



ADDENDUM NUMBER: Two (2)

DATE: August 28, 2026

PROJECT: Montgomery County Courts Center – Generator Replacement

ENGINEER: Erich Vierkant, PE
IC Thomasson Associates, INC

PROJECT MANAGER: Kristopher Olson, PE
Montgomery County Engineering

BID OPENING: September 1st, 2026 at 2:00 P.M.

TO PLANHOLDERS:

This addendum is issued to clarify, revise, and supersede information in the original Project Manual dated August 4th, 2026. This addendum is hereby made part of the contract documents. Bidder must acknowledge receipt of this Addendum and Addendum #1 in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

Review changes to each portion of the work, as changes of one portion may affect the work of another.

QUESTIONS:

ITEM 1

QUESTION: What is the maximum allowable outage duration for replacement of either ATS?

MC ANSWER: The maximum allowable power outage duration is 8 hours on a Saturday or Sunday. That may be reduced if building heating or cooling becomes a factor. Weekday outages must be after hours and will be a maximum of 3 hours, scheduled 4 weeks in advance.

ITEM 2

QUESTION: Who is the BAS contractor and is the programming/interface work to be the responsibility of the contractor in the bid?

ICT/MC ANSWER: The BAS contractor is Siemens. The programming/interface work cost (by Siemens) is to be included in the bid. See revised drawing E101, note 2.

ITEM 3

QUESTION: Is the required BAS signal/function: dry contact indication, generator – running status, ATS-on-emergency status, or another specific point.

ICT ANSWER: Reference drawings attached to Addendum #1; the scope is to turn off the HVAC intake unit when the generator is running and then provide generator-running status on the BAS.

ITEM 4

QUESTION: Can the ATS shutdown/cutover work be performed after normal business hours or over weekends without additional restrictions beyond the required advance coordination?

MC ANSWER: Yes.

ITEM 5

QUESTION: Are normal project hours 7:30 AM to 4:30 PM, with disruptive work subject to owner coordination?

MC ANSWER: Yes, that is correct.

ITEM 6

QUESTION: Who does the County purchase Diesel fuel from?

MC ANSWER: The County does not have a "sole source" for diesel fuel. Fuel is purchased following County Purchasing Policies, which is typically competitive to provide the lowest price to the County.

ITEM 7

QUESTION: Who do you currently use for modifications on your building automation systems?

MC ANSWER: Siemens.

ITEM 8

QUESTION: Will the breaker listed "Fire Pump Power" in the generator be abandoned?

ICT ANSWER: No, reference revised drawings E101 and E103 in addendum #1.

ITEM 9

QUESTION: Can the generator exhaust pipe be reduced to the size required by the need generator exhaust system or does it need to remain the existing size?

ICT ANSWER: The exhaust size can be reduced as recommended by generator manufacturer as long as discharge point remains the same.

ITEM 10

QUESTION: Does the generator need to come with an access platform?

MC ANSWER: No.

ITEM 11

QUESTION: Is the contractor responsible for the maintenance contract on the new generator?

MC ANSWER: No, the County has an existing agreement with Cummings.

ITEM 12

QUESTION: What is the weight of the generator?

MC ANSWER: The County does not have documented information for the weight of the current generator on file. The County recommends contacting Generac or a vendor.

ATTACHMENTS:

- 1) Photos of existing ATS in Historic Courthouse Electrical Room (dated 8/28/26)
- 2) Specification 02 41 19 "Selective Demolition"
- 3) Revised Specification 26 32 12 "Diesel Engine Driven Generator Sets System"

OTHER REQUIREMENTS AND PROVISIONS OF THE CONTRACT DOCUMENTS REMAIN UNCHANGED.

END OF ADDENDUM NUMBER TWO

ADDENDUM 2 – Attachment #1

Historic Courthouse Transfer Switch Photos



Photo #1 ATS Cabinet Location



Photo #2 ATS Cabinet



Photo #3 Back of Cabinet Door

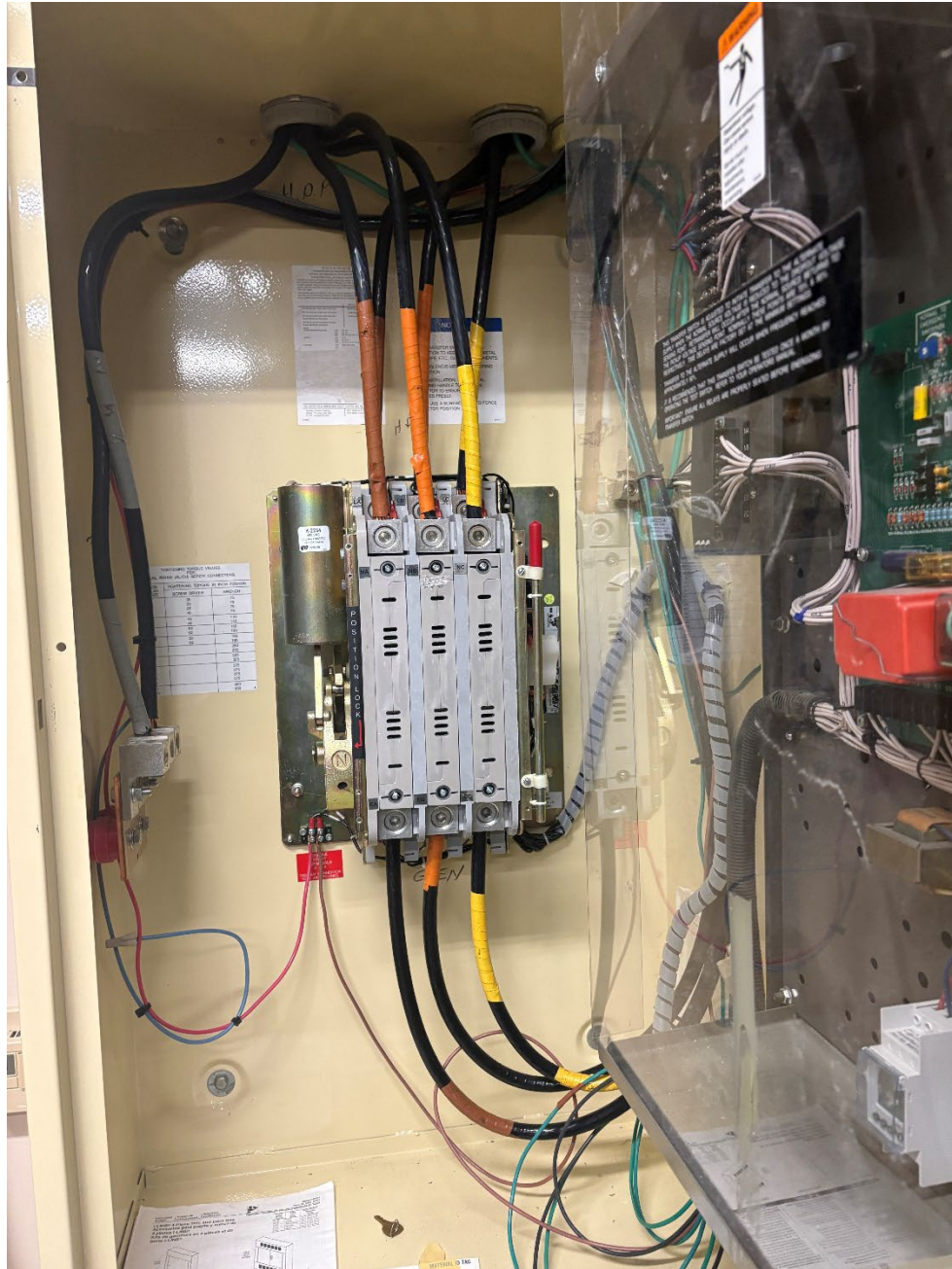


Photo #4 Cabinet Interior 1



Photo #5 Cabinet Interior 2



Photo #6 ATS Manufacturer Data Label

ADDENDUM 2 - Attachment #2

MONTGOMERY COUNTY COURTS CENTER GENERATOR REPLACEMENT

SELECTIVE DEMOLITION

02 41 19

SECTION 02 41 19 – SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Division 00 – Procurement and Contract Requirements, including but not limited to:
 - 1. Owner's Special Conditions
 - 2. General Conditions
 - 3. Supplemental General Conditions
- B. All other Division 01 - General Construction Contract Requirements sections.
- C. Division 02 – 28 Technical Specifications.
- D. Construction Drawings.

1.2 SECTION INCLUDES

- A. Selective Building Demolition:
 - 1. Selective demolition of interior partitions, systems, and building components designated to be removed.
 - 2. Protection of portions of building adjacent to or affected by selective demolition.
 - 3. Removal of abandoned utilities and wiring systems.
 - 4. Notification to Owner of schedule of shut-off of utilities which serve occupied spaces.
 - 5. Pollution control during selective demolition, including but not limited to mechanical systems and noise control.
 - 6. Removal and legal disposal of materials.
 - 7. Salvage of designated items.
 - 8. Interruption, capping or removal of utilities as applicable.
 - 9. Seal off areas to prevent dust transfer to adjacent areas.

1.3 RELATED SECTIONS

- A. 01 73 29 Cutting and Patching

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 – Administrative Requirements.
- B. Schedule: Submit for approval selective demolition schedule, including schedule and methods for capping utilities to be abandoned and maintaining existing utility service.

1.5 QUALITY ASSURANCE

- A. Codes and Regulations: Comply with governing codes and regulations. Use experienced workers.

1.6 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to starting work of this section.

1.7 SEQUENCING

- A. Immediate areas of work will not be occupied during selective demolition. The public, including children, may occupy unaffected adjacent areas.
- B. No responsibility for construction to be demolished will be assumed by the Owner.
- C. Ensure that work of this section is completed in time to prevent interruption of construction progress.

PART 2 PRODUCTS - Not applicable to this Section.

PART 3 EXECUTION

3.1 SELECTIVE DEMOLITION

- A. Demolition Operations: Do not damage building elements and improvements indicated to remain. Items of salvage value, not included on schedule of salvage items to be returned to Owner, shall be removed from structure. Storage or sale of items at project site is prohibited.
- B. Utilities: Locate, identify, disconnect, and seal or cap off utilities in building at areas to be demolished as required.
- C. Shoring and Bracing: Provide and maintain interior and exterior shoring and bracing.
- D. Occupied Spaces: Do not close or obstruct streets, walks, or other occupied or used spaces or facilities without the written permission of the Owner and the authorities having jurisdiction. Do not interrupt utilities serving occupied or used spaces without the written permission of the Owner and authorities having jurisdiction. If necessary, provide temporary utilities.
- E. Operations: Cease operations if public safety or remaining structures are endangered. Perform temporary corrective measures until operations can be continued properly.
- F. Security: Provide adequate protection against unauthorized intrusion beyond secure perimeter.
- G. Restoration: Restore finishes of patched areas.

3.2 SCHEDULE

- A. Items for Protection During Demolition and Construction:
 - 1. Adjacent construction.
 - 2. Floor, wall and ceiling finishes.
- B. Items to be Salvaged for Reinstallation:
 - 1. Wood paneling and trim.
 - 2. Ceiling panels.
 - 3. Light fixtures.
 - 4. Ventilation diffusers and grilles.
 - 5. Doors and hardware.
 - 6. H.M. View windows and glass.
 - 7. Carpet remnants in Owner storage.
- C. Items to be Salvaged for Delivery to Owner:
 - 1. Doors and hardware.

- 2. Light fixtures.
- D. Systems Requiring Interruption, Capping, or Removal:
 - 1. Electric.
 - 2. Heat.
 - 3. Water.
 - 4. Sanitary.
 - 5. Security.

END OF SECTION

ADDENDUM 2 - Attachment #3

Note: Section 3, Item H is only revision

SECTION 26 32 13 - DIESEL ENGINE DRIVEN GENERATOR SETS SYSTEM

PART 1 GENERAL

1.1 WORK INCLUDED

- A. This specification includes packaged engine-generator sets for emergency standby power to be installed as per plans and specifications. Unit(s) shall provide for completely automatic unattended operation, for the duration of any loss of normal utility power. Unit(s) to be capable of reaching operating range within 10 seconds of initial start signal (NFPA 99, Chapter 3). Unit(s) shall be of a emergency standby KW/KVA capacity as shown on plans.
- B. Full-service responsibility for satisfactory operation and performance of this system shall rest with Division 26 contractor supplying the emergency power system. Engine/generator to be furnished with all necessary features and options to comprise a complete operable system when installed as per manufacturers' recommendations.
- C. The generator set covered by these specifications shall be designed, tested, rated, assembled, and installed in strict accordance with all applicable standards below:
 - 1. ISO8528
 - 2. UL508
 - 3. UL2200
 - 4. UL142
 - 5. Designed to allow for installed compliance to NFPA 37, NFPA 70, NFPA 99 and NFPA 110.
- D. The manufacturer's standard warranty shall in no event be for a period of less than two (2) years from date of initial start-up of the system and shall include repair parts, labor, reasonable travel expense necessary for repairs at the job site, and expendables (lubricating oil, filters, antifreeze, and other service items made unusable by the defect) used during the course of repair. Running hours shall be limited to 500 hours annually for the system warranty by both the manufacturer and servicing distributor. Submittals received without written warranties as specified will be rejected in their entirety.
- E. The authorized manufacturer's dealer must have a generator set service location within 100 miles of the site. The dealer shall have a rental fleet with similar sized generator sets to the generator set(s) being supplied.
- F. Unit to be equipped for outdoor installation as shown on drawings.

1.2 RELATED SECTIONS

- A. 26 36 00 - Automatic Transfer Switch (ATS)
- B. 26 05 26 - Grounding and Bonding for Electrical Systems

1.3 SUBMITTALS

- A. Contractor shall provide as part of submittal data: Complete, composite electrical and mechanical drawings indicating control wiring routing, quantity and size, as well as size and suggested routing of coolant, fuel lines and exhaust lines. If options or special equipment other than those specified below are required, they shall be included in the submittals.
- B. Engine-generator submittals shall include the following information:
 - 1. Factory published specification sheet.
 - 2. Manufacturer's catalog cut sheets of all auxiliary components such as battery charger, control panel, enclosure, etc.
 - 3. Dimensional elevation and layout drawings of the generator set, enclosure and transfer switchgear and related accessories.
 - 4. Weights of all equipment.
 - 5. Concrete pad recommendation, layout, and stub-up locations of electrical and fuel systems.
 - 6. Interconnect wiring diagram of complete emergency system, including generator, switchgear, day tank, remote pumps, battery charger, control panel, and remote alarm indications.
 - 7. Engine mechanical data, including heat rejection, exhaust gas flows, combustion air and ventilation air flows, fuel consumption, etc.
 - 8. Generator electrical data including temperature and insulation data, cooling requirements, excitation ratings, voltage regulation, voltage regulator, efficiencies, waveform distortion and telephone influence factor.
 - 9. Generator resistances, reactances, and time constants.
 - 10. Generator locked rotor motor starting curves.
 - 11. Manufacturer's documentation showing maximum expected transient voltage and frequency dips, and recovery time during operation of the generator set at the specified site conditions with the specified loads.
 - 12. Manufacturer's and dealer's written warranty.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS/EQUIPMENT

- A. Emergency generator shall be by Caterpillar, Generac, Kohler, Cummins, or approved equal.

2.2 GENERAL REQUIREMENTS

- A. Genset Requirements: The generator set shall be Standby Duty rated at 600 kW, 750 kVA, 1800 RPM, 0.8 power factor, 480 V, 3-Phase, 60 hertz, including radiator fan and all parasitic loads. Generator-set shall be sized to operate at the specified load at a maximum ambient of 104° F (40° C) and altitude of 500.0 feet (152.4 m). System voltage to be 480/277-volts, 3-phase, 4-wire, 60 Hz., .8 power factor.
 - 1. Standby Power Rating: 600 kW
 - 2. Power is available for the duration of an emergency outage.

3. Average Power Output = 70% of standby power.
4. Load = Varying.
5. Typical Hours/Year = 200 Hours.
6. Maximum Expected Usage = 500 hours/year.
7. Typical Application = Standby.

2.3 ENGINE

- A. Engine shall be full diesel, compression ignition, liquid-cooled, and capable of producing the rated KW at a governed speed of 1800 rpm as specified under job site conditions. Engine to be equipped with electric starting, battery charging generator, electronic governor, fuel filters, oil filters, air cleaners, cooling system, and other equipment to provide a complete operable system. Selling distributor to be a factory authorized distributor of the diesel engine utilized in the standby engine generator system.
- B. The engine will utilize in-cylinder combustion technology, as required, to meet applicable EPA non-road regulations and/or the EPA NSPS rule for stationary reciprocating compression ignition engines. Additionally, the engine shall comply with the State Emission regulations at the time of installation/commissioning. Actual engine emissions values must be in compliance with applicable EPA emissions standards per ISO 8178 – D2 Emissions Cycle at specified kW / bHP rating.

2.4 COOLING

- A. The generator set shall be equipped with rail-mounted, engine-driven radiator with blower fan and all accessories. The cooling system shall be sized to operate at full load conditions and 104°F ambient air entering the room or enclosure (if an enclosure is specified). The generator set supplier is responsible for providing a properly sized cooling system based on the enclosure static pressure restriction. Please assume a 7°F air to core temperature rise across the engine.
- B. Engine shall be equipped with thermostatically controlled water jacket heater to maintain minimum 80-degrees F water jacket temperature under ambient conditions. Vendor shall consult with and coordinate special extreme cold weather needs with Electrical Engineer. Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity. Heater shall include a circulation pump. Provide isolation valves that allow for change out of the heater without having to drain the entire system.
- C. Complete cooling system shall be filled with anti-freeze coolant (0 degrees F or less as required by the extreme of local weather conditions) supplied by the vendor at start-up.

2.5 OUTDOOR INSTALLATIONS

- A. Sound Attenuated Enclosure: The complete diesel engine generator set, including generator control panel engine starting batteries shall be enclosed in a factory assembled, sound attenuated enclosure mounted on the fuel tank base.
 - 1. A weather resistant, sound attenuated enclosure of 14-gauge steel with electrostatically applied powder coated baked polyester paint. The enclosure shall have a resulting sound level of 75_dba @_23 feet with the genset running under full load. It shall consist of a roof, side walls, and end walls.
 - 2. Fasteners shall be either zinc plated or stainless steel.
 - 3. Internally mounted exhaust silencer to meet sound level listed above.
 - 4. Enclosure door shall include control panel viewing window in order to view generator controller without having to access the generator enclosure. No exceptions.
 - 5. Acoustical foam shall be provided between all supports and inside doors and sound baffles or air intake and air discharge.
 - 6. NFPA 110 Level 1 outdoor installations may require motorized automatic dampers at intake and discharge and space heater to maintain 40°F internal temperature.
 - 7. Load center sized for generator ancillary components.
 - 8. Radiator Air Discharge must be vertically discharged without exception.

2.6 SILENCERS AND BATTERIES

- A. For indoor generator sets, furnish and install super critical grade exhaust silencer. VEE-type engines shall have dual inlet, single outlet. Condensate trap, pet cock drain shall be installed in the silencer. A flexible section, 36 inches minimum, shall be provided between the engine exhaust manifold and the silencer. This section shall be carbon steel bellows type. The silencer shall be provided with mounting brackets for ceiling suspension. The silencer shall be installed from the equipment room ceiling in a horizontal position. The silencer shall be mounted so that its weight is not supported by the engine nor will exhaust system growth due to thermal expansion be imposed on the engine.
- B. Engine/generator manufacturer shall specify exhaust line size required for acceptable back pressure. Exhaust line shall be Schedule 40 pipe and be connected to engine manifold through seamless, flexible, carbon steel bellows type connection. Exhaust systems installed inside structure shall be fully insulated (under Division 23) and lines passing through walls shall pass through sleeves.
- C. Provide starting batteries capable of starting unit in time specified under installed conditions and capable of (2) 75-second periods of engine cranking. Batteries to be installed in steel, insulated rack(s).
- D. Battery heater pads to be furnished on outdoor installations.
- E. Provide batteries of the heavy-duty, maintenance-free lead-acid type, plastic case, shipped dry with electrolyte installed at start-up. Battery cables to be sized and provided by engine/generator vendor. Battery voltage shall be compatible with the starting system.

- F. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:
1. 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.
 2. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from -40°C to +60°C to prevent overcharging at high temperatures and undercharging at low temperatures.
 3. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to $\pm 10\%$.
 4. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
 5. 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.
 6. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.7 FUEL TANKS

- A. Subbase Fuel Tank:
1. Provide a double wall sub-base tank constructed to meet all local codes and requirements. A fuel tank base of 24 hour capacity (for NFPA 110 Level 1 systems provide 133% capacity) shall be provided as an integral part of the enclosure. It shall be contained in a rupture basin with 110% capacity. The tank shall meet UL142 standards. A locking fill cap, a mechanical reading fuel level gauge, low fuel level alarm contact, normal and emergency vent extensions to 12', and fuel tank rupture alarm contact shall be provided.
 2. Provide 5 Gallon Fuel Fill spill containment with overfill prevention valve (without exception).

2.8 GENERATOR

- A. The synchronous generator shall be dual bearing, self-ventilated, drip-proof design in accordance with NEMA MG 1 and directly connected to the engine flywheel housing with a flex coupling. The generator shall meet performance class G2 of ISO 8528.
1. The excitation system shall be permanent magnet and enable the alternator to sustain 300% of rated current.
 2. Form Wound 1500kW and above and above 600V, Random Wound below 1500kW.
 3. Rotor/Stator Temperature rise at 40° Ambient: 105° C.
 4. Insulation Class H.
 5. Subtransient Reactance no greater than 12%.

- B. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.
- C. All load connections shall be made up in rear mount junction box. Generator construction to allow load connections to be made on top, bottom or either side of junction box.
- D. Digital Voltage Regulator:
 - 1. The digital voltage regulator shall be microprocessor based with fully programmable operating and protection characteristics. The regulator shall maintain generator output voltage within $\pm 0.25\%$ for any constant load between no load and full load. The regulator shall be capable of sensing true RMS in three phases of alternator output voltage or operating in single phase sensing mode. The voltage regulator shall include a VAR/Pf control feature as standard. The regulator shall provide an adjustable dual slope regulation characteristic in order to optimize voltage and frequency response for site conditions. The voltage regulator shall include standard the capability to provide generator paralleling with reactive droop compensation and reactive differential compensation.
 - 2. The generator set controller shall allow system parameter setup and monitoring and provide fault alarm and shutdown information through the controller. A PC-based user interface shall be available to allow viewing and modifying operating parameters in a Windows compatible environment.
- E. Generator Circuit Breaker: Molded-case, electronic-trip type; 100 percent rated; complying with UL 489.
 - 1. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
 - 2. Ground-Fault Protection: Comply with NFPA 70, signals for ground-fault. Integrate ground-fault alarm indication with other generator-set alarm indications.
 - 3. Energy Reduction Maintenance Setting (ERMS): Provide ERMS switch on breakers 1200A and above.
 - 4. Trip Settings: Selected to coordinate with generator thermal damage curve.
 - 5. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
 - 6. Suitable for Service Entrance
- F. Generator Protector: Microprocessor-based unit shall continuously monitor current level in each phase of generator output, integrate generator heating effect over time, and predict when thermal damage of alternator will occur. When signaled by generator 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 load circuits. Protector shall perform the following functions:
 - 1. Initiates a generator overload alarm when 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 generator to 300 percent of rated full-load current for up to 10 seconds.
3. As overcurrent heating effect on the generator approaches the thermal damage point of the unit, 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.

2.9 GENERATOR CONTROL PANEL

- A. Provide a fully solid-state, microprocessor based, generator set 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. Environmental: The generator set control shall be tested and certified to the following environmental conditions:
 1. -40°C to +70°C Operating Range
 2. 100% condensing humidity, 30°C to 60°C
 3. IP22 protection for rear of controller; IP55 when installed in control panel.
 4. 5% salt spray, 48 hours, +38°C, 36.8V system voltage.
 5. Sinusoidal vibration 4.3G's RMS, 24-1000Hz.
 6. Electromagnetic Capability (89/336/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, BS EN 50081-2, 50082-2).
 7. Shock: withstand 15G.
- C. Functional Requirements: The following functionality shall be integral to the control panel.
 1. Standard ISO labeling
 2. The control shall include a minimum 33 x 132 pixel, 24mm x 95mm, positive image, transfective LCD display with text-based alarm/event descriptions.
 - a. The control shall include a minimum of 3-line data display.
 - b. Audible horn for alarm and shutdown with horn silence switch.
 3. Multiple language capability.
 4. Remote start/stop control.
 5. Local run/off/auto control integral to system microprocessor.
 6. Cooldown timer.
 7. Speed adjust.
 8. Lamp test.
 9. Emergency stop push button.
 10. Voltage adjust.
 11. Voltage regulator V/Hz slope – adjustable.
 12. Password protected system programming.
- D. Digital Monitoring Capability: The controls shall provide the following digital readouts for the engine and generator. All readings shall be indicated in either metric or English units.
 1. Engine:
 - a. Engine oil pressure
 - b. Engine oil temperature

- c. Engine coolant temperature
- d. Engine RPM
- e. Battery volts
- f. Engine hours
- g. Engine crank attempt counter
- h. Engine successful start counter
- i. Service maintenance interval
- j. Real time clock
- k. Engine exhaust stack temperature
- l. Engine main bearing temperature
- 2. Generator:
 - a. Generator AC volts (Line to Line, Line to Neutral and Average)
 - b. Generator AC current (Avg and Per Phase)
 - c. Generator AC Frequency
 - d. Generator kW (Total and Per Phase)
 - e. Generator kVA (Total and Per Phase)
 - f. Generator kVAR (Total and Per Phase)
 - g. Power Factor (Avg and Per Phase)
 - h. Total kW-hr
 - i. Total kVAR-hr
 - j. % kW
 - k. % kVA
 - l. % kVAR
 - m. Generator bearing temperature
 - n. Generator stator winding temperature
- 3. Voltage Regulation:
 - a. Excitation voltage
 - b. Excitation current

E. Alarms and Shutdowns: The control shall monitor and provide alarm indication and subsequent shutdown for the following conditions. All alarms and shutdowns are accompanied by a time, date, and engine hour stamp that are stored by the control panel for first and last occurrence:

- 1. Engine Alarm/Shutdown
 - a. Low oil pressure alarm/shutdown
 - b. High coolant temperature alarm/shutdown
 - c. Loss of coolant shutdown
 - d. Overspeed shutdown
 - e. Overcrank shutdown
 - f. Emergency stop shutdown
 - g. Low coolant temperature alarm
 - h. Low battery voltage alarm
 - i. High battery voltage alarm
 - j. Control switch not in auto position alarm
 - k. Battery charger failure alarm
- 2. Generator Alarm/Shutdown
 - a. Generator phase sequence
 - b. Generator over voltage
 - c. Generator under voltage
 - d. Generator over frequency
 - e. Generator under frequency

- f. Generator reverse power (real and reactive)
 - g. Generator overcurrent
 - 3. Voltage Regulator Alarm/Shutdown
 - a. Loss of excitation alarm/shutdown
 - b. Instantaneous over excitation alarm/shutdown
 - c. Time over excitation alarm/shutdown
 - d. Rotating diode failure
- F. Inputs and Outputs:
 - 1. Programmable Digital Inputs: The Controller shall include the ability to accept programmable digital input signals. The signals may be programmed for either high or low activation using programmable Normally Open or Normally Closed contacts.
 - 2. Programmable Relay Outputs: The control shall include the ability to operate programmable relay output signals, integral to the controller. The output relays shall be rated for 2A @ 30VDC and consist of six (6) Form A (Normally Open) contacts and two (2) Form C (Normally Open & Normally Closed) contacts.
 - 3. Programmable Discrete Outputs: The control shall include the ability to operate two (2) discrete outputs, integral to the controller, which are capable of sinking up to 300mA.
- G. Maintenance: All engine, voltage regulator, control panel and accessory units shall be accessible through a single electronic service tool. The following maintenance functionality shall be integral to the generator set control:
 - 1. Engine running hours display.
 - 2. Service maintenance interval (running hours or calendar days).
 - 3. Engine crank attempt counter.
 - 4. Engine successful starts counter.
 - 5. 40 events are stored in control panel memory.
 - 6. Programmable cycle timer that starts and runs the generator for a predetermined time. The timer shall use 7 user-programmable sequences that are repeated in a 7-day cycle. Each sequence shall have the following programmable set points:
 - a. Day of week
 - b. Time of day to start
 - c. Duration of cycle
- H. Remote Communications:
 - 1. The control shall include Modbus RTU communications as standard via RS-485 half duplex with configurable baud rates from 2.4k to 57.6k.
 - 2. Remote Monitoring Software: The control shall provide Monitoring Software with the following functionality.
 - a. Monitor up to eight (8) generator sets, plus ATS and UPS.
 - b. Provide access to all dates and events on generator set communications network.
 - c. Provide remote control capability for the generator set(s).
 - d. Ability to communicate via Modbus RTU or remote modem.

2.10 REMOTE ANNUNCIATOR

- A. Provide a remote annunciator to meet the requirements of NFPA 99/110, Level 1.
 - 1. Remote Annunciator shall include a lamp test pushbutton, alarm horn and alarm acknowledge pushbutton.
 - 2. Provide the following individual light indications for protection and diagnostics.
 - a. Overcrank
 - b. Low coolant temperature
 - c. High coolant temperature warning
 - d. High coolant temperature shutdown
 - e. Low oil pressure warning
 - f. Low oil pressure shutdown
 - g. Overspeed
 - h. Low coolant level
 - i. EPS supplying load
 - j. Control switch not in auto
 - k. High battery voltage
 - l. Low battery voltage
 - m. Battery charger AC failure
 - n. Emergency stop
 - o. Spare
 - p. Spare
 - 3. Ability to be located up to 4000 ft from the generator set.
 - 4. Remote E-Stop: Provide a remote e-stop in a NEMA 1 enclosure with break-glass cover.
 - 5. Remote annunciator panel shall be mounted where shown on the drawings.

PART 3 EXECUTION

3.1 PROJECT SPECIFIC FACTORY EQUIPMENT TESTS

- A. 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.

3.2 INSTALLATION REQUIREMENTS

- A. Entire unit shall be installed in accordance with manufacturers' recommendations.
- B. Mounting: Complete engine/generator and all mounted accessories shall be assembled on a common channel steel base. Fuel oil lines and lube oil drain shall terminate in base. Lube oil drain line shall be brought out to beyond the base to facilitate changing of the oil. Flexible fuel line sections (18" long) to be installed

between base and fuel lines. Heavy-duty, steel spring vibration isolators shall be installed between the base and mounting pad. Isolators shall be sized and located as recommended by Generator Manufacturer.

- C. Contractor shall provide the services of a factory-trained engineer for periodic job site visits during installation to ensure that the system is being installed in accordance with manufacturers' recommendations.
- D. Complete engine/generator system shall be tested after installation to ensure that the engine/generator, automatic transfer switch, alarm annunciators, and all other equipment function in accordance with the specifications.
- E. After installation, a 4-hour full load test shall be conducted by the distributor's engineer. This test shall be conducted using available building load, plus temporary load bank capacity so that full nameplate reading is utilized during test. Temporary load banks shall be furnished by the generator distributor and connected by Division 26 contractor. Test data shall be recorded and become a part of the three (3) Owners Manuals to be supplied.
- F. After Owner acceptance, Factory Representative shall provide a minimum of one (1) day of Owner training in the complete operation and maintenance of the automatic transfer switch system and generator system. The training session for the automatic transfer switch system and generator system shall be scheduled on a separate day from the startup and testing day and shall be scheduled at least two weeks in advance with the Owner and before building acceptance.
- G. Ground the engine generator frame and enclosure using an equipment grounding conductor sized in accordance with the NEC. Ground generator neutral on 4-pole (switched neutral) applications.
- H. *Generator shall be provided with full fuel tank at project acceptance.***

END OF SECTION 26 32 13