TOWN OF WEST WARWICK, RI
INVITATION TO BID

REQUEST FOR PROPOSALS (RFP) FOR
PORTABLE ENGINE GENERATOR

Sealed bid proposals will be received at the Town of West Warwick Finance Department at the address listed below until 10:00 AM on October 21, 2020. Proposals will be publicly opened and read aloud in the West Warwick Town Council Chambers at 10:30 a.m. on that date.

Town of West Warwick
Town Hall
1170 Main Street
West Warwick, RI 02893

Specifications may be obtained on the Town of West Warwick's website, www.westwarwickri.org under "How do I?...Submit a Proposal or Bid or at the offices of James J. Geremia Engineering & Associates, Inc., 272 West Exchange St., Suite 201, Providence, RI between the hours of 9:00 am and 4:00 pm, Monday through Friday, after September 30, 2020.

ALL SUBMISSIONS MUST BE IN TRIPLICATE AND CLEARLY MARKED ON THE OUTSIDE ENVELOPE:

"2021-04 PORTABLE ENGINE GENERATOR"

For more information, contact Christine Suvajian, at (401) 822-9228. Individuals requesting interpreter services for the hearing impaired must notify the Finance Department (Tel.401-822-9216) or TTD #9224 at least (72) hours in advance of the bid opening date.

The Town of West Warwick reserves the right to reject any and all bids, or parts thereof, to waive any irregularities in the bids received and to accept the bids or part thereof deemed to be most favorable to the Town.

No bidder may withdraw the bid for a period of one hundred twenty (120) days after the actual date of the opening thereof.

WEST WARWICK SEWER COMMISSION
INVITATION TO BID
CONTRACT NO. 2021-04

Sealed bids for the furnishing of a **PORTABLE ENGINE GENERATOR for the West Warwick Regional Wastewater Treatment Facility**, a bid for the West Warwick Sewer Commission, Rhode Island ("Commission") will be received at the:

Office of the Finance Director
Town Hall
1170 Main Street
West Warwick, RI 02893

until **10:00 A.M.**, **October 21, 2020**. At that time, all bids will be forwarded to the Sewer Commission for evaluation. All bids must be properly addressed and marked in sealed envelopes to be considered.

Specifications may be obtained at the Town of West Warwick's web site at www.westwarwickri.org under Request for Proposals/Bids or at the offices of James J. Geremia Engineering & Associates, Inc., 272 West Exchange St., Suite 201, Providence, RI between 9:00 AM and 4:00 PM, Monday through Friday, after **September 30, 2020**.

The Town reserves the right to waive any informalities or to reject any and all bids and to accept the proposal deemed most favorable to the Town.

Bids will be awarded by guaranteed lowest evaluated bid price (i.e. lowest bid price and compliance with technical bid specifications).

No bidder may withdraw the bid for a period of one hundred twenty (120) days after the actual date of opening thereof.

Published: September 30, 2020 **Legal Ad**

Kristen Benoit
Finance Director
Town of West Warwick

STANDARD INSTRUCTIONS TO BIDDERS

The West Warwick Sewer Commission is requesting proposals for the furnishing of a **Portable Engine Generator (Contract No. 2021-04) for the West Warwick Regional Wastewater Treatment Facility** (1 Pontiac Avenue, West Warwick).

1. **PREPARATION OF PROPOSAL**:

   A. Each proposal must be submitted on the prescribed Bid Form and/or Schedule of Prices contained herein. In the Schedule of Prices 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. The original and one (1) copy of the Bid Form as well as any other required information must 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 (Contract No. 2021-04) FOR THE WEST WARWICK REGIONAL WASTEWATER TREATMENT FACILITY**. If mailed, the proposal shall be enclosed in a second envelope similarly marked and addressed to the Finance Director, Town Hall, 1170 Main Street, West Warwick, Rhode Island 02893.

2. **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.

3. **USE OF SUBCONTRACTORS:**

   A. The use of the name of a Subcontractor in the proposal shall be deemed to constitute the acceptance by the Contractor, if awarded the Contract, of the bid of said Subcontractor. Any changes therein after the award of the Contract shall be made only with the approval of the Town.

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 analyzed in accordance with the technical specifications contained herein and evaluated on the basis of quantities and unit prices as stated in the schedule of prices on the Bid Form.

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 perform the Contract. 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 will be awarded to the lowest responsible and eligible Bidder 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 by the Town by means of a registered letter sent to the Bidders' address as stated in said proposal. If, within ten (10) days immediately after receipt of said notice, the successful Bidder fails to comply with the requirements of these documents, he shall forfeit the bid security (if required) and 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., Project Manager (Jim@GeremiaEngineering.com). 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. 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.

9. REJECTION OF BIDS:

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

10. PREVAILING LAWS AND REGULATIONS:

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 conditions of all codes, permits, and laws which affect or govern the work.

11. GUARANTIES AND WARRANTIES:

A. All guaranties and warranties normally available to customers will be extended to the Town.

12. PAYMENT FOR SERVICES:

A. Contractor shall be paid in accordance with the Bid Form. The Contractor shall submit regular statements or invoices to the Town. Said statements 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.

14. 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 and 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.

15. DEFAULT:

A. In the event the Contractor 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 described in the Specifications prior to the completion date, except where provision is made for extension of time, or should the Contractor fail to make prompt payment to subcontractors, or pay for materials or labor or otherwise be guilty of substantial violations of any provision of the contract, the Town may, without prejudice or any

other right or remedy, and after having given seven (7) days written notice, terminate the employment of the Contractor and take possession of the premises, materials, tools, and appliances thereof and finish the work by whatever method they deem necessary.

B. In the event of default, the Contractor shall not be entitled to receive future payment until the work is finished. Should the unpaid balance of the contract price exceed the expense of finishing the work, including compensation for additional administration services, such excess shall be paid to the Contractor. Should the expense exceed the unpaid balance, the Contractor shall pay the difference to the Town.

GENERAL CONDITIONS

1. Should anything be omitted from these CONTRACT DOCUMENTS necessary to the proper execution of the WORK described herein, it shall be the duty of the MANUFACTURER to so notify the Town, in writing, before signing the Agreement. In the event the MANUFACTURER fails to give such notice, the MANUFACTURER shall make good any damage or defect in their WORK caused by their neglect to do so, without extra charge.

2. The MANUFACTURER shall bear all loss or damage from accidents which may occur to any person or persons during the progress of the WORK, until completion of all WORK on the premises. The MANUFACTURER shall provide all legal and necessary guards, barriers, railings, warning signs, guards, flaggers, during the progress of WORK. The MANUFACTURER shall execute the WORK as per the Specifications to the approval of the Town of West Warwick Sewer Commission.

3. The MANUFACTURER shall examine the existing sites. No allowance will be made for lack of full knowledge of all conditions.

4. Unless otherwise stipulated, the MANUFACTURER shall provide and pay for all materials, labor, power, tools, equipment, scaffolding, transportation, and all other facilities necessary to the execution and completion of the WORK. The MANUFACTURER shall not employ any unfit person on the premises, nor anyone unskilled in the WORK assigned to.

5. The MANUFACTURER shall assume all risks and bear all losses occasioned by neglect or accident during the progress of the WORK. The MANUFACTURER shall provide insurance covering the entire WORK in accordance with any worker's compensation laws which may be in force at present or put into effect before the completion of the Agreement. The MANUFACTURER shall obtain certificates of Comprehensive/ General Liability Insurance minimum limits of $1,000,000/$2,000,000 naming the Town of West Warwick and James J. Geremia & Associates, Inc. as insured parties. The MANUFACTURER shall furnish the parties with a proper Certificate of Insurance of the Compensation/Liability insurance policies herein specified, at the time of the signing of the Agreement.

   a. Auto Liability: shall be in the amount of $1,000,000 Combined Single Limit - Bodily Injury & Property Damage.

   b. Employer's Liability: shall be in the amount of $500,000 Policy Limit. $100,000 each by Accident and Disease.

   The MANUFACTURER shall not commence under this Agreement until they have obtained all the insurance required under this contract and such insurance has been approved by the West Warwick Sewer Commission.

6. The West Warwick Sewer Commission shall have the right during the progress of WORK, to make any alterations, additions, omissions. The same shall be carried into effect by the MANUFACTURER 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 parties and the MANUFACTURER. No omission will be allowed, or extra WORK paid for unless ordered in writing by the West Warwick Sewer Commission.

7. The West Warwick Sewer Commission reserves the right to increase or decrease the total quantities of required MANUFACTURER analyses estimated in this Bid Document as a result of the changing needs of the wastewater treatment facilities.

8. The West Warwick Sewer Commission also reserves the right to negotiate the final contract to reflect the best overall MANUFACTURER analysis services for the best overall price.

QUALIFICATIONS OF BIDDER

1. Each Bidder shall present evidence that he/she is normally engaged in the purveying of 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 fo 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.

WEST WARWICK SEWER COMMISSION
WEST WARWICK, RHODE ISLAND

FURNISHING A PORTABLE ENGINE GENERATOR FOR THE WEST WARWICK REGIONAL WASTEWATER TREATMENT FACILITY

BID PROPOSAL

BID TO: Finance Director
Town Hall
1170 Main St.
West Warwick, RI 02893

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 _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

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 WEST WARWICK REGIONAL WASTEWATER TREATMENT FACILITY (Contract 2021-04)			
Item No.	**Estimated Quantity**	**Description and Cost**	**Cost**
1	Lump Sum	Lump Sum Price to Furnish One (1) 150 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:_____

SECTION 16232 – PORTABLE ENGINE GENERATORS

1.00 PART 1- GENERAL

1.01 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.

1.02 SUBMITTALS

A. Manufacturer's literature and brochures shall be submitted for all items to be furnished.

B. 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 l/2 load, operating weight of complete unit. Engine ratings and operation using No. 2 fuel 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.

C. Submit all other data specified in this section.

1.03 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 150 KW, 0.8 power factor capacity with 3 phase, 60 Hertz, 480 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 480/120V, 3-phase full generator capacity output power and 120V, 20A battery charger input power shall be required.

H. The engine shall be EPA Certified Tier 3 emissions and meet all local, State and federal emission requirements. 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 a lunette lifting eye capable of evenly supporting the entire system from the eye location.

1.04 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 Kent County, 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.

1.05 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 2-1/2 percent of rated frequency from no load to full load. The steady state frequency shall be within 0.5 percent of rated frequency.

1.06 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.

2.00 PART 2 - PRODUCTS

2.01 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.

2.02 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.

2.03 FUEL SYSTEM

A. The engine shall be furnished with filter, fuel pressure gage and engine priming pump.

B. A minimum of one full-flow fuel 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; 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; pressure relief valve, and a low fuel level.

3. The storage tank shall be a secondarily contained rectangular steel tank. The tank shall be "Special Purpose" UL142 listed.

5. The tank shall have lifting eye(s) and be approved by UL with a 2 to 1 safety factor.

6. The primary and secondary tanks shall be fabricated from minimum ¼" 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 overfill 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.

2.04 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 steel and sized as recommended by the manufacturer. Connection between engine and silencer shall be of flexible 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 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 non-asbestos insulation and covered with aluminum flashing to protect personnel. Vertical exhaust piping shall be provided with a hinged, gravity-operated, self-closing, rain cover.

2.05 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.

2.06 ALTERNATOR

A. The alternator shall be single bearing, open, drip-proof 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. The 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.

2.07 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 (13^{th}) 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. 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.

   d. An ammeter to individually display all phase currents flowing through the circuit breaker shall be provided.

   e. Main circuit breaker shall be equipped with lockable handle.

5. 480/240/120V, 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.

2.08 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.

2.09 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. 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 be covered with a black CPE rubberjacket applied in two layers whith reinforcement placed between the layers.

2. Cable and plug assemble 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 louvers.

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 23 ft.

E. The housing shall have signs on all four sides of the enclosure reading:
"DANGER - HIGH VOLTAGE"

3.00 PART 3 - EXECUTION

3.01 MANUFACTURER'S SERVICES

A. The engine-generator set manufacturer shall perform onsite tests and instruct personnel as to the operational and maintenance features of the equipment.

B. A minimum of one eight-hour day shall be provided to supervise the installation and testing of the equipment furnished, to assist in start-up and train Owners maintenance personnel

3.02 OPERATION AND MAINTENANCE MANUALS

A. Furnish Operation and Maintenance Manuals.

B. Maintenance instructions shall be furnished for batteries, to include simple and clear procedures for addition of liquids, maintaining cleanliness, proper ventilation, proper electrical connections.

C. Maintenance instruction shall be furnished for engines, including recommended lubricants, coolants, etc., recommended maintenance intervals, and recommended ventilation requirements.

D. The Operating manual shall be a simple starting and stopping procedure, with reference to shop drawings information for more complicated procedures.

END OF SECTION