# PROJECT SPECIFIC TECHNICAL SPECIFICATIONS
# FOR THE PURCHASE OF
# STEEL TRANSMISSION POLES FOR THE MAYO SUB 138kV TRANSMISSION INTERCONNECTS

JEA PROJECT NO: 8007655
TR NO: TR 1368 SP
BID DUE DATE: November 11, 2021
REQUESTED BY: Jonathan Maywood
UPDATED: October 10, 2022

# Table of Contents

## 1. SCOPE

1.1 This specification outlines the required information needed for the purchase, fabrication, and delivery of steel transmission poles and caissons for the the “MAYO SUB 138kV TRANSMISSION INTERCONNECTS”. This specification complements the “General Technical Specifications for the Purchase of Steel Transmission Poles”, Rev 1.4.2.

1.2 This specification includes the following attachments:

a) Pole Drawings, containing the configuration and hole drilling details of the pole(s)

b) Pole Attachment Details

c) PLS-POLE backup file(s) for the pole(s), containing loading data and geometry

1.3 The Project Engineer (JEA) for this purchase is:

Jonathan Maywood

21 West Church Street, T-09

Jacksonville, FL, 32202

Office: (904) 665-7016

Cell: (860) 995-0075

Email: maywjw2@jea.com

## 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 Steel Transmission Poles”, Rev 1.4.2.

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, brackets, vangs, 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, brackets, and vangs 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 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 all 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. Additional load cases are shown in the files as needed for some dead-end poles. These loads are described in more detail in section 2.6 below.

2.3.1 There is one (1) PLS-POLE models with one (1) .lca files provided as described below. There is one(1) pole being purchased.

2.3.2 The 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 file also contains all the geometrical data necessary to analyze the pole 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 Vecor Loads file (.lca). It is the manufacturer's responsibility to apply these wind pressures onto the poles and components that it will be providing.

2.4 Pre-cambering: Pole pre-cambering is not allowed on this project.

2.5 Joints: Steel pole sections shall be designed by the slip-joint method and/or bolted flange method. It is up to the manufacturer to decide the most appropriate joining method based on the loads provided.

2.6 Deflection: All Poles shall be designed to meet the deflection limits as identified in the load (.lca) files found within the PLS-POLE models. In general, poles shall meet the deflection limits for the "NESC LIGHT 250 B", "NESC EXTREME 250 C", "NESC BLOW OUT 6 PSF", and "60 DEG F" loading conditions. When applicable (as identified in the .lca files), poles shall also meet the deflection limits of the loading conditions as described in the sections below. 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. The deflection limits are as described below:

2.6.1 The "60 DEG F" loading condition: The "60 DEG F" loading condition is at final wire tension, at 60 degrees Fahrenheit, with no wind, and no Over Load Factors (OLF). The pole shaft shall have a calculated deflection at the pole tip that does not exceed one (1) % of the pole height above top of flange under this loading condition.

2.6.2 The "NESC BLOW OUT 6 PSF" loading condition: The "NESC BLOW OUT 6 PSF" loading condition is at final wire tension, at 60 degrees Fahrenheit, with a 6psf wind, and no OLF. The pole shaft shall have a calculated deflection at the pole tip that does not exceed two (2) % of the pole height above top of flange under this loading condition.

2.6.3 The "NESC LIGHT 250 B" loading condition: The "NESC LIGHT 250 B" loading condition is at final wire tension, at 30 degrees Fahrenheit, with a 9psf wind, and appropriate OLF. The pole shaft for all poles shall have a calculated deflection at the pole tip that does not exceed six (6)% of the pole height above top of flange under this loading condition.

2.6.4 The "NESC EXTREME 250 C" loading condition: The NESC EXTREME 250 C" loading condition is at final wire tension, at 60 degrees Fahrenheit, with a 120 mph

wind, with appropriate OLF. The pole shaft for all poles shall have a calculated deflection at the pole tip that does not exceed six (6)% of the pole height above top of flange under this loading condition.

## 3. DIMENSION RESTRICTIONS

3.1 Poles for this project shall be installed in a JEA transmission right-of-way with limited room/access. Pole dimensions shall adhere to very strict restrictions as described in the sections below. The pole manufacturer shall design the poles to meet the requirements as described in sections 3.2.1 below.

3.2 Structures # 52A shall be a galvanized steel pole.. The pole manufacturer is responsible for designing, manufacturing, and delivering the steel poles to the construction sites.

3.2.1 Pole shall be a direct embedded steel structure.

a) Tip/Top Diameter: The top/tip diameter shall be between thirty (30) and thirty-five (35) inches.

b) Bottom Diameter: The base diameter shall be between sixty (60) and sixty-five (65) inches.

3.3 Steel Pole Shaft Thickness: The minimum allowed steel thickness for use on any steel pole shafts shall be 0.1875 inches.

3.4 Other restrictions: To ensure proper alignment of the steel poles, the pole shafts must have some sort of marking that will allow the contractor to align the pole shafts with the poles in the ahead and/or back spans. The marking must be easily identifiable and visible to the contractor. If a weld mark is used, the weld mark must be clearly visible so that it is not confused with a seam weld.

3.5 Quality Control: Quality control documents will be required prior to shipment of all structures. In addition to any requirements mentioned in the general technical specification, JEA will be looking for weld inspection reports. The manufacturer must perform inspections for weld integrity and to verify the absence of any detrimental defects to the structures per ASCE/SEI 48-11. Section 10.3.5 of this code states that “For galvanized members with large T-Joint Connections, such as base plates, etc., ultrasonic nondestructive weld testing shall be performed on 100% of all such joints, not only before, but after galvanizing to ensure that no cracks have developed.” The inspections usually involve Magnetic particle inspection and ultrasonic flaw inspection. JEA is requiring that at minimum, a 45 degree angle transducer be used when inspecting for toe cracks before and after galvanization. Quality Control Reports must be submitted to the JEA project manager showing that all joints per section 10.3.5 of ASCE/SEQ 48-11 were inspected with the use of a 45 degree transducer before and after galvanization.

## 4. POLE ATTACHMENT HARDWARE

4.1 The pole manufacturer shall provide all brackets, vangs, grounding attachments, and holes on each pole as shown in the “POLE DRAWINGS” and “POLE ATTACHMENT DETAILS” of these specifications.

4.2 Bolts, nuts, washers and other hardware required for attaching insulators, cross-arms, davit arms, transformers, and miscellaneous cables to pole brackets / vangs / holes, will be supplied by JEA and are not to be provided by the manufacturer.

4.3 Bolts, nuts, washers and other hardware required for assembling the pole sections together at the splice locations are to be provided by the pole manufacturer.

4.4 Bail steps will not be utilized for this project.

## 5. MINIMUM QUALIFICATIONS

See section 1.2.1 of the provided Solicitation: STEEL TRANSMISSION POLES FOR THE MAYO SUB 138kV TRANSMISSION INTERCONNECTs

## 6. DELIVERY LOCATION AND DATE

6.1 Delivery of all poles and hardware will be to storage areas near the job site within the JEA service area. The delivery location for all structures will be near the JEA San Pablo Substation (13865 Wm Davis Pkwy) and W.M. Davis Pkwy, Jacksonville, Florida. Final discretion will be left to the contractor, who may chose a central delivery location for all structures.

6.2 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.

The poles and all associated hardware/attachments for the structures shall be delivered on the following tentative dates:

- Between October 2nd and 6th, 2023

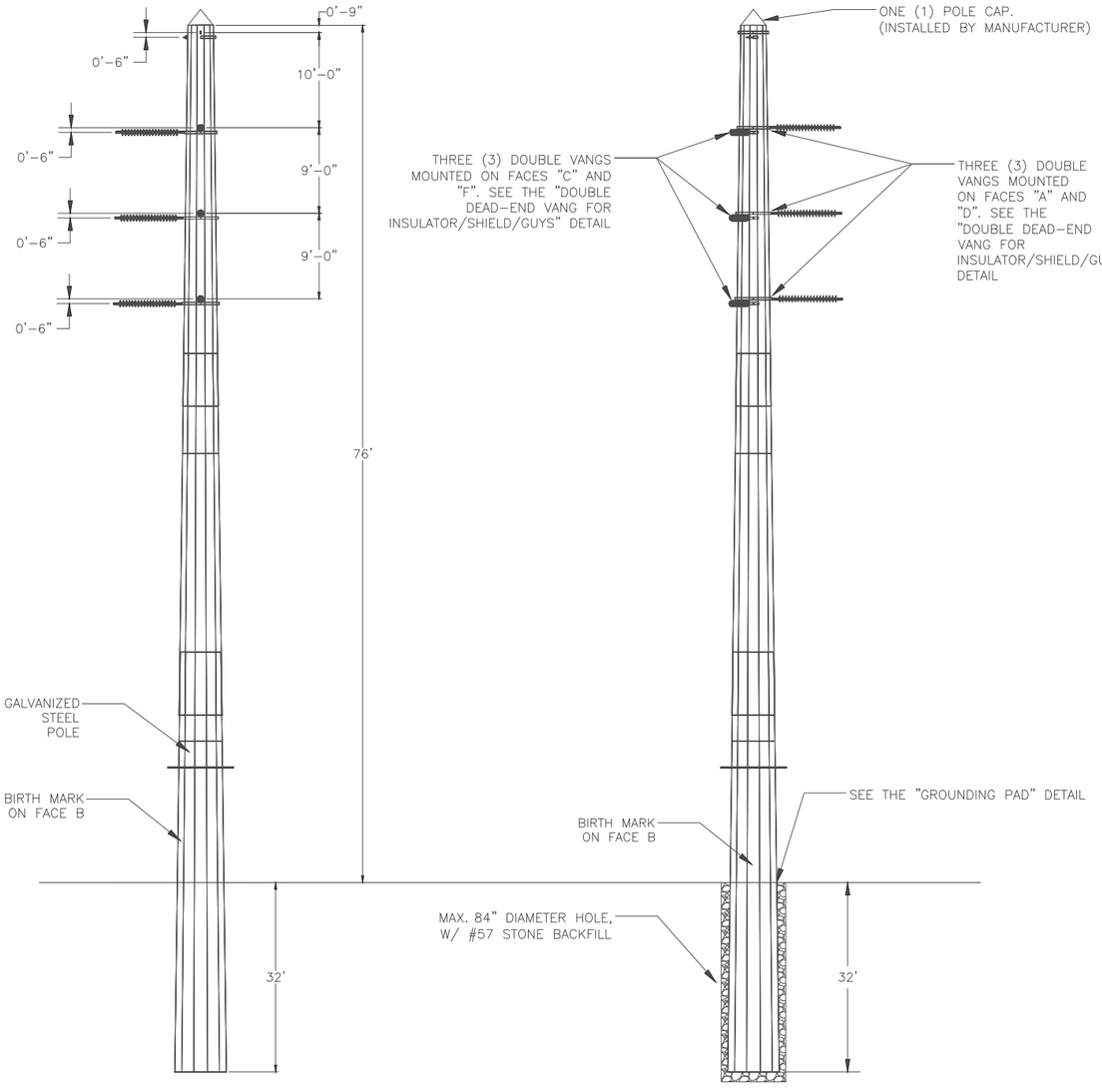
Due to unforeseeable delays, the contractor representing owner will update and coordinate new delivery dates with the pole supplier should they change.

## 7. POLE DRAWINGS

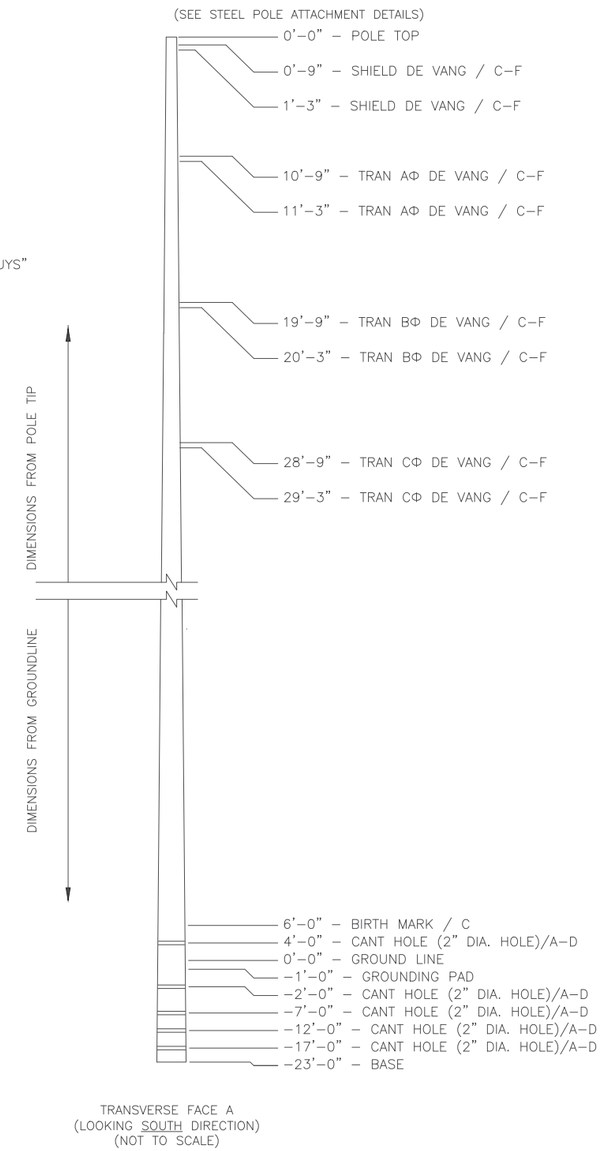
1) Pole Drawings:
   Structure Type B1246C– Double Deadend 90° Without Post, Full Tension To Slack Tension, 3-Phase
   Structure(s) #52A

# STRUCTURE TYPE
# B1246C*954S DOUBLE DEADEND 115° WITHOUT POST, FULL TENSION TO SLACK TENSION, 3-PHASE STRUCTURES #52A

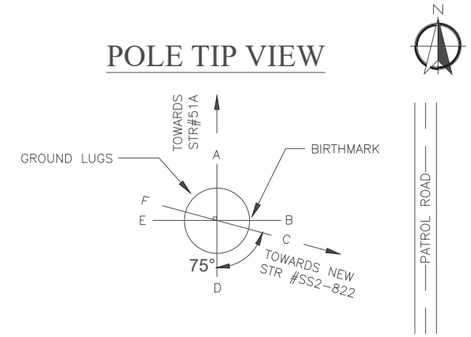
## ELEVATION VIEW




## DRILLING DETAIL




## POLE TIP VIEW




## GROUND NUT LOCATIONS

| FOR | FROM POLE TOP | FROM POLE GROUNDLINE |
|---|---|---|
| SHIELD | 1'–6" | – |
| TRANS AΦ | 11'–6" | – |
| TRANS BΦ | 20'–6" | – |
| TRANS CΦ | 29'–6" | – |

## NOTES:

1. ALL LOADS ARE ULTIMATE LOADS AND INCLUDE APPROPRIATE LOAD ALL LOADS ARE ULTIMATE LOADS AND INCLUDE APPROPRIATE LOAD FACTORS.
2. ALL REFERENCED DETAILS ARE PROVIDED IN THE "PROJECT ALL REFERENCED DETAILS ARE PROVIDED IN THE "PROJECT SPECIFIC TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF STEEL TRANSMISSION POLES AND CAISSONS FOR THE 138kV MAYO INTERCONNECT". POLES SHALL BE DESIGNED TO MEET THE REQUIREMENTS OF THESE SPECIFICATIONS AND DETAILS.
3. POLES ARE TOP BE DESIGNED TO MEET ALL OF THE POLES ARE TOP BE DESIGNED TO MEET ALL OF THE REQUIREMENTS FOUND IN THE "GENERAL TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF STEEL TRANSMISSION POLES, REVISION 1.4.2, UPDATED ON 2/10/2020.

| NO. | REVISION | DATE | BY | CH'D | APP'D |
|---|---|---|---|---|---|
| | | | | | |

| REVISION | DATE | BY | CH'D | APP'D |
|---|---|---|---|---|
| | | | | |

| ENGINEERING RECORD | BY | DATE |
|---|---|---|
| STATUS | | |
| ASSIGNED | PLAN | 10/01/21 |
| DESIGNED | JWM | 10/07/22 |
| DRAWN | JWM | 10/07/22 |
| CHECKED | SMC | 10/07/22 |
| APP'D | SMC | 10/07/22 |

JEA
BUILDING COMMUNITY

PROPOSED STR #52A POLE CONFIGURATION
FOR THE
MAYO SUBSTATION INTERCONNECT

SCALE: N/A

PROJECT DESIGN SEGMENT 20410

PROJECT NO. 8007655

DRAWING NO. TR 1368 SP

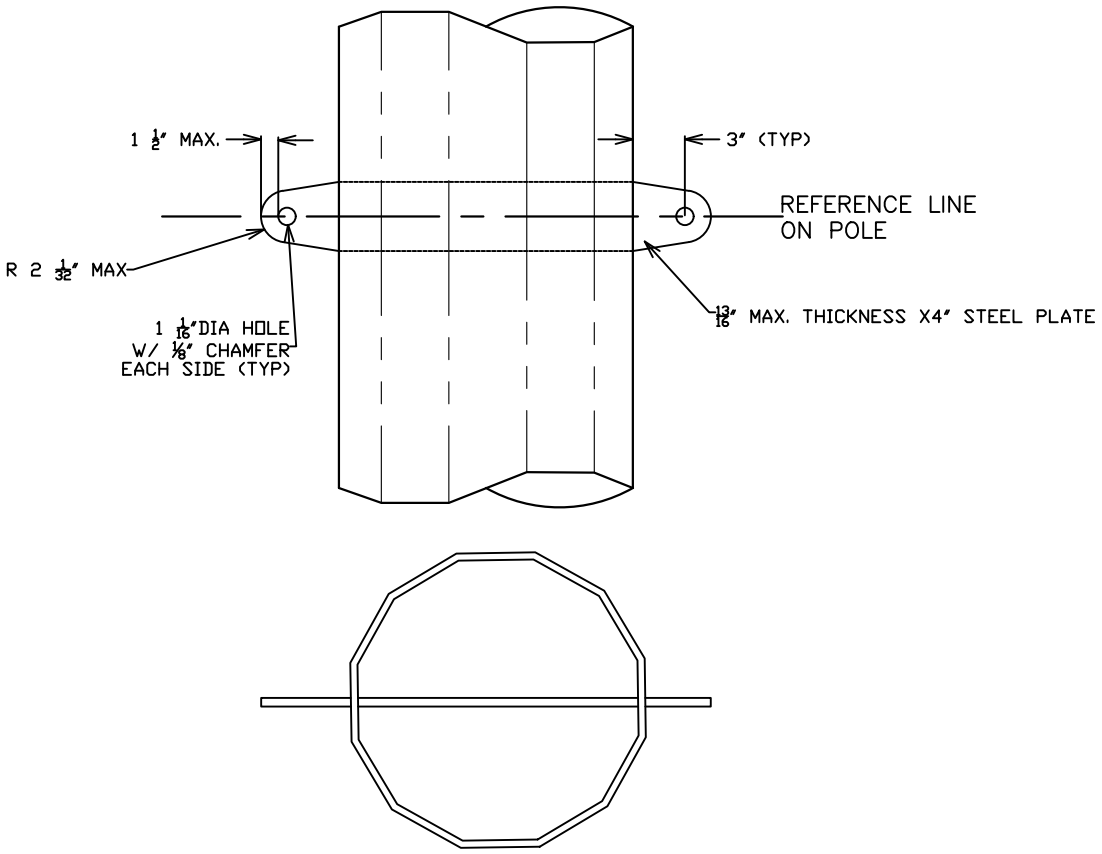
SHEET NO. 1 OF 1

## 8. POLE ATTACHMENT DETAILS

1) Double Dead End Vang for Insulators/Shield/Guys

2) Grounding Nut/Pad Attachment Details

# DOUBLE DEADEND VANG FOR INSULATORS/SHIELD/GUYS




| NO. | REVISIONS TO DRAWING | BY | DATE | APPROVED |
|---|---|---|---|---|
| | | | | |
| | | | | |
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| | | | | |

TRANSMISSION STANDARDS

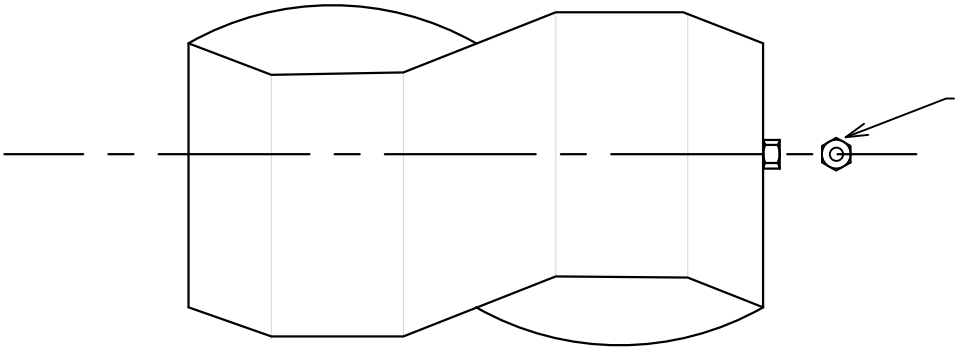
SCALE: NOT TO SCALE

DEADEND VANG

STEEL POLE

JEA BUILDING COMMUNITY

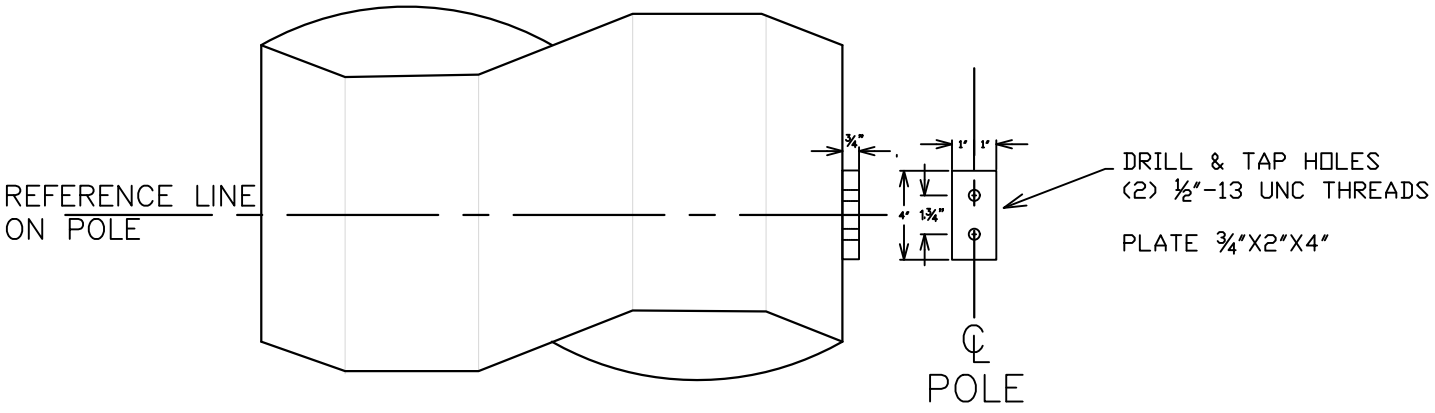
# GROUNDING NUT DETAIL



½"-13 UNC NUT WELDED TO POLE. THREADS SHALL BE PROTECTED DURING GALVANIZING PROCESS.

QUANTITY AND LOCATIONS AS SHOWN ON POLE DETAIL DRAWING

# GROUNDING PAD DETAIL




| NO. | REVISIONS TO DRAWING | BY | DATE | APPROVED |
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TRANSMISSION STANDARDS

GROUNDING

STEEL POLE

SCALE: NOT TO SCALE

JEA BUILDING COMMUNITY

## 9. PLS-POLE BACKUP FILES

1) Pole Drawings:
   Structure Type B1246C– Double Deadend 90° Without Post, Full Tension To Slack Tension, 3-Phase
   Structure(s) #52A
   a. See electronically attached PLS-POLE back up file “STR52A.B1246C.BAK”

# PROPOSAL FOR STEEL TRANSMISSION POLES

PROJECT: STEEL TRANSMISSION POLES FOR THE MAYO SUB
138kV TRANSMISSION INTERCONNECTS

Bidder Please Write Company Name Here: _____

| Bid Item No. | Standard Design No. | Structure No. | Total Length | Required Quantity | Unit Price | Extended Bid Price |
|---|---|---|---|---|---|---|
| 1 | B1246C | #52A | 110' | 1 | $_____ | $_____ |
| 2 | N/A | CorroCote | N/A | 1 Quart | $_____ | $_____ |
| 3 | Freight for all materials (FOB: Destination) | | | | | $_____ |
| | | | | | Total = | $_____ |

I (we) agree to provide approval drawings within _____ calendar days after receipt of the "notice to proceed" / purchase order.

And I (we) agree to complete deliveries of all items within _____ calendar days after the approval of the design calculations and approval drawings.

SIGNED FOR BIDDER: _____

TITLE: _____