

**CITY OF WILSON
WILSON, NORTH CAROLINA**

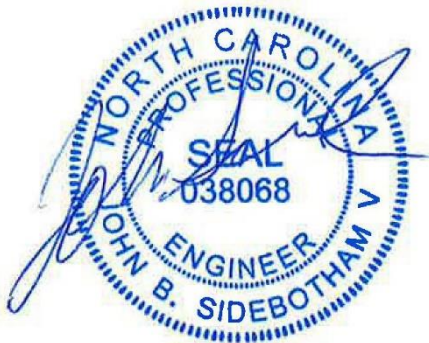
**SPECIFICATIONS AND BID DOCUMENTS FOR
15 kV CIRCUIT BREAKERS FOR THE
CITY OF WILSON**

ISSUED FOR BIDS

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3/17/20

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

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WILSON, NORTH CAROLINA**

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15 kV CIRCUIT BREAKERS FOR THE
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REQUEST FOR PROPOSAL

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 15 kV circuit breakers for the City of Wilson, as set forth in the Bid Schedules, will be received by CITY OF WILSON of WILSON, NORTH CAROLINA (hereinafter referred to as the Owner) at the offices of their Consulting Engineer, Booth & Associates, LLC, 5811 Glenwood Avenue, Suite 109, Raleigh, North Carolina 27612, on or before **2:00 PM, Local Time, Tuesday, April 7, 2020**, 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.

The Specifications, together with all necessary forms and other documents for the Bidder, may be obtained from the Owner's Engineer, Booth & Associates, LLC, 5811 Glenwood Avenue, Suite 109, Raleigh, North Carolina 27612 to the attention of the contact on the attached Data Sheet.

Proposals and all supporting instruments must be submitted on and in the format of the forms furnished in the Form of Proposal of these bid documents and must be delivered in a sealed envelope addressed to the Owner's Engineer, Booth & Associates, LLC. Proposals must be filled in with indelible ink. No alterations or interlineations will be permitted unless made before submission and initialed and dated.

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

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

**"BID FOR 15 KV CIRCUIT BREAKERS
FOR CITY OF WILSON NOT TO BE OPENED UNTIL
2:00 PM, LOCAL TIME, TUESDAY, APRIL 7, 2020"**

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 City of Wilson, North Carolina, in an amount not less than five percent (5%) of the total bid as a guarantee that a Contract, if awarded, will be accepted. In lieu thereof, a Bid Bond, which conforms to the provisions of G.S. 143-129 as amended by Chapter 1104 of the Public Laws of 1951, may be submitted by the Bidder.

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

**CITY OF WILSON
WILSON, NORTH CAROLINA**

By: Daniel Gillen Date: March 16, 2020
Project Manager

DEFINITIONS

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

Owner	City of Wilson Wilson, North Carolina
Project Manager	Daniel Gillen; or his authorized assistant
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 Purchase Order, 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 Purchase Order
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 Purchase Order
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 Purchase Order
Purchase Order	The agreement covering the furnishing of equipment and/or apparatus and the performance of the work. The Purchase Order shall include the "Instructions to Bidders", "General Conditions", "Form of Proposal", "Plans", "Technical Specifications", and Acknowledgments
Performance Bond (Not Required)	The approved form of security to be approved by the Owner furnished by the Bidder and his Surety as a guarantee of good faith on the part of the Bidder to accept the work in accordance with the terms of the Specifications and Purchase Order

**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 Purchase Order

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.
- 2.2 Bids not received on Booth & Associates, LLC Form of Proposal contained herein will be considered unresponsive. The forms shall be filled out complete; any omissions may cause the entire Proposal to be rejected.
- 2.3 Proposals must be made on the Form of Proposal provided herein and must not be altered, erased, or interlined in any manner. The Bidder shall fill in the Form of Proposal as detailed in the Terms and Conditions. The Bidder may retain one (1) copy, but the original, fully executed, must be inserted in or attached to the Bid Documents. Also, one (1) additional copy of all executed forms and supporting information shall be supplied.
- 2.4 The Bidder shall furnish certain information, as required by the Bid Documents regarding the equipment on which he is bidding. Two (2) copies of the information, together with the manufacturer's literature setting forth the guarantees and describing the equipment on which he is bidding shall be included as part of the Proposal. If one manufacturer is bidding through two or more agents or representatives, descriptive literature, guarantees, etc., may be submitted in duplicate in one sealed envelope, which will be considered and treated as though it contained a sealed bid. This envelope shall contain a list of the names of Bidders to whom the information applies. Each sealed Bid Proposal without this information shall state the name of the manufacturer who is furnishing the information. Additional sets of the Specifications may be obtained upon a payment of Fifty Dollars (\$50) non-refundable deposit by approved Bidders.
- 2.5 Bids may be modified by the Bidder's removal of his original and the submittal of a completely revised bid package in full compliance with the Bid Documents if received prior to the time of opening bids and if included in the public reading of such bids. No oral or telephonic Proposals will be considered.
- 2.6 Proposals shall include a Form of Exceptions utilizing forms provided which shall itemize each and every exception from the Bid Documents. The Form of Exceptions shall state the section, subsection, and paragraph designations from the part of the Specifications to which exception is taken and explain in detail the nature of the exception. A copy of this Form of Exceptions is included in the Form of Proposal. Exceptions will not necessarily eliminate a Bidder from consideration, even if bids without exceptions are received from others. The treatment of exceptions will be based entirely on the overall best interests of the Owner. Certain exceptions, e.g., failure to provide rigging and unloading at the site, or failure to properly provide field assembly supervision on testing may result in the entire Bid Proposal being rejected.
- 2.7 Should the Bidder find discrepancies in the documents or fail to understand their meaning, he shall immediately notify the Engineer, who will send written instructions to all Bidders. Neither the Owner nor the Engineer will be responsible for any oral instructions.

- 2.8 The Bidder shall be the manufacturer of the equipment, or the Bidder shall submit with the Form of Proposal a notarized statement that the Bidder is authorized by the manufacturer to tender the Proposal as submitted and that the manufacturer will guarantee the suitability and adequacy of the equipment proposed, and will be bound by the Specifications, as though the manufacturer had submitted the Proposal.
- 2.9 In the event that the Bidder proposes any change or deviation from the Engineer's Plans and Specifications, such Proposal changes or deviations must be submitted at the time bids are opened. The Owner reserves the right to reject any such proposed changes or deviations. All exceptions must be stated on the Form of Exceptions. Failure to submit a Form of Exceptions will imply strict adherence to the Plans and Specifications.
- 2.10 No Bid Proposal may be withdrawn after the scheduled closing time for the receipt of bids for a period of ninety (90) 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 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 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 Breaker shall be shipped to the site with unloading by the Owner, as outlined in the Instructions to Bidders. 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.

- 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 breaker 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 Release for shipment is to be granted by the Owner or the Engineer based upon the manufacturer's compliance with the following:
 - 6.5.1 Fourteen (14) consecutive days prior notification of tests so the Owner may have a representative present for witness of the tests.
 - 6.5.2 Furnishing of the requisite number of copies of the Final Drawings as called for in the Specifications.
 - 6.5.3 Coordination of manufacturing and delivery with Owner's construction schedule as may be noted in these Specifications.
 - 6.5.4 Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to all deliveries.
- 6.6 Delivery of all items of equipment shall be made at such time as to permit unloading between the hours of 9:00 a.m. and 3:00 p.m., Monday through Thursday, holidays excluded. The Owner will furnish escort to the City of Wilson site. Ultimate delivery shall be at the discretion of the Owner.

7.0 Award of Purchase Order

- 7.1 The issue of a purchase order will be made to the lowest acceptable 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 Owner 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

8.0 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, based upon the Manufacturer's compliance with the following:

- 8.1 Furnishing of the requested number of copies of the Final Drawings as called for in the Specifications.

- 8.2 Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to delivery.
- 8.3 Coordination of manufacturing and delivery with the Owner's construction schedule.

9.0 Payment

- 9.1 Payment by the Owner to the Successful Bidder shall be made in a lump sum after delivery and it has been verified that the equipment meets the Specifications. Compliance to Specifications shall be verified within ninety (90) days of the date of delivery.
- 9.2 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, to the attention of the contact on the attached Data Sheet.
- 9.3 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.

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 be 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

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

13.0 Equal Employment Opportunity

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

- 13.1 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.
- 13.2 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.
- 13.3 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.
- 13.4 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.

- 13.5 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.

14.0 Indemnification

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 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, 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 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.

FORM OF PROPOSAL

**CITY OF WILSON
WILSON, NORTH CAROLINA**

**SPECIFICATIONS AND BID DOCUMENTS FOR
15 kV CIRCUIT BREAKERS FOR THE
CITY OF WILSON**

FORM OF PROPOSAL

*(Provide **one** original and **one** copy)*

Respectfully submitted this ____ day of _____, 2020

OWNER:	BIDDER:
City of Wilson 1800 Herring Avenue E Wilson, NC 27893-6727 Contact: Mr. Daniel Gillen Phone: 252-296-3308 Email: dgillen@wilsonnc.org	
	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. 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.
4. Invoice shall list the appropriate state sales tax as a separate item
5. 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.
6. 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.
7. The Owner may accept any schedule or portion thereof.
8. 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.
9. 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 City of Wilson. A simple statement that all necessary materials and equipment will be provided is not acceptable.
10. 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.
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 Bidder's Qualifications and agrees that the Owner will rely upon such accuracy as a condition of the award of 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

**15 kV CIRCUIT BREAKERS FOR
CITY OF WILSON**

BID SCHEDULE NO. 1 – Base Bid

<u>Description</u>	<u>Quantity</u>	<u>Total Cost</u>
Outdoor Power Vacuum Circuit Breaker, 15 kV Nominal, 25,000-ampere Interrupting, 60 Hertz, 1,200-ampere continuous all as per Specifications and attached Data Sheet	3	\$ _____
Delivery Charge	3	\$ _____
Sales Tax (if applicable)	3	\$ _____
	BASE BID:	\$ _____

Manufacturer _____	Type _____
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BID SCHEDULE NO. 1 – Delivery Schedule

Instructions to Bidders, 6.0 Shipment and Delivery

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>Delivery (Days)*</u>
Approval Drawings _____
Final Drawings** _____
Delivery of Material** _____

- * Number of consecutive calendar days after receipt of written order from the Owner.
- ** Allow two (2) weeks for receipt and return of Approval Drawings.

BID SCHEDULE NO. 1 – Field Service Engineering (Per Day Rate)

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

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

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 City of Wilson of Wilson 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 _____, 2020.

WHEREAS, the said Principal is herewith submitting a Proposal for

**15 KV CIRCUIT BREAKERS FOR THE
CITY OF WILSON**

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)

INSERT

ADDENDA / CLARIFICATIONS / BULLETINS

Instructions to Bidders, 5.0 Bulletins and Addenda

TECHNICAL SPECIFICATIONS

**CITY OF WILSON
WILSON, NORTH CAROLINA**

**SPECIFICATIONS AND BID DOCUMENTS FOR
15 kV CIRCUIT BREAKERS FOR THE
CITY OF WILSON**

TECHNICAL SPECIFICATIONS

1.0 Scope

- 1.1 The Owner is procuring three (3) circuit breaker(s) for installation into the City of Wilson. Bids will be received on one (1) schedule(s), each for the purchase of 15 kV 1200 A power circuit breaker(s) to be operated at 12.47 kV.
- 1.2 The Bidder's work shall include furnishing the circuit breaker so represented by the Bill of Materials, the accompanying Drawings, these Technical Specifications, and as set forth in the Bid Schedule. 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.

2.0 General Conditions

- 2.1 All materials and equipment shall be new, manufactured in the United States or Mexico.
- 2.2 These Specifications describe the type, size, and characteristics of the various materials and equipment required to be furnished. The Drawings indicate general arrangement, equipment location, and spacing.
- 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 breaker 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 City of Wilson will be 120/240 volts, 60 Hz, single-phase. Control dc voltage at the City of Wilson will be as documented on the attached Data Sheet. The equipment on the breaker shall coordinate with these voltages as appropriate.
- 2.6 Where a manufacturer's name and type of equipment is indicated in the above Specifications, it is for clarity and the establishment of a standard and is not restrictive.
- 2.7 The power circuit breaker shall be suitable for outdoor operation and shall be dead tank, three-pole, single throw. The breaker 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 shall meet all its ratings as defined in ANSI/IEEE C37.04, latest edition, and as listed in ANSI C37.06, latest edition.

3.0 Special Conditions

3.1 Defective Materials, Equipment, and Workmanship

- 3.1.1 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.
- 3.1.2 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 as does not comply with the Specifications for materials and equipment and 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 open-top truck or open trailer at suitable destination as determined by the Owner. The Owner shall return the rejected materials FOB open-top truck or open trailer 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; and the cost and expense thereof shall be paid by and be recoverable from the Bidder.

- 3.1.3 The breaker to be provided herein shall include a full warranty on the complete units together with all parts. The warranty shall extend for not less than twelve (12) months from the date of initial energization and up to eighteen (18) months from date of delivery, whichever is applicable.

4.0 Standards

- 4.1 All equipment and materials covered by these Specifications shall be in accordance with the applicable provisions of the latest editions of the Standards of the ASTM, ANSI, NEMA, IEEE, OSHA and latest revision of the NESC. Where a manufacturer's name and type of equipment is indicated in the Specifications, it is for clarity and the establishment of a standard and is restrictive unless use of an approved equal is specifically mentioned.
- 4.2 The Bidder may offer alternate pricing for equivalent items by other manufacturers. However, **all** base bids must explicitly comply with the designated materials specified herein. The Owner may elect to purchase alternates, as proposed by the Bidder. The alternate materials are subject to review and approval by the Owner's Engineer.

5.0 Drawings and Documentation

5.1 Preliminary Drawings

Before proceeding with fabrication, the manufacturer shall submit for approval to the Owner sufficient Drawings to demonstrate that all parts conform to the requirements and intent of these Specifications. The Drawings shall include of Breaker, Operator, and Current Transformer (CT) Nameplates, Breaker and Bushing Outlines, Elementary and Connection (Control Wiring) Diagrams, and CT Secondary Exciting Curves and Ratio Correction Factor Curves. The drawings shall be submitted electronically to the contact listed on the attached Data Sheet. The drawings shall be compatible with AutoCAD® 2018. If the bidder elects to submit paper copies in lieu of electronic copies, they shall submit four (4) copies of each drawing. All Drawings submitted 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 Drawing will have to be submitted. All Drawings shall be dimensioned in feet and inches; metric measurements alone will not be acceptable. However, dual dimensioning in feet and inches and centimeters will be acceptable.

5.2 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, based upon the Manufacturer's compliance with the following:

- 5.2.1 Furnishing of the requested number of copies of the Final Drawings as called for in the Specifications.

Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to delivery.
- 5.2.2 Coordination of manufacturing and delivery with the Owner's construction schedule.

5.3 Design and Fabrication Drawings

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, as well as the complete breaker rating. Cut sheets and catalog descriptive bulletins shall be submitted for any components of the breaker, along with the Drawings for review.

5.4 Approval of Drawings shall not be held to relieve the Bidder 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 the Owner being allowed two (2) weeks for approval.

5.5 The Owner or its Engineer may require a second submittal of Shop Drawings if, in the opinion of the Owner or its 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.

5.6 All drawings shall have marked on each sheet or group of sheets which always remain together, a label that shall match the "Drawing Stamp" on the attached Data Sheet.

5.7 The manufacturer shall submit with the preliminary Drawings all information needed to design an adequate foundation for the breaker, including the exact positioning and size of anchor bolts.

5.8 Final Drawings

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

5.8.1 One (1) complete set of all Drawings revised to "as-built" status, released on paper.

5.8.2 Two (2) complete sets of all Drawings, revised to "as-built" status, released on two (2) separate CD-ROMs, compatible with AutoCAD® 2018. Product manuals, leaflets, CT curves, etc. shall be provided on the same CD-ROM (if there is room) in Adobe (.pdf) format. CD-ROMs shall contain .pdf copies of certified test reports as well.

5.8.3 Two (2) copies of applicable instruction books, including one (1) print each of all Drawings representing physical and electric details.

5.8.4 Two (2) copies of certified test reports corresponding to functional performance measurements after final assembly.

5.8.5 All Drawings are to be certified correct and supplied within a reasonable length of time prior to shipment of the equipment. Each set of Drawings and documentation shall include the following information:

- 1) Outline and Assembly Drawings showing size and location of major components and all principal dimensions.
- 2) Control and relay panel front view.
- 3) Details of bushing and bushing terminal connectors.
- 4) Diagram of bushing current transformers, connection, number of turns, polarity marking, ratios, and bushing orientation.
- 5) Current transformer performance characteristic curves and data for all relay accuracy CTs.
- 6) Details of control housing.
- 7) Panel connection diagram showing exact connection for all components furnished.

- 8) Ac and dc elementary circuit diagrams for all relay and control equipment furnished.
- 9) Wiring control and schematic diagrams.
- 10) Instruction books.
- 11) Renewal parts catalog.
- 12) Two (2) copies of certified test reports.

5.8.6 All Drawings and documentation are to be forwarded to Booth & Associates, LLC, 5811 Glenwood Avenue, Suite 109, Raleigh, North Carolina 27612, to the attention of the individual listed on the attached Data Sheet.

6.0 Manufacturer's Field Representative – NOT REQUIRED

7.0 Circuit Breaker

7.1 General

Circuit breakers shall be suitable for outdoor operation and shall be three-pole, single-throw. Each breaker shall consist of an outdoor frame-mounted feeder circuit breaker having weatherproof steel mechanism housing and relay cabinet with hinged panel containing the control and protective relay wiring and breaker control switch with indication lamps. Protective relays, reclosing equipment and control housing shall be as hereinafter described. Circuit breakers shall be rated per the attached Data Sheet and furnished with specified relays and accessories.

7.2 Standards

The equipment covered by the Specifications and all tests applied thereto shall conform to the latest standards of the IEEE, NEMA, NESC, and ANSI, unless otherwise noted herein.

7.3 Assembly

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

7.4 Interrupting

The breaker shall be rated for ANSI C37.06 rated reclosing times. The breaker shall interrupt the arc within 3 cycles or less (at 60 Hz) measured from the instant the trip coil is energized with normal voltage. Five-cycle or less interruption shall be achieved over a range of twenty-five percent (25%) to one hundred percent (100%) of rated interrupting capacity. Vacuum interrupter design shall not require oil for either interrupting medium or for insulation purposes.

7.5 Operating Mechanism

The breaker shall be magnetically or spring actuated as defined on the Data Sheet and shall be mechanically and electrically trip free. The breaker voltages for tripping and closing shall be equipped per attached Data Sheet.

7.6 Nameplates

Each breaker shall be equipped with one (1) or more etched stainless steel weatherproof nameplates prominently attached to the breaker cabinetry, illustrating the following data.

- 7.6.1 Manufacturer's data shall include name of manufacturer, breaker model or style number, breaker serial number, instruction book and diagram reference numbers, breaker weights, 1-3-5 and 2-4-6 bushing orientation, and interrupter media information.
- 7.6.2 Breaker rating data shall include maximum rated voltage application, continuous rated ampacity, impulse withstand (BIL) rating at rated frequency, duty interval in cycles, rated short-circuit interrupting capacity (amperes), voltage range (K) factor, and close and latching capacity (amperes).
- 7.6.3 Breaker mechanism data shall include manufacturer's model/style number of mechanism, closing coil rated amperes at rated voltage, closing voltage range, tripping

coil rated amperes at rated voltage, tripping voltage range, and mechanism recharging motor amperes at rated application voltage.

- 7.6.4 Bushing current transformer data shall include bushing location, polarity, accuracy class, progression of turns, turns ratio, and turns ratio reference chart for available taps.
- 7.6.5 All devices, terminal blocks, relays, fuses, etc., shall be labeled for easy identification.

7.7 Component Parts and Accessories

The component parts and optional additional accessories for each breaker shall include, but are not limited to:

- 7.7.1 Three-pole, high voltage single-throw circuit breaker, electromechanically operated with weatherproof combination mechanism housing and cabinet mounted on a painted steel framework. Paint shall be applied to minimum thickness of 5 mils.
- 7.7.2 One (1) painted, welded steel supporting framework with two (2) ground terminals. The connections are to be located on diagonally opposite corners at the bottom of the frame and on the high-voltage housing with NEMA 2-hole (1-3/4") spacing and mounted with 1/2 inch - 13 NC thread bolts. Framework shall be equipped with adjustable legs to provide a minimum height for grounded parts.
- 7.7.3 Six (6) bushings, with standard creepage distance appropriate for the specified BIL of the breaker, and with ampere rating equal to or greater than the specified continuous current rating of the breaker. All bushings shall have NEMA standard threaded terminal studs. Bushings shall be light gray.

Each bushing shall be furnished with a tin-plated bronze terminal connector featuring NEMA standard four-hole spacing on the terminal pad. The connector shall be suitable for aluminum or copper connections at the rated current capacity of the bushing.

- 7.7.4 Bushing-type current transformers with accuracies as stated on the attached Data Sheet suitable for metering, relay and/or indicating instrument application, all wired to shorting terminal boards 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. Bushing CTs shall have a continuous-current rating (top tap) equivalent to the continuous-current rating of circuit breaker. Taps shall be provided in accordance with Table 8 of ANSI C57.13.

See attached Data Sheet for the detail relating to CTs.

- 7.7.5 Lifting eyes and lugs for vertically lifting the entire breaker assembly.
- 7.7.6 Paint shall be standard light gray ANSI, No. 70. Minimum paint thickness shall be 5 mils.
- 7.7.7 The control panel shall be dead front with all switches, circuit breakers, etc., enclosed.
- 7.7.8 All control wiring shall be 600-volt, flame-resistant, moisture-proof, with stranded copper conductor.

7.8 Mechanism Housing and Cabinet

One (1) weatherproof sheet steel combination mechanism housing and cabinet attached to the breaker frame, with removable plate in bottom for conduit entrance and containing the following:

- 7.8.1 Trip-free, magnetically or spring actuated mechanism: Trip, Close and Motor voltages are to be per the attached Data Sheet.
- 7.8.2 One (1) 11-pole auxiliary switch directly connected to main operating linkage completely available for the Owner's use.
- 7.8.3 Motor limit cutoff switches as required.

- 7.8.4 Latch-checking switch.
- 7.8.5 Veeder-Root type operation counter, visible from outside of mechanism housing.
- 7.8.6 Mechanical position indicator, visible from outside the mechanism housing.
- 7.8.7 Necessary terminal boards and wiring; terminal boards for CT leads shall be shorting-type. All terminal boards shall be equipped with ring-type compression lugs. Each CT shall be wired to a separate six-pole shorting terminal block. The sixth pole shall be permanently grounded.
- 7.8.8 A minimum of twelve (12) spare terminal points shall be provided for Owner's use.
- 7.8.9 Manual maintenance closing device. If applicable.
- 7.8.10 Fused disconnect switches for control power, motor, and heater, pull-out type.
- 7.8.11 Thermostatically-controlled space heater, 120 or 240 volts, single phase ac, to prevent condensation. Space heater shall be protected from physical contact with terminal guards for the ac supply voltage.
- 7.8.12 Internal convenience lights with guards, controlled from a door switch shall be provided in the relay cabinet and the mechanism housing. A 120-volt ground-fault ac convenience outlet shall be provided in the relay cabinet door. Materialman shall provide one molded case circuit breaker or fuse for the light and outlet in the relay cabinet.
- 7.8.13 Electrically trip-free control circuitry, with necessary interlock and seal-in contacts tripping and closing operations. The closing circuit shall be an anti-pump design coordinated with protective latch-check features of the mechanism.
- 7.8.14 Emergency trip control mechanically linked to mechanisms trip latch. 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.
- 7.8.15 One (1) lot of terminal blocks, marking strips, control wiring, and wiring accessories.
- 7.8.16 One (1) hinged steel relay panel, having mounted and wired thereon associated relaying components as described in the following sections.
- 7.8.17 The relay/control panel cabinet is to open on the 1-3-5 bushing side.

7.9 Circuit Breaker

The mechanism housing & cabinet shall feature a hinged steel relay panel which shall contain the various devices necessary for the protection and control of the breaker. Such devices shall be completely installed and wired for fully functional operation, and shall include the following:

- 7.9.1 Orientation: Orientation of the breaker shall be such that the front of the relay panel is toward the side of the breaker corresponding to bushings 1-3-5.
- 7.9.2 The circuit breaker(s) shall be designed in such a way that they are considered "Arc Resistant"
- 7.9.3 Multifunction relay as described in the attached Data Sheet.
- 7.9.4 Indicating Lights as described in the attached Data Sheet. If equipped, the red light shall be wire in trip circuit to indicate breaker closed position and monitor trip coils, and the green light shall be wired to indicate breaker open position.
- 7.9.5 Control Switch as described in the attached Data Sheet.
- 7.9.6 One (1) loss of dc voltage alarm relay wired to load side of control circuit fuses; Potter & Brumfield type KRPA. Relay shall provide one form C contact wired to breaker terminal points for customer use.

- 7.9.7 ABB FT-1 Test switches per attached Data Sheet
- 7.9.8 Separate fuseblocks are to be installed for digital relay potential inputs (one 3-pole, one 2-pole).
- 7.9.9 A minimum of twelve (12) spare terminal points are to be provided for customer use.
- 7.9.10 Breaker shall be equipped with a ground bus bar.
- 7.9.11 The close circuit shall be wired out to two (2) terminal block points to provide external closing from the Owner's controls/ relays.
- 7.9.12 The close circuit shall be wired out to two (2) terminal block points to provide external blocking of any close function with a contact from the Owner's lockout relay.
- 7.9.13 Each trip circuit shall be wired out to two (2) terminal block points to provide external tripping from the Owner's controls/ relay.

7.10 Wiring

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 41 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 latest edition of the National Electrical Code.
 - b. Devices equipped with inherently locking terminals do not require lock washers (ABB test switches, required terminal blocks, SEL relays). All other connections shall be made using silicon bronze, split-type lock washers, screws, and nuts.
 - c. All wires shall be identified at each end with legible permanent labels with opposite end designation.
 - 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 in size 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 YA. (Single-hole lugs may be used only where necessary.)
 - i. High-temperature insulated wire shall be used for connections to heaters.
 - j. "Slip-on/Quick-Slide" type connectors are not permitted.
- 7.10.2 Grommets shall be provided for all openings in metal barriers used for wiring.
 - 7.10.3 Uninsulated exposed conductor or terminal lug shall not extend beyond the sides of the terminal block or its insulating barriers.
 - 7.10.4 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 American Petroleum Institute (API) No. 32448 or Burndy No. YZ10 will not be acceptable.

- 7.10.5 The sixth pole of each current transformer's shorting block shall be grounded and shall be bonded to the shorting strip.
- 7.10.6 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.
- 7.10.7 All wiring shall be neat and orderly.
- 7.10.8 No more than two (2) wires per terminal point are permissible.

7.11 Terminal Blocks and Fuseholders

- 7.11.1 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.
- 7.11.2 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.
- 7.11.3 For current transformer leads, General Electric Type EB-27 or Marathon Type 1506 SC shall be provided with at least three shorting screws per terminal block. A separate short-circuit type terminal block shall be provided for each set of current transformer leads.
- 7.11.4 One 4-pole terminal block shall be provided and sized for #10 to #2 AWG wire for Owner's single phase, 3-wire, 240/120-volt control power leads.
- 7.11.5 One (1) 2-pole terminal block shall be provided and sized for #10 to #2 AWG wire for Owner's dc control power leads
- 7.11.6 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.
- 7.11.7 A single-throw disconnect switch shall be installed on all fuseholders or incorporated into the fuseholder itself. If separate fuseholders are to be utilized then 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.

APPENDICES

1. Breaker Data Sheet

1

Breaker Data Sheet

MV CIRCUIT BREAKER SPECIFICATIONS**DATA SHEET**

Booth Contact: John Sidebotham
 email: sidebothamjb@booth-assoc.com

Drawing Stamp: Wilson 15kv 1200A Feeder Breaker

Required Delivery Date: August 15, 2020

Circuit Breaker Rating Information

Nominal Breaker Rating	<u>15</u> kV
Maximum Breaker Rating	<u>15.5</u> kV
Breaker BIL	<u>110</u> kV
Continuous Current Rating	<u>1,200</u> Amps
Interrupting Current Rating	<u>25,000</u> Amps
Rated Interrupting Time	<u>3</u> Cycles
Closing and Latching Capability	<u>104</u> kA, rms
Low Freq. 1 Minute Dry rms	<u>50</u> kV
Low Freq. 10 Second Wet rms	<u>45</u> kV
Two microsecond chopped wave impulse peak	<u>142</u> kV
Minimum Creepage Distance Of External Insulation to Ground	<u>9.84</u> Inches
Frequency	<u>60</u> Hz
Minimum Ambient Temp.	<u>-30</u> °C
Max. Ambient Temp.	<u>50</u> °C
Humidity Rating	<u>100</u> %
Max. Altitude	<u>3,300</u> Feet

Station Power Information

Station Power Voltage (AC)	<u>120/240</u> VAC
Station Power Frequency (Hz)	<u>60</u> Hz
Station Control Voltage (DC)	<u>48</u> VDC

Equipment Details

Tripping and Closing Voltage	<u>48</u> VDC
DC Control Contact Ratings	<u>48</u> VDC
Alarm Contact Voltage	<u>48</u> VDC
Motor Voltage	<u>120/240</u> VAC
Actuator Style	<u>Magnetic</u>

CITY OF WILSON

On Board Relay YES
 Relay Manufacturer Schweitzer
 Relay Model Number 751502CCCCC7085A671 - 751#K882
 Test Switches YES
 TS1 ABB type FT-1 S#837A407G01
 TS2 ABB type FT-1 S#991AM28G01
 TS3 ABB type FT-1 S#129A528G01

Input and outputs IN101: Breaker 52a contact.
 IN102: Supervisory Trip input contact
 IN103: Supervisory Close input contact.
 IN104: Breaker Loss of DC alarm contact (normally closed).
 IN105: External Lockout Relay (86) contact.
 IN106: Trip Coil Monitor (wired to monitor breaker trip coils).
 OUT101: Breaker Trip contact (by SEL-351S pushbutton).
 OUT102: Breaker Close contact (by SEL-351S pushbutton).
 OUT103: 52CS Close supervision
 OUT104: Breaker Alarm output contact.
 OUT105-OUT106: Not defined.
 OUT107: Programmed Alarm Output
 ALARM: Wired to terminals for remote use.

Separate Control Switch YES
 Control Switch Electros witch Part # 24PB57D

Separate Indicating Lights YES
 Red Light 116B6708G2-R
 Green Light 116B6708G2-G

Breaker shall be of arc resistant design

Bushings 1, 3, and 5 CT Ratings

Number of CT's per bushing: 1
 CT ratings and placement:
 Top CT (X): Ratio: 1200 /5 MR Accuracy Class: C400 Thermal Rating: 2
 Center CT (Y): Ratio: N/A MR Accuracy Class: Thermal Rating:
 Bottom CT (Z): Ratio: N/A Accuracy Class: Thermal Rating:

Bushings 2, 4, and 6 CT Ratings

Number of CT's per bushing 1
 CT ratings and placement:
 Top CT (X): Ratio: 1200 /5 MR Accuracy Class: C400 Thermal Rating: 2
 Center CT (Y): Ratio: N/A MR Accuracy Class: Thermal Rating:
 Bottom CT (Z): Ratio: N/A Accuracy Class: Thermal Rating: