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### TRANSMITTAL COVER SHEET

DATE: JULY 27, 2023

TO: ALL PLAN HOLDERS OF RECORD

FROM: LAUREN GALLO

PROJECT: HIGH SERVICE PUMP UPGRADES AND ELECTRICAL IMPROVEMENTS  
FOR THE TALLADEGA COUNTY COMMISSION  
GMC PROJECT NO. CBHM210088(6)

RE: ADDENDUM NO. 1 AND  
ACKNOWLEDGEMENT OF RECEIPT OF ADDENDUM NO. 1

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### ACKNOWLEDGEMENT OF RECEIPT:

PLEASE PRINT RECIPIENT'S NAME, FIRM, AND DATE RECEIVED.

THEN E-MAIL BACK TO [lauren.gallo@gmcnetwork.com](mailto:lauren.gallo@gmcnetwork.com) FOR OUR RECORDS AND  
TO ACKNOWLEDGE YOUR RECEIPT OF THIS ADDENDUM.

-----  
NAME (PLEASE PRINT)

-----  
FIRM (PLEASE PRINT)

-----  
DATE RECEIVED (PLEASE PRINT)

If there are any problems with this transmittal, please contact sender, at the number listed above.



# ADDENDUM NUMBER 1

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HIGH SERVICE PUMP UPGRADES AND ELECTRICAL IMPROVEMENTS  
FOR THE  
TALLADEGA COUNTY COMMISSION  
GMC PROJECT NO. CBHM210088(6)

## 1. Revisions to Project Manual

- 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.
- 1.2 Revised Specification 26 2923 Variable-Frequency Motor Controllers (Addendum No. 1) shall be incorporated into the project manual.

## 2. Revisions to Plans

- 2.1 A revised plan set is included in the Addendum, dated July 27, 2023.

## 3. Clarifications

- 3.1 The bypass soft start shall be removed from the new VFD.
- 3.2 Low voltage transformer/panelboard setup has changed to a unit substation design, Square D mini power zone Model No. MPZ30T2F
- 3.3 HVAC is 480V, fed from HVA.
- 3.4 E-House length has been increased to 20' in length to accommodate new equipment sizes.
- 3.5 120V circuits shall be added for motor winding heaters, along with local toggle switch for maintenance.
- 3.6 The Generator size has been reduced from 400KW to 250KW.

## 4. Questions

- 4.1 Question: - What kind of time frame will we have to have the clear well down enough to install the new pumps?  
Answer – The contractor shall be prepared to perform the work that is required to lower the clear well level at off-peak hours of the day. The clear well can be lowered approx. 6 – 8 hours as needed per pump. All work shall be coordinated with the Owner and WTF operations staff prior to any work taking place.
- 4.2 Question: - What kind of time frame will we have to install the new discharge piping?  
Answer – The contractor shall be prepared to perform the work that is required to lower the clear well level at off-peak hours of the day. The clear well can be lowered approx. 4-6 hours as needed per pump. All work shall be coordinated with the Owner and WTF operations staff prior to any work taking place.
- 4.3 Question - Is the project AIS?  
Answer – No.
- 4.4 Question – What all is to be painted? Just the piping we install?  
Answer – All new piping, fittings, valves, pump heads, etc. that are installed or relocated shall be painted, to match the existing piping color.



**5. Acknowledgement of Receipt**

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

5.1.1 Note on Page 3 of the Bid Form – Bidder acknowledges receipt of “Addendum No. 1.”

**AND**

5.1.2 EMAIL Goodwyn Mills Cawood, LLC immediately at [lauren.gallo@gmcnetwork.com](mailto:lauren.gallo@gmcnetwork.com) and confirm that EMAIL has been received.

**6. Conclusion**

6.1 This is the end of Addendum No. 1, dated Thursday, July 27, 2023.

SECTION 26 29 23 - VARIABLE-FREQUENCY MOTOR CONTROLLERS (ADDENDUM #1)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes separately enclosed, preassembled, combination VFDs, rated 600 V and less, for speed control of three-phase, squirrel-cage induction motors.

1.3 DEFINITIONS

- A. CE: Conformance Europeene (European Compliance).
- B. CPT: Control power transformer.
- C. DDC: Direct digital control.
- D. EMI: Electromagnetic interference.
- E. LED: Light-emitting diode.
- F. NC: Normally closed.
- G. NO: Normally open.
- H. OCPD: Overcurrent protective device.
- I. PID: Control action, proportional plus integral plus derivative.
- J. RFI: Radio-frequency interference.
- K. VFD: Variable-frequency Drive.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type and rating of VFD indicated.
  - 1. Include dimensions and finishes for VFDs.
  - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

- B. Shop Drawings: For each VFD indicated.
  - 1. Include mounting and attachment details.
  - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 3. Include diagrams for power, signal, and control wiring.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Floor plans, drawn to scale, showing dimensioned layout on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  - 1. Required working clearances and required area above and around VFDs.
  - 2. Show VFD layout and relationships between electrical components and adjacent structural and mechanical elements.
  - 3. Show support locations, type of support, and weight on each support.
  - 4. Indicate field measurements.
- B. Qualification Data: For testing agency.
- C. Seismic Qualification Certificates: For each VFD, accessories, and components, from manufacturer.
  - 1. Certificate of compliance.
  - 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.
- D. Product Certificates: For each VFD from manufacturer.
- E. Harmonic Analysis Report: Provide Project-specific calculations and manufacturer's statement of compliance with IEEE 519.
- F. Source quality-control reports.
- G. Field quality-control reports.
- H. Sample Warranty: For special warranty.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For VFDs to include in emergency, operation, and maintenance manuals.
  - 1. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

- a. Manufacturer's written instructions for testing and adjusting thermal-magnetic circuit breaker and motor-circuit protector trip settings.
- b. Manufacturer's written instructions for setting field-adjustable overload relays.
- c. Manufacturer's written instructions for testing, adjusting, and reprogramming microprocessor control modules.
- d. Manufacturer's written instructions for setting field-adjustable timers, controls, and status and alarm points.
- e. Load-Current and Overload-Relay Heater List: Compile after motors have been installed, and arrange to demonstrate that selection of heaters suits actual motor nameplate, full-load currents.
- f. Load-Current and List of Settings of Adjustable Overload Relays: Compile after motors have been installed, and arrange to demonstrate that switch settings for motor-running overload protection suit actual motors to be protected.

### 1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  1. Power Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
  2. Control Power Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.
  3. Indicating Lights: Two of each type and color installed.
  4. Auxiliary Contacts: Furnish one spare(s) for each size and type of magnetic controller installed.
  5. Power Contacts: Furnish three spares for each size and type of magnetic contactor installed.

### 1.8 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
  1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. If stored in space that is not permanently enclosed and air conditioned, remove loose packing and flammable materials from inside controllers and install temporary electric heating, with at least 250 W per controller.
- B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for VFDs, including clearances between VFDs, and adjacent surfaces and other items.

## 1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace VFDs that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. ABB
  - 2. Square D; by Schneider Electric
  - 3. EATON
  - 4. Allen-Bradley

## 2.2 SYSTEM DESCRIPTION

- A. General Requirements for VFDs:
  - 1. VFDs and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  - 2. Comply with NEMA ICS 7, NEMA ICS 61800-2, and UL 508A.
- B. Application: Constant torque and variable torque.
- C. VFD Description: Variable-frequency motor controller, consisting of power converter that employs 6-pulse-width-modulated inverter and active front end, factory built and tested in an enclosure, with integral disconnecting means, ~~a start-rated bypass-reduced voltage solid state starter~~, output motor protection filter, and overcurrent and overload protection; listed and labeled by an NRTL as a complete unit; arranged to provide self-protection, protection, and variable-speed control of one or more three-phase induction motors by adjusting output voltage and frequency.
  - 1. Units suitable for operation of NEMA MG 1, Design A and Design B motors, as defined by NEMA MG 1, Section IV, Part 30, "Application Considerations for Constant Speed Motors Used on a Sinusoidal Bus with Harmonic Content and General Purpose Motors Used with Adjustable-Voltage or Adjustable-Frequency Controls or Both."
  - 2. Units suitable for operation of inverter-duty motors as defined by NEMA MG 1, Section IV, Part 31, "Definite-Purpose Inverter-Fed Polyphase Motors."
  - 3. Listed and labeled for integrated short-circuit current (withstand) rating by an NRTL acceptable to authorities having jurisdiction.
- D. Design and Rating: Match load type, such as fans, blowers, and pumps; and type of connection used between motor and load such as direct or through a power-transmission connection.

- E. Output Rating: Three phase; 10 to 60 Hz, with voltage proportional to frequency throughout voltage range; maximum voltage equals input voltage.
- F. Unit Operating Requirements:
1. Input AC Voltage Tolerance: Plus 10 and minus 15 percent of VFD input voltage rating.
  2. Input AC Voltage Unbalance: Not exceeding 5 percent.
  3. Input Frequency Tolerance: Plus or minus 3 percent of VFD frequency rating.
  4. Minimum Efficiency: 96 percent at 60 Hz, full load.
  5. Minimum Displacement Primary-Side Power Factor: 96 percent under any load or speed condition.
  6. Minimum Short-Circuit Current (Withstand) Rating: 65 kA.
  7. Ambient Temperature Rating: Not less than 32 deg F and not exceeding 122 deg F.
  8. Humidity Rating: Less than 95 percent (noncondensing).
  9. Altitude Rating: Not exceeding 3300 feet.
  10. Vibration Withstand: Comply with NEMA ICS 61800-2.
  11. Overload Capability: 1.5 times the base load current for 60 seconds; minimum of 1.8 times the base load current for three seconds.
  12. Starting Torque: Minimum 100 percent of rated torque from 3 to 60 Hz.
  13. Speed Regulation: Plus or minus 5 percent.
  14. Output Carrier Frequency: Selectable; 0.5 to 15 kHz.
  15. Stop Modes: Programmable; includes fast, free-wheel, and dc injection braking.
- G. Inverter Logic: Microprocessor based, 32 bit, isolated from all power circuits.
- H. Isolated Control Interface: Allows VFDs to follow remote-control signal over a minimum 40:1 speed range.
1. Signal: Electrical.
- I. Internal Adjustability Capabilities:
1. Minimum Speed: 5 to 25 percent of maximum rpm.
  2. Maximum Speed: 80 to 100 percent of maximum rpm.
  3. Acceleration: 0.1 to 999.9 seconds.
  4. Deceleration: 0.1 to 999.9 seconds.
  5. Current Limit: 30 to minimum of 150 percent of maximum rating.
- J. Self-Protection and Reliability Features:
1. Surge Suppression: Factory installed as an integral part of the VFD, complying with UL 1449 SPD, Type 1 or Type 2.
  2. Loss of Input Signal Protection: Selectable response strategy, including speed default to a percent of the most recent speed, a preset speed, or stop; with alarm.
  3. Under- and overvoltage trips.
  4. Inverter overcurrent trips.
  5. VFD and Motor-Overload/Overtemperature Protection: Microprocessor-based thermal protection system for monitoring VFDs and motor thermal characteristics, and for providing VFD overtemperature and motor-overload alarm and trip; settings selectable via the keypad.



6. Critical frequency rejection, with three selectable, adjustable deadbands.
  7. Instantaneous line-to-line and line-to-ground overcurrent trips.
  8. Loss-of-phase protection.
  9. Reverse-phase protection.
  10. Short-circuit protection.
  11. Motor-overtemperature fault.
- K. Automatic Reset/Restart: Attempt three restarts after drive fault or on return of power after an interruption and before shutting down for manual reset or fault correction; adjustable delay time between restart attempts.
- L. Power-Interruption Protection: To prevent motor from re-energizing after a power interruption until motor has stopped, unless "Bidirectional Autospeed Search" feature is available and engaged.
- M. Bidirectional Autospeed Search: Capable of starting VFD into rotating loads spinning in either direction and returning motor to set speed in proper direction, without causing damage to drive, motor, or load.
- N. Torque Boost: Automatically varies starting and continuous torque to at least 1.5 times the minimum torque to ensure high-starting torque and increased torque at slow speeds.
- O. Motor Temperature Compensation at Slow Speeds: Adjustable current fall-back based on output frequency for temperature protection of self-cooled, fan-ventilated motors at slow speeds.
- P. Integral Input Disconnecting Means and OCPD: UL 489, instantaneous-trip circuit breaker with pad-lockable, door-mounted handle mechanism.
1. Disconnect Rating: Not less than 115 percent of VFD input current rating.
  2. Disconnect Rating: Not less than 115 percent of NFPA 70 motor full-load current rating or VFD input current rating, whichever is larger.
  3. Auxiliary Contacts: NO or NC, arranged to activate before switch blades open.
  4. Auxiliary contacts "a" and "b" arranged to activate with circuit-breaker handle.
  5. NC alarm contact that operates only when circuit breaker has tripped.

## 2.3 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: VFDs shall withstand the effects of earthquake motions determined according to ASCE/SEI 7. The designated VFDs shall be tested and certified by an NRTL as meeting the ICC-ES AC 156 test procedure requirements.
1. The term "withstand" means "the unit will remain in place without separation of any parts when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

## 2.4 CONTROLS AND INDICATION

- A. Status Lights: Door-mounted LED indicators displaying the following conditions:

1. Power on.
  2. Run.
  3. Overvoltage.
  4. Line fault.
  5. Overcurrent.
  6. External fault.
- B. Panel-Mounted Operator Station: Manufacturer's standard front-accessible, sealed keypad and plain-English-language digital display; allows complete programming, program copying, operating, monitoring, and diagnostic capability.
1. Keypad: In addition to required programming and control keys, include keys for HAND, OFF, and AUTO modes.
  2. Security Access: Provide electronic security access to controls through identification and password with at least three levels of access: View only; view and operate; and view, operate, and service.
    - a. Control Authority: Supports at least four conditions: Off, local manual control at VFD, local automatic control at VFD, and automatic control through a remote source.
- C. Historical Logging Information and Displays:
1. Real-time clock with current time and date.
  2. Running log of total power versus time.
  3. Total run time.
  4. Fault log, maintaining last four faults with time and date stamp for each.
- D. Indicating Devices: Digital display mounted flush in VFD door and connected to display VFD parameters including, but not limited to:
1. Output frequency (Hz).
  2. Motor speed (rpm).
  3. Motor status (running, stop, fault).
  4. Motor current (amperes).
  5. Motor torque (percent).
  6. Fault or alarming status (code).
  7. PID feedback signal (percent).
  8. DC-link voltage (V dc).
  9. Set point frequency (Hz).
  10. Motor output voltage (V ac).
- E. Control Signal Interfaces:
1. Electric Input Signal Interface:
    - a. A minimum of two programmable analog inputs: 4- to 20-mA dc.
    - b. A minimum of six multifunction programmable digital inputs.
  2. Pneumatic Input Signal Interface: 3 to 15 psig.

3. Remote Signal Inputs: Capability to accept any of the following speed-setting input signals from the SCADA system:
    - a. 0- to 10-V dc.
    - b. 4- to 20-mA dc.
    - c. Potentiometer using up/down digital inputs.
    - d. Fixed frequencies using digital inputs.
  4. Output Signal Interface: A minimum of one programmable analog output signal(s) (4- to 20-mA dc), which can be configured for any of the following:
    - a. Output frequency (Hz).
    - b. Output current (load).
    - c. DC-link voltage (V dc).
    - d. Motor torque (percent).
    - e. Motor speed (rpm).
    - f. Set point frequency (Hz).
  5. Remote Indication Interface: A minimum of two programmable dry-circuit relay outputs (120-V ac, 1 A) for remote indication of the following:
    - a. Motor running.
    - b. Set point speed reached.
    - c. Fault and warning indication (overtemperature or overcurrent).
    - d. PID high- or low-speed limits reached.
  6. EthernetIP Communications protocol shall be utilized with an Ethernet communications port to relay all available information from the VFD to the SCADA system.
- F. PID Control Interface: Provides closed-loop set point, differential feedback control in response to dual feedback signals. Allows for closed-loop control of fans and pumps for pressure, flow, or temperature regulation.
1. Number of Loops: One.

## 2.5 LINE CONDITIONING AND FILTERING

- A. Input Line Conditioning: VFD shall be 6-pulse with Active Front End filtering, to limit total demand (harmonic current) distortion and total harmonic voltage demand at the defined point of common coupling to meet IEEE 519 recommendations.

## 2.6 OPTIONAL FEATURES

- A. Multiple-Motor Capability: VFD suitable for variable-speed service to multiple motors. Overload protection shuts down VFD and motors served by it, and generates fault indications when overload protection activates.
  1. Configure to allow two or more motors to operate simultaneously at the same speed; separate overload relay for each controlled motor.

2. Configure to allow two motors to operate separately; operator selectable via local or remote switch or contact closures; single overload relay for both motors; separate output magnetic contactors for each motor.
  3. Configure to allow two motors to operate simultaneously and in a lead/lag mode, with one motor operated at variable speed via the power converter and the other at constant speed via the bypass controller; separate overload relay for each controlled motor.
- B. Damper control circuit with end-of-travel feedback capability.
  - C. Sleep Function: Senses a minimal deviation of a feedback signal and stops the motor. On an increase in speed-command signal deviation, VFD resumes normal operation.
  - D. Motor Preheat Function: Preheats motor when idle to prevent moisture accumulation in the motor.
  - E. Remote Indicating Circuit Terminals: Mode selection, controller status, and controller fault.
  - F. Remote digital operator kit.
  - G. Communication Port: Ethernet port, or equivalent connection capable of connecting a printer.

## 2.7 ENCLOSURES

- A. VFD Enclosures: NEMA 1

## 2.8 ACCESSORIES

- A. General Requirements for Control-Circuit and Pilot Devices: NEMA ICS 5; factory installed in VFD enclosure cover unless otherwise indicated.
  1. Push Buttons: Covered.
  2. Pilot Lights: Push to test.
  3. Selector Switches: Rotary type.
  4. Stop and Lockout Push-Button Station: Momentary-break, push-button station with a factory-applied hasp arranged so padlock can be used to lock push button in depressed position with control circuit open.
- B. Control Relays: Auxiliary and adjustable solid-state time-delay relays.
- C. Phase-Failure, Phase-Reversal, and Undervoltage and Overvoltage Relays: Solid-state sensing circuit with isolated output contacts for hard-wired connections. Provide adjustable undervoltage, overvoltage, and time-delay settings.
  1. Current Transformers: Continuous current rating, basic impulse insulating level (BIL) rating, burden, and accuracy class suitable for connected circuitry. Comply with IEEE C57.13.
- D. Breather and drain assemblies, to maintain interior pressure and release condensation in NEMA 250, Type 4X enclosures installed outdoors or in unconditioned interior spaces subject to humidity and temperature swings.

- E. Space heaters, with NC auxiliary contacts, to mitigate condensation in NEMA 250, Type 3R or Type 4X enclosures installed outdoors or in unconditioned interior spaces subject to humidity and temperature swings.
- F. Cooling Fan and Exhaust System: For NEMA 250, Type 12; UL 508 component recognized: Supply fan, with composite intake and exhaust grills; 120-V ac; obtained from integral CPT.
- G. Sun shields installed on fronts, sides, and tops of enclosures installed outdoors and subject to direct and extended sun exposure.
- H. Spare control-wiring terminal blocks; unwired.

## 2.9 SOURCE QUALITY CONTROL

- A. Testing: Test and inspect VFDs according to requirements in NEMA ICS 61800-2.
  - 1. Test each VFD while connected to a motor that is comparable to that for which the VFD is rated.
  - 2. Verification of Performance: Rate VFDs according to operation of functions and features specified.
- B. VFDs will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas, surfaces, and substrates to receive VFDs, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of the Work.
- B. Examine VFD before installation. Reject VFDs that are wet, moisture damaged, or mold damaged.
- C. Examine roughing-in for conduit systems to verify actual locations of conduit connections before VFD installation.
- D. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Wall-Mounting Controllers: Install with tops at uniform height and with disconnect operating handles not higher than 79 inches above finished floor, unless otherwise indicated, and by bolting

units to wall or mounting on lightweight structural-steel channels bolted to wall. For controllers not on walls, provide freestanding racks complying with Section 26 05 29 "Hangers and Supports for Electrical Systems."

- B. Floor-Mounting Controllers: Install VFDs on 4-inch nominal thickness concrete base. Comply with requirements for concrete base specified in Section 03 30 00 "Cast-in-Place Concrete."
  - 1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
  - 2. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
  - 3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 4. Install anchor bolts to elevations required for proper attachment to supported equipment.
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- D. Install fuses in each fusible-switch VFD.
- E. Install fuses in control circuits if not factory installed. Comply with requirements in Section 26 28 13 "Fuses."
- F. Install heaters in thermal-overload relays. Select heaters based on actual nameplate full-load amperes after motors are installed.
- G. Install, connect, and fuse thermal-protector monitoring relays furnished with motor-driven equipment.
- H. Comply with NECA 1.

### 3.3 CONTROL WIRING INSTALLATION

- A. Install wiring between VFDs and remote devices and facility's central-control system. Comply with requirements in Section 26 05 23 "Control-Voltage Electrical Power Cables."
- B. Bundle, train, and support wiring in enclosures.
- C. Connect selector switches and other automatic-control devices where applicable.
  - 1. Connect selector switches to bypass only those manual- and automatic-control devices that have no safety functions when switches are in manual-control position.
  - 2. Connect selector switches with control circuit in both manual and automatic positions for safety-type control devices such as low- and high-pressure cutouts, high-temperature cutouts, and motor-overload protectors.

### 3.4 IDENTIFICATION

- A. Identify VFDs, components, and control wiring. Comply with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
  2. Label each VFD with engraved nameplate.
  3. Label each enclosure-mounted control and pilot device.
- B. Operating Instructions: Frame printed operating instructions for VFDs, including control sequences and emergency procedures. Fabricate frame of finished metal, and cover instructions with clear acrylic plastic. Mount on front of VFD units.

### 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- C. Perform tests and inspections with the assistance of a factory-authorized service representative.
- D. Acceptance Testing Preparation:
1. Test insulation resistance for each VFD element, bus, component, connecting supply, feeder, and control circuit.
  2. Test continuity of each circuit.
- E. Tests and Inspections:
1. Inspect VFD, wiring, components, connections, and equipment installation. Test and adjust controllers, components, and equipment.
  2. Test insulation resistance for each VFD element, component, connecting motor supply, feeder, and control circuits.
  3. Test continuity of each circuit.
  4. Verify that voltages at VFD locations are within 10 percent of motor nameplate rated voltages. If outside this range for any motor, notify Construction Manager before starting the motor(s).
  5. Test each motor for proper phase rotation.
  6. Perform tests according to the Inspection and Test Procedures for Adjustable Speed Drives stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  7. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  8. Perform the following infrared (thermographic) scan tests and inspections, and prepare reports:
    - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each VFD. Remove front panels so joints and connections are accessible to portable scanner.
    - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each VFD 11 months after date of Substantial Completion.

- c. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
  - 9. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
  - F. VFDs will be considered defective if they do not pass tests and inspections.
  - G. Prepare test and inspection reports, including a certified report that identifies the VFD and describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations made after remedial action.
- 3.6 STARTUP SERVICE
- A. Engage a factory-authorized service representative to perform startup service.
    - 1. Complete installation and startup checks according to manufacturer's written instructions.
- 3.7 ADJUSTING
- A. Program microprocessors for required operational sequences, status indications, alarms, event recording, and display features. Clear events memory after final acceptance testing and prior to Substantial Completion.
  - B. Set field-adjustable switches, auxiliary relays, time-delay relays, timers, and overload-relay pickup and trip ranges.
  - C. Adjust the trip settings of instantaneous-only circuit breakers and thermal-magnetic circuit breakers with adjustable, instantaneous trip elements. Initially adjust to 6 times the motor nameplate full-load amperes and attempt to start motors several times, allowing for motor cool-down between starts. If tripping occurs on motor inrush, adjust settings in increments until motors start without tripping. Do not exceed 8 times the motor full-load amperes (or 11 times for NEMA Premium Efficient motors if required). Where these maximum settings do not allow starting of a motor, notify Construction Manager before increasing settings.
  - D. Set the taps on reduced-voltage autotransformer controllers.
  - E. Set field-adjustable pressure switches.
- 3.8 PROTECTION
- A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions until controllers are ready to be energized and placed into service.
  - B. Replace VFDs whose interiors have been exposed to water or other liquids prior to Substantial Completion.



3.9 DEMONSTRATION

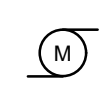
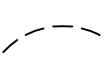
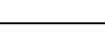
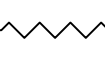
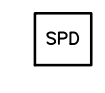
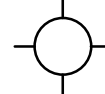



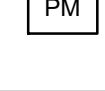
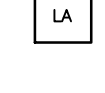


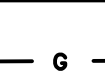

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, reprogram, and maintain VFDs.

END OF SECTION 26 29 23

## GENERAL ELECTRICAL NOTES

1. ALL ELECTRICAL WORK AND MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE N.E.C. AND THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
2. WIRING SYSTEMS SHALL CONSIST OF COPPER WIRING INSTALLED IN CONDUIT. MINIMUM WIRE SIZE SHALL BE #12AWG. MINIMUM CONDUIT SIZE SHALL BE 3/4".
3. CONDUIT ABOVE CEILINGS, IN WALLS, ETC. SHALL BE EMT, WHERE NOT SUBJECT TO MOISTURE OR DAMAGE. WHERE SUBJECT TO DAMAGE, OUTSIDE BUILDING SHALL BE GALVANIZED RIGID CONDUIT. CONDUITS (ALL SIZES) ROUTED EXPOSED SHALL BE GALVANIZED RIGID CONDUIT. CONDUITS SHALL BE SIZED IN ACCORDANCE WITH TABLE 1, CHAPTER NINE OF N.E.C.
4. CONDUCTORS SHALL BE 99% COPPER (NO ALUMINUM CONDUCTORS WILL BE ACCEPTED).
5. EQUIPMENT GROUNDING SHALL BE IN ACCORDANCE WITH N.E.C.
6. ALL ELECTRICAL EQUIPMENT SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.
7. ALL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES TO AVOID INTERFERENCES AND CONFLICTS. REFER TO THE DRAWINGS OF THE RESPECTIVE SYSTEMS PRIOR TO SUBMISSION OF BIDS FOR ADDITIONAL WORK WHICH MAY BE REQUIRED AS PART OF THIS WORK. NO ALLOWANCES WILL BE MADE FOR THE LACK OF COORDINATION BETWEEN DISCIPLINES OR SYSTEMS AND EQUIPMENT.
8. THE WORK SHALL BE COORDINATED WITH THE ENGINEERING DOCUMENTS FOR THE EXACT LOCATION OF LIGHT FIXTURES, EQUIPMENT, DEVICES, ETC. TO ASSURE PROPER PLACEMENT OF SAID DEVICES AND EQUIPMENT. WHERE A CONFLICT EXISTS BETWEEN ANY TWO DOCUMENTS, NOTIFY THE ENGINEER PRIOR TO ANY INSTALLATION FOR RESOLUTION.
9. THE CONTRACTOR SHALL VERIFY ALL EQUIPMENT BEING INSTALLED PRIOR TO INSTALLATION TO ASSURE THAT THE FEEDER, DISCONNECT, STARTER, OVER CURRENT PROTECTION, ETC. MATCHES THE ACTUAL NAMEPLATE DATA AS SUPPLIED BY THE MANUFACTURER.
10. SPECIFIC REQUIREMENTS REGARDING MATERIALS, WORKMANSHIP, AND THE WORK TO BE DONE ARE COVERED BY THE SPECIFICATIONS WHICH COMPLEMENT THE PLANS. WORK CALLED FOR BY THE SPECIFICATIONS OR THE PLANS IS REQUIRED THE SAME AS IF REQUIRED BY BOTH. WHERE A CONFLICT EXISTS BETWEEN THE PLANS AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS OF THE TWO SHALL APPLY.
11. REFER TO EQUIPMENT CUT SHEETS AND MANUFACTURER'S DATA FOR ROUGH IN LOCATIONS OF ELECTRICAL CONNECTIONS AND INTERCONNECTIONS OF ALL EQUIPMENT.
12. INSTALL OVER CURRENT PROTECTION AND BRANCH CIRCUIT WIRING PER U.L. LISTING
13. REQUIREMENTS FOR EQUIPMENT SERVED - REFER TO NAMEPLATE DATA.
14. PROVIDE START-UP ASSISTANCE TO OWNER PERSONNEL AND EQUIPMENT TECHNICIANS TO CONFIRM CORRECT PHASE ROTATION, PROPER OPERATION & SEQUENCE, AND CONTROLS.
15. ELECTRICAL CONTRACTOR TO FIELD MARK ELECTRICAL SERVICE EQUIPMENT WITH A CONSPICUOUS AND PERMANENT LABEL THAT INDICATES THE AVAILABLE FAULT CURRENT PER NEC 110.16 & 110.24.
16. ELECTRICAL CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCEMENT OF ANY EXCAVATION.
17. ELECTRICAL EQUIPMENT SHALL BE FULLY RATED FOR THE FAULT CURRENT INDICATED ON THE PLANS. NO SERIES RATING WILL BE ACCEPTED.
18. SUBSURFACE CONDUIT SHALL BE SCHEDULE 40PVC UNO. VERTICAL TURN UPS SHALL BE GRC SWEEP 90S WITH A BITUMASTIC COATING UNO.
19. ALL EMPTY CONDUITS SHALL HAVE A 200 LBS NYLON PULL STRING AND BE CAPPED AT BOTH ENDS. ALL CONDUITS SHALL BE ADEQUATELY SEALED TO PREVENT ENTRY OF RODENTS, WATER, AND OTHER FOREIGN MATTER. DUCT TAPE IS NOT AN ACCEPTABLE MEANS OF CAPPING.
20. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO VISIT THE SITE AND TO BECOME THOROUGHLY FAMILIAR WITH ALL EXISTING CONDITIONS PRIOR TO BID DATE AS HE SHALL BE RESPONSIBLE FOR THE SAME.
21. ELECTRICAL CONTRACTOR WILL PROVIDE ALL MATERIAL TO FINALIZE A NEAT, COMPLETE, AND PROPERLY WORKING ELECTRICAL SYSTEM WHICH CONFORMS TO ALL LOCAL CODES AND THE NATIONAL ELECTRICAL CODE (N.E.C.), PLANS, AND SPECIFICATIONS.
22. CONTRACTOR SHALL REPAIR ANY DISTURBED AREA TO SAME COMPACTION, GRADE, SLOPE, ETC. AS ORIGINAL AREA INCLUDING REPLACEMENT OF SOD, GRASS, ROCK, GRAVEL, RIP-RAP, ETC. TO THE SATISFACTION OF THE OWNER AND ENGINEER.
23. SLOPE ALL AREAS AROUND CONCRETE PADS TO PREVENT WATER PONDING.
24. CLEAN UP ALL DEBRIS AROUND CONSTRUCTION SITE DAILY.
25. REMOVE ANY SPILLED DIRT, CONCRETE, ETC. FROM ANY DRIVEWAYS, ROADWAYS OR CONSTRUCTION SITE AS DIRECTED BY OWNER OR ENGINEER.
26. CONTRACTOR SHALL CUT AND PATCH ALL CONCRETE TO MATCH EXISTING WHERE REQUIRED TO INSTALL UNDERGROUND CONDUIT.

### LEGEND

MOTOR - HORSEPOWER AS INDICATED.	
CONDUIT OR RACEWAY UNDERGROUND OR CONCEALED IN FLOOR SLAB.	
ABOVE GROUND CONDUIT.	
FLEX CONDUIT.	
SURGE PROTECTIVE DEVICE. SEE SPECIFICATIONS FOR FOR DETAILS.	
SEE LUMINAIRE FIXTURE SCHEDULE. FURNISH AND INSTALL WEATHER PROOF SWITCH AT BOTTOM OF POLE TO CONTROL FIXTURE.	
WALL SWITCH SPST 48" AFF TO CENTER UNO 20A 120/277V. WEATHER PROOF.	
FLOW METER	
PRESSURE INDICATING TRANSMITTER	
POWER MONITOR	
LIGHTNING ARRESTOR. SEE SPECIFICATIONS FOR DETAILS.	
GROUND CONNECTION, EXOTHERMIC.	
GROUND ROD & CONNECTION. ('T' INDICATES TEST WELL)	
GROUND CONNECTION, 1-HOLE OR 2-HOLE SOLDERLESS MECHANICAL OR COMPRESSION LUG.	
GROUND CABLE FOR GROUNDING ELECTRODE SYSTEM (GES).	

### ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERES	FIX	FIXTURE	P	POLE
AC	AIR CONDITIONING	FLUOR.	FLUORESCENT	PC	PHOTO CELL
ACT	ABOVE COUNTER TOP	GFI	GROUND FAULT INTERRUPTER	PMS	PROPERTY MANAGEMENT SYSTEM
AFF	ABOVE FINISHED FLOOR	GRC	GALVANIZED RIGID STEEL CONDUIT	PNL	PANEL
AIC	AMPERES INTERRUPTING CAPACITY (MIN)	GRND, G	GROUND	PVC	POLYVINYL CHLORIDE
APPROX.	APPROXIMATELY	HP	HORSEPOWER	RS	RAPID START
AWG	AMERICAN WIRE GAUGE	IAW	IN ACCORDANCE WITH	RSC	RIGID STEEL CONDUIT
ANN	ANNUNCIATOR	IF	INSIDE FROST	SD	SMOKE DETECTOR
BLDG	BUILDING	IG	ISOLATED GROUND	SIM	SIMILAR
BPS	BOLTED PRESSURE SWITCH	INCAN	INCANDESCENT	S/S	STAINLESS STEEL
C	CONDUIT	J	JUNCTION	SPST	SINGLE POLE SINGLE THROW
CAT	CATALOG	KVA	KILO-VOLT-AMPERE	T	TRANSFORMER
CATV	CABLE TELEVISION	KW	KILOWATT	TC	TRAY CABLE
CKT	CIRCUIT	LAHJ	LOCAL AUTHORITY HAVING JURISDICTION	TBB	TELEPHONE BACKBOARD
CONT	CONTINUATION	LGT	LIGHT	TEL	TELEPHONE
CR	CARD READER	M	METER	TM	TV MONITOR
DD	DUCT DETECTOR	MAT	MASTER ANTENNA TELEVISION	TSP	TWISTED SHIELDED PAIR
DIA	DIAMETER	MAX	MAXIMUM	TYP	TYPICAL
DIM	DIMENSION	MCM	THOUSAND CIRCULAR MILS	UNO	UNLESS OTHERWISE NOTED
DP	DISTRIBUTION PANEL	MDP	MAIN DISTRIBUTION PANEL	V	VOLT
DWG	DRAWINGS	MIN	MINIMUM	W	WIRE
EA	EACH	MLO	MAIN LUGS ONLY	WP	WEATHERPROOF
EC	EMPTY CONDUIT	MPC	MAIN POWER CENTER	WW	WARM WHITE
ELEC	ELECTRICAL	MTD, MTG	MOUNT (ED), (ING)	XFMR	TRANSFORMER
EMER	EMERGENCY	N	NORTH	PDC	POWER DISTRIBUTION CONTROLLER
EMT	ELECTRICAL METALLIC TUBING	NEC	NATIONAL ELECTRIC CODE	E.W.	EACH WAY
EOL	END OF LINE RESISTOR	NIC	NOT IN CONTRACT		
EQUIP	EQUIPMENT	NO	NUMBER		
F	FUSED	NTS	NOT TO SCALE		
FA	FIRE ALARM	OC	ON CENTER		
FIN	FINISH	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION		



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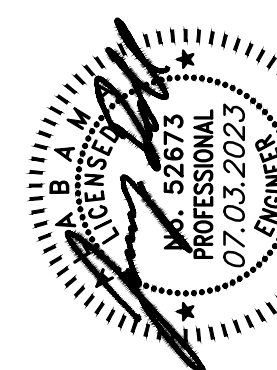


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REVISION #1	07/27/2023
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CHECKED BY: JEA	

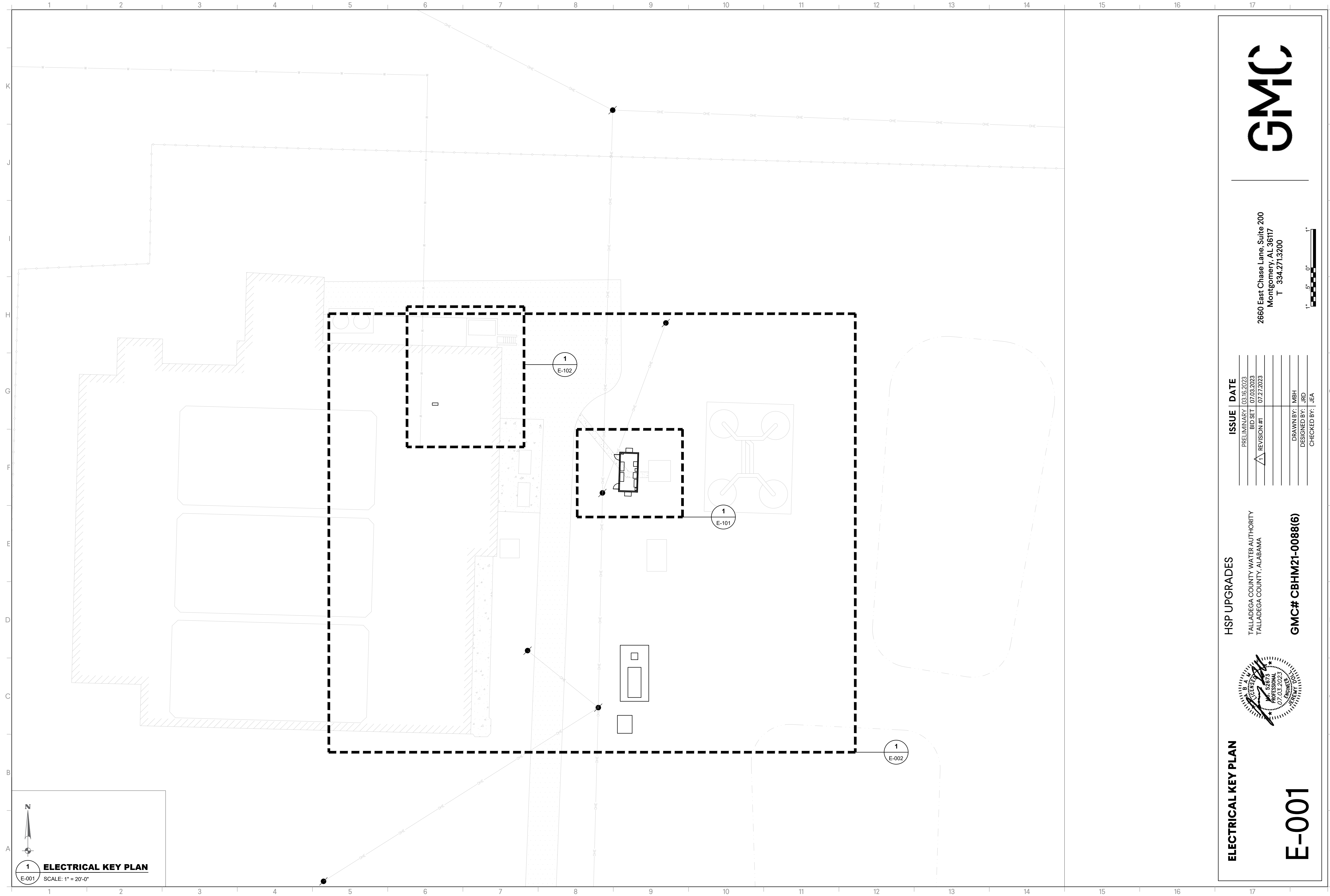
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TALLADEGA COUNTY WATER AUTHORITY  
TALLADEGA COUNTY, ALABAMA


GMC# CBHM21-0088(6)



ELECTRICAL NOTES,  
ABBREVIATIONS,  
& LEGEND

GE001




  
**1**
  
**ELECTRICAL KEY PLAN**
  
 E-001 SCALE: 1" = 20'-0"

**ELECTRICAL KEY PLAN**



**HSP UPGRADES**

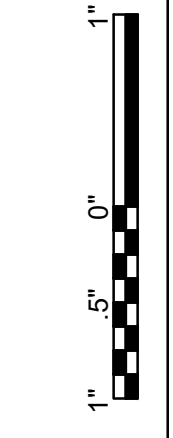
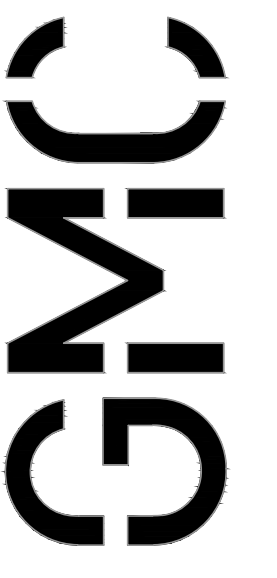
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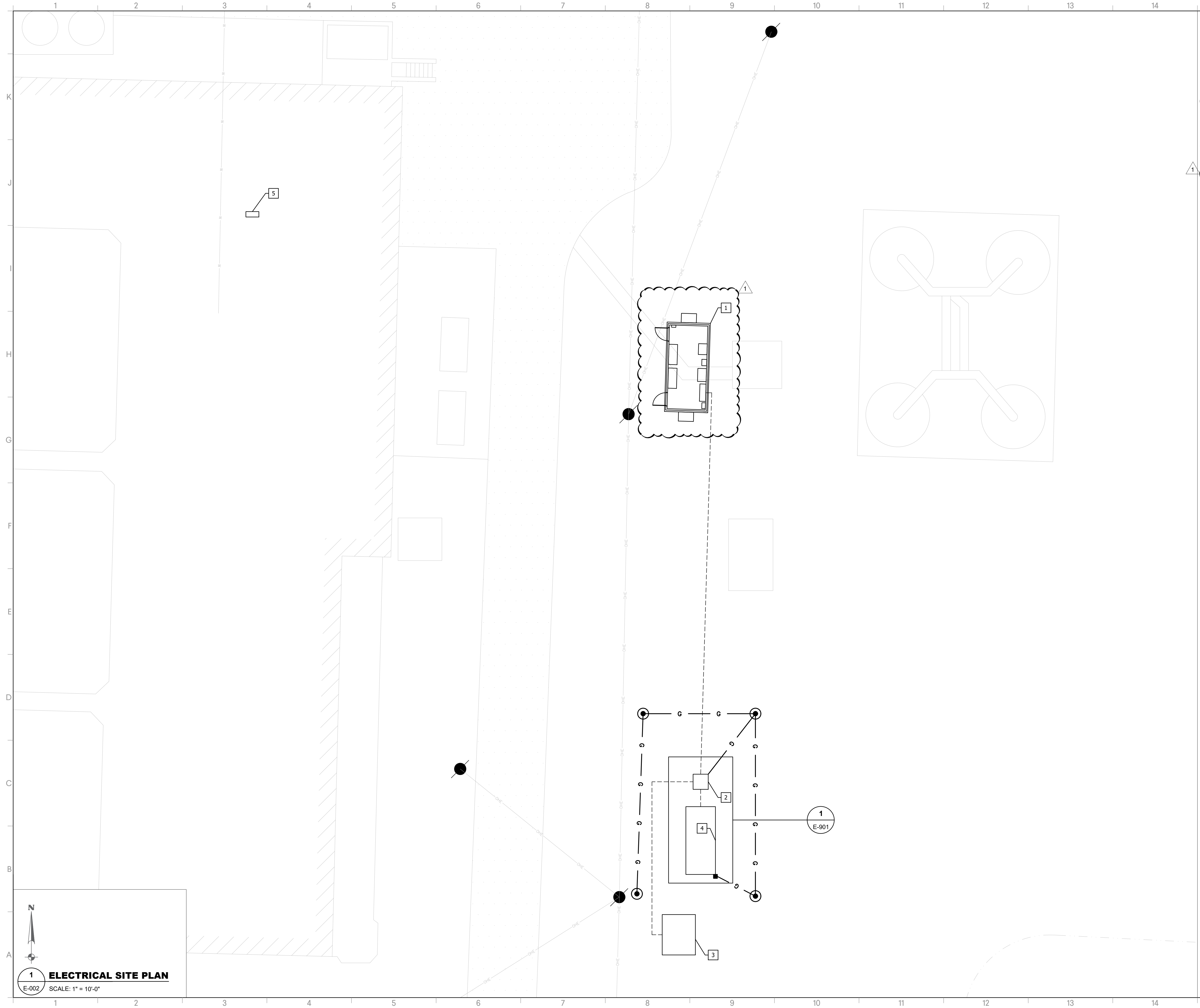
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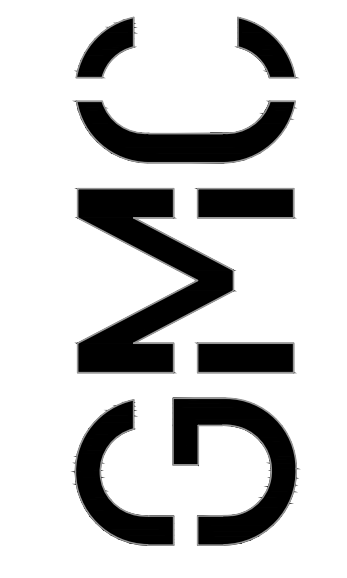


**GENERAL NOTES:**

1. SINGLE CONDUITS ARE SHOWN ON THIS SHEET FOR PLAN CLARITY. CONTRACTOR SHALL VERIFY SIZE AND QUANTITY OF ALL CONDUIT AND CONDUCTORS WITH RISER DIAGRAM.

**KEY NOTES #:**

1. E HOUSE BY EQUIPMENT SUPPLIER. SEE SPECIFICATIONS AND SHEET E-101 FOR MORE INFORMATION.
2. 277/480V, 3P, 1000A, SOLID NEUTRAL, SE RATED AUTOMATIC TRANSFER SWITCH.
3. UTILITY TRANSFORMER.
4. 277/480V, 3Φ, 4W, 250kW DIESEL GENERATOR.
5. APPROXIMATE LOCATION OF LAB ROOM ON SECOND FLOOR OF THE EXISTING WATER TREATMENT PLANT. CONTRACTOR SHALL REPLACE TALLADEGA WATER AUTHORITY'S EXISTING NETWORK PANEL AND WORKSTATION ASSOCIATED WITH TALLADEGA COUNTY WATER AUTHORITY'S MONITORING AND CONTROL SYSTEM PER SPECIFICATIONS.



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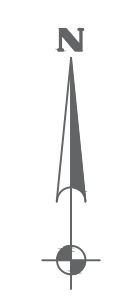
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 TALLADEGA COUNTY, ALABAMA

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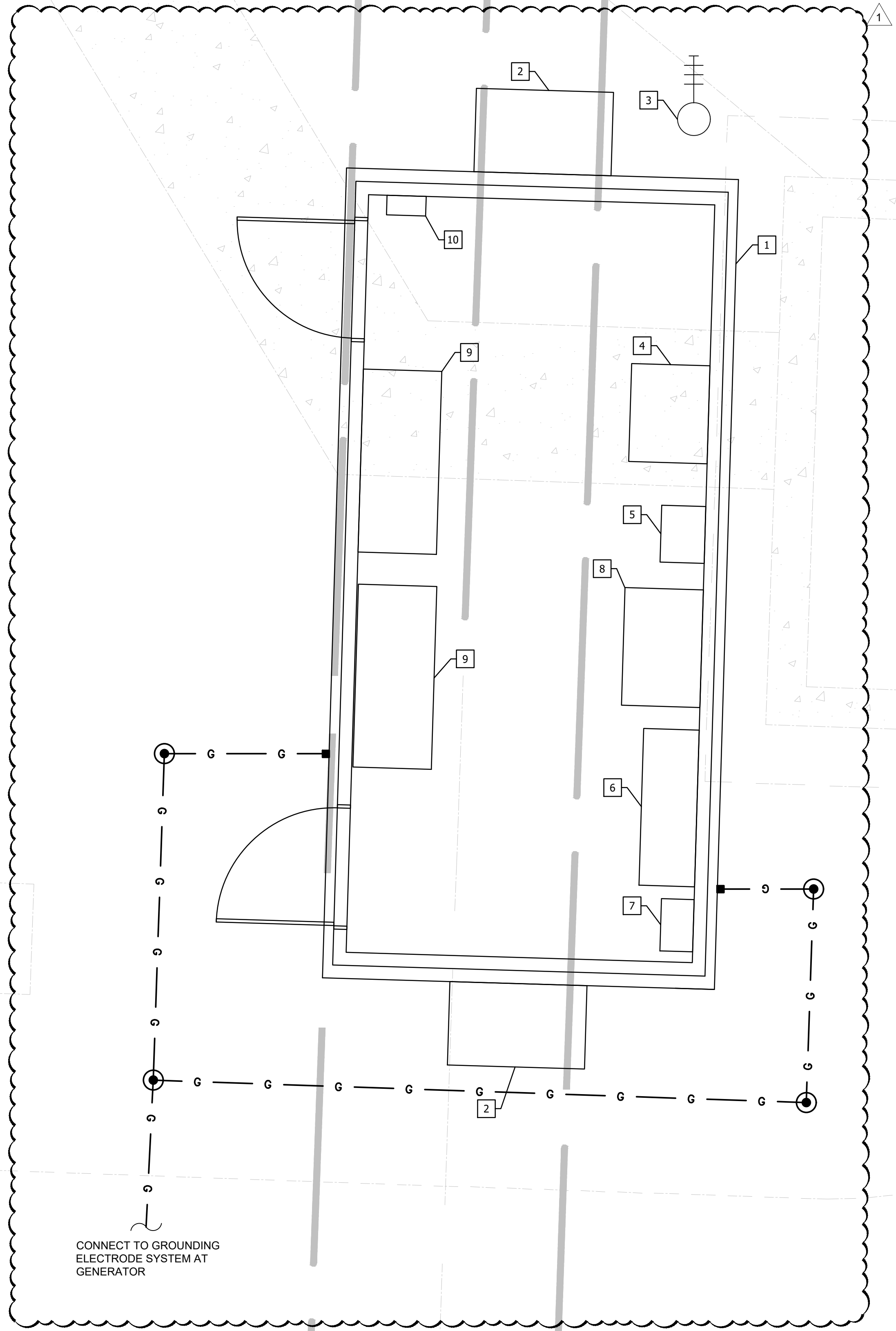


**ELECTRICAL SITE PLAN**

**E-002**



**1 ELECTRICAL SITE PLAN**  
 E-002 SCALE: 1" = 10'-0"



- KEY NOTES** [ ] :
1. CONTRACTOR SHALL OBTAIN STRUCTURAL DESIGN FOR CONCRETE PAD ASSOCIATED WITH E-HOUSE FROM A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF ALABAMA. COORDINATE ALL REQUIREMENTS WITH E-HOUSE SUPPLIER. CONTRACTOR SHALL SUBMIT CONCRETE PAD DESIGN WITH E-HOUSE SUBMITTAL FOR APPROVAL.
  2. HVAC BY E-HOUSE MANUFACTURER. HVAC UNIT SHALL BE EQUIPPED WITH INTEGRAL DISCONNECT MEANS.
  3. SCADA POLE AND ANTENNA. CONTRACTOR SHALL COORDINATE WITH SYSTEMS INTEGRATOR AND RADIO PATH SURVEY FOR POLE REQUIREMENTS.
  4. SCADA PANEL. SEE SPECIFICATIONS FOR MORE INFORMATION.
  5. 30kVA, 480V-120/208V, 3Φ, 4W MINI POWER ZONE 'MPZ-A' BY E-HOUSE MANUFACTURER.
  6. 1000A, 277/480V, 3Φ, 4W PANEL HVA BY E-HOUSE MANUFACTURER.
  7. POWER MONITOR ENCLOSURE BY E-HOUSE MANUFACTURER.
  8. 75HP, 480V, 3Φ VFD BY E-HOUSE MANUFACTURER.
  9. 200HP, 480V, 3Φ VFD BY E-HOUSE MANUFACTURER.
  10. NEW FLOW TRANSMITTER FOR EXISTING FLOW METER.

**GMC**

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1" = 5' 0"

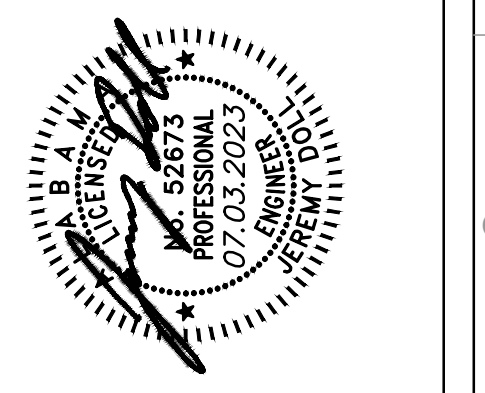
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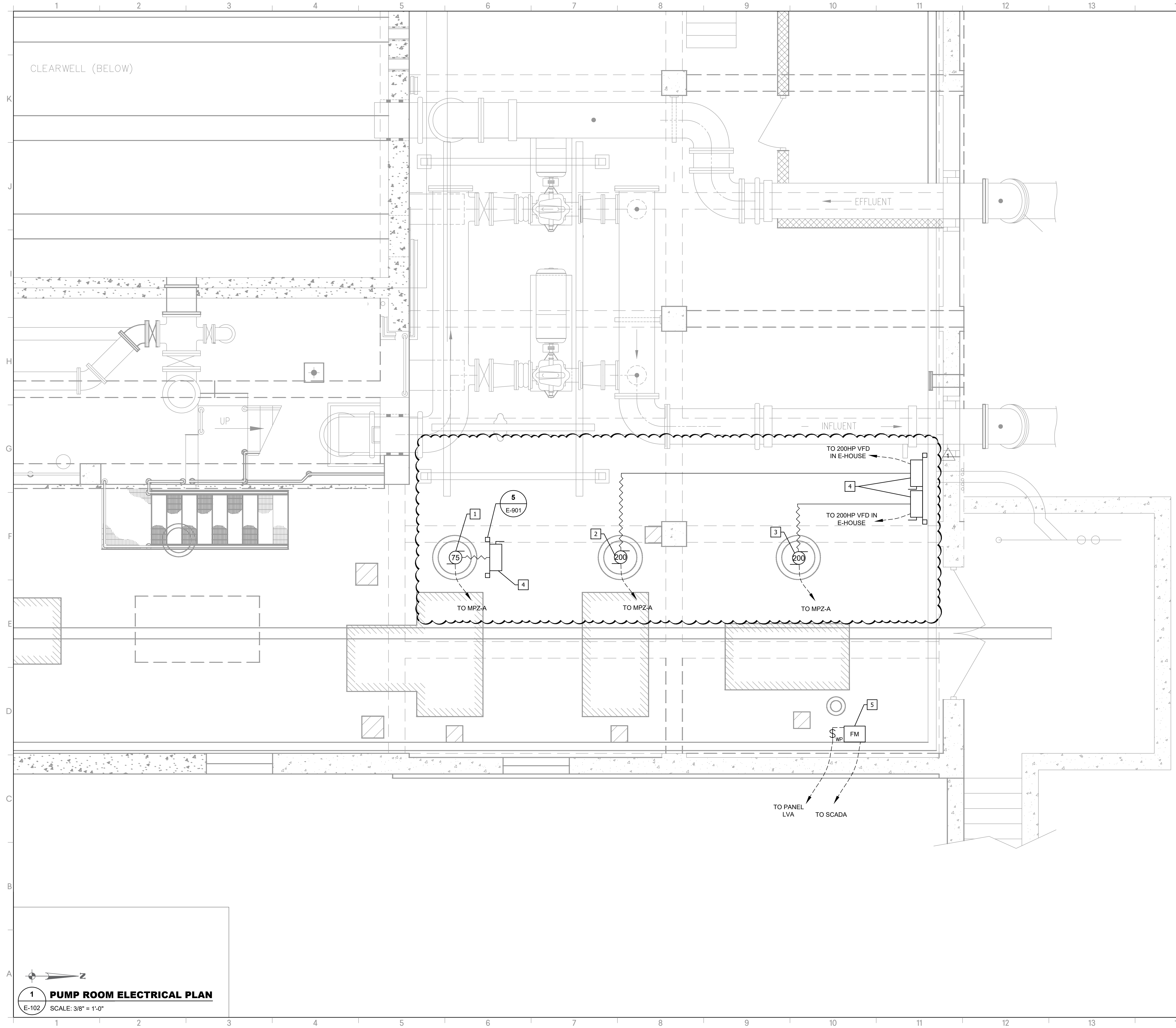


**E-HOUSE ELECTRICAL PLAN**

**E-101**

**1 E-HOUSE ELECTRICAL PLAN**

E-101 SCALE: 1/2" = 1'-0"

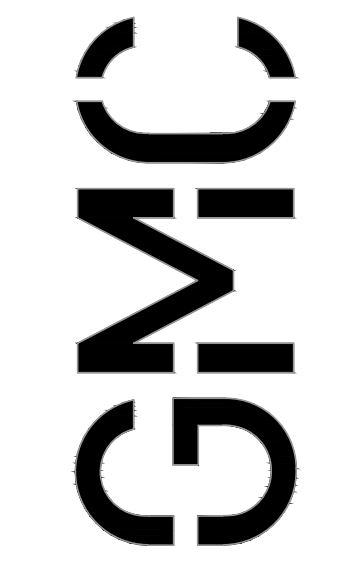


**KEY NOTES #:**

1. EXISTING 480V, 75HP TALLADEGA HSP
2. NEW 480V, 200HP, 3Φ, INVERTER DUTY RATED, TALLADEGA HIGH SERVICE PUMP #2. MOTOR SHALL HAVE AEGIS GROUNDING RINGS INCLUDED.
3. NEW 480V, 200HP, 3Φ, INVERTER DUTY RATED, TALLADEGA HIGH SERVICE PUMP #3. MOTOR SHALL HAVE AEGIS GROUNDING RINGS INCLUDED.
4. 600V, 200A, 3P, N4X DISCONNECT. CONTRACTOR SHALL ENSURE THAT THE CLEARANCE IN FRONT OF THE DISCONNECT SWITCH IS 4'-0" AT MINIMUM, PER THE N.E.C.
5. APPROXIMATE LOCATION OF EXISTING, RELOCATED FLOW METER.
6. 600V, 400A, 3P, N4X DISCONNECT SWITCH.

**CONSTRUCTION SEQUENCE:**

EXISTING 75HP HIGH SERVICE PUMP FOR TALLADEGA SHALL REMAIN IN OPERATION UNDER EXISTING PLANT POWER AND CONTROL SET POINTS UNTIL (2) NEW 200HP HIGH SERVICE PUMPS ARE INSTALLED AND OPERATIONAL. ONCE THE (2) NEW 200HP PUMPS HAVE BEEN CONFIRMED AS OPERATIONAL, CONTRACTOR SHALL REMOVE EXISTING 75HP HIGH SERVICE PUMP FROM EXISTING PLANT POWER AND CONTROL, AND CONNECT TO NEW VFD IN NEW E-HOUSE. CONTRACTOR SHALL INSTALL VFD, CONDUIT, WIRE, AND LOCAL DISCONNECT FOR 75HP HIGH SERVICE PUMP PRIOR TO DISCONNECTION FROM EXISTING PLANT POWER.



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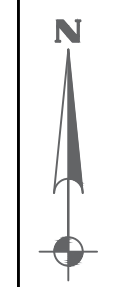
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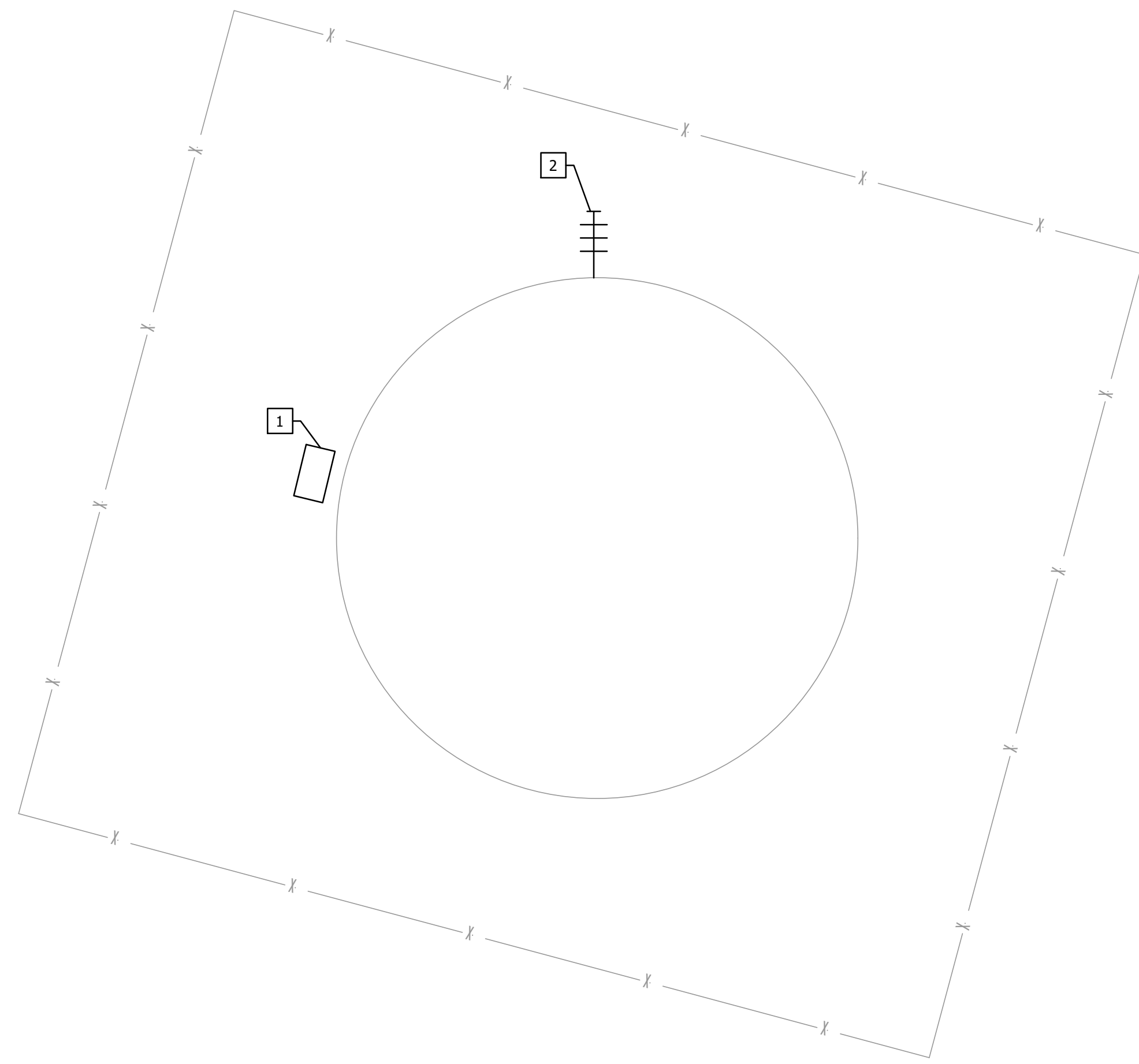
**PUMP ROOM ELECTRICAL PLAN**

**E-102**

**1 PUMP ROOM ELECTRICAL PLAN**  
 E-102 SCALE: 3/8" = 1'-0"



**1 ALPINE TANK SITE PLAN**  
E-201 SCALE: 1" = 10'



PROJECT SITE ADDRESS  
6276 AQUARIUS DR  
ALPINE, AL 35014  
332619.99N, 861741.06W

**KEY NOTES # 1:**

- EXISTING SCADA PANEL AND PRESSURE TRANSMITTER TO BE REPLACED AS NEW. CONTRACTOR SHALL UTILIZE EXISTING POWER WIRING FOR NEW EQUIPMENT AS REQUIRED. CONTRACTOR SHALL FURNISH AND INSTALL A NEW TWISTED SHIELDED PAIR - 1" C BETWEEN NEW SCADA PANEL AND PRESSURE TRANSMITTER.
- CONTRACTOR SHALL REPLACE EXISTING SCADA ANTENNA MOUNTED TO TANK. CONTRACTOR SHALL INSTALL NEW 2" CONDUIT AND INTEGRATOR SUPPLIED ANTENNA CABLING FOR SCADA AS REQUIRED. MOUNT ANTENNA PER SYSTEMS INTEGRATOR RECOMMENDATIONS BASED ON RADIO PATH SURVEY.

**ALPINE TANK ELECTRICAL  
SITE PLAN**

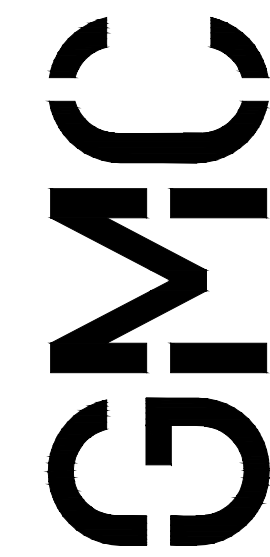
HSP UPGRADES

TALLADEGA COUNTY WATER AUTHORITY  
TALLADEGA COUNTY, ALABAMA

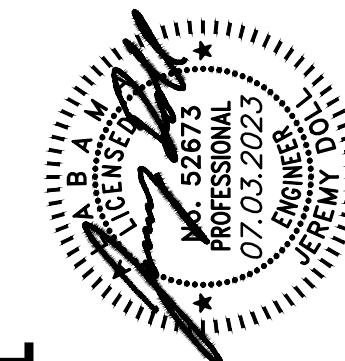
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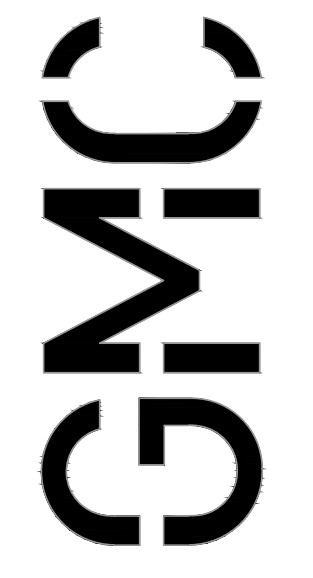


**E-201**

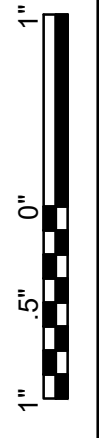


**KEY NOTES #:**

- EXISTING SCADA PANEL TO BE REPLACED AS NEW. CONTRACTOR SHALL EXTEND THE EXISTING POWER AND CONTROL SIGNALS TO NEW SCADA PANEL AS REQUIRED. SEE SPECIFICATIONS FOR MORE DETAILS.
- CONTRACTOR SHALL REPLACE EXISTING SCADA ANTENNA. CONTRACTOR SHALL INSTALL NEW 2" CONDUIT AND ANTENNA CABLING FOR SCADA AS REQUIRED. MOUNT ANTENNA PER SYSTEMS INTEGRATOR RECOMMENDATIONS BASED ON RADIO PATH SURVEY.



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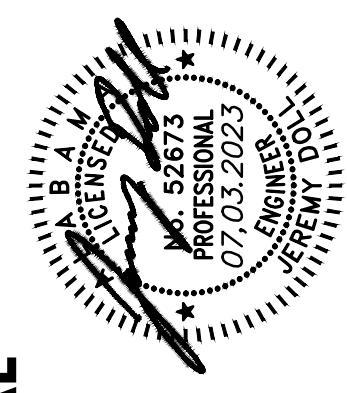
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TALLADEGA COUNTY WATER AUTHORITY  
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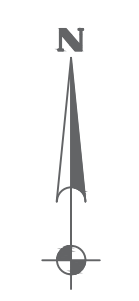
**GMC# CBHM21-0088(6)**



**STEMLEY BPS ELECTRICAL  
 SITE PLAN**

**E-301**

PROJECT SITE ADDRESS  
 2-12 CONSTELLATION AVE  
 ALPINE, AL 35014  
 332632.77N, 861739.64W

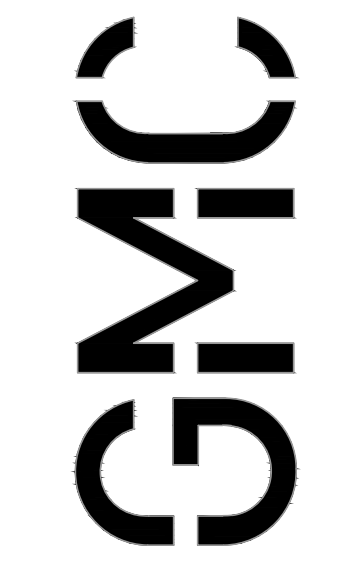


**1** **STEMLEY BPS ELECTRICAL SITE PLAN**  
 E-301 SCALE: 1" = 5'

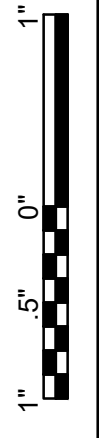




- KEY NOTES #**:
- EXISTING SCADA PANEL AND PRESSURE TRANSMITTER TO BE REPLACED AS NEW. CONTRACTOR SHALL UTILIZE EXISTING POWER WIRING FOR NEW EQUIPMENT AS REQUIRED. CONTRACTOR SHALL FURNISH AND INSTALL A NEW TWISTED SHIELDED PAIR - 1" C BETWEEN NEW SCADA PANEL AND PRESSURE TRANSMITTER.
  - CONTRACTOR SHALL REPLACE EXISTING SCADA ANTENNA MOUNTED TO TANK. CONTRACTOR SHALL INSTALL NEW 2" CONDUIT AND INTEGRATOR SUPPLIED ANTENNA CABLING FOR SCADA AS REQUIRED. MOUNT ANTENNA PER SYSTEMS INTEGRATOR RECOMMENDATIONS BASED ON RADIO PATH SURVEY.



2660 East Chase Lane, Suite 200  
 Montgomery, AL 36117  
 T 334.271.3200



ISSUE	DATE
PRELIMINARY	03/16/2023
BID SET	07/03/2023
1	REVISION #1
DRAWN BY: MBH	
DESIGNED BY: JRD	
CHECKED BY: JEA	

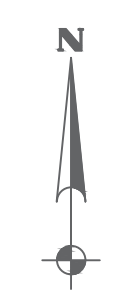
**HSP UPGRADES**  
 TALLADEGA COUNTY WATER AUTHORITY  
 TALLADEGA COUNTY, ALABAMA  
**GMC# CBHM21-0088(6)**



**STEMLEY TANK  
 ELECTRICAL SITE PLAN**

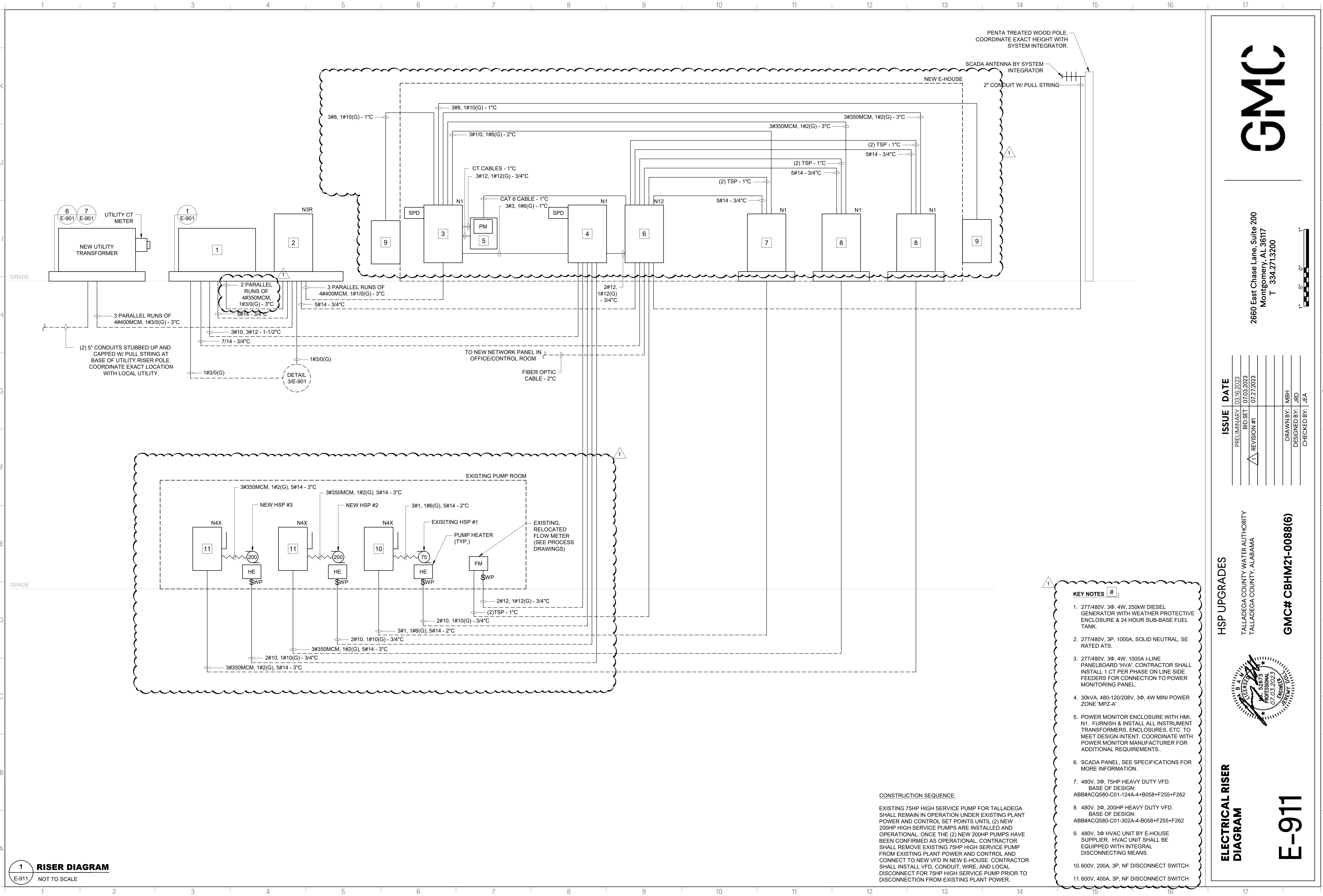
**E-401**

PROJECT SITE ADDRESS  
 3226 STEMLEY RD  
 TALLADEGA, AL 35160  
 332939.46N, 861325.99W



**1 STEMLEY TANK SITE PLAN**  
 E-401 SCALE: 1" = 10'





**1 RISER DIAGRAM**  
E-911 NOT TO SCALE

**CONSTRUCTION SEQUENCE:**  
 EXISTING 75HP HIGH SERVICE PUMP FOR TALLADEGA SHALL REMAIN IN OPERATION UNDER EXISTING PLANT POWER AND CONTROL SET POINTS UNTIL (2) NEW 200HP HIGH SERVICE PUMPS ARE INSTALLED AND OPERATIONAL. ONCE THE (2) NEW 200HP PUMPS HAVE BEEN CONFIRMED AS OPERATIONAL, CONTRACTOR SHALL REMOVE EXISTING 75HP HIGH SERVICE PUMP FROM EXISTING PLANT POWER AND CONTROL AND CONNECT TO NEW VFD IN NEW E-HOUSE. CONTRACTOR SHALL INSTALL VFD, CONDUIT, WIRE, AND LOCAL DISCONNECT FOR 75HP HIGH SERVICE PUMP PRIOR TO DISCONNECTION FROM EXISTING PLANT POWER.

- KEY NOTES #:**
- 277/480V, 3Φ, 4W, 250kW DIESEL GENERATOR WITH WEATHER PROTECTIVE ENCLOSURE & 24 HOUR SUB-BASE FUEL TANK.
  - 277/480V, 3P, 1000A, SOLID NEUTRAL, SE RATED ATS.
  - 277/480V, 3Φ, 4W, 1000A I-LINE PANELBOARD 'HVA'. CONTRACTOR SHALL INSTALL 1 CT PER PHASE ON LINE SIDE FEEDERS FOR CONNECTION TO POWER MONITORING PANEL.
  - 30kVA, 480-120/208V, 3Φ, 4W MINI POWER ZONE 'MPZ-A'
  - POWER MONITOR ENCLOSURE WITH HMI, N1. FURNISH & INSTALL ALL INSTRUMENT TRANSFORMERS, ENCLOSURES, ETC. TO MEET DESIGN INTENT. COORDINATE WITH POWER MONITOR MANUFACTURER FOR ADDITIONAL REQUIREMENTS.
  - SCADA PANEL. SEE SPECIFICATIONS FOR MORE INFORMATION.
  - 480V, 3Φ, 75HP HEAVY DUTY VFD. BASE OF DESIGN: ABB#ACQ580-C01-124A-4-B058+F255+F262
  - 480V, 3Φ, 200HP HEAVY DUTY VFD. BASE OF DESIGN: ABB#ACQ580-C01-302A-4-B058+F255+F262
  - 480V, 3Φ HVAC UNIT BY E-HOUSE SUPPLIER. HVAC UNIT SHALL BE EQUIPPED WITH INTEGRAL DISCONNECTING MEANS.
  - 600V, 200A, 3P, NF DISCONNECT SWITCH
  - 600V, 400A, 3P, NF DISCONNECT SWITCH

**HSP UPGRADES**

TALLADEGA COUNTY WATER AUTHORITY  
TALLADEGA COUNTY, ALABAMA

**GMC# CBHM21-0088(G)**

**ELECTRICAL RISER DIAGRAM**

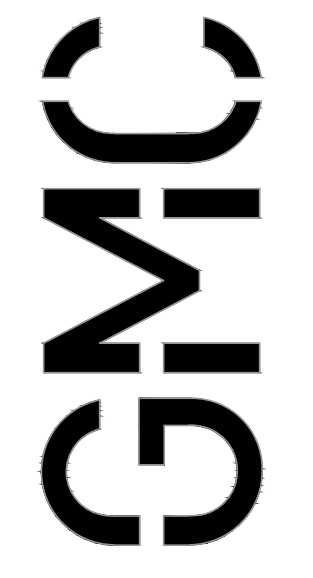
**E-911**

ISSUE	DATE
PRELIMINARY	03/16/2023
BID SET	07/03/2023
REVISION #1	07/27/2023

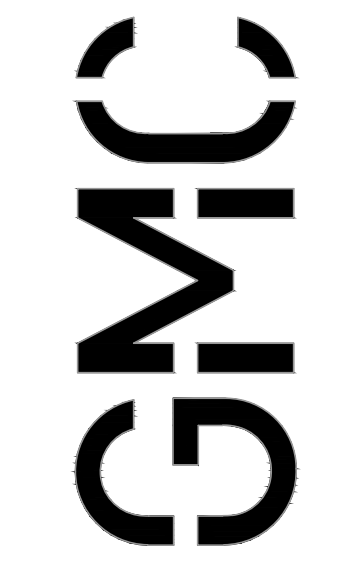
DRAWN BY:	MBH
DESIGNED BY:	JRD
CHECKED BY:	JEA

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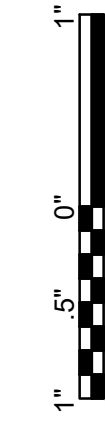


**GENERAL NOTES:**

1. ALL CIRCUIT BREAKERS AND SETTINGS SHALL BE COORDINATED PER MANUFACTURER'S RECOMMENDATIONS PRIOR TO INSTALLATION.



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**ISSUE DATE**

PRELIMINARY	03/16/2023
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DRAWN BY:	MBH
DESIGNED BY:	JRD
CHECKED BY:	JEA

**HSP UPGRADES**

TALLADEGA COUNTY WATER AUTHORITY  
TALLADEGA COUNTY, ALABAMA

**GMC# CBHM21-0088(6)**



**PANELBOARD SCHEDULES**

**E-912**

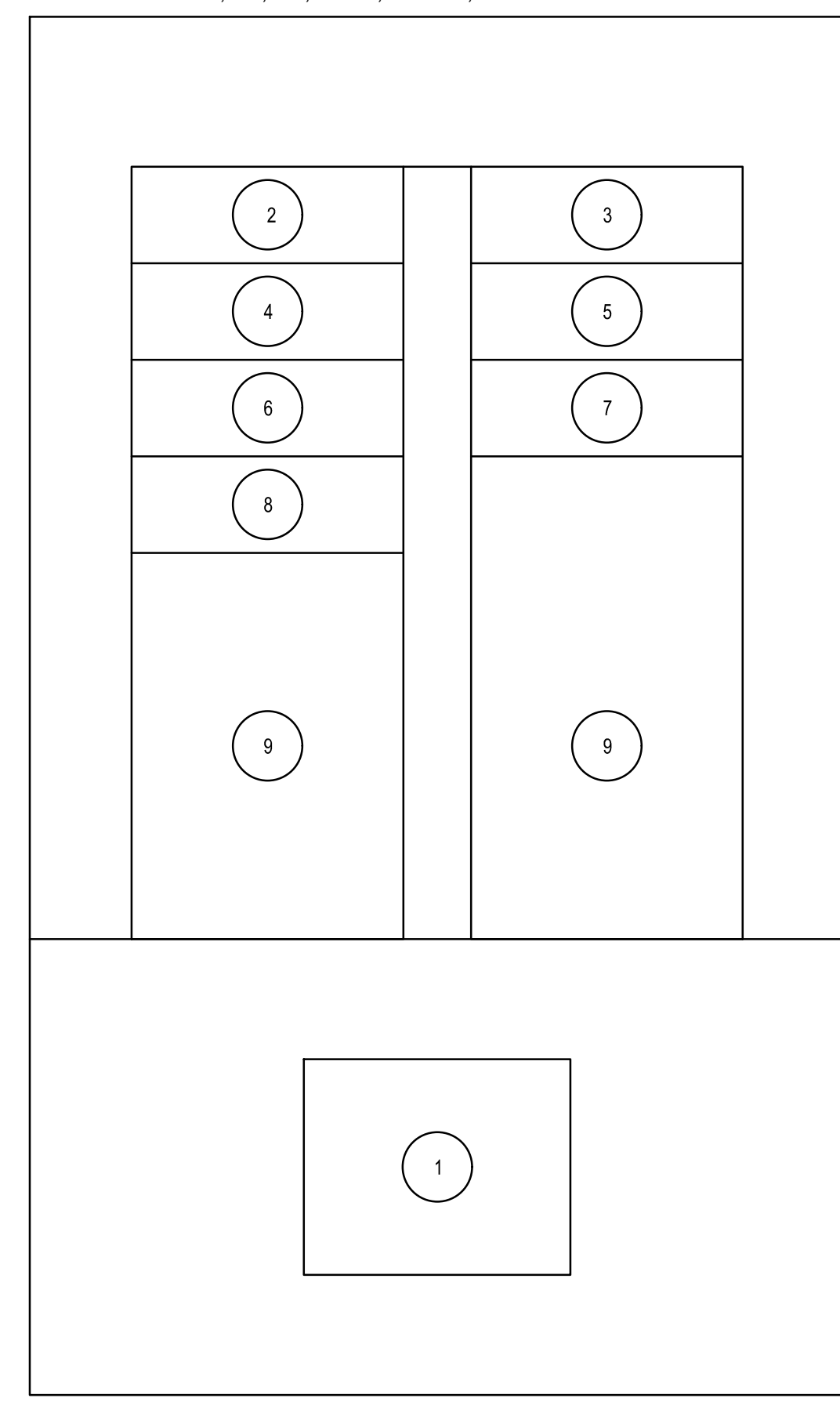
**PANEL HVA SCHEDULE**

LOCATION		E-HOUSE		MAIN: 1000A MCB LSIIG TRIP		I-LINE PANELBOARD, NEMA 1							
VOLTAGE		277/480		SYSTEM: 3Ø, 4 WIRE									
TRIM		SURFACE		INTERRUPTING RATING: 65K AIC									
CKT #	LOAD DESCRIPTION	BREAKER P	TRIP	PHASE (kVA)			PHASE (kVA)			BREAKER TRIP	P	LOAD DESCRIPTION	CKT #
				A	B	C	A	B	C				
1	PANEL LVA THRU X-FMR	3	50A	10.0	10.0					20	3	POWER MONITOR	2
3													4
5						10.0							6
7				66.4			66.4						8
9	200HP HSP VFD	3	350		66.4			66.4		30	3	200HP HSP VFD	10
11						66.4			66.4				12
13				26.6			5.5						14
15	75HP HSP VFD	3	125		26.6			5.5		30	3	HVAC	16
17						26.6			5.5				18
19							5.5						20
21								5.5		30	3	HVAC	22
23									5.5				24
25													26
27													28
29													30
31													32
33													34
35													36
37													38
39													40
41													42

**MPZ-A SCHEDULE**

LOCATION		E-HOUSE		MAIN: 100A MCB (SECONDARY)		SQD #MPZ30T2F							
VOLTAGE		120/208		SYSTEM: 3Ø, 4 WIRE									
TRIM		SURFACE		INTERRUPTING RATING: 22K AIC									
CKT #	LOAD DESCRIPTION	BREAKER P	TRIP	PHASE (kVA)			PHASE (kVA)			BREAKER TRIP	P	LOAD DESCRIPTION	CKT #
				A	B	C	A	B	C				
1	PUMP HEATER	1	20							20	1	PUMP HEATER	2
3	PUMP HEATER	1	20							20	1	SCADA	4
5	GEN. BLOCK HEATER	1	20							20	1	FLOW TRANSMITTER	6
7	GEN. BATTERY CHARGER	1	20							20	1	FLOW METER	8
9	E-HOUSE LIGHTS	1	20							20	1	SPARE	10
11	E-HOUSE LIGHTS	1	20							20	1	SPARE	12
13	E-HOUSE RECEPTACLES	1	20							20	1	SPARE	14
15	E-HOUSE RECEPTACLES	1	20							20	1	SPARE	16
17	E-HOUSE RECEPTACLES	1	20							20	1	SPARE	18
19													20
21													22
23													24
25													26
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277/480V, 3Ø, 4W, 1000A, NEMA 1, I-LINE PANELBOARD 'HVA'



**CIRCUIT BREAKER LEGEND**

UNIT	FRAME	MOUNTING HEIGHT	TRIP TYPE	TRIP SETTING	DESCRIPTION
1	PJ (1200A)	6"	ELECTRONIC, LSIIG	1000A	MAIN CIRCUIT BREAKER
2	HJ (150A)	4.5"	ELECTRONIC, LSI	50A	PANEL LVA THRU X-FMR
3	HJ (150A)	4.5"	ELECTRONIC, LSI	20A	POWER MONITOR
4	LJ (600A)	6"	ELECTRONIC, LSI	350A	200HP HSP VFD
5	LJ (600A)	6"	ELECTRONIC, LSI	350A	200HP HSP VFD
6	LJ (600A)	6"	ELECTRONIC, LSI	125A	75HP HSP VFD
7	HJ (150A)	4.5"	ELECTRONIC, LSI	30A	HVAC
8	HJ (150A)	4.5"	ELECTRONIC, LSI	30A	HVAC
9	----	----	----	----	BUSSED SPACE

- NOTES:**
1. ALL CIRCUIT BREAKER RATINGS & TRIP SETTINGS SHALL BE COORDINATED WITH EQUIPMENT SUBMITTALS AND MANUFACTURER'S RECOMMENDATIONS BASED ON LOAD REQUIREMENTS.
  2. ALL CIRCUIT BREAKERS SHALL HAVE 'FIXED OFF ONLY' LOCKABLE HANDLES.