

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**TECHNICAL SPECIFICATIONS AND BID DOCUMENTS
FOR
TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

REQUEST FOR BIDS

RESPONSE DUE DATE, NOVEMBER 8, 2012 at 3:30 PM (EDST)

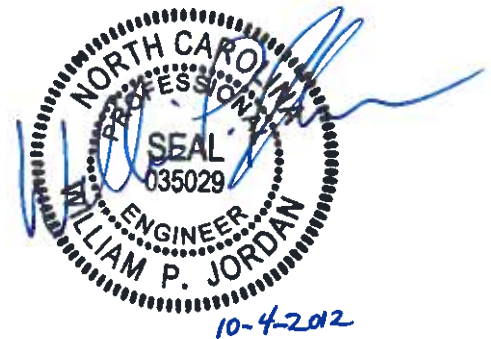
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FOR
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ENGINEERED DISTRIBUTION POLES**

REQUEST FOR BIDS

Engineering provided by Booth & Associates, Inc. covers only that work pertaining to the design and technical specifications of the Electric Utility structures. Bid documentation and additional specifications by Greenville Utilities Commission.

Engineer of record covers only work provided by Booth & Associates, Inc.



**Booth & Associates, Inc.
Consulting Engineers
1011 Schaub Drive
Raleigh, North Carolina 27606
Firm License No.: F-0221**

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**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

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GREENVILLE, NORTH CAROLINA**

**TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

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NOTICE TO PROSPECTIVE BIDDERS

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

NOTICE TO PROSPECTIVE BIDDERS

Sealed bids will be received by Greenville Utilities Commission in the office of the Purchasing Technician, 401 S. Greene Street, Greenville, North Carolina 27834, until **3:30 p.m. (E.D.S.T.) on November 8, 2012** at which time they will be opened and read for the furnishing of Tubular Steel Transmission Structures. Any bids received subsequent to that time will be promptly returned to the Bidder unopened.

Specifications and Proposal Forms may be secured from the office of Booth & Associates, Inc., Consulting Engineers, 5811 Glenwood Avenue, Raleigh, North Carolina, 27612, Attention: Mr. William P. Jordan, PE, or may be examined at the offices of Greenville Utilities Commission, 801 Mumford Road, Greenville, North Carolina. Business hours are 8:00 a.m. to 5:00 p.m., excluding weekends and holidays.

Bids must be enclosed in a sealed envelope and are to be marked "**BID FOR TUBULAR STEEL STRUCTURES FOR THE MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD ENGINEERED DISTRIBUTION POLES, NOT TO BE OPENED UNTIL, 3:30 P.M. (E.D.S.T.) ON NOVEMBER 8, 2012.**" Bidders are to mail or deliver their Proposal as follows: Purchasing Technician, Greenville Utilities Commission, 401 S. Greene Street, Greenville, North Carolina 27834.

The Materialman shall bid on the Proposal Schedule. Greenville Utilities Commission will evaluate all bids based on the material prices quoted for Schedule 1.

Each Proposal shall be accompanied by cash, cashier's check, or a certified check drawn on a bank insured with the Federal Deposit Insurance Corporation or the Savings Association Insurance Fund, payable to Greenville Utilities Commission, Greenville, North Carolina, in an amount not less than five percent (5%) of the greater of the total bid for Schedule 1, as a guarantee that a Contract, if awarded, will be entered into and executed. In lieu thereof, a Bid Bond may be submitted by the Bidder in an amount not less than five percent (5%) of the greater of the total bid for Schedule 1.

The right is reserved to reject any or all bids, in whole or in part, as may be the judgment of Greenville Utilities Commission, Greenville, North Carolina to be serving its best interest and to waive irregularities and informalities in any bid submitted. Greenville Utilities Commission, Greenville, North Carolina reserves the right to retain bids for a period of sixty (60) days from the receipt of such bids. It is requested that bids be given on all items listed.

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

Date: _____

By: _____
Jeff W. McCauley
Chief Financial Officer

DEFINITIONS

DEFINITIONS

Whenever in these “Instructions to Bidders,” “Materialman’s Proposal,” “Technical Specifications,” “Contract,” “Bond,” etc., the following terms or pronoun in place of them are used, the intent and meaning shall be interpreted as follows:

“Owner”	Greenville Utilities Commission Greenville, North Carolina
“Engineer”	Booth & Associates, Inc.
“General Manager/CEO”	Anthony C. Cannon
“Observer”	An authorized representative of the Owner assigned to make any or all necessary observations of work performed and equipment and/or apparatus furnished by the Materialman.
“Bidder” or “Materialman”	Any individual, firm, or corporation submitting a Proposal for the work contemplated, acting directly or through a duly-authorized representative.
“Materialman” or “Bidder”	Party of the second part of the Contract, acting directly or through a duly-authorized representative.
“Subcontractor”	An individual, firm, or corporation who contracts with the Materialman to perform part of or all of the latter’s Contract.
“Surety”	The body, corporate or individual, approved by the Owner which is bound with and for the Materialman, who is primarily liable, and which engages to be responsible for his acceptable performance of the work for which he has contracted.
“Materialman’s Proposal”	The approved prepared form on which the Bidder is to submit or has submitted his Proposal for the work contemplated.
“Bid Deposit”	To all bids there shall be attached cash, cashiers check, certified check, of the Bidder upon a bank authorized to do business in North Carolina, or in lieu thereof, a Bid Bond.
“Plans”	All Drawings or reproductions of Drawings pertaining to the constructions under the Contract.

“Technical Specifications”

The directions, provisions, and requirements contained herein pertaining to the method and manner of performing the work or to the quantities and qualities of material to be furnished under the Contract.

“Contract”

The agreement covering the furnishing of equipment and/or apparatus and the performance of the work. The Contract shall include the “Materialman’s Proposal,” “Plans,” “Technical-Specifications,” and acknowledgments.

“Performance Bond”

The approved form of security, to be approved by the Owner, furnished by the Materialman and his Surety as a guarantee of good faith on the part of the Materialman to execute the work in accordance with the terms of the Specifications and Contract.

“Payment Bond”

The approved form of security, to be approved by the Owner, furnished by the Materialman and his Surety as a guarantee of good faith on the part of the Materialman to promptly pay all persons supplying labor, materials, and/or equipment in accordance with the terms of the Specifications and Contract.

“Work”

The performance of the project covered by the Specifications or the furnishing of labor, machinery, equipment, tools, or any other article or thing being purchased by the Owner.

“Emergency”

A temporary unforeseen occurrence or combination of circumstances which endangers life and property and calls for immediate action or remedy.

“Work at Site of Project”

Work to be performed, including work normally done on the location of the project.

The subheadings in these Specifications are intended for convenience or reference only and shall not be considered as having any bearing on the interpretations thereof.

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

1.0 PROPOSALS

- 1.1 Proposals to be entitled for consideration must be in accordance with these instructions.
- 1.2 Proposals must be made on the Materialman's Proposal provided herein and must not be altered, erased, or interlined in any manner. The Bidder shall follow the Materialman's Proposal as detailed in the instructions. The Bidder may retain one (1) copy, but the fully-executed original must be inserted in or be attached to the Specification Documents. In addition, two (2) extra copies of all executed forms and supporting information shall be supplied.
- 1.3 The Bidder shall furnish certain information, as required by the Specifications, regarding the material on which he is bidding. Three (3) copies of the information, together with the manufacturer's literature setting forth the guarantees and describing the material on which he is bidding, shall be included as part of the Materialman's Proposal. If one (1) manufacturer is bidding through two (2) or more agents or representatives, then descriptive literature, guarantees, etc., may be submitted in duplicate in one (1) sealed envelope, said envelope to be considered and treated as though it contained a sealed bid, in which shall be listed the names of Bidders to whom the information applies. Each sealed bid without this information shall state the manufacturer who is furnishing the information. Additional sets of these Specifications may be obtained upon request and a non-refundable deposit of Fifty Dollars (\$50.00) by approved Bidders.
- 1.4 Proposals shall include a Form of Exceptions which shall itemize each and every exception from the Specifications. The Form of Exceptions shall state the section, subsection, and paragraph designations from the part of the Specifications to which exception is taken and explain in detail the nature of the exception. A copy of the Form of Exceptions is included in the Materialman's Proposal section. Exceptions will not necessarily eliminate a Bidder from consideration, even if bids without exceptions are received from others. The treatment of exceptions will be based entirely on the overall best interest of the Owner. Failure to state exceptions assumes complete compliance with Specifications.
- 1.5 Modifications to bids must be by removal of the Bidder's original bid and the submittal of a completely revised bid package in full compliance with the Plans, Specifications, and Bid Documents. This is required prior to the time of opening bids. No oral or telephonic Proposals will be accepted.
- 1.6 Should the Bidder find discrepancies in the documents or should he be in doubt as to their meaning, he shall at once notify the Engineer who will send written instructions to all Bidders. Neither the Owner nor the Engineer will be responsible for any oral instructions.

2.0 PAYMENT

Payment by the Owner to the Successful Bidder shall be made in a lump sum for each item after delivery and it has been verified that the material meets the Specifications. Compliance to Specifications shall be verified within ninety (90) days of the date of delivery.

Invoices shall be submitted in triplicate to Greenville Utilities Commission for review and approval. The address for submittal of all invoices is: Greenville Utilities Commission, 801 Mumford Road (27834), Post Office Box 1847, Greenville, North Carolina 27835-1847, Attention: Mr. W. Jeffrey Byrd.

There shall be a ten percent (10%) retainage on invoices until all material has been approved and accepted by the Owner and the Engineer. The Owner reserves the right to hold this retainage for a period of up to ninety (90) days without penalty to verify completeness of delivery. Deviation from the foregoing payment provisions will be considered less responsive.

3.0 BID SECURITY

- 3.1 Each Proposal shall be accompanied by cash, cashier's check, or a certified check drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation or the Savings Association Insurance Fund, or a Bid Bond in an amount equal to not less than five percent (5%) of the total bid, said deposit to be retained by the Owner as liquidated damages in event of failure of the Successful Bidder to accept the Contract within ten (10) days after the award.
- 3.2 Bid Bond shall be conditioned that the Surety will upon demand forthwith make payment to the Obligee upon said Bond if the Bidder fails to accept the Contract in accordance with the Bid Bond; and upon failure to forthwith make payment, the Surety shall pay to the Obligee an amount equal to double the amount of said Bond.
- 3.3 Only one (1) Bid Surety is required, the amount of which shall be based on the greater of the total amount of the bid for Schedule 1.

4.0 BULLETINS AND ADDENDA

Any bulletins issued during the time of bidding or addenda to Specifications are to be considered covered in the Materialman's Proposal; and in entering into a Contract, they will become a part thereof. Receipt of addenda shall be acknowledged by the Bidder on the Materialman's Proposal.

5.0 DELIVERY OF POLES

The prices quoted shall include delivery of the pole F.O.B. Point of Delivery, Greenville Utilities Commission, Greenville, North Carolina. The materials shall be quoted including delivery to the site. The delivery point is as shown on the Vicinity Map included herein.

The Materialman shall be responsible for securing all permits required for transportation of the equipment. Delivery of all items of equipment shall be made at such time as to permit unloading between the hours of 9:00 a.m. and 12:00 p.m. (Noon), Monday through Friday, holidays excluded. The Materialman shall give forty-eight (48) hours notice of all deliveries.

Receipt of "Approval Drawings" by the Materialman constitutes authorization for manufacture only, predicated upon the Drawings and corrections found thereon. Release for shipment is to be granted by either the Owner or the Owner's Engineer, based upon the following:

- a. Furnishing of the requested number of copies of the Final Drawings as called for in the Specifications.
- b. Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to delivery.

6.0 AWARD OF CONTRACT

- 6.1 The award of the Contract will be made to the lowest responsible, responsive Bidder, provided that in the selection of materials a Contract may be awarded to a responsible, responsive Bidder other than the lowest in the interest of standardization or ultimate economy if the advantage of such standardization or ultimate economy is clearly evident. The Owner reserves the right to reject any and all bids.
- 6.2 The Owner reserves the right to waive minor irregularities or minor errors in any Proposal if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal prior to its acceptance by the Owner.
- 6.3 The Owner will consider, in addition to the prices quoted in the Materialman's Proposal, the following factors in estimating the lowest cost to the Owner:
 - a. Delivery days for material
 - b. Adherence to the Bid Documents and Specifications
 - c. Suitability of material
 - d. Structure weight
 - e. Structure flexibility
 - f. Firm prices
 - g. Past experience with Materialman
 - h. Installation costs
 - i. Standardization of Material

- 6.4 A form is provided as part of the Materialman's Proposal in which the Bidder shall indicate the delivery schedule for his materials. **Strict adherence is expected to these quoted days.**
- 6.5 In the event the Bidder proposes any change or deviation from the Engineer's Plans and Specifications, such proposed changes or deviations must be submitted at the time bids are opened. The Owner reserves the right to reject any proposed changes or deviations. All exceptions must be stated on the Form of Exceptions. Failure to provide a Form of Exceptions with the Proposal shall imply strict adherence to all details of the Plans and Specifications.

7.0 EXAMINATION OF CONDITIONS

Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the Plans and Specifications on file with the Owner and with the Engineer and all other matters that may affect the cost or the time of completion of the work.

8.0 PERFORMANCE BOND

- 8.1 The Successful Bidder **will** be required to furnish a Performance Bond in an amount at least equal to one hundred percent (100%) of the Contract price as security for the faithful performance of this Contract.
- 8.2 Performance Bonds shall be with a Surety company authorized and licensed to do business in the State of North Carolina and shall be for the full Contract sum.
- 8.3 In all Performance Bonds, there shall be a provision that no suit, action, or proceeding by reason of default shall be brought on this Bond after a period of twelve (12) months. The face value of the Bond shall be one hundred percent (100%) of the Contract price for a period of twelve (12) months following final acceptance of the project.

9.0 COMPLETION

The time of completion of the project shall be as specified in the Materialman's Proposal.

10.0 BIDS TO BE RETAINED

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of sixty (60) days pending the execution of a Contract by the Successful Bidder. Should the Successful Bidder default and not execute a Contract, then the Contract may be offered to the next lowest responsible, responsive Bidder whose Proposal is evaluated as acceptable.

11.0 QUALIFICATION OF BIDDERS

Bids will be accepted only from Bidders deemed by the Engineer to be qualified to design and provide the materials described by these Specifications. The experience of Bidders in providing the same or similar materials will be a major factor in determining qualification. The Bidder shall include with the Proposal information to establish qualifications.

Each Bidder shall file with the Engineer the Bidder's qualifications forms supplied by the Engineer at least seven (7) days in advance of the scheduled bid opening. This will not be a requirement for those Bidders who have submitted an acceptable bid on other jobs with the Engineer in the past or have qualification data on file with the Engineer.

12.0 MATERIALMAN'S PROPOSAL FORM

Those bids not received on the Booth & Associates, Inc. Materialman's Proposal Form contained herein will be considered unresponsive. The forms shall be filled out completely. Any omissions may cause the entire Proposal to be rejected.

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GENERAL CONDITIONS

GENERAL CONDITIONS

1.0 DRAWINGS AND SPECIFICATIONS

The Drawings and Specifications are complementary, one to the other. That which is shown on the Drawings or called for in the Specifications shall be as binding as if it were both called for and shown. The intention of the Drawings and Specifications is to include all labor, materials, transportation, equipment, and any and all other things necessary to do a complete job. In case of discrepancy or disagreement in the Contract Documents, the order of precedence shall be: Contract, Technical Specifications, Large-Scale Detail Drawings, Small-Scale Drawings.

2.0 CLARIFICATIONS AND DETAIL DRAWINGS

In cases where the nature of the work requires clarification by the Engineer, such clarification shall be furnished by the Engineer with reasonable promptness by means of written instructions or Detail Drawings or both. Clarifications and Drawings shall be consistent with the intent of Contract Documents and shall become a part thereof.

3.0 COPIES OF DRAWINGS AND SPECIFICATIONS

The Engineer will furnish free of charge to the Materialman one (1) copy of Plans and Specifications. Additional copies may be obtained from the Engineer for a non-refundable charge of Fifty Dollars (\$50.00) per copy.

4.0 OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

All Drawings and Specifications are instruments of service and remain the property of the Engineer whose name appears thereon. The use of these instruments on work other than this Contract without permission is prohibited. All copies of Drawings and Specifications other than Contract copies shall be returned to the Engineer upon request after completion of the work.

5.0 ROYALTIES, LICENSES, AND PATENTS

It is the intention of the Owner that the work covered in these Contract Documents will not constitute in any way an infringement on any patent whatsoever. The Materialman shall protect and save harmless the Owner against suit on account of alleged or actual infringement. The Materialman shall pay all royalties and/or license fees required on account of patented articles or processes, whether or not the patent rights are evidenced hereinafter.

6.0 UNCORRECTED FAULTY WORK

Should the correction of faulty or damaged work be considered inadvisable or inexpedient by the Owner or the Engineer, the Owner shall be reimbursed by the Materialman for the same by a deduction in the Contract price. This deduction shall be arrived at by a fair estimate of the probable cost of correction, approved by the Engineer.

7.0 DELAYS AND EXTENSION OF TIME

- 7.1 The time to be allowed for delivery shall be stated on the Materialman's Proposal bound with these Specifications.
- 7.2 If Materialman is delayed at any time in the progress of the work by any act of negligence by the Owner or the Engineer or by any separate Materialman employed by the Owner or by changes ordered in the work, the time of completion shall be extended for such reasonable time as the Engineer may decide and an approved change order is issued.
- 7.3 No extension of time for completion will be made for ordinary delays and accidents. Extensions may be granted for delays ordered by the Engineer if the request has been made in writing within forty-eight (48) hours after the order to cease work has been given.

8.0 GUARANTEE

The Materialman shall guarantee his materials and workmanship against defect due to faulty materials or faulty workmanship or negligence for a period of five (5) years following final acceptance of the work and energization of the equipment. He shall make good any defective materials or workmanship and any damage resulting therefrom without cost to the Owner.

9.0 ASSIGNMENTS

The Materialman shall not assign any portion of this Contract nor subcontract in its entirety except as fully explained in the Materialman's Proposal and accepted by the Owner. No funds or sums of money due or to become due the Materialman under this Contract may be assigned.

10.0 CHANGE IN PLANS AND/OR SPECIFICATIONS

The Owner, or the Engineer on behalf of the Owner, may make changes to Plans and/or Specifications after award of the Contract or while construction is in progress. The compensation for such changes shall be agreed upon in writing between the Materialman and the Owner prior to commencement of work involving the change. No payment shall be made to the Materialman for correcting work not in compliance with Specifications.

11.0 INSURANCE

The Materialman shall maintain Workmen's Compensation Insurance and Liability Insurance appropriate for the level of exposure involved in the Contract. The Materialman shall furnish certification of the appropriate insurance.

12.0 EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this Contract, the Materialman agrees as follows:

1. The Materialman will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap. The Materialman will take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap. Such action shall include but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. The Materialman agrees to post in conspicuous places available to employees and applicants for employment notices setting forth the provisions of the nondiscrimination clause.
2. The Materialman will, in all solicitations or advertisements for employees placed by or on behalf of the Materialman, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap.
3. The Materialman will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Contract or other understanding, a notice advising the labor union or workers' representative of the Materialman's commitments under the Equal Employment Opportunity Section of this Contract and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. In the event of the Materialman's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Materialman may be declared ineligible for further Owner Contracts.
5. The Materialman will include the provisions of this section in every subcontract unless exempted by rules, regulations, or orders of Greenville Utilities Commission, Greenville North Carolina, so that such provisions will be binding upon each subcontract.

Bidder: _____
By: _____ **Date:** _____

MATERIALMAN'S PROPOSAL

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

MATERIALMAN'S PROPOSAL

TO: Greenville Utilities Commission
Greenville, North Carolina

(hereinafter called the "Owner")

The undersigned, (hereinafter called the "Materialman") hereby proposes to sell and deliver to the Owner upon the terms and conditions herein stated, the materials, equipment, and services (hereinafter called the "Material") specified in the following schedule attached hereto and by this reference made a part hereof (hereinafter called the "Schedule") in accordance with the Bid Schedule and:

- Specifications for Tubular Steel Structures for the MacGregor Downs Road and B's Barbecue Road Engineered Distribution Poles
- Notice to Bidders
- Instructions to Bidders
- General Conditions
- Legal negotiations after bids are opened

The prices quoted herein:

- Are firm unless otherwise stated
- Are F.O.B. at the site in Greenville, North Carolina as shown on the Vicinity Map
- Shall not include in the unit prices any tax from which a municipality in North Carolina is exempt

The Materialman further declares that he has examined the site of the work and informed himself fully regarding all conditions pertaining to the locations where the work is to be done, examined the Specifications for the work and the Contract Documents relative thereto, read all special provisions furnished prior to the opening of the bids, and satisfied himself relative to the work to be performed.

The Materialman proposes and agrees that if the following schedule of this Proposal is accepted, he will contract with Greenville Utilities Commission , North Carolina in the Form of a Contract specified, to furnish all necessary materials and equipment, except materials and equipment specified to be furnished by the Owner or others, complete and in accordance with the Plans, Specifications, and Contract Documents, to the full and entire satisfaction of the Owner, with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and Contract Documents, and as cited on Change Order Forms.

The following information should be supplied regarding the materials and equipment on which this bid is based:

Manufacturer: _____

Location or Manufacturing Facility: _____

Other Utilities Purchasing Recent Units of Similar Design: _____

If the undersigned is the Successful Bidder, the shipping points shall be the designated structure sites, or as designated by the Owner (See Exhibit 1 – Vicinity Map), and the materials and equipment will be delivered to the Owner within _____ () calendar days () weeks) after notification of the Award of Contract by the Owner. The Bidder should include one (1) week for Engineer to review and return approval drawings.

Note: It is requested that delivery begin within eight (8) weeks and be completed within ten (10) weeks after notification of the Award of Contract by the Owner.

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

SCHEDULE 1

**STEEL TRANSMISSION STRUCTURES
WEATHERING STEEL A871, GRADE 65
WITH GROUND SLEEVE AND CORROCOTE BELOW GRADE PROTECTION**

Structure Number	Pole Overall Ht./Class*	Embedment Depth	Quantity	Unit Weight	Unit Price	Extended Price
<u>Distribution Poles - Surface Mount</u>						
Str. No. A	60/Ung.	S.M.	1		\$ -	\$ -
<u>Distribution Poles - Directly Embedded in Augured Hole</u>						
Str. No. B	80/S-05.7	20'-0"	1		\$ -	\$ -
Str. No. C	60/S-04.9	18'-0"	1		\$ -	\$ -
Str. No. D**	75/S-03.5	9'-6"	7		\$ -	\$ -
Str. No. E**	80/S-03.5	10'-0"	7		\$ -	\$ -
Str. No. F**	85/S-03.5	10'-6"	7		\$ -	\$ -
Str. No. G**	70/S-03.5	9'-0"	7		\$ -	\$ -

**GALVANIZED STEEL A572, GRADE 65
WITH CORROCOTE BELOW GRADE PROTECTION**

Structure Number	Base Ht./Class*	Embedment Depth	Quantity	Unit Weight	Unit Price	Extended Price
<u>Vibratory Pole Foundation - Surface Mount Flange Type</u>						
TMF-VPB-F-A	5'-0"	54'-0" (w/1'-0" Reveal)	1		\$ -	\$ -

SCHEDULE 1 - TOTAL PRICE \$ -

* Pole class designation will be defined either by the current RUS Standard Steel Pole Class Designation or as an unguyed classification. Unit Prices of unguyed surface mounted poles are to include the cost of the anchor bolts and cage.

** Height, Class, or Quantity subject to change by Greenville Utilities Commission.

1. The prices of materials set forth herein do not include any sums which are or may be payable by the Materialman on account of North Carolina Sales Tax upon the sale, purchase, or use of the Materials hereunder from which a municipality in North Carolina is exempt. Any applicable North Carolina and County Sales Tax amount shall be added to the purchase price and paid by Greenville Utilities Commission after the Materialman has ascertained the actual sales tax to be included in the Contract price.
2. The materials will conform to the "Technical Specifications for Tubular Steel Structures for the MacGregor Downs Road and B's Barbecue Road Engineered Distribution Poles" attached hereto and made a part hereof.
3. Price Policy: The prices quoted in the Proposal shall be firm unless otherwise stated in the Proposal.
4. The prices quoted shall include delivery of the materials and equipment by truck; point of delivery, Greenville, North Carolina, as outlined in the Instructions to Bidders, at the following site:

The job site is located in Greenville, North Carolina
as indicated on the Vicinity Map hereto attached.

5. The prices of the materials and equipment set forth herein shall include the cost of delivery to the site at the Materialman's risk. The estimated number of weeks required starting ARO to produce Shop Drawings and manufacture and deliver poles, which together comprise the total time to complete delivery shall be as follows:

Shop Drawings		Delivery		
For Approval	Engineer's Approval	Start	Complete	Total

Schedule 1

_____ Wks. + 1 Wks. + _____ Wks. + _____ Wks. = _____ Wks.

Note: *It is requested that delivery of structures start within eight (8) weeks and be complete within ten (10) weeks.*

The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without fault of the Materialman, including acts of God, fires, floods, strikes, and delays in transportation.

Delivery of all items of equipment to Greenville Utilities Commission designated delivery point shall be made to permit unloading between the hours of 9:00 a.m. and 12:00 p.m. (Noon), Monday through Thursday, holidays excluded.

6. Receipt of Approval Drawings by the Materialman constitutes authorization for manufacture predicated upon the Drawings and corrections found thereon. After the return of Approval Drawings, release for shipment is to be granted by either Greenville Utilities Commission or its Engineer based upon the manufacturer's compliance with the following:
 - a. Notification of tests, if required, so Greenville Utilities Commission may have a representative present to witness the tests. *(Not required for this project)*
 - b. Furnishing of the requested number of copies of the Final Drawings as called for in the Specifications.
 - c. Coordination of manufacturing and delivery with Greenville Utilities Commission construction schedule as may be noted in these Specifications.
 - d. Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to all deliveries.
7. Title to the materials and equipment shall pass to Greenville Utilities Commission upon delivery to the point specified above.
8. This Proposal is made pursuant to the provisions of the Notice to Prospective Bidders, General Conditions, Instructions to Bidders, and the Specifications, and the Materialman agrees to the terms and conditions thereof.
9. The Materialman warrants the accuracy of all statements contained in the Bidder's Qualifications, if any shall be submitted, and agrees that Greenville Utilities Commission shall rely upon such accuracy as a condition of the Contract in the event that this Proposal is accepted.
10. The Materialman warrants that the materials will conform to the performance data and guarantees which are attached hereto and by this reference made a part hereof.
11. NON-COLLUSIVE BIDDING CERTIFICATION – By the submission of this bid, the Materialman certifies that:
 - a. The bid has been prepared independently by the Materialman and has been submitted free of collusion with any other Materialman or supplier of materials, supplies, or equipment of the type described in the Notice to Prospective Bidders or the Specifications.
 - b. The contents of the bid have not been communicated by the Materialman, or, to his best knowledge and belief, by any of his employees or agents, to any person not an employee or agent of the Materialman or his Surety on any Bond furnished herewith, and will not be communicated to any person prior to the official opening of the bid.

12. The undersigned further agrees that in case of failure on his part to accept a Contract within ten (10) consecutive calendar days after written notice has been given of the Award of Contract, the check, cash, or Bid Bond accompanying this bid, and the monies payable thereon, shall be paid into the funds of Greenville Utilities Commission account set aside for this project, as liquidated damages for such failure; otherwise the check, cash, or Bid Bond accompanying the Proposal shall be returned to the undersigned.

(Use this space for attaching check or cash)

13. The Materialman shall complete the attached Form of Exceptions by clearly identifying and describing each and every deviation from the Specifications proposed by the Bidder. Failure to state in the Proposal any deviation from the Specifications assumes complete and total compliance with the requirements of the Specifications.

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

FORM OF EXCEPTIONS

BIDDER:

MANUFACTURER:

INSTRUCTIONS:

The following is a list of exceptions to the Bidding Documents and/or Technical Specifications pertaining to the furnishing of the subject materials. Bidders shall identify each exception by Specification page and paragraph number on this form. The omission of exception implies complete compliance with Plans and Specifications.

**BID DOCUMENT/
SPECIFICATION
PAGE NO. AND
PARAGRAPH**

EXCEPTION/VARIATION

BID DOCUMENT/ SPECIFICATION PAGE NO. AND PARAGRAPH	EXCEPTION/VARIATION
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14. If, in submitting this Proposal the Materialman has made any change in the Materialman's Proposal, the Materialman understands that Greenville Utilities Commission, North Carolina may evaluate the effect of such change as it sees fit or the Proposal may be excluded from consideration in determining the award of the Contract.

Respectfully submitted this _____ day of _____, 20____

Name of Firm

By _____

Title

Address of Bidder:

NORTH CAROLINA BID BOND

NORTH CAROLINA BID BOND
(See Attached)

KNOW ALL MEN BY THESE PRESENT, THAT WE _____

_____ as Principal,

and _____ as Surety,
who is duly licensed to act as Surety in North Carolina, are held and firmly bound unto Greenville Utilities
Commission, Greenville, North Carolina, as Obligee, in the penal sum of _____
DOLLARS (\$) (five percent (5%) Bid Bond), lawful money of the United States of
America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors,
administrators, successors and assigns, jointly and severally, firmly by these present.

SIGNED, Sealed and dated this _____ day of _____, 2012.

WHEREAS, the said Principal is herewith submitting proposal for

**TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

and the Principal desires to file this Bid Bond in lieu of making the cash deposit as required by GS 143-129
amended in Chapter 1104 of the Public Laws of 1951;

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such that if the
Principal shall be awarded the Contract for which the bid is submitted and shall execute the Contract to give
Bond for the faithful performance thereof within ten (10) days after the award of same to the Principal, then
this obligation shall be null and void; but if the Principal fails to so execute such Contract and give
Performance Bond as required by GS 143-129, as amended by Chapter 1104 of the Public Laws of 1951, the
Surety shall, upon demand, forthwith pay to the Obligee the amount set forth in the first paragraph hereof,
and upon failure to forthwith make such payment, the Surety shall pay the Obligee an amount equal to
double the amount of this Bid Bond as set forth in the first paragraph herein. Power of Attorney from the
Surety to its Attorney-in-Fact is attached hereto.

Principal

By _____ (Seal)

Corporate Surety

By _____ (Seal)

Attorney-in-Fact

**SPACE FOR ATTACHING POWER OF ATTORNEY
(Bid Bond)**

CONTRACT

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**TECHNICAL SPECIFICATIONS
FOR
TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

**This instrument has been pre-audited in the manner required by the Local Government
Budget and Fiscal Control Act.**

**Jeff W. McCauley
Chief Financial Officer**

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CONTRACT

THIS CONTRACT, made this _____ day of _____, 20____,

by _____

hereinafter called Materialman, and GREENVILLE UTILITIES COMMISSION (GUC) OF THE CITY OF GREENVILLE, PITT COUNTY, NORTH CAROLINA, with one of its principal offices and places of business at 401 S. Greene Street, Post Office Box 1847, Greenville, Pitt County, North Carolina 27835-1847, hereinafter referred to as "GUC"

WITNESSETH

THAT WHEREAS, a Contract for:

**TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

has recently been awarded to Materialman by Greenville Utilities Commission, at and for a sum equal to the aggregate cost of the work to be done and labor, (except materials to be furnished by Greenville Utilities Commission), equipment apparatus, and supplies furnished at the prices and rates respectively named therefore, in the Proposal attached hereto;

AND WHEREAS, it was provided in said award that a formal Contract would be executed by and between Materialman and Greenville Utilities Commission, evidencing the terms of said award, and that Materialman would commence the work to be performed under this agreement on a date to be specified in a written order of Greenville Utilities Commission, and would fully complete all work thereunder within (____) calendar days.

NOW, THEREFORE, Materialman doth hereby covenant and agree with Greenville Utilities Commission that it will well and faithfully perform and execute such work and furnish such labor, materials (except materials to be furnished by Greenville Utilities Commission), equipment, apparatus, and supplies, in accordance with each and every one of the conditions, covenants, stipulations, terms, and provisions contained in said Specifications and in accordance with the Plans, at and for a sum equal to the aggregate cost of the work done and labor, materials, equipment, apparatus and supplies furnished at the prices and rates respectively named therefore in the Proposal attached hereto, and will well and faithfully comply with and perform each and every obligation imposed upon it by said Plans and Specifications and the terms of said award.

Materialman shall promptly make payments to all laborers and others employed thereon.

Materialman shall be responsible for all damages to the property of Greenville Utilities Commission that may be consequent upon the normal procedure of its work or that may be caused by or result from the negligence of Materialman, its employees, or agents, during the progress of, or connected with the prosecution of the work, whether within the limits of the work or elsewhere. Materialman must restore all property so injured to a condition as good as it was when Materialman entered upon the work.

Materialman shall furthermore be responsible for and required to make good at its expense any and all damages of whatever nature to persons and property, arising during the period of the Contract, caused by carelessness, neglect, or want of due precaution on the part of Materialman, its agents, employees, or workmen. Materialman shall also indemnify and save harmless Greenville Utilities Commission and the officers and agents thereof from all claims, suits, and proceedings of every name and description which may be brought against Greenville Utilities Commission or the officers and agents thereof, for, or on account of, any injuries or damages to persons or property received or sustained by any person or persons, firm or corporation, or by or in consequence of any materials used in said work or by or on account of any improper material or workmanship in its construction or by or on account of any accident, or of any other act or omission of Materialman, its agents, employees, servants, or workmen.

It is agreed and understood that the Advertisement for Bids, the Notice to Prospective Bidders, Instructions to Bidders, Technical Specifications, the accepted Proposal, and the enumerated addenda and Drawings are part and parcels of this Contract, to the same extent as if incorporated herein in full.

It is further mutually agreed that if, at any time after the execution of this agreement and the Surety Bond hereto attached for its faithful performance, Greenville Utilities Commission shall deem the Surety or Sureties upon such Bond to be unsatisfactory, or if, for any reason, such Bond ceases to be adequate to cover the performance of the Work, Materialman shall at its expense, within five (5) days after the receipt of notice from Greenville Utilities Commission so to do, furnish an additional Bond or Bonds in such form and amount, and with such Surety or Sureties as shall be satisfactory to Greenville Utilities Commission. In such event no further payment to the Materialman shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to Greenville Utilities Commission.

And Greenville Utilities Commission doth hereby covenant and agree with Materialman that it will pay to Materialman, when due and payable under the terms of said Specifications and said award, the above-mentioned sum, and that it will well and faithfully comply with and perform each and every obligation imposed upon it by said Specifications and the terms of said award.

Whenever used herein, the singular shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders as the context may require.

IN TESTIMONY WHEREOF, Materialman and Greenville Utilities Commission have duly signed and sealed this Contract.

FURTHER AGREEMENTS

Materialman shall, upon completion of all work awarded under this Contract, furnish to Greenville Utilities Commission invoices or copies of invoices for all materials and equipment purchased for said work and such invoices shall state the amount of North Carolina Sales Tax paid for said materials and equipment, and Materialman shall also furnish Greenville Utilities Commission an affidavit certifying the total costs of materials and equipment purchased for all work performed under the Contract and the total amount of North Carolina Sales Tax paid for said materials and equipment.

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GREENVILLE UTILITIES COMMISSION

By: _____
Anthony C. Cannon

Title: General Manager/CEO
(Authorized Signatory)

Date: _____

Attest: _____

Name (Print): Amy Carson Quinn

Title: Executive Secretary

Date: _____

(OFFICIAL SEAL)

COMPANY NAME:

By: _____

Name (Print): _____

Title: _____
(Authorized Signatory)

Date: _____

Attest: _____

Name (Print): _____

Title: Corporate Secretary

Date: _____

(CORP. SEAL)

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

By: _____
Jeff W. McCauley

Title: Chief Financial Officer

Date: _____

APPROVED AS TO FORM AND LEGAL CONTENT:

By: _____
Phillip R. Dixon

Title: Commission Attorney

Date: _____

SPACE FOR INSURANCE CERTIFICATES

PERFORMANCE BOND

PERFORMANCE BOND

Date of Execution: _____

Name of Principal:
(Materialman) _____

Name of Surety: _____

Name of Contracting
Body: GREENVILLE UTILITIES COMMISSION

GREENVILLE, NORTH CAROLINA

Amount of Bond: \$ _____

Project: TECHNICAL SPECIFICATIONS AND BID DOCUMENTS

FOR TUBULAR STEEL STRUCTURES FOR THE

MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD

ENGINEERED DISTRIBUTION POLES

KNOW ALL MEN BY THESE PRESENTS, That We, the Principal and Surety above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal entered into a certain Contract with the Contracting Body, identified as shown above and hereto attached.

NOW, THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions there of that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument under the several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Witness:

(Proprietorship or Partnership)

ATTEST:

By: _____

Title: _____
(Corporate Secretary or Assistant Secretary, Only)

Witness:

Countersigned:

N.C. Licensed Resident Agent

(Name and Address-Surety Agent)

Surety Company Name and N.C. Regional or Branch Office Address

MATERIALMAN:

(Trade or Corporate Name)

By: _____

Title: _____
(Owner, Partner, or Corporate President or Vice President, Only)

(CORPORATE SEAL)

SURETY COMPANY:

By: _____

Title: _____
(Attorney-in-Fact)

(SURETY SEAL)

SPACE FOR ATTACHING POWER OF ATTORNEY

CERTIFICATE OF ATTORNEY

**CERTIFICATE OF ATTORNEY
FOR
GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

This is to certify I have examined the attached Contract Documents for the Tubular Steel Structures for the MacGregor Downs Road and B's Barbecue Road Engineered Distribution Poles, and after such examination, I am of the opinion that such documents conform to the laws of the State of North Carolina, that the execution of the Contract is in due and proper form, the representatives of Greenville Utilities Commission, Greenville, North Carolina have full power and authority to execute such Contract on behalf of the respective contracting parties, and that the foregoing agreements constitute valid and binding obligations on such parties.

Attorney for Greenville Utilities Commission
Greenville, North Carolina

This the _____ day of _____, 2012

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TECHNICAL SPECIFICATIONS

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**TUBULAR STEEL STRUCTURES
FOR THE
MACGREGOR DOWNS ROAD AND B'S BARBECUE ROAD
ENGINEERED DISTRIBUTION POLES**

TECHNICAL SPECIFICATIONS

1.0 SCOPE

This specification covers the design, materials, welding, inspection, protective coatings, drawings, and delivery of steel transmission structures including crossarms, ladders and anchor bolt cages used for constructing overhead transmission lines. The proposal submitted by the manufacturer shall include field bolts, locknuts, vangs, attachment provisions for arms and/or insulators, anchor bolts, base plates, and other necessary items to make a complete structure per the following specifications:

1.1 Quotations

Quotations will be received on behalf of Greenville Utilities Commission, by Booth & Associates, Inc. Quotations will be evaluated by Greenville Utilities Commission, hereinafter referred to as the "Owner" and their Engineer, Booth & Associates, Inc., Raleigh, North Carolina, hereinafter referred to as the "Engineer."

1.2 The Manufacturer shall provide quotations for the following schedule:

Schedule 1: Steel Transmission Structures – Weathering Steel A871, Grade 65 with Ground Sleeve and Corroccote Below Grade Protection

1.3 Drawings

All poles, anchor bolt cages, steel crossarms, caissons and vibratory bases shall conform to the Drawings included herewith, all of which form a part of these Specifications.

2.0 DEFINITIONS

- a. Cambering – the fabricating of a slight convex curve in a pole or crossarm
- b. D/t – the ratio of the diameter of a tubular pole to the steel plate thickness
- c. Engineer – a registered or licensed person, who may be a staff employee or an outside consultant, and who provides engineering services. Engineer also includes duly authorized assistants and representatives of the licensed person.

- d. Ground line – a designated location on the pole where the surface of the ground will be after installation of a direct embedded pole
- e. Overload factors (OLF) – a multiplier which is applied to each of the vertical, transverse and longitudinal structure loads to obtain an ultimate load
- f. P-delta moment – secondary moment created by the vertical loads acting on the structure when the structure deflects from its unloaded position
- g. Point-of-fixity – location on the pole at ground line or below ground line where the maximum moment occurs
- h. Raking – the practice of installing a straight pole out of plumb, or at an inclined angle
- i. W/t – ratio of the width of the pole (flat-to-flat) to the plate thickness
- j. Ultimate load – the maximum design load which includes the appropriate overload factor specified

3.0 CODES AND STANDARDS

Codes, standards, or other documents referred to in this specification shall be considered as part of this specification. The following codes and standards are referenced:

- a. American Institute of Steel Construction (AISC), Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, latest edition.
- b. American Society of Civil Engineers (ASCE) Standard, Design of Steel Transmission Pole Structures, Manual 72, latest edition.
- c. American Society for Testing and Materials (ASTM), various standards, latest version.
- d. American Concrete Institute (ACI), Building Code Requirements for Reinforced Concrete, ACI 318, latest edition.
- e. American Welding Society (AWS), Structural Welding Code, AWS D1.1, latest edition.
- f. American National Standards Institute (ANSI), National Electrical Safety Code, ANSI C2, latest edition.
- g. Steel Structure Painting Council (SSPC), Surface Preparation Specification, SSPC-SP6, latest edition.

4.0 CONFLICT BETWEEN THIS SPECIFICATION, DRAWINGS, AND REFERENCED DOCUMENTS

In the event of conflict between this specification and the above referenced documents, the requirements of this specification shall take precedence. In the case of conflict between several referenced documents, the more stringent requirement shall be followed. If a conflict exists between this specification or the referenced documents and the attached drawings, the attached drawings shall be followed. If clarification is necessary, contact the Owner or Owner's representative.

5.0 GENERAL REQUIREMENTS

The design, fabrication, allowable stresses, processes, tolerances, and inspection shall conform to the American Society of Civil Engineers (ASCE) Standard, *Design of Steel Transmission Pole Structures*, latest edition, with the following additions and/or exceptions:

5.1 Design

- 5.1.1 Pole designs shall be prepared from the attached specification, configuration drawings and design loads. The structure shall be capable of withstanding all specified loading cases including secondary stresses from foundation movements when specified in Attachment B, but not considering the possible restraining effect of conductors or shield wires. The structure shall withstand the loads without failure, permanent distortion, or exceeding any specified deflection limitations. Loads are in pounds (lbs.) and include all appropriate overload factors.
- 5.1.2 Vibratory Pole Base (VPB) diameter for the non-tapered section shall be as indicated on Drawing No. TMF-VPB in Attachment C. A circumferential weld shall connect the tapered section to the non-tapered section. See Drawing No. TMF-VPB in Attachment C. Tapered section of Vibratory Pole Bases shall match up with pole taper. Permanent identifiable marks are required on the Vibratory Pole Bases including nameplate, angle bisect and/or transverse axis orientation for proper alignment prior to implanting into ground.
 - a. Vibratory Pole Base design shall meet ASCE Manual 72 for local buckling.
 - b. Vibratory Pole Base shall have a minimum wall thickness of three-eighths inches (3/8").
 - c. The Vibratory Pole Base shall be capable of withstanding all specified load cases including secondary stresses.

- d. Vibratory Pole Bases of angled structures shall have a permanent identifiable mark indicating the bisect of the associated structure. Vibratory Pole Bases of tangent structures shall have a permanent identifiable mark indicating the transverse axis of the associated structure. This will help facilitate proper orientation.
- e. Frequency and stroke amplitude ranges for the vibratory hammer shall be provided by the manufacturer.

5.1.3 Wind pressures shown in the loading criteria shall be multiplied by the appropriate shape factor applied to the poles. Pressures in psf shall be computed as follows:

$$p = W \times C_d$$

Where p = pressure on projected area of the pole normal to wind, W = wind pressure, and C_d = shape (or drag) factor.

Shape factors for computing the wind on poles are:

Round	1.0
Hexagon	1.4
Octagon	1.4
Dodecagon	1.0
Square	1.6

5.1.4 The maximum design unit stress under full design load shall be the minimum yield strength as stated in applicable ASTM specifications for the particular application and types of loads, including overload factors.

5.1.5 Poles shall be designed with a minimum number of joints. Field welding shall not be allowed as part of the design of a new pole. The shaft joints to be made in the field shall be slip joints or bolted flange joints. Slip joint length shall be at least one and one-half (1-1/2) times the largest inside diameter of the female section. Bolted flange joints may be used for medium angle and heavy angle guyed structures and X-braced H-frame structures. If approved by the Owner or Owner's representative, a strap across the pole splice to prevent separation of the male and female sections of the pole may be used for X-braced H-frame structures. Approval must be obtained prior to bid.

- a. Manufacturer shall verify slip joint fit before shipment. Joints should not interfere with vangs, through holes, ladder clips, or jacking nuts.
- b. Sufficient jacking lugs and permanent orientation marks shall be provided at all slip joints to ensure proper alignment and complete overlap of the joint.

- 5.1.6 The ultimate load in guys shall not exceed ninety percent (90%) of the rated breaking strength of the guy.
- 5.1.7 Design of anchor bolts shall be in accordance with the latest edition of ACI-318, Building Code Requirements for Reinforced Concrete, assuming a concrete strength as specified by the Owner.
- 5.1.7.1 When anchor bolts are specified, they shall have the top two feet (2'-0") galvanized. Anchor bolts shall be threaded at the top end a distance equal to the base plate thickness, plus the thickness of two (2) anchor bolt nuts, plus two and one-half inches (2-1/2"). Each anchor bolt shall include two (2) heavy hex nuts.
- 5.1.7.2 Welding on anchor bolts will only be allowed in the bottom twelve inches (12"). Only one length of anchor bolt shall be used on each pole. Anchor bolts/clusters shall have a permanent mark indicating the structure type, structure number, orientation, and top of concrete.
- 5.1.7.3 Anchor bolts shall be designed to be shipped as a rigid cage with top and bottom plates holding the anchor bolts in place. The anchor bolt thread shall be protected during shipping. The anchor bolts shall be welded to the holding plate in the bottom of the cage. The top template shall be designed to be removable and to support the assembled cage during lifting and setting operations without detrimental deformations. Bolt clusters shall be designed to be rigid enough to withstand the normal jolts of shipping, handling and installation with no displacement of bolts from the proper positions within the cluster.
- 5.1.7.4 The removable template at the top shall have a set of marks to show the centerline for tangent structures and the angle bisector for angle structures. The set of marks shall be (2) marks along the same line 180° to each other. Matching marks are to be on the base plate of the structure so proper alignment can be made.
- 5.1.8 Minimum plate thickness for all pole components shall be three-sixteenths inch (3/16"). Minimum tip diameter for all poles shall be ten inches (10").
- 5.1.9 Structures which are to be direct embedded shall have bearing plates. Bearing plates shall have a diameter not more than two inches (2") greater than the maximum pole diameter.
- 5.1.9.1 Weathering steel poles shall have a drain hole at the bottom. The drain hole shall not be more than twenty percent (20%) of the bottom plate surface area.

- 5.1.9.2 Direct embedded steel poles shall have ground sleeves. Ground sleeves shall have a minimum length of four feet (4'-0") centered at groundline.
- 5.1.9.3 The Ground sleeve shall have a minimum thickness of three-sixteenths inch (3/16") and shall be centered at the ground line. A seal weld shall be provided around the ground sleeve. The ground sleeve shall not be considered in strength calculations.
- 5.1.10 Poles shall have nearly a uniform taper throughout their entire length. The maximum difference in tapers between two (2) pole sections measured by the diameters shall be .20 inch/ft. for poles with variable taper.
- 5.1.11 Poles with elliptical cross sections shall have a minor axis dimension equal to at least seventy-five percent (75%) of the major axis dimension.
- 5.1.12 Engineered/Unguyed Structures

Pre-cambering of structures is not allowed. Structure deflections at pole top shall be calculated under camber loading. Structure height shall be the height of the pole from the top of the base plate, or designated ground line, to the top. See loading diagrams in Attachment B for camber loading.

- 5.1.12.1 The Materialman shall use the Loading Diagrams provided in Attachment B to design the designated unguyed structures. The Materialman is responsible for determining the "worst-case" orientation of the wind load and applying it in the design calculations.
- 5.1.12.2 The Materialman shall calculate the deflections for the sixty degrees Fahrenheit (60°F) initial tension and sixty degrees Fahrenheit (60°F) final tension load cases. The Materialman shall limit the difference in deflection produced by these two (2) load cases to six inches (6") or less.
- 5.1.12.3 Deflections of single-shaft structures under camber loading shall not exceed eight-tenths (0.8%) of the structure height
- 5.1.12.4 Deflections of H-Frame structures due to the wire tension change across the structure and any angle resultant tension, under camber loading, shall be no more than one half (1/2) the top diameter of the designed tubular steel pole.
- 5.1.12.5 Deflections of switch structures due to the wire tension change across the structure and any angle resultant tension, under camber loading, shall be no more than one-half (1/2) the top diameter of the designed tubular steel pole.

Switch support beams shall be checked for deflection. Engineer's drawings will show deflection limitations and/or minimum switch support beam diameter.

- 5.1.12.6 The manufacturer is responsible for repairing or replacing any structures which are delivered to the site with manufacturing errors. Repair and/or replacement costs shall include the structure itself, as well as any associated construction costs.
 - 5.1.12.7 If pole raking is necessary due to deflection, the raking dimension and orientation shall be clearly marked on the Materialman's Detail Drawings.
 - 5.1.12.8 Switch structure equipment loadings and attachment details shall be obtained by the Pole Manufacturer through coordination with the specified Switch Manufacturer.
- 5.1.13 Standard RUS Steel Pole Class Designations
- 5.1.13.1 Tangent and guyed angle structures have been specified using RUS Standard Steel Pole Class Designations shown in Table 1 unless noted otherwise.
 - 5.1.13.2 Pole designs shall be prepared for the attached Standard Class design loads. The poles shall be designed to meet ASCE Manual No. 72, "Design of Steel Transmission Pole Structures," design methods. The point-of-fixity shall be considered to be located at a distance from the pole bottom that is equal to seven percent (7%) of the pole length. ***The pole shall be symmetrically designed such that the strength required in any one direction shall be required in all directions about the longitudinal axis.***
 - 5.1.13.3 Using the corresponding values in Table 1, the poles shall be designed for the following requirements.
 - a. The pole shall develop the minimum ultimate moment capacity required in Table 1 at a distance of five feet (5'-0") from the pole top.
 - b. The pole shall develop the minimum ultimate moment capacity above the point-of-fixity that is calculated by multiplying the tip load in Table 1 by the distance to the tip load.
 - c. The geometry and taper of the pole shall be uniform throughout their entire length (top to butt).

- 5.1.13.4 The poles shall be designed to withstand the specified tip loading in Table 1 without exceeding a pole deflection of fifteen percent (15%) of the pole length above the point-of-fixity when tested in accordance with ASCE Manual No. 72.
- 5.1.13.5 Overall length of poles shall be designed and manufactured in incremental lengths of five feet (5'-0").

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**TABLE 1
Strength Requirements**

Standard Class Designations for Steel Poles	Minimum Ultimate Moment Capacity at 5 ft from Pole Top (Ft. Kips)	Horizontal Tip Load Applied 2 ft from Pole Top (Lbs.)
S-20.0	160	20000
S-19.0	152	19000
S-18.0	144	18000
S-17.0	136	17000
S-16.0	128	16000
S-15.0	120	15000
S-14.0	112	14000
S-13.0	104	13000
S-12.0	96	12000
S-11.0	88	11000
S-10.0	80	10000
S-09.0	72	9000
S-08.0	64	8000
S-07.4	57	7410
S-06.5	50	6500
S-05.7	44	5655
S-04.9	38	4875
S-04.2	32	4160
S-03.5	27	3510
S-02.9	23	2925
S-02.4	19	2405
S-02.0	15	1950

- 5.1.13.6 Poles shall be designed for the loads generated from handling and erecting without causing permanent deformation or damage to the pole when handled according to the manufacturer's instructions. Handling and erecting loads shall include but not be limited to, a one (1) point (tilting) pickup and a two (2) point (horizontal) pickup.
- 5.1.13.7 The maximum design unit stress shall be the minimum yield strength as stated in applicable ASTM specifications for the particular application and types of loads, including overload factors.
- 5.1.13.8 The top of the pole shall be permanently covered with a structural steel plate that is welded to the top of the pole. The pole shall be delivered with the pole cover attached in place.

- 5.1.13.9 Pole design and design calculations shall be the responsibility of the manufacturer.
- 5.1.14 Arms shall be designed so the end of the arm is at the specified height under a loading of initial conductor tension, sixty degrees Fahrenheit (60°F), no wind, and no overload factors. Arms shall not deflect vertically more than two inches (2") at the end of the arm under heavy ice conditions (without any overload factors applied). See Attachment B for Design Loads and Guide Drawings.
- 5.1.14.1 Arms shall be upswept or straight, tapered, steel tubular members, of any cross-sectional type, which meet the dimensions shown on the attached drawings.
- 5.1.14.2 Arm end plate connection details for hardware attachment shall be typical of those shown on the attached drawings. The arms shall be hermetically sealed when a painted finish is specified. Galvanized arms shall have drain holes where appropriate
- 5.1.15 Lifting lugs are optional. The manufacturer shall supply all instructions for handling and erection of poles and arms.
- 5.1.16 Deadend plates or vangs shall be designed/checked for the maximum resultant loading from the appropriate Vertical, Transverse, and Longitudinal components in the load trees. All load cases shall be considered. Do not use the loads from the column labeled "Structure Loads" for designing/checking vang designs.
- 5.1.17 In the design of connections for vangs, brackets, or stiffeners attached to the pole shaft, care shall be taken to distribute the loads sufficiently to protect the wall of the pole from local buckling.
- 5.1.20 Each pole shall be permanently marked on the pole shaft sixty-six inches (66") above ground line (keeping a minimum of eight inches (8") from slip joints) and on the bottom of base plate or bearing plate with the following identifying information:
- Manufacturer's Identification
 - Structure Type
 - Height and Class
 - Structure Number
 - Ultimate Ground Line Moment
 - Owner's Name
 - Date Manufactured

The method of identification shall be approved by the Owner. In addition, there shall be clear indication or marks for handling or sling points, storage rack points, and lifting joints for standing the pole and vibratory pole base.

5.1.21 Grounding Attachments

- 5.1.21.1 One (1), two (2)-hole NEMA grounding pad shall be provided on the side of each pole as specified in the Structure Dimensions (Framing Drawings) Drawing located in Attachment A. (See Attachment C – Drawing No. TMS-5 for NEMA Grounding Pad Detail.
 - 5.1.21.2 See Attachment A – Structure Dimensions (Framing Drawings) for additional details of two(2)-hole NEMA grounding pad locations. See Attachment C – Drawing No. TMS-5 for NEMA Grounding Pad Detail.
 - 5.1.21.3 Grounding pads and threads shall not be painted or covered with other coatings.
 - 5.1.21.4 Poles shall be pre-drilled with a nine-sixteenth inch (9/16") hole behind each threaded hole of a two(2)-hole NEMA pad to permit the use of various bolt lengths in completing a grounding connection.
 - 5.1.21.5 One (1) heavy hex, stainless steel grounding nut shall be provided where indicated on Structure Dimensions (Framing Drawings). The grounding nut shall have standard one-half inch (1/2"), thirteen (13) UNC threads. Threads shall not be painted or covered with other coatings.
- 5.1.22 Clips for removable ladders shall be located as shown on the enclosed Framing Drawings or as indicated in the specification. Each ladder clip shall be designed to support a minimum 1,200 lb. shear working load. The clips shall be welded to the pole surface. Ladder clips shall be located to avoid interference between ladders, other attachments, material and equipment to be mounted on the pole (See Attachment C Miscellaneous Drawings).
(Not Applicable)
- 5.1.23 Removable step bolts shall be provided with spacing as indicated beginning fifteen feet (15'-0") above ground line and extending to the structure top. Each step lug and step bolts shall be capable of withstanding a minimum of 600 lb. working load. Step bolts mounting nuts shall be spaced at one foot-three inches (1'-3") and oriented to provide maximum ease of climbing.
(Not Applicable)

- 5.1.24 Removable pole steps with permanent clips shall be provided as indicated (Drawing No. PS-1) beginning at ground line and extending to fifteen feet (15'-0") above ground line. Pole steps and clips shall be spaced at one foot-three inches (1'-3") and oriented to provide maximum ease of climbing. *(Not Applicable)*
- 5.1.25 Weathering steel structures shall be designed to eliminate water and refuse traps.
- 5.1.25.1 Tubular sections shall be sealed from moisture entering the inside of the pole. Factory drilled pole holes shall be plugged to prevent moisture intrusion during shipping. For field drilled poles and factory drilled poles, manufacturer shall provide silicon sealant to seal all through-bolt holes. Non-drilled poles when assembled shall be effectively sealed to prevent moisture intrusion.
- 5.1.25.2 Connections shall be designed to reduce the effect of pack-out by preventing moisture from entering the joint or by designing the connection to allow moisture to easily drain off.
- 5.1.25.3 Plastic plugs shall be installed in all nuts welded to the structure and all tapped holes.
- 5.1.26 Application requirements: (See Attachment C) – *(Not Applicable)*

5.2 Materials

- 5.2.1 All materials shall comply with the applicable requirements of ASTM specifications. Any modifications to ASTM specifications must be approved by the Owner's representative prior to bidding.
- 5.2.2 Poles, arms, and conductor brackets shall conform with ASTM A36, ASTM A572, ASTM 581, ASTM A588, ASTM A871, or ASTM A595.
- 5.2.3 Base plate shall conform with ASTM A572, ASTM A588, ASTM A633, or ASTM A595.
- 5.2.4 Anchor bolts shall conform to ASTM A615, Grade 60 or 75.
- 5.2.5 Other bolts and nuts shall conform, as applicable, to ASTM A307, ASTM A325, ASTM A354, ASTM A394, or ASTM A687. Locknuts shall be provided for each structure bolt, or American Nut Company (ANCO) type self-locking nuts may be used. Locknuts shall be the galvanized MF or ANCO type.
- 5.2.6 Anchor bolts, structural plate, and weld material, shall meet ASCE requirements for Charpy tests.

5.2.7 For weathering steel structures, steel used for the pole shaft and arms shall have a silicon content less than .06 percent.

5.3 Fabrication

5.3.1 All welding shall be in accordance with the American Welding Society Code AWS D1.1, latest edition. Welders shall be qualified in accordance with AWS .1 welding procedures.

5.3.2 One hundred percent (100%) penetration welds shall be required in, but not limited to, the following areas:

- circumferential welds (C-welds) joining structural members,
- longitudinal welds in the female portion of the joint within the slip joint area,
- welds at the butt joints of back-up strips,
- base plate to shaft weld,
- longitudinal welds for a minimum length of three inches (3") where there are adjacent C-welds, flange welds, base welds and ends of tubes.

5.3.3 Full penetration or equivalent ninety percent (90%) partial penetration with fillet overlap shall be used for vang-to-plate shaft, and arm box joints.

5.3.4 Quality and acceptability of every inch of the full penetration welds shall be determined by visual and ultrasonic inspection.

5.3.5 All other penetration welds shall have sixty percent (60%) minimum penetration. Quality and acceptability of all welds other than full penetration welds shall be determined by visual inspection, supplemented by magnetic particle, ultrasonic or dye penetrant inspection.

5.3.6 All weld back-up strips shall be continuous the full length of the welds. Care shall be exercised in the design of welded connections to avoid areas of high stress concentration which could be subject to fatigue or brittle fractures.

5.3.7 Field welding shall not be permitted except with the Engineer's and Owner's approval and with the manufacturer's direction in repairing a pole.

5.3.8 All parts of the structure shall be neatly finished and free from kinks or twists. All holes, blocks, and clips shall be made with sharp tools and shall be clean-cut without torn or ragged edges.

5.3.9 Before being laid out or worked in any manner, structural material shall be straight and clean. If straightening is necessary, it shall be done by methods that will not injure the metal.

- 5.3.10 Shearing and cutting shall be performed carefully and all portions of the work shall be finished neatly. Copes and re-entrant cuts shall be filleted before cutting.
- 5.3.11 All forming or bending during fabrication shall be done by methods that will prevent embrittlement or loss of strength in the material being worked.
- 5.3.12 Holes for connection bolts shall be one-sixteenth inch (1/16") larger than the nominal diameter of the bolts. Holes in the flange plates for bolted splices shall be one-eighth inch (1/8") larger than the bolt diameter. Holes in the base plates for anchor bolts shall be three-eighths inch (3/8") larger than the nominal diameter of the anchor bolts. The details of all connections and splices shall be subject to the approval of the Owner or his representatives.
- 5.3.13 Holes in steel plates which are punched must be smooth and cylindrical without excessive tear out or depressions. Any burrs that remain after punching shall be removed by grinding, reaming, etc.
- 5.3.14 Holes of any diameter may be drilled in plate of any thickness. Care shall be taken to maintain accuracy when drilling stacks of plates.
- 5.3.15 Holes may be made by use of a machine guided oxygen torch. Flame cut edges shall be reasonably smooth and suitable for the stresses transmitted to them.
- 5.3.16 The overall length of the assembled structure should not be less than six inches (6") of the specified length and not more than twelve inches (12").
- 5.3.17 Tolerances

Fabrication tolerances shall be as follows:

- a. Length of single piece or flanged poles $\pm 3''$
- b. Cross section of poles: Diameter of 36" or less $+1/4''$, $-1/8''$. Diameter greater than 36" $+1/2''$, $-1/4''$, circumference of all poles - 0"
- c. Spacing between "arm to pole" connections vertically $\pm 3/4''$
- d. Location of hardware with respect to top of pole $\pm 2''$
- e. Pole Butt plate perpendicular to pole 1/16" for 12" as measured on a perpendicular axis
- f. Straightness of pole $\pm 1/2''$ from center line
- g. Location of a drilled hole in a piece $\pm 1/8''$

- h. Spacing between holes: Base plates $\pm 1/8''$, same connection $\pm 1/16''$ (non-accumulative)
- i. Anchor bolts: Length $+3''$, $-0''$; thread length $+2''$, $-0''$
- j. Length of coated portion on anchor bolts $+12''$, $-0''$
- k. Distance between anchor bolt in cluster $\pm 1/8''$ (non-accumulative)
- l. Arms: Length $\pm 1''$, Rise ("W" dimension $\pm 1''$ per 10' of arm length)
- m. Angles shown $\pm 2^\circ$
- n. Length of overlap of slip joint, $+5''$ - 10% of slip joint length
- o. Thru Vang Vertical Spacing $\pm 1/4''$
- p. Thru Vang Angle and Orientation $\pm 2^\circ$.

5.4 Finishes

5.4.1 The following finishes are acceptable: galvanizing, zinc primer and painting, weathering steel, and below grade coating.

- a. Galvanizing – All structures and structural components which are hot-dip galvanized shall meet all the requirements of ASTM A123 or ASTM A153. Measures shall be taken to prevent warping and distortion according to ASTM A384 and to prevent embrittlement according to ASTM A143. Poles made of ASTM A588 steel shall not be galvanized due to the high silicon content of the steel. One (1) gallon of zinc enriched paint shall be provided with each five (5) poles. Provide detailed instructions of proper application and use of zinc enriched paint. *(Not Applicable)*
- b. Zinc Primer and Painting – Poles which are to be painted shall be hermetically sealed to prevent corrosion of interior surfaces. After shot or sand blasting and cleaning in accordance with the Steel Structure Painting Council's Surface Preparation Specification, SSPC-SP6, a zinc primer of three (3) mils dry film thickness (DFT) and two (2) coats of finish paint, each three (3) mils DFT shall be applied to all exterior surfaces in accordance with the paint supplier's recommendations. One (1) gallon each of primer and finish paint shall be supplied with each five (5) poles. A guarantee against flaking or fading of the paint for a minimum of five (5) years shall be provided. *(Not Applicable)*

- c. 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.
- d. Coatings for the Embedded Portion of the Pole – When poles are to be directly embedded, or use a vibratory pole base, a sixteen (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 five feet (5'-0") above ground line. Other coatings shall be approved by the Owner prior to their use.

5.4.2 Bolts and nuts with yield strengths under 100,000 psi shall be hot-dip galvanized per ASTM A153 and ASTM 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.

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

5.5 Inspection and Testing

5.5.1 The Owner and the Owner's designated agents shall have free entry at all times while work is being carried on, to all parts of the manufacturer's plant to inspect any part of the production of the poles covered by this specification.

5.5.2 Steel members which are bent or warped or otherwise improperly fabricated shall be properly repaired or replaced at the manufacturer's expense.

5.5.3 The cost of tests made by the manufacturer (except full scale load tests on poles), including cost of the certified test reports, shall be considered included in the price.

5.5.4 The manufacturer shall make tests in accordance with ASTM A370 and ASTM A673 to verify that the material used in the structures meets the impact properties.

5.5.5 Mill test reports showing chemical and physical properties of all material furnished under this specification shall be maintained by the manufacturer for a period of five (5) years and shall be traceable to the structure.

- 5.5.6 All plates over one and one-half inch (1-1/2") thick shall be ultrasonically tested to assure against defects which could lead to lamellar tearing.
- 5.5.7 Welders or welding operators shall be qualified in accordance with the provisions of AWS D1.1.
- 5.5.8 The manufacturer shall make certified welding reports for each structure. The reports covering welding shall include all welds of a structure. Each weld shall be clearly identified; and the report shall consist of the method of testing, whether the weld is acceptable, the identification of the structure, the date, and the name and signature of the inspector. Records of welding procedure and welding operator test results shall be kept for six (6) years by the Materialman and shall be available for review by the Engineer or Owner.

5.6 Structure Testing *(Not Applicable)*

- 5.6.1 The structures which are to have full-scale load tests performed on them are listed in Attachment C.
- 5.6.2 Details of the test procedures and methods of measuring and recording test loads and deflections shall be specified by the manufacturer prior to testing and shall be subject to the review and approval of the Owner or his representative.
- 5.6.3 Deflections shall be recorded in the transverse and longitudinal directions when applicable. Deflection measurements shall be taken under the no load condition both before and after testing.
- 5.6.4 Material procurement for test poles shall be identical to material procurement procedures for regular production run poles.
- 5.6.5 A full report listing results shall be submitted after completion of all testing. Copies of mill test reports shall be included in the load test report. The report shall also include a complete description of the load tests with diagrams and photographs.
- 5.6.6 The Owner or his representative reserves the right to be present during testing and shall be notified two (2) weeks prior to the start of structure fabrication.

5.7 Shipping

- 5.7.1 Each shipment shall be accompanied by a checklist of all parts, identifiable by structure type and number. Bolts, and miscellaneous hardware will be identified by the list for match up with the respective pole shaft and shall be boxed or bundled. All parts required for any one structure shall be in one (1) shipment, if possible.

- 5.7.2 The Owner and Owner's representative shall be notified prior to shipment that such shipment is to take place, and they reserve the right to inspect the components prior to shipment. The notification shall give quantities, weight, name of common carrier used, and expected time of arrival with at least two (2) working days' notice of delivery. Delivery of all items of material shall be made at such time as to permit unloading between the hours of 9:00 a.m. and 3:00 p.m., Monday through Thursday, holidays excluded.
- 5.7.3 The anchor bolts shall be welded to the holding plate in the bottom of the cage. A removable template shall be used at the top of the cage and shall be marked to show the centerline for tangent structures and the angle bisector for angle structures. Matching marks are to be on the base plate so proper alignment can be made. Bolt clusters shall be rigid enough to withstand the normal jolts of shipping and handling with no displacement of bolts from the proper positions within the cluster.
- 5.7.4 Unless otherwise agreed to by the Owner, the anchor bolt cage shall be shipped at least thirty (30) days prior to pole shipment.
- 5.7.5 Salt-treated wood blocking and urethane foams shall not be used when shipping or storing weathering steel poles.
- 5.7.6 Delivery shall be made either to a single designated location or to the individual structure locations.

6.0 INFORMATION TO BE SUPPLIED BY THE MANUFACTURER

6.1 Information to be Supplied with the Proposal

- a. Calculated shipping weight of each structure excluding anchor bolts. Separate weights shall be given for crossarms and poles.
- b. Calculated shipping weight of anchor bolts,
- c. Ultimate ground line reactions (including overload factors) in poles and guy wires,
- d. Anchor bolt size, length, and locations (bolt circle diameters)
- e. Type of material of major components (ASTM number),
- f. Description of pole shaft, including thickness, length, diameter, cross-sectional geometry, and method of fastening each shaft component,
- g. Data showing the design of the arm, arm connections, arm attachment plates, and brackets,
- h. Design exceptions,

- i. Manufacturer's standards, physical and mechanical dimensions for all steel pole height and class combinations used in the project being bid on.

6.2 Documentation to be Supplied for the Owner's Approval Prior to Fabrication

Documentation includes final design calculations for pole shaft, base plate, anchor bolts, crossarms, and other appurtenances, including their connections for all structures. The following information shall be supplied:

- a. For the loading cases with overload factors, the total shear, axial forces, moments, stresses or stress ratios, moments of inertia furnished, section moduli, cross-sectional areas, deflections w/t's for polygonal and d/t's for round cross sections at all splices, at arm attachment points (top and bottom), and at least every ten feet (10'-0") along the pole.
- b. For the critical loading case, shear and axial forces, moments, stresses, section moduli, cross-sectional areas at the arm connections, bolt stresses in the arm connection, and deflection at the end of the arm.
- c. Anticipated deflections at the top of the pole and at the ends of the arms shall be indicated for each pole for the normal, everyday loading condition of sixty degrees Fahrenheit (60°F), no wind, no overload factors.
- d. For all specified loading cases, reactions and ground line moments shall be supplied.
- e. Detail drawings for each structure type giving weights of structure components, dimensions, and bill of materials.
- f. Assembly instructions and erection drawings. Slip joint lengths and allowable tolerances. Special handling instructions.

6.3 Final Documents shall be supplied to the Owner for the items in paragraph 6.2.e. after erection of all structures and prior to final payment

6.4 Test Reports (as requested)

- a. Certified mill test reports for all structural material,
- b. Certified welding reports for each structure,
- c. Impact property test reports showing that the material used in the structures meets the impact properties,
- d. Test reports on coating thickness,
- e. Report of structure testing, when required, including photographs, diagrams, load trees, etc.

- f. Material, workmanship, inspection travelers, and material certified mill test reports shall be maintained on file for a minimum of six (6) years by the Materialman, and shall be made available to Greenville Utilities Commission or the Engineer upon request at no charge.

7.0 APPROVAL, ACCEPTANCE, AND OWNERSHIP

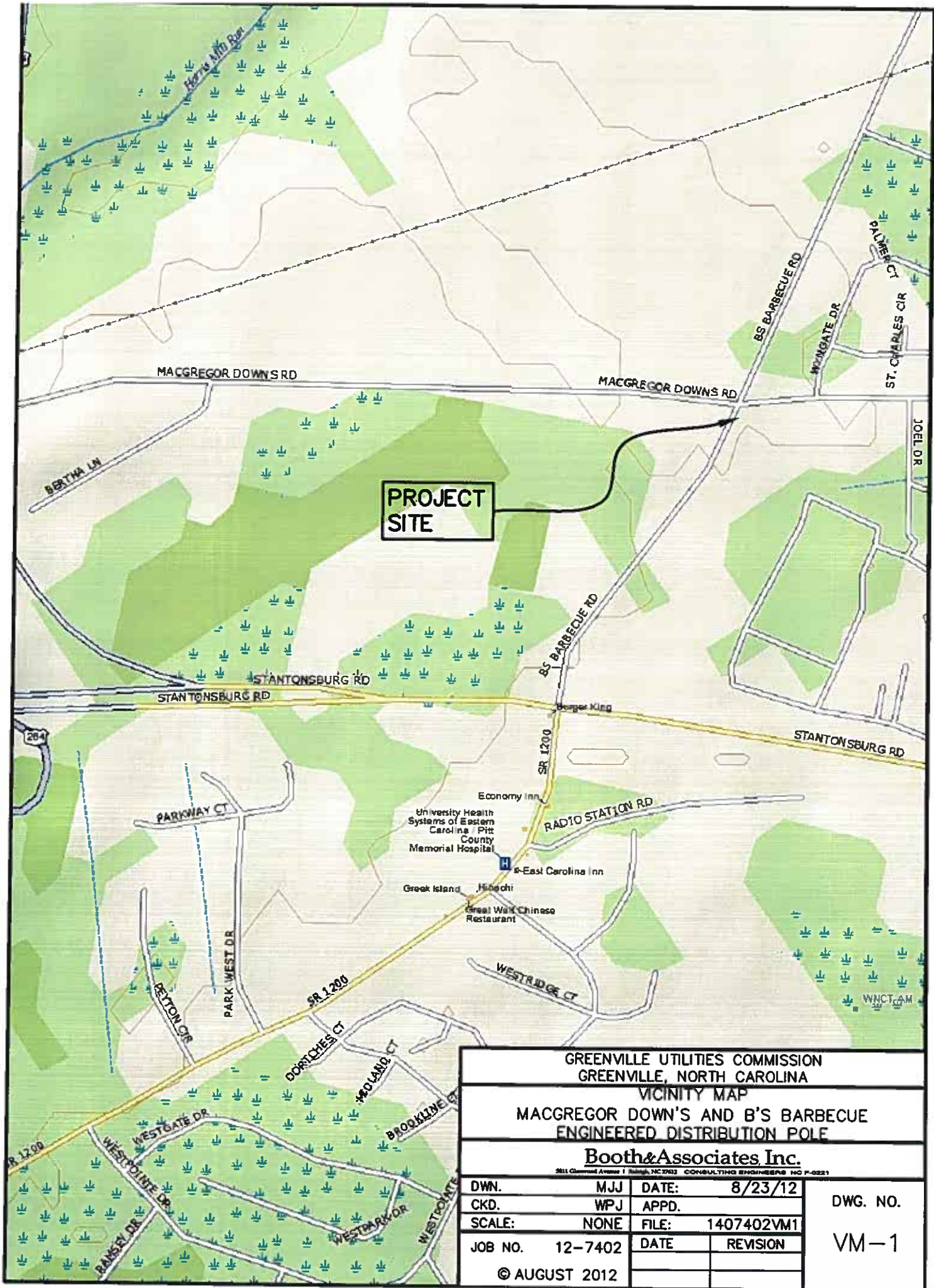
- 7.1 Final designs must be approved by the Engineer before material ordering and fabrication. Material ordering and fabrication prior to approval will be at supplier's risk. It is understood that award of this contract does not constitute acceptance of design calculations submitted with the bid, if corrections are required in the final structure designs due to manufacturer's errors, omissions, or misinterpretations of the specifications, the quoted price shall not change. Approval of the drawings and calculations by the Engineer does not relieve the supplier of responsibility for the adequacy of the design, correctness of dimensions, details on the drawings, and the proper fit of parts.
- 7.2 After delivery, the poles will be inspected and shall be free of dirt, oil blisters, flux, black spots, dross, tear-drop edges, flaking paint or zinc; and in general, shall be smooth, attractive, and unscarred. Poles not meeting this requirement shall be repaired or replaced by the fabricator at no additional cost to the Owner.

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ATTACHMENTS

EXHIBIT 1

VICINITY MAP



PROJECT SITE

GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA

VICINITY MAP
MACGREGOR DOWN'S AND B'S BARBECUE
ENGINEERED DISTRIBUTION POLE

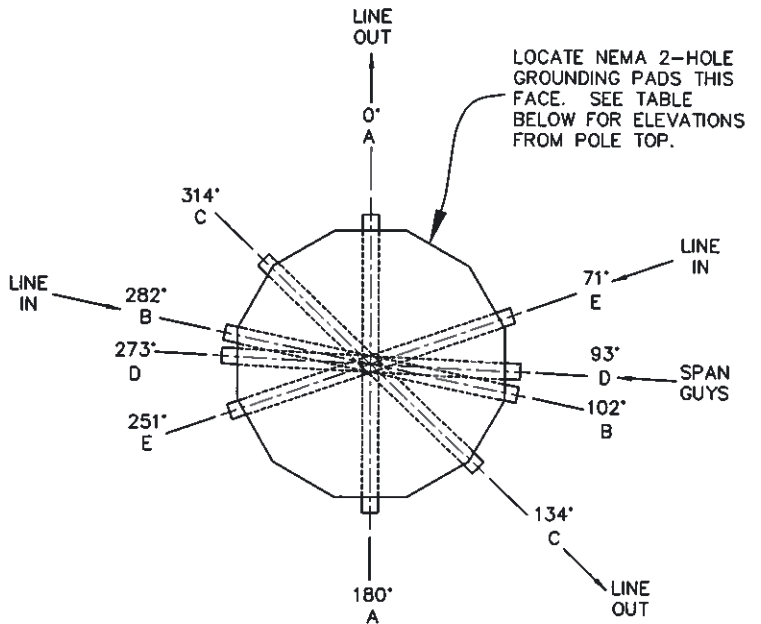
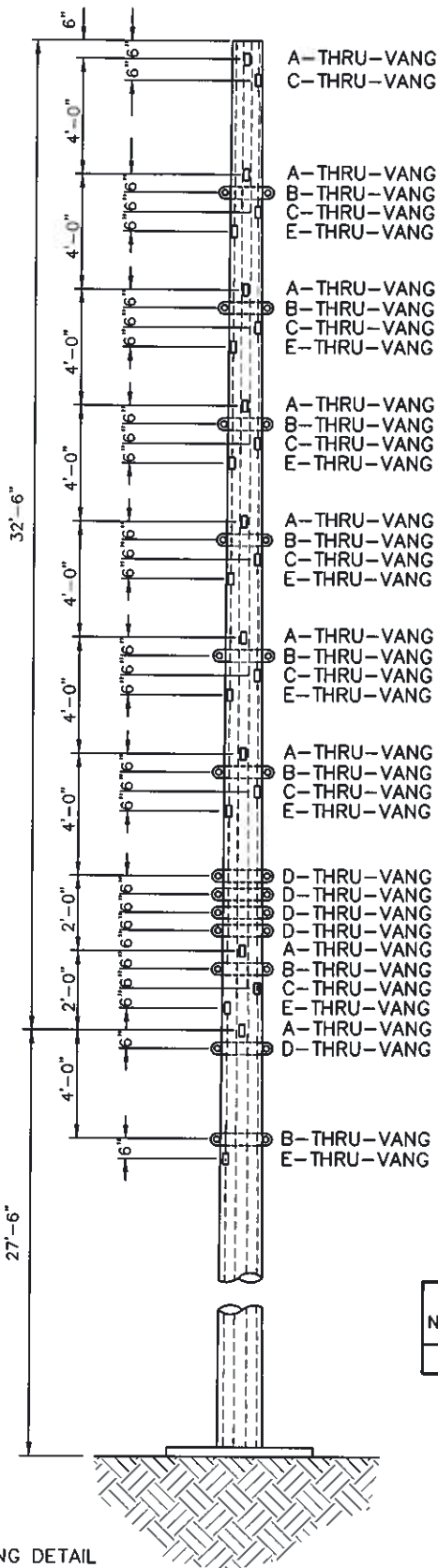
Booth & Associates Inc.
2611 General Avenue | Raleigh, NC 27613 | CONSULTING ENGINEERS NO. P-0221

DWN.	MJJ	DATE:	8/23/12
CKD.	WPJ	APPD.	
SCALE:	NONE	FILE:	1407402VM1
JOB NO.	12-7402	DATE	REVISION
© AUGUST 2012			

DWG. NO.
VM-1

ATTACHMENT A

STRUCTURE DIMENSIONS
(FRAMING DRAWINGS)

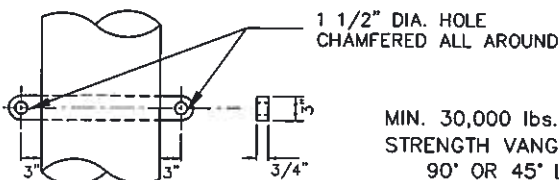


NOTES:

- LETTERS (i.e. "A" & "B") INDICATE THRU-VANG LOCATIONS AND ORIENTATION.
- LETTERS WITH DIMENSIONS (i.e. C-7/8") INDICATE THROUGH HOLES WITH DIAMETER FOR DRILLING. ALL HOLES ARE TO BE CENTERED ON A FLAT.
- DIMENSIONS SHOWN ON THRU-VANG DETAIL ARE REQUIRED TO ENSURE HARDWARE COMPATIBILITY. POLE MANUFACTURER IS RESPONSIBLE FOR VERIFYING THAT THE THRU-VANG STRENGTH EXCEEDS ULTIMATE STRENGTH REQUIREMENTS.
- MINIMUM POLE TOP DIAMETER IS 10 INCHES.

STR. NUMBER	POLE HT. /CLASS	EMBEDMENT DEPTH	NEMA 2-HOLE PADS		
			OHGW	NEUTRAL	POLE GROUND
A	60/UNGUYED	SURFACE MOUNT	1'-6"	31'-6"	58'-6"

THRU-VANG DETAIL
TYPICAL
NTS

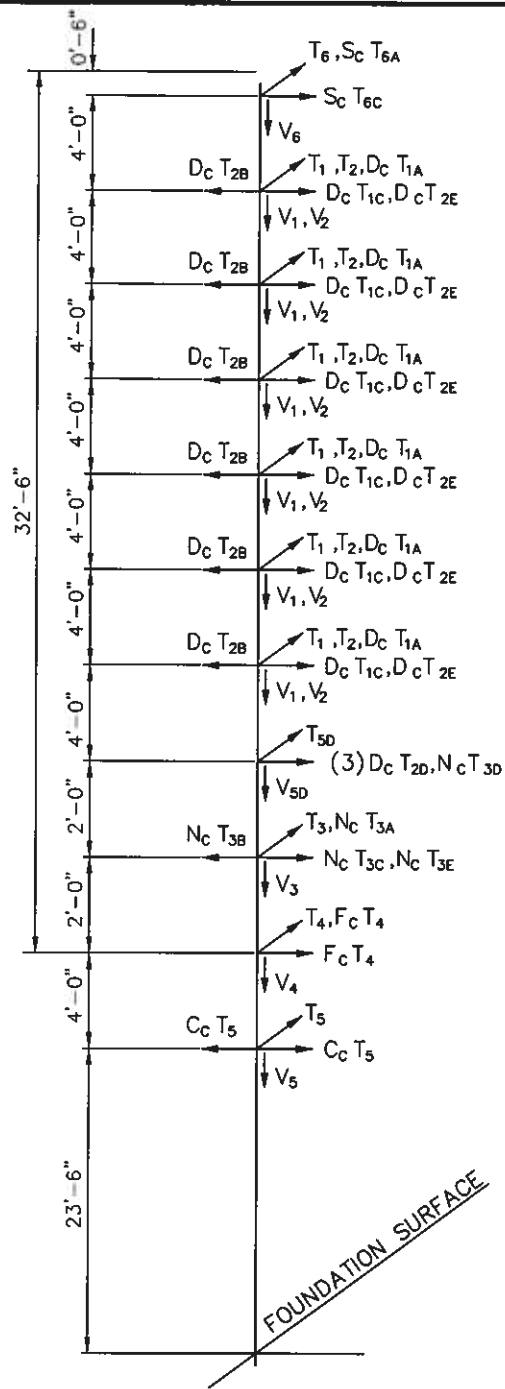


MIN. 30,000 lbs. ULTIMATE STRENGTH VANG REQUIRED
90° OR 45° LOAD

GREENVILLE UTILITIES COMMISSION GREENVILLE, NORTH CAROLINA			
STEEL POLE FRAMING DRAWING 12.47kV/7.2kV DISTRIBUTION LINE MACGREGOR DOWNS AND B'S BARBECUE ENGINEERED DISTRIBUTION POLE			
Booth & Associates, Inc. <small>311 Glenwood Avenue Raleigh, NC 27612 CONSULTING ENGINEERS NO. P-8221</small>			
DSN. MJJ	DWN. MJJ	DWG. NO. SPFD 1	
CKD. WPJ	APPD. WPJ		
SCALE: NTS	DATE: 8/6/12		
DATE	REVISION	© 08/12	

ATTACHMENT B

DESIGN LOADS
(LOADING DIAGRAMS)



NEC DISTRICT LOADS IN LBS.

LOAD DESIGNATION	UNFACTORED	FACTORED
Sc T6A	1,629	2,688
Sc T6C	518	855
Dc T1A	4,500	7,425
Dc T1c	1,000	1,650
Dc T2B	4,499	7,424
Dc T2D	3,500	5,775
Dc T2E	1,500	2,475
Nc T3A	2,393	3,949
Nc T3B	2,828	4,667
Nc T3C	634	1,047
Nc T3D	1,800	2,970
Nc T3E	1,111	1,834
Fc T4	704	1,162
Cc T5	4,500	7,425
T1	24	60
T2	78	195
T3	85	213
T4	23	58
T5	86	215
T5D	93	233
T6	13	32
V1	189	284
V2	168	252
V3	223	335
V4	69	104
V5	200	300
V5D	188	282
V6	65	98

NOTES:

1. MINIMUM POLE TIP DIAMETER TO BE NO LESS THAN 10 INCHES.

LOAD DESCRIPTION

Sc T	STATIC CONDUCTOR TENSION
Dc T	DISTRIBUTION CONDUCTOR TENSION
Nc T	NEUTRAL CONDUCTOR TENSION
Fc T	FIBER OPTIC CONDUCTOR TENSION
Cc T	CATV CONDUCTOR TENSION
T	NEC MEDIUM - TRANSVERSE WIND
V	NEC MEDIUM - VERTICAL CONDUCTOR LOAD

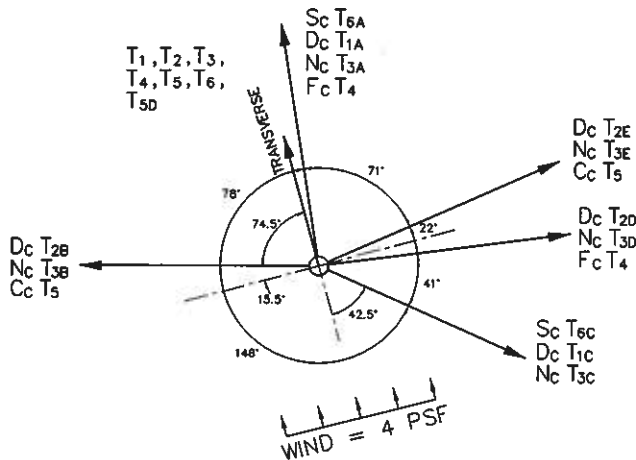
CONDUCTOR DESCRIPTION

1	795.0 kcmil AAC - ARBUTUS
2	556 kcmil ACSR - OSPREY
3	336.4 kcmil ACSR - MERLIN
4	FIBER OPTIC ADSS
5	AERIAL CATV - MODEL 795 AAC 37 ARBUTUS
6	7 NO. 9 ALUMOWELD

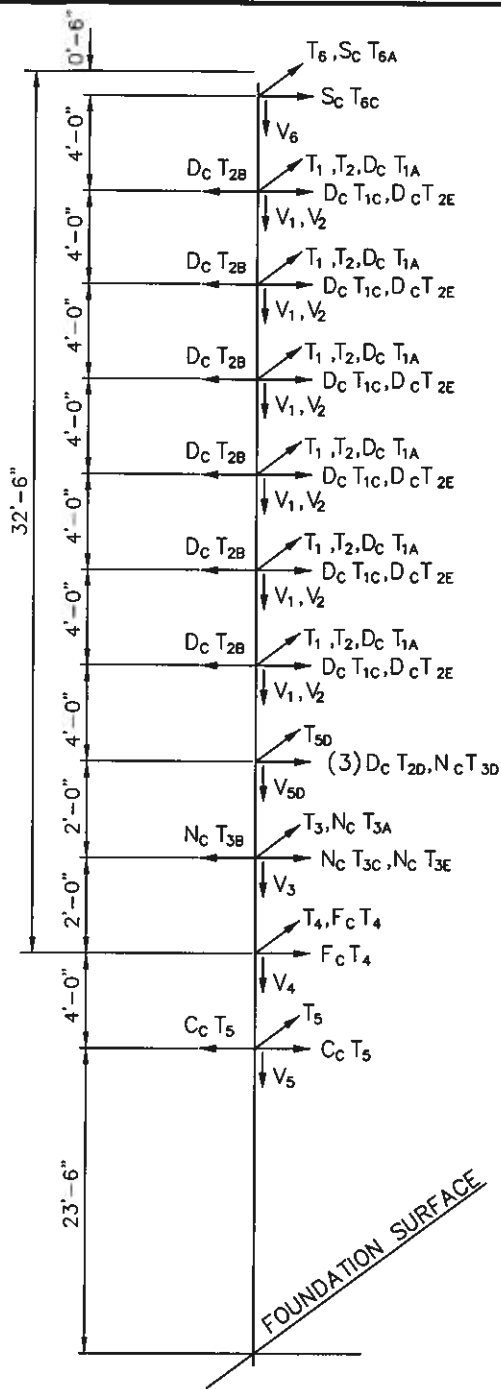
STRUCTURE NUMBER = A

STRUCTURE HEIGHT = 60'-0"

EMBEDMENT DEPTH = SURFACE MOUNT



GREENVILLE UTILITIES COMMISSION GREENVILLE, NORTH CAROLINA			
12.47kV/7.2kV DISTRIBUTION LINE MACGREGOR DOWNS AND B'S BARBECUE STRUCTURE LOADING DESCRIPTION ENGINEERED DISTRIBUTION POLE			
Booth & Associates, Inc.			
5811 Glenwood Avenue Raleigh, NC 27612 CONSULTING ENGINEERS NC F-0221			
DSN. MJJ	DWN. MJJ	DWG. No. LT-1	
CKD. WPJ	APPD. WPJ		
SCALE: NTS	DATE: 8/6/12		
DATE	REVISION	SHEET 1 OF 3 © 08/12	



CAMBER LOADS IN LBS.

LOAD DESIGNATION	UNFACTORED 60°F FINAL TENSION	UNFACTORED 60°F INITIAL TENSION
Sc T _{6A}	670	793
Sc T _{6c}	149	152
Dc T _{1A}	1642	2275
Dc T _{1c}	425	436
Dc T _{2B}	1656	2514
Dc T _{2D}	1036	1511
Dc T _{2E}	615	635
Nc T _{3A}	802	1022
Nc T _{3B}	1001	1521
Nc T _{3C}	208	211
Nc T _{3D}	480	602
Nc T _{3E}	372	384
Fc T ₄	300	300
Cc T ₅	1642	2275
V ₁	124	124
V ₂	106	106
V ₃	125	125
V ₄	23	23
V ₅	131	131
V ₅₀	116	116
V ₆	35	35

NOTES:

1. THE STEEL POLE MANUFACTURER SHALL CALCULATE THE DEFLECTIONS FOR THE 60° INITIAL AND FINAL TENSION LOAD CASES. THE DIFFERENCE BETWEEN THE DEFLECTIONS PRODUCED BY THESE TWO LOAD CASES SHALL BE LIMITED TO SIX INCHES (6") OR LESS.
2. MINIMUM POLE TIP DIAMETER TO BE NO LESS THAN 10 INCHES.

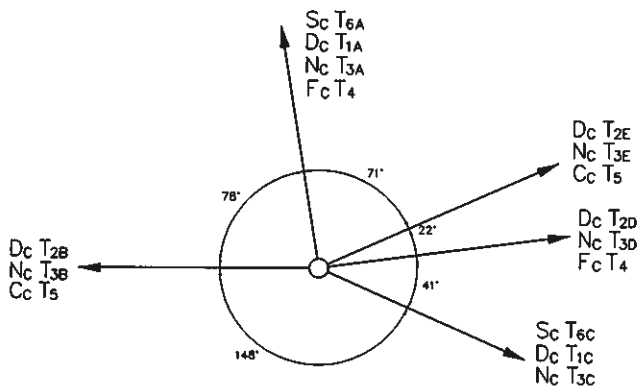
LOAD DESCRIPTION

Sc T	STATIC CONDUCTOR TENSION
Dc T	DISTRIBUTION CONDUCTOR TENSION
Nc T	NEUTRAL CONDUCTOR TENSION
Fc T	FIBER OPTIC CONDUCTOR TENSION
Cc T	CATV CONDUCTOR TENSION
V	VERTICAL LOAD - 60°F, BARE, NO WIND

CONDUCTOR DESCRIPTION

1	795.0 kcmil AAC - ARBUTUS
2	556 kcmil ACSR - OSPREY
3	336.4 kcmil ACSR - MERLIN
4	FIBER OPTIC ADSS
5	AERIAL CATV - MODEL 795 AAC 37 ARBUTUS
6	7 NO. 9 ALUMOWELD

STRUCTURE NUMBER = A
 STRUCTURE HEIGHT = 60'-0"
 EMBEDMENT DEPTH = SURFACE MOUNT

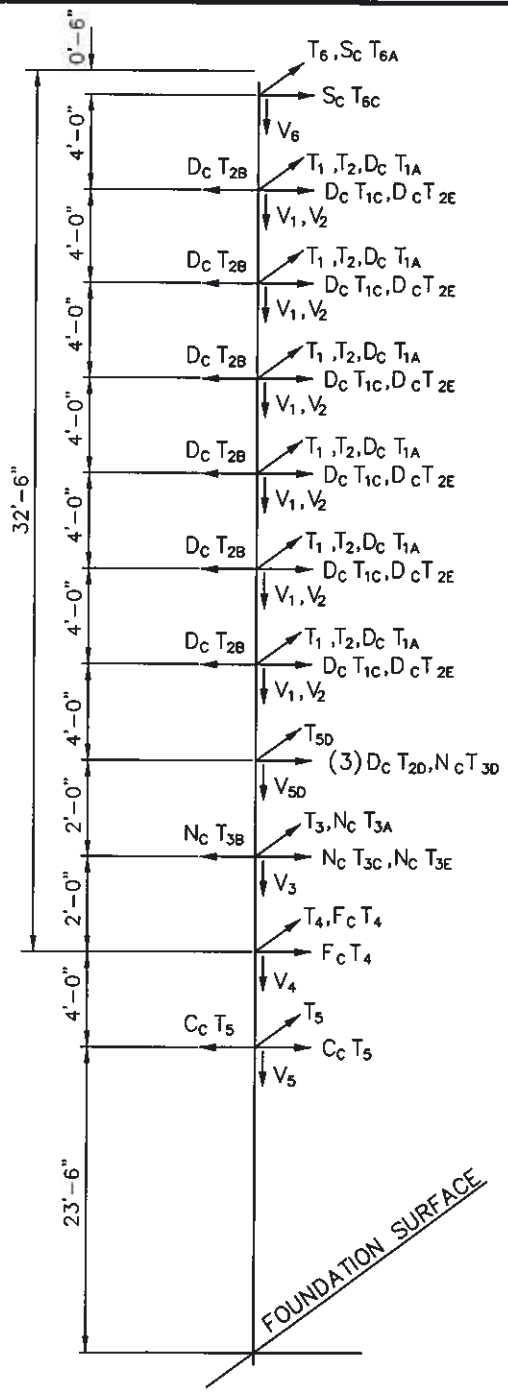


GREENVILLE UTILITIES COMMISSION
 GREENVILLE, NORTH CAROLINA

12.47kV/7.2kV DISTRIBUTION LINE
 MACGREGOR DOWNS AND B'S BARBECUE
 STRUCTURE LOADING DESCRIPTION
 ENGINEERED DISTRIBUTION POLE

Booth & Associates, Inc.
 5811 Glenwood Avenue | Raleigh, NC 27612 | CONSULTING ENGINEERS NC F-0221

DSN. MJJ	DWN. MJJ	DWG. No. LT-1 SHEET 2 OF 3 © 08/12
CKD. WPJ	APPD. WPJ	
SCALE: NTS	DATE: 8/6/12	
DATE	REVISION	



EXTREME WIND LOADS IN LBS.

LOAD DESIGNATION	UNFACTORED	FACTORED
Sc T6A	1517	1669
Sc T6c	538	592
Dc T1A	4254	4680
Dc T1c	1376	1514
Dc T2B	3838	4222
Dc T2D	2529	2782
Dc T2E	2030	2233
Nc T3A	2484	2733
Nc T3B	2588	2847
Nc T3c	877	965
Nc T3D	1511	1663
Nc T3E	1507	1658
Fc T4	1347	1482
Cc T5	4254	4680
T1	109	120
T2	345	380
T3	341	375
T4	91	100
T5	402	443
T50	404	445
T6	37	41
V1	124	137
V2	106	117
V3	125	138
V4	23	26
V5	131	142
V50	116	128
V6	35	38

NOTES:

1. MINIMUM POLE TIP DIAMETER TO BE NO LESS THAN 10 INCHES.

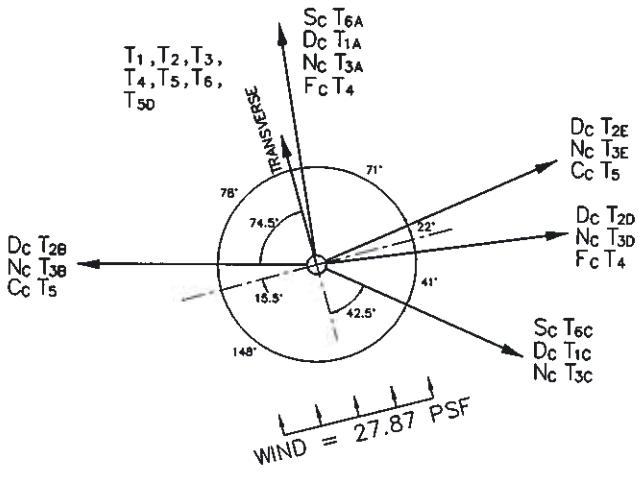
LOAD DESCRIPTION

Sc T	STATIC CONDUCTOR TENSION
Dc T	DISTRIBUTION CONDUCTOR TENSION
Nc T	NEUTRAL CONDUCTOR TENSION
Fc T	FIBER OPTIC CONDUCTOR TENSION
Cc T	CATV CONDUCTOR TENSION
T	NESC EXTREME - TRANSVERSE WIND
V	NESC EXTREME - VERTICAL CONDUCTOR LOAD

CONDUCTOR DESCRIPTION

1	795.0 kcmil AAC - ARBUTUS
2	556 kcmil ACSR - OSPREY
3	336.4 kcmil ACSR - MERLIN
4	FIBER OPTIC ADSS
5	AERIAL CATV - MODEL 795 AAC 37 ARBUTUS
6	7 NO. 9 ALUMOWELD

STRUCTURE NUMBER = A
 STRUCTURE HEIGHT = 60'-0"
 EMBEDMENT DEPTH = SURFACE MOUNT



GREENVILLE UTILITIES COMMISSION
 GREENVILLE, NORTH CAROLINA
 12.47kV/7.2kV DISTRIBUTION LINE
 MACGREGOR DOWNS AND B'S BARBECUE
 STRUCTURE LOADING DESCRIPTION
 ENGINEERED DISTRIBUTION POLE

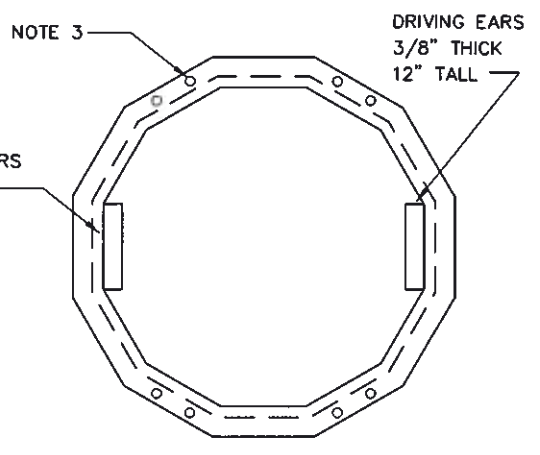
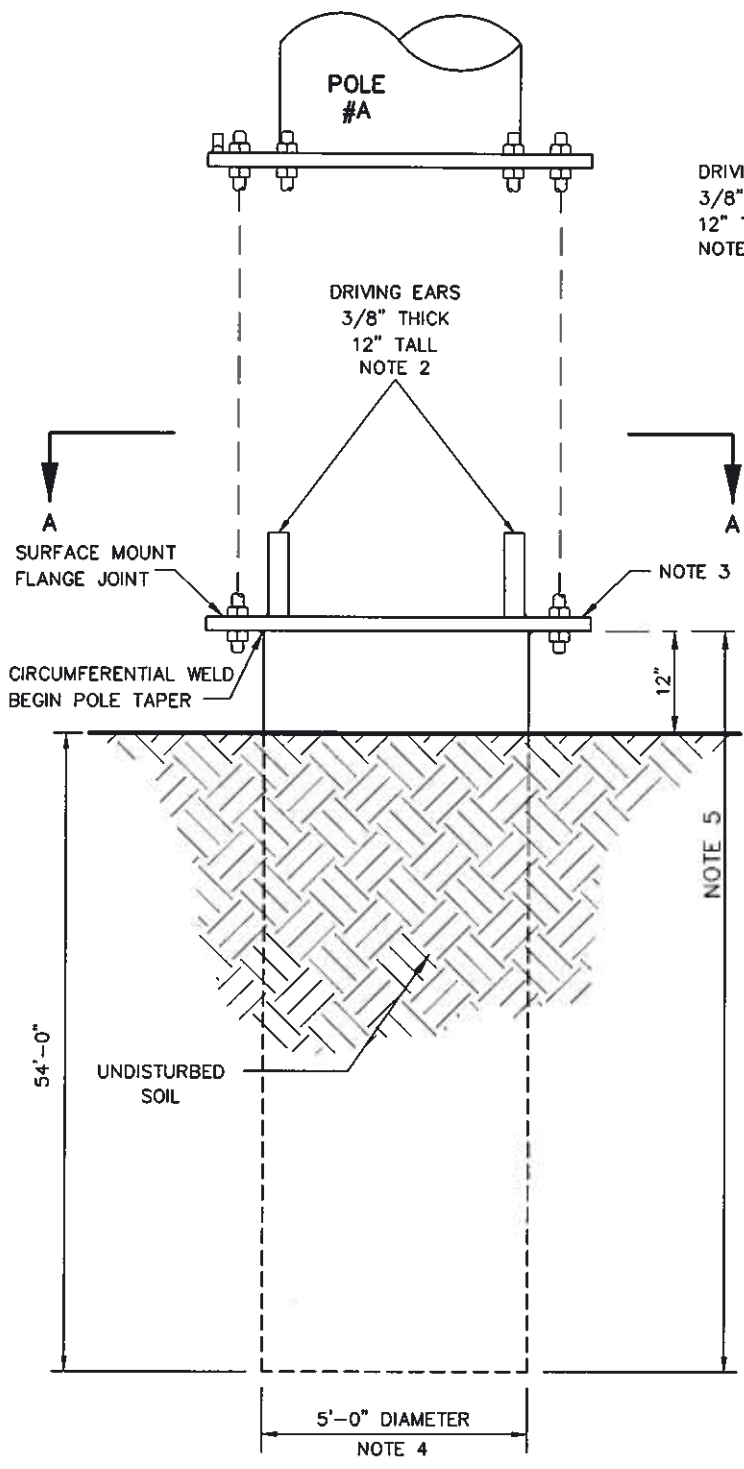
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DSN.	MJJ	DWN.	MJJ	DWG. No. LT-1 SHEET 3 OF 3 © 08/12
CKD.	WPJ	APPD.	WPJ	
SCALE:	NTS	DATE:	8/6/12	
DATE	REVISION			

ATTACHMENT C

MISCELLANEOUS DRAWINGS



SECTION A-A
N.T.S.

NOTES:

- 1) VIBRATORY POLE BASE TO BE INSTALLED USING VIBRATORY HAMMER. THE FREQUENCY AND STROKE AMPLITUDE RANGES FOR INSTALLATION OF THE POLE BASE TO BE PER MANUFACTURERS RECOMMENDATIONS.
- 2) POLE MANUFACTURER TO DETERMINE APPROPRIATE DRIVING EARS FOR INSTALLATION. DIMENSIONS GIVEN ARE MINIMUM. POLE MANUFACTURER TO ENSURE SIZE AND CONNECTION OF DRIVING EARS WILL BE ADEQUATE FOR INSTALLATION BY VIBRATORY HAMMER.
- 3) FLANGE SIZE AND BOLT PATTERN TO BE DETERMINED BY MANUFACTURER. BOLT PATTERN OF POLE TO MATCH BOLT PATTERN OF FOUNDATION FLANGE JOINT.
- 4) VIBRATORY BASE DIAMETERS SHOWN IS MINIMUM. POLE MANUFACTURER IS TO VERIFY VIBRATORY POLE BASE IS ADEQUATE FOR DESIGN LOADS.
- 5) CORROSION INHIBITING COATING FROM POLE ABOVE BASE BOTTOM TO BOTTOM OF FLANGE JOINT.

LIST OF MATERIALS

ITEM	QTY.	DESCRIPTION
1		VIBRATORY POLE BASE - SURFACE MOUNT FLANGE TYPE

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GREENVILLE, NORTH CAROLINA

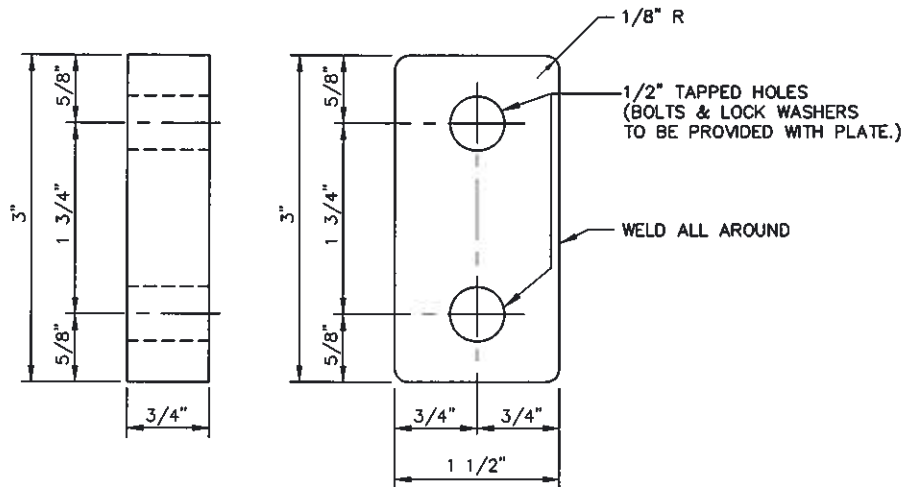
STEEL POLE FRAMING DRAWING
VIBRATORY DRIVEN POLE BASE-FLANGE TYPE
GUIDE ONLY-STRUCTURE NO. A

Booth & Associates, Inc.

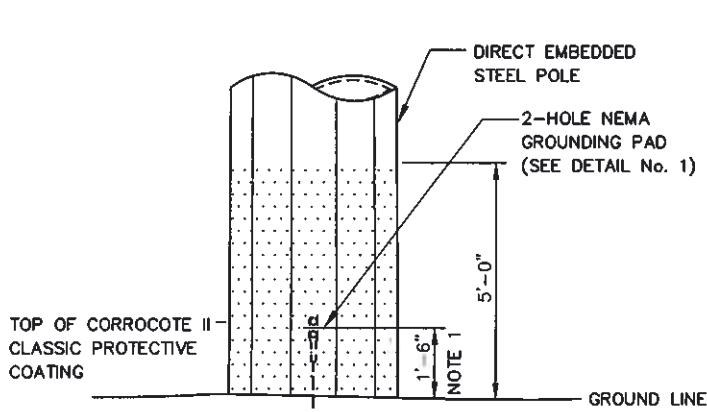
5111 Ominwood Avenue | Raleigh, NC 27612 | CONSULTING ENGINEERS NO. F-0221

DSN.	WPJ	DWN.	MJJ	DWG. NO.
CKD.	DSH	APPD.	WPJ	
SCALE:	NONE	DATE:	09/20/12	TMF-VPB-F-A
DATE	REVISION			

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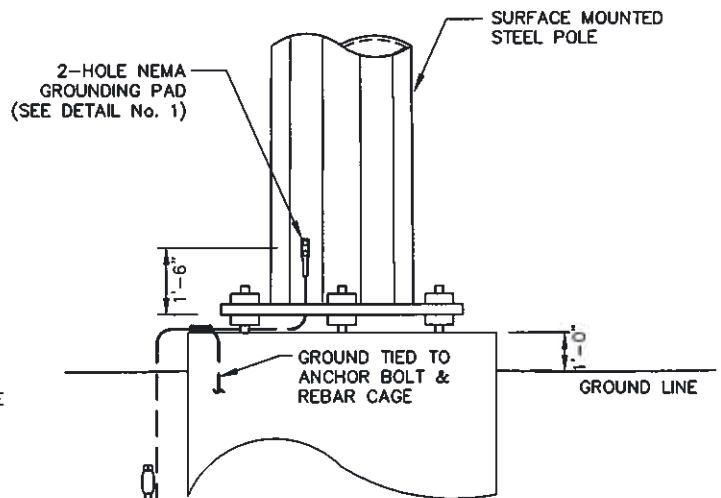
NEMA PAD DETAIL



EMBEDDED OR VIBRATORY BASE

NOTE:

1. KEEP GROUND PAD 6" ABOVE TOP OF GROUND SLEEVE (IF EQUIPPED).



SURFACE MOUNT

STEEL POLE GROUNDING PAD DETAIL

Booth & Associates, Inc.

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CKD.	DSH	APPD.	WPJ
SCALE:	NONE		
DATE	REVISION		

DWG. NO.

TMS-5

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