



**Town of Ridgeland  
1 Town Square / P.O. Box 1119  
Ridgeland, SC 29936  
843.726.7500**

**REQUEST FOR BIDS: TOR 2021-01  
RIDGELAND TOWN HALL GENERATOR PROJECT**

**BIDS DUE: FRIDAY, APRIL 23, 2021 @ 11:00 AM**

**MAIL BID RESPONSE TO:**

Town of Ridgeland  
Attn: Dennis E. Averkin, Town Administrator  
P.O. Box 1119  
Ridgeland, SC 29936

**HAND DELIVER BID RESPONSE TO:**

Town of Ridgeland  
Attn: Dennis E. Averkin, Town Administrator  
1 Town Square  
Ridgeland, SC 29936

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## A. OVERVIEW

The Town of Ridgeland, South Carolina (the "**Town**") requests bids from qualified licensed contractors for the procurement and installation of new propane fueled emergency generator, automatic transfer switch, branch circuit panel, all power and control wiring and miscellaneous equipment. The propane fuel tank to serve the generator will be provided by Beaufort Gas, the Town of Ridgeland propane supplier.

Subject to the terms, conditions, provisions, and the enclosed specifications, responses to this solicitation will be received at this office until the stated date and time. Responses received after the scheduled due date and time will be rejected. Bids must be submitted in a sealed package marked on the outside with the Offeror's name, address, and the solicitation name and number.

This solicitation does not commit the Town of Ridgeland to award a contract, to pay any costs incurred in the preparation of bids submitted, or to procure or contract for the services. The Town reserves the right to accept or reject or cancel in part, or in its entirety offers received as a result of this request if deemed to be in the best interest of the Town to do so.

## B. SCOPE OF WORK

The project consists of procurement and installation of a new 80 KW/100 KVA 208Y/120V 3-Phase, 4-Wire propane fueled generator, 400A/3P/3R automatic transfer switch, surge protection, grounding system, concrete equipment pads, coordination with Dominion Energy for the new electrical service and with Beaufort Gas for the 1000 gallon propane tank, all required testing, permits, maintenance of traffic, erosion and sediment control, and all restoration required to return the site to pre-construction condition.

This contract is a lump sum contract.

## C. INSTRUCTIONS TO BIDDERS

1. Submittal must include one (1) original bid response clearly marked as original, and three (3) complete copies of the Offeror's bid along with a completed W-9 form. Responses must be in a sealed envelope/package containing the solicitation name and number. The individual signing the response must be an Agent legally authorized to bind the company.
2. Show solicitation number on the outside of mailing package. The Town of Ridgeland assumes no responsibility for unmarked or improperly marked envelopes.
3. It is the Offeror's sole responsibility to insure that solicitation responses, amendments thereto or withdrawal requests are submitted by the scheduled due date and time.
4. The Offeror must clearly mark as "Confidential" each part of their response, which they consider to be proprietary information that could be exempt from disclosure under Section 30-40(C) Code of Laws of South Carolina, 1976, Freedom of Information Act. The Town of Ridgeland reserves the right to determine whether this information should be exempt from disclosure and legal action may not be brought against the Town or its agents for its determination in this regard.

5. Offeror shall complete and submit all forms listed in the **Bid Forms** section of the table of contents. All responses shall be printed in ink or typewritten. Bids written in pencil will be disqualified.
6. Subject to the terms, conditions, provisions, and the enclosed specifications, responses to this solicitation will be received at this office until the stated date and time. Responses received after the scheduled due date and time will be rejected. Bids must be submitted in a sealed package marked on the outside with the Offeror's name, address, and the solicitation name and number.
7. *Payment, Performance and Bid Bonds* – The Contractor shall supply for the project, and incorporate the cost as part of his bid, Payment and Performance Bonds for this contract for not less than 100% (one hundred percent) of the total bid amount. A Bid Bond of not less than 5% (five percent) of the total bid amount will be included in the Contractor's quotation. Any bid that does not meet these requirements will not be considered by the Town.
8. The award of the bid is subject to appropriation. If Town Council does not appropriate funds for project, then the Town has the right to withdraw from the project at not cost or penalty to the Town.
9. This solicitation does not commit The Town of Ridgeland to award a contract, to pay any costs incurred in the preparation of bids submitted, or to procure or contract for the services. The Town reserves the right to accept or reject or cancel in part, or in its entirety offers received as a result of this request if deemed to be in the best interest of the Town to do so.

Questions regarding this solicitation must be emailed to Dennis E. Averkin, Town Administrator at [daverkin@ridgelandsc.gov](mailto:daverkin@ridgelandsc.gov) no later than 5:00 PM on Friday, April 16, 2021. Answers to all questions will be posted on the Town website as addendums to this request for bid.

**A “No Response” qualifies as a response; however, it is the responsibility of the Offeror to notify the Procurement Office if you receive solicitations that do not apply.**

## D. SELECTION CRITERIA

It is the intent of The Town of Ridgeland to award one contract to the lowest responsive, responsible bidder based on the submitted information in the Bid Forms. The Town reserves the right to accept or reject all bids if deemed to be in the best interest of the Town to do so.

## E. SPECIFIC TERMS AND CONDITIONS

1. **COMPETITION:** This solicitation is intended to promote full and open competition. If any language, specifications, terms and conditions, or any combination thereof restricts or limits the requirements in this solicitation to a single source, it shall be the responsibility of the interested vendor to notify the Town Administrator in writing no later than seven (7) business days prior to the scheduled due date and time.
2. **PRE-BID CONFERENCE:** There will be an optional pre-bid conference to be held at Town Hall, 1 Town Square, Ridgeland, SC 29936 in Ridgeland on **April 6, 2021 at 10:00 AM** for all prospective bidders. The Town strongly encourages bidders to conduct a site visit and attend the pre-bid conference.

3. RESPONDANTS QUALIFICATION: The Town reserves the right to request satisfactory evidence of the respondents' ability to furnish services in accordance with the terms and conditions listed herein. The Town further reserves the right to make the final determination as to the Offeror's ability to provide said services.
4. RESPONSE WITHDRAWAL: Any responses may be withdrawn prior to the established closing date and time, but not thereafter, with proper approval from the Procurement Manager.
5. REJECTION: The Town of Ridgeland reserves the right to reject any and all bids, to cancel or withdraw this solicitation, and to waive any technicality if deemed to be in the best interest of the Town.
6. WAIVER: The Town reserves the right to waive any Instruction to Offerors, General or Special Provisions, General or Special Conditions, or specifications deviation if deemed to be in the best interest of the Town.
7. RESPONSE PERIOD: All responses shall be good for a minimum period of **60 calendar days**.
8. DEVIATIONS FROM SPECIFICATIONS: Any deviation from the specifications indicated herein must be clearly pointed out; otherwise, it will be considered that items offered are in strict compliance with these specifications, and successful offeror will be held responsible therefore. Deviations must be explained in detail on separate attached sheet(s). The listing of deviations, if any, is required but will not be construed as waiving any requirements of the specifications. Unidentified deviations found during the evaluation of the response may be cause for rejection.
9. AMENDMENTS: All amendments to and interpretations of this solicitation shall be in writing and issued by the Procurement Manager of The Town of Ridgeland.
10. DEBARMENT: By submitting a qualification package, the vendor is certifying that they are not currently debarred from responding to any request for bids by any agency or subdivision of the State of South Carolina or the United States Federal Government, nor are they an agent of any person or entity that is currently debarred from submitting bids on contracts by any agency or subdivision of the State of South Carolina.
11. DEFAULT: In case of default by the Offeror, the Town reserves the right to purchase any or all items in default in the open market, charging the Offeror with any excessive costs. Should such charge be assessed, no subsequent solicitation response of the defaulting Offeror will be considered in future bids until the assessed charge has been satisfied.
12. HOLD HARMLESS: All respondents to this bid shall indemnify and hold harmless The Town of Ridgeland and any of their officers and employees from all suits and claims alleged to be a result of this request for bids. The issuance of this request of bids constitutes only an invitation to present a bid. The Town of Ridgeland reserves the right to determine, at its sole discretion, whether any aspect of a respondent's submittal meets the criteria in this request for proposals. The Town of Ridgeland also reserves the right to seek clarifications, to negotiate with any vendor submitting a response, to reject any or all responses with or without cause, and to modify the procurement process and schedule.
13. CANCELLATION: In the event that this request for bids is withdrawn or the project canceled for any reason, The Town of Ridgeland shall have no liability to any respondent for any costs or expenses incurred in

connection with this request for bids or otherwise.

14. THE TOWN OF RIDGELAND PURCHASING ORDINANCE: The Request for Bids is subject to the provisions of the Town of Ridgeland Purchasing Ordinance and any revisions thereto, which are hereby incorporated into this request for bids in their entirety except as amended or superseded within.
15. FAILURE TO SUBMIT ALL MANDATORY FORMS: Failure to submit all the mandatory forms from this request for bids shall be just cause for the rejection of the qualification package. However, The Town of Ridgeland reserves the right to decide, on a case-by-case basis, in its sole discretion, whether or not to reject such a bid as non-responsive.
16. CONTRACT AWARD:
  - a. This solicitation and submitted documents, when properly accepted by The Town of Ridgeland shall constitute an agreement equally binding between the successful Offeror and the Town.  
  
No oral statement of any person shall modify or otherwise change, or affect the terms, conditions or specifications stated in the resulting agreement. The Town shall not be legally bound by any amendment or interpretation that is not fully executed by both parties in writing.
  - b. The successful Offeror shall be required to execute a formal agreement with the Town within ten (10) business days after issuance of the Notice of Award.
17. CONTRACT ADMINISTRATION: Questions or problems arising after award of an agreement shall be directed to the Town Administrator by calling (843) 726-7500. Copies of all correspondence concerning this solicitation or resulting agreement shall be sent to the Town Administrator, P.O. Box 1119, Ridgeland, SC 29936.

## F. GENERAL CONTRACTUAL REQUIREMENTS

1. ABANDONMENT OR DELAY: If the work to be done under this contract shall be abandoned or delayed by the Offeror, or if at any time the Town shall be of the opinion and shall so certify in writing that work has been abandoned or delayed by the Offeror, the Town may annul the contract or any part thereof if the Offeror fails to resolve the matter within thirty (30) days of written notice.
2. OFFEROR'S COOPERATION: The Offeror shall maintain regular communications with the Town Administrator and shall actively cooperate in all matters pertaining to this contract.
3. RESPONSIBILITY: The Offeror shall at all times observe and comply with all federal, state, local and municipal laws, ordinances, rules and regulations in any manner affecting the contract.
4. NON-APPROPRIATION / SUBSTITUTION PERMITTED: If the Town of Ridgeland Council fails to appropriate or authorize the expenditure of sufficient funds to provide the continuation of this contract or if a lawful order issued in, or for any fiscal year during the term of the agreement, reduces the funds appropriated or authorized in such amounts as to preclude making the payments set out therein, the agreement shall terminate on the date said funds are no longer available without any termination charges or other liability incurring to Town. Following any such non-appropriation, the master lease agreement shall contain no limitation on the Town's ability to replace the equipment financed with any other equipment.

5. INDEMNIFICATION: Except for expenses or liabilities arising from the negligence of the Town, the Offeror hereby expressly agrees to indemnify and hold the Town harmless against any and all expenses and liabilities arising out of the performance or default of any resulting agreement or arising from or related to the Work as follows:

Offeror expressly agrees to the extent that there is a causal relationship between its negligence, action or inaction, or the negligence, action or inaction of any of its employees or any person, Offeror, or corporation directly or indirectly employed by the Offeror, and any damage, liability, injury, loss or expense (whether in connection with bodily injury or death or property damage or loss) that is suffered by the Town and its employees or by any member of the public, to indemnify and save the Town and its employees harmless against any and all liabilities, penalties, demands, claims, lawsuits, losses, damages, costs, and expenses arising out of the performance or default of any resulting agreement or arising from or related to the equipment. Such costs are to include defense, settlement and reasonable attorneys' fees incurred by the Town and its employees. This promise to indemnify shall include bodily injuries or death occurring to Offeror's employees and any person, directly or indirectly employed by Offeror (including without limitation any employee of any subcontractor), the Town's employees, the employees of any other independent contractor, or occurring to any member of the public. When the Town submits notice, Offeror shall promptly defend any aforementioned action.

6. The prescribed limits of insurance set forth herein shall not limit the extent of the Offeror's responsibility under this Section. The terms and conditions contained in this Section shall survive the termination of any resulting agreement or the suspension of the Work hereunder. Additionally, the Town will not provide indemnity to the successful OFFEROR. Failure to comply with this section may result in your request for bid to be deemed non-responsive.
7. FORCE MAJEURE: The Offeror shall not be liable for any excess costs if the failure to perform the resulting agreement arises out of causes beyond the control and without fault or negligence of the Offeror. Such causes may include, but are not restricted to acts of God or of the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the contractor. If the failure to perform is caused by default of a subcontractor, and if such default arises out of causes beyond the control of both the Offeror and subcontractor and without excess costs for failure to perform, unless the supplies or services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit the contractor to meet the required delivery schedule.
8. ARBITRATION: Under no circumstances and with no exception will The Town of Ridgeland act as arbitrator between the Offeror and any sub-contractor.
9. PUBLICITY RELEASES: Offeror agrees not to refer to award of this contract in commercial advertising in such a manner as to state or imply that the products or services provided are endorsed or preferred by the Town. The Offeror shall not have the right to include the Town's name in its published list of customers without prior approval of the Town Administrator. With regard to news releases, only the name of the Town, type and duration of any resulting agreement may be used and then only with prior approval of the Town. The Offeror also agrees not to publish, or cite in any form, any comments or quotes from the Town's staff unless it is a direct quote from the Procurement Manager.
10. GOVERNING LAWS: Any agreement arising from this solicitation shall be governed by the laws of the State

of South Carolina and any and all disputes arising out of said agreement shall, if litigation is necessary, be litigated only in a Circuit Court for the Fourteenth Judicial Circuit sitting in Jasper County, South Carolina. The prevailing party shall be entitled to attorney's fees and all costs of said litigation.

11. ASSIGNMENT: The Offeror shall not assign in whole or in part any agreement resulting from this Request for Bids without the prior written consent of the Town. The Offeror shall not assign any money due or to become due to him under said agreement without the prior written consent of the Town.
12. AFFIRMATIVE ACTION: The successful Offeror will take affirmative action in complying with all Federal and State requirements concerning fair employment and treatment of all employees, without regard or discrimination by reason of race, color, religion, sex, national origin or physical handicap.
13. FAILURE TO DELIVER GOODS IN ACCORDANCE WITH TERMS & CONDITIONS: In case of failure to deliver goods in accordance with the contract terms and conditions, The Town of Ridgeland, after due oral or written notice, may procure substitute goods or services from other sources and hold the contractor responsible for any resulting additional purchasing and administrative costs. This remedy shall be in addition to any other remedies which The Town of Ridgeland may have.
14. TERMINATION OF CONTRACT:  
Subject to the Provisions below, the contract may be terminated by the Town Administrator providing a thirty (30) days advance notice in writing is given to the offeror.
  - a. Termination for Convenience: In the event that this contract is terminated or canceled upon request and for the convenience of the Town without the required thirty (30) days advance written notice, then the Town shall negotiate reasonable termination costs, if applicable.
  - b. Termination for Cause: Termination by the Town for cause, default or negligence on the part of the offeror shall be excluded from the foregoing provisions; termination costs, if any, shall not apply. The thirty (30) days advance notice requirement is waived and the default provision in this request for bids shall apply.
  - c. The Town shall be obligated to reimburse the Offeror only for those services rendered prior to the date of notice of termination, less any liquidation damages that may be assessed for non-performance.

Non-Appropriations Clause: Notwithstanding any other provisions of the contract, if the funds anticipated for the continued fulfillment of this contract are at any time not forthcoming, through the failure of the Town Government to appropriate funds, discontinuance or material alteration of the program under which funds were provided, the Town shall have the right to terminate the contract without penalty by giving not less than thirty (30) days written notice documenting the lack of funding. Unless otherwise agreed to by the Town and the Offeror, the contract shall become null and void on the last day of the fiscal year for which appropriations were received.

15. GOVERNING LAWS: Any contract resulting from this request for bids shall be governed in all respects by the laws of the State of South Carolina and any litigation with respect thereto shall be brought in the courts of the State of South Carolina.
16. OWNERSHIP OF MATERIAL: Ownership of all data, material, and documentation originated and prepared for the Town pursuant to this contract shall belong exclusively to the Town.
17. INSURANCE: The Town of Ridgeland will require the following remain in force at all times through the life of the contract:



**Professional Liability Insurance – Minimum \$1,000,000.00** - Proof of in force insurance must be provided in the response to the RFB

Other insurances:

**Workers’ Compensation - \$100,000 – each accident**

Statutory Coverage and Employer’s - \$100,000 each employee

Liability - \$500,000 – policy limit

**Comprehensive General Liability -\$1,000,000 – bodily injury each occurrence**

\$1,000,000 – bodily injury aggregate

\$1,000,000 – property damage each occurrence

\$1,000,000 – property damage aggregate

Products – Completed Operations - \$2,000,000 – aggregate

Business Auto Liability – Same as Comprehensive General Liability

Excess or Umbrella Liability - \$5,000,000

The Town of Ridgeland will be named as an “additional insured” party

**A copy of the Certificate of Insurance is required to be submitted to the Town as part of the Bid.**

## G. SPECIAL PROVISIONS

(1) DESIGN STANDARDS:

The Bidders are hereby advised that this project shall be constructed using the design standards and specifications contained in the construction drawings, which are included in Appendix “A” and the technical specifications which are included in Appendix “B.”

(2) LIQUIDATED DAMAGES:

The Contractor is hereby advised that Section 108.09 of the Town’s Ordinances is revised by deleting the table and replacing it with the following:

Schedule of Liquidated Damages for Each Day Overrun in Contract Time		
Original Contract Amount		Daily Charge
From More Than	To and Including	Calendar Day or Fixed Rate
\$0.00	\$500,000.00	\$500.00

(3) TEMPORARY SUSPENSION OF WORK:

Once work on this project commences, the Contractor must not suspend work on the project without written permission from the Town Administrator. In the event the Contractor suspends work without such approval, additional liquidated damages (at the rate specified for overruns in contract time) will be assessed for the unauthorized suspended work period.

- (4) CONSTRUCTION SCHEDULE:  
No electronic CPM Schedule will be required for this contract. In lieu of the electronic CPM schedule, provide the following information to The Town Administrator prior to the Notice to Proceed (NTP) Date:
- Planned work start date.
  - Planned completion date.
  - Anticipated equipment delivery schedule.
  - Anticipated payments by pay application period.

**Time is of the essence on this project and the project must be completed within 120 days after Notice to Proceed date.**

The Town will use this information to account for the work and cash flow generated by this contract. Provide updates to this information in the event there is a significant change to the scope of work or an adjustment to the completion date. If contract progress falls behind, provide a recovery plan to the Town Administrator no later than seven (7) business days following the pay application period end date where progress lapsed. No payment or separate pay item is included for the provision of this information. Include any costs to provide this information in other items of work.

- (5) PAYMENT SCHEDULE:  
Partial Payments will be made no more than once each month as the work progresses. The monthly partial payment periods end at the end of the day on the last day of each month. Pay applications are to be submitted to the Town Engineer for review and approval. Upon approval, the Town Engineer submits the pay application to the Town Finance Department for processing. Payment processing is performed on a weekly basis.

- (6) CHANGES/ADDITIONS TO SCOPE OF WORK:  
Any services rendered that are not specifically set out in the Bid Forms, construction drawings or technical specification are otherwise outside of the Scope of Work and will not be undertaken by the Contractor unless the Contractor has prepared and submitted and the Town has approved a written Change Order Request for the out of scope work. Any out of scope work undertaken by the Contractor without an approved and signed Change Order will be done at the sole risk of the Contractor and the Town makes no guarantees that the Town will pay for such services if performed without an approved Change Order.

- (7) RETAINAGE:  
The Town reserves the right to withhold 10% retainage on all pay applications. Retainage withheld will be paid out on the final pay application following the completion of project and all punch list items addressed.

- (8) TRAFFIC CONTROL:  
The Contractor is responsible for all maintenance of traffic required for the safety of the public including both vehicular and pedestrian traffic during construction of the project. It is noted that all roadways in the vicinity of the project are South Carolina Department of Transportation (SCDOT) roadways and Contractor must adhere to all SCDOT requirements and provide any permits necessary for maintenance of traffic required for construction.

(9) UNIFORM TRAFFIC CONTROL DEVICES:

The Contractor is advised that all work involving design or installation of traffic control devices, including but not limited to signs, pavement markings, elements of work zone traffic control, signals, etc., shall be in compliance with the FHWA's Manual on Uniform Traffic Control Devices (MUTCD), latest edition.

(10) SEDIMENT & EROSION CONTROL SPECIFICATIONS DURING CONSTRUCTION:

In order to meet the requirements of National Pollution Discharge Elimination System (NPDES) regulations, the Contractor shall take necessary measures to insure all sediment is maintained on-site during construction. OCRM Best Management Practices (BMPs) will be implemented and adhered to by the Contractor as necessary. The Contractor is responsible for restoring disturbed areas of the site to preconstruction conditions with sidewalk/pavement, gravel, or permanent grass and shall be responsible for watering until final stabilization occurs.

(11) SUBMITTALS:

Contractor shall provide submittals for the project to the Town Engineer within fourteen (14) days after NTP. Town Engineer shall return reviewed submittals within fourteen (14) days of receipt. Electronic (PDF) documents are acceptable for the submittals.

The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall ensure that the material or equipment shall be as described in the submittal. Each submittal shall bear a stamp or written indication that the Contractor's obligations under the contract with respect to the Contractor's review and approval of that submittal have been met. The Contractor shall verify in writing that all features of all products conform to the requirements of the drawings and specifications. If the Contractor takes exception to the specifications, the Contractor shall note the exception in the letter of transmittal to the Town Engineer and the shop drawings shall clearly indicate any deviations in the submittal from the requirements of the Contract Documents. Submittal documents shall be clearly edited to indicate only those items which are being submitted for review. All extraneous material shall be crossed out or otherwise obliterated. The Contractor shall ensure that there is no conflict with other submittals and shall notify the Town Engineer in each case where his submittal may affect the work of another contractor or the Owner. The Contractor shall ensure coordination of submittals among the related crafts and subcontractors.

Before each submittal, the Contractor shall have determined and verified all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto; all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the work; and all information relative to the Contractor's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto. The Contractor shall be responsible for and bear all costs of damages which may result from the ordering of any material or from proceeding with any part of work prior to the completion of the review by Town Engineer of the necessary Submittals.

(12) MEASUREMENT AND PAYMENT:

The total Contract Amount shall cover the Work required by the Contract Documents. All costs in connection with the successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction, equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum

prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

Payment for Lump Sum Work will be based on the percent of completed work of each item in the Schedule of Values, including stored materials, as determined by the Owner. Progress of work in each item of the Schedule of Values will be determined separately by the Owner. However, the Owner will issue a single payment certificate for progress on the Contract.

- (13) PERMITS: Contractor is responsible for acquiring any and all permits necessary for the completion of this project.

*H. BID FORMS*

**BID SUMMARY FORM: TOR 2021-01: RIDGELAND TOWN HALL GENERATOR PROJECT**

Item No.	Item	Quantity	Unit	Cost	Total
1	Contractor General Conditions	1	LS	\$	\$
2	Soil Erosion & Sediment Control (including permanent grass)	1	LS	\$	\$
3	Electrical Equipment and Installation	1	LS	\$	\$
4	Concrete Pads for Generator, LP Tank (1000 gallon), Demolition and Replacement Misc. Concrete	1	LS	\$	\$
5	Site Restoration	1	LS	\$	\$

**TOTAL BID PRICE (Items 1 through 5):** \$ \_\_\_\_\_

**TOTAL BID PRICE (Items 1 through 5) IN WORDS:** \_\_\_\_\_

Equipment or Material Item	Specification Section	Supplier/Manufacturer (List One Only per Item)	Anticipated Delivery (in Weeks) after Approved Shop Drawings
Generator	16215		

**THIS FORM MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID**

# EXPERIENCE AND REFERENCE FORM

## EXPERIENCE AND REFERENCE

Bidder shall include a list of three references for similar work with bid response. References shall include project name, brief description and location of project, completed dollar amount of project, date completed, contact person's name, phone, fax number, and email address of a similar job completed

1.) Name of Project Owner: \_\_\_\_\_  
Brief Description Including Location \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Completed Dollar Amount: \$ \_\_\_\_\_ Date Completed: \_\_\_\_\_  
Contact Person's Name: \_\_\_\_\_  
Contact Phone: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_ Contact Fax: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_  
Contact E-mail: \_\_\_\_\_

2.) Name of Project Owner: \_\_\_\_\_  
Brief Description Including Location \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Completed Dollar Amount: \$ \_\_\_\_\_ Date Completed: \_\_\_\_\_  
Contact Person's Name: \_\_\_\_\_  
Contact Phone: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_ Contact Fax: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_  
Contact E-mail: \_\_\_\_\_

3.) Name of Project Owner: \_\_\_\_\_  
Brief Description Including Location \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Completed Dollar Amount: \$ \_\_\_\_\_ Date Completed: \_\_\_\_\_  
Contact Person's Name: \_\_\_\_\_  
Contact Phone: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_ Contact Fax: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_  
Contact E-mail: \_\_\_\_\_

4.) Name of Project Owner: \_\_\_\_\_  
Brief Description Including Location \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Completed Dollar Amount: \$ \_\_\_\_\_ Date Completed: \_\_\_\_\_  
Contact Person's Name: \_\_\_\_\_  
Contact Phone: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_ Contact Fax: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_  
Contact E-mail: \_\_\_\_\_

**THIS FORM MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID**

# SUBCONTRACTOR FORM

## SUBCONTRACTOR FORM

Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

**THIS FORM MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID**

# DBE SUBCONTRACTOR FORM

## DBE SUBCONTRACTOR FORM

DBE Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

Subcontractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Description of Work to be Performed: \_\_\_\_\_

\_\_\_\_\_

Dollar Value of Subcontractor's Work: \$ \_\_\_\_\_ Percentage of Contract Value: \_\_\_\_\_

Total Dollar Value of Contract: \$ \_\_\_\_\_

Total Dollar Value of DBE Subcontract Work: \$ \_\_\_\_\_

DBE Percent of Contract Value: \_\_\_\_\_

***The Contractor hereby commits to subcontract portions of the work to DBE subcontractors as indicated above or approved substitute DBE subcontractors.***

CONTRACTOR: \_\_\_\_\_ DATE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ TITLE: \_\_\_\_\_

**THIS FORM MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID**



# CERTIFICATE OF FAMILIARITY

**BID: TOR 2021-01**  
**TOWN OF RIDGELAND TOWN HALL GENERATOR PROJECT**  
**CERTIFICATE OF FAMILIARITY**

The undersigned, having fully familiarized him/herself with the information contained within this entire solicitation and applicable amendments, submits the attached response, and other applicable information to the Town, which I verify to be true and correct to the best of my knowledge. I further certify that this response is made without prior understanding, agreement, or connection with any corporation, Offerer or person submitting a response for the same materials, supplies or equipment, and is in all respects, fair and without collusion or fraud. I agree to abide by all conditions set forth in this solicitation and certify that I have signature authority to bind the company listed herein.

**Required with Bid:** Bid Summary Form, Bid Bond of 5% (five percent) of the Total Bid Price, Certificate of Insurance, Complete Experience and References Form, Subcontractor Form, DBE Contractor Form, and this Certificate of Familiarity

**MINORITY BUSINESS:** Are you a minority business?

▶ Yes \_\_\_\_\_ (*Women-owned /Disadvantaged*) *If yes, please submit a copy of your certificate with your response.*

▶ No \_\_\_\_\_

\_\_\_\_\_  
Mailing Address

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Fax Number

## REMITTANCE ADDRESS

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Authorized Signature (As registered with the IRS)

\_\_\_\_\_  
Address

\_\_\_\_\_  
E-Mail Address

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Fax Number

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Toll Free Number

\_\_\_\_\_  
Federal Tax ID Number

\_\_\_\_\_  
Sales Tax Number

**THIS FORM MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID**

**APPENDIX A**

**CONSTRUCTION DRAWINGS**

**(UNDER SEPARATE COVER)**

## **APPENDIX B**

### **TECHNICAL SPECIFICATIONS**

**16010 – Electrical**

**16215 – Engine Driven Emergency Power Supply System**

**16010**

**ELECTRICAL**

**PART 1 BASIC ELECTRICAL REQUIREMENTS**

**1.01 QUALITY ASSURANCE**

- A. All electrical work shall be in accordance with the following codes and agencies:
  - 1. The National Electrical Code (NFPA 70), 2017 Edition with South Carolina Modifications.
  - 2. The International Building Code, 2018 Edition with South Carolina Modifications.
  - 3. Regulations of the local utility company concerning metering and service entrance.
  - 4. State and local ordinances governing electrical work.
- B. All materials shall be new and shall conform to standards where such have been established for the particular material. All UL listed equipment shall bear the UL label.

**1.02 PERMITS**

- A. Obtain all permits and inspections required for the work involved. Deliver to the owner all certificates of inspection.

**1.03 WARRANTY**

- A. The contractor shall warrant to the owner that all work shall be free from defects and will conform to the contract documents. This warranty shall extend not less than one year from the date of beneficial occupancy.

**1.04 DRAWINGS**

- A. The drawings indicate the general arrangement of electrical equipment, based on one manufacturer's product. Coordinate installation of equipment with all other trades. Do not scale drawings for connection locations. Bring all discrepancies to the immediate attention of the architect.
- B. Contractor shall install and circuit all electrical work as indicated on drawings unless specific building construction requires a change or rerouting of this work. He shall keep a record of the location of all concealed work, including the underground utility lines. He shall document all changes in the manner specified by the General Conditions, Special Conditions and Supplementary General Conditions to the Mechanical and Electrical Work.

**1.05 EQUIPMENT REQUIRING ELECTRICAL SERVICE**

- A. Review all specification sections and drawings for equipment requiring electrical service. Provide service to and make connections to all such equipment.
- B. Drawings are based on design loads of one manufacturer. If equipment actually furnished have loads, numbers of connections, or voltages other than those indicated on the drawings, then control equipment, feeders, and overcurrent devices shall be adjusted as required, at no additional cost to the owner. Such adjustments are subject to review by the architect.
- C. Catalog numbers indicated with equipment, devices and lighting fixtures are for convenience only. Errors or obsolescence shall not relieve the furnishing of items which meet the technical description given in specifications, noted, or required by function designated.

**1.06 SCHEDULING OF OUTAGES**

- A. Electrical work requiring interruption of electrical power which would adversely affect the normal operation of other portions of the owner's property, shall be done at other than normal working hours. Normal working hours shall be considered 8:00 a.m. to 6:00 p.m., Monday through Friday. Schedule the interruption of electrical power three working days prior to actual shutdown.

**1.07 SITE INVESTIGATION AND RENOVATION CONDITIONS**

- A. Prior to submitting bids for the project, visit the site to become familiar with existing conditions. The project shall be restored to its existing condition, with the exception of work under this contract, prior to final payment.
- B. Provide additions and alterations to existing work required to produce a complete electrical installation. Relocate existing electrical work for other trades required to complete the work and to maintain buildings in service. Provide for the removal, reinstallation, reconnection or relocation of existing circuit wiring, wiring devices, lighting fixtures, etc., necessitated by the new work. If any portion of an existing circuit is in an area where no new work is being done, but is made electrically discontinuous by the new work, it shall be recircuited to maintain electrical continuity. Cutting, channeling, chasing, or drilling of walls, partitions, ceilings, or other surfaces and support, or anchorage of conduit, or other electrical work, shall be done without damage to other piping or building equipment. Existing surfaces shall then be patched and painted to match the surrounding areas.

**1.08 PRODUCT DELIVERY, STORAGE, HANDLING, AND PROTECTION**

- A. Provide a dry, weather tight space for storing materials. Store packaged materials in original undamaged condition with manufacturer's labels and seals intact. Handle and store material in accordance with standards to prevent damage. Equipment and materials shall not be installed until such time as the environmental conditions of the job site are suitable. Replace damaged materials. The contractor shall warrant to the owner that all work shall be free from defects and will conform to the contract documents. This warranty shall extend not less than one year from the date of beneficial occupancy.

**1.09 CLEANING AND PAINTING**

- A. Remove oil, dirt, grease and foreign materials from all equipment to provide a clean surface.

**PART 2 BASIC MATERIALS**

**2.01 RACEWAYS**

- A. The following specifications and standards are incorporated into and become a part of this specification:
  - 1. Underwriter's Laboratory, Inc. Publications 1, 6, 467, 651, 797, 1242.
  - 2. American National Standards Institute C 80.1, C 80.3.
- B. Raceway is required for all wiring, unless specifically indicated or specified otherwise. The minimum size of conduit shall be 3/4", but shall not be less than size indicated on the drawings or required by the NEC.
- C. Conduits shall be as specified for the following conditions:
  - 1. Conduits which penetrate the building roof or exterior shall be aluminum rigid conduit (ARC).

2. Conduits installed within concrete slabs shall be ARC or schedule 80 heavy wall PVC. Where transition is made from raceway in slab to any type of raceway out of slab, make transition with an ARC elbow.
  3. Conduits installed in direct contact with earth shall be schedule 80, heavy wall PVC.
  4. Use flexible conduit for connections to all vibrating equipment.
    - a. Length shall not exceed 18".
    - b. Maintain ground continuity through flexible conduit with a green equipment grounding conductor.
    - c. Liquid-tight flexible conduit shall be used in exterior installations.
- D. ARC fittings shall be standard threaded couplings, threaded hubs, bushings, and elbows. All ARC fittings shall be aluminum alloy; set screw or non threaded fittings are not permitted. Non metallic conduit fittings shall be of the same material as the conduit furnished and shall be the product of the same manufacturer.
- E. All conduit support parts and hardware shall be stainless steel. Conduit straps shall be single hole cast metal type or two hole galvanized metal type. Conduit support channels shall be 1 1/2" x 1 1/2" – 14 gauge channel. Wire or chain is not acceptable for conduit hangers.
- F. Leave all empty conduits with a 200 lb. test nylon cord pull line. Complete raceway runs prior to installation of wires or cables. Deformed conduits shall be replaced. Protect conduits against dirt, plaster, and foreign debris with conduit plugs.
- G. Fasten conduit support devices to structure with wood screws on wood, toggle bolts on hollow masonry, expansion anchors on solid masonry or concrete, and machine bolts or clamps on steel. Nails are not acceptable. Seal all conduits penetrating building exterior with insulating electrical putty to prevent entrance of moisture.
- H. Conduit shall be run parallel or at right angles to walls, ceilings, and structural members. Support branch circuit conduits at intervals not exceeding 10 feet, and within 3 feet of each box or change of direction. Restore the fire rating of all wall penetrations. Provide an expansion and deflection coupling where conduits cross a building expansion joint.
- I. All conduits entering or exiting concrete or installed below grade shall be protected from corrosion.
1. Metallic conduits shall be protected from corrosion as follows:
    - a. Apply two coats of 3M Scotchrapp pipe primer. Allow the primer to dry before application of the second coat or application of tape.
    - b. Apply two overlapping layers of 3M Scotchrapp 51 tape.
    - c. Pipe primer and tape shall extend from the end of the metallic conduit to 6" above grade or concrete.

## **2.02 WIRES AND CABLES**

- A. The following specifications and standards are incorporated into and become a part of this specification:
1. Underwriter's Laboratories, Inc. Publications 44, 83, 486, 493.
  2. Insulated Cable Engineers Association Standards S-61-402, S-66-524.
  3. National Electrical Manufacturer's Standards WC-5, WC-7
- B. Conductors shall be electrically continuous and free from short circuits or grounds.
- C. All open, shorted, or grounded conductors and any with damaged insulation shall be removed and replaced with new material free from defects.

- D. Conductor size shall be minimum of No. 12 AWG, unless larger size is required by the drawings or the NEC. Insulation voltage level rating shall be 600 volts. All wire and cable shall bear the UL label.
- E. Conductors No. 10 and smaller shall be solid copper, 90 degrees C. type THWN/THHN. Conductors larger than No. 10 shall be stranded copper, 90 degrees C. type THWN/THHN, or XHHW.
- F. Color code all conductors. No. 6 and smaller shall have solid color compound or coating. No. 4 and larger shall have solid color compound or colored phase tape; tape shall be installed on conductors in every box, termination point, cabinet, or enclosure. Coding shall be as follows:
  - 1. 208Y/120 volt three phase four wire wye system: Phase A-black, Phase B-red, Phase C-blue, neutral-white.
  - 2. Grounding conductors shall be green or green traced.
- G. Maintain phase rotation established per N.E.C. at service equipment throughout entire project.
- H. Group and lace with nylon tie straps all conductors within enclosures. Make splices in conductors only within junction boxes, wiring troughs, or other NEC approved enclosures. Do not splice conductors in pull boxes, witchboards, panelboards, safety switches, or motor control enclosures. Identify each conductor as to circuit connection in all boxes and enclosures.
- I. Terminate stranded conductors No. 10 AWG and smaller with crimp-type lug or stud. Crimp terminal shall be the configuration type suitable for terminal point.
- J. Torque each terminal connection to the manufacturer's recommended torque value. A calibrated torquing tool shall be used to insure proper torque application.

### **2.03 BOXES**

- A. The following specifications and standards are incorporated into and become a part of this specification:
  - 1. Underwriter's Laboratory, Inc. Publications 50, 467, 514.
- B. Review drawings for areas where outlets occur within specific features and install outlets as shown on architectural drawings; or, if not shown, center and align boxes within the predominant features.
- C. Boxes shall be rustproof cast metal outlet boxes for GFI receptacles shall be 2 3/4" deep.
- D. Outlet boxes in exposed wiring systems shall be cast FS type. For exterior installations, use WP in-use type extra-duty hinged covers. Provide larger boxes as required for special purpose devices.
- E. All boxes shall be completely accessible and as required by the NEC. Provide an outlet box for device. Box sizes shall be increased from those outlined above if required by Article 314 of the NEC.
- F. Support every box from structure. Secure to wood with wood screws, hollow masonry with toggle bolts, metal with sheet metal screws, solid masonry or concrete with expansion anchors, metal studs with spring steel clamp, and structure with threaded steel rod when suspended.
- G. Remove only knockouts as required and plug all unused openings. After completion, using indelible ink wide tip marker, indicate on the cover of each junction and pull box the designation of each circuit contained therein.

### **2.04 WIRING DEVICES**

- A. The following specifications and standards are incorporated into and become a part of this specification:

1. National Electrical Manufacturer's Association Publications WD-1, WD-5.
- B. Ground fault interrupter (GFI) receptacles shall be Hubbell GFWRST20. Equivalent receptacles manufactured by Arrow Hart, General Electric, Legrand, or Leviton are acceptable.
- C. All devices installed in areas exposed to the weather shall be provided with a weatherproof, in-use, extra-duty device cover.
- D. All devices shall be provided with white finish.

## **2.05 SUPPORTING DEVICES**

- A. Provide and install supporting devices which comply with manufacturer's standard materials, design, and construction in accordance with published standards and as required for complete installation
- B. Coordinate with other electrical work, including raceway and wiring work, as necessary to interface installation of supporting devices. Install hangars, supports, clamps, and attachments to support piping properly from building structure only. Torque sleeve seal nuts, complying with manufacturer's recommended values. Ensure that sealing grommets expand to form water tight seal.

## **2.06 ELECTRICAL IDENTIFICATION**

- A. Install engraved plastic laminate sign on each major unit of electrical equipment. Provide a single line of text, 1/2" high lettering on 1 1/2" high sign (or 2" high sign if 2 lines required). Provide signs for each unit of the following:
  1. Panelboards.
  2. Electrical cabinets and enclosures.
  3. Automatic Transfer Switch.

## **PART 3 DISTRIBUTION EQUIPMENT**

### **3.01 GROUNDING SYSTEMS**

- A. Equipment grounding system shall be established with equipment ground conductors. The use of metallic raceways for equipment grounding is not acceptable. Unless indicated otherwise, provide equipment ground the same size as phase conductors.
- B. The following specifications and standards are incorporated into and become a part of this specification:
  1. Underwriter's Laboratories, Inc. Publications 44, 83, 467, 486, 493.
  2. National Electrical Manufacturer's Association Standards WC-5, WC-7.
- C. Grounding electrode conductors shall be bare or green insulated copper sized as indicated on the drawings. Equipment grounding conductors shall be green insulated type THW, THWN, or XHHW sized as indicated on the drawings. Where sizes are not indicated, grounding conductor shall be sized in accordance with NEC Article 250.
- D. Each receptacle device shall be furnished with a grounding screw connected to the metallic device frame.
- E. Ground all non-current carrying parts of the electrical system, i.e., wireways, equipment enclosures and frames, junction and outlet boxes, machine frames, and other conductive items in close proximity with electrical circuits.
- F. Grounding conductors for branch circuits are not shown on the drawings; however, grounding conductors shall be provided in all branch circuit raceways and cables, including flexible conduit. Grounding conductors shall be the same AWG size as branch circuit conductors.



- G. The equipment grounding conductor shall be terminated with a screw or bolt used for no other purpose. Equipment grounding conductors shall terminate on panel board grounding bus only. Do not terminate on neutral bus.

### **3.02 PANELBOARDS**

- A. The following specifications and standards are incorporated into and become a part of this specification:
  - 1. Underwriter's Laboratories, Inc. Publications 50, 67,489.
  - 2. National Electrical Manufacturer's Association Publications PB 1, AB 3.
- B. Products of GE/ABB, Eaton or Square D which comply with these specifications are acceptable.
- C. All panels and circuit breakers shall be UL listed and bear a UL label. Panels shall be of the dead front safety type. Provide panels complete with factory assembled circuit breakers connected to the bus bars. Number all panel boards in the following sequence: Circuits 1 and 2 - Phase A; circuits 3 and 4 - Phase B; circuits 5 and 6 - Phase C.
- D. All bus bars shall be copper. Main lugs and main breaker shall be UL approved for copper or aluminum conductors and shall be of a size range for the conductors indicated on the drawings. Each panel shall contain a full size grounding bus and, when required, a full size insulated neutral bus. The neutral and ground busses shall have a sufficient number of lugs to singularly terminate each individual conductor requiring a connection. The ground bus shall be brazed or riveted to the panel enclosure, but not attached to the panel interior. Where designated, each "space" shall include all bussing, device supports and connections for future breaker installation. Where indicated, provide sub-feed or through-feed lugs and increase box height to provide additional cable bending space; lug size shall match ampacity of mains.
- E. Branch circuit panel board width shall be between 20 and 22 inches; depth shall be 5 3/4" maximum. Provide gutters and bending space to conform with the NEC. Key all panels throughout the project alike. Where two section panels are required, provide a fully rated bus for each section with interconnecting copper conductors of ampacity equal to the rating of the main bus.
- F. Circuit breakers shall be quick-make, quick-break, thermal magnetic type bolted to the bus. Multi-pole breakers shall be common trip and common reset type; tie handle connections are not acceptable. Interrupting ratings on 208 volt systems shall be 10,000 RMS symmetrical amps minimum; provide higher ratings when indicated on the drawings. Provide the following when specified, indicated on the drawings, or required by the NEC:
  - 1. Ground fault interrupting circuit breaker (GFI).
- G. Mount panel boards with top circuit not more than 6' 6" above finished floor. Enclosures shall be secured by a minimum of four fastening devices. Attach enclosure directly to masonry, concrete, or wood, maintaining a 1" rear clearance. Mount enclosure to metal channel for installations on steel structure or drywall. Branch circuit panel board width shall be between 20 and 22 inches; depth shall be 5 3/4" maximum. Provide gutters and bending space to conform with the NEC. Key all panels throughout the project alike. Where two section panels are required, provide a fully rated bus for each section with interconnecting copper conductors of ampacity equal to the rating of the main bus.
- H. Provide in each panel board a typewritten circuit directory mounted under clear plastic in metal holder in the door of the panel reflecting all field changes additions. Install push-in knock-out closure plugs in any unused knock-out openings.

**3.03 SURGE PROTECTION**

- A. Surge protection for the system shall be an Square D XDSE series 150kA per phase, rated Type 2 surge protection device.
- B. The surge protection device shall b U.L. 1449, 4thed listed. It shall have status indicating LED, diagnostic monitoring, an audible alarm and form C dry contacts.
- C. Provide manufacturers product data and connection diagrams.
- D. Enclosure shall be NEMA 4X.

**END OF SECTION**

**16215**

**ENGINE DRIVEN EMERGENCY POWER SUPPLY SYSTEM**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. The work required under this section of the specifications consists of the installation of the complete Engine Driven Emergency Power Supply System. All materials and devices which are an integral part of this system shall be provided under this section of the specifications.
- B. Definition: The Emergency Power Supply System (EPSS) shall consist of one or more engine driven generator sets, each of which contains an engine directly coupled to an electric generator, together with the necessary switchgear, controls, accessories, transfer devices, and fuel supply to provide electric power for the duration of any failure of the normal power supply.
1. Automatic Transfer Switch (ATS): An automatic transfer switch is self-acting equipment for transferring one or more load conductor connections from one power source to another.

**1.03 QUALITY ASSURANCE**

- A. The following specifications and standards are incorporated into and become a part of this specification by reference.
1. National Fire Protection Association (NFPA):
- a. NFPA-37 Combustion Engines
  - b. NFPA-70 National Electrical Code
  - c. NFPA-110 Emergency and Stand-By Power Systems
2. Electrical Generating Systems Association (EGSA) Standards:
- a. EGSA CEP2 Codes for Emergency Power by States and Major Cities
  - b. EGSA GTD3 Glossary of Standard Industry Terminology and Definitions
  - c. EGSA ECB1 Performance Standard for Engine Cranking Batteries
  - d. EGSA TSS1 Performance Standard for Transfer Switches for use with Engine Generator Sets
  - e. EGSA BCES1 Performance Standard for Battery Chargers
  - f. EGSA ICAE1 Performance Standard for Electric Generator Set Instrument Control and Auxiliary Equipment
3. Institute of Electrical and Electronics Engineers (IEEE) Standards:
- a. IEEE 446 IEEE Recommended Practices for Emergency and Standby Power Systems
  - b. IEEE 472 Voltage Surge Withstand Capabilities
4. National Electric Manufacturers Association (NEMA) Standards:
- a. MG-1 Motors and Generators
  - b. ICS1-109 Test and Test Procedures for Automatic Transfer Switches
  - c. ICS2-447 A.C. Automatic Transfer Switch
5. Underwriters Laboratories Inc. (UL) Publications:
- a. UL 1008 Automatic and Non-Automatic Transfer Switches
6. American National Standards Institute (ANSI):
- a. C37.90a Voltage Surge Withstand Capability

- B. Acceptable Manufacturers: Products of the following manufacturers, which comply with these specifications, are acceptable:
  - 1. Engine Driven Generator Sets:
    - a. Cummins
    - b. Caterpillar
    - c. Kohler
    - d. MTU
  - 2. Transfer Switches:
    - a. Cummins OTPC Series
    - b. ASCO 7000 Series
    - c. GE/ABB TrueOne
- C. Equipment Dimensions:
  - 1. Dimensions indicated (40" W X 98"L X 52"H) are maximum allowable and shall not be exceeded. Where equipment of acceptable manufacturers listed exceeds the maximum dimensions, products of such manufacturers shall not be acceptable.
- D. Coordination:
  - 1. Review shop drawings submitted under this and other sections, as well as other divisions, to insure coordination between work required among different trades. Coordinate the installation sequence with other contractors to avoid conflicts and to provide the fastest overall installation schedule. Coordinate installation with architectural and structural features, equipment installed under other sections of the specifications, and electrical equipment to insure access and to insure clearance minimums are provided.

#### 1.04 **SUBMITTALS**

- A. Manufacturer's Product Data:
  - 1. Submit material specifications and installations data for products specified under Part 2 - Products to include:
    - a. Engine driven generator sets
    - b. Transfer switches
- B. Shop Drawings: Submit shop drawings to indicate information not fully described by the product data to indicate compliance with the contract drawings. Submittals containing less than the information listed below will be rejected.
  - 1. Shop drawings for the engine driven generator sets shall contain not less than the information listed as follows:
    - a. Continuous and stand-by rating of engine driven generator set(s) including voltage and phase.
    - b. Frequency and voltage regulation with maximum instantaneous voltage dip and time of recovery to stable operation.
    - c. Output voltage adjustment range in percentage of rated plant voltage.
    - d. Alternator type and method of connection to prime mover.
    - e. Components contained in alternator instrument panel.
    - f. Rating of engine at operating speed, engine cycle and number of cylinders.
    - g. Type of engine lubrication system and verification of components specified.
    - h. Type of engine governor.
    - i. Components contained in engine instrument panel.
    - j. Fuel consumption at rated load.
    - k. Starting batteries including ampere hour rating.
    - l. Verification that all accessories specified are to be provided. This includes cold weather starting aid with rating and voltage indicated, exhaust system with muffler type indicated, and outdoor housing (where applicable) with verification of space available within housing for batteries.
    - m. Line and machinery constants of the generator furnished.

2. Shop drawings for the transfer switch shall contain not less than the information listed as follows:
  - a. List of accessories contained in the control panel.
  - b. Withstand rating in RMS symmetrical amperes.
- C. Quality and Service:
  1. All materials and parts of the EPSS shall be new and unused. Each component shall be of current manufacture from a firm regularly engaged in the production of such equipment. Units and components offered under these specifications shall be covered by the manufacturer's parts and labor warranty for a minimum of five years from date of Owner acceptance of the project on a new machine, a copy of which shall be included in the shop drawings submittal.
  2. Submittals will be accepted only on engine driven generator sets and transfer switches which can be properly maintained and serviced without requiring the Owner to stock spare parts or wait longer than twenty-four hours for service. Submittals shall include the nearest location of permanent parts outlet from which parts may be obtained and written assurance that trained service personnel will be available on twenty-four hour's notice. Units with service centers more than 50 miles from project site will not be accepted.
- D. Record Drawings
  1. Include in each set one set of operating, maintenance, and parts manuals covering all components for the EPSS. Each supplier shall provide instructions to the Owner in operation and maintenance of his equipment, both in written form and with on-site personnel for a minimum of eight hours.
  2. A schedule of each motor, indicating actual horsepower and means of starting, connected to the EPSS shall be provided to the Owner with the record drawings.

## **PART 2 PRODUCTS**

### **2.01 ENGINE DRIVEN EMERGENCY POWER SUPPLY (EPS)**

- A. Engines
  1. The engine driven emergency power supply (EPS) shall be an internal combustion propane driven prime mover. The generator set shall have the following characteristics:
    - a. 80 KW Capacity
    - b. 100 KVA Capacity
    - c. 208Y/120 Volts
    - d. 60 Hertz
    - e. 0.8 Power Factor
    - f. 3 Phase
    - g. 4 Wire
  2. The rated net horsepower of the engine at the generator synchronous speed, with all accessories, shall not be less than that required to produce the KW specified in paragraph 1 above. The horsepower rating shall take into account generator efficiency and all accessory losses such as fans, battery charger, etc. The generator set shall be capable of producing the specified KW (without overload) for the duration of the power outage, under the following ambient conditions:
    - a. Altitude: 100 feet above mean sea level.
    - b. Air temperature at engine intake: 104 degrees F.
    - c. Humidity Range: 25 - 95 %.
  3. Included with the shop drawing submittal shall be the manufacturer's estimate of supply fuel and oil consumption for the engine. The engine shall have an oil filter with replaceable elements and a lube oil cooler.
  4. The engine shall be equipped with a suitable governor (engine speed control) to maintain frequency within limit specified below by controlling engine and generator speed. Manufacturer

shall indicate in submittal data whether mechanical, hydraulic, electrical, or hybrid governors are provided.

- a. Type: Droop -  $\pm 1/4\%$  maximum
  - b. Stability:  $\pm 1/2\%$  maximum steady state frequency variation at any constant load from no load to full load.
  - c. Regulation: 5% maximum frequency deviation between no-load steady state and full load steady state.
  - d. Transient: 3 seconds maximum recovery time for maximum motor start.
5. The engine shall be electric start, provided with a solenoid energized motor with either positive engagement or clutch drive to the engine.  
The engine starting batteries shall be sealed lead-acid recombination type. Batteries shall be rack mounted inside the weatherproof plant housing to minimize the distance from the batteries to the starter.
6. A float type battery charger, compatible with the batteries selected, shall be furnished at the engine which shall maintain the starting batteries at full charge. The charging system shall permit charging from either the normal or the emergency power source. It shall have an equalize rate and a float rate charging system. An ammeter and voltmeter shall indicate the charge rate and the circuit shall be protected by either fuses or circuit breakers. The charger or charging circuit shall be so designed that it will not be damaged during the engine cranking cycle, for example, by a current limiting charger or a crank disconnect relay. It shall also be capable of recharging a discharged battery in 12 hours while carrying normal loads. The charger shall be equipped with alarm relays as required for remote annunciation equipment. Provide stranded wire between battery charger and termination points on the generator. Terminate with Stacon connectors. Provide battery strap(s) and heater per NFPA 110.
7. The engine shall be liquid cooled. The type of liquid cooling system shall be unit mounted radiator - consideration shall be given for air temperature rise across the engine in addition to ambient. Minimum capacity shall be rated for 100°F. minimum engine ambient temperature plus air temperature rise across the engine.
- a. Provide an electric heater, thermostatically controlled, in the engine coolant system as a cold weather starting aid. Heater shall be for operation on 208 volt single phase A.C. for 2000 watt units and shall be permanently connected to a circuit from the pump station electrical system. Heater shall maintain 70°F. to 90°F. Provide isolation valves or quick connects for coolant heater.
8. Air Supply/Exhaust System
- a. Cleaner: An air cleaner and silencer shall be furnished, located and mounted as recommended by the engine manufacturer.
  - b. Exhaust: An exhaust system of suitable size, configuration, and material in accordance with engine manufacturer's recommendations shall connect the exhaust outlet of the engine to a silencer. The type of silencer shall meet the requirements of engine manufacturers and shall be commercial. The silencer shall be located on top of the outdoor enclosure.
  - c. The exhaust system including silencer shall be of such size that back pressure on the system will not exceed the back pressure permitted by the engine manufacturer's recommendation. A flexible connection shall be mounted at the engine exhaust outlet and the discharge end shall be protected against entry of precipitation. Piping and silencer within reach of personnel or with 8'-0" of finished floor or grade shall be protected by screening and shall be insulated with two inches of calcium silicate insulation with aluminum jacket. All exhaust piping shall be gas tight. Exhaust shall exit vertically.
9. The engine instrument panel shall be mounted at the engine and shall contain the following:
- a. Oil pressure gauge to indicate lubricating oil pressure.
  - b. Temperature gauge to indicate cooling medium temperature.
  - c. Hour meter to indicate total actual running time.
  - d. Battery charging meter to indicate satisfactory performance of battery charging means.
  - e. Other instruments as recommended by the manufacturer for proper maintenance.

B. Generator

RIDGELAND TOWN HALL GENERATOR  
Ridgeland, South Carolina Project No. 20001.00

1. The generator shall be an engine-driven single or two bearings type, synchronous, brushless, conforming to applicable standards. It shall be connected to the engine flywheel by means of a flexible type coupling for single bearing generators and elastic coupling for two bearing generators.
  2. The generator shall be rated for 40°C. ambient. Class of insulation shall be NEMA Class F. The voltage regulation shall be plus or minus 2% from no load to full load with plus or minus 5% speed change and a 15°C. rise in ambient. The generator voltage dip from no load to full load shall not exceed 20%.
  3. The generator shall be capable of sustaining at least 250% of rated current for at least ten (10) seconds under a three phase symmetrical short by inherent design or by the addition of an optional current boost system. A resettable line sensing circuit breaker shall be furnished which protects the generator from damage due to its own high current capability. This breaker shall not trip within the ten seconds specified above to allow selective tripping of downstream fuses or circuit breakers under a fault condition.
  4. The generator shall be a permanent-magnet type generator.
  5. Provide 120 volt condensation heater with thermostat.
- C. Voltage Regulation
1. The generator shall be equipped with a volts-per-hertz type voltage regulator to maintain voltage within limits specified below:
    - a. Stability:  $\pm 2\%$  maximum voltage variation at any constant load from no load to full load.
    - b. Regulation: 4% maximum voltage deviation between no load steady state and full load steady state.
    - c. Transient: 30% voltage dip or overshoot on one-step application or removal of 0.8 power factor full load.
    - d. Transient: 3% seconds maximum voltage recovery time with application or removal of 0.8 power factor full load.
- D. Generator full main line circuit breaker.
1. A 350A/3P main line circuit breaker shall be supplied to protect the generator and controls from overloads and/or short circuits in the load. Interrupting current shall be 10000 amps RMS minimum. Breakers shall comply with UL 489 and NEMA AB-3.
- E. Start and Stop Controls
1. Automatic starting and stopping controls shall be furnished to start the engine automatically when the normal electrical power fails or falls below specific limits and to stop the engine automatically after the normal power supply resumes. The signal for starting or stopping the engine shall be sensed through an auxiliary contact in the automatic transfer switch. The controls shall be capable of operating at 50% of normal DC system supplied voltage.
  2. The cranking cycle shall be initiated by manual start, loss of normal power at the transfer switch, clock exerciser, or the manually operated test switch at each ATS.
  3. Crank control and the time delay relays shall provide a minimum of 4 crank attempts of at least 7 seconds each, separated by appropriate rest periods. A sensing device shall automatically disconnect the starting circuit when the engine has started. If the engine has not started at the completion of the starting program, the overcrank signal shall indicate. The engine starting controls shall be locked out and no further starting attempts shall take place until the overcranking device has been manually reset.
  4. A selector switch shall be incorporated in the automatic engine start and stop controls. It shall include an "off" position that prevents manual or automatic starting of the engine; a "manual" position that permits the engine to be started manually by the pushbutton on the control cabinet and run unloaded; an "automatic" position that readies the system for automatic start or stop on demand or the automatic load transfer switches or of the programmed exerciser.
  5. A remote manual stop station similar to a weatherproof break-glass station shall be provided mounted on the face of the automatic transfer switch and generator enclosure and shall be tied into the engine controls to stop the engine when activated. Provide laminated plastic label with

1/4" minimum engraved letters to read "EMERGENCY GENERATOR SHUTDOWN".  
 Background to be red and core to be white.

F. Instrumentation

1. Local and remote engine control and safety panel shall be provided, containing the following:
  - a. Automatic remote start capability.
  - b. "Manual-Off-Auto" switch.
  - c. Controls to shut down and lock out the prime mover under the following conditions: failure to start after specified cranking time, overspeed, low lubricating oil pressure, high engine temperature, operation of remote manual stop station.
  - d. Battery powered individual alarm indication to annunciate visually at the control and safety panel the occurrence of any condition itemized below; contacts or circuits for a common audible alarm signaling locally. Test switch shall be provided to test the operation of all lamps.

Indicator Function	Level 1	
(At Battery Voltage)	C.V.	S
i. Overcrank	X	X
ii. Low Water Temp.< 70°F (21°C)	X	X
iii. High Engine Temp.Pre-alarm	X	X
iv. High Engine Temp.	X	X
v. Low Lube Oil Pressure Pre-alarm	X	
vi. Low Lube Oil Pressure	X	X
vii. Overspeed	X	X
viii. EPS Supplying Load	X	
ix. Control Switch Not In Auto Pos.	X	
x. Battery Charger Malfunctioning	X	
xi. Low Voltage in Battery	X	
xii. Lamp Test	X	
xiii. Contacts for Local & Remote Common Alarm	X	
xiv. Audible Alarm Silencing Switch		
xv. Emergency Stop	X	X

Key:

- C.V. -- Control Panel-Mounted Visual Indication
- S -- Shutdown of EPS
- X -- Required

- e. Controls to shutdown the prime mover upon removal of initiating signal or manual emergency shutdown.
- f. A.C. voltmeter with selector switch off position and positions for phase to phase and phase to neutral.
- g. A.C. ammeter with selector switch with positions for each phase.
- h. Frequency meter -- digital electronic type.
- i. Voltage adjusting rheostat to allow plus or minus 5% voltage adjustment.
- j. Manual reset circuit breaker.



- k. Water temperature gauge.
  - l. Manual stop/start control.
  - m. Elapsed time meter.
  - n. Panel lights.
  - o. Indicator lights for signals from engine instrument panel.
  - p. Light to indicate switch has been left in the "off" position.
- 2. All instruments, controls, and indicating lights shall be properly identified. All wires shall be individually identified and must agree with the wiring diagram provided. All wiring shall be harnessed or flexibly enclosed. Terminals on all terminal blocks shall be individually identified. All instrumentation must be isolated from engine generator set vibration.
  - 3. Field coordinate with the owner for the location of the remote annunciator panel.
- G. Enclosures and Connections:
- 1. All electrical enclosures, i.e, terminal cabinets, wireways, circuit breaker enclosures, etc., shall be of adequate size to provide minimum bending radii as required by the NEC for the size conductor actually terminated within or passing through the enclosure.
  - 2. All factory provided enclosures shall have gasketing and finish appropriate for the environment in which the unit is to be mounted. All wiring, wiring harness, etc., shall be protected from the elements, such as direct sunlight, moisture, etc. or shall be UL listed for direct exposure to the applicable elements. Include written documentation of the above with the shop drawing submittal.
- H. Provide flexible fuel connections at supply piping. Flexible hoses shall be steel reinforced type. Provide solenoid valve in series with gate valve in supply line. Solenoid valve shall be powered from generator batteries and shall be open only when generator is running.

## **2.02 TRANSFER SWITCH**

- A. Transfer switch shall be rated at not less than 400A at rated voltage.
- B. Transfer switch serving three phase four wire loads shall be three pole. Provide timed transition type switch with intermediate position. In-phase transition is not permitted.
- C. Transfer switch shall be the automatic type with power contact assemblies.
- D. Transfer switch shall be rack mounted on stainless steel channels in a NEMA 3R painted steel enclosure. Enclosure shall have hinged door with locking three point latch.
- E. Operation shall be inherently double-throw whereby all contacts move simultaneously. Electrical spacing shall be equal to or exceed those listed in Table 15.1 of UL-1008. Only those main contact structures specifically designed for transfer switch service shall be acceptable. An overload or short circuit shall not cause the switch to go to a neutral position. A manual operating handle shall be provided. All main contacts shall be silver alloy type protected by arc quenchers and, for switches rated 600 amps and larger, by arcing contacts. Operating transfer time shall be 1/15 second or less on switches rated below 600 amps. The transfer sequence shall be "Open Transition".
- F. All switch and contacts, coils, springs and control elements shall be removable from the front of the transfer switch without removal of the switch panel from the enclosure and without disconnecting power conductors or drive linkages. Control and sensing relays shall be continuous duty industrial type with minimum contact rating of ten amps.
- G. Transfer switch shall be rated to withstand in RMS symmetrical amperes not less than the available symmetrical RMS amperes when protected by the circuit protective device on the line side of the transfer switch. Withstand rating of switch shall be based on switch contacts not welding under fault conditions.

- H. The control panel for each automatic transfer switch shall contain the following accessories and Features.
1. ATS Control Panel
    - a. The automatic transfer switch(es) shall provide a control panel mounted into the front of the switch. This control panel shall display source condition information including:
    - b. AC voltage for each phase of normal and emergency source. All phases shall be displayed on a single screen for viewing of voltage balance and on line to neutral voltage shall be displayed for each phase.
    - c. Frequency of each source.
    - d. Display source status including indication whether source is/is not connected.
  2. The ATS control panel shall allow the operator to make adjustments to and/or set nominal voltage and frequency of the ATS, frequency sensor operation set points, time clock functions, and load sequence functions. The operator may also enable/disable ATS functions, set up exercise and load test operation conditions, normal system time delays for transfer, time delay to start, stop, transfer and retransfer. These parameters may only be accessed following password input from the authorized operator.
  3. The display shall include real time clock data, including date, time (HH:MM:SS) and log total operating hours for the control system.
  4. The display shall include a service history for the ATS and a fault history on the ATS.
  5. Adjustable 0.5 to 6 second time delay on starting of EPS to override momentary power dips and interruptions of the normal services. Time delay shall be factory set at 1 second.
  6. Time delay on transfer to emergency adjustable from 0 to 60 seconds, factory set at 0 seconds.
  7. Test switch on enclosure door to simulate failure of the normal power source. ATS shall transfer load to the EPS.
  8. Push button to bypass time delay on re-transfer to normal.
  9. Close differential voltage sensing shall be provided on all phases of the normal power supply. The pickup voltage shall be adjustable from 85% to 100% of nominal and the dropout voltage shall be adjustable from 75% to 98% of the pickup value. The transfer to emergency will be initiated upon reduction of normal source to 85% of nominal voltage and re-transfer to normal shall occur when normal source restores to 95% of nominals.
  10. Independent single phase voltage and frequency sensing of the emergency source. The pickup voltage shall be adjustable from 85% to 100% of nominal. Pickup frequency shall be adjustable from 90% to 100% of nominal. Transfer to emergency upon normal source failure when emergency source voltage is 90% or more of nominal and frequency is 95% or more of nominal.
  11. A time delay on re-transfer to normal source. The time delay shall be automatically bypassed if the emergency source fails and normal source is available. The time delay shall be field adjustable from 0 to 25 minutes and factory set at 15 minutes.
  12. An unloaded running time delay for emergency generator cool-down, factory set at 5 minutes.
  13. Provide adjustable timed intermediate position in both directions.
  14. Pilot light for indicating switch in normal position (include fuses and auxiliary contact).
  15. Pilot light for indicating switch in emergency position (include fuses and auxiliary contact).
  16. An exerciser for exercising standby power plant on a weekly basis shall be provided in the transfer switch. Exerciser shall be set to exercise standby plant for one half hour per week under load. Time of plant exercise shall be set in field. Exerciser timer shall have reserve power back-up, either by battery or spring-wound clock, to ride through power outages to the switch.

### **2.03 FUEL SUPPLY**

- A. The owner will coordinate with the propane supplier for service to the generator. Refer to manufacturers furnished submittal information for required nature of fuel supply (liquid vs vapor, pressure, CFH, etc.).

- B. Coordinate with Paul Norris, Beaufort Gas (Charleston Gas Co.), 843-557-0176

### **PART 3 EXECUTION**

#### **3.01 EPS INSTALLATION**

- A. The plant shall be anchored to a concrete base whose overall dimensions shall exceed the outside dimensions of the plant base by 12" in each direction. Base depth shall be 12". Reinforce base with No. 5 bars 12" on center in both directions. Use not less than 6-3/4" galvanized anchor bolts.
- B. The plant shall be on a welded steel base with a minimum of four vibration isolators, with two each located under the generator mounting and the engine front support on each side of the steel base. Isolators shall consist of steel springs designed specifically for this application, mounted on rubber plates to block high frequency vibrations.
- C. Provide a laminated sign at the service entrance equipment indicating type and location of on-site emergency power sources.
- D. For exterior installations, the EPS shall be provided in outdoor, weatherproof housing with removable panels for access to equipment. Provide sound attenuating (70.5dB(A) at seven meters average) weatherproof housing. The starting batteries shall be rack mounted within the housing. Furnish service light and switch within weatherproof housing.
- E. Extend 208 and 120 volt emergency power circuits for battery charger and cold weather starting aids from the building wiring system.

#### **3.02 TRANSFER SWITCH INSTALLATION**

- A. Wall mounted transfer switch shall be installed with top of switch no more than seven feet above finished floor. Locate transfer switch to provide working clearance and full accessibility as required by the National Electrical Code.
- B. Lace and group conductors installed in transfer switch with nylon tie straps. Only one conductor shall be installed under terminals. Form and train conductors in enclosure neatly parallel and at right angles to sides of box. Uninsulated conductor shall not extend beyond one-eighths inch from terminal lug. Conductors shall be installed such that no stresses are transferred to terminal lugs.
- C. Mounting and Support
1. Mounting
    - a. Enclosure shall be secured to structure by a minimum of eight (8) fastening devices. A 1.5 inch minimum diameter round washer shall be used between head of screw or bolt and enclosure.
    - b. Enclosures shall be mounted where indicated on the drawings or specified herein. Support from the structure with fastening device specified.
    - c. Attach enclosure directly to masonry, concrete, or wood surfaces.
    - d. Mount enclosure on metal channel (strut), which is connected to structure with fastening device specified, for installations on steel structure, sheet metal equipment enclosure, or sheet rock walls.
    - e. Where enclosure is not indicated on a wall or structure, construct a metal channel (strut) free standing frame secured to floor, pad, or other appropriate building structure. Refer to the detail on the drawings for frame installation and construction information.
    - f. Do not splice conductors in enclosure. Where required, install junction box or wireway adjacent to transfer switch and splice or tap conductors in box. Refer to number of conductors in a conduit limitation defined in the WIRES AND CABLES section of the specifications and do not exceed.

- g. Conductors not terminating in transfer switch shall not extend through or enter transfer switch enclosure.
- h. Install push-in knock-out closure plugs in any unused knock-out openings.
- i. Cleaning and Adjustment
  - 1) After completion, clean the interior and exterior of dirt, paint and construction debris.
  - 2) Touch up paint all scratched or marred surfaces with factory furnished touch up paint of the same color as the factory applied paint.

### **3.03 TESTING**

- A. Submit verification letter to Engineer indicating successful completion of sequence of operations testing and certification that all functions are operational. Letter to request load testing approval and schedule of proposed test. Prior to load test, written approval must be provided by Engineer. Representatives of the generator and transfer switch shall be present. The local authority having jurisdiction shall be given advance notification of the time of the final test in order that he may witness the tests.
- B. A failure of any test or any component during a test will require a complete retest program at no additional cost to the Owner.
- C. Provide all lubricants and other consumables for testing.
- D. An on-site acceptance test shall be conducted as a final approval test for all Emergency Power Supply Systems.
  - 1. The test shall be conducted after completion of the installation with all EPSS accessory and support equipment in place and operating.
  - 2. Test Results. The EPSS shall perform within the limits specified for Level I installation per NFPA-110.

### **3.04 SPARE PARTS**

- A. At least three sets of an instruction manual(s) for all major components of the EPS shall be supplied by the Manufacturer(s) of the EPS and shall contain:
  - 1. A detailed explanation of the operation of the system.
  - 2. Instruction for routine maintenance.
  - 3. Detailed instructions for repair of the EPS and other major components of the EPS.
  - 4. Pictorial parts list and part numbers.
  - 5. Pictorial and schematic electrical drawings of wiring systems, including operation and safety devices, control panels, instrumentation and annunciators.

**END OF SECTION**