

**CITY OF ROCKY MOUNT
ROCKY MOUNT, NORTH CAROLINA**


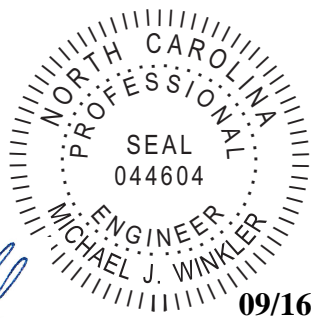
**SPECIFICATIONS AND BID DOCUMENTS FOR A
230 KV AUTOTRANSFORMER FOR THE
230 KV SOUTH POD SUBSTATION
OLD MILL ROAD, ROCKY MOUNT, NORTH CAROLINA
BID # RFP 320-080822RP**

ISSUED FOR REBID

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09/16/2022

**Booth & Associates, LLC
Consulting Engineers
2300 Rexwoods Drive, Suite 300
Raleigh, North Carolina 27607
Firm License No. F-0221**

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**CITY OF ROCKY MOUNT
ROCKY MOUNT, NORTH CAROLINA**

**SPECIFICATIONS AND BID DOCUMENTS FOR A
230KV AUTOTRANSFORMER FOR THE
230KV SOUTH POD SUBSTATION
OLD MILL ROAD, ROCKY MOUNT, NC**

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NOTICE TO PROSPECTIVE BIDDERS

Sealed Proposals for the furnishing and delivery of all materials and equipment (except materials and equipment specified to be furnished by the Owner) complete and conforming to the bid documents for one (1) power transformer for the 230 kV South POD Substation, as set forth in the Bid Schedules, will be received by **The City of Rocky Mount** (hereinafter referred to as the Owner) at the offices of their Purchasing Manager, City of Rocky Mount, Purchasing Division, City of Rocky Mount 331 South Franklin Street Rocky Mount, NC 27804, or PO Box 1180, Rocky Mount, North Carolina 27802-1180, on or before 4:00 PM, local time, Tuesday, September 27, 2022, at which time the Proposals will be opened and read. Proposals can be hand delivered to the Purchasing Office at 331 South Franklin Street, Rocky Mount, NC 27804 or the First Floor Atrium. Any Proposal received after that time will be promptly returned to the Bidder unopened.

The Specifications, together with all necessary forms and other documents for the Bidder, may be obtained from the Owner's website <https://rockymountnc.gov/services-finance-bids/>. Questions and comments can be submitted to [Ramona Plemmer](mailto:Ramona.Plemmer@rockymountnc.gov) (Ramona.Plemmer@rockymountnc.gov).

Proposals and all supporting instruments must be submitted on and in the format of the forms furnished in the *Form of Proposal* of these bid documents and must be delivered in a sealed envelope addressed to the Purchasing Manager, The City of Rocky Mount. Proposals must be filled in with indelible ink. No alterations or interlineations will be permitted unless made before submission and initialed and dated.

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

The name and address of the Bidder, its license number (if a license is required by the State), and the following description must appear on the envelope in with the Proposal is submitted:

**"BID FOR POWER AUTOTRANSFORMER FOR
THE 230KV SOUTH POD SUBSTATION
OLD MILL ROAD, ROCKY MOUNT, NC
NOT TO BE OPENED UNTIL
4:00 PM, LOCAL TIME, TUESDAY, SEPTEMBER 27, 2022"**

The Owner reserves the rights to (1) 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; (2) reject any or all Proposals and to hold any or all Proposals for a period of sixty (60) days from the date of opening thereof; (3) accept the bid, in its opinion, that represents the best value for the Owner, regardless of whether such bid is the lowest price; and (4) award Contracts to Bidder(s) for any Schedule (s) individually or collectively from the Bid Schedules.

**CITY OF ROCKY MOUNT
ROCKY MOUNT, NC**

By: Ramona Plemmer
Senior Purchasing Technician

Date: September 27, 2022

BID DATES SCHEDULE
City of Rocky Mount, NC
BID No. 320-080822RP
230 kV South POD Substation

No.	Item	Description
1	Bid Issue Date:	Friday, September 16, 2022
2	Owner's Contact on Bid:	Name: Ramona Plemmer Phone: Email: ramona.plemmer@rockymountnc.gov
3	Pre-bid Meeting Date:	Not Applicable
4	Site Visit Date:	Not Applicable
5	Address for submission of clarification requests on Bid Documents: Or Email to:	City of Rocky Mount 331 South Franklin Street Rocky Mount, NC 27804 Or Email: Not Applicable*
6	Deadline for submission of questions and clarification requests on Bidding Documents:	4:00 PM Wednesday, September 21, 2022
7	Bid Closing Date and Time (Local Time):	4:00 PM Tuesday, September 27, 2022
8	Bid Submission Address, by Hand Delivery: Bid Submission Address, by Mail:	City of Rocky Mount 331 South Franklin Street Rocky Mount, NC 27804 Or PO Box 1180 Rocky Mount, NC 27802-1180
9	Bids received after the “Bid Closing Date and Time”:	Shall not be accepted and shall be returned closed to the bidder.
10	Bid Opening Date & Time (Local Time):	4:00 PM Tuesday, September 27, 2022
11	Bid Opening Location:	First Floor Atrium City of Rocky Mount 331 South Franklin Street Rocky Mount, NC 27804
12	Validity of Bids:	Bids shall be valid for a period of 60 days after the Bid Closing Date
13	Validity of Bid Security:	The Bid Security shall be valid for 60 days beyond the validity date of the Bid.
14	Delivery Date:	October 2023
15	Performance Bond:	Not Applicable

Bid updates can be found at the City website at <https://rockymountnc.gov/services-finance-bids/>

***Final Submissions cannot be submitted electronically and must be delivered to the purchasing office as described on page N-1.**

DEFINITIONS

Whenever the following terms or pronoun in place of them are used in these "Instructions to Bidders", "Form of Proposal", "Technical Specifications", "Contract", bond, etc., the intent and meaning shall be interpreted as follows:

Owner	City of Rocky Mount Rocky Mount, NC
Senior Purchasing Technician	Ramona L. Plemmer; or authorized assistant
Purchasing Clerk	Alicia Gaines
Consulting Engineer	Booth & Associates, LLC
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 Bidder
Bidder	Any individual, firm, or corporation submitting a Proposal for the work contemplated, acting directly or through a duly authorized representative; or 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 Bidder to perform part of the latter's Contract
Surety	The body, corporate or individual, approved by the Owner, which is bound with and for the Bidder who is primarily liable, and which engages to be responsible for his acceptable performance of the work for which he has contracted
Form of Proposal, Proposal	The approved, prepared form on which the Bidder is to submit or has submitted his Proposal for the work contemplated
Bid Security	To all bids there shall be attached cash, cashier's check, or certified check from the Bidder upon a bank or trust company insured by the Federal Deposit Insurance Corporation or in lieu thereof, a Bid Bond
Plans, Drawings	All Drawings or reproductions of Drawings pertaining to the construction 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 materials to be furnished under the Contract

Purchase Order

The agreement covering the furnishing of equipment and/or apparatus and the performance of the work. The Purchase Order shall include the "Instructions to Bidders", "General Conditions", "Form of Proposal", "Plans", "Technical Specifications", and Acknowledgments

**Performance Bond
(Not Required)**

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

**Payment Bond
(Not Required)**

The approved form of security to be approved by the Owner furnished by the Bidder and his Surety as a guarantee for payment of all Subcontractors on the part of the Bidder in acceptance of the work 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 item 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

Bid Documents

Include all sections of the Request for Bids, Form of Proposal, Technical Specifications and Appendices, Addendum/Clarifications/Bulletins, and Drawings

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

1.0 Bidder Qualification

- 1.1 Bids will be accepted only from Bidders deemed by the Owner or the Engineer to be qualified to provide the materials, equipment, and services described by these Specifications. The experience of Bidders in providing the same or similar materials, equipment, and services will be a major factor in determining qualification. The Bidder shall include information to establish qualifications.
- 1.2 Prospective Bidders who wish to submit a bid, but are not presently qualified, may receive consideration by submitting a completed Bidder's Qualification Form, which requires product line and user list, to the Engineer at least ten (10) days prior to the specified bid opening date and time. The Bidder's Qualification Form may be obtained from the Engineer.

2.0 Proposals

- 2.1 To warrant consideration, Proposals must comply with these instructions. Strict adherence to these Specifications and Drawings is requested to facilitate review and consideration of the Proposal.
- 2.2 Bids not received on Booth & Associates, LLC *Form of Proposal* contained herein will be considered unresponsive. The forms shall be filled out complete; any omissions may cause the entire Proposal to be rejected.
- 2.3 Proposals must be made on the *Form of Proposal* provided herein and must not be altered, erased, or interlined in any manner. The Bidder shall fill in the *Form of Proposal* as detailed in the Terms and Conditions. The Bidder may retain one (1) copy, but the original, fully executed, must be inserted in or attached to the Bid Documents. Also, one (1) additional copy of all executed forms and supporting information shall be supplied.
- 2.4 The Bidder shall furnish certain information, as required by the Bid Documents regarding the equipment on which he is bidding. Two (2) copies of the information, together with the manufacturer's literature setting forth the guarantees and describing the equipment on which he is bidding shall be included as part of the Proposal. If one manufacturer is bidding through two or more agents or representatives, descriptive literature, guarantees, etc., may be submitted in duplicate in one sealed envelope, which will be considered and treated as though it contained a sealed bid. This envelope shall contain a list of the names of Bidders to whom the information applies. Each sealed Bid Proposal without this information shall state the name of the manufacturer who is furnishing the information. Additional sets of the Specifications may be obtained upon a payment of Fifty Dollars (\$50) non-refundable deposit by approved Bidders.
- 2.5 Bids may be modified by the Bidder's removal of his original and the submittal of a completely revised bid package in full compliance with the Bid Documents if received prior to the time of opening bids and if included in the public reading of such bids. No oral or telephonic Proposals will be considered.
- 2.6 Proposals shall include a *Form of Exceptions* utilizing forms provided which shall itemize each and every exception from the Bid Documents. 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 this *Form of Exceptions* is included in the *Form of Proposal*. 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 interests of the Owner. **Certain exceptions, e.g., failure to provide rigging and unloading at the site, or failure to properly provide supervision on field assembly and on testing may result in the entire Bid Proposal being rejected.**

- 2.7 Should the Bidder find discrepancies in the documents or fail to understand their meaning, he shall immediately notify the Engineer, who will send written instructions to all Bidders. Neither the Owner nor the Engineer will be responsible for any oral instructions.
- 2.8 The Bidder shall be the manufacturer of the equipment, or the Bidder shall submit with the *Form of Proposal* a notarized statement that the Bidder is authorized by the manufacturer to tender the Proposal as submitted and that the manufacturer will guarantee the suitability and adequacy of the equipment proposed, and will be bound by the Specifications, as though the manufacturer had submitted the Proposal.
- 2.9 In the event that the Bidder proposes any change or deviation from the Engineer's Plans and Specifications, such Proposal changes or deviations must be submitted at the time bids are opened. The Owner reserves the right to reject any such proposed changes or deviations. All exceptions must be stated on the *Form of Exceptions*. Failure to submit a *Form of Exceptions* will imply strict adherence to the Plans and Specifications.
- 2.10 No Bid Proposal 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 accept a Contract, then the Contract may be offered to the next lowest responsible Bidder whose Proposal is evaluated as acceptable.
- 2.11 Prior to 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 and the time of completion of the work.
- 2.12 The Contract, when accepted, shall be deemed to include the Specifications for the equipment, and the Bidder shall not claim any modification thereof resulting from any representative or promise made at any time by an officer, agent, or employee of the Owner or by any other person.
- 2.13 Firm quotations should be based upon placement of an order within sixty (60) days from bid date.
- 2.14 The Owner reserves the right to select or reject any or all schedules, adders, or deducts (or combination thereof) listed in the *Form of Proposal*. Base quotations for the transformer shall include the risk of delivery to each location.
- 2.15 The Owner will provide reasonable roadway access to each site.
- 2.16 Exceptions taken to the testing performed as outlined in these specifications may result in rejection of the Bidder's proposal.

3.0 Bid Security

- 3.1. Each Proposal shall be accompanied, if applicable, by a cash deposit, cashier's check, or certified check drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation, or a Bid Bond in an amount not less than ten percent (10%) of the Proposal. The Owner will retain said deposit as liquidated damages in the event of failure of the successful Bidder to execute the Purchase Order 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 a Purchase Order in accordance with the Bid Bond, and that 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 Bond is required, the amount of which shall be based on the total amount of the bid. The value for the Bid Bond shall be based on the Bid Schedule of maximum total amount.

4.0 Performance Bond/Payment Bond

A Performance Bond/Payment Bond is not required for this project.

5.0 Bulletins and Addenda

Any bulletins or addenda to the Specifications issued during the time of bidding are to be considered covered in the Proposal, and in executing a contract, they will become a part thereof. Receipt of addenda shall be acknowledged by the Bidder on the *Form of Proposal*.

6.0 Award of Contract

- 6.1. The Award of Contract will be made to the lowest acceptable Bidder as soon as practical, provided that in the selection of materials and equipment a Contract may be awarded to a responsible 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. The Bidder must correct any such irregularities or errors so waived on the Proposal prior to its acceptance.
- 6.3. Timely delivery of the transformer is an essential part of the evaluation process for an award of a contract. The Bidder is requested to offer the best delivery schedule possible, and provide details of the time frame in the *Form of Proposal* utilizing calendar days after receipt of a contract.
- 6.4. In estimating the lowest cost to the Owner as one of the factors in deciding the Award of the Contract, the Owner will consider, in addition to the prices quoted in the Proposal, the following:
 - a. Cost of Ownership, including financing and losses for the power transformer
 - b. Equipment delivery date
 - c. Transformer core and winding losses
 - d. Adherence to the Plans and *Technical Specifications*
 - e. Suitability of materials and equipment
 - f. Firm prices
 - g. Additional extended warranty
 - h. Standardization of equipment.
 - i. Accessibility of service facilities and personnel
 - j. History of delivery performance for past twelve months
 - k. History of prior equipment performance
 - l. Guaranteed PCB dielectric level
 - m. Storage Fee of Transformer

7.0 Approval Drawings

- 7.1. Before proceeding with fabrication, the manufacturer shall submit for approval sufficient Drawings to demonstrate that all parts conform to the requirements and intent of the Specifications. Approval drawings shall include all drawings and CT curves as listed in "Final Drawings."
- 7.2. Approval of Drawings shall not be held to relieve the manufacturer of obligations to meet all requirements of the Specifications, of responsibility for correctness of the Drawings, or responsibility to meet original shipping promise on basis of customer's being allowed two (2) weeks for approval.
- 7.3. Receipt of Approval Drawings by the Bidder 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 the Owner or its Engineer, based upon the Manufacturer's compliance with the following:

- a. Three (3) weeks prior notification of tests, so the Owner may have representatives present for witness of the tests.
 - b. Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to delivery.
- 7.4. Each sheet of each set of Drawings shall be labeled with City of Rocky Mount and the appropriate location name in addition to other identifying information.
- 7.5. Approval Drawings shall be submitted directly to the Owner's Engineer, Booth & Associates, LLC, 2300 Rexwoods Drive, Suite 300, Raleigh, North Carolina 27607, Attention: Michael Winkler (m.winkler@booth-assoc.com).
- 7.6. **Electronic transmittal of approval drawings is preferred.**

8.0 Outline Drawings

- 8.1. The Outline Drawings shall show dimensions of equipment, including bushings, radiators and cooling equipment, base, and all other important external features. These Drawings shall show weights, bushings, catalog numbers, and ampere ratings, description of top bushing terminals, and arrangement of all external accessory devices.
- 8.2. If paper copies are submitted, all Drawings shall be a minimum of a "C" (18" x 24") size print. Submittal of Drawings smaller than "C" size will be immediately returned stamped "not approved" and proper size Drawings will have to be submitted. All dimensions shall be stated in inches or feet and inches.

9.0 Final Drawings

- 9.1. Contingent upon Approval Drawing review and product manufacture, the Bidder shall issue final documentation for the transformer as follows:
- a. One (1) complete set of all Drawings, revised to "as-built" status, released on paper media.
 - b. Two (2) complete sets of all Drawings, revised to "as-built" status, released on two (2) separate CD-ROMs, compatible with AutoCad®, Release 2010.
 - c. Five (5) copies of applicable instruction books, including one (1) print each of all Drawings representing physical and electric details as furnished per these instructions.
 - d. Two (2) copies of certified test reports corresponding to functional performance measurements after final assembly.
 - e. All Drawings are to be certified correct and supplied within a reasonable length of time prior to shipment of the equipment. Each set of Drawings and documentation shall include the following information:
 - 1. Outline and Assembly Drawings showing size and location of major components and all principal dimensions.
 - 2. Control cabinet front view/layouts of bushing and bushing terminal connectors.
 - 3. Diagram of bushing current transformers, connection, number of turns, polarity marking, ratios, and bushing orientation.
 - 4. Current transformer performance characteristic curves and data for all relay accuracy CTs.
 - 5. Details of control housing.
 - 6. Panel connection diagram showing exact connection for all components furnished.

7. AC and DC elementary circuit diagrams for all relay and control equipment furnished.
8. Wiring control and schematic diagrams.
9. Instruction books, including LTC operations manual(s), if applicable.
10. Renewal parts catalog.
11. Two (2) copies of certified test reports.

10.0 Transformer Shipping Details

- 10.1. A Delivery Schedule is included in the *Form of Proposal* on which the Bidder shall indicate the delivery schedule for his materials and equipment. Strict adherence to the quoted delivery schedule is expected. Furthermore, the Bidder shall match his scheduled deliveries to the schedule preferred by the Owner if noted in the *Form of Proposal*.
- 10.2. The prices quoted shall include delivery of the equipment F.O.B. Point of Delivery to each location and unloading onto a permanent concrete pad (or temporary arrangement of timbers supplied by the Bidder). The Bidder is responsible for all highway permits and associated fees from point of origin to each site. Refer to Vicinity Maps in Appendices for each station site location.
- 10.3. The Bidder shall include the cost for complete rigging, and setting in place, utilizing a hydraulic crane of at least twice the capacity of the weight of the transformer, or utilizing a jack and slide method as space permits. Bidder shall provide any necessary top-off oil. Bidder shall provide all equipment required to add oil. High-voltage bushings, oil, radiators, etc., not installed prior to shipping will be installed by the Bidder, subsequent to delivery. The Bidder shall provide all necessary labor and equipment, and will also provide a Field Service Engineer for dress-out of removed parts, oil-filling (if necessary) and field testing as outlined in the Specifications.
- 10.4. The Bidder shall determine the best method to offload the transformer onto its pad. Site Drawings can be obtained from the Owner's Engineer listed on page N-2, site visits are encouraged and can be coordinated with the City's Engineer Khalil Matar (252) 557-6461 khalil.matar@rockymountnc.gov. The bidder shall be responsible for the method of offloading the transformer and any associated costs not incurred from an altered site condition that didn't exist during the time of bid.
- 10.5. The transformer shall be shipped by truck or rail and shall be oil-filled (if possible) with the low-voltage bushings installed unless clearly stated otherwise by the Bidder at the time of the bid. If shipped oil-filled, Bidder shall provide any necessary top-off oil, labor and all equipment required to add oil. If oil-filling is required subsequent to delivery, the Bidder shall be responsible for all labor, equipment and oil necessary to refill each unit on site.
- 10.6. 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 3:00 p.m., Monday through Thursday, holidays excluded. Ultimate delivery shall be at the discretion of the Owner. All components for each transformer shall be delivered at one time.
- 10.7. Coordinated shipment shall be made to reduce storage by the Owner and to facilitate the accumulation of component parts. Small partial shipments at scattered times will not be acceptable. In the event that delays occur, the Bidder shall be responsible for all shipping demurrage unless such delays are caused solely by the Owner.
- 10.8. The Bidder shall furnish evidence of short circuit testing on similar units having the same basic ratings and designs. Short circuit tests shall comply with appropriate ANSI regulations.
- 10.9. Proposals shall include the following:

- a. Catalog numbers, manufacturer, ratings, characteristics, types, sizes, etc., of all materials and equipment included. A simple statement that all necessary materials and equipment will be provided is not satisfactory.
- b. Performance data for the specified item(s) as set forth in the *Technical Specifications*.
- c. The Bidder shall state in his Proposal the manner in which the transformers will be shipped--namely, truck or rail; whether units shall be oil-filled or dry-air-filled; and whether bushings will be installed or removed.
- d. Prices shall include the cost of delivery, oil filling (if necessary), unloading, assembly, supervision of assembly and field testing as per the Instructions to Bidders. The Vicinity Map is included in the Appendices.

11.0 Manufacturer's Field Representative

The manufacturer shall provide (and include in his base bid) the services of a Field Service Engineer for one trip to assure proper assembly and preparation for service. The manufacturer is responsible for all travel time. The duties of the Field Service Engineer shall include installation of component parts removed for shipment, oil-filling (if necessary), and field testing as outlined in the Specifications. All work shall be performed in a de-energized state.

The manufacturer's representative will draw oil sample(s) from each unit and will be responsible for conducting both an ASTM dielectric test and a dissolved gas test. Reports shall be mailed in duplicate to the Owner and the Owner's engineer for reference. Exceptions taken to the testing performed as outlined above may result in rejection of the Bidder's proposal.

12.0 Payment

- 12.1. The successful Bidder shall submit one monthly invoice within fifteen (15) calendar days following the end of each month in which work was performed.
- 12.2. Invoices shall be submitted in triplicate to Accounts Payable, City of Rocky Mount for review and approval. The address for submittal of all invoices is: City of Rocky Mount, Attn: Accounts Payable, PO Box 1180, Rocky Mount, NC 27802.
- 12.3. Payment amounts will be made on a NET 30 day period upon submission of an invoice and appropriate pick tickets to support such invoice.
- 12.4. There shall be a ten-percent (10%) retainage on invoices until all equipment, with proper instruction books per Specifications, certified test reports, and drawings have 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. A ten-percent (10%) Performance Bond may be provided in lieu of retainage provisions. Deviation from the foregoing payment provisions will be considered less than responsive.

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, which may include manufactured items and field service assistance. In case of discrepancy or disagreement in the Contract, the order of precedence shall be: Contract, Specifications, Drawings.

2.0 Clarifications and Detail Drawings

In such 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 Bidding Documents, and shall become a part thereof.

3.0 Copies of Drawings and Specifications

The Engineer will furnish free of charge to the Bidder one (1) copy of the Plans and Specifications. Additional sets of these Specifications may be obtained upon request and a non-refundable deposit of Fifty Dollars (\$50.00) by approved Bidders.

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 these Bid Documents without permission is prohibited. All copies of Drawings and Specifications other than final 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 Bid Documents that the work covered herein will not constitute in any way an infringement on patents. The Bidder shall protect and save harmless the Owner against suit on account of alleged or actual infringement. The Bidder 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

The Bidder shall be notified of faulty or damaged work and shall have the option to respond in a reasonable period of time. 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 Bidder for the same by a deduction in the Contract prices arrived at by a fair estimate of the probable cost of correction, approved by the Engineer.

7.0 Liquidated Damages

The Bidder shall commence manufacture upon issuance of a Contract from the Owner, and shall fully complete delivery as per the Delivery Schedule in the *Form of Proposal*. For each day in excess of the proposed dates, the Bidder shall be made payable to the Owner the sum of five hundred dollars (\$500.00) as liquidated damages (and not as a penalty), reasonably estimated in advance to cover the losses to be incurred by the Owner by reason of failure of said Bidder to complete delivery within the time specified, such time being in the essence of this Contract and material consideration thereof.

8.0 Delays and Extension of Time

8.1 The time to be allowed for delivery is stated in the *Form of Proposal*. The Bidder, upon notice of award of the Contract, shall prepare a delivery schedule based on the allowed time and submit such schedule to the Engineer for approval.

- 8.2 If Bidder is delayed at any time in the progress of the work by any act of negligence by the Owner or the Engineer, by any separate Bidder employed by the Owner, or by changes ordered in the work, then the time of completion shall be extended for such reasonable time as the Engineer may decide.
- 8.3 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.

9.0 Guarantee

The Bidder shall guarantee his materials and workmanship against defect due to faulty materials, faulty workmanship, or negligence for a period of sixty (60) months from energization, or sixty-six (66) months from date of delivery, whichever applies. He shall make good such defective materials or workmanship and any damages resulting there from without cost to the Owner.

10.0 Assignments

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

11.0 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 fabrication is in progress. The compensation for such changes shall be agreed upon in writing between the Bidder and the Owner prior to commencement of work involving the change. No payment shall be made to the Bidder for correcting work not in compliance with Specifications.

*Commercial Clauses in the City of Rocky Mount's General Terms and Conditions that conflict with other clauses in this bid document shall not be applicable.

GENERAL TERMS & CONDITIONS

1. **PERFORMANCE AND DEFAULT:** If, through any cause, Contractor shall fail to fulfill in timely and proper manner the obligations under The Contract, the City shall have the right to terminate The Contract by giving written notice to the Contractor and specifying the effective date thereof. In that event, any or all finished or unfinished deliverable items under The Contract prepared by the Contractor shall, at the option of the City, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any acceptable work completed as to which the option is exercised. Notwithstanding, Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of The Contract, and the City may withhold any payment due the Contractor for the purpose of setoff until such time as the exact amount of damages due the City from such breach can be determined. The City reserves the right to require at any time a performance bond or other acceptable alternative performance guarantees from a Contractor without expense to the City.

In the event of default by the Contractor, the City may procure the goods and services necessary to complete performance hereunder from other sources and hold the Contractor responsible for any excess cost occasioned thereby. In addition, in the event of default by the Contractor under The Contract, or upon the Contractor filing a petition for bankruptcy or the entering of a judgment of bankruptcy by or against the Contractor, the City may immediately cease doing business with the Contractor, immediately terminate The Contract for cause, and may take action to debar the Contractor from doing future business with the City.

2. **GOVERNMENTAL RESTRICTIONS:** In the event any Governmental restrictions are imposed which necessitate alteration of the material, quality, workmanship or performance of the goods or services offered prior to their delivery, it shall be the responsibility of the Contractor to notify the Contract Lead at once, in writing, indicating the specific regulation which required such alterations. The City reserves the right to accept any such alterations, including any price adjustments occasioned thereby, or to cancel the Contract.
3. **AVAILABILITY OF FUNDS:** It is understood and agreed between Contractor and the City that the City's payment obligation under this Contract is contingent upon the availability of appropriated funds from which payment for Contract purposes can be made.
4. **TAXES:** Contractor shall pay all federal, state, and FICA taxes for all employees participating in the provision of services under this Contract.
5. **SITUS AND GOVERNING LAWS:** This Contract is made under and shall be governed and construed in accordance with the laws of the State of North Carolina, without regard to its conflict of laws rules, and within which State all matters, whether sounding in Contract or tort or otherwise, relating to its validity, construction, interpretation and enforcement shall be determined.
6. **PAYMENT TERMS:** Payment terms are Net not later than 30 days after receipt of correct invoice or acceptance of goods, whichever is later. The using Department is responsible for all payments to the Contractor under the Contract. For services the Contractor shall submit to the City monthly invoices itemized by service provided, the number of hours worked and by whom, the date(s) that services were provided, and the amount owed, along with any supporting documentation that may be requested in advance by the City. Such invoices shall be submitted within thirty (30) days of the rendering of services. The City shall process payments to Contractor within thirty (30) days of submission of such invoices. Invoices should be sent to City of Rocky Mount, Attn: Accounts Payable, PO Box 1180, Rocky Mount, NC 27802-1180, for review and approval.
7. **EQUAL OPPORTUNITY CLAUSE:**

- a. The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the secretary of Labor, are incorporated herein.
 - b. The Contractor(s) agree not to discriminate against any employee or applicant for employment because of physical or mental disabilities in regard to any position for which the employee or applicant is qualified. The Contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals with such disabilities without discrimination based upon their physical or mental disability in all employment practices.
8. **CONDITION AND PACKAGING:** Unless otherwise provided by special terms and conditions or specifications, it is understood and agreed that any item offered or shipped has not been sold or used for any purpose and shall be in first class condition. All containers/packaging shall be suitable for handling, storage or shipment.
9. **INTELLECTUAL PROPERTY WARRANTY:**
 - a. Contractor warrants that:
 - i. Performance under The Contract will not infringe upon any intellectual property rights of any third party; and
 - ii. There are no actual or threatened actions against the Contractor arising from, or alleged under, any intellectual property rights of any third party;
 - b. Should any deliverables supplied by Contractor become the subject of a claim of infringement of a patent, copyright, trademark or a trade secret in the United States, the Contractor, shall at its option and expense, either procure for the City the right to continue using the deliverables, or replace or modify the same to become non-infringing. If neither of these options can reasonably be taken in Contractor's judgment, or if further use shall be prevented by injunction, the Contractor agrees to cease provision of any affected deliverables and refund any sums the City has paid Contractor and make every reasonable effort to assist the City in procuring substitute deliverables. If, in the sole opinion of the City, the cessation of use by the City of any such deliverables due to infringement issues makes the retention of other items acquired from the Contractor under this Agreement impractical, the City shall then have the option of terminating the Agreement, or applicable portions thereof, without penalty or termination charge; and Contractor agrees to refund any sums the City paid for unused Services or Deliverables.
10. **TERMINATION FOR CONVENIENCE:** If this contract contemplates deliveries or performance over a period of time, the City may terminate this contract at any time by providing 30 days' notice in writing from the City to the Contractor. In that event, any or all finished or unfinished deliverable items prepared by the Contractor under this contract shall, at the option of the City, become its property. If the contract is terminated by the City as provided in this section, the City shall pay for those items for which such option is exercised, less any payment or compensation previously made.
11. **ADVERTISING:** Contractor agrees not to use the existence of The Contract or the name of the City of Rocky Mount as part of any commercial advertising or marketing of products or services. A Contractor may inquire whether the City is willing to act as a reference by providing factual information directly to other prospective customers.
12. **ASSIGNMENT:** No assignment of the Contractor's obligations nor the Contractor's right to receive payment hereunder shall be permitted.

However, upon written request approved by the issuing purchasing authority and solely as a convenience to the Contractor, the City may:

- a) Forward the Contractor's payment check directly to any person or entity designated by the Contractor, and
- b) Include any person or entity designated by Contractor as a joint payee on the Contractor's payment check.

In no event shall such approval and action obligate the City to anyone other than the Contractor and the Contractor shall remain responsible for fulfillment of all Contract obligations. Upon advance written request, the City may, in its unfettered discretion, approve an assignment to the surviving entity of a merger, acquisition or corporate reorganization, if made as part of the transfer of all or substantially all of the Contractor's assets. Any purported assignment made in violation of this provision shall be void and a material breach of The Contract.

- 13. INSURANCE:** Contractor agrees to maintain **Commercial General Liability** in amount of \$1,000,000 each occurrence, \$1,000,000 each occurrence in Personal & Advertising Injury with \$2,000,000 General Aggregate, and \$2,000,000 Products/Completed Operations Aggregate. Contractor shall maintain \$1,000,000 in **automobile liability**, and other appropriate insurance, as well as Workers Compensation in the required statutory amount for all employees participating in the provision of services under this Contract. Contractor also agrees to maintain \$1,000,000 in professional liability insurance if the Contractor is engaged in a professional service pursuant to this Contract. The City of Rocky Mount shall be named by endorsement as an additional insured on the General Liability and Automobile Liability policies. Certificates of such insurance shall be furnished by Contractor to the City and shall contain an endorsement to provide the City at least 30 days' written notice of any intent to cancel or terminate by either Contractor or the insuring company. Failure to furnish insurance certificates or maintain such insurance shall be a default under this contract and shall be grounds for immediate termination of this Contract.

REQUIREMENTS - Providing and maintaining adequate insurance coverage is a material obligation of the Contractor and is of the essence of The Contract. Such insurance coverage shall be obtained from companies that are authorized to provide such coverage and that are authorized by the Commissioner of Insurance to do business in North Carolina. The Contractor shall at all times comply with the terms of such insurance policies, and all requirements of the insurer under any such insurance policies, except as they may conflict with existing North Carolina laws or The Contract. The limits of coverage under each insurance policy maintained by the Contractor shall not be interpreted as limiting the Contractor's liability and obligations under the Contract.

- 14. GENERAL INDEMNITY:** The Contractor shall indemnify and hold the City, its officers, agents, and employees, harmless from and against liabilities, claims, actions, demands, costs, damages, losses, and/or expenses of any kind, or nature (including but not limited to court costs and attorney's fees, incurred in connection with the defense of the foregoing) resulting from the fault (as that term is defined in N.C. Gen. Stat. 22B-1) of the Contractor or its agents and/or employees that is a proximate cause of the loss, damage, or expense incurred by the City. The parties agree that this indemnification clause is an "evidence of indebtedness" for purpose of N. C. Gen. Stat. § 6-21.2.
- 17. SUBCONTRACTING:** Performance under The Contract by the Contractor shall not be subcontracted without prior written approval of the City's assigned Contract Lead. Unless otherwise indicated, acceptance of a Contractor's bid shall include approval to use the subcontractor(s) that have been specified.
- 18. CONFIDENTIALITY:** Any City information, data, instruments, documents, studies or reports given to or prepared or assembled by or provided to the Contractor under The Contract shall be kept as confidential, used only for the purpose(s) required to perform The Contract and not divulged or made available to any individual or organization without the prior written approval of the City.

19. CARE OF PROPERTY: The Contractor agrees that it shall be responsible for the proper custody and care of any property furnished it by the City for use in connection with the performance of The Contract or purchased by or for the City for The Contract, and Contractor will reimburse the City for loss or damage of such property while in Contractor's custody.

20. OUTSOURCING: Any Contractor or subcontractor providing call or contact center services to the City of Rocky Mount or any of its agencies shall disclose to inbound callers the location from which the call or contact center services are being provided.

If, after award of a contract, the contractor wishes to relocate or outsource any portion of performance to a location outside the United States, or to contract with a subcontractor for any such the performance, which subcontractor and nature of the work has not previously been disclosed to the City in writing, prior written approval must be obtained from the City Department responsible for the contract.

Contractor shall give notice to the using Department of any relocation of the Contractor, employees of the Contractor, subcontractors of the Contractor, or other persons providing performance under a State contract to a location outside of the United States.

21. E-VERIFY: Contractor shall not employ any individuals to provide services to the City who are not authorized by federal law to work in the United States. Contractor represents and warrants that it is aware of and in compliance with the Immigration Reform and Control Act and North Carolina law (Article 2 of Chapter 64 of the North Carolina General Statutes) requiring use of the E-Verify system for employers who employ twenty-five (25) or more employees and that it is and will remain in compliance with these laws at all times while providing services pursuant to this Contract. Contractor shall also ensure that any of its subcontractors (of any tier) will remain in compliance with these laws at all times while providing subcontracted services in connection with this Contract. N.C.G.S. 143-3.

21. COMPLIANCE WITH IRAN DIVESTMENT ACT OF 2015. Contractor certifies that as of the date of this Contract, Contractor is not listed on the Final Divestment List created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.58. Contractor understands that it is not entitled to any payments whatsoever under this Contract if this certification is false. The individual signing this Contract certifies that he or she is authorized by Contractor to make the foregoing statement.

22. COMPLIANCE WITH LAWS: Contractor shall comply with all laws, ordinances, codes, rules, regulations, and licensing requirements that are applicable to the conduct of its business and its performance in accordance with The Contract, including those of federal, state, and City of Rocky Mount having jurisdiction and/or authority.

23. ENTIRE CONTRACT: This contract and any documents incorporated specifically by reference represent the entire agreement between the parties and supersede all prior oral or written statements or agreements. This contract, any addenda hereto, and the Contractor's bid are incorporated herein by reference as though set forth verbatim.

All promises, requirements, terms, conditions, provisions, representations, guarantees, and warranties contained herein shall survive the contract expiration or termination date unless specifically provided otherwise herein, or unless superseded by applicable Federal or State statutes of limitation.

24. ELECTRONIC RECORDS: The City will digitize all Contractor responses to this solicitation, if not received electronically, as well as any awarded contract together with associated procurement-related documents. These electronic copies shall constitute a preservation record and shall serve as the official record of this procurement with the same force and effect as the original written documents comprising such record. Any electronic copy, printout or other output readable by sight shown to reflect such record accurately shall constitute an "original."

25. **AMENDMENTS:** This Contract may be amended only by a written amendment duly executed by the City and the Contractor.
26. **NO WAIVER:** Notwithstanding any other language or provision in The Contract, nothing herein is intended nor shall be interpreted as a waiver of any right or remedy otherwise available to the City under applicable law. The waiver by the City of any right or remedy on any one occasion or instance shall not constitute or be interpreted as a waiver of that or any other right or remedy on any other occasion or instance.
27. **FORCE MAJEURE:** Neither party shall be deemed to be in default of its obligations hereunder if and so long as it is prevented from performing such obligations as a result of events beyond its reasonable control, including without limitation, fire, power failures, any act of war, hostile foreign action, nuclear explosion, riot, strikes or failures or refusals to perform under subcontracts, civil insurrection, earthquake, hurricane, tornado, or other catastrophic natural event or act of God.
28. **SOVEREIGN IMMUNITY:** Notwithstanding any other term or provision in The Contract, nothing herein is intended nor shall be interpreted as waiving any claim or defense based on the principle of sovereign immunity or other State or federal constitutional provision or principle that otherwise would be available to the City under applicable law.

**CITY OF ROCKY MOUNT
ROCKY MOUNT, NORTH CAROLINA**

**SPECIFICATIONS AND BID DOCUMENTS FOR A
230KV AUTOTRANSFORMER FOR THE
230KV POD OLD MILL RD SUBSTATION**

FORM OF PROPOSAL
*(Provide **one** original and **one** copy)*

Respectfully submitted this ____ day of _____, 2022.

OWNER:	BIDDER:	
City of Rocky Mount 331 South Franklin Street Rocky Mount, NC 27804 PO Box 1180 Rocky Mount, NC 27802-1180 Ramona Plemmer 21-10329-8015 Phone: (252) 972-1227 ramona.plemmer@rockymountnc.gov		
	NAME	TITLE
	STREET ADDRESS	
	CITY/STATE/ZIP	
	PHONE:	
	FAX:	
E-MAIL:		
SUPPLIER OF PROPOSED EQUIPMENT	SIGNATURE	
MANUFACTURER		
STREET ADDRESS		
CITY / STATE / ZIP		

TERMS AND CONDITIONS

1. The undersigned (hereinafter called the "Bidder") 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 Bid Schedule (s) attached hereto, and by this reference made a part hereof, for the Materials for the Owner, and:
 - a. These Bid Documents, which include *Notice to Prospective Bidders*, *Instructions to Bidders*, *General Conditions*, and *Technical Specifications*.
 - b. Manufacturer's specifications, both as set forth herein and in Manufacturer's literature (two [2] sets) attached hereto, or furnished separately as provided for in the *Instructions to Bidders*;
 - c. Legal negotiations, with low bidder only, after bids are opened, for budgetary compliance.
2. The prices as quoted herein:
 - a. Are firm unless otherwise stated.
 - b. Are FOB delivery location(s)
 - c. Do include the cost of delivery, unloading, oil filling (if necessary), assembly and field testing at the site at the Bidder's Risk
 - d. Any tax shall be included as a separate line item per the bid schedule
3. Invoice shall list the appropriate state sales tax as a separate item.
4. The Bidder further declares that he has examined the site of the work and informed himself fully regarding all conditions pertaining to the location where the Material is to be delivered; that he has examined the *Technical Specifications* for the work and Bid Documents relative thereto; has read all special provisions furnished prior to the opening of the bids; and that he has satisfied himself relative to the work to be performed.
5. The Bidder proposes and agrees if the following Bid Schedule (s) in this Proposal is accepted, to contract with the Owner, in the form of a Contract specified, to furnish all necessary equipment and materials, except materials and equipment specified to be furnished by the Owner, complete in accordance with the Bid 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 as filed on Change Order Forms.
6. The materials will conform to the *Technical Specifications* attached hereto and made a part hereof.
7. The Material prices set forth herein do not include any sums which are or may be payable by the Bidder on account of State Sales Tax upon the sale, purchase or use of the material. If any such tax is applicable to the sale, purchase or use of the material hereunder, the amount thereof shall be added to the purchase price and paid by the Owner after the Bidder has ascertained the actual sales tax to be included in the Contract price.
8. The Owner reserves the right to accept any schedule, combination of schedules, or any portion of a schedule
9. The prices quoted shall include delivery F.O.B. of Material by open-top truck as described in the *Instructions to Bidders*, and include unloading, supervision of reassembly and field testing of the Material as outlined in the *Instructions to Bidders*. Delivery will be considered as part of the award of Contract.
10. **The services of a Manufacturer's Field Service Engineer for one trip for each unit, to oversee vendor supplied assembly and testing shall be included in the base quotations.**
11. A *Form of Exceptions* to the *Technical Specifications*, prepared in accordance with the *Instructions to Bidders*, is attached hereto. The Bidder shall document any exceptions with deviation from the bid documents and specifications in the *Form of Proposal*. Otherwise, the complete compliance is assumed.

12. The time for delivery may be extended for the period of any reasonable delay due exclusively to causes beyond the control and without fault of the Bidder, including acts of God, fires, floods, strikes and delay in transportation.
13. This Proposal is made pursuant to the provisions of the *Notice and Instructions to Bidders* and the *Technical Specifications*, and the Bidder agrees to the terms and conditions thereof.
14. Proposals shall include a complete bill of materials, identifying each item by catalog number, manufacturer, ratings, characteristics, types, sizes, etc., of all materials and equipment included. A simple statement that all necessary materials and equipment will be provided is not acceptable.
15. Title to the materials shall pass to the Owner upon delivery to the points above specified.
16. The Bidder warrants that the Materials will conform to the performance data and guarantees, which are attached hereto and by this reference made a part thereof.
17. The Bidder warrants the accuracy of all statements contained in the Bidder's Qualifications and agrees that the Owner will rely upon such accuracy as a condition of the award of Contract in the event that this Proposal is accepted.
18. By the submission of this bid, the Bidder certifies that:
 - a. The bid has been arrived at by the Bidder independently and has been submitted without collusion with any other Bidder of materials, supplies, or equipment of the type described in the *Notice to Prospective Bidders* or the *Technical Specifications*, and
 - b. The contents of the bid have not been communicated by the Bidder, nor, to its best knowledge and belief, by any of its employees or agents, to any person not an employee or agent of the Bidder or its Surety on any Bond furnished herewith, and will not be communicated to any person prior to the official opening of the bid.
19. If, in submitting this Proposal, the Bidder has made any change in the *Form of Proposal*, the Bidder understands that the Owner may evaluate the effect of such change as they see fit or they may exclude the Proposal from consideration in determining the award of the Contract.
20. Delivery of all items of equipment shall be in accordance with *Technical Specifications*, Section 6.0.

BID SCHEDULES

BID SCHEDULE NO. 1 – 230KV POD OLD MILL RD SUBSTATION

DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
Power Autotransformer, 90/120/150/168 MVA, 230kV to 66 kV grounded wye, all in accordance with the Specifications, delivered to site by October 9, 2023 .	1	\$ _____	\$ _____
Delivery to pad, rigging/off-loading	1	\$ _____	\$ _____
Assembly and field testing	1	\$ _____	\$ _____
Oil filling (if necessary)	1	\$ _____	\$ _____
TOTAL BID:	1	\$ _____	\$ _____
Sales Tax (If Applicable)	1	\$ _____	\$ _____

Delivery Schedule No. 1

Instructions to Bidders, Clause 10 and Technical Specifications, Clause 6

The prices of the materials and equipment set forth herein shall include the cost of delivery to the site at the Bidder's risk. The time of delivery shall be as follows:

Delivery (Days)*

Approval Drawings _____
 Final Drawings** _____
 Delivery of Material** _____

* Number of consecutive calendar days after receipt of written order from the Owner.

** Allow two (2) weeks for receipt and return of Approval Drawings.

Manufacturer's Field Engineering Services - Schedule No. 1

(additional days over what is included in the Base Bid)

Field Service Engineering Rate: \$ _____ per day

Transformer Storage Fees - Schedule No. 1

(additional days over what is included in the Base Bid)

Storage Fee Rate: \$ _____ per week

FOR CITY USE ONLY: Offer accepted and Contract awarded this ____ day of _____, 20____, as indicated on the attached certification, by _____

(Authorized Representative of City of Rocky Mount Purchasing Office.)

PRE-AUDIT: This instrument has been preaudited in the manner required by the Budget and Fiscal Control Act.

Finance Director

Date

Maximum Guaranteed Losses and Other Data Per Transformer	Bid Schedule No.1	
Maximum guaranteed no-load kW losses, 100% voltage, 75°C, at base MVA load ⁽²⁾		kW
Maximum guaranteed load losses (not total losses), 75°C, at base MVA load		kW
Maximum guaranteed total kW losses, 75°C, at base MVA load ⁽²⁾		kW
Auxiliary kW losses, first-stage cooling		kW
Auxiliary kW losses, second-stage cooling		kW
Exciting current at rated voltage		amps
Shipping weight of transformer		lbs
Gallons of oil required		gal
Impedance, %		%
Maximum Guaranteed PCB Dielectric Level (measured at site prior to and after oil filling of transformer)		ppm

⁽¹⁾ These levels will be considered in evaluating the bids.

⁽²⁾ No-load and total losses are guaranteed per IEEE Standards

SUPPLEMENTARY INFORMATION

Manufacturer and Type _____

Place of Manufacture _____

Nearest Shop Repair Facility _____

Nearest I&SE Facility _____

Other Utilities Purchasing Recent Units of Same Design

Method of Shipment:

Major Insulation Package Manufacturer (Conductor, Core and Coil, etc.):

Type of Shipment: Oil-Filled: _____ Dry-Air-Filled: _____

Proposed Shipping Firm: _____

Proposed Rigging Firm: _____

Core Steel Grade: _____

Winding Types (helical, disc, etc.): _____

(Attach separate supplemental sheets if necessary)

AFFIDAVIT OF BIDDER

The final payment of retained amount due the Bidder on account of the Contract shall not become due until the Bidder has furnished to the Owner through the Engineer an affidavit signed, sworn, and notarized to the effect that all payments for Material, services, or any other reason in connection with this Contract have been satisfied and that no claims or liens exist against the Bidder in connection with this Contract. In the event that the Bidder cannot obtain similar affidavits from Subcontractors to protect the Bidder and the Owner from possible liens or claims against the Subcontractor, the Bidder shall state in his affidavit that no claims or liens exist against any Subcontractor, and if any liens or claims appear afterward, the Bidder shall save the Owner harmless on account thereof.

Bidder: _____

By: _____

Date: _____

FORM OF EXCEPTIONS

Instructions to Bidders, Paragraph 2.6 and Section 6. Award of Contract

BIDDER:

CITY OF ROCKY MOUNT

OWNER:

ROCKY MOUNT, NC

PROJECT DESCRIPTION

POWER AUTOTRANSFORMER FOR 230KV SOUTH POD SUBSTATION

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

[illegible]

INSERT

ADDENDA / CLARIFICATIONS / BULLETINS

Instructions to Bidders, 5. Bulletins and Addenda

**CITY OF ROCKY MOUNT
ROCKY MOUNT, NC**

**SPECIFICATIONS AND BID DOCUMENTS FOR A
230KV AUTOTRANSFORMER FOR THE
230KV SOUTH POD SUBSTATION**

TECHNICAL SPECIFICATIONS

1.0 Scope

The work shall include furnishing all equipment and materials, as set forth in the Bid Schedules and as specified herein.

The Owner, The City of Rocky Mount, intends to purchase one (1) power autotransformer for the 230kV POD South Substation as specified herein, and as required for the operation of this substation. Firm quotations should be based upon placement of an order within sixty (60) days from bid date.

When a single MVA rating is referred to, the rating is the transformer's base rating (ONAN). The Owner reserves the right to reject any or all proposals or to select any or all schedules or combinations or portions thereof listed in the Bidder's Proposal.

2.0 General Conditions

- 2.1 All materials and equipment shall be new and shall be manufactured in the continental United States or Mexico. Manufacturers must be approved by the Owner and Engineer.
- 2.2 These Specifications and attached data sheets describe the type, size, and characteristics of the various materials and equipment required to be furnished, and the Drawings indicate general arrangement, equipment location, and spacing.
- 2.3 Strict adherence to these Specifications and Drawings is requested to facilitate review and consideration of the Proposal.
- 2.4 Proposals shall include the following:
 - 2.4.1 Catalog numbers, manufacturer, ratings, characteristics, types, sizes, etc., of all materials and equipment included. A simple statement that all necessary materials and equipment will be provided is not satisfactory.
 - 2.4.2 **Bidder shall provide a "Not to Exceed" preliminary outline drawing.** This drawing should include such items as maximum transformer dimensions, maximum transformer weight, amount of oil proposed to be in the transformer, and any other pertinent design information typically included on a preliminary outline drawing.
 - 2.4.3 Performance data for the several items as set forth in the Detailed Specifications.
 - 2.4.4 The Bidder shall state in his Proposal the manner in which the transformers will be shipped--namely, truck or rail; whether units shall be oil-filled or dry-air-filled; and whether bushings will be installed or removed.
 - 2.4.5 Prices shall include the cost of delivery to the substation site, unloading, dress-out and field testing as per Instructions to Bidders.
- 2.5 It is the intent of these Specifications that each transformer shall be complete and fully operable. Any details not mentioned in the Specifications but required for satisfactory operation shall be furnished and installed by the Manufacturer.

3.0 Special Conditions

- 3.1 Indemnity Provisions - The Bidder shall hold harmless and indemnify the Owner, its agents, and employees from any and all claims, suits, and proceedings for infringement of any patent or patents covering materials and equipment purchased hereunder. The Bidder shall defend any suit or proceeding brought against the Owner, its agents, or employees based upon a claim that the materials and equipment or any part thereof constitute an infringement of any patent, or if the Bidder shall fail to defend such suit or proceeding, the Owner may do so and the Bidder shall make reimbursement for the expense of such litigation. If the materials and equipment or any part thereof are held to constitute infringement and the use thereof is enjoined, the Bidder shall, at its own expense, either procure for the Owner the right to continue to use the materials and equipment, or such part thereof, or shall replace the materials and equipment, or such part thereof, with non-infringing materials and equipment.
- 3.2 Defective Materials, Equipment, and Workmanship
- 3.2.1 All materials and equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner and the Owner's Engineer and the Manufacturer shall furnish all information required concerning the nature or source of any materials and equipment and provide adequate facilities for testing and inspecting the materials and equipment at the plant of the Manufacturer.
- 3.2.2 The materials and equipment furnished hereunder shall become the property of the Owner when delivered at the point to which shipment is to be made, provided, however, that the Owner may reject any such materials and equipment that do not comply with the Specifications for materials and equipment and warranties of the Manufacturers. Recognition and subsequent rejection of any defective materials and equipment may occur either before or after incorporation of such materials and equipment into the facilities, provided such rejection is made within one year of date of delivery of the materials and equipment. Upon any such rejection, the Manufacturer shall replace the rejected materials and equipment with materials and equipment complying with the materials and equipment and warranties, FOB truck at suitable destination. The Owner shall return the rejected materials FOB truck at the same destination. In the event of the failure of the Manufacturer to so replace rejected materials and equipment, the Owner may make such replacement, and the cost and expense thereof shall be paid by and recoverable from the Manufacturer.
- 3.2.3 The transformers to be provided herein shall include a full five- (5) year warranty on each complete transformer together with all parts. This warranty shall extend for five (5) years from the date of energization (or sixty-six (66) months from delivery). A deduct may be offered for the utilization of manufacturer's standard twelve- (12) month or three- (3) year warranty in lieu of the five- (5) year warranty. However, any base bid not including at least a full five (5) year warranty shall be considered less responsive.

4.0 Standards

All equipment and materials covered by these Specifications and all tests applied thereto shall, unless otherwise stated herein, be in accordance with the applicable provisions of the latest editions of the Standards of the ASTM, ANSI, AEIC, NEMA, OSHA, IEEE, and the latest revision in the National Electrical Safety Code.

Where the term "Standards" is used in the Specifications, it shall be understood to refer to the above Standards.

5.0 Drawings and Documentation

All drawings and documentation shall be labeled with the Owner's name and the appropriate substation name, and submitted directly to the Owner's Engineer, Booth & Associates, LLC, located at 2300 Rexwoods Drive, Suite 300, Raleigh, North Carolina 27607, Attention: Michael Winkler (m.winkler@booth-assoc.com).

5.1 Design and Fabrication

- 5.1.1 Before proceeding with fabrication, the manufacturer shall submit for approval to the Engineer sufficient drawings to demonstrate that all parts conform to the requirements and intent of these Specifications.
- 5.1.2 The drawings shall include a bill of material, outline, control cabinet layout and details, bushing outlines, nameplate, CT curves and connection details, panel connection diagram and details, AC and DC elementary circuit diagrams, and wiring control and schematic drawings. In addition, manufacturer drawings or cut sheets for any accessories (gauges, etc.) to be installed shall be included.
- 5.1.3 Approval of drawings shall not be held to relieve the manufacturer of obligations to meet all requirements to the Specifications, of responsibility for correctness of the drawings, or responsibility to meet original shipping promise on basis of customer's being allowed two (2) weeks for approval. Receipt of approval drawings by the Bidder constitutes authorization for manufacture only, based on corrections found thereon.
- 5.1.4 Approval drawings may be submitted electronically in AutoCad® 2010 format or newer in lieu of paper copies. **Electronic submittal of drawings is preferred.**

5.2 Final Drawings and Documentation

- 5.2.1 Contingent upon Approval Drawing review and product manufacture, the Manufacturer shall issue final documentation for the transformer as follows:
 - a. One (1) complete set of all Drawings, revised to "as-built" status, released on paper media.
 - b. Two (2) complete sets of all Drawings and instruction books, revised to "as-built" status, released on two (2) separate CD-ROMS, compatible with Autocad® 2010.
 - c. Five (5) copies of applicable instruction books including one (1) print each of all Drawings representing physical and electrical details as furnished per these instructions.
 - d. Two (2) copies of certified test reports corresponding to functional performance measurements after final assembly.
 - e. All drawings are to be certified correct and supplied within a reasonable time prior to shipment of the transformer. Each set of drawings and documentation shall include the following information:
 - 1) Outline and assembly drawings showing size and location of major components and all principal dimensions.
 - 2) Control cabinet front view/layout
 - 3) Details of bushing and bushing termination connectors
 - 4) Diagram of bushing current transformers, connection, number of turns, polarity marking, ratios and bushing orientation.

- 5) Current transformer performance characteristic curves and data for all relay accuracy CTs.
- 6) Details of control cabinet.
- 7) Panel connection diagram showing exact connection for all components furnished.
- 8) AC and DC elementary circuit diagrams for all relay and control equipment furnished.
- 9) Wiring control and schematic diagrams.
- 10) Instruction books, including LTC operations manual(s), if applicable.
- 11) Renewal parts catalog.
- 12) Two (2) copies of certified test reports.

6.0 Shipping of Transformer

- 6.1 Transformer(s) shall be shipped to the selected substation site(s). The Manufacturer will be responsible for the complete rigging and setting in place of each unit onto temporary timbers or the permanent concrete pad. The Manufacturer will provide equipment and labor to perform dress-out, oil-filling (if needed), and testing.
- 6.2 The final location of the transformer has very limited access by crane. A slide and jack method may be the most practical option. The final location is within a shared substation space between the City of Rocky Mount and Duke Energy Progress and nearby power lines may need to remain energized. It is recommended that the bidder have a representative visit the site to ensure they understand the complex requirements of delivery.
- 6.3 Before shipment, the transformer(s) shall be completely assembled, and photos taken, to determine that all parts fit properly. Parts removed for shipment shall be marked so as to permit easy identification when reassembling.
- 6.4 Method of packing and loading shall be such as to protect all parts from dampness, corrosion, breakage, or vibration injury that might reasonably be encountered in transportation, storage, and handling.
- 6.5 Release for shipment is to be granted by either the Owner or the Owner's Engineer based upon the manufacturer's compliance with the following:
 - 6.5.1 Three (3) weeks notification of tests, so the Owner may have a representative present for witness of the tests. Testing on like units shall be arranged the same day, or back-to-back days to facilitate witnessing.
 - 6.5.2 Furnishing of the requisite number of copies of the Final Drawings as called for in the Specifications. Furnishing of the requisite number of copies of the test reports as called for in the Specifications.
 - 6.5.3 Thirty (30) days notification of tentative shipping schedule and two (2) days notification prior to delivery.
- 6.6 The Owner reserves the right to request shipping be delayed up to sixty (60) days beyond the delivery date requested in the bid without incurring storage fees. If a delay is requested by the owner beyond sixty (60) days, the manufacturer may begin charging storage fees to the owner at the rate proposed in the bid.
- 6.7 A three-direction impact recorder shall be installed on each transformer for shipment and shall remain on the unit until it is unloaded on the transformer pad regardless of whether the unit is shipped by truck or rail. The impact recorder shall measure longitudinal, lateral, and vertical motion. The impact recorder shall be read prior to unloading, at the rail siding prior to

unloading if applicable, on the trailer prior to transportation to the site, and after arrival at the site.

- 6.8 Transformer(s) shall be shipped by rail or truck, oil-filled (if possible) with the low-voltage bushings (if possible) installed. Manufacturer shall state method of shipment, and this shall be evaluated when awarding the Contract. If shipped by rail, Hydra-Cushion rail car shall be utilized.
- 6.9 If the transformer(s) is not shipped oil-filled, it shall be shipped dry-air-filled and equipped with proper pipe connections for checking and filling under vacuum. The oil shall be shipped by tanker with the unloading facility (pump) furnished. The unloading facility shall have been flushed free of undesirable contaminants by flushing with the same type oil provided for the transformer. The Manufacturer shall furnish all equipment and labor required for filling, and the Manufacturer shall coordinate timing and arrangements.
- 6.10 Type of shipment (rail or trucked, oil-filled or dry-air-filled) shall be specified in the Proposal.

7.0 Manufacturer's Field Representative

- 7.1 The manufacturer shall provide (**and include in his base quotation**) the services of a Field Service Engineer for a period of at least enough time to offload, assemble, and test each unit at the site per transformer. The manufacturer is responsible for all travel time. The duties of the Field Service Engineer shall include supervising installation of component parts removed for shipment, which may include but not be limited to bushings, radiators, lightning arresters, and oil. He shall perform field tests after assembly including (but not limited to) testing as described in Section 10.
- 7.2 The Manufacturer's representative will draw oil sample(s) from each unit, and will be responsible for conducting (1.) the tests as specified in Section 10, and (2.) Dissolved gas tests, to establish initial benchmark controls for future transformer maintenance. Reports shall be mailed in duplicate to the Owner and the Owner's Engineer for reference. **Additional time** required shall be provided at the per-day rate quoted in the Bidder's Proposal. Exceptions taken to the testing performed, as outlined above, may result in rejection of the Bidder's quotation.

8.0 Transformer

The following requirements shall apply to all Bid schedules except where explicitly noted otherwise.

8.1 Type and Rating

- 8.1.1 The main ratings of the transformer and accessories are located in the attached data sheets.
- 8.1.2 **Windings shall be copper, circular concentric construction, utilizing helical type or disc type windings to ensure maximum strength during short circuits. Coil construction consisting of layered sheets shall not be allowed.**
- 8.1.3 The transformer(s) will be operated with the Xo/ Ho bushing terminal tied solidly to ground.
- 8.1.4 The transformer(s) shall be capable of the voltage and frequency requirements in accordance with the latest IEEE C57.12.00 "General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers," section 4.1.6.1.
- 8.1.5 The transformer(s) shall be capable of carrying rated current continuously at five percent (5%) above rated secondary voltage without exceeding an average winding temperature rise as noted on the data sheet.
- 8.1.6 The transformer(s) shall be constructed with the temperature limits as stated in the data sheet and shall be suitable for loading in accordance with the latest IEEE C57.91 "Guide for Loading Mineral Oil-Immersed Transformers and Step-Voltage Regulators."

- 8.1.7 The transformer(s) to be provided shall have full capacity, high voltage taps, at rated kVA. These tap values can be found in the data sheet.
- 8.1.8 A weatherproof external hand operated tap changing mechanism shall be provided, suitable for de-energized operation, with one (1) external handle that may be operated from the transformer base level and have provision for locking in any position. An external indicator shall clearly display the tap position that is set. A Tap Changer instruction nameplate, stainless steel for the high-voltage tap changers shall also be provided.

8.2 Case and Cover

- 8.2.1 Tank shall be designed and braced for full vacuum and be suitable for filling, with oil under a vacuum of 28 inches of mercury, in the field.
- 8.2.2 Containing case shall not leak oil. Welded joints and seams shall be employed whenever practicable. Welded corners are not allowed. Corners shall be formed, with welded seams a minimum of 6" away from the corner.
- 8.2.3 Main transformer cover shall be welded. Gasketed joints for manhole covers, bushings, and other bolted attachments shall be sealed with a durable and reusable gasket material (ordinary cork or corkprene not approved), and shall be designed so as to permit their being made oil tight in reassembly. Mechanical stops shall be provided to prevent crushing, (controlled compression).
- 8.2.4 All surfaces of case and covers, both exterior and interior, shall be thoroughly cleaned by means of shot-blasting or by any other equally effective method. Primer and at least three coats of exterior paint are to be applied, so as to result in a minimum of 5 mils of exterior paint. Interior tank shall be painted white.
- 8.2.5 The exterior surface of all bolts, nuts, and washers shall be primed and painted as above or such parts shall be stainless steel or galvanized. No exposed cadmium-plated or zinc chromate-plated parts will be allowed.
- 8.2.6 The transformer tank shall have an upper valve for filter-press connection, one-inch (1"), with NPT threads and pipe plug. Main tanks should also be supplied with a combination lower valve for filter-press connection, with 3/8-inch (3/8") oil sampling device, and two-inch (2") drain and filter valve, with NPT threads and pipe plug.
- 8.2.7 Transformer shall be equipped with a 2" globe valve, mounted near eye level suitably positioned to install a future oil gas monitor similar to a GE Hydran. A second 1" globe valve shall be installed above the first but near the top of the oil for future on-line oil monitoring similar to a GE Kelman Transfix. All valves shall be capped with cast iron plugs.
- 8.2.8 All valves shall have silicone rubber (or better) packing to prevent leaking.
- 8.2.9 Lifting lugs on tank, lifting eyes on cover, and provisions for jacking. Location of jack bars shall be a minimum of 13" above the transformer base line.
- 8.2.10 The bottom of the transformer tank shall not rest on the concrete pad in the finished installation. The bottom shall be primed and painted as described above. Transformers shall be furnished with permanently welded supporting spacer beams (such as I-beams) that sit squarely on the finished pad. The dimensions and locations of these beams shall be shown in the manufacturer's Drawings. Transformer base shall be suitable for skidding the transformer in a direction parallel to either centerline of the tank.
- 8.2.11 Exterior paint shall be standard light gray ANSI, No. 70.
- 8.2.12 The transformer tank shall have two grounding pads per the latest IEEE C57.12.10, suitable for attachment of NEMA two-hole bronze connectors. The connectors shall

be suitable for use with 4/0 through 500 kcmil, 37-strand copper conductor. The grounding pads shall be located on diagonally opposite front and rear corners of the tank, and shall be located approximately twelve (12) inches above the transformer base.

- 8.2.13 The tank shall include a 1/4-inch x 4-inch minimum copper ground bus to connect, on each diagonal corner, to the grounding pads located at the base of the transformer. The ground bus shall be supported along the surfaces of the tank by the necessary quantity of 5 kV style insulators. The ground bus shall be connected to the neutral bushing using a 1200-ampere flexible copper shunt to a 4-hole NEMA bushing terminal pad. The ground bus shall be connected to the NEMA 2-hole grounding pad at the base of the transformer using a 600-ampere flexible copper shunt. The copper ground bus shall provide four-hole NEMA drilling at the lower end for attachment of the substation ground grid. The bus shall also provide two-hole NEMA drilling located appropriately for attachment of bronze connectors that will bond the ground bus with the 4/0 copper conductor arrester grounding loop.
- 8.2.14 A 4/0 AWG copper conductor grounding loop shall be supplied by the manufacturer around the top of each three-phase transformer. The loop and ground bus shall connect the base of all surge arresters to the two tank ground pads as shown on Appendix-2.
- 8.2.15 Mounting brackets shall be supplied along the transformer tank as necessary to support 4/0 AWG copper grounding conductor from the base of all high-side and low-side surge arresters. The supports must provide for attachment of the grounding conductor from the arresters to the 1/4-inch x 4-inch copper ground bus and to the tank grounding pads located on the front and rear corners of the tank. Anderson Type "TLS" connectors shall be used for attachment of the conductor to the support brackets. See Appendix - 2 for details.
- 8.2.16 The transformer should have one or more hand holes or manholes in cover. Round manholes shall have a diameter of 18-inches minimum. Oval or rectangular manholes shall be dimensioned 10 inches x 16 inches minimum. All core ground should be brought out through a core ground bushing, with a minimum rating of 2.5 kV.
- 8.2.17 Each transformer tank shall be equipped with one (1) core ground pocket bushing with protective cover, per magnetic core. The main transformer core ground bushing shall have connection accessible through top manhole.
- 8.2.18 Transformers shall be equipped with a non-corrosive diagram instruction nameplate in accordance with IEEE Standards, located on the main tank. Turn progression and accuracy class of bushing current transformers shall be shown on nameplate.
- 8.2.19 The transformer tank design shall observe the following criteria for location of external equipment and accessory hardware:
 - a. The control cabinet housing all low voltage wiring associated with current transformer secondaries, automatic fan control, alarms, LTC control (**if applicable**), etc. shall be located on the side of the tank in Segment 1 as identified by IEEE C57.12.10.
 - b. The LTC compartment (**if applicable**) shall be located on the side of the tank in either Segment 1, 2 or Segment 4 as identified by IEEE C57.12.10.
 - c. Auxiliary cooling equipment including radiators, fans, and pumps, shall be located on the side of the tank in either Segment 2, 3 or Segment 4 as identified by IEEE C57.12.10. Placement of radiators shall not obstruct the operator's view of any indicating dial or gauge located within Segment 1 of the transformer.
 - d. Final placement of the control cabinetry, LTC compartment (**if applicable**), LTC position indicator, radiators, and all other external auxiliary equipment shall be subject to the approval of the Owner or the Owner's Engineer. Relocation of

these components will be required only as necessary to physically comply with standard facilities design for foundations, oil containment systems, and surrounding substation structures.

8.3 Impedance

The transformer impedance at normal base rating shall comply with what is stated on the data sheet with IEEE Standards tolerances for the power transformers.

8.4 Sound Level

The transformer will be designed so that the average sound level will be in accordance with the latest revision of NEMA TR-1.

8.5 Bushings and Terminals

8.5.1 The transformer shall be provided with primary and secondary bushings constructed of high strength wet process porcelain. All bushings shall be manufactured by either PCore or ABB.

8.5.2 All high-voltage bushings shall be oil-filled and dimensionally interchangeable between circuit breakers and transformers according to latest revisions of ANSI Standard C76. The high-voltage bushings shall be condenser type and have provisions for power factor testing. Bushings for the high-voltage and low-voltage schedules shall be draw lead type, when current rating, as indicated on data sheet, allows it. If draw lead type is not applicable, bottom connected bushings will be accepted.

8.5.3 Primary and secondary bushings shall be provided with copper thread studs sited in accordance with their respective current ratings. A connection suitable for flat spade connection with NEMA four-hole drilling shall be either built into the bushing or furnished as a separate item. High-voltage and low-voltage terminal studs and flat spade terminal connectors shall have silver-plated contact surfaces.

8.5.4 Neutral bushings will be rated and tested as stated on the data sheet, and provided with a connection for flat spade connections with NEMA four-hole drillings.

8.5.5 The bushings shall be spaced to comply with, or exceed, minimum phase-to-phase clearances between live parts in accordance with IEEE Standard C57.12.00. All external bushing mounting hardware shall be stainless steel. All connections shall be suitable for either copper or aluminum connectors.

8.6 Auxiliary Cooling

8.6.1 Cooling equipment shall be furnished in accordance with IEEE standards for transformer self-cooled and forced air-cooled ratings as stated on data sheet.

8.6.2 Provisions shall be made for cooling radiators to be mounted independently of one another on the transformer, and individually removable from the transformer tank and provided with valves on the transformer tank side so that one cooler may be removed from operation or replaced while the transformer is in service without interfering with the operation of the other coolers (radiators). Radiators shall be designed and braced to withstand all vibration and operating forces. Radiators shall be galvanized. No painted radiators will be allowed.

8.6.3 Radiator mounting flanges on the transformer tank shall each be equipped with valves to permit the removal or replacement of an individual cooling radiator or bank of radiators without loss of either oil or, gas above oil, in the transformer tank.

8.6.4 Each cooling radiator shall be equipped with a fill valve at the top and a drain valve at the bottom of the unit.

8.6.5 Each fan (and/or pump) shall be driven by an enclosed, waterproof induction motor with ratings as specified in the data sheet. Each motor shall be totally enclosed squirrel-cage induction type, and equipped with thermal overload protection. Each

fan (and/or pump) shall be dynamically balanced for vibration-free operation. All fan guards shall be stainless steel and meet OSHA Safety Standards.

8.6.6 The coolers (fans and pumps) shall be mounted independently of each other so that only one cooler may be removed from operation or replaced while the transformer is in service without interfering with the operation of the other coolers.

8.6.7 All cooling fans shall be located at sufficient height to permit their operation when the transformer is embedded in snow up to 30 inches from its base.

8.6.8 The quantity of oil in each radiator shall be included on the nameplate.

8.7 Current Transformers

Each transformer shall be equipped with bushing type current transformers mounted inside the main case on terminals (H₁, H₂, H₃, X₁, X₂, X₃), Neutral (H₀/X₀), and Tertiary (Y) with all secondary leads brought to identified terminals in a control cabinet mounted for nominal working height from ground level. Terminal blocks shall be uncovered and have short circuiting devices which will maintain a continuous CT secondary circuit while tap positions are being changed. Each CT shall be connected to a separate six-point terminal block, and shall comply with the CT Drawing included with these Specifications. The sixth terminal of each block shall be permanently wired to the control ground bus on the internal side of the block to facilitate the Customer grounding unused CTs. **Covered terminal blocks shall NOT be provided for CTs.**

See data sheet for bushing type current transformer ratings.

Provide one (1) accessory BCTs on X₁, X₂ and/or X₃ to be used for transformer monitor, winding temperature gauge as necessary. Ratio is to be determined by manufacturer.

8.8 Current Transformer Mounting

If the current transformers are mounted in a removable current transformer adapter, the current transformer shall be shipped in the main transformer mounted in the adapters. The current transformer secondary leads shall be permanently connected to the terminal blocks in the Control Cabinet. No splicing of secondary current transformer leads shall be required after delivery to the Owner. Marking of leads and locations of shorting-type terminal boards control panel shall be in accordance with the attached Appendix-1. A CT metal diagram instruction plate shall be provided. Turns progression and accuracy class of bushing current transformer shall be shown on the nameplate.

8.9 Lightning Arresters

8.9.1 Lightning arresters shall be of the station class type, transformer mounted for the high and low voltage side on each phase of the transformer and shall be rated as noted on the data sheet.

8.9.2 Metal oxide lightning arresters are rated either in terms of maximum continuous operating voltage (MCOV) or by the conventional arrester rating which they replace. MCOV ratings are assumed here for metal oxide arresters. However, metal oxide arresters which are given conventional ratings may be furnished if the MCOV equivalent ratings are as specified here.

8.9.3 The lightning arresters shall be located with relation to one another and the bushings to comply with, or exceed, minimum phase-to-phase and phase-to-ground clearances between live parts in accordance with the latest version of NEMA Standard C57.12.00. They shall not be mounted on radiators or hand-hole covers. The location shall be such that the entire electrical path from connectors to ground pads can carry, without damage, the specified rated discharge current of the arrester.

8.9.4 The lightning arresters shall be provided with connections to the line-side bushing terminals with connections equivalent to the full capacity of the transformer.

8.9.5 The body of the lightning arresters shall be light gray, ANSI No. 70.

8.9.6 The lightning arresters shall comply with IEEE Standard C-62.11.

8.10 Control Cabinet

- 8.10.1 A weatherproof NEMA 3R control cabinet shall be furnished enclosing control circuits, signal circuits, protective relays, a 120-volt ac convenience duplex receptacle, a minimum of a 40 watt incandescent light or LED equivalent with guard, and a suitable 230-volt, 60 Hertz heater with double pole thermal circuit breaker.
- 8.10.2 The cabinet shall be furnished with swing door(s) complete with handle and three-point latching mechanism and provisions for padlocking. The door(s) shall be equipped with provisions to fix the swing in the open position. Bolted door covers will not be accepted. Door shall be opened without the use of tools.
- 8.10.3 All wire into the control cabinet shall have 600-volt flame-resistant, moisture-proof insulation and shall be enclosed in rigid metallic conduit. All conductors into the control cabinet shall terminate on a clearly marked and properly identified terminal board. Terminal boards for C.T. leads shall be shorting type, all terminal boards shall be equipped with nonmagnetic split type lock washers and ring type compression lugs.
- 8.10.4 The weatherproof control panel shall be centrally located in Segment 1 per IEEE C57.12.10 near the bottom of the tank at a location to be approved by the Owner. A dead-front control panel in the control cabinet shall contain the necessary switches, circuit breakers, relays, indicating lamps, etc. Relays, displays and alarm indicating lamps shall be visible through a Lexan Window in the outer cabinet door(s).
- 8.10.5 Control cabinet shall include vented louvres.
- 8.10.6 All cabinets attached to the transformer shall be solidly grounded to the transformer case.
- 8.10.7 The control cabinet heater shall be equipped with guards and thermostatically controlled so that the guard temperature cannot exceed 120°F. The 240-volt electric terminals at the heater shall be covered.
- 8.10.8 Control cabinet shall provide a cover plate for the entrance of conduit. Detail drawings showing bottom of cabinet shall be provided.

8.11 Wiring

- 8.11.1 All power wiring shall be made with #10 AWG stranded tinned copper wire or larger sized wire. The primary insulation jacket of all wiring shall be 600 volt, 90°C, water, oil, and flame resistant. Control wiring shall be 45 or 65 mil stranded cable and not smaller in size than #14 AWG tinned copper wire, with the exception that wiring to alarm auxiliary relays and indicating lights may be smaller in size. SIS control wire is recommended. All current transformer leads are to be #10 AWG stranded tinned copper or larger. Smaller conductor is acceptable for RTD and low power component wiring.
 - a. Power wiring shall be sized as required in accordance with the National Electrical Code.
 - b. All connections for wiring shall utilize locking terminals such that screws or nuts do not loosen. Acceptable inherently locking terminals include: screws with integral locking washers (e.g. screws on Marathon 1500 series terminal blocks), Sems pressure saddle screws with external lock washers (e.g. screws on SEL relays). All connections for wiring which do not have inherently locking terminals shall be made using silicon bronze, split-type lockwashers, screws, and nuts.
 - c. All wires shall be identified at each end with legible permanent labels.

- d. Wiring connections between fixed and hinged sections shall be minimum 41-stranded wire. Seven-stranded control wire is not acceptable.
 - e. All terminal connections for conductor sizes #10 AWG in size and smaller shall be made with full-ring tongue compression-type lugs. Lugs shall be Burndy Type YAV, or approved equivalent. Spade-type terminals or slip-on connectors are not acceptable.
 - f. All terminal connections for conductors sizes #2 AWG through #9 AWG shall be made with Burndy Type YAV or approved equivalent.
 - g. All terminal connections for conductor sizes larger than #2 AWG shall be made with two-hole, long-barrel, double-indent, crimp-type lugs: Burndy Hylug Type YA or approved equivalent. (Single-hole lugs may be used only where necessary).
 - h. Flat blade type connectors must be used on Pheonix-type terminal blocks, TE Connectivity Wire Pins (Flat) Type, or approved equivalent.
- 8.11.2 Grommets shall be provided for all openings in metal barriers used for wiring.
- 8.11.3 Uninsulated exposed conductor or terminal lug shall not extend beyond the sides of the terminal block or its insulating barriers.
- 8.11.4 All leads for multi-ratio current transformers shall be wired to terminal blocks in the control cabinet. If junction boxes are required in wiring between current transformer and control cabinet, terminal blocks shall be used for wiring connections. In-line-type disconnecting terminals such as American Petroleum Institute (API). No. 32488 or Burndy No. YZ10 will not be acceptable.
- 8.11.5 If accidental short circuiting of certain wires can result in malfunction of equipment, these wires shall not be terminated on adjacent terminal block points.
- 8.11.6 No more than two (2) wires per terminal point are permissible.
- 8.11.7 Stacking of excess wire or cable will not be allowed at the bottom or sides of the control cabinet or wire junction boxes.
- 8.11.8 No tripping relays shall be mounted on a swinging panel. All tripping relays shall have covers.
- 8.12 Terminal Blocks and Fuseholders
- 8.12.1 Molded-type terminal blocks, rated 600 volts and 30 amperes, for all external control connections shall be provided. Terminal blocks with self-contained pressure-type connectors are not acceptable.
- 8.12.2 Marathon 1500 DJ series or General Electric Type EB-25 terminal blocks shall be provided furnished with white marking strips for identification of terminal wires for all connections except current transformers. The terminals shall be identified with legible permanent markings.
- 8.12.3 Marathon 1500 SC series or General Electric Type EB-27 terminal blocks shall be provided for current transformer leads with at least three shorting screws per terminal block. A separate short-circuit-type terminal block shall be provided for each set of current transformer leads.
- 8.12.4 One three-pole terminal block sized for #6 to #2/0 AWG wire for Owner's single-phase, three-wire, 120/240 volt control power leads shall be furnished.
- 8.12.5 A minimum of 15 percent spare (but not less than 12 points) terminal points shall be provided in the control cabinet. These terminal points shall be furnished with all screws and lockwashers.

- 8.12.6 Fuseholders shall be Marathon (R30AxS for 30A and R60AxB for 60A) series phenolic fuseblocks with hard-gripping fuse clips (reinforcing member) and straight-slotted silicon bronze screws on each terminal, or approved equivalent. Terminals to be supplied without ears.
- 8.12.7 A full set of fuses for all types and sizes shall be provided for and secured within the control cabinet.

8.13 Annunciator

- 8.13.1 If required, as indicated on attached data sheet, the transformer shall be equipped with various alarms and an alarm annunciator(s) to provide visual indication of abnormal conditions as designated herein. Each alarm shall be in the form of a normally open contact wired to terminal blocks in the transformer control cabinet via paired wire leads. The alarm annunciator shall be flush-mounted on the control panel within the transformer control cabinet and shall be wired to the designated alarms brought to the terminal blocks for customer's use.
- 8.13.2 The annunciator(s) shall be a ten window annunciator model SEL-2533 as manufactured by Schweitzer Engineering Laboratories, Inc. The annunciator(s) shall use a DC power supply, DC control voltage, support DNP 3.0 communication protocol, and having 14 digital inputs and 7 digital outputs. The full model number shall be as indicated on the data sheet.
- 8.13.3 The typical alarms are to be as identified in Appendix 3.
- 8.13.4 Contact outputs from the annunciator(s) shall be wired to terminal blocks for customer use as shown in Appendix 3.
- 8.13.5 The Transformer Manufacturer will not be responsible for programming the Annunciator, or for providing the labels.

8.14 Fault Pressure Relay

- 8.14.1 One (1) fault pressure relay shall be provided for the transformer main tank for the detection of rapid rates of positive increase in transformer tank pressure. The fault pressure relaying shall also provide contacts for the alarm to the SEL-2414 (if applicable) and remote initiation of transformer lockout to a relay panel provided by the Owner. One (1) fault pressure relay shall also be provided for the LTC, if applicable. The fault pressure relay used for the LTC shall be the same as the fault pressure relay used on the main tank.
- 8.14.2 Contacts supplied for alarms and initiation of station lockout shall be dry, normally-open, latching operation with manual hand reset. Contacts shall be suitable for use with the Owner's station DC voltage. Current shall be limited to 20 amps resistive.
- 8.14.3 Contact leads for alarm and trip shall be brought to a terminal block for field connection to the Owner's relay switchboard.
- 8.14.4 All relay coils associated with fault pressure detection shall be driven by the Owner's station DC voltage.
- 8.14.5 The fault pressure detection relay shall be Qualitrol Series 900 with Qualitrol Seal-in Relay Model Number 909-200-01. All associated auxiliary relays shall be mounted within the transformer control cabinet.
- 8.14.6 The fault pressure relay shall be located on the transformer so as to avoid false trip operation during through-fault conditions. The fault pressure relay shall be located under oil.

8.15 Oil Preservation System

- 8.15.1 Positive Pressure System

- a. If required per Data Sheet, all transformers shall be equipped with a positive pressurizing system utilizing nitrogen gas to protect the transformer oil in the main tank from oxidation and moisture absorption. The system shall consist of a nitrogen gas supply (cylinder) complete with supply pressure gauge, multi-stage pressure reduction assembly, and associated piping and valves to control the flow of gas to and from the tank. The system shall provide alarms for low gas supply, high tank pressure, and low tank pressure conditions. The nitrogen supply cylinder, supply pressure gauge, and multi-stage pressure reduction assembly shall be housed in a weatherproof enclosure. The weatherproof enclosure shall be equipped with a suitable PTC heater.
- b. The system shall maintain transformer tank pressure at 0.5 psi minimum and 5.0 psi maximum, with appropriate fill and bleed-off regulation. Gas system alarms shall actuate whenever pressure falls below 0.25 psi or rises above 5.5 psi or whenever supply pressure falls below 200 psi.

8.15.2 Conservator Tank (If required as indicated per the attached data sheet)

- a. If required, the oil-preservation system shall be a conservator-tank type with a bladder in the conservator to prevent exposure of oil to outside air. There shall be separate liquid level gauges and alarms on the conservator and main tank. The conservator shall have a self-regenerating desiccating breather vent to protect the conservator bladder from atmospheric moisture.
- b. One (1) Buchholz relay shall be installed between the main tank and conservator for the detection of accumulating gas, the loss of insulating fluid, and a sudden tank pressure increase. The Buchholz relaying shall also provide contacts for the alarm to the SEL-2414 (if applicable) and remote initiation of transformer lockout to a relay panel provided by the Owner.
 - 1) Contacts supplied for alarms and initiation of station lockout shall be dry, normally-open. Contacts shall be suitable for use with the Owner's station DC voltage. Current shall be limited to 20 amps resistive.
 - 2) Contact leads for alarm and trip shall be brought to a terminal block for field connection to the Owner's relay switchboard.

8.16 Oil and Winding Temperature Measurement

- 8.16.1 Visual indication of transformer top oil temperature and winding temperature shall be provided by Qualitrol Model 104 temperature indicators. The system shall be provided with six inch (6") remote thermometers with an armored capillary and winding temperature current transformer per IEEE standards.
- 8.16.2 The top oil temperature display shall be capable of measuring and displaying a range of 0° to 120° Celsius. The winding temperature display shall be capable of measuring and displaying a range of 0° to 180° Celsius.
- 8.16.3 The full model number of the temperature indicators shall be shown on the drawings.

8.17 Electronic Temperature Monitor (If required per the attached data sheet)

- 8.17.1 If required, as indicated on the attached data sheet, the transformer shall be equipped with an Electronic Transformer Monitor model SEL-2414. See Appendix 3 for typical input and output wiring. All cooling fans shall be equipped with automatic control via this Electronic Transformer Monitor to provide the operation of all cooling stages based on the sensing of transformer winding temperature.
- 8.17.2 RTD's shall be furnished for Ambient Air, Top Oil, and Bottom Oil. All RTDs shall be 100 Ohm Platinum. If an ambient temperature RTD is required, it shall be a Qualitrol model 103-047, or approved equal, properly located and away from the wash of air from cooling fans.

- 8.17.3 Programming of the Electronic Temperature Monitor shall be done by the Owner.
- 8.17.4 Test switches shall be furnished as shown in Appendix 3.
- 8.17.5 The full model number of the transformer monitor shall be shown on the drawings.
- 8.17.6 An under-voltage relay shall be provided to detect and alarm for the loss of all phases of cooling power.
- 8.18 Transformer Oil Inhibitor
- 8.18.1 The transformers shall be oil immersed and shall be furnished complete with oil in accordance with the requirements of ASTM D 3487.
- 8.18.2 All transformer oil supplied shall have antioxidant oil inhibitor added. The manufacturer may supply .3% wt DBPC or .3% wt DBP inhibitor. Installation of inhibitor shall be in accordance with the latest IEEE C57.106. Insulating oil shall be provided with associated PCB certification, and PCB level shall be noted on transformer nameplate.
- 8.19 Load Tap Changer (LTC) for Transformer Secondary (If required per the data sheet)
- 8.19.1 The power autotransformer and power transformer shall provide an automatically-controlled Load Tap Changer (LTC) for regulating the output voltage of the transformer secondary windings. The LTC shall consist of the following subassemblies:
- Secondary winding tap leads and auxiliary transformers (as may be required by manufacturer's design), all housed within the main transformer tank.
 - An oil-filled compartment separately partitioned from the main transformer tank and housing the mechanical tap selector switch, taps switch contactors, and reversing switch contactors as necessary for switching the tapped leads of the transformer secondary windings.
 - A motor drive assembly compartment housing the ac service-voltage drive motor, service voltage wiring, and related switches, interlocks, and motor drive controls necessary to electrically and mechanically operate the tap changer mechanism.
 - Electronic control modules for the automatic sensing of transformer secondary voltage and automatic loop control of the drive motor thereby regulating the transformer secondary voltage. All control modules shall be located inside the transformer's main control cabinet. Refer to Section 7.19 or details regarding the automatic voltage control modules.
- 8.19.2 The LTC and all tests applied thereto shall conform to the latest standards of the IEEE, IEEE, NEMA, and NESC.
- 8.19.3 Assuming a constant voltage at the nominal rating of the transformer primary windings, the secondary load tap changer shall provide automatic voltage regulation of the nominal secondary tap voltage, ranging as indicated on the data sheet, while under any load current up to the maximum forced ratings of the transformer windings.
- 8.19.4 The full range of voltage regulation shall be accomplished by the LTC in the indicated number of tap steps (as shown on the data sheet) on either side of the neutral (nominal) tap position. Each tap step shall provide an equally distributed percent change in voltage in either the raise ("boost") or lower ("buck") direction.
- 8.19.5 For voltage regulation ranging between nominal and ten percent above ("raise" or "boost" tap positions), the LTC shall have capacity to deliver the full kVA rating of the transformer.

- 8.19.6 For voltage regulation ranging between nominal and ten percent below ("lower" or "buck" tap positions), the LTC shall have either reduced or full capacity for secondary load current corresponding to the attached data sheet.
- 8.19.7 The LTC shall be designed to withstand full-voltage short-circuit conditions, and complete automatic operation of any tap change under such conditions without failure of the tap-changer mechanism or tap-changer windings.
- 8.19.8 The tap-changer contact assembly of all LTC mechanisms shall be housed in an oil-filled compartment separately partitioned from the main transformer tank. The contact assembly shall include the tap selector switch and contactor mechanism, together with the reversing switch necessary for transfer from the neutral position to the raise or lower tap positions. The assembly shall provide mechanical stops to limit the travel of the switch movement within appropriate tolerances. The oil in this compartment shall provide dielectric strength for insulation. The compartment shall be designed to prevent any contamination of main tank oil from oil contained within the tap changer assembly.
- 8.19.9 The oil-filled tap changer compartment shall be outfitted with the following auxiliary equipment:
- Temperature-compensated Qualitrol or Messko dial-type liquid level gage with low level alarm contacts wired out for customer use.
 - Compartment breather shall be a Waukesha Auto-Recharging Dehydrating Breather, Model ARDB2, or approved equal.
 - Drain and filling valves, each one-inch (1") screw-end globe type.
- 8.19.10 The tap changer may incorporate the following techniques to suppress contact arcing during tap changes under load:
- preventive reactor or series winding;
 - resistance bridging device with oil filtration system;
 - The Manufacturer must clearly identify in the Proposal those arc suppression techniques and features that will be incorporated in the tap changer assembly. Preventive reactor windings, where used, shall be located with the core and coil assembly in the main tank of the transformer.
- 8.19.11 The Manufacturer's Proposal shall identify the guaranteed minimum number of maintenance-free tap change operations provided by the LTC mechanism. Mechanisms providing less than 500,000 operations between maintenance service will be evaluated as an unresponsive bid.
- 8.19.12 The secondary windings of the transformer shall be tapped as necessary to provide the desired number of tap steps and percent voltage regulation. A series transformer may be incorporated into the design of the main core and coil assembly if necessary to achieve the appropriate regulation.
- 8.19.13 The compartment housing the motor drive assembly shall provide the following features and accessories:
- Mechanism drive motor, 120 Vac service voltage input, with power supply cut-off switch, thermal overload protection, and complete with all service voltage terminal blocks and wiring. Refer to Section 7.19 for information regarding the automatic voltage regulation modules which control the drive motor.
 - Manual hand-crank operation of the mechanism drive shaft, electrically interlocked to prohibit operation of the drive motor when hand crank is in use.

- c. Electrical transfer switch to block automatic control of the drive motor and provide electrical raise and lower control of the drive motor locally at the motor control compartment.
- d. Mechanically-driven dial-type position indicator displaying the current tap position of the LTC. The indicator dial shall be clearly graduated for every step position N demarcation for neutral position. At least every fourth step position shall be numerically identified on the dial.
 - 1) The position indicator shall be equipped with electrically resettable drag hands indicating the maximum travel of the tap changer in the lower and raise positions.
 - 2) The position indicator shall provide upper and lower limit switches to remotely alarm the full travel of the LTC mechanism in either direction. The alarm contacts shall be fully wired to the main control compartment annunciator.
 - 3) The position indicator shall be mounted on the transformer in a location clearly visible and legible from average eye level while standing at the tap changer mechanism cabinet.
- e. Tap-changer operations counter either mechanically- or electrically- triggered and mounted for unobstructed view at eye level within the compartment.
- f. 120 vac duplex convenience outlet, ground fault protected in accordance with the National Electric Code.
- g. 120 vac thermostatically-controlled low wattage strip heater, complete with overcurrent circuit breaker, for protection against condensation within compartment.
- h. 120 Vac compartment lamp with plunger switch activated by compartment door, and protected by overcurrent circuit breaker.
- i. Selsyn-type transmitter as required for current-loop interface to the automatic tap changer control equipment for indication of LTC tap position.
- j. All wiring necessary for interconnection between the components of the motor control compartment and the automatic voltage control equipment shall be provided by the Manufacturer.

8.19.14 The LTC tank shall be equipped with a thermowell probe and RTD wired back to the SEL-2414.

8.20 Automatic Voltage Regulation Equipment for LTC's (if required)

- 8.20.1 The transformer shall provide microprocessor-based automatic control of the LTC for load-compensated voltage regulation. The automatic LTC controller shall be a BECKWITH MODEL M-2001D-6L4S2BF0S00 Digital Tap-changer Control as manufactured by Beckwith Electric Company, Inc. of Largo, Florida. No substitutions will be accepted.
- 8.20.2 The Beckwith 2001 tap changer control shall be mounted in the main control cabinet of the transformer using a BECKWITH M-2270 faceplate panel. All BECKWITH M-2270 faceplate panel features shall be electrically operable and fully functional. Features of the faceplate panel shall include:
 - a. One pair of combination "banana plug/ binder post" test terminals for sensing voltage input;
 - b. One pair of combination "banana plug/ binder post" terminals for external motor voltage input;

- c. One pair of combination "banana plug/ binder post" terminals for external sensing voltage input;
 - d. Separate fuses in front-mounted fuse holders for each pair of test and input terminal posts;
 - e. RAISE/OFF/LOWER manual switch control;
 - f. AUTO/OFF/MANUAL selector switch control;
 - g. VOLTAGE SOURCE selector switch between internal and external sources;
 - h. DRAG HANDS RESET pushbutton;
 - i. NEUTRAL LIGHT indicator;
 - j. Built-in current transformer shorting protection whenever the M-2001 tap changer control is disconnected from the wiring harness.
- 8.20.3 To accommodate bus voltage regulation in parallel with a future LTC transformer, a parallel current balancing control module shall be provided in conjunction with the Beckwith Model M-2001D. The parallel balancing module shall be a BECKWITH MODEL M-0115 control. No substitutions will be accepted.
- 8.20.4 To accommodate the current loop interface between the Selsyn-type transmitter in the motor control compartment and the M-2001, a BECKWITH M-2025 Current Loop Interface module and an INCON Model 1250 position monitor/transducer shall be provided.
- 8.20.5 To accommodate digital access to the digital tap changer control memory, one copy of the BECKWITH M-2029 "TapTalk" communications software shall be provided.
- 8.20.6 The transformer shall provide a current transformer for line-drop compensation measurement by the tap changer control.
- 8.20.7 The current transformer shall provide dual taps for ratios of 1000:0.2 and 600:0.2. The current transformer shall be located on the X1 bushing within the main transformer tank.
- 8.20.8 Sensing voltage input to the tap changer control will be supplied by an Owner-furnished externally-mounted potential transformer.
- 8.20.9 The Manufacturer shall provide all interconnection wiring between the control modules, current transformers, auxiliary equipment, and field termination blocks to achieve a completely functional automatic voltage regulating system. Terminations shall include all interconnections between the available I/O functions of the digital tap changer control and field termination blocks. These functions include, but are not limited to, the following:
- a. External sensing voltage input;
 - b. Paralleling connections to future transformer;
 - c. Self-test alarm contact outputs;
 - d. User-programmable alarm contact outputs;
 - e. Tap change inhibit contact input;
 - f. Multi-step voltage reduction.

9.0 Additional Features

All transformers shall include, but is not limited to, the following mechanical and electrical features:

- 9.1 Magnetic liquid level gauge with alarm and trip contacts.

- 9.2 Pressure vacuum gauge and bleeder device with sampling and purging valve. Devices shall be mounted at eye level.
- 9.3 Pressure relief device with alarm contacts and visual alarm on top of unit.
- 9.4 Fiber Parts Installation for Annunciator and Transformer Monitor
- 9.4.1 Mount the fiber enclosure securely on an internal panel such that outside plant fiber cable (installed by others) can enter the patch panel without violating bend radius of the fiber cable. It must be possible to route the outside plant fiber cable clear of heaters. Install the fiber adapter panel in the patch panel. Patch panel location must also allow fiber jumper cables to attach to the fiber terminals without violating bend radius of the fiber jumper cables. Fiber jumper cables may run in Panduit channel, installation should take care not to damage the fiber jumpers or allow them to be pinched after installation is complete.
- 9.4.2 Connect the SEL-2414 Transformer Monitor Transmit terminal to the fiber enclosure panel position number 1, connect the Receive terminal to position number 2. Position one should be topmost or leftmost when installation is complete.
- 9.4.3 Using ribbon cable SEL C780, connect the SEL-2812MRX0 transceiver to Port number two on the SEL-2533. Secure the DB9 on the ribbon cable to the SEL-2533 with 4-40 machine hardware. Capture the SEL-2812MRX0 with Velcro ties to adjacent cable. Connect the SEL-2812MRX0 Transmit terminal to the fiber panel position number 3, connect the Receive terminal to position number 4. Fiber jumpers may not be pinched or damaged when the gate opens and closes. Using Velcro ties to secure the fiber jumpers is preferred. Wire ties or other mounting fasteners may not deform the jacket of the fiber jumpers.
- 9.4.4 Engineer will review installation arrangements, connection schematics and wiring diagrams for proper installation.

Item	Qty	MFG - Part Number	Description
1	1	SEL C780	Ribbon Cable, 6 inch long, with DB-M and DB9-F connectors. Use to connect SEL 2812 to SEL-2533 Port 2.
2	2	MACHINE HARDWARE	4-40 MACHINE SCREW, 1/4 INCH LONG Secure cable C780 to SEL-2533 DB-9 connector.
3	1	SEL 2812-MRX0 Key Code: 2386	EIA 232 serial to multimode fiber converter, male DB9 connector, IRIG Receiver.
4	1	Black Box – JPM456C	Black Box Low-Density 10G Multimode Fiber Adapter Panel - Ceramic Sleeve, (6) LC Duplex, Aqua
5	1	Corning 050502T5120003M (Source from any Corning CAH Gold Partner Program certified assembler.)	PROVIDE THIS DESCRIPTION TO DISTRIBUTOR WITH PART NUMBER: Fiber Optic Jumper, Two Fiber OM3 Multimode 2.0MM ZIPCORD LC/LC 3 Meter.
6	1	Corning 055002T5120003M (Source from any Corning CAH Gold Partner Program certified assembler.)	PROVIDE THIS DESCRIPTION TO DISTRIBUTOR WITH PART NUMBER: Fiber Optic Jumper, 2 fiber, LC Duplex to ST Compatible, Zipcord Tight-Buffered Cable, Riser, with 2.0 mm legs, 50 µm multimode (OM3), 3 m
7	1	Black Box – JPM399A-R2	Black Box Wallmount Mini Fiber Enclosure.

10.0 Tests

- 10.1 All transformers shall receive all “routine” and “design” tests specified for a Class II transformer in the latest version of the IEEE C57.12.00 standard.
- 10.2 Transformer shall receive standard IEEE impulse tests, including full wave and chopped wave on each high-voltage line terminal and on each low-voltage line terminal including neutral terminal. Copies of oscillograms and a formal report will be submitted as a record of the tests.
- 10.3 All transformer losses, including auxiliary losses, shall be shown on the test reports.
- 10.4 The transformer shall be tested for no-load losses at 100% and 110% rated voltage both before and after the impulse test.

10.5 The loss measurement system used to measure losses shall state in the test report the measurement error traceable to the National Bureau of Standards by means of a procedure described in NBS Technical Note 1204 or an approved equivalent procedure. This shall be applicable to the test system used to measure both the no-load and load losses for the transformer specified herein. The approach outlined in NBS Technical Note 1204 or an approved equivalent procedure shall be used to insure the traceability of measurements. The measurement error determined through the procedure outlined in Technical Note 1204 or an equivalent procedure will be added to the measured losses determined during the test prior to the determining if the loss guarantee has been met.

10.6 The load-loss and impedance testing shall include the following tap position combinations (as applicable):

T1-16L*	T3-1R*
T3-16L*	T3-8R*
T5-16L*	T3-15R*
T3-8L*	T1-16R*
T1-N	T3-16R*
T3-N	T5-16R*
T5-N	

*For units equipped with LTCs only

10.7 The no-load loss testing shall include the following tap positions (these are to be tested both before and after impulse testing):

16L*	15R*
N	16R*
1R*	

*For units equipped with LTCs only

10.8 Insulation power factor tests shall be made and shall be one-half percent (½%) or less corrected to 20°C by the IEEE temperature correction curve.

10.9 The transformer shall be tested for a temperature rise at the base ONAN and the maximum ONAF ratings. The temperature rise test shall include a DGA before and after the test.

10.10 The transformer sound level shall be tested in accordance with NEMA TR1-2013, 0.03, "Audible Sound Levels."

10.11 All impedances between windings shall be shown on the test reports. Test reports shall also include Insulation Resistance Readings, Core Ground Resistance Readings, and DGA before and after dielectrics.

10.12 The Manufacturer will be responsible for various control tests before the transformer leaves the factory. The purpose of this testing will be to verify wiring of relays as well as functionality of all AC and DC controls. Testing shall include, but not be limited to, the ETM and annunciator wiring, inputs and outputs, RTDs, and AC control circuits (i.e. lights, receptacles, fans, etc.). The Manufacturer shall provide record of this testing in the Certified Test Report.

10.13 The Owner reserves the option of having a representative present to inspect the core and coils prior to tanking and to witness any or all tests. If a representative comes to witness transformer testing, the transformer should be fully assembled, including the control box, and available for inspection by the representative. The Manufacturer, at his own cost including travel, room, and board, shall invite a representative of the Owner and of the Engineer to attend the test at the factory and shall inform the owner and Engineer three (3) weeks ahead of time.

10.14 Tests for core grounds are to be performed after tanking and just prior to leaving the factory using a 1000-volt megger tester. Resistances measured are to be included in a certified test report and reported to the Engineer prior to shipment.

- 10.15 Prior to shipment, the assembled transformer shall be liquid-filled and pressure-tested for at least eight (8) hours at the maximum operating pressure for detecting the presence of leaks.
- 10.16 Transformer shall receive a Sweep Frequency Response Analysis during factory testing. This test shall be repeated during site testing. Results shall be compared and a report provided with explanation for any differences in results.
- 10.17 No transformer will be accepted for shipment until approved by the Owner or the Owner's Engineer.
- 10.18 The Manufacturer's field engineer shall perform a series of tests on the transformer after installation at the substation. These tests shall include:
 - a. sweep frequency response analysis,
 - b. transformer power factor tests,
 - c. bushing power factor tests,
 - d. transformer turns ratio tests for all tap positions,
 - e. insulation megger tests,
 - f. current transformer checks (polarity, turns ratio, and connections), and
 - g. oil tests as follows:
 - 1) Specific gravity,
 - 2) dielectric,
 - 3) moisture content,
 - 4) acidity,
 - 5) interfacial tension, and
 - 6) PCB content
- 10.19 The Manufacturer shall provide a complete dissolved gas in oil analysis on the oil installed in the transformer after final assembly.
- 10.20 The Manufacturer's field engineer shall give approval for energizing the transformer, and a manufacturer's representative shall be on site to observe the entire energization process.
- 10.21 The Manufacturer may offer in his quotation deductions for substitution of manufacturers' standard tests in lieu of those specified. However, the basic quotation must include all tests specified.

11.0 Guarantees

Included with the data on transformer to be submitted by the Manufacturer shall be the following:

- 11.1 Efficiencies at 1/4, 1/2, 3/4 and full load at unity power factor and 75°C.
- 11.2 No-load loss in watts (include losses at 16L, N, 1R, 15R and 16R, if applicable).
- 11.3 Total full-load loss in watts at ONAN, ONAN/ONAF, ONAN/ONAF/ONAF rating at 55°C rise and ONAN/ONAF/ONAF rating at 65°C, including auxiliary losses (include losses at 16L, N, 1R, 15R and 16R, if applicable).
- 11.4 Full load regulation at 100 percent and 80 percent power factor.
- 11.5 Exciting current at rated frequency in percent of the rated voltage and rated kVA.
- 11.6 Cooling fans, (or oil pumps) H.P. rating, and voltage.
- 11.7 Net weight including insulating oil plus weights of tank and oil separately.
- 11.8 Shipping weight.
- 11.9 Gallons of oil required per transformer.
- 11.10 Limiting dimensions of transformer including tank wall thickness.
- 11.11 Copies of the transformer test reports shall be furnished to the Owner's Engineer at the time the transformer is shipped.

- 11.12 Certification that the transformer and all oil-filled equipment meet all EPA requirements and each unit shall be certified as operational with less than two parts per million, PCB.

12.0 Transformer Bid Evaluation

- 12.1 Bids submitted for each Schedule shall be evaluated for "Equivalent First Cost" utilizing initial cost, transformer losses, and the cost of financing over a 20-year evaluation of ownership. The formularization is as follows:

$$\text{"Equivalent First Cost"} = \text{Unit Cost}^* + (\text{No-Load Losses} \times A) + (\text{Winding Losses} \times B)$$

*Including escalation if any and cost of insurance if less than a five-year warranty is quoted and cost of complete assembly of the transformer.

- 12.2 For the purposes of award and determination of compliance after manufacturing and testing, the following evaluation will apply for the no-load and winding losses, when applicable:

12.2.1 No-load losses will be evaluated using the average of quoted losses at LTC 1R position and LTC average 15R and 16R position.

12.2.2 Winding losses will be evaluated using the quoted losses at LTC average 15R and 16R position.

- 12.3 The Cost of Losses will be evaluated for each schedule using the following charge per kW of losses:

<u>Bid Schedule</u>	<u>MVA*</u>	<u>Cost per kW No-Load Losses (A Factor)</u>	<u>Cost Per kW Winding Losses (B Factor)</u>
1	90	\$2,487	\$430

- 12.4 The Owner reserves the right to change at any time the no-load loss and winding loss charge values given above insofar as these values are used to evaluate bids. Such changes might be necessary to reflect changed conditions and are not expected to be more than $\pm 20\%$ of the values shown above. Nevertheless, liquidated damages as described below will be based on the values given above.

- 12.5 The No Load and Winding Losses quoted by the Manufacturer are of the essence of the Contract. Should the Manufacturer neglect, refuse, or fail to meet the quoted losses herein provided, in the event and in view of the difficulty of estimating with exactness damages caused by such delay, the Owner shall have the right to deduct from and retain out of such monies which may be then due or which may become due and payable to the Manufacturer the sum equal to the difference in quoted loss values and the actual loss values as verified by the certified test reports provided after manufacture computed in dollars utilizing the No Load Loss and Winding Loss values listed above as liquidated damages and not as a penalty. In no event shall the adjustment factor under this provision result in a net price increase to the Owner. If the amount due and to become due from the Owner to the Manufacturer is insufficient to pay in full any such liquidated damages, the Manufacturer shall pay to the Owner the amount necessary to effect such payment in full, provided, however, that the Owner shall promptly notify the Manufacturer in writing of the manner in which the amount retained, deducted, or claimed as liquidated damages was computed.

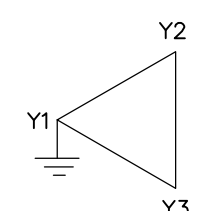
- 12.6 The following adders will be applied during the evaluation process for any quotation having a warranty of less than five years.

One-year warranty in lieu of five years	=	\$ 40,000.00
Three-year warranty in lieu of five years	=	\$ 20,000.00

APPENDICES

1


Typical Current Transformer Arrangement for Power Transformers



CONNECTION FOR MULTI-RATIO BUSHING CURRENT TRANSF.			
LEADS ON	NOMINAL RATIO		
	600/5BCT	1200/5BCT	2000/5BCT
X1-X5	600/5	1200/5	2000/5
X2-X5	500/5	1000/5	1600/5
X3-X5	450/5	900/5	800/5
X1-X4	400/5	800/5	1500/5
X2-X4	300/5	600/5	1100/5
X3-X4	250/5	500/5	300/5
X4-X5	200/5	400/5	500/5
X1-X3	150/5	300/5	1200/5
X1-X2	100/5	200/5	400/5
X2-X3	50/5	100/5	800/5
ACCURACY CLASS	10C400	10C400	10C400

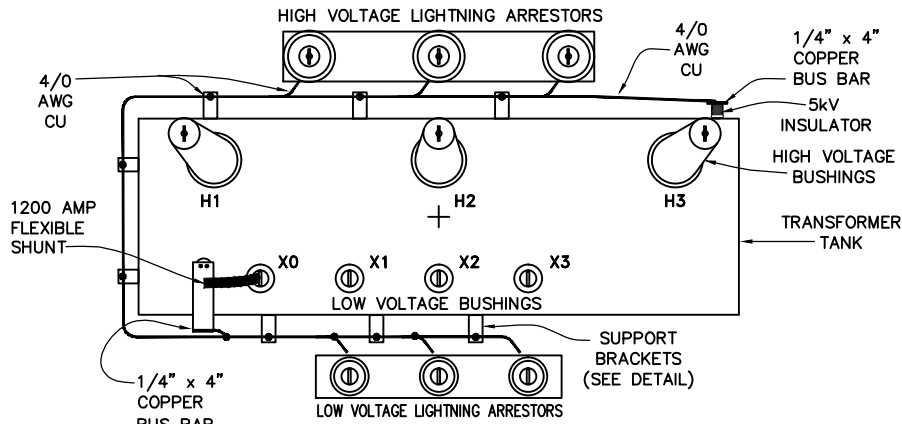
TYPICAL CURRENT
TRANSFORMER ARRANGEMENT
FOR POWER TRANSFORMERS



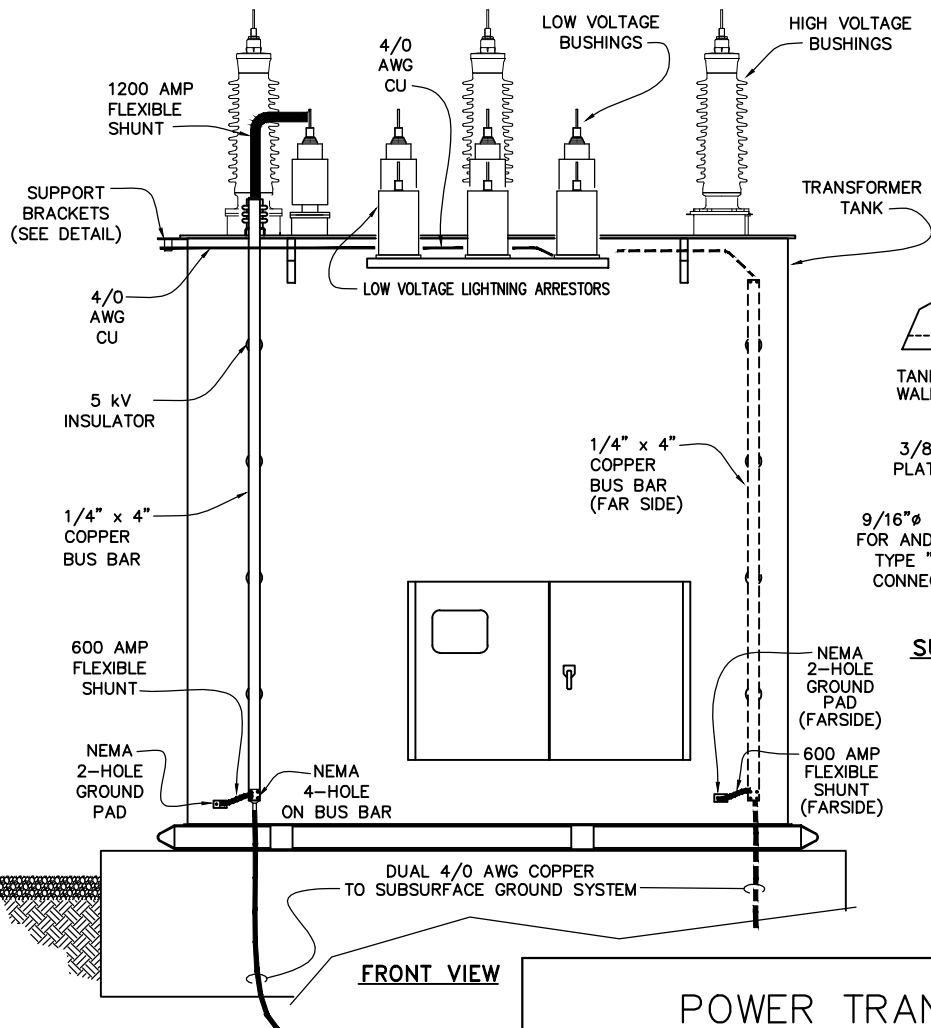
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			DWN. BNC	DATE 08/22/13	DWG. NO. CT1
			CKD. JEN	APPD. CHW	
			SCALE: AS SHOWN		
NO.	REVISION	DATE			

2

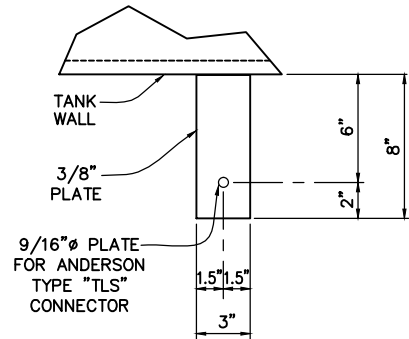
Neutral Support Bracket Detail



PLAN VIEW



FRONT VIEW



SUPPORT BRACKET DETAIL
(NTS)

POWER TRANSFORMER NEUTRAL SUPPORT BRACKET DETAIL

Booth & Associates, Inc.

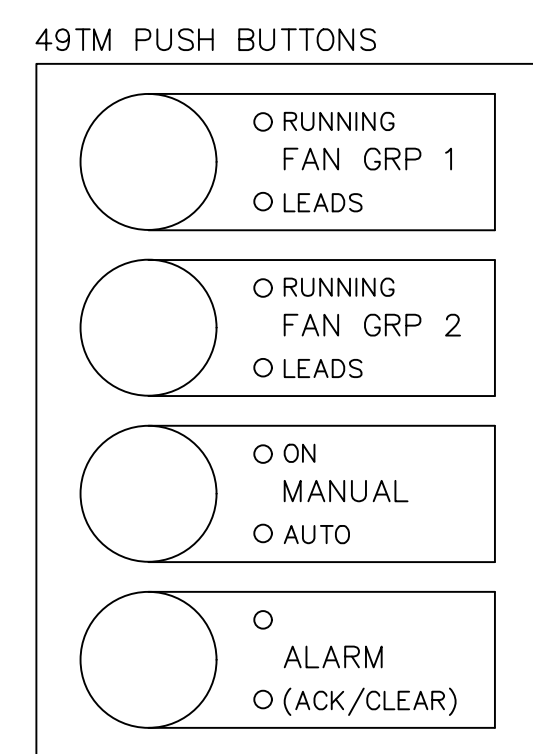
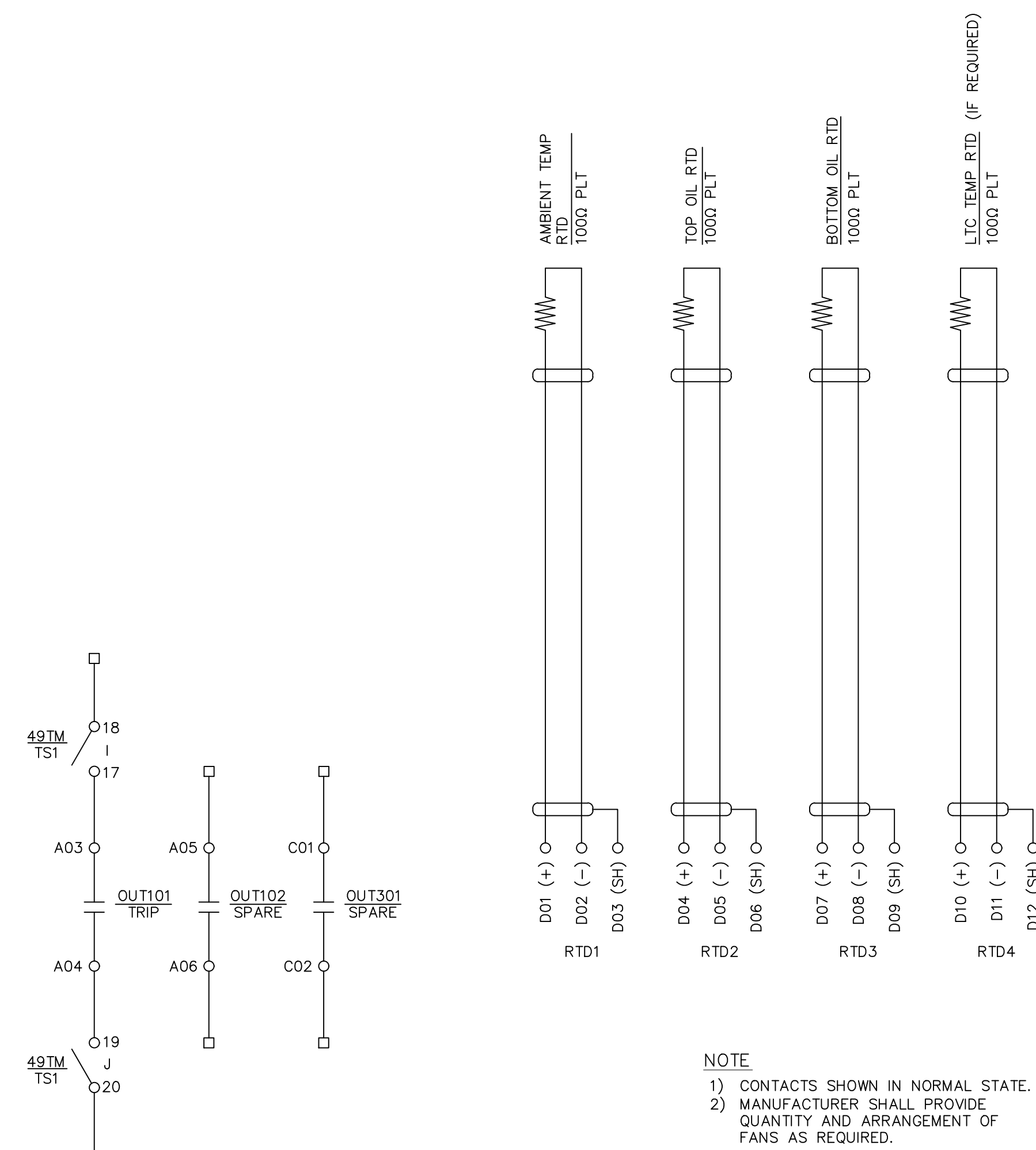
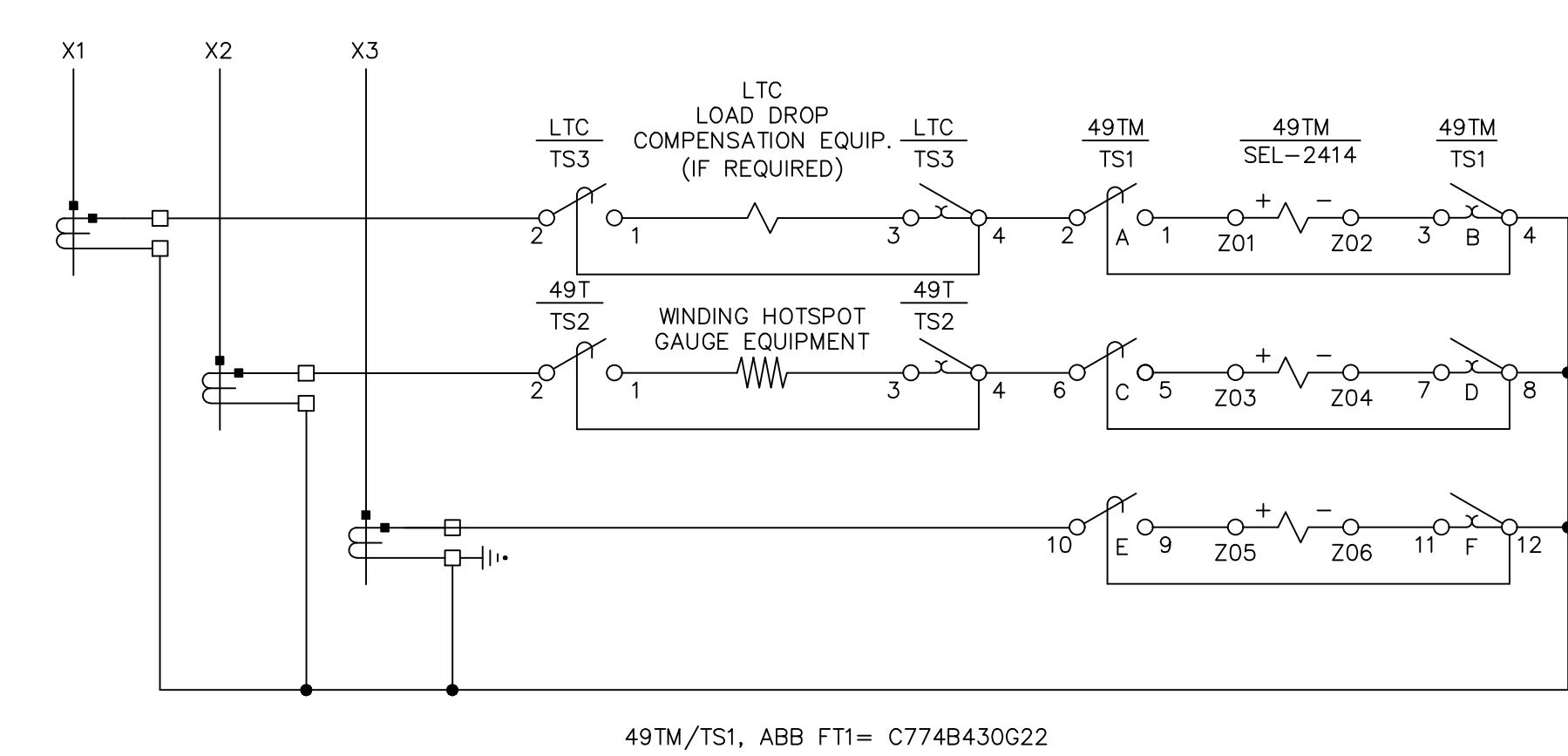
5811 Glenwood Avenue | Raleigh, NC 27610 CONSULTING ENGINEERS NC F-0221

DWN. KRG	DATE 8/28/13	DWG. NO.
CKD. MLC	APPD. MLC	XO-1
SCALE NONE	PLOT: 1=48	10000XO1

APPENDIX 2

3

Typical AC Circuit & Alarm Connections



"PRELIMINARY - DO NOT USE FOR CONSTRUCTION"				BOOTH & ASSOCIATES STANDARD		
				TYPICAL AC CIRCUIT AND ALARM CONNECTIONS		
				Booth & Associates Inc. <small>101 General Avenue, Suite 100, Columbus, Ohio 43206-1001</small>		
	2	CORRECT 125VDC PN'S	11/16/15			
	1	ADD LTC COMPONENTS	09/18/13	DWN.BNC CKD. JEN SCALE:NONE	DATE 08/22/13 APPRO. CHW PLPT: 1=1	DWG. NO. A1 of 1 A1
	NO	REVISIONS	DATE			
	© 08/13					

4

Transformer Data Sheet

**CITY OF ROCKY MOUNT
230KV SOUTH POD SUBSTATION**

TRANSFORMER DATA SHEET

General Information

Transformer Power Rating: 90/120/150/168 MVA

Temperature Rise Rating: ☒ Standard 55/65°C
 ☐ 65°C
 ☐ Other _____ °C

Primary Side Voltage (nominal): 230 kV

Primary Side Tap Ratings: Tap 1 241.500 kV (+5%)
 Tap 2 235.750 kV (+2.5%)
 Tap 3 230.000 kV (nominal)
 Tap 4 224.250 kV (-2.5%)
 Tap 5 218.500 kV (-5%)

Primary Side BIL: 900 kV BIL

Primary Winding Configuration: ☐ Standard Delta
 ☒ Grounded Wye
 ☐ Wye
 ☒ Other (Autotransformer)

Dual Rating Switch Required? ☐ Yes _____
 ☒ No

Secondary Side Voltage: 66.00 kV

Secondary Side BIL: 350 kV BIL

Secondary Winding Configuration: ☐ Standard Grounded Wye
 ☒ Wye
 ☐ Delta
 ☒ Other (Autotransformer)

Dual Rating Switch Required? ☐ Yes _____
 ☒ No

Tertiary Winding Required: ☐ No (standard)
 ☒ Yes

Tertiary Winding Configuration: ☒ Standard buried Delta
☐ Other _____

Tertiary Winding Voltage: 13.20 kV

Tertiary Winding BIL: 150 kV BIL

Transformer Phase Angle: ☐ Standard High Voltage leads Low Voltage by 30° phase angle
☒ Other (Autotransformer) _____

Frequency Rating: ☒ Standard 60 Hz
☐ Other _____

Maximum Altitude: ☒ Standard 3300 Ft
☐ Other _____

Station Voltage:

AC:	<input checked="" type="checkbox"/> Standard 120/240 VAC	DC:	<input checked="" type="checkbox"/> Standard 48 VDC
	<input type="checkbox"/> Other _____		<input type="checkbox"/> 125 VDC
			<input type="checkbox"/> Other _____

Oil Monitor: ☒ Not Required – Provisions only
☐ Standard
☐ Other _____

Communication Options: ☐ Not Required
☒ Standard Fiber Connection
☐ Other _____

Impedance

Transformer Impedance: ☒ Standard value per IEEE standard based on transformer HV rating
☐ Other _____

Sound Level

Transformer Sound Level ☒ Standard levels per NEMA TR-1
☐ Other _____

Bushings

Primary Phase Bushing Rating 230 kV
800 Amps
900 kV BIL

Primary Phase Bushing Location ☒ Standard Top Cover
☐ Other _____

Top CTSet 1: Ratio: 600/5 MR Accuracy Class: 10C800Set 2: Ratio: 600/5 MR Accuracy Class: 10C800Set 3: Ratio: 2000/5 MR Accuracy Class: 10C800

☐ Metering
☒ Relaying
☐ Metering
☒ Relaying
☐ Metering
☒ Relaying

Bottom CTThermal Rating of HV CT's: ☒ Standard 2.0
☐ Other _____**H₀ / X₀ Bushing CT Ratings**Number of H₀ CT's per bushing: 2H₀ CT ratings and placement:**Top CT**Set 1: Ratio: 2000/5 MR Accuracy Class: 10C800Set 2: Ratio: 2000/5 MR Accuracy Class: 10C800

Set 3: Ratio: _____ Accuracy Class: _____

☐ Metering
☒ Relaying
☐ Metering
☒ Relaying
☐ Metering
☐ Relaying

Bottom CTThermal Rating of H₀ CT's: ☒ Standard 2.0
☐ Other _____**LV Bushing CT Ratings**Number of LV CT's per bushing (excluding WTI or LTC CT's): 2

LV CT ratings and placement:

Top CTSet 1: Ratio: 2000/5 MR Accuracy Class: 10C800Set 2: Ratio: 2000/5 MR Accuracy Class: 10C800

Set 3: Ratio: _____ Accuracy Class: _____

☐ Metering
☒ Relaying
☐ Metering
☒ Relaying
☐ Metering
☐ Relaying

Bottom CTThermal Rating of LV CT's: ☒ Standard 2.0
☐ Other _____

X₀ Bushing CT Ratings

Number of X₀ CT's per bushing: _____ N/A _____

X₀ CT ratings and placement:

Top CT

Set 1: Ratio: _____ Accuracy Class: _____

☐ Metering

☐ Relaying

Set 2: Ratio: _____ Accuracy Class: _____

☐ Metering

☐ Relaying

Set 3: Ratio: _____ Accuracy Class: _____

☐ Metering

☐ Relaying

Bottom CT

Thermal Rating of X₀ CT's: ☐ Standard 2.0
☐ Other _____

Tertiary CT Ratings

Number of Tertiary CT's _____ 1 _____

Tertiary CT ratings and placement:

Bottom of Bushing (Winding)

Set 1: Ratio: _____ 1200/5 MR _____ Accuracy Class: _____ 10C800 _____

☐ Metering

☒ Relaying

Set 2: Ratio: _____ Accuracy Class: _____

☐ Metering

☐ Relaying

Top of Winding

Thermal Rating of Tertiary CT's: ☒ Standard 2.0
☐ Other _____

Arresters

HV Arrester Rating: _____ 140 _____ kV MCOV

HV Arrester Material: ☒ Polymer
☐ Porcelain

HV Arrester Model Number: Ohio Brass: xxxxxxxxx-xxxx

LV Arrester Rating: _____ 42 _____ kV MCOV

LV Arrester Material: ☒ Polymer
☐ Porcelain

LV Arrester Model Number: Ohio Brass: xxxxxxxxx-xxxx

Annunciator

Annunciator Required? ☒ Standard Model per Appendix 3
☐ Not Required
☐ Other Model _____

Oil Preservation

Oil Preservation System ☐ Standard Positive Pressure System (Nitrogen Bottle)
☒ Conservator Unit
☐ Other _____

Electronic Temperature Monitor

ETM Required? ☒ Standard Model per Appendix 3
☐ Not Required
☐ Other Model _____

LTC (Load Tap Changer)

LTC Required? ☐ Yes
☒ No

Voltage Range: ☐ Standard +/- 10%
☐ Other _____

Capacity: ☐ Full: For voltage taps lower than nominal voltage, secondary load current is equal to rated transformer kVA and the selected LTC tap position
☐ Reduced: For voltage taps lower than nominal voltage, secondary load current is equal to rated transformer kVA and the nominal secondary voltage

Number of Steps: ☐ Standard +/- 16 Steps at 5/8% each
☐ Other _____

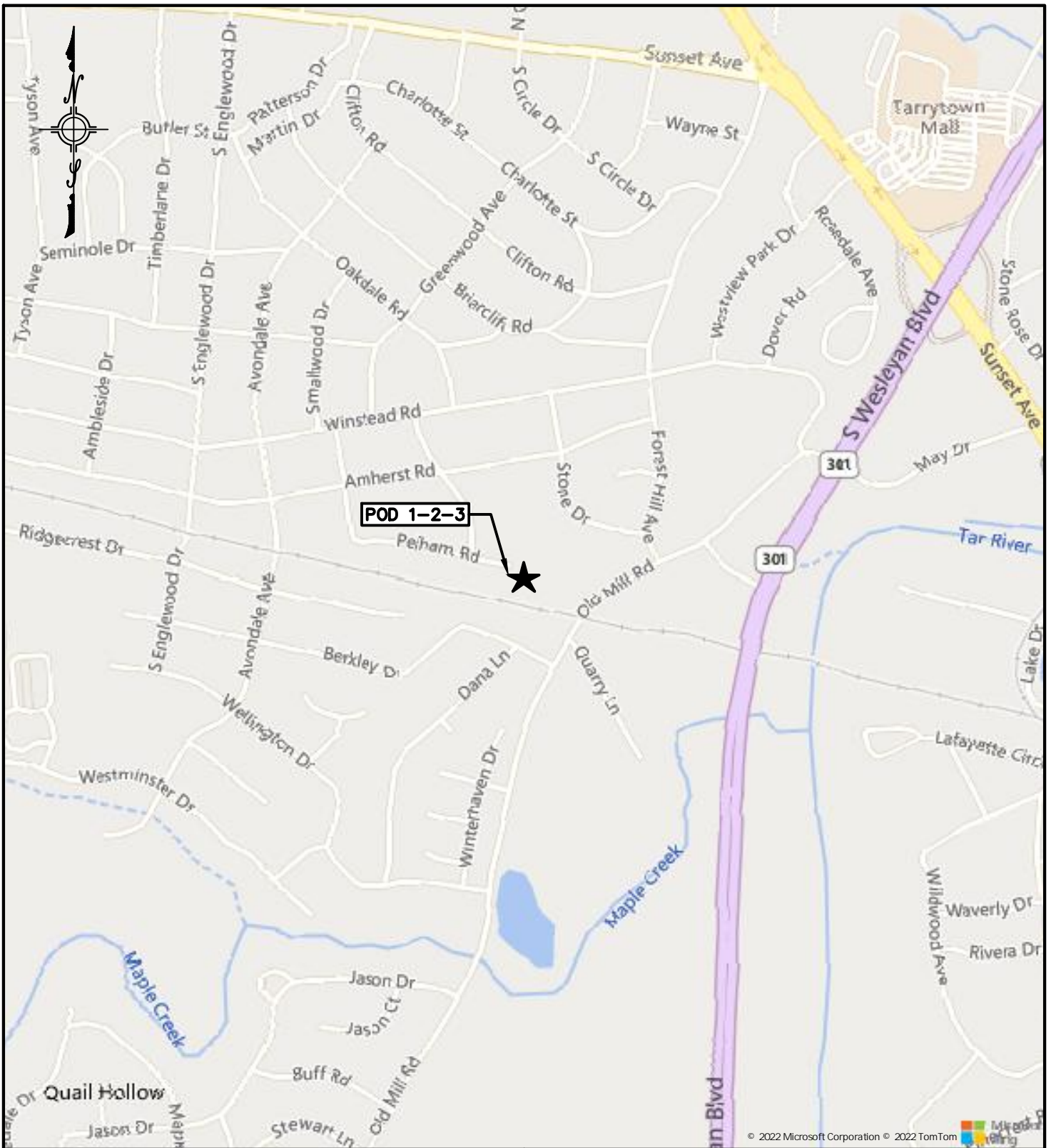
General Comments

This Transformer is to be located on the east side of a three (3) bank POD. There is approximately 30' between the centerlines of the transformers. The transformer/conservator design should be compatible with the spacing available for any and all of the existing 3 transformer bays.

An oil containment basin encompasses the entire transformer footprint. This should be considered when pricing the Transformer delivery.

5

Vicinity Map



SITE LOCATION

ADDRESS:
554 OLD MILL RD.
ROCKY MOUNT, NC 27804

LATITUDE: 35.951766°
LONGITUDE: -77.8342348°

CITY OF ROCKY MOUNT ROCKY MOUNT, NORTH CAROLINA

230 TO 66kV POD 1-2-3 VICINITY MAP



DWN. BAA	DATE: 4/4/20	DWG. NO. VM-1
CKD. KPM	APPD. KPM	
SCALE: 1"=2,000'	FILE: 18899VM	
JOB NO. 18899	DATE	
© 07/20	REVISION	

6

MWBE Affidavits

SUPPLEMENTAL VENDOR INFORMATION

HISTORICALLY UNDERUTILIZED BUSINESSES

Historically Underutilized Businesses (HUBs) consist of minority, women and disabled business firms that are at least fifty-one percent owned and operated by an individual(s) of the categories. Also included in this category are disabled business enterprises and non-profit work centers for the blind and severely disabled.

Pursuant to G.S. 143B-1361(a), 143-48 and 143-128.4, the State invites and encourages participation in this procurement process by businesses owned by minorities, women, disabled, disabled business enterprises and non-profit work centers for the blind and severely disabled. This includes utilizing subcontractors to perform the required functions in this RFP. Any questions concerning NC HUB certification, contact the [North Carolina Office of Historically Underutilized Businesses](#) at (919) 807-2330. The Vendor shall respond to question #1 and #2 below.

- a) Is Vendor a Historically Underutilized Business? ☐ Yes ☐ No
- b) Is Vendor Certified with North Carolina as a Historically Underutilized Business? ☐ Yes ☐ No

If so, state HUB classification: _____

CONTRACTOR REGISTRATION

New vendors must complete a vendor registration form using the link below. If you are a current vendor that has not completed the online vendor registration also complete the form. Once registration is complete email a copy of your W9 and E-Verify Affidavit to the contact person listed on the coversheet.

<https://rockymountnc.gov/services-finance-vendor-registration/>

HOW TO DO BUSINESS WITH THE CITY OF ROCKY MOUNT

Becoming a Vendor <https://youtu.be/MGOjZxl4iQc>

Competing in the Bid Process <https://youtu.be/yy8dYzPOCUs>

Purchase Order, Payment and Performance <https://youtu.be/wA5zVTizZQM>

4.4 MINORITY BUSINESS PARTICIPATION

The Bidder has the responsibility to make a good faith effort to solicit minority proposals and to attain the aspirational ten percent (10%) goal. We encourage all Bidders even MWBE/HUBs to obtain the aspirational goal where sub-contracting and supplier opportunities exist. Use the table below to note the MWBE businesses that will be used as suppliers or subcontractors for this contract.

MWBE FIRM	OWNERSHIP STATUS	ADDRESS	WORK TYPE

If the goal of 10% participation by HUB Certified or minority businesses is not achieved, the Bidder shall provide the following documentation to the City of his/her good faith efforts:

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

- a) Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- b) Copies of quotes or responses received from each MWBE responding to the solicitation.
- c) A telephone log of follow-up calls to each firm sent a solicitation.
- d) For subcontracts where a minority business is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- e) Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- f) Copy of pre-bid roster
- g) Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- h) Letter detailing reasons for rejection of minority business.
- i) Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in a non-responsive bid.

ATTACHMENT G: PROPOSED PRODUCTS FORM

No.	Item	Proposed Product(s)	Supplier Names & Addresses
1			
2			
3			
4			
5			

CERTIFICATION BY PRIME CONTRACTOR:

Each supplier listed above has established his ability and responsibility to supply the specified materials in accordance with the Contract Documents.

Contractor

By: _____ Date: _____
Signature & Title

Approved: CITY OF ROCKY MOUNT

By: _____ Date: _____
City of Rocky Mount