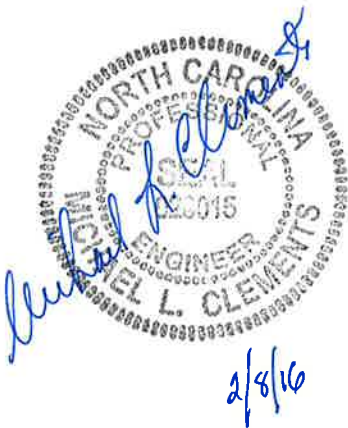


**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**SPECIFICATIONS AND BID DOCUMENTS FOR THE
230 AND 115 kV CIRCUIT BREAKERS FOR
GREENVILLE POD NO. 3**

ISSUED FOR BIDS



**Booth & Associates, LLC
Consulting Engineers
5811 Glenwood Avenue, Suite 109
Raleigh, North Carolina 27612
Firm License No. F-0221**

© January 2016

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**SPECIFICATIONS AND BID DOCUMENTS FOR THE
230 AND 115 kV CIRCUIT BREAKERS FOR
GREENVILLE POD NO. 3**

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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) 230 kV and three (3) 115 kV Circuit Breakers for Greenville POD No. 3, as set forth in the Bid Schedules, will be received by Greenville Utilities Commission of Greenville, North Carolina (hereinafter referred to as the Owner) at the offices of the Buyer II, Greenville Utilities commission, 401 S. Greene Street, Greenville, North Carolina 27834, on or before **2:00 PM, local time, Wednesday, April 6, 2016**, at which time the Proposals will be opened and read. Any Proposal received subsequent to that time will be promptly returned to the Bidder unopened. Bids submitted in a fax or e-mail in response to this Invitation for Bids will not be acceptable. **All questions concerning this bid must be received by March, 30, 2016.**

Instructions for submitting bids and complete specifications will be available in the Office of the Buyer II, Greenville Utilities Commission, 401 S. Greene Street, Greenville, North Carolina during regular office hours, which are 8:30 AM – 5:00 PM Monday through Friday. Greenville Utilities Commission reserves the right to reject any or all bids.

Each bidder must submit a proposal on the enclosed bid forms. **The bid must be signed by an authorized official of the firm. Return only the attached Proposal Form. Do not return the Advertisement for Bids, Instructions to Bidders or Specifications.**

Bids must be in sealed envelopes clearly marked on the outside with the name of the bid and the bid opening date and time. Bid shall be addressed to BUYER II, GREENVILLE UTILITIES COMMISSION, 401 S. GREENE STREET, GREENVILLE, NORTH CAROLINA 27834.

Bids will be opened promptly and read at the hour and on the date set forth in the advertisement in the Office of the Buyer II, Greenville Utilities Main Office, 401 S. Greene Street, Greenville, North Carolina 27834. Bidders or their authorized agents are invited to be present.

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 THE 230 AND 115 kV CIRCUIT BREAKERS FOR GREENVILLE POD NO. 3 NOT TO BE OPENED UNTIL 2:00 PM, WEDNESDAY, APRIL 6, 2016"**.

Each Proposal shall be accompanied by cash, cashier's check, or certified check drawn on a bank insured with the Federal Deposit Insurance Corporation or the Savings Association Insurance Fund, payable to the Owner, in an amount not less than five percent (5%) of the total bid as a guarantee that a Purchase Order, if awarded, will be accepted. In lieu thereof, a Bid Bond may be submitted by the Bidder in an amount not less than five percent (5%) of the total bid (see attached Bid Bond form). The total bid price for which the five percent (5%) applies shall be the total of all schedules.

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 lowest responsible, responsive bid from the standpoint of quality, performance, delivery and price; and (4) award Purchase Order(s) to Bidder(s) for any Schedule(s) individually or collectively from the Bid Schedules.

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

By: Anthony C. Cannon Date: _____
General Manager / CEO

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	Greenville Utilities Commission Greenville, North Carolina
General Manager / CEO	Anthony C. Cannon
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 the Savings Associates Insurance Fund, 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

Contract	The agreement covering the furnishing of equipment and/or apparatus and the performance of the work. The Contract 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.
- 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 purchase order by the successful Bidder. Should the successful Bidder default and not accept a purchase order, then the purchase order may be offered to the next lowest responsible, responsive 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 Purchase Order, 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 accept any schedule, combination of schedules, or any portion of a schedule.

3.0 Bid Security

- 3.1 Each Proposal shall be accompanied 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 Savings Association Insurance Fund, or a Bid Bond in an amount not less than five percent (5%) 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 accepting a purchase order, they will become a part thereof. Receipt of addenda shall be acknowledged by the Bidder on the *Form of Proposal*.

6.0 Shipment and Delivery

- 6.1 The Power Circuit Breakers shall be shipped FOB, point of delivery, to the sites with unloading by the Owner. Assembly of any component parts removed for shipment and field testing of the unit will be performed by the Bidder under the supervision of the manufacturer's field service engineer. See the vicinity maps located in the appendices for site locations.
- 6.2 Units are to be shipped utilizing an open-top truck to facilitate unloading with a crane or fork truck. Units are to be shipped direct from the manufacturing site, with no intermediate transfers. Shipping with the manufacturer's own trucks is preferred.
- 6.3 Before shipment, power circuit breakers shall be completely assembled 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 A Delivery Schedule is provided as part of the Proposal on which the Bidder shall indicate the delivery schedule for his materials and equipment. Strict adherence to the quoted delivery schedule is expected. Special attention should be given to the stipulations for delivery outlined in the General Conditions. Furthermore, the Bidder shall match his scheduled deliveries to the schedule preferred by the Owner, if noted in the *Form of Proposal*.
- 6.6 Release for shipment is to be granted by the Owner or the Engineer based upon the manufacturer's compliance with the following:
 - 6.6.1 Fourteen (14) consecutive days prior notification of tests so the Owner may have a representative present for witness of the tests.
 - 6.6.2 Furnishing of the requisite number of copies of the Final Drawings as called for in the Specifications.
 - 6.6.3 Coordination of manufacturing and delivery with Owner's construction schedule as may be noted in these Specifications.
 - 6.6.4 Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to all deliveries.
- 6.7 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. The Owner will furnish escort to the substation site. Ultimate delivery shall be at the discretion of the Owner.
- 6.8 In the event that delays occur, the Bidder shall be responsible for all shipping demurrage unless such delays are caused solely by the Owner.
- 6.9 Owner will be responsible for unloading equipment upon arrival.

7.0 Purchase Order

- 7.1 The issue of a purchase order will be made to the lowest responsible, responsive Bidder as soon as practical, provided that in the selection of materials and equipment a purchase order 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.
- 7.2 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.

- 7.3 In estimating the lowest cost to the Owner as one of the factors in deciding the Award of the purchase order, the Owner will consider, in addition to the prices quoted in the Proposal, the following:
- a. Equipment delivery (days),
 - b. Adherence to the Plans and *Technical Specifications*,
 - c. Evaluation of equipment suitability to the system as noted and submitted by the Bidder,
 - d. The Bidder's intended method of shipment of the materials and equipment, and
 - e. Firm prices.

8.0 Drawings and Documentation

8.1 Approval Drawings

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.

8.2 Outline Drawings

8.2.1 The Outline Drawings shall show dimensions of equipment, including bushings, 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.

8.2.2 All Drawings submitted shall be submitted electronically compatible with AutoCad 2010. If paper copies are used for approval drawings, they shall be a minimum of a "D" (24" x 36") size print. Submittal of Drawings smaller than "D" 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.

8.2.3 All drawings shall include three (3) copies each of outline, nameplate, ac and dc control elementary, ac three-line power elementary, and control wiring drawings.

8.2.4 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 of responsibility to meet original shipping promise on the basis of Owner being allowed two (2) weeks for approval.

8.2.5 The Owner may require a second submittal of Approval Drawings if, in the opinion of the Owner, such is required due to the extent of changes required on the first submittal. If an extension of time is required due to a protracted drawing approval process, the price will remain as quoted for the quoted delivery.

8.2.6 Receipt of Approval Drawings by the Bidder constitutes authorization for manufacture only, based upon the corrections found thereon.

8.2.7 Approval Drawings shall be submitted directly to Booth & Associates, LLC, 5811 Glenwood Avenue, Suite 109, Raleigh, NC 27612, Attention: Michael L. Clements, PE or electronically to clementsml@booth-assoc.com.

8.3 Final Drawings

8.3.1 Contingent upon Approval Drawing review and product manufacture, the Bidder shall issue final documentation for the materials as follows:

- a. One (1) complete set of all Drawings, revised to "as-built" status, released on paper media.
- b. Two (2) separate CD-ROMs each containing of all Drawings, revised to "as-built" status and compatible with AutoCad®, Release 2010 or newer.

- c. Four (4) copies of applicable instruction books, including one (1) print each of all Drawings representing physical and electric details.
- 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 drawings listed in the *Technical Specifications* section of these bid documents.

9.0 Manufacturer's Field Representative

The manufacturer shall include as a separate line item in the Bid Schedule the cost of services of a Field Service Engineer for a period of one (1) working day per unit. The manufacturer is responsible for all travel time and expenses. The duties of the Field Service Engineer shall include supervising installation of component parts removed for shipment, and to perform certain field tests, outlined in the *Technical Specifications*. All associated cost for field service shall be included in the base bid. If the bidder fails to include all costs, an amount of \$5,000 per unit will be used for evaluation purposes.

10.0 Payment

- 10.1 Payment by the Owner of ninety (90) percent of the purchase price shall be made to the Successful Bidder in a lump sum after delivery.
- 10.2 There shall be a ten-percent (10%) retainage on invoices until all equipment, with proper instruction books per Specifications, and certified test reports 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.
- 10.3 Invoices shall be submitted in triplicate to the Engineer for review and approval. The address for submittal of all invoices is: Booth & Associates, LLC, 5811 Glenwood Avenue, Suite 109, Raleigh, North Carolina 27612; Attention: Michael L. Clements, PE.

GENERAL CONDITIONS

1.0 Drawings and Specifications

The Drawings and Specifications are complementary, one to the other. That which is shown on the Drawings or called for in the Specifications shall be as binding as if it were both called for and shown. The intention of the Drawings and Specifications is to include all labor, materials, transportation, equipment, and any and all other things necessary to do a complete job, which may include manufactured items and field service assistance. In case of discrepancy or disagreement in the Purchase Order, the order of precedence shall be: Purchase Order, 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 Drawings 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 Bidding 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 Purchase Order 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 Purchase Order 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 make 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 Purchase Order 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 Purchase Order, 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 Assignments

The Bidder shall not assign any portion of this Purchase Order 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 Purchase Order may be assigned.

10.0 Guarantee

The Bidder shall guarantee his materials and workmanship against defect due to faulty materials, faulty workmanship, or negligence for a period of one (1) full year from date of energization and/or eighteen (18) months from date of delivery, whichever applies. He shall make good such defective materials or workmanship and any damages resulting therefrom without cost to the Owner. Each class of equipment shall carry a full one (1) year warranty against defects from the date of energization.

11.0 Change In Drawings and/or Specifications

The Owner, or the Engineer on behalf of the Owner, may make changes to Drawings and/or Specifications after award of the Purchase Order 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.

12.0 Insurance

During the term of the Contract, the Bidder at its sole cost and expense shall provide commercial insurance of such type and with such terms and limits as may be reasonably associated with the Contract. As a minimum, the Bidder shall provide and maintain the following coverage and limits:

- 12.1 Worker's Compensation - The Bidder shall provide and maintain Worker's Compensation Insurance, as required by the laws of North Carolina, as well as employer's liability coverage with minimum limits of \$1,000,000.00, covering all of Bidder's employees who are engaged in any work under the Contract. If any work is sublet, the Bidder shall require the subcontractor to provide the same coverage for any of his employees engaged in any work under the Contract.
- 12.2 Commercial General Liability - General Liability Coverage on a Comprehensive Broad Form on an occurrence basis in the minimum amount of \$1,000,000.00 Combined Single Limit. (Defense cost shall be in excess of the limit of the liability.)
- 12.3 Automobile - Automobile Liability Insurance, to include liability coverage, covering all owned, hired, and non-owned vehicles, used in connection with the Contract. The minimum combined single limit shall be \$150,000.00 uninsured/under insured motorist; and \$1,000.00 medical payment.
- Public Liability Insurance for bodily injury or death \$1,000,000 for one person, and \$2,000,000 for each accident.
 - Property Damage Insurance \$2,000,000 for each accident and \$2,000,000 aggregate for accidents during the policy period.

12.4 Motor Vehicle Liability Insurance shall be for not less than the following amounts:

- Bodily injury or death \$1,000,000 for one person and \$2,000,000 for each accident.
- Property damage is \$2,000,000 for each accident.

12.5 Copies of Certificates of Insurance for all aforementioned policies shall be furnished by the Bidder and shall be attached to the respective pages of the Contract Agreement at the time of signing.

12.6 It shall be understood that the above-required insurance shall not be canceled or changed until thirty (30) days after written notice of such termination or alteration has been sent by registered mail to GUC Buyer II.

BUYER II:

Greenville Utilities Commission.

401 South Greene Street

Greenville, North Carolina 27835

12.7 Each certificate must not terminate before the contract completion date.

Requirements - Providing and maintaining adequate insurance coverage is a material obligation of the Bidder and is of the essence of this Contract. All such insurance shall meet all laws of the State of North Carolina. 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 Bidder shall at all times comply with 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 this Contract. The limits of coverage under each insurance policy maintained by the Bidder shall not be interpreted as limiting the Bidder's liability and obligations under the Contract.

13.0 Inspection at Bidder's Site

The Owner reserves the right to inspect, at a reasonable time, the equipment/item, plant or other facilities of a prospective Bidder prior to Contract award, and during the Contract term as necessary for the Owner's determination that such equipment/item, plant or other facilities conform with the specifications/requirements and are adequate and suitable for the proper and effective performance of the Contract.

14.0 Advertising

Bidder agrees not to use the existence of this Contract or the name of the Owner as part of any commercial advertisement.

15.0 Access to Persons and Records

An independent auditor shall have access to persons and records as a result of all Contracts or grants entered into by the Owner in accordance with General Statute 147-64.7 insofar as they relate to transactions with the Owner.

16.0 Equal Employment Opportunity, Minority Business Participation Program

During the performance of this work, the Bidder agrees as follows:

16.1 The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap. The Bidder will take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap. Such action shall include but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. The Bidder agrees to post in conspicuous places available to

employees and applicants for employment notices setting forth the provisions of the nondiscrimination clause.

- 16.2 The Bidder, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, will state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap.
- 16.3 The Bidder will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Purchase Order or understanding, a notice advising the labor union or workers' representative of the Bidder's commitments under the Equal Employment Opportunity Section of this Specification and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 16.4 In the event of the Bidder's noncompliance with the nondiscrimination clauses of this Specification or with any of such rules, regulations, or orders, the Purchase Order may be canceled, terminated, or suspended in whole or in part and the Bidder may be declared ineligible for further Owner contracts.
- 16.5 The Bidder will include the provisions of this section in every Subcontract or Purchase Order unless exempted by rules, regulations, or orders of the Owner, so that such provisions will be binding upon each Subcontractor.
- 16.6 The Owner has adopted an Affirmative Action and Minority and Women Business Enterprise Plan (M/WBE) Program. Firms submitting a proposal are attesting that they also have taken affirmative action to ensure equality of opportunity in all aspects of employment, and to utilize M/WBE suppliers of materials and/or labor.

17.0 Indemnification

Bidder agrees to indemnify and save GUC of the City of Greenville, Pitt County, North Carolina, and the City of Greenville, North Carolina, its co-owners, joint-venturers, agents, employees, and insurance carriers harmless from any and all Third Party claims, actions, costs, expenses, including reasonable attorney fees, judgments, or other damages resulting from injury to any person (including injury resulting in death), or damage (including loss or destruction) to third party tangible property arising out of the negligent performance of the terms of this Contract by Bidder; including, but not limited to, Bidder's employees, agents, subcontractors, and others designated by Bidder to perform work or services in, about, or attendant to, the work and services under the terms of this Contract. Bidder shall not be held responsible for any losses, expenses, claims, subrogation, actions, costs, judgments, or other damages, directly and proximately caused by the negligence of Greenville Utilities Commission of the City of Greenville, Pitt County, North Carolina. Insurance covering this indemnity agreement by Bidder in favor of Greenville Utilities Commission of the City of Greenville, Pitt County, North Carolina, and the City of Greenville, North Carolina, shall be provided by the Bidder.

18.0 Mediation/Binding Arbitration

In the event of any dispute between the Parties, the Parties agree to submit any dispute to non-binding mediation before a mutually agreeable Mediator prior to initiating litigation. If the Parties are unable to agree upon a Mediator within thirty (30) days after demand therefore, either Party may petition a Court of competent jurisdiction for the designation of a qualified Mediator for these purposes. Each Party shall bear its own costs and expenses of participating in the mediation (including, without limitation, reasonable attorneys' fees), and each Party shall bear one-half (1/2) of the costs and expenses of the Mediator. Unless otherwise agreed, the Parties will hold the mediation in Greenville, North Carolina. The matters discussed or revealed in the mediation session shall not be disclosed in any subsequent litigation.

In the event the matter is not resolved in mediation, either Party may request arbitration. The parties shall jointly select an Arbitrator, and shall be bound by the decision of the Arbitrator with respect to any dispute between the parties with respect to this Agreement. If the parties are unable to mutually agree upon an Arbitrator, the Parties shall each select an Arbitrator, and the two

Arbitrators so selected shall select a third Arbitrator, and the decision of the majority of the Arbitrators shall be conclusive and binding upon the Parties. The Parties at all times agree to equally split the costs of any Arbitrator(s) selected in an effort to resolve the dispute between the Parties. Any party desiring to resolve a dispute under the terms of this Agreement shall notify the other Party in writing, and the Parties shall seek to agree upon a mutually agreed-upon Arbitrator within a period of ten (10) days from the date of such written demand. If the Parties are unable to agree within such ten (10) day period, the Parties shall each select an Arbitrator, and the two (2) Arbitrators so selected shall select a third Arbitrator within fifteen (15) days from the date of the written demand for arbitration, and a decision shall be rendered by the Arbitrator(s) so selected within five (5) days after such Arbitrator(s) is selected.

19.0 Government Restrictions

In the event any Governmental restrictions may be imposed which would necessitate alteration of the material, quality, workmanship, or performance of the items offered on this bid prior to their delivery, it shall be the responsibility of the successful Bidder to notify the GUC Buyer II, at once, indicating in its letter the specific regulation which required such alterations. GUC reserves the right to accept any such alterations, including any price adjustments occasioned thereby, or, in the sole discretion of GUC, to cancel the contract

20.0 Patents And Copyrights

The Bidder shall hold and save GUC, its officers, agents, and employees, harmless from liability of any kind, including costs and expenses, including reasonable attorney fees, on account of any copyrighted articles or any patented or unpatented invention, device or appliance manufactured or used in the performance of this contract.

21.0 Patent And Copyright Indemnity

The Bidder will defend or settle, at its own expense, any action brought against GUC to the extent that it is based on a claim that the product(s) provided pursuant to this agreement infringe any U.S. copyright or patent; and will pay those costs, damages, and attorney fees finally awarded against GUC in any such action attributable to any such claim, but such defense, settlements, and payments are conditioned on the following: (1) that Bidder shall be notified promptly in writing by GUC of any such claim; (2) that Bidder shall have sole control of the defense of any action on such claim and of all negotiations for its settlement or compromise; (3) that GUC shall cooperate with Bidder in a reasonable way to facilitate the settlement of defense of such claim; (4) that such claim does not arise from GUC modifications not authorized by the Bidder or from the use of combination of products provided by the Bidder with products provided by GUC or by others; and (5) should such product(s) become, or in the Bidder's opinion likely to become, the subject of such claim of infringement, then GUC shall permit Bidder, at Bidder's option and expense, either to procure for GUC the right to continue using the product(s), or replace or modify the same so that it becomes non-infringing and performs in a substantially similar manner to the original product.

22.0 Exceptions

All proposals are subject to the terms and conditions outlined herein. All responses will be controlled by such terms and conditions and the submission of other terms and conditions, price catalogs, and other documents as part of a Bidder's response will be waived and have no effect on this Request for Proposal or any other contract that may be awarded resulting from this solicitation. The submission of any other terms and conditions by a Bidder may be grounds for rejection of the Bidder's proposal. The Bidder specifically agrees to the terms and conditions set forth in this set of Terms and Conditions by affixing its name on the signatory page contained herein.

23.0 Confidential Information

GUC will keep trade secrets which the Bidder does not wish to be disclosed, except as provided by statute and rule of law. Each page shall be identified in boldface at the top and bottom as

“CONFIDENTIAL” by the Bidder. Cost information shall not be deemed confidential. The determination of whether a matter is confidential will be determined by North Carolina law.

24.0 Assignment

No assignment of the Bidder’s obligations or the Bidder’s right to receive payment hereunder shall be permitted without the express written consent of GUC, provided however, upon written request approved by the GUC Buyer II, solely as a convenience to the Bidder, GUC may:

- Forward the Bidder’s payment check directly to any person or entity designated by the Bidder, and
- Include any person or entity designated by Bidder as a joint payee on the Bidder’s payment check.
- In no event shall such approval and action obligate GUC to anyone other than the Bidder, and the Bidder shall remain responsible for fulfillment of all contract obligations.

25.0 Availability Of Funds

Any and all payments of compensation of this specific transaction and any continuation or any renewal or extension are dependent upon and subject to the allocation of GUC funds for the purpose set forth in this Agreement.

26.0 Governing Laws

All contracts, transactions, agreements, etc., are made under and shall be governed by and construed in accordance with the laws of the State of North Carolina.

27.0 Administrative Code

Bids, proposals, and awards are subject to applicable provisions of the North Carolina Administrative Code.

28.0 Execution

In the discretion of GUC, failure of a duly authorized official of Bidder to sign the Signatory Page may render the bid invalid.

29.0 Clarifications/Interpretations

Any and all questions regarding these Terms and Conditions must be addressed to the GUC Buyer II. Do not contact the user directly. **These Terms and Conditions are a complete statement of the parties’ agreement and may only be modified in writing signed by Bidder and the GUC Buyer II.**

30.0 Situs

The place of all contracts, transactions, agreements, their situs and forum, shall be North Carolina, where all matters, whether in contract or tort, relating to the validity, construction, interpretation, and enforcement shall be determined.

31.0 Termination of Agreement

GUC or Bidder may terminate this Agreement for just cause at any time. Bidder will be paid for all time and expenses incurred as of the termination date. Termination for just cause by either party shall be by certified letter and shall be effective thirty (30) days after signed and acknowledged receipt of said letter. Just cause shall be based on reasonable grounds, and there must be a fair and honest cause or reason for such action. The causes for termination, include, but are not limited to: (1) Bidder’s persistent failure to perform in accordance with the Terms and Conditions, (2) Bidder’s disregard of laws and regulations related to this transaction, and/or (3) Bidder’s substantial violation of the provisions of the Terms and Conditions

32.0 Force Majeure

Neither party shall be considered in default in the performance of its obligations hereunder to the extent that the performance of any such obligation is prevented or delayed by any cause, existing or future, which is beyond the reasonable control of such party. In any such event of force majeure, the parties shall advise each other of such event, and the parties shall negotiate an equitable adjustment to their respective obligations under this Agreement.

33.0 Integrated Contract

These Terms and Conditions, Instructions to Bidders, Specifications, and the selected Bidder's bid represents the entire contract between the Parties. No verbal or other written agreement(s) shall be held to vary the provisions of this Agreement.

34.0 Contract Provisions

Each of the provisions of these Terms and Conditions shall apply to the full extent permitted by law, and the invalidity in whole or in part of any provision shall not affect the remainder of such provision or any other provisions.

35.0 E-Verify

E-Verify - I understand that E-Verify is the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25 et seq. I am aware of and in compliance with the requirements of E-Verify and Article 2 of Chapter 64 of the North Carolina General Statutes. To the best of my knowledge, any subcontractors employed by me as a part of this contract are in compliance with the requirements of E-Verify and Article 2 of Chapter 64 of the North Carolina General Statutes.

36.0 Notices

Notices to the Parties should be sent to the names and addresses specified below:

Mr. Cleve Haddock
Purchasing, Buyer II
Greenville Utilities Commission
P.O. Box 1847
Greenville, NC 27835-1847

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**230 AND 115 kV CIRCUIT BREAKERS FOR
GREENVILLE POD NO. 3**

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

Respectfully submitted this ____ day of _____, 2016

OWNER:	BIDDER:
Greenville Utilities Commission 401 South Greene Street Greenville, North Carolina 27834 P.O. Box 1847 Greenville, North Carolina 27835 Mr. Cleve Haddock Purchasing, Buyer II Office: 252-551-1533 Cell: 252-551-3302	NAME
	TITLE
	STREET ADDRESS
	CITY/STATE/ZIP
	PHONE:
	FAX:
	E-MAIL:
SIGNATURE	
SUPPLIER OF PROPOSED EQUIPMENT	
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 that include *Notice to Prospective Bidders, Instructions to Bidders, General Conditions, and Technical Specifications* for the circuit breaker.
 - 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 to the location(s), as outlined in the *Instructions to Bidders*,
 - c. Do include the cost of delivery to the site at the Bidder's Risk, assuming unloading by Others, and
 - d. Have state sales tax shown as a separate item, if applicable.
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 purchase order 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 purchase order price.
8. The Owner reserves the right to accept any schedule, combination of schedules, or any portion of a schedule.
9. 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.
10. 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 required for a complete and coordinated substation. A simple statement that all necessary materials and equipment will be provided is not acceptable.
11. Title to the materials shall pass to the Owner upon delivery to the location(s) specified in the *Instructions to Bidders*.

12. 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.
13. The Bidder warrants the accuracy of all statements contained in the Bidders Qualifications, if any shall be submitted, and agrees that the Owner shall rely upon such accuracy as a condition of the Purchase Order in the event that this Proposal is accepted.
14. 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.
15. The Bidder further agrees that in case of failure on his part to accept said purchase order within ten (10) consecutive calendar days after written notice has been given of the award of the Purchase Order, the Bid Security accompanying this bid, and the monies payable thereon, shall be paid into the funds of the Owner account set aside for this project, as liquidated damages for such failure; otherwise the check or cash accompanying the *Form of Proposal* shall be returned to the Bidder.
16. 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 issue of Purchase Order.

BID SCHEDULES

BID SCHEDULE NO. 1 – Base Bid

<u>Description</u>	<u>Quantity</u>	<u>Unit Price</u>
Outdoor Power Circuit Breaker rated 230 kV nominal, 245kV Maximum, 2000 amperes continuous current carrying capacity at 60 Hertz with a minimum of 40,000 amperes symmetrical interrupting rating, 900 kV BIL, all as per Specifications, delivered to Greenville POD No. 3	1	\$ _____
	Delivery Charge	\$ _____
	Adder for five year warranty	\$ _____
	Field Service (One Day per Breaker)	\$ _____
	Sales Tax (if applicable)	\$ _____
	TOTAL BID SCHEDULE NO. 1	\$ _____

Manufacturer _____ Type _____

BID SCHEDULE NO. 1 – Delivery Schedule

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:

<u>Item</u>	<u>Delivery Schedule (Days) *</u>
Submittal of Approval Drawings	_____
Submittal of Final Drawings**	_____
Delivery of Materials ^{1**}	_____

- * After the receipt of the written order of the Owner in consecutive calendar days
- ** Allow two (2) weeks for Engineer's review and turnaround for all Drawing submittals

¹Equipment required no later than **November 2016**

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

Delivery of all items of equipment to the Owner's designated delivery point shall be made to permit unloading between the hours of 9:00 a.m. and 3:00 p.m., Monday through Thursday, holidays excluded.

BID SCHEDULE NO. 1 – Field Service Engineering (Per day rate for additional days)

Per Day Rate (including expenses) for field service engineering \$ _____/Day

Rate per one round trip (including expenses) to the site: \$ _____/Day

BID SCHEDULE NO. 2 – Base Bid

<u>Description</u>	<u>Quantity</u>	<u>Unit Price</u>
Outdoor Power Circuit Breaker rated 115 kV nominal, 123kV Maximum, 2000 amperes continuous current carrying capacity at 60 Hertz with a minimum of 40,000 amperes symmetrical interrupting rating, 550 kV BIL, all as per Specifications, delivered to Greenville POD No. 3	3	\$ _____
	Delivery Charge	\$ _____
	Adder for five year warranty	\$ _____
	Field Service (One Day per Breaker)	\$ _____
	Sales Tax (if applicable)	\$ _____
	TOTAL BID SCHEDULE NO. 2	\$ _____

Manufacturer _____ Type _____

BID SCHEDULE NO. 2 – Delivery Schedule

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:

<u>Item</u>	<u>Delivery Schedule (Days) *</u>
Submittal of Approval Drawings	_____
Submittal of Final Drawings**	_____
Delivery of Materials ^{1**}	_____

- * After the receipt of the written order of the Owner in consecutive calendar days
- ** Allow two (2) weeks for Engineer's review and turnaround for all Drawing submittals

¹Equipment required no later than **November 2016**

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

Delivery of all items of equipment to the Owner's designated delivery point shall be made to permit unloading between the hours of 9:00 a.m. and 3:00 p.m., Monday through Thursday, holidays excluded.

BID SCHEDULE NO. 2 – Field Service Engineering (Per day rate for additional days)

Per Day Rate (including expenses) for field service engineering \$ _____/Day

Rate per one round trip (including expenses) to the site: \$ _____/Day

DATA FORM

The Bidder shall submit the following data for each breaker with his proposal:

1. Manufacturer's Name _____
2. Manufacturer's model designation _____
3. Rated maximum voltage, kV rms _____
4. Continuous-current rating, Amperes _____
5. Rated short-circuit current at rated maximum voltage, kA rms _____
6. Maximum symmetrical interrupting capability, kA rms _____
7. Three-second short-time current-carrying capability, kA rms _____
8. Close and latch capability, kA rms _____
9. Temperature:
 - a) Contact temperature rise, °C _____
 - b) Ambient temperature limits, °C min. _____ max. _____
 - c) Minimum interrupting mechanism operating temperature, °C _____
10. Adjustable reclosing range, cycles _____
11. Time characteristics at rated control voltage and operating charge:
 - a) Standard opening time (from energization of trip coil to contact parting) (cycles) _____
 - b) Availability of 3 cycle opening time (Yes/ No) _____
 - c) Closing time (cycles) _____
 - d) Factory adjustment for reclosing time _____
 - e) Maximum interrupting time-cycles:
For 0-25% rated capacity _____
For 25-100% rated capacity _____
12. Low frequency insulation withstand, kV rms wet _____
kV rms dry _____
13. BIL, kV _____
14. Operating mechanism data:
 - a) Type of operating mechanism _____
 - b) Maximum ac current required by closing circuit at rated voltage:
Inrush _____ @ _____ V.
Run _____ @ _____ V.
 - c) Time required to charge mechanism to normal fully charged state: _____
15. Bushing manufacturer and type: _____
16. Current transformers:
 - a) Ratio _____
 - b) ANSI Class Accuracy _____
17. General:
 - a) Net weight _____
 - b) Guaranteed number of rated operations without maintenance:
@ Continuous Current _____
@ Rated IC _____

18. Power Supply Requirements:

- a) AC Amps: 120 Vac _____ 240 Vac _____
Motor (Start/Run): _____
- b) 125 Volts DC Amps
Close: _____
Trip (each trip coil): _____
- c) Mechanism space heater load, watts _____

19. Operator Control Interface Recommendation: _____

AFFIDAVIT OF BIDDER

The final payment of retained amount due the Bidder on account of the Purchase Order 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 Purchase Order have been satisfied and that no claims or liens exist against the Bidder in connection with this Purchase Order. 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: _____

BID BOND

KNOW ALL MEN BY THESE PRESENT, THAT WE _____

_____ as Principal, and _____

as Surety, who is duly licensed to act as Surety in North Carolina, are held and firmly bound unto the Greenville Utilities Commission of Greenville, North Carolina, as Obligee, in the penal sum of _____ DOLLARS (\$ _____) (5%

Bid Bond), lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present.

SIGNED, Sealed and dated this _____ day of _____, 2016.

WHEREAS, the said Principal is herewith submitting a Proposal for

**230 AND 115 kV CIRCUIT BREAKERS
FOR GREENVILLE POD NO. 3**

and the Principal desires to file this Bid Bond in lieu of making the cash deposit as required by the bidding documents contained herein;

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such that if the principal shall be awarded the Purchase Order for which the bid is submitted and shall accept the Purchase Order within ten (10) days after the award of same to the principal, then this obligation shall be null and void; but if the principal fails to so accept such Purchase Order as required by the bidding documents contained herein, the Surety shall, upon demand, forthwith pay to the Obligee the amount set forth in the first paragraph hereof, and upon failure to forthwith make such payment, the Surety shall pay the Obligee an amount equal to double the amount of this Bid Bond as set forth in the first paragraph hereof. Power of Attorney from the Surety to its Attorney-in-Fact is attached hereto.

Principal

By _____ (SEAL)

Corporate Surety

By _____ (SEAL)

Letter of Compliance to E-Verify for Greenville Utilities Commission

1. I have submitted a bid for contract or desire to enter into a contract with the Greenville Utilities Commission;
2. As part of my duties and responsibilities pursuant to said bid and/or contract, I affirm that I am aware of and in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):
 - a. ____ After hiring an employee to work in the United States I verify the work authorization of said employee through E-Verify and retain the record of the verification of work authorization while the employee is employed and for one year thereafter; or
 - b. ____ I employ less than twenty-five (25) employees in the State of North Carolina.
3. As part of my duties and responsibilities pursuant to said bid and/or contract, I affirm that to the best of my knowledge and subcontractors employed as a part of this bid and/or contract, are in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):
 - a. ____ After hiring an employee to work in the United States the subcontractor verifies the work authorization of said employee through E-Verify and retains the record of the verification of work authorization while the employee is employed and for one year thereafter; or
 - b. ____ Employ less than twenty-five (25) employees in the State of North Carolina.

Specify subcontractor: _____

_____ (Company Name)

By: _____ (Typed Name)

_____ (Authorized Signatory)

_____ (Title)

_____ (Date)

GREENVILLE UTILITIES COMMISSION

By: _____
Anthony C. Cannon

Title: General Manager/CEO
(Authorized Signatory)

Date: _____

Attest: _____

Name (Print): Amy Carson Quinn

Title: Executive Secretary

Date: _____

(OFFICIAL SEAL)

COMPANY NAME:

By: _____

Name (Print): _____

Title: _____
(Authorized Signatory)

Date: _____

Attest: _____

Name (Print): _____

Title: Secretary

Date: _____

(OFFICIAL SEAL)

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

By: _____
Jeff W. McCauley

Title: Chief Financial Officer

Date: _____

APPROVED AS TO FORM AND LEGAL CONTENT:

By: _____
Phillip R. Dixon

Title: General Counsel

Date: _____

INSERT

ADDENDA / CLARIFICATIONS / BULLETINS

Instructions to Bidders, 5. Bulletins and Addenda

**GREENVILLE UTILITIES COMMISSION
GREENVILLE, NORTH CAROLINA**

**230 AND 115 kV CIRCUIT BREAKERS FOR
GREENVILLE POD NO. 3**

TECHNICAL SPECIFICATIONS

1.0 Scope

- 1.1 Greenville Utilities Commission of Greenville, North Carolina, is procuring one (1) 230 kV and three (3) 115 kV circuit breakers for Greenville POD No. 3 to use as needed on their electrical system. These *Technical Specifications* describe the 230 and 115 kV circuit breakers required to erect the substation.
- 1.2 The Bidder's work shall include furnishing all equipment and materials so represented by these *Technical Specifications*, and as set forth in the Bid Schedule(s). The Owner reserves the right to select any combination of alternate schedules as may be allowed. The Owner also reserves the right to reject any or all bids.
- 1.3 Quotations for the breaker(s) shall include the Bidder's risk of delivery, as described in the *Instructions to Bidders*.

2.0 General Conditions

- 2.1 All materials and equipment shall be new, manufactured in the United States or Mexico, in compliance with RUS Information Publication 202-1, "List of Acceptable Material for RUS Systems."
- 2.2 These Specifications describe the type, size, and characteristics of the various materials and equipment required to be furnished.
- 2.3 Strict adherence to these general Specifications and Drawings is requested to facilitate checking and consideration of the Proposal.
- 2.4 It is the intent of these Specifications that the specified equipment 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 Bidder.
- 2.5 Station power available at the substations will be 120/240 volts, 60 Hz, single-phase. Control dc voltage at the substations will be 125 volts. All equipment shall coordinate with these voltages as appropriate.
- 2.6 Proposals shall include the following:
 - 2.6.1 Catalog numbers, manufacturer, ratings, characteristics, types, sizes, etc., of all major removable materials and equipment included. A simple statement that all necessary materials and equipment will be provided is not satisfactory.
 - 2.6.2 Performance data for the several items as set forth in these Technical Specifications.
 - 2.6.3 The Bidder shall state in his Proposal the manner in which the breakers will be shipped. Units shall be shipped with bushings installed.
 - 2.6.4 Prices shall include the cost of delivery to the substation sites with unloading performed by the Owner, in accordance with the *Instructions to Bidders*.

3.0 Special Conditions

- 3.1 All materials and equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner; and the Bidder 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 Bidder.

- 3.2 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 which does not comply with the Specifications for materials and equipment and/or warranties of the Bidder and 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 (1) year of date of delivery of the materials and equipment. Upon any such rejection, the Bidder shall replace the rejected materials and equipment with materials and equipment complying with the Specifications for 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 Bidder to so replace rejected materials and equipment, the Owner may make such replacement; the cost and expense thereof shall be paid by and recoverable from the Bidder.
- 3.3 The breaker(s) to be provided herein shall include a full warranty on the complete unit(s) together with all parts. The Bidder shall include a full warranty. Warranty shall cover complete breaker together with all parts. This warranty shall extend for not less than twelve (12) months from date of initial energization, or up to eighteen (18) months from date of delivery, whichever is acceptable.
- 3.4 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.

4.0 Standards

All equipment and materials covered by these Specifications and all test 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, NESC, IEEE, and OSHA. Where the term "Standards" is used in the Specifications, it shall be understood to refer to the above Standards. Breaker must also meet or exceed the ASME Boiler and Pressure Vessel Code, as applicable.

5.0 Drawings and Documentation

All Drawings and documentation shall be labeled with GREENVILLE UTILITIES COMMISSION and the appropriate substation name, and submitted directly to the Owner's Engineer, Booth & Associates, LLC, 5811 Glenwood Avenue, Suite 109, Raleigh, North Carolina 27612, Attention: Michael L. Clements, PE.

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 four (4) copies each of outline, current transformer (CT) nameplate, ac and dc control elementary, bushing outlines, control wiring, CT Secondary Exciting Curves and Ratio Correction Factor curve drawings.

- 5.1.3 The Outline Drawing shall show dimensions of equipment, including bushings, base anchor dimensions, conduit entrance panel location, and all other important external features. These Drawings shall show weights, vertical and horizontal dimensions, bushing catalog numbers and ampere ratings, description of top bushing terminals, and arrangement of all external accessory devices.
- 5.1.4 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 of responsibility to meet original shipping promise on the basis of Owner being allowed two (2) weeks for approval.
- 5.1.5 The Owner may require a second submittal of Approval Drawings if, in the opinion of the Owner's Engineer, such is required due to the extent of changes required on the first submittal. If an extension of time is required due to a protracted drawing approval process, the price will remain as quoted for the quoted delivery.
- 5.1.6 Receipt of Approval Drawings by the Bidder constitutes authorization for manufacture only, based upon the corrections found thereon.
- 5.1.7 Approval drawings may be submitted electronically in AutoCad® 2010 format or newer in lieu of paper copies.
- 5.1.8 All drawings shall be labeled with GREENVILLE UTILITIES COMMISSION and the appropriate substation name.

5.2 Final Drawings and Documentation

- 5.2.1 Final Drawings are to be "certified" and supplied 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 and relay panel front view.
 - 3) Details of bushing and bushing terminal connectors.
 - 4) Diagram of bushing current transformers, connection, and 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 housing and conduit entrance location.
 - 7) Panel connection diagram showing exact connection and location for all components furnished.
 - 8) AC and DC elementary circuit diagrams for all relay and control equipment furnished.
 - 9) Wiring control and schematic diagrams, point-to-point.
 - 10) Renewal parts catalog.
 - 11) Two (2) copies of certified test reports.
- 5.2.2 Contingent upon Approval Drawing review and product manufacture, the Bidder shall issue final documentation as follows:
 - 1) Two (2) complete sets of all Drawings, revised to "as-built" status, released on two (2) separate CD-ROMs, compatible with AutoCad® 2010 or newer.

- 2) Four (4) copies of applicable instruction books, including one (1) print each of all drawings representing physical and electronic details as furnished per Paragraph 5.2.1 above.
- 3) Two (2) copies of certified test reports corresponding to functional performance measurements after final assembly.

6.0 **Shipping and Delivery**

- 6.1 Equipment shall be shipped to the designated site as outlined in the *Instructions to Bidders*. The Bidder shall ship via open-top truck or open trailer for ease of unloading by Owner's personnel using a crane or derrick truck.
- 6.2 Before shipment, circuit breaker(s) shall be completely assembled to determine that all parts fit properly. Parts removed for shipment shall be marked so as to permit easy identification when reassembling.
- 6.3 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.
- 6.4 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:
 - 6.4.1 Fourteen (14) consecutive days prior notification of test so that the Owner may have a representative present for witness of the test.
 - 6.4.2 Furnishing of the requisite number of copies of the final drawings as called for in the *Technical Specifications*.
 - 6.4.3 Coordination of manufacturing and delivery with Owner's construction schedule as may be noted in these Specifications.
 - 6.4.4 **Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to all deliveries.**
 - 6.4.5 **Under no circumstances** will the Owner accept deliveries arriving on Saturdays, Sundays, or nationally observed holidays. The Bidder shall take precautions as necessary to avoid scheduling such deliveries. Deliveries will be received between 9:00 a.m. and 3:00 p.m., Monday through Thursday only.

7.0 **Manufacturer's Field Representative**

- 7.1 The manufacturer shall provide the services of a Field Service Engineer to assist the Owner with pre-service inspection and assembly of the specified equipment. These prices shall be included in the base bid as a separate line item in the Bid Schedules. The manufacturer shall provide these services at the per diem rate quoted by the manufacturer in the Bidder's Proposal.
- 7.2 Services provided by the Field Engineer shall include all pre-service inspection procedures outlined in the manufacturer's literature. The Field Service Engineer may also be required by the Owner to perform a series of tests including high potential testing of interrupters, breaker mechanism travel, synchronization of group operation, current transformer ratio tests, and current polarity tests.
- 7.3 The Owner will be responsible for issuing an advance request for such services. The Owner shall specify those tests desired in addition to standard pre-service inspection procedures. The manufacturer shall be responsible for providing an estimate of the amount of field service time required to perform the requested duties, including all travel expenses. If the bidder fails to include all costs, an amount of \$5,000 per unit will be used for evaluation purposes.

8.0 Power Circuit Breaker Rating

8.1 General

The power circuit breaker(s) shall be suitable for outdoor operation and shall be dead tank, three (3) pole, and single throw. The breaker(s) shall consist of an outdoor dead tank, frame-mounted power circuit breaker having a weatherproof mechanism and relay cabinet with hinged panel containing the control wiring. Breaker(s) shall be rated as follows:

Schedule No. 1

SF₆ Breaker, rated 230 kV, 2000 amperes continuous current carrying capacity at 60 Hertz with a minimum of 40,000 amps symmetrical interrupting rating and furnished with specified accessories.

Schedule No.	Max. Rated Voltage KV, rms	Rated Continuous Current @ 60 Hz Amperes, Rms	Rated Interrupting Time Cycles	Max. Sym. Interrupting Capability and Rated Short-Time Current kA, rms	Closing and Latching Capability kA, rms
1	245	2000	3	40	108

Schedule No. 2

SF₆ Breaker, rated 115 kV, 2000 amperes continuous current carrying capacity at 60 Hertz with a minimum of 40,000 amps symmetrical interrupting rating and furnished with specified accessories.

Schedule No.	Max. Rated Voltage KV, rms	Rated Continuous Current @ 60 Hz Amperes, Rms	Rated Interrupting Time Cycles	Max. Sym. Interrupting Capability and Rated Short-Time Current kA, rms	Closing and Latching Capability kA, rms
2	123	2000	3	40	82

8.2 Seismic Criterion

The breaker(s) shall be designed to withstand seismic events for the applicable seismic zone according to the Uniform Building Code to the extent that a force applied in the direction of least resistance to that loading will not cause the breaker tank(s), cover, frame, bushings, control cabinet, contact assembly, or fastenings to be overstressed.

8.3 Ambient Temperature and Humidity

The breaker(s) shall be suitable for operation at an ambient temperature of -30°C (-22°F). Maximum ambient temperature rating shall be 50°C (122°F). Humidity rating shall be up to 100 percent.

8.4 Altitude

The breaker(s) will be installed at an altitude below 3,300 feet.

8.5 Wind and Ice Loading

The breaker(s) shall be designed to withstand wind and ice loading for the NESC heavy loading district and using the extreme wind with no ice loading criteria, utilizing the governing loading case.

8.6 Assembly

The proposed equipment shall be completely assembled, wired, adjusted, and tested at the factory before shipment.

Schedule Nos. 1 and 2 breakers shall be designed so that no SF₆ seals will have to be made in the field. However, it shall be permissible for the breaker to be brought up to final pressure in the field by use of a gas cylinder furnished by the Bidder.

8.7 Rating

The unit for Schedule 1 shall be rated 230 kV nominal, 245 kV maximum 2000 ampere continuous 900 kV BIL, capable of energizing or de-energizing a 230 kV transmission line without prestrike or restrike. The unit shall be capable of application as the high-side interrupting device for a transformer bank including interruption of high-frequency transient recovery voltage (TRV) conditions associated with low-side faults per IEEE C37.06.1.

The units for Schedule 2 shall be rated 115 kV nominal, 123 kV maximum 2000 ampere continuous 550 kV BIL, capable of energizing or de-energizing a 115 kV transmission line without prestrike or restrike. The unit shall be capable of application as the high-side interrupting device for a transformer bank including interruption of high-frequency transient recovery voltage (TRV) conditions associated with low-side faults per IEEE C37.06.1.

8.8 Dielectric Requirements

The completely assembled breakers, including porcelains, current transformers, and all other appurtenances shall be designed and tested to withstand the voltages tabulated below. The breakers shall be able to withstand tabulated values without puncture or flashover with contacts either closed or fully open:

Item	Schedule No. 1
Full Wave BIL, kV rms	900 kV
60 Hertz 10-second withstand, kV rms wet	350 kV
60 Hertz 1-minute withstand, kV rms dry	425 kV
Two (2) microsecond chopped wave impulse crest	1,160 kV

Sch. No.	Max. Rated Voltage KV, rms	Low Frequency 1 Minute Dry rms KV	Low Frequency 10 Second Wet rms KV	Full Wave BIL: kV, Crest	Interruptor BIL kV, Crest	Minimum Creepage Distance of External Insulation to Ground, Inches
1	245	425	350	900	N/A	140

Item	Schedule No. 2
Full Wave BIL, kV rms	550 kV
60 Hertz 10-second withstand, kV rms wet	230 kV
60 Hertz 1-minute withstand, kV rms dry	260 kV
Two (2) microsecond chopped wave impulse crest	710 kV

Sch. No.	Max. Rated Voltage KV, rms	Low Frequency 1 Minute Dry rms KV	Low Frequency 10 Second Wet rms KV	Full Wave BIL: kV, Crest	Interruptor BIL kV, Crest	Minimum Creepage Distance of External Insulation to Ground, Inches
2	123	260	230	550	N/A	78.3

8.9 Interrupting

The breaker(s) shall have standard interrupting capacities as listed in the Proposal section for each schedule, and in paragraph 8.1. The breaker(s) shall interrupt the arc within three cycles or less (at 60 Hertz) measured from the instant the trip coil is energized with normal voltage. Three-cycle or less interruption shall be achieved over a range of 25 percent to 100 percent of rated interrupting capacity.

The breaker(s) shall be capable of interrupting the full rated fault current at least twice in succession without intentional delay (OCO).

9.0 Equipment Details

9.1 Applicable Codes and Standards

In addition to the requirements set forth herein, each breaker and auxiliary and accessory equipment furnished shall be designed, manufactured, and tested in accordance with the current issue of the standards of IEEE C37, ASME, NEMA 56 4, NEMA 104, and IEEE. If any conflict arises between the standards of IEEE and NEMA, the standards of IEEE shall govern.

9.2 Construction

9.2.1 The insulation structure of the breaker(s) shall meet the requirements of Section 6 of IEEE C37.12, latest revision.

9.2.2 The structural features of the breaker(s) shall meet the requirements of Section 8 of IEEE C37.12, latest revision, including the rated short-circuit current and seismic events as described in Section 8 of these Specifications.

9.2.3 Original and renewal parts shall be so manufactured that they can be assembled in the field without undo fitting.

9.2.4 The main breaker contacts shall be designed to have adequate thermal and current-carrying capacity for carrying full-rated current without exceeding the allowable temperature rise as specified in IEEE C37. They shall be designed to have long life so that frequent replacement or maintenance will be unnecessary. The surfaces of either or both moving and stationary arcing contacts which are exposed directly to the arc shall be faced with suitable arc-resisting material.

9.2.5 All surfaces of steel parts (framework, tank, etc.) shall be cleaned in accordance with the Bidder's standards to remove dirt, scale, and grease prior to painting. This shall be immediately followed by an application of priming of rust-inhibitive paint and the necessary base coat. All steel surfaces shall have a

minimum of 3 mils of paint. Paint finish shall be provided to withstand EEI functional requirements.

The exterior surfaces 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 parts or zinc chromate-plated parts will be allowed.

- 9.2.6 Color specification shall be ANSI #70 light gray, meeting the EEI functional requirements.
- 9.2.7 All viewing windows for viewing gauges, relays, and indicators shall be Lexan.
- 9.2.8 One (1) painted or galvanized, welded steel supporting framework with two (2) ground terminals for 4/0 to 500 kcmil copper grounding cable shall be provided for each breaker. The connections are to be located on diagonally opposite corners at the bottom of the frame with NEMA 2-hole (one and three-fourths inch (1-3/4") spacing) and mounted with one-half inch (1/2") - 13 NC thread bolts. Framework for Schedule No. 1 shall be equipped to support exposed live parts to a height of at least fifteen (15) feet above grade. Overall height shall not exceed twenty (20) feet. Framework for Schedule No. 2 shall be equipped to support exposed live parts to a height of at least twelve (12) feet above grade. Overall height shall not exceed seventeen (17) feet.
- 9.2.9 Bidder shall provide six (6) bushings or enclosures, standard creepage, with external terminals including flat spade connections with NEMA four-hole drilling either built in or furnished separately for each breaker. The bushings shall be rated to match the full capacity of the breaker. The terminal connectors shall be rated for the bushing continuous current capacity.

Bushings or enclosures shall be light gray, constructed of high-strength wet-process porcelain, and rated at circuit breakers Full-Wave withstand BIL.
- 9.2.10 All metal cabinets attached to the breaker shall be solidly grounded to the breaker frame.
- 9.2.11 The circuit breaker(s) shall be completely assembled, wired, adjusted, and tested at the factory before shipment.
- 9.2.12 The breaker(s) shall be designed so that no gas-handling service trailer or gas-recovery facilities are required, and so that no SF₆ seals will have to be made in the field. However, it shall be permissible for the breaker(s) to be brought up to final pressure in the field by use of a gas cylinder furnished by the Bidder.

9.3 Operating Mechanisms

- 9.3.1 The operating mechanisms shall consist of a high-speed electrically trip-free and mechanically trip-free pneumatic, hydraulic, pneuhydraulic, or charged spring-operated device. The mechanism shall operate to open the three phases of the breaker simultaneously. The operating mechanism shall not permit tripping from any position except fully closed. In the event that any pole of the breaker fails to close, the mechanism shall operate to trip all poles. Pneumatic system pressure gauge and window, low-pressure alarm, governor, and cut-out switch shall be furnished.

The stored energy mechanism shall be capable of at least one open-close-open operation without recharging. The time for the motor to recharge the mechanism shall not exceed ten (10) seconds. The charging motor shall not draw more than twenty (20) amperes during the charging operation.

- 9.3.2 The breaker(s) shall be equipped for 125 volt dc tripping and closing. Two (2) separate and independent trip coils (or set of coils) shall be furnished per breaker so the breaker can be tripped independently from two separate and independent relaying sources. The trip coils and all necessary circuits, including pressure

switches and reset devices, shall be provided on the mechanism. Tripping current shall not exceed 20 amperes total.

- 9.3.3 Each tripping circuit shall operate satisfactorily over a voltage range of 60% to 115% of nominal dc voltage. Where more than one trip coil is furnished on each trip for primary relaying and/or back-up relaying, the trip coils associated with the same tripping circuit shall be series connected. Parallel connection is not acceptable.
- 9.3.4 Operating mechanism auxiliary switches of the rotary type shall be mechanically coupled to the mechanism providing a positive indication of the position of the main contacts of the breaker. Each operating mechanism shall be equipped with a 20-stage auxiliary switch with ten (10) "a" and ten (10) "b" contacts for customer use only in addition to those normally required for breaker operation and light indication functions. All spare auxiliary switch contacts and unused contacts on control devices shall be wired to terminal blocks in the control cabinet, even if the contacts are not used.
- 9.3.5 A Veeder-Root type operation counter, visible from outside of mechanism housing shall be provided.
- 9.3.6 For maintenance purposes, a manual tripping device and a manual closing device shall be provided on the outside of each breaker.
- 9.3.7 A latch-checking switch shall be provided on mechanism.
- 9.3.8 Emergency trip control, mechanically linked to mechanism trip latch shall be provided. The manual trip lever shall be externally accessible to operating personnel and upon operation, shall set an interlock (69) to block electrical closing. The interlock shall be manual reset only. The interlock shall have additional poles to provide interlock status to annunciator.
- 9.3.9 Mounting facilities for application of a time travel device and instructions for timing of the breaker shall be furnished with the breaker.
- 9.3.10 A ten (10) point annunciator, minimum, shall be provided for alarming all breaker alarms, tripping, or any breaker trouble. Annunciator to be mounted in such a manner as to facilitate future connections to rear of device. See Section 9.18 for annunciator details.

9.4 Gas Insulation and Interruption Systems

- 9.4.1 The breaker, if closed, shall remain closed and locked and provide an alarm if the air or gas pressure should decrease to the point where the breaker is not capable of a successful operation at rated interrupting capabilities. If open, the breaker shall lock open and provide an alarm. The detection schemes for these air and/or gas pressure conditions shall be fail safe.
- 9.4.2 Each breaker shall be provided with a means of maintaining the appropriate dryness and pressure of the dielectric gas.
 - a. The equipment furnished above, including the air and gas storage systems, shall have ample capacity for a minimum of one open-close-open operation without intentional delay. The Bidder shall state time required to restore normal pressure. In addition, each breaker shall have the capability of one open-close-open operation after loss of control power before the interlock switch opens to prevent the breaker from closing due to inadequate pressure to insure interruption of a rated capacity fault.
 - b. A gas pressure manifold valve assembly shall be provided and shall be easily accessible for routine maintenance checks.

- c. EMGLO compressors are not acceptable.
- d. Air and gas valves and connections shall be furnished to permit unit servicing as far as practical.
- e. All tubing used for SF₆ gas-pressure monitoring and for air pressure from the air compressor discharge outlet to the rest of the air system shall be stainless steel. Copper tubing is not acceptable.

9.4.3 The gas insulation system shall be provided with a temperature-compensated, gas-monitoring system which provides an alarm circuit, a command signal, and a blocking signal. Each device using SF₆ gas under pressure for insulating purposes shall be equipped with dial-type pressure and temperature gauges. Provisions shall be made for remote alarm indication. For breaker pole unit interconnected devices, a centrally located gauge and alarm device shall be provided. Location shall be subject to Owner's approval.

9.5 Mechanism Housing and Cabinet

9.5.1 The mechanism housing and cabinet shall be furnished and mounted on the breaker frame. The centerline of the mechanism housing shall not exceed sixty inches (60") above grade level.

9.5.2 The mechanism housing, cabinet, and cabinet door(s) shall be weatherproof and fabricated of sheet metal of sufficient thickness to prevent warping or buckling. The cabinet door(s) shall be vertically hinged and arranged to permit ready access to the inside of the cabinet housing. A continuous stainless steel hinge shall be used on cabinet door(s) or sufficient reinforcement of cabinet door(s) must be provided to prevent warping and buckling of door hinge side. The door shall have a cabinet-type 3-point latching device with a locking device in the closed position and shall include provisions for attaching a padlock with a 3/8-inch shackle diameter to the locking device. All doors shall open wide (135°), giving full access to interiors. The mechanism housing may be in a separate compartment with bolted covers, which can be removed and replaced without undue difficulty.

9.5.3 The cabinet shall be provided with a removable plate in the bottom for conduit entrances (to be drilled by others). Location and dimensions shall be shown on the drawings.

9.5.4 One or more 240 volt ac heaters for continuous operation shall be furnished to prevent moisture condensation in the cabinet and housing. Additional heaters with thermostatic control shall be provided to maintain normal operation of the cabinet and housing at air temperature to -30°C (-22°F). All heaters shall be equipped with guards, and the 240-volt electric terminals of the heaters shall also be covered.

9.5.5 A holder shall be furnished and mounted on the inside of the cabinet to store the Final Drawings and instruction book.

9.5.6 Convenience 120-volt GFCI receptacles and lamps shall be provided in the main cabinets, complete with fuses or equivalent. Light shall have on/off manual switch plus door switch and shall be protected by a guard.

9.5.7 The control panel shall be dead front with all switches, breaker, etc., enclosed.

9.6 Wiring

9.6.1 All power wiring shall be made with #10 AWG tinned copper wire or larger sized wire. The primary insulation jacket of all wiring shall be 600-volt; 90°C; and water, oil, and flame resistant. Control wiring shall be 45 or 65 stranded cable, Type SIS, 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. All

current transformer leads are to be #10 AWG tinned copper or larger in size.

- a. Power wiring shall be sized as required in accordance with the National Electrical Code.
 - b. All connections for wiring shall be made using silicon bronze, split-type lockwashers, unless the terminating device is equipped with another inherently locking-type connector (e.g., screws with a ringed contact surface or captive square lockwashers).
 - c. All wires shall be identified at each end with legible permanent labels depicting termination location at opposite end.
 - d. Wiring connections between fixed and hinged sections shall be minimum 41-strand, flexible wire.
 - e. Seven-stranded control wire is not acceptable.
 - f. All terminal connections for conductor sizes #10 AWG and smaller shall be made with pre-insulated, full ring tongue, crimp-type lugs. Lugs shall be AMP, Inc. "Pre-Insulated Diamond-Grip" (PIDG) with nylon sleeves. Spade-type terminals or slip-on connectors are not acceptable.
 - g. All terminal connections for conductors sizes #2 AWG through #9 AWG shall be made with Burndy Insulug Type YAEV.
 - h. 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 YAD. (Single-hole lugs may be used only where necessary.)
 - i. High-temperature insulated wire shall be used for connections to heaters.
- 9.6.2 Grommets shall be provided for all openings in metal barriers used for wiring.
- 9.6.3 Uninsulated exposed conductor or terminal lug shall not extend beyond the sides of the terminal block or its insulating barriers.
- 9.6.4 All leads for multi-ratio current transformers shall be wired to shorting-type terminal blocks in the control cabinet. If junction boxes are required in wiring between current transformer and control cabinet, terminal blocks or splicing sleeves shall be used for wiring connections. In-line type disconnecting terminals such as TE Connectivity (AMP) No. 32448 will not be acceptable.
- 9.6.5 If accidental short circuiting of certain wires can result in malfunction of equipment such as closing or tripping of the breaker, these wires shall not be terminated on adjacent terminal block points.
- 9.6.6 All wiring shall be neat and orderly.
- 9.6.7 The close circuit shall be wired out to two (2) terminal block points to provide external blocking of any close function with contact from the substation lockout relay.
- 9.6.8 The trip circuit shall be wired out to two (2) terminal block points to provide external tripping from the substation lockout relay.
- 9.6.9 No more than two (2) wires per terminal point are permissible.

9.7 Terminal Blocks and Fuseholders

- 9.7.1 Molded-type terminal blocks, rated 600 volt, 30 amperes, for all control connections shall be provided. Terminal blocks with self-contained pressure-type connectors are not acceptable.
- 9.7.2 General Electric Type EB-25 or Marathon Type 1500 STD terminal blocks shall be provided furnished with white marking strips for identification of terminal

wires for all connections except current transformer. Modular assembly style terminal blocks are not acceptable.

- 9.7.3 For current transformer leads, General Electric Type EB-27 or Marathon Type 1506SC shorting terminal blocks shall be provided.
- 9.7.4 Each block shall be equipped with at least three shorting screws. A separate shorting type terminal block shall be provided for each set of current transformer leads.
- 9.7.5 General Electric Type EB-1 or Marathon Catalog No. 1422123 power terminal blocks shall be provided for landing of Owner's single-phase, 3-wire, 240/120 volt ac control power leads and 125 volt dc control power leads.
- 9.7.6 A minimum of 15 percent spare (but not less than 12 points) terminal points shall be provided in the mechanism housing and cabinet. These terminal points shall be furnished with all connection hardware.
- 9.7.7 Fuseholders shall be Marathon RF30AXS (X = 2 for 2 poles, 3 for 3 poles, etc.) series fuseblocks with hard-gripping fuse clips (reinforcing member) and straight slotted silicon bronze screws on each terminal, or approved equivalent.
- 9.7.8 A single-throw disconnect switch or equivalent shall be installed on all fuseholders.

9.8 Current Transformers

- 9.8.1 Current transformers shall be considered part of the breaker and shall be coordinated with the breaker to meet all currents, voltages, and mechanical requirements of the breaker for steady state, surge, and fault conditions.
- 9.8.2 Multi-ratio bushing-type current transformers with relaying accuracy 10C800 suitable for relay and indicating instrument application, shall be wired to shorting terminal blocks in the mechanism and relay cabinet. The current transformer leads are to be permanently connected and properly identified to the shorting terminal blocks in the control cabinet. Each CT shall be wired to a separate terminal block; sharing of terminal blocks by different CTs shall not be allowed. Taps shall be provided in accordance with Table 10 of IEEE C57.13.
- 9.8.3 Multi-ratio current transformers shall be furnished as listed on bushing Nos. 1, 3, and 5, and bushing Nos. 2, 4, and 6, rated C800 accuracy class, suitable for relay and indicating instrument application, all wired to separate 6-point terminal blocks in the mechanism and relay cabinet. The current transformer leads are to be permanently connected and properly identified to the shorting terminal blocks. Terminal six of each of the terminal blocks is to be connected together, with one of the terminals tied to ground.

Schedule Nos. 1 and 2

- Two (2) sets of 1200/5-ampere MR current transformers of relaying accuracy Class 10C800 on each source-side bushing (1-3-5).
 - Two (2) sets of 1200/5-ampere MR current transformers of relaying accuracy Class 10C800 on each load-side bushing (2-4-6).
- 9.8.4 All current transformers shall have a continuous thermal rating of 2.0 with 10 ampere continuously rated secondary.

9.9 Nameplates

- 9.9.1 Nameplates and their mounting screws shall be of noncorrosive metal and mounted in positions where they can be safely and easily read with the equipment in service.
- 9.9.2 Nameplates for the breaker shall include as a minimum the information required by IEEE C37.

9.9.3 Nameplates for current transformers which are mounted remote from the breaker shall be mounted on the current transformer secondary housing. Nameplates for bushing-type current transformers which are mounted in the breaker tank shall be mounted in the breaker control cabinet adjacent to their CT terminal blocks. These nameplates shall include information required by IEEE C37.

9.9.4 All relays, switches, contactors, starters, and other devices shall be identified by nameplates.

9.10 Breaker Position Indicators

9.10.1 Mechanical-type breaker position indicators, positive as far as practical, shall indicate open and closed positions of the breaker; shall be clearly visible from the ground at reasonable distances; and shall not require opening of doors or special lighting. These shall be independent of control voltage.

9.10.2 Breaker position indicators shall be supplemented with LED indicating lamps operating on dc control voltage. Lamps shall be applied as follows:

- One green lamp to indicate that all three poles are open. This lamp shall be connected in the dc close circuit. The lamp(s) shall be located in the control cabinet.
- One red lamp to monitor each trip circuit coil and to indicate that any breaker pole is in the closed position. This lamp shall be connected in the dc trip circuit. The lamp(s) shall be located in the control cabinet.

9.11 Terminal Connectors

Tin-plated terminal connectors, NEMA 4-hole spade type, shall be furnished with the breaker. They shall be adequately shielded and corona free.

9.12 Pressure Switches

9.12.1 Devices for all uses, air and gases, for automatic control of pressure, for alarms, and for safeguard cutoffs, shall be of highest quality and proven reliability.

9.12.2 Contacts, ungrounded, shall be fully insulated and compatible with their associated equipment; those used in dc control circuits shall be suitable for 125 Vdc and shall withstand the full standard ac hi-pot test voltage required of switchboard control wiring.

9.12.3 All pressure switches shall have multiple electrically independent contacts and shall be furnished as needed:

- To control compressors and maintain normal air pressure.
- To alarm when pressure drops too low to permit full duty cycle operation.
- To cut off closing if pressure is insufficient for safe and satisfactory closing.
- For interlocking and safeguards to insure satisfactory performance of the three phases in unison.

9.12.4 A gas pressure manifold valve assembly shall be provided and shall be easily accessible for routine maintenance checks of pressure switches.

9.12.5 All pressure switches shall have dust covers.

9.12.6 All switch gauges shall have indicating dials.

9.13 Main Pole Interconnection and Adjustment

The main poles of the breaker shall be electrically or pneumatically interlocked. The design and arrangement shall be such that the interrupting contacts may be readily adjusted to touch and to part essentially simultaneously; and other adjustments may be made as are necessary for the proper operation of the breaker.

The above requirement for adjustability will not be necessary if proper settings are fixed as part of the manufacturing process and not subject to drifting from the proper points.

9.14 Auxiliary Equipment and Accessories

- 9.14.1 Each breaker shall be equipped with an operation counter.
 - 9.14.2 General Electric Type HGA, Westinghouse Type SG, or equivalent relays shall be provided for loss of voltage on all ac and dc circuits; low mechanism working pressure; low SF₆ pressure; and for blocking, tripping, or closing of the breaker.
 - 9.14.3 Auxiliary relays, which perform either a trip or close, start-or-stop function, shall not be mounted on a hinged panel or door. All auxiliary relays shall have dust covers.
 - 9.14.4 All alarm contacts shall be suitable for 125 volts dc, with separate wiring from each device to terminal blocks in control cabinet.
 - 9.14.5 Mounting facilities shall be furnished for a Doble Type MV motion velocity device.
 - 9.14.6 Breaker shall be complete with compressor as required.
 - 9.14.7 Two normally open contacts from the breaker closing relay (52X) and one normally closed contact of the anti-pump relay (52Y) shall be wired to terminal block for use by the Owner. Either side of each contact shall be independently wired to the terminal block (two wires per contact). The 52Y relay coil shall be rated for continuous operation at 125 volts dc. Contact interruption rating for inductive circuit shall be 3 amperes at 125 volts dc. The normally open 52X contacts shall remain closed for a minimum of 10 cycles during a close operation.
 - 9.14.8 Motors shall be 240 Vac. They shall be drip-proof, with Class B insulation. They shall have sufficient capacity for all conditions of starting and continuous operation which their pump or compressor may impose, with temperature rise not to exceed 90°C above an ambient of 40°C and a service factor of 1.15. Each motor shall be equipped with its own thermal protection.
 - 9.14.9 Breaker shall include twenty (20) stage convertible auxiliary switches, directly connected to the main operating linkage. This switch shall be made consistent with the requirements of Section 9.3.4 of these Specifications.
 - 9.14.10 Necessary SF₆ gas service connection fittings shall be provided.
 - 9.14.11 Gas vent, as required, shall be provided.
 - 9.14.12 Provision for travel recorder shall be included.
 - 9.14.13 Breaker shall be equipped with a control switch, or approved equivalent local trip and close device. Control Switch, if used, shall be Electroschwitch Series 24, Catalog No. 2457D with pistol grip spring return handle.
- NOTE: Associated breaker position lights are specified in 9.10.2.

9.15 Piping and Conduit

Furnish all necessary individual storage tanks, piping, valves, and conduit for the complete assembly of the breaker. Storage tanks required shall be manufactured to the requirements of the ASME Code Section VIII Division 1 and so stamped and registered with the National Board of Registration. Any safety and/or safety relief valves approved for service on these tanks shall also be constructed in compliance with the latest requirements of the ASME Boiler and Pressure Vessel Code. These valves shall also be stamped and registered with the National Board of Registration.

9.16 Special Tools and Lifting Devices

- 9.16.1 Furnish two sets of all special tools and hardware required for removal and maintenance of the breaker.
- 9.16.2 Furnish any special lifting devices required for installation and or maintenance of the breaker and/or their accessories.
- 9.16.3 Furnish lifting eyes and lugs for vertically lifting the entire breaker assembly.

9.17 Spare Parts

The Bidder shall furnish with the Proposal a recommended spare parts list and spare parts price list, applicable to each breaker described in the Proposal. This list shall include, but is not limited to, the following:

- a. Complete interrupter for one pole.
- b. One full-capacity-rated bushing.
- c. All pressure-limit switches, gauges, and alarm relays.
- d. Hydraulic pump and motor, if applicable.
- e. Pneumatic pump and motor, if applicable.
- f. One close coil and one trip coil.
- g. One each of each type of electric motor.
- h. Three each of each type of gasket.
- i. Three absorber sets, if used.
- j. One each of each type of relay coil.
- k. One heater element.

The above requirements are for spare parts and prices in the Proposal, but it is not the intention of this Specification that these parts be furnished as part of the Purchase Order.

9.18 Alarms

9.18.1 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 125 Vdc power supply, 125 Vdc control voltage, and have 14 digital inputs and 7 digital outputs. The full model number shall be 2533012100XA2X0.

9.18.2 The following typical alarms are to be identified:

- a. SF₆ Gas Pressure Low Alarm
- b. SF₆ Gas Pressure Lockout
- c. Trip Coil Monitors (TC1 & TC2)
- d. Loss of AC
- e. Loss of DC
- f. Motor alarms

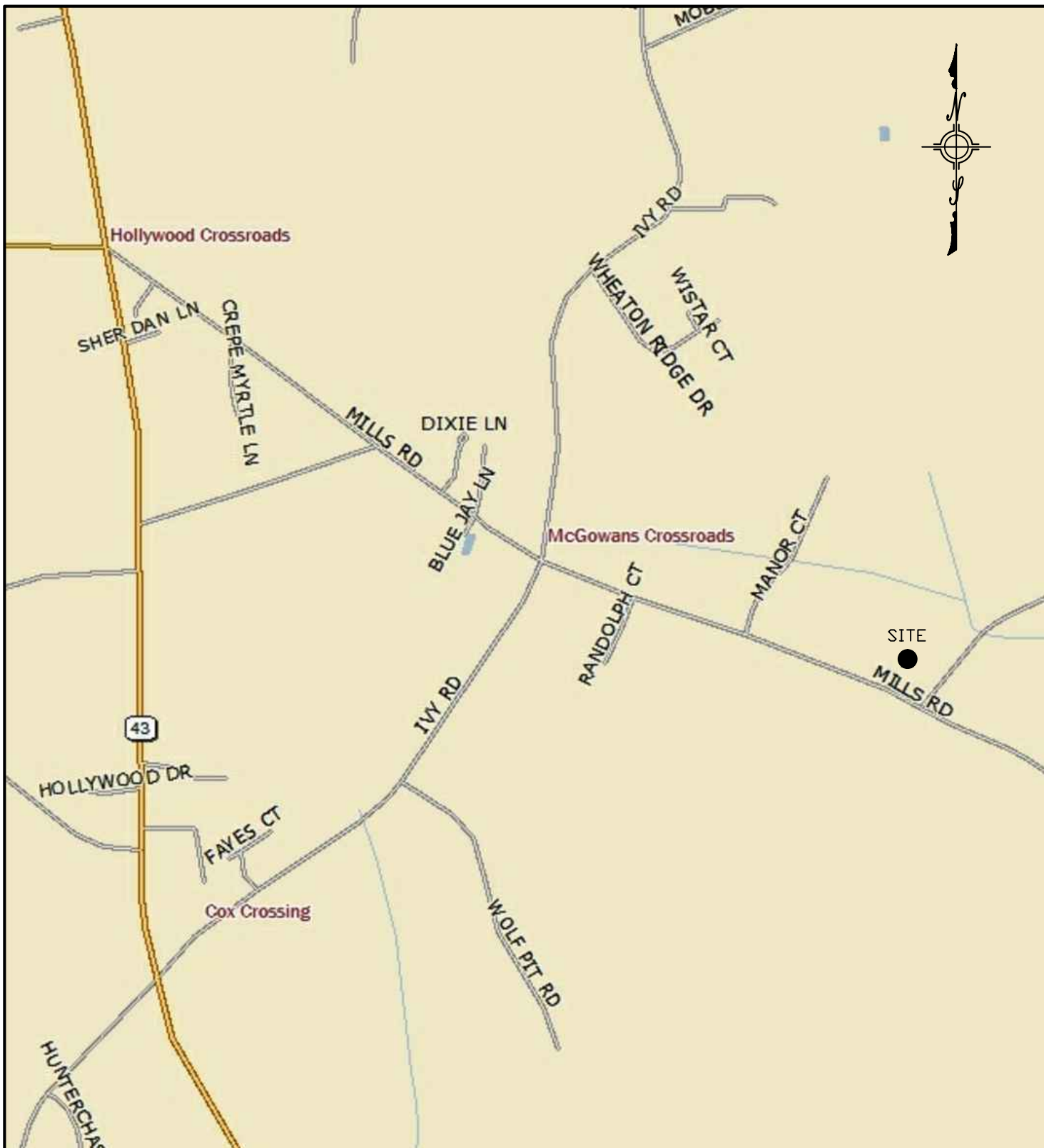
This listing may change depending on the specific application and equipment available on the breaker.

Output Contacts 101, 102, 103 from the annunciator(s) shall be wired to terminal blocks for customer use.

10.0 Tests

- 10.1 The tests shall be performed on the breaker as a three-phase unit.
- 10.2 Production tests shall be performed on each breaker and associated bushing current transformer, bushings, and relays as required by present-day standards.
- 10.3 Design tests shall be conducted on the breaker unless design tests have been conducted on a duplicate breaker of previous manufacture.

- 10.4 The breaker shall be tested by following the latest revisions of the IEEE Standard C37.09-1999-IEEE standard test procedure for AC high-voltage circuit breakers. The Engineer requests a copy of all test records prior to release for shipment.
- 10.5 If the breaker or any of their auxiliaries or accessories fails to pass the tests specified, additional tests shall be made to locate the failure. After rework or repair of the failure, the specified tests shall be repeated to insure that the repaired breaker, auxiliary, or accessories will meet the Specification in all respects.
- 10.6 Rework or repair and retesting shall be done at Bidder's expense.
- 10.7 Bidder shall keep a record of all failures detected during tests, of rework or repair required, and of test data taken after rework or repairs have been completed.
- 10.8 Rework or repairs shall be made in accordance with an approved procedure signed by that party responsible to give in-process disposition of such rework or repairs.
- 10.9 The Field Service Engineer shall perform a series of tests after the breaker(s) are installed to assure that it is functioning properly and that all components and wiring are properly connected. Gas tests shall be made. The Field Service Engineer shall give approval for energizing the breaker. The Field Service Engineer shall also provide training to the Owner's maintenance personnel during checkout of the breaker.



SITE ADDRESS:
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GREENVILLE UTILITIES
GREENVILLE, NORTH CAROLINA

POD No. 3 230 TO 115kV
VICINITY MAP

Booth & Associates, LLC

3811 Glenwood Avenue • Raleigh, NC 27612 • CONSULTING ENGINEERS NC F-0221

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JOB NO.	147796	DATE	REVISION

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