



Goodwyn Mills Cawood
1906 E Three Notch Street
Andalusia, Alabama 36420
T 334.222.2699

TRANSMITTAL COVER SHEET

DATE: DECEMBER 12, 2024
TO: ALL CONTRACTORS
FROM: PATSY STINSON
PROJECT: DWSRF WATER TREATMENT IMPROVEMENTS
FOR THE FORT DEPOSIT WATER WORKS & SEWER BOARD
GMC PROJECT NO: CMGM240024
SRF PROJECT NO: FS010348-01
RE: ADDENDUM #1

PLEASE COMPLETE BELOW AND RETURN IMMEDIATELY.

Patsy Stinson
Email: patsy.stinson@gmcnetwork.com

I, the undersigned, hereby acknowledge receipt of this Addendum #1.

Authorized Representative of Contractor

Date

Company Name

Telephone

Fax

Contractor's License Number (if applicable)



ADDENDUM NUMBER 1

DWSRF WATER TREATMENT IMPROVEMENTS
FOR THE FORT DEPOSIT WATER WORKS & SEWER BOARD
GMC PROJECT NO: CMGM240024
SRF PROJECT NO: FS010348-01

1. General

1.1 The following revisions are hereby added as Addendum No. 1 to the referenced Project Manual and Plans and shall be considered when preparing bids.

2. Revisions to Project Manual

2.1 The attached Bid Proposal Form has been revised and shall be used by contractors for bid submission.

2.2 The attached Specification 26 32 13.14 Diesel Engine Generators has been revised.

3. Revisions to Plans

3.1 The attached plan sheet E-113 has been added.

4. Clarifications:

4.1 The new filter supplier shall also be responsible for supplying new filter media for the Two (2) existing filters, along with new access hatches for the existing filters.

5. Questions:

5.1 Question: Can we move the New Panel inside the building since the valves are inside the building?
Answer: Yes, the panel can be moved inside the building, coordination required with Owner and Engineer.

6. Acknowledgement of Receipt

6.1 Receipt of Addendum No. 1 shall be acknowledged in two ways:

6.1.1 Note on (EJCDC C-410) page 5 of Bid Form – Bidder acknowledges receipt of “Addendum No. 1” and date of “December 12, 2024”.

AND

6.1.2 EMAIL the signed transmittal sheet to patsy.stinson@gmcnetwork.com to confirm the addendum has been received and is legible.

7. Conclusion

7.1 This is the end of Addendum Number 1, dated Thursday, December 12, 2024.

BID FORM FOR CONSTRUCTION CONTRACT – ADDENDUM NO. 1

DWSRF WATER TREATMENT IMPROVEMENTS FOR THE FORT DEPOSIT WATER WORKS & SEWER BOARD

GMC PROJECT NO: CMGM240024

SRF PROJECT NO: FS010348-01

REVISED PER ADDENDUM NO. 1

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

**Attn: Peter Heibel, Chairman
Fort Deposit Water Works & Sewer Board
260 Old Fort Road E.
Fort Deposit, AL 36032**

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

- A. Required Bid security;
- B. List of Proposed Subcontractors;
- C. List of Proposed Suppliers;
- D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids; and
- E. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids.
- F. Accounting of Sales Tax Attachment to Proposal Form.
- G. EPA Form 6-100-2 – Even if subcontractor will not be utilized / If using DBE Supplier, please submit this form.
- H. EPA Form 6-100-3 – Even if subcontractor will not be utilized / If using DBE Supplier, please submit this form.
- I. EPA Form 6-100-4 – Even if subcontractor will not be utilized / If using DBE Supplier, please submit this form.

ARTICLE 3—BASIS OF BIDS

3.01 *Lump Sum Bids*

A. Total Bid Price

BASE BID

<u>Item</u>	<u>Qty.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Total Price</u>
1	1	LS	Mobilization & General Conditions (NTE 3% of Total Bid)	\$ <u>LS</u>	\$ _____
2	1	LS	Remove & Dispose, Filter No. 1 & No. 2, Includes Piping, Foundations, Footings, Concrete Slab, Etc.	<u>LS</u>	_____
3	1	LS	Furnish and Install New Filter No. 1 & No. 2, Includes Coating System, Media, Piping, Valves, Fittings, Connections / Modifications, Foundations, Footings, Concrete Pad, Sump and Related Appurtenances.	<u>LS</u>	_____
4	1	LS	Remove, Dispose and Re-Install New Media @ Filter No. 3 & No. 4	<u>LS</u>	_____
5	1	LS	Remove and Replace Filter No. 3 & No. 4 Manways w/ New 24" Manways and Related Appurtenances	<u>LS</u>	_____
6	1	LS	Interior & Exterior Surface Preparation and Coating System @ Filter No. 3 & No. 4	<u>LS</u>	_____
7	1	LS	Remove, Relocate and Replace Fencing & Gates	<u>LS</u>	_____
8	1	LS	Filter Electrical Improvements	<u>LS</u>	_____
9	1	LS	Filter SCADA Improvements	<u>LS</u>	_____
10	1	LS	All Other Items (Base Bid)	<u>LS</u>	_____
11	1	LS	Allowance - Engineering Startup	<u>LS</u>	<u>10,000.00</u>
12	1	LS	Allowance - Owner's Contingency	<u>LS</u>	<u>100,000.00</u>
13	1	LS	Cleanup, Grassing, Mulching & Site Restoration	<u>LS</u>	_____
TOTAL BASE BID				\$	=====

ADDITIVE ALTERNATE NO. 1

<u>Item</u>	<u>Qty.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Total Price</u>
A1-1	1	LS	WTP Diesel Generator w/ Concrete Pad, ATS & Related Appurtenances	\$ <u>LS</u>	\$ <u> </u>
A1-2	1	LS	Well No. 3 Diesel Generator w/ Concrete Pad, ATS & Related Appurtenances	<u>LS</u>	<u> </u>
A1-3	1	LS	WTP Generator Electrical / SCADA Improvements	<u>LS</u>	<u> </u>
A1-4	1	LS	Well No. 3 Generator Electrical / SCADA Improvements	<u>LS</u>	<u> </u>
A1-5	1	LS	All Other Items (Add. Alt. No. 1)	<u>LS</u>	<u> </u>
TOTAL ALTERNATE NO. 1 BID					\$ <u> </u>
TOTAL BASE BID + ALTERNATE NO. 1 BID					\$ <u> </u>

ADDITIVE ALTERNATE NO. 2

<u>Item</u>	<u>Qty.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Total Price</u>
A2-1	1	LS	Remove Ex. Electrical & Install New Electrical Equipment & Components	<u>LS</u>	<u> </u>
A2-2	1	LS	SCADA Improvements	<u>LS</u>	<u> </u>
A2-3	1	LS	Remove & Replace (2) High Service Pumps & Related Appurtenances (Includes Invertor Duty Rated Motors, New Column Assemblies, Pumps, Basket Strainers, Etc.)	<u>LS</u>	<u> </u>
A2-4	1	LS	Rewind (2) Ex. 40 HP High Service Pump Motors to Invertor Duty Rating and Deliver to Owner	<u>LS</u>	<u> </u>
A2-5	1	LS	Remove & Replace the Existing Chlorination System, Piping & Related Appurtenances	<u>LS</u>	<u> </u>
A2-6	1	LS	Remove & Replace Aerator Blower Motors (2) & Related Appurtenances	<u>LS</u>	<u> </u>
A2-7	1	LS	All Other Items (Add. Alt. No. 2)	<u>LS</u>	<u> </u>
A2-8	1	LS	Allowance - Electrical Contingency	<u>LS</u>	<u>50,000.00</u>
TOTAL ALTERNATE NO. 2 BID					\$ <u> </u>
TOTAL BASE BID + ALTERNATE NO. 1 + ALTERNATE NO. 2 BID					\$ <u> </u>

ADDITIVE ALTERNATE NO. 3

<u>Item</u>	<u>Qty.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Total Price</u>
A3-1	1	LS	Building Rehabilitation (Crack / Hole Repair, Etc.)	\$ <u>LS</u>	\$ _____
A3-2	1	LS	Surface Prep. & Coating System of Exterior Surfaces, Interior Surfaces	<u>LS</u>	_____
A3-3	1	LS	Surface Prep. & Coating System of DI Piping, Valves, Fittings, Doors, Platform & Well Head, Etc.	<u>LS</u>	_____
A3-4	1	LS	Remove and Replace Select DI Piping, Gauges, Etc.	<u>LS</u>	_____
A3-5	1	LS	Remove Existing Soffit, Fascia, Drip Edge & Gables Ends and Replace with New Drip Edge & Hardiplank Siding	<u>LS</u>	_____
A3-6	1	LS	Remove Building No. 1 Roofing System and Replace with Standing Seam Metal Roof & Related Appurtenances	<u>LS</u>	_____
A3-7	1	LS	Remove Silt and Vegetation from Backwash Pond	<u>LS</u>	_____
A3-8	1	LS	All Other Items (Add. Alt. No. 3)	<u>LS</u>	_____
A3-9	1	LS	Cleanup, Grassing, Mulching & Site Restoration (Add. Alt. No. 3)	<u>LS</u>	_____

TOTAL ALTERNATE NO. 3 BID \$ _____

TOTAL BASE BID + ALTERNATE NO. 1 + ALTERNATE NO. 2+ ALTERNATE NO. 3 BID \$ _____

ARTICLE 4—TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

4.02 Bidder agrees that the Work will be substantially complete within **[270]** calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with

Paragraph 15.06 of the General Conditions within [300] calendar days after the date when the Contract Times commence to run.

4.03 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder’s Representations*

- A. In submitting this Bid, Bidder represents the following:
1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and

observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.

- d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

(Signature Page to Follow)

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Address for giving notices:

Bidder's Contact:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

Bidder's Contractor License No.: (if applicable) _____

SECTION 26 32 13.14 - DIESEL ENGINE GENERATORS (Addendum #1)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes packaged engine-generator sets suitable for use in mission critical applications with the features as specified and indicated. Engine generators will be used as the standby power source for the system, but have a prime rating. Shall be capable of providing reliable power with no run-time limitations while the primary source of power is unavailable.

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.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of packaged engine generator indicated, include rated capacities, operating characteristics, and furnished specialties and accessories. Ensure all options, accessories, selections, etc., are clearly identified. In addition, include the following:
 - 1. Thermal damage curve for generator.
 - 2. Time-current characteristic curves for generator protective device.
 - 3. Sound test data, based on a free field requirement.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, and location and size of each field connection.
 - 1. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
 - 2. Wiring Diagrams: Control interconnection, Customer connections.
- C. Certifications:
 - 1. Submit statement of compliance which states the proposed product(s) is certified to the emissions standards required by the location and application of the Project.

1.5 INFORMATIONAL SUBMITTALS

- A. Source quality-control test reports.
 - 1. Certified summary of prototype-unit test report. See requirements in Part 2 – “Source Quality Control”. Include statement indicating torsional compatibility of components.
 - 2. Certified Test Report: Provide certified test report documenting factory test per the requirements of this specification, as well as certified factory test of generator set sensors per NFPA110 level 1.
 - 3. List of factory tests to be performed on units to be shipped for this Project.
 - 4. Report of exhaust emissions and compliance statement certifying compliance with applicable regulations.

- B. Warranty:
 - 1. Submit manufacturer’s warranty statement to be provided for this Project.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required 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. Source Limitations: Obtain packaged generator sets and auxiliary components through one source from a single manufacturer.

- D. Comply with NFPA 37 (Standard For the Installation and Use of Stationary Combustion Engines and Gas Turbines).

- E. Comply with NFPA 70 (National Electrical Code. Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702).

- F. Comply with NFPA 110 (Emergency and Standby Power Systems) requirements for Level 1 emergency power supply system.

- G. Comply with UL 2200.

1.7 PROJECT 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 5643 feet

1.8 WARRANTY

- A. Manufacturer shall provide five (5) year extended warranty on the material and workmanship of the generator set for Stand-By Power rated products from registered commissioning and start-up. Warranty shall be comprehensive covering Parts, Labor, and Travel.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Only approved bidders shall supply equipment provided under this contract. Equipment specifications for this project are based on microprocessor-based generator sets manufactured by Cummins. Equipment by other suppliers are acceptable provided they meet these specifications in its entirety and digitally submit a complete submittal 2 weeks prior to bid. Equipment suppliers will be required to submit a transient analysis and step report for the applicable loads in the project prior to approval.
- B. Pre-approved manufacturers:
 - 1. Cummins
 - 2. Generac
 - 3. Caterpillar

2.2 ENGINE-GENERATOR SET

- A. Factory-assembled and -tested, engine-generator set.
- B. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.
 - 1. Rigging Information: Indicate location of each lifting attachment, generator-set center of gravity, and total package weight in submittal drawings.
- C. Capacities and Characteristics:
 - 1. Water Treatment Plant Generator:
 - a. Power Output Ratings: Operation of not less than kW rating shown on the plans, at 80 percent lagging power factor, 480/277 volt, three phase, 4-wire, 60 hertz and Stand-By certified at that same kW rating.
 - b. Alternator shall be capable of accepting maximum 920 kVA in a single step and be capable of recovering to a minimum of 90% of rated no load voltage. Following the application of the specified kVA load at near zero power factor applied to the generator set.
 - c. Alternator shall be capable of accepting 224 skVA in a single step without exceeding 10% Vdip and 8% Fdip limitations.
 - d. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component. The engine-generator nameplate shall include information of the power output rating of the equipment.
 - 2. Well Site Generator

- a. Power Output Ratings: Operation of not less than kW rating shown on the plans, at 80 percent lagging power factor, 480/277 volt, three phase, 4-wire, 60 hertz and Stand-By certified at that same kW rating.
- b. Alternator shall be capable of accepting maximum 423 kVA in a single step and be capable of recovering to a minimum of 90% of rated no load voltage. Following the application of the specified kVA load at near zero power factor applied to the generator set.
- c. Alternator shall be capable of accepting 175 skVA in a single step without exceeding 20% Vdip and 10% Fdip limitations.
- d. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component. The engine-generator nameplate shall include information of the power output rating of the equipment.

D. Generator-Set Performance:

1. Steady-State Voltage Operational Bandwidth: 0.5 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 8 percent variation for 50 percent step-load increase. Voltage shall recover and remain within the steady-state operating band within 2 seconds. On application of a 100% load step the generator set shall recover to stable voltage within 4 seconds.
3. Steady-State Frequency Operational Bandwidth: 0.25 percent of rated frequency from no load to full load.
4. 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.
5. Transient Frequency Performance: Not more than 2 percent variation for 50 percent step-load increase. Frequency shall recover and remain within the steady-state operating band within 2 seconds. On application of a 100% load step the generator set shall recover to stable frequency within 4 seconds.
6. Output Waveform: At full load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for any single harmonic. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50.
7. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 10 seconds without damage to generator system components. For a 1-phase, bolted short circuit at system output terminals, system shall regulate both voltage and current to prevent over-voltage conditions on the non-faulted phases.
8. Start Time: Comply with NFPA 110, Level 1, Type 10, system requirements. Ambient Condition Performance: Engine generator shall be designed to allow operation at full rated load in an ambient temperature under site conditions, based on highest ambient condition. Ambient temperature shall be as measured at the air inlet to the engine generator for enclosed units, and at the control of the engine generator for machines installed in equipment rooms.
9. Load Sharing: Engine generator shall share real and reactive load proportionally within plus or minus 3 percent with all other engine generators in the system.
10. Noise Output: Engine generator shall be tested by the manufacturer per ANSI S12.34. Data documenting performance shall be provided with submittal documentation.

2.3 ENGINE

- A. Fuel: Engine Fuel oil, Grade DF-2
- B. Rated Engine Speed: 1800 rpm.
- C. Lubrication System: The following items are mounted on engine or skid:
 - 1. Lube oil pump: shall be positive displacement, mechanical, full pressure pump.
 - 2. Filter and Strainer: Provided by the engine manufacturer of record to provide adequate filtration for the prime mover to be used.
 - 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.
- D. Engine Fuel System: The engine fuel system shall be installed in strict compliance to the engine manufacturer's instructions.
 - 1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.
- E. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity and performance.
 - 1. Designed for operation on a single 120V AC, single phase, 60 hertz power connection. Heater voltage shall be shown on the project drawings.
 - 2. Installed with isolation valves to isolate the heater for replacement of the element without draining the engine cooling system or significant coolant loss.
 - 3. Provided with a 24VDC thermostat, installed at the engine thermostat housing
- F. Governor: Adjustable isochronous, with speed sensing. The governing system dynamic capabilities shall be controlled as a function of engine coolant temperature to provide fast, stable operation at varying engine operating temperature conditions. The control system shall actively control the fuel rate as appropriate to the state of the engine generator. Fuel rate shall be regulated as a function of starting, accelerating to start disconnect speed, accelerating to rated speed, and operating in various isochronous states.
- G. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.
 - 1. The generator set manufacturer shall provide prototype test data for the specific hardware proposed demonstrating that the machine will operate at rated standby load in an outdoor ambient condition of 50C.
 - 2. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
 - 3. Size of Radiator overflow tank: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
 - 4. 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.
 - 5. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.

6. Duct Flange: Generator sets installed indoors shall be provided with a flexible radiator duct adapter flange.

- H. Muffler/Silencer: Selected with performance as required to meet sound requirements of the application, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements. Muffler/Silencers for this application shall be no less than Critical Grade.

- I. Air-Intake Filter: Engine-mounted air cleaner with replaceable dry-filter element and restriction indicator.

- J. Starting System: 24V, as recommended by the engine manufacturer; electric, with negative ground.
 1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
 2. Cranking Cycle: As required by NFPA 110 for level 1 systems.
 3. Battery Cable: Size as recommended by engine manufacturer for cable length as required. Include required interconnecting conductors and connection accessories.
 4. Battery Compartment: Factory fabricated of metal with acid-resistant finish.
 5. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation. The battery charging alternator shall have sufficient capacity to recharge the batteries with all parasitic loads connected within 4 hours after a normal engine starting sequence.
 6. Battery Chargers: 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.

2.4 ENCLOSURE / FUEL OIL STORAGE

- A. Comply with NFPA 30.

- B. Weather Enclosure Outdoor Weather-Protective Housing:

1. The generator set shall be provided with a Weather Protective Housing which allows the generator set to operate at full rated load in the ambient conditions previously specified.
2. The enclosure shall be rated, by the engine manufacturer to withstand winds up to 150 mph.
3. The measured sound level of the enclosure shall be 80 dB @ a 7 meters from the enclosure taken via an 8 position circular average.
4. The enclosure shall include hinged doors for access to both sides of the engine and alternator, and the control equipment.
5. Key-locking and pad lockable door latches shall be provided for all doors. Door hinges shall be stainless steel.
6. The enclosure shall be provided with a critical grade exhaust silencer mounted inside of the enclosure.
7. Mounting of the muffler outside of the enclosure will not be allowed.
8. All panels shall be primed for corrosion protection and finish painted with the manufacturer's standard color. All surfaces of all metal parts shall be primed and electro statically or powder coated.
9. Fasteners used shall be corrosion resistant and designed to minimize marring of the painted surface when removed for normal installation or service work.
10. The enclosure shall be anchored to the sub-base fuel tank, prior to shipment.
11. Provide vibration isolators, installed between the engine-generator set and sub-base diesel fuel storage tank, quantity as recommended by the generator set manufacturer.
 - a. Isolators shall include seismic restraints if required by site location.
12. In addition, provide pad isolators to create an air gap between the fuel tank and foundation.

C. Diesel fuel storage, sub-base day tank:

1. The generator shall be supplied with a sub-base diesel fuel storage tank with a capacity for 24 hours at 100% load.
2. The fuel tanks shall be U.L. 142 listed, double wall type and include low fuel level and internal tank leak detection alarm switches wired to the generator set control panel.
3. Tank shall be provided with fuel by the contractor before testing and shall be re-filled to the "full" mark on the fuel tank after testing is complete.
4. Closed top diked, open top diked and single wall fuel tanks shall not be allowed.

D. The complete generator package, which includes the generator set, housing, and sub-base diesel fuel tank, shall be U.L. 2200 listed and labeled as a complete package. The U.L. 2200 listing on just the generator set does not meet this specification, and will not be accepted.

E. Non-corrosive stairs with handrail shall be provided by the enclosure manufacturer for installation by the contractor for gensets that do not comply with the mounting height requirements of NEC Section 240.24.

2.5 CONTROL AND MONITORING

- A. Engine generator control shall be microprocessor based and provide automatic starting, monitoring, protection and control functions for the unit

- B. Automatic Starting System Sequence of Operation: 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 generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. (Switches with different configurations but equal functions are acceptable.) When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of the local (generator set-mounted) and/or remote emergency-stop switch also shuts down generator set.
- C. 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. Operation of the local (generator set-mounted) and/or remote emergency-stop switch also shuts down generator set.
- D. Configuration: Operating and safety indications, protective devices, system controls, engine gages and associated equipment shall be grouped in a common control and monitoring panel. Mounting method shall isolate the control panel from generator-set vibration. AC output power circuit breakers and other output power equipment shall not be mounted in the control enclosure.
- E. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, and the following:
1. AC voltmeter (3-phase, line to line and line to neutral values).
 2. AC ammeter (3-phases).
 3. AC frequency meter.
 4. AC kW output (total and for each phase). Display shall indicate power flow direction.
 5. AC kVA output (total and for each phase). Display shall indicate power flow direction.
 6. AC Power factor (total and for each phase). Display shall indicate leading or lagging condition.
 7. Ammeter-voltmeter displays shall simultaneously display conditions for all three phases.
 8. Emergency Stop Switch: Switch shall be a red “mushroom head” pushbutton device complete with lock-out/tag-out provisions. Depressing switch shall cause the generator set to immediately stop the generator set and prevent it from operating.
 9. Fault Reset Switch: Supply a dedicated control switch to reset/clear fault conditions.
 10. DC voltmeter (alternator battery charging).
 11. Engine-coolant temperature gage.
 12. Engine lubricating-oil pressure gage.
 13. Running-time meter.
 14. Generator-voltage and frequency digital raise/lower switches. Rheostats for these functions are not acceptable. The control shall adjustment of these parameters in a range of plus or minus 5% of the voltage and frequency operating set point (not nominal voltage and frequency values
 15. AC Protective Equipment: The control system shall include over/under voltage, reverse kVAR, reverse kW, over current, over load (kW) short circuit, loss of voltage reference, and over excitation shut down protection. There shall be a ground fault alarm for generator sets rated over 1000 amps, overload warning, and overcurrent warning alarm.
 16. Status LED indicating lamps to indicate remote start signal present at the control, existing shutdown condition, existing alarm condition, not in auto, and generator set running.
 17. A graphical display panel with appropriate navigation devices shall be provided to view all information noted above, as well as all engine status and alarm/shutdown conditions

(including those from an integrated engine emission control system). The display shall also include integrated provisions for adjustment of the gain and stability settings for the governing and voltage regulation systems.

18. Panel lighting system to allow viewing and operation of the control when the generator room or enclosure is not lighted.
19. Data Logging: The control system shall log the latest 20 different alarm and shut down conditions, the total number of times each alarm or shutdown has occurred, and the date and time the latest of these shutdown and fault conditions occurred.
20. DC control Power Monitoring: The control system shall continuously monitor DC power supply to the control, and annunciate low or high voltage conditions. It shall also provide an alarm indicating imminent failure of the battery bank based on degraded voltage recover on loading (engine cranking).

2.6 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Generator Overcurrent Protection: The generator set shall be provided with a UL Listed/CSA Certified protective device that is coordinated with the alternator provided to prevent damage to the generator set on any possible overload or overcurrent condition external to the machine. The protective device shall be listed as a utility grade protective device under UL category NRGU. The control system shall be subject to UL follow-up service at the manufacturing location to verify that the protective system is fully operational as manufactured. Protector shall perform the following functions:
 1. Initiates a generator kW 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 phase or multiple phase fault conditions, or on overload conditions, indicates an alarm conditions when the current flow is in excess of 110% of rated current for more than 10 seconds.
 3. Under single phase or multiple phase fault conditions, operates to switch off alternator excitation at the appropriate time to prevent damage to the alternator.
 4. The operator panel shall indicate the nature of the fault condition as either a short circuit or an overload.
 5. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot greater than 120% of nominal voltage.
 6. The protective system provided shall not include an instantaneous trip function.
 7. In addition to the Overcurrent Protection device above, the generator shall be provided with a UL listed, CSA certified, IEC rated, 3-pole, circuit breaker, rated for 100% output amperage rating of the generator mounted on the left side of a generator set. The circuit breaker has true RMS current sensing, adjustable rating plugs, LCD long-time pickup indication, The circuit breaker is UL listed at 100% of the frame rating for continuous duty.
- B. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground-fault. Integrate ground-fault alarm indication with other generator-set alarm indications.

2.7 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

- A. Comply with NEMA MG 1.

- B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.
- C. Electrical Insulation: Class H
- D. Temperature Rise: 105C over a 40C environment.
- 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. Permanent Magnet Generator (PMG) shall provide excitation power for optimum motor starting and short circuit performance.
- G. Enclosure: Drip-proof.
- H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified. The voltage regulation system shall be microprocessor-controlled, 3-phase true RMS sensing, full wave rectified, and provide a pulse-width modulated signal to the exciter. No exceptions or deviations to these requirements will be permitted.
- I. The alternator shall be provided with anti-condensation heater(s).
- J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- K. Subtransient Reactance: 12 to 13 percent maximum, based on the rating of the engine generator set.

2.8 VIBRATION ISOLATION DEVICES

- A. Vibration Isolation: Provide Spring Type Vibration Isolators. Quantity as recommended by manufacturer.

2.9 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. In addition, the equipment engine, skid, cooling system, and alternator shall have been subjected to actual prototype tests to validate the capability of the design under the abnormal conditions noted in NFPA110. Calculations and testing on similar equipment which are allowed under NFPA110 are not sufficient to meet this requirement.
- B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:
 - 1. Test engine generator set manufactured for this Project to demonstrate compatibility and functionality.
 - 2. Full load run.

3. Maximum power.
4. Voltage regulation.
5. Steady-state governing.
6. Single-step load pickup.
7. Simulated safety shutdowns.
8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

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

3.2 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

3.3 ON SITE ACCEPTANCE TEST

- A. The complete installation shall be tested to verify compliance with the performance requirements of this specification following completion of all site work. Testing shall be conducted by representative of the manufacturer, with required full supplied by Contractor. The Engineer shall be notified in advance and shall have the option to witness the tests. The generator set manufacturer shall provide a site test specification covering the entire system. This test shall not take place prior to acceptance of all other process and electrical equipment associated with the project so that the generator can be tested under normal operating conditions. Test shall include:
 1. Prior to start of active testing, all field connections for wiring, power conductors, and bus bar connections shall be checked for proper tightening torque.
 2. Installation acceptance tests to be conducted on site shall include a "cold start" test, a two (2) hour full load (resistive) test, and a one-step rated load pickup test in accordance with NFPA 110. Provide a resistive load bank and make temporary connections for full load test, if necessary. During the load test, record the following at 15 minute intervals:
 - a. Time of Day
 - b. KW
 - c. Volts per Phase
 - d. Amps per Phase
 - e. Engine RPM
 - f. Frequency
 - g. Engine Coolant Temperature
 - h. Oil Pressure

3. Perform a power failure test on the entire system installed. The test shall be conducted by opening the power supply from the utility service, and observing proper operation of the system for at least two (2) hours. Test other possible failure scenarios of the power system as needed.
4. Coordinate this training with that for the Automatic Transfer Switch. The automatic transfer switch and generator shall be tested and commissioned as a unit. If one fails startup and testing procedures, the other does as well.

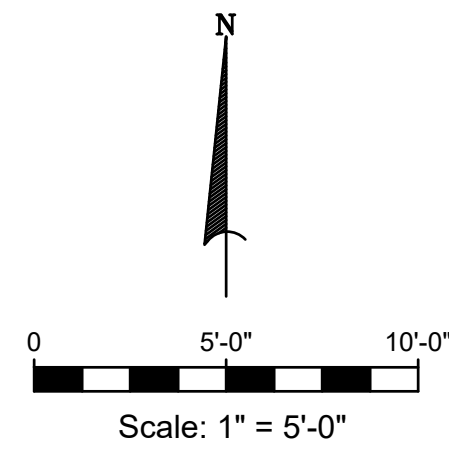
3.4 DEMONSTRATION

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

3.5 SERVICE AGREEMENT:

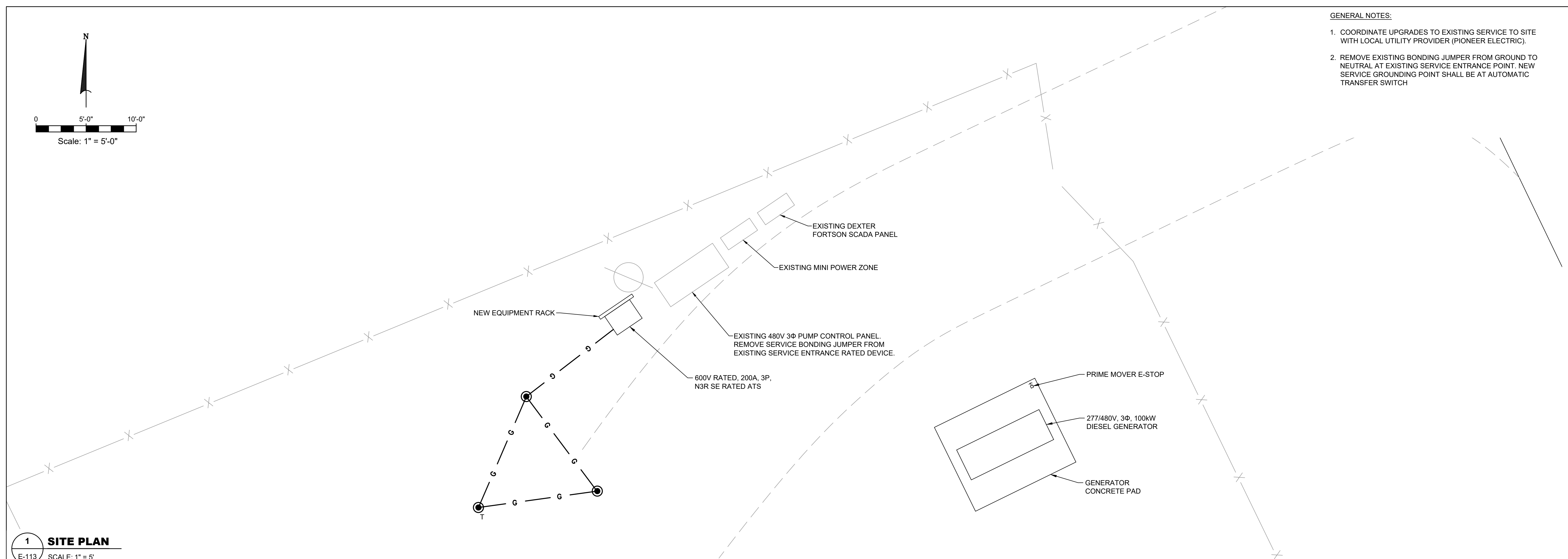
- A. The supplier shall include in the base price, a one-year service agreement. The maintenance shall be performed by factory authorized service technicians capable of servicing both the engine generator set and the transfer switch (es). This agreement shall include the following:
 1. Bi-annual load bank testing at 100% rated output.
 2. Generator supplier must have an in-house rental fleet with equipment sized to back up this project site.
 3. All engine maintenance as recommended by the service manual.
 4. All electrical controls maintenance and calibrations as recommended by the manufacturer.
 5. All auxiliary equipment as a part of the emergency systems.
 6. The supplier shall guarantee emergency service.
 7. All expendable maintenance items are to be included in this agreement.
 8. A copy of this agreement and a schedule shall be given to the Owner at the time of his acceptance, showing what work is to be accomplished and when.

END OF SECTION 26 3213.14

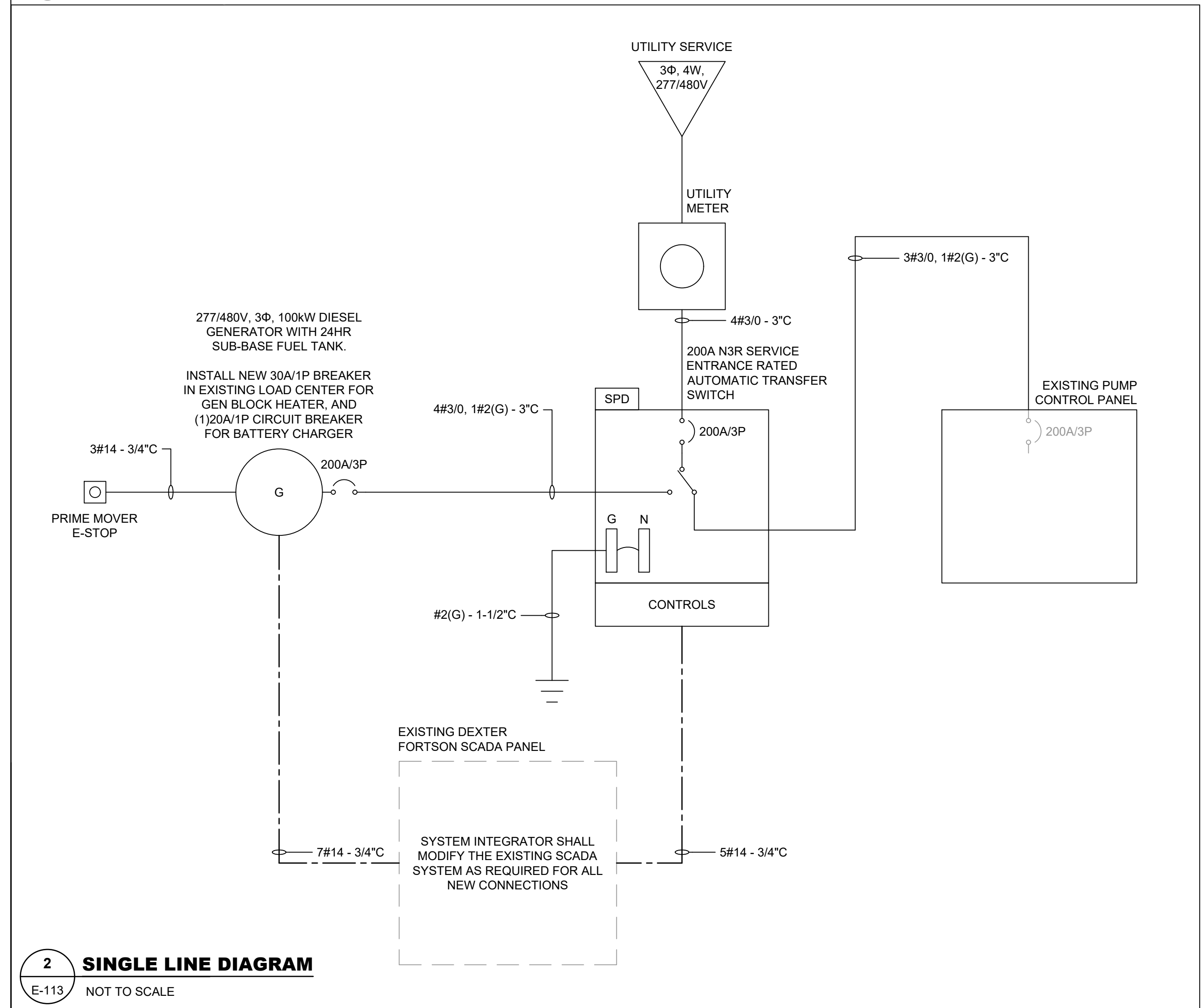


GENERAL NOTES:

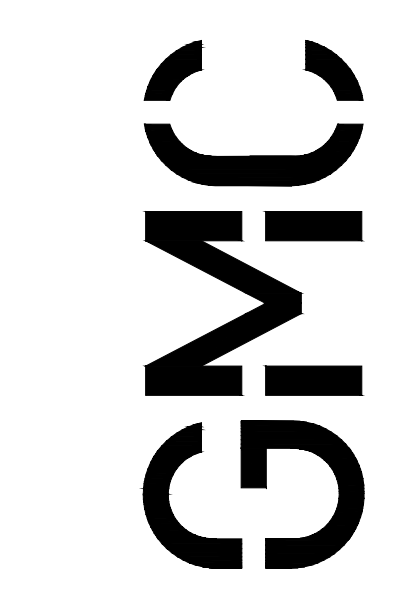
- COORDINATE UPGRADES TO EXISTING SERVICE TO SITE WITH LOCAL UTILITY PROVIDER (PIONEER ELECTRIC).
- REMOVE EXISTING BONDING JUMPER FROM GROUND TO NEUTRAL AT EXISTING SERVICE ENTRANCE POINT. NEW SERVICE GROUNDING POINT SHALL BE AT AUTOMATIC TRANSFER SWITCH



1 SITE PLAN
SCALE: 1" = 5'



2 SINGLE LINE DIAGRAM
NOT TO SCALE



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ISSUE	DATE
FINAL	11/26/2024
ADDENDUM #1	12/12/2024
DRAWN BY:	MBH
DESIGNED BY:	MBH
CHECKED BY:	JRD

DWSRF WATER TREATMENT PLANT REHABILITATION
FORT DEPOSIT WATER WORKS & SEWER BOARD
FORT DEPOSIT, ALABAMA
LOWNDES (& BUTLER) COUNTY, ALABAMA

GMC# CMGM24-0024
DWSRF# FS010348-01



ALTERNATE #1
WELL GENERATOR
AND ATS

E-113

DRAWING FILE: V:\Projects\0204 Projects\MGM\Projects without #\Fort Deposit Well & Treatment Plant\Drawings\Electrical\E-113 - FORT DEPOSIT WELL GENERATOR PLAN ALTR1.dwg
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