City of Auburn, Maine
Financial Services
www.auburnmaine.gov | 60 Court Street
Auburn, Maine 04210
207.333.6601

February 28, 2018

Dear Bidder:

The City of Auburn is accepting written proposals the **design, purchase and installation of natural gas backup emergency generators** at Engine 5 Fire Station, located at 651 Center St., and 180 South Main St., Auburn, ME. The City reserves the right to accept or reject any or all proposals in whole or in part and to waive any informality the City may determine necessary. The City also reserves to itself the exclusive right to accept any proposals when it is deemed by the City to be in its best interest. The City of Auburn is governed by Title 1 M.R.S.A. § 401-410, otherwise known as the Freedom of Information Act, which considers bid specifications as public documents. In awarding any proposal, the City may consider, but not be limited to, any of the following factors: Bidder qualifications, price, experience, financial standing with the City, warranties, references, bonding, delivery date, and service of Bidder. Vendors/Contractors shall be current on all amounts due to the City of Auburn prior to the City entering into any contract agreement. All proposals must include FOB to Auburn, Maine unless otherwise specified.

A **pre-bid meeting** to review the work sites is scheduled for Tuesday, March 6, 2018 at 10:00 a.m. The meeting will begin at Engine 5, 651 Center St., and will proceed to Engine 2, 180 South Main St. immediately after. Please contact Derek Boulanger at dboulanger@auburnmaine.gov to confirm participation.

Proposals will not receive consideration unless submitted in accordance with the following instructions to bidders. Please mark sealed envelopes plainly:
"AFD Fire Station Emergency Generator Project – Bid #2018-025."

Questions regarding this Request for Proposals should be directed to Derek Boulanger, Facilities Manager/Purchasing Agent, at (207) 333-6601, ext. 1135.

Please submit your proposal to the City of Auburn by **2:00 p.m. Thursday, March 15, 2018**. Proposals will be opened at 2:00 p.m. Proposals must be delivered to **Derek Boulanger, Facilities Manager/Purchasing Agent, 60 Court Street, Auburn, ME 04210** on or before the date and time appointed. No proposals will be accepted after the time and date listed above.

Sincerely,

Derek Boulanger
Facilities Manager/Purchasing Agent

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CONDITIONS AND INSTRUCTIONS TO BIDDERS

1. Bidders shall use the enclosed bid form and schedule of values forms for quotations. Whenever, in bid forms, an article is defined by using a trade name or catalog number, the term "**or approved equal**", if not inserted, shall be implied.

2. Submit a separate unit price for each item unless otherwise specified in the bid request. Award will be made on a basis of each item, or as a group, whichever is in the best interest of the City. Prices stated are to be "delivered to destination".

3. Bid proposals must be completed in full, in ink, and must be signed by firm official. Bid proposal **must be notarized** prior to bid being sealed and will be disqualified if not notarized. Bids may be withdrawn prior to the time set for the official opening.

4. Bids will be opened publicly. Bidders or representatives may be present at bid opening.

5. Awards will be made to the lowest responsible bidder, considering the quality of the materials, date of delivery, cost which meets specification and is in the best interest to the City of Auburn.

6. All transportation charges, including expense for freight, transfer express, mail, etc. shall be prepaid and be at the expense of the vendor unless otherwise specified in the bid.

7. The terms and cash discounts shall be specified. Time, in connection with discount offered, will be computed from date of delivery at destination after final inspection and acceptance or from date of correct invoice, whichever is later.

8. The City is exempt from payment of Federal Excise Taxes on the articles not for resale, Federal Transportation Tax on all shipments and Maine Sales Tax and Use Taxes. Please quote less these taxes. Upon application, exemption certificate will be furnished with the Purchase Order when required.

9. Time of delivery shall be stated. If time is of the essence, the earliest date may be a factor in the bid award.

10. No contract may be assigned without the written consent of the Finance Director or her designate. The contract shall not be considered valid until a purchase order has been issued to the successful bidder.

11. Please state **"AFD Fire Station Emergency Generator Project – Bid #2018-025."** on submitted sealed envelope.

12. The City of Auburn reserves the right to waive any formality and technicality in bids whichever is deemed best for the interest of the City of Auburn.

13. The scope of work shall be substantially completed by May 31, 2018. Final completion shall be on or before June 21, 2018.

GENERAL CONDITIONS

1. Equal Employment Opportunity

The City of Auburn is an Equal Opportunity Employer and shall not discriminate against an applicant for employment, and employee or a citizen because of race, color, sex, marital status, physical and/or mental handicap, religion, age, ancestry or natural origin, unless based upon a bona-fide occupation qualification. Vendors and contractor or their agents doing business with the City shall not violate the above clause or the Civil Rights Acts of 1964. Violations by vendors shall be reviewed on a case-by-case basis and may mean an automatic breach of contract or service to the City of Auburn.

2. Save Harmless

The Bidder agrees to protect and save harmless the owner from all costs, expenses or damages that may arise out of alleged infringement of patents of materials used.

3. Subcontracting

The Bidder shall not subcontract any part of the work or materials or assign any monies due it without first obtaining the written consent of the municipality. Neither party shall assign or transfer its interest in the contract without the written consent of the other party.

4. Warranty

The Bidder warrants that all work will be of good quality and free from faults and defects, and in conformance with the specifications. All work not so conforming to these standards may be considered defective. The Bidder agrees to be responsible for the acts and omissions of all of its employees and all subcontractors, their agents and employees, and all other persons performing any of the work under a contract with the Bidder.

5. Retainage and Payments

Retainage in the amount of 10% will be held from each progress payment and shall be released at the discretion of the Project Engineer. Payments shall be made by the City to the Contractor 30 days after receipt of the request for payment.

6. Changes in the Work

6.1 The Contractor shall not proceed with extra work without an approved Change Order or Construction Change Directive. A Change Order which has been properly signed by all parties shall become a part of the contract.

6.2 A Change Order is the usual document for directing changes in the Work. In certain circumstances, however, the Owner may utilize a Construction Change Directive to direct the Contractor to perform changes in the Work that are generally consistent with the scope of the project. The Owner shall use a Construction Change Directive only when the normal process for approving changes to the Work has failed to the detriment of the Project, or when agreement on the terms of a Change Order cannot be met, or when an urgent situation requires, in the Owner's judgment, prompt action by the Contractor.

6.3 The Architect shall prepare the Construction Change Directive representing a complete scope of work, with proposed Contract Price and Contract Time revisions, if any, clearly stated.

6.4 The Contractor shall promptly carry out a Construction Change Directive which has been signed by the Owner and the Architect. Work thus completed by the Contractor constitutes the basis for a Change Order. Changes in the Contract Price and Contract Time shall be as defined in the Construction Change Directive unless subsequently negotiated with some other terms.

6.5 The method of determining the dollar value of extra work shall be by:

a) An estimate of the Contractor accepted by Owner as a lump sum, or

b) Unit prices named in the contract or subsequently agreed upon, or

c) Cost plus a designated percentage, or

d) Cost plus a fixed fee.

6.6 The Contractor shall determine the dollar value of the extra work for both the lump sum and cost plus designated percentage methods using the following rates. The rates include all overhead and profit expenses.

a) Contractor - for any work performed by the Contractor's own forces, 10% of the cost;

b) Subcontractor - for work performed by Subcontractor's own forces, 10% of the cost;

c) Contractor - for work performed by Contractor's Subcontractor, 10% of the amount due the Subcontractor.

6.7 The Contractor shall keep and provide records as needed or directed for the cost plus designated percentage method. The Architect shall review and certify the appropriate amount which includes the Contractor's overhead and profit. The Owner shall make payments based on the Architect's certificate.

7. Liens

7.1 The Contractor shall deliver to the Owner a complete release of all liens arising out of this contract before the final payment or any part of the retainage payment is released. The Contractor shall provide with the release of liens an affidavit asserting each release includes all labor and materials for which a lien could be filed. Alternately, the Contractor, in the event any Subcontractor or supplier refuses to furnish a release of lien in full, may furnish a bond satisfactory to the Owner, to indemnify the Owner against any lien.

7.2 In the event any lien remains unsatisfied after all payments to the Contractor are made by the Owner, the Contractor shall refund to the Owner all money that the latter may be compelled to pay in discharging such lien, including all cost and reasonable attorney's fees.

BID PROPOSAL FORM

AFD Fire Station Emergency Generator Project – Bid #2018-025.

Due: Thursday, March 15, 2018 at 2:00 PM

To: City of Auburn
Derek Boulanger,
Facilities Manager/Purchasing Agent
60 Court Street
Auburn, ME 04210

The undersigned individual/firm/business guarantees this price for Thirty days (30) from the bid due date. The undersigned submits this proposal without collusion with any other person, individual, firm, or agency. The undersigned ensures the authority to act on behalf of the corporation, partnership, or individual they represent; and has read and agreed to all of the terms, requests, or conditions written herein by the City of Auburn. By signing this bid form, the firm listed below hereby affirms that its bid meets the minimum specifications and standards as listed above and as amended in
Addendums #_____ Dated_____.

Signature _____ Name (print)_____

Title_____ Company_____

Address_____

Telephone No._____Fax No. _____

Email Address:_____

STATE OF MAINE
_____, SS. Date: _____

Personally appeared _____ and acknowledged the foregoing instrument to be his/her free act and deed in his/her capacity and the free act and deed of said company.

_____
Notary Public

_____
Print Name
Commission Expires_____

Bid Proposal Form must be accompanied with the Schedule of Values Form.

BID BREAKDOWN SCHEDULE OF VALUES

To be completed in accordance with the attached Appendix A

AFD Fire Station Emergency Generator Project – Bid #2018-025

Engine 5

Item	Description	Value
1.	General Conditions	$_____ . _____
2.	(1) 35kW 3 Phase Natural Gas Generator	$_____ . _____
3.	(1) 200Amp 3 Phase Automatic Transfer Switch	$_____ . _____
4.	Generator Installation and Associated Wiring	$_____ . _____
5.	Other (specify) _____	$_____ . _____
6.	Other (specify) _____	$_____ . _____
7.	Other (specify) _____	$_____ . _____
8.	Other (specify) _____	$_____ . _____
9.	**TOTAL BASE BID (Sum of Items 1 through 8)**	**$_____ . _____**

Name of Company: _____

Brand of Proposed Generator: _____

Brand of Proposed Transfer Switch: _____

State Warranty: _____

TOTAL OF ALL LINE ITEMS IN SCHEDULE OF VALUES MUST EQUAL FINAL BASE BID. THERE MUST BE AMOUNTS IN EACH OF THE SPECIFIED ITEMS ABOVE. ENTER A ZERO IF NOT APPLICABLE.

PROJECT SCHEDULE

Estimated Start Date: _7 Days from Notice to Proceed

Substantial Completion Date: May 31, 2018

FAILURE TO PROPERLY COMPLETE THIS BID ATTACHMENT MAY BE CONSIDERED A NON-RESPONSIVE PROPOSAL AND MAY BE REJECTED AT THE OWNERS DISCRETION.

Bid Proposal Form must be accompanied with the Schedule of Values Form.

BID BREAKDOWN SCHEDULE OF VALUES

To be completed in accordance with the attached Appendix B

AFD Fire Station Emergency Generator Project – Bid #2018-025

Engine 2

Item	Description	Value
1.	General Conditions	$_____ . _____
2.	(1) 22kW Single Phase Natural Gas Generator	$_____ . _____
3.	(1) 200Amp Single Phase Automatic Transfer Switch	$_____ . _____
4.	Generator Installation and Associated Wiring	$_____ . _____
5.	Other (specify) _____	$_____ . _____
6.	Other (specify) _____	$_____ . _____
7.	Other (specify) _____	$_____ . _____
8.	Other (specify) _____	$_____ . _____
9.	**TOTAL BASE BID (Sum of Items 1 through 8)**	**$_____ . _____**
10.	**COMBINED BASE BID-ENGINE 5 & ENGINE 2**	**$_____ . _____**

Name of Company: _____

Brand of Proposed Generator: _____

Brand of Proposed Transfer Switch: _____

State Warranty: _____

TOTAL OF ALL LINE ITEMS IN SCHEDULE OF VALUES MUST EQUAL FINAL BASE BID. THERE MUST BE AMOUNTS IN EACH OF THE SPECIFIED ITEMS ABOVE. ENTER A ZERO IF NOT APPLICABLE.

PROJECT SCHEDULE

Estimated Start Date: 7 Days from Notice to Proceed

Substantial Completion Date: May 31, 2018

FAILURE TO PROPERLY COMPLETE THIS BID ATTACHMENT MAY BE CONSIDERED A NON-RESPONSIVE PROPOSAL AND MAY BE REJECTED AT THE OWNERS DISCRETION.

SAMPLE CONTRACT AGREEMENT

THIS AGREEMENT is made this **###** day of ***Month Year***, by and between the CITY OF AUBURN, a municipal corporation existing under the laws of the State of Maine and located in the County of Androscoggin, State of Maine (hereinafter "CITY"), ***Company Name, Address, EIN***, (hereinafter "CONTRACTOR"),

WITNESSETH:
In consideration of the mutual covenants and conditions contained herein, the CITY and the CONTRACTOR agree as follows:

SPECIFICATIONS:

1. The CONTRACTOR shall furnish all of the material and perform all of the work shown on the drawings and described in the specifications entitled: **Bid # *XXXXX Bid Title*** which are attached hereto and made a part hereof, and the CONTRACTOR covenants that it shall do everything required by this Agreement, the Special Provisions of the Agreement, the Invitation to Bid and the Specifications in return for payment as provided herein.

COMPLETION DATE:

2. The work to be performed under this Agreement shall be commenced by ***Month Day, Year*** and fully completed on or before ***Month Day, Year***.

CONTRACT PRICE:

3. The CITY shall pay the CONTRACTOR for the performance of the Agreement the sum of **$*XXX***

PERFORMANCE BOND:

4. If required by the City, the CONTRACTOR shall furnish to the CITY at the time of the execution of this Agreement a performance bond and a labor and material payment bond each in the amount of **$*XXX*** (whichever applies) executed by a surety company satisfactory to the CITY, guaranteeing the performance and payment by the CONTRACTOR. ❑ Yes, Required (Initials: ____) ❑ No, Waived (Initials ___)

GUARANTEE:

5. The CONTRACTOR shall guarantee his work against any defects in workmanship and materials for a period of one year from the date of the CITY's written acceptance of the project.

PERMITS AND LICENSES:

6. Permits and licenses necessary for the prosecution of the work shall be secured and paid by the CONTRACTOR.

CITY'S RIGHT TO TERMINATE CONTRACT:

7. If the CONTRACTOR should be adjudged a bankrupt, or if it should make a general assignment for the benefit of creditors, or if a receiver should be appointed on account of its insolvency, or if it should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if it should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, and ordinances, or otherwise be guilty of a substantial violation of any provision of the Agreement, then the CITY when sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the CONTRACTOR, and his surety, seven (7) days written notice, terminate the employment of the CONTRACTOR and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method it may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Agreement price shall exceed the expense of the finishing the work, including compensation for additional architectural, managerial and administrative services, such excess shall be paid to the CONTRACTOR. If such expense shall exceed such unpaid balance, the CONTRACTOR shall pay the difference to the CITY.

CONTRACTOR'S LIABILITY INSURANCE:

8. The CONTRACTOR shall not commence work under this Agreement until he has obtained all insurance required under this paragraph and such insurance has been approved by the CITY, nor shall the CONTRACTOR allow any subcontractor to commence work on his subcontract until all similar insurance required of subcontractor has been so obtained and approved. **It is a requirement that the CITY be named as an Additional Insured on the General Liability and Automobile Liability policies.**

(a) **Commercial General Liability** to include products and completed operations, and blanket contractual. The limits of liability shall be as follows:

Bodily Injury and Property Damage	$1,000,000
Personal Injury and Advertising Injury	$1,000,000
Per Project Aggregate	$1,000,000
General Aggregate	$2,000,000
Products and Completed Operations Aggregate	$2,000,000
Medical Payments	$10,000

(b) **Business Automobile Liability**

The CONTRACTOR shall maintain and cause all sub-contractors and lower tier contractors to maintain business automobile liability insurance covering all owned, non-owned, leased, rented or hired automobiles (symbol 1). The limits of liability shall be as follows:

Bodily Injury and Property Damage	$1,000,000

Automobile physical damage coverage shall be at the option of the CONTRACTOR, all sub-contractors and lower tier contractors. The CITY shall not be liable for physical loss or damage to any owned, non-owned, leased, rented or hired automobile.

(c) **Workers' Compensation Insurance**

The CONTRACTOR shall maintain and cause all sub-contractors and lower tier contractor's to maintain Workers' Compensation and Employers Liability in accordance with the laws and regulations of the State of Maine. The limits of liability provided shall be as follows:

Coverage A:	Statutory
Coverage B:	$100,000/$500,000/$100,000

(d) **Professional Liability**

If the CONTRACTOR is an Architect, Engineer or Surveyor, they shall maintain a policy of insurance to pay on their behalf whatever amounts that may become legally required to pay on account of an error, omission or negligent act.

Limits of Liability shall be as follows: $1,000,000 per occurrence and in the aggregate site specific.

It is a requirement that this policy be maintained for a period of three (3) years following completion of the project.

(e) **Certificates of Insurance** of the types and in the amounts required shall be delivered to the CITY prior to the commencement of any work by the CONTRACTOR, subcontractor or lower tier contractor or any person or entity working at the direction or under control of the CONTRACTOR. The CONTRACTOR shall assume the obligation and responsibility to confirm insurance coverage for all sub-contractors or lower tier contractors who will participate in the project.

(f) The Certificate of Insurance and the policies of insurance shall include a sixty (60) day notice to the CITY of cancellation, non-renewal or material change in coverage or form.

(g) The CONTRACTOR and his surety shall indemnify and save harmless the CITY, his officers and employees from all suits, actions or claims of any character brought because of any injuries or damage received or sustained by any person, persons or property on account of the operations of the said CONTRACTOR; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in construction of the work; or because of any act or omission, neglect, or misconduct of said CONTRACTOR; or because of any claims or amounts recovered from any infringements or patent trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act" or of any other law, ordinance, order or decree; and so much of the money due to the said CONTRACTOR under and by virtue of his/her contract as shall be considered necessary by the CITY for such purpose, may be retained; or in case no money is due, his surety may be held until such suit or suits, action or actions, claim or claims, for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the CITY.

(h) **Waiver of Subrogation**

Payment of any claim or suit including any expenses incurred in connection therewith by the CITY, or any insurance company on behalf of the CITY shall not constitute a waiver of subrogation against the CONTRACTOR, sub-contractors or any lower tier contractor in the event that such claim or suit was caused by or contributed to as a result of the negligent acts of the CONTRACTOR, any sub-contractors or lower tier contractors.

(i) **Construction Agreement**

The CONTRACTOR shall and does hereby agree to indemnify, save harmless and defend the CITY from the payment of any sum or sums of money to any person whomsoever on account of claims or suits growing out of injuries to persons, including death, or damages to property, caused by the CONTRACTOR, his employees, agents or sub-contractors or in any way attributable to the performance and execution of the work herein contracted for, including (but without limiting the generality of the foregoing), all claims for service, labor performed, materials furnished, provisions and suppliers, injuries to persons or damage to property, liens, garnishments, attachments, claims, suits, costs, attorney's fees, costs of investigation and defense. It is the intention of this paragraph to hold the CONTRACTOR responsible for the payment of any and all claims, suits, or liens, of any nature character in any way attributable to or asserted against the CITY, or the CITY and the CONTRACTOR, which the City may be required to pay. In the event the liability of the CONTRACTOR shall arise by reason of the sole negligence of the CITY and/or the sole negligence of the CITY's agents, servants or employees, then and only then, the CONTRACTOR shall not be liable under the provisions of this paragraph.

DAMAGES:

9. The CONTRACTOR shall defend, indemnify and save harmless the CITY and all persons acting for or in behalf of it against all claims for injuries (including death), loss or damage, arising out of the performance out this contract.

LIENS:

10. Neither the final payment nor any part of the retained percentage shall become due until the CONTRACTOR, if required, shall deliver to the CITY a complete release of all liens arising out of the Agreement, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as it has knowledge or information the releases and receipts include all the labor and material for which a lien could be filed; but the CONTRACTOR may, if any SUB-CONTRACTOR refuses to furnish a release or receipt in full, furnish a bond satisfactory to the CITY to indemnify it against any lien. If any lien remains unsatisfied after all payments are made, the CONTRACTOR shall refund to the CITY all moneys that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

ASSIGNMENT:

11. Neither party to the Agreement shall assign the Agreement or sublet it as a whole without the written consent of the other, nor shall the CONTRACTOR assign any moneys due or to become due to it hereunder, without the previous written consent of the CITY.

SUBCONTRACTS:

12. The CONTRACTOR shall not sublet any part of this Agreement without the written permission of the CITY. The CONTRACTOR agrees that it is as fully responsible to the CITY for the acts and omissions of its SUB-CONTRACTORS and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

USE OF PREMISES:

13. The CONTRACTOR shall confine its apparatus, the storage of materials and operations of its workers to limits indicated by law, ordinance and permits and shall not otherwise unreasonably encumber the premises with its materials. If any part of the project is completed and ready for use, the CITY may, by written and mutual consent, without prejudice to any of its rights or the rights of the CONTRACTOR, enter in and make use of such completed parts of the project. Such use or occupancy shall in no case be construed as an acceptance of any work or materials.

CLEANING UP:

14. The CONTRACTOR shall at all times keep the premises free from accumulation of waste materials or rubbish caused by its employees or work, and at the completion of the work it shall remove all its rubbish from and about the project, and all its tools, scaffolding and surplus materials and shall leave its work "broom-clean" or its equivalent, unless more exactly specified. In case of dispute, the CITY may remove the rubbish and charge the cost to the CONTRACTOR.

PAYMENTS:

15. Unless otherwise agreed to, the CITY shall make payments on account of the Agreement less retainage as follows:

Within 30 days, as invoices are submitted for work completed to the satisfaction of the CITY.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

BY:_____ BY:_____

Witness Finance Director

BY:_____ BY:_____

Witness Contractor

ENGINE GENERATOR SPECIFICATION
Engine 5
651 Center St
Auburn, ME 04210

1. **General**

1.1. **Description of System & Site**

1.1.1. Provide a _35__ kW standby power system to supply electrical power at _208___ Volts, _60__ Hertz, 3 Phase. The system will utilize generators rated __35___ kW. The generator shall consist of a liquid cooled, natural gas, propane or duel fuel gaseous driven engine, a synchronous AC alternator and system controls with all necessary accessories for a complete operating system, including but not limited to the items as specified hereinafter.

1.1.2. The site is an NEC ordinary location with no specific harsh environment requirements.
1.1.3. The genset shall be applied at the listed ambient and elevation. Bidders to submit the generators rated power output at __110____ ambient (˚F) and _3500_____ elevation (Ft).
1.1.4. Bidders are to submit the genset's sound level in dBA at 23 ft based on the configuration specified.
1.1.5. The on-site gas pressure is __12_____ inches of water column.

1.2. **Requirements of Regulatory Agencies**

1.2.1. An electric generating system, consisting of a prime mover, generator, governor, coupling and all controls, must have been tested, as a complete unit, on a representative engineering prototype model of the equipment to be sold.

1.2.2. The generator set must conform to applicable NFPA requirements.

1.2.3. The generator set must be available with the Underwriters Laboratories listing (UL2200) for a stationary engine generator assembly.

1.2.4. The generator set must be pre-certified to meet EPA federal emission requirements for stationary standby. On-site emission testing & certification will not be acceptable for standby applications.

1.3. **Manufacturer Qualifications**

1.3.1. This system shall be supplied by an original equipment manufacturer (OEM) who has been regularly engaged in the production of engine-alternator sets, automatic transfer switches, and associated controls for a minimum of 25 years, thereby identifying one source of supply and responsibility. Approved suppliers are Generac Industrial Power model SD035 or an approved equal.

1.3.2. The manufacturer shall have printed literature and brochures describing the standard series specified, not a one of a kind fabrication. Custom designed solutions using site specific PLC programs and site specific schematics are not acceptable.

1.3.3. Manufacturer's authorized service representative shall meet the following criteria:
- 1.3.3.1. Certified, factory trained, industrial generator technicians
- 1.3.3.2. Service support 24/7
- 1.3.3.3. Service location within 50 miles
- 1.3.3.4. Response time of 4 hours
- 1.3.3.5. Service & repair parts in-stock at performance level of 95%

1.4. **Submittals**

1.4.1. Engine Generator specification sheet
1.4.2. Controls specification sheet(s)
1.4.3. Installation / Layout dimensional drawing
1.4.4. Wiring schematic

1.4.5. Sound data
1.4.6. Emission certification
1.4.7. Warranty statement
NFPA 110 required AHJ documentation: Proto type test report; Certification of torsional compatibility; NFPA compliance statement; and Certification of rated load testing

2. Engine

2.1. Engine Rating and Performance

2.1.1. The prime mover shall be a liquid cooled, spark-ignited, 4-cycle engine. It will have adequate horsepower to achieve rated kW output.

2.1.2. The engine shall support a 100% load step.

2.1.3. The system shall be sized and sequenced to allow emergency system loads as defined by NEC 700 to be transferred onto the generator(s) within 10 seconds. Non-emergency system loads will be sequenced onto the generator(s) as generator capacity comes on-line.

2.2. Engine Oil System

2.2.1. Full pressure lubrication shall be supplied by a positive displacement lube oil pump. The engine shall have a replaceable oil filter(s) with internal bypass and replaceable element(s).

2.2.2. The engine shall operate on mineral based oil. Synthetic oils shall not be required.**The oil shall be cooled by an oil cooler which is integrated into the engine system.**

2.3. Engine Cooling System

2.3.1. The engine is to be cooled with a unit mounted radiator, fan, water pump, and closed coolant recovery system. The coolant system shall include a coolant fill box which will provide visual means to determine if the system has adequate coolant level. The radiator shall be designed for operation in 122 degrees F, (50 degrees C) ambient temperature.

2.3.2. The engine shall have (a) unit mounted, thermostatically controlled water jacket heater(s) to aid in quick starting. The wattage shall be as recommended by the manufacturer.

2.3.3. Engine coolant and oil drain extensions, equipped with pipe plugs and shut-off valves, must be provided to the outside of the mounting base for cleaner and more convenient engine servicing.

2.3.4. A radiator fan guard must be installed for personnel safety that meets UL and OSHA safety requirements.

2.4. Engine Starting System

2.4.1. Starting shall be by a solenoid shift, DC starting system.

2.4.2. The engine's cranking batteries shall be lead acid. The batteries shall be sized per the manufacturer's recommendations. [The batteries shall be the largest available by the manufacturer for this generator size.]The batteries supplied shall meet NFPA 110 cranking requirements of 90 seconds of total crank time. Battery specifications (type, amp-hour rating, cold cranking amps) to be provided in the submittal.

2.4.3. The genset shall have an engine driven, battery charging alternator with integrated voltage regulation.

2.4.4. The genset shall have an automatic dual rate, float equalize, 10 amp battery charger. The charger must be protected against a reverse polarity connection. The chargers charging current shall be monitored within the generator controller to support remote monitoring and diagnostics. The battery charger is to

be factory installed on the generator set. Due to line voltage drop concerns, a battery charger mounted in the transfer switch will be unacceptable.
Thermostatically controlled battery pad heaters are to be provided to maximize the batteries cold cranking capabilities.

2.5. **Engine Fuel System**

2.5.1. The engine shall be configured to operate on pipe line grade natural gas.

2.5.2. The engine shall utilize a fuel system inclusive of carburetor, gas regulator, , low gas pressure switch, and fuel shut-off solenoid. Generators larger than 80 kW are to include air-fuel-ratio control.

The engines internal fuel connections shall be terminated to the generator frame via an NPT fitting for easy installation

2.6. **Engine Controls**

2.6.1. Engine speed shall be controlled with an integrated isochronous governor function with no change in alternator frequency from no load to full load. Steady state regulation is to be 0.25%.

2.6.2. To support EPA emission requirements, gensets larger than 80 kW will incorporate an active air-fuel-ratio controller. The air-fuel-ratio controller shall be integrated into the generator controller to ensure security of settings and to support monitoring and remote diagnostics. External air-fuel-ratio controllers are not acceptable.

2.6.3. Engine sensors used for monitoring and control are to be conditioned to a 4-20ma signal level to enhance noise immunity.

2.6.4. All engine sensor connections shall be sealed to prevent corrosion and improve reliability.

2.7. **Engine Exhaust & Intake**

2.7.1. The engine exhaust emissions shall meet the EPA emission requirements for stationary emergency power generation.

2.7.2. For generators larger than 80 kW, the engine will incorporate a 3-way catalytic convertor to meet EPA emission requirements.

2.7.3. The manufacturer shall supply its recommended stainless steel, flexible connector to couple the engine exhaust manifold to the exhaust system. A rain cap will terminate the exhaust pipe after the silencer. All components must be properly sized to assure operation without excessive back pressure when installed.

2.7.4. The manufacturer shall supply a critical grade exhaust silencer as standard. For applications with site specific sound requirements (reference section 1.1), the silencer shall be selected to achieve site sound levels.

2.7.5. For gensets in a weather or sound attenuated enclosure, all exhaust piping from the turbo-charger discharge to the silencer shall be thermally wrapped to minimize heat dissipation inside the enclosure.

2.7.6. The engine intake air is to be filtered with engine mounted, replaceable, dry element filters.

3. Alternator

3.1. The alternator shall be the voltage and phase configuration as specified in section 1.1.1.

3.2. The alternator shall be a 4-pole, revolving field, stationary armature, synchronous machine. The excitation system shall utilize a brushless exciter with a three phase full wave rectifier assembly protected against abnormal transient conditions by a surge protector. Photo-sensitive components will not be permitted in the rotating exciter.

3.3. The alternator shall include a permanent magnet generator (PMG) for excitation support. The system shall supply a minimum short circuit support current of 300% of the rating (250% for 50Hz operation) for 10 seconds.

3.4. The alternator shall support __54____ skVA with a maximum voltage dip of __30____ %.

3.5. Three phase alternators shall be 12 lead, broad range capable of supporting voltage reconnection. Single phase alternators shall be four lead and dedicated voltage designs (600v) shall be six lead. All leads must be extended into a NEMA 1 connection box for easy termination. A fully rated, isolated neutral connection must be included by the generator set manufacturer.

3.6. The alternator shall use a single, sealed bearing design. The rotor shall be connected to the engine flywheel using flexible drive disks. The stator shall be direct connected to the engine to ensure permanent alignment.

3.7. The alternator shall meet temperature rise standards of UL2200 (120 degrees C). The insulation system material shall be class "H" capable of withstanding 150 degrees C temperature rise.
The alternator shall be protected against overloads and short circuit conditions by advanced control panel protective functions. The control panel is to provide a time current algorithm that protects the alternator against short circuits. To ensure precision protection and repeatable trip characteristics, these functions must be implemented electronically in the generator control panel -- thermal magnetic breaker implementation are not acceptable.

3.9. An alternator strip heater shall be installed to prevent moisture condensation from forming on the alternator windings.

4. Controls

4.1. The generator control system shall be a fully integrated microprocessor based control system for standby emergency engine generators meeting all requirements of NFPA 110 level 1.

4.2. The generator control system shall be a fully integrated control system enabling remote diagnostics and easy building management integration of all generator functions. The generator controller shall provide integrated and digital control over all generator functions including: bi-fuel control, engine protection, alternator protection, speed governing, voltage regulation and all related generator operations. The generator controller must also provide seamless digital integration with the engine's electronic engine control module (ECM) if so equipped. Generator controller's that utilize separate voltage regulators and speed governors or do not provide seamless integration with the engine management system are considered less desirable.

4.3. Communications shall be supported with building automation via the Modbus protocol without network cards. Optional internet and intranet connectivity shall be available.

4.4. The control system shall provide an environmentally sealed design including encapsulated circuit boards and sealed automotive style plugs for all sensors and circuit board connections. The use of non-encapsulated boards, edge cards, and pc ribbon cable connections are considered unacceptable.

4.5. Circuit boards shall utilize surface mount technology to provide vibration durability. Circuit boards that utilize large capacitors or heat sinks must utilize encapsulation methods to securely support these components.

4.6. A predictive maintenance algorithm that alarms when maintenance is required. The controller shall have the capability to call out to the local servicing dealer when maintenance is required.

4.7. Diagnostic capabilities should include time-stamped event and alarm logs, ability to capture operational parameters during events, simultaneous monitoring of all input or output parameters, callout capabilities, support for multi-channel digital strip chart functionality and .2 msec data logging capabilities.

4.8. In addition to standard NFPA 110 alarms, the application loads should also be protected through instantaneous and steady state protective settings on system voltage, frequency, and power levels.

4.9. The control system shall provide pre-wired customer use I/O: 4 relay outputs (user definable functions),

communications support via RS232 and RS485. Additional I/O must be an available option.

4.10. Customer I/O shall be software configurable providing full access to all alarm, event, data logging, and shutdown functionality. In addition, custom ladder logic functionality inside the generator controller shall be supported to provide application support flexibility. The ladder logic function shall have access to all the controller inputs and customer assignable outputs.

4.11. The control panel will display all user pertinent unit parameters including: engine and alternator operating conditions; oil pressure and optional oil temperature; coolant temperature and level alarm; fuel level (where applicable); engine speed; DC battery voltage; run time hours; generator voltages, amps, frequency, kilowatts, and power factor; alarm status and current alarm(s) condition per NFPA 110 level 1.

5. **Engine / Alternator Packaging**

5.1. The engine/alternator shall be isolated from the generator frame with rubber isolators. The packaging shall not require the addition of external spring isolators.

5.2. A mainline, thermal magnetic circuit breaker carrying the UL mark shall be factory installed. The breaker shall rated between 100 to 125% of the rated ampacity of the genset. Circuit breaker to be 100% rated.

5.3. The generator shall include a unit mounted auxiliary power load center. All ancillary AC devices (block heater, battery charger, alternator strip heater, etc) shall have a dedicated breaker within the load center.**Enclosure**

5.4.1. The genset shall be packaged with a **weather protective** enclosure.

5.4.2. The enclosure shall be made of steel with a minimum thickness of 16 gauge. The enclosure is to have hinged, removable doors to allow access to the engine, alternator and control panel. The hinges shall allow for door fit adjustment. Hinges and all exposed fasteners will be stainless steel or Sermagard coated. The use of pop-rivets weakens the paint system and not allowed on external painted surfaces. Each door will have lockable hardware with identical keys.

5.4.3. The enclosure shall be coated with electrostatic applied powder paint, baked and finished to manufacturer's specifications. The color will be manufacturer's standard.
The enclosure shall utilize an upward discharging radiator hood. Due to concerns relative to radiator damage, circulating exhaust, and prevailing winds, equipment without a radiator discharge hood will not be acceptable.

5.4.5. The genset silencer shall be mounted on the discharge hood of the enclosure. Due to architectural concerns, silencers mounted on the top of the generator enclosure are not acceptable. Gensets with silencers mounted inside the main generator compartment are acceptable only if the silencer is thermally wrapped to minimize heat stress on the surrounding components.

6. **Loose Items**

Supplier to itemize loose parts that require site mounting and installation. Preference will be shown for gensets that factory mount items like mufflers, battery chargers, etc.

7. Transfer switch

7.1. Transfer switch to be Generac model HTS, 200a 3p 4w, 208v nema 3r or equivalent.

7.2. The transfer switch is to communicate with the generator controller via rs485 and be capable to 2 wire start if comms with the controller is disrupted.

8. **Additional project requirements**

8.1 **Factory testing**

8.1.1 Before shipment of the equipment, the engine-generator set shall be tested under rated load for performance and proper functioning of control and interfacing circuits. Tests shall include:

8.1.1.1 Verify voltage & frequency stability.
8.1.1.2 Verify transient voltage & frequency dip response.
8.1.1.3 Load test the generator for 30 minutes.

8.2 **Manuals**

8.2.1 Three (3) sets of owner's manuals specific to the product supplied must accompany delivery of the equipment. General operating instruction, preventive maintenance, wiring diagrams, schematics and parts exploded views specific to this model must be included.

8.3 **Installation**

8.3.1 Contractor shall install the complete electrical generating system including all external fuel connections in accordance with requirements of NEC, NFPA, and the manufacturer's recommendations.
8.3.2 Contractor to provide and install generator feed wiring from the generator to the transfer switch, feed wire to be sized according to NEC.
8.3.3 Contractor to provide and install all transfer switch control wiring and communication wiring between the generator and transfer switch.
8.3.4 Contractor to provide rigging and setting of the generator on the existing concrete pad.
8.3.5 Concrete pad is already formed and conduits installed.
8.3.6 Provide and install a 200a 3p 240v rated nema 3R, enclosed circuit breaker, AIC rating to meet or exceed the transformer short circuit current rating.
8.3.7 Provide and install a 200a 3p 240v rated nema 3R, generator transfer switch, see section 7 of this spec
8.3.8 Provide and install a 30a, 2p 208v circuit to power the generator accessories
8.3.9 Remove existing service feeders
8.3.10 Install new copper service feeders and ground wire to code, no splicing of existing wiring.
8.3.11 Separate grounds and neutrals in the main distribution panel.
8.3.12 Provide and install generator emergency stop switch per NEC 2017
8.3.13 Provide and install required natural gas piping/regulators, size piping per the manufactures recommendation
8.3.14 Contractor or contractors representative to provide start up services and load bank testing
8.3.15 Freight to be included

8.4 **Service**

8.4.1 Supplier of the genset and associated items shall have permanent service facilities in this trade area. These facilities shall comprise a permanent force of factory trained service personnel on 24 hour call, experienced in servicing this type of equipment, providing warranty and routine maintenance service to afford the owner maximum protection. Delegation of this service responsibility for any of the equipment listed herein will not be considered fulfillment of these specifications. Service contracts shall also be available.

8.5 **Warranty**

8.5.1 The standby electric generating system components, complete genset and instrumentation panel shall be warranted by the manufacturer against defective materials and factory workmanship for a period of five (5) years. Such defective parts shall be repaired or replaced at the manufacturer's option, free of charge for parts, labor and travel.

8.5.2 The warranty period shall commence when the standby power system is first placed into service. Multiple warranties for individual components (engine, alternator, controls, etc.) will not be acceptable. Satisfactory warranty documents must be provided. Also, in the judgment of the specifying authority, the manufacturer supplying the warranty for the complete system must have the necessary financial strength and technical expertise with all components supplied to provide adequate warranty support.

8.6 **Startup and Commissioning**

8.6.1 The supplier of the electric generating plant and associated items covered herein shall provide factory trained technicians to checkout the completed installation and to perform an initial startup inspection to include:

8.6.1.1 Ensuring the engine starts (both hot and cold) within the specified time.

8.6.1.2 Verification of engine parameters within specification.

8.6.1.3 Verify no load frequency and voltage, adjusting if required.

8.6.1.4 Test all automatic shutdowns of the engine-generator.

8.6.1.5 Perform a load test of the electric plant, ensuring full load frequency and voltage are within specification by using building load.

8.6.1.6 Perform a load test for 1.5 hours using building load. In addition to the building load test, load the generator at 30% for 30 minutes, 50 % for 30 minutes, and 100% for 60 minutes, utilizing a load bank.

8.7 **Training**

8.7.1 Training is to be supplied by the start-up technician for the end-user during commissioning. The training should cover basic generator operation and common generator issues that can be managed by the end-user.

8.7.2 Training is to include manual operation of system.

ENGINE GENERATOR SPECIFICATION
Engine 2
181 South Main St
Auburn, ME 04210

1. **General**

1.1. **Description of System & Site**

1.1.1. Provide a _22__ kW standby power system to supply electrical power at _240___ Volts, _60__ Hertz, 1 Phase. The system will utilize generators rated __22___ kW. The generator shall consist of a liquid cooled, natural gas, propane or duel fuel gaseous driven engine, a synchronous AC alternator and system controls with all necessary accessories for a complete operating system, including but not limited to the items as specified hereinafter.

1.1.2. The site is an NEC ordinary location with no specific harsh environment requirements.

1.1.3. Bidders are to submit the genset's sound level in dBA at 23 ft based on the configuration specified. Sound level to be 70 dB max at full load.

1.1.4. The on-site gas pressure is __12_____ inches of water column.

1.2. **Requirements of Regulatory Agencies**

1.2.1. An electric generating system, consisting of a prime mover, generator, governor, coupling and all controls, must have been tested, as a complete unit, on a representative engineering prototype model of the equipment to be sold.

1.2.2. The generator set must conform to applicable NFPA requirements.

1.2.3. The generator set must be available with the Underwriters Laboratories listing (UL2200) for a stationary engine generator assembly.

1.2.4. The generator set must be pre-certified to meet EPA federal emission requirements for stationary standby. On-site emission testing & certification will not be acceptable for standby applications.

1.3. **Manufacturer Qualifications**

1.3.1. This system shall be supplied by an original equipment manufacturer (OEM) who has been regularly engaged in the production of engine-alternator sets, automatic transfer switches, and associated controls for a minimum of 25 years, thereby identifying one source of supply and responsibility. Approved suppliers are Generac or an approved equal.

1.3.2. Specification is based on Generac model RG022

1.3.3. The manufacturer shall have printed literature and brochures describing the standard series specified, not a one of a kind fabrication.

1.3.4. Manufacturer's authorized service representative shall meet the following criteria:
- 1.3.4.1. Certified, factory trained, industrial generator technicians
- 1.3.4.2. Service support 24/7
- 1.3.4.3. Service location within 50 miles
- 1.3.4.4. Response time of 4 hours
- 1.3.4.5. Service & repair parts in-stock at performance level of 95%

1.4. **Submittals**

1.4.1. Engine Generator specification sheet
1.4.2. Transfer switch specification sheet

1.4.3. Installation / Layout dimensional drawing for generator and transfer switch
1.4.4. Wiring schematic for generator and transfer switch
1.4.5. Emission certification
1.4.6. Warranty statement

2. Engine

2.1. Engine Rating and Performance

2.1.1. The prime mover shall be a liquid cooled, spark-ignited, 4-cycle engine. It will have adequate horsepower to achieve rated kW output.

2.2. Engine Oil System

2.2.1. Full pressure lubrication shall be supplied by a positive displacement lube oil pump. The engine shall have a replaceable oil filter(s) with internal bypass and replaceable element(s).

2.2.2. The engine shall operate on mineral based oil. Synthetic oils shall not be required.**The oil shall be cooled by an oil cooler which is integrated into the engine system.**

2.3. Engine Cooling System

2.3.1. The engine is to be cooled with a unit mounted radiator, fan, water pump, and closed coolant recovery system. The coolant system shall include a coolant fill box which will provide visual means to determine if the system has adequate coolant level.

2.3.2. The engine shall have (a) unit mounted, thermostatically controlled water jacket heater(s) to aid in quick starting. The wattage shall be as recommended by the manufacturer.

2.3.3. Engine coolant and oil drain extensions, equipped with pipe plugs and shut-off valves, must be provided.

2.3.4. A radiator fan guard must be installed for personnel safety that meets UL and OSHA safety requirements.

2.4. Engine Starting System

2.4.1. Starting shall be by a solenoid shift, DC starting system.

2.4.2. The engine's cranking batteries shall be lead acid. The batteries shall be sized per the manufacturer's recommendations. [The batteries shall be the largest available by the manufacturer for this generator size.]

2.4.3. The genset shall have an engine driven, battery charging alternator with integrated voltage regulation.

2.4.4. The genset shall have an integrated battery charger in the controller, 2.5 amps, and can accept lead acid and AGM batteries.

2.5. Engine Fuel System

2.5.1. The engine shall be configured to operate on pipe line grade natural gas.

2.5.2. The engine shall utilize a fuel system inclusive of carburetor, gas regulator, , low gas pressure switch, and fuel shut-off solenoid. Generators larger than 80 kW are to include air-fuel-ratio control.

The engines internal fuel connections shall be terminated to the generator frame via an NPT fitting for easy installation

2.6. **Engine Controls**

2.6.1. Engine speed shall be controlled with an integrated isochronous governor function with no change in alternator frequency from no load to full load. Steady state regulation is to be 0.25%.

2.6.2. To support EPA emission requirements, gensets larger than 80 kW will incorporate an active air-fuel-ratio controller. The air-fuel-ratio controller shall be integrated into the generator controller to ensure security of settings and to support monitoring and remote diagnostics. External air-fuel-ratio controllers are not acceptable.

2.6.3. All engine sensor connections shall be sealed to prevent corrosion and improve reliability.

2.7. **Engine Exhaust & Intake**

2.7.1. The engine exhaust emissions shall meet the EPA emission requirements for stationary emergency power generation.

2.7.2. For generators larger than 80 kW, the engine will incorporate a 3-way catalytic convertor to meet EPA emission requirements.

2.7.3. The manufacturer shall supply its recommended stainless steel, flexible connector to couple the engine exhaust manifold to the exhaust system. All components must be properly sized to assure operation without excessive back pressure when installed.

2.7.4. For gensets in a weather or sound attenuated enclosure, all exhaust piping shall be thermally wrapped to minimize heat dissipation inside the enclosure.

2.7.5. The engine intake air is to be filtered with engine mounted, replaceable, dry element filters.

3. Alternator

3.1. The alternator shall be the voltage and phase configuration as specified in section 1.1.1.

3.2. The alternator shall be a 4-pole, revolving field, stationary armature, synchronous machine. The excitation system shall utilize a bushed rotor with direct excitation.

3.3. The alternator shall support __32.4____ skVA with a maximum voltage dip of __30____ %.

3.4. Single phase alternators shall be 4 lead, A fully rated, isolated neutral connection must be included by the generator set manufacturer.

3.5. The alternator shall use a single, sealed bearing design. The rotor shall be connected to the engine flywheel using flexible drive disks. The stator shall be direct connected to the engine to ensure permanent alignment.

3.6. The alternator shall meet temperature rise standards of UL2200 (120 degrees C). The insulation system material shall be class "H" capable of withstanding 150 degrees C temperature rise.

4. Controls

4.1. The generator control system shall be a fully integrated microprocessor based control system for standby emergency engine generators.

4.2. The generator control system shall be a fully integrated control system. The generator controller shall provide integrated and digital control over all generator functions including engine protection, alternator protection, speed governing, voltage regulation and all related generator operations. The generator controller must also provide seamless digital integration with the engine's electronic engine control module (ECM) if so equipped. Generator controller's that utilize separate voltage regulators and speed governors or do not provide

seamless integration with the engine management system are considered less desirable.

4.3. The control system shall provide an environmentally sealed design including encapsulated circuit boards and sealed automotive style plugs for all sensors and circuit board connections. The use of non-encapsulated boards, edge cards, and pc ribbon cable connections are considered unacceptable.

4.4. Circuit boards shall utilize surface mount technology to provide vibration durability. Circuit boards that utilize large capacitors or heat sinks must utilize encapsulation methods to securely support these components.

4.5. A predictive maintenance algorithm that alarms when maintenance is required. The controller shall have the capability to call out to the local servicing dealer when maintenance is required.

4.6. Diagnostic capabilities should include time-stamped event and alarm logs, simultaneous monitoring of all input or output parameters, callout capabilities

4.7. An external indication, mounted on the outside of the generator enclosure, is to show the state of the unit so operating personal can quickly asses the operational state of the generator.

5. **Engine / Alternator Packaging**

5.1. The engine/alternator shall be isolated from the generator frame with rubber isolators. The packaging shall not require the addition of external spring isolators.

5.2. A mainline, thermal magnetic circuit breaker carrying the UL mark shall be factory installed. The breaker shall rated between 100 to 125% of the rated ampacity of the genset. Circuit breaker to be 80% rated.

6. Enclosure

6.1.1. The genset shall be packaged with a **weather protective sound attenuated** enclosure.

6.1.2. The enclosure shall be made of aluminum, removable doors to allow access to the engine, alternator and control panel. Hinges and all exposed fasteners will be stainless steel or Sermagard coated. The use of pop-rivets weakens the paint system and not allowed on external painted surfaces. Each door will have lockable hardware with identical keys.

6.1.3. The enclosure shall be coated with electrostatic applied powder paint, baked and finished to manufacturer's specifications. The color will be manufacturer’s standard.

6.1.4. The genset silencer shall be mounted within the enclosure. Due to architectural concerns, silencers mounted on the top of the generator enclosure are not acceptable. Gensets with silencers mounted inside the main generator compartment are acceptable only if the silencer is thermally wrapped to minimize heat stress on the surrounding components.

7. **Loose Items**

Supplier to itemize loose parts that require site mounting and installation. Preference will be shown for gensets that factory mount items like mufflers, battery chargers, etc.

7.2. **Manuals**

7.2.1. One (1) sets of owner's manuals specific to the product supplied must accompany delivery of the equipment. General operating instruction, preventive maintenance, wiring diagrams, schematics and parts exploded views specific to this model must be included.

7.3. **Installation**

7.3.1. Contractor shall install the complete electrical generating system including all external fuel connections in accordance with requirements of NEC, NFPA, and the manufacturer's recommendations.
7.3.2. Contractor to provide and install generator feed wiring from the generator to the transfer switch, Feed wire size to meet NEC
7.3.3. Contractor to provide and install all transfer switch control wiring and communication wiring between the generator and transfer switch.
7.3.4. Contractor to provide rigging and setting of the generator on the concrete pad.
7.3.5. Concrete pad is already formed and conduits installed
7.3.6. Provide and install a 200a 2p 240v service entrance rated generator transfer switch Generac model RTSW200A3 Or RXSW200A3
7.3.7. Provide and install a 20a, 1p 120v circuit to power the generator block heater, circuit to be terminated in a 4 square box with a GFCI receptacle installed. Receptacle to be mounted inside the enclosure.
7.3.8. Separate grounds and neutrals in the main distribution panel
7.3.9. Provide and install generator emergency stop switch per nec 2017
7.3.10. Provide and install required natural gas piping/regulators, size piping per the manufactures recommendation
7.3.11. Contractor or contractors representative to provide start up services and load bank testing
7.3.12. Freight to be included
7.3.13. Generator equipment to be furnished and installed by the installer
- 7.3.13.1. Generac RG02224ANAX
- 7.3.13.2. Generac 26R Battery
- 7.3.13.3. Generac DEW-EXWAR200001 – 5 year extended warranty
- 7.3.13.4. Generac 5616 – block heater kit

7.4. **Service**

7.4.1. Supplier of the genset and associated items shall have permanent service facilities in this trade area. These facilities shall comprise a permanent force of factory trained service personnel on 24 hour call, experienced in servicing this type of equipment, providing warranty and routine maintenance service to afford the owner maximum protection. Delegation of this service responsibility for any of the equipment listed herein will not be considered fulfillment of these specifications. Service contracts shall also be available.

7.5. **Warranty**

7.5.1. The standby electric generating system components, complete genset and instrumentation panel shall be warranted by the manufacturer against defective materials and factory workmanship for a period of five (5) years. Such defective parts shall be repaired or replaced at the manufacturer's option, free of charge for parts, labor and travel.

7.5.2. The warranty period shall commence when the standby power system is first placed into service. Multiple warranties for individual components (engine, alternator, controls, etc.) will not be acceptable. Satisfactory warranty documents must be provided. Also, in the judgment of the specifying authority, the manufacturer supplying the warranty for the complete system must have the necessary financial strength and technical expertise with all components supplied to provide adequate warranty support.

7.6. **Startup and Commissioning**

7.6.1. The supplier of the electric generating plant and associated items covered herein shall provide factory trained technicians to checkout the completed installation and to perform an initial startup inspection to include:

7.6.1.1. Ensuring the engine starts (both hot and cold) within the specified time.

7.6.1.2. Verification of engine parameters within specification.

7.6.1.3. Verify no load frequency and voltage, adjusting if required.

7.6.1.4. Test all automatic shutdowns of the engine-generator.

7.6.1.5. Perform a load test of the electric plant, ensuring full load frequency and voltage are within specification by using building load and load bank.

7.6.1.6. Perform a load test for 1.5 hours using building load. In addition to the building load test, load the generator at 30% for 30 minutes, 50 % for 30 minutes, and 100% for 60 minutes, utilizing a load bank.

7.6.1.7. Start up, test, and program transfer switch. Consult owner for exercise time and date.

7.7. **Training**

7.7.1. Training is to be supplied by the start-up technician for the end-user during commissioning. The training should cover basic generator operation and common generator issues that can be managed by the end-user.

7.6.2. Training is to include manual operation of system.