

PROJECT SPECIFIC TECHNICAL SPECIFICATIONS  
FOR THE PURCHASE OF  
SPUN CONCRETE DISTRIBUTION POLES  
FOR THE CIRCUIT 428 EXTENSION

JEA PROJECT NO: 8007613  
TR NO: GTI 23001  
BID DUE DATE: May 26, 2023  
REQUESTED BY: Sebastian Chmist  
UPDATED: April 14, 2023

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## 1. SCOPE

- 1.1 This specification outlines the required information needed for the purchase, fabrication, and delivery of Spun Concrete Distribution poles for the "SPUN CONCRETE DISTRIBUTION POLES FOR THE CIRCUIT 428 EXTENSION". This specification complements the "General Technical Specifications for the Purchase of Spun Concrete Transmission Poles", Rev 1.2".
- 1.2 This specification includes the following attachments:
  - a) Bid Form
  - b) Pole Moment Capacity Tables
  - c) Pole Drawings, containing the configuration and hole drilling details of the pole(s)
  - d) Pole Attachment Details
  - e) PLS-POLE backup files for the pole(s), containing loading data and geometry
- 1.3 The Project Engineer (JEA) for this purchase is:

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## 2. DESIGN

Structures shall be designed for the configuration, drilling details, loadings and limitations contained in these and the "General Technical Specifications for the Purchase of Spun Concrete Transmission Poles", Rev 1.2".

- 2.1 Pole Configuration: The configuration of each pole to be provided is shown in the "Pole Drawings" attachment of these specifications. The Drawings specify the dimensions of the poles, the orientation, drilling details, and attachment locations for insulators, step bolts, etc.
- 2.2 Pole Attachment Details: Details of all attachments are shown in the "Attachment Details" attachment of these specifications. These details illustrate and identify required dimensions on all the insulator attachments, step bolts, etc. that are to be provided with each pole. Attachments that support any equipment if any (transformers, streetlights, etc. modeled in PLS-POLE) need to be analyzed to determine if they can withstand the dead loads of that equipment. It is the responsibility of the fabricator to ensure that the attachments are fabricated and can withstand the loads placed on them as specified in these specifications and attachments.
- 2.3 Pole Load Data: All of the loading data for which the poles are to be designed to are included as a separate electronic attachment in the form of a PLS-POLE backup file. At the least, all the poles are being subjected to a NESC Light 60 mph wind loading, NESC Extreme 120 mph wind loading, NESC Blow Out 6PSF loading, and 60 Degree loading criteria plus applicable load factors. Load

criteria is being applied from multiple directions. These loads are described in more detail in section 2.4 below.

2.3.1 There are four (4) PLS-POLE models with five (4) .lca files provided as described below. There are four (4) poles to be purchased in total.

- a) One (1) PLS-POLE backup file provided for structure #11849
- b) One (1) PLS-POLE backup file provided for structure #11607
- c) One (1) PLS-POLE backup file provided for structure #11911
- d) One (1) PLS-POLE backup file provided for structure #11901

2.3.2 Each PLS-POLE backup file references a Vector Loads File (.lca) which contains all the loading data on the pole and the pole attachments.

2.3.3 The PLS-POLE backup files also contain all the geometrical data necessary to analyze the poles with the specific loads.

2.3.4 The loads shown in the Vector Loads files (.lca) include the wind loads acting on the conductors/wires, attachments, and the theoretical pole that was modeled. A wind pressure is identified for each load case within the Vector Loads file (.lca). It is the manufacturer's responsibility to apply these wind pressures onto the poles and components that it will be providing.

2.3.5 In addition to the PLS-Pole backup files and loading data (.lca) files, the required pole strengths shall at the very least meet or exceed the moment capacity diagrams for each pole as shown in the pls-pole back up files.

2.3.6 See the Moment-Capacity Tables contained in Section 7 for clarity. The moment capacity tables match the same values as shown on the moment capacity diagrams in the pls-pole back up files for each pole.

2.4 Deflection: Instead of the eight (8) % deflection limit described in the General Technical Specifications (section 4.1), the poles shall be designed to meet the deflection limits as identified in the load (.lca) files found within the PLS-POLE models. In general and where applicable, poles shall meet the deflection limits for the "NESC LIGHT 250 B", "NESC EXTREME 250 C", "NESC BLOW OUT 6 PSF", "60 DEG F" loading conditions, as well as several broken wire loading conditions on some dead-end structures. These load conditions are identified under the "Load Case Description" column of each pole's .lca file. On all poles, loads are provided from multiple directions including loads that result with positive offset (NA+), negative offset (NA-), and maximum structure usage (MAX). The loading condition name will be followed by a comma and a wind load direction. For example, a load case description by the name of "NESC LIGHT 250B, U NA+" identifies that this is a NESC Light 250 B loading criteria with wind normal to all spans/ structure in direction of positive offset.

### 3. DIMENSION RESTRICTIONS

3.1 Wall Thickness: All structures shall have a **minimum of a three and one-half (3-1/2) inch** wall thickness at the pole tip, and an outside total taper of not less than 0.216 inches per foot.

3.2 Top Diameter: The **minimum tip diameter** for all poles shall be thirty-four (34) inches and the **maximum tip diameter** shall not exceed thirty-nine (39) inches. The Manufacturer shall notify the

Owner if the strength requirements of a controlling load case dictate a greater tip diameter. All poles are essentially 32-kip poles with the tops cut off.

- 3.3 Minimum Bottom Diameter: The **minimum bottom diameters** of all poles shall be as described below.

- 3.3.1 Structure #11849: Fifty-four (54) inches.
- 3.3.2 Structures #11607: Fifty-four (54) inches.
- 3.3.3 Structures #11911: Fifty-four (54) inches.
- 3.3.4 Structures #11901: Fifty-four (54) inches.

- 3.4 Maximum Bottom Diameter: The **maximum bottom diameters** of all poles shall be as described below. The Manufacturer shall notify the Owner if the strength requirements of a controlling load case dictate a greater bottom diameter and/or a need for a different taper.

- 3.4.1 Structure #11849: Fifty-five (55) inches.
- 3.4.2 Structures #11607: Fifty-five (55) inches.
- 3.4.3 Structures #11911: Fifty-five (55) inches.
- 3.4.4 Structures #11901: Fifty-five (55) inches.

#### 4. POLE ATTACHMENT HARDWARE

- 4.1 The pole manufacturer shall provide all step bolts, ground inserts, thru holes, threaded inserts, and a pole cap on each pole as shown in the "POLE DRAWINGS" and/or "POLE ATTACHMENT DETAILS" of these specifications.
- 4.1.1 Design of the threaded inserts shall be at the discretion of the pole manufacturer. Inserts shall allow standard Imperial-thread machine bolts to be attached on opposite faces of the pole. The threaded portion shall be of sufficient length, and the inserts shall be secured within the pole, such that the final installation provides at least the equivalent strength of a comparable through-bolt installation.
  - 4.1.2 Pole caps shall be provided and secured on the top of each pole. Caps shall be in the shape of a cone, fabricated from steel and hot-dip galvanized. Two 1/2"-13 nuts shall be welded to the cap on opposite sides to allow attachment of ground lugs.
- 4.2 Bolts, nuts, washers and other hardware required for assembling the step bolts with the step inserts are to be provided by the manufacturer (**n/a for this bid request, there are no step bolts to be provided for this request**).
- 4.3 Bolts, nuts, washers and other hardware required for attaching insulators, cross-arms, transformers, guy wires, and miscellaneous cables to poles will be supplied by JEA and are not to be provided by the manufacturer.

#### 5. DELIVERY LOCATION AND DATE

- 5.1 Delivery of all poles and hardware will be to storage areas near the job site within the JEA service area. The jobsite is located at several areas. Final discretion for delivery locations will be left to the construction contractor representing the owner. The poles shall be delivered to the following areas:
- 5.1.1 Structure #11849 shall be delivered to a transmission corridor near 12135 Harts Rd, Jacksonville, FL 32218. The delivery location will be the corridor to the east of Harts Road.
  - 5.1.2 Structure #11607 shall be delivered to a transmission corridor near 12135 Harts Rd, Jacksonville, FL 32218. The delivery location will be the corridor to the west of Interstate 95.
  - 5.1.3 Structure #11911 shall be delivered to a transmission corridor near 131 Noah Rd, Jacksonville, FL 32218. The delivery location will be the corridor to the west of N. Main Street.
  - 5.1.4 Structure #11901 shall be delivered to a transmission corridor near 131 Noah Rd, Jacksonville, FL 32218. The delivery location will be the corridor to the east of N. Main Street.
- 5.2 Specific directions for delivery will be provided by the construction contractor. The unloading will be done by the owner's forces and equipment or by a contractor representing the owner. The owner also reserves the right to allow a contractor representing the owner to coordinate delivery with the supplier. The supplier shall allow **four (4) hours** "turn around" time for unloading each pole. Untimely delivery, either ahead of or behind agreed upon delivery schedules, shall not be a cause for claim to the owner for any costs incurred by the Manufacturer. Freight is to be included in the bid price. **All communications regarding the delivery date/time are to be verified and approved by email with the JEA Project Engineer even if verified and coordinated verbally with the contractor representing JEA. JEA will not be responsible for any extra costs incurred by the manufacturer for delivery that was not approved by the JEA Project Engineer.**

Unless the construction contractor advises differently, poles shall be delivered in order, beginning at Structure #11849 and ending at Structure #11901. The poles and all associated hardware/attachments for the structures shall be delivered on the following tentative dates:

- Between October 9<sup>th</sup> and October 13<sup>th</sup>, 2023.

**Due to unforeseeable delays, the contractor representing the owner will update and coordinate new delivery dates with the pole supplier should they change.**

## 6. MOMENT-CAPACITY TABLES

32 kip

For structures #11849 and #11607, the top 40 feet is removed.

For structure #11911, the top 35 feet is removed.

For structure #11901, the top 50 feet is removed.

<b>Distance Below Top (ft)</b>	<b>Zero Tension Moment Cap. (ft-k)</b>	<b>First Crack Moment Cap. (ft-k)</b>	<b>Ultimate Moment Cap. (ft-k)</b>
5	183	244	645
10	337	408	918
15	354	432	990
20	372	458	1065
25	449	543	1218
30	470	572	1303
35	491	602	1391
40	514	633	1484
45	536	665	1577
50	559	698	1675
55	582	742	1787
60	606	812	1889
65	631	882	2016
70	680	952	2176
75	730	1022	2336
80	780	1092	2496
85	830	1162	2656
90	880	1232	2816
95	930	1302	2976
100	980	1372	3136
105	1030	1442	3296
110	1080	1512	3456
115	1130	1582	3616
125	TBD	TBD	TBD

## 7. POLE DRAWINGS

1) Pole Drawings:

Structure Type A12462 – Double Dead-end, 135°, Full Tension to Slack Tension, 3-Phase

Structure(s): #11849

2) Pole Drawings:

Structure Type A12462 – Double Dead-end, 135°, Full Tension to Slack Tension, 3-Phase

Structure(s): #11849

3) Pole Drawings:

Structure Type DC45F-5 – Double Dead-end, 180°, Full Tension to Full Tension, 3-Phase

Structure(s): #11911

4) Pole Drawings:

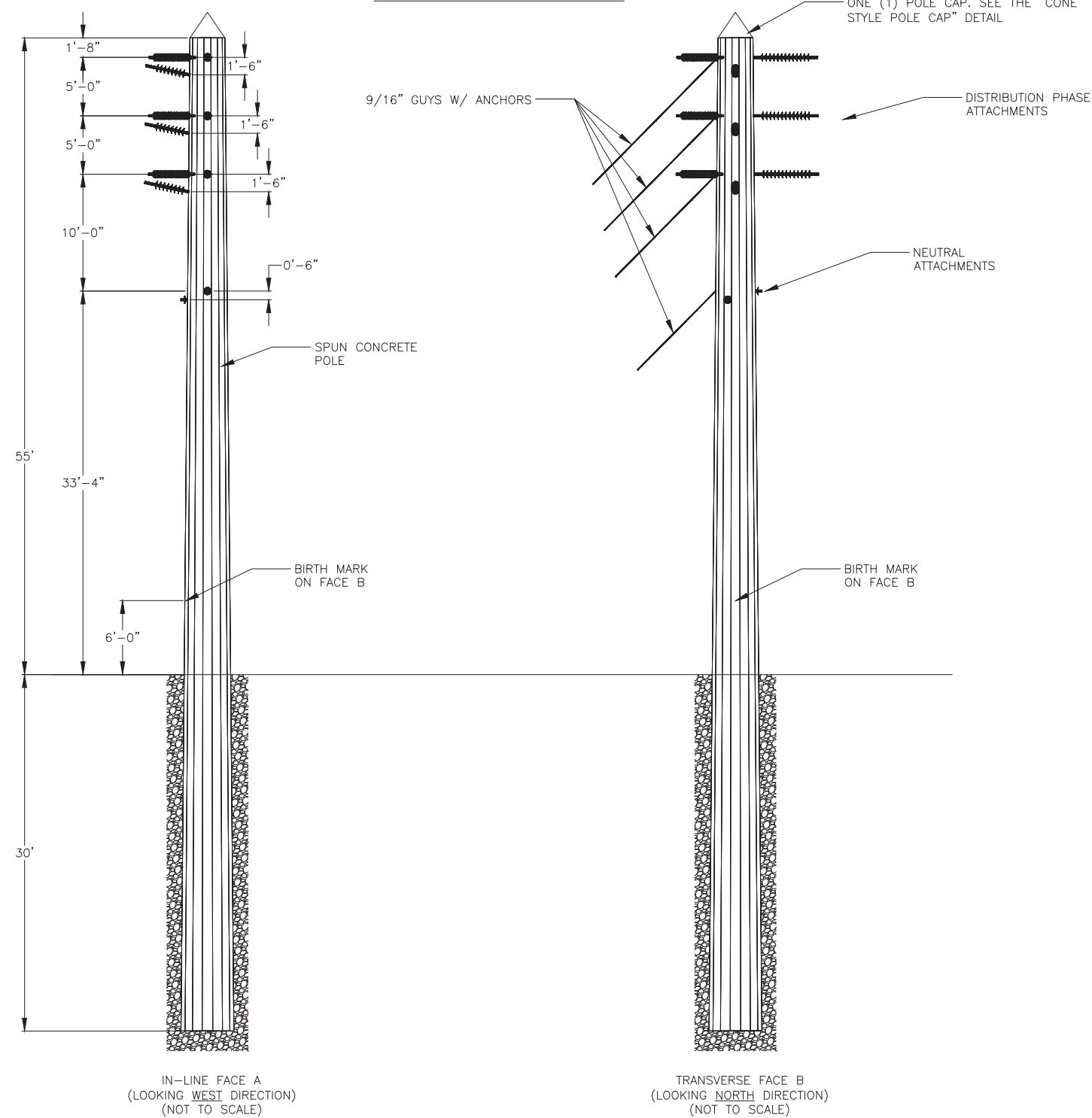
Structure Type DC5F\_DC8F-5 – Triple Dead-end, Full Tension to Full Tension, 3-Phase

Structure(s): #11901

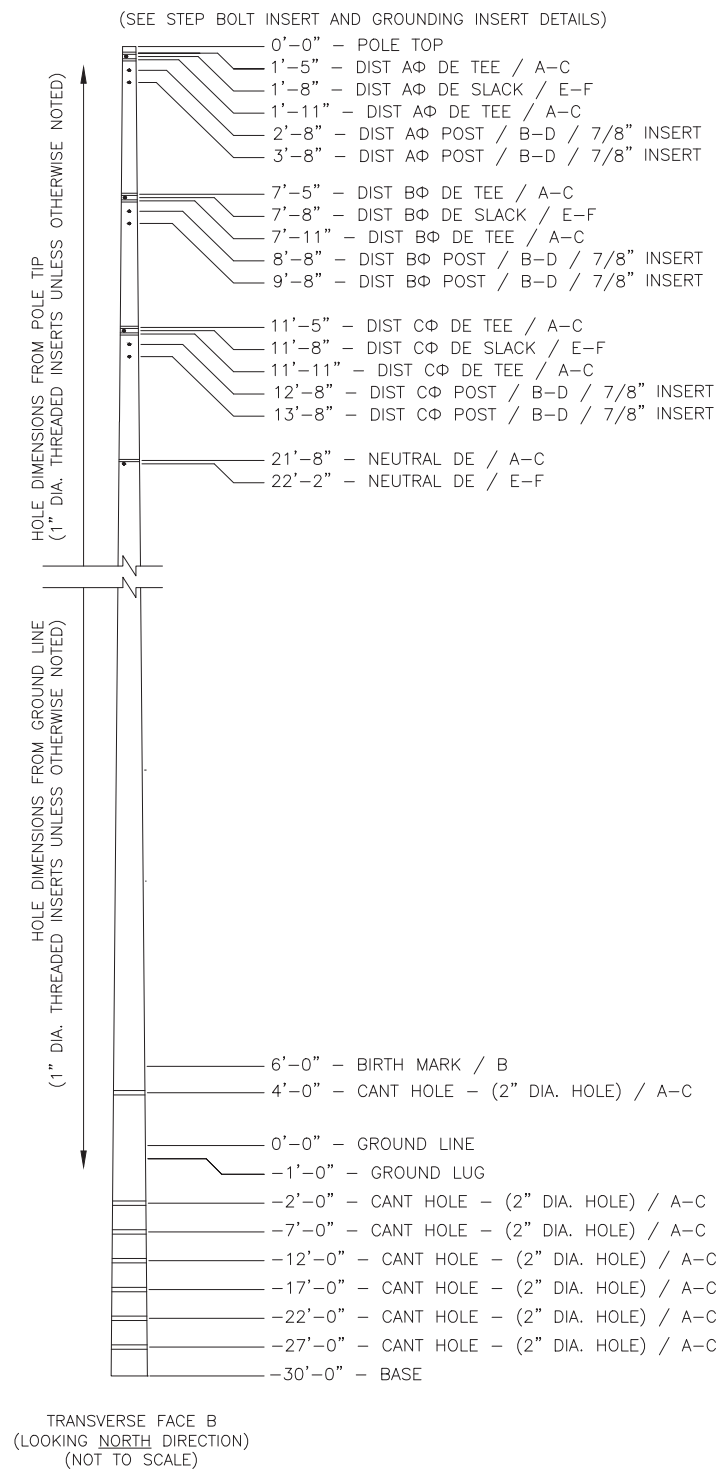


## STRUCTURE #11849

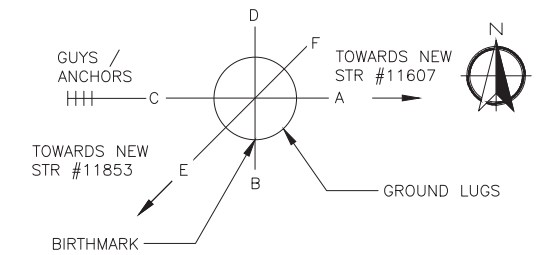
## ELEVATION VIEW



## DRILLING DETAIL



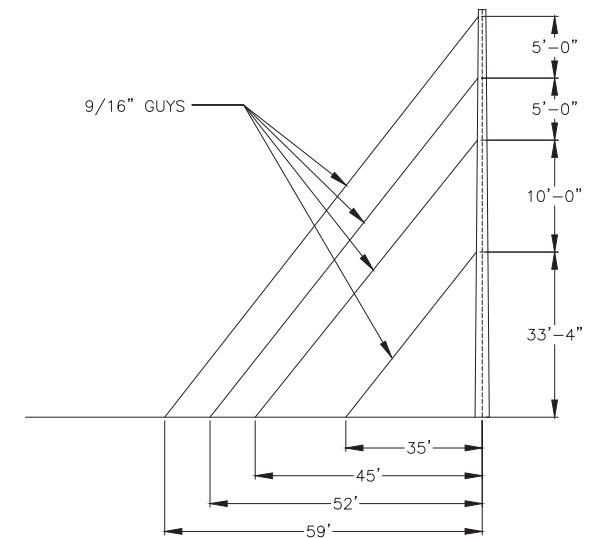
### POLE TIP VIEW



## GROUND LUG LOCATIONS


FOR	FROM POLE TOP	FROM POLE GROUNDLINE
DIST AΦ	2'-5"	-
DIST BΦ	8'-5"	-
DIST CΦ	12'-5"	-
NEUTRAL	22'-8"	-
GROUND ROD	-	-1'-0"

## GUY ARRANGEMENT



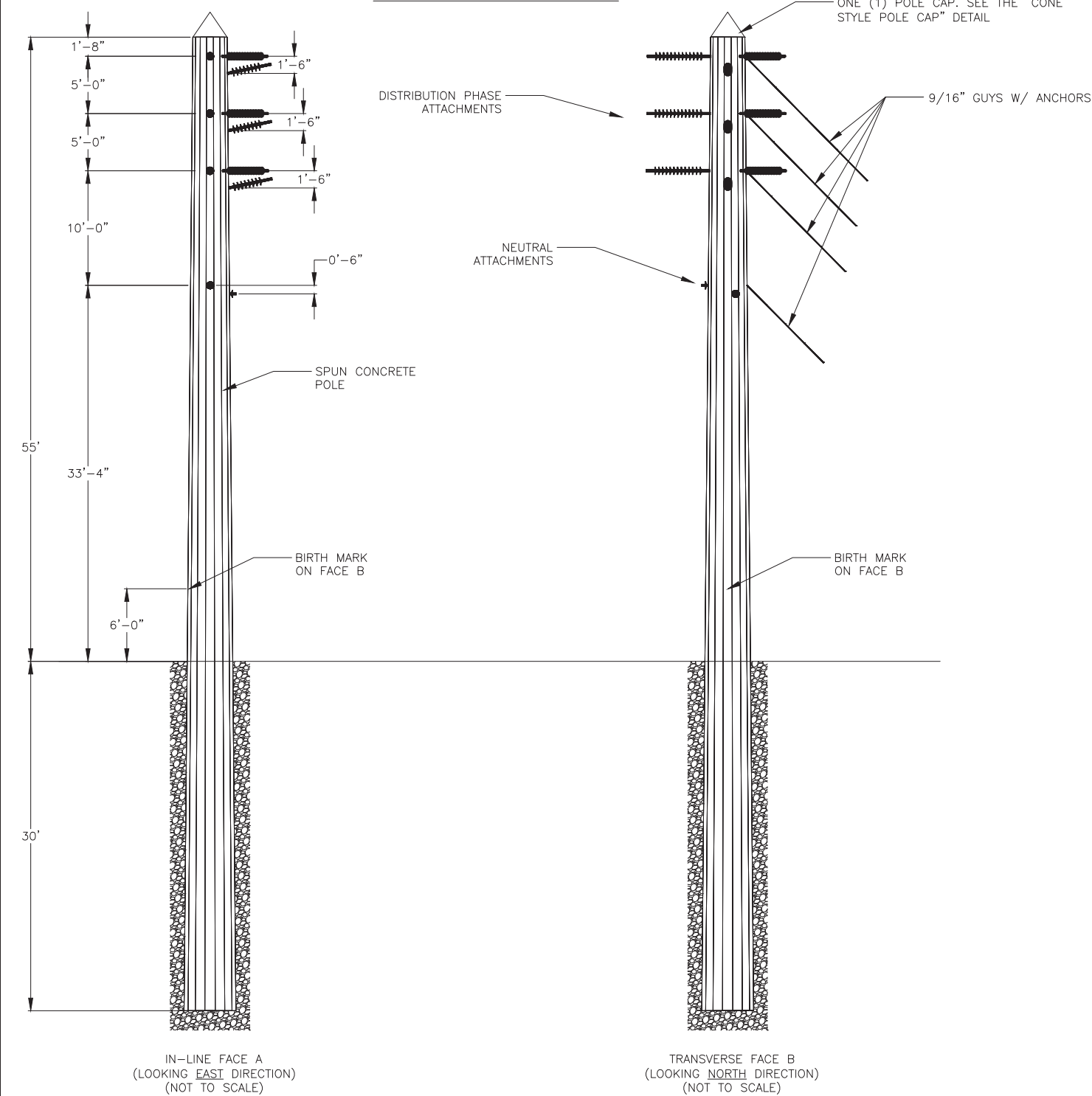
NOTES:

1. THIS POLE DRAWING IS ACCOMPANIED BY A PLS-POLE BACKUP FILE NAMED "STR11849.A12462.BAK", CONTAINING ALL THE LOADS SPECIFIED IN A REFERENCED VECTOR LOADS (.LCA) FILE FOR STRUCTURE #11849.
2. ALL LOADS ARE ULTIMATE LOADS AND INCLUDE APPROPRIATE LOAD FACTORS.
3. ALL REFERENCED DETAILS ARE PROVIDED IN THE "PROJECT SPECIFIC TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF SPUN CONCRETE TRANSMISSION POLES FOR THE CIRCUIT 428 STRUCTURES #11849, #11607, #11911, AND #11901". POLES SHALL BE DESIGNED TO MEET THE REQUIREMENTS OF THESE SPECIFICATIONS AND DETAILS.
4. POLES ARE TOP BE DESIGNED TO MEET ALL OF THE REQUIREMENTS FOUND IN THE "GENERAL TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF SPUN CONCRETE TRANSMISSION POLES, REVISION 1.2, UPDATED ON 1/16/2020.

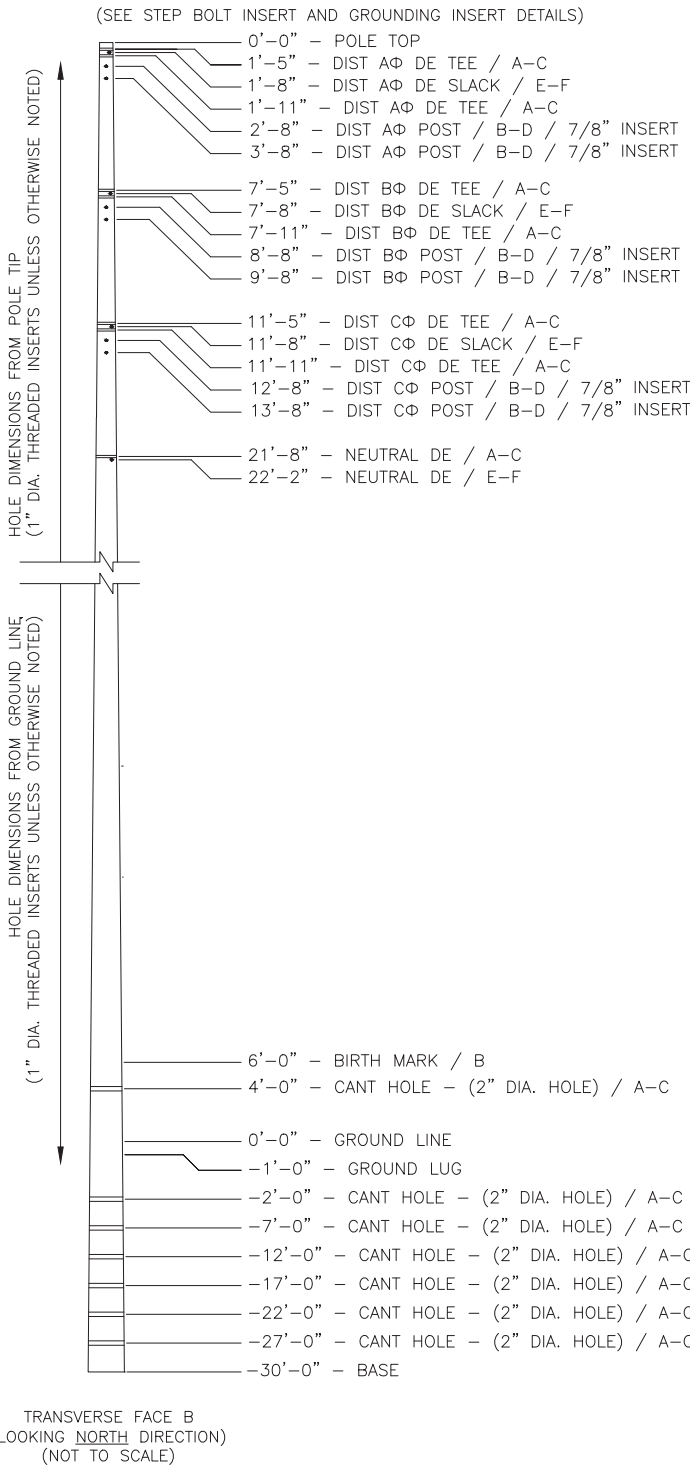
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										STATUS	BY	DATE				DRAWING NO. GTI23001 CP
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										DESIGNED	SMC	03/02/23				
										DRAWN	SMC	03/02/23				
										CHECKED	CHM	03/10/23				
										APP'D	CHM	03/10/23			SHEET NO. 1 OF 4	
											SCALE: N/A		PROJECT DESIGN SEGMENT 20410			

STRUCTURE TYPE  
A12462 DOUBLE DEAD-END, 135°, FULL TENSION TO SLACK TENSION, 3-PHASE  
STRUCTURE #11607

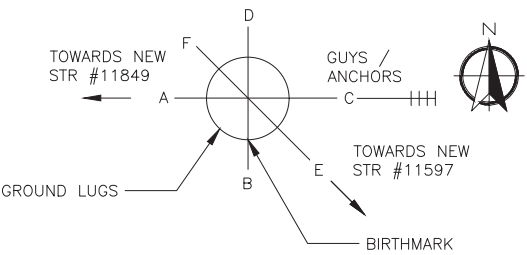
ELEVATION VIEW



DRILLING DETAIL



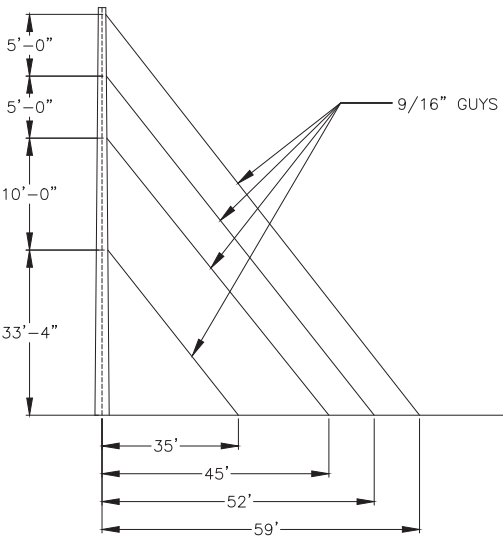
POLE TIP VIEW



GROUND LUG LOCATIONS

FOR	FROM POLE TOP	FROM POLE GROUNDLINE
DIST AΦ	2'-5"	-
DIST BΦ	8'-5"	-
DIST CΦ	12'-5"	-
NEUTRAL	22'-8"	-
GROUND ROD	-	-1'-0"

GUY ARRANGEMENT

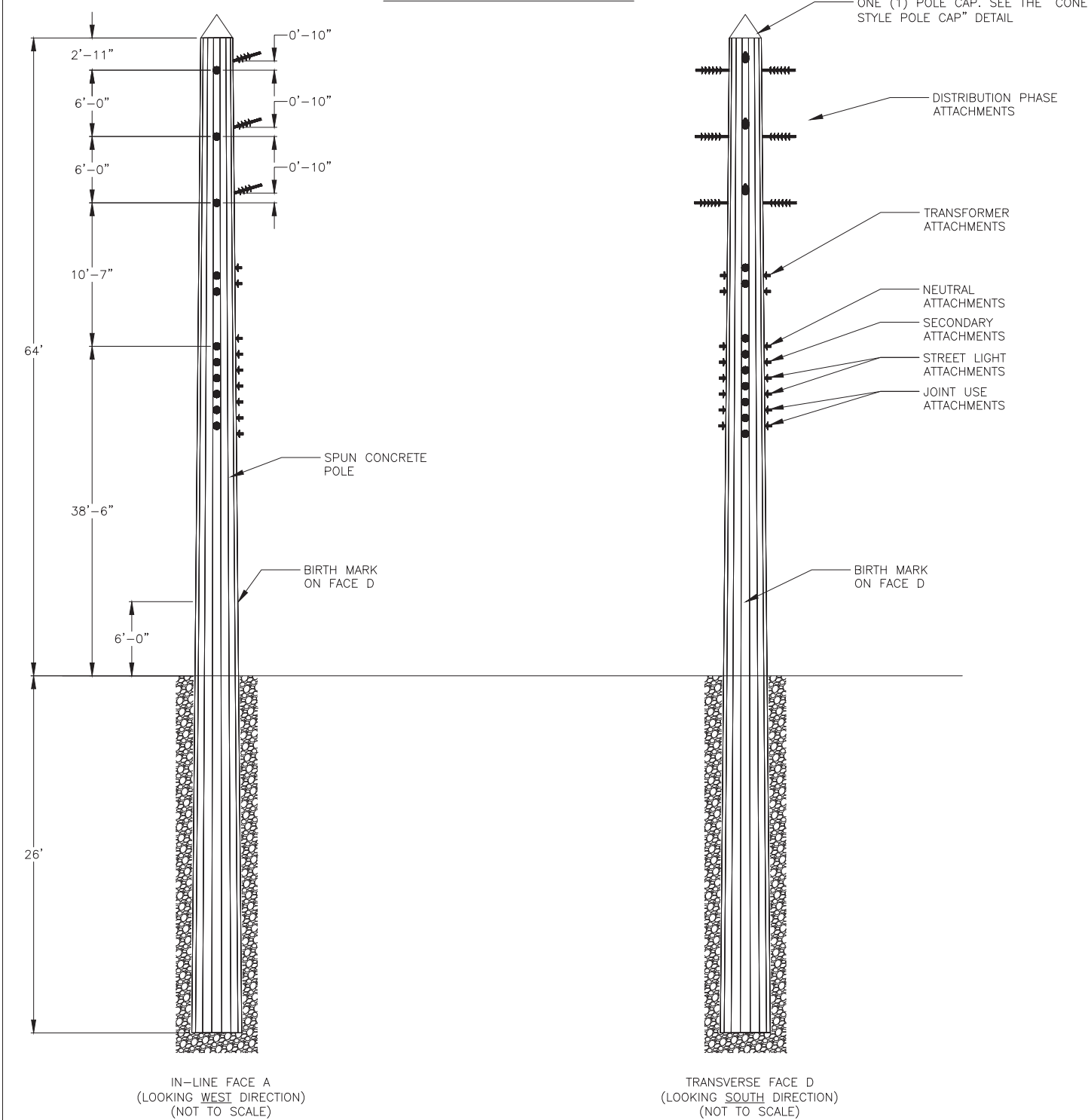


- NOTES:
- THIS POLE DRAWING IS ACCOMPANIED BY A PLS-POLE BACKUP FILE NAMED "STR11607.A12462.BAK", CONTAINING ALL THE LOADS SPECIFIED IN A REFERENCED VECTOR LOADS (.LCA) FILE FOR STRUCTURE #11607.
  - ALL LOADS ARE ULTIMATE LOADS AND INCLUDE APPROPRIATE LOAD FACTORS.
  - ALL REFERENCED DETAILS ARE PROVIDED IN THE "PROJECT SPECIFIC TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF SPUN CONCRETE TRANSMISSION POLES FOR THE CIRCUIT 428 STRUCTURES #11849, #11607, #11911, AND #11901". POLES SHALL BE DESIGNED TO MEET THE REQUIREMENTS OF THESE SPECIFICATIONS AND DETAILS.
  - POLES ARE TOP BE DESIGNED TO MEET ALL OF THE REQUIREMENTS FOUND IN THE "GENERAL TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF SPUN CONCRETE TRANSMISSION POLES, REVISION 1.2, UPDATED ON 1/16/2020.

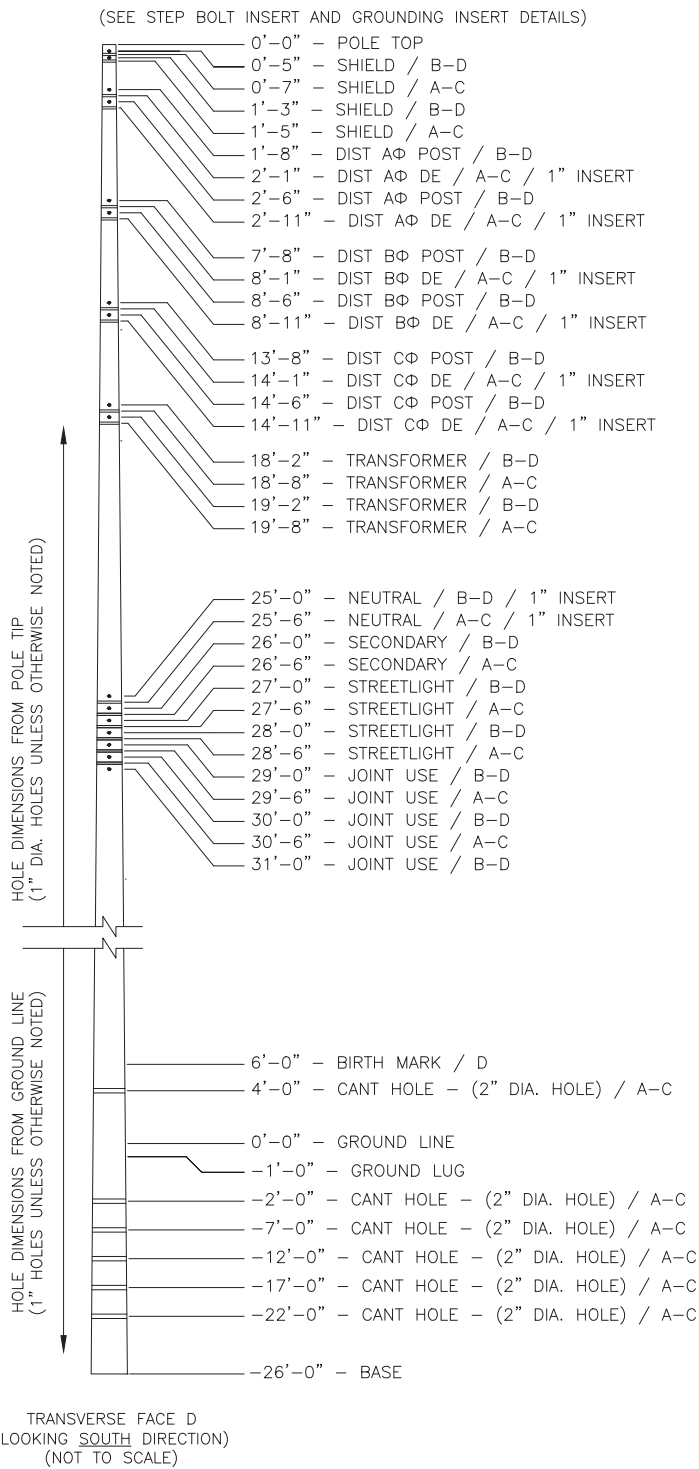
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											DESIGNED	SMC	03/02/23	
											DRAWN	SMC	03/02/23	
											CHECKED	CHM	03/10/23	
											APP'D	CHM	03/10/23	

STRUCTURE TYPE  
DC8F-5 DOUBLE DEAD-END, 180°, FULL TENSION TO FULL TENSION, 3-PHASE  
STRUCTURE #11911

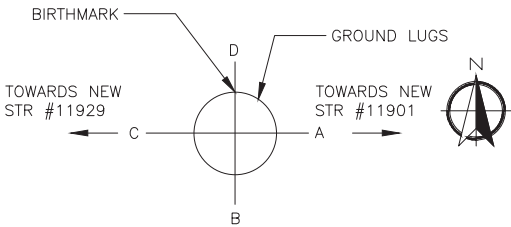
ELEVATION VIEW



DRILLING DETAIL



POLE TIP VIEW



GROUND LUG LOCATIONS

FOR	FROM POLE TOP	FROM POLE GROUNDLINE
SHIELD	0'-9"	-
DIST AΦ	2'-9"	-
DIST BΦ	8'-9"	-
DIST CΦ	14'-9"	-
TRANSFORMER	16'-6"	-
TRANSFORMER	19'-0"	-
NEUTRAL	25'-3"	-
SECONDARY	26'-4"	-
STREETLIGHT	27'-9"	-
GROUND ROD	-	-1'-0"

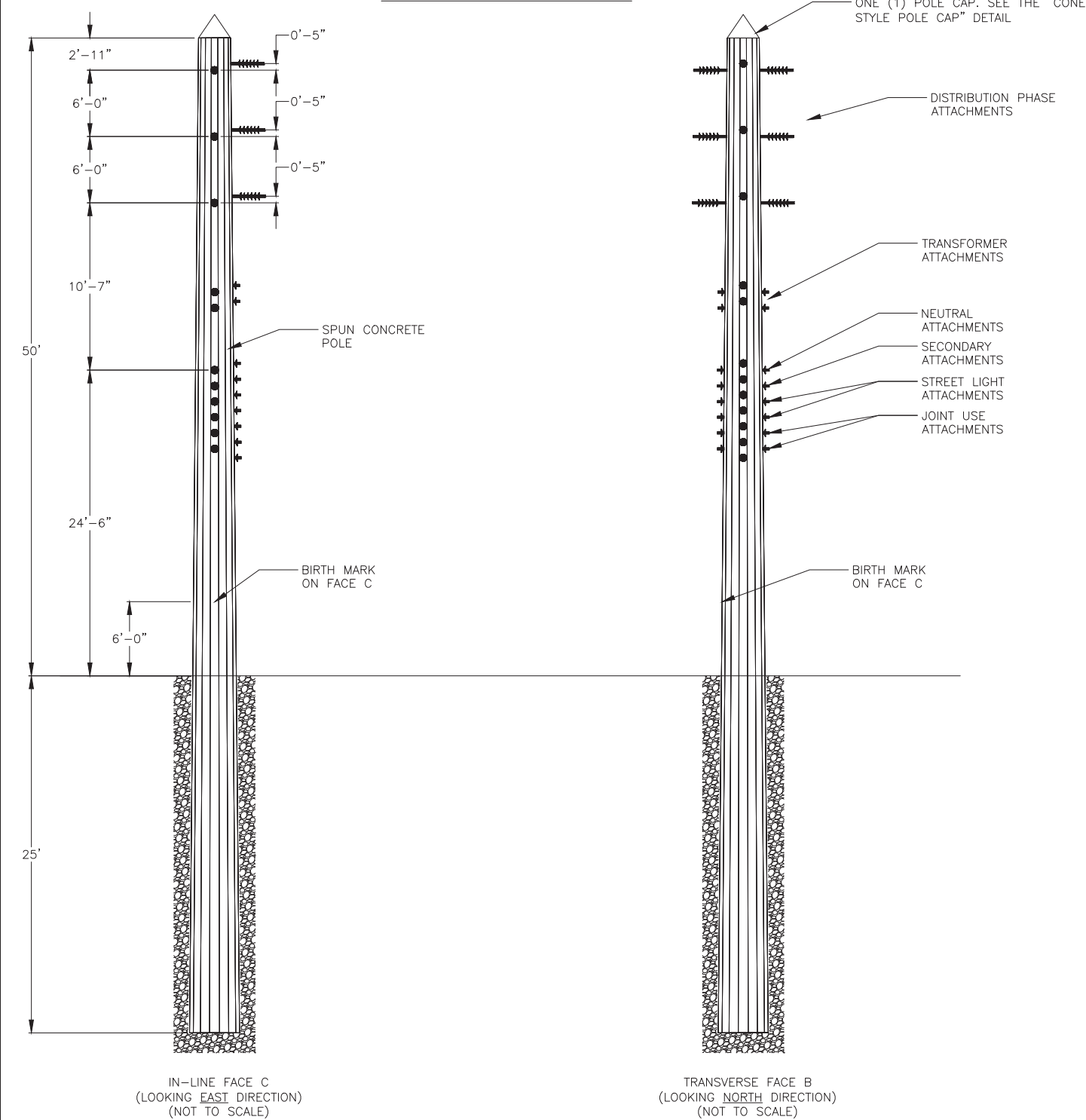
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- THIS POLE DRAWING IS ACCOMPANIED BY A PLS-POLE BACKUP FILE NAMED "STR11911.DC8F-5.BAK", CONTAINING ALL THE LOADS SPECIFIED IN A REFERENCED VECTOR LOADS (.LCA) FILE FOR STRUCTURE #11911.
- ALL LOADS ARE ULTIMATE LOADS AND INCLUDE APPROPRIATE LOAD FACTORS.
- ALL REFERENCED DETAILS ARE PROVIDED IN THE "PROJECT SPECIFIC TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF SPUN CONCRETE TRANSMISSION POLES FOR THE CIRCUIT 428 STRUCTURES #11849, #11607, #11911, AND #11901". POLES SHALL BE DESIGNED TO MEET THE REQUIREMENTS OF THESE SPECIFICATIONS AND DETAILS.
- POLES ARE TOP BE DESIGNED TO MEET ALL OF THE REQUIREMENTS FOUND IN THE "GENERAL TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF SPUN CONCRETE TRANSMISSION POLES, REVISION 1.2, UPDATED ON 1/16/2020.

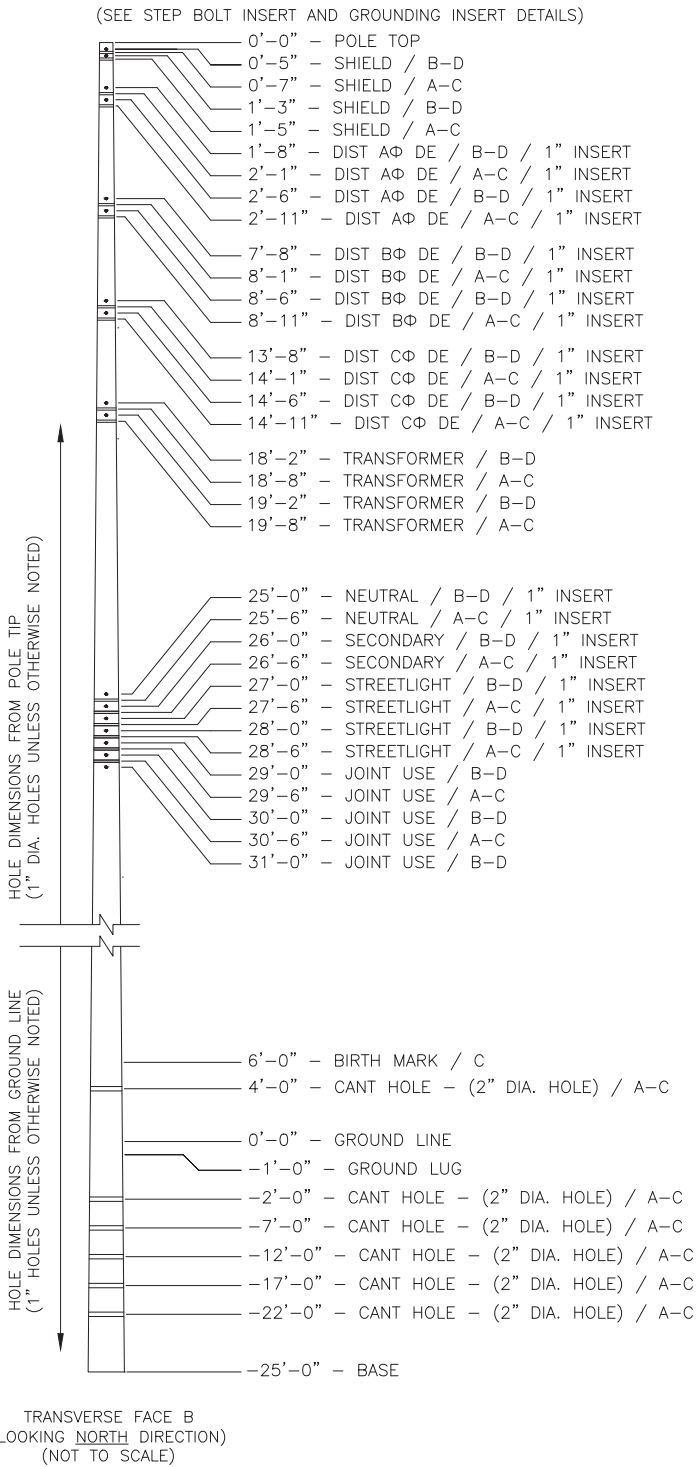
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											STATUS	BY	DATE	DRAWING NO. GTI23001 CP
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											CHECKED	CHM	03/10/23	
											APP'D	CHM	03/10/23	

STRUCTURE TYPE  
DC45F-5 TIPPLE DEAD-END, FULL TENSION TO FULL TENSION, 3-PHASE  
STRUCTURE #11901

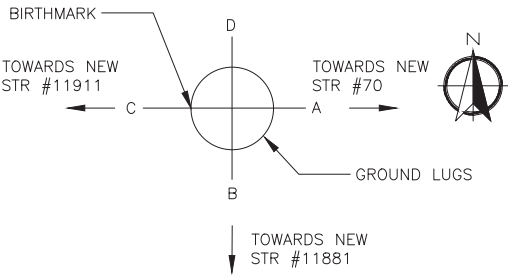
ELEVATION VIEW



DRILLING DETAIL



POLE TIP VIEW



GROUND LUG LOCATIONS

FOR	FROM POLE TOP	FROM POLE GROUNDLINE
SHIELD	0'-9"	-
DIST AΦ	2'-9"	-
DIST BΦ	8'-9"	-
DIST CΦ	14'-9"	-
TRANSFORMER	16'-6"	-
TRANSFORMER	19'-0"	-
NEUTRAL	25'-3"	-
SECONDARY	26'-4"	-
STREETLIGHT	27'-9"	-
GROUND ROD	-	-1'-0"

NOTES:

- THIS POLE DRAWING IS ACCOMPANIED BY A PLS-POLE BACKUP FILE NAMED "STR11901.DC45-5.BAK", CONTAINING ALL THE LOADS SPECIFIED IN A REFERENCED VECTOR LOADS (.LCA) FILE FOR STRUCTURE #11901.
- ALL LOADS ARE ULTIMATE LOADS AND INCLUDE APPROPRIATE LOAD FACTORS.
- ALL REFERENCED DETAILS ARE PROVIDED IN THE "PROJECT SPECIFIC TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF SPUN CONCRETE TRANSMISSION POLES FOR THE CIRCUIT 428 STRUCTURES #11849, #11607, #11911, AND #11901". POLES SHALL BE DESIGNED TO MEET THE REQUIREMENTS OF THESE SPECIFICATIONS AND DETAILS.
- POLES ARE TOP BE DESIGNED TO MEET ALL OF THE REQUIREMENTS FOUND IN THE "GENERAL TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF SPUN CONCRETE TRANSMISSION POLES, REVISION 1.2, UPDATED ON 1/16/2020.

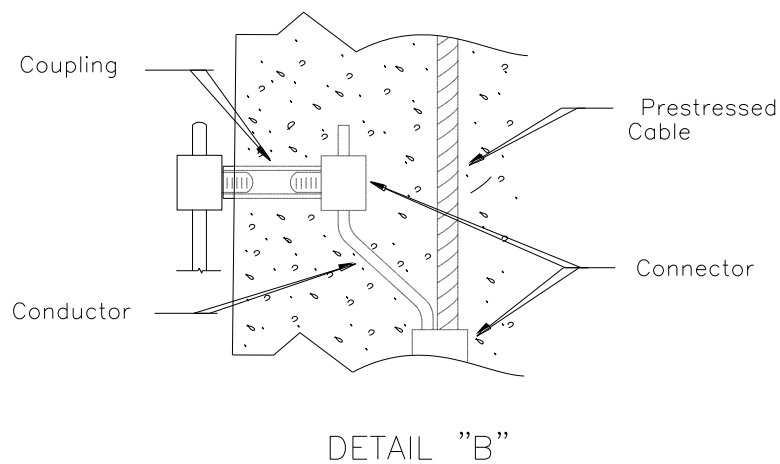
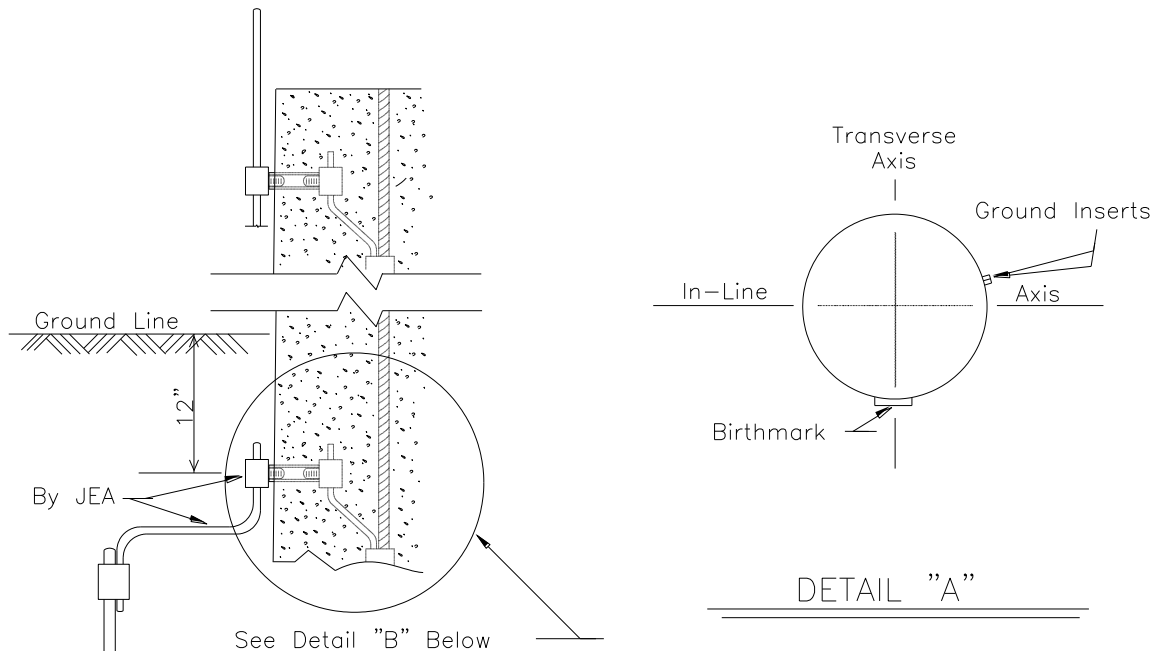
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											APP'D	CHM	03/10/23	

## 8. POLE ATTACHMENT DETAILS

- 1) Ground Inserts Detail PGI
- 2) Cone Style Pole Cap (per spec paragraph 4.1.2)
- 3) 7/8" Threaded Inserts (per spec paragraphs 4.1.1)
- 4) 1" Threaded Inserts (per spec paragraphs 4.1.1)

## PGI

### GROUND INSERT DETAILS



Note: Coupling and Internal Cable with Connectors To Be Furnished By Pole Manufacturer



## 9. PLS-POLE BACKUP FILES

1) Pole Drawing:

Structure Type A12462 – Double Dead-end, 135<sup>0</sup>, Full Tension to Slack Tension, 3-Phase

Structure(s): #11849

- a. See electronically attached PLS-POLE back up file "STR11849.A12462.BAK."

2) Pole Drawing:

Structure Type A12462 – Double Dead-end, 135<sup>0</sup>, Full Tension to Slack Tension, 3-Phase

Structure(s): #11849

- a. See electronically attached PLS-POLE back up file "STR11607.A12462.BAK."

3) Pole Drawing:

Structure Type DC45F-5 – Double Dead-end, 180<sup>0</sup>, Full Tension to Full Tension, 3-Phase

Structure(s): #11911

- a. See electronically attached PLS-POLE back up file "STR11911.DC8F-5.BAK."

4) Pole Drawing:

Structure Type DC5F\_DC8F-5 – Triple Dead-end, Full Tension to Full Tension, 3-Phase

Structure(s): #11901

- a. See electronically attached PLS-POLE back up file "STR11901.DC5F\_DC8F-5.BAK."