



JAMES J. GEREMIA & ASSOCIATES, INC.
CONSULTING ENVIRONMENTAL ENGINEERS & SCIENTISTS

June 20, 2012

To: Bidders

Re: Furnish a Portable Engine Generator at the Block Island Wastewater Treatment Facility for the Town of New Shoreham / New Shoreham Sewer Commission
SEWER GRANT 2010

To Whom It May Concern:

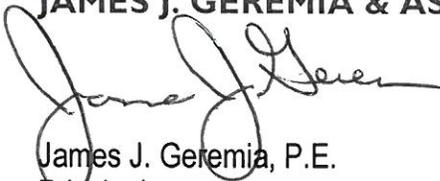
The Town of New Shoreham / New Shoreham Sewer Commission are soliciting proposals to furnish a portable engine generator at the Block Island Wastewater Treatment Facility. We are enclosing a copy of the Specifications.

Bids are to be forwarded to the Town Manager at the Town Hall on Old Town Road, Block Island no later than **1:00 P.M. on July 12, 2012.**

We thank you for your consideration. If you have any questions with regards to this proposal, please do not hesitate to contact me.

Very truly yours,

JAMES J. GEREMIA & ASSOCIATES, INC.



James J. Geremia, P.E.
Principal

Enclosure

cc: Nancy O. Dodge
Raymond Boucher

SPECIFICATIONS

Furnishing a Portable Engine
Generator for the Block Island
Wastewater Treatment Facility

For the Town of New Shoreham /
New Shoreham Sewer Commission

Prepared by:



JAMES J. GEREMIA & ASSOCIATES, INC.

CONSULTING ENVIRONMENTAL ENGINEERS & SCIENTISTS

272 West Exchange St. · Suite 201 · Providence, RI 02903-1061

Tel: (401) 454-7000

Fax: (401) 454-7415

JUNE 2012

INVITATION TO BID

Separate sealed Bids will be received by the TOWN OF NEW SHOREHAM / NEW SHOREHAM SEWER COMMISSION for the **Furnishing a Portable Engine Generator for the Block Island Wastewater Treatment Facility**, on or before **1:00 P.M. on July 12, 2012** at the office of the Town Manager, Town Hall, Old Town Road, Block Island, Rhode Island and will be opened and read in public.

Specifications for the **Furnishing a Portable Engine Generator for the Block Island Wastewater Treatment Facility** may be obtained at the office of James J. Geremia & Associates, Inc., 272 West Exchange St., Suite 201, Providence, RI between the hours of 8:30 A.M. and 4:00 P.M., Monday through Friday, after **June 25, 2012**.

All Bids must be submitted and clearly marked:

“(Sealed Bid): FURNISHING A PORTABLE ENGINE GENERATOR FOR THE BLOCK ISLAND WASTEWATER TREATMENT FACILITY”

Bids must be enclosed in an opaque envelope addressed to:

New Shoreham Sewer Commission
c/o Town Manager
Town Hall
P.O. Drawer 220
Block Island, Rhode Island 02807

No Bidder may withdraw his Bid within one hundred twenty (120) days after the scheduled closing time for receipt of Bid.

The New Shoreham Sewer Commission reserves the right to reject any/all Bids, waive any informalities in the Bids received, and to accept the Bid deemed most favorable to the interest of the New Shoreham Sewer Commission.

Individuals requesting interpreter services for the hearing impaired must notify the Town Clerk (401-466-3200) three (3) business days prior to the Bid opening.

Minority business enterprises as defined by R.I. General Laws Section 37-14.1-3 shall have the maximum opportunity to participate in the performance of Subcontracts performed under this agreement. The Contractor will take all reasonable steps in accordance with the regulations promulgated under Chapter 37-14.1 of the Rhode Island General Laws to ensure that minority business enterprises have the maximum opportunity to compete for and perform subcontracts under this agreement.

The Town will be receiving funds through USDA/Rural Development.

Date: June 25, 2012

Nancy O. Dodge
Town Manager
New Shoreham, RI

STANDARD INSTRUCTIONS TO BIDDERS

The Town of New Shoreham / New Shoreham Sewer Commission (hereinafter called the Town) is requesting bids to furnish a portable engine generator for the Block Island Wastewater Treatment Facility.

1. PREPARATION OF PROPOSAL

- A. Each proposal must be submitted on the prescribed Bid Proposal contained herein. In the Bid Proposal, all blank spaces must be completed, written in ink, and amounts written in both words and figures. **In the event of a discrepancy, the bid amount(s) shown in words shall govern.**
- B. Originals and one (1) copy are to be submitted.
- C. All proposals must be signed and submitted in a sealed envelope bearing the name and address of the Bidder and endorsed **Portable Engine Generator** indicating which item or items are included in the proposal. If mailed, the proposal shall be enclosed in a second envelope similarly marked and addressed to the New Shoreham Sewer Commission, c/o Town Manager, Town Hall, P.O. Drawer 220, Block Island, RI 02807.

2. BID SECURITY: NONE REQUIRED

3. WITHDRAWAL OF BID

- A. Any bid may be withdrawn prior to the scheduled time for opening of the bids. No Bidder may withdraw a bid for a period of one hundred twenty (120) days after the date set for the opening of the bids.

4. RESPONSIBILITY OF BIDDER

- A. The Town reserves the right to make any such investigation as is necessary to determine the ability of the Bidder to perform the work. Every Bidder is therefore required to furnish all information requested in this proposal. Failure of any Bidder to furnish this information may be cause for the rejection of the bid.

5. BASIS OF AWARD

- A. Bids will be compared on the basis of the unit prices stated in the schedule of prices in the Bid Proposal. The Town will award the bids **by item** to the lowest responsive and eligible bidder on each item.
- B. The competency and responsibility of bidders will be considered in making the award. The Town reserves the right to reject any or all bids when such rejection is in the interest of the Town, and to reject the bid of a bidder who, in the judgment of the Town, is not in a position to provide the equipment. Each bidder shall be prepared, if so requested by the Town, to present evidence of their experience and qualifications. It is intended that the Contract(s) will be awarded **by item** to the lowest responsive and

eligible Bidder(s) possessing the skill, ability and integrity necessary to the faithful performance of the work.

6. NOTICE OF ACCEPTANCE

- A. Within one hundred twenty (120) days after the opening of bids, notice of the acceptance of a proposal will be sent to the successful Bidder(s) by the Town to the Bidders' address as stated in said proposal. If, within ten (10) days immediately after receipt of said notice, a successful Bidder fails to comply with the requirements of these Documents, the proposal and acceptance, at the option of the Town, may become null and void. The Town may then proceed to accept another of the proposals.

7. INTERPRETATION

- A. No oral interpretation of the meaning of the Plans, Specification or other Contract Documents will in general be given. Any such request must be made in writing to James J. Geremia, P.E., James J. Geremia & Associates, Inc., 272 West Exchange St., Suite 201, Providence, RI 02903 (FAX: (401) 454-7415). To be given consideration, such request must be received at least five (5) days prior to the date fixed for the opening of bids. Interpretations will be made in the form of written addenda. All such addenda shall become a part of the Contract. No later than three (3) days prior to the date fixed for the opening of bids, the addenda will be mailed to each prospective Bidder. Failure of a Bidder to receive any such addenda will not relieve the Bidder from any obligation under the proposal as submitted.

8. PREVAILING LAWS AND REGULATIONS

- A. The Contractor shall keep himself informed of and comply with all laws, ordinances and regulations of the Federal, State or Municipal Government which may apply and be informed during the life of the Contract, in any manner which may affect employees or the conduct of the work or the materials used or employed in the work. Before submitting proposals, prospective Bidders should examine the terms, covenants and condition of all codes, permits, and laws which affect or govern the work.

9. FAILURE OR OMISSION

- A. The failure or omission of any Bidder to receive or examine and become familiar with any form, instrument, or document shall in no way relieve the Bidder of any obligation in respect to the proposal.

10. REJECTION OF BIDS

- A. The Town reserves the right to reject any and all bids.

11. "OR EQUAL" BIDDING

- A. When the name of a manufacturer, brand, or manufacturer's catalogue number is issued as the Bid Standard in describing an item, it is used to indicate quality,

performance, and other essential characteristics of the article required.

- B. If Bidding on other than the make, model, brand, or sample specified, but equal thereto, Bidder must so state by giving the manufacturer's name, catalogue number, and any other information necessary to prove that the intended substitution of a commodity is equal in all essential respects to the Bid Standard. Bidder must prove to the satisfaction of the Superintendent of Sewers or by person or persons designated by him, that his designated substitute is equal to the Bid Standard; otherwise, his Bid will be declared "No Bid" insofar as the item in question is concerned.

12. PAYMENT TO SUPPLIER

- A. The Supplier will be paid in accordance with the Bid Form.
- B. The Supplier shall submit statements or invoices for work under the Contract which include a detailed description of charges which shall be payable within thirty (30) days of approval of said invoices.

13. TAXES

- A. The Town is exempt from the payment of the Rhode Island Sales Tax under the 1956 General Laws of the State of Rhode Island, 44-18-30, Paragraph 1, as amended.
- B. The Town is exempt from the payment of any excise tax or federal transportation taxes. The price bid must be exclusive of taxes and will be so constructed.

14. GUARANTIES AND WARRANTIES

- A. All guaranties and warranties normally available to customers will be extended to the Town of New Shoreham / New Shoreham Sewer Commission.

15. OMISSIONS, CHANGES AND ADDITIONS:

- A. Should anything be omitted from these Bid Specifications necessary to the proper execution of the work described therein, it shall be the duty of the Contractor to notify the Town(s), in writing, before signing the Agreement. In the event the Contractor fails to give such notice, the Contractor shall make good any damage or defect in their work caused by their neglect to do so, without extra charge.
- B. The Town shall have the right during the progress of work to make any alterations, additions, and deletions. The same shall be carried into effect by the Contractor without violating or vitiating the contract, but if special changes are made, the value of the same must be agreed upon, in writing, by the Town and the Contractor.
- C. No omission will be allowed, or extra work paid for unless ordered in writing by the Town.

16. **DEFAULT:**

- A. In the event the Bidder is adjudged bankrupt, or should they make a general assignment for the benefit of their creditors, or should a receiver be appointed on account of their insolvency, or should they refuse or fail to perform the work or services described in the Bid Specifications and/or Contract in any way default in the exercise of the terms of these Bid Specifications and/or Contract prior to the completion date, the Town may, in its discretion and without prejudice or any other right or remedy, terminate the employment of the Bidder after having given seven (7) days written notice sent by certified mail, return receipt requested, to the Bidder's principal place of business.

- B. Failure to terminate upon any default herein, shall not be deemed as a waiver by the Town for any future acts of default on the part of the Bidder, nor shall termination of this contract/agreement be deemed as a waiver by the Town to recover any damages, including costs and attorney fees, which it may incur as a result of such default through any means available to the Town.

BID SPECIFICATIONS

1. SCOPE OF WORK

- A. This specification covers the furnishing of one (1) 75 KW Portable Engine Generator.

The generator must be delivered to the jobsite.

The equipment covered by this specification is intended for use at the remote pump stations for the Wastewater Treatment Facility.

- B. The Portable Engine Generator must be delivered to the site by October 31, 2012.

2. QUALIFICATIONS OF BIDDER

- A. Each Bidder shall present evidence that he is normally engaged in the purveying the type of material, supplies or equipment bid on. The Bidder shall make himself thoroughly familiar with the contents of the notice before submitting his proposal; the Bidder automatically acknowledges and accepts all the provisions, conditions and specifications of this notice; no bid shall be considered from Bidders who are unable to show that they are normally engaged in the purveying of the required type of material, supplies, or equipment.

**TOWN OF
NEW SHOREHAM, RHODE ISLAND**

**FURNISHING A PORTABLE ENGINE GENERATOR FOR THE BLOCK ISLAND
WASTEWATER TREATMENT FACILITY**

BID PROPOSAL

BID TO: Town Manager
Town Hall
P.O. Drawer 220
Block Island, RI 02807

BID FROM: _____

(Print Name and Address of Bidder)

A Corporation/A Partnership/An Individual/A Joint Venture
(Bidder to strike out inapplicable terms)

Gentlemen:

The undersigned Bidder offers and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents, and to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

Bidder declares that no person or persons other than those named herein are interested in this Bid; that this Bid is made without collusion with any other person, firm, or corporation; and that no person or persons acting in any official capacity for the OWNER are directly or indirectly interested in this Bid, or in any portion of the profit thereof.

In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that he has examined the Standard Instructions to Bidders, all of the other Bidding Documents, and all of the Contract Documents; that he has examined the actual site and locality where the work is to be performed; that he has familiarized himself with the legal requirements (Federal, State, and local laws, ordinances, rules, and regulations); that he has made such independent investigation as he deems necessary; and that he has satisfied himself as to all conditions affecting cost, progress or performance of the Work; and that by signing this Bid waives all rights to plead any misunderstanding regarding the same.

The undersigned further understands and agrees that the estimated quantities for unit Bid Prices, if any, are to be considered as approximate only. The OWNER does not expressly or by implication agree that the actual quantities will correspond therewith and reserves the right to increase or decrease any quantity or to eliminate any quantity as he may deem necessary. Neither the OWNER nor the CONTRACTOR will be entitled to any adjustments in a unit Bid Price as a result of any change in quantity and he agrees to accept the aforesaid unit Bid Prices as complete and total compensation for any additions or deductions caused by variation in quantities as a result of more accurate measurements, or by any changes or alterations in the Work ordered by the OWNER, and for use in the computation of the value of the Work performed for progress payments.

Bidder further agrees as follows: 1) that this Bid shall remain open and may not be withdrawn for the time period set forth in the Standard Instructions to Bidders; 2) that he accepts all of the terms and conditions of the Standard Instructions to Bidders, including without limitation those dealing with the disposition of his Bid Security; 3) and that, upon acceptance of this Bid, he will execute the Agreement and will furnish the required Contract Security and Insurance Certificates within the time period(s) set forth in the Standard Instructions to Bidders.

ADDENDA: The following Addenda have been received. The modifications to the Bid Documents noted therein have been considered and all costs thereto are included in the Bid Price.

Addendum No. _____	Dated _____

In accordance with the above understandings and agreements, Bidder will complete the Work for the following unit and lump sum prices:

SCHEDULE OF PRICES

In the event of discrepancy between the words and figures given, the amount written in words shall govern.

PORTABLE ENGINE GENERATOR FOR THE BLOCK ISLAND WASTEWATER TREATMENT FACILITY			
Item No.	Estimated Quantity	Description and Cost	Cost
1	Lump Sum	Lump Sum Price to Furnish One (1) 75 KW Portable Engine Generator and Related Appurtenances, in accordance with the Contract Documents, Complete _____ Dollars and _____ Cents, \$ _____	\$ _____

The TOTAL BID, is:

_____ Dollars and
 _____ Cents
 \$ _____

BUSINESS NAME: _____

BY: _____ (Signature)

_____ (Print)

_____ (Title) (Seal - if Bidder is a Corporation)

_____ (Business Address)

_____ (Business Telephone Number)

_____ (Business Fax Number)

_____ (Date)

_____ (Employer Identification Number)

EXPERIENCE

The following experience sheet shall be completed by each Bidder. Any Bid submitted without a fully completed Experience Sheet will be rejected by the OWNER.

1. The Bidder (Contractor), under the current business name, shall have a minimum of five (5) years experience in the manufacture of the related equipment.
2. List three (3) similar projects where the equipment is operating:

PROJECT NO. 1 : _____
Owner : _____
Amount : _____
Engineer : _____
Person to Contact : _____ Phone Number: _____

PROJECT NO. 2 : _____
Owner : _____
Amount : _____
Engineer : _____
Person to Contact : _____ Phone Number: _____

PROJECT NO. 3 : _____
Owner : _____
Amount : _____
Engineer : _____
Person to Contact : _____ Phone Number: _____

TECHNICAL SPECIFICATIONS

<u>Section</u>	<u>Description</u>	<u>Page Nos.</u>
16232	PORTABLE ENGINE GENERATOR	13 - 28

PORTABLE ENGINE GENERATOR

1. PART 1- GENERAL

1.1 SCOPE

- A. The work of this section includes all labor, materials, tools, equipment and incidentals necessary to furnish and install, put in operation and field test one diesel engine driven, industrial towable trailer mounted generator set with a sound attenuated enclosure and a fuel base tank as specified herein.

1.2 SUBMITTALS

- A. Submit all pertinent technical data and manufacturer's data sheets in a three (3) ring binder with tabs including but not limited, to the following:
1. Manufacturer and model of engine and generator, with all rated data including, rated capacity B.H.P., generator KVA, KW and P.F. rating, voltage, class insulation, temperature rise above 40 degree C ambient, generator efficiency and fuel consumption at full load, 3/4 load and 1/2 load, operating weight of complete unit. Engine ratings and operation using No. 2 diesel shall be certified.
 2. Generator, controls and circuit breaker
 3. Exhaust system and associated pipe arrangement
 4. Fuel tanks and alarm indications.
 5. Battery and charger
 6. Auxiliary system power requirements
 7. Sound Attenuated weatherproof enclosure.
 8. Trailer and all towing, parking, and interconnection cables.
 9. Power Cables.
- B. Submit all other data specified in this section.
- C. In requesting a review of deviations or substitutions, the Supplier shall provide, upon request, evidence leading to a reasonable certainty that the proposed substitution or deviation shall provide a result at least equal in quality to that specified. If, in the opinion of the Engineer, the evidence presented by the Supplier does not provide a sufficient basis for such reasonable certainty, the Engineer will reject such substitution or deviation without further investigation, in which case it shall be the responsibility of the Contractor to provide another product which is satisfactory to the Engineer. The Engineer is in no way obligated to review nor allow that speculative substitution to be furnished. The Supplier shall submit all requests for substitutions sufficiently ahead of

need to cause no delay in the job because of the subsequent rejections and/or resubmissions.

- D. Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the Contractor, notwithstanding review or acceptance of such substitution by the Owner or the Engineer, unless such substitution was made at the written initiation of the Owner. Any additional cost for redesign of any components for a substituted product shall be borne by Contractor unless such substitution was initiated in writing by the Owner.

1.3 DESIGN CRITERIA

- A. The engine generator set shall be arranged for manual starting.
- B. The engine generator unit shall include, but not be limited to excitation system, controls, keep warm system, cooling system, silencer, starting batteries, charger, and all essential and desirable appurtenances whether specifically mentioned in this specification or not.
- C. The systems described herein, including but not necessarily limited to the engine generator set, engine auxiliaries, batteries and engine generator control panels shall be furnished by a single supplier who is regularly engaged in the production of diesel fueled engine driven generators.
- D. The voltage regulation shall be within plus or minus two percent from no load to full rated load. On application or removal of full rated load in one step, the transient voltage dip or overshoot shall not exceed twenty percent of rated voltage. Frequency regulation shall be within 3 Hertz from no load to full load.
- E. The voltage regulator shall be insensitive to severe load induced waveshape distortion from SCR or thyrister circuits such as those used in battery charging and motor speed control equipment. This SCR immune regulator shall not reduce the motor starting capabilities as specified herein.
- F. Provide an engine generator unit of not less than 75 KW, 0.8 power factor capacity with 3 phase, 60 Hertz, 208 Volts, 4 wire (grounded wye) alternating current, in a weather-proof, sound attenuated enclosure.
- G. The engine generator unit shall be completely pre-wired and piped. Receptacle cord connections for 208/120V, 3-phase full generator capacity output power and 120V, 20A battery charger input power shall be required.
- H. The engine shall be EPA Certified for low emissions and meet the State of Rhode Island's Air Emission Regulations. It shall be rated for operation using diesel fuel mixture. The unit tank shall be filled at completion of the project.

- I. The weather protected unit shall be trailer mounted. Trailer and accessories shall be furnished as hereinafter specified. The entire assembly shall be provided with two lunette lifting eyes capable of evenly supporting the entire system from the two eye locations.

1.4 QUALIFICATIONS

- A. The generator unit shall be the standard product, as modified by these Specifications, of a manufacturer regularly engaged in the production of this type of equipment. They shall be a standard production model of proven ability and shall be designed, constructed, and installed in accordance with the best practice and methods. In addition, the manufacturer shall maintain a permanent service organization and supply of spare parts as necessary to provide adequate service within four hours from receipt of a request for service.
- B. The engine generator set shall be a factory assembled unit specifically designed and fitted for operation using diesel fuel. The engine generator unit shall be free from injurious torsional or other vibration, and shall be assembled on an adequate steel subbase suitable for mounting on heavy duty, industrial grade spring-type vibration isolators, on a towable trailer. The spring isolators shall be furnished as part of the complete engine generator set.
- C. The engine generator unit will operate in New Shoreham, Rhode Island and shall be rated for use at this elevation level. Outdoor enclosed units shall be provided with heating and cooling, as required, to maintain the generator set operational within the temperature limits of all devices and equipment. The engine generator unit shall be suitable for continuous operation at any temperature between 0 and 110 degree F at its full load rating and at 80 percent power factor.
- D. The engine generator unit shall be designed and built in accordance with the latest standards of IEEE, NEMA, ANSI and ASME. The engine shall be manufactured in the United States; no exception.
- E. The engine generator unit shall be designed to minimize the danger of accidents to operating and maintenance personnel. The manufacturer shall, prior to shipment, verify that all electrical connections are tight and that circuits are isolated, that on-set piping connections are well-made, and that standard safety equipment is included and functions according to design.

1.5 ENGINE GENERATOR UNIT PERFORMANCE

- A. The engine generator unit shall maintain rated frequency from no load to full rated load.
- B. Voltage regulation shall be as specified herein and recovery to steady state operation shall be within two seconds.

- C. Stable or steady state operation is defined as operation with terminal voltage remaining constant within plus or minus one percent of rated voltage. A rheostat shall provide a minimum of plus or minus five percent voltage adjustment from rated voltage.
- D. Frequency regulation shall be maintained within 2½ percent of rated frequency from no load to full load. The steady state frequency shall be within 0.5 percent of rated frequency.

1.6 PRODUCT HANDLING

- A. All materials shall be shipped, stored, handled and installed in such a manner as not to degrade quality, serviceability, or appearance.
- B. Protect material and equipment, in accordance with the manufacturers recommended storage procedures, before, during, and after installation. Stored items shall be protected from the weather and contamination. During installation, piping and similar openings shall be capped to keep out dirt and other foreign matter.

2. PART 2 - PRODUCTS

2.1 ENGINE

- A. The engine shall be furnished with thermostatically controlled jacket water heaters of the size recommended by the supplier. Heaters shall be rated for operation on 120 Volts.
- B. Each engine shall be provided with a governor which maintains the frequency within a bandwidth of the rated frequency, over a steady-state load range of zero to 100% of rated output capacity. The governor shall be configured for safe manual adjustment of the speed/frequency during operation of the engine-generator set, without special tools, from 90 to 110% of the rated speed/frequency, over a steady state load range of 0 to 110% or rated capacity.
 1. Steady state speed band, +/- 0.25% of rated speed.
 2. Internal oil pump, relief valve and accumulator controls governor operating pressure.
 3. Manual speed adjustment knob at top of unit.
 4. Positive locking to allow manual speed adjustment.

2.2 COOLING SYSTEM

- A. The engine shall be furnished with a unit mounted radiator. The radiator shall be of sufficient size to cool the water when ambient temperature is 100 degrees F. and the engine generator unit is operating at full rated load continuously.

- B. Cooling system shall further include water cooled manifolds, pusher fans and high temperature cutout. Provide radiator duct connector complete with suitable gasket, bolts and nuts. The cooling system shall be furnished with sufficient antifreeze solution to protect the cooling system with ambient air temperature down to minus fifty degrees F.
- C. Provide an anti-freeze treatment as recommended by the manufacturer for protection against corrosion and scale formation. The anti-freeze treatment shall be compatible with the antifreeze solution.

2.3 FUEL SYSTEM

- A. The engine shall be furnished with filter, fuel pressure gauge and engine priming pump.
- B. A minimum of one full-flow filter shall be provided for each engine. The filter shall be readily accessible and capable of being changed without disconnecting the piping or disturbing other components. The filter shall have inlet and outlet connections plainly marked.
- C. The engine generator shall be provided with a sub-base fuel tank package sized for continuous operation at 100% load for 18 hours, minimum.
 - 1. Tank shall be constructed of heavy gauge steel; epoxy coated interior, and rust proofed and finished painted exterior.
 - 2. Tank shall be furnished with a lift off cover; 1 inch npt. connections for engine suction; return, drain cock; vent and overflow; float switch with adjustment to maintain reserve, control panel with press to test button; fuel gauge; check valve on pump intake, pressure relief valve, hand pump and a low fuel level.
 - 3. Tank wiring and plumbing shall be pre-connected and enclosed under a removable top.
 - 4. The storage tank shall be a secondarily contained rectangular steel tank capable of mounting an engine generator to top of tank. The tank shall be "Special Purpose" UL142 listed.
 - 5. The tank shall be designed, tested and labeled per UL requirements to support a generator weight of 50,000 pounds, and lift lugs shall be approved by UL with a 4 to 1 safety factor.
 - 6. The primary and secondary tanks shall be fabricated from minimum 1/4" steel.
 - 7. Primary tank shall be air pressure tested at three (3) PSI using a leak detection solution and the secondary tank shall be air pressure tested at one and one-half (1-1/2) PSI using a leak detection solution.

8. There shall be an annular space between the primary and secondary tank to provide an immediate leak path for external monitoring manually or electronically.
9. All tank-top fittings shall be forged steel weld flanges.
10. The outer tank shall be cleaned and painted with one coat of industrial enamel.
11. The tanks shall be labeled by product, capacity and manufacturer.
12. Updraft and emergency venting shall be provided by tank manufacturer per UL 142 requirements.
13. The outer tank shall be abrasive blasted per SSPS-SP10 (White metal blast), then painted with one coat of high build polyester glass flake to a minimum of 12 - 15 mils (DFT), and a finish coat of aliphatic urethane with a minimum of 3 mils (DFT).
14. Tanks shall be provided with UL listed 10 gauge stainless steel overspill box welded and permanently affixed to top of tank and shall include a handle pull overflow drain to allow fuel to return to the tank.
15. The rear of fuel tank shall be equipped with an attached compartment, which acts as an electrical stub-up area. The rear panel of this compartment shall be detachable to allow for contractor access to connect electrical conduits.
16. Through inner tank stub-up area shall be available per generator design requirements.

2.4 EXHAUST SILENCERS

- A. The engine generator unit shall be provided with a stainless steel critical type silencer including flexible exhaust fittings. Mounting shall be designed by the Manufacturer and secured within the enclosure structure. Silencers shall be mounted so that its weight is not supported by the engine. Exhaust piping shall be stainless steel and sized as recommended by the manufacturer. Connection between engine and silencer shall be of flexible stainless steel.
- B. Silencers shall be Maxim Model M41, equal by Kitell, or equal for naturally aspirated engines. Silencers shall be Maxim MT41 equal by Kitell, or equal for turbocharged engines.
- C. A flexible section shall be provided at each engine and an expansion joint at each muffler. Flexible sections and expansion joints shall have flanged connections. Flexible sections shall be made of convoluted seamless tube without joints or packing. Expansion joints shall be the bellows type. Expansion and flexible elements shall be stainless steel suitable for diesel-engine exhaust gas at the maximum exhaust temperature that is specified by the engine manufacturer. Expansion and flexible

elements shall be capable of absorbing vibration from the engine and compensation for thermal expansion and contraction.

- D. Horizontal sections of exhaust piping shall be sloped downward away from the engine to a drip leg for collection of condensate with drain valve and cap. Changes in direction shall be long radius. Exhaust piping, mufflers and silencers installed shall be insulated with 3 inches of calcium silicate insulation and covered with aluminum flashing to protect personnel. Vertical exhaust piping shall be provided with a hinged, gravity-operated, self-closing, rain cover.

2.5 STARTING SYSTEM

- A. The electric starting system shall consist of the following equipment:
1. The engine shall have either two 12 VDC, or one 24 VDC, two wire, direct current starter suitable for automatic starting through the load transfer switch.
 2. Batteries shall be of the lead-acid type. Batteries shall be guaranteed to have sufficient capacity when in a fully charged state to perform not less than five, 15 second cranks while in an ambient temperature of 0 degrees F without recharging.
 3. Current limiting type automatic battery charger conforming to UL 1236 shall be of the static type, magnetic amplifier control with D.C. voltmeter, D.C. ammeter and potentiometer for voltage adjustment. Charger to be completely automatic, charging rate to be determined by the state of the battery, and reducing to milliamp current on a fully charged battery. Charger shall be for 120 Volt, single phase, 60 Hertz A.C. input with an output of not less than 10 amperes. The charger shall be a LaMarche Model All, equal by Onan or equal, and for the correct voltage for the battery, and specifically for charging a lead-acid battery and for panel mounting. The charger shall be furnished with a battery under-voltage, over-voltage and loss of AC input alarm system consisting of dry contacts for remote use.

2.6 ALTERNATOR

- A. The alternator shall be single bearing, open, dripproof revolving field, four pole brushless type, permanently aligned to the engine by flexible disc coupling. Each unit shall be reconnectable type having nine leads and shall be factory connected for three phase, 4 wire, 60 Hertz. The rating of the unit shall be as hereinbefore specified.
- B. Alternators shall have Class H insulation provided with a 2/3 pitch rated for use with non-linear variable frequency drive loads and shall be furnished with Amortisseur windings. Alternators shall have a complete static automatic voltage regulator which will hold the voltage within plus or minus two percent from no load to full rated load. On application of rated load in one step, the transient voltage dip shall not exceed twenty percent. The generator windings shall be braced to withstand any possible short circuit stresses. Alternator shall be "Radio Interference Proof" (RIP) and

“Telephone Influence Factor” (TIF) and shall be within the limits of Section 9, ANSI C50.12. Alternators shall have a rotating brushless exciter and rectifier.

- C. The alternator characteristics shall be matched to the torque characteristics of the engine in such a manner that with full load connected to the alternator terminals, the alternator will utilize all the available engine power without exceeding it at all speeds.
- D. The generator exciter shall be of the brushless type. Semiconductor rectifiers shall have a minimum safety factor of 300% for peak inverse voltage and forward current ratings for all operating conditions, including 110% generator output at 40 degrees C 104 degrees F ambient. The exciter and regulator in combination shall maintain generator-output voltage within the limits specified.
- E. Each generator shall be provided with a solid-state voltage regulator, separate from the exciter. The regulator shall maintain the voltage within a bandwidth of the rated voltage, over a steady-state load range of zero to 100% of rated output capacity. Regulator shall be configured for safe manual adjustment of the engine-generator voltage output without special tools, during operation, from 90 to 110% of the rated voltage over the steady state load range of 0 to 100% of rated output capacity. Regulation drift shall not exceed plus or minus 0.5% for an ambient temperature change of 20 degrees C. 68 degrees F.
- F. Alternators shall be furnished with vacuum-impregnated windings with fungus-resistant epoxy varnish.

2.7 CONTROL PANELS

- A. The engine generator unit shall be furnished with a shock resistant, engine mounted microprocessor instrument panel:
- B. Standard data available shall include:
 - 1. Jacket water temperature
 - 2. Lube oil temperature
 - 3. Lube oil pressure
 - 4. Battery voltage
 - 5. RPM
 - 6. A.C. Voltmeter
 - 7. A.C. Ammeter
 - 8. Frequency meter
 - 9. Elapsed time meter calibrated in hours and tenths of hours
 - 10. Current transformers

11. Fuses
 12. Generator voltage regulator
 13. Voltage adjusting control.
 14. Fault indication for:
 - a. Oil pressure
 - b. Coolant temperature
 - c. Overspeed
 - d. Overcrank (fail to start).
 - e. Low fuel
 - f. Battery charger
 15. 90 DB (a) Audible alarm to sound on any fault or prewarn and an alarm silencer.
 16. On-Off key switch
 17. Control power fuse
 18. Fixed overcrank timer - four-10 second cranks shall be provided. After four cranks, the unit shall stop and an alarm initiated.
 19. Auxiliary contacts which close when engine is in operation. Contacts shall be rated 10 amperes and shall be used to interlock combustion and ventilation air dampers.
 20. Engine sensors for low water temperature near low oil pressure, near high water temperature.
 21. Emergency stop button.
- C. In addition to the equipment included in the control panel described above, the unit shall include a power and control junction box mounted on the generator. This junction box shall include:
1. Three phase power conductors terminated with pressure type ring connectors.
 2. Neutral connection.
 3. Terminal block with marked connection points for all external control connections and for jacket heaters, etc.

4. Circuit breaker shall be 100% rated insulated case, adjustable trip type, rated 25KA symmetrical.
 - a. Circuit breaker trip system shall be a microprocessor-based true rms sensing design with sensing accuracy through the thirteenth (13th) harmonic.
 - b. The integral trip system shall be independent of any external power source and shall contain no less than industrial grade electronic components.
 - c. Circuit breakers shall be equipped with back-up thermal and magnetic trip system.
 - d. The ampere rating of the circuit breaker shall be determined by the combination of an interchangeable rating plug, the sensor size and the long-time pickup adjustment on the circuit breaker. The sensor size, rating plug and switch adjustments shall be clearly marked on the face of the circuit breaker. Circuit breakers shall be UL Listed to carry 100% of their ampere rating continuously.
 - e. An ammeter to individually display all phase currents flowing through the circuit breaker shall be provided.
 - f. Main circuit breaker shall be equipped with lockable handle.
5. 208/120V, 3-phase, 4-wire, plus ground flush mounted receptacle with full rated capacity of the generator and connected to the load side of the generator main circuit breaker.
6. 120V, 1-phase, 20A, 2-wire, plus ground flush mounted plug inlet connected to the 120VAC input of the battery charger. Plug to have a NEMA 1-20 configuration.

2.8 MOUNTING

- A. The engine and generator shall be close coupled and mounted on a structural steel subbase, designed to maintain proper alignment of the unit.
- B. Rubber vibration mounts as recommended by the manufacturer of the generator shall be supplied between the generator and its base.
- C. The entire set including the enclosure shall be securely bolted to the frame of the trailer.

2.9 TRAILER

- A. The trailer shall be designed and built for transporting an electric generating set and sub-base tank with a maximum of safety at highway speeds. The generator set including the enclosure shall be mounted on a heavy duty “highway” type trailer. The trailer may be of double axle design and shall be determined by the overall size and weight of the complete unit. However, the capacity of the trailer shall be at least 10 percent more than the total gross weight of the enclosed generator with a full fuel tank. Tires shall be at least 14 inch diameter.
- B. The trailer shall be equipped with hydraulic surge brakes or electric brake system. Hydraulic brakes shall not require any external connection in order to function properly. Electric brake system shall have break away and battery backup. A steel tether shall be provided for connection between the tow vehicle and brake actuator. The trailer chassis shall be welded all steel channel and angle construction with heavy gauge bed plate. The V-torque shall be equipped with ball coupler.
- C. The trailer shall include, but not be limited to, the following accessories with required ICC equipment:
1. Pintle hitch connection
 2. Steel fenders
 3. Stop, directional, running and side marker lights
 4. Reflectors on each upper corner and rear of the weather protective enclosure
 5. Leveling jacks front and rear
 6. Four wheel checks with holding brackets for when not in use
 7. Welded link safety chains with shackles
 8. Spare tire with rack and jack
 9. Registration mounting plate bracket with light.
 10. Lockable utility box large enough to house the power cables.
- E. All lights shall be wired to a plug at the trailer tongue. A mating pigtail shall be supplied.
- F. The entire unit shall be in accordance with the Department of Transportation, State, and local regulations.
- G. The certification of origin for the trailer shall be furnished directly to the Owner by the supplier after the equipment is accepted by the Owner and the supplier has been paid in full.

2.10 POWER CABLES

- A. Provide a 3-phase, 4-wire, plus ground power cable with pre-wired NEMA 4X plug to match generator enclosure receptacle.
 - 1. Cable to be UL type W portable power cable with copper conductors insulated with synthetic rubber (EPDM). The cable is to be covered with a black CPE rubberjacket applied in two layers with reinforcement placed between the layers.
 - 2. Cable and plug assembly to have full rated capacity of the generator.
- B. Provide a 1-phase, 2-wire, plus ground, 20A rated, heavy duty power cable with pre-wired NEMA 4X plug and receptacle. Plug and receptacle to have a NEMA 1-20 configuration.
- C. All cables shall have a minimum length of 30 feet.

2.11 WEATHER-PROTECTIVE ENCLOSURE

- A. The engine-generator shall be totally enclosed in a weatherproof housing. A hinged meter panel door shall be furnished at the generator end of the housing. All doors shall be hinged. Handles shall be lockable and keyed alike. The configuration of the housing shall allow for proper cooling and ventilation of the generator set under all operating conditions. The enclosure shall be furnished with automatic type louvers which are normally closed and open when the generator is started.
- B. All accessory equipment such as heaters, charger, etc. shall be wired to an accessory load center panel. The load center shall be located within the weather protected enclosure and shall have provisions for connection to a "twist lock" type receptacle with a mating connection for the Owner's use. The Owner will supply a "house service" cable. Accessory equipment shall be fed through individual circuit breakers located with panel. The load center shall also include a main circuit breaker. Panel ratings shall be as required to properly handle all equipment loads. Three spare breakers shall be provided for future use. Panel shall be wired for connection to a 120 Volt, single phase, 2 wire power supply.
- C. The unit shall be provided with 50 feet of flexible load cable of suitable capacity to handle the load conditions. The cable shall meet all applicable codes for the use intended. The housing shall be equipped with a cable reel system which shall house and automatically coil all length of cable for storage.
- D. The enclosure shall have sound attenuation to achieve 70dB(A) at 25 ft.
- E. The housing shall have signs on all four sides of the enclosure reading:

"DANGER - HIGH VOLTAGE"

- F. The enclosure shall be labeled on two (2) sides with the New Shoreham Wastewater Treatment logo.

3. PART 3 - EXECUTION

3.1 MANUFACTURER'S SERVICES

- A. The engine-generator set manufacturer or assembler shall furnish a qualified field engineer to supervise the complete installation of the engine-generator set, assist in the performance of the onsite tests, and instruct personnel as to the operational and maintenance features of the equipment. The field engineer shall have attended the engine generator manufacturer's training courses on installation and operation and maintenance of engine generator sets.
- B. A minimum of two, eight-hour days (not including travel) in two separate trips shall be provided to instruct the Owner in the operation of the system.
- C. A minimum of one, four hour day, not including travel time to and from the site, shall be used by a fully qualified field service engineer to make necessary adjustments and to provide operator training on the equipment furnished. This work shall occur after the equipment has been in operation and at the request of the owner, but not to exceed one year after the acceptance of the facility.

3.2 TESTS

- A. At least 48 hours prior to the load test, the manufacturer shall perform a pretest. The pretest shall determine that the unit is ready for load testing and that all components are functioning correctly. All adjustment for tuning the unit shall be made during the pretest. If remedial work is required, the work shall be performed before the load test is conducted.
- B. Upon completion of the installation, the manufacturer of the equipment shall test the complete unit, at full load, using load banks, for four continuous hours. During the test, the following data shall be taken at 15 minute intervals:
1. Outside air temperature
 2. Generator room temperature
 3. Oil pressure
 4. Oil temperature
 5. Jacket water temperature
 6. Battery charge rate
 7. Fuel pressure
 8. A.C. Volts
 9. A.C. Amps
 10. Frequency
 11. Kilowatts.
- C. Following the test, three successive simulated power outages shall be conducted using all connected building loads.

- D. The equipment shall be left in good operating order, with a full tank of fuel and the settings of all alarm and shutdown devices verified.
- E. The noise transmitted by the running engine shall be measured in the field by the manufacturer.

3.3 WARRANTY:

- A. The unit shall be fully warranted for one (1) year from the date of acceptance.

3.4 OPERATION AND MAINTENANCE MANUALS

- A. Two (2) bound copies of each instruction, maintenance and lubrication manual shall be furnished for each piece of equipment for review to Engineer. Upon acceptance by the Engineer, five (5) bound copies of the manuals shall be submitted to the Engineer. In general, all manuals shall be in 3-ring clear view binders, suitable in size for the quantity of material presented. All manuals shall have removable pages. Oversized drawings shall be in 3-hole punched full size pockets.
- B. All elements and components of the equipment of the system shall be included in the manual including a description of how the equipment or complete system works. Additionally, where a number of components are furnished to provide a complete system, the operation of the components as they related to the complete system shall be described.
- C. The manual shall include all necessary instruction for the maintenance and operation of the equipment or system in accordance with the manufacturer's recommendations. The manuals shall include, but not be limited to, the following:
 - 1. Table of Contents and Index.
 - 2. A complete written description of the operation. Identify function, normal characteristics and limiting conditions. Include performance curves with engineering data and tests. Include equipment nameplate data (Serial Number, Model Number, Rating, Voltage, etc.)
 - 3. Clear and concise maintenance instruction including schedules and types of lubricants.
 - 4. Detailed drawings.
 - 5. Wiring diagrams and control schematics including external connection diagrams.
 - 6. Complete parts lists including the specific part or identification number utilized by the manufacturer of the parts. Arbitrary sequential numbers or letters keyed to a sectional diagram are not satisfactory.
 - 7. Recommended spare parts list.

8. Current parts list.
 9. All calibrations and other data for future modifications, alterations or reconfigurations shall be completely indicated and described.
 10. Pages are to be numbered consecutively in the upper right hand corner through all sections of the manual.
 11. Shop drawing submittal data.
 12. Names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
 13. Test and balancing reports calibration data, alignment records and other information.
 14. Each page shall be numbered.
- D. The manual shall be customized in that only data pertaining to the specific equipment of system to be furnished shall be included. If a standard type manual is utilized, it shall be neatly annotated to highlight the data pertaining to, and deleting the data not pertaining to, the specific equipment or system being furnished.
- E. Each manual shall be identified by title sheets affixed to the front cover, back cover and spine and shall include the following information:
1. Name of Project.
 2. Town Seal.
 3. Common name of equipment or system.
 4. Location of equipment or system when applicable.
 5. Tabbed flyleaf for each separate product and system with typed description of product and major component parts of equipment.
- F. Two (2) copies of the manual shall be submitted for approval no later than the time the equipment or system is delivered on site. If the manual is satisfactory, one (1) additional bound copy and one (1) electronic copy shall be submitted to the Engineer. If the manual is not satisfactory, one (1) copy will be retained by the Engineer and one (1) copy will be returned to the Contractor. When unsatisfactory manuals are resubmitted, two (2) copies will again be required. At the conclusion of the submittal process, the Contractor shall provide a total of three (3) bound copies and one (1) electronic copy.

3.5 CERTIFICATION:

- A. The manufacturer shall certify to the Owner:
1. The system operates in accordance with the specifications; and

2. The air emission meets EPA and RIDEM regulations in place at the time of acceptance.

END OF SECTION