

ADDENDUM NO. 1

TO: PLANS AND SPECIFICATIONS FOR STATE OF MISSOURI

**Replace Standby Generator
MSHP Troop B Headquarters
Macon, Missouri
PROJECT NO.: R2310-01**

Bid Opening Date: 1:30 PM, March 21, 2024 (UNCHANGED)

Bidders are hereby informed that the construction Plans and/or Specifications are modified as follows:

SPECIFICATION CHANGES:

1. Section 013300 - Submittals: Updated to include Manual Transfer Switch
2. Section 263613- Manual Transfer Switches: Add Section
3. Section 263623.13 – Automatic Transfer Switches: Modified section 2.02 (N) to add a power meter.

DRAWINGS CHANGES:

1. Sheet G-002
 - a. Revise general construction note 1 to include installing a MTS (Manual Transfer Switch) in phase 1 of the project.
2. Sheet G-003
 - a. Revise keyed note A to reference conduit to MTS (Manual Transfer Switch).
3. Sheet E-102
 - a. Revise keyed note A to reference conduit to MTS (Manual Transfer Switch).
4. Sheet E-501
 - a. Add MTS-1 to the Electrical Device Schedule.
 - b. Added accessories to ATS-1 (strip heater, 100% rated breaker, Power meter).
 - c. Revised detail 2 – New Electrical Riser to include a new MTS.
5. Sheet E-502
 - a. Add detail 2 – ATS & MTS configuration detail.
6. Sheet E-503
 - a. Modified Keyed note 4 to include the MTS (Manual Transfer Switch).
 - b. Modified detail 1 – Utility Service Site Detail to show the new MTS and conduit routing.

GENERAL COMMENTS:

The modifications to this project were code related due to this facility being classified as Mission Critical. NEC 700.3(F)

ATTACHMENTS:

Section 263613- Manual Transfer Switches

Section 263623.13 – Automatic Transfer Switches

Sheet G-002

Sheet G-003

Sheet E-102

Sheet E-501

Sheet E-502

Sheet E-503

END ADDENDUM NO. 1

SECTION 013300 – SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.
- B. Division 1, Section 013115 “Project Management Communications” for administrative requirements for communications.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submittals required for performance of the Work including the following:
 - 1. Shop Drawings
 - 2. Product Data
 - 3. Operating and Maintenance Manuals
 - 4. Warranties
- B. Administrative Submittals: Refer to General and Supplementary Conditions other applicable Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:
 - 1. Construction Progress Schedule including Schedule of Values
 - 2. Performance and Payment Bonds
 - 3. Insurance Certificates
 - 4. Applications for Payment
 - 5. Certified Payroll Reports
 - 6. Partial and Final Receipt of Payment and Release Forms
 - 7. Affidavit – Compliance with Prevailing Wage Law
 - 8. Record Drawings
 - 9. Notifications, Permits, etc.
- C. The Contractor is obliged and responsible to check all shop drawings and schedules to assure compliance with contract plans and specifications. The Contractor is responsible for the content of the shop drawings and coordination with other contract work. Shop drawings and schedules shall indicate, in detail, all parts of an Item or Work including erection and setting instructions and integration with the Work of other trades.
- D. The Contractor shall at all times make a copy, of all approved submittals, available on site to the Construction Representative.

1.3 SUBMITTAL PROCEDURES

- A. The Contractor shall comply with the General and Supplementary Conditions and other applicable sections of the Contract Documents. The Contractor shall submit, with such

promptness as to cause no delay in his work or in that of any other contractors, all required submittals indicated in Part 3.1 of this section and elsewhere in the Contract Documents. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Designer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
- B. Each drawing and/or series of drawings submitted must be accompanied by a letter of transmittal giving a list of the titles and numbers of the drawings. Each series shall be numbered consecutively for ready reference and each drawing shall be marked with the following information:
1. Date of Submission
 2. Name of Project
 3. Location
 4. Section Number of Specification
 5. State Project Number
 6. Name of Submitting Contractor
 7. Name of Subcontractor
 8. Indicate if Item is submitted as specified or as a substitution

1.4 SHOP DRAWINGS

- A. Comply with the General Conditions, Article 3.2.
- B. The Contractor shall submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.
- C. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings including the following information:
 1. Dimensions
 2. Identification of products and materials included by sheet and detail number
 3. Compliance with specified standards
 4. Notation of coordination requirements
 5. Notation of dimensions established by field measurement
 6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8½"x11" but no larger than 24"x36".

1.5 PRODUCT DATA

- A. The Contractor shall comply with the General Conditions, Article 3.2.
- B. The Contractor shall collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
 - 1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information including the following information:
 - a. Manufacturer's printed recommendations
 - b. Compliance with Trade Association standards
 - c. Compliance with recognized Testing Agency standards
 - d. Application of Testing Agency labels and seals
 - e. Notation of dimensions verified by field measurement
 - f. Notation of coordination requirements
 - 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 - a. Refer to other Specification Sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 - b. Refer to other Sections for samples to be returned to the Contractor for incorporation in the Work. Such samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of sample submittals.
 - c. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.
 - 3. Field samples are full-size examples erected onsite to illustrate finishes, coatings, or finish materials and to establish the Project standard.
 - a. The Contractor shall comply with submittal requirements to the fullest extent possible. The Contractor shall process transmittal forms to provide a record of activity.

1.6 OPERATING AND MAINTENANCE MANUALS AND WARRANTIES

- A. The Contractor shall submit all required manufacturer's operating instructions, maintenance/service manuals, and warranties in accordance with the General Conditions, Article 3.5, and Supplementary Conditions along with this and other Sections of the Contract Documents.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REQUIRED SUBMITTALS

- A. Contractor shall submit the following information for materials and equipment to be provided under this contract.

SPEC SECTION	TITLE	CATEGORY
013100	Coordination Drawings	Shop Drawings
013100	List of Key Personnel Names	Schedule of Values
013200	Construction Progress Schedule	Construction Schedule
013200	Schedule of Values (O&M's)	Schedule of Values
013200	Schedule of Values (Close Out Documents)	Schedule of Values
013200	Schedule of Values (General Conditions)	Schedule of Values
013200	List of Subcontracts	List of Subcontractors
013200	Schedule of Submittals	Construction Schedule
013200	Schedule of Inspections, Tests, and Similar Services	Construction Schedule
013300	Record Drawings	As-Builts
013300	Notification	Construction Schedule
013300	Permit	Certification
013300	Construction Digital Photographs	Test Report
013300	Manufacturer's Instructions	Operation / Maintenance Manual
013300	Manufacturer's Maintenance/Service Manuals and Warranties	Operation / Maintenance Manual
013300	Manufacturer's Maintenance/Service Manuals and Warranties	Warranty
013300	Manufacturer's Field Reports	Test Report
013300	Certifications (signed) for Products, Materials, and Installation	Certification
013300	Construction Progress Schedule including Schedule of Values	Schedule of Values
013513.31	Material Safety Data Sheet for Hazardous Material	Product Data
013513.31	Schedule of Proposed Shutdowns	Construction Schedule
013513.31	List of Employees who will Submit Fingerprint Background Checks	Schedule of Values
013513.31	Missouri Applicant Fingerprint Privacy Notice (Signed)	Certification
013513.31	Applicant Privacy Rights (Signed)	Certification
013513.31	Privacy Act Statement (Signed)	Certification
013513.31	Inventory of Tools, Equipment, and Materials	Schedule of Values
015000	Test, Inspection, Meter Reading, or Similar Procedure of Temporary Utility	Test Report
015000	Implementation and Termination Schedule of Temporary Utility	Construction Schedule
015713	Installation Schedule of Temporary Erosion and Sediment Control	Construction Schedule

017400	Cleaning Submittal-Prior to Substantial Completion	Certification
260505	Discrepancies prior to disturbing existing installation	Product Data
260505	Coordinate Utility Outage(s) with Utility Company and Owner	Construction Schedule
260519	Low Voltage Power	Product Data
260519	Low Voltage Power	Shop Drawings
260519	Low Voltage Power	Warranty
263213	Engine Generators	Product Data
263213	Engine Generators	Shop Drawings
263213	Engine Generators	Warranty
263613	Manual Transfer Switch	Shop Drawings
263613	Manual Transfer Switch	Product Data
263613	Manual Transfer Switch	Warranty
263623.13	SE Automatic Transfer Switch	Shop Drawings
263623.13	SE Automatic Transfer Switch	Product Data
263623.13	SE Automatic Transfer Switch	Warranty
311000	Site Clearing-Coordinate with Utility Company	Construction Schedule
312200	Grading-Tree Damage-Engineer to Supply Remedy	Construction Schedule
312316.13	Trenching-Notify Engineer for Unexpected Subsurface Conditions	Construction Schedule
312316.13	Trenching-QC-Notify Engineer prior to backfilling any trench	Construction Schedule
329219	Seeding-Notify Engineer/CA once any given area is complete	Construction Schedule

END OF SECTION 013300

SECTION 263613 MANUAL TRANSFER SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Low-voltage manual transfer switches.

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete: Concrete equipment pads.
- B. Section 263213 - Engine Generators.

1.03 ABBREVIATIONS AND ACRONYMS

- A. MTS: Manual transfer switch.

1.04 DEFINITIONS

- A. Manual transfer switches may also be identified as MTS, MUS, MGQ, MPQ, MGDQ, MTDQ, MTQ, or MUQ.

1.05 REFERENCE STANDARDS

- A. ISO 9001 - Quality Management Systems — Requirements; 2015.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. UL 891 - Switchboards; Current Edition, Including All Revisions.
- E. UL 1008 - Transfer Switch Equipment; Current Edition, Including All Revisions.

1.06 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Provide sufficient information to determine compliance with Contract Documents. Identify submittal data with specific equipment tags and/or service descriptions to which they pertain. Identify specific model numbers, options, and features of equipment proposed.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product, including ratings, configurations, dimensions, finishes, weights, service condition requirements, and installed features.
- D. Shop Drawings: Include dimensioned plan views and sections indicating locations of system components, required clearances, and field connection locations. Include system interconnection schematic diagrams showing factory and field connections.
- E. Operation and Maintenance Data: Provide detailed information on system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.
- F. Executed warranty.
- G. Project Record Documents:
 - 1. Construction, installation, schematic, and wiring diagrams updated to as-installed and commissioned state.
 - 2. Configured settings/parameters for adjustable components updated to as-installed and commissioned state, noted if different from factory default.

1.07 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. NFPA 70.
 - 2. Requirements of authorities having jurisdiction.
 - 3. Applicable local codes.

- B. Manufacturer Qualifications:
 - 1. Firm engaged in manufacture of specified products of types and sizes required, and whose products have been in satisfactory use in similar service for minimum of 10 years.
 - 2. Certified in accordance with ISO 9001 with applicable quality assurance system regularly reviewed and audited by third-party registrar. Develop and control manufacturing, inspection, and testing procedures under guidelines of quality assurance system.
 - 3. Service, repair, and technical support services available 24 hours per day, 7 days per week, 365 days per year from manufacturer or their representative.
 - 4. Maintain records of each switch, by serial number, for minimum of 20 years.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Prior to delivery to project site, verify suitable storage space is available to store materials in well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity, and corrosive atmospheres.
- B. Protect materials during delivery and storage and maintain within manufacturer's written storage requirements. At minimum, store indoors in clean, dry space with uniform temperature to prevent condensation and protect electronics from potential damage from electrical and magnetic energy.
- C. Deliver materials to project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and equipment tag number or service name as identified in Contract Documents.
- D. Inspect products and report damage or violation of delivery, storage, and handling requirements to Engineer.

1.09 WARRANTY

- A. Manufacturer Warranty: Provide the following manufacturer warranty.
 - 1. 2 years for labor and travel expenses.
 - 2. 5 years for parts (2 years for circuit breakers).
 - 3. 10 years for main contacts.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Schneider Electric; ASCO 300 Series; www.ascopower.com/#sle.
- B. Source Limitations: Provide manual transfer switches and accessories produced by same manufacturer as other electrical distribution equipment for project and obtained from single supplier.

2.02 LOW-VOLTAGE MANUAL TRANSFER SWITCHES

- A. Basis of Design: Schneider Electric; ASCO 300 Series; www.ascopower.com/#sle.
- B. Description: Transfer switches consisting of three-position, center-off mechanically held power transfer switch unit for manual operation.
- C. Do not use double-throw safety switches or other equipment not specifically designed for power transfer applications and listed as transfer switch equipment.
- D. List and label as complying with UL 1008 and, for systems with integrated circuit breakers, UL 891.
- E. Transfer Switch Ratings/Configurations: As indicated on drawings.
- F. Transfer Switch Construction:
 - 1. Manually operated, mechanically held.
 - 2. Positively locked, unaffected by momentary outages, such that contact pressure is maintained at constant value and contact temperature rise is minimized for maximum reliability and operating life.
 - 3. Mechanically interlocked to allow only one of three possible positions:

- a. Connected to SOURCE 1 (preferred).
- b. Connected to SOURCE 2 (alternate).
- c. CENTER OFF (disconnected position).
- 4. Provide capability to pad-lock switch when connected to SOURCE 1 or SOURCE 2.
- 5. Main Contacts: Silver composition.
- 6. Switches Rated 600 A and Greater: Provide segmented, blow-on construction for high withstand and close-on capability, protected by separate arcing contacts.
- 7. Designed to allow inspection of contacts from front without disassembly of operating linkages and disconnection of power conductors.
- 8. Devices utilizing components of molded-case circuit breakers, contactors, or parts thereof, which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.
- 9. Manual Operating Handle: Capable of external operation without opening enclosure door.
- 10. Provide same contact-to-contact speed as automatic operation.
- G. Withstand and Closing Ratings: Rate to close on and withstand available RMS symmetrical short circuit current at terminals with overcurrent protection indicated.
- H. Neutral Configurations:
 - 1. Solid Neutral: Provide neutral conductor plate with fully rated AL-CU pressure connectors.
- I. Endurance Ratings:
 - 1. Switches Rated 600 A to 3,000 A: 3,000 cycles.
- J. Enclosures:
 - 1. Construction: Steel.
 - 2. Mounting: Free-standing, floor-mounted.
 - 3. Comply with UL 50.
 - 4. Finish: ANSI 61 grey powder coat.
 - 5. UL 50E Rating, Unless Otherwise Indicated:
 - a. Outdoor Locations: Type 3R, Type 3RX, Type 4, or Type 4X.
 - 6. Provide nameplate with drawing numbers and serviceable part numbers to facilitate maintenance.
- K. Status Indication: Provide yellow mechanical position indicators visible to operator for SOURCE 1 (preferred), SOURCE 2 (alternate), and CENTER OFF.
- L. Enclosure Heater:
 - 1. Provide for transfer switches installed outdoors and in unconditioned indoor spaces.
 - 2. Provide thermostat and terminal block.
 - 3. Capable of being added to existing switches.
 - 4. Provide connection to load terminals.
- M. User Interface/Annunciation Bundle:
 - 1. Provide LED indicators for SOURCE 1 (preferred) and SOURCE 2 (alternate).

2.03 SOURCE QUALITY CONTROL

- A. Factory test for proper operation of individual components and compliance with sequence of operation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine equipment exterior and interior for damage, including but not limited to, structure, moisture, and mildew.
- B. Examine for conditions detrimental to completion of work.
- C. Do not proceed with work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install equipment in accordance with manufacturer's written instructions.
- B. Install transfer switches in accordance with NECA 1.
- C. Unless otherwise indicated, install and anchor floor-mounted transfer switches on raised concrete pad 6 inches high; see Section 033000.

3.03 FIELD QUALITY CONTROL

- A. Manufacturer Services: Provide services of manufacturer's field representative to perform functional testing, commissioning, and first parameter adjusting.
 - 1. Include necessary material, equipment, labor, and technical supervision.
 - 2. Replace damaged or malfunctioning equipment and report discrepancies or installation issues.
 - 3. Identify transfer switches with label indicating inspection/testing agency and date of service.
- B. Operational Readiness Testing:
 - 1. Inspect and test equipment and associated systems for conformance to Contract Documents, including equipment manufacturer's recommendations, and readiness for operation.
 - a. Visually inspect for physical damage and proper installation.
 - b. Perform tests in accordance with manufacturer's instructions.
 - c. Perform tests to verify compliance with Contract Documents.
 - d. Perform tests to verify equipment is ready for operation.
 - e. Touch-up paint chips and scratches with manufacturer-supplied paint.
- C. Correct deficiencies and replace damaged or defective transfer switches or associated components.

3.04 PROTECTION

- A. Protect installed transfer switches from subsequent construction operations.

END OF SECTION

SECTION 263623.13 AUTOMATIC TRANSFER SWITCHES – SERVICE ENTRANCE EQUIPMENT PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Low-voltage automatic/nonautomatic transfer switches.

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete: Concrete equipment pads.
- B. Section 263213 - Engine Generators.

1.03 ABBREVIATIONS AND ACRONYMS

- A. ATS: Automatic transfer switch.
- B. NTS: Nonautomatic transfer switch.

1.04 DEFINITIONS

- A. Automatic transfer switches may also be identified as ATS, ADTS, ACTS, ATB, ADTB, ACTB, AUS, ADUS, ACUS, AUB, ADUB, or ACUB.
- B. Nonautomatic transfer switches may also be identified as NTS, NDTs, NCTS, NTB, NDTB, NCTB, NUS, NDUS, NCUS, NUB, NDUB, or NCUB.

1.05 REFERENCE STANDARDS

- A. IEEE 802.3 - IEEE Standard for Ethernet 2022.
- B. ISO 9001 - Quality Management Systems — Requirements 2015.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- D. NEMA ICS 10 Part 1 - Industrial Control and Systems Part 1: Electromechanical AC Transfer Switch Equipment 2020.
- E. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations Current Edition, Including All Revisions.
- G. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations Current Edition, Including All Revisions.
- H. UL 1008 - Transfer Switch Equipment Current Edition, Including All Revisions.

1.06 ADMINISTRATIVE REQUIREMENTS

- A. Scheduling: Do not schedule functional demonstration testing until operational readiness testing is complete and associated report and certification have been submitted.

1.07 SUBMITTALS

- A. See Section 013300 - Requirements for submittal procedures.
- B. Provide sufficient information to determine compliance with Contract Documents. Identify submittal data with specific equipment tags and/or service descriptions to which they pertain. Identify specific model numbers, options, and features of equipment proposed.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product, including ratings, configurations, dimensions, finishes, weights, service condition requirements, and installed features.
- D. Shop Drawings: Include dimensioned plan views and sections indicating locations of system components, required clearances, and field connection locations. Include system interconnection schematic diagrams showing factory and field connections.
- E. Operational Readiness Report:

1. Document test results, including assumptions, conditions, allowances, and corrections made.
 2. Provide listing of field modifications and adjustments made including settings/parameters not identified as factory defaults within equipment's operations and maintenance manual documentation.
 3. Include certification, signed by Contractor and manufacturer's representative, that equipment and associated system have been installed, configured, and tested in accordance with manufacturer's recommendations, conforms to requirements of Contract Documents, and is ready for operation.
- F. Operation and Maintenance Data: Provide detailed information on system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.
- G. Executed warranty.
- H. Project Record Documents:
1. Configured settings/parameters for adjustable components updated to as-installed and commissioned state, noted if different from factory default.

1.08 QUALITY ASSURANCE

- A. Comply with the following:
1. NFPA 70.
- B. Manufacturer Qualifications:
1. Firm engaged in manufacture of specified products of types and sizes required, and whose products have been in satisfactory use in similar service for minimum of 10 years.
 2. Certified in accordance with ISO 9001 with applicable quality assurance system regularly reviewed and audited by third-party registrar. Develop and control manufacturing, inspection, and testing procedures under guidelines of quality assurance system.
 3. Service, repair, and technical support services available 24 hours per day, 7 days per week, 365 days per year from manufacturer or their representative.
 4. Maintain records of each switch, by serial number, for minimum of 20 years.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Prior to delivery to project site, verify suitable storage space is available to store materials in well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity, and corrosive atmospheres.
- B. Protect materials during delivery and storage and maintain within manufacturer's written storage requirements. At minimum, store indoors in clean, dry space with uniform temperature to prevent condensation and protect electronics from potential damage from electrical and magnetic energy.
- C. Deliver materials to project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and equipment tag number or service name as identified in Contract Documents.
- D. Inspect products and report damage or violation of delivery, storage, and handling requirements to Engineer.

1.10 WARRANTY

- A. Manufacturer Warranty: Provide the following manufacturer warranty.
1. 2 years for labor and travel expenses.
 2. 5 years for parts (2 years for circuit breakers).
 3. 10 years for main contacts.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Schneider Electric; ASCO 7000 Series; www.ascopower.com/#sle.

- B. Source Limitations: Provide automatic transfer switches, controllers, and accessories produced by same manufacturer as other electrical distribution equipment for project and obtained from single supplier.

2.02 LOW-VOLTAGE AUTOMATIC/NONAUTOMATIC TRANSFER SWITCHES

- A. Basis of Design: Schneider Electric; ASCO 7000 Series; www.ascopower.com/#sle.
- B. Description: Transfer switches consisting of inherently double-throw power transfer switch with solenoid-operated mechanism and microprocessor controller; automatic or nonautomatic operation as indicated.
 - 1. Automatic Transfer Switches: Transfer switches with automatically initiated transfer between sources.
- C. Comply with NEMA ICS 10 Part 1 and IEC 60947-6-1; list and label as complying with UL 1008 and, where applicable, UL 891 or UL 1558.
- D. Automatic Transfer Switch:
 - 1. Service-Entrance Switch:
 - a. Frame: 800 A.
 - b. Automatic Transition Configuration, Utility Service Entrance Breaker: Open transition.
 - c. Neutral Configuration: Solid neutral.
 - d. Phase Poles: Three.
 - e. Ampere Rating: 800 A.
 - f. Voltage: 208 V.
 - g. Enclosure: Type 3R secure double door.
- E. Service Entrance Rated Transfer Switches:
 - 1. Overcurrent Protective Device:
 - a. Switches Rated Less Than 1,000 A: For normal connection, provide molded case circuit breaker with current rating and number of poles as indicated.
 - 2. Grounding/Bonding Provisions:
 - a. Provide ground bus for connection of grounding conductor to grounding electrode.
- F. Transfer Switch Construction:
 - 1. Electrically operated, mechanically held.
 - 2. Provide one type of main operator for available sizes for ease of maintenance and commonality of parts.
 - 3. Positively locked, unaffected by momentary outages, such that contact pressure is maintained at constant value and contact temperature rise is minimized for maximum reliability and operating life.
 - 4. Main Contacts: Silver composition.
 - 5. Designed to allow inspection of contacts from front without disassembly of operating linkages and disconnection of power conductors.
 - 6. Stationary and Moveable Contacts: Removable and replaceable without removing power conductors and/or bus bars.
 - 7. Switches Rated 800 A and Greater: Provide segmented, blow-on construction for high withstand and close-on capability, protected by separate arcing contacts.
 - 8. Devices utilizing components of molded-case circuit breakers, contactors, or parts thereof, which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.
- G. Enclosures:
 - 1. UL 50E Rating, Unless Otherwise Indicated:
 - a. Outdoor Locations: Type 3R.
- H. Pilot Devices:

1. Provide 0.63 inch (16 mm), industrial-grade, door-mounted switches and pilot lights to facilitate viewing and replacement.
 2. Provide separate removable plate for door controls, supplied loose for open type units.
 3. Provide three-position momentary switch for test/automatic/reset modes.
 - a. Test Position: Simulates normal source failure.
 - b. Reset Position: Bypass time delays on either transfer to emergency or retransfer to normal.
 4. Provide 0.63 inch (16 mm), industrial-grade, type 12 LED indicating lights, consisting of one green LED to indicate when transfer switch is connected to normal source and one red LED to indicate when transfer switch is connected to emergency source.
 5. Provide 0.63 inch (16 mm), industrial-grade, type 12 LED indicating lights, energized by controller outputs to indicate true source availability of normal/emergency sources as determined by voltage sensing trip/reset settings for each source.
- I. Controller:
1. Construction:
 - a. Provide single, built-in microprocessor for controller's sensing and logic for maximum reliability and minimum maintenance.
 - b. Provide capability for serial communication through separate module.
 - c. Provide single controller with 12 selectable nominal voltages for maximum application flexibility and minimal spare part requirements.
 - d. Connect controller to transfer switch with interconnecting wiring harness, including keyed disconnect plug to enable controller disconnection from transfer switch for routine maintenance.
 - e. Provide multi-layer printed circuit boards for sensing and control logic.
 - f. Provide industrial-grade, plug-in interfacing relays with dust covers.
 - g. Provide enclosure with protective cover mounted separately from transfer switch unit for safety and ease of maintenance. Include built-in pocket for storage of operator's manuals.
 - h. Wire customer connections to common terminal block to simplify field-wiring connections.
 2. Voltage Sensing: True RMS, accurate to within plus/minus 1 percent of nominal voltage.
 3. Frequency Sensing: Accurate to within plus/minus 0.2 percent.
 4. Service Conditions:
 - a. Ambient Operating Temperature: Between minus 4 degrees F (minus 20 degrees C) and 140 degrees F (60 degrees C).
 - b. Ambient Storage Temperature: Between minus 67 degrees F (minus 55 degrees C) and 185 degrees F (85 degrees C).
 5. Electromagnetic Compatibility (EMC):
 - a. IEC CISPR 11, Group 1, Class A.
 - b. IEC 61000-4-2.
 - c. IEC 61000-4-3.
 - d. IEC 61000-4-4.
 - e. IEC 61000-4-5.
 - f. IEC 61000-4-6.
 - g. IEC 61000-6-2.
 6. Controller Display/Keypad:
 - a. Provide integral four-line, 20-character LCD display and keypad for viewing available data and setting operational parameters.
 - b. Make operational parameters available for viewing and limited control through serial communications input port.
 - c. Make the following operational parameters adjustable only via controller DIP switches:
 - 1) Nominal line voltage and frequency.

- 2) Single or three phase sensing.
- 3) Operating parameter protection.
- 4) Transfer operating mode configuration (open, closed, or delayed transition).
- d. Controller Instructions and Settings: Accessible, readable, and accomplished without use of codes, calculations, or instruction manuals.
- 7. Provide the following integral features, capable of being activated through keypad programming:
 - a. Commit to Transfer: Selectable to determine whether load should be transferred to emergency generator if normal source restores before generator is ready to accept load.
 - b. Engine Exerciser:
 - 1) Enables user to program up to seven different exercise routines.
 - 2) Programmable Routine Parameters:
 - (a) Enable/disable routine.
 - (b) Enable/disable transfer of load during routine.
 - (c) Start Time: By time of day, day of week, and week of month (first, second, third, fourth, alternate, or every week).
 - (d) Duration of run.
 - 3) At end of specified duration, transfer load back to normal source and run generator for specified cool down period.
 - c. Provide terminals for remote contact which close to signal transfer to emergency source. If emergency source fails while connected to emergency source, but normal source is acceptable, override transfer command and return to normal source.
 - d. System Status: Provide system status screen for controller LCD display, accessible from menu by pressing "ESC" key maximum of two times. Display clear description of active operating sequence and switch position, such as 'Normal Failed; Load on Normal; TD Normal to Emergency; 2 min 15 s'.
 - e. Self-Diagnostics: Provide diagnostics screen for detecting system errors. Provide information on status input signals to controller, which may prevent load transfer commands from being completed.
 - f. Data Logging: Log data, storing previous 99 events in nonvolatile memory, retained in event of total power loss; include the following:
 - 1) Event Logging:
 - (a) Data, time, and reason for transfer from normal to emergency.
 - (b) Data, time, and reason for transfer from emergency to normal.
 - (c) Data, time, and reason for engine start.
 - (d) Data and time engine stopped.
 - (e) Data and time emergency source available.
 - (f) Data and time emergency source not available.
 - 2) Statistical Data:
 - (a) Total number of transfers.
 - (b) Total number of transfers due to source failure.
 - (c) Total number of days controller has been energized.
 - (d) Total number of hours both normal and emergency sources have been available.
- J. Voltage, Frequency, and Phase Rotation Sensing:
 - 1. Voltage and Frequency Sensing: Continuously monitored on normal and emergency sources with the following minimum pickup and dropout/trip capabilities:
 - a. Undervoltage:
 - 1) Sources: Normal and emergency, 3 phase.
 - 2) Dropout/Trip: 70 to 98 percent.
 - 3) Pickup/Reset: 85 to 100 percent.
 - b. Overvoltage:

- 1) Sources: Normal and emergency, 3 phase.
- 2) Dropout/Trip: 102 to 115 percent.
- 3) Pickup/Reset: 2 percent below trip.
- c. Under Frequency:
 - 1) Sources: Normal and emergency.
 - 2) Dropout/Trip: 85 to 98 percent.
 - 3) Pickup/Reset: 90 to 100 percent.
- d. Over Frequency:
 - 1) Sources: Normal and emergency.
 - 2) Dropout/Trip: 102 to 110 percent.
 - 3) Pickup/Reset: 2 percent below trip.
- e. Voltage Unbalance:
 - 1) Sources: Normal and emergency.
 - 2) Dropout/Trip: 5 to 20 percent.
 - 3) Pickup/Reset: 1 percent below dropout.
2. Repetitive Accuracy of Settings: Within plus/minus 0.5 percent over operating temperature range of minus 4 degrees F (minus 20 degrees C) to 140 degrees F (60 degrees C).
3. Voltage and Frequency Settings: Field adjustable in 1-percent increments locally via display/keypad or remotely via serial communications port access.
4. When activated by keypad or through serial port, capable of sensing phase rotation of both normal and emergency sources and rejecting source if phase rotation does not match rotation reference selected in settings (ABC or CBA).
5. Source Status Screens: For normal and emergency sources, display digital readout of voltage on each phase, frequency, and phase rotation.
6. Include selectable algorithm to:
 - a. Prevent repeated transfer cycling to source which experiences primary-side, single-phase failures on grounded-wye-to-grounded-wye transformer then regenerates voltage when unloaded.
 - b. Inhibit retransfer to normal/utility source upon detection of single-phasing condition until dedicated timer expires, alternate source fails, or normal source fails and is restored during time delay period; time delays adjustable via display/keypad.
- K. Time Delays:
 1. Provide adjustable time delay of 0 to 6 seconds for override of momentary normal source outages and delay of transfer and engine starting signals. Provide capability to extend time delay to 60 minutes by providing external 24 VDC power supply.
 2. Provide time delay on transfer to emergency, adjustable from 0 to 60 minutes, for controlled timing of load transfer to emergency source.
 3. Delayed Transition:
 - a. Provide adjustable time delay of 0 to 6 seconds to override momentary emergency source outage to delay retransfer signals during initial loading of engine generator set.
 - b. Provide adjustable time delay of 0 to 5 minutes for load disconnect position for delayed transition operation.
 - c. Time Delays: Adjustable via display/keypad; value displayed on LCD or remote device to represent remaining time until next event occurs.
 4. Closed Transition:
 - a. Provide adjustable time delay of 1 to 5 minutes on failure to synchronize normal and emergency sources prior to transfer.
 - b. Provide adjustable time delay of 0.1 to 1 second on extended parallel condition of both power sources during transfer.
 5. Provide two time delay modes on retransfer to normal source, independently adjustable from 0 to 60 minutes; one for normal source power failures and one for test mode function.

- Automatically bypass time delay if emergency source fails and normal source is acceptable.
6. Provide time delay on shut down of engine generator for cool down, adjustable from 0 to 60 minutes.
 7. Provide time-delay-activated output signal to drive external relay(s) for selective load disconnect control; capable of activating adjustable time delay of 0 to 5 minutes in following modes:
 - a. Prior to transfer only.
 - b. Prior to and after transfer.
 - c. Normal to emergency only.
 - d. Emergency to normal only.
 - e. Normal to emergency and emergency to normal.
 - f. All transfer conditions or only when both sources are available.
 8. Time Delays: Adjustable in 1 second increments, except extended parallel time to be adjustable in 0.01 second increments.
- L. Provide SPDT contact, rated 5 A at 30 VDC, for low-voltage engine start signal; prevents dry cranking of engine by requiring generator set to reach proper output and run for duration of cool-down setting, regardless of whether normal source restores before load is transferred.
- M. Provide auxiliary contacts, rated 10 A at 250 VAC, consisting of one contact which is closed when transfer switch is connected to normal source and one contact which is closed when transfer switch is connected to emergency source.
- N. Power meter (This feature shall be equal to ASCO accessory 135L)
1. *The Power Meter shall conform to the requirements of:*
 - a. UL 3111-1-Electrical Measuring and Testing Equipment
 - b. The Power Meter shall be capable of operating without modification at a nominal frequency of 45 to 66Hz.
 - c. The Power Meter shall be rated for an operating temperature of -4°F to 158°F and a storage temperature of -22°F to 176°F. and shall be rated for an 85% non-condensing, relative humidity.
 - d. The Power Meter shall accept inputs from industry standard instrument transformers (120 VAC secondary PT's and 5A secondary CT's). Direct phase voltage connections, 0 to 600VAC nominal, shall be possible without the use of PT's.
 - e. The Power Meter shall accept single, 3 phase, or three & four wire circuits. A fourth CT input shall be available to measure neutral or ground current.
 - f. The Power Meter shall contain a built-in discrete contact to wire an ATS 14A auxiliary contact to indicate switch position.
 - g. The Power Meter shall accept AC voltage from the sensing lines for operation. Additional provisions shall be provided for external DC voltage input range 9-36 VDC with a nominal of 24 VDC.
 - h. The Power Meter shall be equipped with a continuous duty, long –life, 4 line x 20 character green backlit LCD
 - i. All setup parameters required by the Power Meter shall be stored in non- volatile memory and retained in the event of a control power interruption.
 - j. The Power Meter shall be flush mountable on a surface.
 - k. The Power Meter enclosure shall be sealed to IP-51 (NEMA 1) and the faceplate shall be sealed to IP-65 (NEMA 4). All push buttons shall be sealed tact switches
 - l. The Power Meter shall send, when prompted, information to a central location equipped with a manufacturer supplied critical power management system or 3rd party monitor through manufacturer supplied communication modules. All 3rd party monitor must utilize industry standard open protocols Modbus/RTU.Modbus/TCP or SNMP.

- m. An embedded RS-485 port will be provided which will enable communication at 9600, 19.2K, 38.4K, or 57.6K baud. DIP switches will be provided on the RS-485 port allowing a user to select 2-wire or 4-wire communication as well as the option to activate a terminating resistor on the port. The Power Meter shall help facilities comply with NEC 220. It shall provide Maximum Demand calculations for the past 24 months, as per standards with 15 minute averages.
 - n. The following data will be available on the display and Modbus registers of the Power Meter:
 - 1) Line-to-neutral voltages (V_{AN} , V_{BN} , and V_{CN})
 - 2) Line-to-neutral voltage average (V_{AVE})
 - 3) Line-to-line voltages (V_{AB} , V_{BC} , and V_{CA})
 - 4) Line-Line voltage average (V_{LAVE})
 - 5) Current on each phase (I_A , I_B , and I_C)
 - 6) Current on the neutral conductor (I_N)
 - 7) Average current (I_{AVE})
 - 8) Active power, KW per phase and total (W_A , W_B , W_C , and W_T)
 - 9) Apparent power, KVA per phase and total (V_{AA} , V_{AB} , V_{AC} , and V_{AT})
 - 10) KWHours importing, exporting and net (KWH_{IMP} , KWH_{EXP} , and KWH_{NET})
 - 11) KVARHours leading, lagging and net ($KVARH_{LEAD}$, $KVARLAG$, and $KVARH_{NET}$)
 - 12) Power factor (PF)
 - 13) Signal Frequency (Hz)
 - o. Setup of a system requirements shall be allowed from the front of the Power Meter.
- O. Transfer Switch Remote Annunciator:
- 1. Provide remote annunciators for monitoring and control of automatic transfer switches remotely over ethernet where indicated.
 - 2. Hardware Features:
 - a. List in accordance with UL 1008 and UL 60950-1.
 - b. Project-specific labels with equipment designations and power source names.
 - c. Dual 10/100 Base-T, RJ45 auto-sensing and auto-crossover Ethernet ports.
 - d. LED indication of source acceptability, switch position, common alarm, time delay and Ethernet link activity.
 - e. Pushbutton for transfer/retransfer control operations and time delay bypass.
 - f. Pushbuttons for alarm silence and lamp test.
 - g. Key lock to enable/disable transfer pushbutton.
 - h. Provide audible and visual alarms to indicate communication error, transfer switch locked out, failure to synchronize, extended parallel, and eight user-configured discrete inputs.
 - i. Programmable watchdog timer that can generate system reset upon timeout; minimum of 1 second.
 - j. Factory reset capability.
 - k. Power ride-through of 100 milliseconds.
 - 3. Communications

- a. Dual 10/100 Base-T (RJ-45) Ethernet ports are provided to support TCP/IP communications for up to eight automatic transfer switches via individual remote connectivity modules or daisy-chained serial modules into a single Connectivity Module. Additional features include:
 - 1) *Supports Full Duplex Flow Control (IEEE 802.3x)*
 - 2) *3.3V power supply with 5V I/O tolerance*
 - 3) *Supports 3 LEDs to indicate traffic link speed and collision*
- 4. Mounting: Support surface mounting via mounting screw studs and flush mounting to front or back of enclosure cutout.
- 5. Power Supply: 24 VDC, 120 VAC, or 240 VAC.
- 6. Service Conditions:
 - a. Ambient Operating Temperature: Between minus 4 degrees F (minus 20 degrees C) and 158 degrees F (70 degrees C).
 - b. Ambient Storage Temperature: Between minus 40 degrees F (minus 40 degrees C) and 185 degrees F (85 degrees C).
 - c. Relative Humidity: Between 5 and 85 percent.

2.03 SOURCE QUALITY CONTROL

- A. Factory test for proper operation of individual components and compliance with sequence of operation. Verify operating transfer time, voltage, frequency, and time delay settings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine equipment exterior and interior for damage, including but not limited to, structure, moisture, and mildew.
- B. Examine for conditions detrimental to completion of work.
- C. Do not proceed with work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install equipment in accordance with manufacturer's written instructions.
- B. Install transfer switches in accordance with NECA 1.
- C. Unless otherwise indicated, install and anchor floor-mounted transfer switches on raised concrete pad 4 inches (100 mm) high; see Section 033000.

3.03 FIELD QUALITY CONTROL

- A. Manufacturer Services: Provide services of manufacturer's field representative to perform functional testing, commissioning, and first parameter adjusting.
 - 1. Include necessary material, equipment, labor, and technical supervision.
 - 2. Replace damaged or malfunctioning equipment and report discrepancies or installation issues.
 - 3. Identify transfer switches with label indicating inspection/testing agency and date of service.
- B. Operational Readiness Testing:
 - 1. Inspect and test equipment and associated systems for conformance to Contract Documents, including equipment manufacturer's recommendations, and readiness for operation.
 - a. Visually inspect for physical damage and proper installation.
 - b. Perform tests in accordance with manufacturer's instructions.
 - c. Perform tests to verify compliance with Contract Documents.
 - d. Perform tests to verify equipment is ready for operation.

- e. Touch-up paint chips and scratches with manufacturer-supplied paint.
- C. Correct deficiencies and replace damaged or defective transfer switches or associated components.

3.04 CLOSEOUT ACTIVITIES

- A. Functional Demonstration Testing: Demonstrate proper operation of transfer switches and associated systems to Owner's designated representative and Engineer, observing and documenting compliance with Contract Documents.
- B. Training:
 - 1. Train Owner's personnel on operation and maintenance of system.
 - a. Accommodate minimum of four attendees.
 - b. Provide not less than one session(s) with four hours of classroom and hands-on training.
 - c. Training Reference: Use submitted operations and maintenance manuals.
 - d. Instructor: Factory-trained manufacturer's representative.
 - e. Location: Project site.
 - 2. Provide sufficient time and detail in each session to cover the following at minimum:
 - a. Operation theory.
 - b. Major equipment components.
 - c. Equipment operation.
 - d. Equipment configurations.
 - e. Maintenance, troubleshooting, and repair.
 - f. Component-level parts replacement.

3.05 PROTECTION

- A. Protect installed transfer switches from subsequent construction operations.

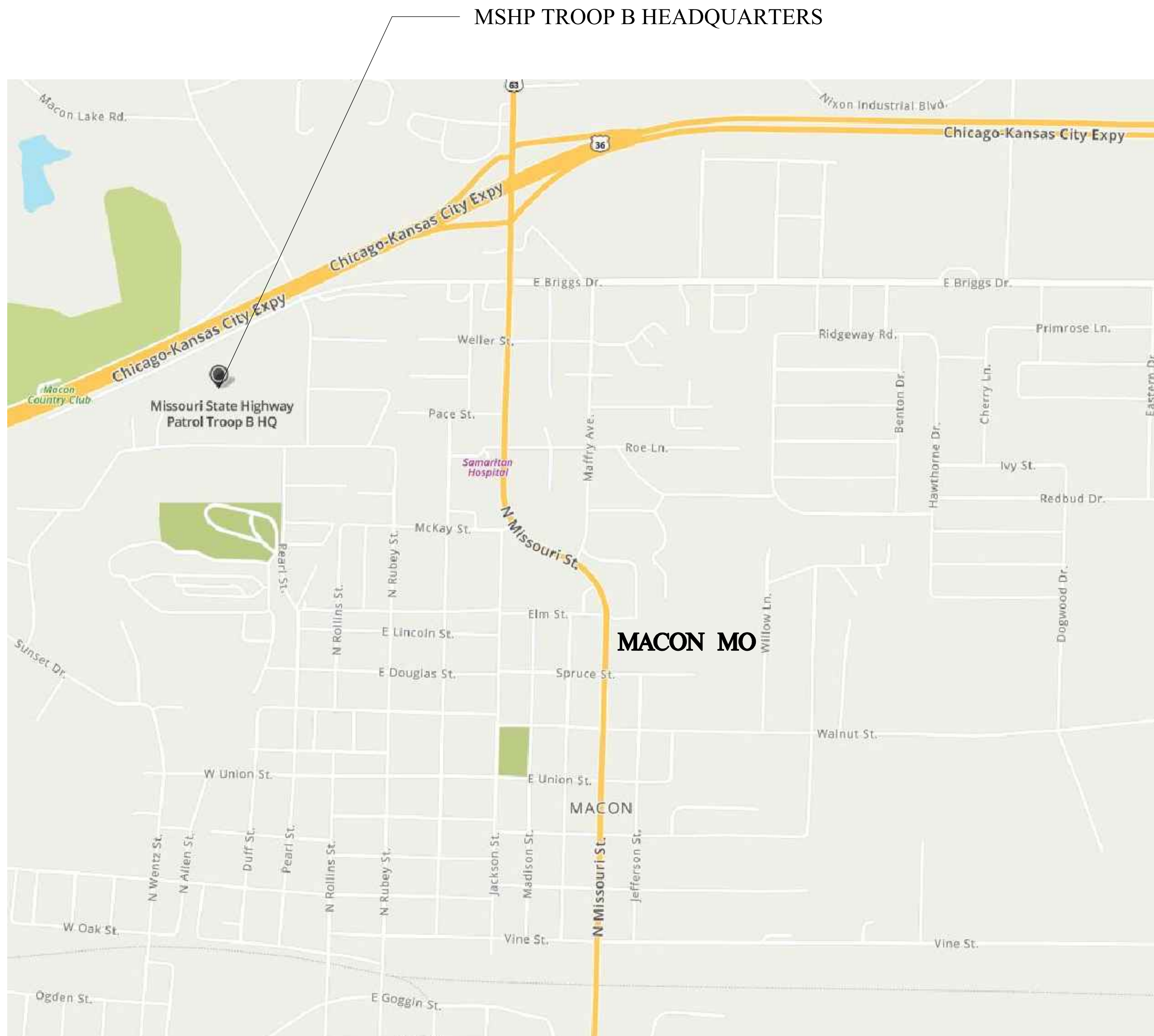
END OF SECTION

SHEET INDEX

1	G-001	COVER SHEET
2	G-002	GENERAL NOTES, DRAWING INDEX AND LOCATION MAP
3	G-003	EXISTING AND PROPOSED SITE UTILITIES
4	E-101	HEADQUARTERS, GROUND FLOOR RENO/DEMO POWER PLAN
5	E-102	HEADQUARTERS FIRST FLOOR RENO/DEMO POWER PLAN
6	E-103	CRIME LAB/GENERATOR/RADIO POWER PLANS
7	E-501	EXISTING/NEW ELECTRICAL UTILITY RISER DETAILS
8	E-502	HEADQUARTERS EXISTING ELECTRICAL RISER DIAGRAM
9	E-503	UNINTERRUPTIBLE POWER SUPPLY/BYPASS DETAILS

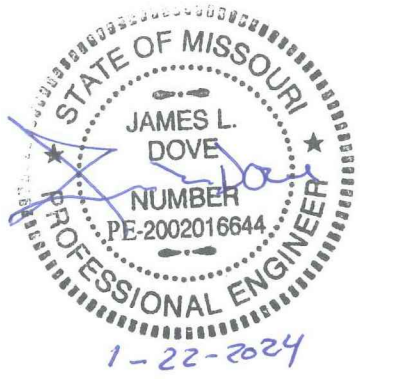
GENERAL CONSTRUCTION NOTES

- 1 THIS PROJECT SHALL BE PHASED TO MINIMIZE THE DOWN TIME:
 - PHASE ONE SHALL INCLUDE INSTALLING A TRANSFORMER PAD AND TRANSFORMER, INSTALLING A GENERATOR PAD AND GENERATOR, INSTALLING AN OUTDOOR SERVICE RATED ATS AND OUTDOOR RATED MTS AND ASSOCIATED CONDUIT TO BUILDING.
 - PHASE TWO SHALL INCLUDE REMOVAL OF THE EXISTING DELTA HIGH LEG OVERHEAD SERVICE AND ENERGIZING THE NEW 120/208V PAD MOUNT TRANSFORMER. FINALIZING THE INSTALLATION OF THE SECONDARY CONDUIT AND CONDUCTORS TO THE HEADQUARTERS BLDG. CONVERTING FROM 230V TO 208V WILL REQUIRE MODIFYING THE TAP SETTINGS ON A TRANSMITTER TRANSFORMER AND INSTALLING A BUCK-BOOST TRANSFORMER FOR THE ELEVATOR EQUIPMENT.
 - 2 THESE DRAWINGS SHALL NOT BE SCALED. REFER TO DIMENSIONS INDICATED OR WHERE NO DIMENSIONS ARE GIVEN, CONTRACTOR SHALL VERIFY THE ACTUAL SIZE AND LOCATION THROUGH FIELD VERIFICATION. THE EXISTING CONDITIONS SHOWN ON THESE DRAWINGS WERE DERIVED FROM OBSERVATIONS AND MEASUREMENTS TAKEN DURING SITE VISITS AND FROM ARCHIVE INFORMATION PROVIDED BY THE OWNER AND MAY NOT BE TOTALLY ACCURATE. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY ANY CRITICAL DIMENSIONS PRIOR TO BIDDING AND/OR FABRICATION AND INSTALLATION OF THE WORK.
 - 3 IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR TO REVIEW THE DRAWINGS TO ASSURE COORDINATION OF ALL WORK AFFECTING EACH TRADE. FAILURE TO REVIEW ALL CONTRACT DOCUMENTS FOR APPLICABLE ITEMS OF WORK SHALL NOT RELIEVE THE RESPONSIBLE PARTY FROM PERFORMING ALL WORK REQUIRED BY THE CONTRACT DOCUMENTS.
 - 4 COORDINATION – THE GENERAL CONTRACTOR SHALL COORDINATE REQUIREMENTS OF ALL TRADES TO ALLOW FOR TIMELY INCLUSION IN THE WORK SO AS NOT TO DELAY THE WORK OR THE WORK OF ANY SUBCONTRACTOR.
 - 5 PRECAUTIONS – CONTRACTOR SHALL IMMEDIATELY REPORT ANY UNFORESEEN STRUCTURAL CONDITIONS WHICH COULD RESULT IN DAMAGE TO THE STRUCTURE OR INJURY TO ITS OCCUPANTS REPORT ANY SUCH CONDITION IMMEDIATELY TO THE OWNER AND ENGINEER. TAKE PRECAUTIONS NECESSARY TO PROPERLY SUPPORT THE STRUCTURE AND PROTECT THE OCCUPANTS.
 - 6 SITE USAGE – USE OF THE SITE FOR ANY CONSTRUCTION STAGING OR OTHER OPERATIONS SHALL BE COORDINATED WITH THE OWNER AND CONSTRUCTION ADMINISTRATOR. THE CONTRACTOR'S OPERATIONS SHALL NOT OBSTRUCT OR ADVERSELY AFFECT ANY PUBLIC OR ADJACENT OWNER AREAS.
 - 7 EXIT ACCESS – MAINTAIN FREE, SAFE, AND APPROVED MEANS OF EGRESS IN AND OUT OF PROJECT LOCATION AND EXISTING OCCUPIED BUILDINGS IN ACCORDANCE WITH REQUIREMENTS OF APPLICABLE REGULATORY AGENCIES.
 - 8 GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING RED LINE "AS-BUILT" DRAWINGS AT THE END OF THE PROJECT ALONG WITH ALL OPERATING MANUALS OF NEW SYSTEMS INSTALLED.
 - 9 COORDINATE ALL UTILITY WORK WITH MACON UTILITY (BEN STUEVE 660-651-9743).
- CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ANY UNDERGROUND UTILITIES PRIOR TO EXCAVATION. THE UTILITIES SHOWN ARE A ROUGH ESTIMATE AND SHOULD NOT BE CONSIDERED ACCURATE.



1 MSHP TROOP B LOCATION MAP SCALE: NONE

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

MISSOURI DEPARTMENT
OF PUBLIC SAFETY
DIVISION OF MO STATE
HIGHWAY PATROL

MSHP
TROOP B HEADQUARTERS
308 PINE CREST DR.
MACON, MO 63552

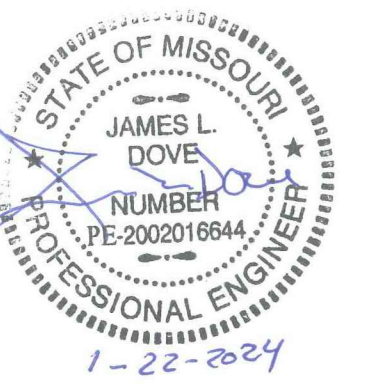
PROJECT # R2310-01
SITE # 4753
FACILITY # 55113

REVISION: ADDENDUM 1
DATE: 02-26-2024
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 01/22/2024

CAD DWG FILE: TBHCL-E.dwg
DRAWN BY: MDS
CHECKED BY: JLD
DESIGNED BY: JLD

SHEET TITLE:
**LOCATION MAP
AND
DRAWING INDEX**

SHEET NUMBER:
G-002
2 OF 9 SHEETS
2024-01-22



OFFICE OF ADMINISTRATION
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MANAGEMENT,
DESIGN AND CONSTRUCTION

MISSOURI DEPARTMENT
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MSHP
TROOP B HEADQUARTERS
308 PINE CREST DR.
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ISSUE DATE: 01/22/2024

CAD DWG FILE: TBHCL-E.dwg
DRAWN BY: MDS
CHECKED BY: JLD
DESIGNED BY: JLD

SHEET TITLE:
**EXISTING AND
PROPOSED SITE
UTILITIES**

SHEET NUMBER:

G-003

3 OF 9 SHEETS
2024-01-22

PHASE II DEMOLITION NOTES

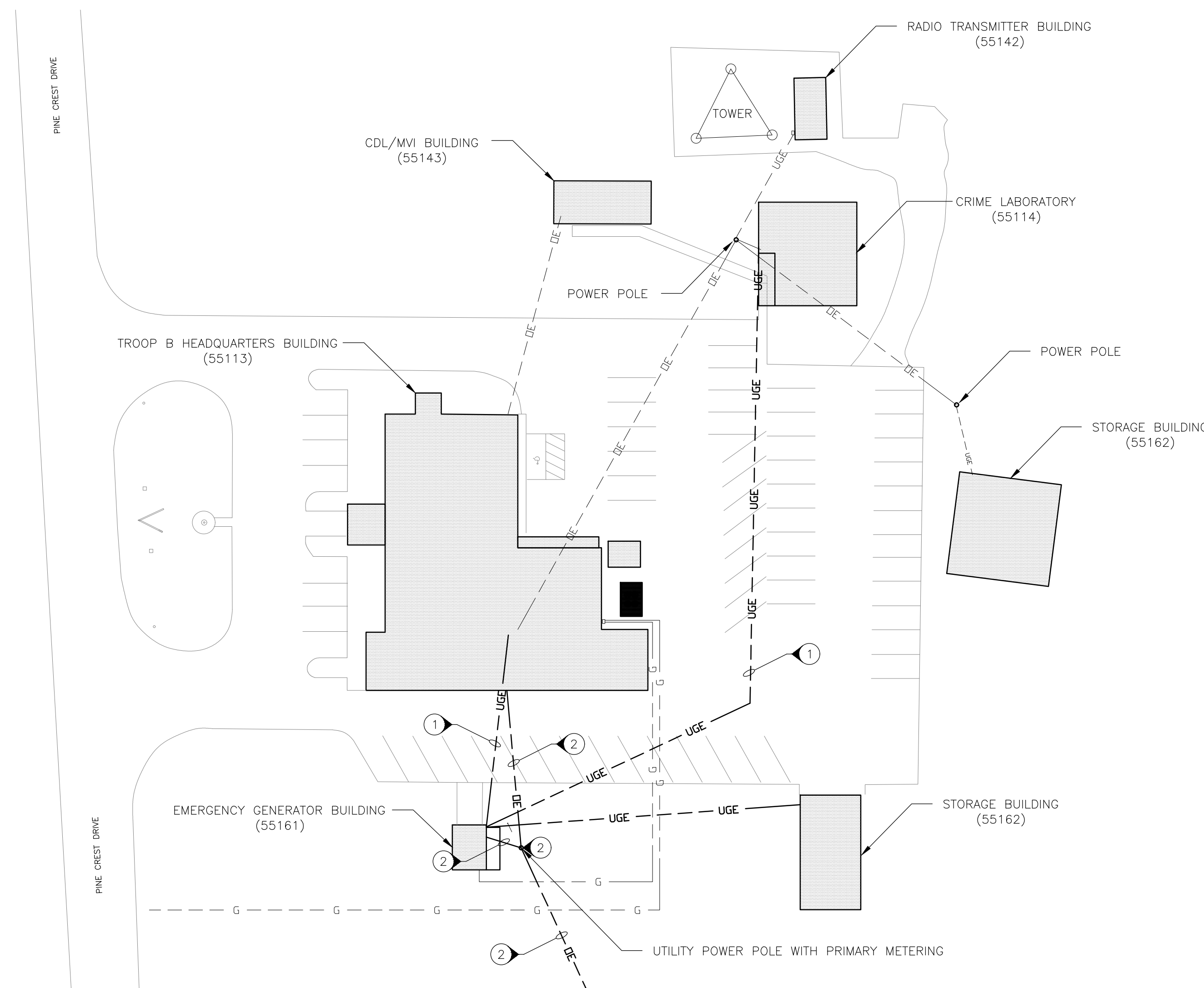
INDICATES KEYED NOTES

- 1 ABANDONED OR REMOVE EXISTING UNDERGROUND GENERATOR CIRCUIT.
- 2 LOCAL UTILITY COMPANY TO REMOVE EXISTING OVERHEAD SERVICE CONDUCTORS, POLE, AND ANCHORS.

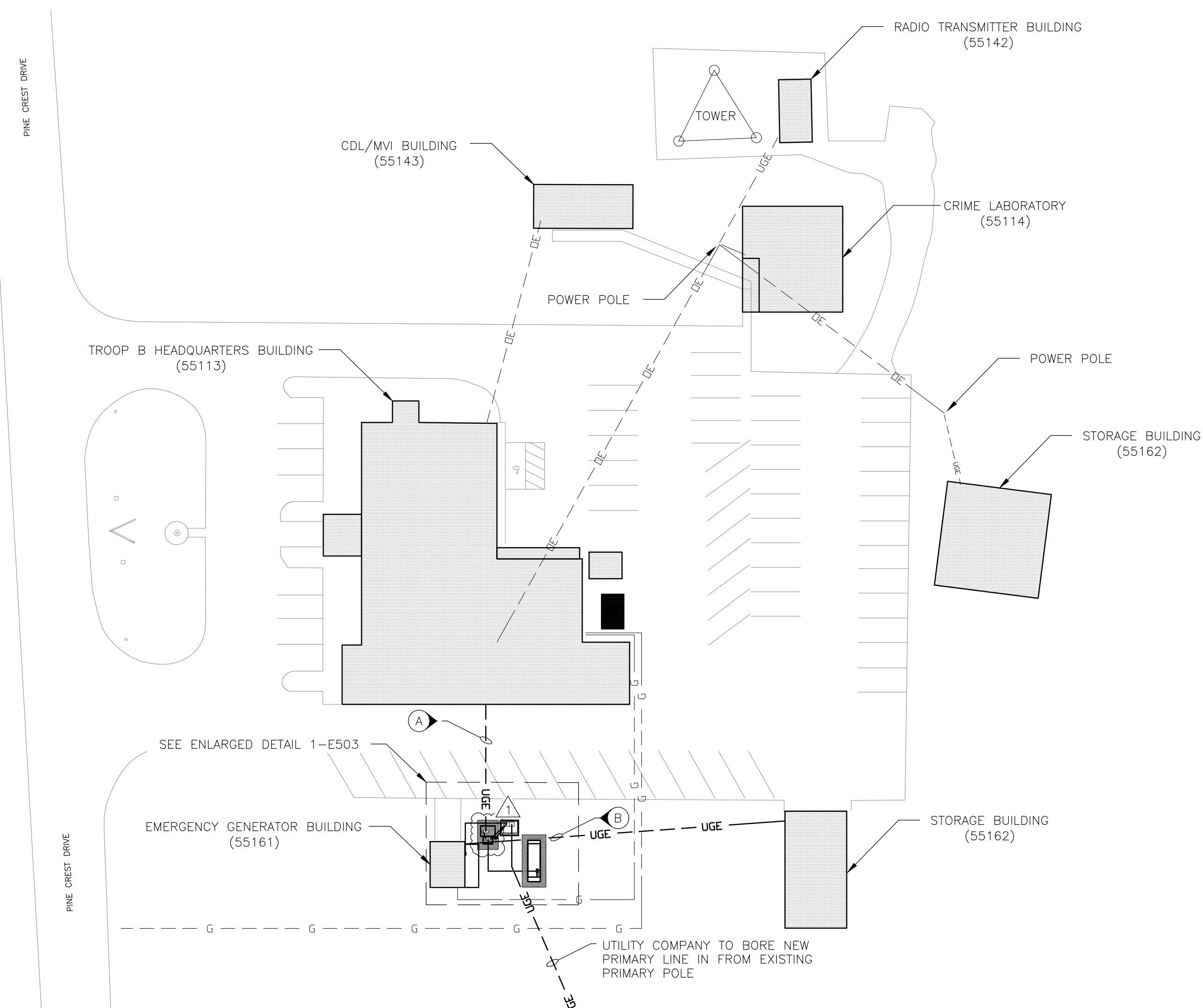
PHASE II RENOVATION NOTES

INDICATES KEYED NOTES

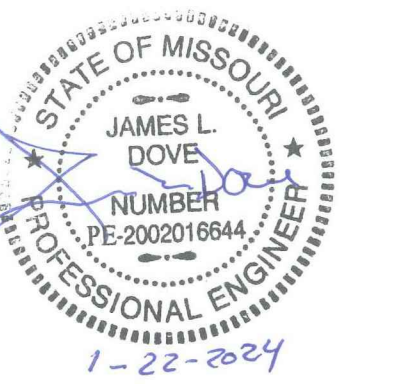
- A FINALIZE INSTALLATION OF (2) 3" PVC CONDUITS FROM MIS TO HEADQUARTERS BLDG. TRANSITION TO GRS CONDUIT ABOVE GRADE.
- B COORDINATE EXISTING BELOW GRADE SERVICE TO STORAGE BLDG. WITH EXCAVATION AND TRENCHING. SERVICE CONDUCTORS SHOULD BE ROUTED TO GENERATOR SHED AND FED FROM THAT NEW SERVICE.



1 EXISTING MSHP TROOP B SITE MAP
SCALE: 1/32" = 1'-0"



2 PROPOSED MSHP TROOP B SITE MAP
SCALE: 1/32" = 1'-0"



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MSHP
TROOP B HEADQUARTERS
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PROJECT # R2310-01
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REVISION: ADDENDUM-1
DATE: 02-26-2024
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 01/22/2024

CAD DWG FILE: TBHCL-E.dwg
DRAWN BY: MDS
CHECKED BY: JLD
DESIGNED BY: JLD

SHEET TITLE:
**HEADQUARTERS
FIRST FLOOR
DEMO/RENO PLANS**

SHEET NUMBER:

E-102

5 OF 9 SHEETS
2024-01-22

PHASE II DEMOLITION NOTES

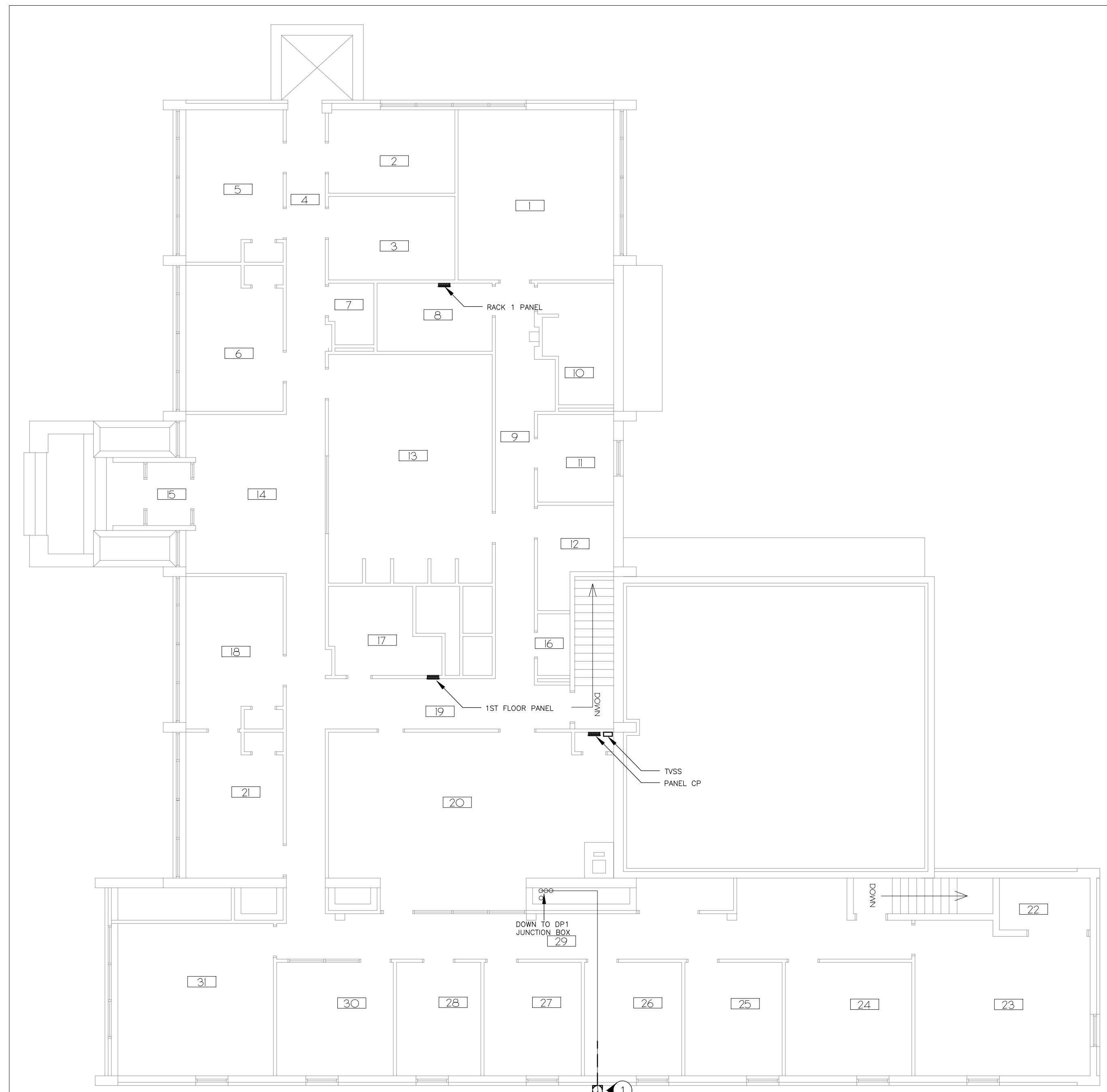
INDICATES KEYED NOTES

- 1 WEATHER HEADS TO BE REMOVED AND REPLACED WITH JUNCTION BOX AS LISTED IN THE RENOVATION NOTES.
- 2 OVERHEAD SERVICE DROP TO BE REMOVED.

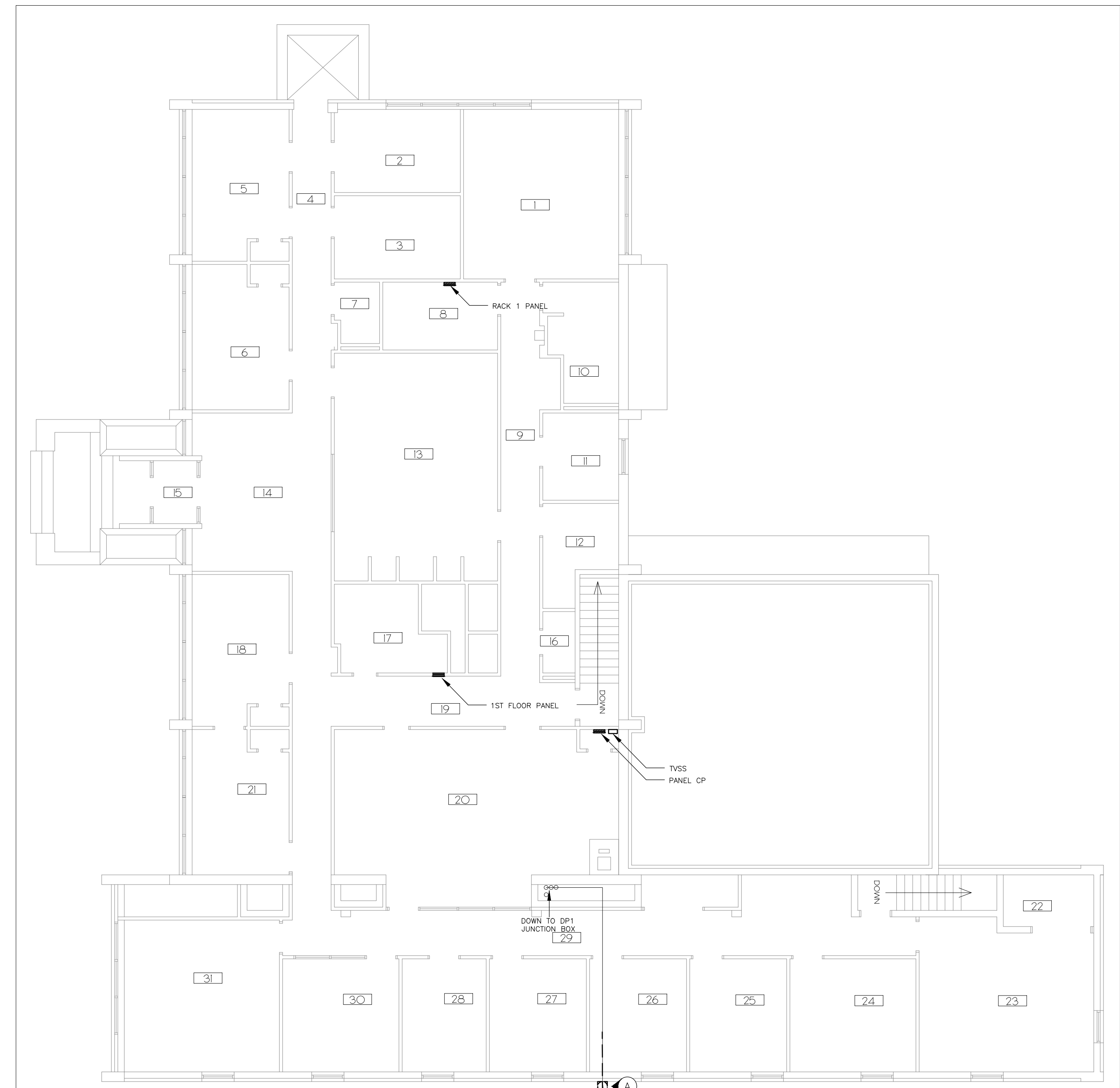
PHASE II RENOVATION NOTES

INDICATES KEYED NOTES

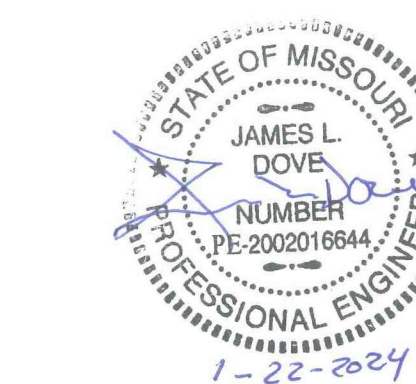
- A FINALIZE THE CONDUIT RUN IN PHASE I AND WIRE FROM THE NEW MTS TO THE HEADQUARTERS BLDG. INSTALL (2) SETS OF (3)-500 KCM CU THWN, (1)-350 KCM CU THWN, & (1)-1/0 CU THWN GRND. RUN REMAINING CONDUIT UP THE BUILDING TO THE OLD WEATHER HEAD LOCATION. REPLACE WEATHER HEAD WITH AN APPROPRIATELY SIZED WEATHER PROOF J-BOX. SPLICE THE NEW SERVICE CONDUCTORS INTO THE OLD CONDUCTORS. CORE DRILL THE BUILDING SUCH THAT THE NEW GROUND WIRES CAN BE RUN INTO THE BUILDING AND RUN PARALLEL WITH THE EXISTING CONDUIT ALL THE WAY TO DP1.



1 HEADQUARTERS FIRST FLOOR DEMO POWER PLAN
SCALE: 1/8"=1'-0"



2 HEADQUARTERS FIRST FLOOR RENOVATION POWER PLAN
SCALE: 1/8"=1'-0"



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Missouri State Certificate of Authority #2010032467

PHASE 1 NOTES

(N) INDICATES KEYED NOTES

- 1 PHASE 1 SHALL BE COMPLETED PRIOR TO ANY UTILITY DISCONNECTS. ALL WORK SHALL BE DONE IN STRICT CONFORMANCE WITH THE LOCAL BUILDING CODES AND REGULATIONS AND CURRENT NEC. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ELECTRICAL PERMITTING FEES AND COORDINATION WITH LOCAL UTILITY ON INSTALLATION INSPECTIONS.
- 2 INSTALL A NEW UTILITY TRANSFORMER PAD PER DETAIL 1 ON SHEET E503.
- 3 INSTALL A NEW PAD MOUNT UTILITY TRANSFORMER WITH C.T.s ON SECONDARY SIDE, COORDINATE WITH LOCAL UTILITY COMPANY.
- 4 INSTALL 1" PVC CONDUIT FROM XFMR SECONDARY TO NEW METER BASE. TRANSITION TO GRs FOR CONDUIT ABOVE GRADE.
- 5 INSTALL A NEW NEMA 3R SERVICE RATED ATS PER DETAIL 1 ON SHEET E503.
- 6 INSTALL A NEW GENERATOR PAD PER DETAIL 1 ON SHEET E503.
- 7 INSTALL A NEW 125 KW GENERATOR, SEE SPECIFICATIONS AND ELECTRICAL DEVICE SCHEDULE BELOW.
- 8 COORDINATE TRENCHING WITH OTHER EXISTING SITE UTILITIES. BURIED CONDUITS BELOW TURF AREAS SHALL BE A MINIMUM OF 18" BELOW GRADE. CONDUITS BELOW ROADWAYS ARE TO BE A MINIMUM OF 24" BELOW GRADE.
- 9 CONTRACTOR TO STUB OUT A NEW 4" PVC CONDUIT FROM PRIMARY SIDE OF XFMR VAULT TOWARDS EXISTING PRIMARY POWER POLE. REMAINDER OF CONDUIT AND WIRE IS TO BE INSTALLED IN PHASE 2 BY UTILITY COMPANY. COORDINATE RISER WITH LOCAL UTILITY COMPANY (BEN STUEVE 660-651-9743)
- 10 INSTALL (2) 3" PVC CONDUITS FROM SECONDARY SIDE OF XFMR VAULT TO ATS. INSTALL 2 SETS OF 3-500 KCM CU THWN AND 1-350 KCM CU THWN.
- 11 INSTALL (2) 3" PVC CONDUITS FROM ATS TO NEW GENERATOR. INSTALL 2 SETS OF 3-500 KCM CU THWN, 1-350 KCM CU THWN, AND 1-1/0 CU THWN GRND.
- 12 INSTALL (2) 3" PVC CONDUITS FROM ATS TO HEADQUARTERS BLDG, BELOW THE EXISTING WEATHER HEAD. TRANSITION TO GRs CONDUIT JUST PRIOR TO THE 90 DEG FITTING AND UP THE WALL. REMAINDER OF CONDUIT AND WIRE IS TO BE INSTALLED IN PHASE 2.
- 13 INSTALL (1) 2" PVC CONDUIT FROM XFMR SECONDARY TO GENERATOR BLDG NEAR PANEL G1. REMAINDER OF CONDUIT AND WIRE TO BE INSTALLED IN PHASE 2.
- 14 INSTALL (1) 1" PVC CONDUIT FROM GENERATOR TO OLD GENERATOR BLDG NEAR PANEL G1 FOR ENGINE BLOCK HEATER AND BATTERY CHARGING CIRCUIT. REMAINDER OF CONDUIT AND WIRE TO BE INSTALLED IN PHASE 2.
- 15 INSTALL (1) 1" PVC CONDUIT FROM GENERATOR TO ATS FOR CONTROL WIRING. MOUNT EMERGENCY STOP SWITCH ON SIDE OF ATS AND WIRE BACK TO GENERATOR. INSTALL (1) 1" PVC CONDUIT FROM ATS TO HEADQUARTERS BLDG WITH PRIMARY CONDUITS FOR REMOTE CONTROL WIRING, EXTEND UP BUILDING PER PHASE 2 NOTES IN GRs CONDUIT.

PHASE 2 (OUTSIDE) NOTES

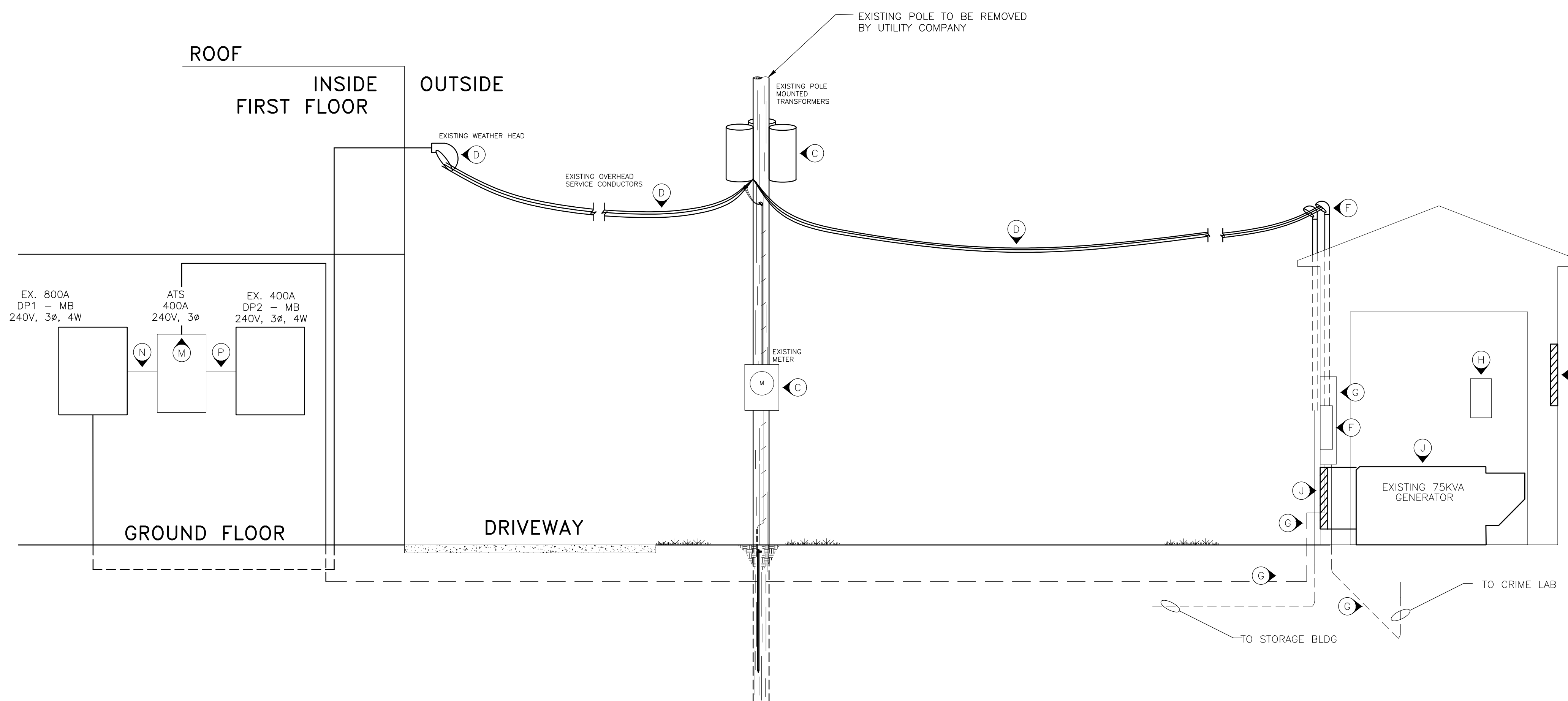
(N) INDICATES KEYED NOTES

- A PHASE 2 SHALL NOT START UNTIL ALL OF PHASE 1 WORK IS COMPLETE. THIS IS TO INCLUDE THE INSTALLATION OF NEW PAD MOUNT TRANSFORMER AND ALL SECONDARY WIRING FROM XFMR TO ATS. THE CONDUIT AND WIRE FROM ATS TO GENERATOR ALSO NEEDS TO BE INSTALLED AND THE GENERATOR NEEDS TO BE OPERATIONAL.
- B CONTRACTOR SHALL STAGE ALL WORK TO MINIMIZE ANY POWER OUTAGES. ALL OUTAGES ARE TO BE COORDINATED WITH OWNER 72 HOURS PRIOR.
- C COORDINATE WITH LOCAL UTILITY ON THE REMOVAL OF THE EXISTING 120/240V DELTA TRANSFORMER BANK AND POLE. NEW SERVICE IS TO BE FED BY NEW PRIMARY WIRE AND CONDUIT INSTALLED BY UTILITY FROM PRIMARY UTILITY POLE TO NEW PAD MOUNT TRANSFORMER. THE OLD C.T. METER AND BASE SHALL BE RETURNED TO THE UTILITY COMPANY.
- D UTILITY COMPANY TO REMOVE THE OVER HEAD DROPS TO THE GENERATOR BUILDING AND THE HEADQUARTERS BLDG.
- E FINALIZE THE CONDUIT AND WIRE FROM THE ATS TO THE HEADQUARTERS BLDG. INSTALL (2) SETS OF (3)-500 KCM CU THWN, (1)-350 KCM CU THWN, & (1)-1/0 CU THWN GRND. RUN REMAINING CONDUIT UP THE BUILDING TO THE OLD WEATHER HEAD LOCATION. REPLACE WEATHER HEAD WITH AN APPROPRIATELY SIZED WEATHER PROOF J-BOX. SPLICE THE NEW SERVICE CONDUCTORS INTO THE OLD CONDUCTORS. CORE DRILL THE BUILDING SUCH THAT THE NEW GROUND WIRES CAN BE RUN INTO THE BUILDING AND RUN PARALLEL WITH THE EXISTING CONDUIT.
- F REMOVE EXISTING WEATHER HEADS FROM ROOF OF GENERATOR BLDG. AND PATCH PENETRATIONS WITH NEW SHINGLES. REMOVE THE CONDUIT AND CONDUCTORS COMING DOWN TO FEED PANEL G1. SEVER THE CONDUIT COMING DOWN AND GOING BELOW GRADE TO FEED STORAGE SHED. FINALIZE THE CONDUIT AND WIRE FROM THE NEW PAD MOUNT XFMR TO THE EXISTING GENERATOR BLDG. SET A NEW EXTERIOR MOUNTED J-BOX THAT INTERSECTS THE STORAGE SHED CONDUIT AND IS ON THE BACK SIDE OF PANEL G1. INSTALL (3)-1/0 CU THWN & (1)-#1 CU THWN. REPLACE EXISTING PANEL G1 (100A 1Ø, 3W), WITH EXISTING EMERGENCY PANEL (225A 3Ø, 4W). RE-CIRCUIT LIGHTING AND OUTLET LOADS FROM OLD PANEL G1, UTILIZING EXISTING BREAKERS. RUN CONDUIT UP THE WALL TO A SURFACE MOUNTED J-BOX AND THROUGH THE WALL TO THE PANEL. SEVER EXISTING CONDUIT GOING DOWN WALL FROM SECOND WEATHER HEAD FEEDING STORAGE SHED AND TIE INTO J-BOX. INSTALL NEW 8" GROUND ROD OUTSIDE AND CONNECT TO PANEL WITH A #6 CU GRND WIRE. BOND THE NEUTRAL AND GROUND TOGETHER IN THIS PANEL. FINALIZE THE 1" CONDUIT FROM PANEL G1 TO THE NEW GENERATOR. UTILIZE THE OLD GENERATOR BATTERY AND GENERATOR HEATER 20A 1P BREAKERS FOR THE NEW GENERATOR. RUN (4)-#12 CU THWN & (2)-#12 CU THWN GRND WIRES FOR GENERATOR MOTOR HEATER AND BATTERY CHARGER. REMOVE THE OLD WEATHER HEADS, CONDUIT, AND WIRING.
- G REMOVE THE EMERGENCY PANEL AND ASSOCIATED CONDUIT AND WIRING. THE BELOW GRADE WIRE SHALL BE REMOVED IF POSSIBLE OR CUT OFF AT GRADE AND ABANDONED IN PLACE.
- H REMOVE THE OLD GENERATOR PANEL ON THE GARAGE BACK WALL AND ALL ASSOCIATED CONDUIT AND WIRING.
- J REMOVE THE EXISTING 75KVA GENERATOR, WALL LOUVERS, FUEL TANK, EXHAUST SYSTEM AND ALL ASSOCIATED COMPONENTS. CONTRACTOR WILL BE RESPONSIBLE FOR THE PATCH AND REPAIR NEEDED TO THE GENERATOR BLDG'S EXTERIOR WALLS. THIS WILL INCLUDE FULLY RESIDING THE SHED WITH NEW VINYL SIDING, COLOR PER OWNER'S SELECTION.
- K MOUNT GENERATOR REMOTE ANNUNCIATOR NEXT TO PANEL DP1 IN BASEMENT AND RUN 2-#18 AWG AND A #18 AWG SHIELDED TWISTED PAIR, FROM GENERATOR TO ANNUNCIATOR IN 1" CONDUIT. EXPOSED CONDUIT ON EXTERIOR OF BUILDING SHALL BE GRs. SHARE 1" CONDUIT INSTALLED, PER KEY NOTE 15 ABOVE, BETWEEN ATS AND GENERATOR.
- L CONTRACTOR SHALL BE RESPONSIBLE FOR TOPING OFF ALL THE FLUID LEVELS, INCLUDING A FULL TANK OF FUEL (900 GAL).

PHASE 2 (INSIDE) NOTES

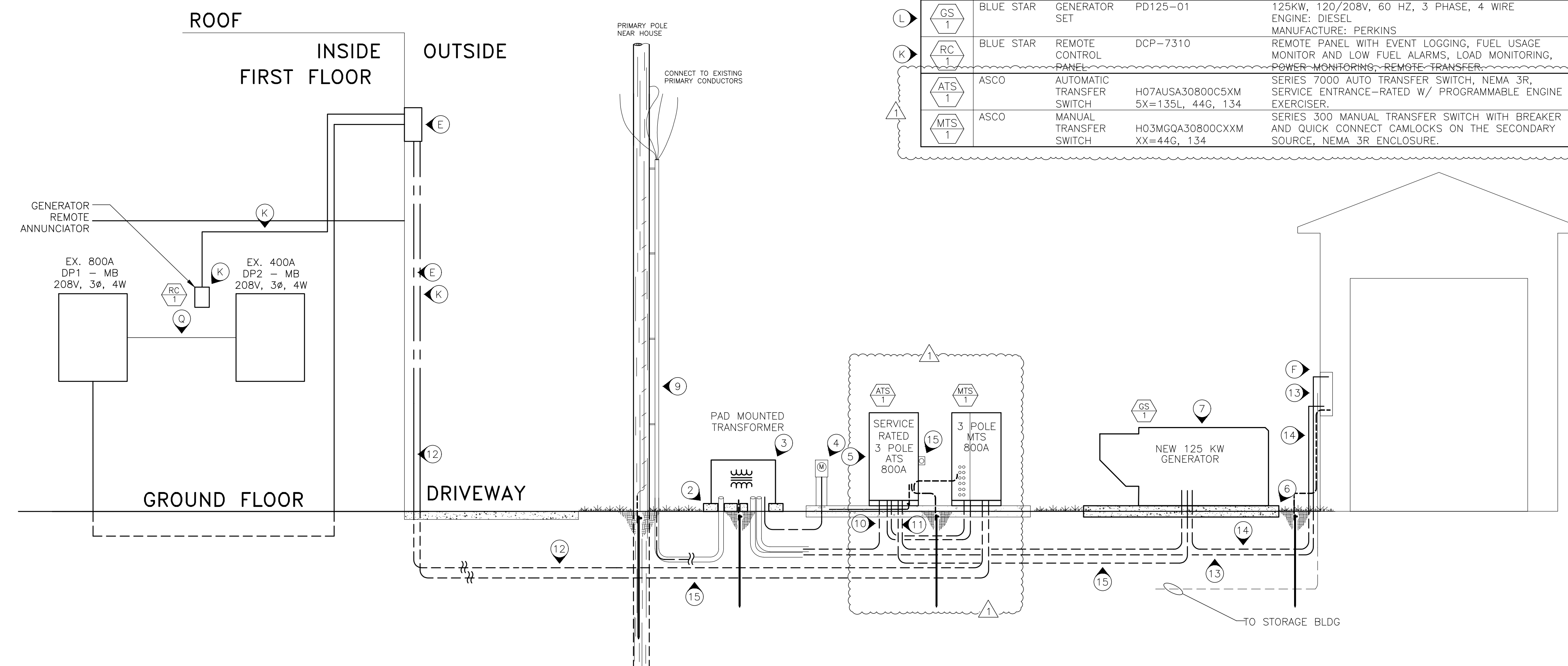
(N) INDICATES KEYED NOTES

- M REMOVE EXISTING ATS INSIDE HEADQUARTERS BASEMENT.
- N REMOVE CONDUIT AND CONDUCTORS FROM DP1 TO ATS.
- P REMOVE CONDUIT AND CONDUCTORS FROM ATS TO DP2.
- Q INSTALL A NEW 3" EMT CONDUIT BETWEEN PANELS DP1 & DP2. INSTALL (3)-500 KCM CU THWN, (1)-350 KCM CU THWN, & (1)-#3 CU THWN GRND FROM EXISTING 400A BREAKER TO DP2.



1 EXISTING ELECTRICAL RISER (120/240V DELTA HIGH LEG)
NO SCALE

TAG	MFG	DESCRIPTION	MODEL NUMBER	REMARK
(GS) 1	BLUE STAR	GENERATOR SET	PD125-01	125KW, 120/208V, 60 HZ, 3 PHASE, 4 WIRE ENGINE: DIESEL MANUFACTURE: PERKINS
(RC) 1	BLUE STAR	REMOTE CONTROL PANEL	DCP-7310	REMOTE PANEL WITH EVENT LOGGING, FUEL USAGE MONITOR AND LOW FUEL ALARMS, LOAD MONITORING, POWER MONITORING, REMOTE TRANSFER
(ATS) 1	ASCO	AUTOMATIC TRANSFER SWITCH	H07AUSA30800C5XM 5X=135L, 44G, 134	SERIES 7000 AUTO TRANSFER SWITCH, NEMA 3R, SERVICE ENTRANCE-RATED W/ PROGRAMMABLE ENGINE EXERCISER.
(MTS) 1	ASCO	MANUAL TRANSFER SWITCH	H03MGQA30800CXXM XX=44G, 134	SERIES 300 MANUAL TRANSFER SWITCH WITH BREAKER AND QUICK CONNECT CAMLOCKS ON THE SECONDARY SOURCE, NEMA 3R ENCLOSURE.



2 NEW ELECTRICAL RISER (120/208V WYE)
NO SCALE

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

MISSOURI DEPARTMENT
OF PUBLIC SAFETY
DIVISION OF MO STATE
HIGHWAY PATROL

MSHP
TROOP B HEADQUARTERS
308 PINE CREST DR.
MACON, MO 63552

PROJECT # R2310-01
SITE # 4753
FACILITY # 55113

REVISION: ADDENDUM 1
DATE: 02-26-2024
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 01/22/2024

CAD DWG FILE: TBHCL-E.dwg
DRAWN BY: MDS
CHECKED BY: JLD
DESIGNED BY: JLD

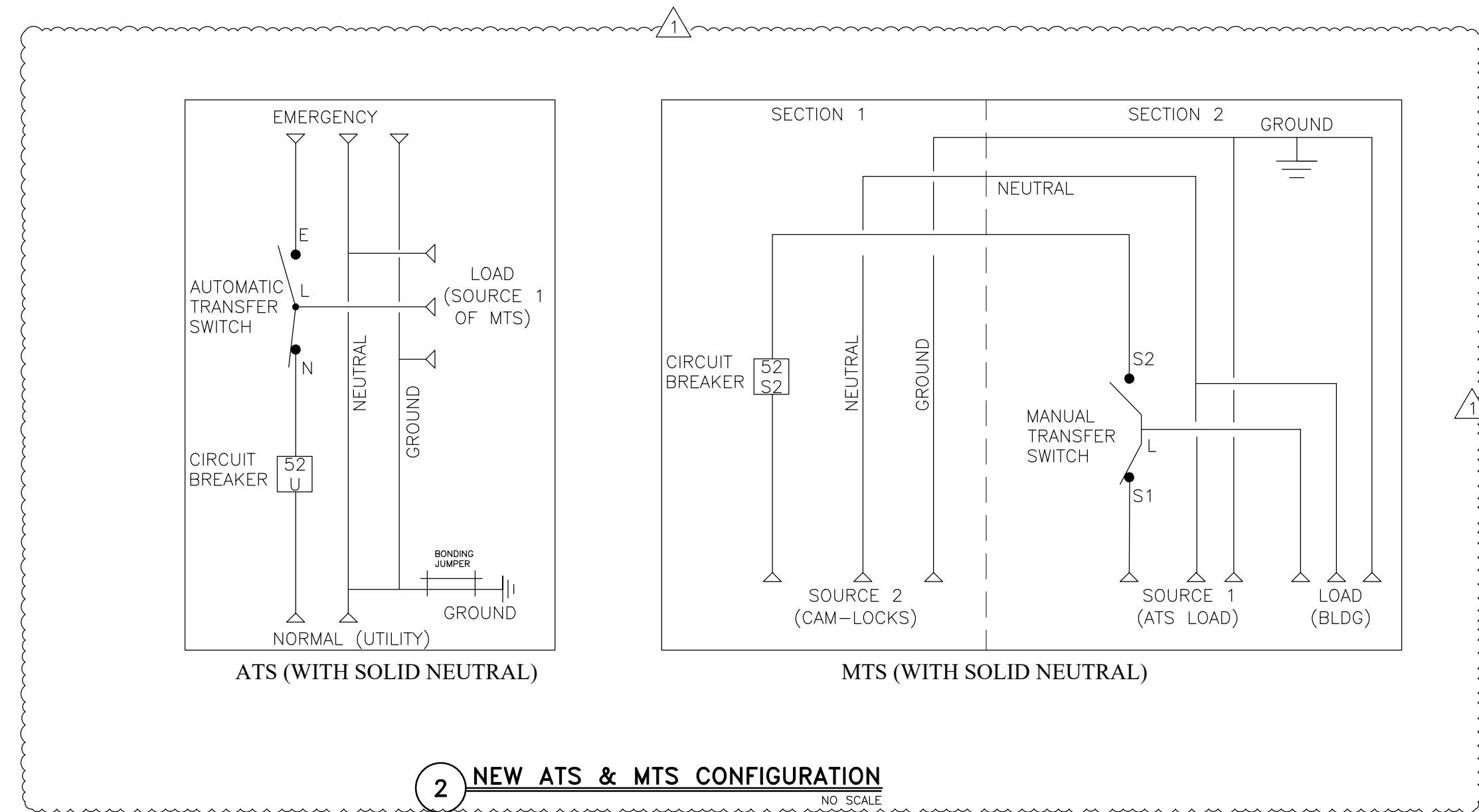
SHEET TITLE:

EXISTING / NEW
ELECTRICAL UTILITY
RISER DETAILS

SHEET NUMBER:

E-501

7 OF 9 SHEETS
2024-01-22

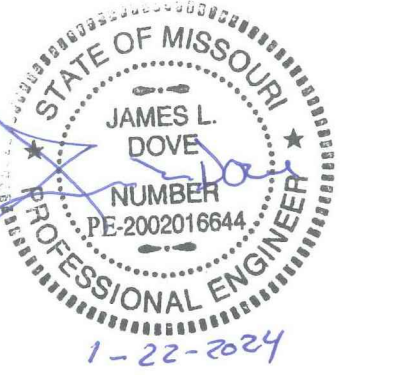


PHASE II DEMOLITION NOTES

(N) INDICATES KEYED NOTES

- 1 DISCONNECT CONDUCTORS AND CONDUIT FEEDING THE ATS AND REMOVE ATS FROM WALL. FEED PANEL DP2 PER RENOVATION DRAWINGS.
- 2 REMOVE J-BOXES, CONDUIT, AND CONDUCTORS FROM ATS TO POINT WHERE CONDUCTORS GO UNDERGROUND. REMOVE OR ABANDON CONDUCTORS RUN UNDERGROUND TO GENERATOR BUILDING.
- 3 DISCONNECT EXISTING BATTERY BACKUP AND RELOCATE PER RENOVATION DRAWINGS.
- 4 SEVER EXISTING ELEVATOR CONDUIT AND CONDUCTORS NEAR ELEVATOR DISCONNECT. REROUTE CONDUIT AND CONDUCTORS TO NEW BUCK-BOOST TRANSFORMER PER THE RENOVATION DRAWINGS.
- 5 REMOVE EXISTING GENERATOR AND ALL ASSOCIATED COMPONENTS.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



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MISSOURI DEPARTMENT
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HIGHWAY PATROL

MSHP
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MACON, MO 63552

PROJECT # R2310-01
SITE # 4753
FACILITY # 55113

REVISION: ADDENDUM-1
DATE: 02-26-2024
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 01/22/2024

CAD DWG FILE: TBHCL-E.dwg
DRAWN BY: MDS
CHECKED BY: JLD
DESIGNED BY: JLD

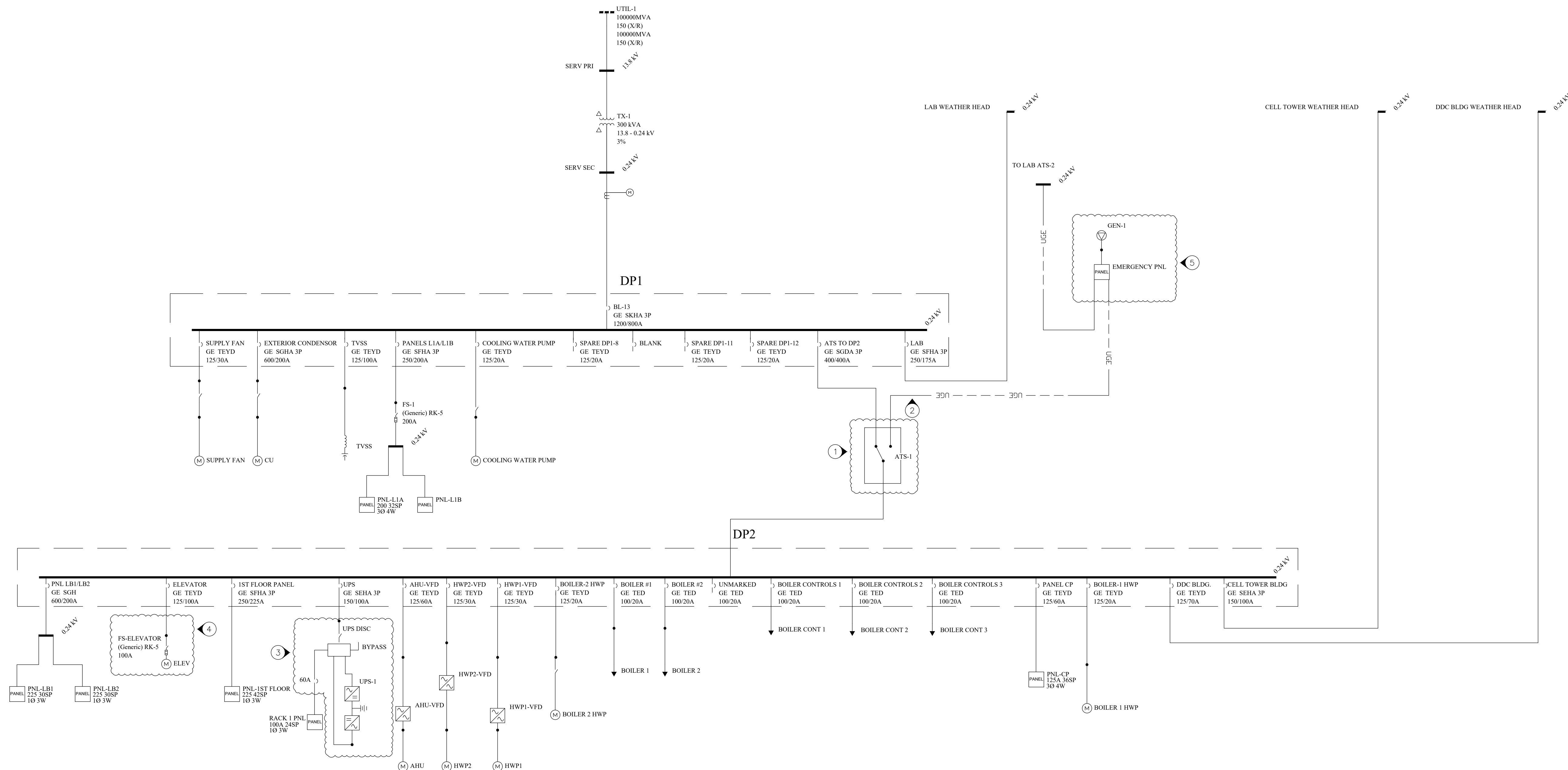
SHEET TITLE:

HEADQUARTERS
EXISTING ELECTRICAL
RISER DIAGRAM

SHEET NUMBER:

E-502

8 OF 9 SHEETS
2024-01-22



1 HEADQUARTERS EXISTING ELECTRICAL RISER DIAGRAM
NO SCALE



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MACON, MO 63552

PROJECT # R2310-01
SITE # 4753
FACILITY # 55113

REVISION: ADDENDUM 1
DATE: 02-26-2024
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 01/22/2024

CAD DWG FILE: TBHCL-E.dwg
DRAWN BY: MDS
CHECKED BY: JLD
DESIGNED BY: JLD

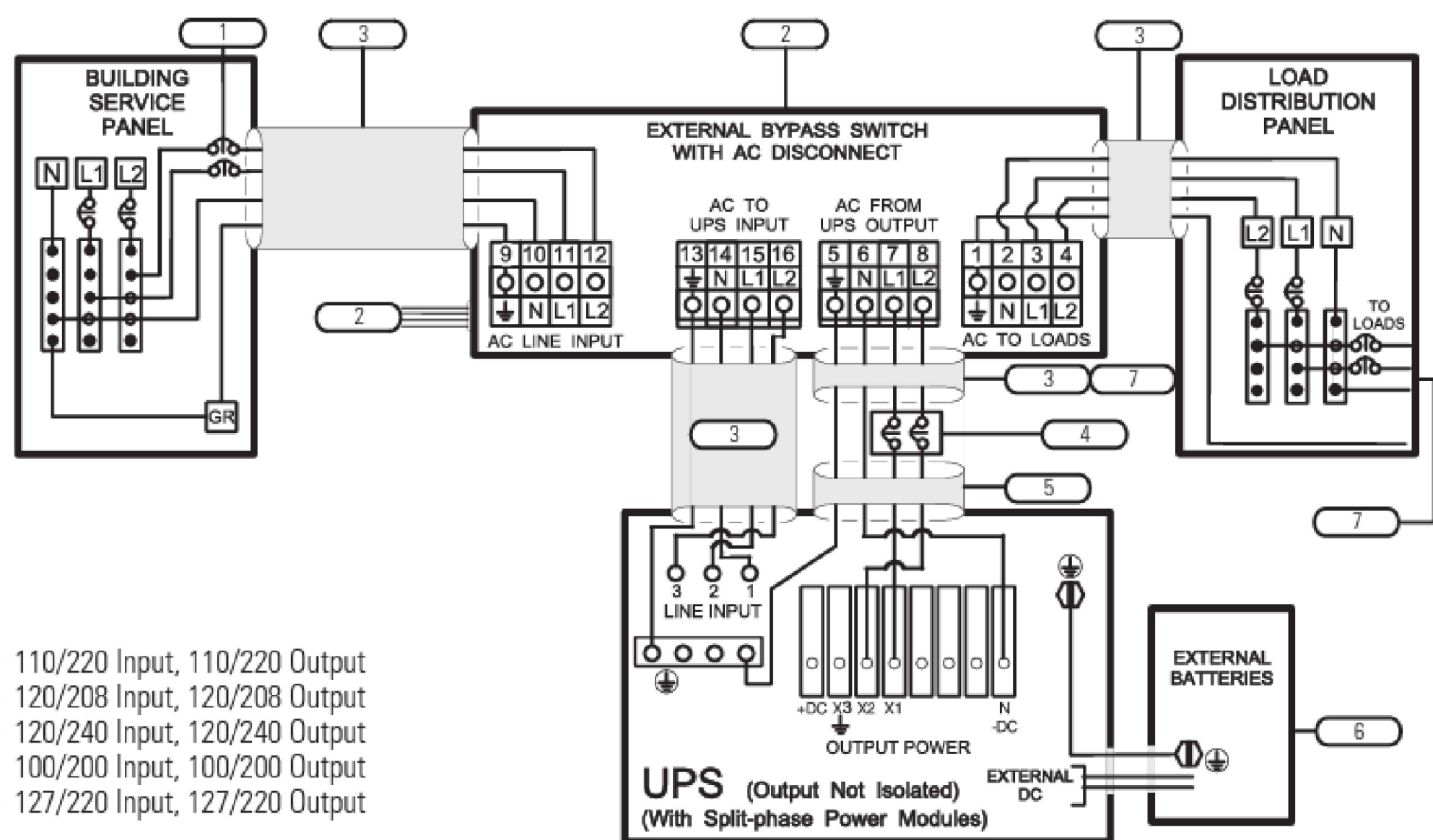
SHEET TITLE:

UNINTERRUPTIBLE
POWER SUPPLY /
BYPASS DETAILS

SHEET NUMBER:

E-503

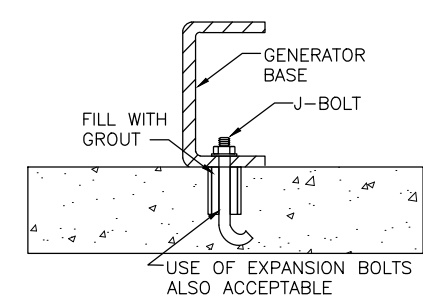
9 OF 9 SHEETS
2024-01-22



- 110/220 Input, 110/220 Output
- 120/208 Input, 120/208 Output
- 120/240 Input, 120/240 Output
- 100/200 Input, 100/200 Output
- 127/220 Input, 127/220 Output

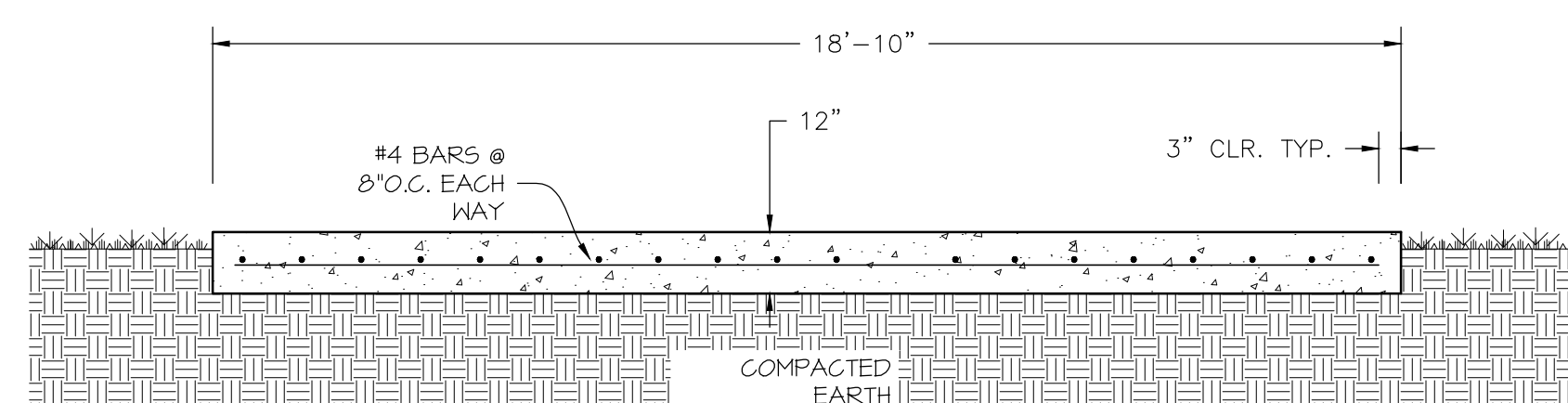
Figure 22. External Bypass Switch (L1, L2, N), Non-Isolated Output, Split-Phase Power Modules

7 UPS EXTERNAL BYPASS SWITCH WIRING DETAIL
NO SCALE



THE SIZE OF THE BOLTS HOLDING THE SUB-BASE TO THE FOUNDATION SHOULD BE SIZED TO FIT THE MOUNTING HOLES GIVEN IN THE INSTALLATION MANUAL.
THREE-INCH IRON PIPE SLEEVES SHOULD BE PLACED AROUND THE BOLTS IN THE FOUNDATION TO ALLOW FOR ANY MIS-LOCATION OF THE BOLTS AFTER THE FOUNDATION HARDENS. "J" OR "L" TYPE BOLTS ARE RECOMMENDED FOR THE FOUNDATION BOLTS. AFTER THE FOUNDATION IS CURED AND THE GENERATOR IS LOCATED, THE SLEEVES ARE FILLED WITH GROUT.
COORDINATE WITH INSTALLATION MANUAL ON MOUNTING BOLT LOCATIONS.
USE OF EXPANSION BOLTS ALSO ACCEPTABLE

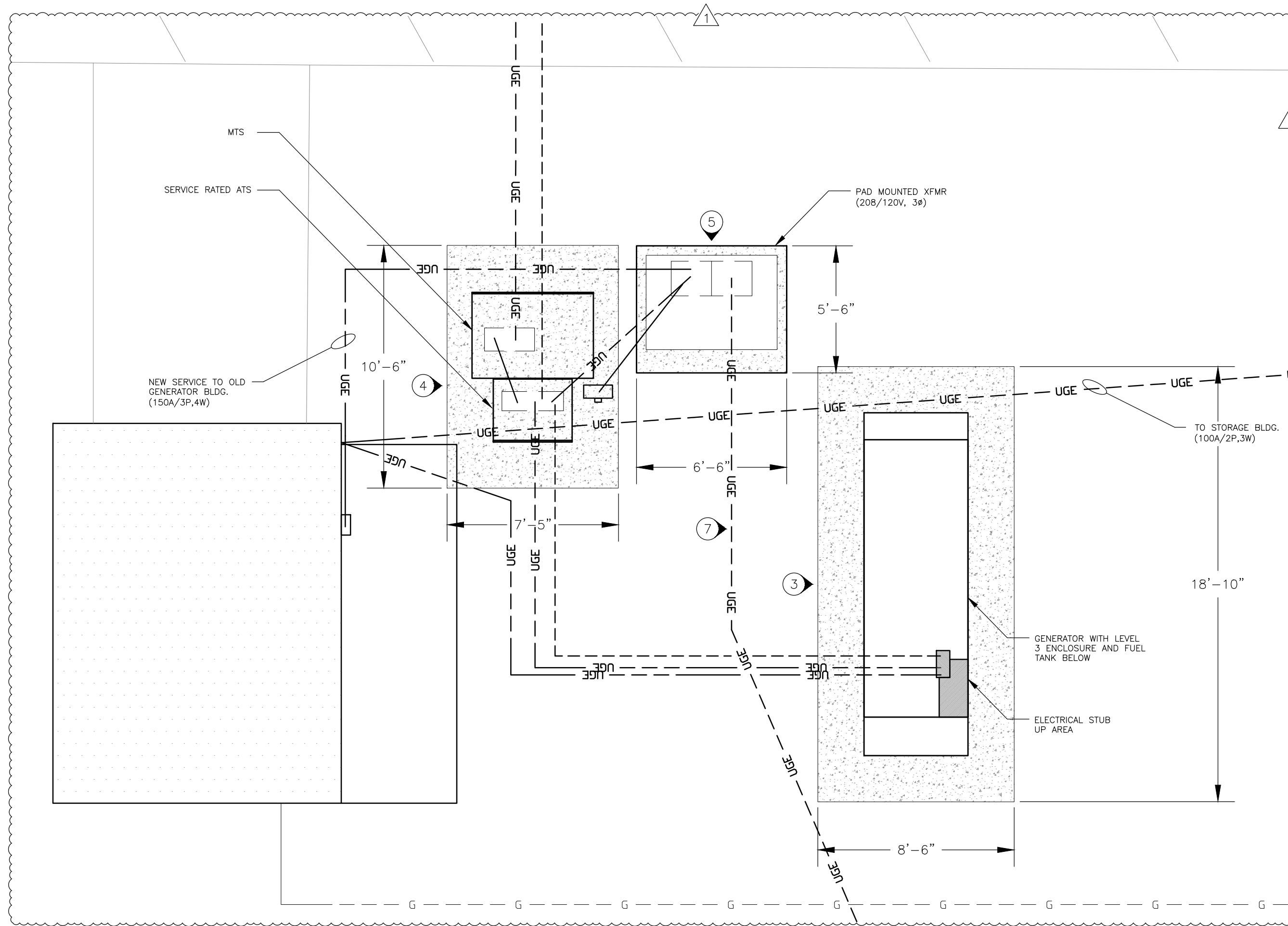
4 GENERATOR ANCHORING DETAIL
NO SCALE



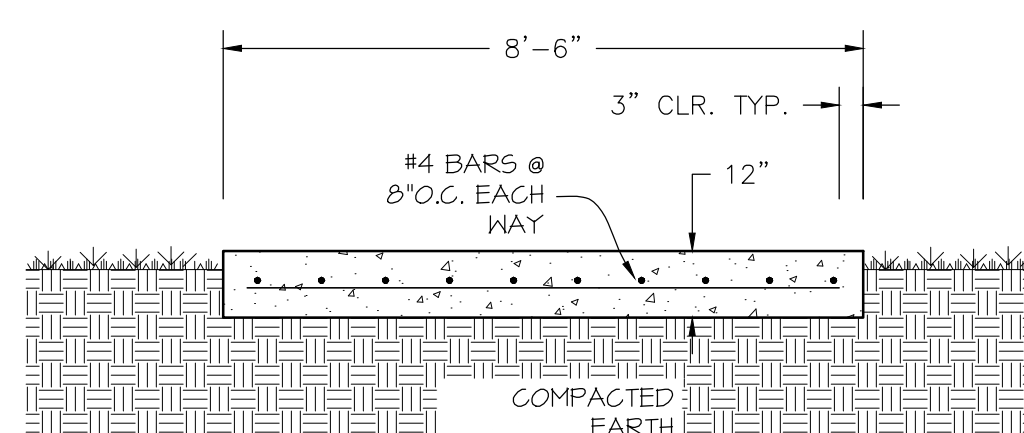
FOUNDATION SECTION NOTES:

1. CONCRETE SHALL MEET A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI.
2. THE NEW CONCRETE GENERATOR PAD SHALL BE PLACED ON COMPACTED SOIL. ANY UNSUITABLE MATERIAL SHALL BE REMOVED.
3. ALLOW 3" CLEAR FROM EDGE OF REINFORCING STEEL TO ANY OPENING OR END OF SLAB.

5 GENERATOR FOUNDATION SIDE SECTION
NO SCALE



1 UTILITY SERVICE SITE DETAIL
SCALE: NONE



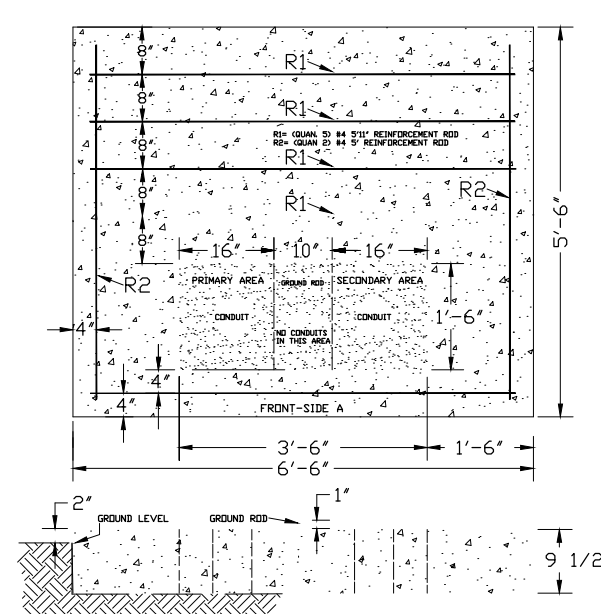
6 GENERATOR FOUNDATION END SECTION
NO SCALE

38 112-750 KVA TRANSFORMER PAD DETAIL

ALL PRIMARY AND SECONDARY CABLES MUST BE IN CONDUIT AND ENTER THE TRANSFORMER THROUGH BUILT AREA.
THE 1FT AREA MUST BE BOTTLECALLED WITH READILY REMOVABLE MATERIAL, SUCH AS SAND OR GRAVEL. NO CONDUITS ARE ALLOWED IN THE MIDDLE 1FT OF BUILT AREA. PROTECTIVE LAYERS IN ANY DIRECTION FROM PAD.
CONDUITS SHALL BE 1/2" MINIMUM CLEARANCE FROM ALL OTHER CONDUITS. CONDUITS SHALL BE A MINIMUM OF 2 FEET AWAY FROM ANY OBSTRUCTIONS.
CONDUITS OF TRANSFORMER MUST BE WITHIN 10' OF TRUCK ACCESSIBLE PAVEMENT. CONCRETE MUST BE SIX SACS PER CU YARD WITH WALKWAY 3/4" ASPHALTIC CONCRETE SHALL BE REINFORCED WITH REGULAR STEEL.
GROUNDING SHALL BE AS SHOWN. PAD FORMS AND PRIMARY CONDUITS MUST BE INSPECTED BY UTILITY DEPARTMENT BEFORE CONCRETE IS POURED.

ANY EXEMPTIONS TO THE ABOVE REQUIREMENTS MUST BE APPROVED IN WRITING BY WATER AND LIGHT ENGINEERING DEPARTMENT BEFORE CONSTRUCTION.

TOP VIEW



2 TRANSFORMER PAD DETAIL
SCALE: NONE

NOTES

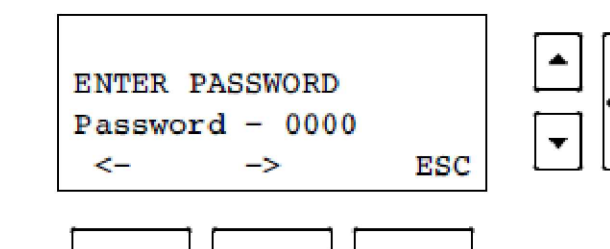
INDICATES KEYED NOTES

- 1 THE UPS HAS NO PHYSICAL ON/OFF SWITCH. ACCESS THE ON/OFF FUNCTION THROUGH THE FRONT PANEL DISPLAY. ALWAYS TRANSITION THE UNIT TO OFF PRIOR TO REMOVING INPUT POWER. COORDINATE UNIT ACCESS WITH OWNER.
- 2 ONCE THE NEW SERVICE IS INSTALLED, THE UPS OUTPUT SHOULD BE SET TO 208V OUT (MENU ITEM 4 2 4). COORDINATE PROGRAMMING WITH INSTALL. MANUAL. FOLLOW THE MANUFACTURES INSTALLATION MANUAL STARTUP PROCEDURES. SEE DETAIL 3 NOTES BELOW.
- 3 GENERATOR PAD SHALL BE INSTALLED WITH A MINIMUM 2' WALKWAY AROUND THE ENTIRE PERIMETER OF THE GENERATOR/FUEL TANK. PAD THICKNESS CAN BE REDUCED TO 4" UNDER THE WALKWAY. COORDINATE THE CONDUIT STUB UP FOR POWER, REMOTE CONTROL, AND BATTERY CHARGING. THE TOP OUTER PERIMETER EDGE OF CONCRETE SHOULD BE CHAMFERED WITH A BROOM TEXTURED SURFACE FINISH.
- 4 THE MTS AND ATS SHALL BE SET ON A RAISED EQUIPMENT PAD. CONCRETE PAD SHALL BE A MINIMUM OF 6" THICK WITH A 2' WALKWAY AROUND THE ENTIRE PERIMETER. COORDINATE THE CONDUIT STUB UP FOR POWER, REMOTE CONTROL, AND METERING. THE TOP OUTER EDGE OF CONCRETE SHOULD BE CHAMFERED WITH A BROOM TEXTURED SURFACE FINISH. INSTALL A 1' CONDUIT TO PAD MOUNTED TRANSFORMER FOR C.T. METER CIRCUIT. UTILITY COMPANY TO INSTALL A UNISTRUT FRAME AND METER BASE AT PAD.
- 5 INSTALL A UTILITY TRANSFORMER PAD PER MACON UTILITIES REQUIREMENTS. COORDINATE ALL UTILITY WORK WITH LOCAL SERVICE PROVIDER.
- 6 UPS EXTERNAL BYPASS SWITCH WIRING DETAIL.
- 7 MACON UTILITY SHALL BE RESPONSIBLE FOR INSTALLING THE PRIMARY CONDUIT AND CONDUCTOR FROM THE POLE TO THE EXTERIOR OF THE PAD. CONTRACTOR TO STUB OUT CONDUIT. MACON UTILITY CONTACT: BEN STUEVE (660) 651-9743.

Initial Startup Parameters

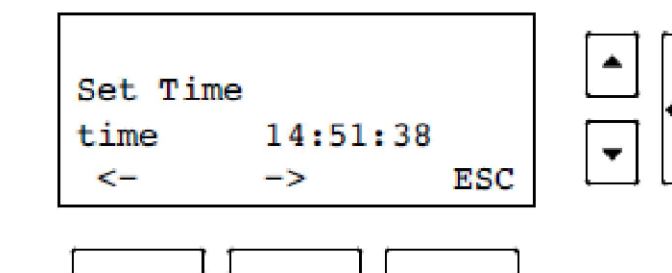
The first time the UPS is turned on, you must set or verify certain operating parameters before placing the UPS into operation. To set these initial configuration parameters:

1. Enter the correct user security password: 0377. Move left and right by pressing the buttons below the <- and -> on the display. To change the value of the selected digit, press the ▲ and ▼ buttons. When the password shows 0377, press the ↵ button.



2. Select the desired language for the display. Use the ▲ and ▼ buttons to scroll between English, French, German, and Spanish. Enter your selection by pressing the ↵ button.

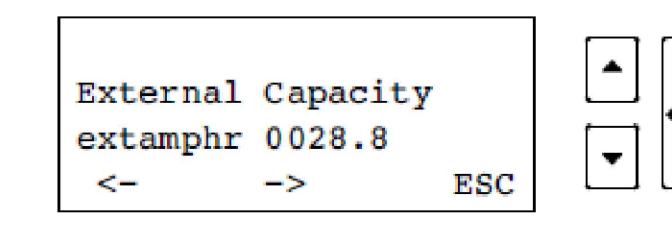
3. Set the clock for the local time and date.
 - If the time or the date is correct as displayed, press the ↵ button to advance to the next configuration setting. Time must be entered in 24-hour format.
 - If the time is incorrect as displayed, press the <- and -> buttons to move left and right. Press the ▲ and ▼ buttons to increase or decrease the value of each selected digit. When the displayed value is correct, press the ↵ button.



4. The output voltage is the most important operating parameter you must set as part of the initial configuration screens. Select the desired UPS output voltage using the ▲ and ▼ buttons. Possible selections are 200, 208, 220, 230, and 240 Vac. Press the ↵ button when the desired output value is displayed.

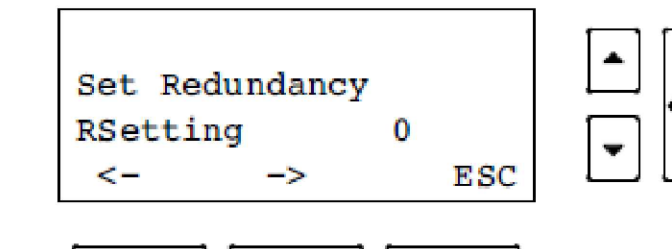
NOTE Low voltages are derived from these voltages, as listed in Table 5 on page 25 and Table 9 on page 39.

5. If the system includes any external battery cabinets, record the ampere-hour capacity of batteries installed in these cabinets. If using a standard cabinet, count the number of battery strings (two battery modules side-by-side equals one string). Each battery string contains 72 ampere-hours. Enter the total value in the next startup screen.



6. The system signals an alarm when the required output cannot be maintained with the loss of redundant power modules. The alarm is essentially disabled with a redundancy level set at 0.

7. **Optional.** If you want the system to notify you when the number of redundant power modules is less than a specified level, enter a redundancy level. Each increment above 0 indicates the number of modules that can be removed from operation before the alarm occurs. This setting affects only the alarm; the system continues to operate as an N+X system even if this parameter is left at the default value of 0.



3 UPS PROGRAMMING NOTES
SCALE: NONE