a 6 foot arm on an aluminum pole (Drawing 14-4)
- (3) 207 W LED with an 8 foot arm; (Drawing 14-5)
- (4) A 53 W LED fixture shall be installed on poles at a height of 24'-6" (See Drawing 14-3); and the 137 W and 207 W luminaires shall be installed on poles at heights of 29'-6" and 32' respectively (See Drawings 14-4 and 14-5).

All street light arms shall be grounded at the pole; where no grounding arrangement exists the mounting bolt shall be grounded using a ground clip and nut. All grounds shall be connected to the pole ground where applicable.

A photo control shall be installed on all luminaires in the receptacle provided and shall have the photo eye pointing to the North. To change the orientation of the fixture receptacle, loosen the two screws, orient the receptacle and tighten both screws.


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|---|----------------------------------|---------------------------------|-----------------|--|
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| | Drawn by: C. Rose | | | |
| | Revision #: B | STREET & SECURITY LIGHTING | | |
| | Revision date: November 23, 2020 | Approved date: December 7, 2020 | STANDARD # 14-1 | |
| | Revised by: N. Malcolm | Approved by: N. Malcolm | Page: 1 of 1 | |

Service & Street Lights - Overhead

Street Lights:

When planning for streetlights installations, the following optimization can be made without exceeding a voltage drop of 3% at the streetlight on the end of the circuit:

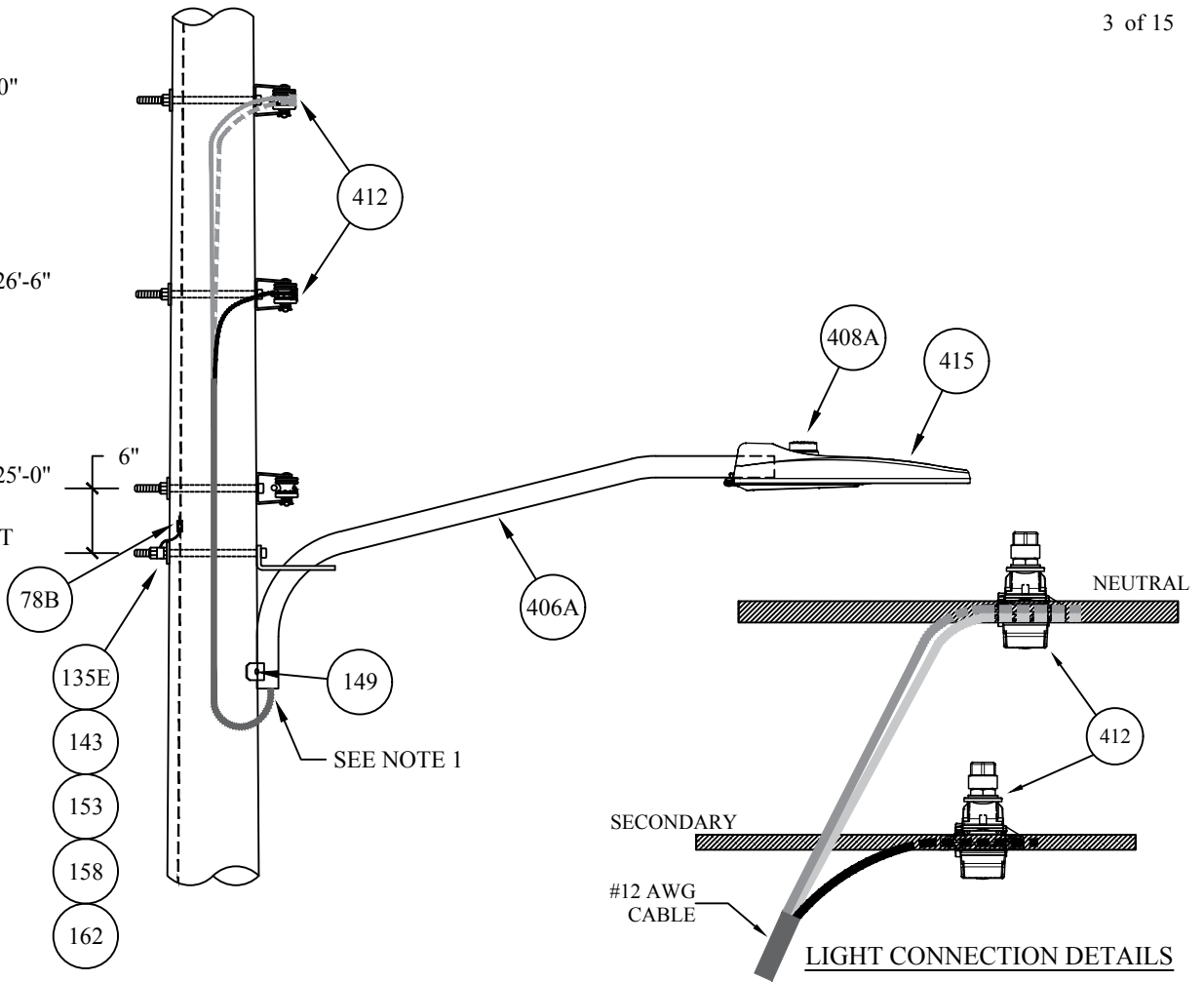
- (a) 2/0 AAC bare conductors can be installed at a maximum distance of 2,000 feet between the transformer and the last streetlights; and a maximum of eighteen (18) 53 W LED streetlights, with each LED streetlight installs at approximately 200 feet interval. Similarly, a maximum of seven (7) 137 W LED streetlights can be accommodated with each light installs at approximately 200 feet interval; only four (4) 207 W LED streetlights at approximately 200 feet span can be installed. For greater number of LED streetlights, the secondary circuit shall be upgraded to 4/0 conductor.
- (b) For shorter spans of 150 feet or less, and in areas requiring excessive tree trimming, #2 triplex should be considered for the overhead line supplying the streetlight.

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NEUTRAL @ 28'-0"
TYPICAL

SECONDARY @ 26'-6"
TYPICAL

SECONDARY @ 25'-0"
TYPICAL
MOUNTING BOLT
@ 24'-6"



| ITEM NO. | QUANTITY | | MATERIAL | STOCK NO. |
|----------|----------|----|---|-----------|
| | Galv. | SS | | |
| 78B | | 1 | CRIMPIT - CTYPE, COPPER, #2-#6 AWG | 253-00004 |
| 135E | | 1 | BOLT - MACH. 5/8" x 12", SS | 098-00039 |
| 143 | | 1 | NUT, SQUARE, 5/8", SS | 565-00009 |
| 149 | | 2 | SCREW - LAG, TWIST DRIVE/DRIVE POINT, 1/2" X 3", SS | 744-00003 |
| 153 | | 1 | WASHER - FLAT SQ., 2 1/4", 11/16" HOLE, SS | 973-00009 |
| 158 | | 1 | WASHER - LOCK, 5/8", SINGLE COIL, SS | 973-00010 |
| 162 | | 1 | CLIP-GROUND WIRE BONDING, 5/8", SS | 188-00004 |
| 406A | | 1 | ARM, LIGHT ALUMINUM - 2" X 4' | 035-00001 |
| 408A | | 1 | PHOTOCELL ELECTRONIC | 597-00001 |
| 412 | | 2 | CONNECTOR, INSULATED PIERCING, TYPE EPB | 213-00027 |
| 415 | | 1 | LUMINAIRE, LED 54W | 520-00005 |

NOTES:

1. Enough slack shall be left in the cable to provide a loop to ensure that the cable does not chafe against the bracket.
2. Each streetlight shall be grounded inside the luminaire and also the ground shall be connected to the neutral on both primary and secondary poles.



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DISTRIBUTION STANDARDS

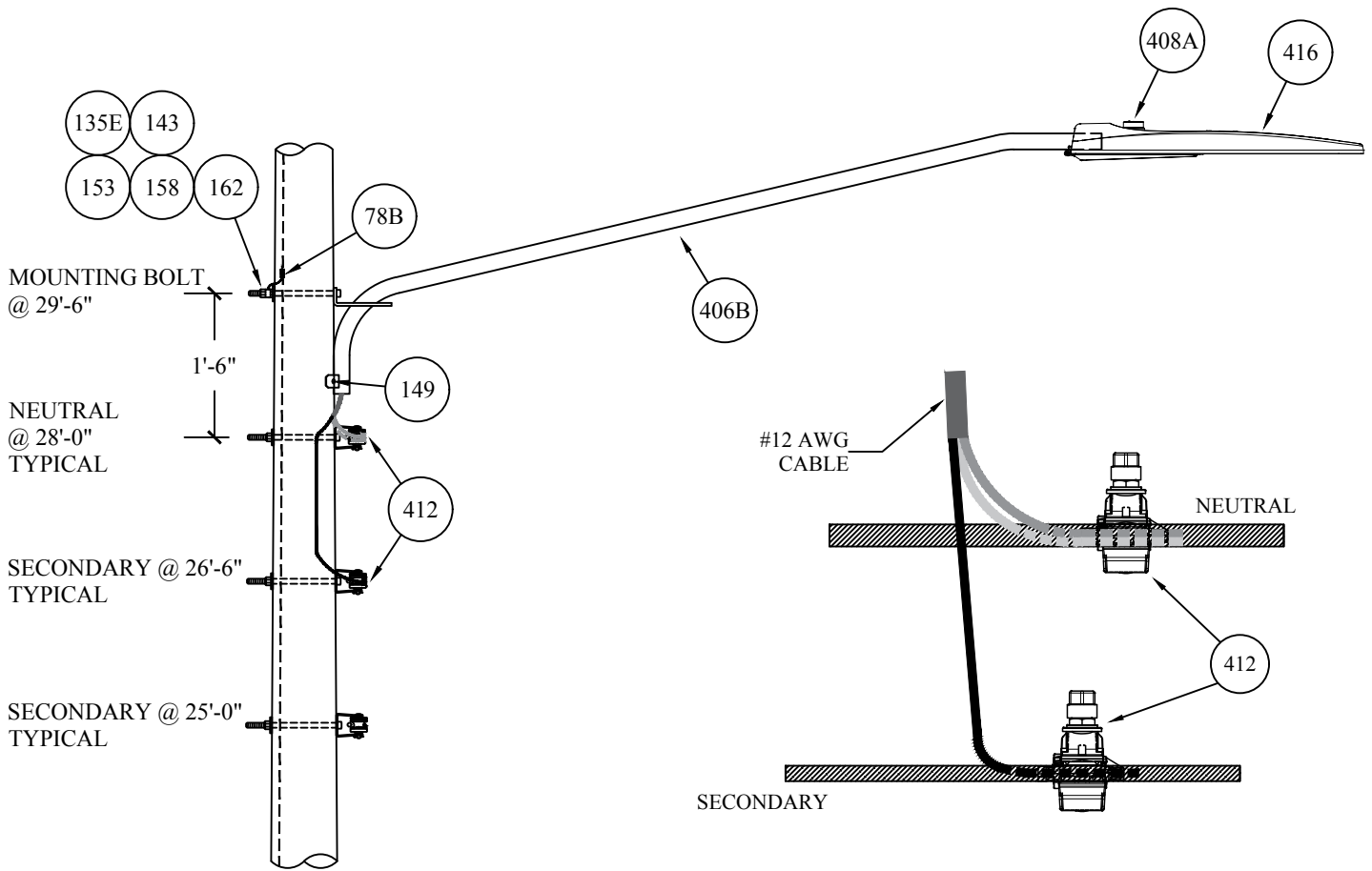
54W LED 4FT. ARM INSTALLATION

Approved date: November 23, 2020

Approved by: N. Malcolm

STANDARD # 14-3

Sheet: 1 of 1



LIGHT CONNECTION DETAILS

| ITEM NO. | QUANTITY | | MATERIAL | STOCK NO. |
|----------|----------|----|---|-----------|
| | Galv. | SS | | |
| 78B | | 1 | CRIMPIT - CTYPE, COPPER, #2-#6 AWG | 253-00004 |
| 135E | | 1 | BOLT - MACH. 5/8" x 12", SS | 098-00039 |
| 143 | | 1 | NUT, SQUARE, 5/8", SS | 565-00009 |
| 149 | | 2 | SCREW - LAG, TWIST DRIVE/DRIVE POINT, 1/2" X 3", SS | 744-00003 |
| 153 | | 1 | WASHER - FLAT SQ., 2 1/4", 11/16" HOLE, SS | 973-00009 |
| 158 | | 1 | WASHER - LOCK, 5/8", SINGLE COIL, SS | 973-00010 |
| 162 | | 1 | CLIP-GROUND WIRE BONDING, 5/8", SS | 188-00004 |
| 406B | | 1 | ARM, LIGHT ALUMINUM - 2" X 8' | 035-00005 |
| 408A | | 1 | PHOTOCELL ELECTRONIC | 597-00001 |
| 412 | | 2 | CONNECTOR, INSULATED PIERCING, TYPE EPB | 213-00027 |
| 416 | | 1 | LUMINAIRE, LED 137W | 520-00007 |

NOTES:

- Each streetlight shall be grounded inside the luminaire and also the ground shall be connected to the neutral on both primary and secondary poles.



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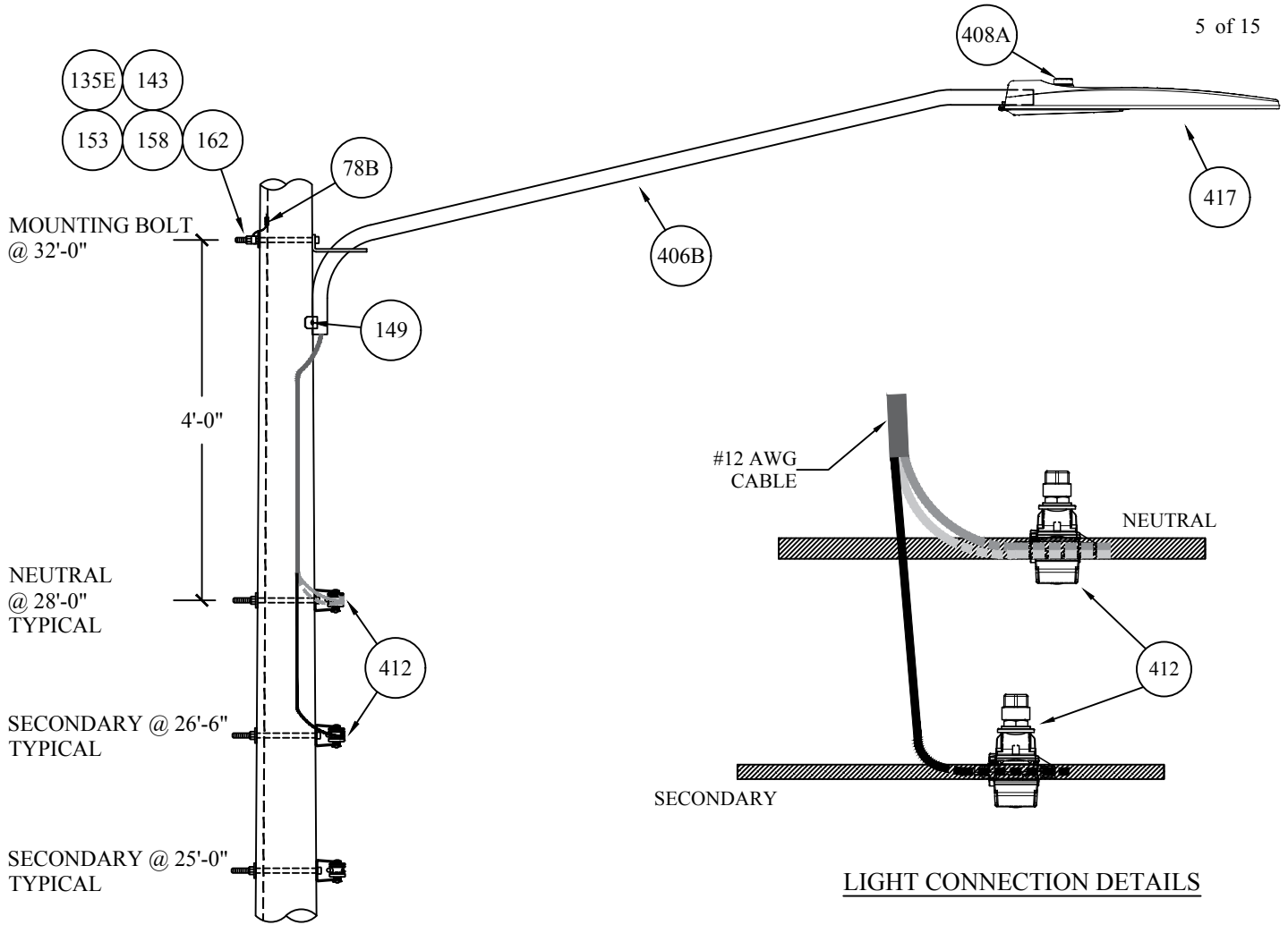
137W LED 8FT. ARM INSTALLATION

Approved date: November 23, 2020

Approved by: N. Malcolm

STANDARD # 14-4

Sheet: 1 of 1



LIGHT CONNECTION DETAILS

| ITEM NO. | QUANTITY | | MATERIAL | STOCK NO. |
|----------|----------|----|---|-----------|
| | Galv. | SS | | |
| 78B | | 1 | CRIMPIT - CTYPE, COPPER, #2-#6 AWG | 253-00004 |
| 135E | | 1 | BOLT - MACH. 5/8" x 12", SS | 098-00039 |
| 143 | | 1 | NUT, SQUARE, 5/8", SS | 565-00009 |
| 149 | | 2 | SCREW - LAG, TWIST DRIVE/DRIVE POINT, 1/2" X 3", SS | 744-00003 |
| 153 | | 1 | WASHER - FLAT SQ., 2 1/4", 11/16" HOLE, SS | 973-00009 |
| 158 | | 1 | WASHER - LOCK, 5/8", SINGLE COIL, SS | 973-00010 |
| 162 | | 1 | CLIP-GROUND WIRE BONDING, 5/8", SS | 188-00004 |
| 406B | | 1 | ARM, LIGHT ALUMINUM - 2" X 8' | 035-00005 |
| 408A | | 1 | PHOTOCELL ELECTRONIC | 597-00001 |
| 412 | | 2 | CONNECTOR, INSULATED PIERCING, TYPE EPB | 213-00027 |
| 417 | | 1 | LUMINAIRE, LED 207W | 520-00006 |

NOTES:

- Each streetlight shall be grounded inside the luminaire and also the ground shall be connected to the neutral on both primary and secondary poles.



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207W LED 8FT. ARM INSTALLATION

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STANDARD # 14-5

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UNDERGROUND STREET LIGHTING

All underground street lights are typically one of three types:

- 20' aluminum pole with one or two 53 watt LED lights on a 6' arm (Drawing 14-9)
- 35' aluminum pole with one or two 137 watt LED lights on a 6' arm (Drawing 14-10)
- 50' aluminum pole with four 207 watt LED lights on a 8' arm (Drawing 14-11)

General Rule for Connection Design:

- Standard 16 & maximum 18 lights can be installed either side of the connection point for 53 and 137 watt lights and maximum 12 lights either side of the connection point for 207 watt lights.

Ducting:

- Conduit size shall be 2" schedule 40.
- A draw string shall be installed in conduit by contractor, at the time of installation.
- Depth of conduit to be a minimum of 18". If it is less than 18" it must have a minimum of 2" concrete cover. All road crossing must be encased in concrete.
- A galvanized rigid steel elbow encased in concrete is required at the base of the pole. The first section of the conduit (10') at the base of the pole must be galvanized rigid steel.
- A separate ground will be required for services greater than 240 volts and attached to the conduit with a ground bracket, this will be connected by CUC staff.

Wire Size:

- The standard wire size will be #6/3 core fully insulated.

Distance between base pedestals:

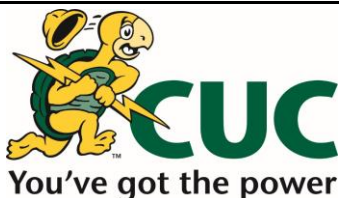
- Distance between base pedestals will be determined from lighting designs to meet the required design criteria.

Base Templates:

- Please refer to Drawings: 14-9 (20' Base), 14-10 (35' Base) and 14-11 (50' Base) for base template information & measurements.

Procedure to Install Light:

- Ensure that the light base pedestal is level (By Contractor)
- Use draw rope to pull in feed conductor.
- Install light Pole (ensuring it is plumb)
- Install and connect light
- Install Cover On Bolts



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DISTRIBUTION STANDARDS

STREET & SECURITY LIGHTING

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STANDARD # 14-7

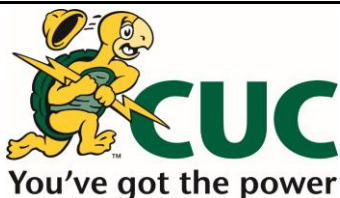
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Procedure To Install Fuse Disconnect Switch On a Secondary Feed Pole:

- A fuse disconnect switch (CUC stock item) will be mounted above the 10' galvanized conduit.
- (2)-60amp blade type fuse to be installed to protect against short circuits such as a motor vehicle accident.
- Install 2" PVC conduit with weatherhead on pole (2" straps & weatherhead to be purchased locally as not a CUC stock item).
- Install #4 TEK cable for secondary feed for fuse disconnect switch
- Fuse disconnect switch to be grounded as per CUC standards

Padmount Transformer Connections For Underground Lighting Installation:

- Fuse disconnect switch to be mounted on a pedestal that will need to be constructed on the transformer vault.
- Install #4 TEK cable from secondary source to fuse disconnect switch.
- Install #6/3 core cable from switch to lights.
- Fuse disconnect switch to be grounded as per CUC standards.



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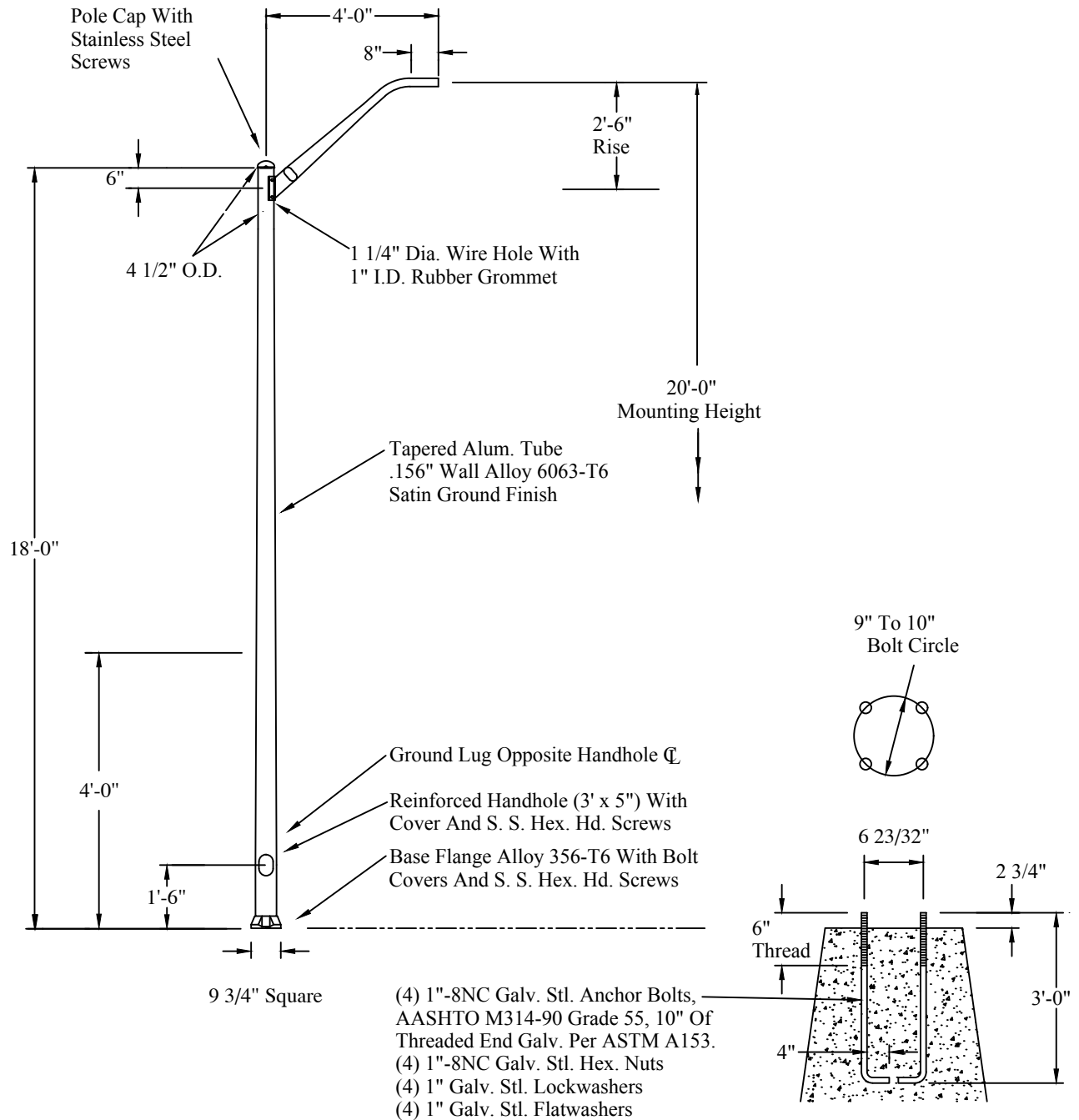
STREET & SECURITY LIGHTING

Approved date: December 7, 2020

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NOTES:

1. Streetlight shall be grounded inside the base of the pole.
2. Warning: Do not install light pole without luminaire.



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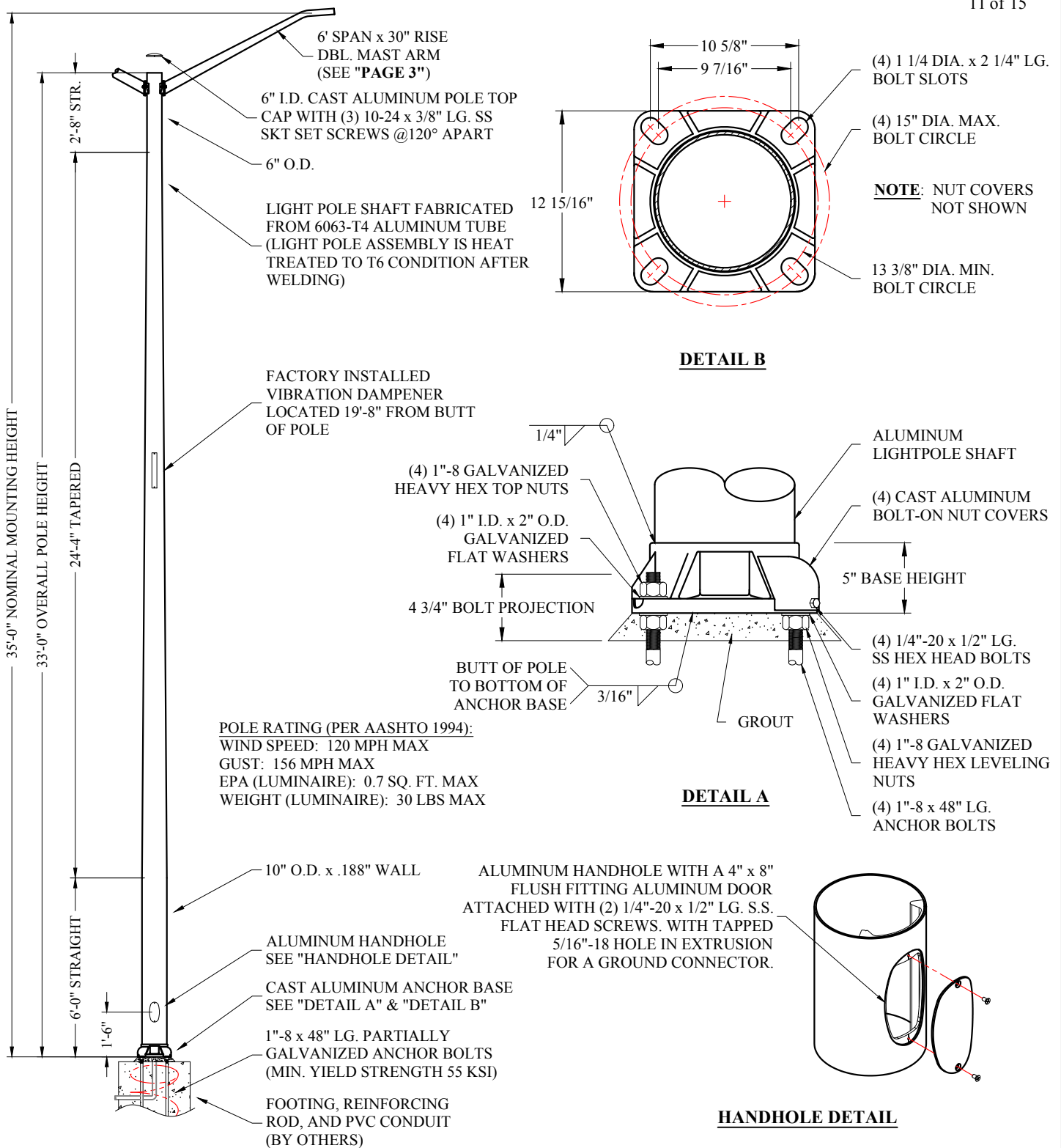
20FT. ALUMINUM POLE FOR STREETLIGHT
 UNDERGROUND CABLE

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Approved by: N. Malcolm

STANDARD # 14-9

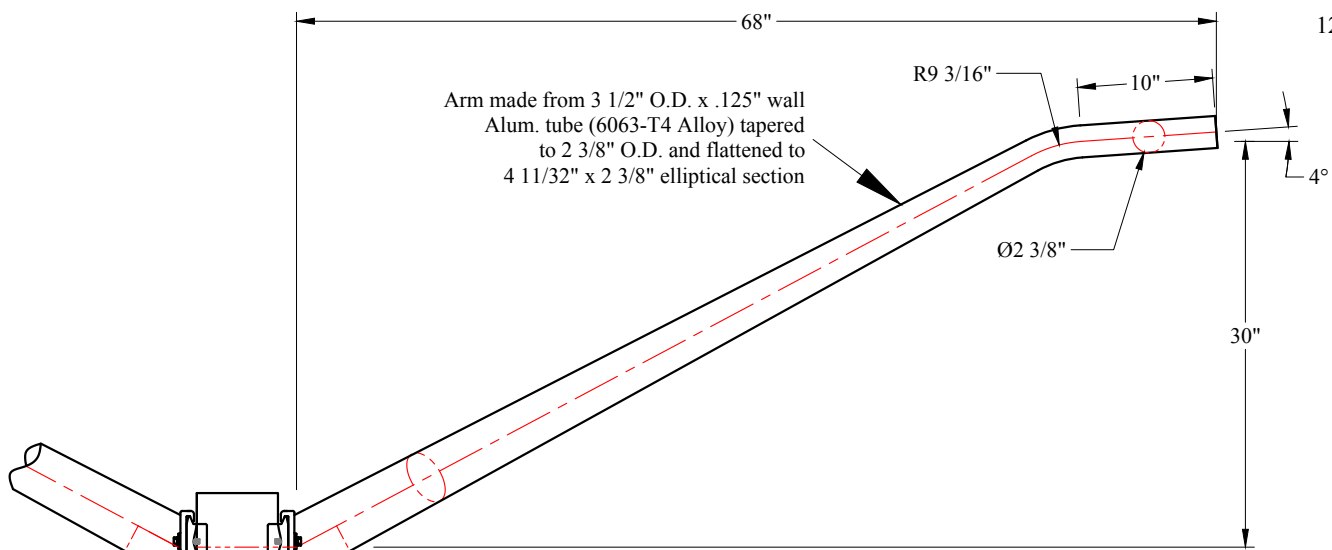
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| Revised by: C. Craig |

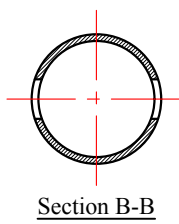
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| DISTRIBUTION STANDARDS | |
| 35FT. ALUMINUM POLE FOR STREETLIGHT UNDERGROUND CABLE | |
| Approved date: December 7, 2020 | STANDARD # 14-10 |
| Approved by: N. Malcolm | Sheet: 1 of 2 |



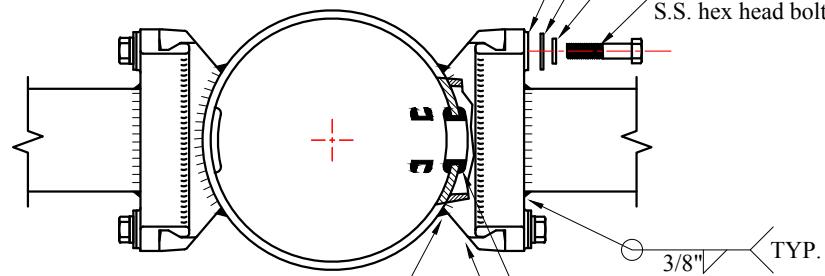
Arm made from 3 1/2" O.D. x .125" wall Alum. tube (6063-T4 Alloy) tapered to 2 3/8" O.D. and flattened to 4 11/32" x 2 3/8" elliptical section

- (2) 13/64" dia. draining hole 1 1/2" from simplex casting (one per arm)
- (2) Cast Aluminum interlocking plate (A356-T6 Alloy)
- (2) Cast Aluminum shaft mounting plate (A356-T6 Alloy)
- 6" dia. pole top (see "Pole Top Drilling Detail")

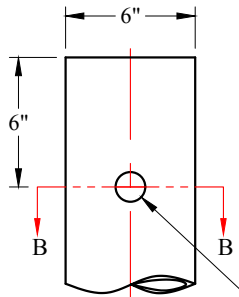
- (2) Simplex cast Aluminum arm mount
- (4) 1/2" I.D. x 1 1/4" O.D. S.S. flat washers
- (4) 1/2" I.D. S.S. split lock washers
- (4) 1/2"-13 x 1 1/2" LG. S.S. hex head bolts



Section B-B



VIEW A-A



Pole Top Drilling Detail

Drill Ø1 3/8" thru hole for (2) 1" I.D. rubber grommets

NOTES:

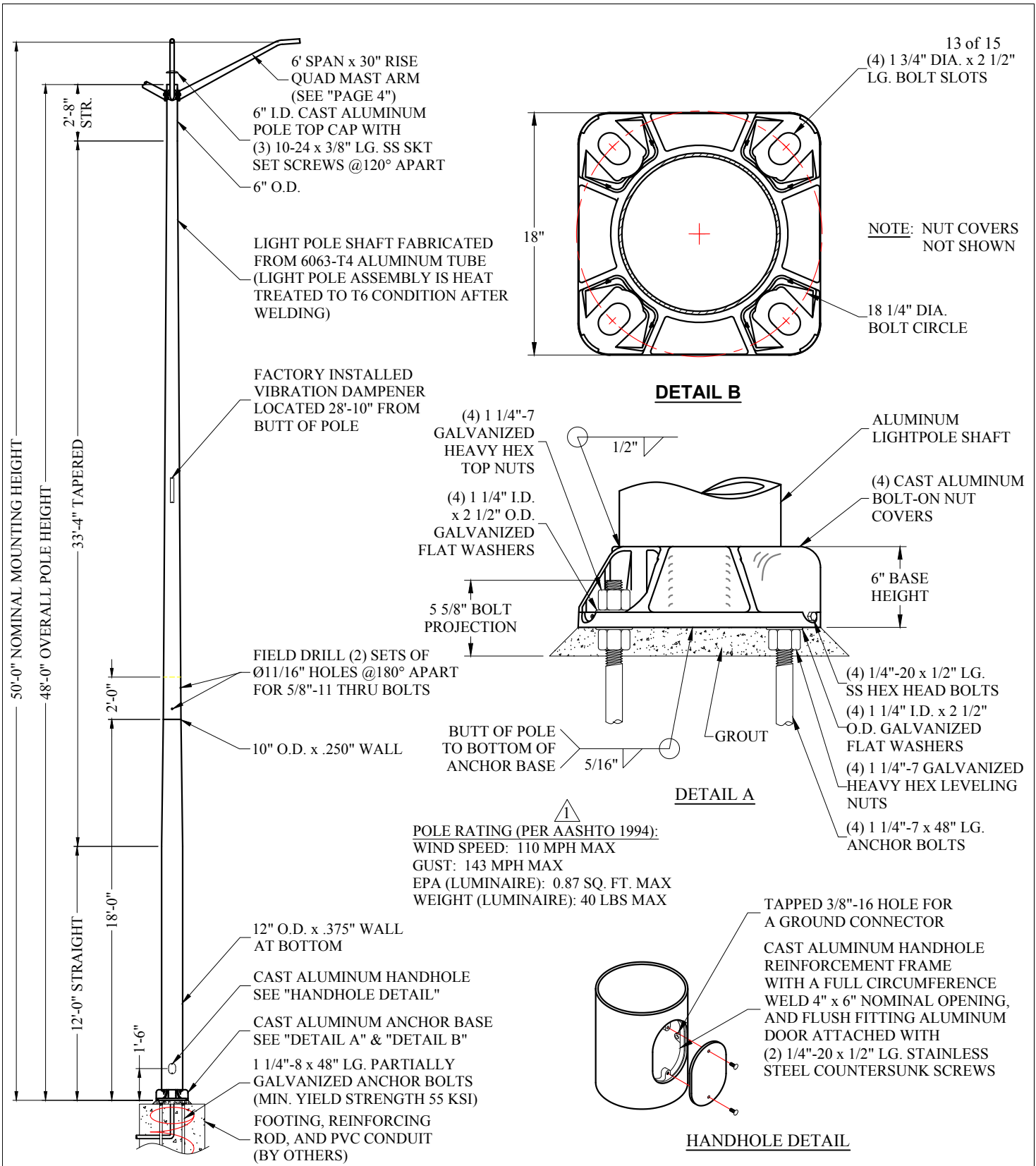
1. Welding wire (ER4043).
2. Mast arms heat treated after fabrication to T6 condition.
3. All hardware is 300 Series stainless steel.
4. Streetlight shall be grounded inside the base of the pole.



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| Revised by: C. Craig |

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| DISTRIBUTION STANDARDS | |
| 35FT. ALUMINUM POLE FOR STREETLIGHT UNDERGROUND CABLE | |
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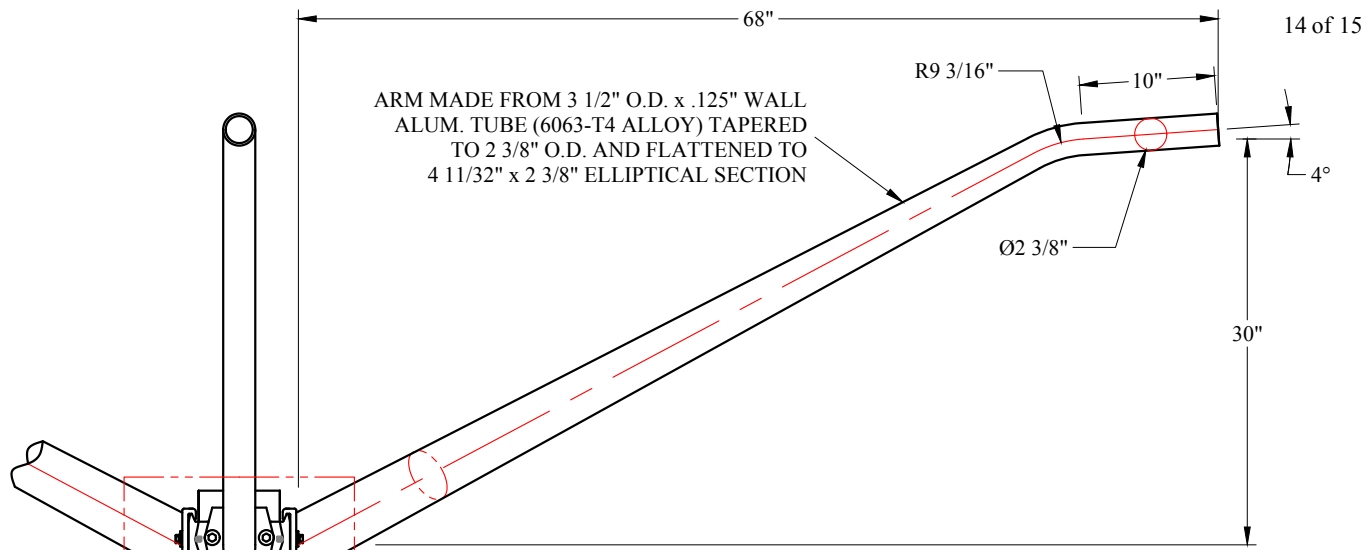


CUC
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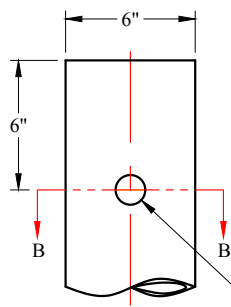
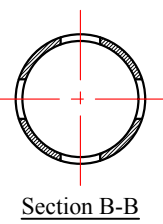
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| DISTRIBUTION STANDARDS | |
| 50FT. ALUMINUM POLE FOR STREETLIGHT UNDERGROUND CABLE | |
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| Approved by: N. Malcolm | Sheet: 1 of 2 |

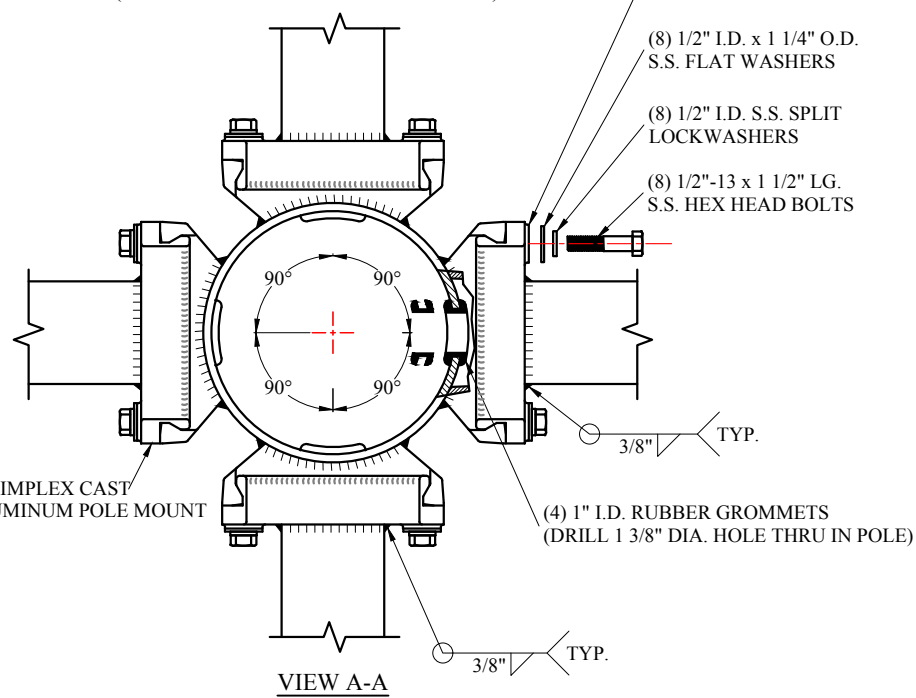


ARM MADE FROM 3 1/2" O.D. x .125" WALL ALUM. TUBE (6063-T4 ALLOY) TAPERED TO 2 3/8" O.D. AND FLATTENED TO 4 11/32" x 2 3/8" ELLIPTICAL SECTION

- (4) 13/64" DIA. DRAINAGE HOLE 1 1/2" FROM SIMPLEX CASTING (ONE PER ARM)
- (4) CAST ALUMINUM INTERLOCKING PLATE (A356-T6 ALLOY)
- (4) CAST ALUMINUM SHAFT MOUNTING PLATE (A356-T6 ALLOY)
- 6" DIA. POLE TOP (SEE "POLE TOP DRILLING DETAIL")
- (4) SIMPLEX CAST ALUMINUM ARM MOUNT



DRILL Ø1 3/8" THRU HOLE FOR (4) 1" I.D. RUBBER GROMMETS



NOTES:

1. Welding wire (ER4043).
2. Mast arms heat treated after fabrication to T6 condition.
3. All hardware is 300 Series stainless steel.
4. Streetlight shall be grounded inside the base of the pole.



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| 50FT. ALUMINUM POLE FOR STREETLIGHT UNDERGROUND CABLE | |
| Approved date: December 7, 2020 | STANDARD # 14-11 |
| Approved by: N. Malcolm | Sheet: 2 of 2 |