

## ITEM OPPORTUNITY SYNOPSIS

Scouting Number:	2024-216
Name of the item to be scouted:	Diesel Generator
State item to be used in:	Vermont

### Describe the Item:

Please describe the item application/the end use of the item.	Equipment that can generate on site electrical power in the event of a electrical power outage.
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### Supplier Information:

#### Type of Supplier Being Sought (select from the list below):

Manufacturer	x
Contract Manufacturer	
Distributor	
Other (Please Specify)	

#### Reason for Scouting Submission (select from the list below)

2nd Supplier	
Price	
Re-Shore	
Past supplier no longer available	
New Product Startup	
BABA	x
Other (Please Specify)	

### Summary of Technical Specifications and Performance Requirements:

Describe the manufacturing processes (elaborate to provide as much detail as possible)	A generator consists mainly of an engine, alternator and control panel. Each of the listed components is manufactured separately but integrated together physically via mechanical connections and electrical wiring. Once generator is assembled into a unit it is placed within a fabricated sheet metal enclosure to be ship to site as one package.
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Provide dimensions / size / tolerances / performance specifications of the item	Generator shall be a 250kW/313kVA 1208/208V, 3Ph, 4W system. #2 diesel fuel. Generator shall be provided with level 2 sound attenuated weatherproof enclosure. Refer to specification section 262300 for generator information
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List required materials needed to make the product, including materials of product components, if applicable	Information not provided.
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#### Are there applicable certification requirements?

Yes	x
No	

Please explain:	IEEE ISO 9001 UL other ? ANSI ? ASTM ? ADA ? AEIC ? CSA ? EEI ? EPA ? FM ? FCC ? FIPS Pub 94 ? ICEA ? IBC ? IEC ? IECC ? OSHA ? NEC ? NESC ? NEMA ? NFPA
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#### Are there any applicable regulations that apply to the production of this item?

Yes	x
No	

Please explain:	See provided specifications 262300 (1.4) REGULATORY REFERENCES for more information.
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#### Are there any other standards / requirements?

Yes	
No	x
Please explain:	

#### NAICS CODES:

NAICS 1	335312 Motor and generator manufacturing
NAICS 2	

### Additional Comments:

Additional technical comments:	
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### Volume and Pricing:

<b>Estimated Potential Business Volume (i.e. #units per day, month, year):</b>	1 Generator will be needed for this project.
<b>Estimated Target Price/Unit Cost Information:</b>	\$65,000/unit
<b>Delivery Requirements:</b>	
<b>When is it needed by? (Immediate, 30 days, 6 months, etc.)</b>	Construction is scheduled to start in February of 2025.
<b>Describe packaging requirements (i.e. individually/group packaging, etc.)</b>	Shipped on truck.
<b>Where will this item be shipped?</b>	Norwich University, Northfield, VT
<b>Additional Comments:</b>	
<b>Is there other information you would like to include?</b>	Contact information for questions including BABA/Buy American compliance: Jones Architecture Alya Staber alya@jonesarch.com Please copy scouting@nist.gov on all correspondence.

## Standby & Prime: 60Hz



Image shown might not reflect actual configuration

Engine Model	Cat <sup>®</sup> C9 ACERT™ In-line 6, 4-cycle diesel
Bore x Stroke	112mm x 149mm (4.4in x 5.9in)
Displacement	8.8 L (538 in <sup>3</sup> )
Compression Ratio	16.1:1
Aspiration	Turbocharged Air-to-Air Aftercooled
Fuel Injection System	HEUI
Governor	Electronic ADEM™ A4

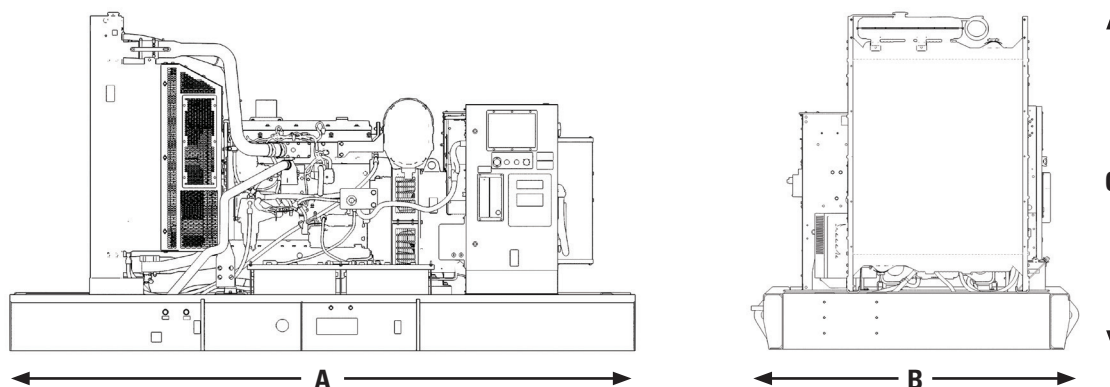
Model	Standby	Prime	Emission Strategy
C9	250 ekW, 313 kVA	225 ekW, 281 kVA	TIER III Non-Road

## PACKAGE PERFORMANCE

Performance	Standby	Prime
Frequency	60 Hz	
Genset Power Rating	313 kVA	281 kVA
Genset power rating with fan @ 0.8 power factor	250 ekW	225 ekW
Emissions	TIER III Non-Road	
Performance Number	DM8501-03	DM8505-03
<b>Fuel Consumption</b>		
100% load with fan, L/hr (gal/hr)	73.3 (19.4)	68.9 (18.2)
75% load with fan, L/hr (gal/hr)	58.8 (15.5)	55.7 (14.7)
50% load with fan, L/hr (gal/hr)	43.8 (11.6)	42.0 (11.1)
25% load with fan, L/hr (gal/hr)	27.4 (7.3)	27.2 (7.2)
<b>Cooling System<sup>1</sup></b>		
Radiator air flow restriction (system), kPa (in. Water)	0.12 (0.48)	0.12 (0.48)
Radiator air flow, m <sup>3</sup> /min (cfm)	497 (17551)	497 (17551)
Engine coolant capacity, L (gal)	13.9 (3.7)	13.9 (3.7)
Radiator coolant capacity, L (gal)	43 (11.5)	43 (11.5)
Total coolant capacity, L (gal)	57 (15)	57 (15)
<b>Inlet Air</b>		
Combustion air inlet flow rate, m <sup>3</sup> /min (cfm)	25.2 (889.8)	24.2 (855.3)
Max. Allowable Combustion Air Inlet Temp, °C (°F)	50 (122)	50 (122)
<b>Exhaust System</b>		
Exhaust stack gas temperature, °C (°F)	455.5 (852.0)	444.1 (831.3)
Exhaust gas flow rate, m <sup>3</sup> /min (cfm)	63.6 (2245.6)	59.8 (2112.4)
Exhaust system backpressure (maximum allowable) kPa (in. water)	10.0 (40.0)	10.0 (40.0)
<b>Heat Rejection</b>		
Heat rejection to jacket water, kW (Btu/min)	104 (5928)	99 (5631)
Heat rejection to exhaust (total) kW (Btu/min)	277 (15772)	259 (14720)
Heat rejection to aftercooler, kW (Btu/min)	82 (4686)	72 (4115)
Heat rejection to atmosphere from engine, kW (Btu/min)	18 (1004)	26 (1500)

Emissions (Nominal) <sup>2</sup>	Standby		Prime	
NOx, mg/Nm <sup>3</sup> (g/hp-hr)	1516.2 (2.9)		1355.4 (2.7)	
CO, mg/Nm <sup>3</sup> (g/hp-hr)	172.8 (0.4)		188.9 (0.4)	
HC, mg/Nm <sup>3</sup> (g/hp-hr)	37.7 (0.1)		44.2 (0.1)	
PM, mg/Nm <sup>3</sup> (g/hp-hr)	32.6 (0.1)		37.0 (0.1)	
Alternator <sup>3</sup>				
Voltages	480V	600V	480V	600V
Motor starting capability @ 30% Voltage Dip	543 skVA	656 skVA	543 skVA	656 skVA
Current	376 amps	301 amps	338 amps	271 amps
Frame Size	LC5014H	LC5024H	LC5014H	LC5024H
Excitation	SE	AR	SE	AR
Temperature Rise	150 ° C	150 ° C	105 ° C	105 ° C

## WEIGHTS & DIMENSIONS



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
3091 (122)	1622 (64)	2066 (82)	2248 (4956)

### APPLICABLE CODES AND STANDARDS:

AS1359, CSA C22.2 No100-04, UL142, UL489, UL869, UL2200, NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG1-22, NEMA MG1-33, 2006/95/EC, 2006/42/EC, 2004/108/EC.

Note: Codes may not be available in all model configurations. Please consult your local Cat Dealer representative for availability.

**STANDBY:** Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

**PRIME:** Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

**RATINGS:** Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

### DEFINITIONS AND CONDITIONS

<sup>1</sup> For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

<sup>2</sup> Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77° F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 BTU/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

<sup>3</sup> UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40° C ambient per NEMA MG1-32.

## LET'S DO THE WORK.™

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## SECTION 262300

### STANDBY GENERATOR SYSTEM

#### PART 1 – GENERAL

##### 1.1 WORK INCLUDED

- A. Provide standby generator system, transfer switch, and accessories for a complete and operable system.

##### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary General Conditions and other Division 01 specification sections, apply to this Section and to all Contractors, Subcontractors, or other persons supplying materials and/or labor, entering into the Project site and/or premises, directly, or indirectly.
- B. The Specifications and Drawings are intended to be complementary. A particular section, paragraph or heading in a Division may not describe each and every detail concerning work to be done and materials to be furnished. The Drawings are diagrammatic and may not show all of the work required or all construction details. Dimensions are shown for critical areas only; all dimensions and actual placements are to be verified in the field. It is to be understood that the best trade practices of the Division will prevail. It remains the responsibility of the Contractor or Subcontractor to provide all items, equipment, construction, and services required to the proper execution and completion of the Work.
- C. Reference listings are provided as a convenience to the Contractor or Subcontractor providing the Work of this Section and may not contain all the requirements affecting this Section. It remains the responsibility of the Contractor or Subcontractor to locate and comply with all requirements of the Contract Documents.
- D. All trade subcontractors are to note that the organization of these Specifications into divisions, sections, and paragraphs, and likewise the arrangement of the Drawings, is set up for the convenience of understanding the scope of the Work only. This structuring shall not control the Construction Manager in dividing the Work among trade subcontractors or in establishing the extent of the Work to be performed by any trade.

##### 1.3 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Section 260100.
- B. Submit data, plans, and wiring diagrams, including power and voltage ratings, maximum symmetric short circuit current, annunciation methods, and all control functions. Submittal shall include overall dimension, weight, fuel consumption, and fuel tanks, rated KW, KVA, voltage, starting KVA, circuit breaker rating and alarm. Also automatic transfer switch short circuit voltage and current ratings, dimensions, weight and all control functions.
- C. Generator shall operate the intended load with 10% [30%] voltage dip and 0.25% frequency dip maximum. Manufacturer's written verification of generator suitability shall be sent to the Engineer. Contact Engineer for intended load information.

- D. Submit certification that the following factory testing has been successfully completed by the manufacturer:
1. Prototype factory tests: The system manufacturer shall certify that the engine, generator, controls, and switchgear of an in-house engineered model with similar characteristics has been completed including the following:
    - a. Fuel consumption at 1/4, 1/2, 3/4, and full load.
    - b. Exhaust emissions.
    - c. Mechanical and exhaust noise.
    - d. Governor speed regulation 1/4, 1/2, 3/4, and full load; and during transients.
    - e. Motor starting kVA.
    - f. Generator temperature rise in accordance with NEMA MG1-22.40.
    - g. Voltage regulation at 1/4, 1/2, 3/4, and full load; and during transients.
    - h. Harmonic analysis, voltage wave form deviation and telephone influence factor.
    - i. Generator short circuit capability.
    - j. Cooling system performance.
    - k. Torsional analysis.
    - l. Linear vibration analysis.
    - m. Generator revolving field assembly for 2 hours at 2700 rpm (150% overspeed) and 70°C, and each production unit tested at 2250 rpm (125% overspeed) at room temperature.
  2. Production factory tests: The system manufacturer shall perform production tests on the complete generator set supplied by the manufacturer's facility. A certified report of these tests shall be available when requested at the time of the generator set order. These tests and controls shall include but not be limited to:
    - a. Operation at rated kW.
    - b. Operation at rated kW (optional).
    - c. Transient and steady state governing.
    - d. Transient and steady state voltage regulation.
    - e. Operation of all alarm and shutdown devices.
    - f. Single step load pickup of rated kW.
    - g. Operation at 2250 rpm (125% overspeed) at room temperature.
- E. Submit operation and maintenance manuals for complete system in accordance with Section 260100, to include but not limited to the following:
1. Operating instructions - with description and illustration of all switchgear controls and indicators; and engine and generator controls and indicators.
  2. Parts CD - that illustrates and lists all assemblies, subassemblies, and components, except standard fastening hardware (nuts, bolts, washers, etc.).
  3. Preventative maintenance instructions - on the complete system that cover daily, weekly, monthly, biannual, and annual maintenance requirements and include a complete lubrication chart.
  4. Routine test procedures - for all electronic and electrical circuits and for the main AC generator.
  5. Troubleshooting chart - covering the complete generator set showing description of trouble, probable cause, and suggested remedy.
  6. Recommended spare parts list - showing all consumables anticipated to the required during routine maintenance and test.
  7. Wiring diagrams and schematics - showing function of all electrical components.

- F. Submit test results in accordance with Section 260800.
- G. Certifications: Provide manufacturer's certification that all applicable products were manufactured in United States and meet the requirements of the Build America, Buy America Act (BABA) (part of Infrastructure Investment and Jobs Act).

#### 1.4 REGULATORY REFERENCES

- A. All specified items or systems shall be designed, manufactured, tested, and installed in compliance with applicable provisions of all governing codes, rules, laws, and ordinances in accordance with Section 260100.
  - 1. If there is a conflict between applicable documents, then the more stringent requirement shall apply. All documents listed are believed to be the most current releases of the documents. The Contractor has the responsibility to determine and adhere to all applicable documents and to the most recent release when developing the proposal for installation.
  - 2. This document does not replace any code, either partially or wholly. The Contractor must be aware of local codes that may impact this project.

#### 1.5 WARRANTY

- A. Provide full two-year warranty for standby generator system at the completion of the project. The warranty shall cover all parts, labor and travel expenses necessary for a dependable system for the indicated period. Warranty shall not cover routine maintenance items such as oil, filters and belts.
- B. Provide warranty in accordance with Section 260100.
- C. The generator set supplier shall have factory-trained service representatives and tooling necessary to install, test, maintain, and repair all provided equipment and shall maintain a dispatch center 24 hours per day, 365 days per year to minimize service response time.
- D. The generator set supplier shall have sufficient parts inventory to maintain over the counter availability of at least 90% of any required parts and shall guarantee 100% parts availability within 48 hours from the time an order is entered with the dealer.

### PART 2 – PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements, provide products by the following or equal:
  - 1. Standby Generator:
    - a. Kohler
    - b. Caterpillar
    - c. Onan
  - 2. Automatic Transfer Switch:
    - a. Asco Series 4000
    - b. Russelectric

- B. Substitutions: Items of equal quality, function, and performance may be proposed for substitution by following the procedures outlined in Section 260100.

## 2.2 STANDBY GENERATOR SYSTEM

- A. Emergency standby generator system shall be suitable for intended use. Ratings of system shall be adequate for proposed full loading. Work shall be coordinated with Division 23 to ensure proper operation of the system.
- B. Upon failure of normal power source switch of emergency load to generator shall be within 10 seconds maximum.

## 2.3 ENGINE-GENERATOR UNIT

- A. Provide an alternating current standby #2 diesel fuel engine-driven generator unit as indicated rated for 250KW, 331 KVA] at 0.8 power factor for standby operation, 208/120 volt, three-phase, four-wire, 60 Hz, 1800 rpm, water-cooled, with unit-mounted radiator, heavy-duty engine connected directly to a 4-pole revolving field type single-bearing generator. Equip unit with low oil pressure, low coolant level, high water temperature, over-speed and overcrank automatic safety shutdown.
- B. Unit shall be equipped with a Level 1 type control panel including, but not limited to:
  - 1. Visual indication of:
    - a. overcrank, low water temperature (below 70°F),
    - b. high engine temperature pre-alarm,
    - c. high engine temperature,
    - d. low lube oil pressure pre-alarm,
    - e. low lube oil pressure,
    - f. overspeed,
    - g. low coolant level, EPS supplying load,
    - h. control switch not in automatic position,
    - i. high battery voltage,
    - j. low battery voltage,
    - k. battery charger AC failure, lamp test.
    - l. Loss of start circuit integrity
  - 2. Audible alarm indication of:
    - a. overcrank,
    - b. low water temperature (below 70°F),
    - c. high engine temperature pre-alarm
    - d. high engine temperature
    - e. low lube oil pressure pre-alarm
    - f. low lube oil pressure
    - g. overspeed, low coolant level
    - h. control switch not in automatic position
    - i. Loss of start circuit integrity
  - 3. Generator shutdown control of:
    - a. overcrank
    - b. high engine temperature
    - c. low lube oil pressure



- d. overspeed.
  - 4. A means shall be provided to shut off the audible signal in the event of an alarm indication but the visual indication would remain on until the condition was rectified. Additional alarm, if specified, shall have indication at this panel. Provide a break-glass emergency manual stop station.
  - 5. The generator controller shall start the generator upon loss of start circuit integrity.
- C. Unit shall automatically start upon indication from the automatic transfer switch. Upon transfer of full load, the voltage dip shall not exceed value specified in paragraph 1.03.C, at the rated power factor. Voltage shall be regulated to within 2% of rated value during constant load conditions. Stable operating conditions shall be reestablished within two (2) seconds following any sudden change in load. Generator shall have a manufacturer sized, UL listed, thermal magnetic circuit breaker (with shunt trip device connected to safety shutdowns) on its output. The circuit breaker shall be mounted to be accessible per the NEC.
- D. Engine-generator unit shall be installed as indicated on Drawings. Unit shall be mounted on heavy steel base with vibration isolators (Korfund Series L or equal) to reduce the possibility of torsional vibration, and shall conform to seismic requirements. A sufficient number of control wires shall be provided to and from the automatic transfer switch and remote annunciator panel (if specified) for indicated system operation. Critical exhaust silencer shall be provided to minimize the noise emission from the unit. Silencer shall have mounting brackets with isolators to isolate the silencer vibration from the weather housing.
- E. Engine shall have electric starting system including rack-mounted 24-volt storage batteries, starting motor alternator, and automatic battery charger. Batteries shall be maintenance-free type with 60-second cranking capability minimum. Battery charger shall be fed from normal power source under normal conditions. Battery shall be charged by alternator when engine/generator unit is in operation. A dual-rate 10 ampere battery charger shall be provided which shall accept 120-volt AC, single-phase input to provide 24-volt DC output. It shall be fused on the AC input and DC output, incorporate current limiting circuitry, and include a DC ammeter and voltmeter. The charger shall be housed in a NEMA 1 enclosure and vibration mounted on the generator set. An automatic disconnect device shall be provided to remove electrical power upon engine start. Wiring for the charger and all controls shall be provided complete and shall be terminated in the Control and Auxiliary Power Enclosure. The charger shall include LED annunciation for low battery voltage, high battery voltage, battery charger malfunction, and AC failure; and dry contacts for battery charger malfunction and low battery voltage; as required by NFPA-110.
- F. The exciter shall be a three-phase, brushless, permanent magnet type with full-wave rectified output.
- G. Unit shall have 120V electric water jacket heater with thermostat to ease starting in cold weather. Operating temperature shall be as recommended by the manufacturer.
- H. Unit shall also have a heated type fuel filter, and generator strip heater.
- I. Provide electric solenoid valves equipped with manual operation feature or manual bypass valves.
- 2.4 AUTOMATIC TRANSFER SWITCH
- A. Automatic transfer switch shall be rated for 208/120Y volts, 800 amperes minimum, 4 pole, and interrupting capacity of 65,000 amperes rated with any circuit breaker. Unit shall start standby generator unit when line voltage drops to 75% of normal value, transfer load to generator and retransfer load to normal source when voltage is 90% of normal value. Switch shall be electrically operated and mechanically held with overlapping neutral transfer. Units shall be equipped with

test switch for manual simulation of normal power outage including standby unit operation and load transfer and time-clock exerciser for automatic periodic exercise of engine-generator unit.

- B. The automatic transfer switch shall be equipped with time delay features to override momentary normal source outages (up to 5 seconds), on retransfer to normal source (from 0 to 30 minutes) and for unloaded running time cool down (0 to 5 minutes). Adjustable dwell period between sources shall be provided for voltage decay.
- C. Indicator lights shall be provided for connection to normal source and for connection to emergency source. As a minimum a normally closed and a normally open contact shall be provided for both, connection to normal source and connection to emergency source.
- D. An in-phase monitor shall be provided. The monitor shall control transfer/retransfer operation between live source so that closure on the alternate source will occur only when the two sources are approaching synchronism and are within 60 electrical degrees' maximum so that inrush currents do not exceed normal starting currents. The monitor shall function over a frequency difference range of up to  $\pm 2.0$  Hz with a maximum operating transfer time of one-sixth of a second. If the voltage of the load carrying source drops below 70%, the in-phase function shall be automatically bypassed. The monitor shall not require interwiring with the generator controls, or active control of the governor.

## 2.5 REMOTE ANNUNCIATOR PANEL

- A. The remote annunciator panel shall be located as indicated on Drawings. The panel shall be a flush-mounted NEMA 1 enclosure with a lockable, hinged door.
- B. Unit shall be equipped with a Level 1 type control panel including, but not limited to:
  - 1. Visual indication of:
    - a. overcrank, low water temperature (below 70°F),
    - b. high engine temperature pre-alarm,
    - c. high engine temperature,
    - d. low lube oil pressure pre-alarm,
    - e. low lube oil pressure,
    - f. overspeed,
    - g. low coolant level, EPS supplying load,
    - h. control switch not in automatic position,
    - i. high battery voltage,
    - j. low battery voltage,
    - k. battery charger AC failure, lamp test.
    - l. Loss of start circuit integrity
  - 2. Audible alarm indication of:
    - a. overcrank,
    - b. low water temperature (below 70°F),
    - c. high engine temperature pre-alarm,
    - d. high engine temperature,
    - e. low lube oil pressure pre-alarm,
    - f. low lube oil pressure,
    - g. overspeed, low coolant level,
    - h. control switch not in automatic position.
    - i. Loss of start circuit integrity

3. Generator shutdown control of:
  - a. overcrank,
  - b. high engine temperature,
  - c. low lube oil pressure,
  - d. overspeed.
4. A means shall be provided to shut off the audible signal in the event of an alarm indication but the visual indication would remain on until the condition was rectified. Additional alarm, if specified, shall have indication at this panel. Provide a break-glass emergency manual stop station.
5. The generator controller shall start the generator upon loss of start circuit integrity.

## 2.6 WEATHERPROOF SOUND ATTENUATED ENCLOSURE

- A. Provide engine generator unit with a weatherproof housing suitable for the intended location. Housing shall be of 14-gauge steel with sufficient bracing and support and zinc phosphate rust inhibiting primer and two finish coats of color satisfactory to the Owner. Housing shall have lockable doors for unit maintenance with stainless steel hinges and locks. Unit shall have externally-mounted generator stop button with vandal protection, and a window for full view of the control panel.
- B. Provide 208/120 volt, three-phase panelboard within enclosure to power all generator appurtenances. Provide all necessary branch circuits to power generator accessories indicated above.
- C. If the housing will not accept the panelboard due to the size of the generator, the panelboard shall be provided exterior to the housing as indicated on the drawings with branch circuits extended as required.
- D. A ground bus bar shall be provided within the enclosure for equipment grounding of the generator and base. The generator neutral conductor shall be connected to the ground bar.

## 2.7 EXHAUST SYSTEM

- A. A complete exhaust system shall be provided by the generator manufacturer. The silencer, piping, and associated fittings shall not impose more than 27 inches H<sub>2</sub>O restriction, and shall include aluminized side-in, end-out exhaust silencer limiting exhaust noise to a maximum 85 dBA measured at 10 feet. Silencer shall include a rain cap and provisions for draining moisture. Provide stainless steel flexible connection and mating weld flanges, gaskets, and Grade 8 hardware. Exhaust silencer shall be mounted within the weatherproof generator enclosure.

## 2.8 SKID-MOUNTED FUEL TANK

- A. The emergency generator shall be supplied fuel by a double-wall, skid-mounted fuel tank located as indicated on the Drawings. The skid-mounted fuel tank shall also have alarm indication for high fuel, low fuel, and shutdown of the generator due to very low fuel, as a minimum. These alarms shall be tied into and have indication at the generator control panel and the generator annunciator panel.
- B. The skid-mounted fuel tank operation shall be controlled by the level in the tank. The two control levels in the skid-mounted fuel tank shall be as follows:

1. Level 2: If the fuel level drops below this level the low level alarm shall activated.
  2. Level 3 (lowest): If the fuel level drops below this level, the generator shall shut off.
- C. These levels shall be set by the manufacturer. The skid-mounted fuel tank shall also have a vent to the outside per the manufacturer. A weather cap shall be on the outside end of the vent.
- D. The capacity of the skid-mounted fuel tank shall be such as to provide fuel for a minimum of 24 hours of standby use.
- E. Provide a tank overfill audible and visual alarm at the tank fill location, visible to the person filling the tank. Set tank overfill alarm at 90% of tank capacity.
- F. Provide an NFPA-compliant sign on the tank indicating tank identification number, capacity, and safe fill height or volume. The sign shall be completely visible and shall be located directly adjacent to the tank fill line.

### PART 3 – EXECUTION

#### 3.1 INSTALLATION

- A. Installation of all emergency power system equipment shall be in accordance with the manufacturer's written instructions and with recognized industry practices to ensure that the system fulfills requirements. Comply with NFPA and NEMA standards pertaining to installation of engine-generator systems and accessories.
- B. Provide equipment grounding connections, sufficiently tight to assure a permanent and effective ground for system components.
- C. Upon completion of installation of engine-generator system and after building circuitry has been energized with normal power source, test engine-generator and associated equipment in accordance with Section 260800 to demonstrate standby capability and compliance with requirements. Engineer shall be notified five (5) days prior to the test.
- D. Cooling system shall have manufacturer-recommended percentage of glycol added.
- E. Phase sequencing between normal and emergency power sources shall be coordinated.
- F. The Contractor shall coordinate with the environmental permitting agency (DEC) and provide all permits, inspections, and certifications required, and shall include all auxiliary devices as required by the permit.
- G. The Contractor shall provide fuel for all testing and start-up services and a full tank of fuel at the completion of the project before turn-over to Owner.

END OF SECTION