

**BROOKE COUNTY COMMISSION
BROOKE COUNTY, WEST VIRGINIA**

BROOKE COUNTY EMS FACILITY

ADDENDUM #2

MARCH 20, 2023

THRASHER PROJECT #T60-11009

TO WHOM IT MAY CONCERN:

A Pre-Bid Conference was held on Tuesday, March 7, 2023, for the Brooke County EMS Facility project. The following are clarifications and responses to questions posed by contractors for the above reference project.

A. GENERAL

1. **THE BID DATE FOR THE PROJECT HAS BEEN EXTENDED TO TUESDAY, APRIL 11, 2023, AT 10:00AM**

B. SPECIFICATIONS

1. ADDED: 096723 – Resinous Flooring
2. ADDED: 263213 – Natural Gas Generator
3. ADDED: 263600 – Automatic Transfer Switches
4. REVISED: 312000 – Earth Moving - Trenching

C. DRAWINGS

1. OMIT sheet A7.01R – Revision #1 and REPLACE with A7.01R – Floor Finish Plan – Revision 2
2. OMIT sheet A4.02 and REPLACE with A4.02R – Enlarged Plans and Int. Elevations – Revision 2
3. OMIT sheet A4.02 and REPLACE with A4.03R – Enlarged Plans and Int. Elevations – Revision 2
4. OMIT sheet E1.01 and REPLACE with E1.01R.
5. OMIT sheet E2.01 and REPLACE with E2.01R.
6. OMIT sheet E3.01 and REPLACE with E3.01R.

7. OMIT sheet E3.02 and REPLACE with E3.02R.
8. OMIT sheet E-SITE and REPLACE with E-SITE R
9. OMIT sheet M3.01 and REPLACE with M3.01R.
10. NEW: sketch SK-P1.
11. NEW: sketch SK-P2.

D. QUESTIONS AND RESPONSES

Q1. Is there a backup generator? I just wanted to verify and that I didn't overlook one.

A1. Yes, See attached Specification Section 263213 – Natural Gas Generator and 263600 – Automatic Transfer Switches, SK-P1

Q2. Where is the primary service for the power company located?

A2. As indicated on C2.01, power comes from the new transformer located at the Southeast corner of the project site.

Q3. Do you have the location of the communication conduit for the tele/data?

A3. Communications utilities services are shown on C2.01. Underground telecommunications are shown to be to/from the existing utility pole located in front of the building.

Q4. Is there supposed to be a Urinal in the Men's Locker Room? The print shows one but it is not labeled nor is it on the schedule.

A4. Yes, See Addendum #1, Question/Answer #8.

Q5. Drawing P1.01: no plumbing connections are shown to MB-1 located in room 109.

A5. See attached SK-P1 and SK-P2

Q6. Drawing P1.01: sprinkler room 122 appears to show a second floor drain near the exterior wall, but it is not labeled. Please advise.

A6. See attached SK-P2

Q7. Can press fittings be used on the interior water and gas lines?

A7. No.

Q8. C2.01 shows 2-1/2" gas service line to the building. 2-1/2" plastic is not readily available, if at all. Should we figure 3" for the underground gas line?

A8. Provide 3" gas service line.

Q9. Can the AWI Certification requirements for the p-lam casework on this project be waived?

A9. No.

Q10. Could you clarify if new parking lot has curb edge – C2.01 does not show but E-Site shows concrete curb.

A10. The only curb is at the proposed sidewalk on the south side of the proposed building. The curb and sidewalk could be poured integral.

Q11. Please clarify the stained concrete floor finish for the rooms adjacent the exterior wall. Detail 1/A3.03 shows 8" CMU then 2x6 wall with 5/8 CDX and 5/8 GWB which will leave approximately 1 1/8" of exposed CMU – how is this to be covered/stained?

A11. Replace top course with 6" CMU. Cast floor slab with 8" x 16" haunch as shown on 5/S5.00 onto the stem wall and to the backside of the 6" CMU.

Q12. Finish schedule calls for ACT in rooms 103 and 110 but not shown on RCP. It states ceiling at 10' AFF is this GWB?

A12. Ceiling type in Room #s 103 and 110 should be GWB as shown on A1.02. See A7.01R – Revision 2 attached.

Q13. Door 101B on door schedule is calling for aluminum door on hollow metal frame. Is this correct?

A13. This is incorrect. Door 101B should be aluminum door with aluminum frame.

Q14. Can you provide sizing and specification for the transaction window? Is there a sill?

A14. The Transaction Window is 48"W x 36"H with a sill. See 7/A4.01 for description.

E. CLARIFICATIONS

1. Sealed, stained concrete flooring is limited to room #'s: 101, 102, 103, 104, 106, 107, 108, 109, 110, 111, 116, 117, 118, 119. Room #'s: 112, 113, 114, 115 are to receive Ceramic Tile as shown on drawing A7.01/A7.01R

If you have any questions or comments, please feel free to contact me at your earliest convenience. As a reminder, bids will be received until **10:00 a.m. on Tuesday, April 11, 2023**, at the Brooke County Courthouse, located at 632 Main Street, Wellsburg, WV. 26070. Good luck to everyone and thank you for your interest in the project.

Sincerely,

THE THRASHER GROUP, INC.



Philip M Freeman, AIA, NCARB
Project Architect

SECTION 096723 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Resinous flooring.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each resinous floor system required and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Material certificates.
- B. Material test reports.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Flammability: Self-extinguishing in accordance with ASTM D635.

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2.2 RESINOUS FLOORING

- A. Resinous Flooring System: Abrasion-, impact-, and chemical-resistant, aggregate-filled, resin-based monolithic floor surfacing designed to produce a seamless floor.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Duraflex, Inc.
 - b. Elite Crete Systems, Inc.
 - c. National Polymers Inc.
 - d. Sherwin-Williams High Performance Flooring.
 - e. Sika Corporation; Flooring.
 - f. Stonhard, Inc.
- B. System Characteristics:
1. Color and Pattern: As selected by Architect from manufacturer's full range.
 2. Wearing Surface: Manufacturer's standard wearing surface.
 3. Overall System Thickness: 60 mils.
 4. Critical Radiant Flux: 0.22 W/sq. cm or greater in accordance with NFPA 253.
- C. Primer: Type recommended in writing by resinous flooring manufacturer for substrate and resinous flooring system indicated.
1. Formulation Description: Water based.
- D. Reinforcing Membrane: Flexible resin formulation that is recommended in writing by resinous flooring manufacturer for substrate and resinous flooring system indicated and that inhibits substrate cracks from reflecting through resinous flooring.
1. Formulation Description: High solids.
- E. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended in writing by manufacturer for installation indicated.
- F. Body Coats:
1. Resin: Epoxy.
 2. Formulation Description: 100 percent solids.
 3. Type: Pigmented.
 4. Installation Method: Self-leveling slurry with broadcast aggregates.
 5. Number of Coats: Two.
 6. Thickness of Coats: 20 mils.
 7. Aggregates: Vinyl flakes.
- G. Topcoats: Sealing or finish coats.
1. Resin: Urethane.
 2. Formulation Description: High solids.

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3. Type: Clear.
4. Number of Coats: One.
5. Thickness of Coats: 20 mils.
6. Finish: Gloss.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare and clean substrates in accordance with resinous flooring manufacturer's written instructions for substrate indicated to ensure adhesion.
- B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
 1. Roughen concrete substrates as follows:
 - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
 - b. Comply with requirements in SSPC-SP 13/NACE No. 6, with a Concrete Surface Profile of 3 or greater in accordance with ICRI Technical Guideline No. 310.2R, unless manufacturer's written instructions are more stringent.
 2. Repair damaged and deteriorated concrete in accordance with resinous flooring manufacturer's written instructions.
 3. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
 4. Alkalinity and Adhesion Testing: Perform tests recommended in writing by resinous flooring manufacturer. Proceed with installation only after substrate alkalinity is not less than 6 or more than 8 pH unless otherwise recommended in writing by flooring manufacturer,
- C. Patching and Filling: Use patching and fill material to fill holes and depressions in substrates in accordance with manufacturer's written instructions.

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1. Control Joint Treatment: Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring in accordance with manufacturer's written instructions.
- D. Resinous Materials: Mix components and prepare materials in accordance with resinous flooring manufacturer's written instructions.

3.2 INSTALLATION

- A. Apply components of resinous flooring system in accordance with manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness specified.
- B. Primer: Apply primer over prepared substrate at spreading rate recommended in writing by manufacturer.
- C. Reinforcing Membrane: Apply reinforcing membrane to substrate cracks as required by the manufacturer.
- D. Self-Leveling Body Coats: Apply self-leveling slurry body coats in thickness specified for flooring system.
 1. Aggregates: Broadcast aggregates at rate recommended in writing by manufacturer. After resin is cured, remove excess aggregates to provide surface texture indicated.
- E. Topcoats: Apply topcoats in number indicated for flooring system specified, at spreading rates recommended in writing by manufacturer, and to produce wearing surface specified.
- F. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 096723

SECTION 263213- NATURAL GAS GENERATOR

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 applications with the features as specified and indicated where the engine generators will be used as the Standby power source for the system.

1.3 DEFINITIONS

- A. Emergency Standby Power (ESP): Per ISO 8528: The maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 200 hours of operation per year with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. The permissible average power output (Ppp) over 24 hours of operation shall not exceed 70 percent of the ESP unless otherwise agreed by the RIC engine manufacturer.
- B. 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. 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 for EPA, stationary emergency application.

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" Article Part A. 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 100 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 99 (Essential Electrical Systems for Health Care Facilities).
- G. Comply with NFPA 110 (Emergency and Standby Power Systems) requirements for Level 1 emergency power supply system.
- H. 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: 0.0 deg C (32.0 deg F) to 25.0 deg C (77.0 deg F).
2. Relative Humidity: 0 to 95 percent.
3. Altitude: Sea level to 361.0 feet (110.0 m).

1.8 WARRANTY

A. Base Warranty: Manufacturer shall provide base warranty coverage on the material and workmanship of the generator set for a minimum of 2 years from registered commissioning and start-up.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: The basis for this specification is Cummins Power Generation model C70N6 equipment, approved equals may be considered if equipment performance is shown to meet the requirements herein.

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. Power Output Ratings: Electrical output power rating for Standby operation of not less than 70.0kW, at 80 percent lagging power factor, 120/208, Series Wye, Three phase, 4 -wire, 60 hertz.
2. Alternator shall be capable of accepting maximum 306.0 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.
3. 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.
4. Circuit Breaker – 100% Rated LSI

D. Generator-Set Performance:

1. Steady-State Voltage Operational Bandwidth: 1.0 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 15 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within 3 seconds. On application of a 100% load step the generator set shall recover to stable voltage within 10 seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 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 7 percent variation for 50 percent step-load increase or decrease. 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 10 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 engine-generator sets using a PMG-excited alternator) 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 8 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.
9. 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.

2.3 ENGINE

- A. Fuel: Natural Gas
- B. Rated Engine Speed: 1800RPM.
- 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
- 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 120 VAC, Single phase, 60Hz 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 12VDC 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
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 40 deg C.
 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.
- 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. For generator sets with outdoor enclosures the silencer shall be inside the enclosure.
- I. Air-Intake Filter: Engine-mounted air cleaner with replaceable dry-filter element and restriction indicator.
- J. Starting System: 12V, 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, provide fully regulated, constant voltage, current limited, battery charger for each battery bank. It will include the following features:
 - a. Operation: Equalizing-charging rate of 6 Amp 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 20 deg C to plus 40 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. 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.
- e. Provide LED indication of general charger condition, including charging, faults, and modes. Provide a LCD display to indicate charge rate and battery voltage. Charger shall provide relay contacts for fault conditions as required by NFPA110.
- f. Enclosure and Mounting: NEMA, Type 1, wall-mounted cabinet.

2.4 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 kVA output (total and for each phase). Display shall indicate power flow direction.
5. Ammeter-voltmeter displays shall simultaneously display conditions for all three phases.
6. 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.
7. Fault Reset Switch: Supply a dedicated control switch to reset/clear fault conditions.
8. DC voltmeter (alternator battery charging).
9. Engine-coolant temperature gage.
10. Engine lubricating-oil pressure gage.
11. Running-time meter.
12. 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.)
13. AC Protective Equipment: The control system shall include over/under voltage, over current, short circuit, loss of voltage reference, and over excitation shut down protection. There shall be an overload warning, and overcurrent warning alarm.
14. Status LED indicating lamps to indicate remote start signal present at the control, existing alarm condition, not in auto, and generator set running.
15. 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.
16. Panel lighting system to allow viewing and operation of the control when the generator room or enclosure is not lighted.
17. 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).

- F. Remote Emergency-Stop Switch: Flush; wall mounted, unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

2.5 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 F
- D. Temperature Rise: 105 / Class F environment.
- E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, over speed 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: SCR type, Separate from exciter, providing performance as specified. The voltage regulation system shall be microprocessor-controlled, full wave rectified, and provide a pulse-width modulated signal to the exciter. No exceptions or deviations to these requirements will be permitted.
- I. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- J. Subtransient Reactance: 15 percent maximum, based on the rating of the engine generator set.

2.6 OUTDOOR GENERATOR-SET ENCLOSURE

- A. Description: Sound Attenuated Aluminum housing. Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Instruments, control, and battery system shall be mounted within enclosure.
- B. Construction:
 - 1. Hinged Doors: With padlocking provisions. Restraint/Hold back hardware to prevent door to keep door open at 180 degrees during maintenance. Rain lips over all doors.
 - 2. Exhaust System:
 - a. Muffler Location: Within enclosure.
 - 3. Hardware: All hardware and hinges shall be stainless steel.
 - 4. Wind Rating: Wind rating shall be 150 mph

5. Mounting Base: Suitable for mounting on sub-base fuel tank or housekeeping pad.
6. A weather protective enclosure shall be provided which allows the generator set to operate at full rated load with a static pressure drop equal to or less than 0.5 inches of water.
- C. Engine Cooling Airflow through Enclosure: Housing shall provide ample airflow for engine generator operation at rated load in an ambient temperature of 40 deg C.
- D. Sound Performance: Reduce the sound level of the engine generator while operating at full rated load to a maximum of 72 dBA measured at any location 7 m from the engine generator in a free field environment.
- E. Site Provisions:
 1. Lifting: Complete assembly of engine generator, enclosure shall be designed to be lifted into place as a single unit, using spreader bars.

2.7 VIBRATION ISOLATION DEVICES

- A. Vibration Isolation: Generators installed on grade shall be provided with elastomeric isolator pads integral to the generator, unless the engine manufacturer requires use of spring isolation.

2.8 FINISHES

- A. Indoor and Outdoor Enclosures and Components: Powder-coated and baked over corrosion-resistant pretreatment and compatible primer. Manufacturer's standard color or as directed on the drawings.

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.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with packaged engine-generator manufacturers' written installation, application, and alignment instructions and with NFPA 110.
- B. Equipment shall be installed by the contractor in accordance with final submittals and contract documents. Installation shall comply with applicable state and local codes as required by the authority having jurisdiction. Install equipment in accordance with manufacturer's instructions and instructions included in the listing or labeling of UL listed products.
- C. Installation of equipment shall include furnishing and installing all interconnecting wiring between all major equipment provided for the on-site power system. The contractor shall also perform interconnecting wiring between equipment sections (when required), under the supervision of the equipment supplier.
- D. Equipment shall be installed on concrete housekeeping pads. Equipment shall be permanently fastened to the pad in accordance with manufacturer's instructions and seismic requirements of the site.
- E. Equipment shall be initially started and operated by representatives of the manufacturer. All protective settings shall be adjusted as instructed by the consulting engineer.
- F. All equipment shall be physically inspected for damage. Scratches and other installation damage shall be repaired prior to final system testing. Equipment shall be thoroughly cleaned to remove all dirt and construction debris prior to initial operation and final testing of the system.
- G. On completion of the installation by the electrical contractor, the generator set supplier shall conduct a site evaluation to verify that the equipment is installed per manufacturer's recommended practice.

3.2 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 representatives of the manufacturer, with required fuel 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. Tests shall include:

- B. Prior to start of active testing, all field connections for wiring, power conductors, and bus bar connections shall be checked for proper tightening torque.
- C. Perform a power failure test on the entire installed system. This test shall be conducted by opening the power supply from the utility service, and observing proper operation of the system for at least 2 hours. Coordinate timing and obtain approval for start of test with site personnel.

3.3 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.

3.4 SERVICE AND SUPPORT

- A. The generator set supplier shall maintain service parts inventory for the entire power system at a central location which is accessible to the service location 24 hours per day, 365 days per year. The inventory shall have a commercial value of \$3 million or more. The manufacturer of the generator set shall maintain a central parts inventory to support the supplier, covering all the major components of the power system, including engines, alternators, control systems, paralleling electronics, and power transfer equipment.
- B. The generator set shall be serviced by a local service organization that is trained and factory certified in generator set service. The supplier shall maintain an inventory of critical power system replacement parts in the local service location. Service vehicles shall be stocked with critical replacement parts. The service organization shall be on call 24 hours per day, 365 days per year. The service organization shall be physically located within 100 miles of the site.
- C. The manufacturer shall maintain model and serial number records of each generator set provided for at least 20 years.

END OF SECTION 263213

ADDED: ADDENDUM 2
MARCH 20, 2023

SECTION 263600- AUTOMATIC TRANSFER SWITCHES

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. This Section includes transfer switches rated 600 V and less, including the following:
 - 1. Automatic transfer switches
- B. Related Sections include the following:

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, weights, operating characteristics, furnished specialties, and accessories.
 - 1. Technical data on all major components of all transfer switches and other products described in this section. Data is required for the transfer switch mechanism, control system, cabinet, and protective devices specifically listed for use with each transfer switch. Include steady state and fault current ratings, weights, operating characteristics, and furnished specialties and accessories.
 - 2. Single Line Diagram: Show connections between transfer switch, power sources and load
- B. Shop Drawings: Dimensioned plans, elevations, sections, and details showing minimum clearances, conductor entry provisions, gutter space, installed features and devices, and material lists for each switch specified.
 - 1. Dimensioned outline drawings of assembly, including elevations, sections, and details including minimal clearances, conductor entry provisions, gutter space, installed features and devices and material lists for each switch specified.
 - 2. Internal electrical wiring and control drawings.
 - 3. Interconnection wiring diagrams, showing recommended conduit runs and point-to-point terminal connections to generator set.
 - 4. Installation and mounting instructions, including information for proper installation of equipment to meet seismic requirements.
- C. Manufacturer and Supplier Qualification Data

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1. The transfer switch manufacturer shall be certified to ISO 9001 International Quality Standard and shall have third party certification verifying quality assurance in design/development, production, installation, and service, in accordance with ISO 9001.
 2. The manufacturer of this equipment shall have produced similar equipment for a minimum period of 10 years. When requested, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.
- D. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
1. Features and operating sequences, both automatic and manual.
 2. List of all factory settings of relays, timers and protective devices; provide setting and calibration instructions where applicable.
- E. Warranty documents demonstrating compliance with the project's contract requirements.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: The equipment supplier shall maintain a service center capable of providing training, parts, maintenance and emergency repairs to equipment, including transfer switch generator sets and remote monitoring equipment (if applicable) at the site within a response period of less than (eight hours or appropriate time period designated for Project) from time of notification.
1. The transfer switch shall be serviced by technicians employed by, and specially trained and certified by, the generator set supplier and the supplier shall have a service organization that is factory-certified in both generator set and transfer switch service. The supplier shall maintain an inventory of critical replacement parts at the local service organization, and in service vehicles. The service organization shall be on call 24 hours per day, 365 days per year.
 2. The manufacturer shall maintain model and serial number records of each transfer switch provided for at least 20 years.
- B. Source Limitations: All transfer switches are to be obtained through one source from a single manufacturer. The generator set manufacturer shall warrant transfer switches to provide a single source of responsibility for products provided.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked as suitable for use in emergency, legally required or optional standby use as appropriate for the connected load.

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- D. The automatic transfer switch installation and application shall conform to the requirements of the following codes and standards:
1. Transfer switches and enclosures shall be UL 1008 listed and labeled as suitable for use in emergency, legally required, and optional standby applications.
 2. CSA 282, Emergency Electrical Power Supply for Buildings, and CSA C22.2, No. 14-M91 Industrial Control Equipment
 3. NFPA 70, National Electrical Code. Equipment shall be suitable for use in systems in compliance with Articles 700, 701 and 702.
 4. Comply with NEMA ICS 10-1993 AC Automatic Transfer Switches
 5. IEEE 446 – Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
 6. EN55011, Class B Radiated Emissions and Class B Conducted Emissions
 7. IEC 1000-4-5 (EN 61000-4-5); AC Surge Immunity
 8. IEC 1000-4-4 (EN 61000-4-4) Fast Transients Immunity
 9. IEC 1000-4-2 (EN 61000-4-2) Electrostatic Discharge Immunity
 10. IEC 1000-4-3 (EN 61000-4-3) Radiated Field Immunity
 11. IEC 1000-4-6 Conducted Field Immunity
 12. IEC 1000-4-11 Voltage Dip Immunity
 13. IEEE 62.41, AC Voltage Surge Immunity
 14. IEEE 62.45, AC Voltage Surge Testing
- E. Comply with NFPA 99 – Essential Electrical Systems for Healthcare Facilities
- F. Comply with NFPA 110 – Emergency and Standby Power Systems. The transfer switch shall meet all requirements for Level 1 systems, regardless of the actual circuit level.
- G. The manufacturer shall warrant the material and workmanship of the transfer switch equipment for a minimum of two (2) years from registered commissioning and start-up, or eighteen (18) months from date of shipment.
- H. The warranty shall be comprehensive. No deductibles shall be allowed for travel time, service hours, repair parts cost, and etc. during the minimum noted warranty period described above.

1.5 PROJECT CONDITIONS

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- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service:
 - 1. Notify (Architect/Construction Manager/Owner) no fewer than (insert appropriate number) days in advance of proposed interruption of electrical service.
 - 2. Do not proceed with interruption of electrical service without (Architect/Construction Manager/Owner's) written permission.
 - 3. Do not energize any new service or distribution equipment without notification and permission of the (Architect/Construction Manager/Owner).

1.6 COORDINATION

- A. Size and location of concrete bases and anchor bolt inserts shall be coordinated. Concrete, reinforcement and formwork must meet the requirements specified in Division 03. See section "INSTALLATION" for additional information on installation

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cummins Power Generation OTECSEC 400A
- B. Equipment specifications for this Project are based on automatic transfer switches manufactured by Cummins Power Generation. Switches manufactured by other manufacturers that meet the requirement of this specification are acceptable, if approved not less than two weeks before scheduled bid date. Proposals must include a line-by-line compliance statement based on this specification.
- C. Transfer switches utilizing molded case circuit breakers do not meet the requirements of this specification and will not be accepted.

2.2 GENERAL TRANSFER-SWITCH PRODUCT REQUIREMENTS

- A. Provide transfer switches in the number and ratings that are shown on the drawings.
- B. Indicated Current Ratings: Apply as defined in UL 1008 for continuous loading and total system transfer.
- C. Fault-Current Closing and Withstand Ratings: UL 1008 WCR ratings must be specifically listed as meeting the requirements for use with protective devices at installation locations, under specified fault conditions. Withstand and closing ratings

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shall be based on use of the same set of contacts for the withstand test and the closing test.

- D. Solid-State Controls: All settings should be accurate to +/- 2% or better over an operating temperature range of - 40 to + 60 degrees C (- 40 to + 140 degrees F).
- E. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.41. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.
- F. Electrical Operation: Accomplished by a non-fused, momentarily energized solenoid or electric motor operator mechanism, mechanically and electrically interlocked in both directions (except that mechanical interlock is not required for closed transition switches).
- G. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.
 - 1. Switches using molded-case switches or circuit breakers, or insulated case circuit breaker components are not acceptable.
 - 2. Transfer switches shall be double-throw, electrically and mechanically interlocked, and mechanically held in the Source 1 and Source 2 positions.
 - 3. Main switch contacts shall be high pressure silver alloy. Contact assemblies shall have arc chutes for positive arc extinguishing. Arc chutes shall have insulating covers to prevent inter-phase flashover.
 - 4. Contacts shall be operated by a high-speed electrical mechanism that causes contacts to open or close within three electrical cycles from signal.
 - 5. Transfer switch shall be provided with flame retardant transparent covers to allow viewing of switch contact operation but prevent direct contact with components that could be operating at line voltage levels.
 - 6. The transfer switch shall include the mechanical and control provisions necessary to allow the device to be field-configured for operating speed. Transfer switch operation with motor loads shall be as is recommended in NEMA MG1.
 - a. Phase angle monitoring/timing equipment is not an acceptable substitute for this functionality
 - 7. Transfer switches designated on the drawings as "3-pole" shall have a full current-rated neutral bar with lugs.

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8. Transfer switches designated on the drawings as "service entrance" switches shall meet the requirements of section "SERVICE ENTRANCE TRANSFER SWITCHES" of this specification.
- H. Factory wiring: Transfer switch internal wiring shall be composed of pre-manufactured harnesses that are permanently marked for source and destination. Harnesses shall be connected to the control system by means of locking disconnect plug(s), to allow the control system to be easily disconnected and serviced without disconnecting power from the transfer switch mechanism
- I. Terminals: Terminals shall be pressure type and appropriate for all field wiring. Control wiring shall be equipped with suitable lugs, for connection to terminal strips.
- J. Enclosures: All enclosures shall be third-party certified for compliance to NEMA ICS 6 and UL 508, unless otherwise indicated:
 1. The enclosure shall provide wire bend space in compliance to the latest version of NFPA70, regardless of the direction from which the conduit enters the enclosure.
 2. Exterior cabinet doors shall provide complete protection for the system's internal components. Doors must have permanently mounted key-type latches. Bolted covers or doors are not acceptable.
 3. Transfer switches shall be provided in enclosures that are third party certified for their intended environment per NEMA requirements.

2.3 AUTOMATIC TRANSFER SWITCHES

- A. Comply with requirements for Level 1 equipment according to NFPA 110.
- B. Indicated current ratings:
 1. Refer to the Project drawings for specifications on the sizes and types of transfer switch equipment, withstand and closing ratings, number of poles, voltage and ampere ratings, enclosure type, and accessories.
 2. Main contacts shall be rated for 600 VAC minimum.
 3. Transfer switches shall be rated to carry 100% of rated current continuously in the enclosure supplied, in ambient temperatures of -40 to +60 degrees C (-40 to +140 degrees F), relative humidity up to 95% (non-condensing), and altitudes up to 10,000 feet (3000 meters).
- C. Relay Signal: Control shall include provisions for addition of a pre-transfer relay signal, adjustable from 0 to 60 seconds, to be provided if necessary for elevator operation, based on equipment provided for the project.

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- D. Transfer switches that are designated on the drawings as 3-pole shall be provided with a neutral bus and lugs. The neutral bus shall be sized to carry 100% of the current designated on the switch rating.
- E. Automatic Transfer Switch Control Features
 - 1. The transfer switch control system shall be configurable in the field for any operating voltage level up to 600 VAC. Voltage sensing shall be monitored based on the normal voltage at the site. Systems that utilize voltage monitoring based on standard voltage conditions that are not field configurable are not acceptable.
 - 2. All transfer switch sensing shall be configurable from an operator panel or from a Windows XP or later PC-based service tool. Designs utilizing DIP switches or other electromechanical devices are not acceptable.
 - 3. The transfer switch shall provide a relay contact signal prior to transfer or re-transfer. The time period before and after transfer shall be adjustable in a range of 0 to 60 seconds.
 - 4. The control system shall be designed and prototype tested for operation in ambient temperatures from - 40 degrees C to + 60 degrees C (- 40 to +140 degrees F). It shall be designed and tested to comply with the requirements of the noted voltage and RFI/EMI standards.
 - 5. The control shall have optically isolated logic inputs, high isolation transformers for AC inputs and relays on all outputs, to provide optimum protection from line voltage surges, RFI and EMI.
 - 6. The transfer switch network monitoring equipment, when supplied, shall be provided with a battery-based auxiliary power supply to allow monitoring of the transfer switch when both AC power sources are non-operational.
 - 7. The indicator panel LEDs shall display:
 - a. Which source the load is connected to (Source 1 or Source 2)
 - b. Which source or sources are available
 - c. When switch is not set for automatic operation, the control is disabled
 - d. When the switch is in test/exercise mode
 - 8. The indicator shall have pushbuttons that allow the operator to activate the following functions:
 - a. Activate pre-programmed test sequence
 - b. Override programmed delays, and immediately go to the next operation

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- c. Reset the control by clearing any faults
 - d. Test all of the LEDs by lighting them simultaneously
- 9. The alphanumeric digital display shall be vacuum fluorescent-type, clearly visible in both bright sunlight and no-light conditions over an angle of 120 degrees, and shall display the following:
 - a. AC voltage for all phases, normal and emergency
 - b. Source status: connected or not connected.
- 10. The display panel shall be password-protected, and allow the operator to view and make adjustments:
 - a. Set nominal voltage and frequency for the transfer switch
 - b. Adjust voltage and frequency sensor operation set points
 - c. Set up time clock functions
 - d. Set up load sequence functions
 - e. Enable or disable control functions including program transition
 - f. View real-time clock data, operation log (hours connected, times transferred, failures) and service history
- F. Transfer Switch Control Panel: The transfer switch shall have a microprocessor-based control with a sealed membrane panel incorporating pushbuttons for operator-controlled functions, and LED lamps for system status indicators. Panel display and indicating lamps shall include permanent labels.
- G. Control Functions: Functions managed by the control shall include:
 - 1. Software adjustable time delays:
 - a. Engine start (prevents nuisance genset starts in the event of momentary power fluctuation): 0 to 120 seconds (default 3 sec)
 - b. Transfer normal to emergency (allows genset to stabilize before load is transferred): 0 to 120 seconds (default 3 sec)
 - c. Re-transfer emergency to normal (allows utility to stabilize before load is transferred from genset): 0 to 30 minutes (default 3 sec)
 - d. Engine cooldown: 0 to 30 minutes (default 10 min)
 - e. Programmed transition: 0 to 60 seconds (default 3 sec)
- H. Control features shall include:

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1. Programmable genset exerciser: A field-programmable control shall periodically start and run the generator with or without transferring the load for a preset time period, then re-transfer and shut down the generator after a preset cool-down period.
 2. In event of a loss of power to the control, all control settings, real-time clock setting and the engine start-time delay setting will be retained.
 3. The system continuously logs information including the number of hours each source has been connected to the load, the number of times transferred, and the total number of times each source has failed. An event recorder stores information, including time and date-stamp, for up to 50 events.
 4. Re-Transfer Inhibit Switch: Inhibits automatic re-transfer control so automatic transfer switch will remain connected to emergency power source as long as it is available regardless of condition of normal source.
 5. Transfer Inhibit Switch: Inhibits automatic transfer control so automatic transfer switch will remain connected to normal power source regardless of condition of emergency source.
- I. Control Interface
1. Provide one set Form C auxiliary contacts on both sides, operated by transfer switch position, rated 10 amps 250 VAC.
- J. Engine Starting Contacts
1. One isolated and normally closed pair of contacts rated 10A at 32 VDC minimum.

2.4 SERVICE ENTRANCE TRANSFER SWITCHES

- A. Transfer switches must be specifically intended for service entrance applications, and labeled "Suitable for service entrance use only"
- B. Transfer switch shall meet NEC requirements for emergency, legally required and standby applications as specified in UL 1008.
- C. Entire transfer switch including enclosure must be listed and labeled to UL 1008; switches with only the mechanism listed are not acceptable.
- D. Molded case circuit breaker must be UL 489 listed.
- E. Automatic transfer-switch sensing, controlling, or operating function shall not depend on remote panel for proper operation. The remote annunciation system shall not prevent transfer to the alternate source when the primary power source fails, nor prevent return to the primary source if the alternate source fails

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PART 3 - EXECUTION

3.1 INSTALLATION

- A. Design each fastener and support to carry load indicated by seismic requirements and according to seismic-restraint details. See Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- B. Floor-Mounting Switch: Anchor to floor by bolting.
 - 1. Floor-mounted transfer switches (except drawout switches supported by wheeled carriages, which must be rolled out at floor level) shall be mounted on concrete bases complying with the following requirements:
 - a. Concrete Bases: 4 inches (100 mm) high, reinforced, with chamfered edges. Extend base no more than 4 inches (100 mm) in all directions beyond the maximum dimensions of switch, unless otherwise indicated or unless required for seismic support. Construct concrete bases according to Division 26 Section "Hangers and Supports for Electrical Systems."
- C. Identify components according to Division 26 Section "Identification for Electrical Systems."
- D. Set field-adjustable intervals and delays, relays, and engine exerciser clock.

3.2 CONNECTIONS

- A. Wiring to Remote Components: Match type and number of cables and conductors to control and communication requirements of transfer switches as recommended by manufacturer. Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.
- B. Field control connections shall be made on a common terminal block that is clearly and permanently labeled.
- C. Transfer switch shall be provided with AL/CU mechanical lugs sized to accept the full output rating of the switch. Lugs shall be suitable for the number and size of conductors shown on the drawings.
- D. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.3 SOURCE QUALITY CONTROL

- A. Prior to shipping, factory shall test and inspect components, assembled switches, and associated equipment to ensure proper operation.

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- B. Factory shall check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements.
- C. Factory shall perform dielectric strength test complying with NEMA ICS 1.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: The supplier of the transfer switch(es) and associated equipment shall inspect, test, and adjust components, assemblies, and equipment installations, including connections, and report results in writing.
- B. Manufacturer's representative shall perform tests and inspections and prepare test reports.
- C. After installing equipment and after electrical circuitry has been energized, installer shall test for compliance with requirements.
 - 1. Perform recommended installation tests as recommended in manufacturer's installation and service manuals.
 - 2. After energizing circuits, demonstrate interlocking sequence and operational function for each switch.
 - a. Simulate power failures of normal source to automatic transfer switches and of emergency source with normal source available.
 - b. Verify time-delay settings.
 - c. Verify that the transfer switch is accurately metering AC voltage.
 - d. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.

3.5 DEMONSTRATION

- A. After generator set installation, the generator and transfer switch supplier shall conduct a complete operation, basic maintenance, and emergency service seminar covering generator set and transfer switch equipment, for up to 10 people employed by the Owner.
 - 1. The seminar shall include instruction on operation of the transfer equipment, normal testing and exercise, adjustments to the control system, and emergency operation procedures.

END OF SECTION 263600

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SECTION 312000 - EARTH MOVING-TRENCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for slabs-on-grade and walks.
3. Excavating and backfilling for buildings and structures.
4. Drainage course for concrete slabs-on-grade.
5. Subbase course for concrete walks and pavements.
6. Subbase course and base course for asphalt paving.
7. Excavating and backfilling trenches for utilities and pits for buried utility structures.

1.2 DEFINITIONS

A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

F. Fill: Soil materials used to raise existing grades.

- G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- H. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- I. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- J. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.3 INFORMATIONAL SUBMITTALS

- A. Material test reports.

1.4 FIELD CONDITIONS

- A. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- B. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- C. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- D. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- E. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and zero to 5 percent passing a No. 8 sieve.

2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored to comply with local practice or requirements of authorities having jurisdiction.
- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored to comply with local practice or requirements of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.
- D. Any abandoned underground utility lines discovered in the project area shall be removed and all voids should be backfilled with engineered fill in 8" max lifts at min. 95% compaction in paved/lawn areas, 98% under building structure.
- E. Proof-rolling of soil subgrades should be performed prior to placing any fill, base stone, foundations. Proof-rolling shall be performed using a minimum 10-ton weight smooth-drum roller. Any areas with excessive deflection should be undercut and replaced with engineered fill.
- F. The soil bearing materials are susceptible to softening if exposed to standing water which can result from precipitation during construction. Therefore, the contractor shall be responsible for keeping the site dewatered, draining stormwater away and out of any excavated trenches, and should coordinate to have the excavation backfilled as soon as possible (concrete footers, pipe, bedding, etc) to minimize the subgrade from being saturated.

3.2 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil

materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.3 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 2. A Geotech report dated August 2022 by NGE, LLC was produced for this project. The report provides discussions and recommendations for design purposes only. Any conclusions drawn by the contractor regarding subsurface conditions, quantities of unsuitable soils, rock, groundwater, or means and methods of construction are at their own risk.
- B. Excavations at Edges of Tree- and Plant-Protection Zones:
 1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

3.4 EXCAVATION FOR WALKS

- A. Excavate surfaces under walks to indicated lines, cross sections, elevations, and subgrades.

3.5 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
 1. Clearance: 12 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.6 SUBGRADE INSPECTION

- A. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired dump truck to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.7 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2000 psi, may be used when approved by Architect.
 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.8 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.9 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Section 033000 "Cast-in-Place Concrete."
- D. Trenches under Roadways: Provide 4-inch thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase course. Concrete is specified in Section 033000 "Cast-in-Place Concrete."

- E. Initial Backfill: Place and compact initial backfill of subbase material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.
 - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- F. Final Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.
- G. Warning Tape: Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.10 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material.
 - 3. Under steps and ramps, use engineered fill.
 - 4. Under building slabs, use engineered fill.
 - 5. Under footings and foundations, use engineered fill.

3.11 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.12 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D698:

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 98 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent.
3. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.13 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
 1. Turf or Unpaved Areas: Plus or minus 1 inch.
 2. Walks: Plus or minus 1 inch.
 3. Pavements: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.14 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
 1. Shape subbase course and base course to required crown elevations and cross-slope grades.
 2. Place subbase course and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 3. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D698 and ASTM D1557.

3.15 DRAINAGE COURSE UNDER CONCRETE SLABS-ON-GRADE

- A. Place drainage course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:

1. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
2. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D698.

3.16 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform inspections:
- B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.17 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIALS

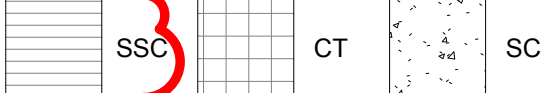
- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

GENERAL NOTES:

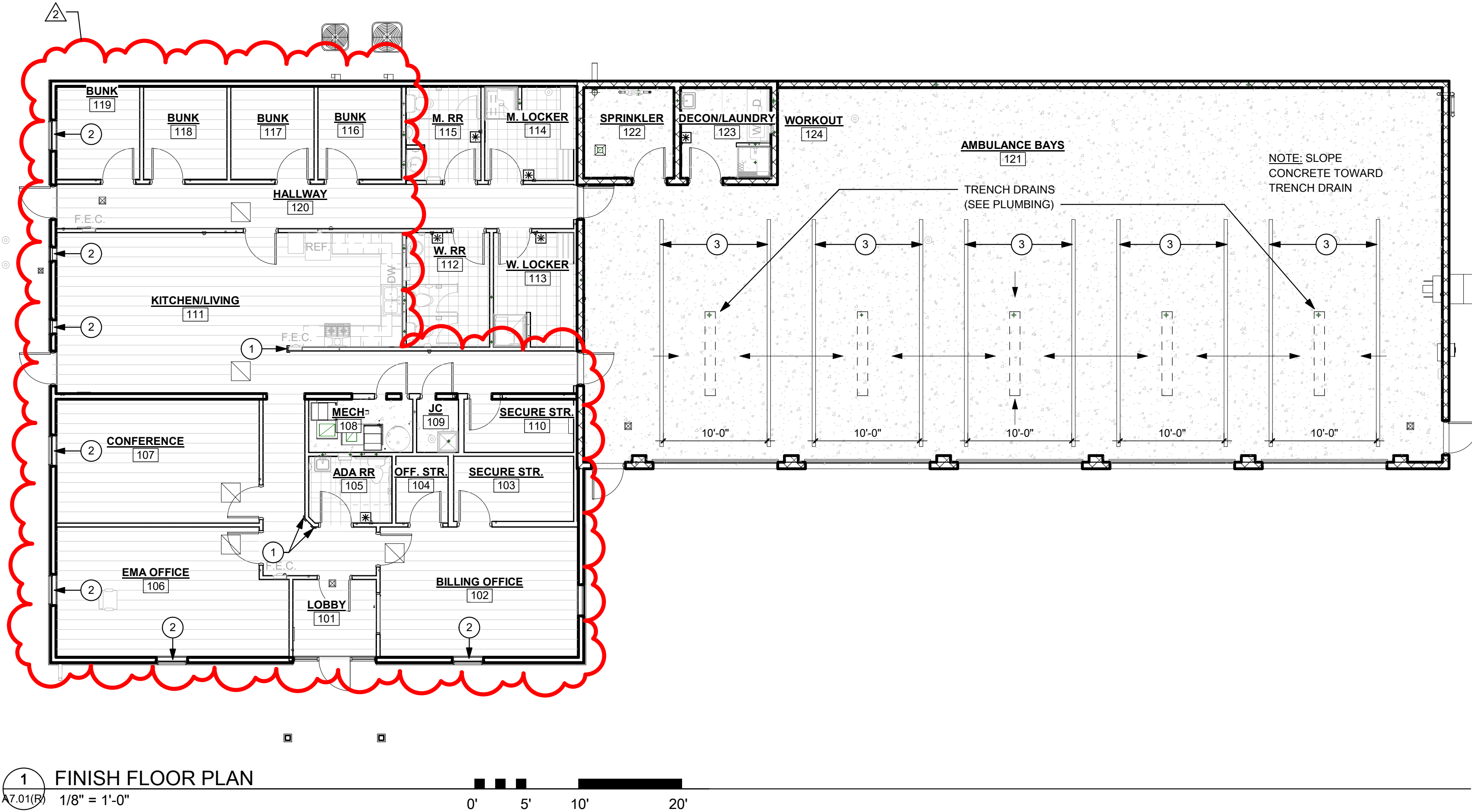
- THE SCOPE OF THE WORK IS GENERALLY LIMITED TO THE AREAS SHOWN ON THESE PLANS. WORK NECESSARY TO RUN ELECTRICAL SERVICE TO EXISTING PANELS OR EXTEND OR REROUTE OTHER UTILITY LINES IS ALSO INCLUDED.
- VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO COMMENCEMENT OF ANY ON SITE ACTIVITIES.
- INTERIOR DIMENSIONS SHOWN ON THESE PLANS ARE FROM FACE OF FINISHED WALL TO FACE OF FINISHED WALL UNLESS NOTED OTHERWISE.
- TYPICAL NEW WALLS SHALL BE 6" ABOVE FINISHED CEILING HEIGHT. VERIFY CEILING HEIGHTS ON ROOM FINISH SCHEDULE, SHEET A1.02. NEW WALLS SHALL BE 2x6 WOOD STUDS WITH 5/8" GWB. ON EACH SIDE.
- INSTALL WOOD BLOCKING IN NEW WALLS TO RECEIVE WALL-MOUNTED ITEMS. WOOD BLOCKING SHALL BE FIRE RETARDANT TREATED.
- PREPARE ALL NEW SURFACES TO RECEIVE SCHEDULED FINISH. REFERENCE ROOM FINISH SCHEDULE, SHEET A6.01.
- FINISH FLOOR MAT'L TRANSITIONS SHALL OCCUR AT CENTERLINE OF DOOR.

FLOOR FINISH LEGEND



FINISH PLAN REFERENCE NOTES

NOTE #	DESCRIPTION
1	PROVIDE CORNER GUARD
2	PROVIDE WINDOW SHADE
3	PAINT STRIPING ON AMBULANCE BAY FLOOR. SEE SPECIFICATION 321723.



ROOM FINISH SCHEDULE										
ROOM #	ROOM NAME	FLOOR FINISH	BASE	WALL FINISH				CEILING HEIGHT	CEILING FINISH	REMARKS
				NORTH	EAST	SOUTH	WEST			
101	LOBBY	SSC	RB	P	P	P	P	9'-0"	ACT	
102	BILLING OFFICE	SSC	RB	P	P	P	P	9'-0"	ACT	
103	SECURE STR.	SSC	RB	P	P	P	P	10'-0"	GWB	
104	OFF. STR.	SSC	RB	P	P	P	P	9'-0"	ACT	
105	ADA RR	CT	RB	T	P/T	P	P/T	9'-0"	ACT	2
106	EMA OFFICE	SSC	RB	P	P	P	P	9'-0"	ACT	
107	CONFERENCE	SSC	RB	P	P	P	P	9'-0"	ACT	
108	MECH	SC	RB	P	P	P	P	9'-0"	ACT	
109	JC	SC	RB	P	P	P	P	9'-0"	ACT	
110	SECURE STR.	SC	RB	P	P	P	P	10'-0"	GWB	
111	KITCHEN/LIVING	SSC	RB	P	P	P	P	9'-0"	ACT	
112	W. RR	CT	RB	P	P/T	P/T	P/T	9'-0"	ACT	2
113	W. LOCKER	CT	RB	P	P	P/T	P/T	9'-0"	ACT	1,3
114	M. LOCKER	CT	RB	P	P	P/T	P/T	9'-0"	ACT	1,3
115	M. RR	CT	RB	P/T	P	P/T	P/T	9'-0"	ACT	
116	BUNK	SSC	RB	P	P	P	P	9'-0"	ACT	
117	BUNK	SSC	RB	P	P	P	P	9'-0"	ACT	
118	BUNK	SSC	RB	P	P	P	P	9'-0"	ACT	
119	BUNK	SSC	RB	P	P	P	P	9'-0"	ACT	
120	HALLWAY	SSC	RB	P	P	P	P	9'-0"	ACT	
121	AMBULANCE BAYS	SC	-	P	P	P	P	-	P	
122	SPRINKLER	SC	-	P	P	P	P	8'-0"	ACT	
123	DECON/LAUNDRY	SC	RB	P	P	P	P	8'-0"	ACT	1
124	WORKOUT	SC	-	P	P	P	P	-	P	

ALTERNATE #1: PROVIDE RESINOUS FLOORING IN LIEU OF SEALED STAINED CONC (SSC) FLOORING.

REMARKS:

- ACT - 2 AT SHOWERS
- TILE TO 6'-0" A.F.F.
- TILE ADJACENT TO SHOWER

ALTERNATE #3: REVISED FINISH PLAN, REVISED FINISH SCHEDULE	NO.	BY	DATE	DESCRIPTION
03/15/2023	2			

BROOKE COUNTY EMS

BROOKE COUNTY COMMISSION
3031 PLEASANT AVE, WELLSBURG WV 26070
FEBRUARY 24, 2023
CONSTRUCTION DOCUMENTS

DRAWN: DS
CHECKED: PMF
DATE: 02/24/2023
DATE: 02/24/2023

PROJECT No.
T60-11009-00

FINISHED FLOOR PLAN

SHEET No.

A7.01(R)

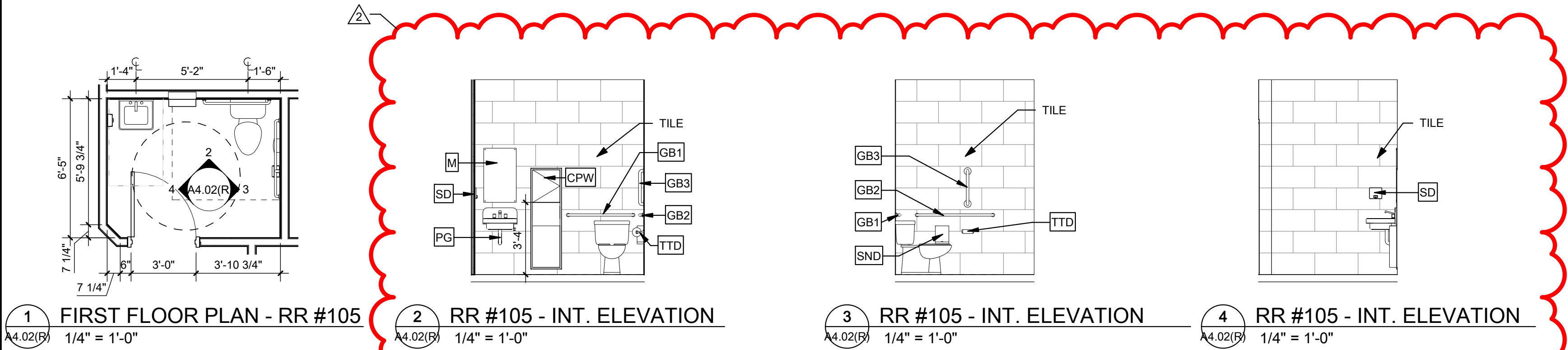
THRASHER

600 WHITE OAKS BLVD.
P.O. BOX 940
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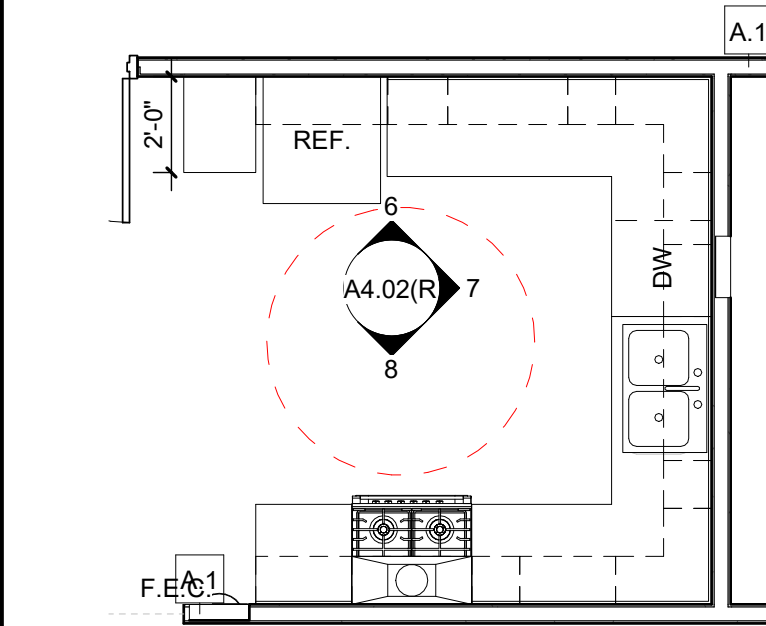


1 FIRST FLOOR PLAN - RR #105
A4.02(R) 1/4" = 1'-0"

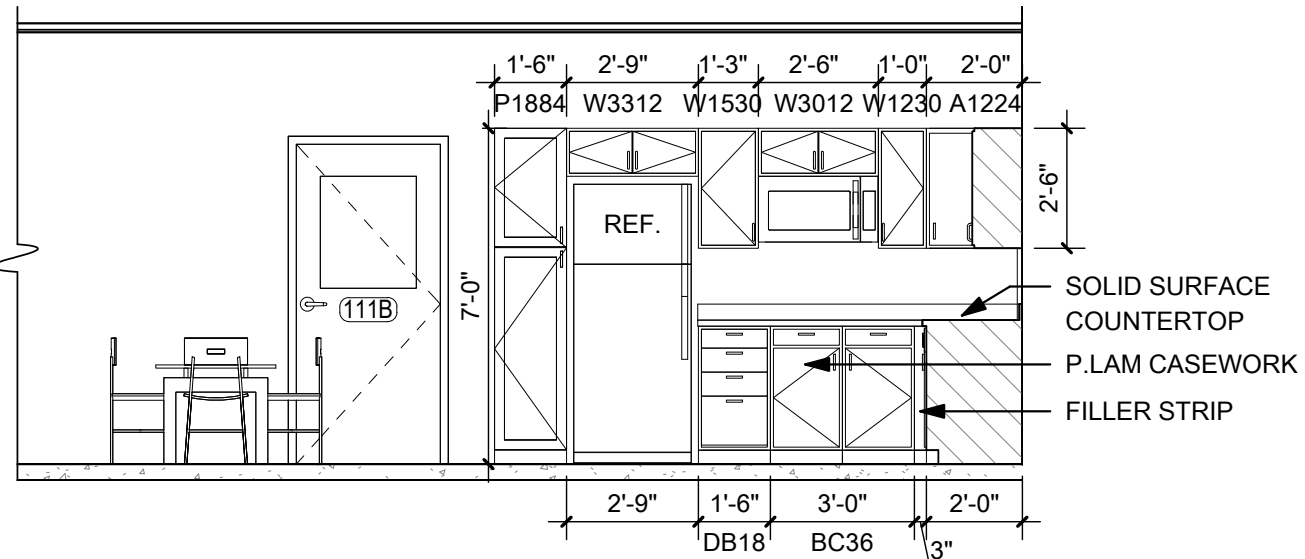
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A4.02(R) 1/4" = 1'-0"

3 RR #105 - INT. ELEVATION
A4.02(R) 1/4" = 1'-0"

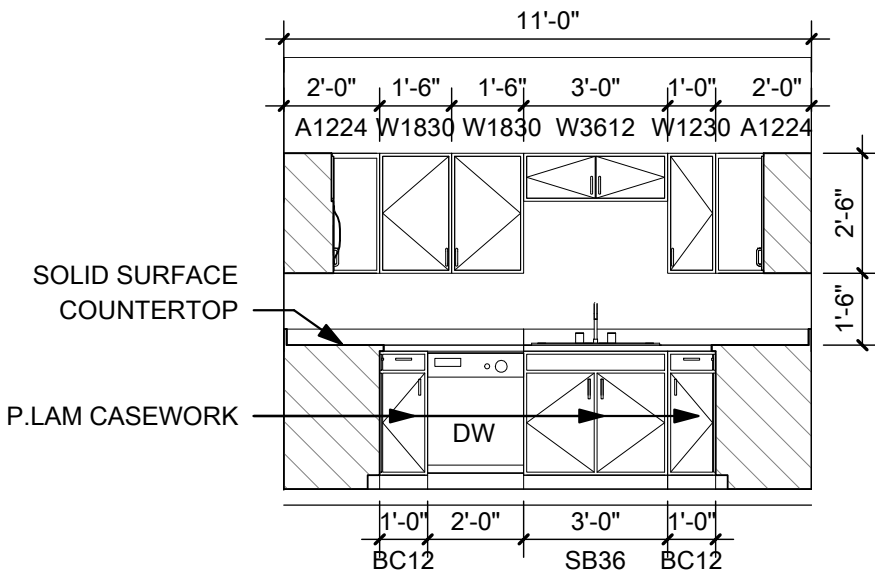
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A4.02(R) 1/4" = 1'-0"



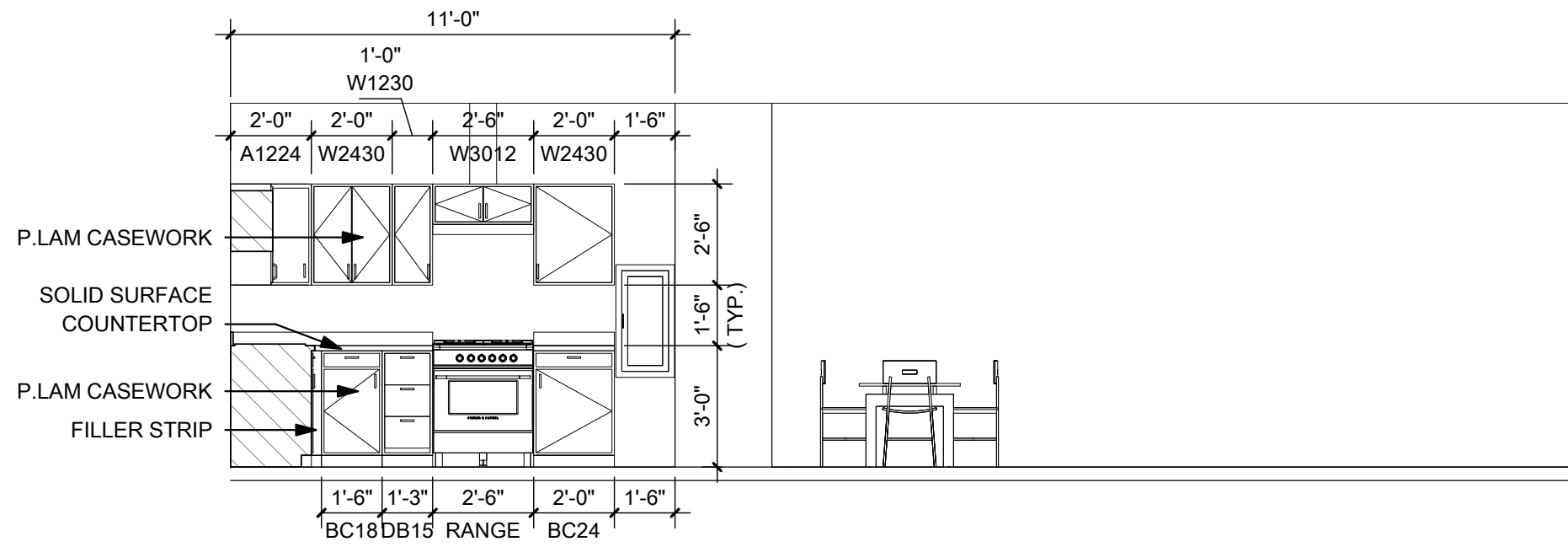
5 FIRST FLOOR PLAN - KITCHEN #111
A4.02(R) 1/4" = 1'-0"



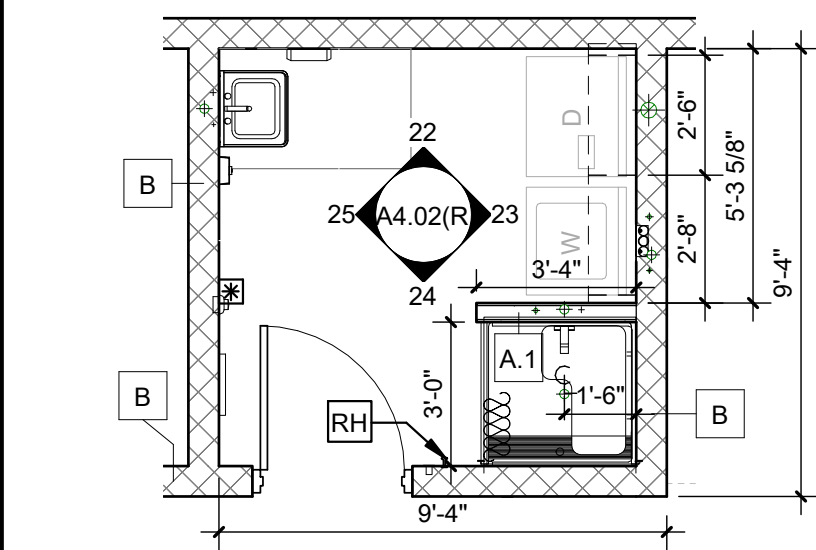
6 KITCHEN - INT. ELEVATION
A4.02(R) 1/4" = 1'-0"



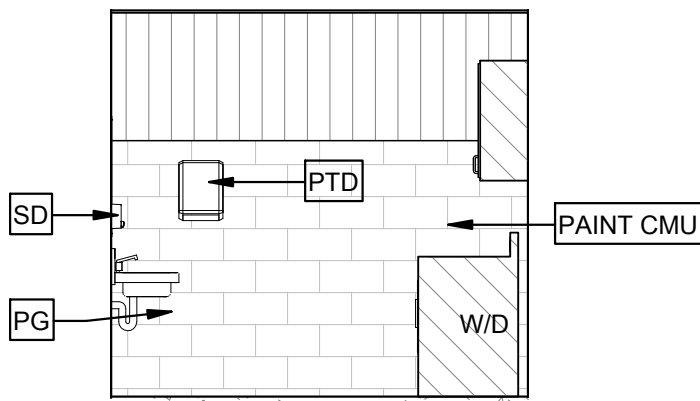
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A4.02(R) 1/4" = 1'-0"



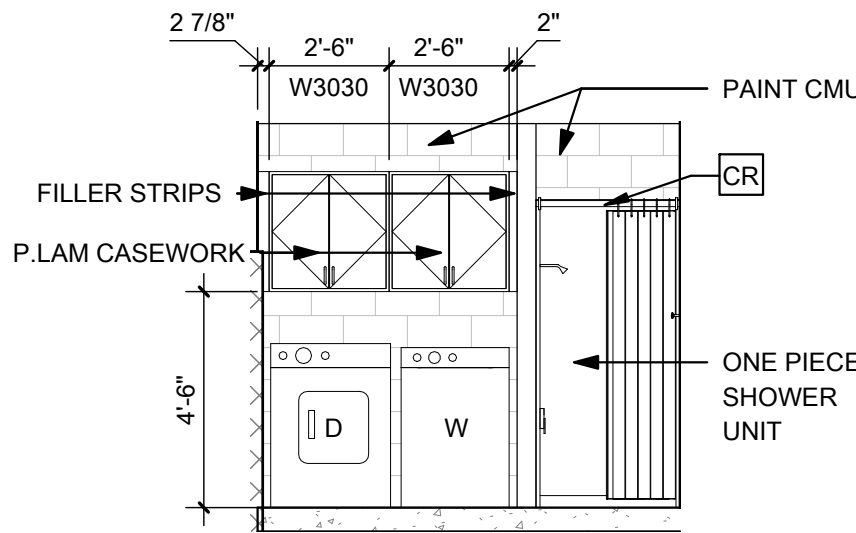
8 KITCHEN - INT. ELEVATION
A4.02(R) 1/4" = 1'-0"



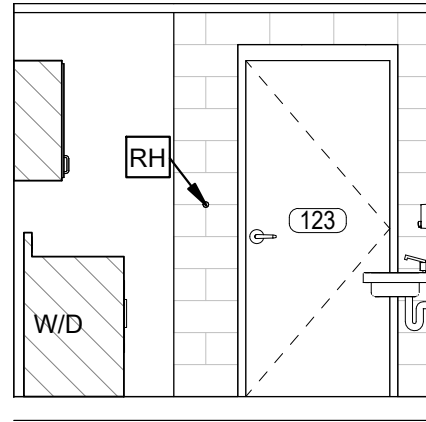
21 FIRST FLOOR PLAN - DECON/LAUNDRY #123
A4.02(R) 1/4" = 1'-0"



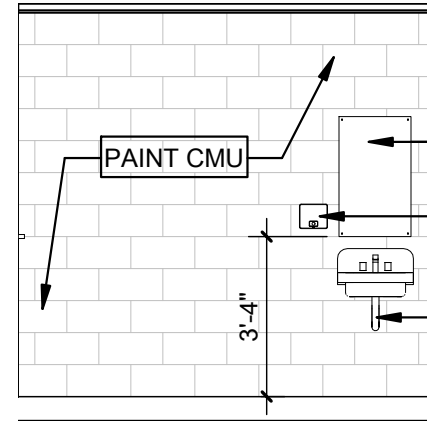
22 DECON/LAUNDRY #123 - INT. ELEVATION
A4.02(R) 1/4" = 1'-0"



23 DECON/LAUNDRY #123 - INT. ELEVATION
A4.02(R) 1/4" = 1'-0"



24 DECON/LAUNDRY #123 - INT. ELEVATION
A4.02(R) 1/4" = 1'-0"



25 DECON/LAUNDRY #123 - INT. ELEVATION
A4.02(R) 1/4" = 1'-0"

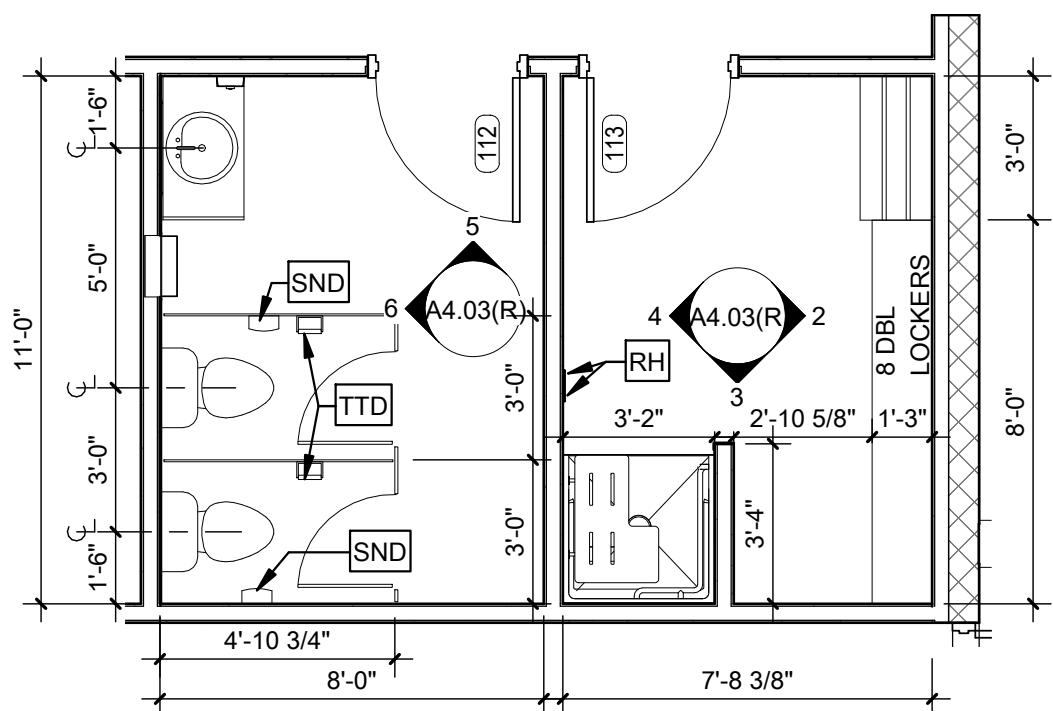
RESTROOM ACCESSORY SCHEDULE	
NOTE #	DESCRIPTION
CPW	COMBINATION PAPER TOWEL/WASTE
CR	CURTAIN ROD
FDS	FOLD DOWN SEAT
GB1	36" HORIZONTAL GRAB BAR
GB2	42" HORIZONTAL GRAB BAR
GB3	24" VERTICAL GRAB BAR
GB4	SHOWER GRAB BARS
HD	HAND DRYER
M	MIRROR
PG	PIPE GUARD
PTD	PAPER TOWEL DISPENSER
RH	ROBE HOOK
SD	SOAP DISPENSER
SND	SANITARY NAPKIN DISPOSAL
TTD	TOILET TISSUE DISPENSER

DATE	BY	DESCRIPTION
2		RESTROOM TILE TO CEILING.

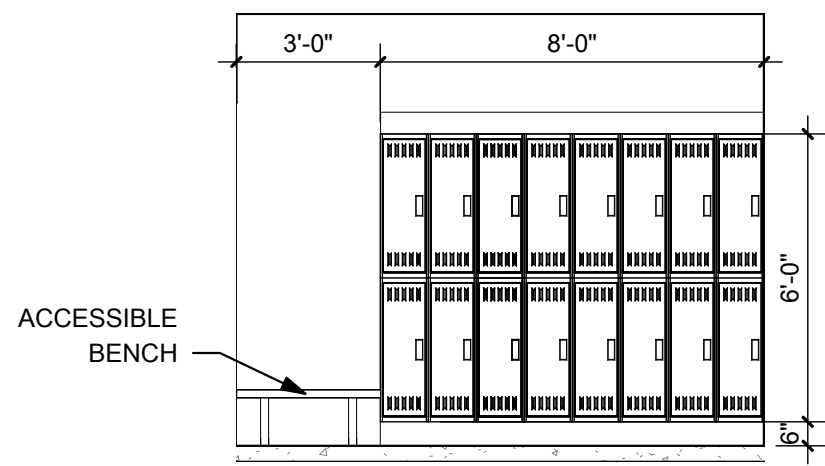
BROOKE COUNTY EMS
BROOKE COUNTY COMMISSION
3031 PLEASANT AVE, WELLSBURG WV 26070
FEBRUARY 24, 2023
CONSTRUCTION DOCUMENTS

DRAWN: DS
CHECKED: PMF
PROJECT No.
T80-11009.00
ENLARGED PLANS AND INT. ELEVATIONS
SHEET No.

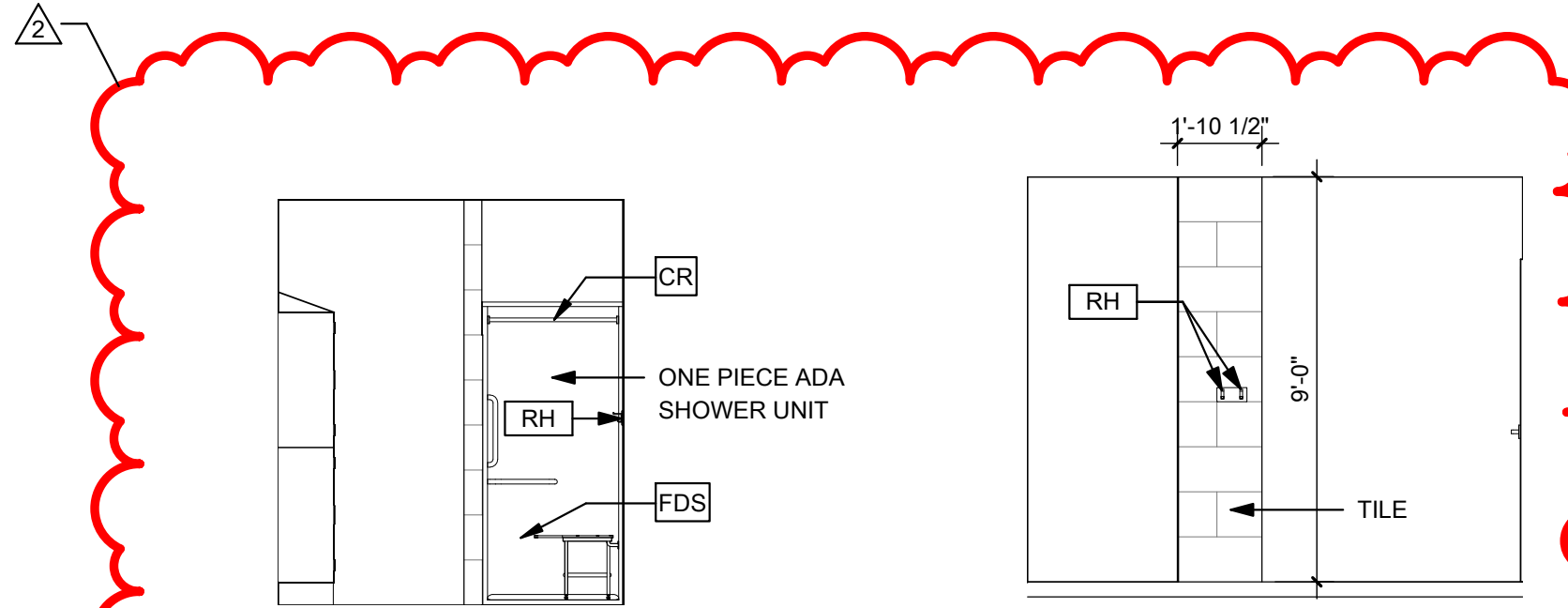
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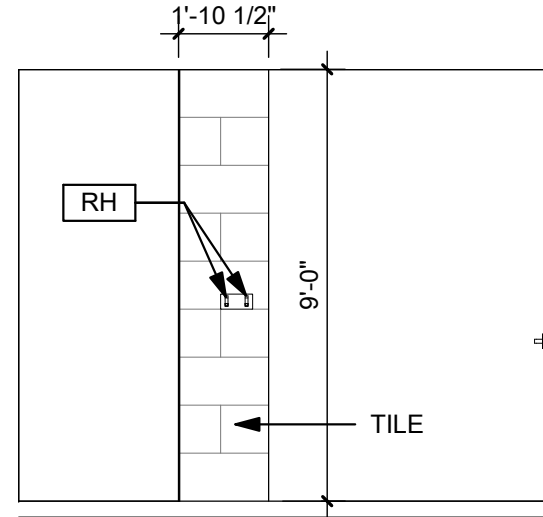
1 FIRST FLOOR PLAN - W. RR/LOCKER CALLOUT
A4.03(R) 1/4" = 1'-0"



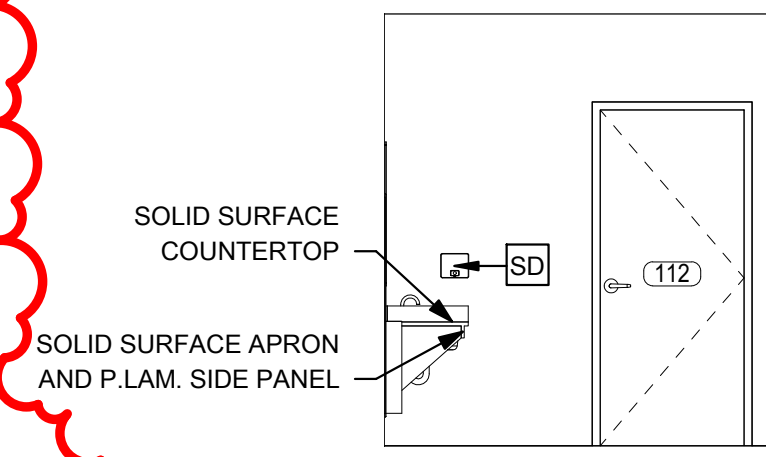
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A4.03(R) 1/4" = 1'-0"



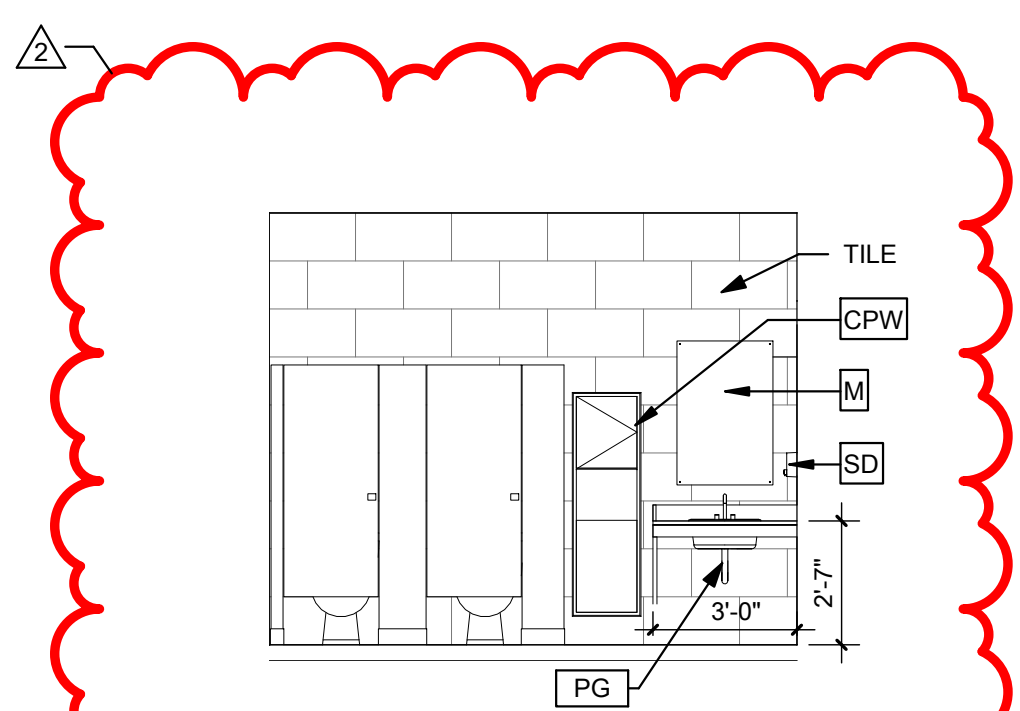
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A4.03(R) 1/4" = 1'-0"



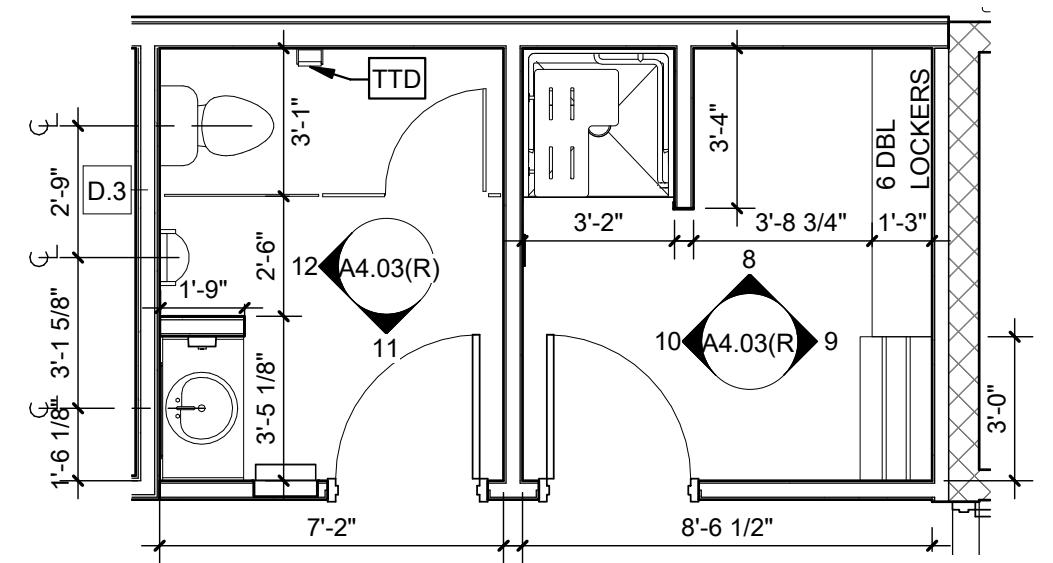
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A4.03(R) 1/4" = 1'-0"



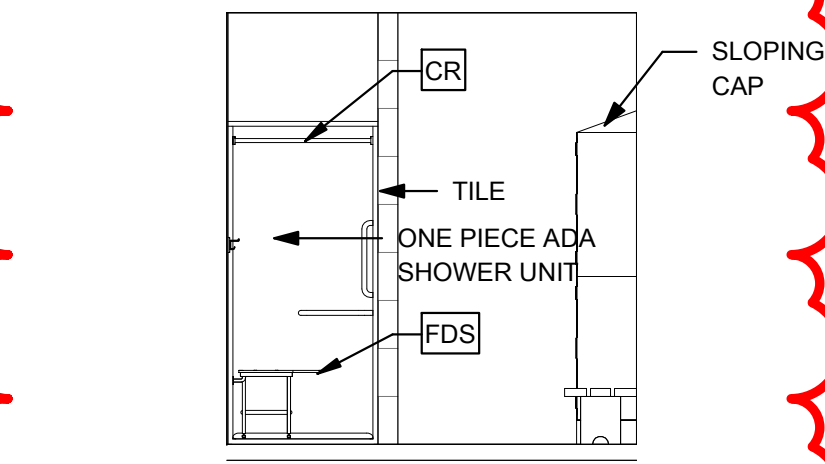
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A4.03(R) 1/4" = 1'-0"



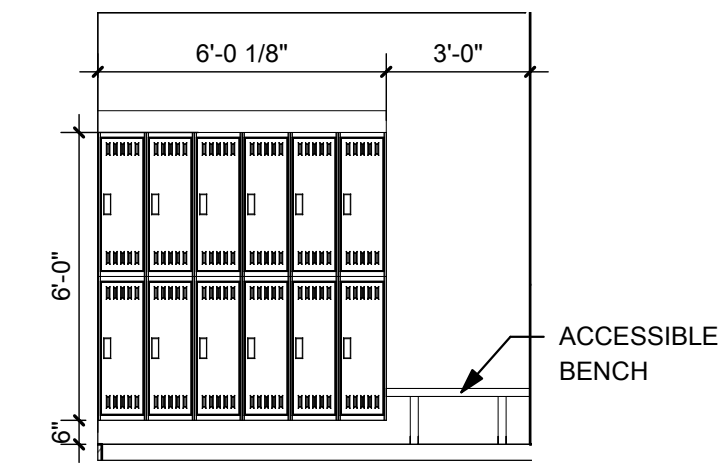
6 W. RR - INT. ELEVATION
A4.03(R) 1/4" = 1'-0"



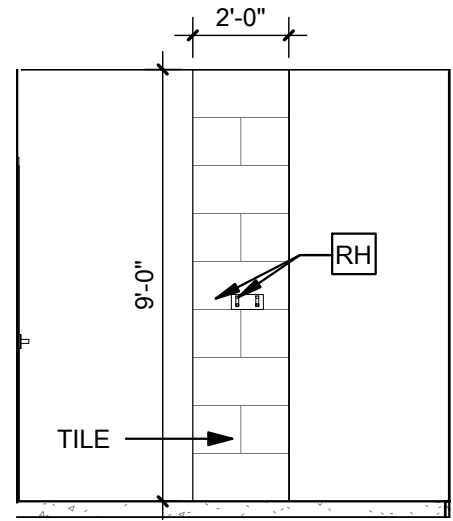
7 FIRST FLOOR PLAN - M. RR/LOCKER CALLOUT
A4.03(R) 1/4" = 1'-0"



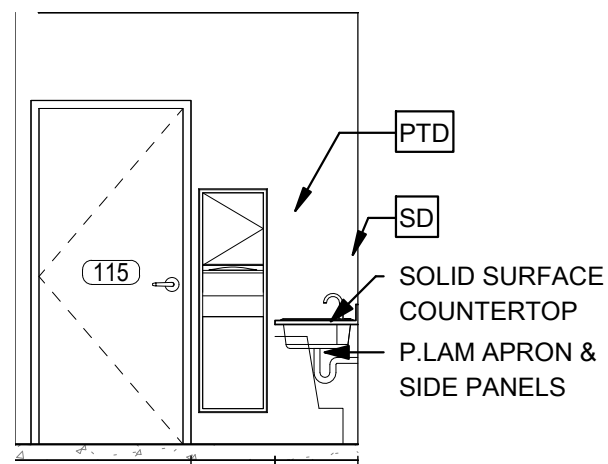
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A4.03(R) 1/4" = 1'-0"



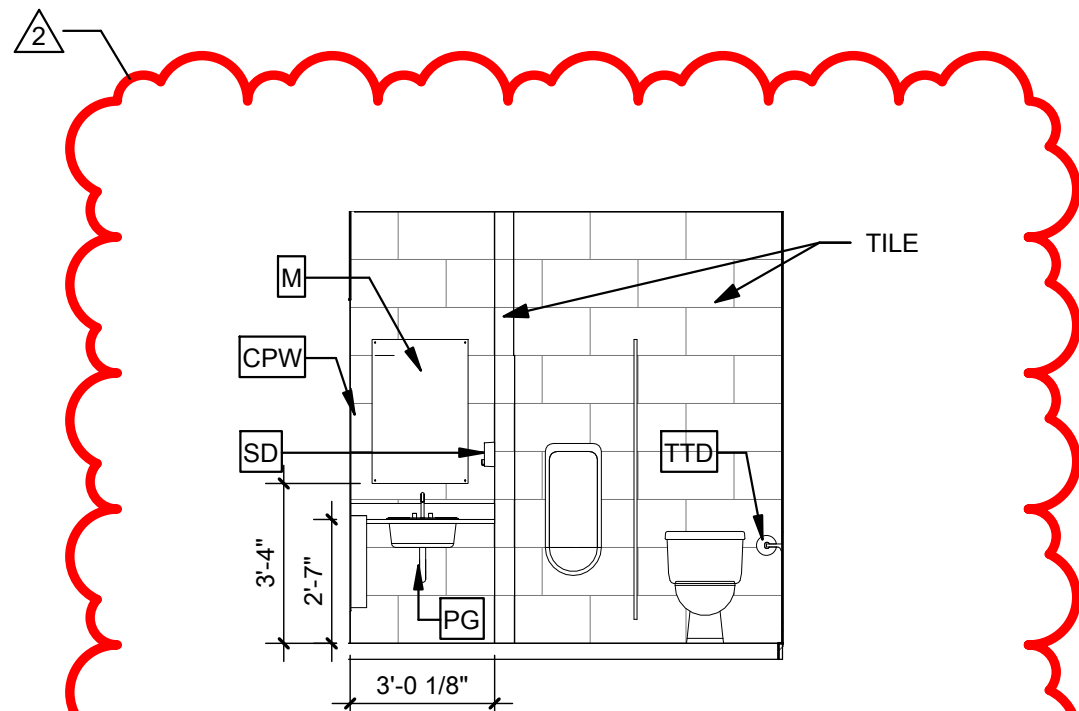
9 M. LOCKER - INT. ELEVATION
A4.03(R) 1/4" = 1'-0"



10 M. LOCKER - INT. ELEVATION
A4.03(R) 1/4" = 1'-0"



11 M. RR - INT. ELEVATION
A4.03(R) 1/4" = 1'-0"



12 M. RR - INT. ELEVATION
A4.03(R) 1/4" = 1'-0"

RESTROOM ACCESSORY SCHEDULE

NOTE #	DESCRIPTION
CPW	COMBINATION PAPER TOWEL/WASTE
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FDS	FOLD DOWN SEAT
GB1	36" HORIZONTAL GRAB BAR
GB2	42" HORIZONTAL GRAB BAR
GB3	24" VERTICAL GRAB BAR
GB4	SHOWER GRAB BARS
HD	HAND DRYER
M	MIRROR
PG	PIPE GUARD
PTD	PAPER TOWEL DISPENSER
RH	ROBE HOOK
SD	SOAP DISPENSER
SND	SANITARY NAPKIN DISPOSAL
TTD	TOILET TISSUE DISPENSER

NO.	BY	DATE	DESCRIPTION
2			RESTROOM TILE TO CEILING.

BROOKE COUNTY EMS

BROOKE COUNTY COMMISSION
3031 PLEASANT AVE, WELLSBURG WV 26070
FEBRUARY 24, 2023
CONSTRUCTION DOCUMENTS

DRAWN: DS DATE: 02/24/2023
CHECKED: PMF DATE: 02/24/2023

PROJECT No. T80-11009-00

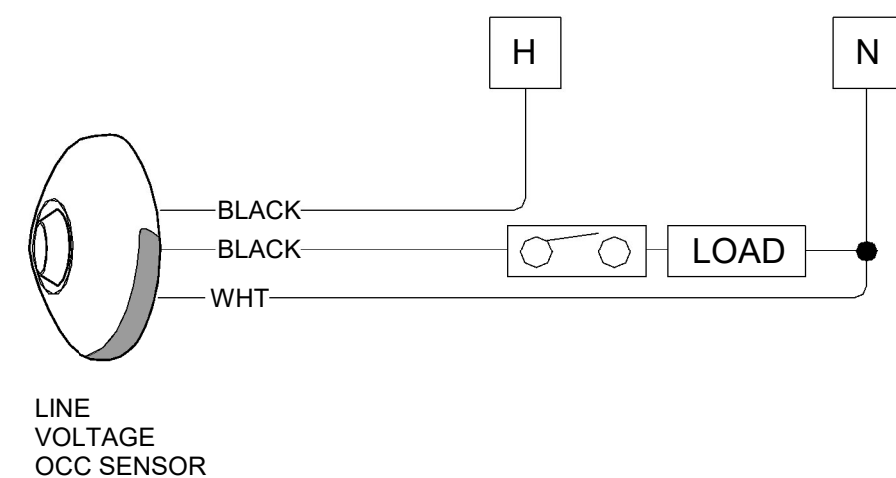
ENLARGED PLANS AND
INT. ELEVATIONS

SHEET No.

A4.03(R)

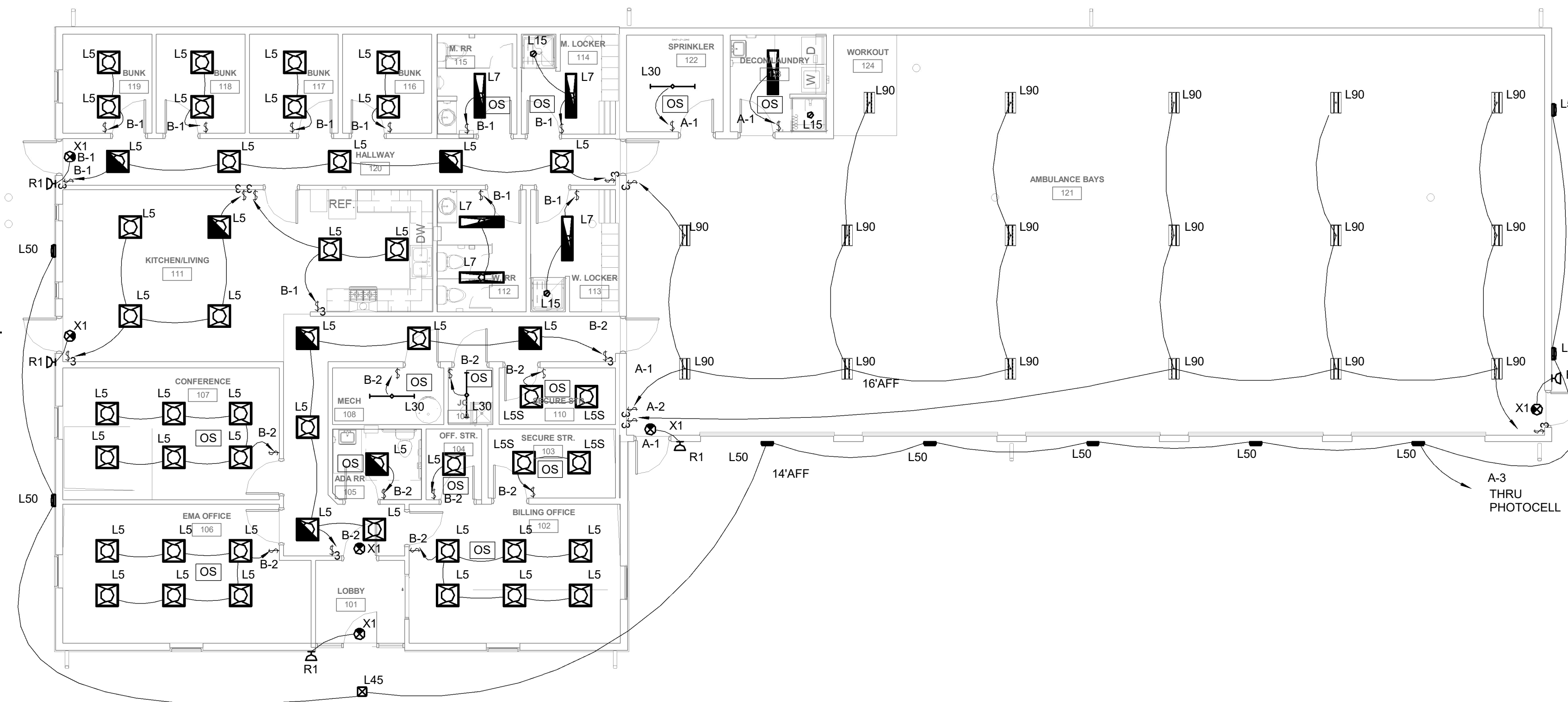
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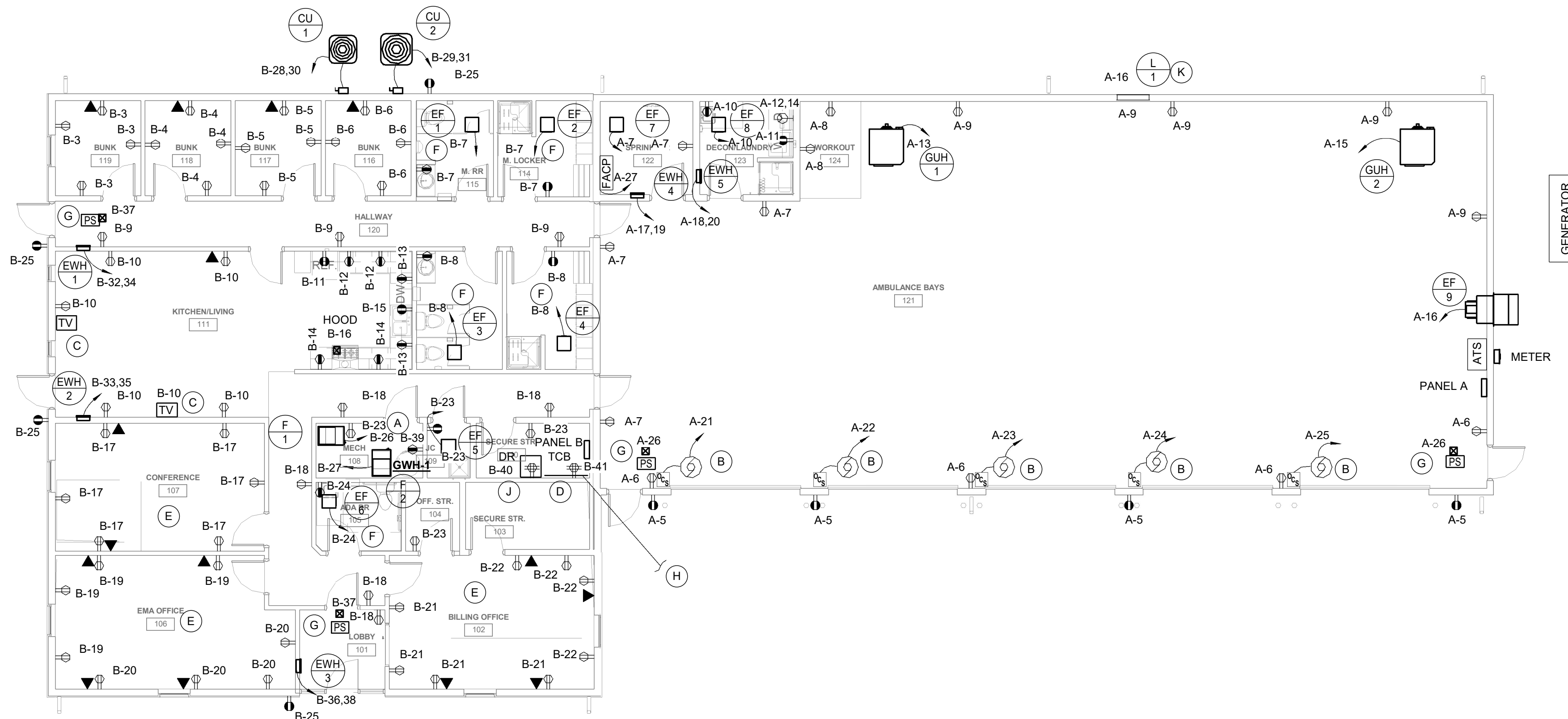
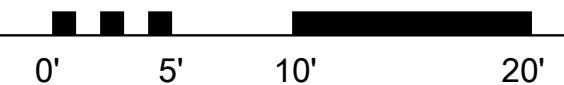


OCCUPANCY SENSOR WIRING DIAGRAM

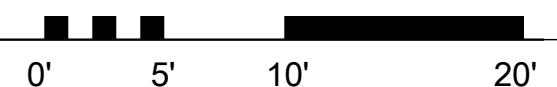
NOT TO SCALE



1 Lighting Plan
E1.01R 1/8" = 1'-0"



2 Power Plan
E1.01R 1/8" = 1'-0"



PLAN NOTES: (X)

- A. RECEPTACLE FOR GAS WATER HEATER AND RECIRCULATION PUMP. COORDINATE LOCATION WITH PLUMBING CONTRACTOR.
- B. COORDINATE GARAGE DOOR. INSTALLATION WITH DOOR SUPPLIER. ELECTRICAL CONTRACTOR TO PROVIDE ALL CONDUIT, WIRING AND LABOR FOR A COMPLETE INSTALLATION.
- C. SEE TV OUTLET DETAIL ON SHEET E3.01R.
- D. SEE TELEPHONE CONNECTION BOARD ON SHEET E3.01R.
- E. RECEPTACLES SHALL BE SWITCHED PER ASHRAE 90.1, 2013. SEE DETAIL ON SHEET E3.01R
- F. EXHAUST FAN POWERED AND CONTROLLED THRU LIGHTING CIRCUIT.
- G. JUNCTION BOX FOR DOOR POWER SUPPLY.
- H. (2)- 4" CONDUITS WITH PULL STRING FOR TELEPHONE, CABLE AND INTERNET SERVICE. COORDINATE WITH CIVIL SITE PLAN.
- J. PROVIDE 24U OPEN FRAME DATA RACK WITH CABLE MANAGEMENT AND 96 PORT CAT-6 QUICKPORT PATCH PANEL.
- K. INTERLOCK WITH EXHAUST FAN EF-9.

GENERAL NOTES:

1. CONTROLLED RECEPTACLES SHALL BE INDICATED PER NEC 406.3(E).
2. PROVIDE GFCI PROTECTION PER NEC 210.8.
3. ALL EXTERIOR RECEPTACLES SHALL BE WEATHER RESISTANT AND SHALL HAVE WEATHERPROOF COVER EVEN WHILE "IN USE" PER NEC 406.9.
4. PROVIDE ARC FAULT PROTECTION PER NEC 210.12.
5. DATA/PHONE CABLES SHALL BE CAT6.
6. RECEPTACLES IN ABUNDANCE BAYS SHALL BE MOUNTED AT 48" AFF.

[illegible]

BROOKE COUNTY EMS

BROOKE COUNTY COMMISSION

PLEASANT AVE, WELLSBURG, WV 26070

02/24/2023

CONSTRUCTION DOCUMENTS

DRAWN: JCS
CHECKED: JEH
APPROVED: JEH

DATE: 02/24/202

PROJECT No.

T60-11009.04

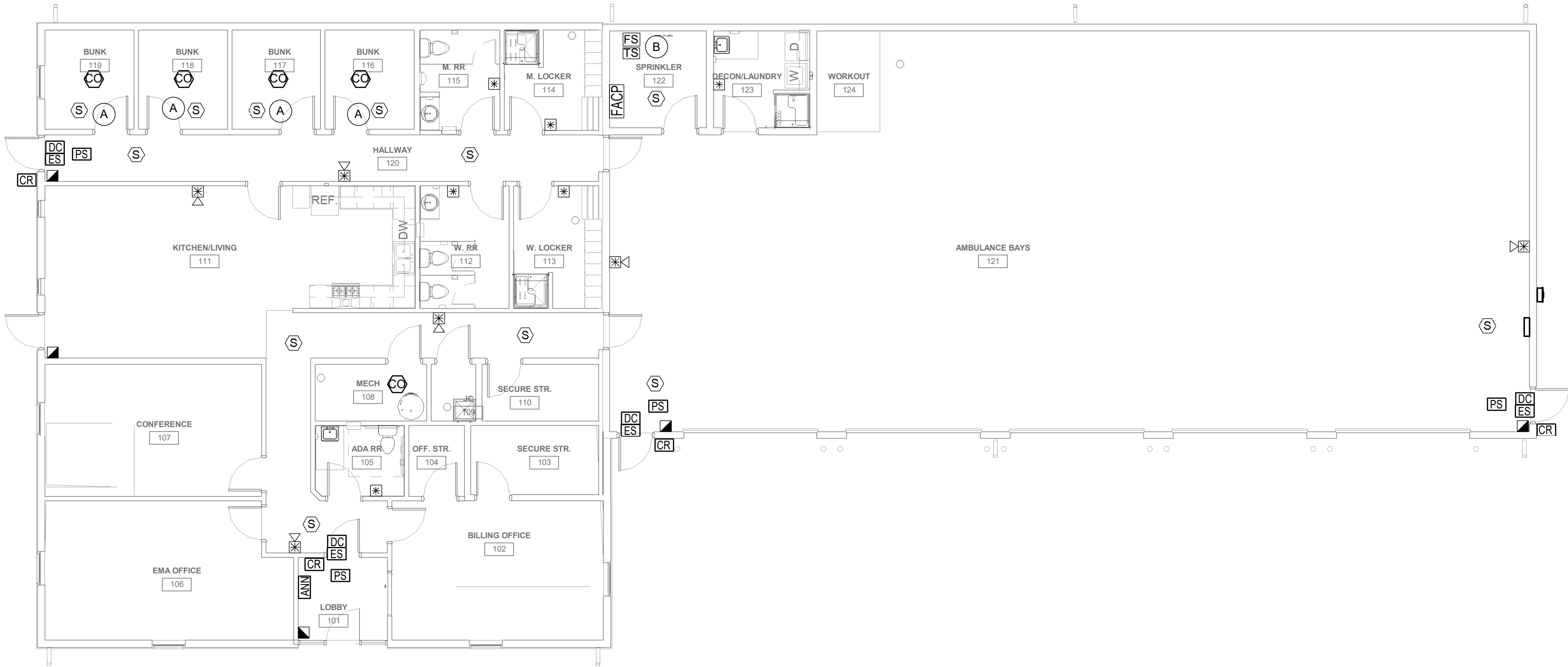
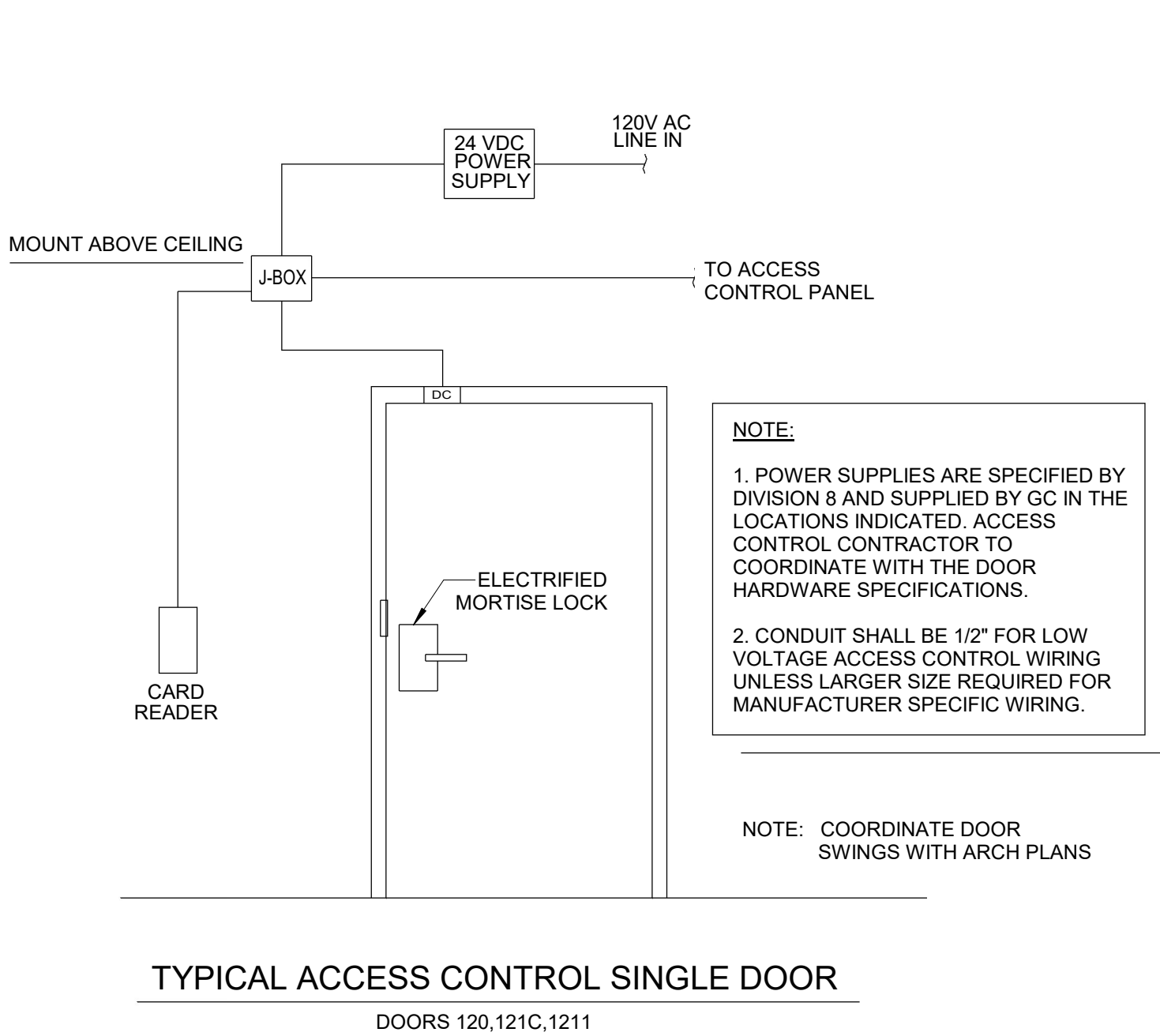
ELECTRICAL PLANS

SHEET No. _____

E1.01R

PLAN NOTES: (X)

- A. SMOKE DETECTOR SHALL HAVE AUDIBLE BASE.
- B. COORDINATE LOCATIONS AND QUANTITIES OF TAMPER AND FLOW SWITCHES WITH SPRINKLER CONTRACTOR.



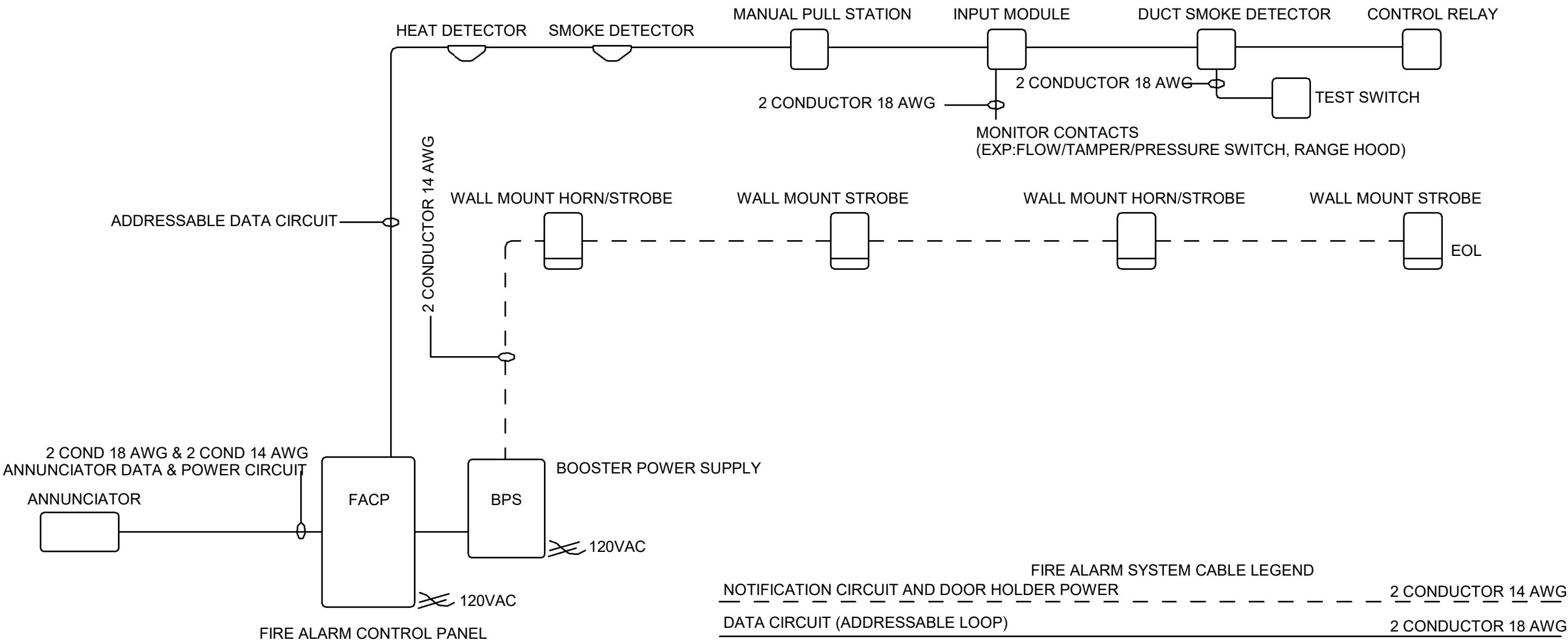
GENERAL FIRE ALARM NOTES

1. PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL A COMPLETE AND OPERABLE FIRE ALARM SYSTEM DEVICES AS INDICATED ON THE DRAWINGS ARE SCHEMATIC IN NATURE. CONTRACTOR SHALL PROVIDE ANY ADDITIONAL WORK AR REQUIRED BY LOCAL AHJ AT NO ADDITIONAL COST TO THE OWNER.
2. IT SHALL BE THE CONTRACTORS SOLE RESPONSIBILITY TO PROVIDE A FIRE ALARM SYSTEM IN FULL COMPLIANCE WITH THE LATEST EDITION OF (NFPA 72, WV STATE FIRE CODE, AND ADA).
3. THIS BUILDING WILL BE PARTIALLY SPRINKLED PER NFPA 13.
4. SUPPLY A 120 VOLT CONNECTION AS REQUIRED AT ALL SYSTEMS EQUIPMENT.
5. DEVICES SHOWN ARE APPROXIMATE LOCATIONS. FIELD VERIFY ACTUAL CONDITIONS.
6. DO NOT SUPPORT RACEWAYS FROM PIPES DUCTS OR CEILING SUSPENSION SYSTEM.
7. EXPOSED RACEWAY AND BLANK COVERS SHALL BE PAINTED TO MATCH EXISTING SURFACES.
8. SURFACES DAMAGED BY THIS CONTRACTOR SHALL BE REPAIRED.
9. WHERE SURFACES ARE REQUIRED TO BE PATCHED OR REPAIRED, SURFACE SHALL BE PAINTED TO MATCH ADJACENT SURFACE.
10. ALL JUNCTION BOX COVERS IN FIRE ALARM RACEWAY SHALL BE PAINTED RED.
11. MOUNTING HEIGHT OF FIRE ALARM STROBE SHALL BE 80" AFF.
12. SYSTEM SHALL INTERFACE WITH HOOD SUPPRESSION SYSTEM PER NFPA.
13. SYSTEM SHALL INTERFACE WITH SHUNT TRIP BREAKERS OR GAS VALVE FOR ALL EQUIPMENT LOCATED UNDER THE KITCHEN HOOD.

FIRE ALARM SYSTEM NOTES

(SPRINKLERED)

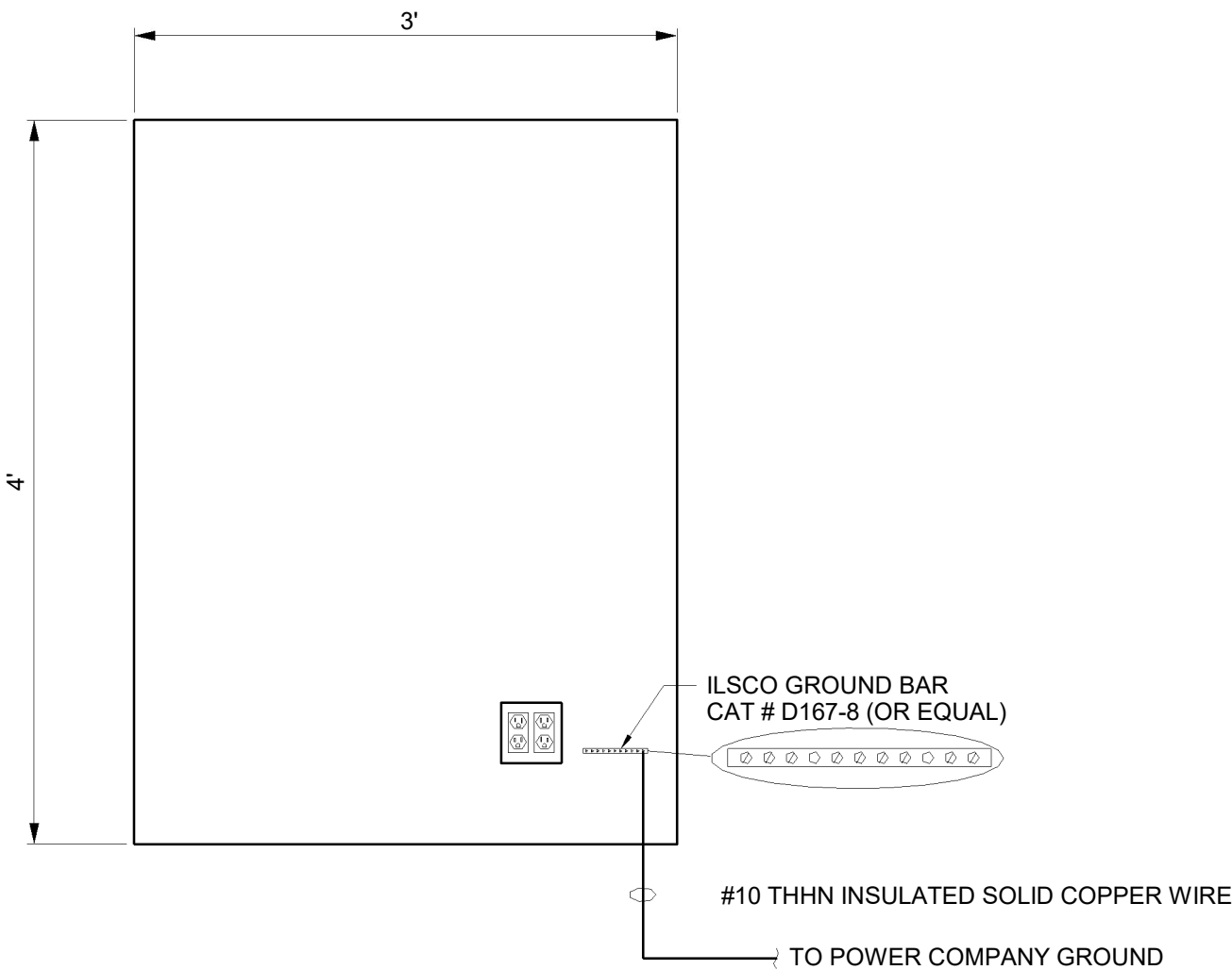
1. ALL EXTERIOR DOORS SHALL HAVE A PULL STATION MOUNTED ADJACENT TO THE DOOR. SPACING OF PULL STATIONS SHALL NOT EXCEED 200' ALONG PATH OF EGRESS.
2. FIELD VERIFY LOCATION AND QUANTITY OF AIR HANDLING UNITS GREATER THAN 2000 CFM. PROVIDE A DUCT SMOKE DETECTOR IN THE RETURN AIR DUCT OF EACH UNIT. EACH AIR HANDLER DUCT SMOKE DETECTOR SHALL BE SEPARATELY ANNUNCIATED BY THE FIRE ALARM PANEL AND THE ANNUNCIATOR. PROVIDE REMOTE LED INDICATOR AT CEILING BELOW EACH DETECTOR.
3. FIELD VERIFY LOCATION AND QUANTITY OF ELECTRICAL PANELS. PROVIDE A SMOKE DETECTOR IN EACH OF THESE ROOMS.
4. PROVIDE SMOKE DETECTORS IN CORRIDOR A MAXIMUM 15' FROM EACH END AND A MAXIMUM OF 30' ON CENTER.
5. PROVIDE STROBES IN ALL TOILETS.
6. PROVIDE HORN/STROBES AS REQUIRED BY NFPA 72. SPACING AND SOUND LEVEL SHALL BE SUCH THAT THE AUDIBLE ALARM CAN BE EFFECTIVELY HEARD ABOVE THE AMBIENT NOISE LEVEL OBTAINED UNDER NORMAL OCCUPIED CONDITIONS.
7. PROVIDE STROBES IN ALL PUBLIC SPACES EXCEPT COMMON AREAS AS DEFINED IN THE AMERICAN WITH DISABILITIES ACT. SPACING SHALL BE PER NFPA 72.



FIRE ALARM SYSTEM RISER

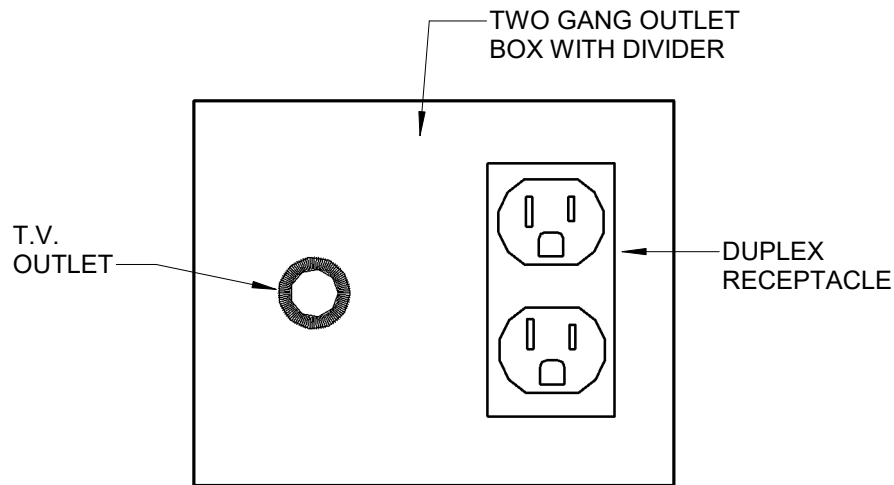
NOTES: FIRE ALARM SYSTEM DOES NOT REFLECT ACTUAL DEVICE QUANTITIES OR LOCATIONS. PLEASE SEE THE BUILDING FIRE ALARM PLAN DRAWINGS.

SCALE: N/A



TELEPHONE CONNECTION BOARD DETAIL (TCB)

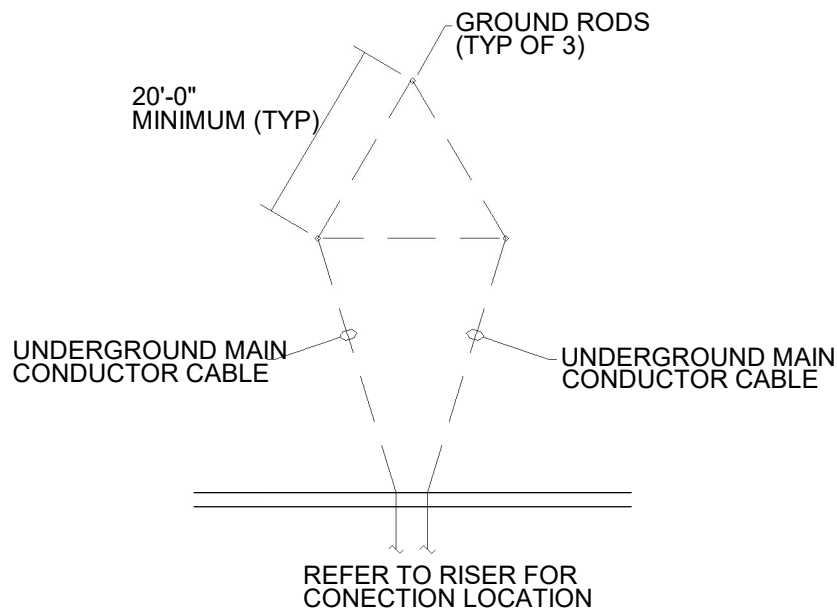
NOT TO SCALE



NOTE:
COORDINATE EXACT LOCATION OF T.V. OUTLETS
W/WHITEBOARDS, ELECTRONIC BOARDS & TACKBOARDS.
MOUNT AT 76" A.F.F

TV OUTLET DETAIL

NOT TO SCALE

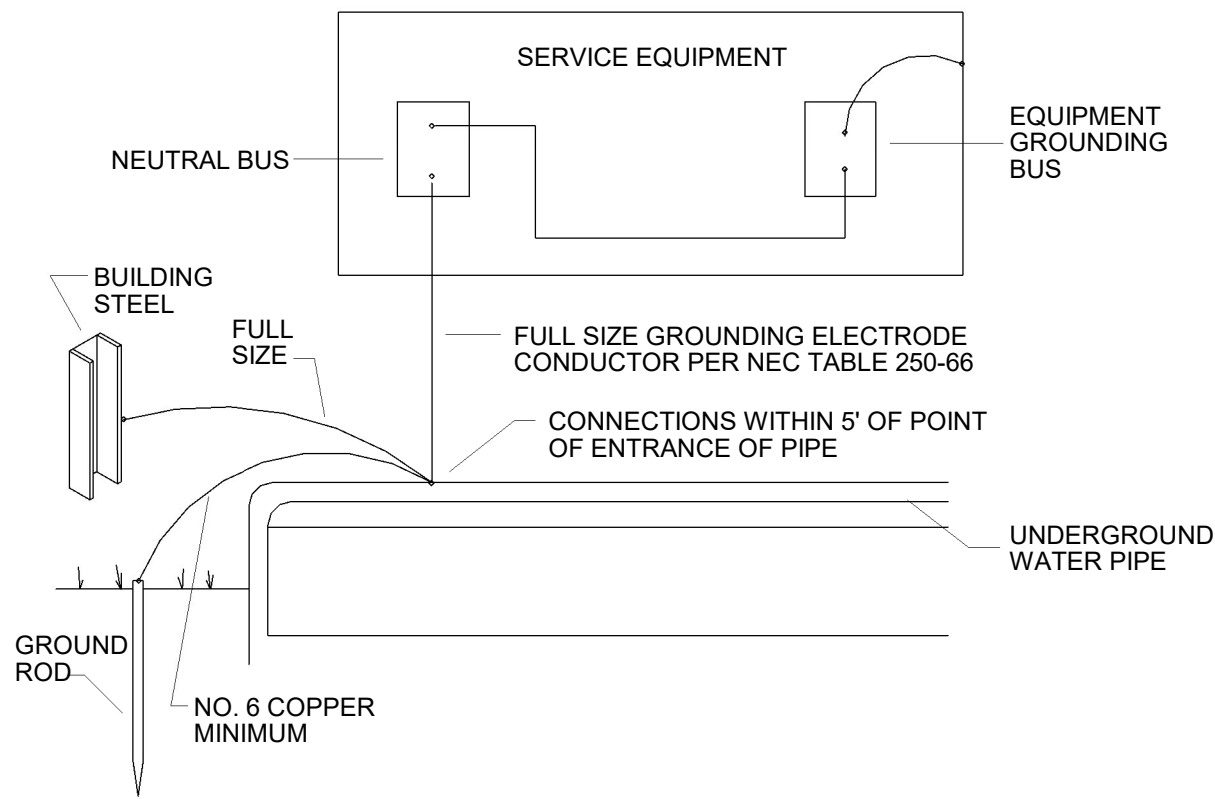


GROUNDING PROTECTION NOTES:

1. BOND GROUND SYSTEM TO BUILDING STEEL.
2. ALL CONDUCTOR CABLES SHALL BE STRANDED COPPER.
3. PROVIDE MINIMUM OF TWO PATHS TO GROUND FROM EACH GROUND ROD. MINIMUM SEPARATION IS 20'-0".
4. BONDING CONDUCTOR CABLE SHALL BE 1/0 MINIMUM.
5. PROVIDE GROUND GRID USING THREE 5/8" MINIMUM DIAMETER GROUND RODS. LENGTH OF RODS 10'-0" MINIMUM.
6. MINIMUM CONDUCTOR CABLE BEND IS 90 DEG., MINIMUM RADIUS OF BEND IS 8".
7. NO DEAD END CABLES ARE ALLOWED.
8. ALL WORK TO COMPLY WITH NFPA ARTICLE 780, NEC ARTICLE 250-66 AND NEC ARTICLE 250-106.

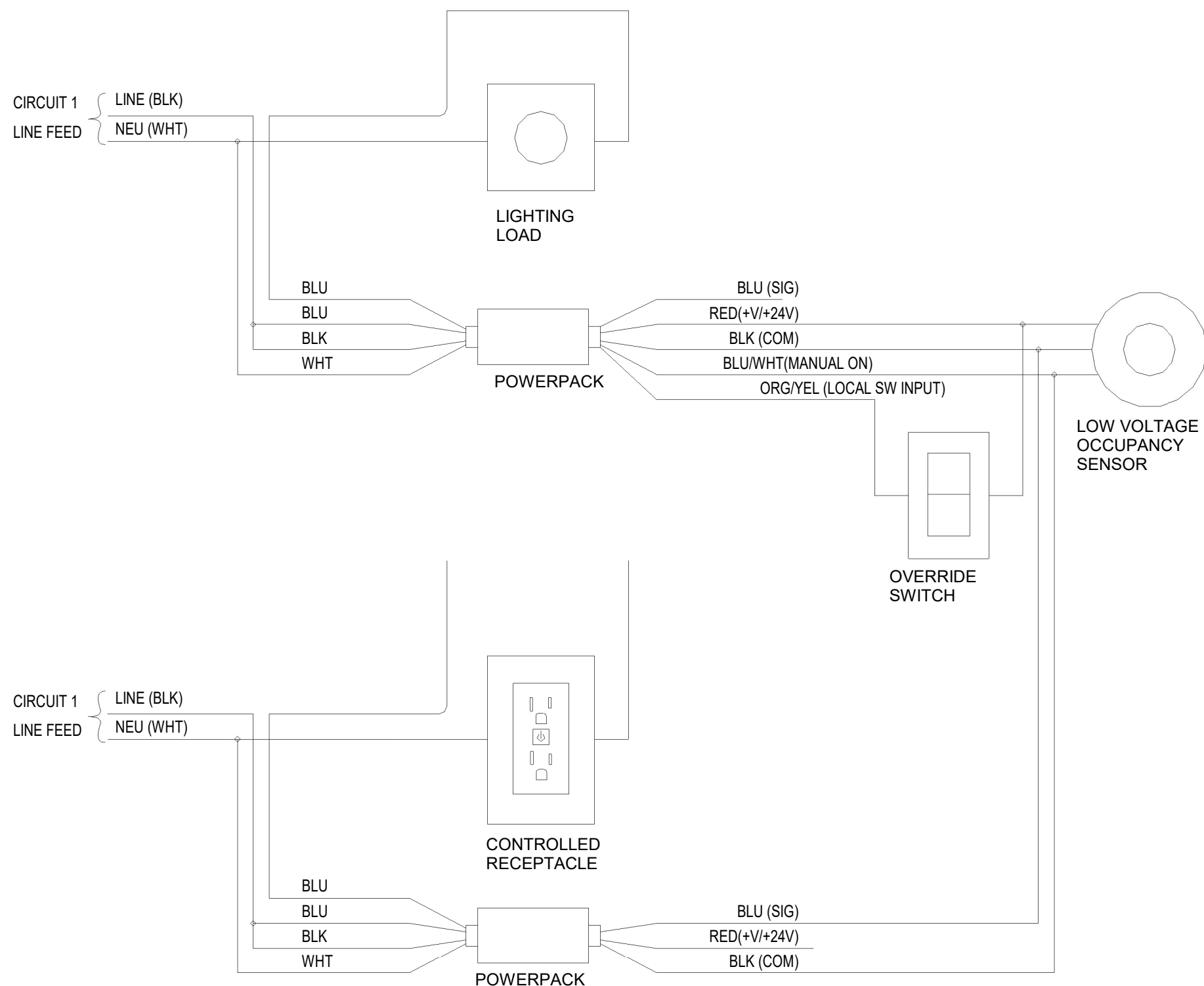
GROUNDING DETAIL

NOT TO SCALE



SERVICE ENTRANCE GROUNDING

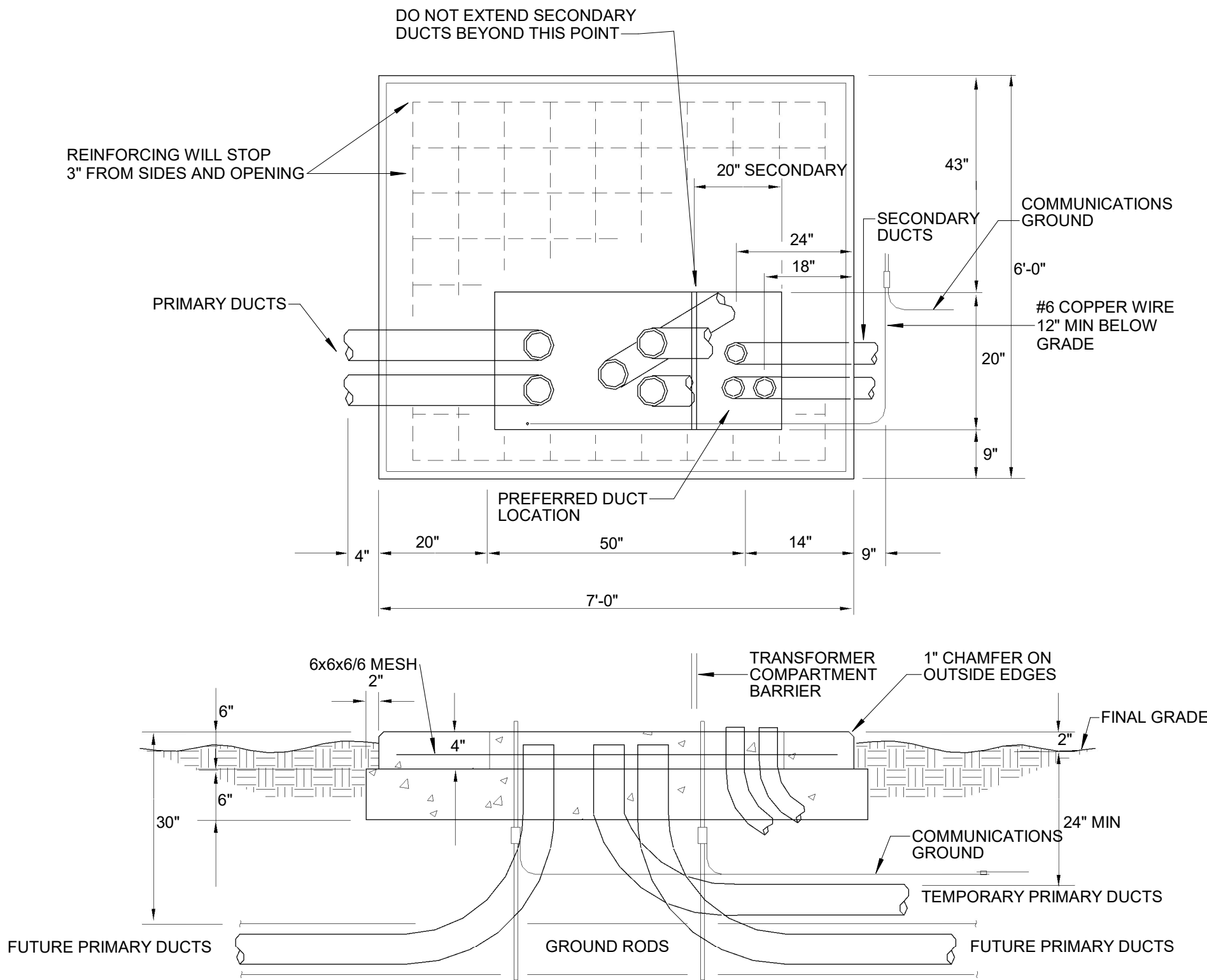
SCHEMATIC



- OPERATIONAL NOTES:
1. AREA LIGHTING CONTROLLED BY MANUAL ON/OFF, AUTO OFF FROM SENSORS.
 2. LOCAL TASK RECEPTACLE CONTROLLED AUTO ON OFF BY SENSOR.
 3. AREA LIGHTING MAY BE CHANGED TO BE AUTO ON/OFF, MANUAL ON/OFF BY TERMINATING ON POWER PACK BLU (SIG) INSTEAD OF BLU/WHT (MANUAL ON) AS SHOWN

OCCUPANCY SENSOR WIRING DIAGRAM

NOT TO SCALE



NOTES

1. TRANSFORMER PAD TO BE CONCRETE PAD POURED IN PLACE AT THE INSTALLATION SITE.
2. ON POURED IN PLACE CONCRETE PADS, THE CONCRETE SHALL BE 3000 PSI
3. SECONDARY DUCTS SHOULD NOT EXTEND MORE THAN 2" ABOVE THE TOP OF FOUNDATION. FOR TERMINATING THE CABLES. PRIMARY DUCTS SHOULD BE CUT OFF 2" BELOW THE TOP OF THE FOUNDATION TO ALLOW
4. EXTEND GROUND RODS 2" ABOVE THE TOP OF THE FOUNDATION TO ACCOMMODATE A GROUNDING JUMPER.
5. HORIZONTAL SECONDARY DUCTS (CONDUITS) TO BE KEPT 24" BELOW GRADE TO TOP OF CONDUITS.

TRANSFORMER PAD DETAIL

NO SCALE

DESCRIPTION

DATE

BY

NO.

BROOKE COUNTY EMS

BROOKE COUNTY COMMISSION

3031 PLEASANT AVE., WELLSBURG, WV 26070

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ELECTRICAL DETAILS

SHEET No.

E3.01R

WIRE AND CONDUIT SIZE SCHEDULE

MOCP (AMP)	CONDUCTO R SIZE	GROUND SIZE	CONDUIT SIZE WITH GROUND		
			1-POLE	2-POLE	3-POLE
20	#12	#12	3/4"	3/4"	3/4"
30	#10	#10	3/4"	3/4"	3/4"
40	#8	#10	3/4"	3/4"	3/4"
50	#8	#10	3/4"	3/4"	3/4"
60	#6	#8	3/4"	3/4"	3/4"
70	#4	#8	1"	1"	1"
80	#4	#8	-	1"	1"
90	#3	#8	-	1 1/4"	1 1/4"
100	#2	#8	-	1 1/4"	1 1/4"
110	#2	#6	-	1 1/4"	1 1/4"
125	#1	#6	-	1 1/4"	1 1/4"
150	#1/0	#6	-	1 1/2"	1 1/2"
175	#2/0	#6	-	1 1/2"	2"
200	#3/0	#6	-	1 1/2"	2"
225	#4/0	#4	-	-	2-1/2"
250	250MCM	#3	-	-	2 1/2"
300	350MCM	#3	-	-	3"
350	500MCM	#3	-	-	4"
400	500MCM	#3	-	-	4"

INCREASE CONDUCTOR SIZE AS REQUIRED FOR MAXIMUM VOLTAGE
DROP OF 2% FOR FEEDERS AND 3% FOR BRANCH CIRCUITS.

ALL CIRCUITS SHALL COMPLY WITH NEC AND OTHER APPLICABLE
CODES.

CONDUCTOR SIZE BASED ON 75 DEGREE C LUGS.

Branch Panel: A

Location:
Supply From:
Mounting:
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22,000
Mains Type: MCB
Mains Rating: 400A
MCB Rating: 400A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
A-1	Lighting	20 A	1	1167 VA	1206 VA					1	20 A	Lighting	A-2
A-3	Lighting EXTERIOR, POLES	20 A	1			736 VA	0 VA			1	20 A	Spare	A-4
A-5	Receptacle	20 A	1					720 VA	720 VA	1	20 A	Receptacle	A-6
A-7	Receptacle EF-7	20 A	1	751 VA	360 VA					1	20 A	Receptacle	A-8
A-9	Receptacle, L1	20 A	1			720 VA	245 VA			1	20 A	Receptacle EF-8	A-10
A-11	Receptacle	20 A	1					750 VA	2500 VA	2	40 A	DRYER	A-12
A-13	GUH-1	20 A	1	696 VA	2500 VA								A-14
A-15	GUH-2	20 A	1			696 VA	1656 VA			1	20 A	EF-9	A-16
A-17	EW-H-4	20 A	2					1499 VA	1499 VA	2	20 A	EW-H-5	A-18
A-19				1499 VA	1499 VA								A-20
A-21	DOOR OP	20 A	1			1920 VA	1920 VA			1	20 A	DOOR OP	A-22
A-23	DOOR OP	20 A	1					1920 VA	1920 VA	1	20 A	DOOR OP	A-24
A-25	DOOR OP	20 A	1	1920 VA	360 VA					1	20 A	DOOR CARD READER	A-26
A-27	Equipment	20 A	1			500 VA	0 VA			1	20 A	Spare	A-28
A-29	GEN. BATTERY CHAR	20 A	1					1200 VA	0 VA	1	20 A	Spare	A-30
A-31	GEN. JACKET HEATER	20 A	1	1200 VA	0 VA					1	20 A	Spare	A-32
A-33													A-34
A-35													A-36
A-37					12161...								A-38
A-39						12957...				3	200 A	B	A-40
A-41									11749...				A-42

Total Load: 25182 VA 21278 VA 24383 VA
Total Amps: 214 A 177 A 207 A

Legend:

Notes:

Branch Panel: B

Location: SECURE STR. 110
Supply From: A
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22,000
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
B-1	Lighting	20 A	1	1139...	1260...					1	20 A	Lighting	B-2
B-3	Receptacle	20 A	1			720 VA	720 VA			1	20 A	Receptacle	B-4
B-5	Receptacle	20 A	1					720 VA	720 VA	1	20 A	Receptacle	B-6
B-7	Receptacle EF-1,2	20 A	1	490 VA	490 VA					1	20 A	Receptacle	B-8
B-9	Receptacle	20 A	1			540 VA	900 VA			1	20 A	Receptacle	B-10
B-11	Receptacle REF	20 A	1					750 VA	360 VA	1	20 A	Receptacle	B-12
B-13	Receptacle	20 A	1	360 VA	360 VA					1	20 A	Receptacle	B-14
B-15	Receptacle DW	20 A	1			700 VA	500 VA			1	20 A	Equipment HOOD	B-16
B-17	Receptacle	20 A	1					1080...	900 VA	1	20 A	Receptacle	B-18
B-19	Receptacle	20 A	1	720 VA	720 VA					1	20 A	Receptacle	B-20
B-21	Receptacle	20 A	1			720 VA	720 VA			1	20 A	Receptacle	B-22
B-23	Receptacle EF-5	20 A	1					751 VA	211 VA	1	20 A	Receptacle EF-6	B-24
B-25	Receptacle	20 A	1	720 VA	1632...					1	20 A	F-1	B-26
B-27	F-2	20 A	1			1560...	2038...			2	40 A	CU-1	B-28
B-29								1362...	2038...				B-30
B-31	CU-2	30 A	2	1362...	1499...					2	20 A	EW-H-1	B-32
B-33						1499...	1499...						B-34
B-35	EW-H-2	20 A	2					1499...	1499...	2	20 A	EW-H-3	B-36
B-37	DOOR CARD READER	20 A	1	360 VA	1499...								B-38
B-39	Receptacle	20 A	1			180 VA	1200...			1	20 A	Receptacle DATA	B-40
B-41	Receptacle TCB	20 A	1					360 VA	0 VA	1	20 A	Spare	B-42
B-43	Spare	20 A	1	0 VA	0 VA					1		Spare	B-44
B-45	Spare	20 A	1			0 VA	0 VA			1	20 A	Spare	B-46
B-47	Spare	20 A	1					0 VA					B-48
B-49													B-50
B-51													B-52
B-53													B-54

Total Load: 12161 VA 12957 VA 11749 VA

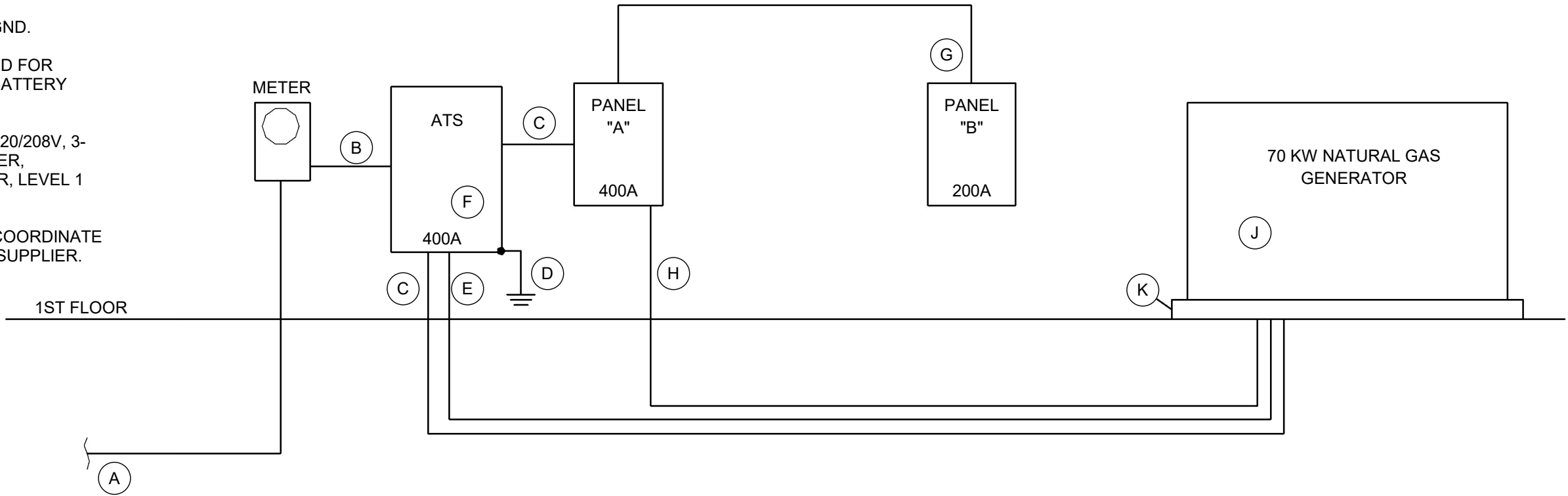
Total Amps: 102 A 109 A 98 A

Legend:

Notes:

RISER NOTES:

- A. (1) - 4" CONDUIT WITH PULL STRINGS TO POWER
COMPANY TRANSFORMER. SEE CIVIL PLANS
FOR LOCATION.
- B. (1) - 4" CONDUIT WITH (4) - 500MCM.
- C. (1) - 4" CONDUIT WITH (4) - 500MCM + #2 GND.
- D. GROUND PER NEC.
- E. (2)-1" CONDUITS FOR COMMUNICATIONS.
COORDINATE WITH GENERATOR SUPPLIER.
- F. 3P/400A, 208V AUTOMATIC TRANSFER SWITCH.
- G. (1)-2 1/2" CONDUIT WITH (4) - 3/0, #6 GND.
- H. (1)-1" CONDUIT WITH (4) - #12, #12 GND FOR
GENERATOR JACKET HEATER AND BATTERY
CHARGER.
- J. 70 KW NATURAL GAS GENERATOR. 120/208V, 3-
PHASE, 3P/400A 100% RATED BREAKER,
BATTERY CHARGER, JACKET HEATER, LEVEL 1
SOUND ATTENUATED COVER.
- K. CONCRETE PAD FOR GENERATOR. COORDINATE
REQUIREMENTS WITH GENERATOR SUPPLIER.



ELECTRICAL RISER

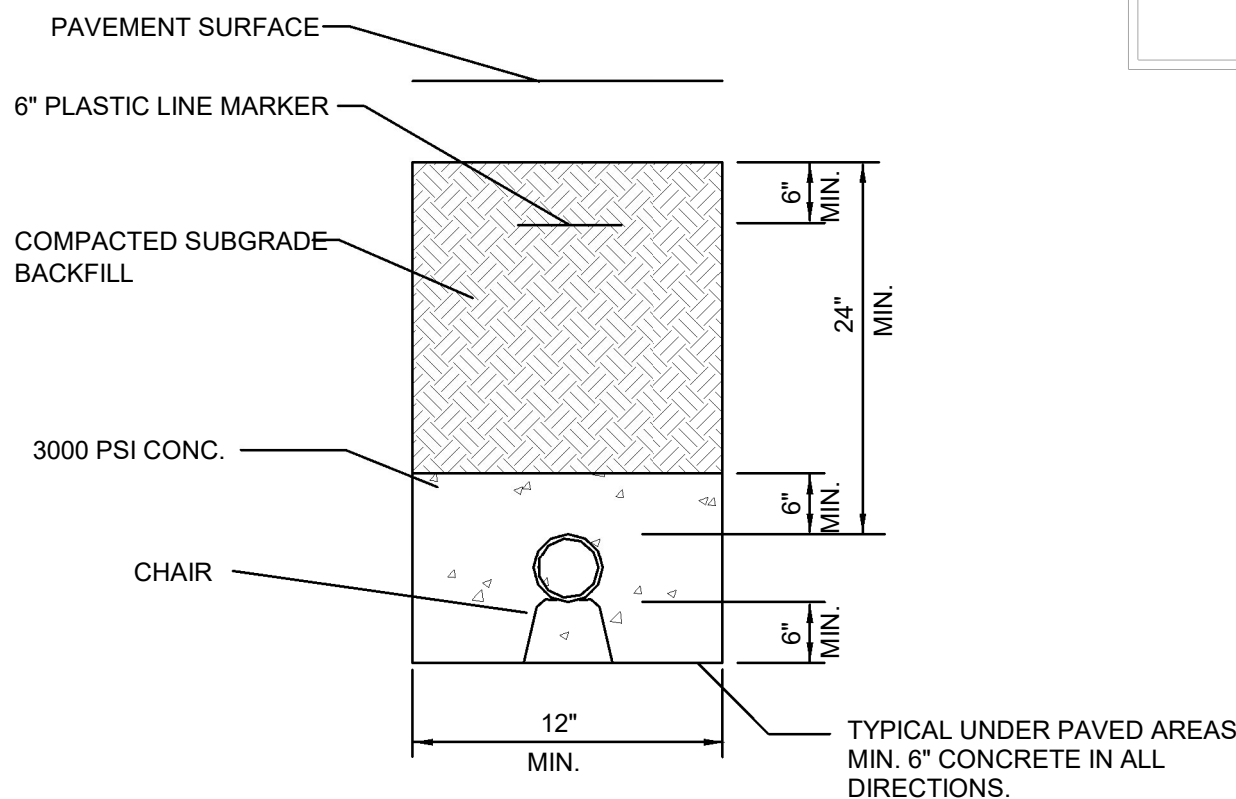
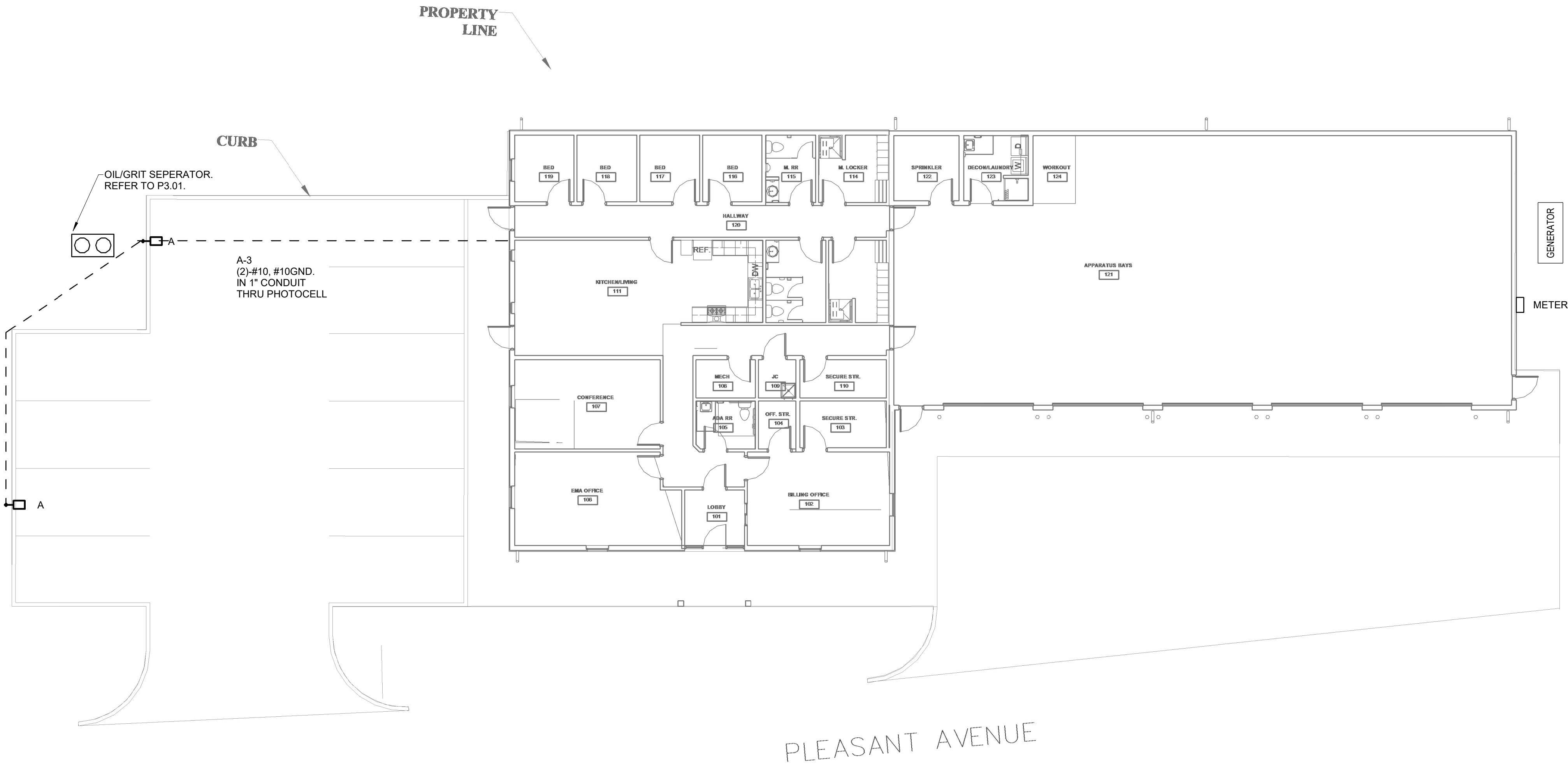
NOT TO SCALE

LIGHTING FIXTURE SCHEDULE

MARK	LAMP	MOUNTING	MANUFACTURER	MODEL	DESCRIPTION	NOTES
L5	LED	RECESSED	LITHONIA COOPER COLUMBIA	2TL233LRWA12	2X2 STATIC TROFFER WHITE ALUMINUM REGRESSED DOOR, MIN .125 ACRYLIC LENS ELECTRONIC DRIVER	120V
L5S	LED	RECESSED	LITHONIA COOPER COLUMBIA	2TL233LRWA12	2X2 STATIC TROFFER WHITE ALUMINUM REGRESSED DOOR, MIN .125 ACRYLIC LENS ELECTRONIC DRIVER	120V
L7	LED	RECESSED	LITHONIA COOPER COLUMBIA	TL440LRWA12	1X4 RECESSED TROFFER WHITE ALUMINUM REGRESSED DOOR, MIN .125 ACRYLIC LENS ELECTRONIC DRIVER	120V
L15	LED	SURFACE	JUNO COOPER COLUMBIA	L7XLEDT24	RECESSED 6" DOWNLIGHT CLEAR REFLECTOR ELECTRONIC DRIVER	120V
L30	LED	PENDANT	LITHONIA COOPER DAY-BRITE	ZL2NL48 3000LM	4' STRIP W/ACRYLIC LENS ELECTRONIC DRIVER	120V
L45	LED	SURFACE	LITHONIA COOPER DAY-BRITE	CNYLED P240K	LED CANOPY LIGHT	120V
L50	LED	WALL	LITHONIA COOPER DAY-BRITE	TWPX2LEDPA	LED WALLPAK	120V
L90	LED	PENDANT	LITHONIA COOPER DAY-BRITE	CPHB18LMMVOLT	LED HIGHBAY	120V
R1	PAR 36	Surface	LITHONIA COOPER DAY-BRITE	ELA NX	EMERGENCY EGRESS WALL LIGHT	6V
X1	LED	UNIV	LITHONIA COOPER DAY-BRITE	LHQM	EXIT SIGN WITH REMOTE CAPABILITY	120V

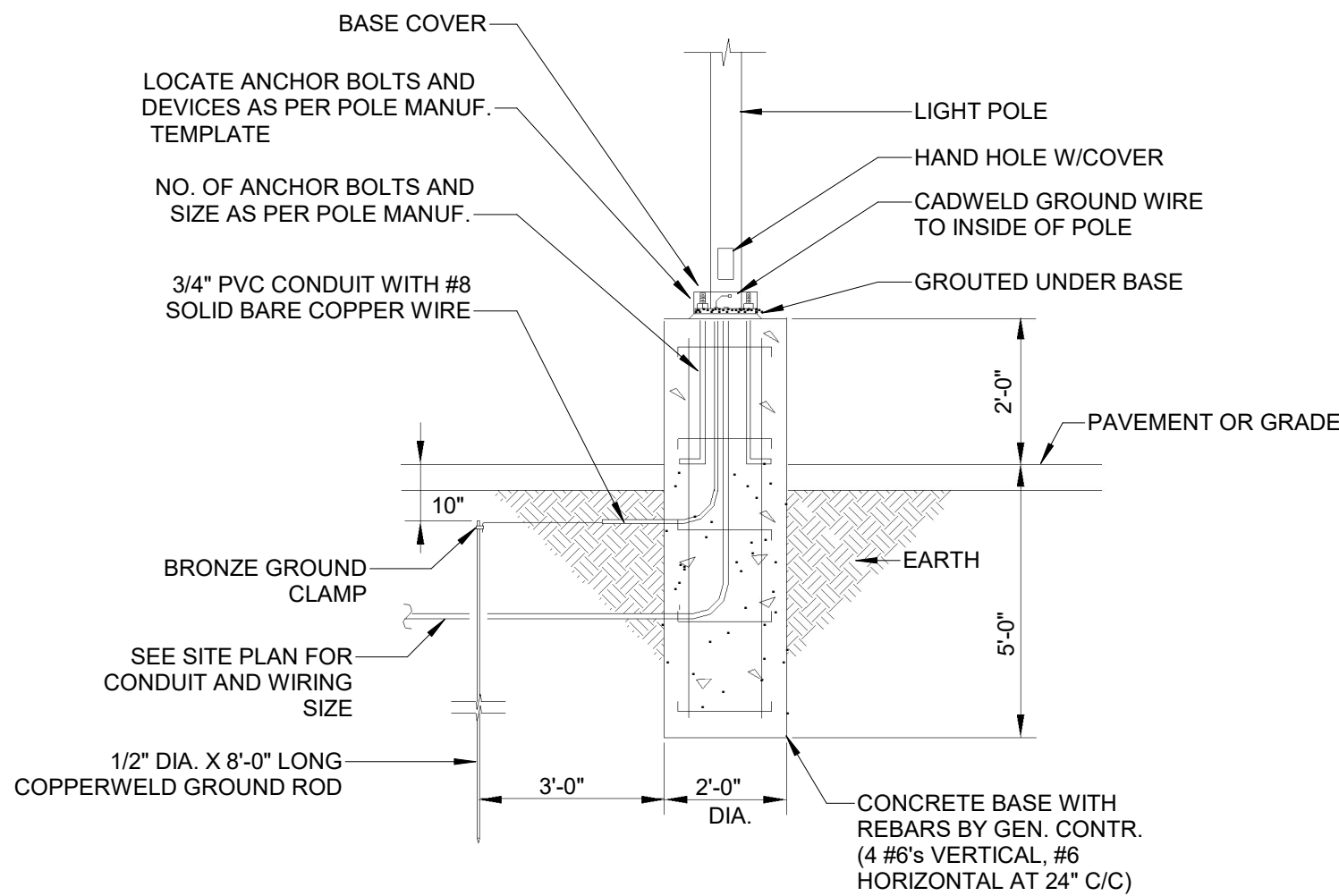
LIGHT FIXTURE SCHEDULE NOTES:

- VERIFY CEILING CONSTRUCTION TYPE WITH ARCHITECTURAL DRAWINGS TO DETERMINE WHETHER
RECESSED LIGHTING FIXTURES SHALL BE FLANGE OR GRID TYPE MOUNTING.
- DIRECTIONAL INDICATOR ON EXIT SIGNS SHALL COMPLY WITH NFPA 101 SECTION 5-10.4.1.2.
- VERIFY VOLTAGE TO OPERATE FIXTURE WITH ELECTRICAL DRAWINGS.
- LIGHT FIXTURES SHALL COME COMPLETE WITH NECESSARY MOUNTING HARDWARE.
- ALL RECESSED LIGHT FIXTURES SHALL BE PAINTED AFTER FABRICATION.
- ANY REQUEST FOR SUBSTITUTION TO THE LIGHTING FIXTURE SCHEDULE SHALL BE OF EQUAL OR HIGHER
QUALITY AS DETERMINED BY THE ENGINEER. ANY PERSON REQUESTING TO SUBSTITUTE FIXTURES MUST SUBMIT
IN BOUND FORM A COLLECTION OF THE MANUFACTURER'S CUT SHEETS TO BE REVIEWED BY THE ENGINEER
A MINIMUM OF (FOURTEEN) 14 DAYS PRIOR TO BID. ACCEPTED SUBSTITUTIONS SHALL BE REFLECTED IN AN ADDENDUM.
- SUPPLY HANGING BAR KITS WITH ALL RECESSED DOWN LIGHTS.
- EMERGENCY BATTERY PACK FOR LIGHT FIXTURES SHALL BE RATED TO SUPPLY A
MINIMUM OF 600 INITIAL LUMENS.



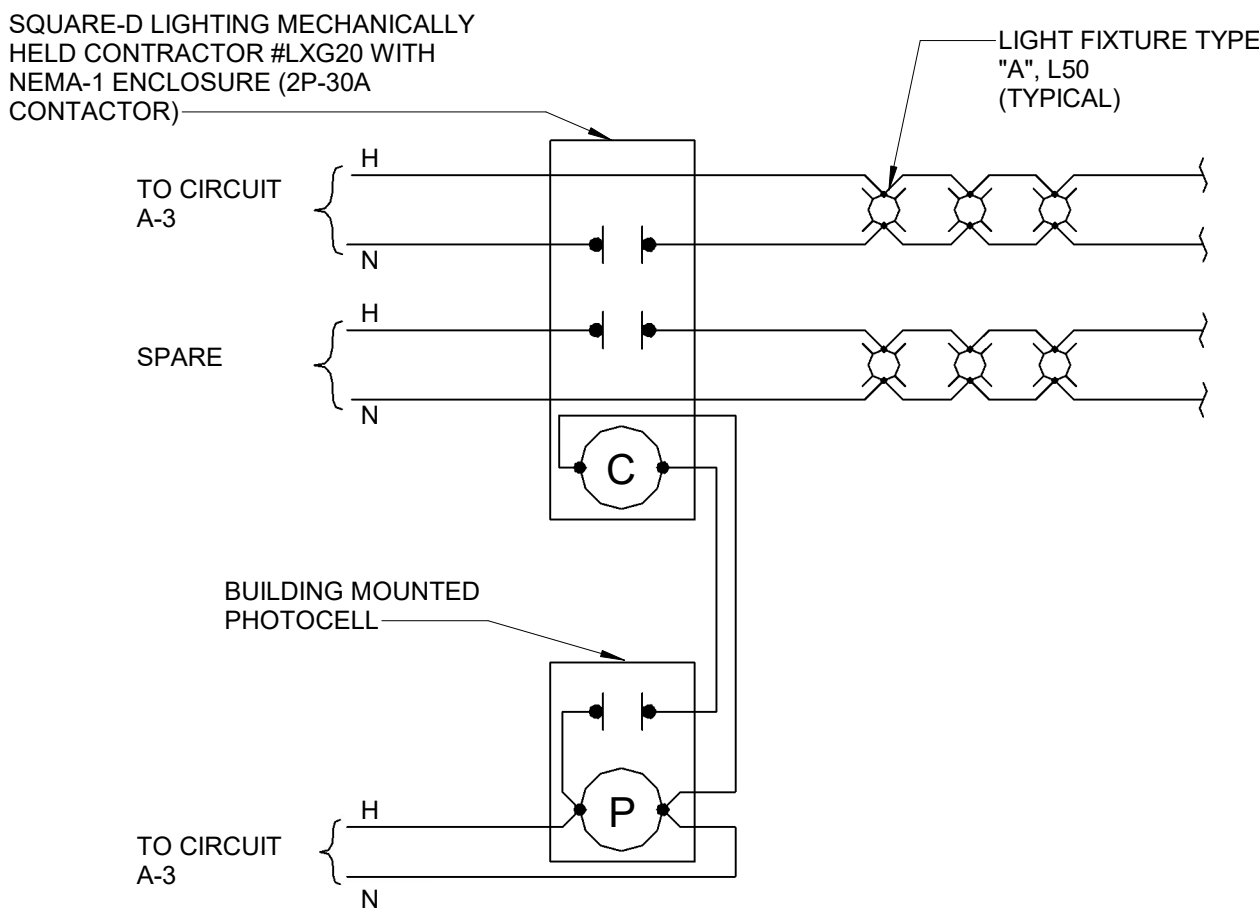
TRENCH DETAIL

NO SCALE



POLE BASE DETAIL

NO SCALE



LIGHTING CONTROL DIAGRAM

NO SCALE

LIGHTING FIXTURE SCHEDULE SITE						
MARK	LAMPS/TYPE	MOUNTING	MANUFACTURER	SERIES	DESCRIPTION	NOTES
A	LED	POLE	COOPER		POLE AREA LIGHT WITH MOUNTING HARDWARE WET LOCATION RATED/DK BRONZE 5000K ELECTRONIC DRIVER	120 VOLT 12\"/>
			LITHONIA	RSX1LEDP2R4MVOLT		

BROOKE COUNTY EMS

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02/24/2023

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APPROVED: Approver DATE: 02/24/2023

PROJECT No.

T60-11009-00

SITE PLAN ELECTRICAL

SHEET No.

E-SITE R



600 WHITE OAKS BLVD.
P.O. BOX 940
BRIDGEPORT, WV 26330

P (304) 624-4108
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www.thrashergroup.com

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AHU FURNACE

MARK	MANUFACTURER	MODEL NO.	WEIGHT	S.A	R.A.	O.A. (Max.)	ESP	BRAKE HP	SEER	COOLING TOTAL MBH	COOLING SENS MBH	EAT (°F) DB/WB	LAT (°F) DB/WB	HEATING INPUT MBH	HEATING OUTPUT MBH	HEATING EAT (°F)	HEATING LAT (°F)	VOLTAGE	PHASE	FLA	MCA	MOCP	NOTES
F-1	CARRIER	59SC	165	1600 CFM	1400 CFM	200 CFM	0.50 in-wg	3/4 HP	14.2	46.7	35.2	81/67	60/58	100	97	57	108	120 V	1	13.6 A	17.0 A	20 A	1, 2
F-2	CARRIER	59SC	155	1200 CFM	1025 CFM	175 CFM	0.50 in-wg	3/4 HP	14	34.3	27.8	81/67	60/58	80	78	57	108	120 V	1	13.0 A	16.3 A	20 A	1, 2
NOTES: 1. DIRECT DRIVE GAS FURNACE, UPFLOW, DX COIL, SINGLE POINT POWER CONNECTION, DISCONNECTS, 1" FIBER GLASS INSULATION, FILTER RACK WITH MERV 8 FILTER. 2. WALL MOUNT PROGRAMMABLE THERMOSTAT.																							

CONDENSING UNIT SCHEDULE

MARK	MANUFACTURER	MODEL NO.	SERVING	WEIGHT (LBS.)	COOLING TOTAL MBH	SEER	HEATING OUTPUT MBH	VOLTAGE	PHASE	FLA	MCA	MOCP	NOTES
CU-1	CARRIER	24SCA	F-1	171	46.7	14.2	0	208 V	1	20 A	25 A	40 A	1, 2
CU-2	CARRIER	25SCA	F-2	155	35.4	15	0	208 V	1	13 A	16 A	20 A	1, 2
NOTES: 1. AIR COOLED CONDENSING UNIT WITH DISCONNECT. 2. REFRIGERANT LINE SET SIZE AND INSULATED PER MANUFACTURER.													

GRILLE REGISTER AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL NO.	USE	DESCRIPTION	NOTES
D1	PRICE	SCD	SUPPLY	24" X 24" SQUARE CONE CEILING DIFFUSER WITH FRAME TYPE FOR LAY-IN	1, 4
D2	PRICE	SCD	SUPPLY	12" X 12" SQUARE CONE CEILING DIFFUSER WITH FRAME TYPE FOR SURFACE MOUNT	1, 4
G8	PRICE	80	TRANSFER	1/2"X1/2"X1/2" EGGCRATE CEILING GRILLE WITH FRAME TYPE FOR LAY-IN	1, 4
G13	PRICE	80	EXHAUST	1/2"X1/2"X1/2" EGGCRATE CEILING GRILLE WITH FRAME TYPE FOR SURFACE MOUNT. PROVIDE PLASTER FRAME WHERE REQUIRED.	1, 4
NOTES: 1. STEEL 2. ALUMINUM 3. STAINLESS STEEL 4. WHITE FINISH 5. ALUMINIUM FINISH					6. SPECIAL FINISH 7. VOLUME DAMPER (OPPOSED BLADE) 8. TAMPERPROOF VOLUME DAMPER 9. FIRE DAMPER 10. FILTER 11. TAMPERPROOF SCREWS 12. BAFFLE 13. SAFETY CHAIN

ELECTRIC HEATER SCHEDULE

MARK	MANUFACTURER	MODEL NO.	WEIGHT (LBS.)	HEATER KW	CFM	VOLTAGE	PHASE	FLA	MCA	MOCP	NOTES
EWH-1	QMARK	AWH	25	3.0	100 CFM	208 V	1	14.4 A	18.0 A	25 A	2
EWH-2	QMARK	AWH	25	3.0	100 CFM	208 V	1	14.4 A	18.0 A	25 A	2
EWH-3	QMARK	AWH	25	3.0	100 CFM	208 V	1	14.4 A	18.0 A	25 A	2
EWH-4	QMARK	AWH	25	3.0	100 CFM	208 V	1	14.4 A	18.0 A	25 A	2
EWH-5	QMARK	AWH	25	3.0	100 CFM	208 V	1	14.4 A	18.0 A	25 A	2
NOTES: 1. RECESSED CEILING HEATER WITH BUILT-IN TAMPERPROOF THERMOSTAT, THERMAL OVERLOAD, FAN DELAY SWITCH, POWER DISCONNECT. 2. SURFACE MOUNT WALL HEATER WITH BUILT-IN TAMPERPROOF THERMOSTAT CONTROL, THERMAL OVERLOAD, FAN DELAY SWITCH, POWER DISCONNECT SWITCH. 3. UNIT HEATER WITH BUILT-IN THERMOSTAT CONTROL; THERMAL OVERLOAD; FAN DELAY SWITCH; POWER DISCONNECT SWITCH; UNIVERSAL MOUNTIN BRACKET. 4. LINE VOLTAGE CONTROL RELAY. COORDINATE EXACT REQUIREMENTS WITH CONTROL MANUFACTURER.											

EXHAUST FAN AND BOOSTER SCHEDULE

MARK	MANUFACTURER	MODEL NO.	WEIGHT (LBS.)	CONTROLLED BY	CFM	TS	ESP	RPM	SONES	FAN HP / WATTS	VOLTAGE	PHASE	FLA	MCA	MOCP	NOTES
EF-1	COOK	GC-186	15	SWITCH	150 CFM	19 MPH	0.30 in-wg	842	3.0	65.3 W	120 V	1	0.5 A	0.7 A	20 A	2,3,4,5
EF-2	COOK	GC-186	15	SWITCH	150 CFM	19 MPH	0.30 in-wg	842	3.0	65.3 W	120 V	1	0.5 A	0.7 A	20 A	2,3,4,5
EF-3	COOK	GC-186	15	SWITCH	150 CFM	19 MPH	0.30 in-wg	842	3.0	65.3 W	120 V	1	0.5 A	0.7 A	20 A	2,3,4,5
EF-4	COOK	GC-186	15	SWITCH	150 CFM	19 MPH	0.30 in-wg	842	3.0	65.3 W	120 V	1	0.5 A	0.7 A	20 A	2,3,4,5
EF-5	COOK	GC-148	15	SWITCH	75 CFM	18 MPH	0.30 in-wg	798	1.1	32 W	120 V	1	0.3 A	0.3 A	20 A	2,3,4,5
EF-6	COOK	GC-148	15	SWITCH	75 CFM	18 MPH	0.30 in-wg	798	1.1	32 W	120 V	1	0.3 A	0.3 A	20 A	2,3,4,5
EF-7	COOK	GC-148	15	SWITCH	75 CFM	18 MPH	0.30 in-wg	798	1.1	32 W	120 V	1	0.3 A	0.3 A	20 A	2,3,4,5
EF-8	COOK	GC-186	15	SWITCH	150 CFM	19 MPH	0.30 in-wg	842	3.0	65.3 W	120 V	1	0.5 A	0.7 A	20 A	2,3,4,5
EF-9	COOK	20XW28D162	96	INTERLOCK W/ L-1	3000 CFM	89	0.50 in-wg	1550	23	3/4	120 V	1	13.8 A	17.3 A	20 A	3,5,6
NOTES: 1. DIRECT DRIVE ROOF EXHAUST FAN WITH 24" HIGH INSULATED ROOF CURB; BIRDSCREEN; NON-FUSED POWER DISCONNECT. 2. DIRECT DRIVE CEILING EXHAUST FAN WITH BACKDRAFT DAMPER; NON-FUSED POWER DISCONNECT. 3. SOLID STATE SPEED CONTROL (MOUNT ON SIDE OF FAN HOUSING). 4. COMPLETE WITH BRICKVENT. 5. LINE VOLTAGE THERMOSTAT. 6. WALL PROPELLER EXHAUST FAN WITH WEATHERHOOD, OSHA RATED WIRE GUARD;NON-FUSED POWER DISCONNECT.																

GAS UNIT HEATER SCHEDULE

MANUFACTURER	MODEL NO.	HEATING INPUT MBH	HEATING OUTPUT MBH	FAN HP	VOLTAGE	FLA	MCA	MOCP	NOTES
REZNOR	UDZ100	105	87.15	1/4	120 V	5.8 A	7.3 A	20 A	1
REZNOR	UDZ100	105	87.15	1/4	120 V	5.8 A	7.3 A	20 A	1
NOTES: 1. SEPERATES COMBUSTION, LOW STATIC UNIT HEATER WITH CONCENTRIC VENT KIT.									

LOUVER SCHEDULE

MARK	MANUFACTURER	MODEL NO.	USE	MODULATING DAMPER?	SIZE (WXH)	CFM	NOTES
L-1	RUSKIN	ELC6375DAX	INTAKE	YES	36"X36"	3000 CFM	1, 2, 3
NOTES: 1. EXTEND ALUMINUM LOUVER WITH STANDARD FRAME; INSECT SCREEN. 2. COLOR BY ARCHITECT. 3. INTERLOCK WITH EF-9.							

BROOKE COUNTY EMS

BROOKE COUNTY COMMISSION

3031 PLEASANT AVE., WELLSBURG, WV 26070

02/24/2023

CONSTRUCTION DOCUMENTS

DRAWN: Author

DATE: 02/24/2023

CHECKED: Checker

DATE: 02/24/2023

APPROVED: Approver

DATE: 02/24/2023

PROJECT No.

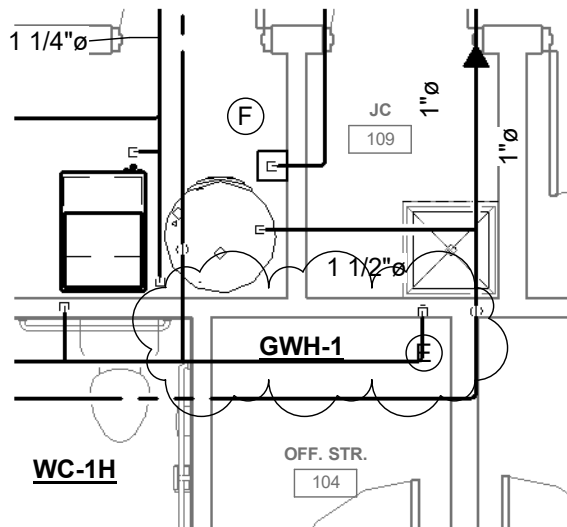
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MECHANICAL
SCHEDULES

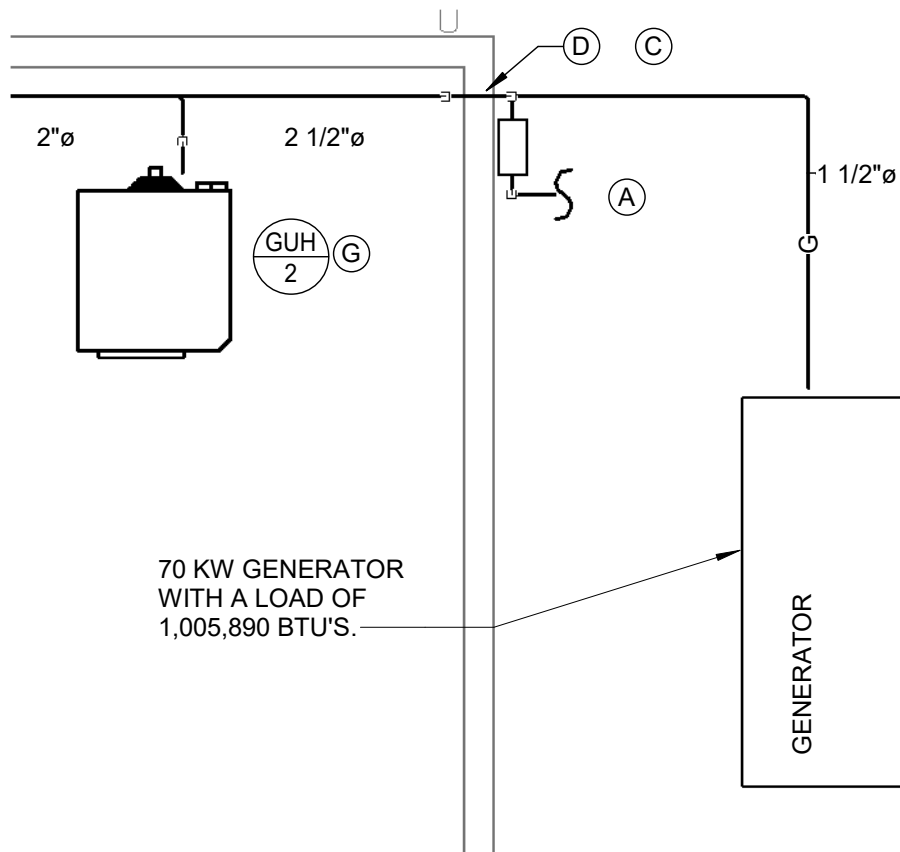
SHEET No.

M3.01R

ADDED: ADDENDUM 2
MARCH 20, 2023



1 DOMESTIC JAN. CLOSET
SK-P1 1/4" = 1'-0"



2 GAS GENERATOR
SK-P1 1/4" = 1'-0"

CONSTRUCTION DOCUMENTS
BROOKE COUNTY EMS

3031 PLEASANT AVE, WELLSBURG, WV 26070



Harper
Engineering

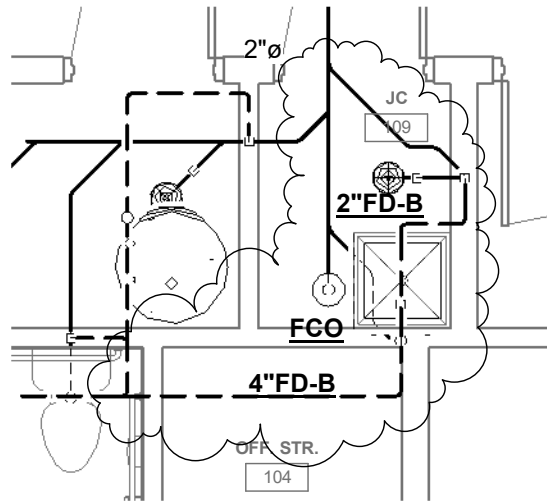
52 B Street

St Albans, WV 25177

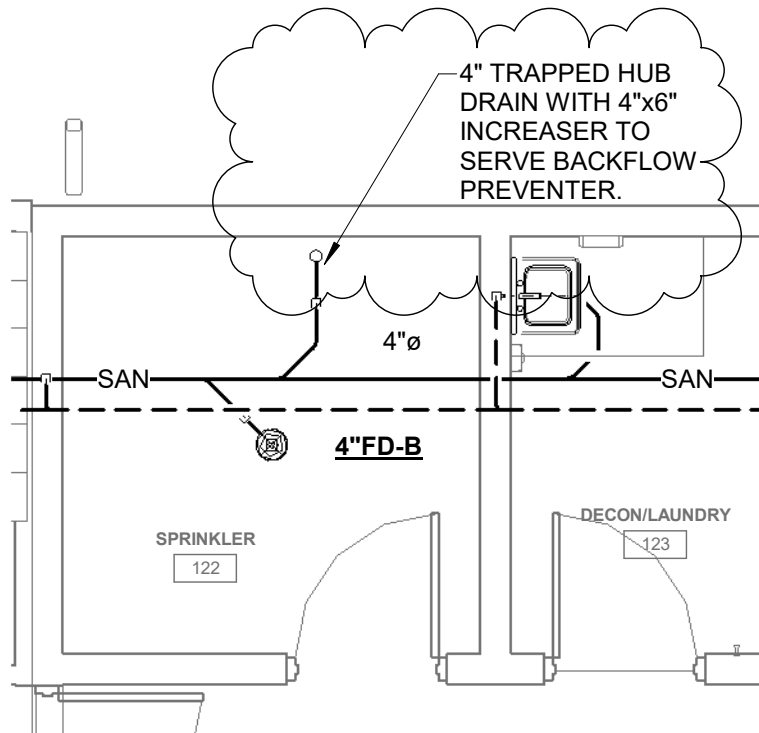
p. 304.722.3602 f. 304.722.3603

SK-P1

Date: 03/14/23



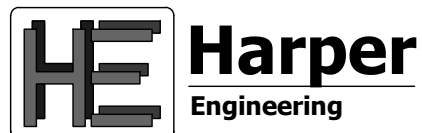
1 **SANITARY JAN. CLOSET**
SK-P2 1/4" = 1'-0"



2 **SPRINKLER ROOM**
SK-P2 1/4" = 1'-0"

CONSTRUCTION DOCUMENTS
BROOKE COUNTY EMS

3031 PLEASANT AVE, WELLSBURG, WV 26070



52 B Street

St Albans, WV 25177

p. 304.722.3602 f. 304.722.3603

SK-P2

Date: 03/14/23