



SPECIFICATIONS

FOR

230 kV Gas Circuit Breaker For Twin Bridges Road Substation

CITY OF ALEXANDRIA

BID PROPOSAL #2181

April 02, 2018

CITY OF ALEXANDRIA, LOUISIANA (OWNER)
UTILITY DIVISION

MAYOR

JACQUES M. ROY

COUNCIL MEMBERS

ROOSEVELT L. JOHNSON - PRESIDENT
JIM VILLARD - VICE PRESIDENT
JOE FULLER - COUNCILMAN AT LARGE
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HARRY B. SILVER - DISTRICT 4
CHARLES L. "CHUCK" FOWLER - DISTRICT 5

City of Alexandria
Electric Distribution Department
1015 North Third Street, Alexandria, LA 71301
PO Box 71, Alexandria, LA 71309-0071
Phone (318)473-1301

Prepared by:

BHA, INC.

Consulting Engineers

Baton Rouge, Louisiana Job No.: 2019E16A

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**SECTION A
EQUIPMENT CONTRACT**



Joe C. Despino
Purchasing Manager

City of Alexandria
Purchasing Department
P.O. Box 71
Alexandria, Louisiana
71309-0071



Office: (318) 441-6180
Fax: (318) 441-6185

Sealed bids will be received until **10:00 AM, Tuesday, May 15, 2018**, and publicly opened in the Council Chambers or Council Committee Room.

City of Alexandria Bid #2181

Date Specifications Prepared: April 02, 2018

Bid Bond Requirements: A bid bond or check for N/A% of the total amount of bid.

Performance Bond Requirements: In the event bid is accepted, a performance bond shall be required in the amount of N/A%.

Please file bid with the following:

Donna Jones, City Clerk
City of Alexandria - City Hall
915 Third Street
P.O. Box 71
Alexandria, LA 71309-0071
Phone: 318-449-5090

INTRODUCTION

One (1) 230kV Gas Circuit Breaker

It is the intent of the City of Alexandria to secure pricing on **ONE (1) 230kV Gas Circuit Breaker**, for use by the City of Alexandria Electrical Distribution Department. The equipment to be furnished by the Bidder consists of one (1) 230kV Gas Circuit Breaker. The breaker shall be furnished with all accessories ready for mounting, connecting and energization. Bid prices shall be for material only, no installation.

All Information requested in the Contract and Specifications shall be submitted with the Bidder's proposal.

The bid price shall be held firm through delivery. No bid with escalation charges will be accepted.

All bid prices shall include any and all freight charges.

Completed bid packet should be returned as issued by the City of Alexandria with ALL PAGES intact and all specification response columns filled in. Incomplete columns or missing pages, to include addendum pages, may result in the bidder's (proposer's) entire bid being rejected.

Questions and/or clarifications of bid specifications are to be in written form only, either mailed, faxed or e-mailed to the attention of Robert Normand, City of Alexandria – Electric Distribution Department, PO Box 71, Alexandria, LA 71309; Faxed to (318)619-3414; or emailed to Robert.normand@cityofalex.com and shall be received by close of business on Thursday, May 03, 2018.

GENERAL CONDITIONS FOR BIDDERS - PLEASE READ CAREFULLY

1. Pursuant to LA R.S 38:2212.1. C.(1)(2), any manufacturer's preference in this proposal is descriptive, but non-restrictive, and is used only to indicate minimum requirement for type, grade and quality unless otherwise specified.
2. Pursuant to LA R.S. 38:2212 B.(1), the provisions and requirement of this bid shall not be considered as informalities and shall not be waived by the City of Alexandria. Therefore, conditions and specifications on this bid form shall be strictly enforced and any and all alterations, deviations, and non-compliance to said conditions and specifications, either on the bid form or by separate attachment, shall be grounds for immediate disqualification.
3. Preference shall be given to bidders quoting F.O.B. Destination (the City of Alexandria using department), FREIGHT PREPAID, unless otherwise requested.
4. Each bidder shall submit his proposal on the proposal form furnished by the City of Alexandria Purchasing Department. The complete bid package must be returned as issued by the City with all pages intact and all specification response columns filled in. Incomplete columns or missing pages, to include addendum pages, shall result in the vendor's entire bid package being rejected.
5. Literature, brochures, and other related paperwork attached to the bid should be identified with the name of the bidder and bid item number.
6. In case of a mathematical discrepancy between unit price and extensions, the unit price shall prevail.
7. Pursuant to LA R.S. 38:2212 F., the bid specifications may contemplate a fixed escalation or de-escalation in accordance with the United States Bureau of Labor Statistic's Consumer Price Index or the Producer Price Index. Bids based on specifications which are subject to a recognized escalation index shall be legal and valid for any item of a public work, at the discretion of the City.
8. Pursuant to LA R.S. 38:2212.1. F., any public procurement unit may participate in a cooperative purchasing agreement with the City of Alexandria to acquire quantities of the above listed items under a contract with the City of Alexandria for items awarded by public bid, pursuant to the cooperative purchasing provisions of Part VII of Chapter 17 of Subtitle III of Title 39 of the Louisiana Revised Statures of 1950, R.S. 39:1701 et seq.
9. The City of Alexandria reserves the right to award by item or by total bid, unless otherwise specified in the bid specifications. (Price(s) should be itemized.)
10. All erasures or corrections on the bid form must be initialed and the City of Alexandria may rely on the apparent authority represented by the initials.
11. The City of Alexandria reserves the right to reject for cause any and all bids or parts of bids, or accept bids most beneficial to the City.

General Conditions for Bidders - Please Read Carefully (Continued)

12. Any bid submitted which contains additions, conditional or alternate bids, or irregularities which may make the proposal incomplete, indefinite, or ambiguous as to its meaning, thus requiring clarification after the specified date and time of bid opening shall be rejected.
13. Bids shall be opened publicly in the City Council Chambers or Council Committee Room.
14. Cash discounts may be accepted, but SHALL NOT be considered in making award.
15. Regarding a bid for purchase of materials, supplies or services, not to include construction of any public works, a written notice of acceptance mailed or otherwise furnished to the successful bidder shall result in a binding contract without further action by either party.
16. When any bid is accepted for the construction or doing of any public works, a written contract shall be executed by and between the City of Alexandria and the Contractor. No contract shall be binding upon the City until it has been executed by the City and delivered to the successful bidder. Should the bidder to whom the contract is awarded fail to execute the contract, the award shall then be made to the next lowest responsible bidder, or re-advertised for public bid, said decision to be in the sole judgment of the City of Alexandria. This action may result in the loss of bidding privileges for a period of one (1) year.
17. The City of Alexandria shall schedule for payment the invoices for articles or services purchased under this bid within thirty (30) days after due and proper delivery accompanied by invoice.
18. The City of Alexandria is exempt from all sales taxes. A sales tax exempt form shall be furnished by the City of Alexandria Purchasing Department, if requested.
19. Bidder(s) awarded item(s) by the City of Alexandria shall be responsible for supplying all products at the awarded price(s). Failure may result in the City's cancellation of the remaining items awarded.
20. Regarding Service Contracts and Procurement Contracts, the terms of the contract shall be binding upon any and all parties involved until goods and supplies are delivered, services have been rendered, and/or work has been completed and accepted by the Mayor on behalf of the City of Alexandria and all payments required to be made to the Contractor have been made. However, a contract may be terminated under any and all of the following conditions:
 - (a) By mutual agreement and consent of either party upon thirty (30) days written notice to the other party;
 - (b) By the Mayor, on behalf of the City of Alexandria, as a consequence of the failure of the Contractor to comply with the terms and conditions of the contract or the progress or quality of work to be performed in a satisfactory manner, proper allowance being made for circumstances beyond the control of the Contractor; or
 - (c) By satisfactory completion of all services and obligations described in the contract.

General Conditions for Bidders - Please Read Carefully (Continued)

If the contract is terminated for any of the terms and conditions authorized in subparagraph (b) above, Contractor shall be formally notified in writing by the City of Alexandria Purchasing Department by means of certified mail informing him of cancellation of the contract, giving specific reasons for said cancellation. Contractor shall have the right to appeal to the City Council within ten (10) days from the date that said notification is placed in the U.S. Mail. Contractor's appeal shall be accomplished by means of a letter addressed to the City Council and delivered to the City Clerk, stating that an appeal to the decision of cancellation is desired. The City Council shall thereafter hold a hearing on the appeal, giving all parties the opportunity to present any and all evidence concerning the decision of cancellation. After hearing the appeal, the city Council may, by a majority vote, sustain, modify, or reverse the findings for said decision and shall provide, if requested by Contractor, a written determination of its findings.

21. Contractors submitting bids for Public Works construction projects in excess of \$1.00 must show his Contractor's License Number on the front of the bid envelope, except for certain projects for which a Contractor's License Number is not required by the State Contractor's Licensing Board. Failure to comply with this directive shall result in automatic bid rejection, furthermore, any Contractor who submits a bid for a type of construction for which he is not properly licensed shall be acting in violation of LA R.S. 37:2163, and shall be subject to all provisions for violation and penalties thereof. Contractors who are owned by, and are submitting a bid as a subsidiary of a parent company, whose name is listed in the State of Louisiana's Roster of Licensed Contractors, may do so by including a letter of proof of ownership from the parent company with the submitted bid package. The letter must be signed as per LA R.S. 38:2212 B.(5)(a)(b)(c) (see Item #22 below).

22. All bids submitted via USPS (registered or certified), overnight courier or hand delivered, shall be signed by hand and in ink by an authorized company representative per LA R.S. 38:2212 B.(5)(a)(b)(c), which states:

(c)(i) Evidence of agency, corporate, or partnership authority shall be required for submission of a bid to the division of administration or the State of Louisiana. The authority of the signature of the person submitting the bid shall be deemed sufficient and acceptable if any of the following conditions are met:

(aa) The signature on the bid is that of any corporate officer listed on the most current annual report on file with the Secretary of State, or the signature on the bid is that of any member of a partnership or partnership in commendam listed in the most current partnership records on file with the Secretary of State.

(bb) The signature on the bid is that of an authorized representative of the corporation, partnership, or other legal entity and the bid is accompanied by a corporate resolution, certification as to the corporate principle, or other documents indicating authority which are acceptable to the public entity.

(cc) The corporation, partnership, or other legal entity has filed in the appropriate records of the Secretary of State in which the public entity is located, an affidavit, resolution, or other acknowledged or authentic document indicating the names of all parties authorized to submit bids

General Conditions for Bidders - Please Read Carefully (Continued)

for public contracts. Such document on file with the Secretary of State shall remain in effect and shall be binding upon the principal until specifically rescinded and canceled from the records of the office.

23. In-State preferences shall not apply to procurements involving federal funds.

24. Pursuant to LA R.S. 38:2212 O.(2)(a)(b), any modifications of plans and specifications will be made through an addendum. No addendum shall be issued within seventy-two (72) hours of the bid opening, excluding weekends and legal holidays, without the extension of the bid opening date. An extension of at least seven (7) but no more than thirty (30) working days is required but, re-advertising is not required. The addendum shall be transmitted by any one of the following methods: (1) facsimile transmission; (2) e-mail; (3) by hand; or (4) posted on the City of Alexandria's website (www.cityofalexandria.com) and posted on Central Bidding's website (www.centralauctionhouse.com) if applicable.

25. All Federal Transit Administration (FTA) funded procurements, including operating assistance funding contracts, are to follow the Master Agreement, to include all applicable federal clauses.

a. Any bidder that is found listed on the Federal Government's *System for Award Management* (SAM) website, at www.sam.gov/portal/sam, under the advanced search feature for *Excluded Parties List System* (EPLS), shall automatically be rejected for the award of this bid, by Category and/or in its entirety. This applies to any portion of the bid that is a procurement funded by FTA.

26. Under the City's *AFEAT (Alexandria Fairness, Equality, Accessibility, and Teamwork Program)*, participation by minority and/or disadvantaged business enterprise firms is encouraged. Inquiries about the *AFEAT* Program should be directed to the Division of Finance. As a part of its RFP response, each Bidder ***shall*** submit documentation of its bona fide effort to secure subcontractors that meet the City's *AFEAT* goals. Each bidder ***shall*** also submit proof of engagement of any subcontractor selected because of its solicitations. The Bidder's bona fide efforts and engagement(s) are a consideration in bid review and rating.

*Alexandria Fairness, Equality, Accessibility, and Teamwork Program
(AFEAT)*

Dear Vendor:

Under the City's AFEAT (*Alexandria Fairness, Equality, Accessibility, and Teamwork Program*), participation by minority and/or disadvantaged business enterprise firms is encouraged. The AFEAT Program should be inquired about through the Division of Finance. The goals for qualifying disadvantaged, minority and female owned business in the use of professional service agreements with prime contractors will help effectuate the goals of increasing: the competitive viability of small business, minority, and women business enterprise by providing contract, technical, educational, and management assistance; business ownership by small business persons, minority persons, and women (including professional service opportunities); and the procurement by the City of professional services, articles, equipment, supplies, and materials from business concerns owned by small business concerns, minority persons, and women.

Prime contractors offering subcontracting should take specific action to ensure that a bona fide effort is made to achieve maximum results towards meeting the established goals. Primes shall document efforts and shall implement steps at least as extensive as the following in a good faith effort to reach or exceed the established goals:

- A. *Establish and maintain a current list of minority and female owned businesses in Alexandria, in Rapides Parish, and in the State of Louisiana.*
- B. *Document and maintain a record of all solicitations of offers for subcontracts from minority or female construction contractor and suppliers in Alexandria, in Rapides Parish, and in the State of Louisiana.*
- C. *Secure listing of minority and women owned businesses from the City of Alexandria Purchasing Department, the Central Louisiana Business Incubator, and the State of Louisiana Department of Minority Affairs.*
- D. *Participate in associations which assist in promoting minority and women owned businesses such as the Central Louisiana Business League, the Central Louisiana Business Incubator, and the Entrepreneurial League System.*
- E. *Designate a responsible official to monitor all activity made in the effort to achieve or exceed the established goals; record contacts made, subcontracts entered into with dollar amounts, and other relevant information.*

For more information on AFEAT and the City of Alexandria's Diversity in Action Initiative, and to explore a local and statewide directory of minority businesses, please visit www.diversityinaction.org. Should you have any questions or comments, please do not hesitate to contact our Finance Department at 318-449-5091 or our Purchasing Department at 318-441-6180.

As a part of its RFP response, each Bidder shall submit documentation of its bona fide effort to secure subcontractors that meet the City's AFEAT goals. Each bidder shall also submit proof of engagement of any subcontractor selected because of its solicitations. The Bidder's bona fide efforts and engagement(s) are a consideration in bid review and rating.

Sincerely,

City of Alexandria

SECTION B
SPECIFICATIONS

City of Alexandria, Louisiana
Twin Bridges Substation
Specifications for 245 kV Gas Circuit Breaker
BHA Job No.: 2019E16A COA Bid # 2181

1.0 Introduction

1.1 Scope

1.1.1 These Specifications describe the circuit breaker to be designed, manufactured, and tested in accordance with the latest applicable ANSI, IEEE, NEMA, and NEC Standards.

1.2 Equipment

1.2.1 The equipment to be furnished by the Bidder consists of one (1) 245 kV outdoor dead tank SF₆ gas circuit breaker.

1.3 Contact Information

1.3.1 All correspondence, drawings, and communication concerning this project shall be directed to the following:

OWNER

City of Alexandria
1015 Upper Third Street
Alexandria, LA 71301
Attn.: Robert Normand
Email: robert.normand@cityofalex.com
Phone: 318-473-1301

ENGINEER

BHA, Inc.
Post Office Box 4467
Baton Rouge, LA 70821
Attn.: Gerard Waguespack
Email: gwaguespack@bhabr.com
Phone: 225-927-7430

1.4 Bid Requirements

1.4.1 All information requested in the Specifications shall be submitted with the Bidder's proposal.

1.4.2 All exceptions to the Specifications must be identified in the Bidder's proposal.

1.4.3 The bid price shall be firm through delivery.

1.5 Bid Evaluation

1.5.1 Bids will be evaluated based upon the following items:

- a. Quoted price
- b. Adherence to the Specifications
- c. Delivery Schedule
- d. Warranty

1.6 Delivery

1.6.1 As stated in the Specifications, the breaker shall be delivered to Owner's Twin Bridges Substation site not later 22 weeks after receipt of order.

2.0 Ratings

2.1 The ratings shall be as set forth below:

a.	Continuous Current (Amps)	2,000
b.	Maximum Voltage Rating (kV)	245
c.	Phases	3
d.	Frequency (Hertz)	60
e.	Voltage Range Factor K	1.0
f.	Type of interrupting medium	SF ₆ Gas
g.	Maximum Symmetrical Short Circuit Current Capability (kA)	40
h.	Three (3) Second Short Time Current Carrying Capability (kA, RMS)	40
i.	Close and Latch Capability (kA, Peak)	104
j.	<u>Withstand Test Voltage (kV)</u> Low Frequency, 1-Minute Dry Full Wave Impulse	425 900
k.	Trip Control Voltage (DC Volts)	125
l.	Close Control Voltage (DC Volts)	125
m.	Maximum Interrupting Time (Cycles)	3.0
n.	Closing Time (Cycles)	6.0
o.	Reclosing Time (Cycles)	20
p.	Permissible Tripping Delay Y (Seconds)	2.0
q.	Mechanical Endurance Operations	10,000

3.0 Construction

- 3.1 The phasing of all terminals, switchboards, instruments, fuses, disconnecting switches, and other equipment shall be A-B-C from left to right when facing the front of the equipment. In the vertical plane, the phasing shall be A-B-C from top to bottom. All equipment involving direct current shall be arranged "plus-minus" from left to right and top to bottom.
- 3.2 The equipment shall operate satisfactorily in an environment that may have an ambient temperature range from -30°C to 40°C and a relative humidity as high as 100%.
- 3.3 Nameplates shall be furnished and mounted by the supplier and shall be attached with stainless steel screws. Exterior nameplates shall be non-corrosive metallic, preferably stainless steel, and permanently engraved.
- 3.4 Control and instrument switches shall be located at such a height that the operator may use them conveniently.
- 3.5 All gauges, counters, indicators, etc., shall be readable from ground level without the use of ladders or portable stands.

- 3.6 All primary and auxiliary devices and all wiring to such devices shall be completely accessible for operation, maintenance, removal and replacement. Perforated wiring grilles are acceptable if furnished with 1-1/2" grommets. Panel wiring will not pass behind panels that are not removable. Use of "PANDUIT," or approved equivalent, is encouraged.
- 3.7 Terminal blocks for control wiring shall be provided and shall be rated at least 600 volts and 30 amperes. The terminal strip shall be molded block type to accommodate ring lugs. The terminal screws shall be #10 slotted head, tin plated brass machine with phosphor bronze lockwashers. The terminal blocks shall be 12-point with molded insulating barriers between terminals and a removable marking strip. Short-circuit type blocks will be furnished for all C.T. circuits. Slide links are not to be used in C.T. circuits.
- 3.8 One (1) empty 12-point terminal block shall be provided in the mechanism and control housing for customer's use.
- 3.9 Power sources shall be provided with molded case breakers and knife switches located within the panel.

4.0 Operating Mechanism

- 4.1 The operating mechanism shall be of the automatic motor charged, spring-operated type. The mechanism shall be rated for 125V D.C. The stored energy shall allow a CO-15S-CO duty cycle without auxiliary power available.
- 4.2 The circuit breaker shall be gas insulated using Sulfur Hexafluoride (SF₆) gas for interruption and insulation. Circuit breakers that require a mixture of SF₆ and Nitrogen will not be accepted. The gas shall comply with ASTM D2472.
- 4.3 Operating mechanism shall be mechanically and electrically trip free with anti-pumping feature.
- 4.4 Heaters shall be provided in the mechanism housing. They shall be thermostatically controlled and rated for 230V A.C., single-phase.
- 4.5 Each individual control circuit, motor circuit, and heater circuit shall be protected by a molded case circuit breaker with single-throw knife switches. The circuit breaker shall have an interrupting capacity of 10,000 amps.
- 4.6 A manual closing device shall be provided.
- 4.7 The breaker shall be equipped with two (2) mechanically and electrically independent trip coils. Simultaneous operation of both trip coils shall not prevent the breaker from tripping.
- 4.8 An operation counter shall be installed to record on trip.
- 4.9 An auxiliary switch shall be provided with a minimum of twelve (12) "a" and twelve (12) "b" contacts for customer use, all wired to a terminal block in the control housing.
- 4.10 Interrupters shall be single break, single pressure units.
- 4.11 Moving interrupter contacts shall be mechanically linked together.
- 4.12 A hand trip device shall be included on the breaker and be accessible from outside the breaker control cabinet. This trip device shall be capable of mechanically tripping the breaker without control power available.
- 4.13 The operating mechanism shall be equipped with an externally visible mechanical breaker position indicator marked "OPEN" (green) and "CLOSED" (red).
- 4.14 Pressure gauges shall be provided to monitor air system conditions and SF₆ gas system pressure. Cutout contacts shall be provided to block tripping for low SF₆ gas pressure. Alarm contacts shall be provided to monitor low SF₆ gas system pressure in each interrupter and spring charged/discharged as applicable.
- 4.15 The proper amount of SF₆ gas shall be supplied with the device to fill the breaker to manufacturer's specifications.
- 4.1.6 A Trip/Normal/Close control switch shall be provided.

4.1.7 A Local/Remote control switch shall be provided.

5.0 Bushings and Connectors

5.1 Bushings shall comply with the requirements of IEEE Std. C37.017. Voltage class and the current rating of the bushings and insulators shall not be less than that of the circuit breaker.

5.2 All bushings shall be porcelain and all connections shall be made with stainless steel nuts and bolts.

5.3 Terminals shall be identified as 1, 3, 5, 6, 4, and 2 in a clockwise pattern around the breaker, so that terminals 1 and 2 are on pole 1, terminals 3 and 4 are on pole 2, and terminals 5 and 6 are on pole 3. Bushing numbers shall be marked in black color on the circuit breaker tank and shall be visible from ground.

5.4 Each bushing shall be supplied complete with four-hole, NEMA pad, bronze stud connectors. The surface area of the pads shall be sufficient to accommodate the full current rating of the breaker.

6.0 Current Transformers (CTs)

6.1 CT ratings

6.1.1 Relaying CTs shall 2000:5A multi-ratio, C800 accuracy, with a thermal rating if 2.0 on all taps.

6.1.2 Metering CTs shall be 2000/1000:5 dual-ratio, 0.3% accuracy class for burdens B0.1 through B1.8 with a thermal rating of 3.0 on all taps.

6.2 Two relaying CTs shall be furnished on each of bushings 1, 3, and 5.

6.3 One relaying CT and one metering CT shall be furnished on each of bushings 2, 4, and 6, with the metering CT in the lower position.

6.4 All C.T. leads shall terminate on suitable C.T. terminal blocks located in the mechanism and control housing and grounded at the ground bar. All C.T. terminal blocks shall have short-circuiting straps. Wire jumpers are not acceptable.

6.5 A nameplate shall be provided for all bushing current transformers.

7.0 Wiring

7.1 The breaker shall be equipped with all internal wiring necessary for complete and proper operation.

7.2 All wiring shall be stranding class "K" copper with SIS insulation rated 600 volts or higher.

7.3 Wire for current circuits shall be no smaller than No. 10 AWG. All other wiring shall be no smaller than No. 14 AWG.

7.4 There shall be no splices in the wiring and all connections shall be made at device studs or terminal blocks.

7.5 Wiring Connectors

7.5.1 All wiring will be terminated with T&B Stakon Type No. 10RC-10, or approved equal, nylon insulated ring tongue connectors.

7.5.2 All wire connectors shall be copper and shall be tin plated. The inner barrel shall be serrated and the exterior surface of the terminal barrel shall be furnished with crimp guides.

7.5.3 The nylon insulation shall be color coded to indicate conductor size.

7.5.4 All compression terminals shall be crimped with hand or power tools approved by the terminal manufacturer. If hand tools are used, they must be "ratchet" type tools that require full compression of the terminal barrel.

- 7.6 No more than two (2) wire terminals shall be placed under one screw.
- 7.7 Each wire termination device shall be labeled to coincide with the breaker drawings.
- 7.8 A conductor identification PVC sleeve shall be provided on each end of each internal conductor and marked using permanent printing to indicate the local and opposite end terminal/device number/code. Adhesive labels are not acceptable.
- 7.9 Fuse and/or circuit breaker wiring shall be arranged such that the source is at the top and the load is at the bottom of the device.

8.0 Alarms

8.1 The following alarm contacts shall be provided:

- (a) Loss of trip coil 1 DC
- (b) Loss of trip coil 2 DC
- (c) Loss of close DC
- (d) Loss of motor DC
- (e) SF₆ gas lockout
- (f) SF₆ gas differential or low pressure
- (g) Motor/Pump excessive run
- (h) Low closing system pressure
- (i) Gas monitor failure

8.2 All alarm contacts shall be normally open under normal operating conditions, and will close to indicate an alarm condition.

8.3 Four (4) Potter & Brumfield voltage relays, model # KRPA-11DG-125, shall be provided to monitor the DC circuits for Trip Coil 1, Trip Coil 2, Close, and Motor control. These relays shall be surface mounted using octal sockets in a readily accessible and visible location.

8.4 Annunciator

8.4.1 Each alarm contact shall be wired to an annunciator to be furnished and mounted in the control cabinet. The annunciator shall be Schweitzer Engineering Laboratories, Inc., (SEL) Type 2533, with standard firmware, 125V DC power supply, 125V DC control input voltage, 14 digital inputs and 7 digital outputs, SEL Catalog Number 2533012100XA2X0. The following accessories shall be provided with the annunciator:

- (a) Wetting Voltage Jumper Kit, Six 4-Prong Jumpers, SEL P/N 915900239
- (b) Additional Configurable Labels, SEL P/N 9260065

8.4.2 The individual alarms shall be wired to the annunciator inputs in accordance with the following schedule:

- Input A1 – Loss of trip coil 1 DC
- Input A2 – Loss of trip coil 2 DC
- Input B1 – Loss of close DC
- Input B2 – Loss of motor DC
- Input C1 – SF₆ gas lockout
- Input C2 – SF₆ gas differential or low pressure
- Input D1 – Motor/Pump excessive run
- Input D2 – Low closing system pressure
- Input E1 – Gas monitor failure
- Input E2, F1, G2 – Spares

8.4.3 Outputs OUT01 and OUT02 of the annunciator shall be wired to terminal blocks in the control cabinet for customer use.

8.4.4 Alarm window labels shall be provided for the annunciator in accordance with the legend at the end of this specification.

9.0 Paint

- 9.1 The breaker, cabinets and other non-current carrying metal accessories mounted on it shall be painted with an undercoat of rust inhibiting primer such as red inorganic zinc, (or equal), followed by two (2) coats of Devoe 379 polyurethane (or equal).
- 9.2 Finish color shall be ANSI #70, light gray. Minimum overall dry thickness of the undercoat and the finish coats shall be 1.5 and 3 mills, respectively. All removable transit braces shall be painted red.
- 9.3 Prior to undercoating, all surfaces to be painted shall be thoroughly cleaned of all dirt, oil and other impurities by applying Devoe Deprep 88 (or equal) per the manufacturer's instructions. Then the surface shall be shot blasted or sandblasted for removal of weld splatter, rust, dirt, and all or any foreign matter accumulated during fabrication.
- 9.4 The internal surfaces (if painted) shall be painted with a special coat that will not cause oil degradation.
- 9.5 Sufficient amount of touch-up paint (spray cans) will be furnished to cover scratches that occurred during shipping.

10.0 Control Cabinet/Mechanism Housing

- 10.1 All devices for circuit breaker control, indication, and terminal blocks shall be located in a weatherproof control cabinet. The components installed in the central control and compressor cabinets shall be mounted between 18 and 60 inches above the circuit breaker foundation.
- 10.2 The cabinet(s) shall be weatherproof, rainproof, dust-tight, and gasketed NEMA Type 3R. The top of the cabinet shall be sloped to prevent water accumulation. A drip shield shall be provided above the cabinet door.
- 10.3 All cabinets shall be of sheet metal sufficiently rigid to prevent warping of doors and to assure positive operation of doors and latches. The bottom of all cabinets shall be a minimum of 18" above top of foundations.
- 10.4 Any compartment of the cabinet, which requires access for regular maintenance, shall be provided with a hinged pad lockable door. This door shall have a three-point latch and shall be capable of being latched open or closed.
- 10.5 Cabinet door hardware including hinges, latches and pins shall be made of stainless steel.
- 10.6 The cabinet shall be provided with viewing windows in front of the pressure gauges, position indicators, etc.
- 10.7 Any external cables that the Manufacturer will provide between the circuit breaker poles and the control cabinet shall enter the control cabinet preferably from the bottom of the cabinet. Top entry is not permitted.
- 10.8 All devices, fuses, terminal blocks etc. their wiring and mounting hardware shall be readily accessible without removing other devices or wires.
- 10.9 Sufficient space, minimum six inches, shall be provided between the rows of terminal Blocks and between terminal blocks and the cabinet walls and reserved for the Purchaser's cable terminations. This space shall be free from any internal wiring between the circuit breaker devices and terminal blocks.
- 10.10 Bottom of the cabinet shall be provided with a removable aluminum plate, approximately 12" X 18", to facilitate customer's cable entry and termination.
- 10.11 All devices shall be identified with suitable nameplates in the English language. Terminal blocks shall be numbered.
- 10.12 A manually switched or door operated compact fluorescent light shall be installed inside the control cabinet.
- 10.13 A 120V, 20 Amp weatherproof convenience duplex receptacle with ground fault protection shall be provided on the exterior of one side of the cabinet. A molded case circuit breaker for this outlet shall be located inside the cabinet.
- 10.14 Screened vents, with filters shall be provided in the cabinet for air circulation.

- 10.15 A copper grounding bar with approximate dimensions of ¼” x 1” x 12” shall be bolted inside the control cabinet/mechanism housing to terminate all CT secondary, control, and instrumentation ground wires. The bar shall be complete with 10-32 screw holes with nickel plated brass screws spaced evenly at 1”. At one end of the ground bar, a lug shall be provided for attachment to Owner’s 2/0 AWG to 300 MCM stranded copper ground cables.

11.0 Mounting Structure

- 11.1 The mounting structure for the circuit breaker shall be hot dipped galvanized steel.
- 11.2 The steel frame will be completely fabricated with all holes punched, drilled and all cutting, notching and bending of the steel being done before galvanizing.
- 11.3 All steel shall be shipped pre-laced. Only required holes shall be drilled.
- 11.4 Galvanizing shall be in accordance with ASTM A-123, ASTM A-143 and ASTM 1-153. “Double dip” galvanizing is prohibited.
- 11.5 All parts of the structural assembly should be made from materials that ensure galvanizing compatibility. The immersion time, the temperature of the bath, and the use of inhibitors will vary with the type of steel being used. Parts made from steel of different chemistry or from members having large differences in thickness may result in various coating colors, textures, and thicknesses.

11.6 Surface Preparation

- 11.6.1 A caustic bath shall be used to remove excessive oils, paints, and grease.
- 11.6.2 An acid bath shall be used to remove mill scale and rust.
- 11.6.3 Shot or grit blasting shall be used if necessary to remove deeply embedded mill scale or where the surface has inclusions of sand particles that cannot be removed by pickling.
- 11.6.4 All welds shall be cleaned by hand or blast methods to remove welding residues.
- 11.6.5 Inhibitors shall be used as necessary in the pickling bath to reduce hydrogen absorption.
- 11.6.6 All of the pickling solution shall be removed from both the inside and outside surface of the part before immersion in the preflux solution.

11.7 Zinc Coating

- 11.7.1 After prefluxing, the parts shall be dipped in a molten zinc galvanizing bath in accordance with the ASTM specifications noted above.
- 11.7.2 All areas that have become damaged prior to delivery at site may be repaired by using commercial zinc products designed for this purpose, applying zinc rich paint, zinc spraying or applying brushed molten zinc. All repairs shall be subject to the approval of the Engineer.

12.0 Accessories

- 12.1 One lot special tools required for installation shall be provided with the breaker.

13.0 Factory Witness Test

The manufacturer shall notify the City of Alexandria not less than ten (10) working days prior to the date of factory witness test.

14.0. Drawings and Instruction Manuals

14.1 General

- 14.1.1 One (1) complete set of printed drawings, instruction book, and installation/maintenance manual shall be shipped with each breaker.
- 14.1.2 The following information shall be included on all drawings, in or adjacent to the drawing title block, and on the first page of all instruction books:

City of Alexandria
Twin Bridges Substation
230 kV Gas Circuit Breaker
City of Alexandria Purchase Order Number

14.2 Approval Drawings:

- 14.2.1 Supplier shall furnish three (3) sets of approval prints plus all drawings electronically in AutoCAD (DXF) format to the Engineer as soon as possible after receipt of purchaser's order.
- 14.2.2 Drawings shall indicate weight, dimensions, mounting data, anchor bolt plans, performance, summary of equipment sheets, wiring and schematic diagrams, C.T. excitation curves, and other pertinent data on all significant items.
- 14.2.3 Any drawings not approved shall be re-submitted until approved.

14.3 Final Drawings:

- 14.3.1 Final drawings shall be supplied no later than the date of shipment.
- 14.3.2 Three (3) complete sets of printed drawings plus all drawings in AutoCAD (DXF) format shall be sent to the Owner.
- 43.3.3 One (1) complete set of printed drawings plus all drawings in AutoCAD (DXF) format shall be sent to the Engineer.

14.4 Instruction Manuals

- 14.4.1 Each instruction manual will be complete with instructions for each device, along with a parts breakdown with ordering information on obtaining spare or replacement components as well as long-term storage and handling information.
- 14.4.2 Three (3) copies of each instruction book and installation/maintenance manual will be provided to the Owner.
- 14.4.3 One (1) copy of each instruction book and installation/maintenance manual will be supplied to the Engineer.

15.0. Warranty

- 15.1 Manufacturer shall warrant the breaker to be free from defects in material and workmanship, including material, parts and components of other suppliers which are an integral part of the breaker, for a period of not less than five (5) years after delivery.
- 15.2 If any component fails to meet these requirements within the warranty period, manufacturer shall be responsible for furnishing parts and all transportation, supervision, labor and other cost of dismantling, furnishing and installing the repaired or replacement parts in a timely manner.
- 15.3 Bidder shall include with its proposal a warranty statement indicating the terms and conditions of the warranty for the breaker and all accessories.

16.0 Shipping

- 16.1 The breaker shall be shipped F.O.B. point of delivery at the Owner's Twin Bridges substation site located in Alexandria, Louisiana. A Vicinity Map showing the location of the station site is included with this specification.
- 16.2 The proper amount of SF₆ gas shall be supplied with each breaker to fill the breaker to the manufacturer's specifications.
- 16.3 The circuit breaker and components shall be clean, dry, and sealed when shipped from the factory. Each component shall contain a packaged moisture absorbing chemical. Complete instructions on inspection upon receipt at substation and maintaining moisture free components as well as SF₆ filling instructions shall be shipped inside of breaker control cabinet.
- 16.4 The breaker shall be shipped with a complete set of recommended spare parts. Also one set of special tools shall be supplied, if they are required, for dismantling and maintenance of the breaker. The tools and spare parts shall be shipped in separate well constructed wooden boxes provided with hinged cover and padlock hasps. All boxes shall be designed as permanent storage enclosures.
- 16.5 If truck shipment is made, all breakers are to be shipped in open top truck. Circuit breakers shipped in closed vans will not be accepted.
- 16.6 Components are to be packaged and preferably shipped within the mechanism housing or fastened to the breaker frame.

17.0 Field Engineering Service

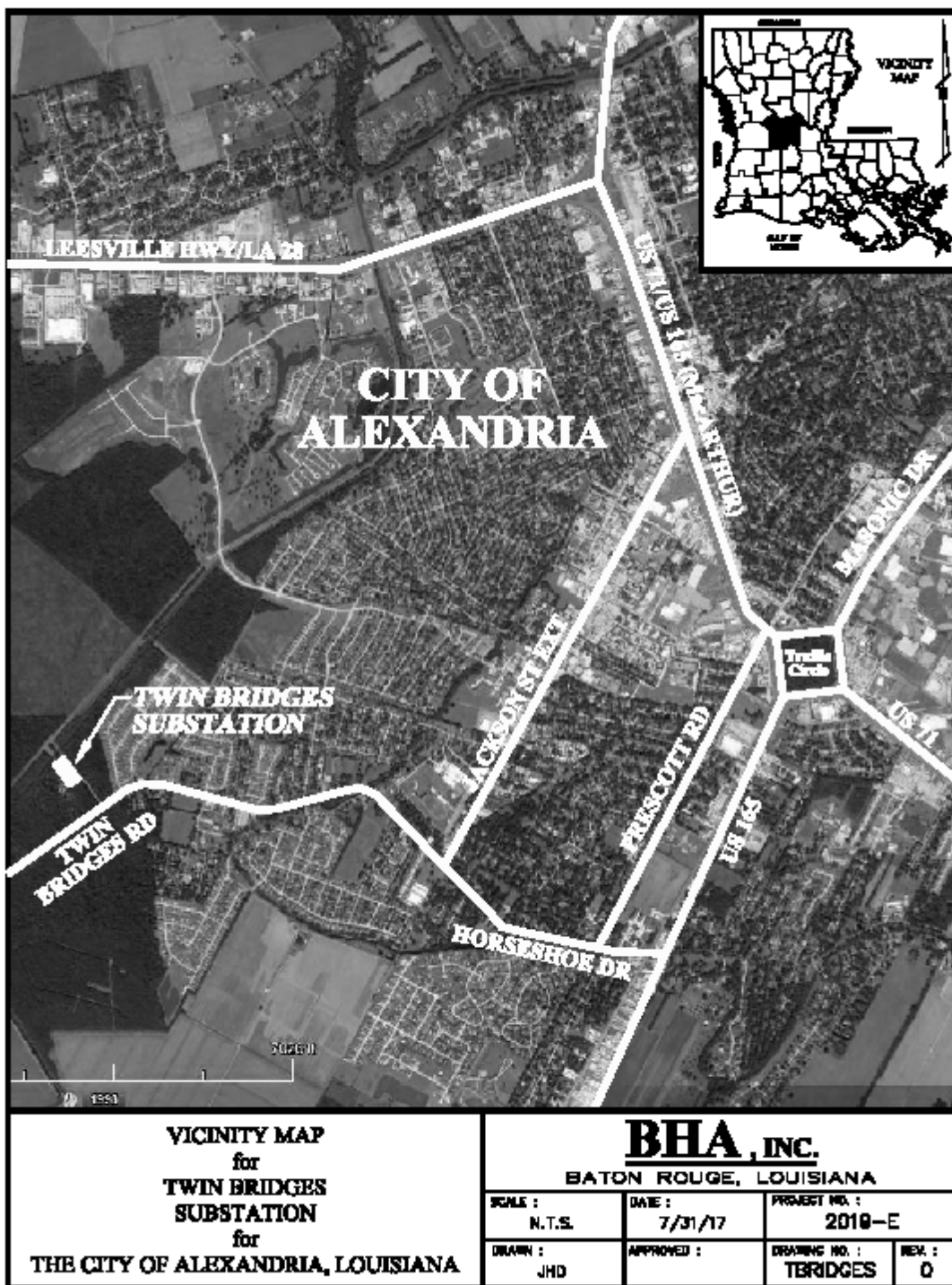
- 17.1 Manufacturer shall furnish an authorized and qualified Field Engineer to perform on site inspection and alignment of the breaker, to fill the breaker with SF₆ gas, and to instruct personnel on operation and maintenance prior to placing the breaker in service. Price for this service shall be included in the base bid.

18.0 Delivery

- 18.1 The breaker shall be delivered not later than 22 weeks after receipt of order. A Bidder that cannot meet this schedule should quote its best delivery.
- 18.2 The Owner reserves the right to delay delivery up to ninety (90) days from the delivery date specified, upon thirty (30) days notice prior to scheduled shipment.
- 18.3 Manufacturer's scheduled shipment and delivery date shall be included in the proposal.
- 18.4 Vendor shall provide 48 hours advance notice of delivery to Owner.

END OF SPECIFICATIONS

SECTION C
VICINITY MAP



SECTION D
ALARM WINDOW LEGEND

SEL 2533 Alarm Window Legend

	1	2
A	LOSS OF DC PRIMARY TRIP	LOSS OF DC BACKUP TRIP
B	LOSS OF DC CLOSE	LOSS OF DC MOTOR
C	SF6 GAS LOCKOUT	SF6 GAS PRESSURE
D	MOTOR/PUMP EXCESSIVE RUN	LOW CLOSING PRESSURE
E	GAS MONITOR FAILURE	

SECTION E

BID FORM

