General Info

Actions

Digital ID required

to disable Q & A notifications for this solicitation.

Deadline

07/21/2026 11:00 AM CDT

Advertised

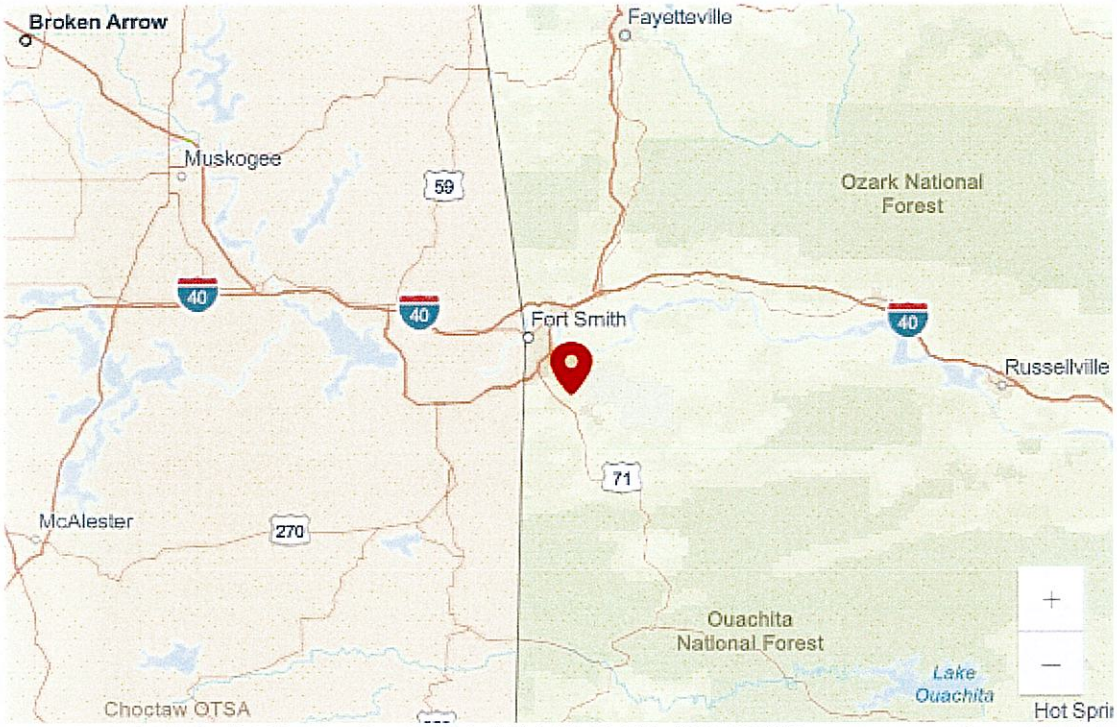
06/29/2026 10:38 AM CDT

Business Name

Arkansas Department of Transportation - Equipment and Procurement

Location(s)

808 Frontier Rd, Barling, Arkansas, 72923



Number

M-27-002H

Description

Southwest Power Administration Utility Relocation

Job 040904 Phase Two Material Procument

FOB: Barling, AR

Allows zero unit prices and labor

Yes

Allows negative unit prices and labor

Yes

Allows multiple bids per solicitation

No

Solicitation Summary

AI generated | Quality may vary

This summary is hidden from vendors

This is a transmission line steel pole structure specification involving design, fabrication, and delivery of eight steel poles (six concrete caisson supported base-plated poles and two H-frame poles) for I-49 highway crossing in Arkansas. May require structural engineering seal, steel fabrication capabilities, galvanizing, welding certification, and NESC Grade B construction compliance.

Work Types

Procurement Utility

Q & A

Deadline

07/16/2026 03:00 PM CDT

Remarks

For questions about the bidding process please contact ARDOT Equipment and Procurement at 501-569-2677

ATTACHMENT LIST

CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM.pdf (157 KB)

Download, complete, and upload in the Required Document List at the bottom of t...

Certificate For Boycott and Illegal Immigrant Restrictions - 2025.docx (84.9 KB)

Download, complete, and upload in the Required Document List at the bottom of t...

Standard Bid Conditions Revised 2025.pdf (177 KB)

Buy America-Construction Materials 01-22-26.pdf (148 KB)

Transmission Line Steel Pole and Structure Specification - SWPA I49 IFP - updated 5-19-2026 KM.pdf (300 KB)

040904 - SWPA - Plans 11-7-2025 reduced.pdf (12.9 MB)

M-27-002H Bill of Materials.pdf (1.36 MB)

Please use as a guide when pricing items in the Bid Sheet section.

BID INVITATION

Electronic Sealed bids for furnishing the commodities and/or services described below subject to the Standard Bid Conditions of this Bid Invitation will be publicly opened at the above-noted bid opening date and time at the ARDOT Equipment and Procurement Divison located at 11302 West Baseline Road, Little Rock, AR 72209. Bids must be submitted on this form, with attachments when appropriate, or bids will be rejected.

In compliance with this Bid Invitation and subject to all the Conditions thereof, the undersigned offers and agrees to furnish any and all items upon which prices are quoted, at the price set opposite each item.

Company Name:* **Name:***

Address:* **Title:***

Federal Tax ID or Social Security No:* **Phone:*** **Fax:**

E-mail:*

Signature:*

Southwest Power Administration Utility Relocation Phase Two

The Arkansas Department of Transportation (hereafter referred to as ARDOT) is seeking bids for the procurement of material components as part of the Southwest Power Administration Utility Relocation
Job 040904 Phase Two.

All materials to meet the requirements of the Arkansas Department of Transportation Specifications attached to and made part of this bid.

ALL OR NONE BIDS ONLY WILL BE CONSIDERED.

FOB: ARDOT – District Four Headquarters 808 Frontier Road, Barling, AR 72923

All bidders should complete and return the Eligible Bidder Certification (Attachment A), Disclosure Form (see Page 2 of Standard Bid Conditions – Item 18), Restriction of Boycott of Israel Certification and Illegal Immigrant Certification (see Page 2 of Standard Bid Conditions – Item 17) issued with this bid. These forms are kept on file and remain current for one year from date of submission. Forms do not need to be submitted again, during that time, unless there is a status change.

Bid Bond in the total amount of 5% of total bid amount required of all bidders at time of bid opening or bid will be rejected. **Personal and company checks are not acceptable as Bid Bonds.** See Condition 4 on page 1 of Standard Bid Conditions.
Performance Bond in the amount of 100% of total bid price will be required of successful bidder prior to providing goods/services. **Personal and company checks are not acceptable as Performance Bonds.** See Condition 4 on page 1 of Standard Bid Conditions.
The name of the principal on the Bid Bond and the name of the bidder on the Bid Invitation must match.

****BID INVITATION NUMBER, COMPANY'S NAME & DATE BID OPENS SHOULD BE CLEARLY DISPLAYED ON THE SEALED ENVELOPE OR PACKAGE. ****

Surety Bonds may be submitted electronically through the online bidding process. If submitting a Surety Bond that is not compatible with Surety 2000 and Tinubu, your company still may do so. Other Surety Companies will still be accepted, but must be recieved in Equipment and Procurement before the time of bid opening at 11302 West Baseline Road, Little Rock, AR 72209 prior to the designated time of the bid opening. This includes Cashier's checks, Certified checks, or Money orders submitted as bid bonds must be physically received by Equipment & Procurement.

The successful bidder will be required to complete delivery within **270** days after award.

Bids and Specifications are available on-line by going to the ARDOT Web Site – www.ardot.gov and clicking on "Commodities and Services Bids/Contracts Information". Tabulations will also be available at this site after award of bid/contract. If you have any questions, call this office at 501-569-2667.

BID SHEET

Description	Manufacturer	Part Number	Quantity	Unit	Price	Extended Pric
Bill of Materials 1	Hubbell	S025056H2010	6	EA.		
Bill of Materials 2	Hubbell	S050073S2010	12	EA.		
Bill of Materials 3	Maclean Power Systems	H29010074VXSS028	6	EA.		
Bill of Materials 11	Hubbell	A041025	6	EA.		
Bill of Materials 12	Hubbell	A041558	6	EA.		
Bill of Materials 13	Hubbell	HAS182S	12	EA.		
Bill of Materials 41	AFL	ODE650/659G09	4	EA.		
Bill of Materials 42	AFL	SUME647/679	2	EA.		
Bill of Materials 61	Hubbell	SWDE55S	4	EA.		
Bill of Materials 62	Hubbell	MS60S	2	EA.		
Bill of Materials 211			8,550	LF		
Bill of Materials 220	AFL	DNO-12519	3,000	LF		
Bill of Materials 260			2,750	LF		
Bill of Materials 314	Maclean Power Systems	SYCR-37-S	12	EA.		
Bill of Materials 316	Maclean Power Systems	ASH-67-BC	18	EA.		
Bill of Materials 341	AFL	SE-SC	2	EA.		
Bill of Materials 342	AFL	YCBS	10	EA.		
Bill of Materials 343	Maclean Power Systems	YCBHL-65A	8	EA.		
Bill of Materials 345	AFL	SE-BDE	4	EA.		

BID SHEET

Order	Description	Manufacturer	Part Number	Quantity	Unit	Alternate	(
31	Bill of Materials 805			20	EA		
32	Bill of Materials 831	BURNDY	YA4C2LN	20	EA.		
33	Bill of Materials 841	AFL	BWAL50H/50H24	4	EA.		
34	Bill of Materials 842	AFL	BWAL50H/50H40	8	EA.		

ATTACHMENT A - ELIGIBLE BIDDER CERTIFICATION

The Bidder represents and warrants for itself, its employees and its subcontractors and certifies they:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
2. Have not within a three-year period preceding thus Bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph two (2) of this Certification;
4. Have not within a one-year period preceding this application/Bid had one or more public transactions (Federal, State, or local) terminated for cause or default; and

The Bidder represents, warrants and acknowledges the understanding that resfrictions placed on the employment of labor or on the scale of pay for the work on a contract will be the requirements of the Fair Labor Standards Act (Federal Wage-Hour Law) of 1938, 28 USC §201 et seq., and other applicable labor laws.

The person executing this Certification further represents, warrants and affirms the truthfulness and accuracy of the contents of the statements submitted on or with this Certification and understands that the provisions of 31 USC §3801 et seq. are applicable thereto.

Description	Manufacturer	Part Number	Quantity	Unit	Price	Extended Pric
Bill of Materials 347	AFL	OVD-671.675	5	EA.		
Bill of Materials 348	AFL	1702-3	3	EA.		
Bill of Materials 350	AFL	FDCA-B6B6	32	EA.		
Bill of Materials 351	AFL	SB01-72	2	EA.		
Bill of Materials 352	AFL	SB01FK	4	EA.		
Bill of Materials 353	AFL	SPS60	4	EA.		
Bill of Materials 354	AFL	APCKE647.662	4	EA.		
Bill of Materials 355	AFL	CB-44-3AL	2	EA.		
Bill of Materials 802			20	EA.		
Bill of Materials 803	BURNDY	YGHP29C2	10	EA.		
Bill of Materials 804	ERICO	CC58	10	EA.		

ATTACHMENT A - ELIGIBLE BIDDER CERTIFICATION

The Bidder represents and warrants for itself, its employees and its subcontractors and certifies they:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
2. Have not within a three-year period preceding thus Bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph two (2) of this Certification;
4. Have not within a one-year period preceding this application/Bid had one or more public transactions (Federal, State, or local) terminated for cause or default; and

The Bidder represents, warrants and acknowledges the understanding that resfrictions placed on the employment of labor or on the scale of pay for the work on a contract will be the requirements of the Fair Labor Standards Act (Federal Wage-Hour Law) of 1938, 29 USC §201 et seq., and other applicable labor laws.

The person executing this Certification further represents, warrants and affirms the truthfulness and accuracy of the contents of the statements submitted on or with this Certification and understands that the provisions of 31 USC §3801 et seq. are applicable thereto.

BIDDER NAME (Company Name):*

BY (Signature):*

TITLE:*

BID BOND

In the amount of 5%

Guarantee Method*

Choices...

Paper Bid Bond, Cashier's Check, Certified Check, Money Order, or an Annual Bond on File

Confirmation*

Choices...

Electronic Bid Bond

Bond ID*

Surety Agency*

Choices...

Surety State*

Principal*

ENVELOPE REQUIRED DOCUMENT LIST

Name	Omission Terms

The information supplied in this component will be available to the owner-agency immediately after the bid deadline, but before the bid is opened.

Paper Bid Bond, Cashier's Check, Certified Check, Money Order, or an Annual Bond on File Original, wet-ink documents are required at time of bid opening or bid will be rejected.	I have opted to electronically verify my bid bond.

1 Required Document

REQUIRED DOCUMENT LIST

Name	Omission Terms
Contract and Grant Disclosure and Certification Form Failure to complete all of the following information may result in a delay in obtaining a contract...	
Certification for Boycott and Illegal Immigrant Restrictions Failure to complete all of the following information may result in a delay in obtaining a contract...	

2 Required Documents

ARKANSAS STATE HIGHWAY COMMISSION

ARDOT - STANDARD BID CONDITIONS

1. **GENERAL:** Any special terms and conditions included in the invitation for bid override these standard terms and conditions. The standard terms and conditions and any special terms and conditions become part of any contract entered into if any or all parts of the bid are accepted by the Arkansas Department of Transportation (ARDOT).

2. **ACCEPTANCE AND REJECTION:** ARDOT reserves the right to reject any or all bids, to accept bids in whole or in part (unless otherwise indicated by bidder), to waive any informalities in bids received, to accept bids on materials or equipment with variations from specifications where efficiency of operation will not be impaired, and to award bids to best serve the interest of the State.

3. **PRICES:** Unless otherwise stated in the Bid Invitation, the following will apply: (1) unit prices shall be bid, (2) prices should be stated in units of quantity specified (feet, each, lbs., etc.), (3) prices must be F.O.B. destination specified in bid, (4) prices must be firm and not subject to escalation, (5) bid must be firm for acceptance for 30 days from bid opening date. In case of errors in extension, unit prices shall govern. Discounts from bid price will not be considered in making awards.

4. **BID BONDS AND PERFORMANCE BONDS**: If required, a **Bid Bond** in the form of a cashier's check, certified check, or surety bond issued by a surety company, in an amount stated in the Bid Invitation, must accompany bid. **Personal and company checks are not acceptable as Bid Bonds**. Surety Bonds may be submitted electronically through the online bidding process. Cashier's checks, Certified checks, or Money orders submitted as bid bonds must be physically received by Equipment & Procurement located at 11302 West Baseline Road, Little Rock, AR 72209 prior to the designated time of the bid opening and should be made payable to the Arkansas Department of Transportation (ARDOT). The name of the principal on the Bid Bond and the name of the bidder on the Bid Invitation must match. Failure to submit a Bid Bond as required will cause a bid to be rejected. The Bid Bond will be forfeited as liquidated damages if the successful bidder fails to provide a required Performance Bond within the period stipulated by ARDOT or fails to honor their bid. When a bidder claims and can show clear and convincing evidence that a material mistake was made in the bid and was not the bid intended, the bidder may be permitted to withdraw their bid prior to award without forfeiture of bid bond. Cashier's checks and certified checks submitted as Bid Bonds will be returned to unsuccessful bidders; surety bonds will be retained. The successful bidder will be required to furnish a **Performance Bond** in an amount stated in the Bid Invitation and in the form of a cashier's check, certified check, or surety bond issued by a surety company, unless otherwise stated in the Bid Invitation, as a guarantee of delivery of goods/services in accordance with the specifications and within the time established in the bid. **Personal and company checks are not acceptable as Performance Bonds**. In some cases, a cashier's check or certified check submitted as a Bid Bond and made payable to the Arkansas Department of Transportation (ARDOT) will be held as the Performance Bond of the successful bidder. Cashier's checks or certified checks submitted as Performance Bonds will be refunded shortly after payment has been made to the successful bidder for completion of all terms of the bid; surety bonds will be retained. Surety bonds must be issued by a surety company that is authorized to do business in the State of Arkansas and that is listed on the current United States Department of the Treasury Listing of Approved Sureties. Surety bonds must be executed by a resident or non-resident agent who is licensed by the Arkansas State Insurance Commissioner to represent the surety company executing the bond, and the resident or non-resident agent shall file with the bond the power of attorney of the agent to act on behalf of the bonding company. Certain bids involving labor will require Performance Bonds in the form of surety bonds only (no checks of any kind allowed). These bonds shall not only serve to guarantee the completion of the work, but also to guarantee the excellence of both workmanship and material until the work is finally accepted and the provisions of the Plans, Specifications, and Special Provisions fulfilled. In such cases, the company issuing the surety bond must comply with all stipulations herein and must be named in the U. S. Treasury listing of companies holding Certificates of Authority as acceptable sureties on Federal Bonds and as acceptable reinsuring companies. Any excess between the face amount of the bond and the underwriting limitation of the bonding company shall be protected by reinsurance provided by an acceptable reinsuring company. Annual Bid and Performance Bonds on file with E & P Division must have sufficient unencumbered funds to meet current bonding requirements, or the bid will be rejected, unless the balance is submitted as set forth above, prior to bid opening.

5. **TAXES:** The ARDOT is not exempt from Arkansas State Sales and Use Taxes, or local option city/county sales taxes, when applicable, and bidders are responsible to the State Revenue Department for such taxes. These taxes should not be included in bid prices, but where required by law, will be paid by the ARDOT as an addition thereto, and should be added to the billing to the ARDOT. The ARDOT is exempt from Federal Excise Taxes on all commodities except motor fuels; and excise taxes should not be included in bid prices except for motor fuels. Where applicable, tax exemption certificates will be furnished by the ARDOT.

6. **"ALL OR NONE" BIDS:** Bidders who wish to bid "All or None" on two or more items shall so stipulate on the face of bid sheet; otherwise, bid may be awarded on an individual item basis.

7. **SPECIFICATIONS:** Complete specifications should be attached for any substitution or alternate offered, or where amplification is necessary. Bidder's name must be placed on all attachments to the bid.

8. **EXCEPTIONS TO SPECIFICATIONS:** Any exceptions to the bid specifications must be stated in the bid. Any exceptions to manufacturer's published literature must be stated in the bid, or it will be assumed that bidder is bidding exactly as stated in the literature.

9. **BRAND NAME REFERENCES:** All brand name references in bid specifications refer to that commodity or its equivalent, unless otherwise stated in Bid Invitation. Bidder should state brand or trade name of item being bid, if such name exists.

10. **FREIGHT:** All freight charges should be included in bid price. Any change in common carrier rates authorized by the Interstate Commerce Commission will be adjusted if such change occurs after the bid opening date. Receipted common carrier bills that reflect ICC authorized rate changes must be furnished.

11. **SAMPLES, LITERATURE, DEMONSTRATIONS:** Samples and technical literature must be provided free of any charge within 14 days of ARDOT request, and free demonstrations within 30 days, unless ARDOT extends time. Failure to provide as requested within this period may cause bid to be rejected. Samples, literature and demonstrations must be substantially the same as the item(s) being bid, unless otherwise agreed to by ARDOT. Samples that are not destroyed will be returned upon request at bidders expense. Samples from successful bidders may be retained for comparison with items actually furnished.

12. **GUARANTY:** Unless otherwise indicated in Bid Invitation, it is understood and agreed that any item offered or shipped on this bid shall be newly manufactured, latest model and design, and in first class condition; and that all containers shall be new, suitable for storage or shipment and in compliance with all applicable laws relating to construction, packaging, labeling and registration.

13. **BACKORDERS OR DELAY IN DELIVERY:** Backorders or failure to deliver within the time required may constitute default. Vendor must give written notice to the ARDOT, as soon as possible, of the reason for any delay and the expected delivery date. The ARDOT has the right to extend delivery if reasons appear valid. If reason or delivery date is not acceptable, vendor is in default.

14. **DEFAULT:** All commodities furnished will be subject to inspection and acceptance by ARDOT after delivery. Default in promised delivery or failure to meet specifications authorizes the ARDOT to cancel award or any portion of same, to reasonably purchase commodities or services elsewhere and to charge full increase, if any, in cost and handling to defaulting vendor. Applicable bonds may be forfeited.

15. **ETHICS:** *"It shall be a breach of ethical standards for a person to be retained, or to retain a person, to solicit or secure a State contract upon an agreement of understanding for a commission, percentage, brokerage, or contingent fee, except for retention of bona fide employees or bona fide established commercial selling agencies maintained by the contractor for the purpose of securing business."* (Arkansas Code, Annotated, Section 19-11-708).

16. **NOTICE OF NONDISCRIMINATION:** The Arkansas Department of Transportation (ARDOT) complies with all civil rights provisions of federal statutes and related authorities that prohibit discrimination in programs and activities receiving federal financial assistance. Therefore, ARDOT does not discriminate on the basis of race, sex, color, age, national origin, religion (not applicable as a protected group under the Federal Motor Carrier Safety Administration Title VI Program) or disability in the admission, access to and treatment in the ARDOT's programs and activities, as well as the ARDOT's hiring or employment practices. Complaints of alleged discrimination and inquiries regarding the ARDOT's nondiscrimination policies may be directed to the Civil Rights Division P. O. Box 2261, Little Rock, AR 72203, (501)569-2298, (Voice/TTY 711), or the following email address: Civil.Rights@ardot.gov Free language assistance for may be available upon request. This notice is available from the ADA/504/Title VI Coordinator in large print, on audiotape and in Braille.

17. **PROHIBITION OF EMPLOYMENT OF ILLEGAL IMMIGRANTS:** Pursuant to Arkansas Code Annotated 19-11-105, all bidders must certify prior to award of a contract that they **do not** employ or contract with any illegal immigrant(s) in its contract with the state. Bidders shall certify online at https://www.ark.org/dfa/immigrant/index.php.

18. **DISCLOSURE:** Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that order, **shall** be a material breach of the terms of this contract. Any contractor, whether an individual or entity, who fails to make the required disclosure or who violates any rule, regulation, or policy **shall** be subject to all legal remedies available to the agency.

19. **COOPERATIVE PURCHASING:** Other tax-supported entities* in Arkansas (cities, counties, state agencies, school districts, etc.) may purchase commodities or services covered in this Contract on an individual basis under the same specifications and conditions, and at the pricing set forth by each vendor, all at the discretion of each vendor in each case. Prices could be reduced by a vendor for minor alterations in conditions (changing minimum order quantities, etc.) as agreed by both parties, but could not be raised above the contract bid price under any circumstances. Vendors would not be required to sell to any such entity under this Contract, and those entities would not be obligated to purchase from the Contract.

    Each entity wishing to purchase from the Contract would make contact directly with the appropriate vendor(s). The ARDOT would remain "out of the loop" for such transactions: all contact, orders, invoices, payments, etc. regarding such transactions must take place exclusively between the tax-supported entity and the vendor. The ARDOT would be held harmless of any and all liability arising from such transactions.

    *Tax-supported entities are defined as those receiving more than half of total funding from appropriated tax funds.

CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM

Failure to complete all of the following information may result in a delay in obtaining a contract, lease, purchase agreement, or grant award with any Arkansas State Agency.

SUBCONTRACTOR: ☐ Yes ☐ No

SUBCONTRACTOR NAME:

IS THIS FOR:

TAXPAYER ID NAME: ☐ Goods? ☐ Services? ☐ Both?

YOUR LAST NAME: FIRST NAME: M.I.:

ADDRESS:

CITY: STATE: ZIP CODE: COUNTY:

AS A CONDITION OF OBTAINING, EXTENDING, AMENDING, OR RENEWING A CONTRACT, LEASE, PURCHASE AGREEMENT, OR GRANT AWARD WITH ANY ARKANSAS STATE AGENCY, THE FOLLOWING INFORMATION MUST BE DISCLOSED:

FOR INDIVIDUALS*

Indicate below if: you, your spouse or the brother, sister, parent, or child of you or your spouse is a current or former: member of the General Assembly, Constitutional Officer, State Board or Commission Member, or State Employee:

Position Held	Mark (✓)		Name of Position of Job Held	For How Long?		What is the person(s) name and how are they related to you? (i.e., Jane Q. Public, spouse, John Q. Public, Jr., child, etc.)	
	Current	Former	(senator, representative, name of board/ commission, data entry, etc.)	From MM/YY	To MM/YY	Person's Name(s)	Relation
General Assembly							
Constitutional Officer							
State Board or Commission Member							
State Employee							

☐ **None of the above applies**

FOR AN ENTITY (BUSINESS)*

Indicate below If any of the following persons, current or former, hold any position of control or hold any ownership interest of 10% or greater in the entity: member of the General Assembly, Constitutional Officer, State Board or Commission Member, State Employee, or the spouse, brother, sister, parent, or child of a member of the General Assembly, Constitutional Officer, State Board or Commission Member, or State Employee. Position of control means the power to direct the purchasing policies or influence the management of the entity.

Position Held	Mark (✓)		Name of Position of Job Held	For How Long?		What is the person(s) name and what is his/her % of ownership interest and/or what is his/her position of control?		
	Current	Former	(senator, representative, name of board/ commission, data entry, etc.)	From MM/YY	To MM/YY	Person's Name(s)	Ownership Interest (%)	Position of Control
General Assembly								
Constitutional Officer								
State Board or Commission Member								
State Employee								

☐ **None of the above applies**

Contract and Grant Disclosure and Certification Form

Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that Order, shall be a material breach of the terms of this contract. Any contractor, whether an individual or entity, who fails to make the required disclosure or who violates any rule, regulation, or policy shall be subject to all legal remedies available to the agency.

As an additional condition of obtaining, extending, amending, or renewing a contract with a state agency I agree as follows:

1. Prior to entering into any agreement with any subcontractor, prior or subsequent to the contract date, I will require the subcontractor to complete a **CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM**. Subcontractor shall mean any person or entity with whom I enter an agreement whereby I assign or otherwise delegate to the person or entity, for consideration, all, or any part, of the performance required of me under the terms of my contract with the state agency.

2. I will include the following language as a part of any agreement with a subcontractor:

   Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that Order, shall be a material breach of the terms of this subcontract. The party who fails to make the required disclosure or who violates any rule, regulation, or policy shall be subject to all legal remedies available to the contractor.

3. No later than ten (10) days after entering into any agreement with a subcontractor, whether prior or subsequent to the contract date, I will mail a copy of the CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM completed by the subcontractor and a statement containing the dollar amount of the subcontract to the state agency.

Signature _____ Title _____ Date _____

Vendor Contact Person _____ Title _____ Phone No. _____

Agency Use Only

Agency Number _____ Agency Name _____ Agency Contact Person _____ Contact Phone No. _____ Contract or Grant No. _____

ARDOT.gov | Jared D. Wiley, P.E., Director

10324 Interstate 30 | P.O. Box 2261, Little Rock, AR 72203-2261
Phone: (501) 569-2000 | Voice/TTY 711 | Fax: (501) 569-2400

CERTIFICATION FOR BOYCOTT AND ILLEGAL IMMIGRANT RESTRICTIONS

Pursuant to Arkansas law, a vendor must submit the below certifications prior to entering into a contract with a public entity for an amount as designated by the applicable laws.

1. **Israel Boycott Restriction:** For contracts valued at $1,000 or greater.
   A public entity shall not enter into a contract with a company unless the contract includes a written certification that the person or company is not currently engaged in a boycott of Israel. If at any time after signing this certification the contractor decides to engage in a boycott of Israel, the contractor must notify the contracting public entity in writing. See Arkansas Code Annotated § 25-1-503.

2. **Illegal Immigrant Restriction:** For contracts exceeding $25,000.
   No state agency may enter into or renew a public contract for services with a contractor who employs or contracts with an illegal immigrant. A contractor shall certify that it does not employ, or contract with, illegal immigrants. See Arkansas Code Annotated § 19-11-105.

3. **Energy, Fossil Fuel, Firearms, and Ammunition Industries Boycott Restriction:** For contracts valued at, or exceeding, $75,000.
   A public entity shall not enter into a contract with a company unless the contract includes a written certification that the person or company is not currently engaged in, and agrees for the duration of the contract not to engage in, a boycott of an Energy, Fossil Fuel, Firearms, or Ammunition Industry. If a company does boycott any of these industries, see Arkansas Code Annotated § 25-1-1102.

4. **Scrutinized Company Restriction:** Required with bid or proposal submission.
   A state agency shall not contract with a Scrutinized Company or a company that employs a Scrutinized Company as a subcontractor. A Scrutinized Company is a company owned in whole or with a majority ownership by the government of the People's Republic of China. A state agency shall require a company that submits a bid or proposal for a contract to certify that it is not a Scrutinized Company and does not employ a Scrutinized Company as a subcontractor. *See* Arkansas Code Annotated § 25-1-1203.

By signing this form, the contractor agrees and certifies that it does not, and shall not for the remaining aggregate term of the contract, participate in the activities checked below:

☐ Do not boycott Israel.
☐ Do not employ illegal immigrants.
☐ Do not boycott Energy, Fossil Fuel, Firearms, or Ammunition Industries.
☐ Do not employ a Scrutinized Company as a subcontractor.

Contract Number & Description	
Name of Public Entity	Arkansas Department of Transportation
Name of Vendor/Contractor	
AASIS Vendor Number	N/A

Contractor Signature _____ Date _____

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. XXXXXX

BUY AMERICA - CONSTRUCTION MATERIALS

Description: **Section 106, Control of Material**, of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added as **Subsection 106.01(c) Construction Materials**

Buy America – Construction Materials. (1) General. The Bipartisan Infrastructure Law (BIL) was enacted on November 15, 2021 (BIL Build America, Buy America Act Publication L. No. 117-58). This provision expands the Buy America requirements beyond what was only required for steel and iron products. The steel and iron provisions have not changed with the new law. Buy America requirements are in effect only on Federal-Aid contracts and all construction materials shall be produced/manufactured in the United States. Items specifically excluded from this requirement are cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives (including asphalt binders). All other materials permanently incorporated into the project will be subject to Buy America requirements.

(2) Definitions. A construction material includes an article, material, or supply that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cable);
- glass (including optic glass);
- lumber; or
- drywall.

All construction materials shall be produced in the United States. This means all manufacturing processes to produce the construction materials shall occur in the United States. All manufacturing processes for construction materials shall mean the final manufacturing process and the immediately preceding manufacturing stage for the construction material.

All manufactured products permanently incorporated into the project must be manufactured in the United States or assembled from components that are mined, produced, or manufactured in the United States. The combined value of the domestic components of a manufactured product must be greater than 55 percent of the total cost of all components of the manufactured product.

(3) Compliance. All prospective bidders should obtain quotes from suppliers that can furnish the required domestic manufactured materials and the cost of such should be included in the contract unit prices bid for the various individual pay items. Waivers will only be considered when there is no domestic manufacturer of the specific item meeting the requirements in the appropriate section of the Standard Specifications. Questions relating to domestic product availability should be made pre-bid and responses, including possible waivers, will be posted on the Department's website.

The Contractor shall ensure that all manufacturing processes for each covered product comply with this Buy America Provision. Non-conforming products shall be replaced at no expense to the Department. It is the contractor's responsibility to assure all submittals required for Buy America are submitted to the Engineer prior to the products and or materials being incorporated into the project.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. XXXXXX

BUY AMERICA - CONSTRUCTION MATERIALS

Buy America requirements do not apply to temporary elements not permanently incorporated into a project. This includes falsework, temporary sheet piling, detour bridges, temporary elements left in place at the contractor's convenience, unless the contract plans and specifications require steel or iron components or imply that the item be left in place, or items that are simply moved from one place to another within the same project. Buy America only applies to construction materials that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, removed at or before completion of the project.

(4). Certification. The contractor shall provide a certification from the supplier for each construction material, stating that it meets the provisions of this specification or the Build America/Buy America act, prior to incorporating any construction material into the project. The supplier certifying may be the original manufacturer, fabricator, or vendor provided the supplier has sufficient control and knowledge of the manufacturing process to accept responsibility and certify full and complete conformance with the certification. In lieu of the manufacturer's certification, the Contractor or supplier may provide the Domestic Materials Self-Certification Form for the specific product from AASHTO's DataMine Industry Document Repository (www.datamine.transportation.org)

(5). Examples of Pay Items Affected. The following are items from the Standard Specifications and common special provisions that must meet the requirements of this specification. This list is provided for bidders' information and is not to be considered as all-inclusive as other items covered by the standard specifications, supplemental specifications, and special provisions may also fall under these requirements:

Non-Ferrous Metals	
Item	**Specification Section**
Aluminum Pipe Culverts	606
Aluminum Chain Link Fence	619
Aluminum Gates	619
Mailboxes	637
Electrical Conductors	700, 708
Controller Cabinet (cabinet assembly)	701, 702,703
Ground Rods	701, 712, 714, 715
System Local Controller/Actuated Controller components (surge protector, conflict monitor, switches, flashers, relays, wiring harness, clocks, etc.)	701. Job SP
Pre-Timed Controller (cabinet and internal equipment)	702
Flashing Beacon Controller (cabinet and all internal equipment)	703
Loop Wiring	704
Vehicle Detectors (including all electrical components and mounting racks)	704
Feeder Wire	704
Preformed Detector Loops	704
Loop Wiring in Duct	705

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. XXXXXX

BUY AMERICA - CONSTRUCTION MATERIALS

Traffic Signal Heads (all types)	706, Job SP
Pedestrian Signal Heads	707
Traffic Signal Cable	708
Sign Supports - all types (including clips and fasteners)	724, 730
Sign Panels (including clips and fasteners)	723, 725, 726, 727, 728
Video Detectors (detector, processor, and other equipment)	733
Video Cable	733
Metal Bridge Railing	806
Bridge Name Plates	812
Accessible Pedestrian Signals (APS)	Job SP
Electrical Conductors for Luminaires	Job SP
Electrical Conductors-in-Conduit	Job SP
LED Roadway Illumination Poles	Job SP
Luminaires	Job SP
Pedestal Type Service Point Assembly	Job SP
Retroreflective Backplates	Job SP
Wrong Way Detection System Controller Cabinet	Job SP

Plastic/Polymer Based Products	
Item	**Specification Section**
Joint Sealers (Types 3 and 4)	501,503, 504,507,509
Epoxy Coating for Dowel Bars and Reinforcing Steel	501, 502, 507, 804
Epoxy Resin Anchoring Systems (Dowel Bars, Hand Rails, Metal Bridge Railing, Anchor Bolts)	507, 633, 806, 807
Polyethylene Pipe Culverts	606
PVC Pipe Culverts	606
RC Pipe Culvert Gaskets	606
Drop Inlet Steps	609, 610, 640
ABS or Polyethylene Pipe for Underdrains	611
PVC Pipe for Underdrain Laterals	611
Filter Fabrics	611, 625, 629, 816
Geotextile Fabrics	625
Tactile Panels for Wheelchair Ramps	641, Job SP
System Local Controller/Actuated Controller components (surge protector, conflict monitor, switches, flashers, relays, wiring harness, clocks, etc.)	701, Job SP
Pre-Timed Controller (internal equipment)	702
Flashing Beacon Controller (all internal equipment)	703

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. XXXXXX

BUY AMERICA - CONSTRUCTION MATERIALS

Vehicle Detectors (all electrical components)	704
Traffic Signal Heads (all types)	706, Job SP
Pedestrian Signal Heads	707
Non-Metallic Conduit (PE & PVC)	710
Paint for Reflectorized Paint Pavement Markings	718
Thermoplastic Pavement Markings (all)	719
Permanent Pavement Marking Tape	720
Raised Pavement Markers (markers and epoxy adhesive)	721
Sand Barrels/Lids for Impact Attenuation Barriers	731
Video Detectors (detector, processor, and other equipment)	733
Paint Systems for Structural Steel	807, 820
Preformed Joint Seals	809
Silicone Joint Sealants	809
Accessible Pedestrian Signal (APS) components	Job SP
Cellular Modem	Job SP
Enhanced Thermoplastic Pavement Markings	Job SP
Ethernet Switch (all types)	Job SP
Geogrids (all types)	Job SP
Hybrid Video/Radar Detection System components	Job SP
Latex Modifier in Latex Modified Concrete Overlays	Job SP
Lightweight Panels for Sound Reflecting Noise Barriers	Job SP
Overhead Digital Message Sign Assembly	Job SP
Polymer Resin in Polymer Overlays	Job SP
Polypropylene Pipe Culverts	Job SP
PTZ Camera System	Job SP
Radar Detection System	Job SP
Wrong Way Detection System FLIR Thermal Sensor	Job SP
Wrong Way Detection System Solar Panel	Job SP

Glass	
Item	**Specification Section**
Glass Beads (drop on application)	718, 719
Fiber Optic Cable	Job SP
Solar Panels (Wrong Way Detection Systems and other ITS systems)	Job SP
Windows in Building Construction	Job SP

Lumber	
Item	**Specification Section**
Wood Guard Rail Posts	617, 639
Wood Block Outs for Guardrail	617,639
Wood Posts for Guard Cable	618

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. XXXXXX

BUY AMERICA - CONSTRUCTION MATERIALS

Fence Posts and Braces (Type A, B, C and D)	619
Mailbox Supports	637
Treated Wood Poles	716
Treated Lumber	817
Treated Bridge Timbers	817
Timber Piling	818
Framing Lumber, Plywood, Trim Lumber in Building Construction	Job SP

Drywall	
Item	**Specification Section**
Drywall in Building Construction	Job SP

SOUTHWESTERN POWER ADMINISTRATION
I-49 LINE RELOCATION
161kV TRANSMISSION LINE

CRAWFORD COUNTY, ARKANSAS

ARKANSAS DEPARTMENT OF TRANSPORTATION

DATE REVISED	DATE REVISED	PERIOD CONTRACT	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
02/27/26		6	ARK.	040748	T0.01	--
		SHEET INDEX MAP				

ISSUED FOR CONSTRUCTION

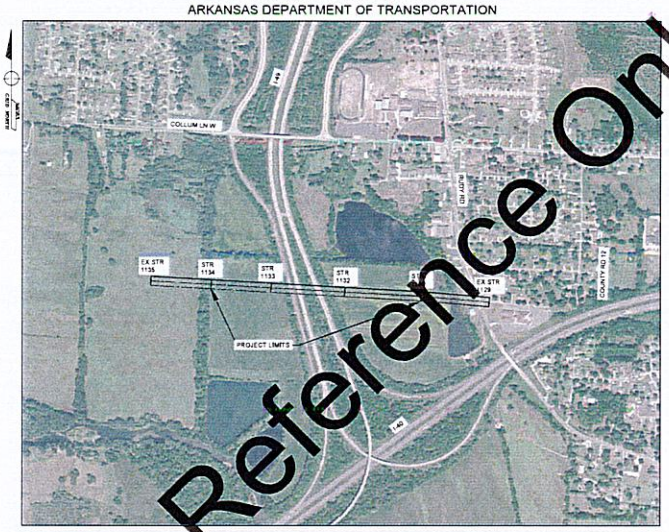
STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER

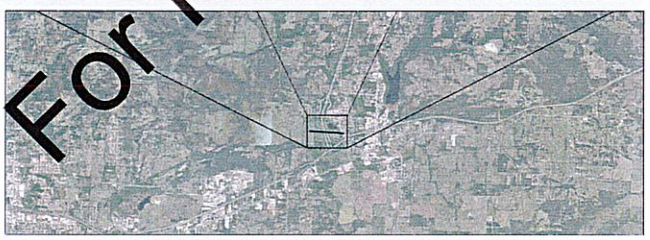
Stamped 03/05/2026

GENERAL NOTES:

1. SWPA I-49 LINE RELOCATION LOCATED APPROXIMATELY 1.5 MILES WEST OF ALMA, ARKANSAS.
2. 161KV TRANSMISSION LINE, 0.69 MILES IN LENGTH, CONSISTING OF (4) TOTAL STRUCTURES. (2) 2P SC TANGENT, (2) 3P SC DEADENDS.
3. COORDINATE SYSTEM DEFINED AS: NAD83, ARKANSAS NORTH STATE PLANE ZONE 301, US SURVEY FOOT.
4. DESIGN MINIMUM GROUND CLEARANCE IS AT THE CONDUCTOR MAXIMUM OPERATING TEMPERATURE OF 212° F AND INCLUDES A 3.0 FT DESIGN/CONSTRUCTION BUFFER.
5. WIRE SUMMARY
   - 5.1. EXISTING CONDUCTOR: (1) PER PHASE 556.5 ACSR 45/7 "DOVE"
   - 5.2. PROPOSED CONDUCTOR: (1) PER PHASE 1192.5 ACSR 45/7 "DRAKE"
   - 5.3. EXISTING OPGW: ONO-3093 AG-624M/6012 FIBER
   - 5.4. PROPOSED OPGW: AFL-ONO-12519.48 FIBER
6. LOADING CRITERIA
   - 6.1. NESC 250B: HEAVY LOADING: 4 PSF WIND, 0.5" ICE 0° F
   - 6.2. NESC 250C: EXTREME WIND 90MPH, 60° F
   - 6.3. NESC 250D: CONCURRENT 40MPH WIND WITH 1" ICE, 15° F

STATE CODE (ARKANSAS):
OVERHEAD POWER LINES ARE DESIGNED TO MEET THE CURRENT ISSUE OF THE NATIONAL ELECTRIC SAFETY CODE (NESC) AS REQUIRED BY THE ARKANSAS PUBLIC SERVICE COMMISSION, SPECIAL RULES _ ELECTRIC, SECTION 5.01.





161kV OVERHEAD TRANSMISSION LINE PROJECT LOCATION MAP

SWPA I-49 LINE RELOCATION

(STATE) VICINITY MAP

SHEET NUMBER	SHEET TITLE	REVISION NUMBER	REVISION DATE
	T0 - GENERAL PROJECT INFORMATION		
T0.01	SHEET INDEX MAP	0	2/27/2026
T0.02	STRUCTURE SUMMARY	0	2/27/2026
	T1 - PLAN AND PROFILES		
T1.01	PLAN AND PROFILE SHEET 1	0	2/27/2026
	T2 - STRUCTURE ASSEMBLY DRAWINGS		
T2.01	161kV 2P SC TAN	0	2/27/2026
T2.02	161kV 3P SC DE SA	0	2/27/2026
	T3 - MISCELLANEOUS DETAILS		
T3.01	GROUNDING DETAILS	0	2/27/2026
T3.02	OPGW SPLICE DETAILS	0	2/27/2026
T3.03	DAMPER DETAILS	0	2/27/2026
	T4 - FOUNDATION DETAILS		
T4.01	FOUNDATION NOTES	0	2/27/2026
T4.02	DIRECT BURY FOUNDATION DETAILS	0	2/27/2026
T4.03	DRILLED PIER FOUNDATIONS	0	2/27/2026

THE T5.XX FRAMING DRAWINGS ARE INCLUDED FOR INFORMATION ONLY. THEY REPRESENT THE STEEL POLE PROCUREMENT PACKAGE THAT IS BEING BID AND PROCURED BY ARDOT FOR INSTALLATION BY THE CONTRACTOR.

SHEET NUMBER	SHEET TITLE	REVISION NUMBER	REVISION DATE
	T5 - STRUCTURE FRAMING DRAWINGS		
T5.01	556kV 2P SC TAN FRAMING	0	2/11/2026
T5.02	161kV 3P SC DE SA FRAMING	0	2/11/2026
T5.03	STEEL FRAMING NOTES	0	2/11/2026
T5.04	STANDARD STEEL POLE ATTACHMENTS	0	2/11/2026
T5.07	OPGW COIL RACK FRAMING DETAILS	0	2/11/2026

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$FILE$

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
02/27/26		6	ARK.	040748	T0.02	--
		STRUCTURE SUMMARY				

ISSUED FOR CONSTRUCTION

LINE LAYOUT INFORMATION					STRUCTURE INFORMATION										FOUNDATION INFORMATION								
STRUCTURE NUMBER	STATION	GROUND ELEV	AHEAD SPAN	LINE ANGLE	STRUCTURE DESCRIPTION	POLE CLASS			POLE LENGTH (HT)			STRUCTURE ASSEMBLY DRAWING	FRAMING DRAWING	QUANTITY	EMBEDMENT DEPTH			TYPE	FOUNDATION DETAIL T04.01/T4.04	PERMANENT CASING	TEMPORARY CULVERT	POLE GROUNDING DETAIL T03.01
						Left	Center	Right	Left	Center	Right				Left	Center	Right					
1130	135948.79	424.7	846	1.1	3P SC DE SA	CUSTOM	CUSTOM	CUSTOM	80	65	80	T2.02	T5.02	3				Drilled Pier	A			Detail 1
1132	136795.22	426.4	669		2P SC TAN	CUSTOM		CUSTOM	120		120	T2.01	T5.01	2	17.0		17.0	Direct Bury	F1			Detail 1
1133	137464.19	427.4	714		2P SC TAN	CUSTOM		CUSTOM	120		[illegible]	[illegible]	T5.01	2	17.0		17.0	Direct Bury	F1			Detail 1
1134	138178.60	429.0	683	-1.6	3P SC DE SA	CUSTOM	CUSTOM	CUSTOM	80	65	80	T2.02	T5.02	3				Drilled Pier	A			Detail 1

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 19882
ANDREW W. MERRITT

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03/06/2026

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$DATE$ $TIME$
$FILES$

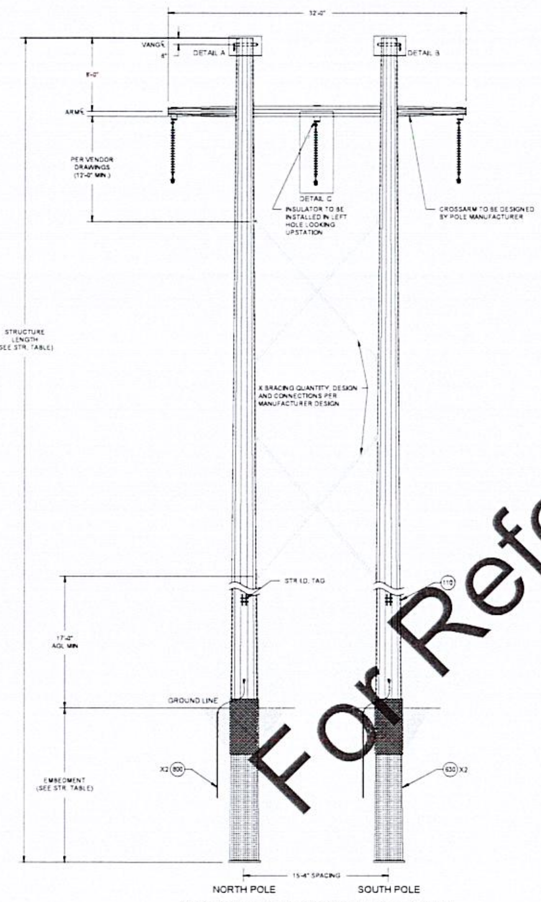
DATE REVISED	DATE REVISED	REGION DIST NO.	STATE	ICE NO.	SHEET NO.	TOTAL SHEETS
02/27/26		5	ARK.	040748	T2.01	
		161KV 2P SC TAN				

ISSUED FOR CONSTRUCTION

161kV 2P SC TAN - BOM (PER ONE STRUCTURE)				
ITEM #	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY
1	SUSPENSION INSULATOR, ULT 25K, GROUND FITTING Y-CLEVIS, LINE FITTING BALL, 161KV MAX RATING	HUBBELL	S025056H2010	3
13	CONDUCTOR SUSPENSION CLAMP, ALUMINUM, 1.25" - 1.82", ULT STR 25K LBS, SOCKET EYE INCLUDED	HUBBELL	HAS1825	3
42	OPGW SUSPENSION CLAMP, CLAMPING RANGE 0.647" 0.679"	AFL	SUME647/679	1
62	SUSPENSION CLAMP FOR STATIC WIRE, US 16K, CLAMP RANGE Ø 0.2 -0.6", INCLUDES SOCKET EYE	HUBBELL	M5605	1
110	CUSTOM STEEL - SEE PLAN AND PROFILE SHEETS			2
211	1192.5 kcmil 54/19 "GRACKLE" Ø1.338" 41900LBS RBS ACSR			AS REQ'D
220	OPGW ALUMACORE 43/49/654 Ø0.654", 48 FIBER 18,022 LBS RBS	AFL	DNO-12519	AS REQ'D
260	7/16" EHS STATIC WIRE Ø0.435" 20,800LBS RBS			AS REQ'D
316	ANCHOR SHACKLE, 60K, 1 1/4" THROAT, 7/8" BOLT	MPS	ASH-67-BC	3
341	SOCKET EYE 1 3/4" WIDE, 11/16" PIN, ULTIMATE STRENGTH 30KIP	AFL	SE-SC	1
342	BALL Y-CLEVIS, 30KIP, 3/4" PIN, 1.5" THROAT, 3 3/32" LENGTH	AFL	YCBS	2
630	DIRECT EMBED FOUNDATION - SEE DRAWING T4-02			2
800	SEE DRAWING T3-01 FOR FOUNDATION GROUNDING DETAILS AND PARTS			
841	ALUMINUM BONDING WIRE, 4/0 STRANDED, LENGTH 24" W/(2) 1/2" TERMINALS, INCLUDES 2 SETS OF 1/2" HARDWARE	AFL	BWAL50H/50H24	2

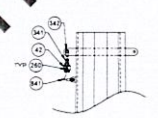
STRUCTURE TABLE
161kV 2P SC TAN

STR #	POLE LENGTH			POLE CLASS			EMBEDMENT			LINE ANGLE
	L	C	R	L	C	R	L	C	R	
1132	120		120	CUSTOM		CUSTOM	17		17	
1133	120		120	CUSTOM		CUSTOM	17		17	

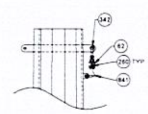


161kV HORIZONTAL TANGENT STRUCTURE

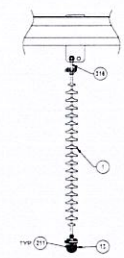
SHOWN AT ZERO LINE ANGLE FOR CLARITY



DETAIL A
OPGW SUSPENSION ASSEMBLY



DETAIL B
OHGW SUSPENSION ASSEMBLY



DETAIL C
CONDUCTOR SUSPENSION ASSEMBLY
THREE ASSEMBLIES REQ'D

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NOTES

1. SEE STRUCTURE TABLE FOR POLE LENGTH, CLASS, EMBEDMENT AND LINE ANGLE.
2. STEEL POLE DESIGN TO BE COMPLETED BY MANUFACTURER.
3. DIRECT EMBEDMENT SHOWN. SEE FOUNDATION DETAILS FOR DEPTH AND DETAILS PER STRUCTURE.
4. ALL POLE ATTACHMENT HARDWARE PROVIDED BY POLE MANUFACTURER.

ELECTRICAL CLEARANCES

161kV MINIMUM CLEARANCES
PHASE-TO-PHASE AT SUPPORT 7.2 FT
PHASE-TO-GROUND AT SUPPORT NO WIND 4.4 FT

REFERENCE DOCUMENTS

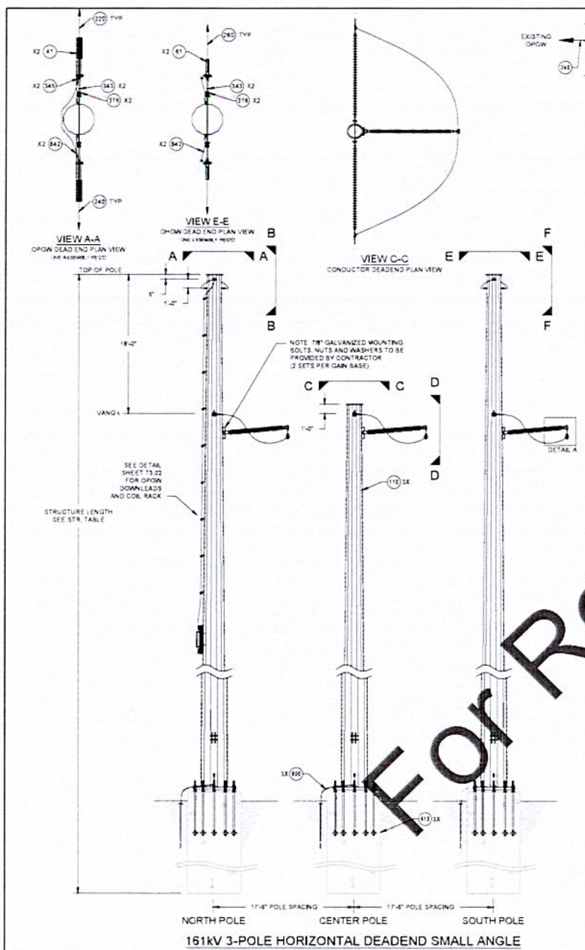
CONSTRUCTION STAKING REPORT D2.01
STRINGING CHART D1.02

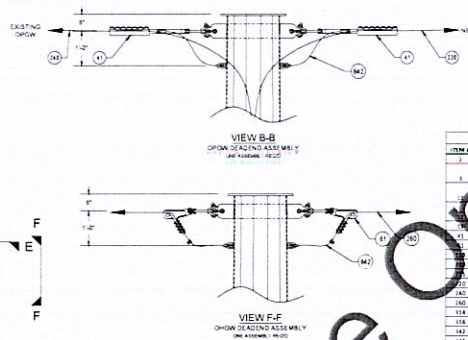
REFERENCE DRAWINGS

PLAN AND PROFILE T1.01
GROUNDING DETAILS T3.01

DATE REVISED	DATE REVISED	PROJECT DIST NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
02/27/26		6	ARK.	040748	T2.02	
		161KV 3P SC DE SA				

ISSUED FOR CONSTRUCTION



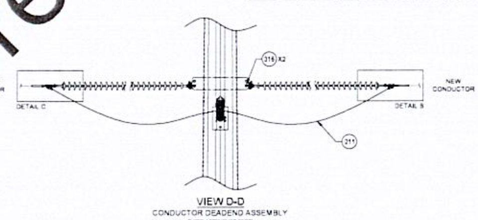


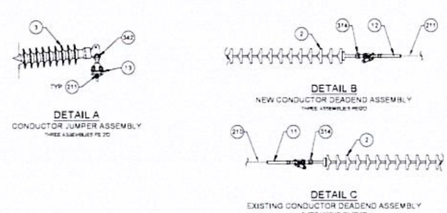
161kV 3P SC DE SA - BOM (PER ONE STRUCTURE)				
ITEM #	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY
[2]	DEADEND INSULATOR, ULT 50K, GROUND FITTING Y-CLEVIS, LINE FITTING BALL, 161kV MAX RATING	HUBBELL	505007352010	6
3	HORIZONTAL LINE POST INSULATOR, STEEL GAIN BASE WITH 2 HOLE BLADE, 161kV RATING	MPS	H2901007XVX5502#	3
11	CONDUCTOR DEADEND CLAMP, COMPRESSION, "DOVE", DOUBLE TONGUE, 15" TERMINAL, 2 HOLE, PAD SIZE (2"), 1" Ø HORIZONTAL EYE	HUBBELL	AG41025	3
12	CONDUCTOR DEADEND CLAMP, COMPRESSION, "GRACKLE", DOUBLE TONGUE, 15" TERMINAL, 4 HOLE, 1.2" Ø HORIZONTAL EYE	HUBBELL	AG41558	3
13	CONDUCTOR SUSPENSION CLAMP, ALUMINUM, 1.25" - 1.82", ULT STR 25K LBS, SOCKET EYE INCLUDED	HUBBELL	HAS1825	3
41	OPGW DEADEND CLAMP, CLAMPING RANGE 0.650"-0.659"	AFL	ODE650/659G09	2
61	OHGW DEADEND CLAMP ASSEMBLY, CLAMP RANGE 0.22"-0.55", ULT STR 18KIP, INCLUDES SOCKET EYE	HUBBELL	SWDE555	2
110	CUSTOM STEEL - SEE PLAN AND PROFILE SHEETS			3
[210]	556.5 kcmil 26/7 "DOVE" Ø0.927" 22600LBS RBS ACSR			
[211]	1192.5 kcmil 54/19 "GRACKLE" Ø1.338" 41900LBS RBS ACSR			AS REQ'D
220	OPGW ALUMACORE 43/48/654 Ø0.654", 48 FIBER 18,022 LBS RBS	AFL	DNO-12519	AS REQ'D
240	OPGW-EXISTING AC-52/64/650 Ø0.650", 12-FIBER	AFL	DNO-3098	EXIST
260	7/16" EHS STATIC WIRE Ø0.435" 20,800LBS RBS			EXIST
314	SOCKET Y-CLEVIS, 50K, 7/8"DIA. PIN, ANSI 52-8 & 52-11 SOCKET	MPS	SYCR-87-5	6
316	ANCHOR SHACKLE, 60K, 1 1/4" THROAT, 7/8"DIA. BOLT	MPS	ASH-67-BC	6
342	BALL Y-CLEVIS, 30KIP, 3/4" PIN, 1.5" THROAT, 3 3/32" LENGTH	AFL	YCBS	3
343	HOT LINE BALL Y-CLEVIS, 35KIP, 3/4" PIN, 10 1/2 5" LENGTH, 52-3 & 5 BALL	MPS	YCBHL-65A	4
345	SOCKET EYE 7/8" WIDE, 13/16" PIN, ULTIMATE STRENGTH 30KIP	AFL	SE-8DE	2
610	DRILLED PIER FOUNDATION - SEE DRAWING T4-03			3
800	SEE DRAWING T3-01 FOR FOUNDATION GROUNDING DETAILS AND PARTS			
842	ALUMINUM BONDING WIRE, 4/0 STRANDED, LENGTH 40", w/ (2) 1/2" TERMINALS, INCLUDES 2 SETS OF 1/2" HARDWARE	AFL	BWAL50H/50H40	4

STRUCTURE TABLE
161kV 3P SC DE SA
T2.02

STR #	POLE LENGTH			POLE CLASS			EMBEDMENT			LINE ANGLE
	L	C	R	L	C	R	L	C	R	
1130	90	65	90	CUSTOM	CUSTOM	CUSTOM				
1134	90	65	90	CUSTOM	CUSTOM	CUSTOM				

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 19862
Stamped 03/06/2026





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NOTES

1. SEE STRUCTURE TABLE FOR POLE LOCATIONS, ABOVE GROUND HEIGHT (AGH), AND LINE ANGLE.
2. STEEL POLE DESIGN TO BE COMPLETED BY MANUFACTURER.
3. DRILLED PIER SHOWN, SEE FOUNDATION DETAILS FOR DEPTH AND DETAILS PER STRUCTURE.
4. ALL POLE ATTACHMENT HARDWARE PROVIDED BY POLE MANUFACTURER.

ELECTRICAL CLEARANCES

161kV MINIMUM CLEARANCES
PHASE-TO-PHASE AT SUPPORT 7.2 FT
PHASE-TO-GROUND AT SUPPORT NO WIND 4.4 FT

REFERENCE DOCUMENTS

CONSTRUCTION STAKING REPORT TL.02.01
STRINGING CHART TL.31.02

REFERENCE DRAWINGS

PLAN AND PROFILE .... TL.T1.01 - TL.T1.13
GROUNDING DETAILS TL.T3.01
FOUNDATION NOTES TL.T4.01
DIRECT BURY FOUNDATION TL.T4.02

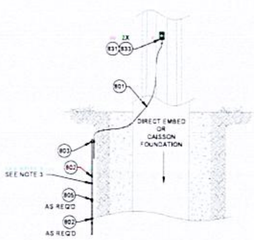
$DATE$ $TIME$
$FILE$

DATE REVISED	DATE REVISED	FED. AID DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
02/27/26		6	ARK.	040748	T3.01	
		GROUNDING DETAILS				

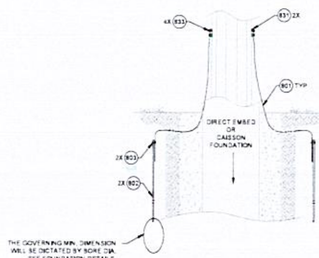
ISSUED FOR CONSTRUCTION

DETAIL 1 BOM (PER POLE)				
ITEM #	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY
[illegible]	#4 AWG, BARE STRANDED COPPER WIRE, TINNED			AS REQ'D
802	COPPER CLAD GROUNDING ROD 5/8"Ø x 10' 0"			2
803	COMPRESSION CONNECTOR, 5/8" ROD TO #4 AWG STR CU	BURNDY	YGHP29C2	1
805	COMPRESSION CONNECTOR, 5/8" ROD TO 5/8" ROD	ERICO	CC58	1
[illegible]	COPPER COMPRESSION CONNECTOR, #4 AWG, 2 HOLE, 1 3/4" STUD SPACING, 1/2" DIA. STUD	BURNDY	YA4C2LN	2
833	(1) SET OF STAINLESS STEEL HARDWARE, INCLUDES 1/2" X 2" BOLT, NUT, WASHERS, AND LOCK WASHERS	BURNDY	TMH6955	2

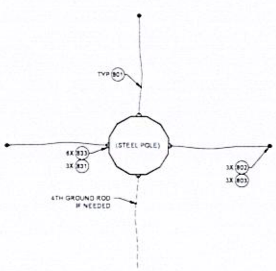
NOTE TO CONTRACTOR: ONE SET OF PARTS WILL BE PROVIDED FOR EACH POLE (10 TOTAL). ADDITIONAL RODS AND CONNECTORS, IF NEEDED, SHALL BE PROVIDED BY THE CONTRACTOR.



DETAIL 1



DETAIL 2



DETAIL 3

SEE STRUCTURE SUMMARY FOR ESTIMATED REQUIREMENTS PER STRUCTURE. THESE CONFIGURATION DESIGNATIONS ARE FOR MATERIAL ESTIMATE AND CONSTRUCTION PLANNING PURPOSES ONLY. SEE NOTES 2, 3, AND 4 FOR STRUCTURE GROUNDING PROCEDURAL SEQUENCE.

$DATE$ $TIME$
$FILES$

Stamped
03/06/2026

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ELECTRIC POWER ENGINEERING, INC.
12600 W. COLFAX AVE, STE. C500
LAKEWOOD, CO 80215
(303) 431-7895 www.neieng.com

NOTES

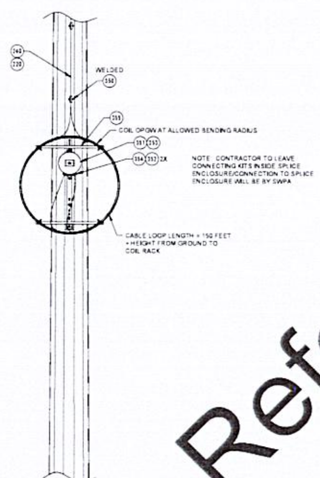
1. GROUND RESISTANCE MUST BE MEASURED PRIOR TO CONNECTING THE GROUND ROD(S) TO THE STRUCTURE.
2. TARGET RESISTANCE VALUE IS 20 OHMS. MEASURED VALUES AT EACH STRUCTURE SHALL BE RECORDED AND PROVIDED TO THE ENGINEER AT PROJECT COMPLETION.
3. IF THE TARGET VALUE IS NOT ACHIEVED WITH A SINGLE ROD, INSTALL ADDITIONAL RODS BY STACKING UP TO 4 TOTAL RODS PER DETAIL 1.
4. IF SUBSURFACE SOILS DO NOT ALLOW FOR STACKED GROUND RODS ADDITIONAL RODS CAN BE PLACED IN A RADIAL PATTERN AROUND THE POLE PER DETAILS 2 + 3. EACH GROUND ROD MUST BE DIRECTLY CONNECTED TO THE STRUCTURE GROUND. "DAISY-CHAINING" THE RADIAL GROUND RODS IS NOT PERMITTED.
5. IF TARGET VALUE IS NOT ACHIEVED WITH FOUR RODS, EITHER VERTICAL OR RADIAL, RECORD THE MEASURED VALUE.
6. IF CONSISTENTLY UNABLE TO MEET THE TARGET RESISTANCE VALUE, CONTACT THE ENGINEER FOR DIRECTION.
7. STRUCTURE FOOTING RESISTANCE SHALL BE INDEPENDENTLY VERIFIED WITH A FALL-OF-POTENTIAL TEST POST-CONSTRUCTION. RESULTS SHALL BE RECORDED AND PROVIDED TO THE ENGINEER OF RECORD.

REFERENCE DRAWINGS

DATE REVISED	DATE REVISED	FED RD DIST NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
02/27/26		5	ARK.	040748	T3.02	
		OPGW SPLICE DETAILS				

ISSUED FOR CONSTRUCTION

OPGW SPLICE - BOM (PER SPLICE LOCATION)				
ITEM #	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY
220	OPGW ALUMACORE 43/49/654 Ø0.654", 48 FIBER 18,022 LBS RBS	AFL	DNO-62519	AS REQ'D
240	OPGW-EXISTING AC 52/64/650 Ø0.650", 12 FIBER	AFL	DNO-3093	AS REQ'D
350	OPGW DOWNLEAD CLAMP, 0.601" - 0.700" DIA. OPGW	AFL	FDDA-8686	16
[illegible]	SPLICE ENCLOSURE FOR OPGW, INCLUDES ONE SPLICE TRAY FOR 72 FIBERS	AFL	SB01-72	1
[illegible]	FURCATION KIT, ONE KIT REQ'D PER STAINLESS STEEL TUBE PER PORT	AFL	SB01FK	2
353	SPLICE PROTECTOR SLEEVE - 60 mm LENGTH, PACKAGE OF TEN	AFL	SPS60	2
354	CONNECTOR KIT FOR OPGW TO SPLICE ENCLOSURES	AFL	APCKE647/662	2
[illegible]	FIBER COIL BRACKET FOR SB01 AND OPTI-GUARD SPLICE CANS	AFL	CB-44-3AL	1



OPGW SPLICE

SPLICE ENCLOSURE

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STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 19652 ANDREW W. MERRITT

Stamped 03/06/2026

REFERENCE DOCUMENTS

CONSTRUCTION STAKING REPORT TL.02.01
STRINGING CHART TL.01.02

REFERENCE DRAWINGS

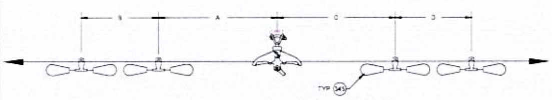
PLAN AND PROFILE T1.01
GROUNDING DETAILS T3.01
FOUNDATION NOTES .... TBD
DIRECT BURY FOUNDATION .... TBD

$DATE$ $TIME$
$FILE$

VIBRATION DAMPERS - BOM				
ITEM #	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY.
347	VIBRATION DAMPERS FOR OPGW, 7/16" BOLT, 0.371-0.675 IN RANGE, 30 FT-LB TORQUE	AFL	OVD-371/675	3
348	VIBRATION DAMPERS FOR 7/16" EHS STEEL SHIELD WIRE	AFL	1702-3	3

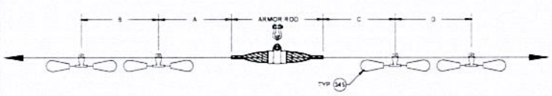
DATE REVISED	DATE REVISED	FERC NO. DIST NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
02/27/26		6	ARK.	040748	T3.03	
		DAMPER DETAILS				

ISSUED FOR CONSTRUCTION

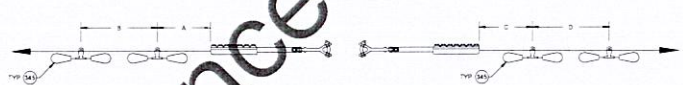


D1 OPGW/OHGW DAMPER PLACEMENT
OHGW SUSPENSION
(NO ARMOR ROD)
PER WIRE

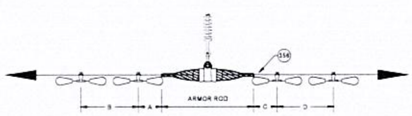
D2 OHGW DAMPER PLACEMENT
BACK AND AHEAD SPAN OHGW DEADEND
(BOLTED CONNECTION)



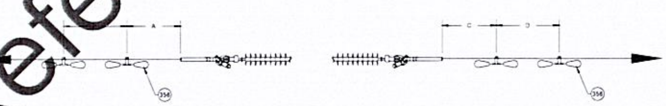
D3 OPGW DAMPER PLACEMENT
OPGW SUSPENSION
(W/ ARMOR ROD)
PER WIRE



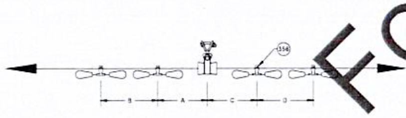
D4 OPGW DAMPER PLACEMENT
BACK AND AHEAD SPAN OPGW DEADEND
(BOLTED CONNECTION)



D5 CONDUCTOR PLACEMENT
CONDUCTOR SUSPENSION
(W/ ARMOR ROD)
PER PHASE



D6 CONDUCTOR PLACEMENT
BACK AND AHEAD SPAN CONDUCTOR DEADEND
(COMPRESSION CONNECTION)
PER PHASE



D7 CONDUCTOR PLACEMENT
CONDUCTOR SUSPENSION
(NO ARMOR ROD)
PER PHASE

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OPGW Damper Table (per wire)

Str. No.	Damper Placement				Damper Placement Detail
	Back Span		Ahead Span		
	B (in.)	A (in.)	C (in.)	D (in.)	
1132		25			D1
1133		25	25		D1

OHGW Damper Table (per wire)

Str. No.	Damper Placement				Damper Placement Detail
	Back Span		Ahead Span		
	B (in.)	A (in.)	C (in.)	D (in.)	
1132		22			D1
1133		22	22		D1

NOTES

1. DAMPER PLACEMENTS INDICATED ON THIS DRAWING HAVE BEEN PROVIDED BASED ON RECOMMENDATIONS BY THE THIRD-PARTY VENDOR INDICATED IN THE ABOVE TABLE. ANY SUBSTITUTION OF DAMPERS MAY VOID VENDOR-PROVIDED WARRANTY AND RESULT IN DEGRADED PERFORMANCE OF THE AEOLIAN VIBRATION PROTECTION.
2. INSTALL DAMPERS PER VENDOR INSTALLATION SPECIFICATIONS.
3. THE "BACK" AND "AHEAD" SPANS INDICATED IN THE TABLE ABOVE ARE IN RELATION TO THE LINE DIRECTION SHOWN ON THE PLAN AND PROFILE DRAWINGS.
4. SEE DAMPER SCHEDULE FOR FURTHER INFORMATION ON DAMPER PLACEMENT.
5. WHEN BUNDLED CONDUCTOR IS REQUIRED, CONDUCTOR DAMPERS SHALL BE INSTALLED ON BOTH BUNDLED CONDUCTORS FOR EACH PHASE.

REFERENCE DRAWINGS

PLAN AND PROFILE.............................. TL.T1.01

FOUNDATION NOTES

1. CODES USED IN DESIGN: ACI 318-19
2. DIRECT EMBED FOUNDATIONS DESIGNED PER INTERIM GEOTECHNICAL REPORTS 25.00272a & b. FINAL REPORT TO ADDRESS CAISSON FOUNDATIONS IS PENDING FIELD ACCESS. THE REPORT SHALL BE REVIEWED AND FOLLOWED BY CONTRACTOR.
3. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
4. CONTRACTOR SHALL PROVIDE APPROPRIATE EQUIPMENT TO DRILL, EXCAVATE, AND INSTALL FOUNDATIONS AS REQUIRED.

5. STRUCTURAL FILL
   - 5.1. QUARRY REPORTS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL FOR ALL MATERIALS.
   - 5.2. STRUCTURAL FILL SHALL CONFORM TO THE FOLLOWING PARAMETERS: AASHTO #57 AGGREGATE, OR SIMILAR
     - 5.2.1. GRADATION
       - 5.2.1.1. PERCENT PASSING THE 1" SIEVE: 100%
       - 5.2.1.2. PERCENT PASSING THE 3/4" SIEVE: 95-100%
       - 5.2.1.3. PERCENT PASSING THE 3/8" SIEVE: 80-100%
       - 5.2.1.4. PERCENT PASSING THE #4 SIEVE: 60-100%
       - 5.2.1.5. PERCENT PASSING THE #8 SIEVE: 60-100%
       - 5.2.1.6. PERCENT PASSING THE #50 SIEVE: 7-55%
       - 5.2.1.7. PERCENT PASSING THE #200 SIEVE: 0-15%
     - 5.2.2. PHYSICAL LIMITS
       - 5.2.2.1. MAXIMUM LIQUID LIMIT: 25%
       - 5.2.2.2. MAXIMUM PLASTICITY INDEX: 6%
       - 5.2.2.3. MAXIMUM WET BALL MILL: 45%
       - 5.2.2.4. MAXIMUM WET BALL MILL INCREASE PASSING NO. 40 SIEVE: 20%
   - 5.3. STRUCTURAL FILL SHALL CONSIST OF TWO FRACTURED ROCK FACES ON AT LEAST 80% OF MATERIAL RETAINED ON THE #4 SIEVE. TESTS SHALL BE DONE IN ACCORDANCE WITH AASHTO T 335-09.
   - 5.4. AGGREGATE SHALL BE COMPACTED IN 6" LIFTS. AGGREGATE SHALL BE CONSIDERED PROPERLY COMPACTED WITHIN 2% OF OPTIMAL MOISTURE CONTENT AND 95% OF STANDARD PROCTOR DENSITY.
   - 5.5. IF AGGREGATE IS NOT SUITABLE FOR STANDARD PROCTOR COMPACTION TESTING, AGGREGATE SHALL BE CONSIDERED COMPACTED WHEN THERE IS NO MOVEMENT UNDER THE APPLICATION OF COMPACTION EQUIPMENT.
   - 5.6. FLOWABLE FILL OR FULL STRENGTH CONCRETE MAY BE SUBSTITUTED FOR AGGREGATE BACKFILL WITH ENGINEER APPROVAL.
     - 5.6.2. CEMENTITIOUS BACKFILL SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 3/4"
     - 5.6.3. FLOWABLE FILL SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 1000PSI
     - 5.6.4. FULL STRENGTH CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 6
   - 5.7. CONTRACTOR SHALL DEWATER EXCAVATION PRIOR TO ADDING STRUCTURAL FILL. IF THE EXCAVATION CANNOT BE DEWATERED, CONTRACTORS SHALL USE CONCRETE BACKFILL.

6. CONCRETE
   - 6.1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF ACI 301 AND ACI 318 EXCEPT AS MODIFIED BY PROJECT SPECIFICATIONS AND CONTRACT DOCUMENTS.
   - 6.2. CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 305R (HOT WEATHER) OR ACI 306R (COLD WEATHER) AS APPLICABLE.
   - 6.3. CONCRETE MIX DESIGN SHALL CONFORM TO THE LATEST EDITION OF ACI 301 AND ACI 318 AND BE SUBMITTED AND APPROVED BY DESIGN ENGINEER PRIOR TO CONCRETE PLACEMENT.
     - 6.3.1. CONCRETE STRENGTH (f'c) SHALL BE A MINIMUM OF 4000 PSI AND COMPLY WITH ACI 318 CHAPTER 19.
       - 6.3.1.1. CONCRETE MIXTURES SHALL BE DESIGNED BASED ON EXPOSURE CATEGORY F3 (FREEZING AND THAWING WITH EXPOSURE TO WATER AND DEICING CHEMICALS) AS DEFINED IN ACI 318 CHAPTER 19.3.
       - **6.3.1.2. CONCRETE MIXTURES SHALL BE DESIGNED PER THE GEOTECHNICAL REPORT TBD**
       - 6.3.1.3. AIR CONTENT SHALL BE 6% ±1%.
       - 6.3.1.4. MAXIMUM WATER TO CEMENT RATIO (w/cm) OF 0.45 IS ALLOWED.
       - 6.3.1.5. MAXIMUM NOMINAL COARSE AGGREGATE SIZE SHALL BE 1" UNLESS OTHERWISE STATED IN CONTRACT DOCUMENTS. COARSE AND FINE AGGREGATES SHALL CONFORM TO ASTM C33.
   - 6.4. CONCRETE MIXTURES SHALL COMPLY WITH THE REQUIREMENTS OF ACI 318 CHAPTERS 19.3.2 AND 26.4. MIXING PROPORTIONS SHALL COMPLY WITH ACI 301 ARTICLE 4.2.3.
   - 6.5. FLY ASH SHALL CONFORM TO ASTM C618, CLASS F OR CLASS C.
     - 6.5.1. ALTERNATIVE CEMENTITIOUS ADMIXTURES MAY BE USED WITH ENGINEER APPROVAL.
   - 6.6. WATER REDUCERS MAY BE USED. WATER MAY NOT BE ADDED TO THE MIX ONSITE.
   - 6.7. UNDER NO CIRCUMSTANCES SHALL ANY CHLORIDE-CONTAINING ADMIXTURES BE ADDED TO THE CONCRETE.
   - 6.8. DRILLED PIERS SLUMP SHALL BE 6" (-1" to +2"). SLUMP SHALL BE APPROPRIATE FOR SITE CONDITIONS AND MODIFIED ACCORDINGLY IF WET CONDITIONS ARE ENCOUNTERED.
   - 6.9. CONCRETE SHALL BE SAMPLED ACCORDING TO ASTM C172 AND C31. CONCRETE STRENGTH TESTS SHALL BE PERFORMED ACCORDING TO ASTM C39. TEST REPORTS SHALL BE SUBMITTED FOR 3, 7, 28 AND 56 DAY TESTS. TEST CYLINDERS SHALL ALSO BE CREATED TO PERFORM 128 DAY TESTS. TESTING OF THESE CYLINDERS SHALL BE PERFORMED IF REQUIRED BY ENGINEER.
   - 6.10. CONTRACTOR SHALL DEWATER EXCAVATION PRIOR TO POURING CONCRETE. IF THE EXCAVATION CANNOT BE DEWATERED, PLACEMENT OF CONCRETE BY FREE FALL IS NOT ACCEPTABLE. A TREMIE PIPE OR OTHER ACCEPTABLE METHODOLOGY FOR AVOIDING CONCRETE FREE FALL DURING PLACEMENT SHALL BE UTILIZED.
   - 6.11. FOR DRILLED PIER FOUNDATIONS, CONTRACTOR SHALL PLACE THE TIED ANCHOR CAGE IN THE EXCAVATION PRIOR TO POURING CONCRETE. AFTER CONCRETE IS POURED, CONTRACTOR SHALL CLEAN VISIBLE ANCHOR BOLT PROJECTIONS AND TEMPLATE OF ANY CEMENTIOUS MATERIAL.
   - 6.12. WHEN MULTIPLE CONCRETE TRUCKS ARE REQUIRED TO COMPLETE A FOUNDATION POUR, THE PREVIOUSLY POURED CONCRETE SHALL NOT BE ALLOWED TO SET PRIOR TO THE ADDITION OF THE LATEST CONCRETE BATCH.
   - 6.13. CONTRACTOR SHALL PROVIDE CONCRETE MIX DESIGN FOR REVIEW. MIX DESIGN SHALL INCLUDE ANY ADMIXTURES INTENDED FOR USE.
   - 6.14. CONCRETE PLACEMENT SHALL BE COMPLETED WITHIN 90 MINUTES OF LOADING OF THE CONCRETE TRUCK. EXTENSIONS TO THIS TIME LIMIT MAY BE APPROVED ON A CASE-BY-CASE BASIS. CONTRACTOR MAY BE REQUESTED TO VERIFY SLUMP SPECIFICATIONS WITH A SLUMP LOSS TEST. SLUMP LOSS TEST SHALL BE SAMPLED EVERY 20 MINUTES FOR THE TESTING EXTENT AND SHALL INCLUDE DATA FOR SLUMP, TEMPERATURE AND AIR ENTRAINMENT.

7. ANCHOR BOLTS
   - 7.1. CONTRACTOR SHALL VERIFY ANCHOR BOLT PATTERNS, SIZE AND PROJECTIONS WITH STEEL STRUCTURE SHOP DRAWING, PRIOR TO ANCHOR BOLT PLACEMENT.
   - 7.2. CONTRACTOR SHALL ASSESS ANCHOR CAGE FOR DEFORMATION PRIOR TO INSTALLATION. ANCHOR BOLT CAGES STORED FOR LONG PERIODS MAY UNDERGO EXCESSIVE DEFORMATION.
   - 7.3. ANCHOR BOLT PROJECTIONS ABOVE THE TOP OF CONCRETE SHALL BE BETWEEN 0 TO +1/4" FROM THE SPECIFIED PROJECTIONS. INDIVIDUAL ANCHOR BOLTS SHALL NOT DEVIATE FROM THEIR SPECIFIED CENTERLINES SHOWN ON THE CONSTRUCTION DRAWINGS.
   - 7.4. THE CENTER OF A COMPLETE SET OF BOLT GROUPS SHALL BE WITHIN 1/8" OF THE SPECIFIED CENTERLINE OF THE STRUCTURE. ANCHOR BOLTS SHALL NOT BE OUT OF PLUMB BY MORE THAN 0.5% OF THE HEIGHT OF THE ANCHOR BOLT.
   - 7.5. ANCHOR BOLTS TO BE PROVIDED BY THE POLE MANUFACTURER.

8. STEEL REINFORCING
   - 8.1. REINFORCING STEEL SHALL BE ASTM 615, GRADE 60 BLACK.
   - 8.2. MINIMUM REBAR COVER IS 3" EXPOSED TO EARTH, 2" EXPOSED TO FORM OR AIR. COVER IS FROM CONCRETE EDGE TO STIRRUPS/TIES OR MAIN BAR (WHICHEVER OCCURS FIRST). ANY REBAR SPLICES SHALL BE AS DESIGNATED ON THE DRAWINGS OR APPROVED BY DESIGN ENGINEER.
   - 8.3. MINIMUM CLEAR SPACING IS THE MAXIMUM OF
     - 8.3.1. 4/3X COURSE AGGREGATE DIMENSION: 0.75 IN
     - 8.3.2. 1X BAR DIAMETER
     - 8.3.3. 1 INCH
   - 8.4. CONTRACTOR IS FREE TO SELECT THE TYPE AND CLASS OF BAR SUPPORTS REQUIRED TO MAINTAIN TOLERANCES.
   - 8.5. THE USE OF SHAFT SPACERS MAY BE USED TO ENSURE PROPER ALIGNMENT OF CAGES BEFORE PLACING OF CONCRETE.
   - 8.6. TOLERANCES (ONLY SINGLE PLANE PERMITTED).
     - 8.6.1. FOR #3, #4 AND #5 STRAIGHT AND BENT BARS, DIMENSIONS SHALL BE ±½".
     - 8.6.2. FOR #6, AND LARGER STRAIGHT AND BENT BARS, DIMENSIONS SHALL BE ± 1".
     - 8.6.3. BEND DIAMETERS FOR 90 DEGREE HOOKS SHALL INCLUDE "SPRING BACK" EFFECTS.

	#4	#5	#6	#7	#8	#10	#11
	DIMENSIONS IN INCHES						
LAP SPLICE LENGTHS (ACI 318-14 TABLE 25.5.2.1, CLASS B)	25"	31"	37"	54"	62"	79"	87"
MINIMUM INSIDE BEND DIAMETER	3"	3½"	4½"	5½"	6"	10½"	11½"
8.8.2 FOR 90 AND 180 DEGREE STIRRUPS TIES AND HOOPS (ACI 318-14, TABLE 25.3.2)	2"	2½"	4½"	5½"	6"		

   - 8.7. ASSEMBLED CAGE MUST BE SUITABLY RIGID FOR INSTALLATION WITHOUT DEFORMATION AS A SINGLE UNIT. STIFFENING MEMBERS MUST ALLOW FOR CLEARANCES TO ANCHOR BOLT CAGE AND BOTTOM TEMPLATE WHILE MAINTAINING CLEAR SPACING REQUIREMENTS OF 8.3.
   - 8.8. OVERLAPS AT ENDS OF ADJACENT CIRCULAR TIE BARS SHALL BE STAGGERED AROUND THE PERIMETER ENCLOSING THE LONGITUDINAL BARS. SEE SECTION A ON THE DRILLED PIER FOUNDATION DETAIL.

9. DRILLED PIER INSTALLATION NOTES
   - 9.1. INSTALLATION OF DRILLED PIERS SHALL COMPLY WITH THE LATEST REVISION OF ACI 336.1 AND ACI 336.3.
   - 9.2. DRILLED PIERS SHALL NOT DEVIATE FROM THE POSITIONS SHOWN ON THE CONSTRUCTION DRAWINGS. THE TOP ELEVATIONS OF ALL FOUNDATIONS SHALL BE BETWEEN 0 AND +½" OFF THE ELEVATIONS SHOWN ON THE CONSTRUCTION DRAWINGS.
   - 9.3. PIER PLUMBNESS SHALL BE CHECKED PERIODICALLY DURING DRILLING AND VERIFIED PRIOR TO PLACEMENT OF CONCRETE. TOLERANCES SHALL NOT EXCEED 1% OF PIER DIAMETER OR 1".
   - 9.4. DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY LOOSE MATERIAL BEFORE PLACING ANY CONCRETE.
   - 9.5. DRILLED HOLES SHALL NOT BE LEFT OPEN FOR ANY MORE TIME THAN ABSOLUTELY NECESSARY. CONCRETE SHALL BE PLACED IN DRILLED HOLE IMMEDIATELY AFTER DRILLING AND CLEANING ARE COMPLETE. CONTRACTOR SHALL ENSURE THAT ALL OPEN HOLES ARE PROPERLY COVERED WHEN LEFT UNATTENDED.
   - 9.6. A TREMIE PIPE OR CONCRETE ELEPHANT'S TRUNK SHALL BE TO USED TO PLACE ANY FREE FALL CONCRETE GREATER THAN 5' IN ANY DRILLED PIER FOUNDATIONS.
   - 9.7. CONCRETE USED TO DISPLACE WATER SHALL BE INSTALLED WITH A TREMIE PIPE. THE HEAD OF THE TREMIE PIPE SHALL BE FULLY BELOW THE WATER/CONCRETE INTERFACE DURING CONCRETE PLACEMENT.
   - 9.8. CONCRETE PLACED FOR DRILLED PIERS SHALL BE PLACED MONOLITHICALLY TO ASSURE NO COLD JOINTS ARE FORMED.
   - 9.9. CHAMFER ALL EXPOSED FORMED EDGES ¾", TYPICAL OF ALL FOUNDATION TYPES.
   - 9.10. VIBRATION OF CONCRETE IS REQUIRED FOR TOP 5' OF THE FOUNDATION.
   - 9.11. REINFORCING STEEL SHALL BE ACCURATELY PLACED AND ADEQUATELY SUPPORTED BEFORE THE CONCRETE IS PLACED, AND SHALL BE SECURED AGAINST DISPLACEMENT WITHIN PERMITTED TOLERANCES.
   - 9.12. CONTRACTOR SHALL CONFIRM ANCHOR BOLT PROJECTION MATCHES ANCHOR CAGE DRAWING.

10. SOIL CAP (NOTE TO DESIGNER: RECOMMEND THIS BE INCLUDED FOR AREAS OF EXPANSIVE SOIL TO MINIMIZE WATER PERCOLATION THROUGH STRUCTURAL FILL)
   - 10.1. CLAY NATIVE SOIL CAP REQUIRED ON ALL DIRECT EMBED FOUNDATIONS. SEE DRAWING TL.T4.02, FOR DETAILS
   - 10.2. SOIL SHALL BE NON-FROZEN, CLEAN, AND FREE OF ORGANIC MATERIAL.
   - 10.3. STANDARD PROCTOR COMPACTION IS LIKELY NOT POSSIBLE DUE TO THICKNESS OF LAYER. HOWEVER, SOIL SHALL BE AS WELL COMPACTED AS POSSIBLE.

11. PERMANENT AND TEMPORARY CASINGS
   - 11.1. ALL CASINGS USED DURING DRILLING FOR CONCRETE FOUNDATIONS SHALL BE CONSIDERED PERMANENT UNLESS STATED OTHERWISE IN CONTRACT DOCUMENTS. TEMPORARY CASINGS SHALL BE REMOVED AT A RATE THAT WILL PREVENT THE SOIL FROM COLLAPSING AND DISPLACING CONCRETE.
   - 11.2. CASING THICKNESS SHALL BE A MINIMUM OF 10 GAUGE AND RESIST DEFORMATION UNDER LATERAL SOIL PRESSURES TO ENSURE FOUNDATION DESIGN DIAMETER IS ACHIEVED.
   - 11.3. UNFILLED ANNULAR SPACE BETWEEN PERMANENT CASING AND UNDISTURBED EARTH SHALL BE BACKFILLED WITH PRESSURIZED GROUT, PLACED BY TREMIE FOR DEPTHS GREATER THAN 5 FEET.
   - 11.4. PERMANENT CASINGS SHALL BE CORRUGATED UNLESS OTHERWISE APPROVED BY THE ENGINEER. PERMANENT CASINGS SHALL TERMINATE A MINIMUM OF 3 FEET BELOW GRADE AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A76.
   - 11.5. ALL TEMPORARY CASING SHALL BE SMOOTH. CORRUGATED STEEL CASING IS NOT ACCEPTABLE FOR USE FOR TEMPORARY CASING UNLESS APPROVED IN WRITING BY ENGINEER.

12. STRUCTURAL SUPPORT DURING CONCRETE CURING AND STRINGING ACTIVITIES
   - 12.1. DIRECTLY EMBEDDED STRUCTURES UTILIZING NON-CEMENTIOUS BACKFILL SHALL BE SUPPORTED DURING PLACEMENT AND TAMPING BACKFILL MATERIAL.
   - 12.2. DIRECTLY EMBEDDED STRUCTURES UTILIZING CEMENTIOUS BACKFILL SHALL BE SUPPORTED UNTIL THE CONCRETE HAS CURED TO A SUFFICIENT DEGREE TO ALLOW THE STRUCTURE TO BE FULLY SELF SUPPORTED. THIS SHALL BE TAKEN AS A MINIMUM CONCRETE STRENGTH OF 1,000 PSI. UNDER NORMAL NON-WATER AND/OR DRY WEATHER CONDITIONS, THIS STRENGTH CAN BE ASSUMED TO HAVE BEEN REACHED WITHIN 24 HOURS FOR A CONCRETE MIX DESIGN WITH A SUCCESSFUL BREAK HISTORY. IN WINTER AND/OR WET CONDITIONS, SUFFICIENT STRENGTH CAN BE ASSUMED AFTER THREE DAYS OR AFTER TWENTY-FOUR HOURS WITH THE ADDITION OF AN EARLY CONCRETE BREAK SHOWING A STRENGTH OF 1,000 PSI.
   - 12.3. BASE PLATED STRUCTURES SUPPORTED ON A DRILLED PIER SHALL NOT BE ERECTED UNTIL A SATISFACTORY 3-DAY BREAK OF 1,000 PSI IS ACHIEVED.
   - 12.4. STRINGING OF DIRECTLY EMBEDDED STRUCTURES WITH CEMENTIOUS BACKFILL SHALL NOT OCCUR UNTIL AFTER A MINIMUM OF 7 DAYS HAVE PASSED AND A CONCRETE BREAK CONFIRMING 75% OF THE CONCRETE RATED STRENGTH HAS BEEN ACHIEVED.
   - 12.5. STRINGING OF DRILLED PIER STRUCTURES SHALL NOT OCCUR UNTIL ONE OF THE FOLLOWING CONDITIONS IS MET:
     - 12.5.1. A MINIMUM OF 7-DAYS AFTER THE FINAL POUR HAS PASSED AND A CONCRETE BREAK CONFIRMING 75% OF THE CONCRETE RATED STRENGTH HAS BEEN ACHIEVED.
     - 12.5.2. A MINIMUM OF 28-DAYS AFTER THE FINAL POUR HAS PASSED.

DATE REVISED	DATE REVISED	FED RD DIST NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
02/27/26		6	ARK.	040748	T4.01	–
		FOUNDATION NOTES				

ISSUED FOR CONSTRUCTION

nei
ELECTRIC POWER ENGINEERING, INC.
12600 W. COLFAX AVE, STE. C300
LAKEWOOD, CO 80215
(303) 431-7895 www.neieng.com

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 19892 ANDREW W. MERRITT
Stamped
03/06/2026

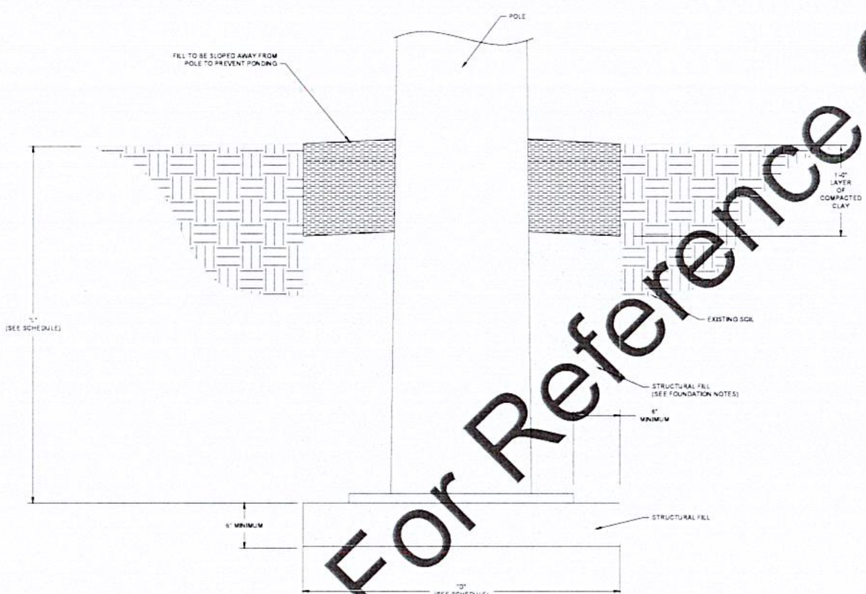
REFERENCE DRAWINGS

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
02/27/26		5	ARK.	040748	T4.02	--
		DIRECT BURY FOUNDATION DETAILS				

ISSUED FOR CONSTRUCTION

DIRECT EMBED SCHEDULE

STRUCTURE NUMBER	STRUCTURE DESCRIPTION	EMBEDMENT LENGTH "L" [FT]			BORE LOG	FNDTN DETAIL	BORE DIA. "D" [FT]	BEARING PAD THICKNESS "T" [FT]
		Left	Center	Right				
1132	2P SC TAN	17.0		17.0	93	F1	3.5	0.0
~~1133~~	~~2P SC TAN~~	~~17.0~~		~~17.0~~	~~92~~	~~F1~~	~~3.5~~	~~0.0~~



DETAIL F1
DIRECT EMBED

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 19882 ANDREW W. MERRITT

Stamped 03/06/2026

ELECTRIC POWER ENGINEERING, INC.
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NOTES

1. SEE CONSTRUCTION STAKING REPORT FOR FOUNDATION COORDINATES.

REFERENCE DRAWINGS

FOUNDATION NOTES T4.01

REFERENCE DOCUMENTS

CONSTRUCTION STAKING REPORT XX.XX.00

$DATE$ $TIME$
$FILES$

DATE REVISED	DATE REVISED	FED'RD DIST NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		5	ARK.	040748	T4.03	
		DRILLED PIER FOUNDATIONS				

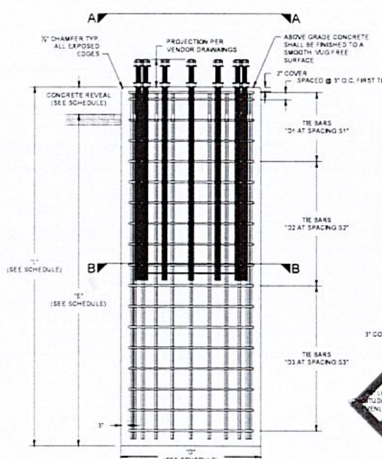
REV # PC PLACEHOLDER DATE [illegible]

PRELIMINARY
SUBJECT TO REVISION

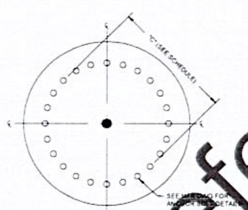
STRUCTURE TABLE

STRUCTURE NUMBER	STRUCTURE DESCRIPTION	FNDTN PLAN	PIERS REQ'D	CONCRETE CLASS	EXIST. GRADE			CONC. REVEAL [FT]	TOC ELEV			PIER DIA "D" [FT]	EMBEDMENT DEPTH "E" [FT]	TOTAL PIER LENGTH "L" [FT]	A.B. CIRCLE DIA "C" [IN]	QUANTITY "N"	SIZE	LENGTH (IN)	TOTAL # OF TIES	TIE BAR SIZE	D1 DEPTH [FT] "D1"	TIE SPACING FOR D1 [IN] "S1"	D2 DEPTH [FT] "D2"	TIE SPACING FOR D2 [IN] "S2"	D3 DEPTH [FT] "D3"	TIE SPACING FOR D3 [IN] "S3"
DRILLED PIER SCHEDULE																REBAR CAGE SCHEDULE (PER FOUNDATION)										
																LONGITUDINAL BARS			TIE BARS							
					Left	Center	Right		Left	Center	Right															
1130		A		TBD	424.72	424.73	424.84	TBD				TBD	TBD													
~~1234~~		~~A~~		~~TBD~~	~~429.02~~	~~429.03~~	~~429.05~~	~~TBD~~				~~TBD~~	~~TBD~~													

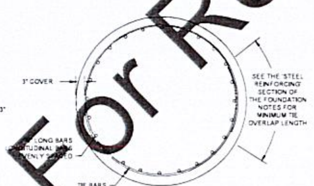
THIS TABLE WILL BE COMPLETED AND THIS DRAWING CONVERTED TO ISSUED FOR CONSTRUCTION AFTER RECEIPT OF THE SELECTED POLE VENDOR'S ANCHOR CAGE DESIGN.



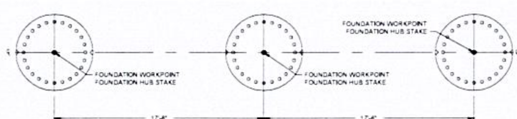
DRILLED PIER FOUNDATION



SECTION A-A



SECTION B-B



FOUNDATION PLAN A

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NOTES

1. SEE CONSTRUCTION STAKING REPORT FOR FOUNDATION COORDINATES
2. FOUNDATION AXIS ALONG STRUCTURE 0-180 DEGREE ORIENTATION LINE
3. ALIGN ANCHOR BOLT TEMPLATE V NOTCH ALONG FOUNDATION AXIS
4. SEE PLAN AND PROFILE SHEET FOR LINE ANGLE

REFERENCE DRAWINGS

PLAN AND PROFILE.............................. XX.T01.XX - XX.T01.XX
FOUNDATION NOTES.............................. XX.T01.XX

REFERENCE DOCUMENTS

CONSTRUCTION STAKING REPORT.................. XXX-T-000-00

$DATE$ $TIME$
$FILE$

Bill of Materials

TRANSMISSION LINE BILL OF MATERIALS

ITEM NO.	PART	MANUFACTURER		EXACT QUANTITY
MAJOR EQUIPMENT				
1	SUSPENSION INSULATOR, ULT 25K, GROUND FITTING Y-CLEVIS, LINE FITTING BALL, 161kV MAX RATING	HUBBELL	S025056H2010	6
2	DEADEND INSULATOR, ULT 50K, GROUND FITTING Y-CLEVIS, LINE FITTING BALL, 161kV MAX RATING	HUBBELL	S050073S2010	12
3	HORIZONTAL LINE POST INSULATOR, STEEL GAIN BASE WITH 2-HOLE BLADE, 161kV RATING	MPS	H29010074VXSS028	6
11	CONDUCTOR DEADEND CLAMP, COMPRESSION, "DOVE", DOUBLE TONGUE, 15" TERMINAL, 2 HOLE, PAD SIZE (2"), 1" Ø HORIZONTAL EYE	HUBBELL	A041025	6
12	CONDUCTOR DEADEND CLAMP, COMPRESSION, "GRACKLE", DOUBLE TONGUE, 15" TERMINAL, 4 HOLE, 1.2" Ø HORIZONTAL	HUBBELL	A041558	6
13	CONDUCTOR SUSPENSION CLAMP, ALUMINUM, 1.25" - 1.82", ULT STR 25K LBS, SOCKET EYE INCLUDED	HUBBELL	HAS182S	12
41	OPGW DEADEND CLAMP, CLAMPING RANGE 0.650"-0.659"	AFL	ODE650/659G09	4
42	OPGW SUSPENSION CLAMP, CLAMPING RANGE 0.647"-0.679"	AFL	SUME647/679	2
61	OHGW DEADEND CLAMP ASSEMBLY, CLAMP RANGE 0.22"-0.55", ULT STR 18KIP, INCLUDES SOCKET EYE	HUBBELL	SWDE55S	4
62	SUSPENSION CLAMP FOR STATIC WIRE, US 16K, CLAMP RANGE Ø 0.2 -0.6", INCLUDES SOCKET EYE	HUBBELL	MS60S	2
POLES				
110	**CUSTOM STEEL - SEE PLAN AND PROFILE SHEETS**			**10**
CONDUCTOR				
211	1192.5 kcmil 54/19 "GRACKLE" Ø1.338" 41900LBS RBS ACSR			8550 LF
220	OPGW ALUMACORE 43/49/654 Ø0.654", 48 FIBER 18,022 LBS RBS	AFL	DNO-12519	3000 LF
260	7/16" EHS STATIC WIRE Ø0.435" 20,800LBS RBS			2750 LF
CONDUCTOR CONNECTING PARTS			The conductor quantity is based on 3 reels of 2850LF each to support pulling all three phases in a single pull operation.	
314	SOCKET Y-CLEVIS, 50K, 7/8"DIA. PIN, ANSI 52-8 & 52-11 SOCKET	MPS	SYCR-87-S	12
316	ANCHOR SHACKLE, 60K, 1 1/4" THROAT, 7/8"DIA. BOLT	MPS	ASH-67-BC	18
341	SOCKET EYE 1 3/4" WIDE, 11/16" PIN, ULTIMATE STRENGTH 30KIP	AFL	SE-SC	2
342	BALL Y-CLEVIS, 30KIP, 3/4" PIN, 1.5" THROAT, 3 3/32" LENGTH	AFL	YCBS	10
343	HOT LINE BALL Y-CLEVIS, 35KIP, 3/4" PIN, 10.125" LENGTH, 52-3 & 5 BALL	MPS	YCBHL-65A	8
345	SOCKET EYE 7/8" WIDE, 13/16" PIN, ULTIMATE STRENGTH 30KIP	AFL	SE-BDE	4
347	VIBRATION DAMPERS FOR OPGW, 7/16" BOLT, 0.571-0.675 IN RANGE, 30 FT-LB TORQUE	AFL	OVD-571/675	3
348	VIBRATION DAMPERS FOR 7/16" EHS STEEL SHIELD WIRE	AFL	1702-3	3
350	OPGW DOWNLEAD CLAMP, 0.601" - 0.700" DIA. OPGW	AFL	FDOA-B6B6	32
351	SPLICE ENCLOSURE FOR OPGW, INCLUDES ONE SPLICE TRAY FOR 72 FIBERS	AFL	SB01-72	2
352	FURCATION KIT, ONE KIT REQ'D PER STAINLESS STEEL TUBE PER PORT	AFL	SB01FK	4
353	SPLICE PROTECTOR SLEEVE - 60 mm LENGTH, PACKAGE OF TEN	AFL	SPS60	4
354	CONNECTOR KIT FOR OPGW TO SPLICE ENCLOSURES	AFL	APCKE647/662	4
355	FIBER COIL BRACKET FOR SBO1 AND OPTI-GUARD SPLICE CANS	AFL	CB-44-3AL	2
FOUNDATIONS				
610	**DRILLED PIER FOUNDATION - SEE DRAWING T4-03**			**6**
630	**DIRECT EMBED FOUNDATION - SEE DRAWING T4-02**			**4**

To be included in separate bid package, see M-26-041H

To be included in separate bid package.

Bill of Materials

GUYING PARTS

GROUNDING PARTS

801	**#4 AWG, BARE STRANDED COPPER WIRE, TINNED**			**AS REQ'D**
802	COPPER CLAD GROUNDING ROD 5/8"Ø x 10'-0"			20
803	COMPRESSION CONNECTOR, 5/8" ROD TO 4 AWG STR CU	BURNDY	YGHP29C2	10
804	COMPRESSION CONNECTOR, 5/8" ROD TO 5/8" ROD	ERICO	CC58	10
805	COPPER COMPRESSION CONNECTOR - 4/0 TO 4/0 - DEFAULT			20
831	COPPER COMPRESSION CONNECTOR, #4 AWG, 2 HOLE, 1 3/4" STUD SPACING, 1/2" DIA. STUD	BURNDY	YA4C2LN	20
833	**(1) SET OF STAINLESS STEEL HARDWARE, INCLUDES 1/2" X 2" BOLT, NUT, WASHERS, AND LOCK WASHERS**	**BURNDY**	**TMH69SS**	**AS REQ'D**
841	ALUMINUM BONDING WIRE, 4/0 STRANDED, LENGTH 24", w/ (2) 1/2" TERMINALS, INCLUDES 2 SETS OF 1/2" HARDWARE	AFL	BWAL50H/50H24	4
842	ALUMINUM BONDING WIRE, 4/0 STRANDED, LENGTH 40", w/ (2) 1/2" TERMINALS, INCLUDES 2 SETS OF 1/2" HARDWARE	AFL	BWAL50H/50H40	8

To be included in separate bid package.

To be included in separate bid package.

NUTS, BOLTS, ETC

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www.neiengineering.com

Transmission Line
Steel Pole and Structure Specification
Line 3001 Structures Replacement (ARDOT)

Garver/ARDOT/SWPA

Crawford County, Arkansas

Structure Replacement

NEI Document Version 2.0

Prepared By:

NEI Electric Power Engineering, Inc.

Monday, Nov. 3, 2025

REV	DATE	DESCRIPTION	BY	CHK
0	02/11/2026	ISSUED FOR PROCUREMENT	MDL	

Table of Contents

1. General

1.1 Scope

These specifications cover the design, shop detailing, fabrication, galvanization, shipping and delivery of tubular steel pole structures for high-voltage transmission lines.

Other assembly materials shall include cross arms, davit arms, bolts, locknuts, step bolts, ladder clips, anchor bolts, base plates, and any other components required to be furnished and installed.

All work shall be performed in accordance with the best modern practices for designing, detailing, fabricating and galvanizing steel transmission poles.

The Structure Designer or Fabricator shall furnish the necessary labor and material to design, detail, and fabricate the steel poles and other items shown on the drawings and specified herein to ship to designated locations. This shall include providing the seal of the structural engineer responsible for the structure design. See paragraph 1.2 "Project Description and Location" for the required State stamp.

1.2 Project Description and Location

This project includes the design, manufacture and delivery of six concrete caisson supported base-plated steel poles (two 3-pole dead ends) and two H-frame steel poles for a crossing of I-49 in Crawford County, AR.

1.3 Project-Specific Environmental Considerations

There are no site-specific environmental considerations that will impact pole design.

Steel structures and accompanying vangs, brackets, and other hardware are intended for a service life of 50 years.

1.4 Definitions

"Fabricator" – The party responsible for the fabrication of the steel pole structure(s).

"Owner" – The owner of the proposed transmission line or the owner's designated representative, who may be a consulting engineer, general contractor, or other entity.

"Line Designer" – An agent of the Owner who is responsible for the design of the proposed transmission line.

"Structure Designer" – the party responsible for the design of the structure. May be an agent of the Owner or Fabricator.

Other Useful Definitions:

Base Plate – A plate at the base of the pole that is intended to transfer the structure loads to the foundation.

Camber (or precamber) – pole curvature, induced in fabrication, used to counteract predetermined pole deflection, such that the pole will appear plumb under a specified load condition.

Charpy Impact – The impact properties of the material which are used to evaluate the susceptibility of the structural steel to brittle fracture (See ASTM A370).

Circumferential Weld – A weld joint directionally perpendicular to the longitudinal axis of a structure member. Commonly used to join two closed-section shapes of common diameter.

Complete Joint Penetration Weld – A penetration by weld metal for the full thickness of the base metal in a joint with a groove weld.

D/t – The ratio of the diameter of the round steel pole to the plate thickness.

Ground Collar or Sleeve – A steel jacket that encapsulates a portion of a direct-embedded pole immediately above and below the groundline.

Groundline – The designated location on the pole where the surface of the ground will be after installation of a direct-embedded pole.

Flanged Connection – A bolted type connection for joining two sections of a structure member

Factored Design Load – Unfactored loads multiplied by a specific load factor to establish the design load on a structure.

Longitudinal Weld – A weld parallel to the long axis of the structural member.

Load Factor (LF) – A multiplier used with the assumed loading condition or unfactored load to establish the factored design load.

Local Buckling – Introduction of a series of waves or wrinkles in one or more elements of a column section or on the compressive side of a beam section because the inability of the section to resist the compressive stress in its current geometric shape.

P-Delta Moment – A measure of the increase in bending moment resulting from the structure's displacement under load.

Pole Height – The distance from the groundline to the top of the pole.

Pole Length – The length from top of the pole to the base plate on pole bottom.

Pole Sweep – The measure of deviation from straightness along the length of the pole.

Point of Fixity – The point where maximum moment occurs. For direct embed poles, the actual location of this point is dependent upon the characteristics of soil around the embedded portion of the pole. This point is assumed to be 3' below ground for this project.

Slip Connection or Splice – A telescoping type connection of two tapered tubular pole sections.

Taper – The change in diameter of a tubular section from its base to its top.

Tip Load – The horizontal load that is applied to the standard class pole at a distance of 2 feet from the pole top.

Ultimate Load – The maximum design load that includes the appropriate Load Factor.

Yield Strength – The minimum stress at which a material will start to physically deform without further increase in the load. Also known as the elastic limit of the material.

Ultimate Moment Capacity – The moment that is developed in the pole at the time the yield strength of the pole is reached.

w/t – Ratio of the flat width of a multi-sided pole to the thickness of the steel plate.

Weathering Steel – Steel that conforms to ASTM A242, A588, or A871. This steel forms a natural protective oxide layer on the surface.

1.5 Technical Specifications

This specification and the American Society of Civil Engineers document ASCE Standard 48 "Design of Steel Transmission Pole Structures," shall govern the design of all tubular steel pole structures.

1.5.1 All work must be performed in a thorough and proficient manner in accordance with all project specifications and drawings.

1.5.2 The contractor must use the most recent version of the following codes and specifications in addition to ASCE 48, except where local regulations are more stringent, in which case the more stringent requirements will govern.

1.5.2.1 Owner's Specification

1.5.2.2 American Society for Testing and Materials

a. A6 Standard Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use
b. A36 Standard Specification for Structural Steel
c. A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
d. A143 Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
e. A153 Standard Specification for Zinc Coatings (Hot-Dip) on Iron and Steel Hardware
f. A283 Specifications for Low and Intermediate Tensile Strength Carbon-Steel Plates of Structural Quality
g. A307 Low-Carbon Steel Externally and Internally Threaded Fasteners
h. A354 Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners
i. A370 Standard Test Methods and Definitions for Mechanical Testing of Steel Products
j. A385 Standard Specification for Providing High-Quality Zinc Coatings (Hot-Dip)
k. A386 Specification for Zinc Coatings (Hot-Dipped) on Assembled Steel Products
l. A394 Standard Specification for Zinc-Coated Steel Transmission Tower Bolts
m. A449 Standard Specification for Quenched and Tempered Steel Bolts and Studs
n. A475 Standard Specification for Zinc-Coated Steel Wire Strand
o. A529 Standard Specification for Structural Steel with 42 ksi (290MPa) Minimum Yield Point (1/2 inch Maximum Thickness)
p. A563 Standard Specification for Carbon and Alloy Steel Nuts
q. A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality
r. A588 Standard Specification for High-Strength Low-Alloy Structural Steel with 50 ksi [345 MPa] Minimum Yield Point to 4 inches Thick
s. A615 Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
t. A633 Standard Specification for Normalized High-Strength Low Alloy Structural Steel
u. A673 Standard Specification for Sampling Procedure for Impact Testing of Structural Steel
v. A871 Standard Specification for High-Strength Low-Alloy Structural Steel Plate With Atmospheric Corrosion Resistance
w. E165 Standard Test Method for Liquid Penetrant Examination

x. E709 Standard Practice for Magnetic Particle Examination
y. F436 Standard Specification for Hardened Steel Washers
z. F3125 Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength
aa. F1554 Standard Specifications for Anchor Bolts, Steel, 36, 55 and 105 ksi yield strength

1.5.2.3 IFI Industrial Fasteners Institute Fastener Standards

1.5.2.4 NEMA Tapered Tubular Steel Structures

1.5.2.5 American Welding Society (AWS)

a. D1.0 Specifications for Design Stress and Joint Design for Welding
b. D1.1 Structural Welding Code-Steel
c. QC1 Certification of Welding Inspectors

1.5.2.6 Rural Utilities Services/ United States Department of Agriculture (RUS/USDA)

a. Bulletin 1724E-204 Guide Specifications for Single Steel Poles and H-Frame Structures
b. Bulletin 1724E-214 Guide Specifications for Standard Class Steel Transmission Poles Steel Structures Painting Council

1.5.2.7 Association for Materials Protection and Performance

a. SSPC-PA 1 Shop, Field, and Maintenance Painting of Steel
b. SSPC-SPCOM Surface Preparation Specifications: Surface Preparation Commentary for Steel and Concrete Substrates
c. SSSPC-CS-23.00 (I) Interim Specification for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel
d. SSPC-PS Guide 8.00 Guide to Topcoating Zinc-Rich Primers
e. SSPC-PS Guide 12.00 Guide to Zinc-Rich Coating System

2. Design

2.1 Preliminary Information

Preliminary information shall be shown on drawings submitted by the pole manufacturer with their proposal, which shall include the calculated shipping weight of each item, maximum ground line reactions, type of material and major components (i.e. ASTM designation including yield point and ultimate strength), and description of pole shaft (i.e. thickness, length, diameter, cross-sectional geometry, deflection, camber, coating method, and method of fastening each shaft component).

2.2 Major Requirements

- The material used shall be suitable, of uniform quality, and without defects which would affect the strength or service of the structure.
- All materials shall be new and unused.
- Proper loads and conditions shall be used in the design.
- The unit stresses shall be suitable for the material used.

- The computations and design shall be properly made, such that the unit stresses specified shall not be exceeded and the structure and its details possess the requisite strength and stability.

2.3 Calculations

Standard industry design practice is to use nonlinear, finite element-based computer programs. The Structure Designer's design method shall consider the effects of large displacements. Any design procedure not using the methods described in latest version of ASCE Standard 48 "Design of Steel Transmission Pole Structures," or other explicitly specified standards, shall not be accepted by the Owner or Line Designer.

Complete design calculations shall be made available within a specified period of time after award of the contract. Stress calculations shall be based on non-linear elastic analysis. Calculations shall be presented in a manner that allows the reviewing engineer to assess that the inputs reflect those provided by the engineer and that structure performance of the proposed design meets or exceeds design criteria (usage, deflection, etc.).

2.3.1 Design calculations shall provide the following information:

2.3.1.1 Diameter, material thickness, moment of inertia, deflection, stresses, and moments in the transverse and longitudinal directions at every flange plate or splice connection and all arm/beam connection points.

2.3.1.2 Base plate configuration, thickness, maximum stress, type of steel, and safety factor.

2.3.1.3 Anchor bolt length, size, quantity, maximum bolt force, type of material, and safety factor.

2.3.1.4 Weights of all sections, base plate(s) and anchor bolts shall be included, along with the ASTM specification for the material used.

2.3.1.5 All vang/guy attachment loadings (if applicable)

2.4 PLS-Pole Model Files

Steel supplier shall submit PLS-Pole files to engineer for review

2.5 Pole Shafts

Pole shafts shall be regular polygons with a maximum length of 60-feet. Circular or regular polygonal cross sections (8 or 12-sided) for tubular steel pole members are preferred. Elliptical sections shall not be used.

Poles shall be designed for butt jointed connections circumferentially welded, flanged or telescoping slip fitted sections with 1½ times the female I.D. as a minimum overlap between sections.

Maximum shaft thickness shall be 1-1/4". multiple plies will not be allowed.

Minimum shaft thickness shall be 3/16" (0.1875 inch).

Pole shaft top diameter, across flats, shall not be less than 9 inches.

2.6 Davit and Cross Arms

All davit arms and/or cross arms and appropriate attachment hardware shall be provided by the Fabricator. All arms must be capable of being mounted and removed independently without affecting each other in any manner.

- All conductor-to-structure (phase-to-ground) clearances shall be maintained for each arm.
- Arm deflections for all load cases shall not compromise the required phase-to-ground.
- The plate thickness of davit arms shall be adequate to sustain cyclic loadings due to wind-induced oscillations, but not less than 3/16 (0.1875) inch. Unloaded davit arms shall be evaluated by the Structure Designer for susceptibility to fatigue cracks. The protective procedures described in Chapter 8 of "Guide to the Assembly and Erection of Metal Transmission Structures," IEEE Standard 951 or other standards, may be adopted by the Owner or Structure Designer.
- All davit arms shall include a rise that is sufficient to keep the arms above horizontal under all load cases. A minimum rise of 6" shall be included on all davit arms.

2.7 Local Buckling

The methods as defined in Section 5.2.3 of "Design of Steel Transmission Pole Structures," ASCE Standard 48 shall be used to determine local buckling.

2.8 Raking and/or Cambering

Raking and/or cambering may be provided at Structure Designer's discretion, as required by analysis/design.

2.9 Slip Splices

Slip splices shall be designed in accordance with Section 6.4 of "Design of Steel Transmission Pole Structures," ASCE Standard 48. Slip splices may be used only if the Fabricator designs the splice in such a manner that the minimum jacking force exceeds the maximum design compressive force at the joint.

If a slip splice cannot resist the maximum design compressive force at a joint, then a flange plate connection must be used.

Supplier must include on the drawing the minimum compression load to apply during construction.

2.10 Deflections

Deflection limits vary based on structure type and are specified in the project load tree drawing notes.

2.11 Climbing Provisions

Refer to Steel Framing Drawings for climbing provisions. If none are shown, then none are required.

2.12 Grounding

Ground wire connection points shall be located on the exterior surface of the pole as detailed in the Steel Framing Drawings.

2.13 Ground Sleeve

When poles are to be directly embedded, a ground sleeve shall be utilized in addition to the protective coating indicated in 6.5 to provide additional corrosion protection. Sleeve shall utilize a minimum thickness of 3/16" hot-rolled material.

The thickness of the ground sleeve shall not be considered in the strength calculations of the structure.

Ground sleeve shall be 6' in length with the top extending 2' above ground line unless otherwise specified on the structure detail drawings.

2.14 Ventilation

If structures are not sealed, ventilation provisions shall be provided at both ends of the structure.

Pole top covers shall be provided for all structures.

2.15 Miscellaneous

Detailing for steel members and assemblies shall avoid pockets, crevices, faying surfaces or locations that can collect and retain water, damp debris, and moisture. Structures shall either be sealed or well ventilated. Bolted joints should be stiff and tight. Welding materials and welding procedures should be compatible with the parent material to ensure proper weathering characteristics.

- Vangs shall be designed as thru-vangs, welded in place for the vang attachment. All bolts, nuts, washers and lock washers shall be galvanized steel.
- Bearing plates shall be used on embedded poles. They shall be a minimum of 3/16" thick and a diameter of 2" greater than the maximum pole diameter.
- All poles with open tops shall be supplied with a pole cap. This cap shall have a single bolt connecting it to the pole. The cap shall prevent birds or large amounts of water from entering the pole but allow for ventilation. Pole cap for galvanized structures shall be galvanized.

3. Loading

Load case files and PLS POLE backup files are provided to convey the loading requirements for each pole. Several weather conditions have been identified as Load Cases. Structure Designer shall perform an analysis for each condition listed in the "Structure Load Descriptions & Load Factors" as found on the Load Tree Drawings and contained within the PLS-POLE LCA files. A loading tree is provided to identify locations of the named PLS POLE joints. All tubular steel poles, arms, hardware, and foundation components shall be designed considering all conditions. Overload factors found in NESC Table 253 have been indicated in the tables provided for each structure drawing. Loads other than NESC load cases, if applicable, are as shown on the Load Tree Drawings.

Poles must meet all NESC requirements for Grade B Construction.

4. Materials

4.1 Steel

All material shall comply with the applicable requirements of ASTM unless otherwise specified.

ASTM yield strength of the material used shall be equal to or greater than values used in design calculations. All materials shall be first quality, newly manufactured, from the manufacturer's or the Fabricator's stock.

- All steel pole/plate material shall comply with ASCE 48 Chapter 5 material requirements.
- Steel used in galvanized structures shall have silicon content less than .04% or between 0.15% to 0.4%.
- All material which is essential to the load carrying capability of the structures shall have an impact property in the longitudinal direction of 15 pounds at -20° Fahrenheit using the Charpy "V" notch test as described in ASTM A370/A673 and specified in ASCE 48.
- Rolled steel shall be used for base plates unless the use of forged ring base plates is approved by the Line Designer.

4.2 Connection Material

All connection material – bolts, nuts and washers – used in the component pieces of the tubular steel pole structures shall be compatible with ASTM specifications.

- A354 Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners
- A449 Standard Specification for Quenched and Tempered Steel Bolts and Studs
- A563 Standard Specification for Carbon and Alloy Steel Nuts
- F3125 Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

All material shall be galvanized and/or protected against corrosion.

This list does not exclude the use of other connection materials which conform to the chemical and mechanical properties of one or more of the listed ASTM specifications which establish the properties and suitability of the materials.

4.3 Anchor Bolts and Nuts

4.3.1 Anchor Bolts

Fabricator shall furnish pre-assembled anchor bolts of sufficient length (to develop bond and tension in concrete) with all necessary templates and bracing in place ready for use.

Material and physical properties of anchor bolts shall conform to ASTM A615 or to ASTM F1554 Grade 55. Anchor Bolts shall meet or exceed the standards as set forth in ASTM A370.

Threaded reinforcing bars, #14J and #18J, conforming to ASTM A615 Grade 75 may be used when required. Minimum Charpy V-notch requirement is of 15 ft-lbs at –20ºF as specified in ASCE 48.

4.3.2 Anchor Bolt Design

The Fabricator shall select and specify the anchor bolt arrangement for the given loading requirements. Anchor bolts shall assume a concrete strength of 3,000 psi for design purposes unless otherwise specified in the structure notes.

The clear distance between anchor bolts shall not be less than 2.0 times the diameter of the bolt.

4.3.3 Anchor Bolt Threading

Threads on all anchor bolts shall be American NC thread series. Threads for anchor bolts made from steel conforming to ASTM A615 shall be fabricated to avoid thread interruption.

All anchor bolts shall have a minimum threaded length not less than the bolt projection plus four (4) inches.

4.3.4 Anchor Bolt Template

The Fabricator shall provide top and bottom templates of adequate strength to hold the anchor bolts in place during placement of concrete. The top template shall have a V-notch oriented on the bisector of the line angle or as specified on Load Tree Drawings. The bottom cage template shall be tack welded to the bottom of the anchor bolt or sandwiched between two heavy hex nuts and the top cage template shall be sandwiched between two heavy hex nuts.

Fabricator shall supply templates to a tolerance of 0.0625 inches for bolt hole alignment.

4.3.5 Anchor Bolt Galvanizing

Galvanizing of anchor bolts and nuts shall be in accordance with the latest revision of ASTM A153. The top 24-inches of anchor bolts shall be galvanized. The remainder of the bolt, if not galvanized, shall be clean and free from oil, paint and other objectionable material. Anchor bolts shall be tapped and threaded prior to galvanizing.

4.3.6 Anchor Bolt Nuts

4.3.6.1 Each anchor bolt shall be supplied with a minimum of two heavy hex nuts and two flat washers, with a locking mechanism for the upper nut – either an ANCO lock nut, or a third nut.

4.3.6.2 Anchor bolt nuts shall have a proof load equal to or greater than the yield strength of the anchor bolt.

4.3.6.3 Nuts shall have a free-running fit on the bolts without excessive shake and shall be shipped assembled on the bolts.

4.3.6.4 Nuts shall be compatible with the required anchor bolt strength. For bolts conforming to ASTM A615 or F1554, the nuts shall correspond to a minimum ASTM A563 specification, depending on the bar diameter.

4.4 Stainless Steel Grounding Attachments

All material shall comply with the applicable requirements of ASTM unless otherwise specified.

All materials shall be first quality, newly manufactured, from the manufacturer's or the Fabricator's stock.

Grounding pads and tabs shall be welded to the structure on all sides.

All steel pole/plate material shall comply with 300 series grade, 18-8 stainless steel with 18% chromium and 8% nickel. Other materials may be used with EOR approval.

5. Fabrication

5.1 Holes

All holes in structural steel may be punched to full size in material where the thickness is equal to or less than the bolt diameter. Holes in material thicker than the hole diameter shall be sub-punched and reamed, or drilled from solid. The accuracy of sub-punching shall be such that after reaming, the punched surface shall be clean cut and without torn or ragged edges. All

burrs resulting from reaming or drilling shall be removed. If the material is to be galvanized, specifications found in ASTM A123 and ASTM A143 shall be followed to guard against steel embrittlement. Holes must be sharp and cylindrical without excessive tear-outs or depressions.

5.2 Welding

All welding shall be performed by operators qualified in welding practices found in the latest revision of the American Welding Society Structural Welding Code (ANSI/AWS D1.1).

Welding electrodes shall meet the same Charpy impact requirements as the base material.

Welding may be done by shielded metal-arc electrodes, gas metal-arc process, submerged arc process or flux cored arc process. Preheating shall be in accordance with AWS recommendations and must be controlled to prevent underbead cracking in weldments.

The Fabricator shall use nondestructive testing procedures in accordance with the guidelines of Section 10.19 of ANSI/AWS D1.1. Those procedures should incorporate all thicknesses of plate used, including thicknesses less than 0.3125 inches, not specifically covered by ANSI/AWS code.

The Fabricator's inspection personnel shall be Certified Welding Inspectors as certified by the American Welding Society or Level II Inspectors as certified by the American Society for Nondestructive Testing. At a minimum, the Fabricator's Quality Control Program shall include inspection of the following weldments:

- All welds shall be 100 percent visually inspected for surface flaws such as poor profile, undercut, spatter, arc strikes, cracking, blow holes or other rejectable flaws. Such inspection shall be performed prior to volumetric inspections and all rejectable flaws shall be corrected prior to volumetric inspections.
- Full penetration circumferential welds shall be inspected by ultrasonic techniques.
- All baseplate-to-leg, beam-to-flange, and flange-to-leg weldments shall be 100 percent volumetric inspection by ultrasonic or radiographic techniques.
- All major load carrying attachments such as vangs-to-columns or beams shall be 100 percent inspection by magnetic particle techniques.
- All partial penetration welds shall be inspected with MT where there are visual indications and further shall have random spot inspection of 10 percent of the length of using magnetic particle or dye-penetrant techniques.
- Major load carrying fillet welds shall be inspected by magnetic particle or dye- penetrant techniques. The surface shall be finished in such a manner that such inspections can be performed without undue non-relevant indications.

Circumferential pole welds shall have 100 percent penetration between plates. Welds shall be free of any cracking of either the surface or the subsurface. No undercutting greater than 0.01 inches when its axis is transverse to the pole axis or 0.03125 inches when its direction is parallel to the pole axis of either surface is permitted. Blowholes, porosity, or spherical inclusions which exceed the limitations of AWS D1.1, as amended are unacceptable.

Longitudinal Welds, a minimum of 80% penetration is required. All longitudinal welds within three (3) inches of a circumferential weld shall be 100 percent penetration welds.

Welds shall be free of surface blowholes. No undercutting greater than 0.01 inches when its axis is transverse to the pole axis or 0.03125 inches when its direction is parallel to the pole axis of either surface is permitted.

Compliance with the above requirements shall be determined ultrasonic inspection, or Dry Powder Magnetic Particle Inspection or Wet Magnetic Particle Inspection as defined by AWS E109 and E138.

Longitudinal Welds within Area of Slip Joint: For slip splices, the female section longitudinal seam weld shall be a 100 percent penetration weld with a minimum length equal to the maximum lap dimension.

- All attachment welds shall be adequate for the loads and stresses to be applied. Proper measures shall be taken to relieve the stresses on the opposite side of the shaft if warpage occurs.
- Limitations of Circumferential Welds: Circumferential welds shall be used only at the base plate for pole shaft diameters less than 24 inches.
- Any pole assembly not meeting the requirements of Section 10.3.5 of ASCE 48 shall be rejected. The Fabricator may repair and re-test the assembly.
- The Fabricator shall keep inspection reports on file and available to the Owner, in accordance with AWS specifications.

5.3 Identification of Structures

Structure identification information shall be either stamped or molded directly into the structure or imprinted into a metal tag permanently affixed to the structure. If the pole identification information is stamped or molded, the pole shall be marked before galvanizing or painting. The identification information shall remain readable after galvanizing or painting. The identification information shall be placed five (5) feet above the base plate or designated ground line unless otherwise specified on the structure detail drawings. The information on each structure shall be as specified on the Standard Steel Framing Notes Drawing.

5.4 Alignment Mark

Each pole section shall be marked with an alignment arrow properly located on the exterior surface of the pole section to ensure that each pole section may be correctly aligned during assembly.

The base plate shall have a V-notch for alignment of the base plate to the anchor bolts.

5.5 Misalignment and Warpage:

After fabrication and assembly, but before any external load is applied, the sweep of the pole or any section of the pole measured from a plumb line held along the pole center line shall not exceed the value shown in Table 1.

5.6 Manufacturing Tolerances

The recommended tolerances are shown in Figure 1 and Table 1

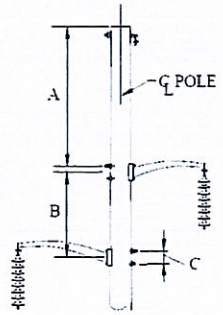


Figure 1

Table 1

Item	Tolerance
Pole Length	One Piece: ± 2" or ± 1" ± ⅛" per 10' of length whichever is greater
	Assembled pole with flanged joints: Same as for One Piece
	Assembled pole with slip joints: The accumulation of the slip
	joint tolerances not to exceed - 6" to + 12"
Pole Diameter	0 to + ¼"
Pole End Squareness	± ⅛" per foot of pole diameter
Pole Sweep	⅛" per 10' of pole length
Pole Twist	None Acceptable
Pole Taper	Should be uniform from top to bottom of pole
Slip Joints	Overlap must comply with the latest version of ASCE 48
	Per total pole length requirements
Location of Groups of Bolt Holes from Top of Pole	± 1" (See Dimension A of Figure 1)
Location of Centerline Between Groups of Bolt Holes	± 1" (See Dimension B of Figure 1)
Location Holes within a Group of Bolt Holes	± ⅛" (See Dimension C of Figure 1)
Bolt Hole Diameter	+⅛" larger than nominal bolt diameter
Bolt Hole Alignment	Not to vary from the longitudinal pole centerline of that group of holes by more than 1/16"
Location of ID Plate	± 2"

6. Structure Finish

Structure finish shall be as specified on the Steel Framing Notes Drawing. Specifications for various structure finishes are provided below.

6.1 Galvanizing

All galvanized steel shall meet all the requirements of ASTM A123 or A153. Measures shall be taken to prevent warping and distortion according to ASTM A384 and to prevent embrittlement according to ASTM A143. Poles shall not be made of ASTM A588 steel, as it cannot be galvanized due to the high silicon content of the steel. One gallon of zinc enriched paint shall be provided with each five (5) poles.

6.2 Cold Galvanizing

When applicable, cold galvanized steel shall meet all the requirements of ASTM A780 and E376. Generally, cold galvanizing should only be used to correct a hot-dipped galvanized coating, or to protect certain steel that is not compatible with being hot-dipped galvanized. Cold galvanizing should only be applied by zinc enriched paint or by electro-galvanizing.

6.3 Painting

When painting of steel is required this standard shall apply. All galvanized steel surfaces to be painted shall be thoroughly cleansed of all foreign material and converted before painting to insure good adhesion of paint to the galvanized surfaces. All coatings shall be applied in the shop in strict accordance with paint manufacturer's instructions. All painted surfaces shall have a minimum thickness of 5.0 mils. All paints shall be approved by the Owner before application. Primer shall be 2.0 – 2.5 mils minimum thickness. Paint color shall be as specified on the Load Tree Drawings. Topcoat shall be 3.0-3.5 mils minimum depth. Paint type shall be epoxy. Areas damaged during handling, transport or erection shall be cleaned and coated with two coats of paint. Field repair shall only be performed during dry weather conditions with temperatures above 50 degrees and below 90 degrees or as allowed by paint manufacturer. A minimum of two gallons of primer and topcoat paint shall be included with each order.

6.4 Weathering Steel

Steel shall conform to ASTM A588 or A871. After fabrication, poles made of weathering steel shall be cleaned of oil, scale, etc., in accordance with the Steel Structure Painting Council's Surface Preparation Specification, SSPC-SP6, to ensure uniform and rapid formation of the protective oxide layer. All nuts and ground pads shall be plugged prior to shot blasting to keep the threads free from damage and plugging with shot. All weathering steel poles shall be designed to keep out moisture.

6.5 Coating for Embedded Pole Portion

When poles are to be directly embedded, a 16 mil (minimum dry film thickness), two (2) component hydrocarbon extended polyurethane coating that is resistant to ultraviolet light shall be applied on the exposed surface of the embedded portion of the pole. The coating shall extend from the butt to the top of the ground sleeve or 2 ft above the ground surface, whichever is greater. All ground pads shall be plugged and covered prior to application of protective coating if located in the zone of coating or if risk of overspray exists. Other coatings shall be approved by the Owner prior to use. The top of the coating shall be feathered to prevent ponding of water at the lip of the coating.

6.6 Bolts and Nuts

Bolts and nuts with yield strengths less than 100,000 psi shall be hot-dip galvanized per ASTM A153 and A143 or mechanically coated with zinc in accordance with ASTM B454, Class 50. Bolting materials with yield strengths in excess of 100,000 psi shall not be hot-dip galvanized. Instead, they shall be painted with zinc enriched paint or mechanically coated with zinc per ASTM B454, Class 50.

7. Shipping, Packaging, and Storage

7.1 Shipping

The Fabricator shall deliver all structures to the location designated by Arkansas Department of Transportation. For shipping purposes the vendor should assume that the delivery will be to a storage yard near Mulberry, AR. The Fabricator shall be responsible for monitoring all shipments, for the carrier and freight forwarders selected for shipping and for delivery of the structures to the specified site. The Fabricator shall assume and be liable for the entire risk involving damage or loss while equipment is in transit, and shall be responsible for filing all claims with its Insurance Carrier for damaged and lost equipment and shall promptly replace or repair any damaged or lost equipment, without awaiting the finalization of insurance claims. At all times, Fabricator shall be responsible for all risk of loss until the structures are delivered to the Site in accordance with the Contract and to the satisfaction of the Owner. Delivery shall be deemed to be completed as specified in the Contract.

The Fabricator shall investigate load restrictions along potential shipping routes and on the roads and highways as these restrictions may apply.

The Fabricator agrees and understands that all duties, tariffs, fees, insurance, expenses and other costs associated with transporting, shipping, delivery, and importing the equipment, apparatus and materials to be furnished and expended by the Fabricator or its Subcontractors or its agents are to the account of the Fabricator and are included in the Contract Price. The Fabricator shall be responsible for any and all expenses associated with transporting. Proof of all payments towards duties, tariffs, fees, insurance, expenses and other costs, and transportation, shall be provided to the Owner within 45 days of payments made by Fabricator.

The Fabricator shall ensure that all shipments have readable packing slips attached to the Bill of Lading and all item numbers on the packing slip correspond to the item numbers on the Parts Master List. A copy of each packing list shall be affixed to the respective component or box by the Fabricator.

7.2 Packaging

The Fabricator shall ensure that the packaging used is adequate to prevent contamination, mechanical damage, or deterioration of the item supplied.

The Fabricator shall ensure that all items are inspected for cleanness immediately before packaging. The Fabricator shall remove any entrapped water and foreign matter, and clean and dry those parts.

The anchor bolts shall be fully assembled. The Fabricator shall ensure that all structures are adequately braced and supported for shipment. Any bracing required only for shipping purposes shall be marked by the Fabricator to indicate the proper sequence of its removal prior to operation.

It shall be the responsibility of the Fabricator to ensure that all items subject to corrosion are suitably protected.

The Fabricator shall be responsible for and shall submit packaging and shipping plan to the Owner.

7.3 Marking

Prior to the shipment from the point of origin, the following information shall be clearly marked by the Fabricator on the outermost covering of each box crate, skid, or package:

- Destination address
- The Owner's Contract number
- Item numbers of the contents
- Gross weight
- Center of gravity
- Lifting points

The Fabricator shall submit a copy of shipping notices with copies of Bill of Lading to the Owner. The Fabricator shall ensure that all components and accessories are tagged, stenciled or stamped with the item number of the piece of equipment with which it belongs and with an identifying number or designation that can be referenced back to the appropriate assembly drawing.

7.4 Unloading and Inspection

Receiving, unloading, and inspection at the Site will be performed by the Installation Contractor with the Fabricator's and Owner's representatives present. Delivery shall be coordinated with the Owner at least 72 hours in advance. Fabricator shall make arrangements with its transportation provider to allow the Installation Contractor up to 24 hours during normal work days to off-load the equipment. No deliveries shall be scheduled on Saturdays, Sundays or holidays, unless agreed upon by the owner and installation contractor.

All structures arriving at the Site shall be checked by the Fabricator and installation contractor against the bills of lading and the packing list, and shall be inspected for damage, which may have occurred during shipping. Omissions, damage, and other discrepancies shall be reported immediately to the Line Designer in writing in a joint report prepared by the Contractor and the installation contractor. Appropriate actions are then taken with the approval of the Owner.

The installation contractor shall perform joint visual inspections of structures before installation. Any equipment or component that is questionable shall be examined in further detail and shall be brought into compliance with Contract requirements at the fabricator's expense before its installation or placement into final storage is permitted.

7.5 Provision for Storage

Structures covered by these Specifications may need to be stored at the storage site or at a staging area used by the installation contractor for the construction of the transmission line, as needed. The Fabricator's preparation of the structures shall be suitable for storage outdoors.

Any special storage requirements specified by the Fabricator shall be forwarded to the Site with each shipment to which they are applicable.

Special attention should be given to storage of the anchor bolt assemblies. Unless specifically allowed in the Fabricator's written instructions the assemblies should be stored upright to avoid the potential for warping of the template and bolt circle.

The Fabricator's written instructions shall ensure the equipment is safeguarded to provide protection against corrosion, distortion, weather, and injury.

8. Testing

Testing and inspection shall be performed by personnel qualified as Level II. Ultrasonic weld inspection techniques and procedures shall be in accordance with AWS D1.1.

Galvanizing shall comply in coating thickness and shall be checked with a magnetic thickness gauge.

Compliance to paint coating thickness requirements shall be checked with a magnetic thickness gauge.

9. Drawings

9.1 Owner

The Owner shall provide documents containing pole configurations, layout, dimensions, overload capacity factors, point loads, guying requirements and attachment details for conductors, overhead ground wires, fiber optic and guy wires.

9.2 Fabricator

The Fabricator shall provide all final structure detail and erection drawings electronically in PDF format, or by mail in paper format. If the successful Fabricator is unable to comply with this requirement, alternate formats must be approved by the Owner.

Drawings shall not exceed 24" x 36" (ANSI Standard "D" size) and shall have a binding margin along the left side. All drawings shall be submitted on the same size sheet with drawing and detail scales noted in an obvious location.

Drawings shall be clear and complete and contain all necessary information to enable the installation contractor and Line Designer to evaluate the design and correctly erect the structure. The following items shall be shown or noted on the drawings:

- Outline dimensions of each shop assembly including plate thickness, weight, and grades of steel by ASTM designation
- Details of full penetration welded joints including the transition between plates of unequal thickness and the connection between the pole shaft and base plate
- Cambering diagram, if required
- Total weight of the structure including all fittings, devices, and guys furnished by the Seller. If the structure is furnished in sections, the weight of each section
- Details of arms, base plates, venting assemblies, jacking nuts, conductor vangs, ladder attachments, guy vangs, etc.
- Anchor bolt cage drawings displaying outer diameter of alignment templates, bolt circle diameter(s), anchor bolt length(s) and anchor bolt projection(s)
- Any additional information not listed above but necessary for Engineer's evaluation and/or for erecting the structures
- Each piece listed in the Fabricator's Bill of Materials shall be called out on the drawings.

9.3 Line Designer's Review

The Fabricator shall provide paper drawings or electronic drawings to the Line Designer for review. The Line Designer will return one (1) set of drawings with comments within fourteen (14) working days of receipt. Fabrication work done before Fabricator receives Line Designer's approval shall be at the Fabricator's risk. Approval of drawings by the Line Designer shall not relieve the Fabricator of responsibility for the overall structural integrity and ensuring compliance of the fit and finish of the structures with these specifications.

9.4 Reproducibles

Upon final approval of drawings by the Line Designer and prior to delivery of the tubular steel pole structures, the Fabricator shall furnish reproducible shop drawings for each structure type, either by mail in paper format, or electronically in PDF format. Reproducible shop drawings deemed unreadable by the Line Designer or Owner shall be returned to the Fabricator for re-issue at the Fabricator's expense.

9.5 Bills of Material

With each approved shop drawing, Fabricator shall include a Bill of Material including the following information:

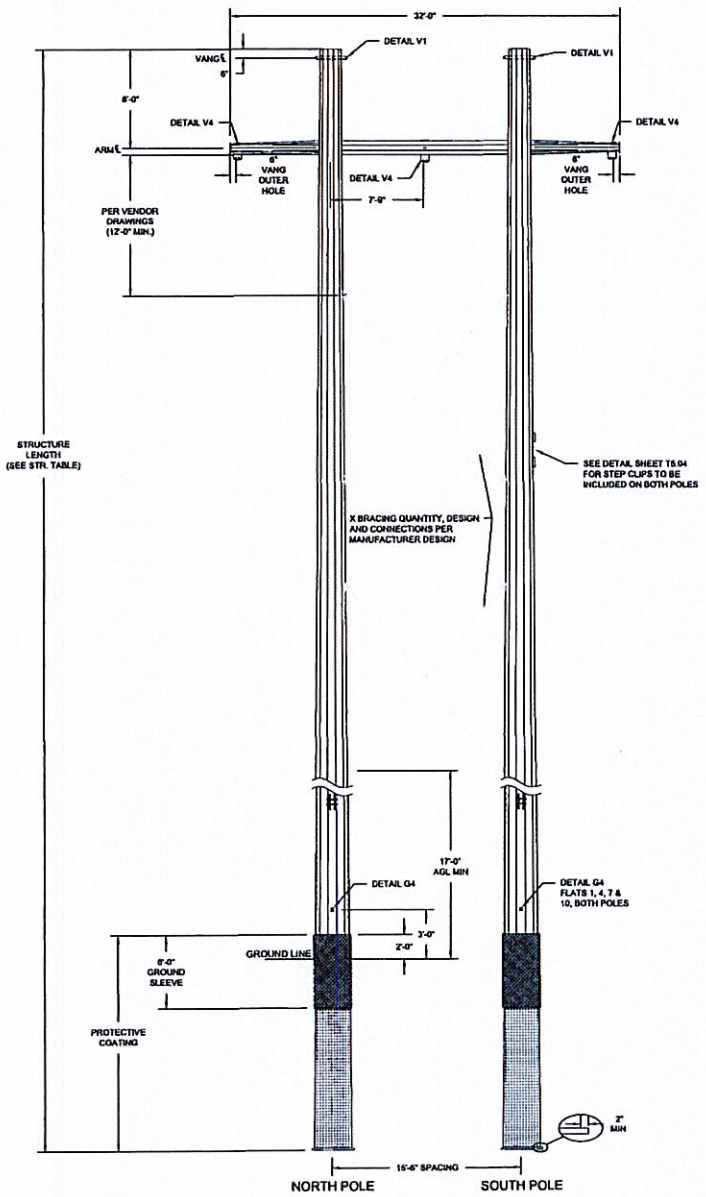
- Quantities of all required pieces
- Descriptions of all separate pieces
- Mark numbers used for each piece
- A complete list of all required bolts including size and ASTM designation
- All required guys and accessories, if furnished by Fabricator

TEMPLATE REVISION HISTORY

REV	DATE	DESCRIPTION	BY	CHK
1.0	07/20/21	Initial Template Publication	MDL	JWW
2.0	06/05/24	Major Restructure/Overhaul including revision of language around welder qualifications and weld inspections to be in compliance with AWS Standards, and addition of language related to ground sleeve, stainless steel ground tabs/plates, and cold galvanizing	MDL	JWW/JRC

DATE REVISED	DATE REVISED	FED.ROJ. DIST NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	4801.001	T5.01	
		161KV 2P SC TAN FRAMING				
8	ISSUED FOR PROCUREMENT			DATE	02/11/26	

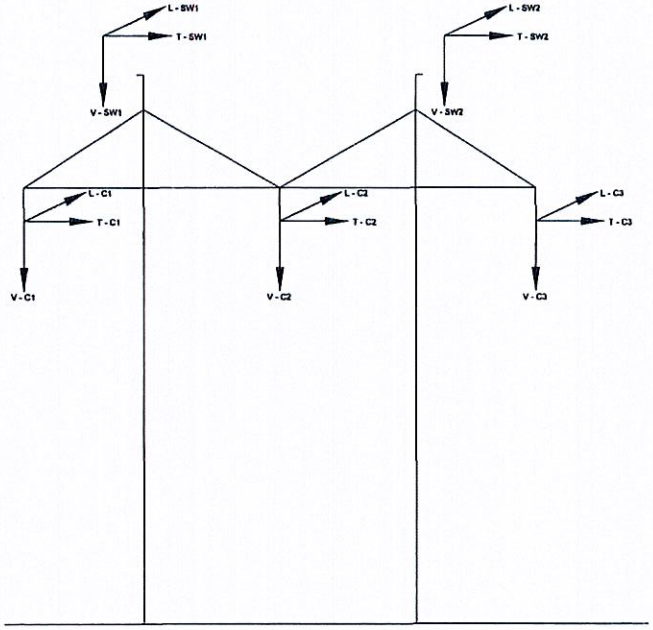
ISSUED FOR PROCUREMENT



161kV HORIZONTAL TANGENT STRUCTURE
SHOWN AT ZERO LINE ANGLE FOR CLARITY

STRUCTURE TABLE
161kV 2P SC TAN
T2.01

STR #	POLE LENGTH			POLE CLASS			EMBEDMENT			LINE ANGLE
	L	C	R	L	C	R	L	C	R	
1132	120		120	CUSTOM		CUSTOM	17		17	
1133	120		120	CUSTOM		CUSTOM	17		17	



STRUCTURE LOAD TREE
CONDUCTOR/SHIELD WIRE LOADS

nei
ELECTRIC POWER ENGINEERING, INC.
12400 W. COLFAX AVE., STE. C500
LAKEWOOD, CO 80215
(303) 431-7895 www.neieng.com

NOTES

1. SEE STRUCTURE TABLE FOR POLE LENGTH, HEIGHT, AND LINE ANGLE.
2. STEEL POLE DESIGN TO BE COMPLETED BY MANUFACTURER.

REFERENCE DRAWINGS

PLAN AND PROFILE	T1.01
GROUNDING DETAILS	T3.01
FOUNDATION DETAILS	T4.01

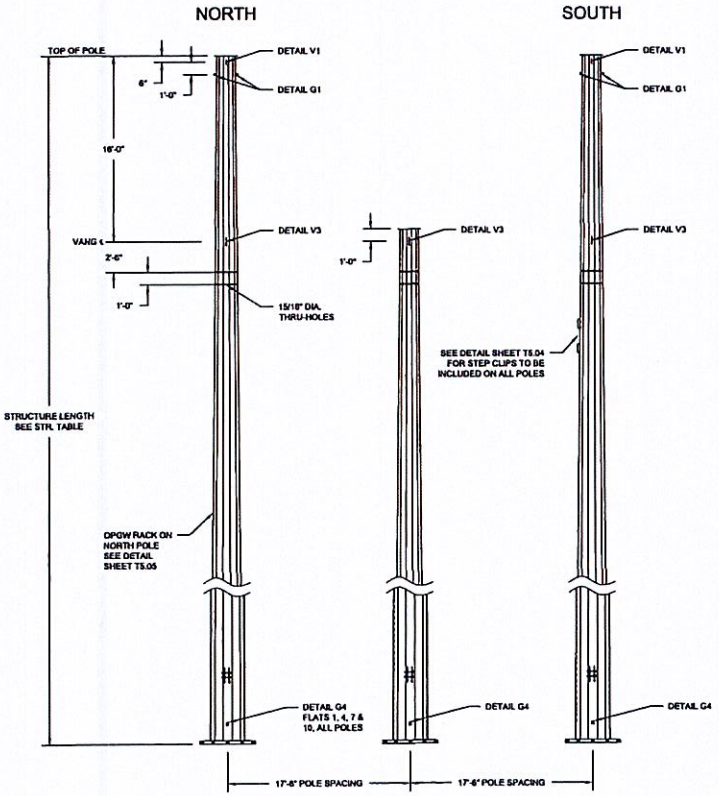
$DATE$ $TIME$
$FILE$

DATE REVISED	DATE REVISED	FED.AID. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	4801.001	T5.02	
		161KV 3P SC DE SA FRAMING				
B	ISSUED FOR PROCUREMENT			DATE	02/11/16	

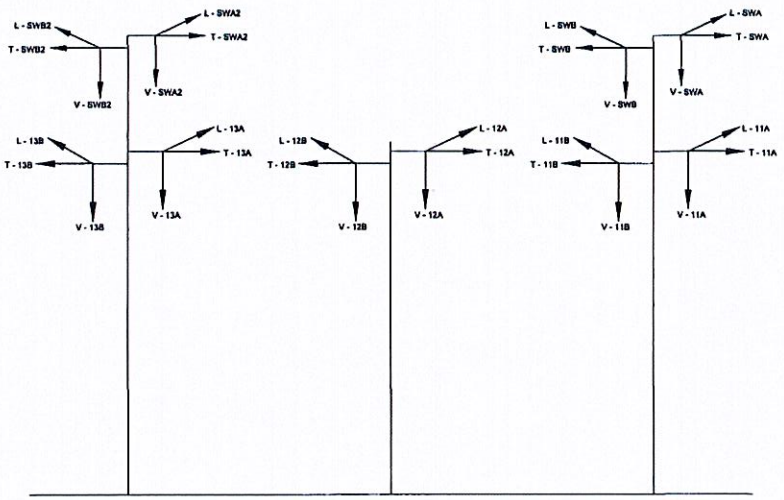
ISSUED FOR PROCUREMENT

STRUCTURE TABLE
161kV 3P SC DE SA
T2.02

STR #	POLE LENGTH			POLE CLASS			EMBEDMENT			LINE ANGLE
	L	C	R	L	C	R	L	C	R	
1130	80	65	80	CUSTOM	CUSTOM	CUSTOM				-1.06
1134	80	65	80	CUSTOM	CUSTOM	CUSTOM				-1.62



161kV 3-POLE HORIZONTAL DEADEND SMALL ANGLE



STRUCTURE LOAD TREE
CONDUCTOR/SHIELD WIRE LOADS

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NOTES

1. SEE STRUCTURE TABLE FOR POLE LENGTH, HEIGHT, AND LINE ANGLE.
2. STEEL POLE DESIGN TO BE COMPLETED BY MANUFACTURER.

REFERENCE DRAWINGS

PLAN AND PROFILE	TL.T1.01 - TL.T1.13
GROUNDING DETAILS	TL.T3.01
FOUNDATION DETAILS	TL.T4.01-02

$DATE$ $TIME$
$FILES$

DATE REVISED	DATE REVISED	FED.AID. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	4801.001	T5.03	–
		STEEL FRAMING NOTES				
B	ISSUED FOR PROCUREMENT		DATE	02/11/26		

STEEL POLE NOTES:

1. ALL STRUCTURES TO BE HOT DIP GALVANIZED STEEL
2. POLES SHALL BE DESIGNED AND FABRICATED IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS PER THE STEEL POLE SPECIFICATION
3. CUSTOM POLES TO BE DESIGNED BY POLE MANUFACTURER
4. COMPLETE STRUCTURES TO INCLUDE BASE OR BEARING PLATES, CONNECTION PLATES, VANGS, BRACKETS, GROUNDING TABS AND DAVIT ARMS

5. PRE-ENGINEERED POLE CLASS AND HEIGHTS PROVIDED IN STRUCTURE TABLE ARE BASED ON THE PLS POLE LIBRARY PROVIDED BY SABRE.
   a. ALL PRE-ENGINEERED POLES MUST MEET OR EXCEED GROUND LINE MOMENTS PROVIDED IN ASSUMED MOMENT CAPACITY TABLE AT 100% UTILIZATION
   b. PRE-ENGINEERED POLES PROVIDED BY OTHER VENDORS, FOR POLES EMBEDDED GREATER THAN STANDARD 10% + 2, MUST VERIFY THE REQUIRED POLE CLASSIFICATION FOR THE GROUND LINE MOMENT PER THE PLS CADD LOAD CASE (.LCA) FILES.

6. FOR STRUCTURE LOADS REFER TO LOAD TREE DOCUMENTS AND PLS-POLE .BAK FILES. IF NOT INCLUDED IN DRAWING PACKAGE CONTACT NEI
   a. POLES SHALL BE DESIGNED TO 90% UTILIZATION

7. UNDER SERVICEABILITY DEFLECTION LIMITS, CASE 5 POLE TOP DEFLECTIONS OF TANGENT STRUCTURES SHALL BE LIMITED TO 1% OF THE POLE HEIGHT. ALL OTHER STRUCTURES SHALL BE LIMITED TO 2% OF THE POLE HEIGHT.
   a. FOR NON-TANGENT STRUCTURES POLE MANUFACTURER SHALL INCLUDE PRE-CAMBER OR RAKING REQUIREMENTS IN THE FABRICATION DRAWINGS FOR PLUMB INSTALLATION

8. DEFLECTIONS FOR ALL OTHER LOAD CASES (WITH OVERLOAD FACTOR) SHALL BE LIMITED TO 10% OF THE POLE HEIGHT.

9. STRUCTURE NAME PLATE AND V-NOTCH
   a. ALL STRUCTURES SHALL HAVE THE NAME PLATE ORIENTED ON THE INNER BISECTOR OF THE LINE ANGLE.
   b. BASE-PLATED STRUCTURES SHALL HAVE A V-NOTCH ON BOTH THE BASE PLATE AND THE ANCHOR BOLT TEMPLATE
   c. NAME PLATE ON DIRECT BURY STRUCTURES SHALL BE LOCATED A MAXIMUM OF 5 FEET ABOVE GROUND LINE AND ON BASE-PLATED STRUCTURES A MAXIMUM OF 4 FEET ABOVE THE BASE PLATE.

STRUCTURE I.D. TAG

THIS TAG TO BE INSTALLED ON ALL STEEL STRUCTURES

STRUCTURE IDENTIFICATION TAG - STANDARD CLASS	
OWNER'S NAME:	
PROJECT NAME:	
STRUCTURE NUMBER:	
STRUCTURE TYPE:	
POLE LENGTH/CLASS:	
POLE WEIGHT:	
GROUND LINE MOMENT	
MANUFACTURER'S NAME:	
MANUFACTURER'S DRAWING NUMBER:	
DATE OF MANUFACTURE:	

NOTE: FOR CUSTOM POLES USE CUSTOM FOR POLE CLASS.

LOAD CASES TABLE

THESE CASES ARE APPLIED TO ALL STRUCTURES

STRUCTURE LOAD DESCRIPTIONS & LOAD FACTORS												
		WEATHER CRITERIA					UNFACTORED MAN LOADS		LOAD FACTORS		
	LOAD CASE DESCRIPTION	TEMP (°F)	ICE (IN)	WIND ON WIRE (PSF)	WIND ON STR (PSF)	K FACT.	SHIELD	PHASE	VERT	STR WIND	TENSION
1	NESC Heavy District Loading (250B)	0	0.5	4	4	0.3	0	0	1.5	2.5	1.65
2	NESC Extreme Wind (250C)	60	0	20.736	20.736	0	0	0	1	1	1
3	NESC Concurrent Ice and Wind (250D)	15	1	4.096	4.096	0	0	0	1	1	1
4	Uplift	-20	0	0	0	0	0	0	1	1	1
5	Deflection, 60 F, Wind (5 MPH)	60	0	0.064	0.1	0	550	950	1	1	1

NOTES:
1. APPLY MAN-LOADS TO ONE PHASE OR OPGW LOCATION THAT INDUCES THE GREATEST STRESS INTO STRUCTURE.
2. WIND ON STRE BASED ON AVG STR HEIGHT, SEE LCA FILE FOR STR SPECIFIC WIND LOADING

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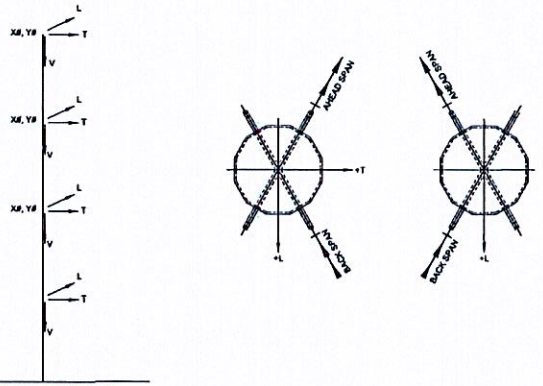

GENERIC LOAD TREE

LEGEND

LOAD VECTOR DIRECTIONS
- LONGITUDINAL LOAD (L)
- TRANSVERSE LOAD (T)
- VERTICAL LOAD (V)

XØ PLS POLE JOINT NAME

STRUCTURE LOAD TREES AND SECTION VIEWS

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REFERENCE DOCUMENTS

STEEL SPECIFICATION ..... TL SSS.01

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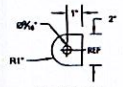
$FILE$

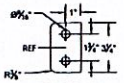
DATE REVISED	DATE REVISED	FED RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	4801.001	TS.04	–
		STANDARD STEEL POLE ATTACHMENTS				
8	ISSUED FOR PROCUREMENT		DATE	02/11/26		

ISSUED FOR PROCUREMENT

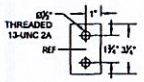


DETAIL G1
GROUNDING TAB

NOTES:
1. ORIENT TABS ON FLAT THAT CORRESPONDS WITH VANG OR ARM
2. GROUNDING TABS ARE REQUIRED WITHIN 4 FEET OF EACH END OF ANY STATIC WIRE DAVIT ARM WITH A MIN OF ONE PER ARM

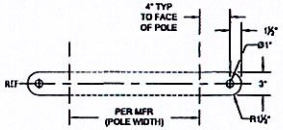


DETAIL G2
2 HOLE NEMA GROUNDING TAB

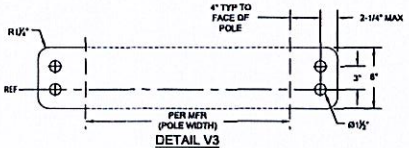


DETAIL G4
2 HOLE THREADED NEMA GROUNDING PLATE

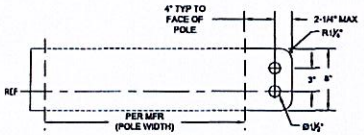
STANDARD GROUNDING NOTES:
1. TABS AND PLATES ARE ¼" THICK
2. GROUNDING TABS AND PLATES TO BE STAINLESS STEEL



DETAIL V1
TWO-WAY SHIELD/BRACE VANG

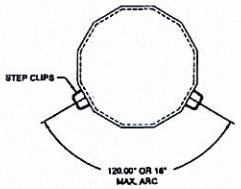


DETAIL V3
TWO-WAY CONDUCTOR VANG



DETAIL V4
ONE-WAY CONDUCTOR VANG

STANDARD VANG NOTES:
1. MANUFACTURER TO VERIFY REQUIRED VANG PLATE THICKNESS.
2. ½" X 45° CHAMFER ON BOTH SIDES VANG HOLES.
3. MAXIMUM VANG PLATE THICKNESS = 3/4" FOR ALL VANGS.



STEP CLIPS DETAIL
FOR 3/4" STEP BOLTS

NOTES:
1. STEP CLIPS ON 16" SPACING.
2. CLIMBING FACE FLAT B.
3. STEP CLIPS START AT 8'-0" ABOVE THE GROUND LINE AND GO TO THE POLE TOP WITH STAGGERED SPACING.
4. WORKING STEP CLIPS TO BE ATTACHED ON 3 FACES OF ALL POLES AT 4' BELOW EACH WORKING ATTACHMENT.

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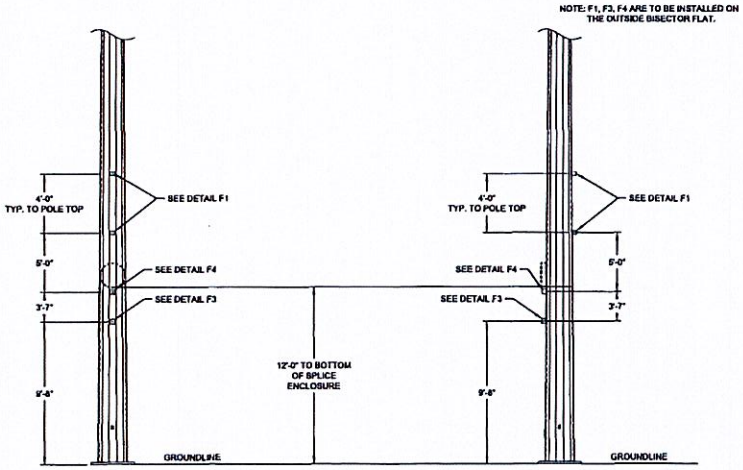
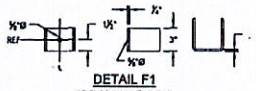
DATE REVISED	DATE REVISED	FED.AID DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	4801.001	T5.05	--
		OPGW COIL RACK FRAMING DETAILS				
B	ISSUED FOR PROCUREMENT			DATE	02/11/26	

ISSUED FOR PROCUREMENT



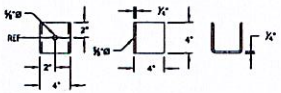
OPGW SPLICE BOX MOUNTING BRACKET
BISECTOR VIEW

OPGW SPLICE BOX MOUNTING BRACKET
PROFILE VIEW

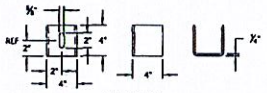


DETAIL F1
OPGW DOWNLEAD TAB

NOTES:
1. TAB IS ¼" THICK
2. DOWNLEAD TABS REQUIRED 4 FEET ABOVE SPLICE BOX ANGLE BRACKET (23 FEET ABOVE GROUND) THEN EVERY 4 FEET O/C TO WITHIN 1 FOOT OF OPGW VANG
3. DOWNLEAD TABS ARE TO BE PLACED ALONG FLAT OPPOSITE JUMPER POST



DETAIL F3
OPGW COIL MOUNTING BRACKET (HOLE)
NOTES:
1 ONE REQ'D PER STRUCTURE



DETAIL F4
OPGW COIL MOUNTING BRACKET (SLOTTED)
NOTES:
1 ONE REQ'D PER STRUCTURE

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