**The Town of Hebron**

# EMERGENCY ELECTRIC GENERATOR UPGRADE PROJECT PHASE 1 CONCRETE PAD AND UNDERGROUND ELECTRICAL CONDUITS AND CONDUCTORS INSTALLATIONS LOAD, DELIVER, PLACE AND ACTIVATE EMERGENCY ELECTRIC GENERATOR

## ADDENDUM NO. 1

**May 29, 2025**

**Each Respondent must acknowledge receipt of this Addendum by inserting its number within the Bid Form submission. Failure to do so may result in the Respondent's disqualification.**

**This Addendum consists of three (3) pages.**

**A. General Clarifications and Information**

| | | |
|---|---|---|
| 1. | Van Zelm-Addendum No. 1-Dated May 28, 2025 | 3 Pages |
| 2. | Van Zelm Field Report #1-Dated May 9, 2025 | 5 Pages |
| 3. | Catalog Cut Sheets-Basis of Design-Caterpillar CS32-D1250GC | 6 Pages |
| 4. | Catalog Cut Sheets-Generator Enclosure-Basis of Design Caterpillar D800GC D1250GCNA | 9 Pages |

**B. Revised Drawings**

| | | |
|---|---|---|
| 1. | Drawing-Cover Page-Dated May 28, 2025 | 1 Page |
| 2. | Drawing-Phase 1-EOA100-Dated May 28, 2025 | 1 Page |
| 3. | Drawing-Phase 1-ESUD100-Dated May 28, 2025 | 1 Page |
| 4. | Drawing-Phase 1-ESU100-Dated May 28, 2025 | 1 Page |
| 5. | Drawing-Phase 1-ESU101-Dated May 28, 2025 | 1 Page |
| 6. | Drawing-Phase 1-E301-Dated May 28, 2025 | 1 Page |

**C. Revised Specifications**

1. **Specification Section 002000-Instruction to Bidders-Item #1-Bid Opening-**Amend the paragraph to read, "Sealed bids will be accepted by the Town Manager's Office, Town of Hebron, 15 Gilead Street, Hebron, Connecticut 06248 no later than 10:00 a.m. Friday, June 6, 2025, at which time they shall be publicly opened and read. Bids received by the Town after the date and time specified will not be accepted.
2. **Specification Section 002000-Instruction to Bidders-II. Technical Specifications/Additional Requirements-Item #4**-Revise to read as follows:

PHASE 1 WORK-Pre-Purchase of Electric Generator - Offsite Storage and Future Onsite Delivery-The Town of Hebron is pre-purchasing the Electric Generator for a variety of reasons. One of them is to be sure that when it is required to be on the campus of the middle and high school that it is available for delivery. There is a significant amount of electrical work that will need to be undertaken to connect the new generator and then disconnect the existing electrical generator. As such, it is prudent that this work be undertaken after both the middle and high school have been dismissed for the summer recess which would begin in the middle of June 2026. As such, this will require that after the generator is manufactured it will be shipped and stored locally in the greater Hartford area until it can be received on the site. It shall be this Trade Contractors' responsibility for arranging for Crane Service and the Trucking to load the generator onto truck(s) at the local storage facility and transporting them to the Project Site. At the project site, it shall also be this Trade Contractors' responsibility for arranging for Crane Service to offload the generator and setting them in the appropriate locations. This Trade Contractor shall also be responsible for connecting and activating the generator. This Trade Contractor shall also be responsible for the installation of the concrete pad, underground conduits, conductors, connections to existing Fire Pump Control Panel, Panel GDP and bituminous paving.
As part of the bid proposal, the trade contractor shall be responsible for accepting the generator at local rigger/storage facility, including the off-loading and storage costs. The trade contractor shall be responsible for the delivery of the generator from the rigger/storage facility to the project site, including all costs associated with loading/off-loading, transportation and crane costs.

3. Specification Section-P263213-Pre-Purchase Engine Generators Revised May 21, 2025 28 Pages

**D. Revisions to the Bid Form 4 Pages**

**Added Deduct Alternate #2-**Provide the deduct amount for not having to load and transport the generator and transporting it from the local storage facility to the project site.

**Added Deduct Alternate #3-**Provide the deduct amount for not having to incur monthly offsite storage costs for the generator

**E. Pre-Bid Questions and Responses**
**See Van Zelm's Document "Pre-Bid Contractor Requests for Information dated May 28, 2025 2 Pages**

**F. Agendas from Pre-Bid Conference 2 Pages**

**G. Sign-In Sheet from Pre-Bid Conference 1 Page**

**H. Responses to Questions Raised at Pre-Bid Conference**

1. **Building Permit-**At this point, all Contractors should assume that the Town of Hebron will waive the building permit portion of the fees. However, all Contractors must carry the cost of the fees associated with the State Education Fund.
2. **Crane Plan-**A crane plan must be submitted before the hoisting work related to the placement of the generator is undertaken. At this point, all Contractors

should assume that the plan will not be required to stamped and sealed by a Connecticut Licensed Engineer.

3. **State Funding-**The entire overall costs of the project is being funded by the State of Connecticut through the Department of Economic Development (DECD).
4. **Pre-Bid RFI's Deadline**-All Pre-Bid RFI's are due by no later than 12:00 pm on Friday, May 30, 2025.

**END OF ADDENDUM NO. 1**

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Connecticut | Massachusetts | North Carolina

# ADDENDUM #1

**Issue Date:** **May 28, 2025**

**Project Name:** EMERGENCY ELECTRICAL GENERATOR SYSTEM
RHAM MIDDLE & HIGH SCHOOLS – PHASE I

**Project No.:** 2023159.01

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GENERAL:

Modifications described herein as Addendum items supersede specific parts of the Contract Documents for the above-named project. All bids and the construction contract shall be based on the inclusion of these modifications.

CLARIFICATIONS

ITEM 1: As part of the pre-purchase specifications, the items being procured by The Town of Hebron will be the generator and its associated appurtenances and Switchboard/ATS HS-MSB-ATS, included in separate bid packages. HS-MSB-ATS will be installed as part of Phase 2.

ITEM 2: The attached Field Report #1 dated May 13, 2025 regarding preliminary "test pits" performed on May 9, 2025 in the area between the existing generator and the building shall be made part of this Addendum.

ITEM 3: The attached Response to Pre-Bid Contractor Requests for Information dated 05/28/2025 shall be made part of this Addendum.

REVISIONS TO DRAWINGS

ITEM 4: **REVISE** Cover sheet as noted in clouded areas shown on attached re-issued Drawing.

ITEM 5: **ADD** attached Drawing #EOA100, HIGH SCHOOL AND MIDDLE SCHOOL ELECTRICAL LOCATOR PLANS notated as Rev 0, Addendum #1, dated 05/28/2025,

ITEM 6: On Drawing #ESDU100, ELECTRICAL EXISTING CONDITIONS AND SITE UTILITIES DEMOLITION PLAN, **REVISE** work in clouded area shown on attached re-issued Drawing notated as Rev 1, Addendum #1, dated 05/28/2025.

ITEM 7: On Drawing #ESU100, ELECTRICAL SITE UTILITIES NEW WORK PLAN, **REVISE** work in clouded areas shown on attached re-issued Drawing notated as Rev 1, Addendum #1, dated 05/28/2025.

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ITEM 8: On Drawing #ESU101, ELECTRICAL ENLARGED SITE UTILITIES NEW WORK PLAN, **REVISE** work in clouded areas shown on attached re-issued Drawing notated as Rev 1, Addendum #1, dated 05/28/2025.

ITEM 9: On Drawing #E301, HIGH SCHOOL ELECTRICAL ONE LINE RISER DIAGRAM, **REVISE** work in clouded areas shown on attached re-issued Drawing notated as Rev 1, Addendum #1, dated 05/28/2025.

REVISIONS TO PROJECT MANUAL

ITEM 10: In Section #012300, ALTERNATES, on page 012300-2 in Paragraph 3.1, **REVISE** subparagraph A.6 to read:

*7. DELETE the transfer switch testing, load management operation demonstration and operational tests to confirm proper motor rotation and unit operation per Specification Section 263213, paragraph 3.6.C and 3.6.D*

ITEM 11: In Section #012300, ALTERNATES, on page 012300-2 in Paragraph 3.1, **ADD** subparagraph A.8 to read:

*8. DELETE the installation of shunt trip operators for HS-MSB-ATS and GDP breakers in Generator.*

ITEM 12: In Section #260505, INSTALLATION OF PREPURCHASED EQUIPMENT, on page 260505-1 in Paragraph 1.3. SCOPE, **REVISE** subparagraph D to read:

*D. Contractor shall include storage, loading and transportation charges required as a result of temporarily stored Owner pre-purchased equipment which is ready to deliver or is delivered before the space for said equipment is ready and/or before the Contractor is ready to install said equipment.*

ITEM 13: In Section #260505, INSTALLATION OF PREPURCHASED EQUIPMENT, on page 260505-3 in Paragraph 3.4. INSTALLATION OF OWNER PRE-PURCHASED EQUIPMENT, **REVISE** subparagraph C to read:

*C. Furnish services of factory-trained manufacturer's representative for consultation, technical assistance and supervision during installation of new generator.*

ITEM 14: In Section #263213, ENGINE GENERATORS, on page 263213-6 in Paragraph 2.1, MANUFACTURERS, **REVISE** subparagraph B.2 to read:

*2. The Basis of Design is Caterpillar C32-D1250-GC*

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ITEM 15: In Section #263213, ENGINE GENERATORS, on page 263213-15 in Paragraph 2.13, GENERATOR OVERCURRENTAND FAULT PROTECTION, **REVISE** subparagraph 2.13.B to read:

*B. The 800 Ampere and 125 Ampere Generator Circuit Breakers: Molded-case, electronic-trip type; 100 percent rated; complying with UL 489; Sq. D. PowerPact family or equal by ABB or Cutler Hammer as a minimum. These breakers must be capable of providing WCR/closing rating of the existing ATS's of a minimum of 50,000 RMS symmetrical amperes; SQD Type MH or PJ.*

ITEM 16: In Section #263213, ENGINE GENERATORS, on page 263213-15 in Paragraph 2.13, GENERATOR OVERCURRENTAND FAULT PROTECTION, **REVISE** subparagraph 2.13.D to read:

*A. The 125A and 1200A circuit breakers shall be provided in Nema 3R enclosures for exterior mounting in the field.*

END OF ADDENDUM

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# FIELD REPORT #1

| | |
|---|---|
| Issue Date: | May 13, 2025 |
| Project Name: | RHAM |
| Project No.: | 2023159.00 |
| Field Location: | RHAM High School |
| Date of Visit: | May 9, 2025 |
| Written By: | EMG |

Attendees:

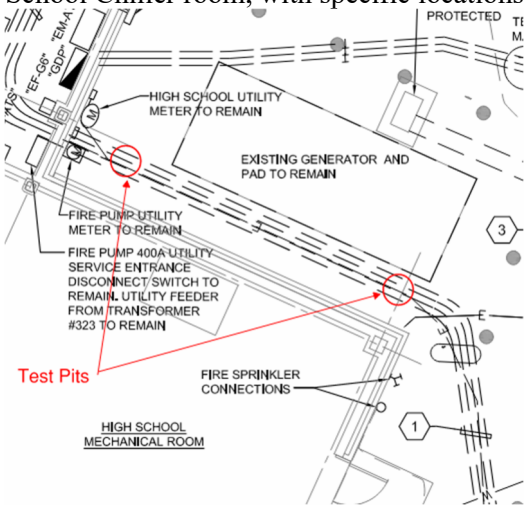
| Name | Company | Email |
|---|---|---|
| Edward Grafe | vanZelm Engineers | egrafe@vanzelm.com |
| Paul Forrest | Town of Hebron | pforrest@hebronct.com |
| Michael Schlehofer | RHAM Schools | michael.schlehofer@rhamschools.org |

Distribution:

| Name | Company | Email |
|---|---|---|
| Attendees | | |
| Darren Norton | Town of Hebron | dnorton@hebronct.com |
| Richard Steiner | Town of Hebron | rsteiner@hebronct.com |
| Steven Perry | vanZelm Engineers | sperry@vanzelm.com |
| Steven Krawczynski | vanZelm Engineers | skrawczynski@vanZelm.com |

Purpose of field visit to observe and guide Hebron DPW to perform test pits in the area of existing generator to determine burial depths of feeders from Eversource Transformer #323 to the building.

| Item No: | Observations and Determinations | Action Item: |
|---|---|---|
| 1. | The Area surveyed is identified as the "alleyway" between the existing generator and bounded by the High School Main Electric room and the High School Chiller room, with specific locations noted below: | |



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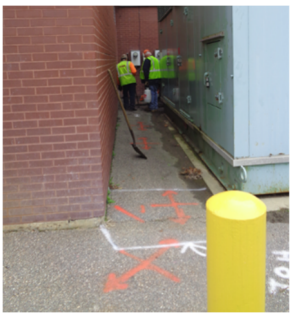
2. The two areas for test pits are outlined in white paint as shown below. The "alleyway" is nominally 45" wide, with (2) layers of asphalt (nominal 2" binder base and a tapered top coat, ranging 4" to 2").





3. The first area to be examined is the area closest to the building.
There are numerous conduits that run straight into the building, with the tops at approximately 27" below the asphalt plus a random conduit that crosses over the main run which we believe is the existing generator feed to the fire pump controller in the Chiller Room, running at approximately 24" below the asphalt. As this conduit gets closer to the building the burial depth appears to decrease slightly.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4. In the “alleyway”, in the run toward the building, it appears that little to no sand was incorporated into the backfill, with more stoney fill with “potatoe sized” rocks in the fill material used even down to and around the conduits.

5. vanZelm’s observed the placement of the Fire Pump and High School Utility meters, and adjacent, what appear to be PV System components. The component between the two meters will most likely need to be relocated to accommodate the new conduits that will run up the wall and into the Main Electrical Room.

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6. As an alternative to penetrating the brick portion of the wall above, below or adjacent to the easternmost exhaust louver, cutting back the in-active portion of the exhaust louver above Panel "GDP" to be able to run the new feeders through and enter conduits into the Electrical Room. The exterior louver has approximately one-half the area as an active exhaust louver above Panel "GDP"


7. Even though the GPR markings referenced a burial depth of 32" out of the "alleyway" toward Transformer #323, we found top of conduits to be around 26"-27" to top of asphalt. This burial depth is fairly typical thru-out the "alleyway".

8. In the area near the end of the generator nearest the utility transformers, the excavation found 4" of asphalt, 12" of fill over 12" sand above and around the conduits. We observed the lightning protection/grounding loop intersection with a ground rod which is in the middle of the proposed new conduit routing path. This will be revised and rerouted/relocated/reconfigured as part of the Phase 1 work to facilitate the installation of the new conduits.


9. All the feeders running below grade are believed to be PVC. It is not known whether rigid sweeps, bends or elbows were used in turns within the individual runs. The installation and placement of the conduits appears random, with no spacers being used. or consideration for spacing of the conduits incorporated.

# Cat® D1250 GC
## Diesel Generator Sets

Image shown might not reflect actual configuration.

| | |
|---|---|
| Engine | C32 |
| Bore – mm (in) | 145 (5.7) |
| Stroke – mm (in) | 162 (6.4) |
| Displacement – L ($in^3$) | 32.1 (1959) |
| Compression Ratio | 14.0:1 |
| Aspiration | TA |
| Fuel System | EUI |
| Governor Type | ADEM™ A4 |

| Model | Standby 60 Hz ekW (kVA) | Emissions Performance |
|---|---|---|
| D1250 GC | 1250 (1563) | U.S EPA Emergency Stationary Use only (Tier 2) |

## Standard Features

### Cat® Diesel Engine
- Meets U.S. EPA Emergency Stationary Use only (Tier 2) emission standards
- Reliable performance proven in thousands of applications worldwide

### Generator Set Package
- Meets NFPA 110 start time & block load requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements
- Reliability is verified through prototype testing, which includes torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

### Alternators
- Superior motor starting capability minimizes the need for oversizing the generator
- Designed to match the performance and output characteristics of Cat diesel engines

### Cooling System
- Cooling systems available to operate in ambient temperatures 50° C @ 0m
- Tested to ensure proper generator set cooling

### GCCP Control Panels
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored & displayed simultaneously for full visibility
- The module can be configured to suit a wide range of applications for user flexibility

### Warranty and Extended Service Coverage (ESC)
- 24 months/1000-hour warranty for standby ratings
- 5 yrs Gold Complimentary Extended Service Coverage

### Worldwide Product Support
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

### Financing
- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

## Standard and Optional Equipment

### Engine

**Air Cleaner**
- ❑ Single element
- ❑ Dual element

**Starting**
- ❑ Standard batteries
- ❑ Oversized batteries
- ❑ Dual Electric Starters
- ❑ Jacket water heater

**Engine Attachments**
- ❑ 6" Exhaust Flexible Fittings
- ❑ 6" Exhaust Flange Kits
- ❑ Radiator Duct Flange

### Alternator

**Output voltage**
- ❑ 480V
- ❑ 600V

**Temperature Rise (over 40°C ambient)**
- ❑ 125°C
- ❑ 105°C

**Winding type**
- ❑ Random wound

**Excitation**
- ❑ Internal excitation (IE)
- ❑ Permanent magnet (PM)

**Attachments**
- ❑ Anti-condensation heater

### Power Termination

**Type**
- ❑ Circuit breaker (Primary)
- ❑ 1200A ❑ 1600A ❑ 2000A
- ❑ Circuit breaker (Auxiliary)
- ❑ 250A ❑ 400A
- ❑ 3-pole
- ❑ Manually operated

***Trip Unit***
- ❑ LSI ❑ LSIG ❑ LSIG-P

### Factory Enclosure
- ❑ Sound attenuated
- ❑ Weatherproof

**Attachments**
- ❑ DC lighting package

### Fuel Tank
- ❑ Integrated 2100 gal (7950 L)
- ❑ Sub base 3000 gal (11356 L)
- ❑ Sub base 4200 gal (15876 L)

### Control System

**Controller**
- ❑ GCCP 1.2

**Attachments**
- ❑ Remote annunciator module
- ❑ Expansion I/O module
- ❑ 100A Load Center
- ❑ 20A GFCI AC Receptacle
- ❑ Ground Fault Indication
- ❑ Audible Alarm

### Charging
- ❑ Battery charger – 10A (Installed)
- ❑ Battery charger – 20A (Shipped loose)

### Cat Connect

**Connectivity**
- ❑ Ethernet
- ❑ Cellular

### Extended Service Options

**Terms**
- ❑ 3 year
- ❑ 4 year
- ❑ 5 year

**Coverage**
- ❑ Silver
- ❑ Gold

### Certifications
- ❑ UL 2200 Listed
- ❑ cUL CSA 22.2 No. 100-14
- ❑ IBC seismic certification

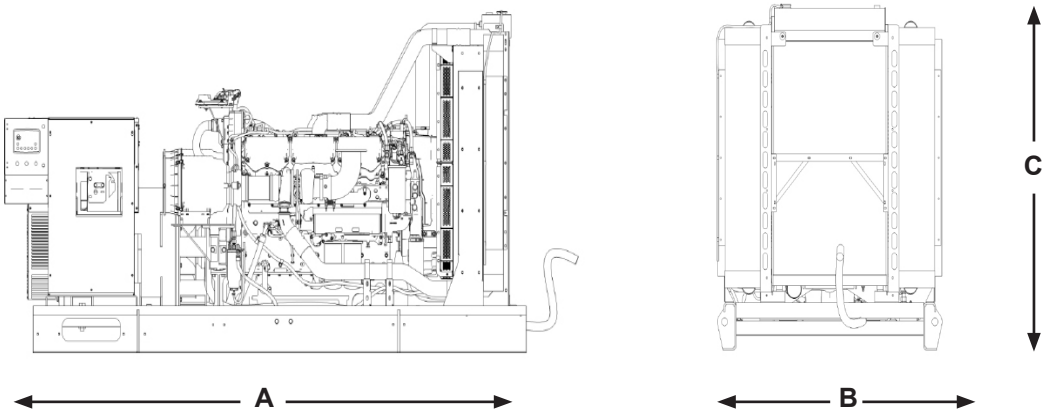
Note: Some options may not be available on all models. Certifications may not be available with all model configurations. Consult factory for availability.

## Package Performance – D1250 GC

| Performance | Standby | |
|---|---|---|
| Frequency | 60 Hz | |
| Gen set power rating with fan | 1250 kW | |
| Gen set power rating with fan @ 0.8 power factor | 1563 kVA | |
| Fueling strategy | EPA ESE (Tier 2) | |
| Performance number | EM2324 | |
| **Fuel Consumption** | | |
| 100% load with fan – L/hr (gal/hr) | 330.9 | (87.4) |
| 75% load with fan – L/hr (gal/hr) | 268.9 | (71.0) |
| 50% load with fan – L/hr (gal/hr) | 181.1 | (47.8) |
| 25% load with fan – L/hr (gal/hr) | 102.1 | (27.0) |
| **Cooling System** | | |
| Radiator air flow restriction (system) – kPa (in. water) | 0.12 | (0.48) |
| Radiator air flow – $m^3$/min (cfm) | 1109 | (39164) |
| Engine coolant capacity – L (gal) | 55 | (14.5) |
| Radiator coolant capacity – L (gal) | 61 | (16.1) |
| Total coolant capacity – L (gal) | 116 | (30.6) |
| **Inlet Air** | | |
| Combustion air inlet flow rate – $m^3$/min (cfm) | 118.0 | (4168.3) |
| **Exhaust System** | | |
| Exhaust stack gas temperature – °C (°F) | 430.3 | (806.6) |
| Exhaust gas flow rate – $m^3$/min (cfm) | 283.4 | (10005.8) |
| Exhaust system backpressure (maximum allowable) – kPa (in. water) | 6.7 | (27.0) |
| **Heat Rejection** | | |
| Heat rejection to jacket water – kW (Btu/min) | 403 | (22908) |
| Heat rejection to exhaust (total) – kW (Btu/min) | 1097 | (62361) |
| Heat rejection to aftercooler – kW (Btu/min) | 452 | (25715) |
| Heat rejection to atmosphere from engine – kW (Btu/min) | 222 | (12620) |
| Heat rejection from alternator – kW (Btu/min) | 58.9 | (3350) |
| **Emissions* (Nominal)** | | |
| NOx $mg/Nm^3$ (g/hp-h) | 2416.9 | (5.13) |
| CO $mg/Nm^3$ (g/hp-h) | 53.0 | (0.11) |
| HC $mg/Nm^3$ (g/hp-h) | 21.6 | (0.05) |
| PM $mg/Nm^3$ (g/hp-h) | 5.1 | (0.01) |
| **Emissions* (Potential Site Variation)** | | |
| NOx $mg/Nm^3$ (g/hp-h) | 2924.5 | (6.20) |
| CO $mg/Nm^3$ (g/hp-h) | 99.1 | (0.21) |
| HC $mg/Nm^3$ (g/hp-h) | 40.8 | (0.10) |
| PM $mg/Nm^3$ (g/hp-h) | 10.0 | (0.02) |

*$mg/Nm^3$ levels are corrected to 5% $O_2$. Contact your local Cat dealer for further information.

## Weights and Dimensions




| Model | Dim "A" mm (in) | Dim "B" mm (in) | Dim "C" mm (in) | Dry Weight kg (lb) |
|---|---|---|---|---|
| D1250 GC | 4175 (164.3) | 2090.5 (82.3) | 2268 (89.3) | 7156 (15776) |

**Note:** For reference only. Do not use for installation design. Contact your local Cat dealer for precise weights and dimensions.

## Ratings and Definitions

### 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.

### Applicable Codes and Standards

CSA C22.2 No. 100-14, UL 142, UL 489, UL 869A, UL 2200, IBC 2018, ISO 3046, ISO 8528 and facilitates compliance to NFPA37, NFPA70, NFPA99 and NFPA110 codes.

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

### Fuel Rates

Fuel rates are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42,780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.).

LET'S DO THE WORK.™

LEHE20274-04 (05/24)

# Cat® D1250 GC
## Diesel Generator Sets

Image shown might not reflect actual configuration.

| | |
|---|---|
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| Stroke – mm (in) | 162 (6.4) |
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| Fuel System | EUI |
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- Superior motor starting capability minimizes the need for oversizing the generator
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## Standard and Optional Equipment

### Engine

**Air Cleaner**
- ❑ Single element
- ❑ Dual element

**Starting**
- ❑ Standard batteries
- ❑ Oversized batteries
- ❑ Dual Electric Starters
- ❑ Jacket water heater

**Engine Attachments**
- ❑ 6" Exhaust Flexible Fittings
- ❑ 6" Exhaust Flange Kits
- ❑ Radiator Duct Flange

### Alternator

**Output voltage**
- ❑ 480V
- ❑ 600V

**Temperature Rise (over 40°C ambient)**
- ❑ 125°C
- ❑ 105°C

**Winding type**
- ❑ Random wound

**Excitation**
- ❑ Internal excitation (IE)
- ❑ Permanent magnet (PM)

**Attachments**
- ❑ Anti-condensation heater

### Power Termination

**Type**
- ❑ Circuit breaker (Primary)
- ❑ 1200A ❑ 1600A ❑ 2000A
- ❑ Circuit breaker (Auxiliary)
- ❑ 250A ❑ 400A
- ❑ 3-pole
- ❑ Manually operated

***Trip Unit***
- ❑ LSI ❑ LSIG ❑ LSIG-P

### Factory Enclosure
- ❑ Sound attenuated
- ❑ Weatherproof

**Attachments**
- ❑ DC lighting package

### Fuel Tank
- ❑ Integrated 2100 gal (7950 L)
- ❑ Sub base 3000 gal (11356 L)
- ❑ Sub base 4200 gal (15876 L)

### Control System

**Controller**
- ❑ GCCP 1.2

**Attachments**
- ❑ Remote annunciator module
- ❑ Expansion I/O module
- ❑ 100A Load Center
- ❑ 20A GFCI AC Receptacle
- ❑ Ground Fault Indication
- ❑ Audible Alarm

### Charging
- ❑ Battery charger – 10A (Installed)
- ❑ Battery charger – 20A (Shipped loose)

### Cat Connect

**Connectivity**
- ❑ Ethernet
- ❑ Cellular

### Extended Service Options

**Terms**
- ❑ 3 year
- ❑ 4 year
- ❑ 5 year

**Coverage**
- ❑ Silver
- ❑ Gold

### Certifications
- ❑ UL 2200 Listed
- ❑ cUL CSA 22.2 No. 100-14
- ❑ IBC seismic certification

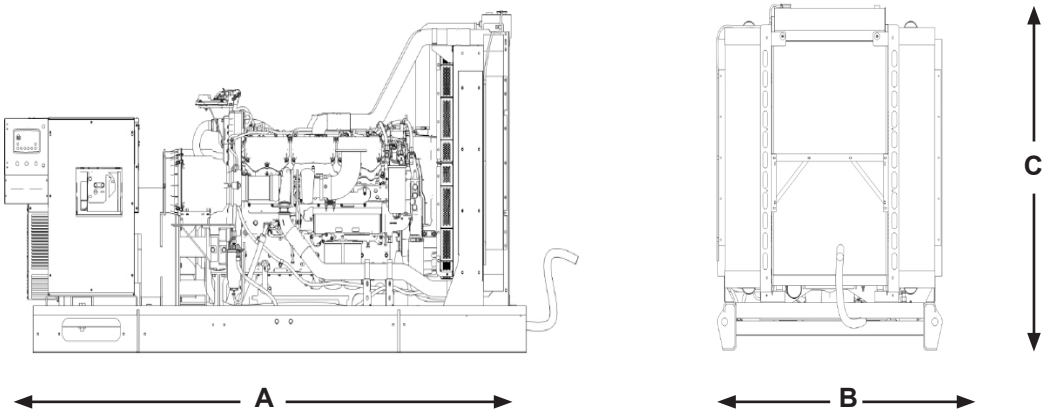
Note: Some options may not be available on all models. Certifications may not be available with all model configurations. Consult factory for availability.

## Package Performance – D1250 GC

| Performance | Standby | |
|---|---|---|
| Frequency | 60 Hz | |
| Gen set power rating with fan | 1250 kW | |
| Gen set power rating with fan @ 0.8 power factor | 1563 kVA | |
| Fueling strategy | EPA ESE (Tier 2) | |
| Performance number | EM2324 | |
| **Fuel Consumption** | | |
| 100% load with fan – L/hr (gal/hr) | 330.9 | (87.4) |
| 75% load with fan – L/hr (gal/hr) | 268.9 | (71.0) |
| 50% load with fan – L/hr (gal/hr) | 181.1 | (47.8) |
| 25% load with fan – L/hr (gal/hr) | 102.1 | (27.0) |
| **Cooling System** | | |
| Radiator air flow restriction (system) – kPa (in. water) | 0.12 | (0.48) |
| Radiator air flow – $m^3$/min (cfm) | 1109 | (39164) |
| Engine coolant capacity – L (gal) | 55 | (14.5) |
| Radiator coolant capacity – L (gal) | 61 | (16.1) |
| Total coolant capacity – L (gal) | 116 | (30.6) |
| **Inlet Air** | | |
| Combustion air inlet flow rate – $m^3$/min (cfm) | 118.0 | (4168.3) |
| **Exhaust System** | | |
| Exhaust stack gas temperature – °C (°F) | 430.3 | (806.6) |
| Exhaust gas flow rate – $m^3$/min (cfm) | 283.4 | (10005.8) |
| Exhaust system backpressure (maximum allowable) – kPa (in. water) | 6.7 | (27.0) |
| **Heat Rejection** | | |
| Heat rejection to jacket water – kW (Btu/min) | 403 | (22908) |
| Heat rejection to exhaust (total) – kW (Btu/min) | 1097 | (62361) |
| Heat rejection to aftercooler – kW (Btu/min) | 452 | (25715) |
| Heat rejection to atmosphere from engine – kW (Btu/min) | 222 | (12620) |
| Heat rejection from alternator – kW (Btu/min) | 58.9 | (3350) |
| **Emissions* (Nominal)** | | |
| NOx $mg/Nm^3$ (g/hp-h) | 2416.9 | (5.13) |
| CO $mg/Nm^3$ (g/hp-h) | 53.0 | (0.11) |
| HC $mg/Nm^3$ (g/hp-h) | 21.6 | (0.05) |
| PM $mg/Nm^3$ (g/hp-h) | 5.1 | (0.01) |
| **Emissions* (Potential Site Variation)** | | |
| NOx $mg/Nm^3$ (g/hp-h) | 2924.5 | (6.20) |
| CO $mg/Nm^3$ (g/hp-h) | 99.1 | (0.21) |
| HC $mg/Nm^3$ (g/hp-h) | 40.8 | (0.10) |
| PM $mg/Nm^3$ (g/hp-h) | 10.0 | (0.02) |

*$mg/Nm^3$ levels are corrected to 5% $O_2$. Contact your local Cat dealer for further information.

## Weights and Dimensions




| Model | Dim "A" mm (in) | Dim "B" mm (in) | Dim "C" mm (in) | Dry Weight kg (lb) |
|---|---|---|---|---|
| D1250 GC | 4175 (164.3) | 2090.5 (82.3) | 2268 (89.3) | 7156 (15776) |

**Note:** For reference only. Do not use for installation design. Contact your local Cat dealer for precise weights and dimensions.

## Ratings and Definitions

### 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.

### Applicable Codes and Standards

CSA C22.2 No. 100-14, UL 142, UL 489, UL 869A, UL 2200, IBC 2018, ISO 3046, ISO 8528 and facilitates compliance to NFPA37, NFPA70, NFPA99 and NFPA110 codes.

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

### Fuel Rates

Fuel rates are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42,780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.).

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LEHE20274-04 (05/24)

# Enclosure

Image shown may not reflect actual configuration.

## Enclosures
## D800 GC – D1250 GC NA
## C27 / C32

### Sound Attenuated and Weather Protective

These sound attenuated and weather protective, factory installed enclosures are designed for safety and aesthetic value. Rugged construction provides weather protection and the ability to withstand exposure to the elements.

## FEATURES

### Robust/Highly Corrosion-Resistant Construction

- Environmentally friendly, polyester powder-baked paint in Caterpillar White
- Zinc plated and stainless steel fasteners
- 14-Gauge steel construction
- Flat roof with protection for water ingress from rain
- Critical grade internally mounted muffler/exhaust system
- Soft mounted isolators
- 75 dbA @ 7m for sound attenuated enclosures
- 100 mph wind loading
- Refer TMI for ambient capability data

### Excellent Access

- Control panel mounted on RH side with an optional auxiliary box on the LH side of the package
- Large cable entry area for the ease of installation
- Left-hand or Right-hand bottom entry access to power cable bus or circuit breaker
- Multiple doors on both sides allow easy access to service points
- Hinged doors allow 180° opening rotation
- Lube oil and coolant drains piped to exterior of enclosure and terminated drain valves
- Radiator fill cover

### Options

- Weather protective enclosure available with same footprint
- Interior DC lighting systems
- Caterpillar White paint (default)
- 100 (factory installed), 3000 and 4000 (shipped loose) gallon fuel tanks

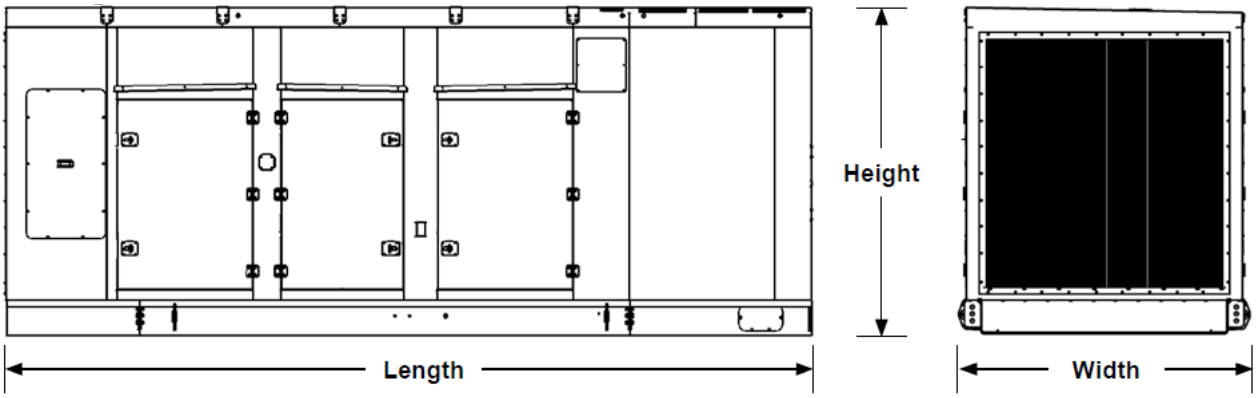
### Security and Safety

- Lockable access doors with standard key use
- Cooling fan and battery charging alternator fully guarded
- Oil fill and battery can only be reached via lockable access
- External fuel connections
- Externally mounted emergency stop buttons
- Designed for spreader bar lifting to ensure safety

### Certifications

- UL 2200 listed & cUL
- Seismic certification per applicable building codes: IBC 2021
- Tested and analysed in accordance with: ASCE 7-98, ASCE 7-02, ASCE 7-05, ICC-ES AC-156

## Enclosure Weights and Dimensions




| Sound Attenuated Enclosure Base Options* | Weight kgs (lbs) | Length mm (in) | Width mm (in) | Height mm (in) |
|---|---|---|---|---|
| With lifting base | 2672 (5891) | 6610 (260) | 2342 (92.2) | 2350 (92.5) |
| With 2100 gal integral tank base | 4891 (10783) | 7620 (300) | 2350 (92.5) | 3265 (128.5) |
| With 3000 gal tank with lifting base | 5638 (12429) | 7646 (301) | 2471 (97) | 3565 (140) |
| With 4200 gal tank with lifting base | 6563 (14468) | 7646 (301) | 2471 (97) | 3870 (152) |

| Weather Protective Enclosure Base Options* | Weight kgs (lbs) | Length mm (in) | Width mm (in) | Height mm (in) |
|---|---|---|---|---|
| With lifting base | 2452 (5405) | 6610 (260) | 2342 (92.2) | 2350 (92.5) |
| With 2100 gal integral tank base | 4671 (10298) | 7620 (300) | 2350 (92.5) | 3265 (128.5) |
| With 3000 gal tank with lifting base | 5418 (11944) | 7646 (301) | 2471 (97) | 3565 (140) |
| With 4200 gal tank with lifting base | 6343 (13984) | 7646 (301) | 2471 (97) | 3870 (152) |

**Note:** For reference only – do not use for installation design. Please contact your dealer for exact weights and dimensions.
*Weight does not include package generator set weight.

## Exhaust Back-Pressure Data

| Generator Set Models | Enclosed Set L2 (75 dBA) kPa (allowable) at 100% Load |
|---|---|
| D800 GC | – |
| D1000 GC | – |
| D1250 GC | 6.7 |

## Generator Set Weights

| Generator Set Weights** | Weight kgs (lbs) |
|---|---|
| C27 Open generator set | 5813 (12815) |
| C32 Open generator set | 6798 (14987) |

**Dry Weight of heaviest configuration and without base rail weight (Does not include exhaust system weights).

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# TOWN OF HEBRON

## REGIONAL SCHOOL DISTRICT 8

85 WALL ST,
HEBRON, CT 06248

# EMERGENCY ELECTRICAL GENERATOR SYSTEM
# RHAM MIDDLE AND HIGH SCHOOL

PHASE I

MARCH 14, 2025

Addendum #1 May 28, 2025

TOWN OF HEBRON PROJECT #2025-10
VANZELM PROJECT # 2023159.01

VAN ZELM ENGINEERS
VAN ZELM HEYWOOD & SHADFORD, INC.

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Connecticut | Massachusetts | North Carolina

## DRAWING LIST


KEY NOTES-PHASE I:

1. EXISTING HIGH SCHOOL SECONDARY CONDUCTORS AND CONDUITS BETWEEN TRANSFORMER #323 AND "HS-MDB" TO REMAIN
2. EXISTING MIDDLE SCHOOL CONDUCTORS AND CONDUIT BETWEEN TRANSFORMER #322 AND "MS-MDB" TO REMAIN
3. EXISTING UTILITY PRIMARY TO REMAIN
4. PREPARE TRANSFORMER #323 PIT WALLS TO ACCEPT NEW CONDUITS.
5. PREPARE TRANSFORMER #322 PIT WALLS TO ACCEPT NEW CONDUITS.
6. BOLLARDS TO BE REMOVED AND RETAINED FOR REUSE.
7. RELOCATE ACCESSORY ENCLOSURES (PV AND UTILITY METERING) ADJACENT TO THE FIRE PUMP AND MAIN UTILITY METERS IN ORDER TO FACILITATE ROUTING CONDUITS UP WALL, INTO HIGH SCHOOL MAIN ELECTRIC ROOM..
8. LIGHTNING PROTECTION/GROUNDING LOOP INTERSECTION WITH GROUND ROD IN THIS LOCATION . RECONFIGURE/RELOCATE/RECONNECTGROUND ROD AND ASSOCIATED GROUND CONDUCTORS TO FACILITATE INSTALLATION OF NEW FEEDER CONDUITS FROM THE NEW GENERATOR.

1 OVERALL PROJECT AREA - ELECTRICAL EXISTING CONDITIONS AND DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

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SECURITY:
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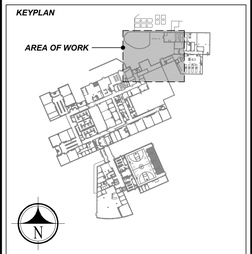
PROJECT NAME:
# RHAM HIGH AND MIDDLE SCHOOL EMERGENCY ELECTRICAL GENERATOR SYSTEM REPLACEMENT
REGIONAL SCHOOL DISTRICT #8
85 WALL STREET
HEBRON, CT 06248

KEYPLAN



REVISIONS

| REV. NO. | DATE | DESCRIPTION |
|---|---|---|
| 1 | 05/28/2025 | ADDENDUM #1 |

DRAWING TITLE:
ELECTRICAL EXISTING CONDITIONS AND SITE UTILITIES DEMOLITION PLAN

DATE: 03/14/2025
DRAWN BY: AMA
CHECKED BY: EDC
SCALE: 1/8"=1'-0"
PROJ #: 2023159.00

DRAWING NUMBER:
PHASE I
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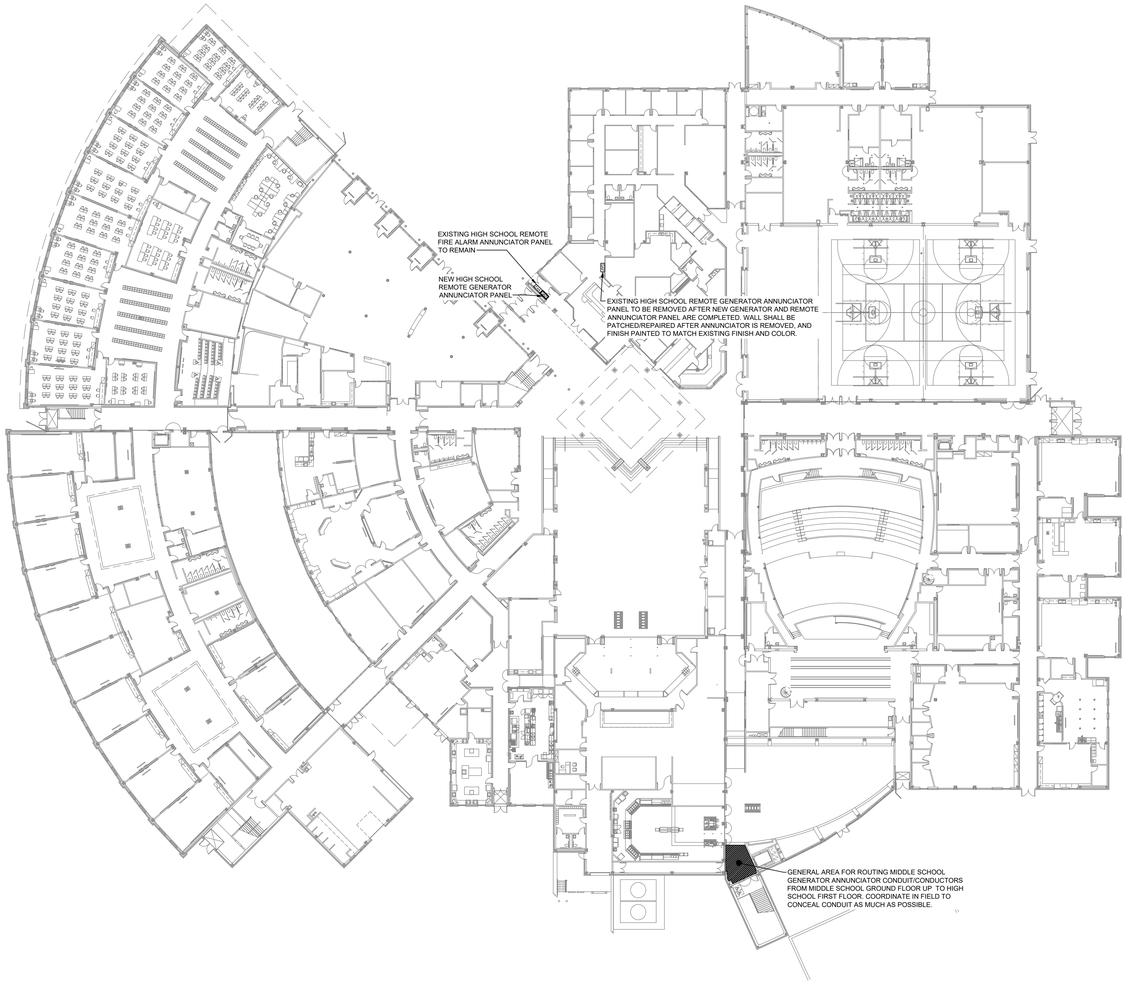
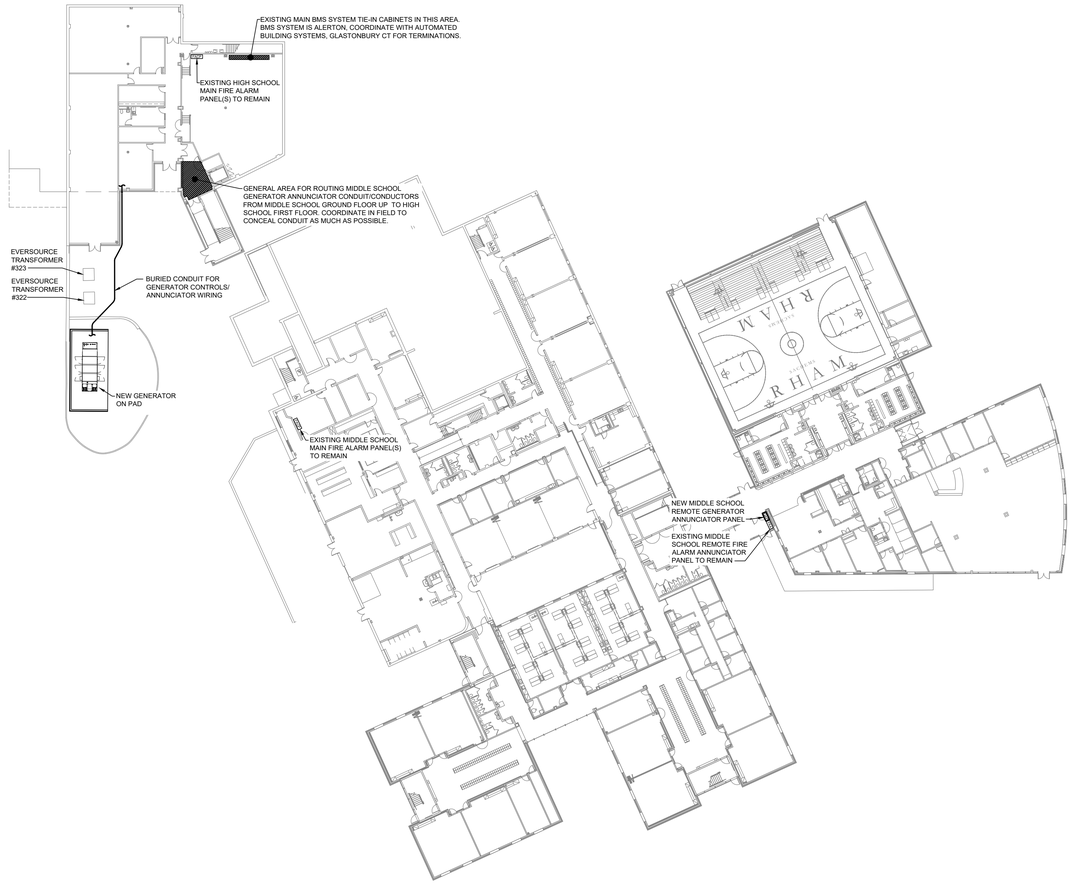



1 HIGH SCHOOL OVERALL FIRST FLOOR ELECTRICAL LOCATOR PLAN
SCALE: 1/32" = 1'-0"




1 MIDDLE SCHOOL OVERALL GROUND FLOOR ELECTRICAL LOCATOR PLAN
SCALE: 1/32" = 1'-0"

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SECURITY:
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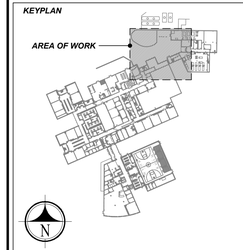
(978) 897-7100

PROJECT NAME:
# RHAM HIGH AND MIDDLE SCHOOL EMERGENCY ELECTRICAL GENERATOR SYSTEM REPLACEMENT
REGIONAL SCHOOL DISTRICT #8
85 WALL STREET
HEBRON, CT 06248

KEYPLAN



REVISIONS

| REV. NO. | DATE | DESCRIPTION |
|---|---|---|
| 0 | 05/28/2025 | ADDENDUM #1 |

DRAWING TITLE:
HIGH SCHOOL AND MIDDLE SCHOOL ELECTRICAL LOCATOR PLANS

DATE: 03/14/2025
DRAWN BY: EMG
CHECKED BY: EDC
SCALE: 1/32" = 1'-0"
PROJ #: 2023159.00

DRAWING NUMBER:
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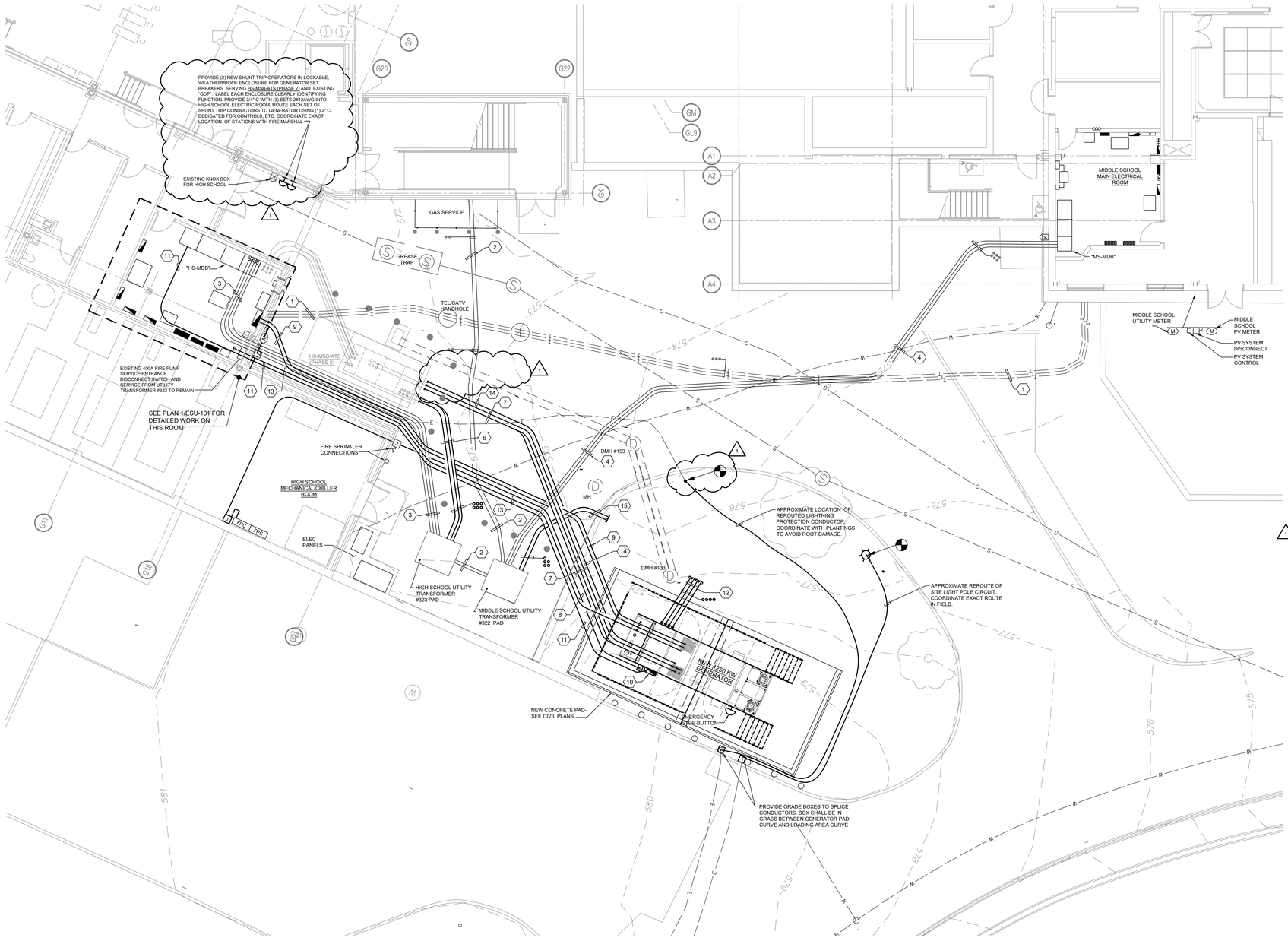


1 OVERALL PROJECT AREA - NEW WORK PLAN
SCALE: 1/8" = 1'-0"

NOTE:
REFER TO ALTERNATES FOR DESCRIPTION OF SCOPE REDUCTION OF FEEDERS AND CONDUITS BETWEEN GENERATOR AND HIGH SCHOOL ELECTRIC ROOM AND FIRE PUMP

KEY NOTES:

1. EXISTING (3) 4" CONDUITS FROM HIGH SCHOOL TO MIDDLE SCHOOL FOR TELEPHONE/ CATV/ ETC TO REMAIN.
2. EXISTING EVERSOURCE PRIMARY TO REMAIN.
3. EXISTING HIGH SCHOOL SECONDARY FEEDER FROM TRANSFORMER #323 TO REMAIN
4. EXISTING MIDDLE SCHOOL SECONDARY FEEDER FROM TRANSFORMER #322 TO REMAIN
5. NOT USED
6. PROVIDE (5) 4"C EACH PLUS (1) SPARE 4"C FROM TRANSFORMER #323 TO AREA OF FUTURE HS-MSB-ATS (PROVIDED AS PART OF PHASE 2). CAP AND SEAL CONDUIT ENDS
7. PROVIDE (5) 4"C EACH PLUS (1) SPARE 4"C FROM GENERATOR 2000A-3P C/B INSIDE GENERATOR ENCLOSURE TO AREA OF FUTURE HS-MSB-ATS (PROVIDED AS PART OF PHASE 2). CAP AND SEAL CONDUIT ENDS
8. EXTEND 3#2, 1#6G, 2"C FROM 125A-3P C/B ON EXTERIOR OF GENERATOR TO HIGH SCHOOL FIRE PUMP CONTROLLER VIA JUNCTION BOX ON BUILDING EXTERIOR. FROM JUNCTION BOX, EXTEND 3#1/0, 1#4G. MI FEEDER TO EMERGENCY TERMINALS OF FIRE PUMP CONTROLLER TRANSFER SWITCH
9. PROVIDE 2 SETS 4-500KCMIL, 1#1/0G, 4"C EACH FROM 800A C/B INSIDE GENERATOR ENCLOSURE TO PANEL "GDP" IN HIGH SCHOOL
10. INSTALL 100A, 120/208V-3Ø PANEL (FURNISHED WITH GENERATOR) ON OUTSIDE OF GENERATOR ENCLOSURE.
11. EXTEND 4#1, 1#8G, 2"C FROM 100A-3P C/B IN MAIN SWITCHBOARD "HS-MDP" IN HIGH SCHOOL TO PANEL ON OUTSIDE OF GENERATOR ENCLOSURE.
12. EXTEND (4) 5"C. 12" UP THROUGH GENERATOR PAD AND 4' OUT FROM EDGE OF GENERATOR PAD . ALIGN STUB-UP WITH EDGE OF GENERATOR ASSEMBLY FOR FUTURE EXTERNALLY MOUNTED BREAKER WHICH WILL FEED FUTURE MIDDLE SCHOOL OUTDOOR SWITCHGEAR UNDER SEPARATE CONTRACT. CAP AND SEAL CONDUIT ENDS
13. EXTEND (4) 2"C W/ DRAGLINE FROM GENERATOR TO HIGH SCHOOL MAIN ELECTRICAL ROOM, FOLLOWING ROUTE OF GENERATOR PANEL AND PANEL "GDP" FEEDERS
14. EXTEND (3) 2"C W/DRAGLINE FROM GENERATOR TO AREA OF FUTURE HS-MSB-ATS (PROVIDED AS PART OF PHASE 2). CAP AND SEAL CONDUIT ENDS
15. PROVIDE (5) 4"C. FROM TRANSFORMER #322 TO 24" BEYOND RETAINING WALL. CAP AND SEAL CONDUIT ENDS

GENERAL NOTE:

A. ALL NEW CONDUITS RUN IN PAVED AREA BETWEEN NEW GENERATOR AND EXISTING HIGH SCHOOL WALLS, INCLUDING ALLEYWAY BETWEEN EXISTING GENERATOR AND THE HIGH SCHOOL SHALL BE ENCASED IN MINIMUM 2" CONCRETE WITH REBAR REINFORCEMENT.

NOTE:
WORK SHOWN IN LIGHT LINEWORK IS PART OF PHASE 2 AND IS SHOWN FOR REFERENCE ONLY. NONE OF PHASE 2 WORK IS PART OF THE SCOPE ON THESE DOCUMENTS

VANZELM ENGINEERS
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PROJECT NAME:
# RHAM HIGH AND MIDDLE SCHOOL EMERGENCY ELECTRICAL GENERATOR SYSTEM REPLACEMENT
REGIONAL SCHOOL DISTRICT #8
85 WALL STREET
HEBRON, CT 06248

KEYPLAN
AREA OF WORK

| REVISIONS | | |
|---|---|---|
| REV. NO. | DATE | DESCRIPTION |
| 1 | 05/28/2025 | ADDENDUM #1 |

DRAWING TITLE:
ELECTRICAL
SITE UTILITIES
NEW WORK PLAN

DATE: 03/14/2025
DRAWN BY: AMA
CHECKED BY: EDC
SCALE: 1/8"=1'-0"
PROJ #: 2023159.00

DRAWING NUMBER:
PHASE I
ESU100

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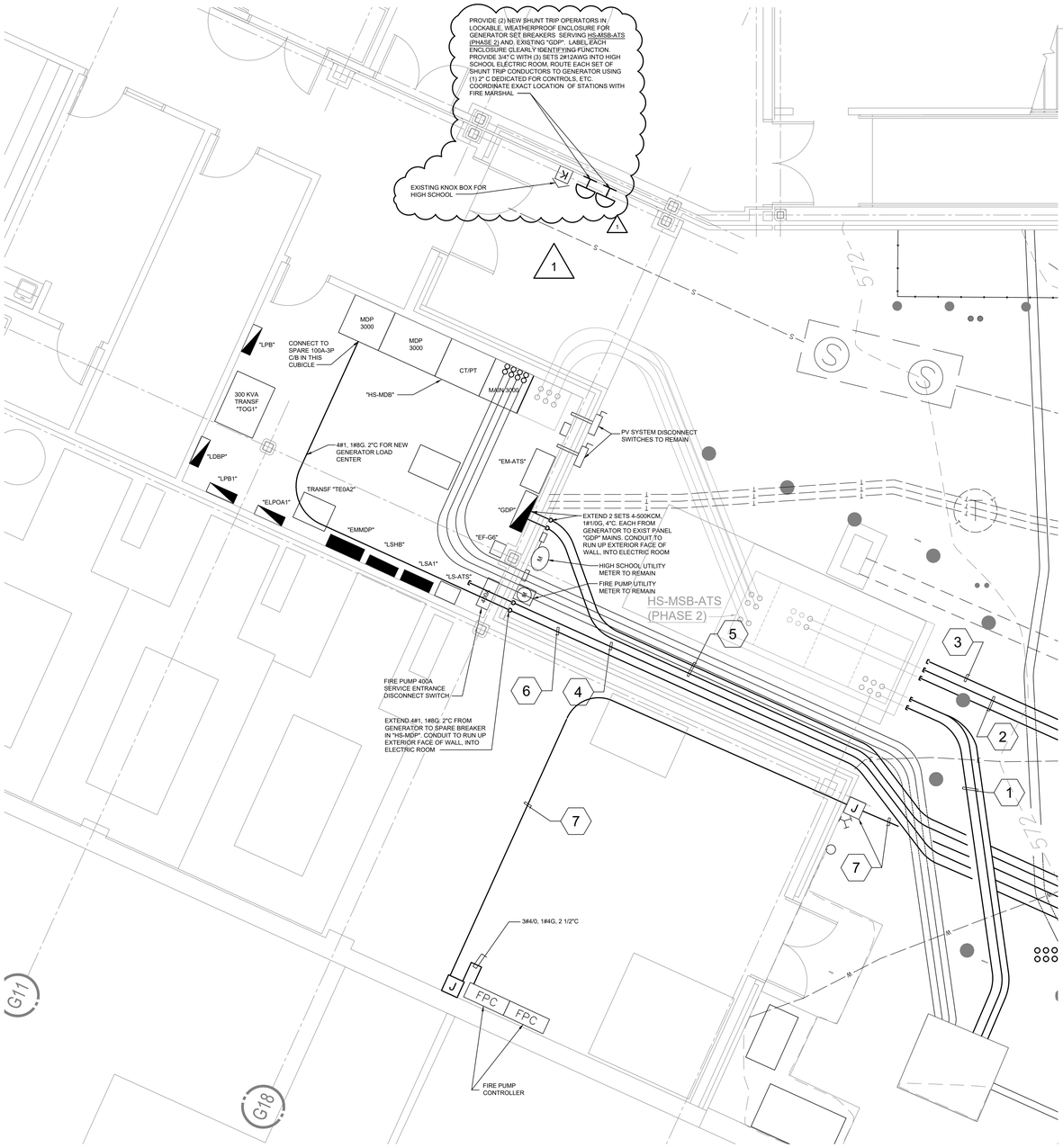


HIGH SHOOL ENLARGED SITE UTILITIES AND MAIN ELECTRICAL ROOM AND NEW SWITCHGEAR PLAN

1 SCALE: 1/4" = 1'-0"

1

NOTE:
REFER TO ALTERNATES FOR DESCRIPTION OF SCOPE REDUCTION OF FEEDERS AND CONDUITS BETWEEN GENERATOR AND HIGH SCHOOL ELECTRIC ROOM AND FIRE PUMP

KEY NOTES:

1. PROVIDE (5) 4"C EACH PLUS (1) SPARE 4"C FROM TRANSFORMER #323 TO AREA OF FUTURE HS-MSB-ATS (PROVIDED AS PART OF PHASE 2). CAP AND SEAL CONDUIT ENDS
2. PROVIDE (5) 4"C EACH PLUS (1) SPARE 4"C FROM GENERATOR 2000A-3P C/B INSIDE GENERATOR ENCLOSURE TO AREA OF FUTURE HS-MSB-ATS (PROVIDED AS PART OF PHASE 2). CAP AND SEAL CONDUIT ENDS
3. EXTEND (3) 2"C W/DRAGLINE FROM GENERATOR TO AREA OF FUTURE HS-MSB-ATS (PROVIDED AS PART OF PHASE 2). CAP AND SEAL CONDUIT ENDS
4. EXTEND (4) 2"C W/ DRAGLINE FROM GENERATOR TO HIGH SCHOOL MAIN ELECTRICAL ROOM, FOLLOWING ROUTE OF GENERATOR PANEL AND PANEL "GDP" FEEDERS
5. PROVIDE 2 SETS 4-500KCMIL, 1#1/0G, 4"C EACH FROM 800A C/B INSIDE GENERATOR ENCLOSURE TO PANEL "GDP" IN HIGH SCHOOL
6. EXTEND 4#1, 1#8G, 2"C FROM 100A-3P C/B IN MAIN SWITCHBOARD "HS-MDP" IN HIGH SCHOOL TO PANEL ON OUTSIDE OF GENERATOR ENCLOSURE.
7. EXTEND 3#2, 1#6G, 2"C FROM 125A-3P C/B ON EXTERIOR OF GENERATOR TO HIGH SCHOOL FIRE PUMP CONTROLLER VIA JUNCTION BOX ON BUILDING EXTERIOR. FROM JUNCTION BOX, EXTEND 3#1/0, 1#4G. MI FEEDER TO EMERGENCY TERMINALS OF FIRE PUMP CONTROLLER TRANSFER SWITCH

NOTE:
WORK SHOWN IN LIGHT LINEWORK IS PART OF PHASE 2 AND IS SHOWN FOR REFERENCE ONLY. NONE OF PHASE 2 WORK IS PART OF THE SCOPE ON THESE DOCUMENTS


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PROJECT NAME:
# RHAM HIGH AND MIDDLE SCHOOL
# EMERGENCY ELECTRICAL GENERATOR SYSTEM REPLACEMENT
REGIONAL SCHOOL DISTRICT #8
85 WALL STREET
HEBRON, CT 06248

KEYPLAN


REVISIONS

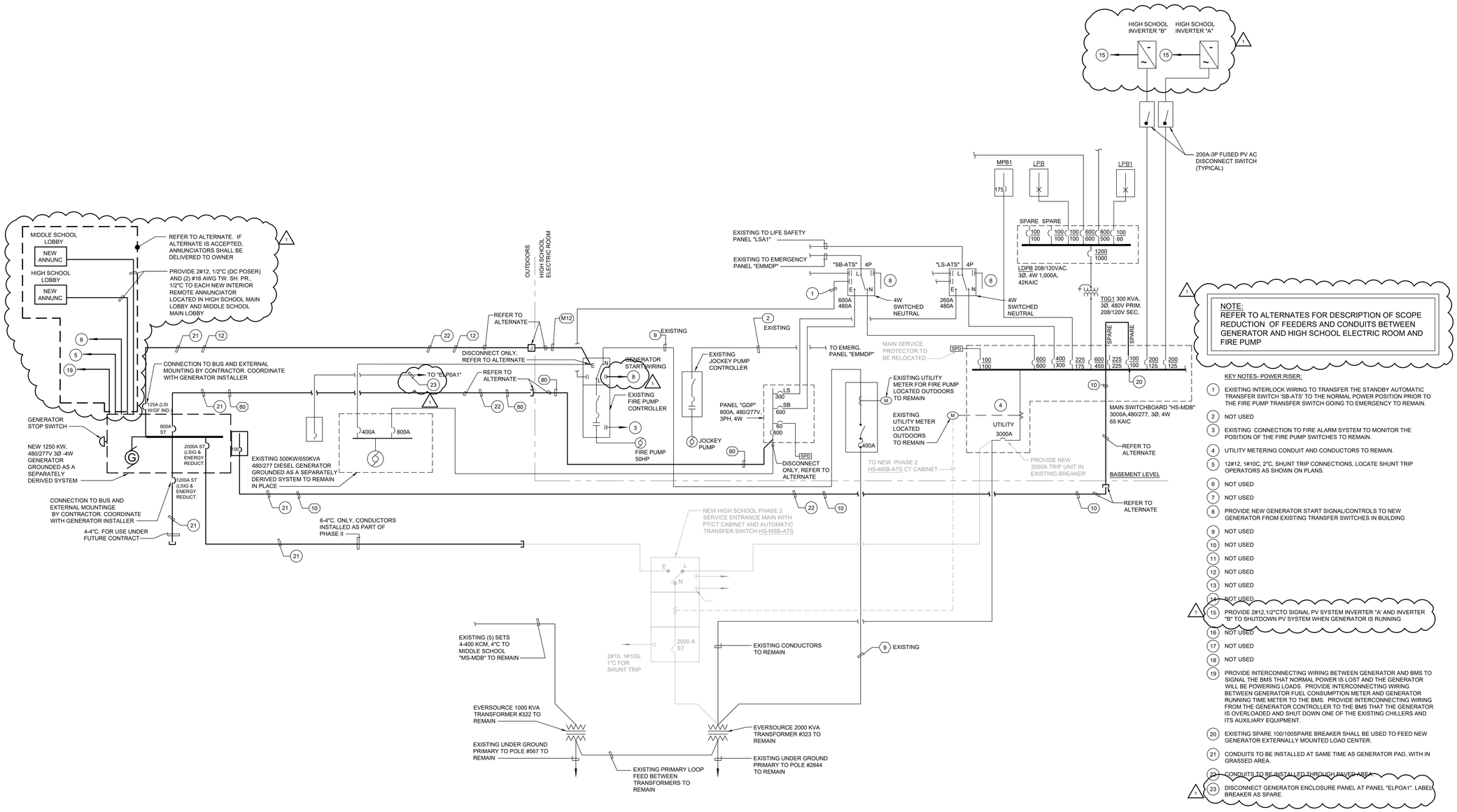
| REV. NO. | DATE | DESCRIPTION |
|---|---|---|
| 1 | 05/28/2025 | ADDENDUM #1 |

DRAWING TITLE:
ELECTRICAL ENLARGED SITE UTILITIES NEW WORK PLAN

DATE: 03/14/2025
DRAWN BY: AMA
CHECKED BY: EDC
SCALE: 1/4"=1'-0"
PROJ #: 2023159.00

DRAWING NUMBER:
PHASE I
ESU101

File Name:ESU101-SITE.dwg
File Path: U:\2023\2023159.00\BIM\CAD\.01 Phase I
5/29/2025 11:59:54 AM User ID: Grafe, Ed




1 HIGH SCHOOL- PARTIAL ONE-LINE DIAGRAM - DEMO AND NEW WORK
SCALE: N.T.S

NOTE:
REFER TO ALTERNATES FOR DESCRIPTION OF SCOPE REDUCTION OF FEEDERS AND CONDUITS BETWEEN GENERATOR AND HIGH SCHOOL ELECTRIC ROOM AND FIRE PUMP

KEY NOTES- POWER RISER:

1. EXISTING INTERLOCK WIRING TO TRANSFER THE STANDBY AUTOMATIC TRANSFER SWITCH 'SB-ATS' TO THE NORMAL POWER POSITION PRIOR TO THE FIRE PUMP TRANSFER SWITCH GOING TO EMERGENCY TO REMAIN.
2. NOT USED
3. EXISTING CONNECTION TO FIRE ALARM SYSTEM TO MONITOR THE POSITION OF THE FIRE PUMP SWITCHES TO REMAIN.
4. UTILITY METERING CONDUIT AND CONDUCTORS TO REMAIN.
5. 12#12, 1#10C, 2"C, SHUNT TRIP CONNECTIONS, LOCATE SHUNT TRIP OPERATORS AS SHOWN ON PLANS.
6. NOT USED
7. NOT USED
8. PROVIDE NEW GENERATOR START SIGNAL/CONTROLS TO NEW GENERATOR FROM EXISTING TRANSFER SWITCHES IN BUILDING
9. NOT USED
10. NOT USED
11. NOT USED
12. NOT USED
13. NOT USED
14. NOT USED
15. PROVIDE 2#12,1/2"CTO SIGNAL PV SYSTEM INVERTER "A" AND INVERTER "B" TO SHUTDOWN PV SYSTEM WHEN GENERATOR IS RUNNING
16. NOT USED
17. NOT USED
18. NOT USED
19. PROVIDE INTERCONNECTING WIRING BETWEEN GENERATOR AND BMS TO SIGNAL THE BMS THAT NORMAL POWER IS LOST AND THE GENERATOR WILL BE POWERING LOADS. PROVIDE INTERCONNECTING WIRING BETWEEN GENERATOR FUEL CONSUMPTION METER AND GENERATOR RUNNING TIME METER TO THE BMS. PROVIDE INTERCONNECTING WIRING FROM THE GENERATOR CONTROLLER TO THE BMS THAT THE GENERATOR IS OVERLOADED AND SHUT DOWN ONE OF THE EXISTING CHILLERS AND ITS AUXILIARY EQUIPMENT.
20. EXISTING SPARE 100/100SPARE BREAKER SHALL BE USED TO FEED NEW GENERATOR EXTERNALLY MOUNTED LOAD CENTER.
21. CONDUITS TO BE INSTALLED AT SAME TIME AS GENERATOR PAD, WITH IN GRASSED AREA.
22. CONDUITS TO BE INSTALLED THROUGH PAVED AREA
23. DISCONNECT GENERATOR ENCLOSURE PANEL AT PANEL "EJPOA1". LABEL BREAKER AS SPARE.

NOTE:
WORK SHOWN IN LIGHT LINEWORK IS PART OF PHASE 2 AND IS SHOWN FOR REFERENCE ONLY. NONE OF PHASE 2 WORK IS PART OF THE SCOPE ON THESE DOCUMENTS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PROJECT NAME:
# RHAM HIGH AND MIDDLE SCHOOL EMERGENCY ELECTRICAL GENERATOR SYSTEM REPLACEMENT
REGIONAL SCHOOL DISTRICT #8
85 WALL STREET
HEBRON, CT 06248

KEYPLAN
AREA OF WORK

| REVISIONS | | |
|---|---|---|
| REV. NO. | DATE | DESCRIPTION |
| 1 | 05/28/2025 | ADDENDUM #1 |

DRAWING TITLE:
HIGH SCHOOL ELECTRICAL ONE LINE RISER DIAGRAM

| | |
|---|---|
| DATE: | 03/14/2025 |
| DRAWN BY: | AMA |
| CHECKED BY: | EDC |
| SCALE: | NONE |
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E301


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TABLE OF CONTENTS
SECTION 263213 – ENGINE GENERATORS

# SECTION P263213 – PRE PURCHASE ENGINE GENERATORS

## PART 1 - GENERAL

### 1.1 REFERENCES

A. This Section covers the specification of Packaged Engine Generators. Section – COMMON WORK RESULTS FOR ELECTRICAL WORK, GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, applicable Sections of DIVISION 1, and all other project instructions for other requirements.

### 1.2 SCOPE

A. Provide labor, materials, services, equipment and transportation necessary for complete and operational electrical generation systems as indicated on Contract Drawings and specified herein, including, but not limited to the following:

1. Engine generator set
2. Unit mounted cooling system
3. Unit-mounted and remote-mounted control and monitoring
4. Performance requirements for sensitive loads
5. Fuel system, including sub-base fuel tank.
6. Load Management System
7. Starting battery
8. Battery charger
9. Silencer/exhaust system
10. Remote annunciators
11. Remote stop switch
12. Outdoor Enclosure

B. The engine generator will be pre-purchased by the Owner and assigned to the contractor.

C. The contractor will provide all work required for the complete installation of the pre-purchased generator, including, but not limited to the following.

1. Processing of submittals.
2. Acceptance of delivery and rigging into final location.
3. Preparation of site to accept new equipment.
4. Concrete base for generator.
5. Power, control and monitoring field wiring.
6. Piping and wiring connections.
7. Identification.
8. Schedule and coordinate all required work.

9. Assist in field start-up and testing.

D. Related Sections include the following:

1. Division 26 Section "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

## 1.3 DEFINITIONS

A. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

B. Steady-State Voltage Modulation: The uniform cyclical variation of voltage within the operational bandwidth, expressed in Hertz or cycles per second.

## 1.4 SUBMITTALS

A. Product Data: Include the following:

B. Specifications Compliance: A complete copy of this generator specification with each subparagraph noted with the comment, “compliance”, “deviation”, or “alternate”. In the case of non-primary, vendor-supplied items, the name of the sub-vendor supplying said item, including model number, shall be indicated.

1. By noting the term “compliance”, it shall be understood that the manufacturer is in full compliance with the item specified and will provide exactly the same with no deviations.
2. By noting the term “deviation”, it shall be understood that the manufacturer prefers to provide a different component in lieu of that specified. Manufacturer shall indicate all deviations.
3. By noting the term “alternate”, it shall be understood that the manufacturer proposes to provide the same operating function but prefers to do it in a different manner. An alternate shall be fully described as to what the manufacturer proposes to provide.
4. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
5. Include thermal damage curve for generator.
6. Include time-current characteristic curves for generator protective device.
7. Include fuel consumption in gallons per hour at 0.8 power factor at 0.5, 0.75 and 1.0 times generator capacity.
8. Include generator efficiency at 0.8 power factor at 0.5, 0.75 and 1.0 times generator capacity.
9. Include air flow requirements for cooling and combustion air in cfm at 0.8 power factor, with air supply temperature of 95, 80, 70, and 50 deg F. Provide drawings showing requirements and limitations for location of air intake and exhausts.
10. Include generator characteristics, including, but not limited to kw rating, efficiency, reactances, and short-circuit current capability.

C. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components and location and size of each field connection.

1. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
2. Detailed, dimensioned plan, elevations and sections for outdoor enclosure. Include sound attenuation data.
3. Design Calculations: Signed and sealed by a qualified professional engineer. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
4. Vibration Isolation Base Details: Signed and sealed by a qualified professional engineer. Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.
5. Wiring Diagrams: Power, signal, and control wiring.

D. Welding certificates.

E. Manufacturer Seismic Qualification Certification: Submit certification that sub-base tank engine-generator set, batteries, battery racks, accessories, and components will withstand seismic forces defined as Seismic Design Category D. Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

    a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

F. Submit Qualification Data for testing agency; including a sample of a representative Field Quality Control Test Report.

G. Certified summary of prototype-unit test report.

H. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.

I. Certified Summary of Performance Tests: Demonstrate compliance with specified requirement to meet performance criteria for sensitive loads.

J. Test Reports:

1. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
2. Report of sound generation.
3. Report of exhaust emissions showing compliance with applicable regulations.
4. Field quality-control test reports.

K. Certification of Torsional Vibration Compatibility: Comply with NFPA 110.

L. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 and Division 26 , include the following:

1. List of tools and replacement items recommended to be stored at the Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.

M. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.
2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints of engine skid mounts, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Manufacturer Qualifications: A qualified manufacturer. Maintain, within 50 miles of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.

C. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

D. Source Limitations: Obtain packaged generator sets and auxiliary components through one source from a single manufacturer.

E. Product Options: Drawings indicate size, profiles, and dimensional requirements of packaged generator sets and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

F. Welding: Qualify procedures and personnel according to ASME Boiler and Pressure Vessel Code: Section IX for welding exhaust system piping.

G. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

H. Comply with NFPA 37.

I. Comply with NFPA 70.

J. Comply with NFPA 99.

K. Comply with NFPA 110 requirements for Level 1 emergency power supply system.

L. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

M. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

## 1.6 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.

## 1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver engine generator set and system components to their final locations in protective wrappings, containers and other protection that will exclude dirt and moisture and prevent damage from construction operations. Remove protection only after equipment is safe from such hazards.

## 1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

2. All warranty work shall include all parts and labor for the duration of warranty period and shall include provision of temporary generator for the duration of the repair at no additional cost to the Owner.

1.9 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Maintenance agreements shall include parts and supplies as used in manufacture and installation of original equipment.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: One for every 10 of each type and rating, but not less than one of each.
2. Indicator Lamps: Two for every six of each type used, but not less than two of each.
3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Generators:
   a. Caterpillar; Engine Div.
   b. Generac Power Systems, Inc.
   c. Kohler Co; Generator Division.
   d. Cummins Power Generation; Industrial Business Group.
   e. MTU.

2. The Basis of Design is Caterpillar C32-1250.

2.2 ASSEMBLY DESCRIPTION

A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.

C. EPSS Class: Engine-generator set shall be classified as a Class 48 in accordance with NFPA 110.

D. Induction Method: Turbocharged.

E. Governor: Adjustable isochronous, with speed sensing.

F. Emissions: Comply with EPA Tier requirements.

G. Mounting Frame: Structural steel framework to maintain alignment of mounted components without depending on concrete foundation. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.

H. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries, with capacity as required to operate as a unit as evidenced by records of prototype testing.
2. Output Connections: Three-phase, four wire.
3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

## 2.3 ENGINE-GENERATOR SET

A. Packaged engine-generator set shall be a coordinated assembly of compatible components.

B. Power Output Ratings: Nominal ratings of 1,250 kW with capacity as required to operate as a unit as evidenced by records of prototype testing.

C. Output Connections: Three-phase, four wire.

D. Safety Standard: Comply with ASME B15.1.

E. NFPA Compliance:

1. Comply with NFPA 37.
2. Comply with NFPA 70.
3. Comply with NFPA 99.
4. Comply with NFPA 110 requirements for Level 1 emergency power supply system.

F. UL Compliance: Comply with UL 2200.

G. Nameplates: Each major system component shall be equipped with a nameplate to identify manufacturer's name and address, and model and serial number of component.

H. Fabricate engine-generator-set mounting frame and attachment of components to resist generator-set movement during a seismic event when generator-set mounting frame is anchored to building structure.

I. Mounting Frame: Adequate strength and rigidity to maintain alignment of mounted components without depending on concrete foundation. Mounting frame shall be free from sharp edges and corners and shall have lifting attachments arranged for lifting with slings without damaging components.

1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.

## 2.4 GENERATOR-SET PERFORMANCE

A. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.

1. Nameplate Data for Oversized Generator: Show ratings required by the Contract Documents rather than ratings that would normally be applied to generator size installed.

B. Steady-State Voltage Operational Bandwidth: 2 percent of rated output voltage from no load to full load.

C. Steady-State Voltage Modulation Frequency: Less than 1 Hz.

D. Transient Voltage Performance: Not more than 10 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within 0.5 second.

E. Steady-State Frequency Operational Bandwidth: Plus or minus 0.25 percent of rated frequency from no load to full load.

F. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.

G. Transient Frequency Performance: Less than 2-Hz variation for a 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within three seconds.

H. Output Waveform: At no load, harmonic content measured line to neutral shall not exceed 2 percent total with no slot ripple. The telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.

I. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, the system shall supply a minimum of 300 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to winding insulation or other generator system components.

J. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.

K. Start Time: Comply with NFPA 110, Type 10, system requirements.

## 2.5 SERVICE CONDITIONS

A. Environmental Conditions: Engine-generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: Minus 15 to plus 40 deg C.
2. Relative Humidity: 0 to 95 percent.
3. Altitude: Sea level to 1000 feet.

## 2.6 ENGINE

A. Fuel: Fuel oil, Grade DF-2.

B. Rated Engine Speed: 1800 rpm.

C. Maximum Piston Speed for Four-Cycle Engines: 2250 fpm.

D. Lubrication System: The following items are mounted on engine or skid:

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

E. Engine Fuel System:

1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.
2. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.
3. Provide fuel cooler to maintain fuel temperature and viscosity during a long period (up to one week) of continuous operation at high load.

4. Provide fuel consumption meter to provide data on fuel consumed during any testing or actual power outage generator operation. The fuel data will be transmitted to the Facility Wide BMS system to aid in generator running data required by the State of Connecticut DEEP.

F. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity: minimum 1500 Watt.

G. Pipe crankcase ventilation fumes directly into engine intake to burn them and reduce unwanted emissions.

H. Emissions: Engine must be certified to meet the EPA Emissions Limits Alternate Standard for Stationary Emergency Generator Sets.

2.7 ENGINE COOLING SYSTEM

A. Description: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.

B. Radiator: Rated for specified coolant.

C. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.

D. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.

E. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.

F. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.

1. Rating: 50-psig maximum working pressure with coolant at 180 deg F, and non-collapsible under vacuum.
2. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

G. Coolant piping external to engine-generator set. Use ASTM B 88, Type L (ASTM B 88M, Type B) copper tubing with brazed joints, sized as recommended by engine manufacturer. Refer to Division 23 Section "Basic Mechanical Materials and Methods" for basic piping installation and joint construction.

2.8 FUEL SUPPLY SYSTEM

A. Comply with NFPA 30.

B. Base-Mounted Fuel Oil Tank: Factory installed and piped, complying with UL 142 fuel oil tank. Features include the following:

1. Tank level indicator.
2. Capacity: Fuel for 48 hours' continuous operation at 100 percent rated power output of engine generator system without being refilled.
3. Vandal-resistant fill cap.
4. Containment Provisions: Double wall, EPA rupture basin.
5. Fuel tank can be up to 48” high and up to 376” long to provide required fuel amount.

2.9 ENGINE EXHAUST SYSTEM

A. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.

1. Minimum sound attenuation of 25 dB at 500 Hz.
2. Sound level measured at a distance of 7 meters from exhaust discharge after installation is complete shall be 78.8 dBA or less.

B. Connection from Engine to Exhaust System: Flexible section of corrugated stainless-steel pipe, minimum 18” length from exhaust outlet to muffler with flanged pipe connections.

C. Connection from Exhaust Pipe to Muffler: Stainless-steel expansion joint with liner.

D. Exhaust Piping External to Engine: ASTM A 53/A 53M, Schedule 40, welded, black steel, with welded joints and fittings.

2.10 COMBUSION-AIR INTAKE

A. Description: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

2.11 STARTING SYSTEM

A. Description: 24-V electric, with negative ground and including the following items:

1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in "Environmental Conditions" Paragraph in "Service Conditions" Article.

2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: 60 seconds.
4. Battery: Adequate capacity within ambient temperature range specified in "Environmental Conditions" Paragraph in "Service Conditions" Article to provide specified cranking cycle at least three times without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Thermostatically controlled heater shall be arranged to maintain battery above 10 deg C regardless of external ambient temperature within range specified in "Environmental Conditions" Paragraph in "Service Conditions" Article. Include accessories required to support and fasten batteries in place.
7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
8. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:

    a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
    b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 deg C to plus 60 deg C to prevent overcharging at high temperatures and undercharging at low temperatures.
    c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
    d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
    e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
    f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

## 2.12 CONTROL AND MONITORING

A. Provide a fully solid-state, microprocessor based, generator set mounted control. The control panel shall be designed and built by the engine manufacturer. The control shall provide all operating, monitoring and control functions for the generator set. The control panel shall provide real time digital communications to all engine and regulator controls via SAE J1939.

B. The controller shall also include logic to automatically provide load management. If the load exceed a maximum preset level, the controller shall initiate load shed by closing a contact to signal the existing BMS to immediately shut down one of the existing chillers and its auxiliary equipment. The maximum preset level shall be 1250kW. Provide a total of two (2) load shed output contacts.

1. The controller shall provide Monitoring Software with the following functionality
   a. Provide access to all data and events on generator set communications network and transmit all, including sub-base fuel levels and fuel consumption to the High School BMS.
   b. Provide interface adapters to convert the generator's data protocol to be compatible with the High School BMS. The generator supplier shall also include software package(s) that will allow all available status points of the generator to be programmed, read, and recorded. The generator data interface shall be a read only interface.
   c. Ability to communicate via Modbus TCP, Modbus RTU or remote modem.
   d. The integrity of the generator remote start circuit(s) shall be continuously monitored for broken, disconnected, or shorted wires.
      1) Loss of integrity of the remote start circuit(s) shall initiate visual and audible annunciation of generator malfunction at the generator local and remote annunciator(s) and start the generator(s).

C. Functional Description: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of the generator set. When mode-selector switch is switched to the on position, the generator set starts. The off position of the same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down the generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down the generator set.

D. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms.

E. Provide minimum run time control set for 15 minutes with override only by operation of a remote emergency-stop switch.

F. Comply with UL 508A.

G. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gauges shall be grouped in a common control and monitoring panel mounted on the generator set. Mounting method shall isolate the control panel from generator-set vibration.

H. Indicating and protective devices and controls shall include those required by NFPA 110 for a Level 1 system, and the following:

I. Indicating and Protective Devices and Controls:

1. AC voltmeter: dual scale, 0-600V, 2% accuracy, 2-1/2" diameter.
2. AC ammeter: dual scale, 2% accuracy, 2-1/2" diameter.
3. AC frequency meter: dial type.
4. DC voltmeter (alternator battery charging).
5. Engine-coolant temperature gage.
6. Engine lubricating-oil pressure gage.
7. Engine lube oil temperature.
8. Running-time meter.
   a. Transmit running-time meter data to the system wide BMS system to aid in providing generator operating data required by the State DEEP.
9. Ammeter-voltmeter, phase-selector switch(es).
10. Generator-voltage adjusting rheostat.
11. Upper and lower meter scale indicator lights.
12. Auto/Off/Test switch. Test mode shall automatically start unit without interrupting normal electrical supply.
13. Overspeed shutdown device with LED status indicator which lights when overspeed condition has occurred as cause of shutdown.
14. Coolant high-temperature shutdown device with LED status indicator which lights when pre-alarm operating temperature has been reached and stays lit when shutdown occurs.
15. Coolant low-level shutdown device with LED status indicator which lights when low coolant level causes shutdown.
16. Oil low-pressure shutdown device with LED status indicator which lights when pre-alarm oil pressure condition has been reached and stays lit when shutdown occurs.
17. Overcrank shutdown device with LED status indicator which indicates engine has failed to start after 60 second cranking period.
18. Lamp test switch and audible alarm with silencer switch.
19. Low coolant temperature alarm with LED status indicator which indicates failure of block heater.
20. LED status indicator for "switch off", which indicates when control switch has been placed in "off" position.
21. LED status indicator for "system ready", indicating no malfunctions detected.
22. Fuel tank derangement alarm.
23. Fuel tank high-level shutdown of fuel supply alarm.
24. Generator overload.
25. Start-stop switch.
26. Overspeed shutdown device.
27. Coolant high-temperature shutdown device.
28. Coolant low-level shutdown device.
29. Oil low-pressure shutdown device.

J. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.

K. Connection to Data Link: A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals. Data system connections to terminals are covered elsewhere in Division 26.

L. 12 Volt remote annunciator panel: Provide two remote annunciator panels. Install one in the High School Main Electrical Room and one in the Middle Schol Main Electrical Room. Panels shall include lights, audible alarm, alarm switch and lamp test switch, in accordance with NFPA 110, Level 1, to monitor the following conditions:

1. Line power.
2. Generator power.
3. System ready (in auto position).
4. Alarm switch off.
5. Generator switch off.
6. Emergency stop.
7. Engine high-temperature shutdown.
8. Lube-oil low-pressure shutdown.
9. Overspeed shutdown.
10. Remote emergency-stop shutdown.
11. Engine high-temperature prealarm.
12. Lube-oil low-pressure prealarm.
13. Fuel tank, low-fuel level.
14. Low coolant level.
15. Overcrank shutdown.
16. Coolant low-temperature alarm.
17. Control switch not in auto position.
18. Battery-charger malfunction alarm.
19. Battery low-voltage alarm.
20. Battery high voltage alarm.

M. Remote Alarm Annunciator: Comply with NFPA 99. Labeled LED shall identify each alarm event. Common audible signal shall sound for alarm conditions. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

N. Enclosure Exterior Remote Emergency Stop Switch: Mounted on exterior of generator enclosure. Glass break type switch within weatherproof enclosure.

## 2.13 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. General

1. Acceptance of generator overcurrent protective devices will be contingent upon achievement of selective coordination of system including but not limited to elevators per

NEC Article 620; Emergency Systems per NEC Article 700 and legally required Standby Systems and components per NEC Article 701.

2. Provide an energy-reducing maintenance switch with local status indicator for all breakers rated 1200 Amp or higher or that can be adjusted to 1200 Amp or higher.

    a. The maintenance switch shall override the coordinated trip settings that may cause a delay in breaker opening during a fault condition while service is being performed on the breaker or distribution sections of the switchboard. The resulting faster breaker opening time will lower the potential arc flash energy available.
    b. Provide alternate means to reduce clearing time and provide arc energy reduction.

        1) Zone selective interlocking.
        2) Differential delaying.
        3) Energy reducing active arc flash mitigation system.

B. The 800 Ampere and 125 Ampere Generator Circuit Breakers: Molded-case, electronic-trip type; 100 percent rated; complying with UL 489; Sq. D. PowerPact family or equal by ABB or Cutler Hammer as a minimum. These breakers must be capable of providing WCR/closing rating of the existing ATS's of a minimum of 50,000 RMS symmetrical amperes; SQD Type MH or PJ.

1. Tripping Characteristics: Adjustable long-time pickup and delay, short-time pickup and delay, instantaneous and ground fault pickup INDICATION ONLY if 1,000 amperes or above at 480/277 volts. Instantaneous must have high setting (15 times LTPU) or the capability to be turned off.
2. Trip Settings: Matched to generator thermal damage curve.
3. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
4. Mounting: Adjacent to or integrated with control and monitoring panel.

C. 2000 Ampere and 1200 Ampere Generator Circuit Breakers: Insulated-case, electronic-trip type; 100 percent rated; complying with UL 489.

1. Tripping Characteristics: Adjustable long-time pickup and delay, short-time pickup and delay, instantaneous and ground fault pickup INDICATION ONLY if 1,000 amperes or above at 480/277 volts. Instantaneous must have high setting (15 times LTPU) or the capability to be turned off. Breakers shall include energy reduction.
2. Trip Settings: Matched to generator thermal damage curve as closely as possible.
3. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
4. Mounting: Adjacent to or integrated with control and monitoring panel.

D. The 125A and 1200A circuit breakers shall be provided in Nema 3R enclosures for exterior mounting in the field.

E. Generator Protector: Microprocessor-based unit that continuously monitors current level in each phase of generator output, integrates generator heating effect over time, and predicts when thermal damage of the alternator will occur. When signaled by the protector or other generator-set protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from the load circuits. Protector shall perform the following functions:

1. Initiates a generator overload alarm when the generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other generator-set malfunction alarms.
2. Under single or three-phase fault conditions, regulates the generator to 300 percent of rated full-load current for up to 10 seconds.
3. As the overcurrent heating effect on the generator approaches the thermal damage point of the unit, the protector switches the excitation system off, opens the generator disconnect device, and shuts down the generator set.
4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.

F. Ground-Fault Indication: Comply with NFPA 70, Article 700.7(D). Integrate ground-fault alarm indication with other generator-set alarm indications.

G. Provide generator OPD with one N.C. and one N.O. contact indicating breaker status. This status indication shall signal an alarm to the remote annunciator panel to indicate a “Generator Output Breaker Open” alarm. The remote annunciator panel shall be equipped with a single summary alarm wired to the building BMS system indicating a “Generator Trouble” alarm.

## 2.14 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1 and specified performance requirements.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class H or Class F.

D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.

E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

F. Excitation shall use no slip or collector rings, or brushes, and shall be arranged to sustain generator output under short-circuit conditions as specified.

G. Enclosure: Dripproof.

H. Instrument Transformers: Mounted within generator enclosure.

I. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.

1. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band.
2. Provide with under-frequency protection and moisture-resistive protection.
3. Regulation shall be within +/-2% of rated voltage from no load to full load.
4. On application of rated load at rated power factor, instantaneous voltage dip shall NOT exceed 20%, with recovery within one second.

J. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.

K. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

L. Subtransient Reactance: 12 percent, maximum.

M. Provide Permanent Magnet Generator (PMG) system.

N. Alternator shall be self-ventilated, one-piece cast aluminum alloy, uni-directional internal fan shall provide high volume, low noise air delivery with broad range, 12-lead reconnectable, four pole rotating field unit.

O. Temperature rise shall be within NEMA MG1-22.40, IEEE and ANSI Standards for standby duty at rated output.

P. Provide front-end mounted junction box for load connections. Junction box shall have space to mount regulator and voltage adjust rheostat inside box and to relocate same to opposite side without unit modification.

## 2.15 OUTDOOR GENERATOR-SET ENCLOSURE – SKIN TIGHT TYPE

A. Description: Vandal-resistant, weatherproof steel housing, wind resistant up to 100 mph (160 km/h). Multiple panels shall be lockable and provide adequate access to components requiring maintenance including rear-hinged control panel door. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.

1. Provide locking hasps (keyed alike) on engine side panels and control door.
2. Hinged Doors: With padlocking provisions.
3. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine-generator-set components.
4. Muffler Location: Within enclosure.
5. Enclosure Panelboard: NEMA 3R panel external to enclosure, serving lights, receptacles, heaters, controls, battery charger and devices within enclosure. All electrical components and devices served by the enclosure panelboard shall be factory prewired and field wired

to this panelboard. Enclosure panelboard may only serve equipment that serves the EPSS within the generator enclosure.

6. Sound level of 79 dBA at 25 feet (minimum 25 DB attenuation) or level to comply with local requirements at the property line, whichever is more restrictive.
7. Enclosure can be up to 376” long x 122” wide x 198” high, including generator, silcer and fuel tank.

B. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.

1. Louvers: Fixed-engine cooling-air inlet and discharge. Storm-proof and drainable louvers prevent entry of rain and snow.
2. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.

C. Interior Lights with Switch: Factory-wired, vapor-proof type fixtures within housing; arranged to illuminate controls and accessible interior.

D. Generator Access Platform: Prefabricated Code compliant heavy duty working platform along both sides of generator. Platform to include:

1. 48” wide steel frames (or larger to accommodate door swing) with 1” aluminum bar grate platform with OSHA compliant railings minimum of 42” high with posts top and mid railing of 1-1/2” schedule 40 pipe.
2. Leg height to set platform at base of enclosure, above fuel tank.
3. Final dimensions of platform to be based on dimensions of approved generator and sub-base fuel tank.
4. Stair system shall be designed for installation outdoors, with 1” aluminum bar grate in accordance with U.S. OSHA Standard for Fixed Industrial Stairs, 29 CFR 1910.24.
5. Guard and handrails shall be painted safety yellow.

## 2.16 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard enamel over corrosion-resistant pretreatment and compatible standard primer.

## 2.17 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with NFPA 110, Level 1 energy converters.
2. Generator Tests: Comply with IEEE 115.

3. Test Components and Accessories: Items furnished with installed unit that are not identical to those on tested prototype shall have been factory tested to demonstrate compatibility and reliability.
4. Test generator, exciter and voltage regulator as a unit.

B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Full load run.
2. Maximum power.
3. Voltage regulation.
4. Transient and steady-state governing.
5. Single-step load pickup.
6. Safety shutdown.
7. Observation of Factory Tests: Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.

C. Report factory test results within 10 days of completion of test.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator performance.

B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 CONCRETE BASES

A. Coordinate size and location of concrete bases with manufacturers requirements. Verify structural requirements with structural engineer.

B. Concrete base design, materials and installation requirements are specified in Division 3.

### 3.3 INSTALLATION

A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.

B. Install packaged engine generators level on concrete base.

1. Seismic Restraint: Mount packaged engine generator on restrained spring isolators to provide seismic restraint and vibration isolation.

C. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

D. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

1. Verify that electrical wiring is installed according to manufacturer's submittal and installation requirements in Division 26 Sections. Proceed with equipment start up only after wiring installation is satisfactory.
2. Provide interconnecting wiring between generator and automatic transfer switch(es).
3. Provide interconnecting wiring between generator and remote annunciator panels.
4. Provide interconnecting wiring between generator and BMS to signal the BMS that normal power is lost and the generator will be powering loads.
5. Provide interconnecting wiring between generator fuel consumption meter and generator running time meter to the BMS.
6. Provide interconnecting wiring from the generator controller to the BMS that the generator is overloaded and to shut down one of the existing chillers and its auxiliary equipment.
7. Provide interconnecting wiring between generator NEMA 3R enclosure panel and devices in the enclosure.
8. Provide data wiring from generator to the High School BMS to enable generator status points to be read and recorded.

E. Electrical Contractor to provide fuel for testing and start-up of the engine-generator. Quantity shall be sufficient to complete testing and start-up, but not less than 4 hours at 100% load.

## 3.4 CONNECTIONS

A. Piping installation requirements are specified in Division 23 Sections. Drawings indicate general arrangement of piping and specialties. The following are specific connection requirements:

1. Install fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.
2. Connect cooling-system water supply and drain piping to diesel-engine heat exchangers. Install flexible connectors at connections to engine generator and remote radiator.
3. Connect fuel piping to engines with a gate valve and union.
4. Connect exhaust-system piping to engines.

B. Ground equipment according to Division 26 Section "Electrical Grounding."

C. Connect wiring according to Division 26 Section "Conductors and Cables."

D. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

## 3.5 IDENTIFICATION

A. Identify system components according to Division 23 Section "Mechanical Identification" and Division 26 Section "Basic Electrical Materials and Methods."

## 3.6 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect**,** test and adjust field-assembled components and equipment installation, including connections, and to complete in field testing. Report results in writing.

B. The factory-authorized service representative shall perform the following field tests and inspections and prepare test reports: Furnish required materials, equipment and services to perform on-site tests, in presence of Architect and Owner, to demonstrate system operation. Correct defects and re-test system until proper operation is guaranteed. Materials and equipment shall include: temporary power and wiring; temporary cooling; 480 Volt, 1500 KW, infinitely variable, outdoor load bank and operator; monitoring devices; etc.

1. Perform each electrical test and visual and mechanical inspection according to current Edition of ANSI/NETA Standards for Acceptance Testing as outlined in Section 7 (except for vibration baseline test). Certify compliance with test parameters. Tests shall be conducted by applying load (via load bank) to load side of automatic transfer switch or to other load point acceptable to Engineer. Test shall include a minimum of four hours operating at 100% rated load.
2. Perform tests recommended by manufacturer.
3. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to, the following:

    a. Single-step full-load pickup test.

4. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.

    a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
    b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
    c. Verify acceptance of charge for each element of the battery after discharge.
    d. Verify that measurements are within manufacturer's specifications.

5. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
6. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.
7. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg (120 kPa). Connect to exhaust line close to engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's written allowable limits for the engine.
8. Exhaust Emissions Test: Comply with applicable government test criteria.
9. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
10. Harmonic-Content Tests: Measure harmonic content of output voltage under 25 percent and at 100 percent of rated linear load. Verify that harmonic content is within specified limits.
11. Noise Level Tests: Measure A-weighted level of noise emanating from generator-set installation, including engine exhaust and cooling-air intake and discharge, at four locations on the property line, and compare measured levels with required values.

C. Coordinate tests with tests for transfer switches and run them concurrently. There are multiple transfer switches in the two buildings that must be individually tested to confirm any one of these transfer switches will start the generator and provide generator power to the load.

1. Test each transfer switch operation by opening its normal power feeder breaker.

D. Load Management Operation: Demonstrate proper operation of the Load Management system.

1. Engage the 2000 Ampere Automatic Transfer switch to start the generator and transfer to generator power.
2. Increase the load via Loadbank to 1500kW and confirm the BMS signals one of the chillers to shutdown.
3. Lower the load via Loadbanks to less than 1500kW and confirm the BMS signals the chiller to restart.

E. Test instruments shall have been calibrated within the last 12 months, traceable to standards of the National Institute for Standards and Technology, and adequate for making positive observation of test results. Make calibration records available for examination on request.

F. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

G. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

H. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

I. Remove and replace malfunctioning units and retest as specified above.

J. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

K. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

L. Infrared Scanning: After Substantial Completion, but not more than 60 days after final acceptance, perform an infrared scan of each power wiring termination and each bus connection while running with maximum load. Remove all access panels, so terminations and connections are accessible to portable scanner.

1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 11 months after date of Substantial Completion.
2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
3. Record of Infrared Scanning: Prepare a certified report that identifies terminations and connections checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

## 3.7 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

B. Inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.

C. Complete installation and startup checks according to manufacturer's written instructions.

## 3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators. Refer to Division 1.

1. Coordinate this training with that for transfer switches.

END OF SECTION 263213

Alternate No 2.

Quote the amount of money to DEDUCT from the base bid for the deletion of providing the loading of the pre-purchased equipment onto your vehicle and transporting it from the local storage facility to the project site as described in Specification Section 260505-page 1 paragraph 1.3 subitem D.

UNIT -Lump Sum

PRICE $_____

Alternate No. 3.

Quote the amount of money to DEDUCT from the base bid for the deletion of the costs of the monthly storage charges (assume two (2) months) for the pre-purchased equipment at the local storage facility Section 260505-page 1 paragraph 1.3 subitem D.

UNIT -Monthly Cost

PRICE $_____

# BID PROPOSAL FORM

## TOWN OF HEBRON, CONNECTICUT 06248
## GENERATOR CONCRETE PAD AND
## UNDERGROUND ELECTRICAL CONDUITS AND CONDUCTORS INSTALLATIONS
## LOAD, DELIVER, PLACE AND ACTIVATE GENERATOR
## RHAM MIDDLE/HIGH SCHOOL
## 85 WALL STREET
## HEBRON, CONNECTICUT

**BID # 2025-10**

Opening Date: **10:00 a.m., Friday, June 6, 2025**

Town Manager's Office
Town of Hebron
15 Gilead St
Hebron, CT 06248

In accordance with the Drawings, Specifications, Bidding and Contract Document, the undersigned agrees to the following:

Provide ALL Labor, Material and Equipment that is necessary to complete the Generator Concrete Pad, Underground Electrical Conduits and Conductors Installation, Load, Deliver, Place and Activate Generator, and Bituminous Concrete Paving.

References:

We have performed work or provided services for the following municipalities and on these dates:

1_____

2_____

3_____

SUBMITTED BY:

(Bidder's full Company Name)……..

(Bidder's full address)……

……

(Bidder's telephone and fax numbers)……

(Bidder's email address)…….

**1. OFFER**

Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Bidding and Contract Documents prepared by Van Zelm Engineers for the above-mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work of the Base Bid for the Sum of:

**BASE BID**

$…….dollars (……...)
(amount in words) (amount in figures)

**2. ALTERNATE No. 1 Deduct Alternate $_____**

Quote the amount of money to DEDUCT from the base bid for deletion of the CDP panel, fire pump and generator panel feeder conductors and deletion of the generator communication, monitoring and control wiring including extension into building per specifications in Section 012300.

**ALTERNATE No 2. Deduct Alternate $_____**

UNIT: Lump Sum

Quote the amount of money to DEDUCT from the base bid for the deletion of providing the loading of the pre-purchased equipment onto your vehicle and transporting it from the local storage facility to the project site as described in Specification Section 260505-page 1 paragraph 1.3 subitem D.

**ALTERNATE No. 3. Deduct Alternate $_____**

UNIT: Monthly Cost

Quote the amount of money to DEDUCT from the base bid for the deletion of the costs of the monthly storage charges (assume two (2) months) for the pre-purchased equipment at the local storage facility Section 260505-page 1 paragraph 1.3 subitem D.

**3. UNIT PRICES**

We propose and agree that the following unit prices for work performed in accordance with Contract Documents, measured in place, shall be used to compute cost to the Town of Hebron should amount of work required by the Contract Documents be changed by order of the Town of Hebron. Unit prices include all necessary material, overhead and profit, and applicable taxes.

The unit price amounts will be added or deducted from the Contract Sum by Change Order. For work added to Contract, these unit prices include all costs, overhead and profit for all parties involved including the Contractor and Subcontractors. For work deleted from Contract, credit to the Town of Hebron for such work shall be computed on the basis of unit price.

Schedule of Allowances included in Base Bid

| ITEM NO. | UNIT | UNIT PRICE |
|---|---|---|
| A. Provide all labor, material, equipment, overhead and profit to form, place, pour, finish, strip an additional cubic yard of concrete for the slab. | CY | $_____ |
| B. Provide all labor, material and equipment, overhead and profit to remove and dispose of properly all soils that are deemed as unsuitable and provide, place and compact structural fill as specified in the Project Manual. | CY | $_____ |

**4. ACCEPTANCE**

This offer shall be open to acceptance and is irrevocable for ninety (90) days from the bid closing date.

If the Town of Hebron accepts this bid within the time period stated above, we will:

- Execute the Agreement within ten days of receipt of notice of acceptance of this bid.
- Furnish the required bonds and insurance certificates within ten (10) days of receipt of notice of acceptance of this bid in the form described in the Supplementary Conditions.

- Commence work within ten days after award of Contract and written Notice to Proceed.

If this bid is accepted within the time stated, and we fail to enter into an Agreement or we fail to provide the required Bonds, the Bid Security shall be forfeited as damages to the Town of Hebron by reason of our failure.

In the event our bid is not accepted within the time stated above, the required Bid Security shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

We understand the Town of Hebron reserves the right to accept any Bid or reject any or all Bids and to waive any informality in the Bidding.

**5. CONTRACT TIME**

If this Bid is accepted, we will be required to complete the Work in accordance with the following schedule:

Final Punch List for the Sitework and Concrete and Underground Conduit work shall be complete, all temporary facilities removed, and site restored no later than **August 22, 2025,** as designated by the Town of Hebron. Final Punch List for the offloading install, erection and activation of the Emergency Electrical Generator, work shall be complete, all temporary facilities removed, and site restored no later than **August 21, 2026,** as designated by the Town of Hebron.

**6. ADDENDA**

The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

Addendum No. ……. Dated ……..

Addendum No. ……. Dated ……..

Addendum No. ……. Dated ……..

**7. APPENDICES**

In accordance with the Instructions to Bidders, we include the following required Appendices concurrent with Bid submission. The information provided shall be an integral part of our Bid.

Bid Bond - Section 005100

Statement of Bidder's Qualifications – Section 006000

CHRO-Notification to Bidders/Contract Compliance Monitoring Report - Section 008900
All bidders must complete, sign, and return the "CHRO Contract Compliance Regulations Notification to Bidders" form to the grantee at the time of bid opening. Bids not including this form shall be considered incomplete and rejected. This form is attached, and can also be found at: http://www.ct.gov/chro/lib/chro/pdf/notificationtobidders.pdf

8. The undersigned is familiar with the conditions surrounding this call for bids, is aware that the Town of Hebron reserves the right to reject any and all bids, and is submitting this bid without collusion with any other person, individual or corporation.

| | |
|---|---|
| _____ | _____ |
| Signature | Witness |
| _____ | _____ |
| Printed Name & Title of Signer | Date |
| _____ | _____ |
| Company Name | Phone |
| _____ | _____ |
| Address | Fax |
| _____ | |
| Town/City State Zip | |

9. SUBCONTRACTORS

List all Subcontractors to be used on this project (or attach list to back of Bid Form)

a. _____
_____

b. _____
_____

## CHRO/AFFIRMATIVE ACTION PLAN

## BIDDERS PROPOSED SET ASIDE SUBCONTRACTORS

The Contractor who is selected to perform this State Project must comply with CONN. GEN. STAT. 4a60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5.

State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services (DAS) under the provisions of CONN. GEN. STAT. 4a-60g. (25% of the total state-funded value with DAS- certified Small businesses and 6.25% of the total state-funded value with DAS Certified Minority, Women and/or Disabled owned businesses). The Contractor must demonstrate good faith effort to meet the 25% set-aside goals.

**LIST THE SUBCONTRACTORS THAT YOU PLAN TO RETAIN TO COMPLY WITH THIS REQUIREMENT**

| NAME | ADDRESS | SCOPE OF WORK | CONTRACT AMOUNT | DAS CERTIFICATION (SMALL BUSINESS, MINORITY, WOMEN, DISABLED) |
|---|---|---|---|---|
| _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ |

**END OF SECTION**

VAN ZELM ENGINEERS
VAN ZELM HEYWOOD & SHADFORD, INC.
10 TALCOTT NOTCH FARMINGTON, CT 06032-1800
P: 860.284.5064 F: 860.284.5098
Connecticut | Massachusetts | North Carolina

# RESPONSE TO:
## Pre-Bid Contractor Requests for Information

Issue Date: May 28, 2025.
Project Name: EMERGENCY ELECTRICAL GENERATOR SYSTEM RHAM MIDDLE & HIGH SCHOOLS – PHASE I
Project No.: 2023159.01

Distribution: (attendees of Contractor Pre bid conference)

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| RFI number | Question / Response |
|---|---|
| RFI #1: | In Section 012300: in Schedule of Alternates:<br>Item #5 – Please advise which conduits are being described to be removed.<br>***RESPONSE:*** *In Section 012300, Para 3.1, sub-paragraphs #3.1.A.1, #3.1.A.2, #3.1.A.3 and #3.1.A.4 outlines the deletion of the conductors. Para 3.1, sub-paragraphs #3.1.A.5, outlines the deletion of the conduits which extend from 12" above grade into the building and extending to the load to which they are connected to Panel GDP. Fire Pump Controller, Generator enclosure Load Center and the miscellaneous metering and control wiring noted in sub-para #3.1.A.4.* |
| RFI #2: | In Section 012300: in Schedule of Alternates:<br>Item #6 - All testing of the generator and ATS would have been included by the vendor during the purchase of the generator. Please confirm this is accurate, and not part of the Contractor's Scope.<br>***RESPONSE:*** *Testing of the pre purchased generator is included with the pre-purchase specs, but is to be coordinated and scheduled by the trade contractor as outlined in Section 260505. Testing of the pre purchased switchgear/ATS is included with the pre-purchase specs. Installation of pre purchased switchgear/ATS is part of Phase 2 scope.* |

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RFI #3: In Section 012300: in Schedule of Alternates:
Item #7 - The Automatic Transfer Switch and Generator Annunciators are not being furnished by the Contractor.
***RESPONSE**: The generator remote annunciators are furnished with the generator. The trade contractor is responsible for installing, wiring and ensuring operation. The switchgear/ATS installation is part of Phase 2 scope.*

RFI #4: In Section 263213, What is the Make/Model of the Basis of Design Generator?
***RESPONSE:** Caterpillar C32-1250-DG, Included in Addendum #1*

RFI #5: Per the Key Notes Power Riser Drawing E-301

a. Please advise the distance from the Generator to the High School and Middle School Lobby where the new Annunciator Panels are to be located.

***RESPONSE:** Included in Addendum #1 and is shown on new Drawing EOA100.*

b. Note 5 - Please advise location of Shunt Trip Operators as they are not shown on the drawings.

***RESPONSE:** Included in Addendum #1, location is under the overhang adjacent to the High School Knox Box and is shown on Drawings ESU100 and ESU101.*

c. Note 19 - Please advise distance from the Generator to the Building Management System headend equipment.

***RESPONSE:** Included in Addendum #1, location is in Boiler Rm on Middle School Ground Floor and is shown on new Drawing EOA100.*

RFI #6 ***CLARIFICATION:** Section 263213_ENGINE GENERATORS is included for reference; this equipment is pre-purchased by the Owner and is to be installed by the Contractor as part of Phase 1.*

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# Emergency Electrical Generator System
# RHAM Middle and High Schools
# Pre-Bid Contractor Conference Agenda

**May 28, 2025**

*The following items are intended to describe the highlights of the meeting and are not necessarily presented in the order in which they will occur.*

## Review project schedule

1. Bidder RFIs due: 12:00PM, Friday, May 30, 2025
2. RFI responses and Addendum #1: Issued, Monday, June 2, 2025
3. Bids due: 10:00AM, Friday, June 6, 2025
4. Bid opening: 10:01AM Friday June 6, 2025
5. De-scope meeting w/ apparent low bidder: June 9, 2025. Time selected by Owner
6. Contract Award: immediately following scope review

## Project synopsis

1. Installation of concrete pad on the grass area to support new generator (generator is pre-purchased by Owner). Contractor will hold the responsibility to deliver the new generator to the project site and install it on the pad. There are numerous conduit/feeder runs to be buried, originating beneath the new generator and extended across the driveway and into the High School. There are also "conduit only" segments that are required to prepare the site in order for Phase 2 work to be performed.
2. There is a deduct alternate which removes the installation of all conductors, and terminates the conduit installation just outside of the High School exterior walls.

## Upcoming Addendum

1. Minor Drawing clarifications, including addition of drawing identifying the remote annunciator locations
2. Minor Specification clarifications
3. Questions from Pre-Bid Conference

## Questions/comments from bidders

## Walk project site

1. Starting at the High School, noting the location of the remote generator Annunciator.
2. Proceed to the Middle School, noting the location of the remote generator Annunciator.
3. Proceed to the outdoor area where the new generator will be located
4. Proceed to the Main Electrical and Mechanical rooms to see the scope of interior work

**RHAM Emergency Electric Generator Upgrade Project (EEGUP)**
**Building Committee**

**PRE-BID CONFERENCE MEETING**
**MAY 28, 2025**

**AGENDA**

1. Contract
2. Schedule
    a. Summer 2025
    b. Summer 2026
3. Phase 2-Scope of Work
4. Building Permit
5. Temporary Requirements
    a. Toilets
    b. Electricity
    c. Temporary Fencing
    d. Temporary Toilets
    e. Dumpsters
    f. Drinking Water
6. Site Logistics
    a. Access Roadway
    b. Fire Exits from Building
7. Crane Plan
8. Include Offsite Storage Related Costs
    a. Storage Fees (2 months)
    b. Crane-Loading Generator on Truck
    c. Transportation of Generator to Project Site
9. Employee Background Checks

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# Emergency Electrical Generator System
# RHAM Middle and High Schools
# Pre-Bid Contractor Conference Sign-in Sheet
**May 28, 2025**

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