



PROCUREMENT DEPARTMENT  
813 W Northern Lights Blvd  
Anchorage, AK 99503

RETURN BY EMAIL  
[aeaprocurement@akenergyauthority.org](mailto:aeaprocurement@akenergyauthority.org)

## REQUEST FOR QUOTATION

RFQ NO: **24073**  
Quotations due on/before  
**2:00 PM Local Time 10/31/2023**

# Circle Replacement Generator and Switchgear Installation

Page 1 of 3 Date: 10/24/2023

### CONTRACTOR NOTICE (This is NOT a Purchase Order)

This is an **informal quotation** that will not be read at public opening. The information may be publicly reviewed after award. The terms and conditions should be reviewed and understood before preparing a quotation. Fill out and sign the bottom portion of this page along with the Debarment Certificate, page 4 of Appendix B, and return both pages. Please return the quotation by the above time and date to:

[AEAProcurement@akenergyauthority.org](mailto:AEAProcurement@akenergyauthority.org). Please reference the RFQ number on the SUBJECT of the email.

**DELIVERY LOCATION:**  
Circle Power Plant  
Circle, Alaska

**BUYER:**  
Selwin C. Ray (907) 771-3035  
[sray@akenergyauthority.org](mailto:sray@akenergyauthority.org)

### VENDOR QUOTATION

This Request for Quotation (RFQ) is for a licensed contractor to perform Work in the diesel electric power plant in Circle, Alaska. The Work shall consist primarily of installing replacement diesel-generators and switchgear components along with associated tasks as described in Appendix A, Detailed Project Description, and Appendix C, Drawings.

The Engineer's Estimate for the Work is between \$50,000 and \$100,000.

All questions relating to bidding procedures should be directed to:  
Selwin C. Ray, Contract Officer, (907) 771-3035 [sray@akenergyauthority.org](mailto:sray@akenergyauthority.org)

All questions relating to technical aspects of the project should be directed to:  
Justin Tuomi, Project Manager, (907) 771-3093 [juomi@akenergyauthority.org](mailto:juomi@akenergyauthority.org)

Provide a lump sum fixed price quote in U.S. dollars where indicated below. The cost shall include all labor, materials, supervision, equipment, tools, transportation, quality control, and supplies required to complete the work as described in this RFQ.

The proposed schedule for the Work is described in Appendix A, Detailed Project Description. Provide a firm completion date where indicated below.

### THIS SECTION MUST BE COMPLETED BY VENDOR

**Lump sum price for completion of the Work \$ \_\_\_\_\_**

**Completion is desired no later than December 1, 2023.**

Delivery shall be made \_\_\_\_\_ calendar days after receipt of order.

Payment Terms: \_\_\_\_\_

Company Name	Address	City	State	ZIP Code	Phone Number
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Alaska Business License No.	Vendor Tax I.D. No.
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_____ Signature	_____ Date	_____ Typed Name and Title
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## INSTRUCTIONS TO BIDDERS TERMS AND CONDITIONS

**1. REQUEST FOR QUOTATION (RFQ) REVIEW:** Offerors shall carefully review this RFQ for defects and questionable or objectionable material. Offerors' comments concerning defects and questionable or objectionable material in the RFQ must be made in writing and received by the purchasing authority before the date and time set for receipt of quotes. This will allow time for an amendment to be issued if one is required. It will also help prevent the opening of a defective quote, upon which award cannot be made, and the resultant exposure of offerors' prices. Offerors' original comments should be sent to the purchasing authority listed on the front of this RFQ.

**2. QUOTATION FORMS:** Offerors shall use this and attached forms in submitting quotes. A photocopied quote may be submitted.

**3. SUBMISSION:** Quotations shall be signed where applicable and received at the designated Purchasing Office no later than as indicated.

**4. QUOTE REJECTION:** The State reserves the right to reject any or all quotes, combinations of items, or lot(s), and to waive defects or minor informalities.

**5. EXTENSION OF PRICES:** In case of error in the extension of prices in the quote, the unit prices will govern; in a lot bid, the lot prices will govern. Negligence by the vendor in preparing the quotation confers no right for the withdrawal of the quotation after it has been opened.

**6. ALASKA PROCUREMENT CODE:** The Procurement Code (AS.36.30) and its Regulations (2 AAC Ch. 12), are made a part of this document as if fully set forth herein. Note: AS.36.30 and 2 AAC Ch. 12 are available at most public libraries and legislative information offices; and both are available for review at Alaska State Purchasing Offices.

**7. PRICES:** The offeror shall state prices in the units of issue on this RFQ. Prices quoted for commodities must be in U.S. funds and include applicable federal duty, brokerage fees, packaging, and transportation cost to the FOB point so that upon transfer of title the commodity can be utilized without further cost. Prices quoted for services must be quoted in U.S. funds and include applicable federal duty, brokerage fee, packaging, and transportation cost so that the services can be provided without further cost. Prices quoted must be exclusive of federal, state, and local taxes. If the offeror believes that certain taxes are payable by the State, the offeror may list such taxes separately, directly below the bid price for the affected item. The State is exempt from Federal Excise Tax except the following:

- Coal - Internal Revenue Code of 1986 (IRC), Section 4121 - on the purchase of coal;
- "Gas Guzzler" - IRC, Section 4064 - on the purchase of low m.p.g. automobiles, except that police and other emergency type vehicles are not subject to the tax;
- Air Cargo - IRC, Section 4271 - on the purchase of property transportation services by air;
- Air Passenger - IRC, Section 4261 - on the purchase of passenger transportation services by air carriers;
- Leaking Underground Storage Tank Trust Fund Tax (LUST) - IRC, Section 4081 - on the purchase of Aviation gasoline, Diesel Fuel, Gasoline, and Kerosene.

**8. PAYMENT FOR STATE PURCHASES:** Payment for agreements under \$500,000 for the undisputed purchase of goods or services provided to a State agency, will be made within 30 days of the receipt of a proper billing or the delivery of the goods or services to the location(s) specified in the agreement, whichever is later. A late payment is subject to 1.5% interest per month on the unpaid balance. Interest will not be paid if there is a dispute or if there is an agreement which establishes a lower interest rate or precludes the charging of interest.

**9. PAYMENT DISCOUNT:** Discounts for prompt payment will not be considered in evaluating the price you quote. However, the State shall be entitled to take advantage of any payment discount(s) offered by the vendor provided payment is made within the discount period. Payment discount periods will be computed from the date of receipt of the commodities or services and/or a correct invoice, whichever is later. Unless freight and other charges are itemized, any discount provided will be taken on full amount of invoice.

**10. VENDOR TAX ID NUMBER:** If goods or services procured through this RFQ are of a type that is required to be included on a Miscellaneous Tax Statement, as described in the Internal Revenue Code, a valid tax identification number must be provided to the State of Alaska before payment will be made.

**11. INDEMNIFICATION:** The Contractor shall indemnify, hold harmless, and defend the contracting agency from and against any claim of, or liability for error, omission or negligent act of the Contractor under this agreement. The Contractor shall not be required to indemnify the contracting agency for a claim of, or liability for, the independent negligence of the contracting agency. If there is a claim of, or liability for, the joint negligent error or omission of the Contractor and the independent negligence of the Contracting agency, the indemnification and hold harmless obligation shall be apportioned on a comparative fault basis. "Contractor" and "Contracting agency", as used within this and the following article, include the employees, agents and other contractors who are directly responsible, respectively, to each. The term "independent negligence" is negligence other than in the Contracting agency's selection, administration, monitoring, or controlling of the Contractor and in approving or accepting the Contractor's work.

**12. SEVERABILITY:** If any provision of this contract is declared by a court to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected; and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the particular provision held to be invalid.

**13. TITLE:** Title passes to the State for each item at FOB destination.

**14. FILING A PROTEST:** An offeror shall attempt to informally resolve a dispute with the procurement officer regarding a small procurement. If the attempt is unsuccessful, the vendor may protest the solicitation or the award of a small procurement contract under AS 36.30.320. The protest must be filed in writing with the commissioner of the purchasing agency or the commissioner's designee and include the following information: (1) the name, address, and telephone number of the protester; (2) the signature of the protester or the protester's representative; (3) identification of the contracting agency and the solicitation or contract at issue; (4) a detailed statement of the legal and factual grounds of the protest, including copies of relevant documents; and (5) the form of relief requested. The protester must file a copy of the protest with the procurement officer for the purchasing agency. Protests will be treated in accordance with AS 36.30.550 and 2 AAC 12.695.

**INSTRUCTIONS TO BIDDERS  
TERMS AND CONDITIONS**

**15. COMPLIANCE:** In the performance of a contract that results from this RFQ, the contractor must comply with all applicable federal, state, and borough regulations, codes, and laws; and be liable for all required insurance, licenses, permits and bonds; and pay all applicable federal, state, and borough taxes.

**16. SUITABLE MATERIALS, ETC.:** Unless otherwise specified, all materials, supplies or equipment offered by an offeror shall be new, unused, and of the latest edition, version, model or crop and of recent manufacture.

**17. SPECIFICATIONS:** Unless otherwise specified in the RFQ, product brand names or model numbers are examples of the type and quality of product required, and are not statements of preference. If the specifications describing an item conflict with a brand name or model number describing the item, the specifications govern. Reference to brand name or number does not preclude an offer of a comparable or better product, if full specifications and descriptive literature are provided for the product. Failure to provide such specifications and descriptive literature may be cause for rejection of the offer.

**18. FIRM OFFER:** For the purpose of award, offers made in accordance with this RFQ must be good and firm for a period of ninety (90) days from the date of quote opening.

**19. QUOTE PREPARATION COSTS:** The State is not liable for any costs incurred by the offeror in quote preparation.

**20. CONSOLIDATION OF AWARDS:** Due to high administrative costs associated with processing of purchase orders, a single low quote of \$50 or less may, at the discretion of the State, be awarded to the next low offeror receiving other awards for consolidation purposes. This paragraph is not subject to the protest terms enumerated in "FILING A PROTEST" above.

**21. CONTRACT FUNDING:** Offerors are advised that funds are available for the initial purchase and/or the first term of the contract. Payment and performance obligations for succeeding purchases and/or additional terms of the contract are subject to the availability and appropriation of funds.

**22. CONFLICT OF INTEREST:** An officer or employee of the State of Alaska may not seek to acquire, be a party to, or possess a financial interest in, this contract if (1) the officer or employee is an employee of the administrative unit that supervises the award of this contract; or (2) the officer or employee has the power to take or withhold official action so as to affect the award or execution of the contract.

**23. ASSIGNMENT(S):** Assignment of rights, duties, or payments under a contract resulting from this RFQ is not permitted unless authorized in writing by the procurement officer of the contracting agency. Quotes that are conditioned upon the State's approval of an assignment will be rejected as nonresponsive.

**24. SUBCONTRACTOR(S):** Within five (5) working days of notice from the state, the apparent low bidder must submit a list of the subcontractors that will be used in the performance of the contract. The list must include the name of each subcontractor and the location of the place of business for each subcontractor and evidence of each subcontractor's valid Alaska business license.

**25. FORCE MAJEURE (Impossibility to perform):** The parties to a contract resulting from this RFQ are not liable for the consequences of any failure to perform, or default in performing, any of its obligations under the contract, if that failure or default is caused by any unforeseeable Force Majeure, beyond the control of, and without the fault or negligence of, the respective party. For the purposes of this Agreement, Force Majeure will mean war (whether declared or not); revolution; invasion; insurrection; riot; civil commotion; sabotage; military or usurped power; lightning; explosion; fire; storm; drought; flood; earthquake; epidemic; quarantine; strikes; acts or restraints of governmental authorities affecting the project or directly or indirectly prohibiting or restricting the furnishing or use of materials or labor required; inability to secure materials, machinery, equipment or labor because of priority, allocation or other regulations of any governmental authorities.

**26. LATE QUOTES:** Late quotes are quotes received after the time and date set for receipt of the quotes. Late quotes will not be accepted.

**27. CONTRACT EXTENSION:** Unless otherwise provided in this RFQ, the State and the successful offeror/contractor agree: (1) that any holding over of the contract excluding any exercised renewal options, will be considered as a month-to-month extension, and all other terms and conditions shall remain in full force and effect and (2) to provide written notice to the other party of the intent to cancel such month-to-month extension at least thirty (30) days before the desired date of cancellation.

**28. DEFAULT:** In case of default by the contractor, for any reason whatsoever, the State of Alaska may procure the goods or services from another source and hold the contractor responsible for any resulting excess cost and may seek other remedies under law or equity.

**29. DISPUTES:** If a contractor has a claim arising in connection with a contract resulting from this RFQ that it cannot resolve with the State by mutual agreement, it shall pursue a claim, if at all, in accordance with the provisions of AS 36.30.620 – 632.

**30. GOVERNING LAW; FORUM SELECTION:** A contract resulting from this RFQ is governed by the laws of the State of Alaska. To the extent not otherwise governed by section 29 of these Standard Terms and Conditions, any claim concerning the contract shall be brought only in the Superior Court of the State of Alaska and not elsewhere.

**31. CONSUMER ELECTRICAL PRODUCT:** AS 45.45.910 requires that "...a person may not sell, offer to sell, or otherwise transfer in the course of the person's business a consumer electrical product that is manufactured after August 14, 1990, unless the product is clearly marked as being listed by an approved third party certification program." Electrical consumer products manufactured before August 14, 1990, must either be clearly marked as being third party certified or be marked with a warning label that complies with AS 45.45.910(e). Even exempted electrical products must be marked with the warning label. By signature on this quote the offeror certifies that the product offered is in compliance with the law. A list of approved third party certifiers, warning labels and additional information is available from: Department of Labor, Labor Standards & Safety Division, Mechanical Inspection Section, P.O. Box 107020, Anchorage, Alaska 99510-7020, (907)269-4925.

**INSTRUCTIONS TO BIDDERS  
TERMS AND CONDITIONS**

**32. CONTINUING OBLIGATION OF CONTRACTOR:** Notwithstanding the expiration date of a contract resulting from this RFQ, the contractor is obligated to fulfill its responsibilities until warranty, guarantee, maintenance and parts availability requirements have completely expired.

**33. ORDER DOCUMENTS:** Except as specifically allowed under this RFQ, an ordering agency will not sign any vendor contract. The State is not bound by a vendor contract signed by a person who is not specifically authorized to sign for the State under this RFQ. The State of Alaska Purchase Order, Contract Award and Delivery Order are the only order documents that may be used to place orders against the contract(s) resulting from this RFQ.

**34. BILLING INSTRUCTIONS:** Invoices must be billed to the ordering agency's address shown on the individual Purchase Order, Contract Award or Delivery Order. The ordering agency will make payment after it receives the merchandise or service and the invoice. Questions concerning payment must be addressed to the ordering agency.

**35. OFFERORS WITH DISABILITIES:** The State of Alaska complies with Title II of the Americans with Disabilities Act of 1990. Individuals with disabilities who may need auxiliary aids, services, and/or special modifications to participate in this procurement should contact the procurement officer named on the cover page of this RFQ as soon as possible, but no later than the date and time quotations are due to make any necessary arrangements.

**36. COMPLIANCE WITH ADA:** By signature of their quote the bidder certifies that they comply with the Americans with Disabilities Act of 1990 and the regulations issued thereunder by the federal government. Services or activities furnished to the general public on behalf of the State must be fully accessible. This is intended to ensure that agencies are in accordance with 28 CFR Part 35 Section 35.130 and that services, programs or activities furnished to the public through a contract do not subject qualified individuals with a disability to discrimination based on the disability.

**I. Background:**

Circle Telephone and Electric (CTE) operates a power plant that provides prime power to the community of Circle using 3 each diesel powered engine-generators. In 2020 the Alaska Energy Authority (AEA) assisted CTE with a major renovation of the plant that included two new engine-generators, new switchgear, and new mechanical and electrical systems.

In the spring of 2023 Circle experienced a severe flood that caused extensive damage throughout the community. The engine-generators and the electric motors on the radiators were submerged and are considered damaged beyond use. The lower portion of the switchgear was submerged and the circuit breakers, contactors, and current transformers located in this area are considered not suitable for use. The control devices in the upper portion of the switchgear and most of the other systems in the plant appear to be suitable for use.

In response to the flood, the AEA and the Alaska State Emergency Operation Center (SEOC) mobilized two each emergency standby generators and a manual transfer switch plus associated power cables. This equipment was set up outside of the Circle power plant, connected to the step up transformers, and is presently providing prime power to the community.

The standby generators are not adequately protected for service during the cold winter. In addition, the manual transfer switch requires a community power outage at every oil change. The purpose of this project is to install Owner Furnished engine-generators and switchgear components to return the power plant to the functional status prior to the flood.

**II. Project Schedule:**

October 26, 2023	Bids due no later than NOON local time.
November 1, 2023	Notice of Contract Award.
November 1, 2023	Owner Furnished Equipment available for pickup.
December 1, 2023	Substantial Completion. Note that this is the desired completion date. Provide a firm completion date in the Bid Response based on the above listed schedule.

**III. Scope of Work:**

Drawings are included in Appendix C and are hereby incorporated into this RFQ. The following drawings are included:

**2023 Replacement Drawings** - New design drawings MR1, MR2, MR3, ER1, ER2, ER3, and ER4 which depict the Work for this project and include specifications.

**Switchgear Drawings** - Shop drawings for the switchgear that was installed in 2020 with redmarks delineating components that are to be replaced as part of this Work.

**2020 DERA Record Drawings** – Record drawings for the 2020 power plant renovation which are provided for reference.

The intent of the Contract is to provide for the construction and completion of every detail of work described in the RFQ. The Contractor shall furnish all labor, materials, supervision, equipment, tools, transportation, quality control, and supplies required to

complete the work in accordance with the RFQ. The Work shall include but not be limited to the following tasks:

- 1) Prior to beginning construction, provide a schedule to AEA. The schedule shall include the estimated date for substantial completion so that AEA can schedule staff travel for inspection, testing, and commissioning.
- 2) Provide daily progress reports to AEA via email. Reports shall include a brief summary of work completed along with representative photos.
- 3) Receive Owner Furnished Equipment. See Part IV, Owner Furnished Equipment.
- 4) Furnish all other required miscellaneous materials and hardware.
- 5) Mobilize all required materials, equipment, tools, supplies, etc. and all required personnel to the project site in Circle, Alaska.
- 6) Maintain power in the community during construction with limited outages scheduled in advance with the local utility. Note that the existing switchgear and generators are presently de-energized and isolated from the standby generators so outages should only be required for re-connection of the renovated power plant to the community.
- 7) Remove two each existing engine-generators. Drain coolant and fuel hoses. Carefully disconnect piping and electrical and protect for connection to new.
- 8) Install three each new Owner Furnished engine-generators and reconnect piping and electrical. Note that replacement engine-generators are identical to the original ones.
- 9) Install two each Owner Furnished 2 HP electric motors on existing radiators.
- 10) Install two each Owner Furnished coolant temperature sensors and one each digital piping thermometer on existing coolant return main.
- 11) Charge cooling system with Owner Furnished glycol and bleed air out.
- 12) Carefully remove existing circuit breakers, contactors, and current transformers located in the lower portion of the switchgear and reinstall new components. Note that replacement components are essentially identical to the original ones. See Switchgear redlines for connections. Following is a list of components:
  - a) 3 each 400A Contactors
  - b) 4 each 400A Molded Case Circuit Breakers
  - c) 1 each 150A Molded Case Circuit Breaker
  - d) 6 each 10A Din Rail Mount Circuit Breakers
  - e) 9 each 0.5A Din Rail Mount Circuit Breakers
  - f) 9 each 400:5 Ratio Current Transformers
  - g) 3 each 150:5 Ratio Current TransformersUsing a label maker, label each replacement component with the same designation as the label on the removed item.
- 13) Prior to connecting to the community, AEA will test the new generators and refurbished switchgear with a load bank to verify proper function. Provide assistance to AEA staff during testing and correct any deficiencies found.
- 14) Schedule a brief outage. Disconnect one standby generator from the transfer switch. Connect the main feeder from the switchgear to the empty side of the

transfer switch. Note that this is being done to allow CTE the ability to use the standby generator in an emergency this winter.

- 15) Upon completion of Work, remove all Contractor tools and equipment from the project site, thoroughly clean all work areas, remove all rubbish and debris, and dispose of all waste in accordance with State requirements.

#### **IV. Owner Furnished Equipment:**

Under Part IV the term Owner refers to the Alaska Energy Authority (AEA).

- 1) The following equipment and materials will be furnished by the Owner at no cost to the Contractor:
  - a) Three each skid mounted engine-generators. Overall dimensions of each unit approximately 7' long by 3' wide by 4' high. Approximate weight of each unit 3,200#.
  - b) One lot switchgear components as listed under Part V, Scope of Work. One crate approximately 3' by 3' by 2' weighing 300#.
  - c) Two 2 HP 240V electric motors weighing 80# each.
  - d) One 55 gallon drum 50% ethylene glycol weighing 550#.
  - e) One box flange gaskets, piping thermometer, and temperature sensors.
- 2) All materials will be staged at the AEA Warehouse, 2601 Commercial Drive, Anchorage, AK. AEA will furnish a forklift for loading onto the Contractor's truck.
- 3) The Contractor shall receive and accept the materials at the AEA Warehouse; inspect all materials to confirm that the materials delivered are in good condition and the quantities are correct; and execute a receipt for all materials accepted from the Authority.
- 4) The Contractor shall receive, transport, and protect all material in accordance with accepted industry standards. All handling charges required for receiving, loading, unloading, hauling, transporting or storing the material shall be borne by the Contractor.
- 5) Upon receipt of the materials as specified above, the Contractor shall become solely responsible for their care, transportation, storage, and protection. In the event materials are damaged, lost, stolen, or destroyed by any cause whatsoever after the Contractor has signed a receipt for them, their repair or replacement shall be entirely at the Contractor's expense. All material replaced by the Contractor shall be equal to the material provided by the Authority and shall meet the material purchase specifications.
- 6) At the time of substantial completion the Owner will furnish a 100kW load bank complete with cables for testing the generation equipment.

#### **V. Owner Furnished Tools and Services:**

Under Part V the term Owner refers to Circle Telephone and Electric (CTE).

- 1) The Owner will provide heat, light, and electrical power inside the power plant at no cost to the Contractor.

- 2) The Owner will provide use of a forklift for unloading and a pallet jack for moving the generators at no cost to the Contractor.

**VI. Special Terms and Conditions:**

- 1) Specific insurance requirements are included under Part VII, Insurance. The Contractor shall provide Insurance in accordance with these requirements. Note that failure to supply satisfactory proof of insurance within the time required may cause Owner to declare the bidder non-responsible and to reject the bid.
- 2) The Denali Commission Federal funds being used are exempt from Davis Bacon wage requirements; therefore, Federal prevailing wage rates do not apply.
- 3) Circle Telephone and Electric is not a political subdivision of the State of Alaska; therefore, this work is not subject to AS 36.05. Alaska Mini-Davis-Bacon wage rates do not apply and certified payroll is not required.

**VII. Insurance Requirements:**

The Contractor shall purchase at their own expense and maintain in force at all times during the performance of services under this agreement the following policies of insurance. Where specific limits are shown, it is understood that they shall be the minimum acceptable limits. If the Contractor's policy contains higher limits, the Owner shall be entitled to coverage to the extent of such higher limits. Certificates of Insurance must be furnished to the Owner prior to beginning work and must provide for a notice of cancellation, non-renewal, or material change of conditions in accordance with policy provisions. Failure to furnish satisfactory evidence of insurance or lapse of the policy is a material breach of this contract and shall be grounds for termination of the Contractor's services. All insurance policies shall comply with, and be issued by insurers licensed to transact the business of insurance under AS 21. Proof of insurance is required for the following:

Workers' Compensation Insurance: The Contractor shall provide and maintain, for all employees engaged in work under this contract, coverage as required by AS 23.30.045, and; where applicable, any other statutory obligations including but not limited to Federal U.S.L. & H. and Jones Act requirements. The policy must waive subrogation against Owner.

Commercial General Liability Insurance: covering all business premises and operations used by the Contractor in the performance of services under this agreement with minimum coverage limits of \$1,000,000 combined single limit per occurrence. The Owner shall be listed as additional insured and a Waiver of Subrogation against the Owner will be provided.

Commercial Automobile Liability Insurance: covering all vehicles used by the Contractor in the performance of services under this agreement with minimum coverage limits of \$300,000 combined single limit per occurrence.

*Failure to supply satisfactory proof of insurance within the time required may cause Owner to declare the bidder non-responsible and to reject the bid.*

The Certificate of Insurance shall name Circle Telephone and Electric, Alaska Energy Authority, and Denali Commission as certificate holders and reference the project title "Circle Replacement Generator and Switchgear Installation".



## APPENDIX B – FEDERAL ASSURANCES

Because this contract is funded with federal funds, the following contract provisions shall apply, where applicable, to all work performed on the contract by the contractor's own organization and by subcontractors. As provided in this Section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions and further require their inclusion in any lower tier subcontracts or purchase orders that may in turn be made. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with all applicable Required Contract Provisions.

### B.1 BREACHES AND DISPUTE RESOLUTION.

**Contracts in excess of \$250,000.** Any dispute arising under this Contract which is not disposed of by mutual agreement shall be resolved in accordance with 2 AAC 108.915.

### B.2 TERMINATION.

**Contracts in excess of \$10,000.** This Contract may be terminated by either party upon 10 days written notice if the other party fails substantially to perform in accordance with its terms through no fault of the party initiating the termination ("Default Termination"). If the Authority terminates this agreement, the Authority will pay the Contractor a sum equal to the percentage of Work completed that can be substantiated either by the Contractor to the satisfaction of the Authority, or by the Authority. If the Authority becomes aware of any non-conformance with the Work or this agreement by the Contractor, the Authority will promptly notify the Contractor in writing of the non-conformance. Should the Contractor's Work remain in non-conformance after having received written notification, the percentage of total compensation attributable to the non-conforming Work may be withheld. The Authority may at any time suspend or terminate ("Convenience Termination") this Agreement for its needs or convenience with or without cause upon written notice. In the event of a Convenience Termination, the Contractor will be compensated for all authorized Work and authorized expenditures performed to the date of receipt of written notice of termination plus reasonable expenses. No fee or other compensation will be due for any incomplete portion of the Work.

### B.3 EQUAL EMPLOYMENT OPPORTUNITY.

Except as otherwise provided under [41 CFR Part 60](#), **all construction contracts** must include, and all contractors and subcontractors must comply with, the equal opportunity clause provided under [41 CFR 60-1.4\(b\)](#), in accordance with Executive Order 11246, "Equal Employment Opportunity" ([30 FR 12319](#), [12935](#), [3 CFR Part, 1964-1965](#) Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at [41 CFR part 60](#), "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

### B.4 DAVIS-BACON ACT, AS AMENDED ([40 U.S.C. 3141-3148](#)).

**Construction contracts in excess of \$2,000** are required to comply with the Davis-Bacon Act ([40 U.S.C. 3141-3144](#), and [3146-3148](#)) as supplemented by Department of Labor regulations ([29 CFR Part 5](#), "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must pay wages not less than once a week. **A copy of the current prevailing wage determination issued by the Department of Labor is included in this solicitation.** Contract and subcontract awards must be conditioned upon the acceptance of the wage determination. All suspected or reported violations must be reported to the Federal awarding agency.

**B.5 COPELAND “ANTI-KICKBACK” ACT ([40 U.S.C. 3145](#))**

**Construction contracts in excess of \$2,000** are required to comply with the **Copeland “Anti-Kickback” Act ([40 U.S.C. 3145](#))**, as supplemented by Department of Labor regulations ([29 CFR Part 3](#), “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). Each contractor or subrecipient is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. All suspected or reported violations must be reported to the Federal awarding agency.

**B.6 CONTRACT WORK HOURS/SAFETY STANDARDS ACT ([40 U.S.C. 3701-3708](#)).**

**Construction contracts in excess of \$100,000** that involve the employment of mechanics or laborers are required to comply with [40 U.S.C. 3702](#) and [3704](#), as supplemented by Department of Labor regulations ([29 CFR Part 5](#)). Under [40 U.S.C. 3702](#) of the Act, each contractor is required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of [40 U.S.C. 3704](#) are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

**B.7 RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT.**

If the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of [37 CFR Part 401](#), “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

**B.8 CLEAN AIR ACT ([42 U.S.C. 7401-7671Q](#).) AND THE FEDERAL WATER POLLUTION CONTROL ACT ([33 U.S.C. 1251-1387](#)), AS AMENDED**

**Contracts in excess of \$150,000** are required to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act ([42 U.S.C. 7401-7671q](#)) and the Federal Water Pollution Control Act as amended ([33 U.S.C. 1251-1387](#)). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

**B.9 DEBARMENT AND SUSPENSION (EXECUTIVE ORDERS 12549 & 12689)**

A contract award **greater than or equal to \$25,000** (see [2 CFR 180.220](#)) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at [2 CFR 180](#) that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” **Contractors that apply or bid for an award exceeding \$25,000 must sign and submit the attached “Debarment” certification with their bid.**

**B.10 BYRD ANTI-LOBBYING AMENDMENT ([31 U.S.C. 1352](#))**

Each contractor and subcontractor must certify that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or

employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by [31 U.S.C. 1352](#). Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Disclosures shall be forwarded from tier to tier up to the Authority. **Contractors that apply or bid for an award exceeding \$100,000 must sign and submit the attached “Lobbying” certification with their bid.**

### **B.11 PROCUREMENT OF RECOVERED MATERIALS.**

A state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at [40 CFR part 247](#) that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, **where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000**; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

### **B.12 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT.**

Contractors and subcontractors are prohibited from entering into a contract (or extending or renewing a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in [Public Law 115-232](#), section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities). See [§ 200.216](#).

### **B.13 DOMESTIC PREFERENCES FOR PROCUREMENTS.**

As appropriate and to the extent consistent with law, and to the greatest extent practicable, Contractor’s are required to provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all contracts and purchase orders for work or products under this award. See [§ 200.322](#).

The funding for this project is exempt from the Buy American Act and therefore this purchase is not subject to the Buy American Act.

**DEBARMENT, SUSPENSION, INELIGIBILITY & VOLUNTARY EXCLUSION – 2 CFR 200.214; Executive Orders 12549 and 12689** [Applicable to all federally assisted contracts which exceed \$25,000]**Instructions for Certification:**

1. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective contractor and lower tier participants knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Authority may pursue available remedies, including suspension and/or debarment.
2. The prospective contractor and lower tier participants shall provide immediate written notice to the Authority if at any time the prospective contractor and lower tier participants learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
3. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "persons," "lower tier covered transaction," "principal," "proposal," and voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Orders [12549](#) and 12689. You may contact the Authority for assistance in obtaining a copy of those regulations.
4. The prospective contractor and lower tier participants agrees by submitting this bid or proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized in writing by the Authority.
5. The prospective contractor and lower tier participants further agrees by submitting this bid or proposal that it will require the language of this certification be included in all subcontracts and all lower tier participants shall certify compliance with this requirement.
6. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Non-procurement List issued by U.S. General Service Administration.
7. Nothing contained in the foregoing shall be construed to require establishment of system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
8. Except for transactions authorized under Paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to all remedies available to the Federal Government, the Authority may pursue available remedies including suspension and/or debarment.

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transaction**

- (1) The prospective contractor and lower tier participants certifies, by submission of this bid or proposal, that neither it nor its "principals" is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) When the prospective contractor and lower tier participants is unable to certify to the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The Contractor, \_\_\_\_\_ certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 2 CFR §180 apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Official: \_\_\_\_\_

Name and Title of Contractor's Authorized Official: \_\_\_\_\_

Date: \_\_\_\_\_

End of Federal Assurances

<b>SCHEDULE OF DRAWINGS:</b>
MR1 SCHEDULE OF DRAWINGS, NOTES, MECHANICAL PLANS, & SPECIFICATIONS
MR2 NEW GEN#1 & GEN#2 INSTALLATION ELEVATION & DETAILS
MR3 NEW GEN#3 INSTALLATION ELEVATION & DETAILS

**PROJECT DESCRIPTION**

- IN THE SPRING OF 2023 CIRCLE EXPERIENCED A SEVERE FLOOD THAT CAUSED EXTENSIVE DAMAGE THROUGHOUT THE COMMUNITY. THE ENGINE-GENERATORS AND THE ELECTRIC MOTORS ON THE RADIATORS WERE SUBMERGED AND ARE CONSIDERED DAMAGED BEYOND USE. THE LOWER PORTION OF THE SWITCHGEAR WAS SUBMERGED AND THE CIRCUIT BREAKERS, CONTACTORS, AND CURRENT TRANSFORMERS LOCATED IN THIS AREA ARE CONSIDERED NOT SUITABLE FOR USE. THE CONTROL DEVICES IN THE UPPER PORTION OF THE SWITCHGEAR AND MOST OF THE OTHER SYSTEMS IN THE PLANT APPEAR TO BE SUITABLE FOR USE.
- THE PURPOSE OF THIS PROJECT IS TO INSTALL OWNER FURNISHED ENGINE-GENERATORS AND SWITCHGEAR COMPONENTS TO RETURN THE POWER PLANT TO THE FUNCTIONAL STATUS PRIOR TO THE FLOOD.
- IN ADDITION, MINOR REPAIRS WILL BE MADE TO THE PLANT MECHANICAL AND ELECTRICAL SYSTEMS AS INDICATED.

ENGINE-GENERATOR SCHEDULE	
GENSET	DESCRIPTION
GEN #1	ENGINE - 148 HP, 100 EKW PRIME, JOHN DEERE 4045AFM85, TIER 3 MARINE. 24 VDC STARTING & CONTROL. GENERATOR - MINIMUM 125 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UCI274E.
GEN #2	ENGINE - 148 HP, 100 EKW PRIME, JOHN DEERE 4045AFM85, TIER 3 MARINE. 24 VDC STARTING & CONTROL. GENERATOR - MINIMUM 125 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UCI274E.
GEN #3	ENGINE - 129 HP, 90 EKW PRIME, JOHN DEERE 4045HFM285, TIER 3 MARINE. 12 VDC STARTING & CONTROL. GENERATOR - MINIMUM 125 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UCI274E.

**GENERAL NOTES:**

- EXISTING EQUIPMENT TO REMAIN IN SERVICE SHOWN WITH LIGHT DASHED LINES.
- EXISTING EQUIPMENT TO BE DEMOLISHED SHOWN HATCHED
- NEW EQUIPMENT TO BE INSTALLED SHOWN WITH DARK SOLID LINES.
- ALL EXISTING ENGINE COOLING, EXHAUST, FUEL, CRANKCASE VENTILATION, AND VIBRATION ISOLATION/ENGINE SUPPORT SYSTEMS INCLUDING PIPING, FITTINGS, HOSE, EQUIPMENT, AND ACCESSORIES TO REMAIN FOR RECONNECTION TO NEW GENERATORS UNLESS SPECIFICALLY INDICATED OTHERWISE. TAKE CAUTION TO AVOID DAMAGING ANY EXISTING EQUIPMENT DURING DEMOLITION.

**MECHANICAL SPECIFICATIONS:**

**\*\* GENERAL CONDITIONS \*\***

PERFORM ALL WORK IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF THE INTERNATIONAL FIRE CODE AND THE INTERNATIONAL BUILDING CODE INCLUDING STATE OF ALASKA AMENDMENTS. COMPLY WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS.

THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW ALL FEATURES OF THE REQUIRED WORK. PROVIDE ALL EQUIPMENT AND MATERIALS REQUIRED FOR A COMPLETE SYSTEM. VERIFY EXISTING FIELD CONDITIONS PRIOR TO STARTING CONSTRUCTION. IMMEDIATELY CONTACT THE ENGINEER FOR CLARIFICATION OF QUESTIONABLE ITEMS OR APPARENT CONFLICTS.

ALL EQUIPMENT AND MATERIALS SHOWN ARE NEW UNLESS SPECIFICALLY INDICATED AS EXISTING. WHERE ADDITIONAL OR REPLACEMENT ITEMS ARE REQUIRED, PROVIDE LIKE ITEMS BY THE SAME MANUFACTURER TO THE MAXIMUM EXTENT PRACTICAL. INSTALL ALL MATERIALS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND INSTRUCTIONS, UNLESS INDICATED OTHERWISE.

PROTECT ALL MATERIALS AND EQUIPMENT DURING THE ENTIRE DURATION OF CONSTRUCTION WORK AGAINST CONTAMINATION OR DAMAGE. REPLACE OR REPAIR TO ORIGINAL MANUFACTURED CONDITION ANY ITEMS DAMAGED DURING CONSTRUCTION. IMMEDIATELY REPORT TO THE ENGINEER ANY ITEMS FOUND DAMAGED PRIOR TO COMMENCING CONSTRUCTION.

PERFORM WORK WITH SKILLED CRAFTSMEN SPECIALIZING IN SAID WORK. INSTALL ALL MATERIALS IN A NEAT, ORDERLY, AND SECURE FASHION, AS REQUIRED BY THESE SPECIFICATIONS AND COMMONLY RECOGNIZED STANDARDS OF GOOD WORKMANSHIP.

DO NOT CUT, DRILL, OR NOTCH STRUCTURAL MEMBERS UNLESS SPECIFICALLY APPROVED BY THE ENGINEER. MINIMIZE PENETRATIONS AND DISRUPTION OF BUILDING FEATURES. WHERE PREVIOUSLY COMPLETED BUILDING SURFACES OR OTHER FEATURES MUST BE CUT, PENETRATED, OR OTHERWISE ALTERED, SUCH WORK SHALL BE CAREFULLY LAID OUT AND PATCHED TO ORIGINAL CONDITION. SEAL ALL EXTERIOR FLOOR AND WALL PENETRATIONS AS INDICATED.

PROVIDE ONE SET OF DRAWINGS CLEARLY MARKED UP WITH ALL AS-BUILT INFORMATION TO THE ENGINEER WITHIN TWO WEEKS OF COMPLETION.

**\*\* SPECIAL CONDITIONS \*\***

ENSURE THAT APPROPRIATE SAFETY MEASURES ARE IMPLEMENTED AND THAT ALL WORKERS ARE AWARE OF THE POTENTIAL HAZARDS FROM ELECTRICAL SHOCK, BURN, ROTATING FANS, PULLEYS, BELTS, HOT MANIFOLDS, NOISE, ETC. ASSOCIATED WITH WORKING NEAR POWER GENERATION AND CONTROL EQUIPMENT.

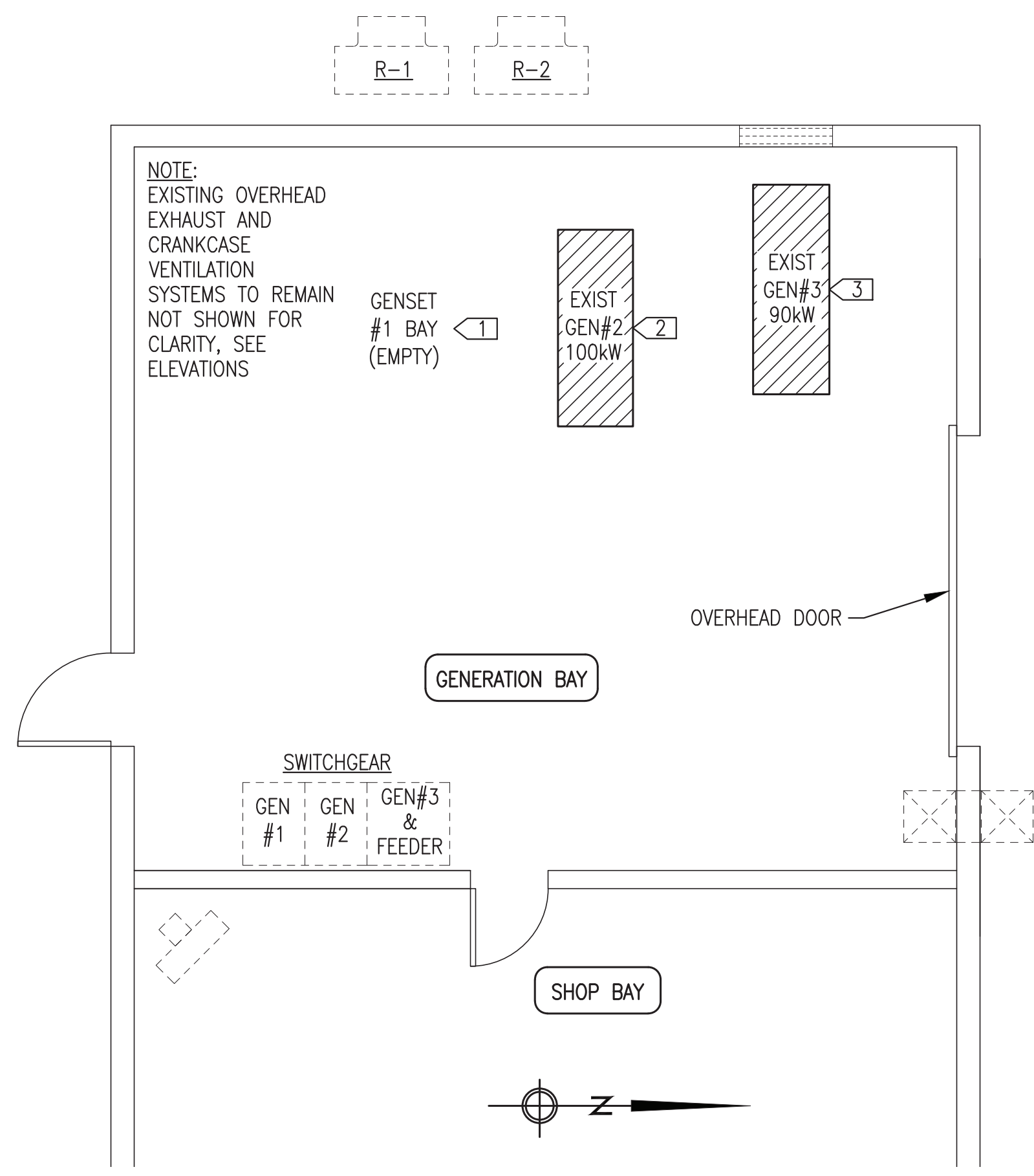
**\*\* SUPPORTS AND FASTENERS \*\***

SUPPORT PIPING AND EQUIPMENT AS SHOWN ON PLANS USING SPECIFIED SUPPORTS AND FASTENERS. IF NOT DETAILED ON PLANS, SUPPORT FROM STRUCTURAL MEMBERS WITH PIPE HANGERS, CLAMPS, OR PIPE STRAPS SPECIFICALLY INTENDED FOR THE APPLICATION. DO NOT SUPPORT PIPING FROM CONNECTIONS TO EQUIPMENT. INDEPENDENTLY SUPPORT PUMPS AND EQUIPMENT.

STRUT - COLD FORMED MILD STEEL CHANNEL STRUT, PRE-GALVANIZED FINISH AND SLOTTED BACK UNLESS SPECIFICALLY INDICATED OTHERWISE. B-LINE PARTS LISTED FOR REFERENCE, APPROVED EQUALS ACCEPTABLE.  
STANDARD STRUT - 12 GA, 1-5/8" x 1-5/8", B-LINE B22-SH-GALV.  
DOUBLE STRUT - 12 GA, 1-5/8" x 3-1/4", B-LINE B22A-SH-GALV.  
SHALLOW STRUT - 14 GA, 1-5/8" x 13/16", B-LINE B54-SH-GALV.

FITTINGS AND ACCESSORIES - PROVIDE FITTINGS, BRACKETS, CHANNEL NUTS, AND ACCESSORIES DESIGNED SPECIFICALLY FOR USE WITH SPECIFIED CHANNEL STRUT. ZINC-PLATED CARBON STEEL.

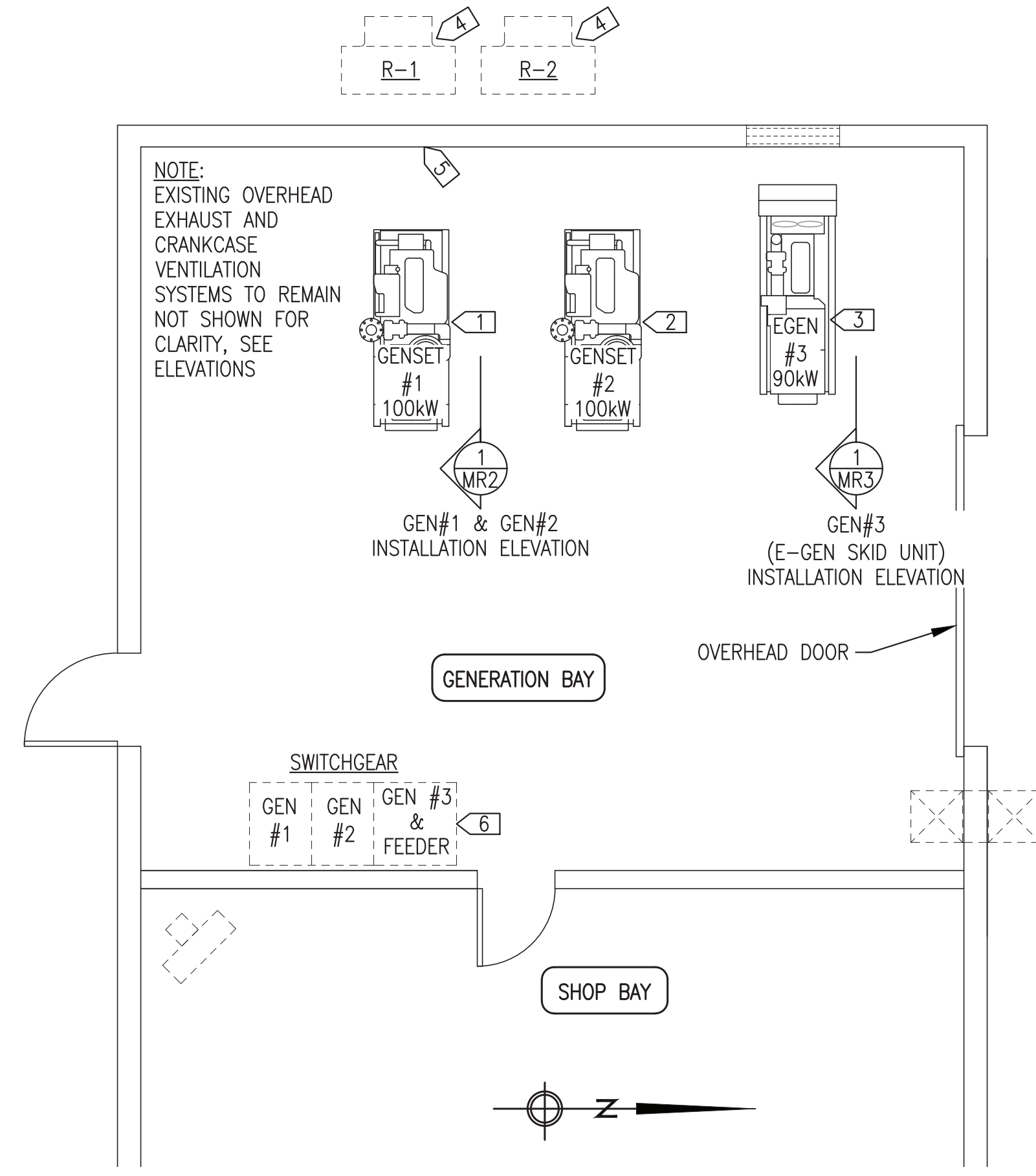
FASTENERS - ALL BOLTS, NUTS, AND WASHERS ZINC-PLATED EXCEPT FOR EXTERIOR INSTALLATIONS HOT DIP GALVANIZED.



**1 DEMOLITION PLAN**  
MR1 1/4"=1'-0"

**DEMOLITION SPECIFIC NOTES:**

- EXISTING GEN#1 ALREADY REMOVED FROM POWER PLANT. THE EXISTING PIPING CONNECTIONS AND VIBRATION ISOLATORS LEFT IN PLACE FOR USE WITH NEW GEN#1. SALVAGE EXHAUST FLEX AND INSULATION BLANKET FROM OLD GEN#1 FOR REUSE ON NEW GEN#1.
- CAREFULLY REMOVE EXISTING GEN#2 IN ITS ENTIRETY. TAKE CAUTION TO AVOID DAMAGING EXISTING ENGINE COOLING, CRANKCASE VENTILATION, FUEL, AND EXHAUST CONNECTIONS WHICH ARE TO REMAIN FOR REUSE WITH NEW GEN#2. EXISTING VIBRATION ISOLATORS TO REMAIN IN EXISTING LOCATIONS FOR USE WITH NEW GEN#2. SALVAGE EXHAUST FLEX AND INSULATION BLANKET FROM OLD GEN#2 FOR REUSE ON NEW GEN#2.
- CAREFULLY REMOVE EXISTING GEN#3 IN ITS ENTIRETY. TAKE CAUTION TO AVOID DAMAGING EXISTING CRANKCASE VENTILATION, FUEL, AND EXHAUST CONNECTIONS. CAREFULLY REMOVE EXISTING VIBRATION ISOLATORS FOR USE WITH NEW GEN#3 AND GRIND OFF EXISTING FLOOR STUD ANCHORS. SALVAGE EXHAUST FLEX AND INSULATION FROM OLD GEN#3 FOR REUSE ON NEW GEN#3.

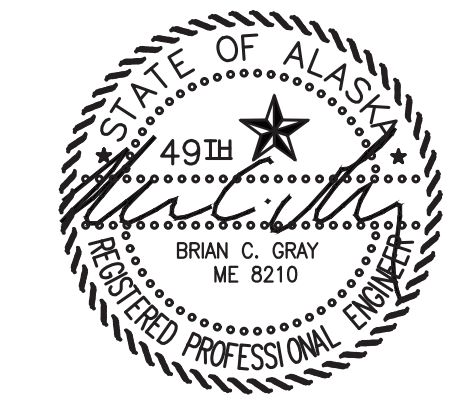


**2 NEW WORK PLAN**  
MR1 1/4"=1'-0"

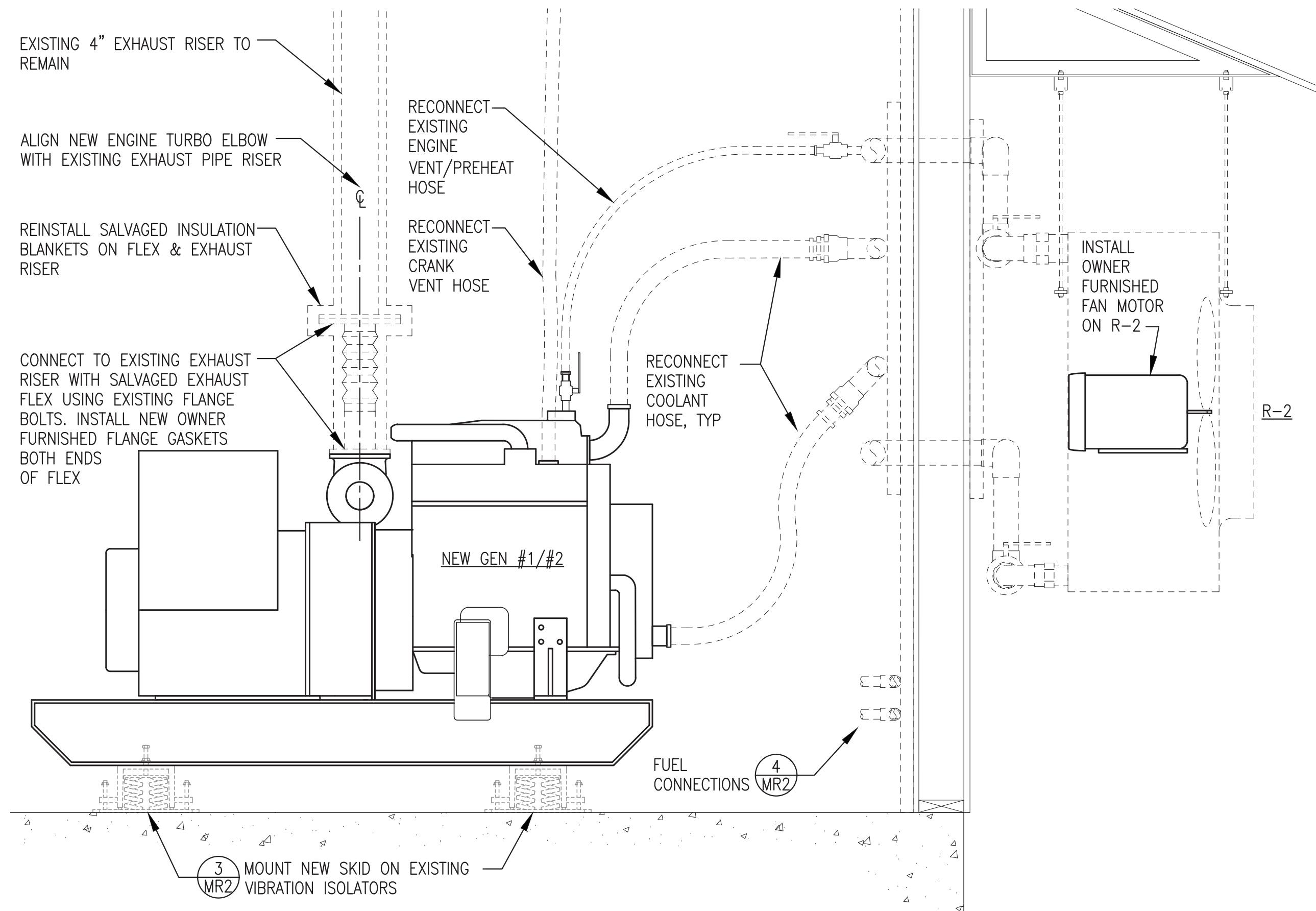
**NEW WORK SPECIFIC NOTES:**

- INSTALL NEW OWNER FURNISHED GENSET#1 AND RECONNECT TO EXISTING ENGINE COOLING, FUEL, EXHAUST, AND CRANK VENT SYSTEMS. SEE SHEET MR2 AND ELECTRICAL FOR INSTALLATION DETAILS.
- INSTALL NEW OWNER FURNISHED GENSET#2 AND RECONNECT TO EXISTING ENGINE COOLING, FUEL, EXHAUST, AND CRANK VENT SYSTEMS. SEE SHEET MR2 AND ELECTRICAL FOR INSTALLATION DETAILS.
- INSTALL NEW OWNER FURNISHED GEN#3 WITH RELOCATED VIBRATION ISOLATOR SUPPORTS. RECONNECT TO EXISTING FUEL, EXHAUST, AND CRANK VENT SYSTEMS. SEE SHEET MR3 AND ELECTRICAL FOR INSTALLATION DETAILS.
- INSTALL NEW OWNER FURNISHED FAN MOTORS ON R-1 AND R-2.
- INSTALL NEW OWNER FURNISHED TEMPERATURE SENSORS AND DIGITAL THERMOSTAT ON ENGINE COOLANT RETURN MAIN, SEE REFERENCE PHOTO 4/MR3.

ISSUED FOR CONSTRUCTION  
OCTOBER 2023



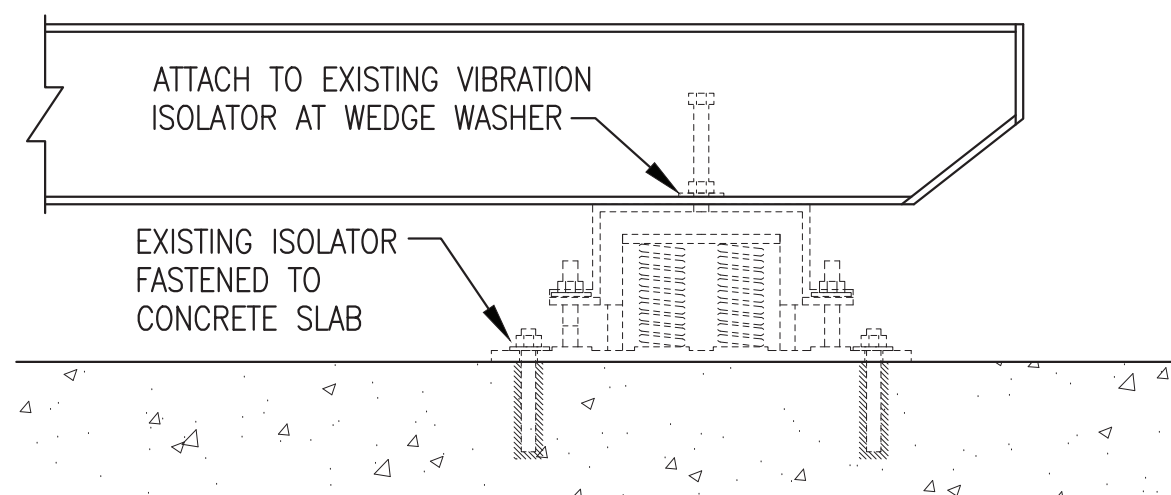
PROJECT:	CIRCLE REPLACEMENT GENERATOR AND SWITCHGEAR INSTALLATION		
TITLE:	SCHEDULE OF DRAWINGS, NOTES, MECHANICAL PLANS, & SPECIFICATIONS		
DRAWN BY:	JTD	SCALE:	AS NOTED
DESIGNED BY:	BCG	DATE:	10/12/23
FILE NAME:	CIRPP MR1-3	SHEET:	MR1 OF 3
PROJECT NUMBER:	P.O. 111405, Anchorage, AK 99511 (907)349-0100		



1 NEW GEN#1 & GEN#2 INSTALLATION ELEVATION  
MR2 1"=1'-0"

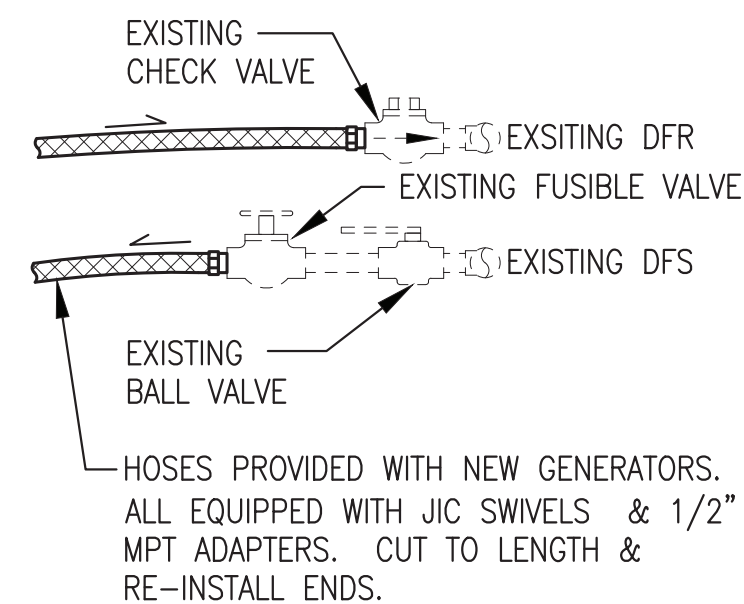


2 EXISTING GEN#1 (REMOVED) & GEN#2 (IN PLACE) REFERENCE PHOTO  
MR2 1"=1'-0"



NOTES:

- 1) NEW SKIDS CONFIGURED THE SAME AS THE ORIGINAL. ATTACH SKIDS TO EXISTING VIBRATION ISOLATORS IN ORIGINAL LOCATIONS.
- 2) ADJUST SPRING VIBRATION ISOLATOR LEVELING BOLTS TO ACHIEVE A UNIFORM INSTALLATION HEIGHT WITH THE NEW GENERATOR EXHAUST CONNECTION APPROXIMATELY 1/8" BELOW THE EXISTING EXHAUST RISER CONNECTION TO ALLOW FOR THERMAL EXPANSION. ADJUST NUTS ON STABILIZER BOLTS TO ACHIEVE A UNIFORM CLEARANCE OF APPROXIMATELY 1/8" THEN TIGHTEN LOCKING NUTS. VERIFY UNIT MOVES FREELY ON ISOLATORS.



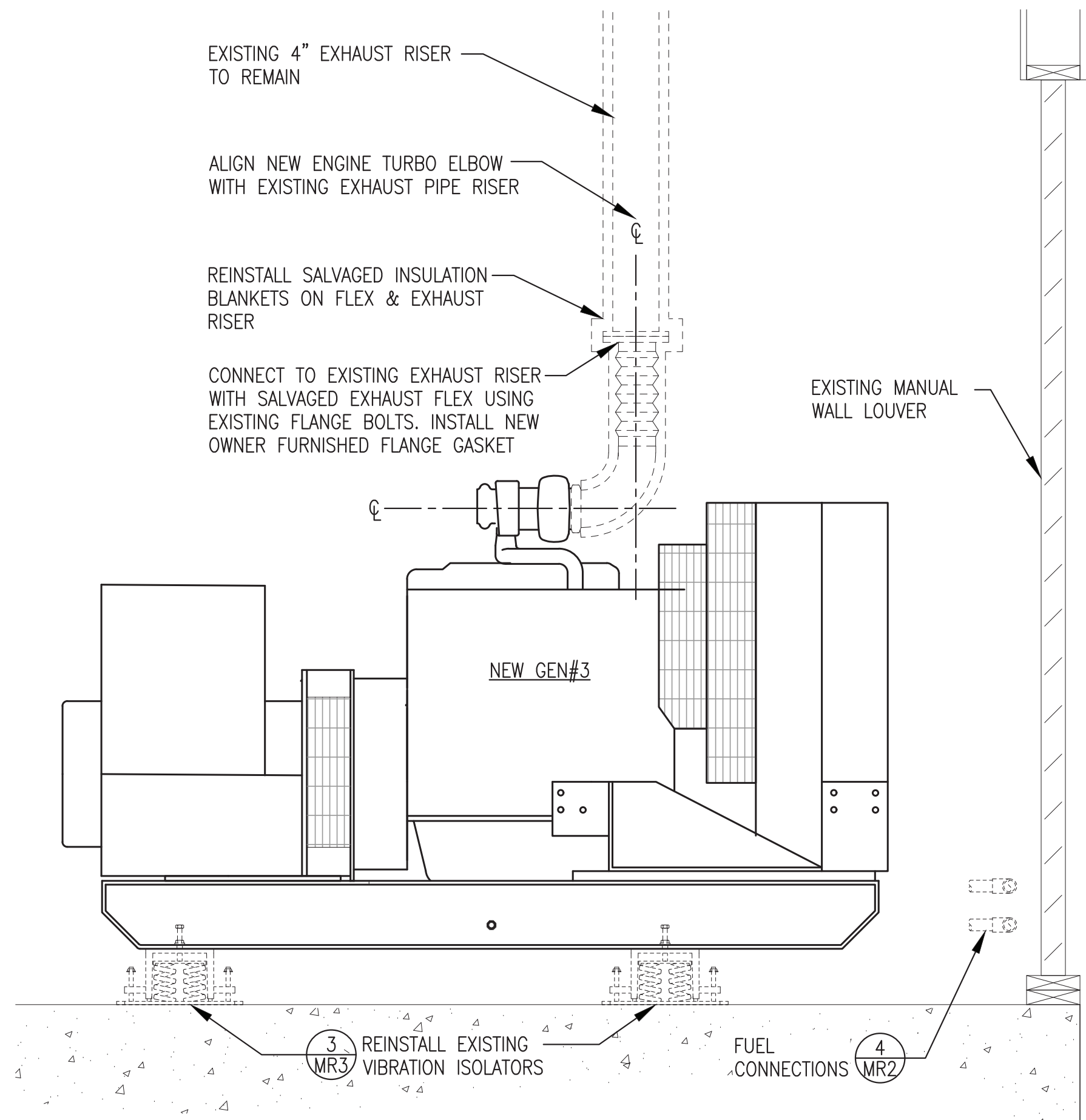
3 GENERATOR VIBRATION ISOLATOR INSTALLATION  
MR2 NO SCALE

4 TYPICAL FUEL PIPING CONNECTION DETAIL  
MR2 NO SCALE

ISSUED FOR CONSTRUCTION  
OCTOBER 2023



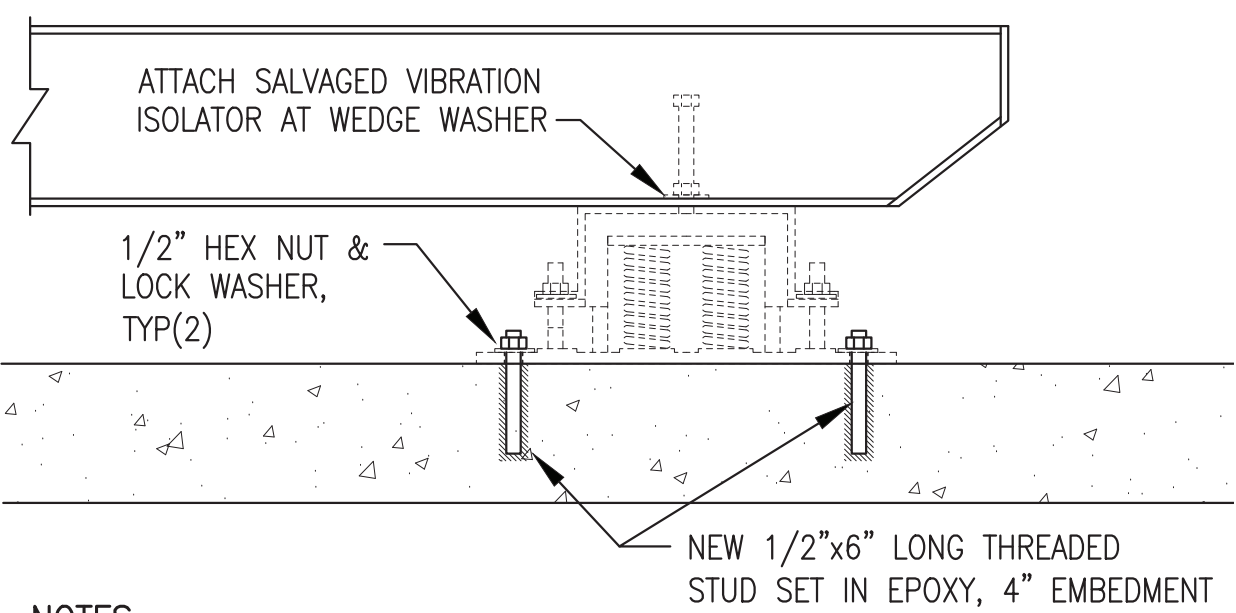
PROJECT:	CIRCLE REPLACEMENT GENERATOR AND SWITCHGEAR INSTALLATION	
TITLE:	NEW GEN#1 & GEN#2 INSTALLATION ELEVATION & DETAILS	
	DRAWN BY: JTD	SCALE: AS NOTED
	DESIGNED BY: BCG	DATE: 10/12/23
	FILE NAME: CIRPP MR1-3	SHEET: MR2 OF 3
P.O. 111405, Anchorage, AK 99511 (907)349-0100	PROJECT NUMBER:	



**1** NEW GEN#3 INSTALLATION ELEVATION  
MR3 1"=1'-0"

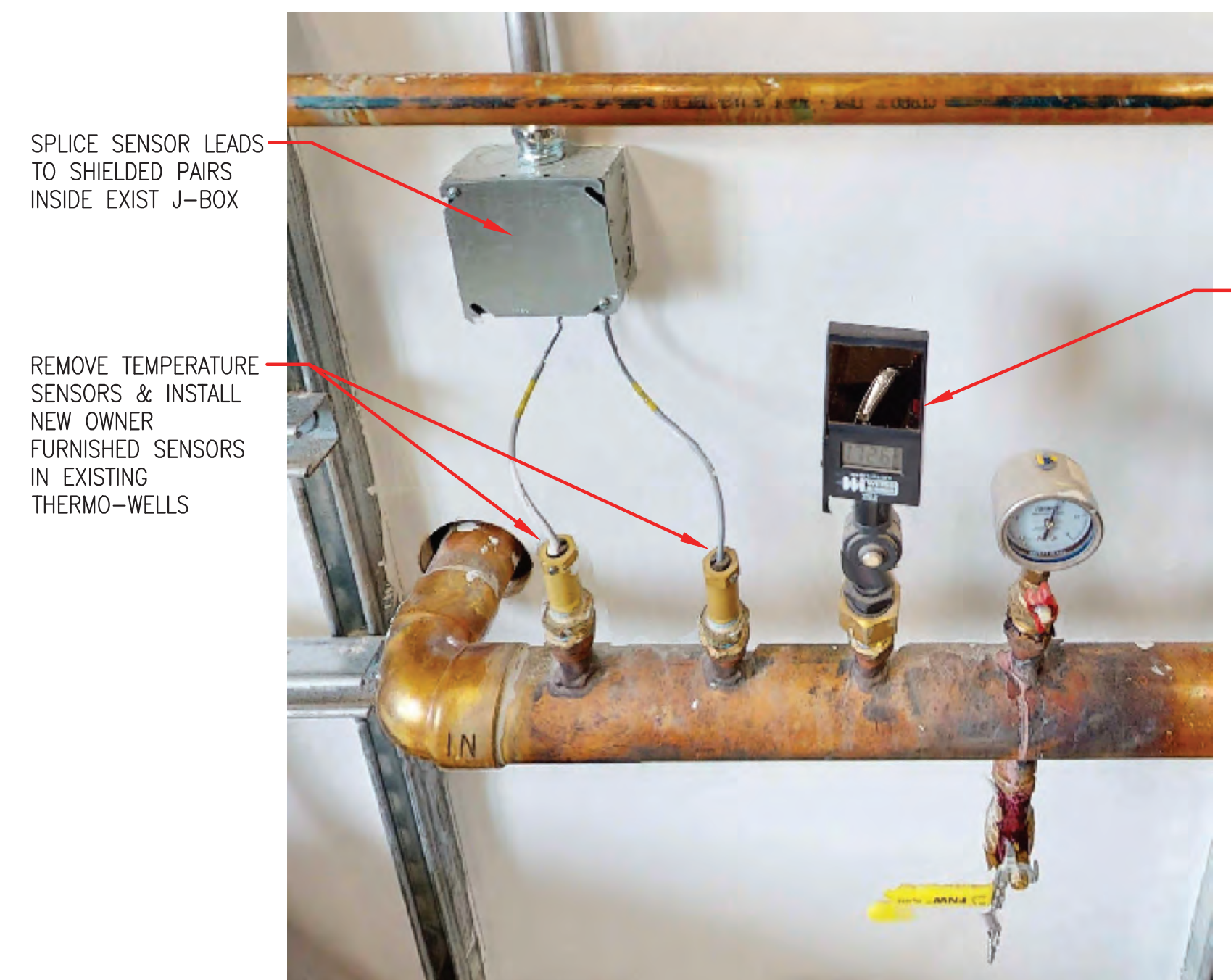


**2** EXISTING GEN#3 REFERENCE PHOTO  
MR3 1"=1'-0"



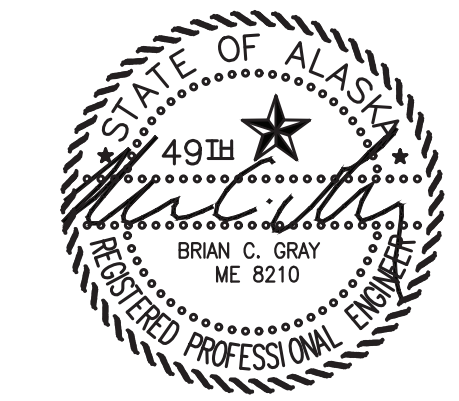
- NOTES:**
- 1) NEW SKIDS CONFIGURED DIFFERENT THAN THE ORIGINAL. BOLT ISOLATORS TO SKIDS, POSITION TURBO ELBOW DIRECTLY UNDER EXHAUST RISER, AND MARK LOCATIONS OF STUD ANCHORS. DRILL AND SET STUDS.
  - 2) AFTER INSTALLATION ADJUST SPRING VIBRATION ISOLATOR LEVELING BOLTS TO ACHIEVE A UNIFORM INSTALLATION HEIGHT WITH THE NEW GENERATOR EXHAUST CONNECTION APPROXIMATELY 1/8" BELOW THE EXISTING EXHAUST RISER CONNECTION TO ALLOW FOR THERMAL EXPANSION. NOTE THAT IF THE NEW GENERATOR IS TOO LOW, INSTALL 3"x3"x1/4" SQUARE PLATE WASHERS UNDER ISOLATORS. ADJUST NUTS ON STABILIZER BOLTS TO ACHIEVE A UNIFORM CLEARANCE OF APPROXIMATELY 1/8" THEN TIGHTEN LOCKING NUTS. VERIFY UNIT MOVES FREELY ON ISOLATORS

**3** GENERATOR VIBRATION ISOLATOR INSTALLATION  
MR3 NO SCALE



**4** TEMP SENSOR & DIGITAL THERMOMETER REFERENCE PHOTO  
MR3 NO SCALE

ISSUED FOR  
CONSTRUCTION  
OCTOBER 2023



PROJECT:	CIRCLE REPLACEMENT GENERATOR AND SWITCHGEAR INSTALLATION	
TITLE:	NEW GEN#3 INSTALLATION ELEVATION & DETAILS	
	DRAWN BY: JTD	SCALE: AS NOTED
	DESIGNED BY: BCG	DATE: 10/12/23
	FILE NAME: CIRPP MR1-3	SHEET: MR3 OF 3
P.O. 111405, Anchorage, AK 99511 (907)349-0100		PROJECT NUMBER:

**SCHEDULE OF ELECTRICAL DRAWINGS:**

- ER1 SCHEDULE OF DRAWINGS, NOTES, ELECTRICAL PLANS, & SPECIFICATIONS
- ER2 NEW GENERATOR SECTIONS & DETAILS
- ER3 NEW FEEDER INSTALLATION
- ER4 NEW FEEDER INSTALLATION

**PROJECT DESCRIPTION**

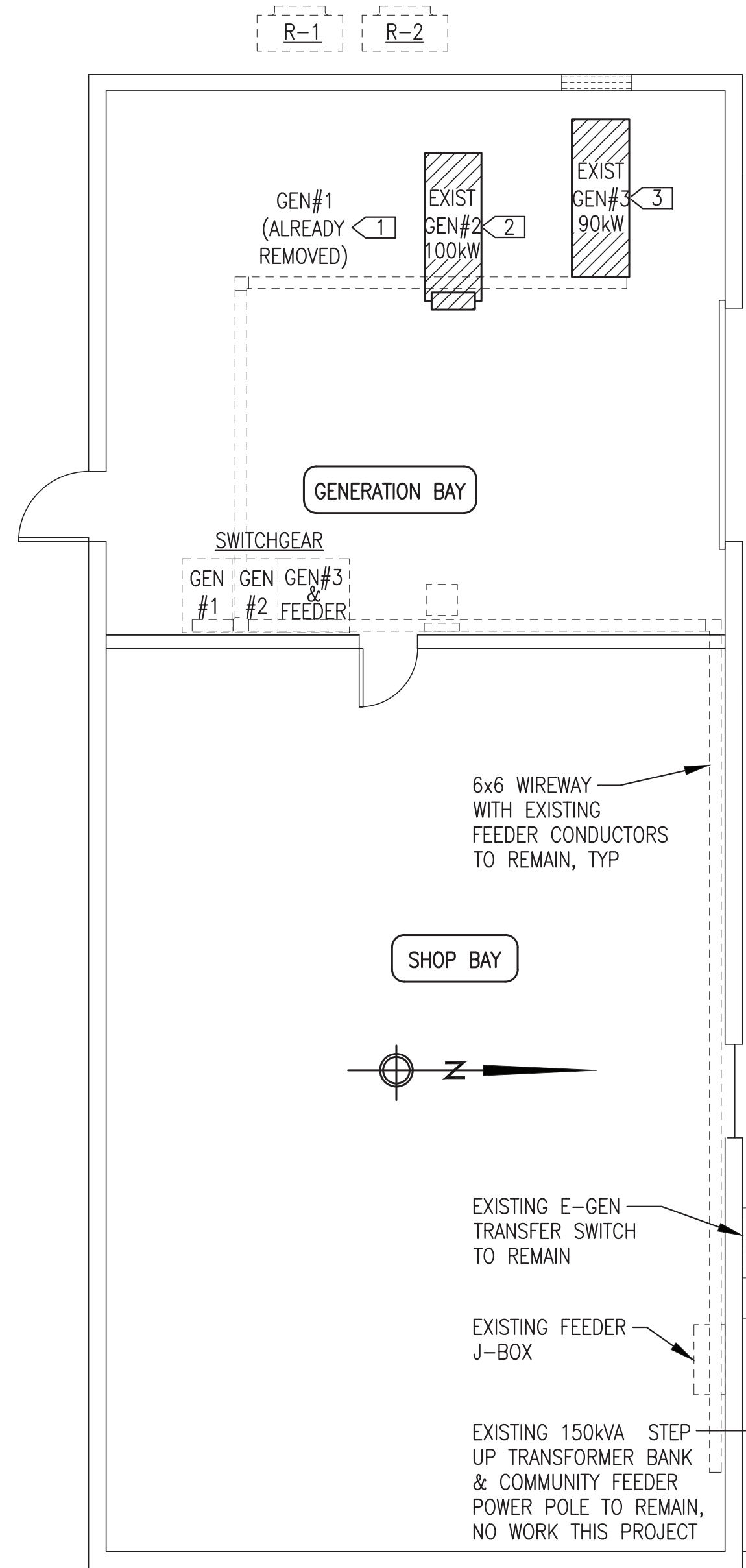
1. IN THE SPRING OF 2023 CIRCLE EXPERIENCED A SEVERE FLOOD THAT CAUSED EXTENSIVE DAMAGE THROUGHOUT THE COMMUNITY. THE ENGINE-GENERATORS AND THE ELECTRIC MOTORS ON THE RADIATORS WERE SUBMERGED AND ARE CONSIDERED DAMAGED BEYOND USE. THE LOWER PORTION OF THE SWITCHGEAR WAS SUBMERGED AND THE CIRCUIT BREAKERS, CONTACTORS, AND CURRENT TRANSFORMERS LOCATED IN THIS AREA ARE CONSIDERED NOT SUITABLE FOR USE. THE CONTROL DEVICES IN THE UPPER PORTION OF THE SWITCHGEAR AND MOST OF THE OTHER SYSTEMS IN THE PLANT APPEAR TO BE SUITABLE FOR USE.
2. THE PURPOSE OF THIS PROJECT IS TO INSTALL OWNER FURNISHED ENGINE-GENERATORS AND SWITCHGEAR COMPONENTS TO RETURN THE POWER PLANT TO THE FUNCTIONAL STATUS PRIOR TO THE FLOOD.
3. IN ADDITION, MINOR MODIFICATIONS WILL BE MADE TO THE PLANT MECHANICAL AND ELECTRICAL SYSTEMS AS INDICATED.

**ENGINE-GENERATOR SCHEDULE**

GENSET	DESCRIPTION
GEN #1	ENGINE - 148 HP, 100 EKW PRIME, JOHN DEERE 4045AFM85, TIER 3 MARINE. 24 VDC STARTING & CONTROL. GENERATOR - MINIMUM 125 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UC1274E.
GEN #2	ENGINE - 148 HP, 100 EKW PRIME, JOHN DEERE 4045AFM85, TIER 3 MARINE. 24 VDC STARTING & CONTROL. GENERATOR - MINIMUM 125 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UC1274E.
GEN #3	ENGINE - 129 HP, 90 EKW PRIME, JOHN DEERE 4045HFM285, TIER 3 MARINE. 12 VDC STARTING & CONTROL. GENERATOR - MINIMUM 125 KW CONTINUOUS AT 105°C RISE, NEWAGE/STAMFORD UC1274E.

**GENERAL NOTES:**

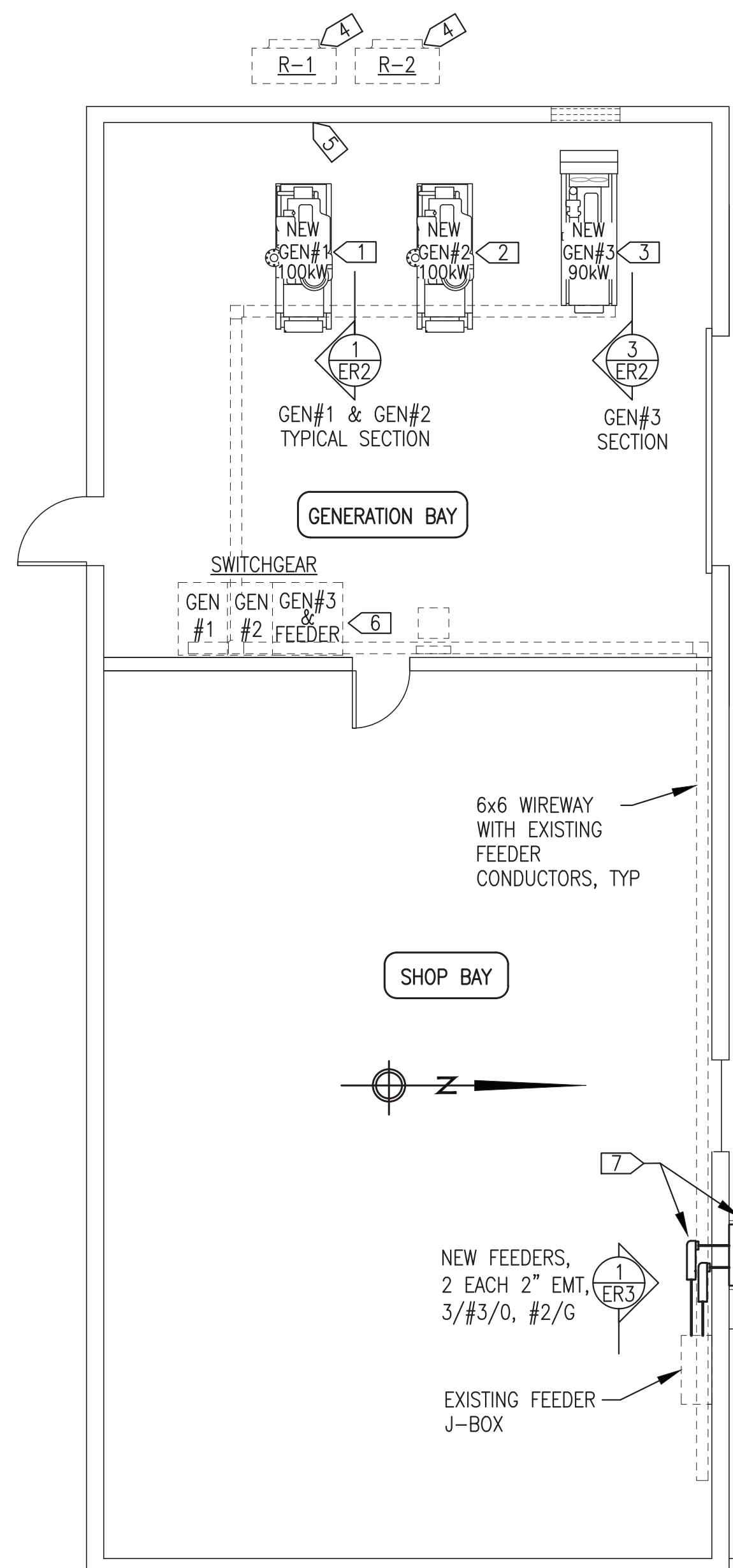
1. EXISTING EQUIPMENT TO REMAIN IN SERVICE SHOWN WITH LIGHT DASHED LINES.
2. EXISTING EQUIPMENT TO BE DEMOLISHED SHOWN HATCHED
3. NEW EQUIPMENT TO BE INSTALLED SHOWN WITH DARK SOLID LINES.
4. ALL EXISTING POWER, CONTROL, GROUND, AND BATTERY CONDUCTORS TO REMAIN FOR RECONNECTION TO NEW GENERATORS UNLESS SPECIFICALLY INDICATED OTHERWISE. TAKE CAUTION TO AVOID DAMAGING ANY EXISTING CONDUCTORS OR RACEWAY DURING DEMOLITION.



**1 DEMOLITION PLAN**  
ER1 3/16"=1'-0"

**DEMOLITION SPECIFIC NOTES:**

- 1 EXISTING GEN#1 ALREADY REMOVED FROM POWER PLANT. ALL EXISTING POWER, CONTROL, GROUND, AND BATTERY CONDUCTORS ARE COILED IN PLACE IN PREPARATION FOR RECONNECTION. EXISTING GEN CONTROL J-BOX WITH STRUT RACK HAS BEEN MOUNTED ON NEW GEN#1.
- 2 CAREFULLY DISCONNECT ALL EXISTING GEN#2 POWER, SHUTDOWN, GROUND, AND BATTERY CONDUCTORS AND COIL IN SAFE LOCATION IN PREPARATION FOR RECONNECTION. SALVAGE EXISTING GEN CONTROL J-BOX WITH EXISTING STRUT RACK AND MOUNTING HARDWARE FOR REINSTALLATION ON NEW GEN#2.
- 3 CAREFULLY DISCONNECT ALL EXISTING GEN#3 POWER, CONTROL, GROUND, AND BATTERY CONDUCTORS AND COIL IN SAFE LOCATION IN PREPARATION FOR RECONNECTION.
- 4 SEE NEW WORK
- 5 SEE NEW WORK
- 6 SEE NEW WORK
- 7 AFTER TESTING OF NEW GENERATORS AND REFURBISHED SWITCHGEAR, TAKE EGEN-2 OUT OF SERVICE AND DISCONNECT CONDUCTORS FROM TRANSFER SWITCH.



**2 NEW WORK PLAN**  
ER1 3/16"=1'-0"

**NEW WORK SPECIFIC NOTES:**

- 1 RECONNECT EXISTING RACEWAYS, POWER, CONTROL, GROUND, AND BATTERY CONDUCTORS TO NEW GEN#1. SEE SHEET ER2.
- 2 REINSTALL SALVAGED GEN CONTROL J-BOX WITH EXISTING STRUT RACK. RECONNECT EXISTING RACEWAYS, POWER, CONTROL, GROUND, AND BATTERY CONDUCTORS TO NEW GEN#2. SEE SHEET ER2.
- 3 RECONNECT EXISTING POWER, SHUTDOWN, GROUND, AND BATTERY CONDUCTORS AND RACEWAY TO NEW GEN#3. SEE SHEET ER2.
- 4 RECONNECT EXISTING POWER CONDUCTORS AND RACEWAYS TO NEW FAN MOTORS ON RADIATORS R-1 AND R-2.
- 5 RECONNECT EXISTING CONDUCTORS TO NEW OWNER FURNISHED RADIATOR TEMPERATURE SENSORS, SEE REFERENCE PHOTO 4/MR3.
- 6 CAREFULLY REMOVE EXISTING CIRCUIT BREAKERS, CONTACTORS, AND CURRENT TRANSFORMERS LOCATED IN THE LOWER PORTION OF THE SWITCHGEAR AND REINSTALL NEW OWNER FURNISHED COMPONENTS. SEE REDMARKED SWITCHGEAR DRAWINGS FOR DETAIL.
- 7 INSTALL NEW FEEDER FROM EXISTING INTERIOR J-BOX TO EXISTING EXTERIOR TRANSFER SWITCH, SEE SHEETS ER3 AND ER4.

**ELECTRICAL SPECIFICATIONS**

**\*\* GENERAL CONDITIONS \*\***

PERFORM ALL WORK IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE INCLUDING STATE OF ALASKA AMENDMENTS.

THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW ALL FEATURES OF THE REQUIRED WORK. PROVIDE ALL EQUIPMENT AND MATERIALS REQUIRED FOR A COMPLETE SYSTEM. VERIFY EXISTING FIELD CONDITIONS PRIOR TO STARTING CONSTRUCTION. IMMEDIATELY CONTACT THE ENGINEER FOR CLARIFICATION OF QUESTIONABLE ITEMS OR APPARENT CONFLICTS.

ALL EQUIPMENT AND MATERIALS SHOWN ARE NEW UNLESS SPECIFICALLY INDICATED AS EXISTING. WHERE ADDITIONAL OR REPLACEMENT ITEMS ARE REQUIRED, PROVIDE LIKE ITEMS BY THE SAME MANUFACTURER TO THE MAXIMUM EXTENT PRACTICAL. INSTALL ALL MATERIALS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND INSTRUCTIONS, UNLESS INDICATED OTHERWISE.

PROTECT ALL MATERIALS AND EQUIPMENT DURING THE ENTIRE DURATION OF CONSTRUCTION WORK AGAINST CONTAMINATION OR DAMAGE. REPLACE OR REPAIR TO ORIGINAL MANUFACTURED CONDITION ANY ITEMS DAMAGED DURING CONSTRUCTION. IMMEDIATELY REPORT TO THE ENGINEER ANY ITEMS FOUND DAMAGED PRIOR TO COMMENCING CONSTRUCTION.

PERFORM WORK WITH SKILLED CRAFTSMEN SPECIALIZING IN SAID WORK. INSTALL ALL MATERIALS IN A NEAT, ORDERLY, AND SECURE FASHION, AS REQUIRED BY THESE SPECIFICATIONS AND COMMONLY RECOGNIZED STANDARDS OF GOOD WORKMANSHIP.

DO NOT CUT, DRILL, OR NOTCH STRUCTURAL MEMBERS UNLESS SPECIFICALLY APPROVED BY THE ENGINEER. MINIMIZE PENETRATIONS AND DISRUPTION OF BUILDING FEATURES. WHERE PREVIOUSLY COMPLETED BUILDING SURFACES OR OTHER FEATURES MUST BE CUT, PENETRATED, OR OTHERWISE ALTERED, SUCH WORK SHALL BE CAREFULLY LAID OUT AND PERFORMED, AND PATCHED TO ORIGINAL CONDITION. SEAL ALL EXTERIOR FLOOR AND WALL PENETRATIONS AS INDICATED.

PROVIDE ONE SET OF DRAWINGS CLEARLY MARKED UP WITH ALL AS-BUILT INFORMATION TO THE ENGINEER WITHIN TWO WEEKS OF COMPLETION.

**\*\* SPECIAL CONDITIONS \*\***

ENSURE THAT APPROPRIATE SAFETY MEASURES ARE IMPLEMENTED AND THAT ALL WORKERS ARE AWARE OF THE POTENTIAL HAZARDS FROM ELECTRICAL SHOCK, BURN, ROTATING FANS, PULLEYS, BELTS, HOT MANIFOLDS, NOISE, ETC. ASSOCIATED WITH WORKING NEAR POWER GENERATION AND CONTROL EQUIPMENT.

**\*\* SUPPORT \*\***

INDEPENDENTLY SUPPORT EACH DEVICE AND RACEWAY FROM STRUCTURES INDICATED AS EXISTING. WHERE ADDITIONAL OR REPLACEMENT ITEMS ARE REQUIRED, PROVIDE LIKE ITEMS BY THE SAME MANUFACTURER TO THE MAXIMUM EXTENT PRACTICAL. ALL STRUT, BRACKETS, FITTINGS, PIPE CLAMPS, FASTENERS, AND ACCESSORIES SHALL BE GALVANIZED OR ZINC PLATED.

**\*\* RACEWAYS \*\***

INTERIOR - ALL INTERIOR LOCATIONS SHALL BE ELECTRICAL METALLIC TUBING (EMT) EXCEPT WHERE SPECIFICALLY INDICATED AS WIREWAY. WIREWAY SHALL BE NEMA 1 WITH HINGED COVER AND MANUFACTURER PROVIDED CONNECTORS AND FITTINGS.

EXTERIOR - ALL EXTERIOR ABOVE GRADE LOCATIONS SHALL BE GALVANIZED RIGID CONDUIT (GRC). CLEAN AND DE-GREASE THREADS AFTER CUTTING & SPRAY WITH COLD GALV PRIOR TO ASSEMBLY.

FLEX - PROVIDE LIQUID TIGHT OIL RESISTANT FLEXIBLE CONDUIT WHERE INDICATED, AS REQUIRED TO ACCOMMODATE MOVEMENT, AND FOR FINAL CONNECTIONS TO EQUIPMENT REQUIRING SERVICE.

TERMINATION - CONDUITS SHALL BE TERMINATED WITH LOCKNUTS INSIDE AND OUT WITH A METALLIC CONDUIT BUSHING, HUB, OR BOX CONNECTOR INSIDE THE ENCLOSURE.

**\*\* CONDUCTORS \*\***

GENERAL USE CONDUCTORS AND 240V FEEDER TO TRANSFER SWITCH - CLASS B CONCENTRIC STRANDED, SOFT DRAWN COPPER. TYPE XHHW2 INSULATION, 600V AND 90C RATED.

COLOR CODING - UNLESS SPECIFICALLY INDICATED OTHERWISE CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:  
120 & 240 VOLT POWER CONDUCTORS  
PHASE A - BLACK  
PHASE B - RED  
PHASE C - BLUE  
NEUTRAL - WHITE

FOR NO. 6 AWG AND SMALLER CONDUCTORS COLOR CODING SHALL BE PROVIDED BY USING CONDUCTORS WITH CONTINUOUS COLOR EMBEDDED IN THE INSULATION. FOR ALL CONDUCTORS LARGER THAN NO. 6 COLOR CODING SHALL BE PROVIDED BY:  
A) CONTINUOUS COLOR EMBEDDED IN THE INSULATION; OR  
B) BLACK CABLE WITH SCOTCH 35 OR APPROVED EQUAL MARKING (PHASE) TAPE AT EVERY ACCESSIBLE LOCATION A MINIMUM 3" LONG SECTION OF CONDUCTOR SHALL BE SPIRAL WRAPPED. NOTE THAT PHASE TAPE NOT BE USED ON COLORED CABLE, BLACK CABLE ONLY

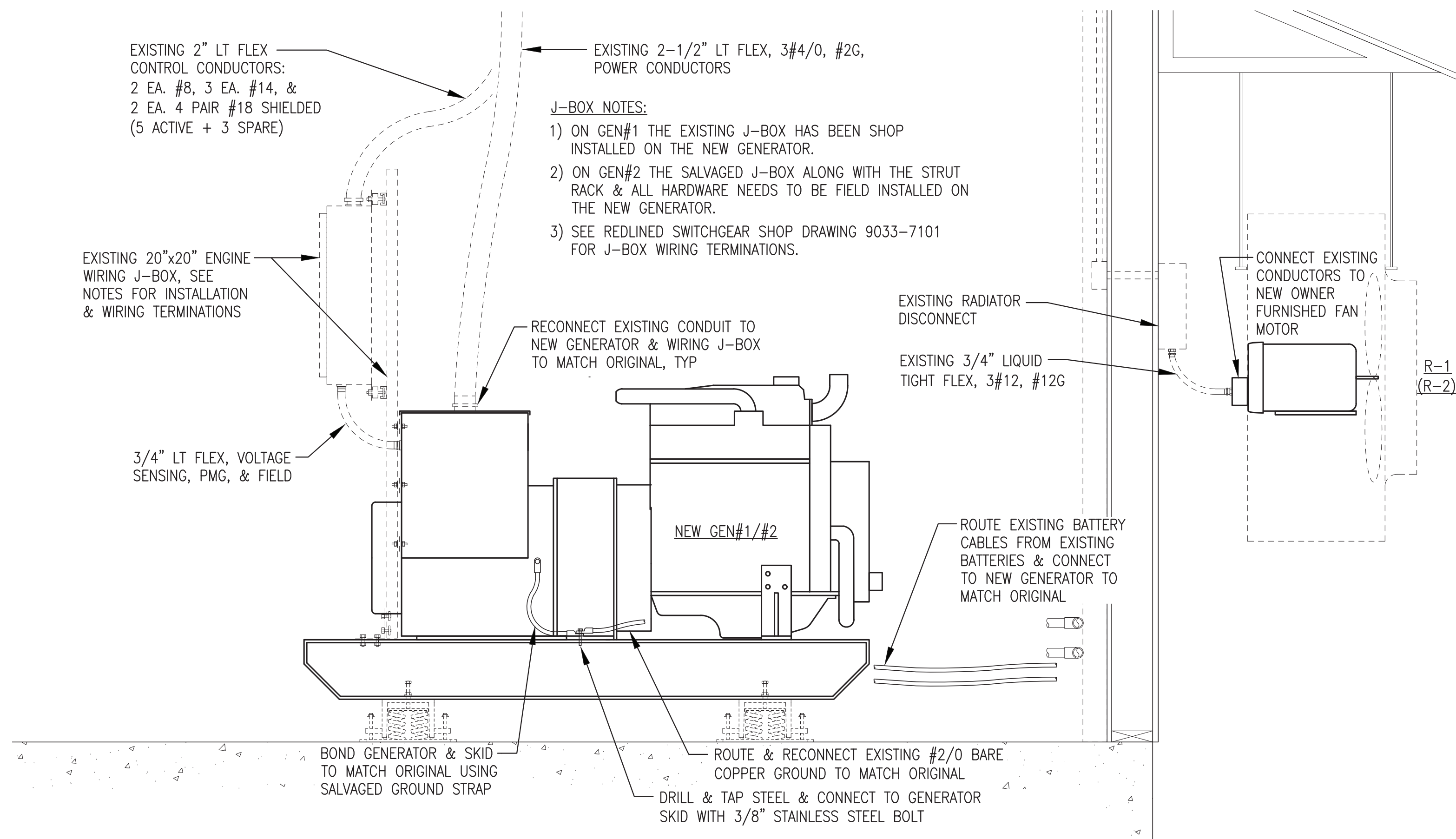
GROUNDING - PROVIDE A SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH RACEWAY. DO NOT USE THE CONDUIT AS AN EQUIPMENT GROUNDING CONDUCTOR. EQUIPMENT GROUNDING CONDUCTORS SHALL BE OF THE SAME TYPE AS THE PHASE CONDUCTORS AND SHALL BE SIZED AS INDICATED ON THE DRAWINGS. CONDUCTORS NOT INDICATED SHALL BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

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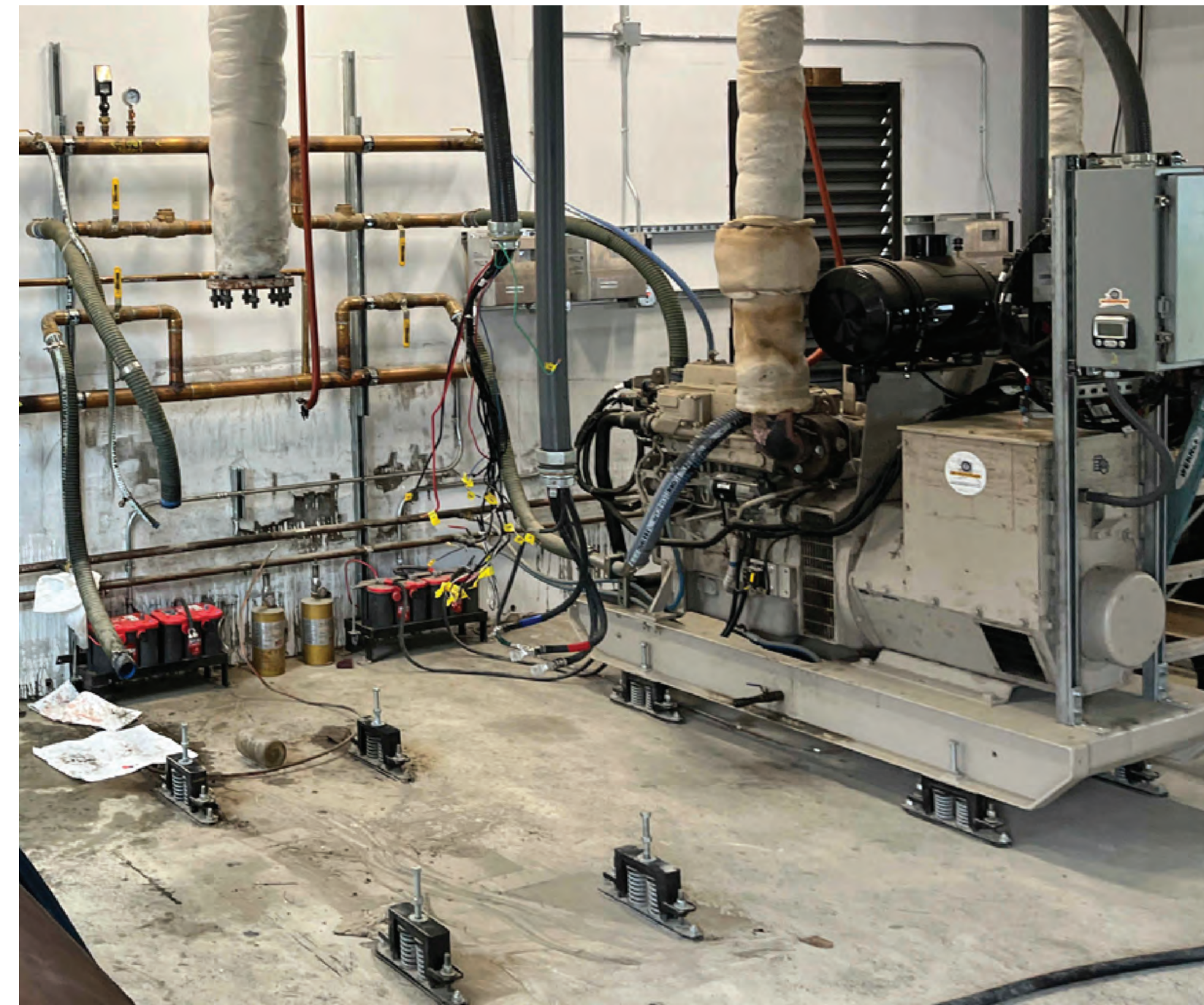


PROJECT: CIRCLE REPLACEMENT GENERATOR AND SWITCHGEAR INSTALLATION	
TITLE: SCHEDULE OF DRAWINGS, NOTES, ELECTRICAL PLANS, & SPECIFICATIONS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: CWW/BCG	DATE: 10/12/23
FILE NAME: CIRPP ER1-4	SHEET: ER1 OF 4
PROJECT NUMBER: P.O. 111405, Anchorage, AK 99511 (907)349-0100	

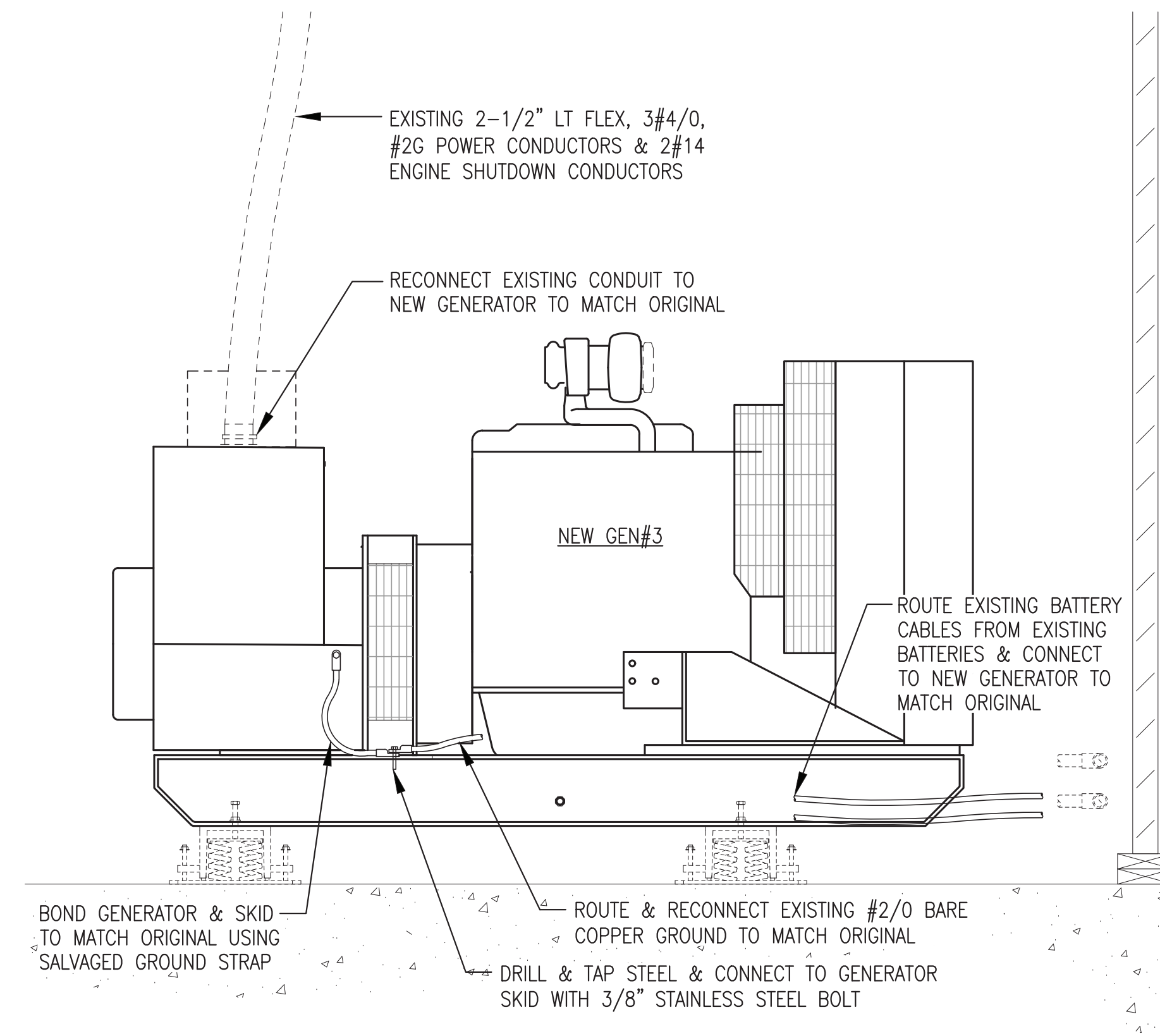




1 NEW GEN#1 & GEN#2 INSTALLATION ELEVATION  
ER2 1"=1'-0"



2 EXISTING GEN#1 (REMOVED) & GEN#2 (IN PLACE) REFERENCE PHOTO  
ER2 1"=1'-0"

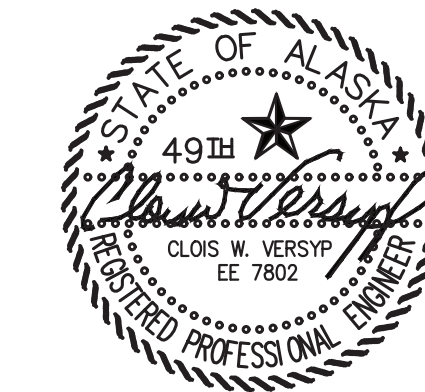


3 NEW GEN#3 INSTALLATION ELEVATION  
ER2 1"=1'-0"



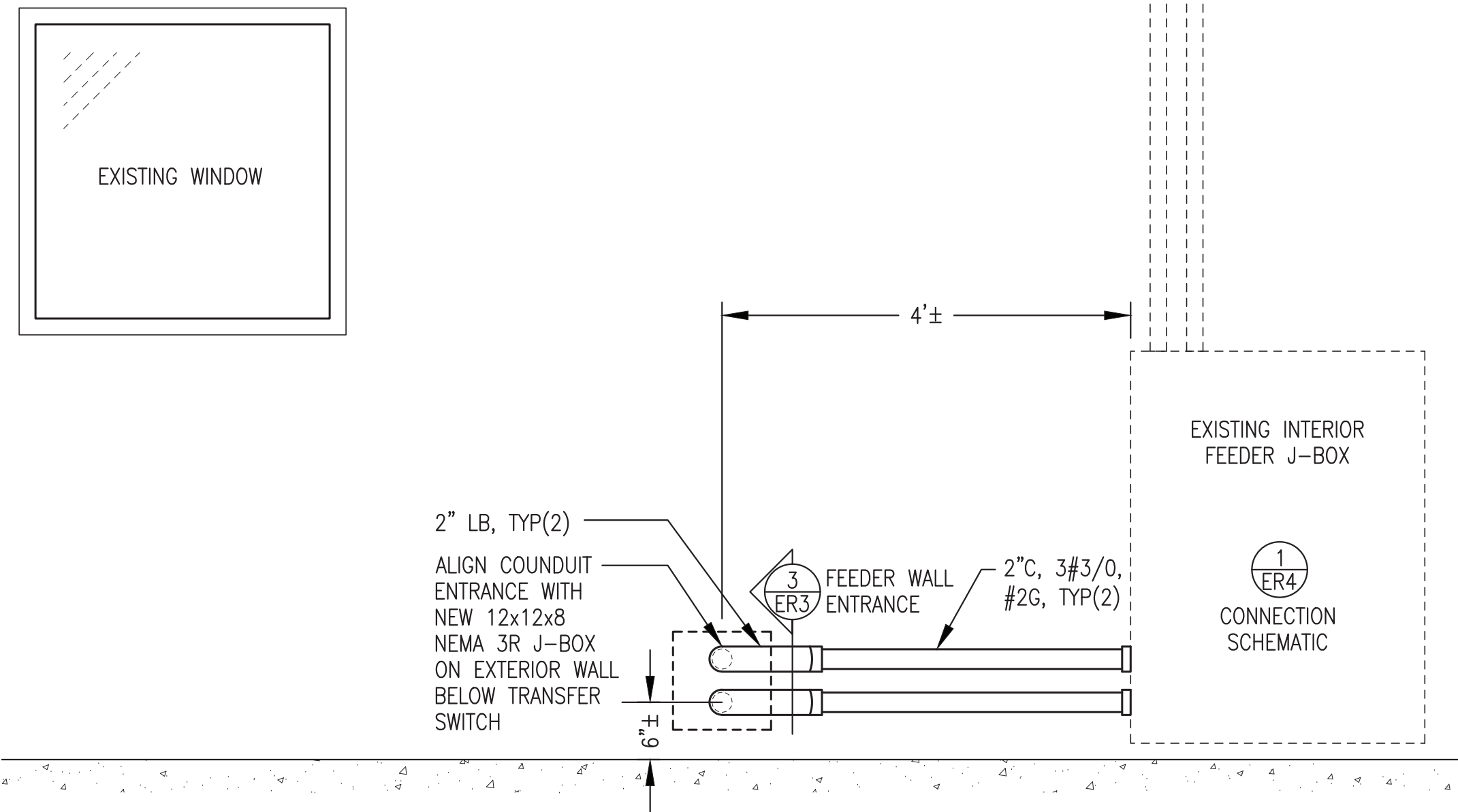
4 EXISTING GEN#3 REFERENCE PHOTO  
ER2 1"=1'-0"

ISSUED FOR  
CONSTRUCTION  
OCTOBER 2023



PROJECT:	CIRCLE REPLACEMENT GENERATOR AND SWITCHGEAR INSTALLATION	
TITLE:	NEW GENERATOR SECTIONS & DETAILS	
DRAWN BY: JTD	DESIGNED BY: CWV/BCG	SCALE: AS NOTED
FILE NAME: CIRPP ER1-4	PROJECT NUMBER:	SHEET: ER2 OF 4
P.O. 111405, Anchorage, AK 99511 (907)349-0100		

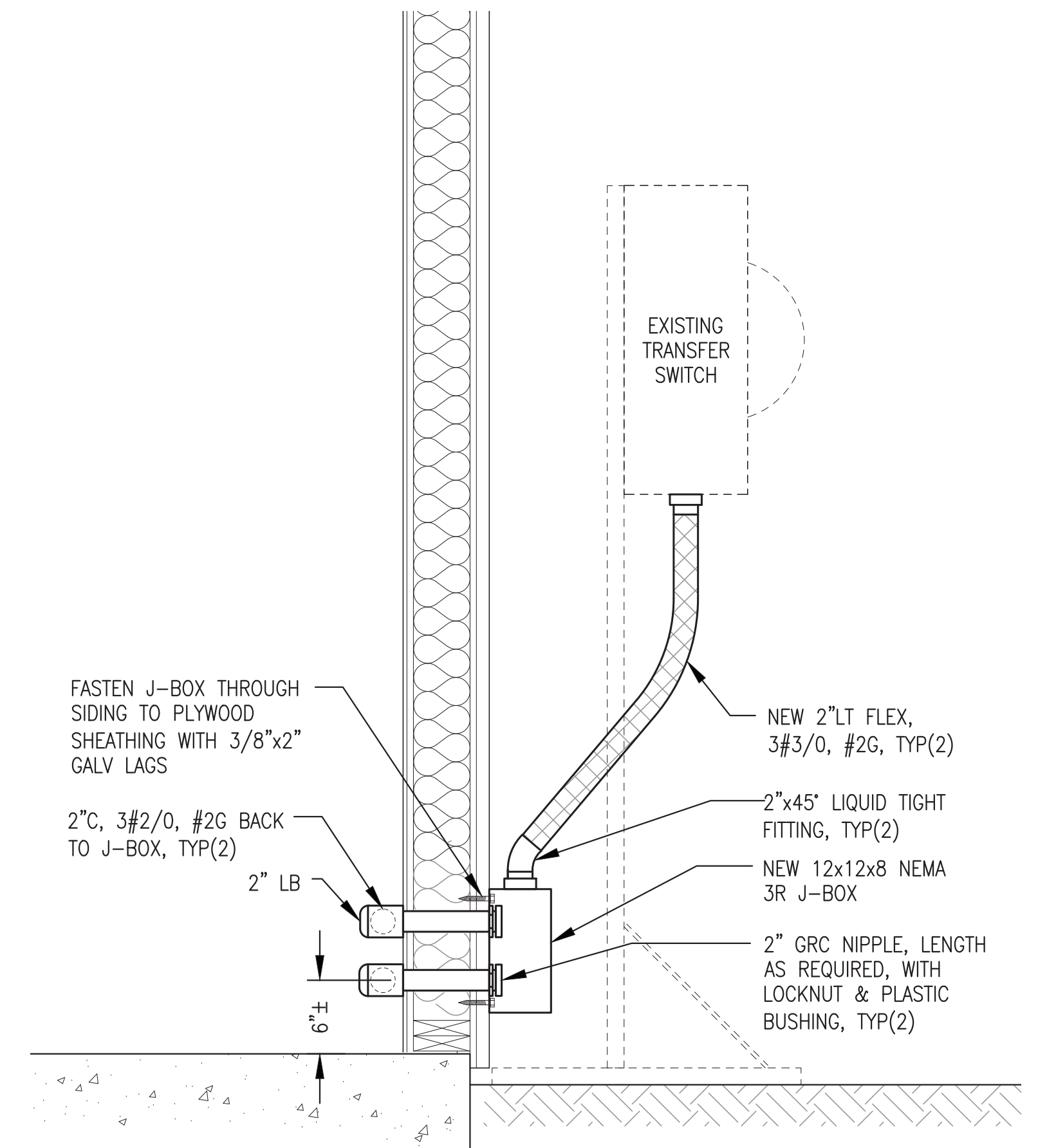




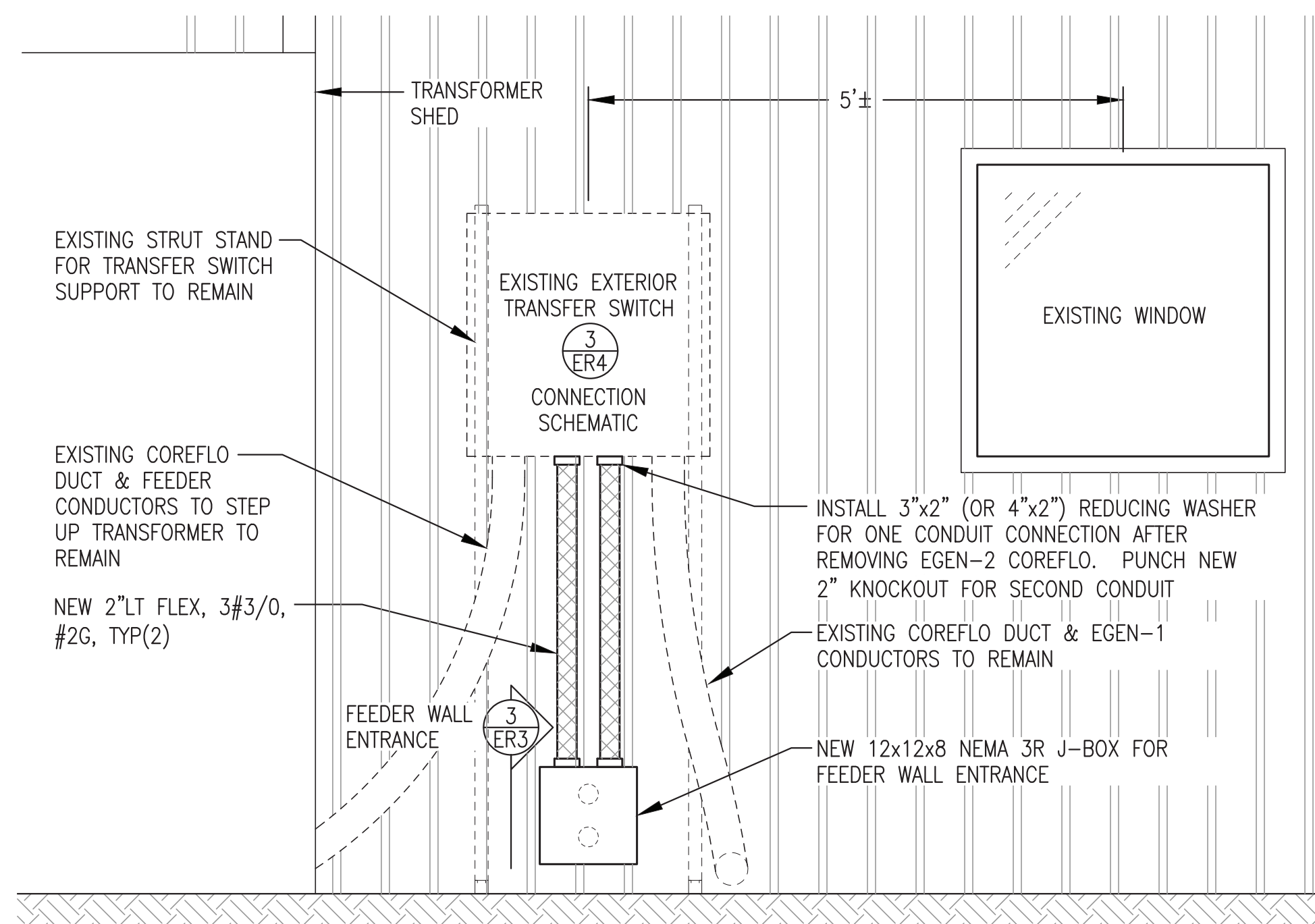
1 INTERIOR WALL ELEVATION AT J-BOX  
ER3 3/4"=1'-0"



2 J-BOX LOCATION REFERENCE PHOTO  
ER3 3/4"=1'-0"



3 NEW FEEDER WALL ENTRANCE  
ER3 1/2"=1'-0"

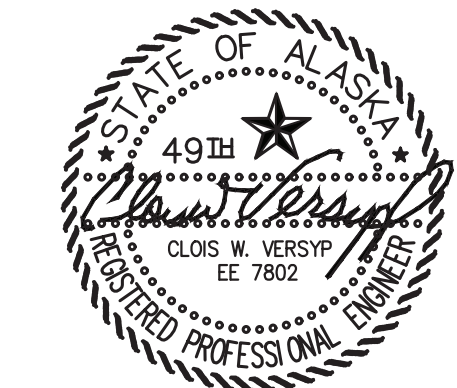


4 EXTERIOR WALL ELEVATION AT TRANSFER SWITCH  
ER3 NO SCALE



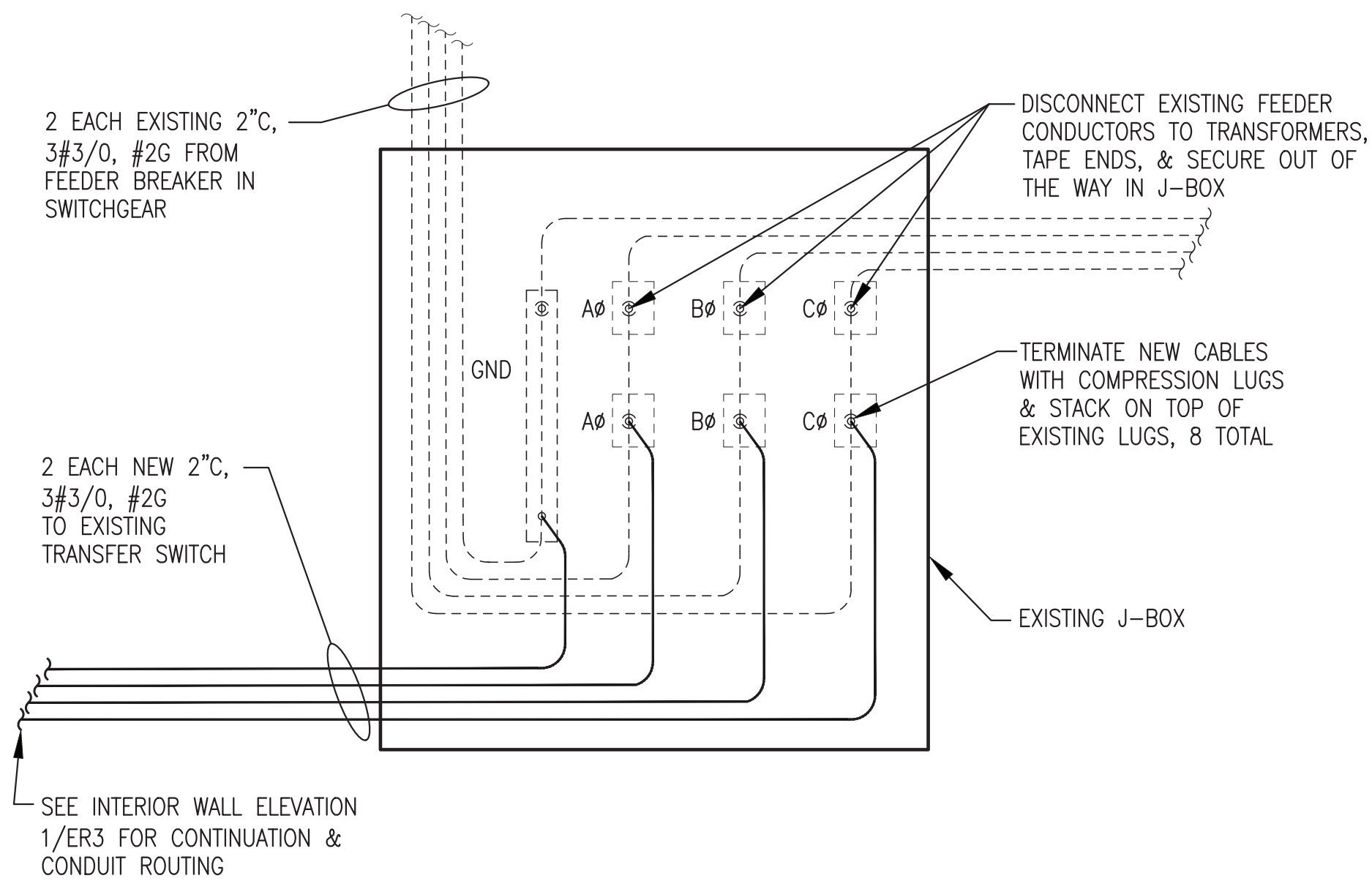
5 TRANSFER SWITCH LOCATION REFERENCE PHOTO  
ER3 3/4"=1'-0"

ISSUED FOR  
CONSTRUCTION  
OCTOBER 2023



PROJECT:	CIRCLE REPLACEMENT GENERATOR AND SWITCHGEAR INSTALLATION	
TITLE:	NEW FEEDER INSTALLATION	
DRAWN BY:	JTD	SCALE: AS NOTED
DESIGNED BY:	OWV/BCG	DATE: 10/12/23
FILE NAME:	CIRPP ER1-4	SHEET:
PROJECT NUMBER:		ER3 OF 4

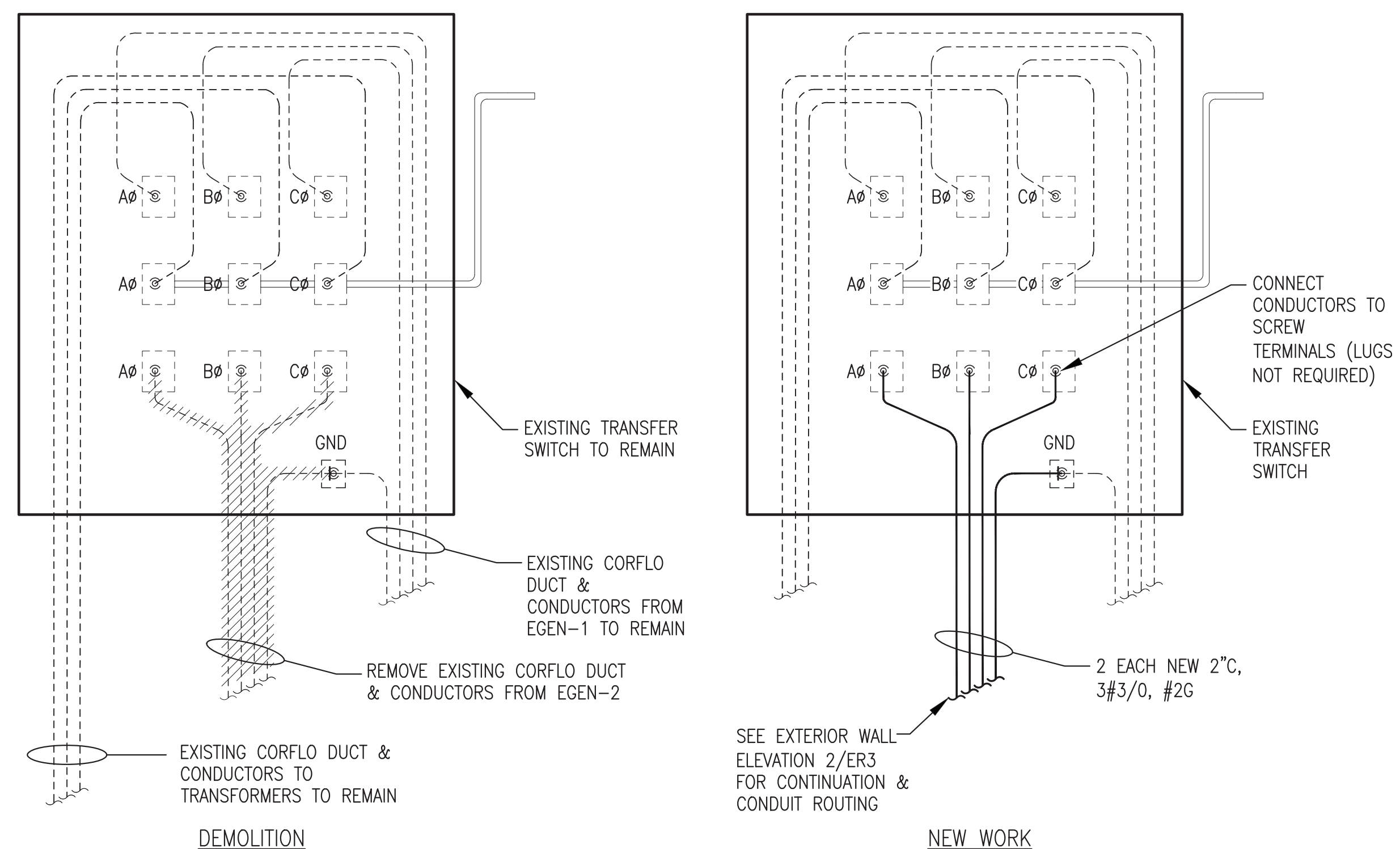
**Gray Stassel Engineering, Inc.**  
P.O. 111405, Anchorage, AK 99511 (907)349-0100



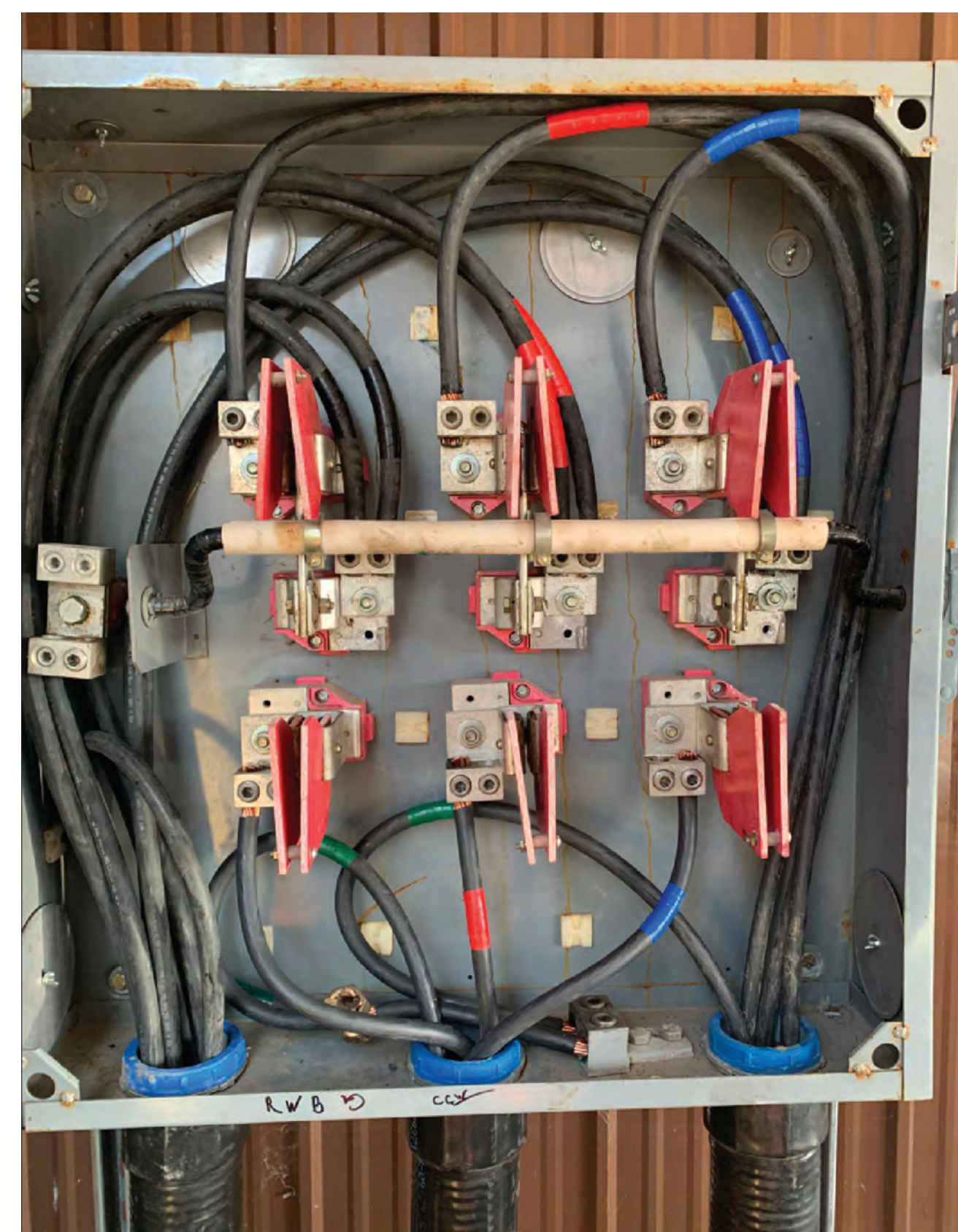
1 EXISTING INTERIOR FEEDER J-BOX CONNECTION SCHEMATIC  
ER4 NO SCALE



2 EXISTING FEEDER J-BOX TERMINATION PHOTO  
ER4 NO SCALE



3 EXISTING TRANSFER SWITCH CONNECTION SCHEMATIC  
ER4 NO SCALE

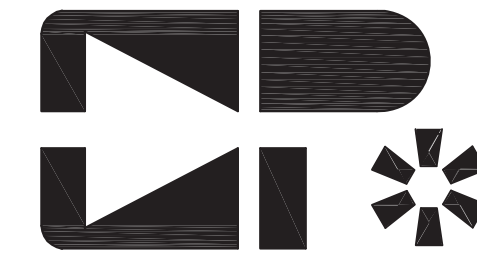


4 EXISTING TRANSFER SWITCH INTERIOR PHOTO  
ER4 NO SCALE

ISSUED FOR  
CONSTRUCTION  
OCTOBER 2023



PROJECT:	CIRCLE REPLACEMENT GENERATOR AND SWITCHGEAR INSTALLATION	
TITLE:	NEW FEEDER INSTALLATION	
DRAWN BY: JTD	DESIGNED BY: CWM/BCG	SCALE: AS NOTED
FILE NAME: CIRPP ER1-4	PROJECT NUMBER:	DATE: 10/12/23
P.O. 111405, Anchorage, AK 99511 (907)349-0100	Gray Stassel Engineering, Inc.	SHEET: <b>ER4</b> OF 4

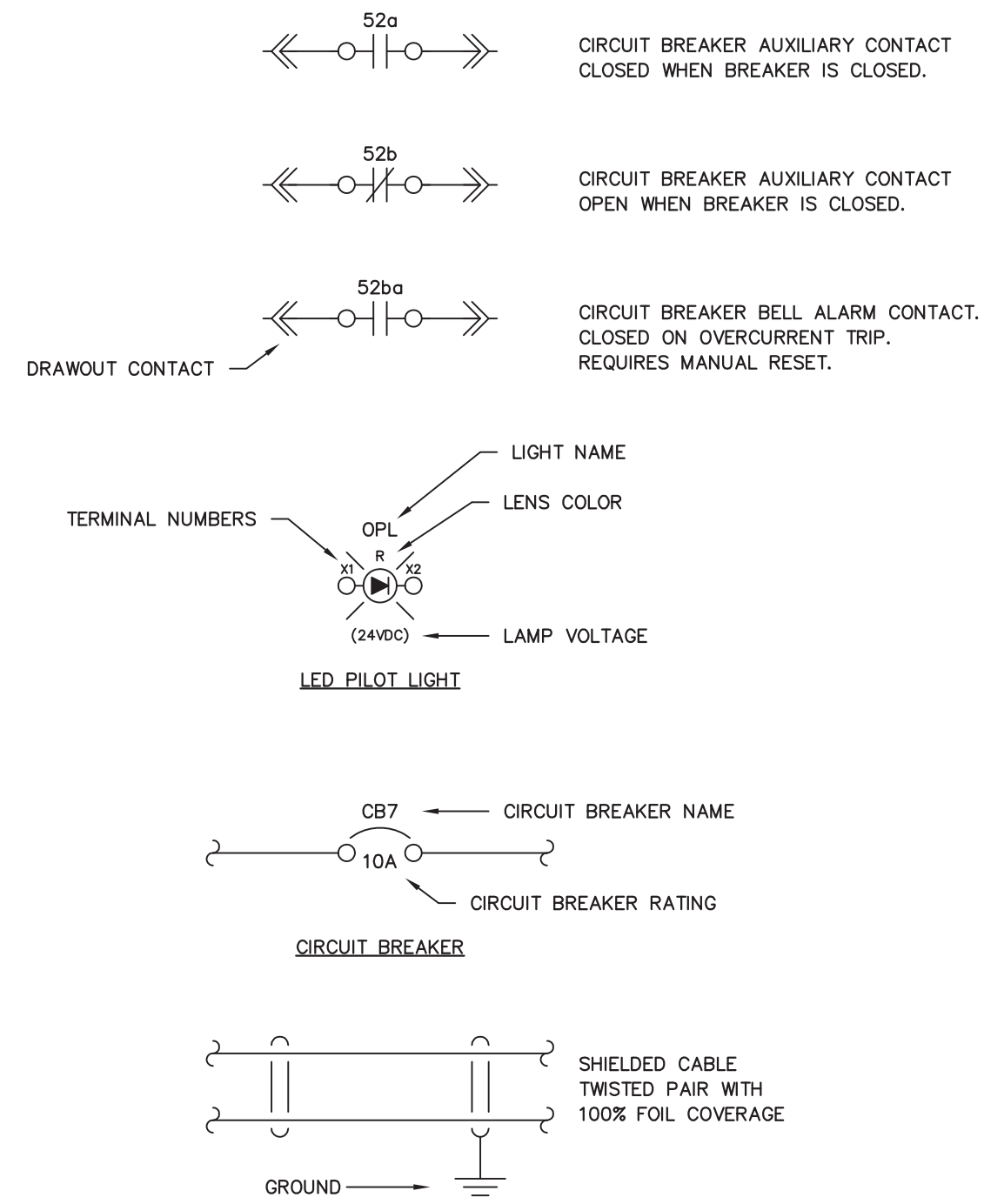
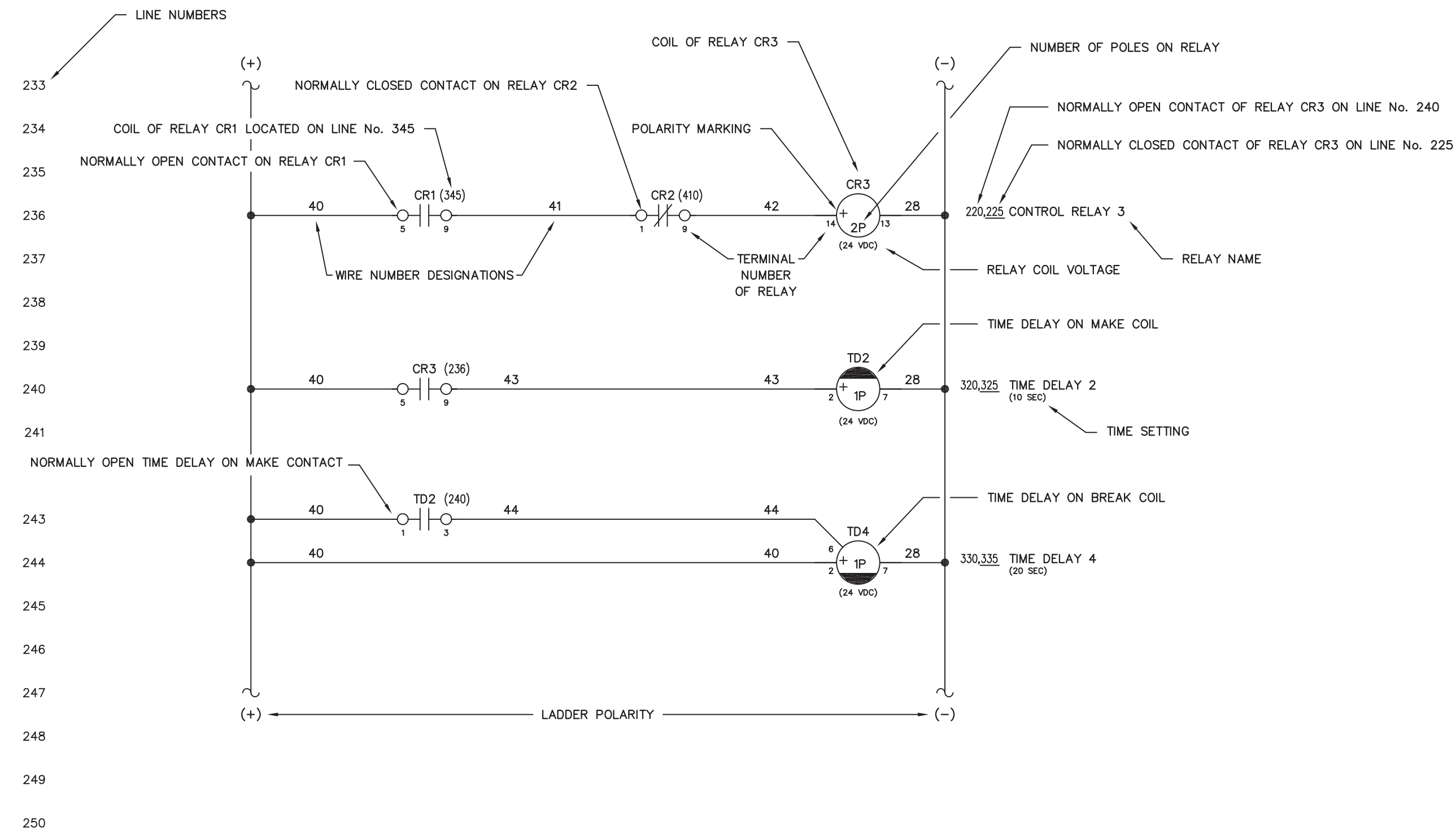


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BOTHELL, WASHINGTON USA  
(425)-485-1778 www.controlledpowerinc.com

**CIRCLE POWER PLANT UPGRADE  
CONTROLLED POWER, INC. JOB No. 9033  
STURGEON ELECTRIC PURCHASE ORDER No. 54540**

<u>DRAWING No.</u>	<u>DRAWING TITLE</u>
9033-2101-D	COVER SHEET
9033-3101-D	SCHEMATIC LEGEND & NOTES
9033-4101-D	GENERATOR SWITCHGEAR ELEVATION VIEW, OUTLINE DIAGRAM
9033-5101-D	GENERATOR SWITCHGEAR SINGLE LINE, SCHEMATIC DIAGRAM
9033-5201-D	GENERATOR 1 AC THREE LINE, SCHEMATIC DIAGRAM
9033-5202-D	GENERATOR 2 AC THREE LINE, SCHEMATIC DIAGRAM
9033-5203-D	GENERATOR 3 AC THREE LINE, SCHEMATIC DIAGRAM
9033-5204-D	MASTER AC THREE LINE, SCHEMATIC DIAGRAM
9033-5301-D	GENERATOR 1 DC CONTROL, SCHEMATIC DIAGRAM
9033-5302-D	GENERATOR 2 DC CONTROL, SCHEMATIC DIAGRAM
9033-5303-D	GENERATOR 3 DC CONTROL, SCHEMATIC DIAGRAM
9033-5304-D	MASTER DC CONTROL, SCHEMATIC DIAGRAM
9033-5305-D	LIGHTING CONTROL, SCHEMATIC DIAGRAM
9033-5306-D	R1 & R2 CONTROL, SCHEMATIC DIAGRAM
9033-5601-D	COMMUNICATION NETWORK, SCHEMATIC DIAGRAM
9033-5602-D	COMMUNICATION NETWORK, SCHEMATIC DIAGRAM
9033-6101-D	CONTROL SWITCH TARGET DIAGRAM
9033-6201-D	NAMEPLATE ENGRAVING SCHEDULE, FABRICATION DIAGRAM
9033-6202-D	ANNUNCIATOR WINDOWS, FABRICATION DIAGRAM
9033-7101-D	INTERCONNECTION DIAGRAM

**NOTE: THESE SHOP DRAWINGS SHOW  
THE ORIGINAL INSTALLATION.  
COMPONENTS THAT ARE TO BE  
CHANGED ARE NOTED WITH RED  
REVISION CLOUDS ON THE PAGES  
THAT FOLLOW.**



**NOTES:**

1. SCHEMATIC IS SHOWN AS FOLLOWS:
  - ALL AC AND DC POWER REMOVED.
  - ALL RELAY CONTACTS DE-ENERGIZED.
  - ALL CIRCUIT BREAKERS IN THE OPEN/RESET POSITION.
  - ALL MODE SWITCHES IN THE "OFF" POSITION.
  - ALL EMERGENCY STOP SWITCHES IN THE "NORMAL" POSITION
  - ALL PRESSURE SWITCHES SHOWN WITHOUT PRESSURE PRESENT.
  - ALL LEVEL SWITCHES SHOWN WITHOUT FLUID PRESENT.
  - ALL TEMPERATURE SWITCHES SHOWN AT AMBIENT.
2. ⊙ INDICATES INTERCONNECT TERMINALS IN GENERATOR CONTROL SECTION.
3. ⊙ INDICATES FIELD TERMINALS IN GENERATOR CONTROL SECTION.
4. ⊙ INDICATES TERMINALS AT ENGINE/GENERATOR.
5. ⊙ INDICATES INTERCONNECT TERMINALS IN MASTER SECTION.
6. ⊙ INDICATES FIELD TERMINALS IN MASTER SECTION.
7. ⊙ INDICATES INTERCONNECT TERMINALS IN FEEDER/VFD SECTION.
8. ⊙ INDICATES FIELD TERMINALS IN FEEDER/VFD SECTION.
9. — INDICATES FIELD WIRING BY OTHERS.
10. SHIELDED WIRING TO BE No. 14 AWG, 600 VOLT, TYPE SIS EXCEPT AS NOTED.
11. ALL DIODES ARE 1N4007 EXCEPT AS NOTED.
12. ⊙ INDICATES LOWER SECTION TIE POINT TERMINAL BLOCK.

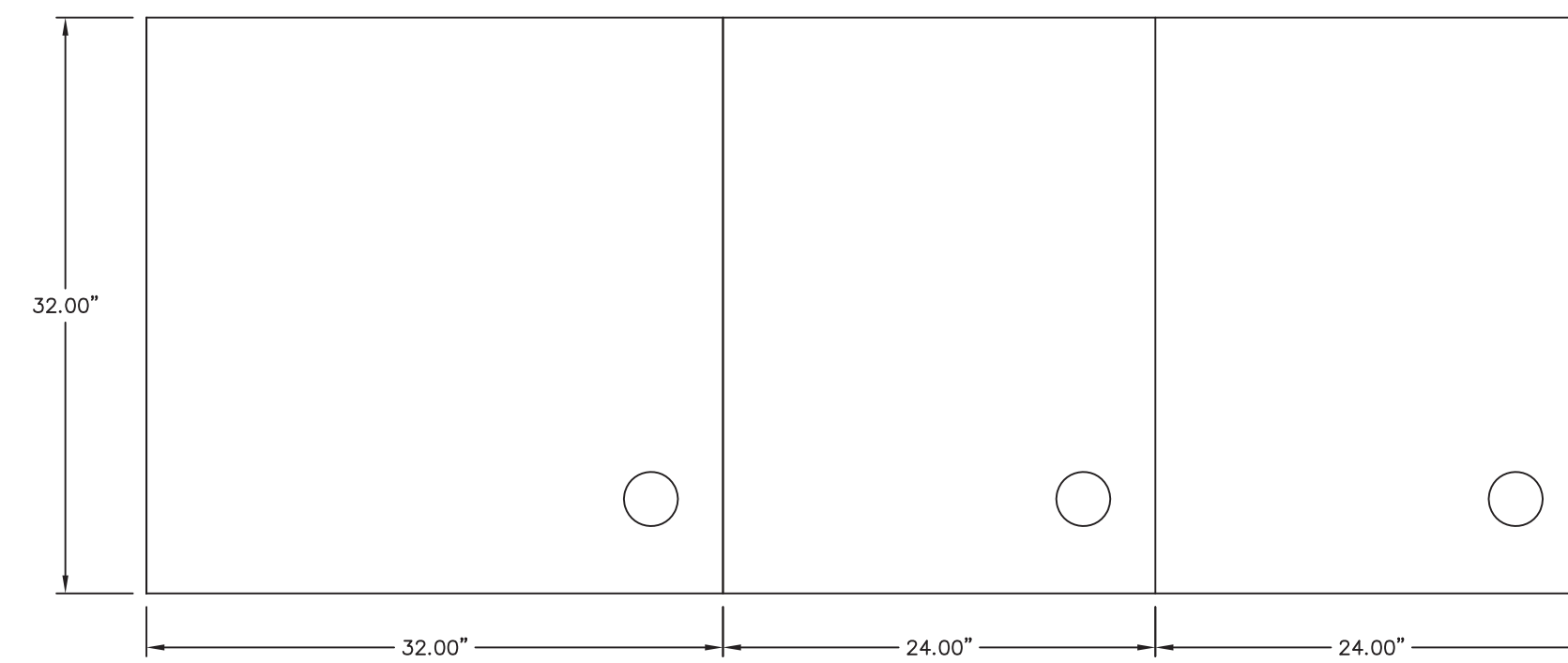
REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540			CONTROLLED POWER JOB No. 9033
TITLE: SCHEMATIC LEGEND & NOTES			
SCALE: NONE	DATE: 05/07/20	DWN. BY: GJG	
DWG. No: 9033-3101-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

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https://sturgeonelectric.com

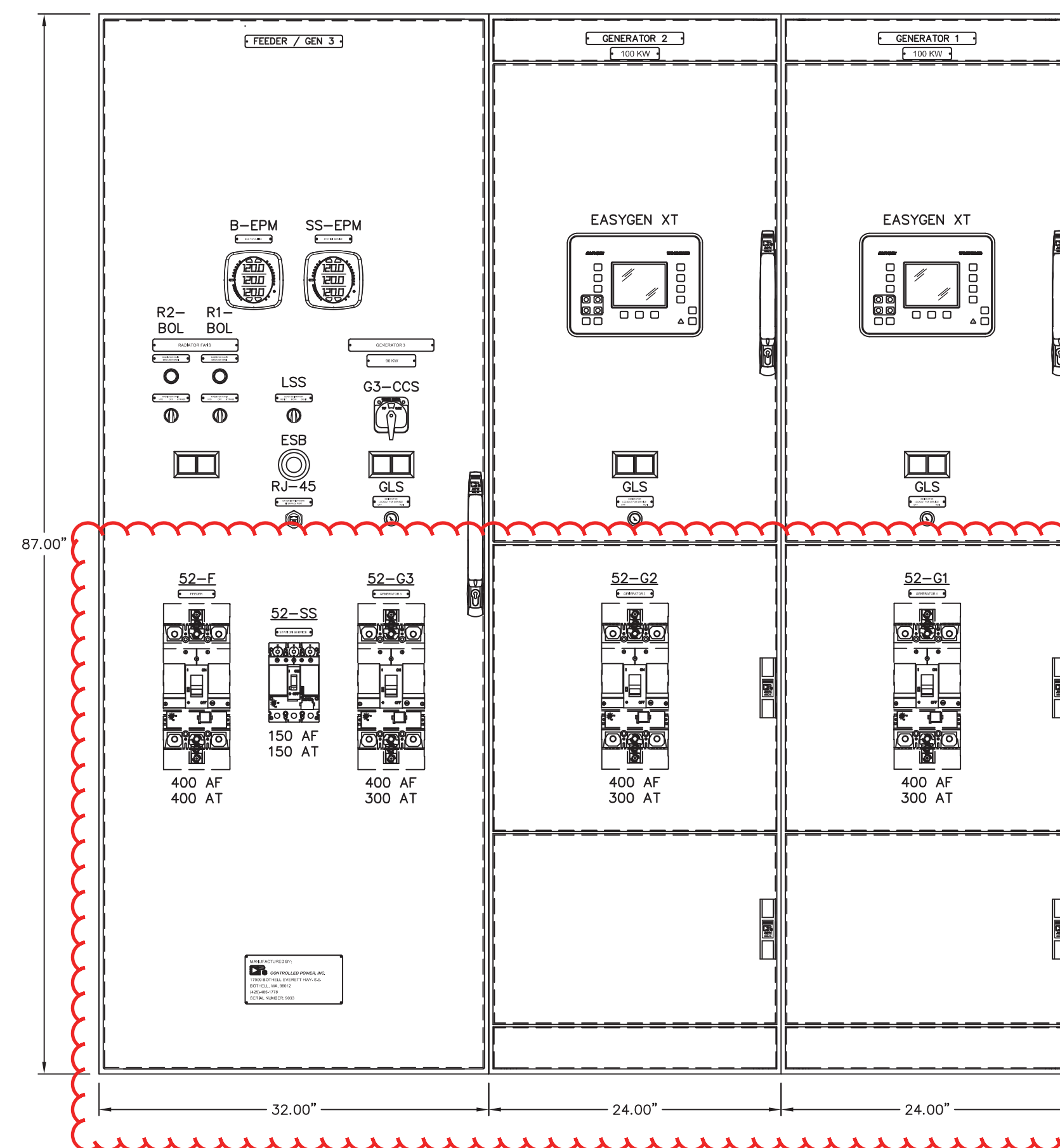
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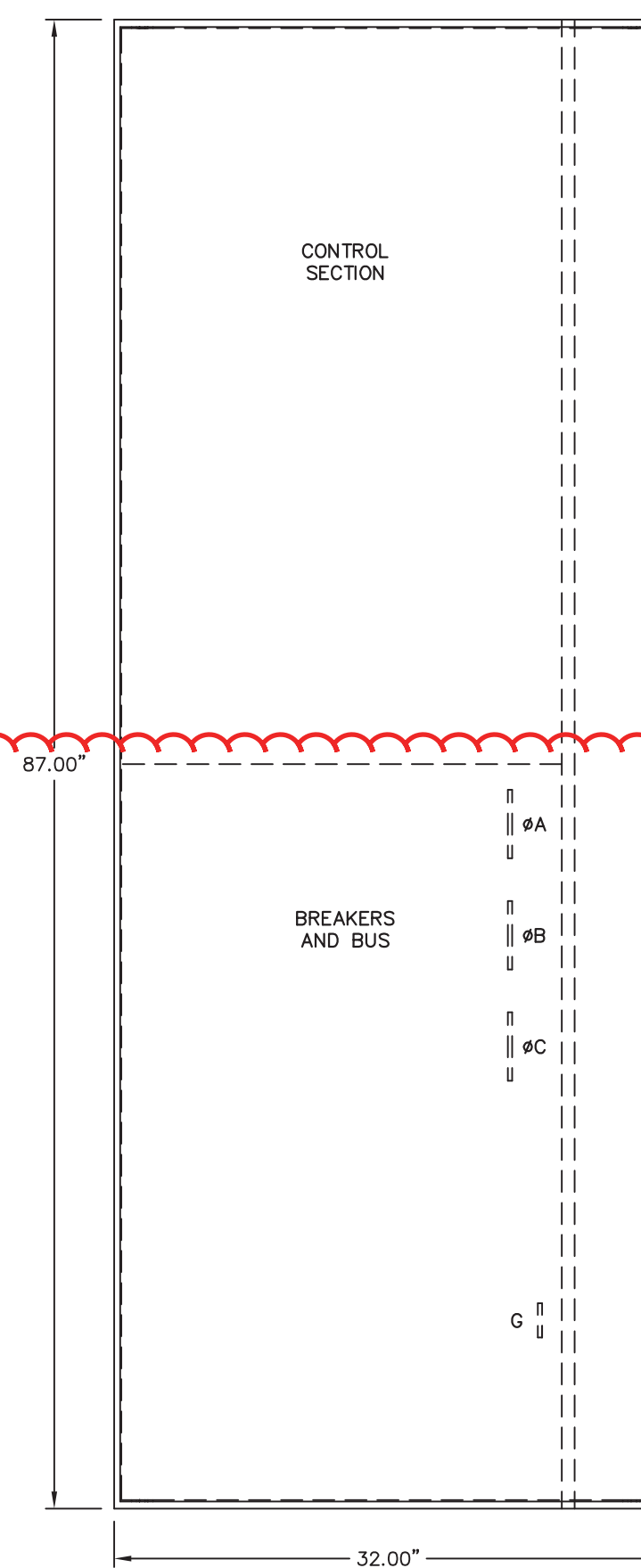


TOP VIEW



GENERATOR SWITCHGEAR ELEVATION VIEW

REPLACE COMPONENTS  
IN LOWER HALF OF  
SWITCHGEAR, SEE ONE  
LINE AND THREE LINE  
DIAGRAMS.



SIDE VIEW

NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: GENERATOR SWITCHGEAR ELEVATION VIEW, OUTLINE DIAGRAM			
SCALE: NONE	DATE: 05-07-20	DWN. BY: GJG	
DWG. No: 9033-4101-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

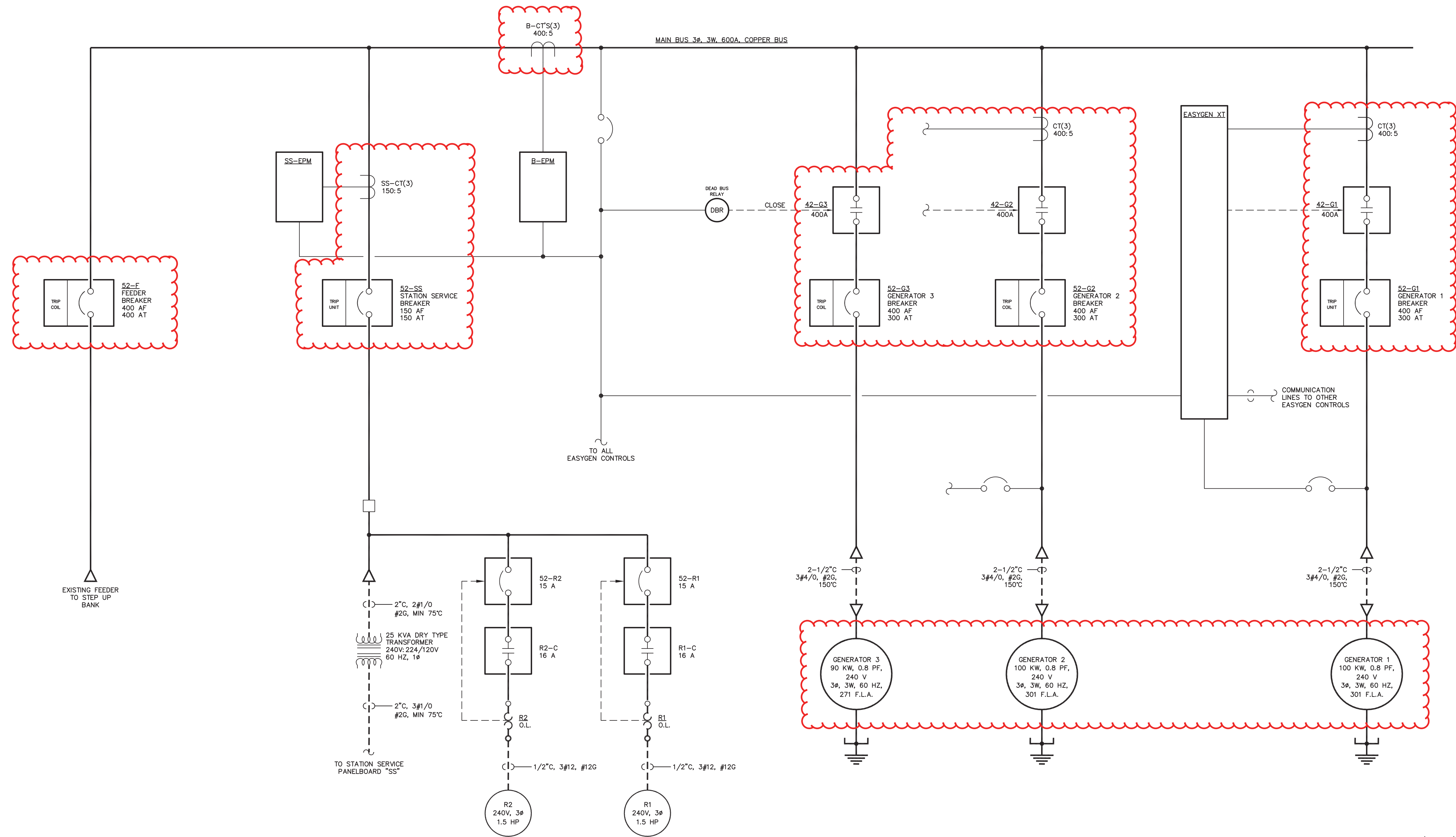


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**NOTES**  
 1. GENERATOR 2 SIMILAR TO GENERATOR 1.

**NOTE:**  
 1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: GENERATOR SWITCHGEAR SINGLE LINE, SCHEMATIC DIAGRAM			
SCALE: NONE	DATE: 05/07/20	DWN. BY: GJG	
DWG. No: 9033-5101-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

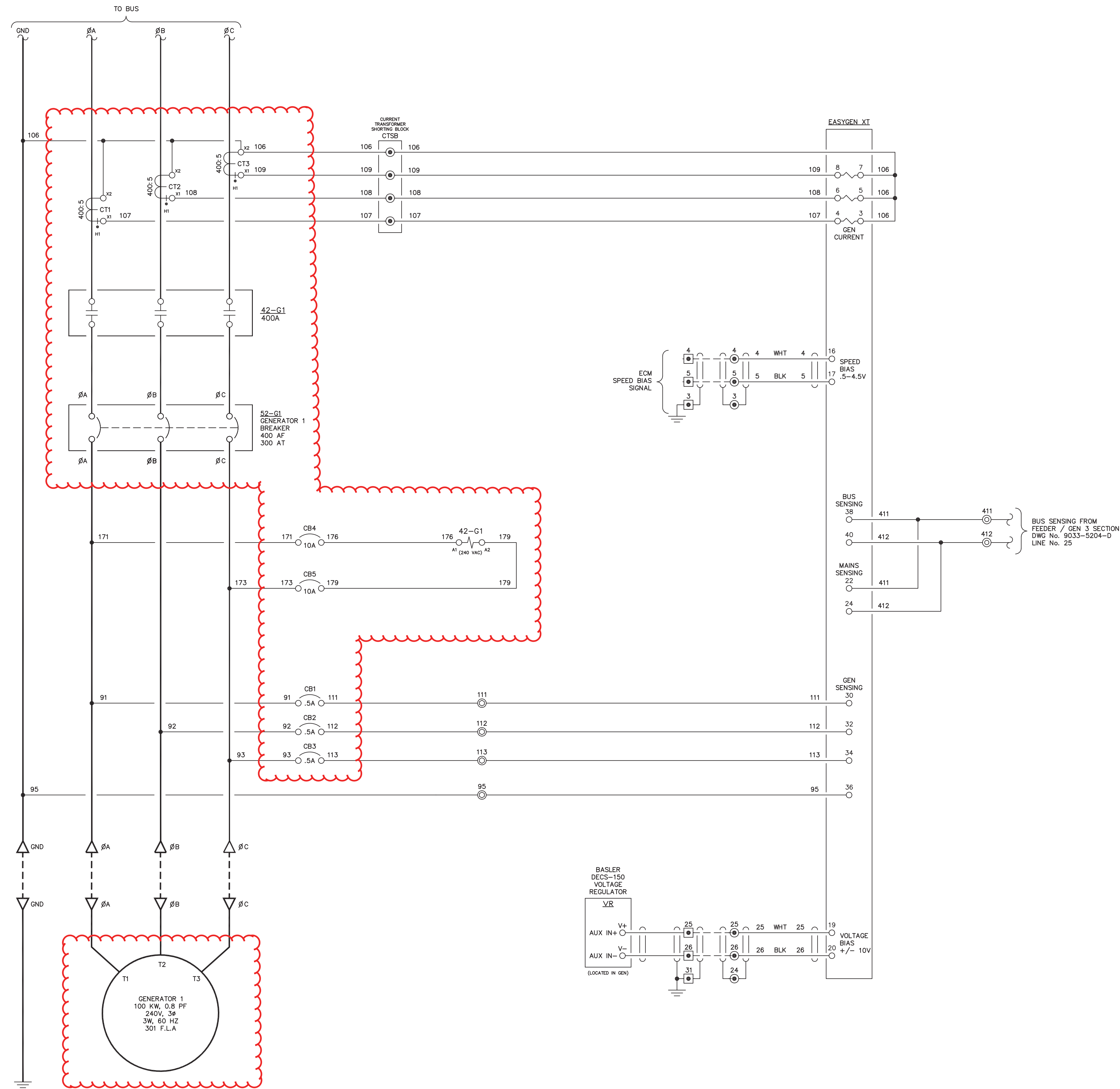
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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: GENERATOR 1 AC THREE LINE, SCHEMATIC DIAGRAM			
SCALE: NONE	DATE: 05-07-20	DWN. BY: GPN	
DWG. No: 9033-5201-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

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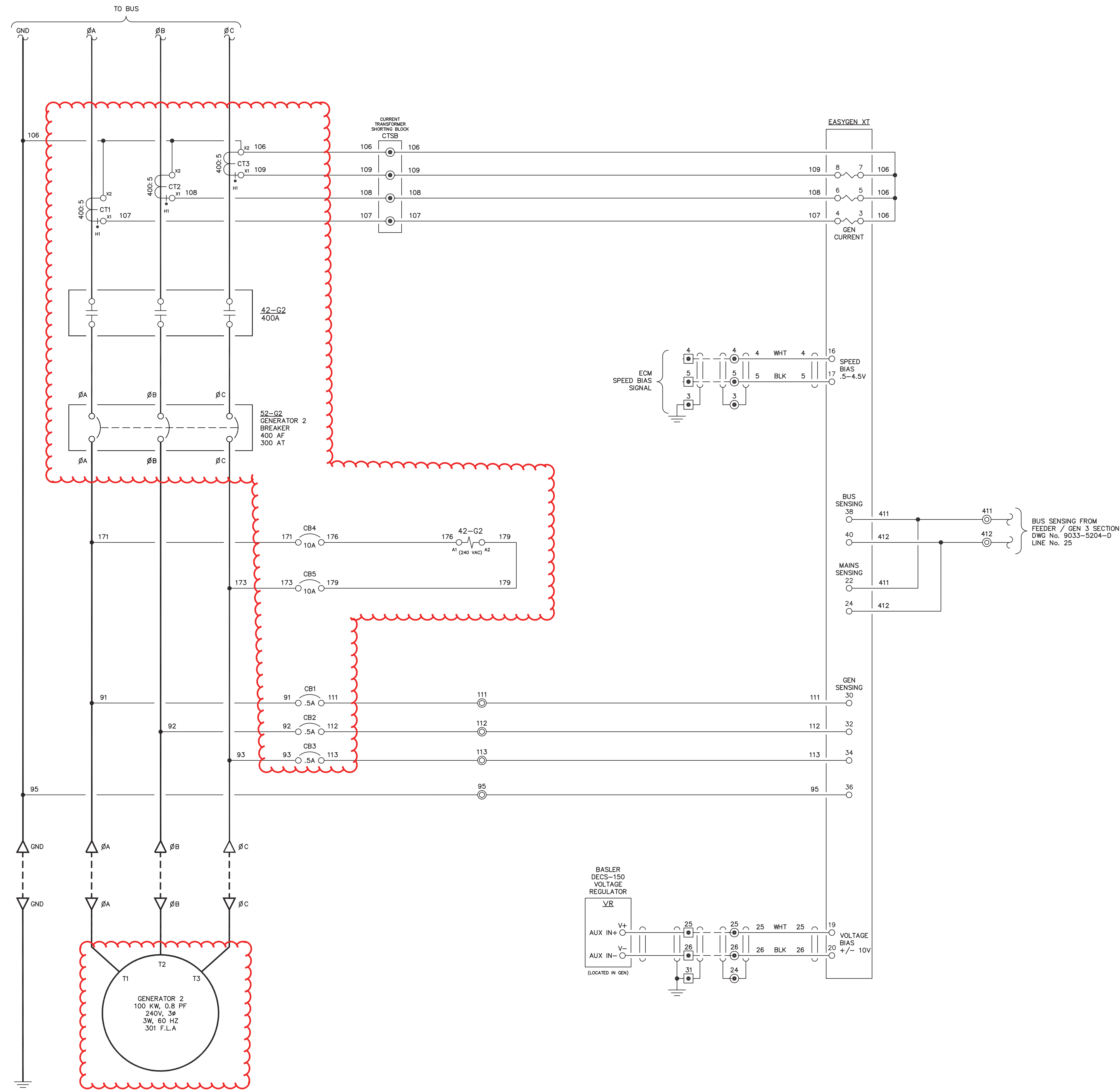
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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: GENERATOR 2 AC THREE LINE, SCHEMATIC DIAGRAM			
SCALE: NONE	DATE: 05-07-20	DWN. BY: GPN	
DWG. No: 9033-5202-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

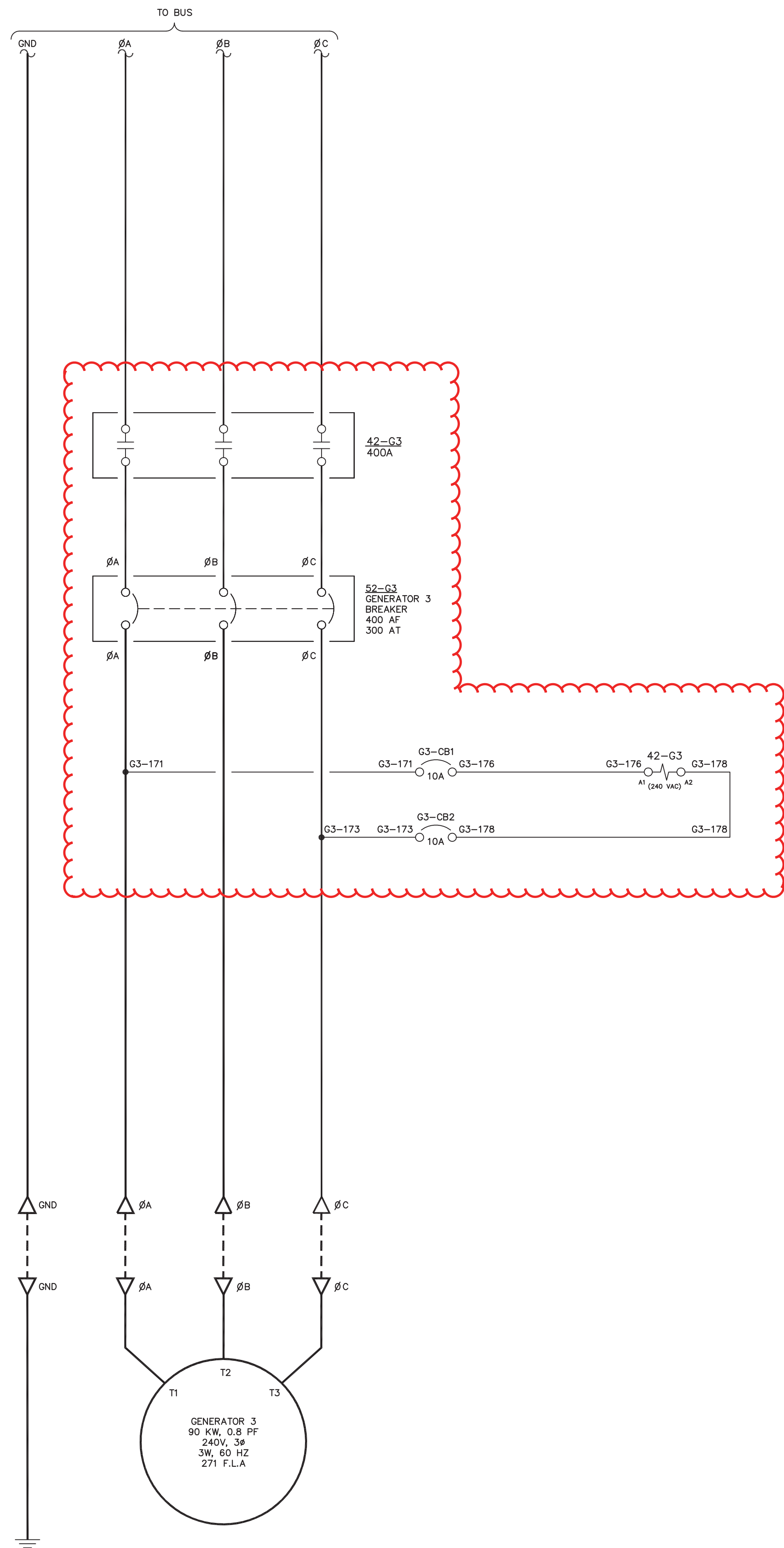
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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: GENERATOR 3 AC THREE LINE, SCHEMATIC DIAGRAM			
SCALE: NONE	DATE: 05-07-20	DWN. BY: GPN	
DWG. No: 9033-5203-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

**Sturgeon ELECTRIC**

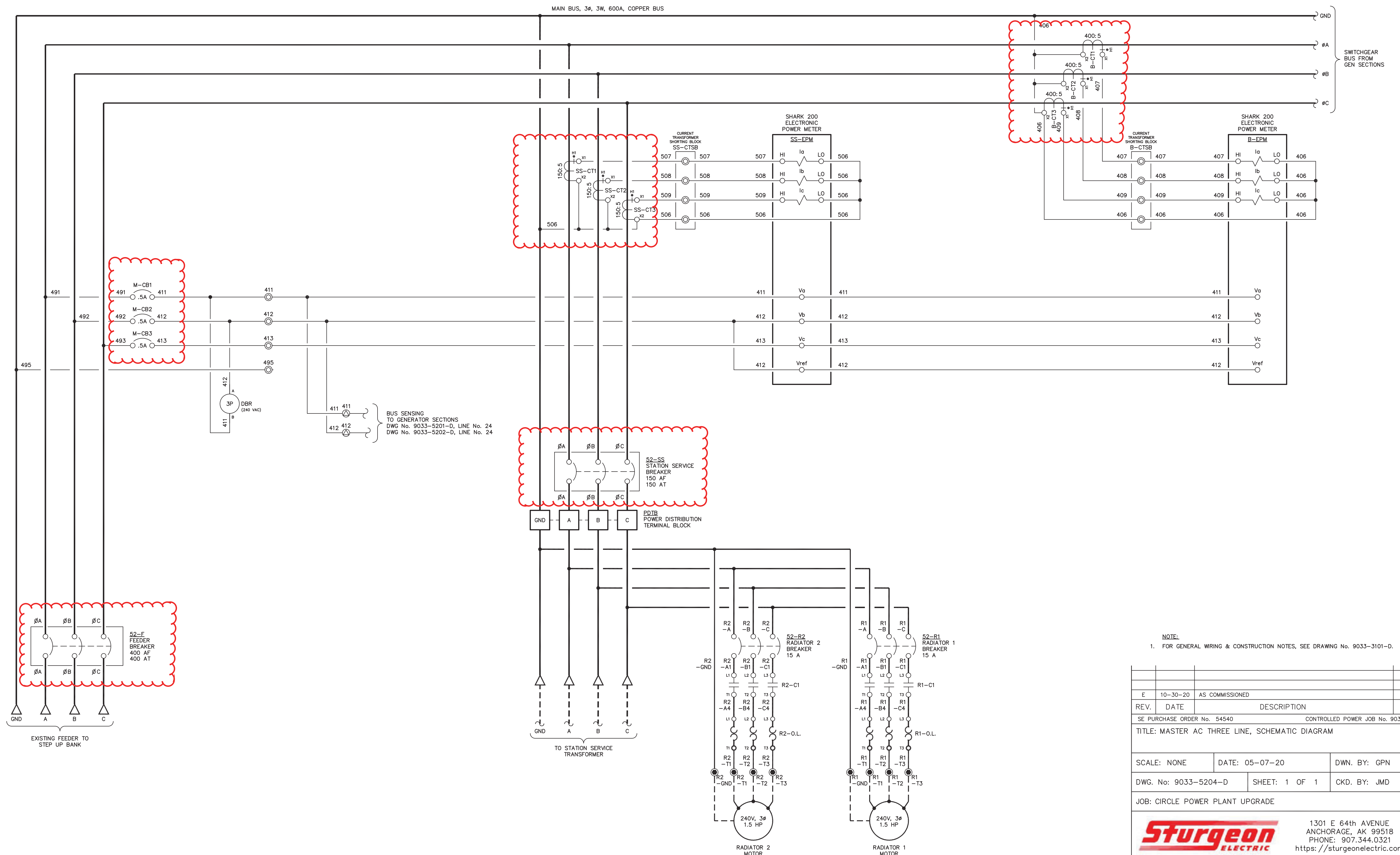
1301 E 64th AVENUE  
ANCHORAGE, AK 99518  
PHONE: 907.344.0321  
<https://sturgeonelectric.com>

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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN

SE PURCHASE ORDER No. 54540 CONTROLLED POWER JOB No. 9033

TITLE: MASTER AC THREE LINE, SCHEMATIC DIAGRAM

SCALE: NONE	DATE: 05-07-20	DWN. BY: GPN
DWG. No: 9033-5204-D	SHEET: 1 OF 1	CKD. BY: JMD

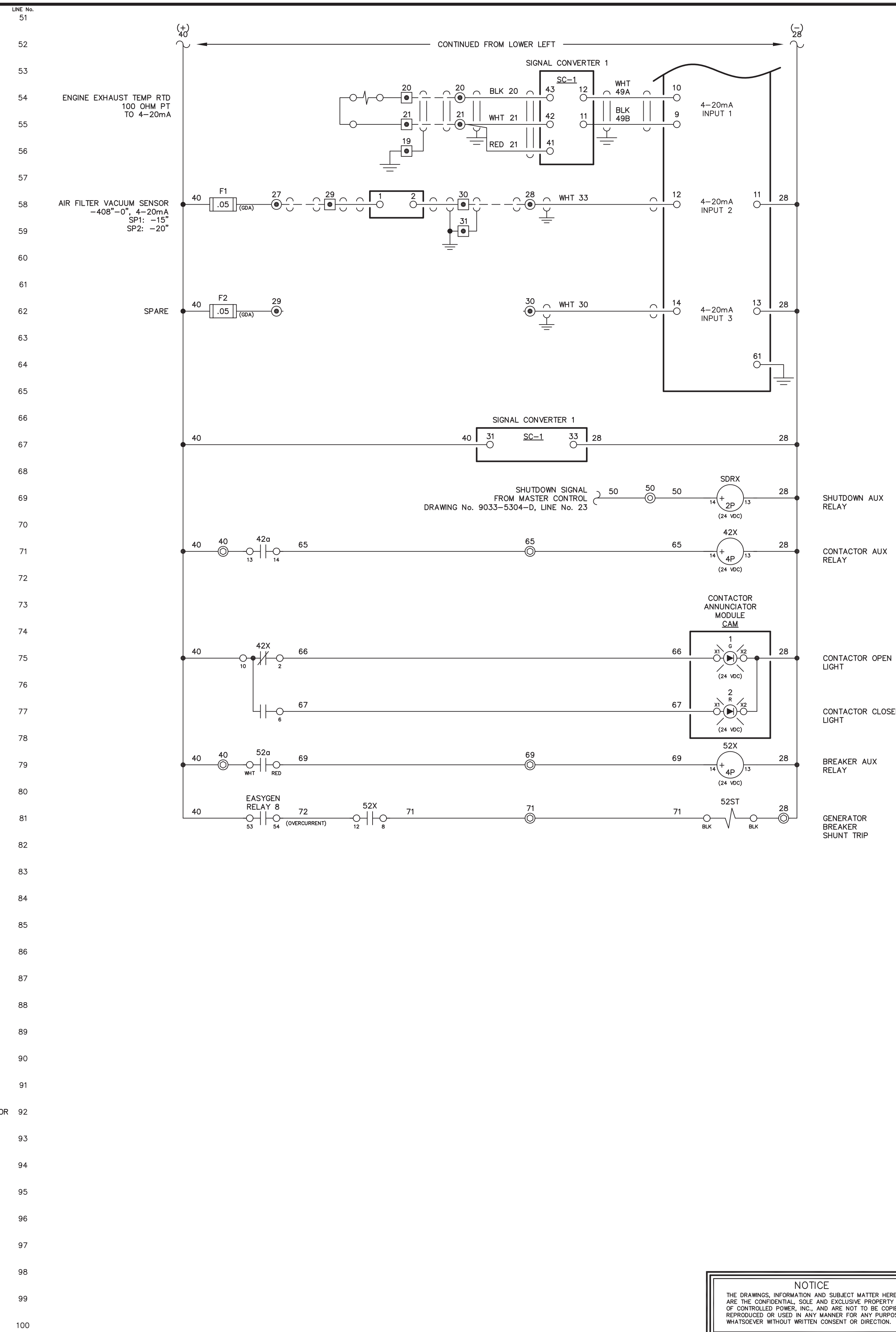
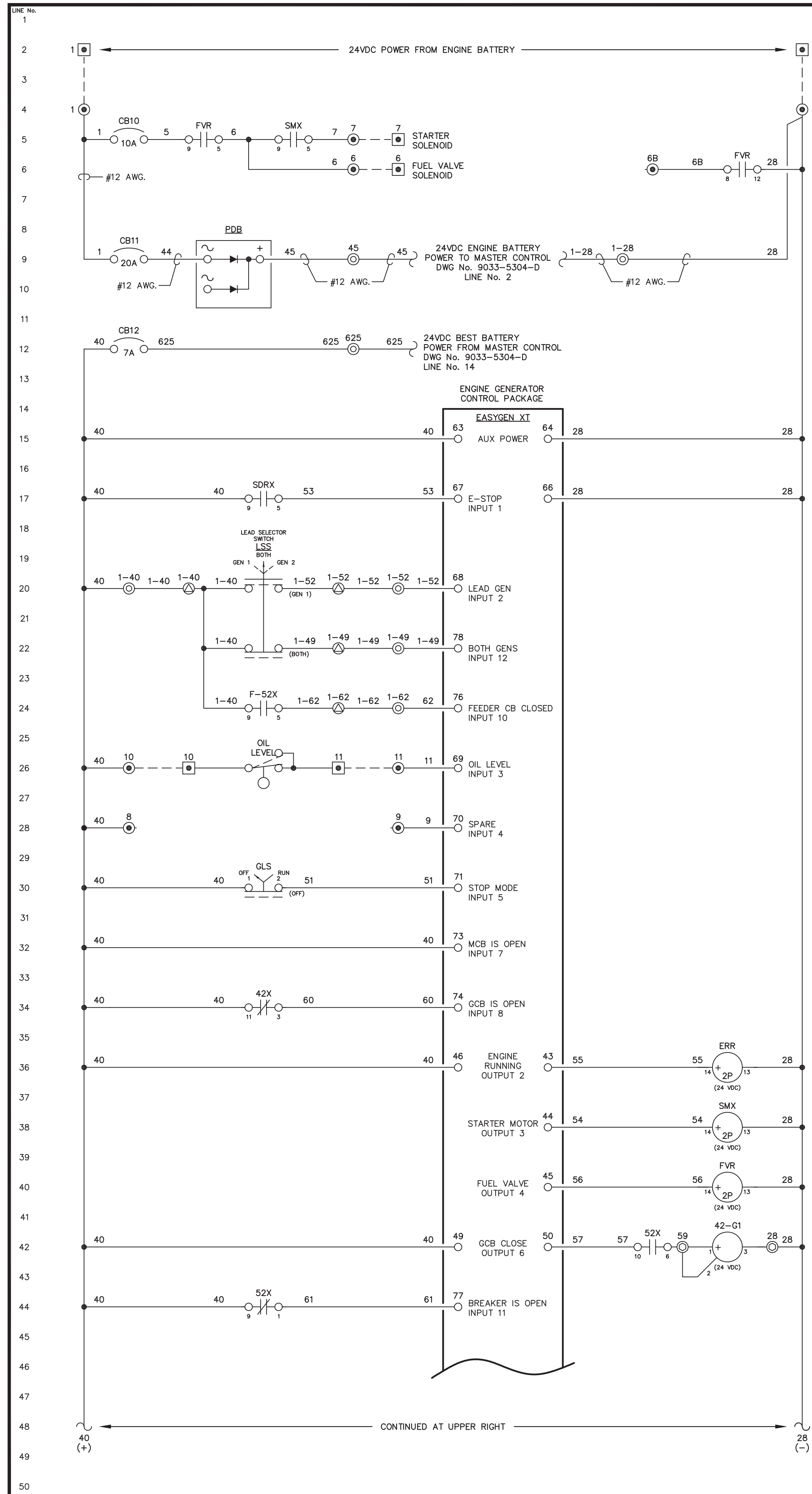
JOB: CIRCLE POWER PLANT UPGRADE

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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN

SE PURCHASE ORDER No. 54540 CONTROLLED POWER JOB No. 9033

TITLE: GENERATOR 1 DC CONTROL, SCHEMATIC DIAGRAM

SCALE: NONE DATE: 05-08-20 DWN. BY: GJG

DWG. No: 9033-5301-D SHEET: 1 OF 1 CKD. BY: JMD

JOB: CIRCLE POWER PLANT UPGRADE

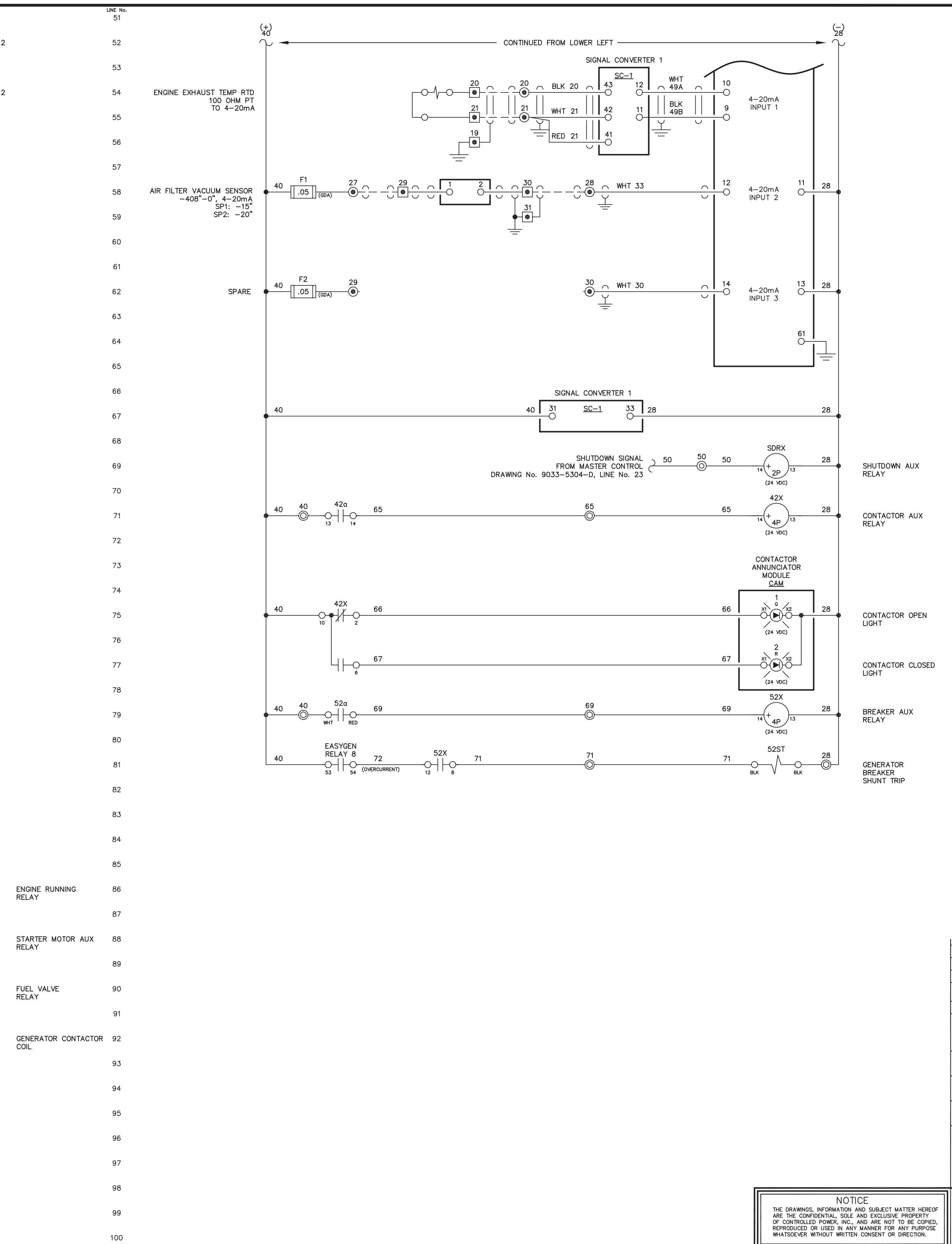
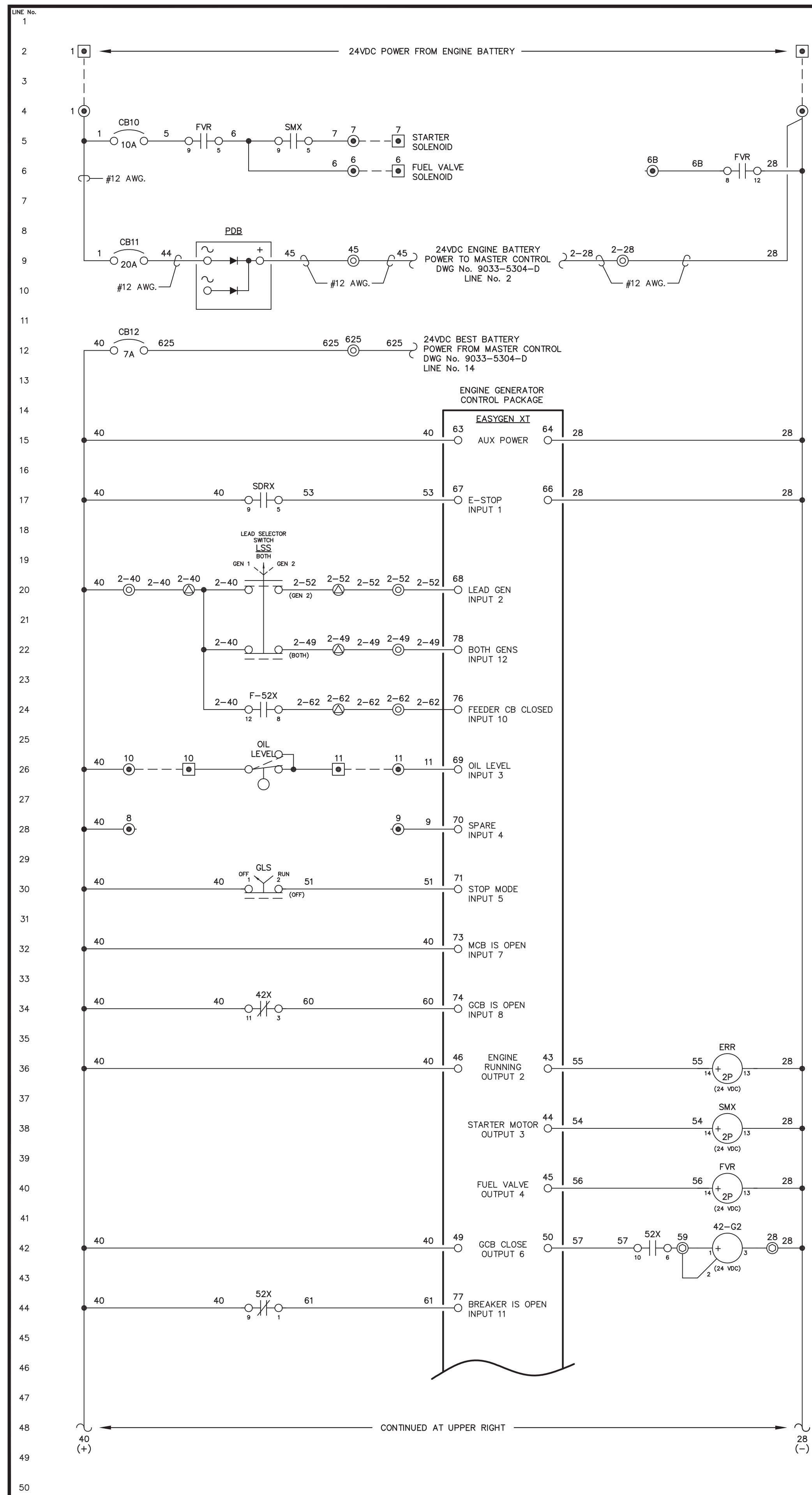
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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: GENERATOR 2 DC CONTROL, SCHEMATIC DIAGRAM			
SCALE: NONE	DATE: 05-08-20	DWN. BY: GJG	
DWG. No: 9033-5302-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

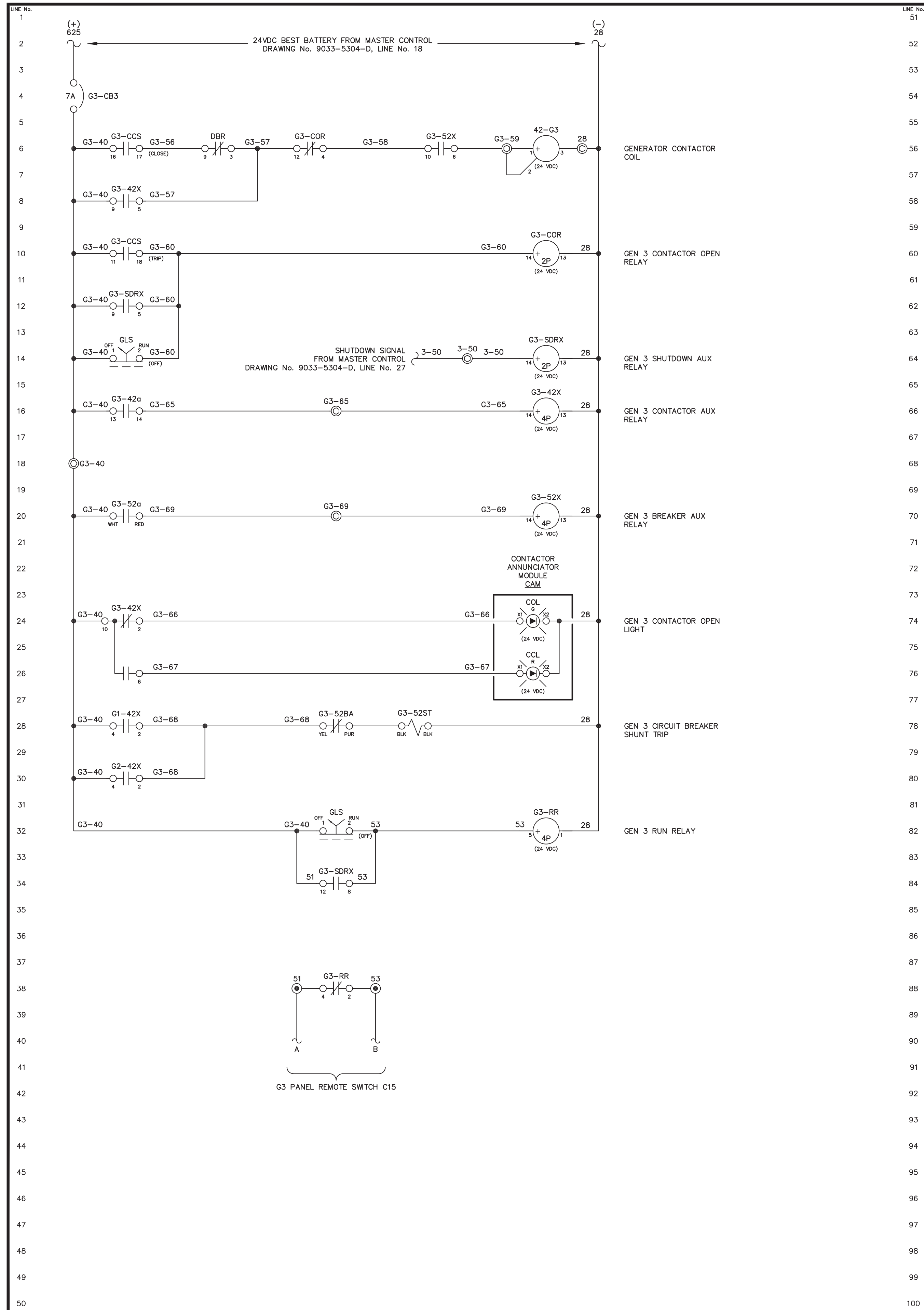
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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

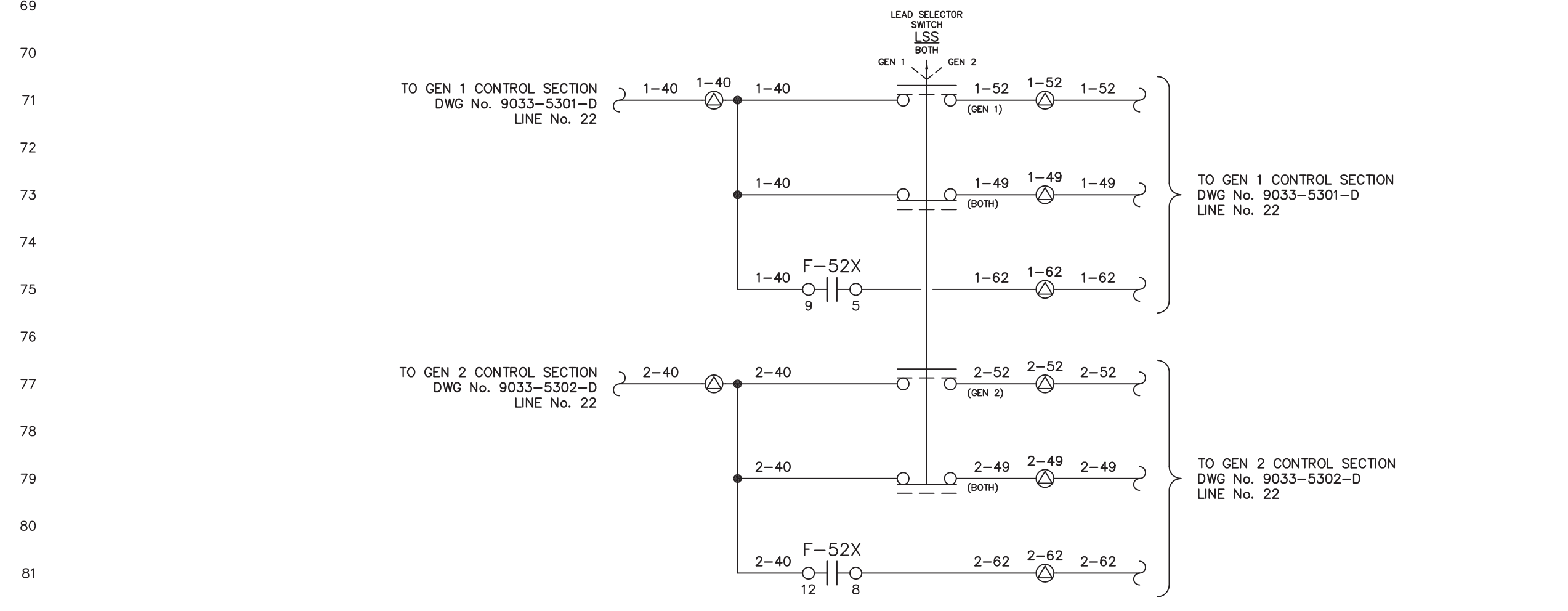
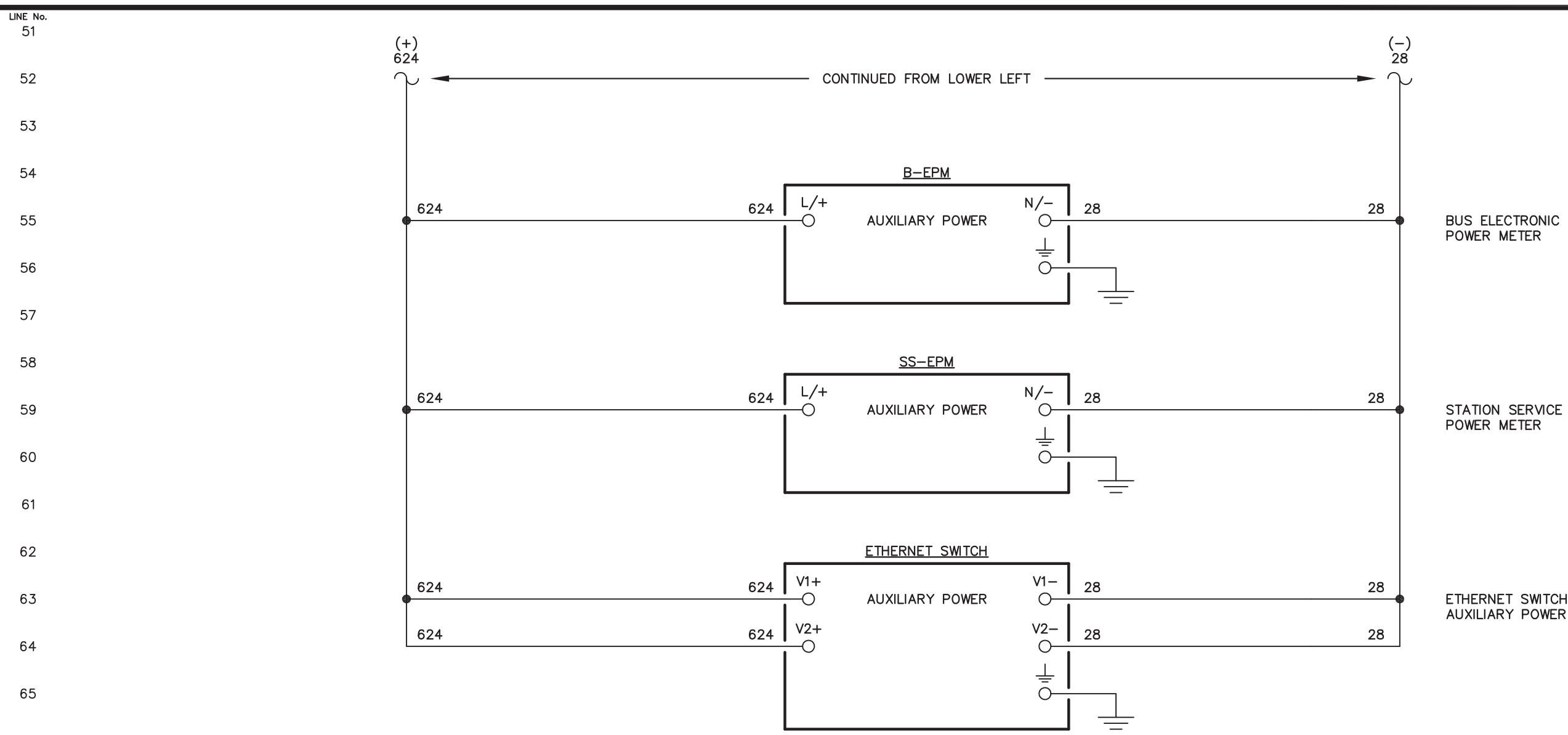
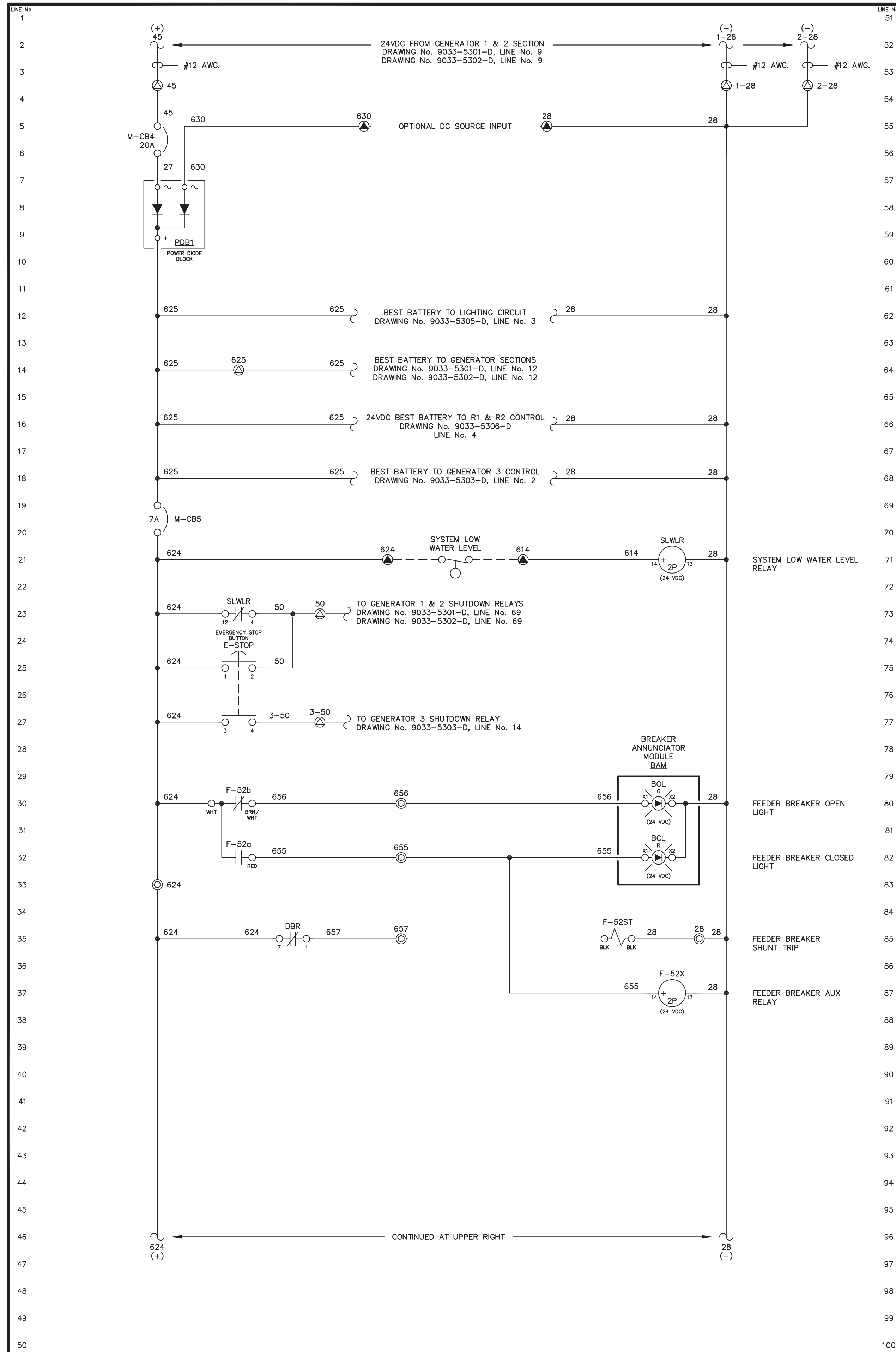
REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: GENERATOR 3 DC CONTROL, SCHEMATIC DIAGRAM			
SCALE: NONE	DATE: 05-08-20	DWN. BY: GJG	
DWG. No: 9033-5303-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540 CONTROLLED POWER JOB No. 9033			
TITLE: MASTER DC CONTROL, SCHEMATIC DIAGRAM			
SCALE: NONE	DATE: 05-08-20	DWN. BY: GJG	
DWG. No: 9033-5304-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

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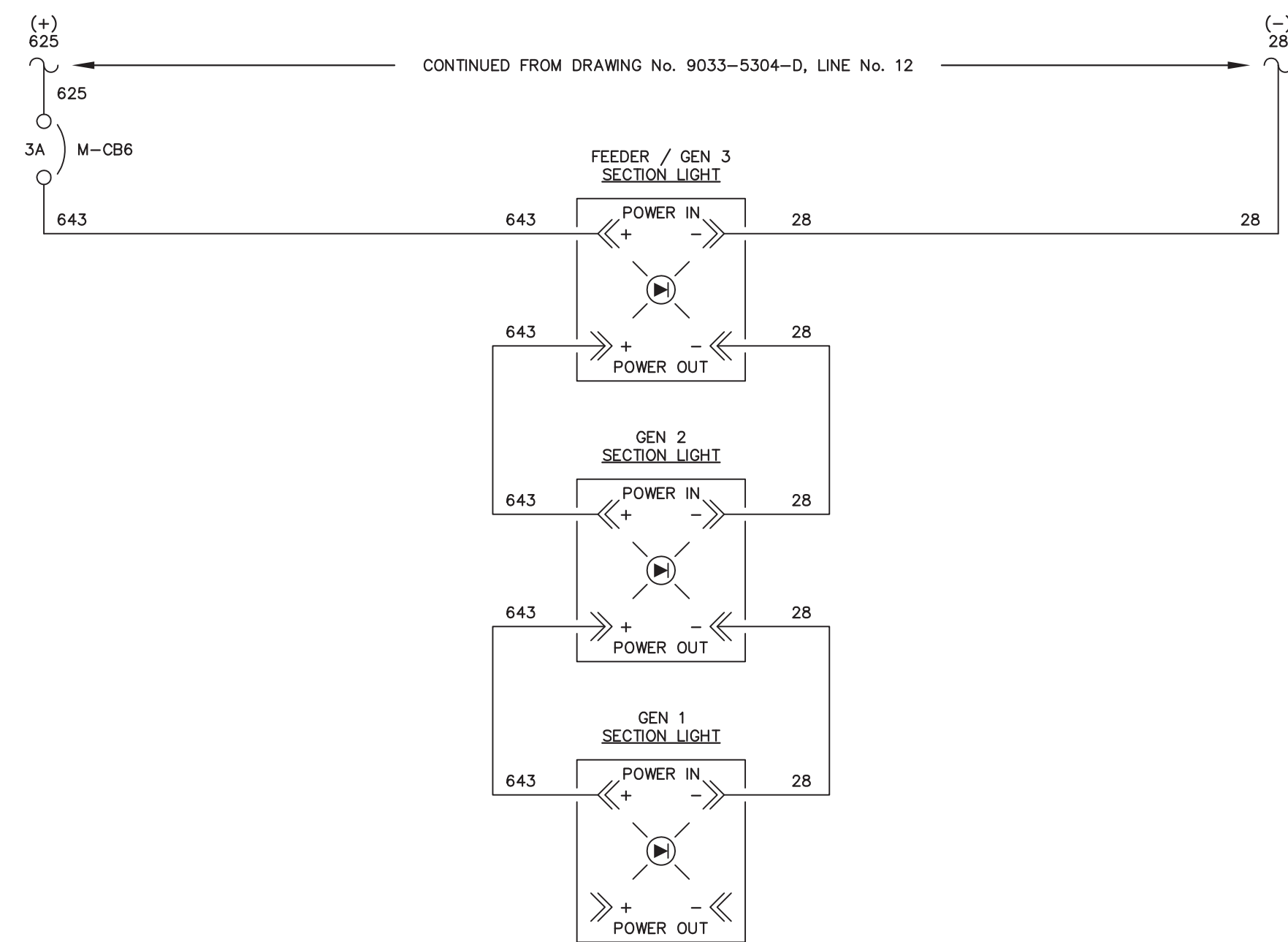
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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN

SE PURCHASE ORDER No. 54540 CONTROLLED POWER JOB No. 9033

TITLE: LIGHTING CONTROL, SCHEMATIC DIAGRAM

SCALE: NONE      DATE: 05-08-20      DWN. BY: GJG

DWG. No: 9033-5305-D      SHEET: 1 OF 1      CKD. BY: JMD

JOB: CIRCLE POWER PLANT UPGRADE

**Sturgeon**  
ELECTRIC

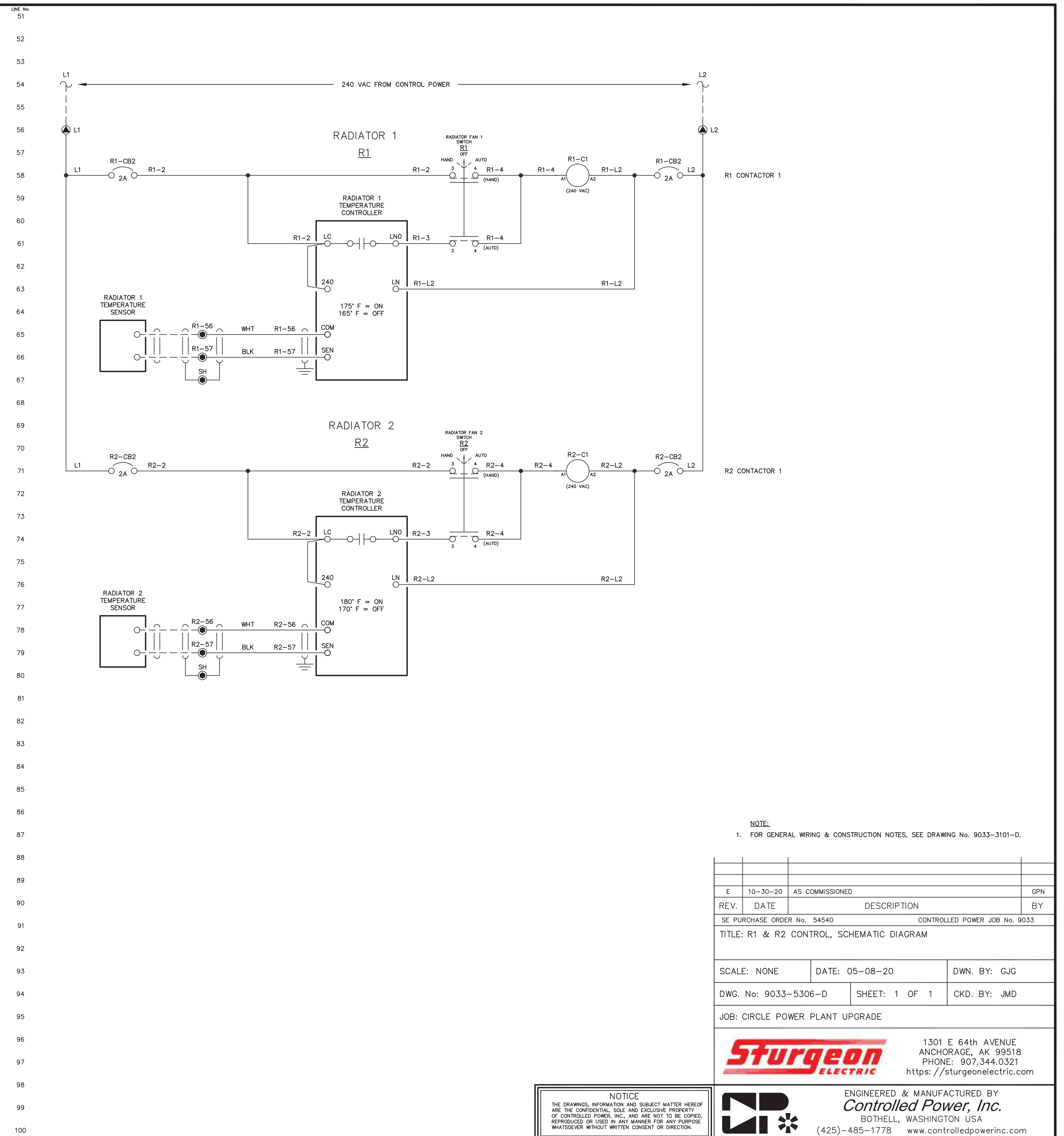
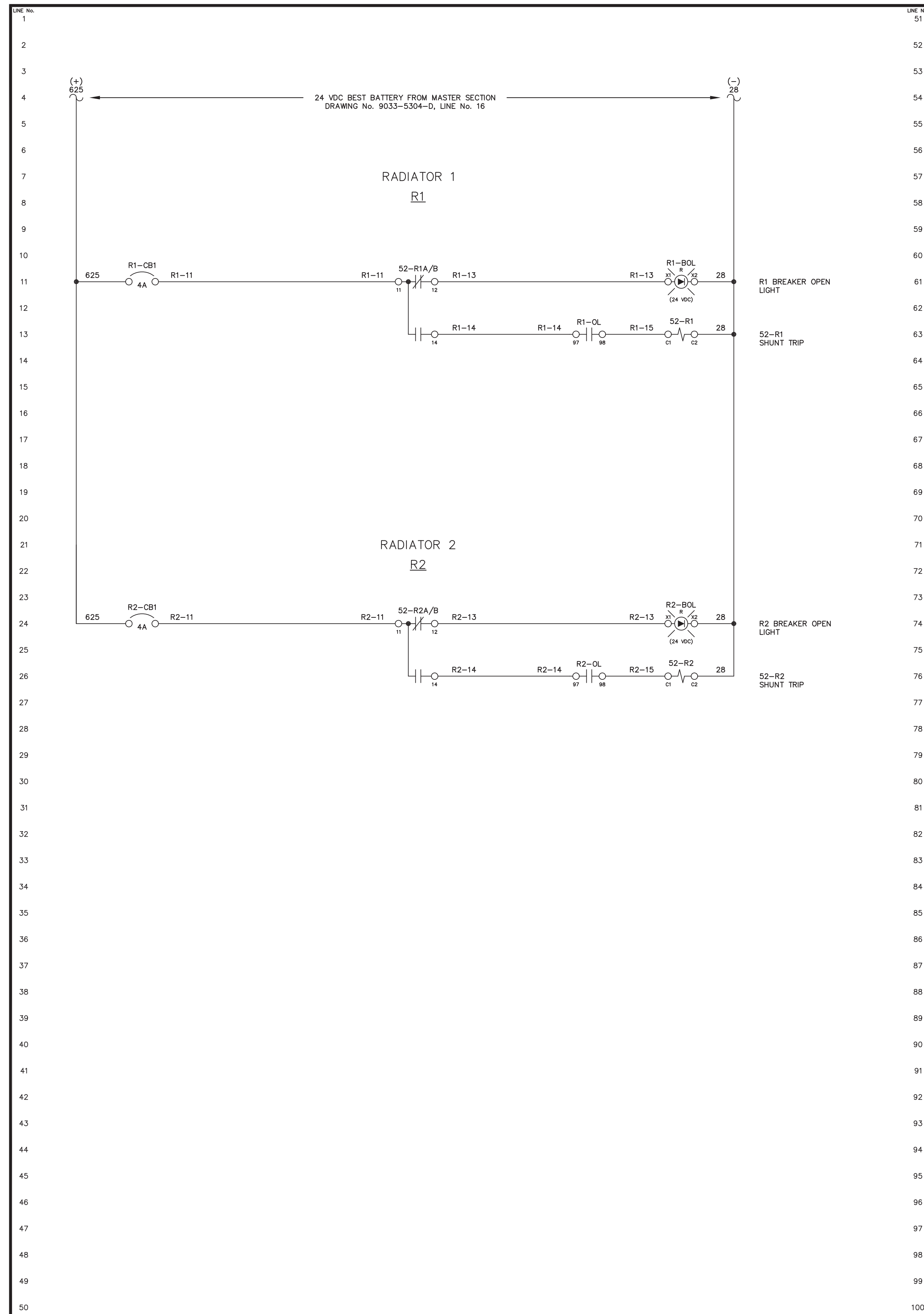
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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN

SE PURCHASE ORDER No. 54540 CONTROLLED POWER JOB No. 9033

TITLE: R1 & R2 CONTROL, SCHEMATIC DIAGRAM

SCALE: NONE      DATE: 05-08-20      DWN. BY: GJG

DWG. No: 9033-5306-D      SHEET: 1 OF 1      CKD. BY: JMD

JOB: CIRCLE POWER PLANT UPGRADE

**Sturgeon ELECTRIC**      1301 E 64th AVENUE  
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PHONE: 907.344.0321  
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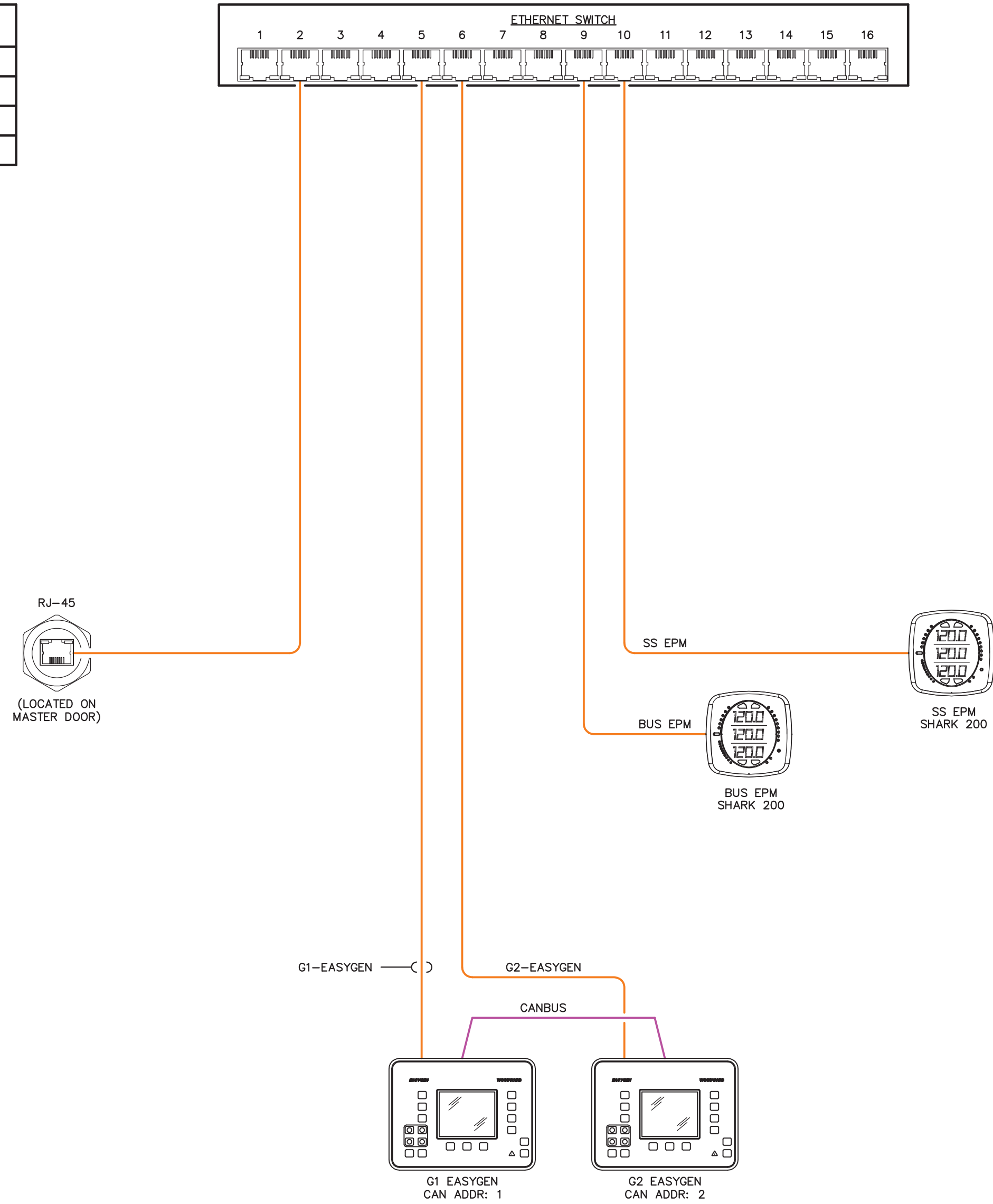
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DEVICE	IP ADDRESS
BUS EPM	192.168.1.190
SS EPM	192.168.1.191
G1 EZGEN	192.168.1.161
G2 EZGEN	192.168.1.162



NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN

SE PURCHASE ORDER No. 54540 CONTROLLED POWER JOB No. 9033

TITLE: COMMUNICATION NETWORK, SCHEMATIC DIAGRAM

SCALE: NONE	DATE: 05-08-20	DWN. BY: GJG
DWG. No: 9033-5601-D	SHEET: 1 OF 1	CKD. BY: JMD

JOB: CIRCLE POWER PLANT UPGRADE

**Sturgeon**  
ELECTRIC

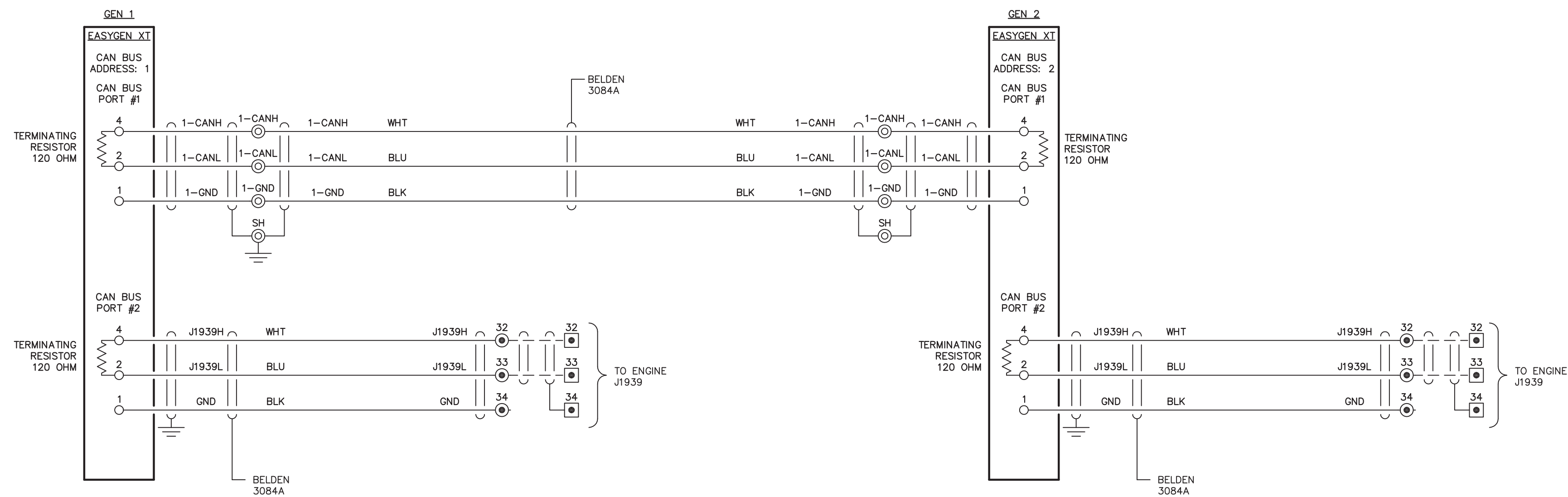
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NOTE:  
 1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: COMMUNICATION NETWORK, SCHEMATIC DIAGRAM			
SCALE: NONE	DATE: 05-08-20	DWN. BY: GJG	
DWG. No: 9033-5602-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

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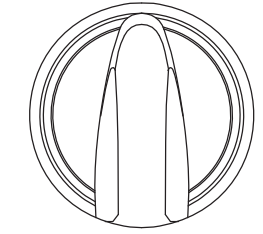
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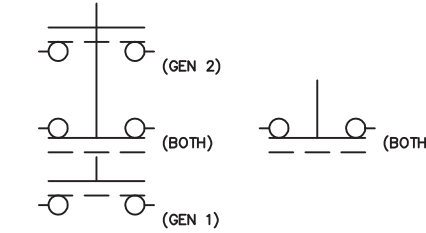
GENERATOR LEAD - LSS

LEAD GENERATOR  
GEN 2 BOTH GEN 1

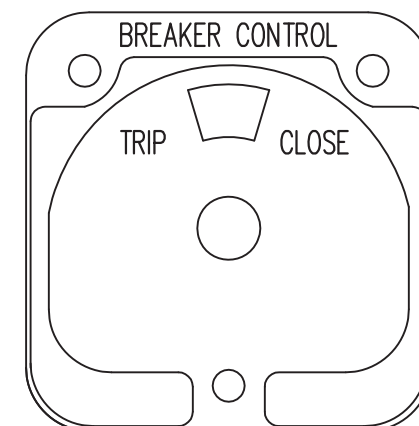


3 POS MAINTAINED

	POS		
	GEN 2		
	BOTH		
	GEN 1		
X			
X			
X			



CONTACTOR CONTROL SWITCH - G3-42CS

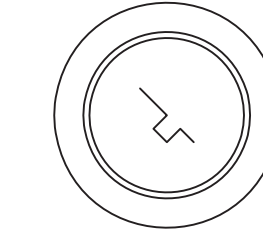


(ELECTROSWITCH 2438D)  
PISTOL GRIP HANDLE  
SPRING RETURN TO CENTER

DECK	CONTACTS	POS.
	TRIP	NORM.
	CLOSE	
1	11 18	X
	16 17	X

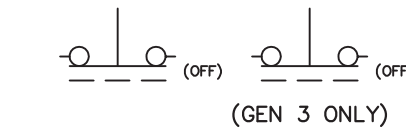
GENERATOR LOCKOUT SWITCH - GLS

GENERATOR  
LOCKOUT FOR SERVICE  
OFF RUN



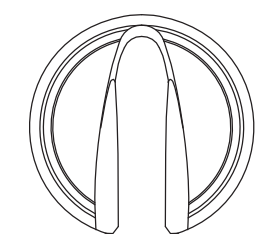
KEY OPERATED  
2 POS MAINTAINED

	POS
	OFF
	RUN
X	



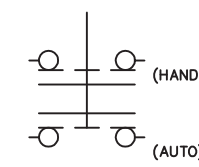
RADIATOR FAN 1 - R1

RADIATOR FAN 1  
HAND OFF AUTO



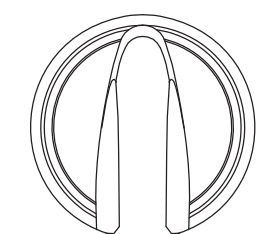
3 POS MAINTAINED

	POS		
	HAND		
	OFF		
	AUTO		
X			
X			



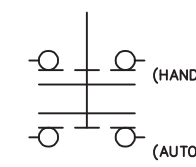
RADIATOR FAN 2 - R2

RADIATOR FAN 2  
HAND OFF AUTO



3 POS MAINTAINED

	POS		
	HAND		
	OFF		
	AUTO		
X			
X			



- NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: CONTROL SWITCH TARGET DIAGRAM			
SCALE: NONE	DATE: 05-08-20	DWN. BY: GJG	
DWG. No: 9033-6101-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

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 17909 BOTHELL EVERETT HWY. S.E.  
 BOTHELL, WA. 98012  
 (425)-485-1778  
 SERIAL NUMBER: 9033

NP, TEXT 1/4", QUANTITY 1, SCALE 1/1  
 SEE NOTE 4

FEEDER / GEN 3

NP, TEXT 1/2", QUANTITY 1, SCALE 1/1

GENERATOR 1

NP, TEXT 1/2", QUANTITY 1, SCALE 1/1

GENERATOR 2

NP, TEXT 1/2", QUANTITY 1, SCALE 1/1

GENERATOR 3

NP, TEXT 1/4", QUANTITY 1, SCALE 1/1

RADIATOR FANS

NP, TEXT 1/4", QUANTITY 1, SCALE 1/1

100 KW

NP, TEXT 1/2", QUANTITY 2, SCALE 1/1

90 KW

NP, TEXT 1/4", QUANTITY 1, SCALE 1/1

GENERATOR 1

NP, TEXT 3/16", QUANTITY 1, SCALE 1/1

GENERATOR 2

NP, TEXT 3/16", QUANTITY 1, SCALE 1/1

GENERATOR 3

NP, TEXT 3/16", QUANTITY 1, SCALE 1/1

FEEDER

NP, TEXT 3/16", QUANTITY 1, SCALE 1/1

STATION SERVICE

NP, TEXT 3/16", QUANTITY 1, SCALE 1/1

GENERATOR LOCKOUT FOR SERVICE  
 OFF RUN

NP, TEXT 1/8", QUANTITY 3, SCALE 1/1

BUS TOTALIZING

NP, TEXT 1/8", QUANTITY 1, SCALE 1/1

STATION SERVICE

NP, TEXT 1/8", QUANTITY 1, SCALE 1/1

RADIATOR FAN 1  
 HAND OFF AUTO

NP, TEXT 1/8", QUANTITY 1, SCALE 1/1

RADIATOR FAN 2  
 HAND OFF AUTO

NP, TEXT 1/8", QUANTITY 1, SCALE 1/1

ETHERNET NETWORK  
 INTERFACE PORT

NP, TEXT 1/8", QUANTITY 1, SCALE 1/1

RADIATOR FAN 1  
 BREAKER OPEN

NP, TEXT 1/8", QUANTITY 1, SCALE 1/1

RADIATOR FAN 2  
 BREAKER OPEN

NP, TEXT 1/8", QUANTITY 1, SCALE 1/1

LEAD GENERATOR  
 GEN 2 BOTH GEN 1

NP, TEXT 1/8", QUANTITY 1, SCALE 1/1

- NOTES:
- ALL NAMEPLATES SHALL BE BLACK FACE WITH WHITE LETTERS EXCEPT AS NOTED.
  - ALL NAMEPLATES SHALL HAVE PRESSURE SENSITIVE ADHESIVE ON BACK, 100 % COVERAGE.
  - ALL NAMEPLATES SHALL HAVE MOUNTING HOLES DRILLED AS INDICATED.
- INDICATES THAT NAMEPLATE SHALL BE BRUSHED ALUMINUM WITH BLACK ENGRAVED LETTERS.

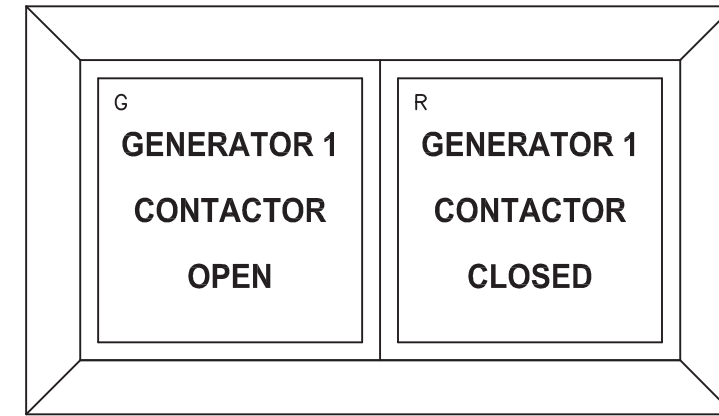
REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: NAMEPLATE ENGRAVING SCHEDULE, FABRICATION DIAGRAM			
SCALE: NONE	DATE: 05-08-20	DWN. BY: GJG	
DWG. No: 9033-6201-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

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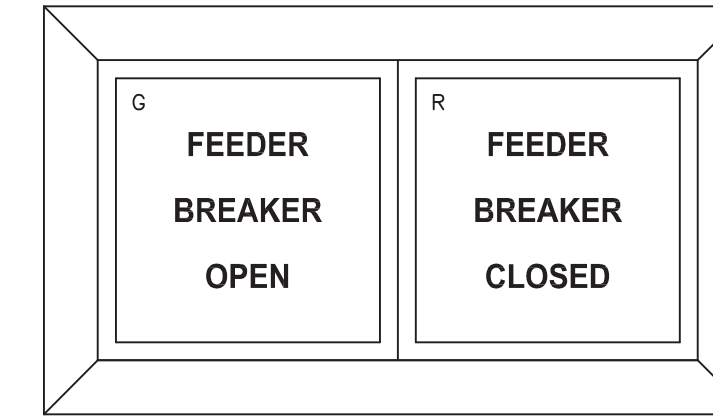
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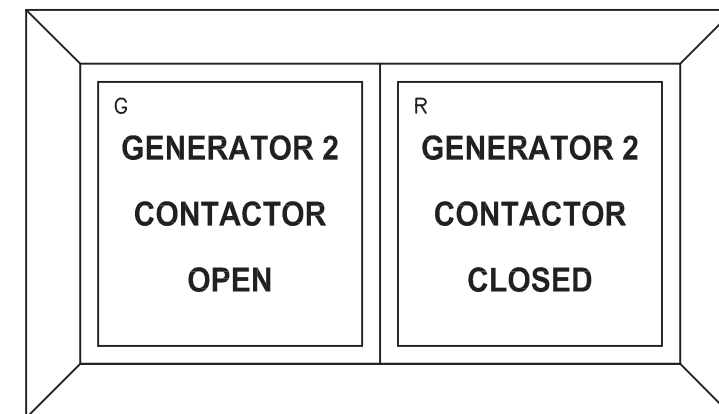
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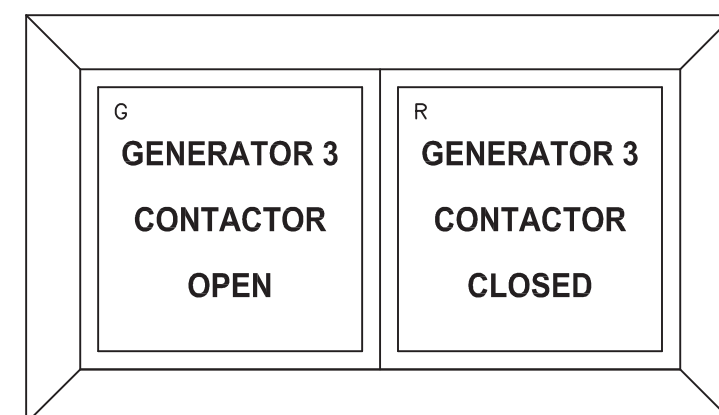
GEN 1 CONTACTOR ANNUNCIATOR  
QTY 1



FEEDER BREAKER ANNUNCIATOR  
QTY 1



GEN 2 CONTACTOR ANNUNCIATOR  
QTY 1



GEN 3 CONTACTOR ANNUNCIATOR  
QTY 1

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: ANNUNCIATOR WINDOWS, FABRICATION DIAGRAM			
SCALE: NONE		DATE: 05-08-20	DWN. BY: GJG
DWG. No: 9033-6202-D		SHEET: 1 OF 1	CKD. BY: JMD
JOB: CIRCLE POWER PLANT UPGRADE			

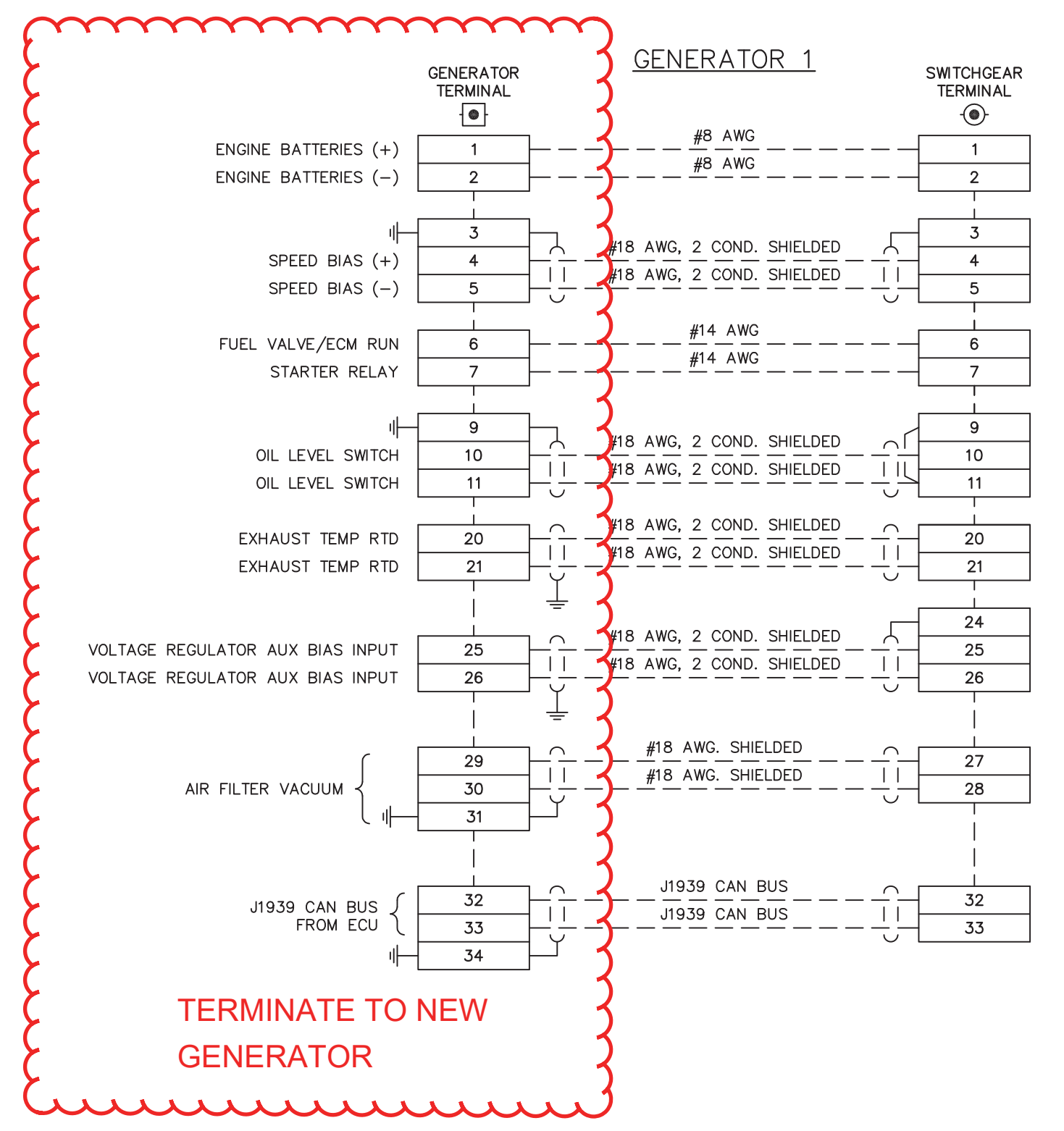
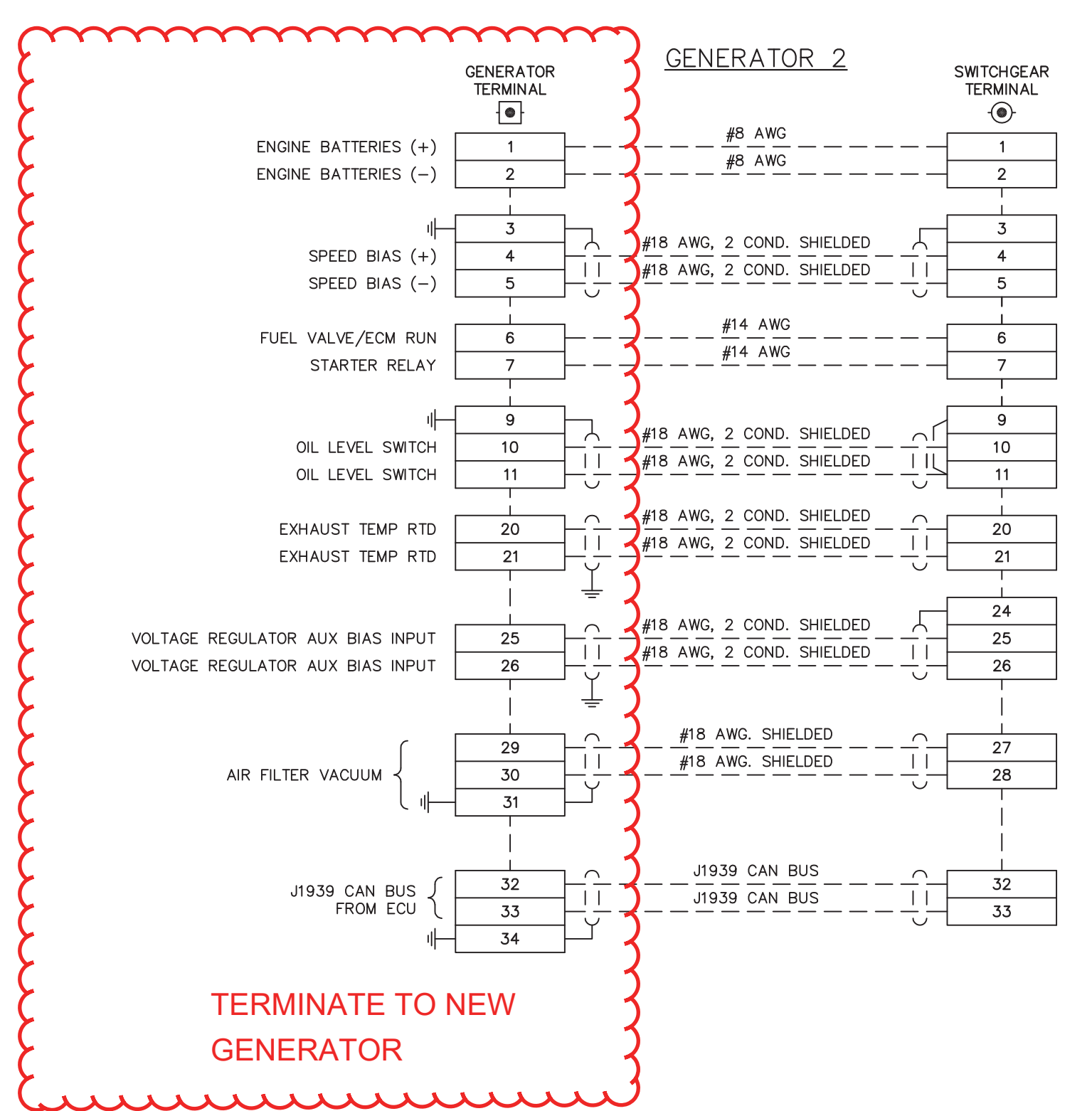
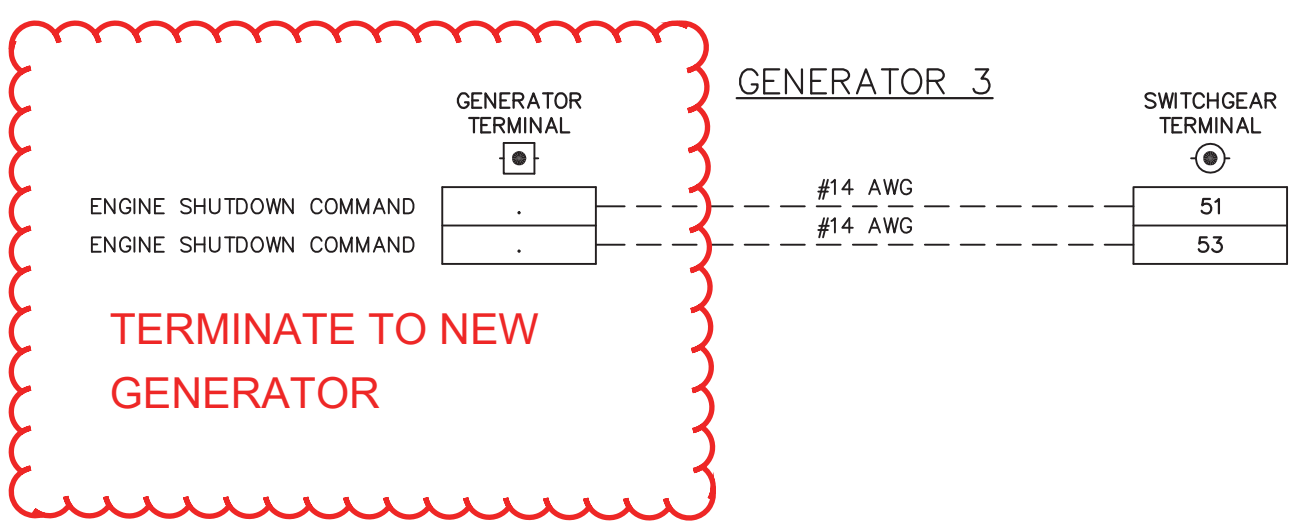
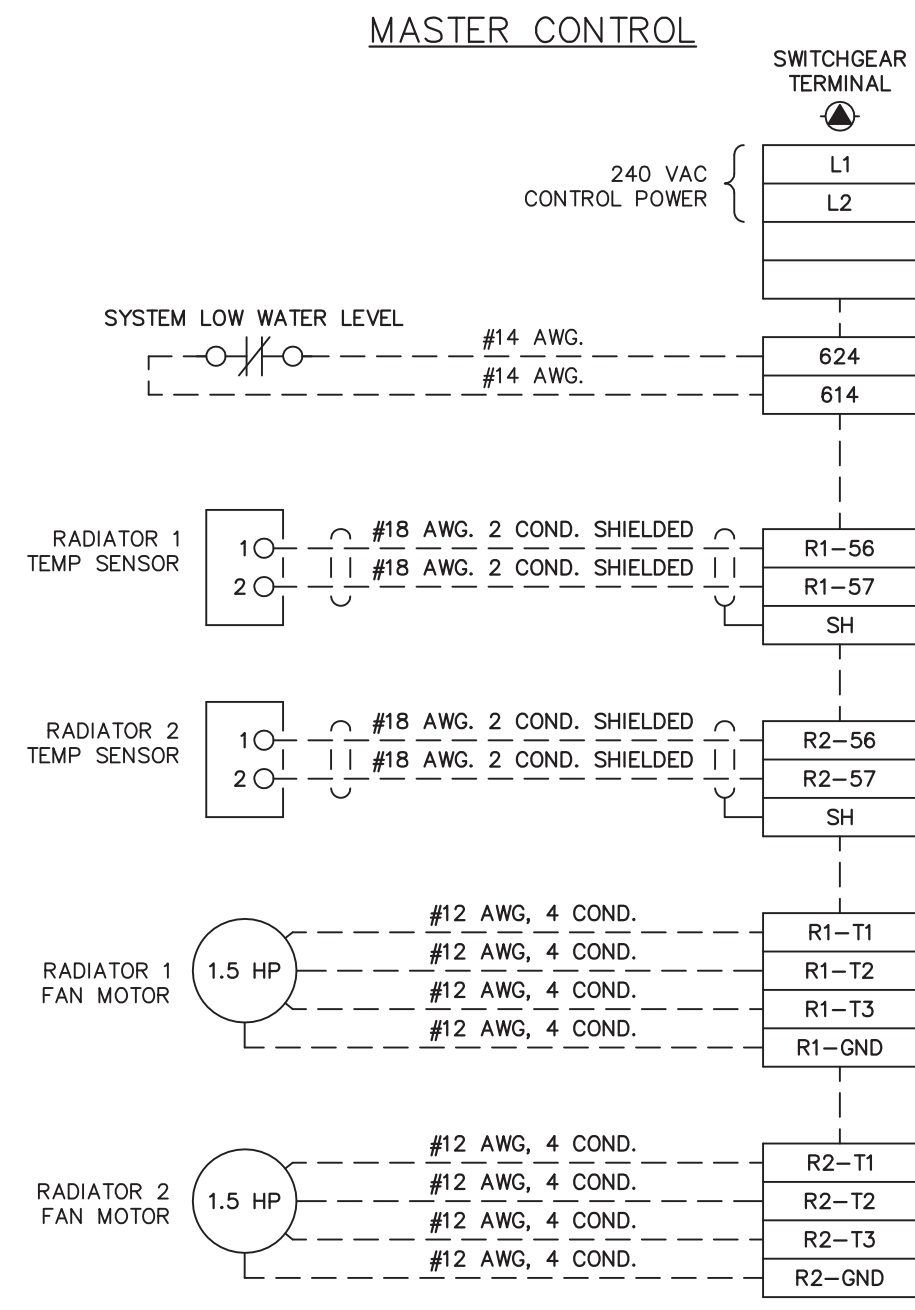


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NOTE:  
1. FOR GENERAL WIRING & CONSTRUCTION NOTES, SEE DRAWING No. 9033-3101-D.

REV.	DATE	DESCRIPTION	BY
E	10-30-20	AS COMMISSIONED	GPN
SE PURCHASE ORDER No. 54540		CONTROLLED POWER JOB No. 9033	
TITLE: INTERCONNECTION DIAGRAM			
SCALE: NONE	DATE: 05-08-20	DWN. BY: GJG	
DWG. No: 9033-7101-D	SHEET: 1 OF 1	CKD. BY: JMD	
JOB: CIRCLE POWER PLANT UPGRADE			

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1301 E 64th AVENUE  
ANCHORAGE, AK 99518  
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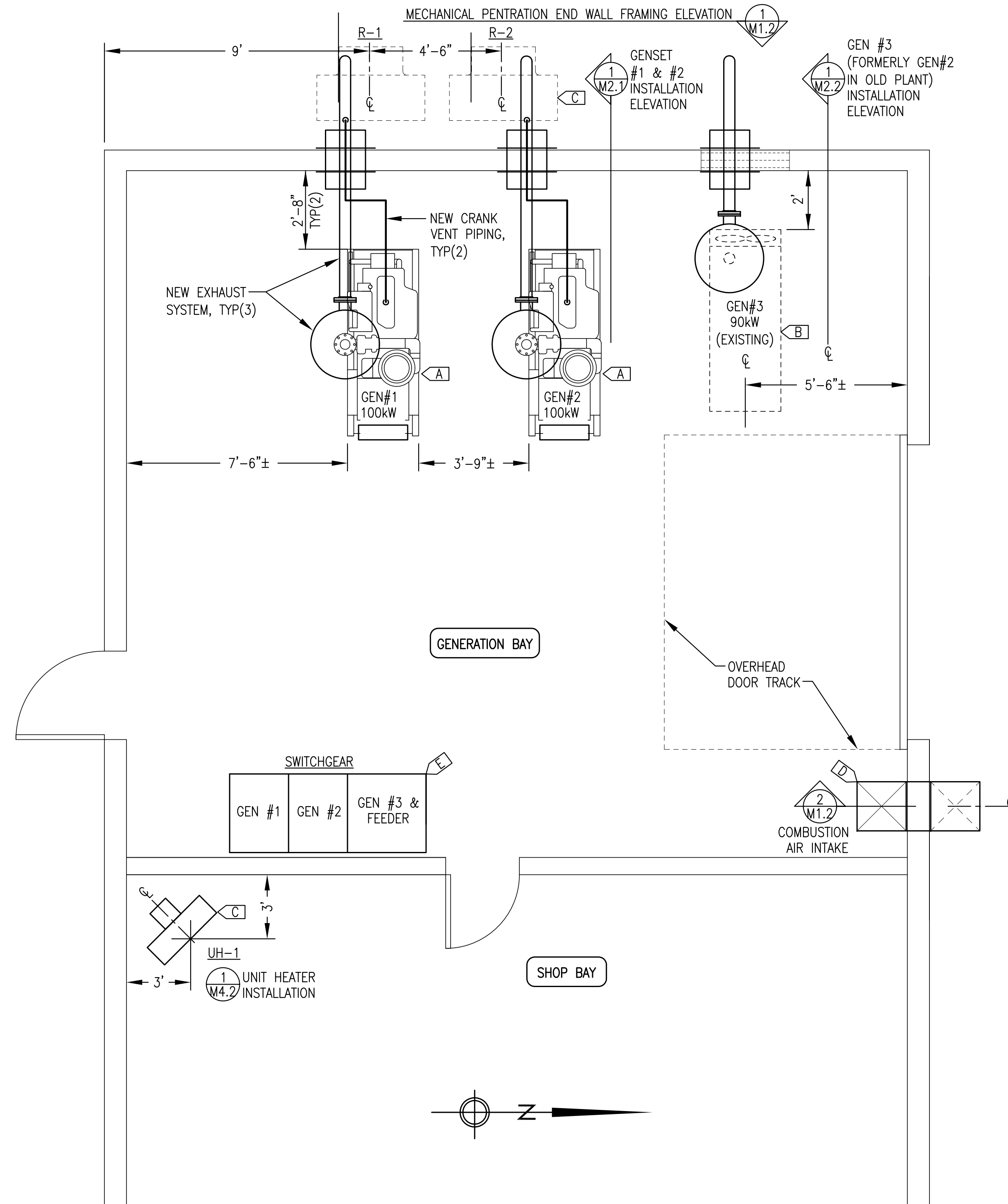
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**PROJECT DESCRIPTION**

1. THE CIRCLE ELECTRIC UTILITY HAS CONSTRUCTED A NEW ADDITION TO THE WEST OF THE EXISTING BUILDING. THE NEW ADDITION WILL SERVE AS THE GENERATION BAY AND WILL HOUSE ALL GENERATORS AND SWITCHGEAR. THE EXISTING BUILDING WILL SERVE AS A SHOP BAY.
2. THE PRIMARY PURPOSES OF THIS DERA PROJECT ARE TO:
  - INSTALL TWO NEW TIER 3 MARINE DIESEL ENGINE-GENERATOR SETS (GENSETS #1 & #2) WITH FULL AUTOMATIC PARALLELING CONTROL.
  - RELOCATE EXISTING GENSET #3 AS INDICATED.
  - INSTALL NEW SWITCHGEAR WITH FULL AUTOMATIC PARALLELING CONTROL FOR GENSETS #1 & #2 PRIME POWER AND MANUAL ON/OFF CONTROL FOR GENSET #3 BACKUP OPERATION.
3. IN ADDITION, MINOR MODIFICATIONS WILL BE MADE TO THE PLANT MECHANICAL AND ELECTRICAL SYSTEMS AS INDICATED.
4. THE DESIGN SHOWS CONSTRUCTION OF A NEW HYDRONIC ENGINE COOLING SYSTEM WITH REMOTE RADIATORS AND NEW SHOP BAY UNIT HEATER. ALL ENGINE COOLING AND HYDRONIC WORK SHOWN ON THESE DRAWINGS IS FOR INFORMATIONAL PURPOSES ONLY. ALL HYDRONIC EQUIPMENT IS TO BE FURNISHED AND INSTALLED BY THE UTILITY. THE SCOPE OF THE DERA PROJECT COOLING SYSTEM IS LIMITED TO HOSES AND FITTINGS AS NOTED ON DETAILS.

**SCHEDULE OF DRAWINGS:**

- M1.1 PROJECT DESCRIPTION, SCHEDULE OF DRAWINGS, & MECHANICAL WORK PLAN
- M1.2 MECHANICAL WALL PENETRATIONS & VENTILATION DETAILS
- M2.1 GENSET #1 & #2 INSTALLATION DETAILS
- M2.2 FUEL PIPING PLAN, DETAILS, & GENSET #3 INSTALLATION
- M2.3 EXHAUST & CRANK VENT INSTALLATION DETAILS
- M3 GENSET FABRICATION DETAILS
- M4.1 PIPING & EQUIPMENT INSTALLATION PLAN, ELEVATION, & DETAILS
- M4.2 COOLANT PIPING ISOMETRIC & DETAILS
- M4.3 COOLANT PIPING DETAILS
- E1 ELECTRICAL WORK PLAN & EQUIPMENT SCHEDULE
- E2.1 TYPICAL GENERATION BAY SECTION & DETAILS
- E2.2 DETAILS & GENSET #3 SECTION
- E3.1 SWITCHGEAR LAYOUT, ONE-LINE, & SCHEMATICS
- E3.2 GENSET #1 & #2 24V ENGINE WIRING JUNCTION BOX



**GENERAL NOTES:**

1. EXISTING EQUIPMENT TO BE RELOCATED AND REMAIN IN SERVICE SHOWN WITH LIGHT DASHED LINES.
2. NEW EQUIPMENT TO BE INSTALLED SHOWN WITH DARK SOLID LINES.

**SPECIFIC NOTES:**

- [A] INSTALL NEW GENSETS #1 & #2 INCLUDING COOLANT, FUEL, EXHAUST, & CRANK VENT CONNECTIONS. SEE ELECTRICAL FOR ADDITIONAL INSTALLATION DETAILS.
- [B] RELOCATE EXISTING GENSET #3 & INSTALL FUEL & EXHAUST CONNECTIONS. SEE ELECTRICAL FOR ADDITIONAL INSTALLATION DETAILS.
- [C] ENGINE COOLANT & HYDRONIC PIPING & EQUIPMENT SHOWN FOR INFORMATIONAL PURPOSES ONLY & IS NOT IN DERA PROJECT SCOPE. AS PART OF DERA PROJECT FURNISH & INSTALL COOLANT HOSES, KING NIPPLES, & CLAMPS AS INDICATED.
- [D] INSTALL NEW COMBUSTION AIR INTAKE DUCT, SEE SHEET M1.2
- [E] SEE ELECTRICAL.

**ENGINE COOLING & HYDRONIC SYSTEM EQUIPMENT SCHEDULE**

SYMBOL	SERVICE/FUNCTION	DESCRIPTION	MANUFACTURER/MODEL
R-1 R-2	GLYCOL RADIATOR	HORIZONTAL DISCHARGE HOT WATER UNIT HEATER, 358 MBH AT 37 GPM 200F EWT & 60F EAT, 1-1/2HP, 240V, 3ø	MODINE PT-500
ET-1	GEN COOLANT EXPANSION TANK	24 GALLON CAPACITY TANK, 12.75" O.D x 48" LONG FABRICATED STEEL TANK, SEE FABRICATION DETAIL	CUSTOM FABRICATION
HP-EC	ENGINE COOLANT FILL HAND PUMP	DOUBLE ACTION PISTON HAND PUMP, ALUM HOUSING, SS PISTON SHAFT & LINER, BUNA-N SEALS, ANTI-SIPHONING VALVE.	GPI MODEL HP-100
P-UH1	SHOP HEAT	15 GPM AT 15' TDH, 1/12HP, 115V, 1ø. PROVIDE WITH 1-1/4" SOLDER SHUTOFF FLANGES, GASKETS, & BOLTS.	GRUNDFOS UP 26-64F
UH-1	SHOP HEAT	HORIZONTAL DISCHARGE UNIT HEATER, 143 MBH AT 15 GPM, 200F EWT & 60F EAT, 1/3HP, 120V, 1ø	MODINE HC-193

NOTE: ALL ENGINE COOLING AND HYDRONIC EQUIPMENT IS TO BE FURNISHED AND INSTALLED BY THE UTILITY AND ARE SHOWN HERE FOR INFORMATIONAL PURPOSES ONLY.

**PIPE/TUBING STRUT CLAMP SCHEDULE**

PIPE/TUBE	CLAMP #	PIPE/TUBE	CLAMP #	NOTES:
1/2" COPPER	B2026	1/2" STEEL	B2008	1) ALL CLAMP NUMBERS ARE B-LINE. EQUIVALENT EQUALS ACCEPTABLE. 2) ALL CLAMPS TO BE PRE-GALVANIZED. 3) WRAP ALL COPPER TUBING AT CLAMP LOCATIONS WITH VINYL PIPE WRAP TAPE TO PROVIDE DIELECTRIC ISOLATION. 4) SEE PLANS, ELEVATIONS, ISOMETRICS, AND DETAILS FOR ACTUAL PIPE SIZES.
3/4" COPPER	B2028	3/4" STEEL	B2009	
1" COPPER	B2030	1" STEEL	B2010	
1-1/4" COPPER	B2032	1-1/4" STEEL	B2011	
1-1/2" COPPER	B2034	1-1/2" STEEL	B2012	
2" COPPER	B2038	2" STEEL	B2013	
2-1/2" COPPER	B2042	3" STEEL	B2015	

**1** EQUIPMENT LAYOUT & MECHANICAL WORK PLAN  
3/8"=1'-0"

THESE DRAWINGS HAVE BEEN PREPARED FROM INFORMATION PROVIDED BY OTHERS & OBSERVATIONS OF THE UNDERSIGNED. THERE IS NO GUARANTEE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION CONTAINED HEREIN.

*John Daleson*  
DATE: 12/30/20

PROJECT: FFY17-18 DERA PROJECT  
CIRCLE POWER PLANT UPGRADE

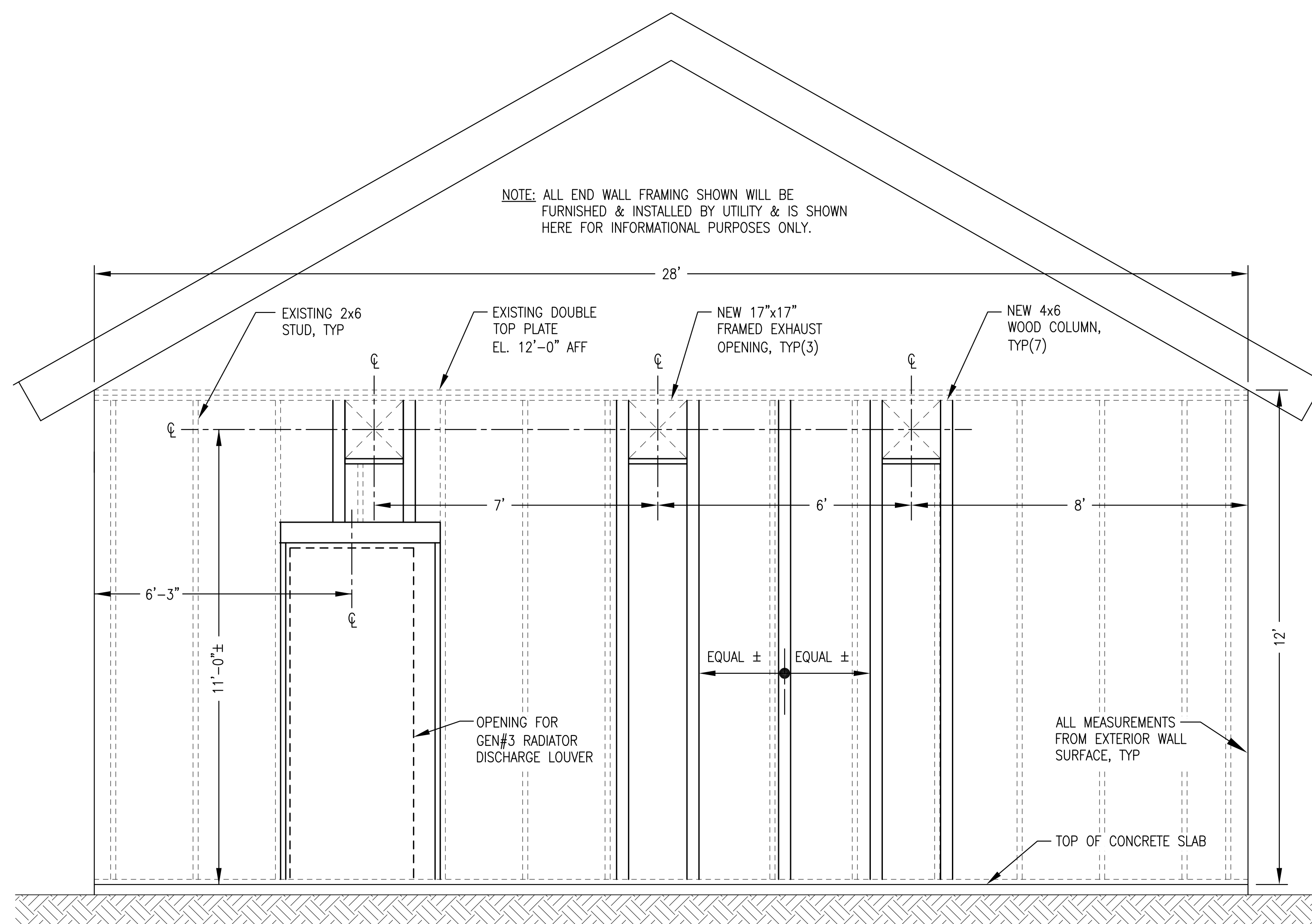
TITLE: PROJECT DESCRIPTION, SCHEDULE OF DRAWINGS, & MECHANICAL WORK PLAN

Gray Stassel Engineering, Inc.  
P.O. 111405, Anchorage, AK 99511 (907)349-0100

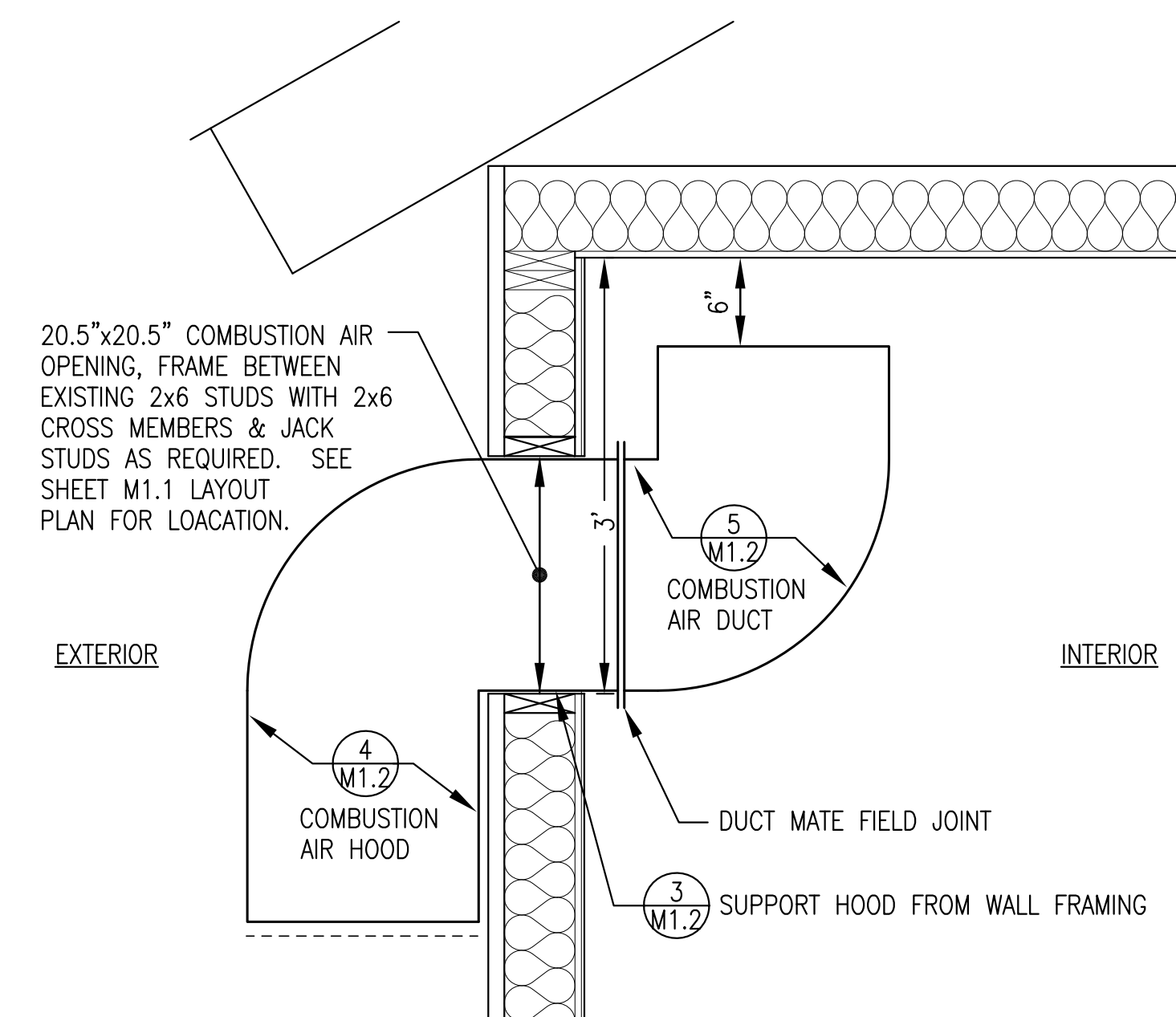
DRAWN BY: JTD  
DESIGNED BY: BCG  
FILE NAME: CIRDERA M1-4A  
PROJECT NUMBER:

SCALE: AS NOTED  
DATE: 3/18/20  
SHEET: M1.1 OF 4

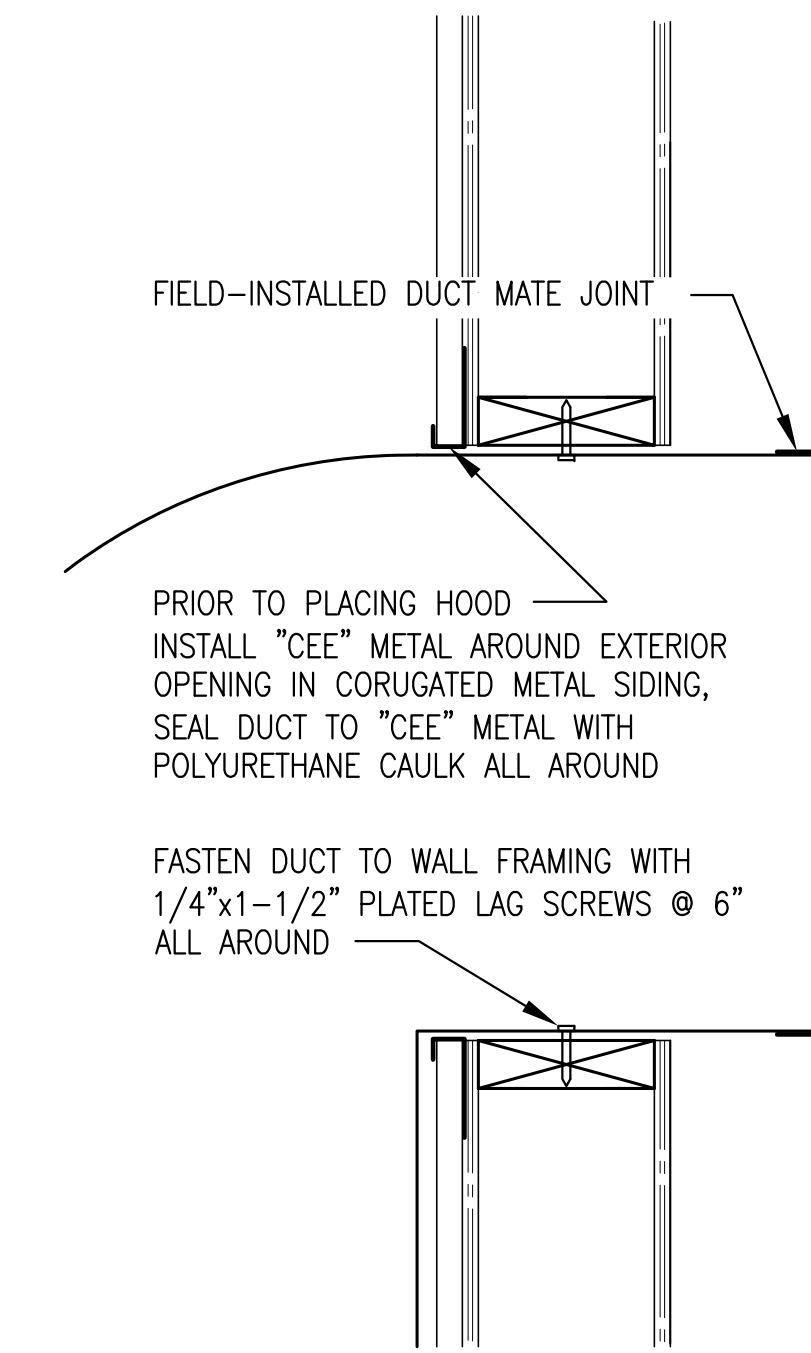




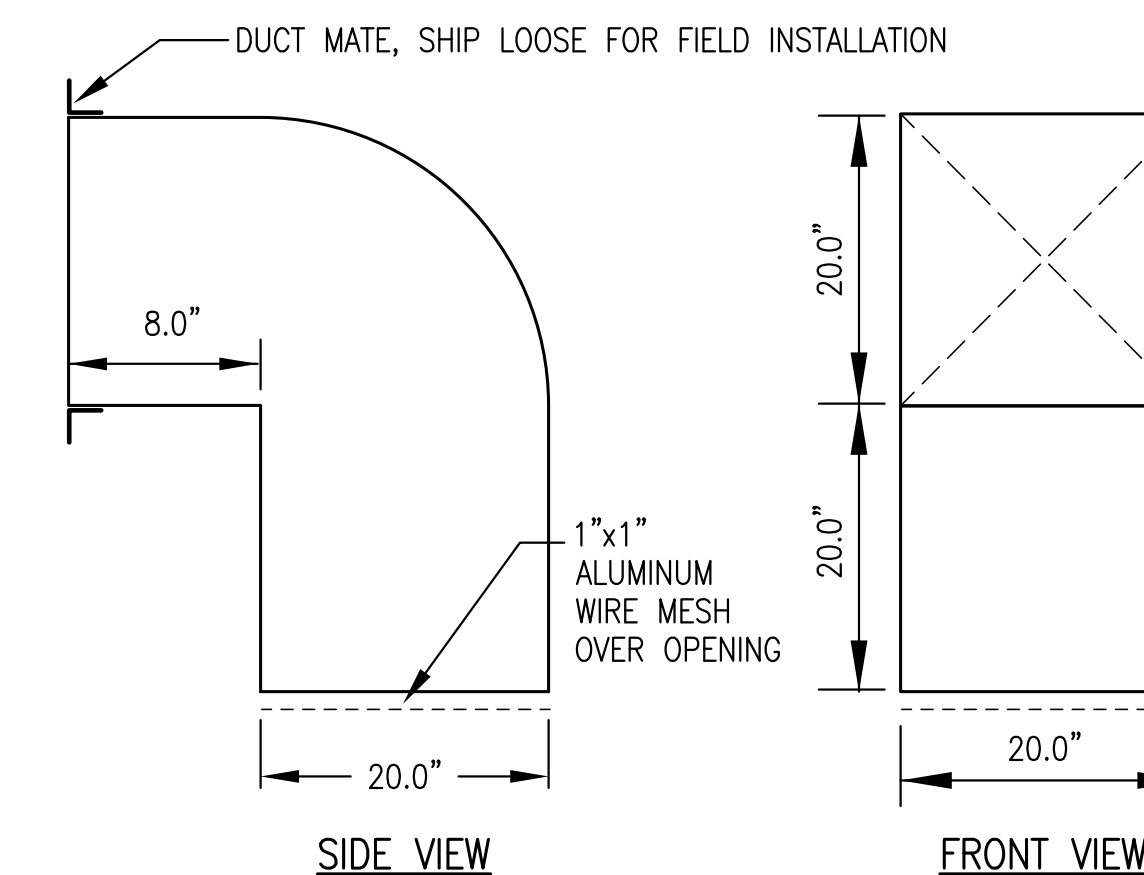
**1** MECHANICAL PENETRATION END WALL FRAMING ELEVATION (EXTERIOR VIEW)  
**M1.2** 1/2"=1'-0"



**2** COMBUSTION AIR DUCT INSTALLATION  
**M1.2** 1"=1'-0"

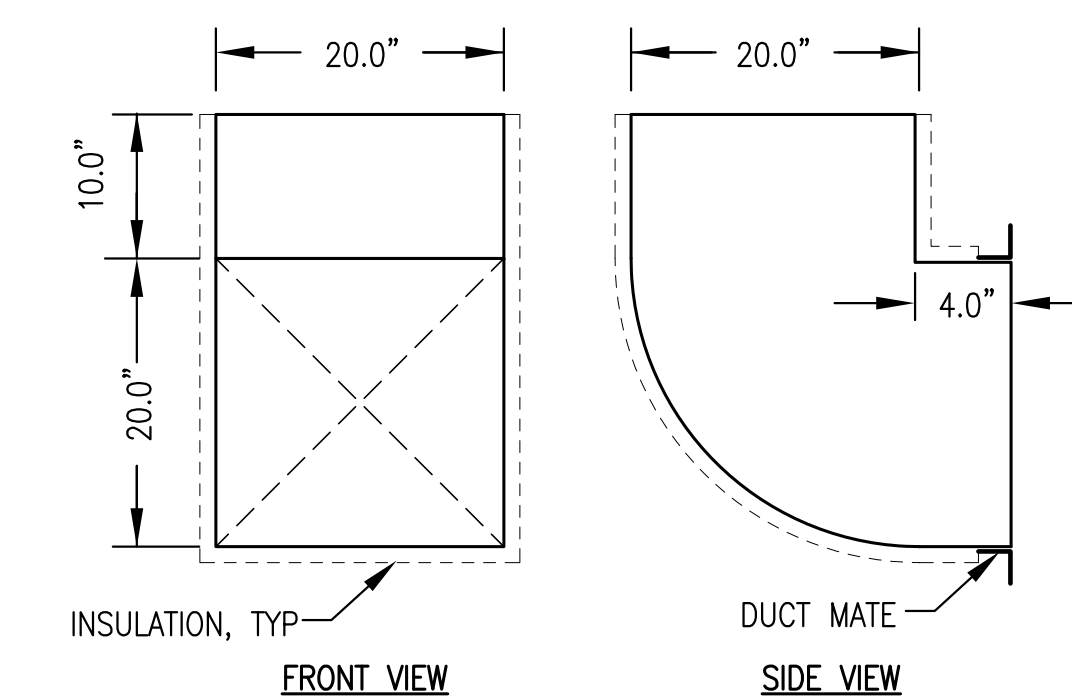


**3** COMBUSTION AIR HOOD SUPPORT  
**M1.2** 2"=1'-0"



NOTE: FABRICATE FROM 20 GAUGE GALV. SHEET METAL.

**4** COMBUSTION AIR HOOD FABRICATION  
**M1.2** 1"=1'-0"



NOTES:

- FABRICATE 1 EA. ASSEMBLY.
- FABRICATE FROM MIN 20 GAUGE GALV. SHEET METAL, WELD ALL SEAMS.
- INSULATE WITH 1" THICK RIGID FOIL-BACK INSULATION AND SEAL WITH FOIL TAPE

**5** COMBUSTION AIR DUCT FABRICATION  
**M1.2** 1"=1'-0"

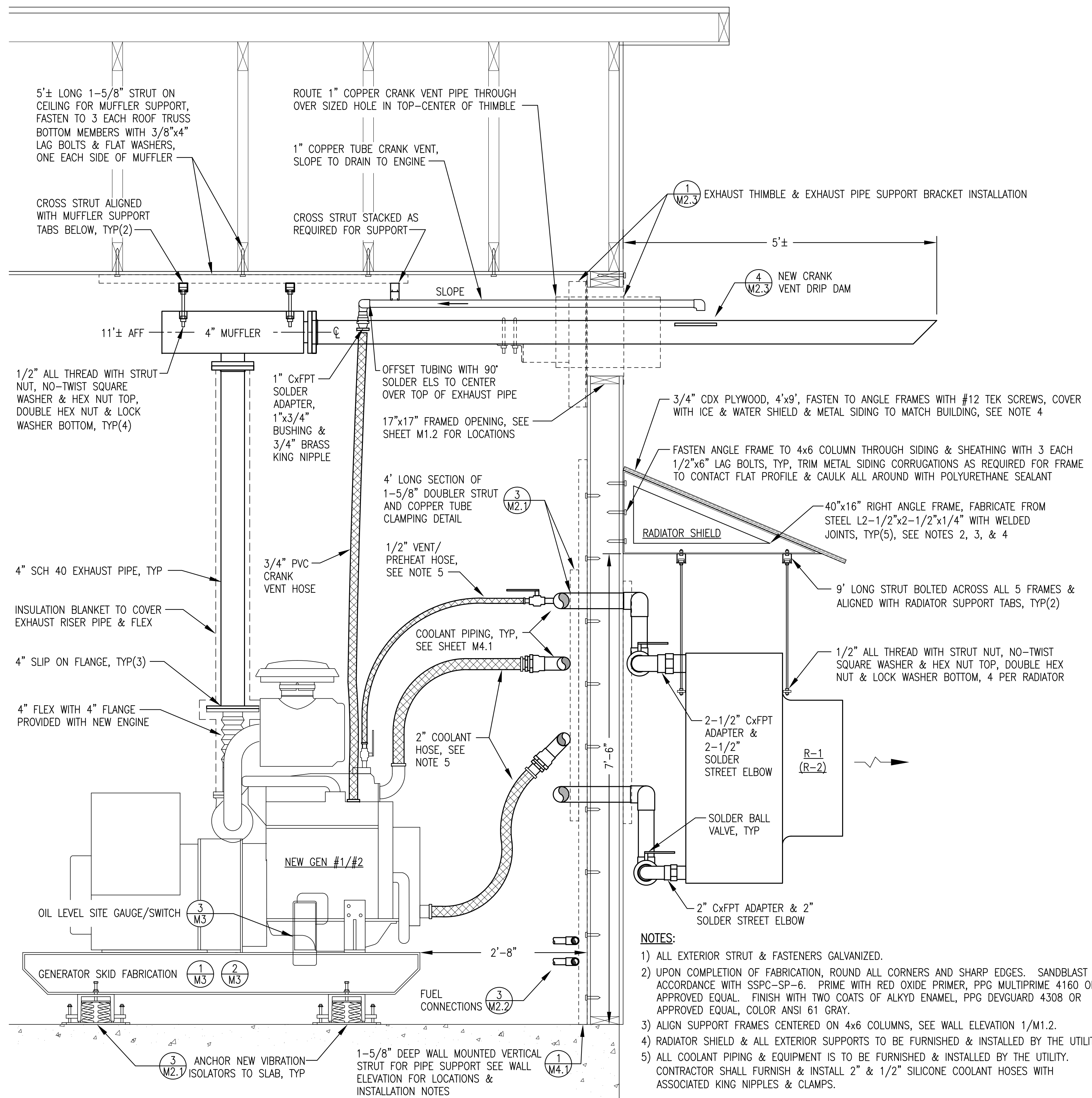
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*John Daleson*

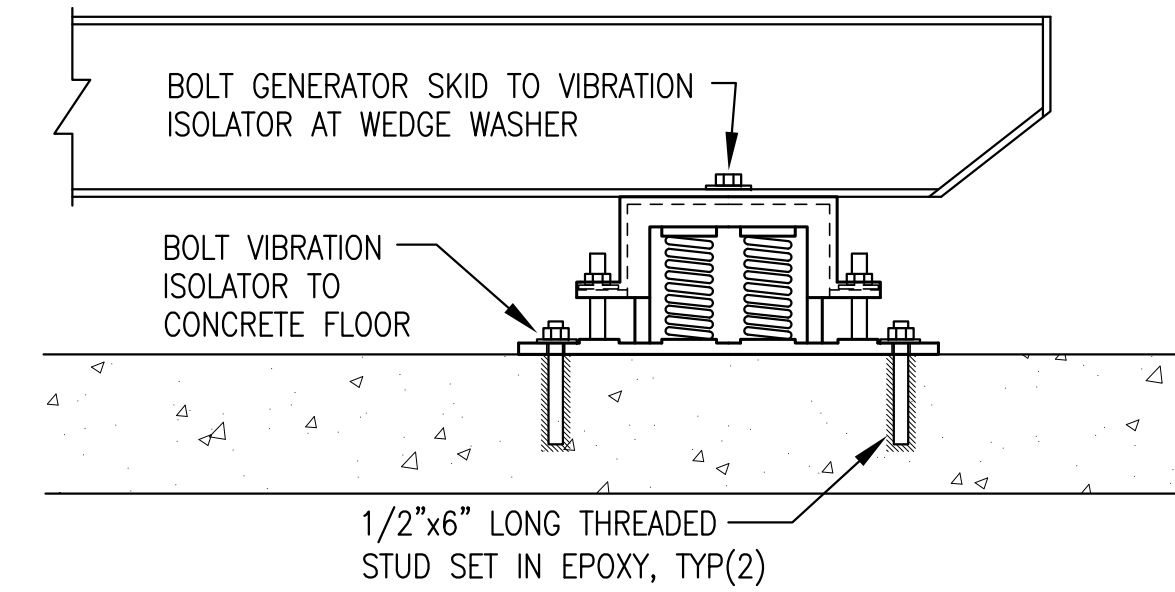
DATE: 12/30/20

PROJECT: FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE	
TITLE: MECHANICAL WALL PENETRATIONS & VENTILATION DETAILS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 3/18/20
FILE NAME: CIRDERA M1-4A	SHEET: M1.2 OF 4
PROJECT NUMBER:	

**Gray Stassel Engineering, Inc.**  
 P.O. 111405, Anchorage, AK 99511 (907)349-0100



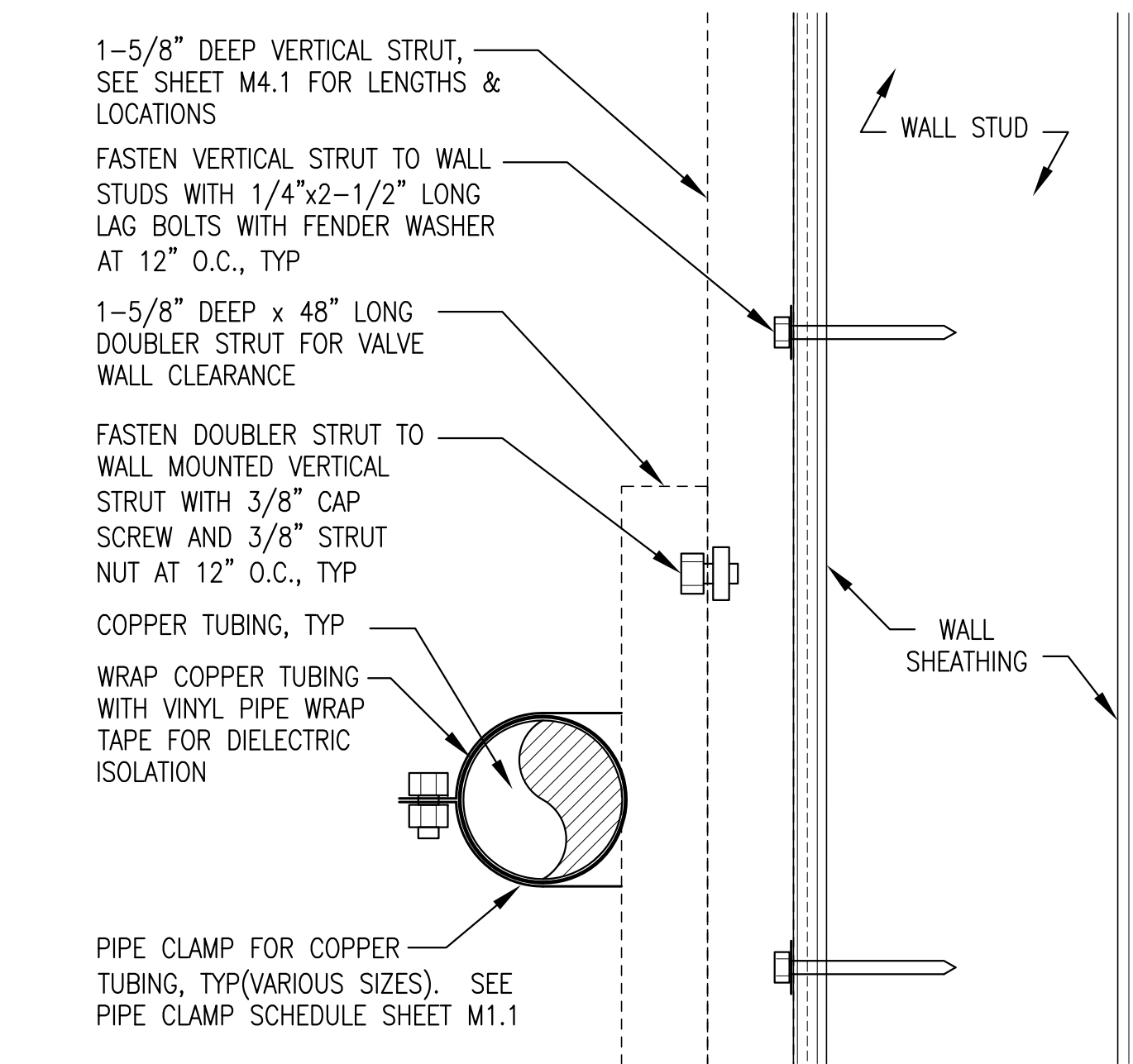
**1** NEW GENSET #1 & #2 INSTALLATION ELEVATION  
 M2.1 1"=1'-0"



**NOTES:**

- 1) GENSET #1 & #2: VIBRATION ISOLATORS SPECIFIED TO BE FURNISHED WITH GENSETS. FOR GENSET #3 FURNISH 4 NEW VIBRATION ISOLATORS IDENTICAL TO THOSE FURNISHED FOR GENSET #1 & #2.
- 2) AFTER INSTALLATION ADJUST SPRING VIBRATION ISOLATOR LEVELING BOLTS TO ACHIEVE A UNIFORM INSTALLATION HEIGHT OF APPROXIMATELY 5-3/4" THEN TIGHTEN LOCKING NUTS. ADJUST NUTS ON STABILIZER BOLTS TO ACHIEVE A UNIFORM CLEARANCE OF APPROXIMATELY 1/8" THEN TIGHTEN LOCKING NUTS. VERIFY UNIT MOVES FREELY ON ISOLATORS

**2** GENERATOR VIBRATION ISOLATOR INSTALLATION  
 M2.1 NO SCALE



**3** DOUBLER STRUT & COPPER TUBE CLAMPING DETAIL  
 M2.1 NO SCALE

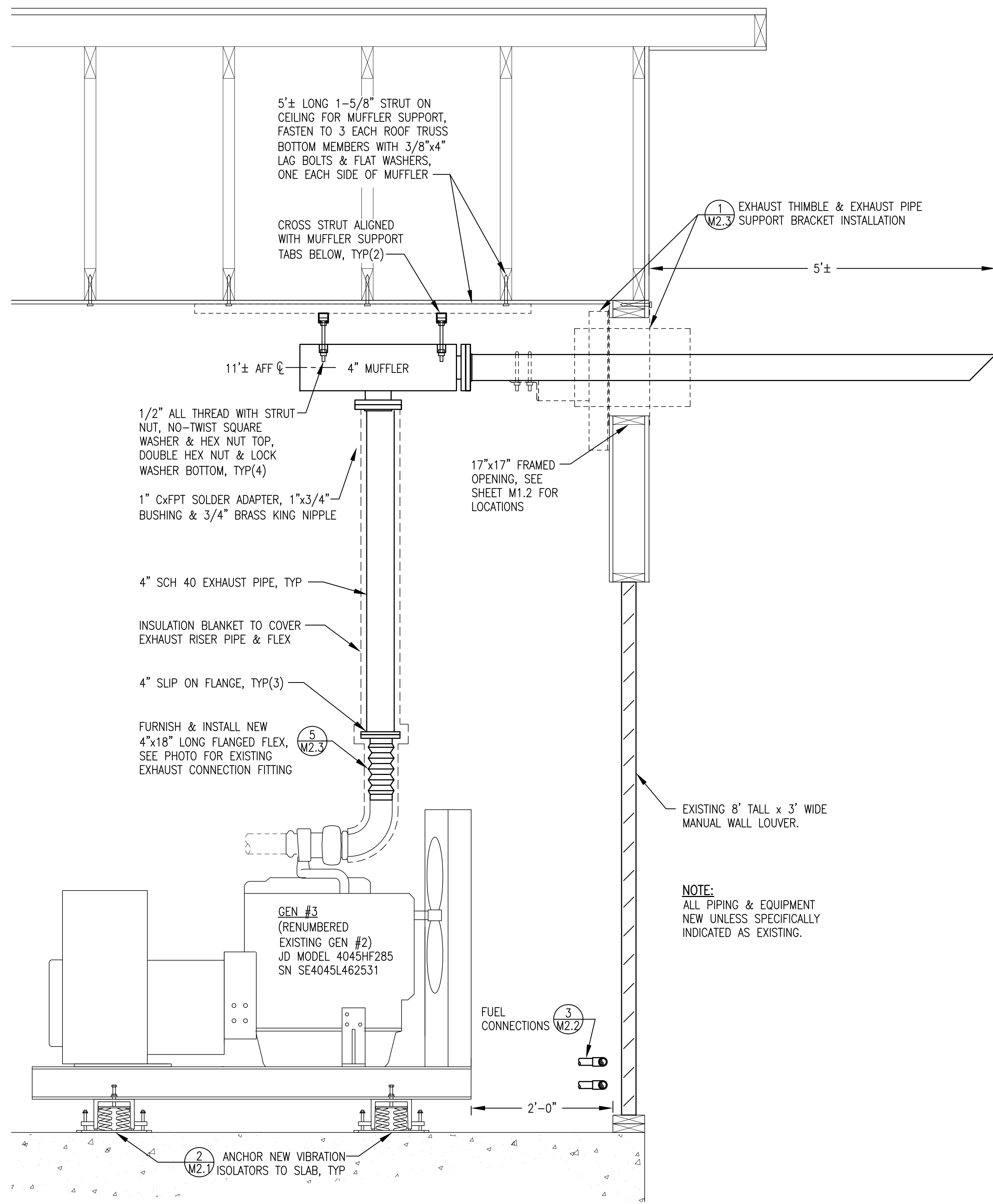
**NOTES:**

- 1) ALL EXTERIOR STRUT & FASTENERS GALVANIZED.
- 2) UPON COMPLETION OF FABRICATION, ROUND ALL CORNERS AND SHARP EDGES. SANDBLAST IN ACCORDANCE WITH SSPC-SP-6. PRIME WITH RED OXIDE PRIMER, PPG MULTIPRIME 4160 OR APPROVED EQUAL. FINISH WITH TWO COATS OF ALKYD ENAMEL, PPG DEVGUARD 4308 OR APPROVED EQUAL, COLOR ANSI 61 GRAY.
- 3) ALIGN SUPPORT FRAMES CENTERED ON 4x6 COLUMNS, SEE WALL ELEVATION 1/M1.2.
- 4) RADIATOR SHIELD & ALL EXTERIOR SUPPORTS TO BE FURNISHED & INSTALLED BY THE UTILITY.
- 5) ALL COOLANT PIPING & EQUIPMENT IS TO BE FURNISHED & INSTALLED BY THE UTILITY. CONTRACTOR SHALL FURNISH & INSTALL 2" & 1/2" SILICONE COOLANT HOSES WITH ASSOCIATED KING NIPPLES & CLAMPS.

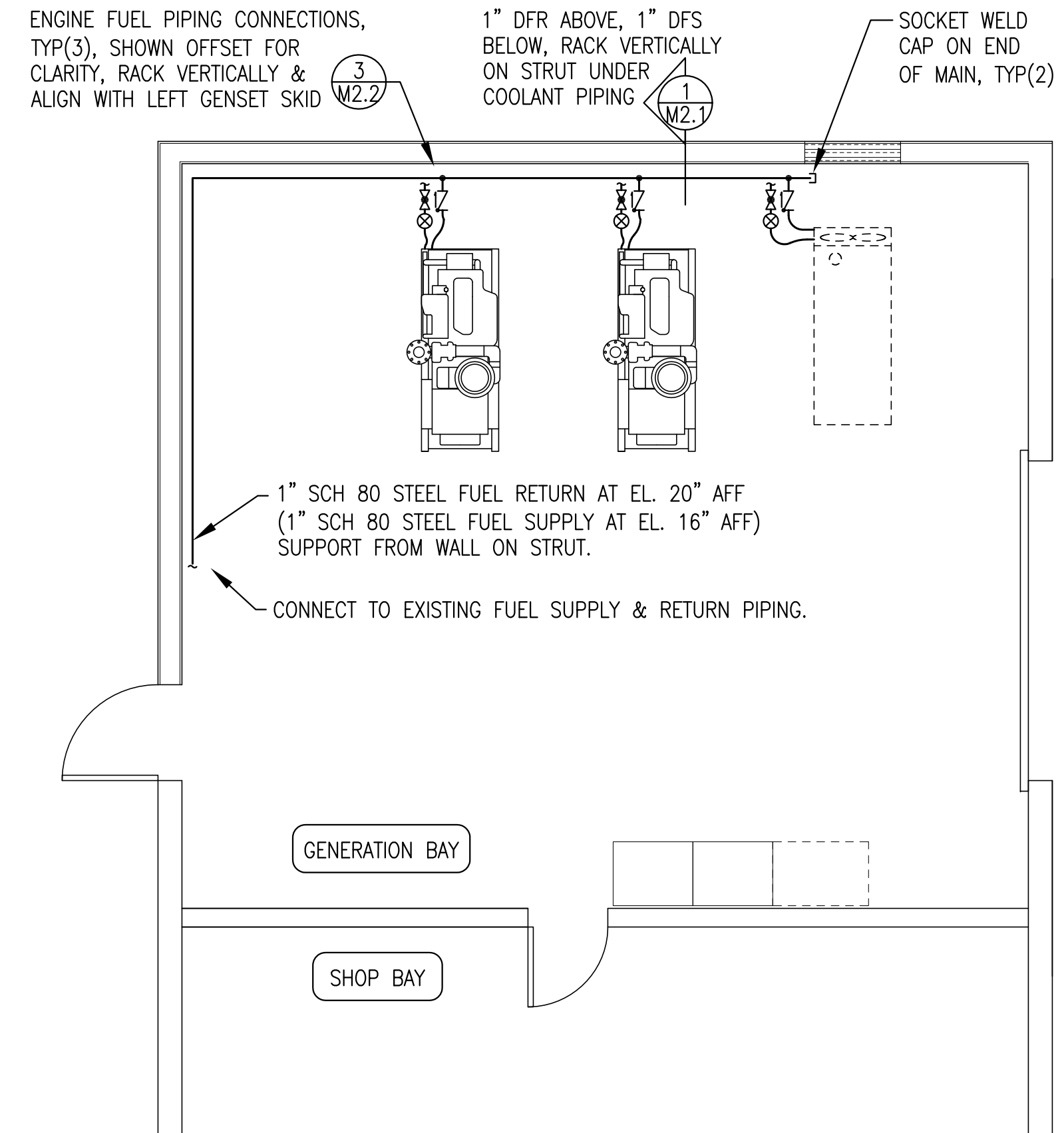
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*John Daleson*  
 DATE: 12/30/20

PROJECT: FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE	
TITLE: GENSET #1 & #2 INSTALLATION DETAILS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 3/18/20
FILE NAME: CIRDERA M1-4A	SHEET: M2.1 OF 4
PROJECT NUMBER:	



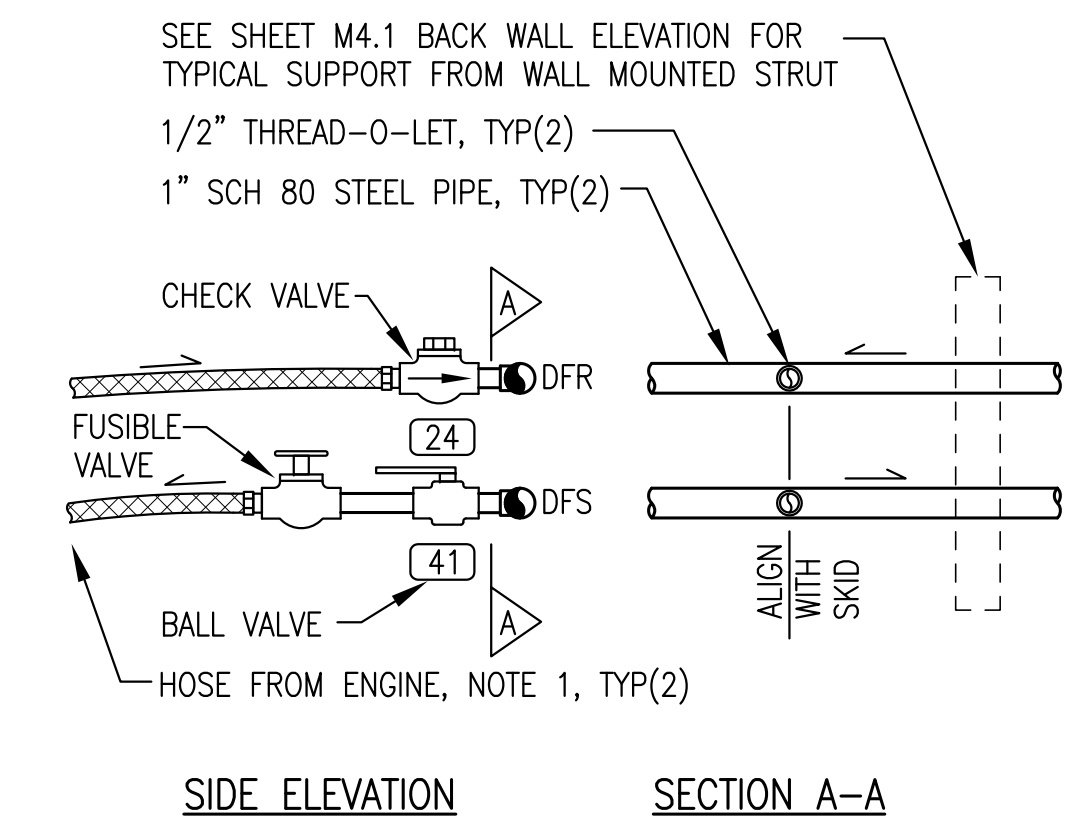
1 GENSSET #3 (RENUMBERED EXISTING GENSSET #2) REINSTALLATION ELEVATION  
M2.2 1"=1'-0"



2 FUEL PIPING PLAN  
M2.2 1/4"=1'-0"

NOTES:

- 1) GENSSET #1 & #2: HOSES PROVIDED WITH ENGINE, SIZE VARIES PER ENGINE & PRODUCT, SEE SHEET M3. ALL EQUIPPED WITH JIC SWIVELS & 1/2" MPT ADAPTERS. CUT TO LENGTH & RE-INSTALL ENDS.
- 2) GENSSET #3 (FORMERLY GEN #2): FURNISH & INSTALL NEW #8 HOSE FOR DFS/DFR. FURNISH WITH JIC SWIVELS & FIELD CUT TO LENGTH. PROVIDE 1/2" MPT ADAPTERS FOR VALVE CONNECTIONS. PROVIDE ADAPTERS AS REQUIRED FOR ENGINE FUEL SYSTEM CONNECTIONS.
- 3) ALL PIPING & NIPPLES SCH 80. ALL VALVES 1/2" SIZE, THREADED BODY.



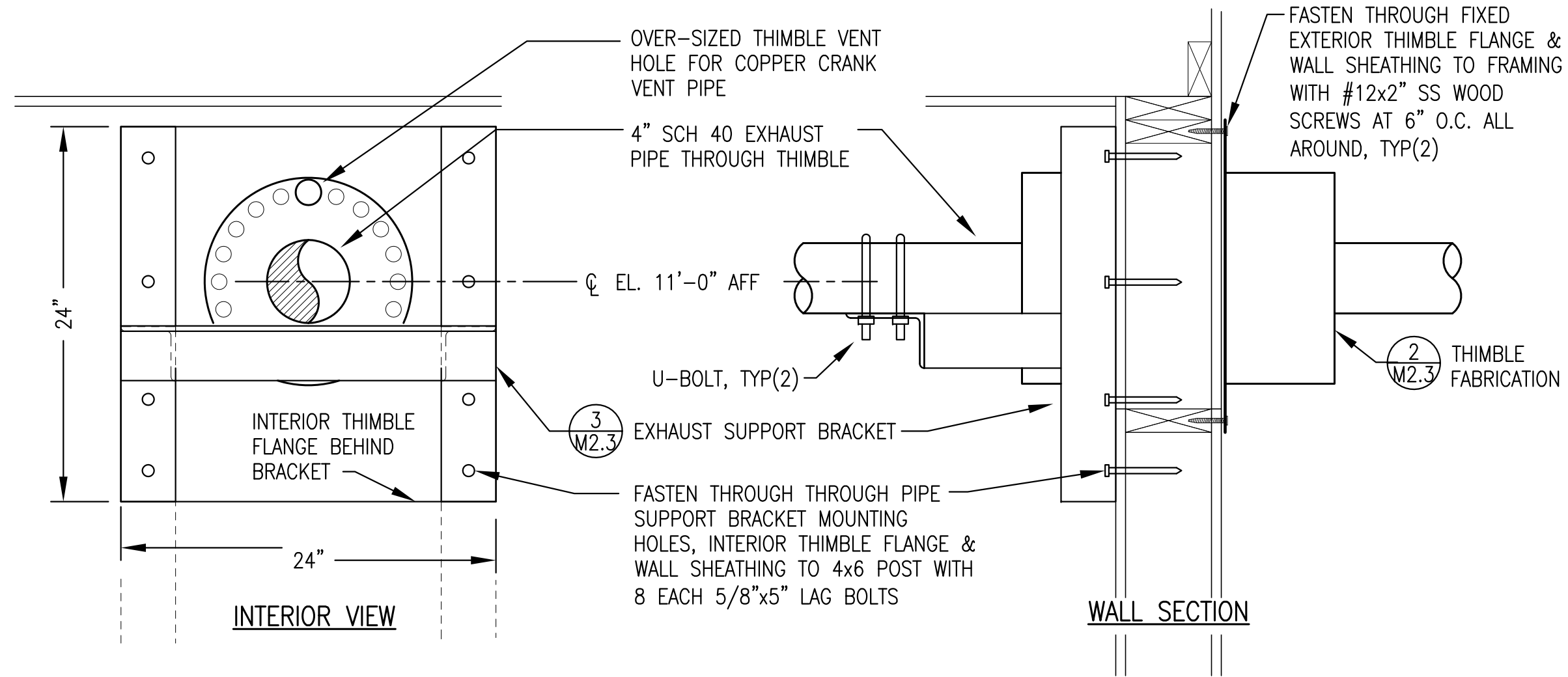
3 TYPICAL FUEL PIPING CONNECTION DETAIL  
M2.2 NO SCALE

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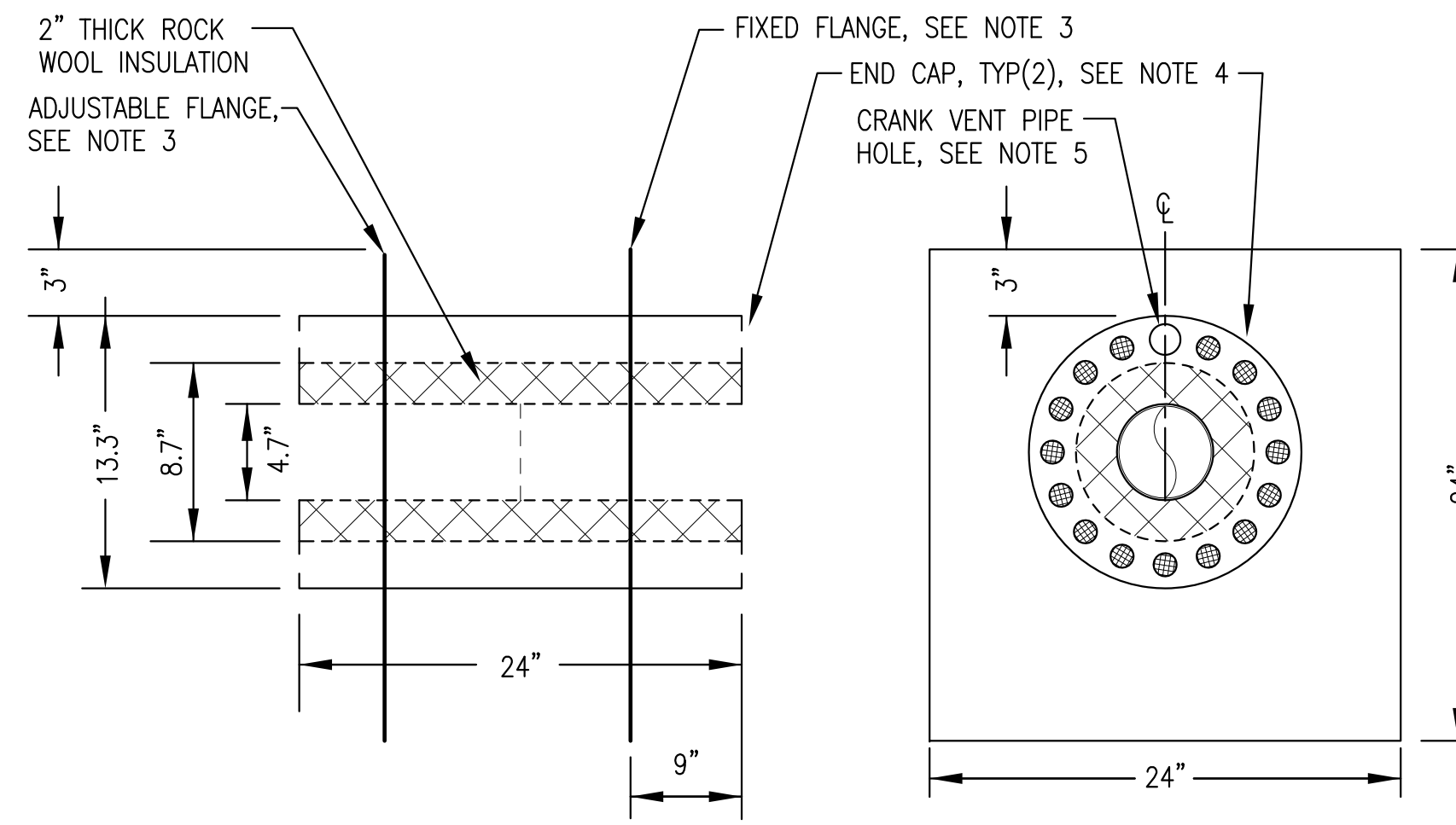
*John Daloz*

DATE: 12/30/20

PROJECT:	FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE		
TITLE:	FUEL PIPING PLAN, DETAILS, & GENSET #3 INSTALLATION,		
	DRAWN BY: JTD	SCALE: AS NOTED	
	DESIGNED BY: BCG	DATE: 3/18/20	
	FILE NAME: CIRDERA M1-4A	SHEET:	M2.2 OF 4
	PROJECT NUMBER:		

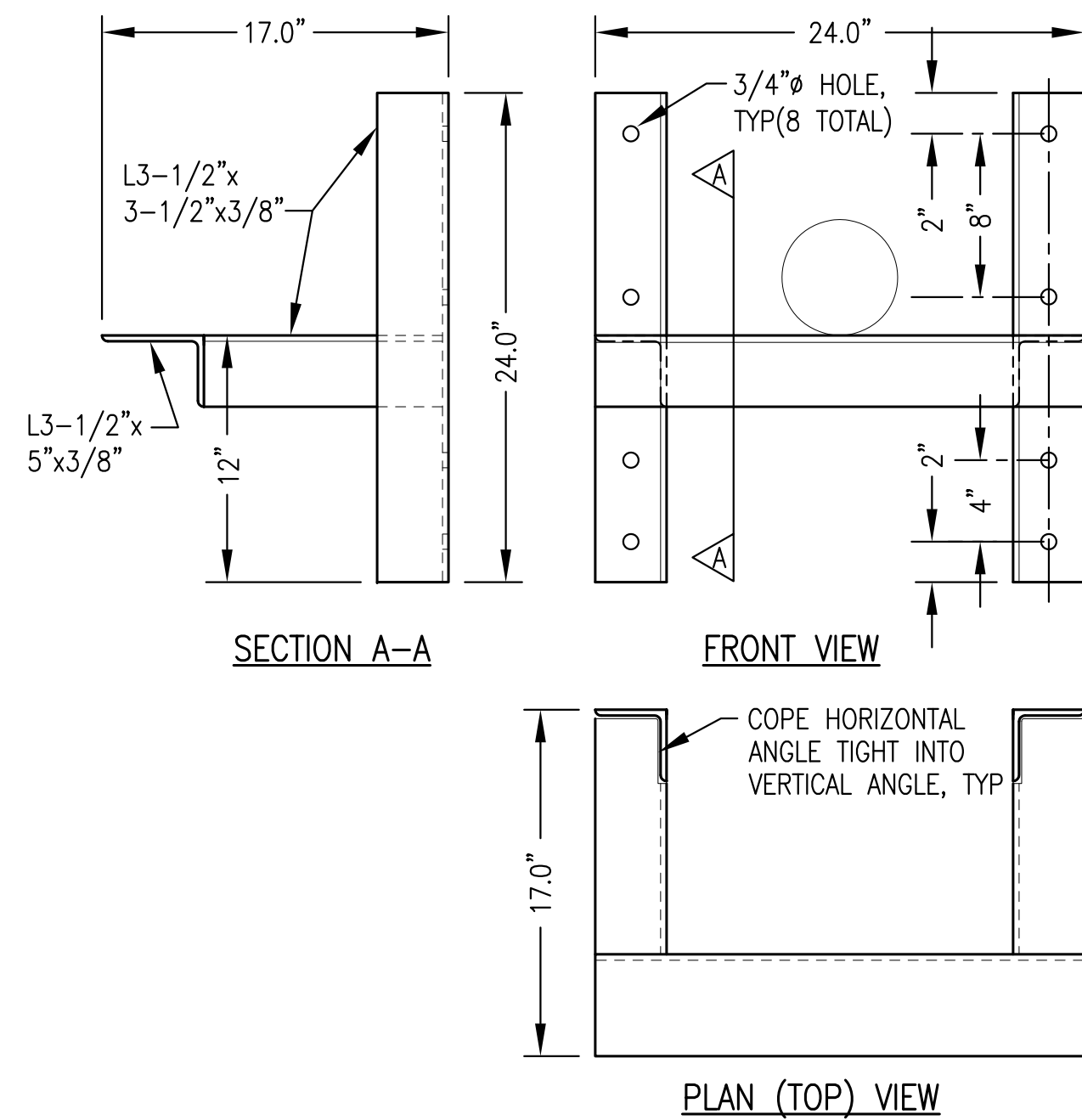


**1** EXHAUST THIMBLE & EXHAUST PIPE SUPPORT BRACKET INSTALLATION  
 M2.3 1-1/2"=1'-0"



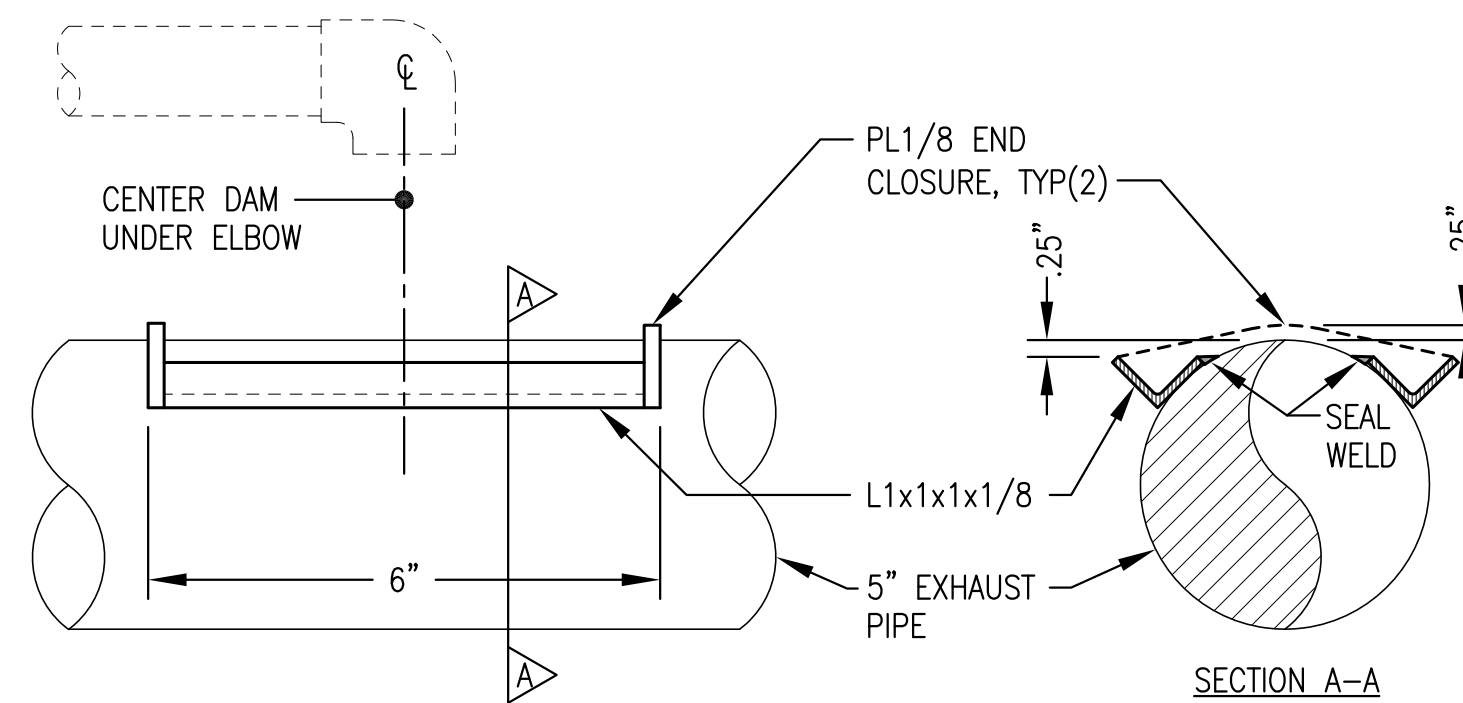
**2** EXHAUST PIPE THIMBLE FABRICATION  
 M2.3 NO SCALE

- NOTES:
1. FABRICATE 3 EACH IDENTICAL THIMBLES.
  2. FABRICATE ENTIRE ASSEMBLY FROM MINIMUM 16 GAUGE TYPE 304 STAINLESS STEEL WITH ALL JOINTS SEAL WELDED.
  3. FABRICATE TWO IDENTICAL SQUARE FLANGES. SEAL WELD FIXED FLANGE TO OUTER SHELL. ADJUSTABLE FLANGE TO SHIP LOOSE FOR FIELD INSTALLATION.
  4. SEAL WELD END CAPS TO INNER & OUTER SHELLS. PROVIDE 16 EACH 1" VENT HOLES INTO UNINSULATED SPACE BOTH ENDS, EQUALLY SPACED. ON EXTERIOR (FIXED FLANGE) END INSTALL 1/8" STAINLESS STEEL BUG SCREEN.
  5. AT TOP-CENTER LOCATION EACH END PROVIDE 1.5" VENT HOLE WITHOUT SCREEN FOR CRANK VENT PIPE INSTALLATION.



- NOTES:
1. FABRICATE 3 EACH IDENTICAL BRACKETS.
  2. MAKE ALL JOINTS WITH CONTINUOUS FULL PENETRATION WELDS.
  3. AFTER COMPLETION GRIND EDGES AND ROUND SHARP CORNERS, SANDBLAST ENTIRE ASSEMBLY, AND FINISH WITH TWO COATS OF EPOXY, SHERWIN WILLIAMS MACROPOXY 646, NO SUBSTITUTES, COLOR STRUCTURAL GRAY 4031.

**3** EXHAUST SUPPORT BRACKET FABRICATION  
 M2.3 NO SCALE



**4** CRANKCASE DRIP DAM FABRICATION DETAIL  
 M2.3 NO SCALE



**5** EXISTING E-GEN EXHAUST CONNECTION FITTING  
 M2.3 NO SCALE

PROJECT: FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE	
TITLE: EXHAUST & CRANK VENT INSTALLATION DETAILS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 3/18/20
FILE NAME: CIRDERA M1-4A	SHEET: M2.3 OF 4
PROJECT NUMBER:	

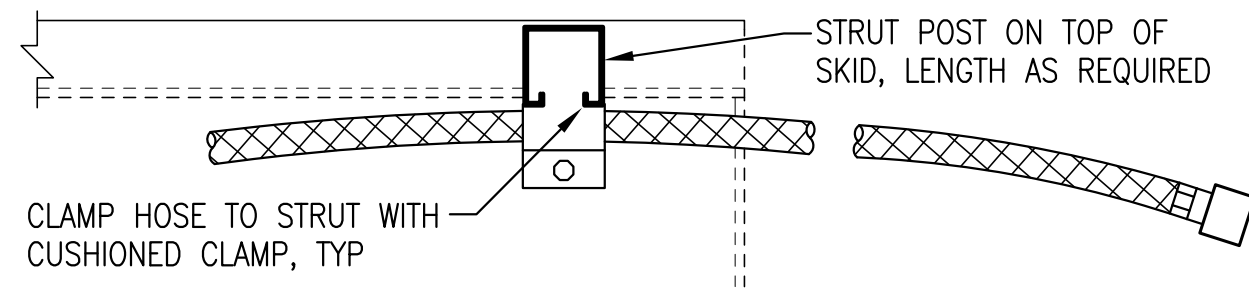
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*John Daleson*  
 DATE: 12/30/20

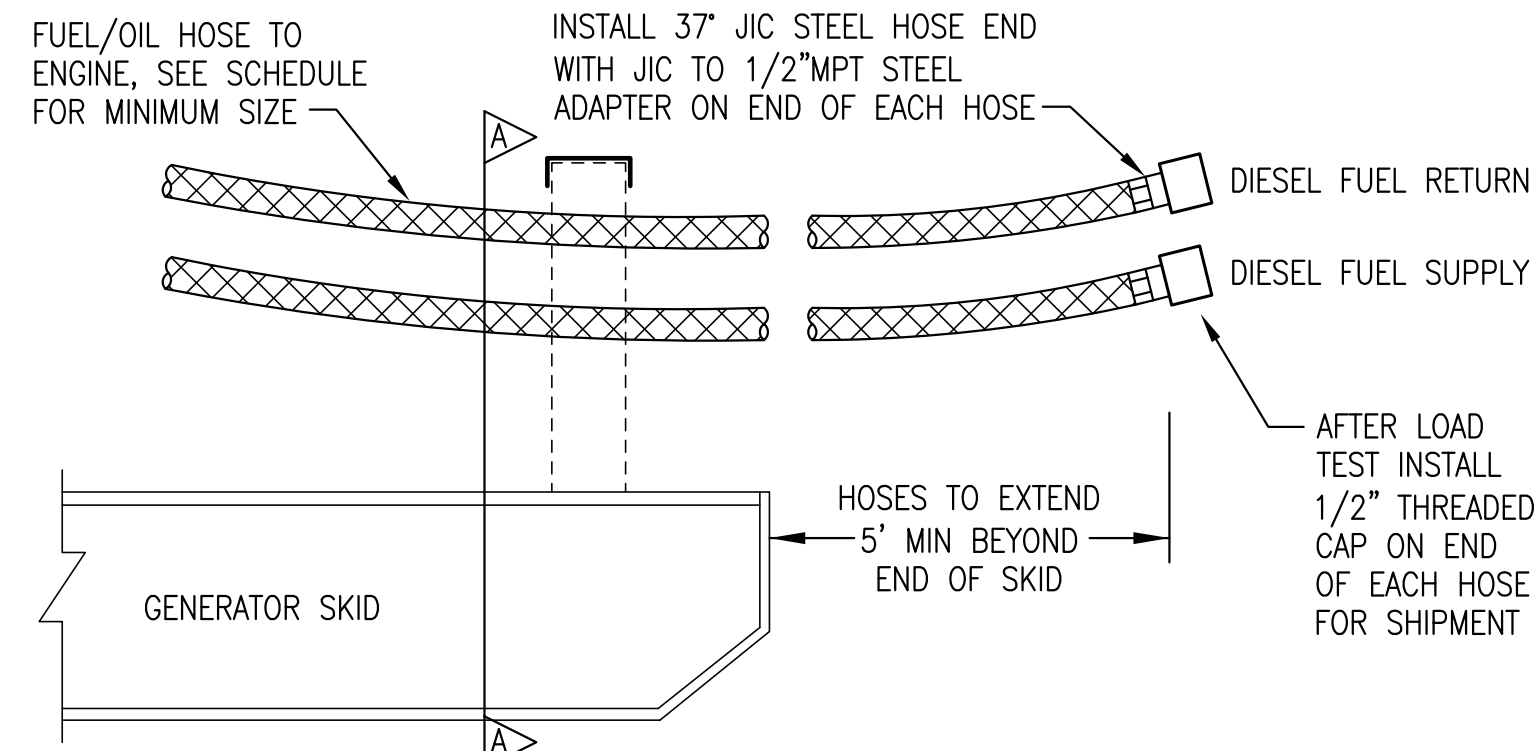
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MINIMUM HOSE SIZE SCHEDULE		
FUEL SUPPLY	FUEL RETURN	USED OIL
#8	#8	N/A

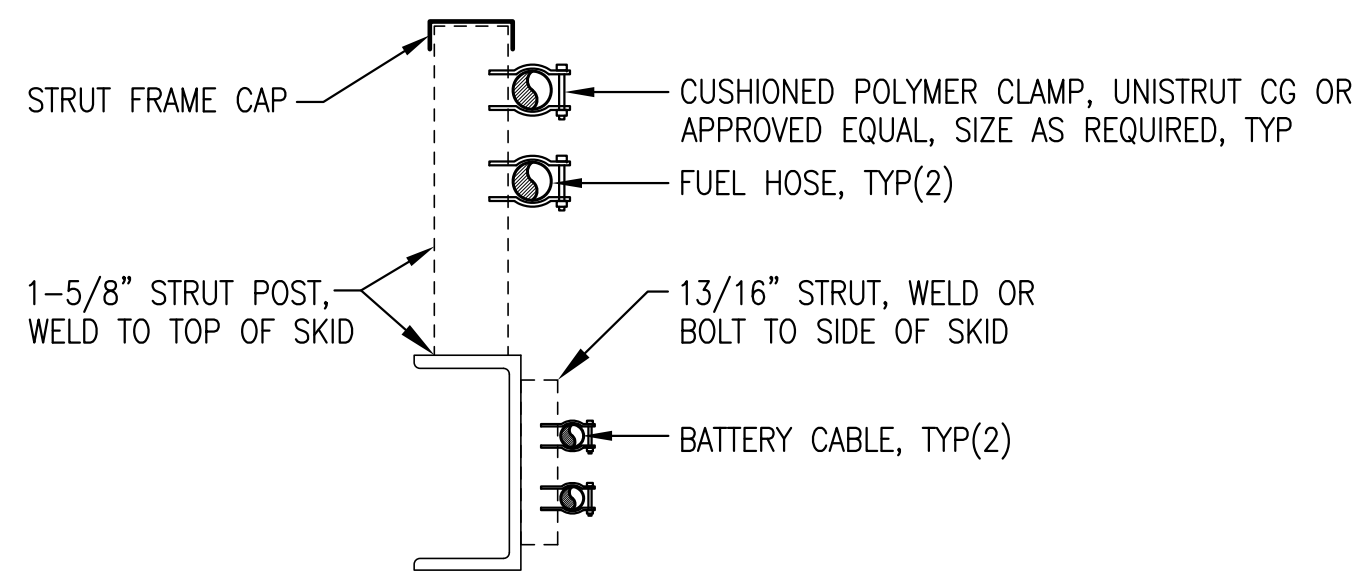
NOTE:  
ON 4045'S GROUP HOSES  
ON LEFT SKID AS SHOWN  
TO COORDINATE WITH  
COOLANT HOSES.



LEFT SKID PLAN (TOP) VIEW

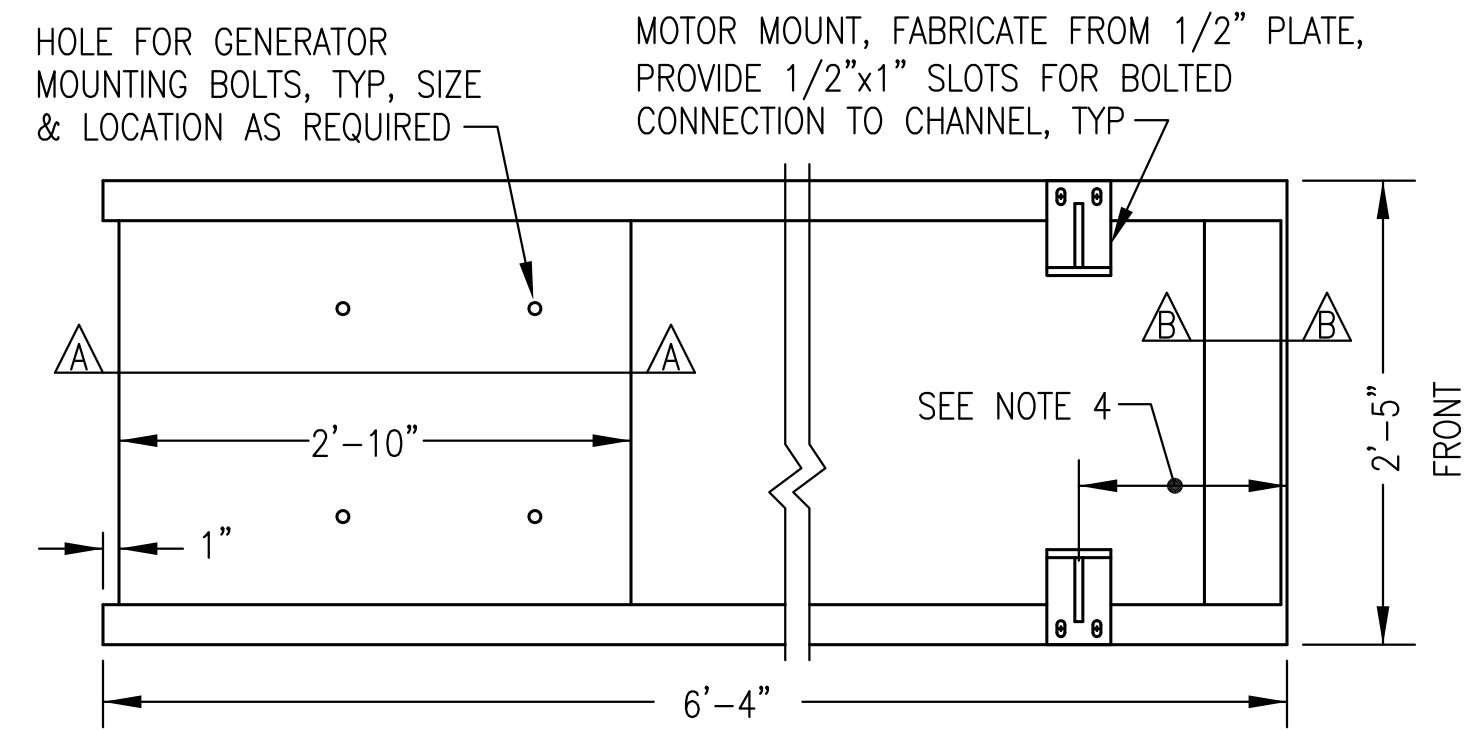


ELEVATION (SIDE) VIEW

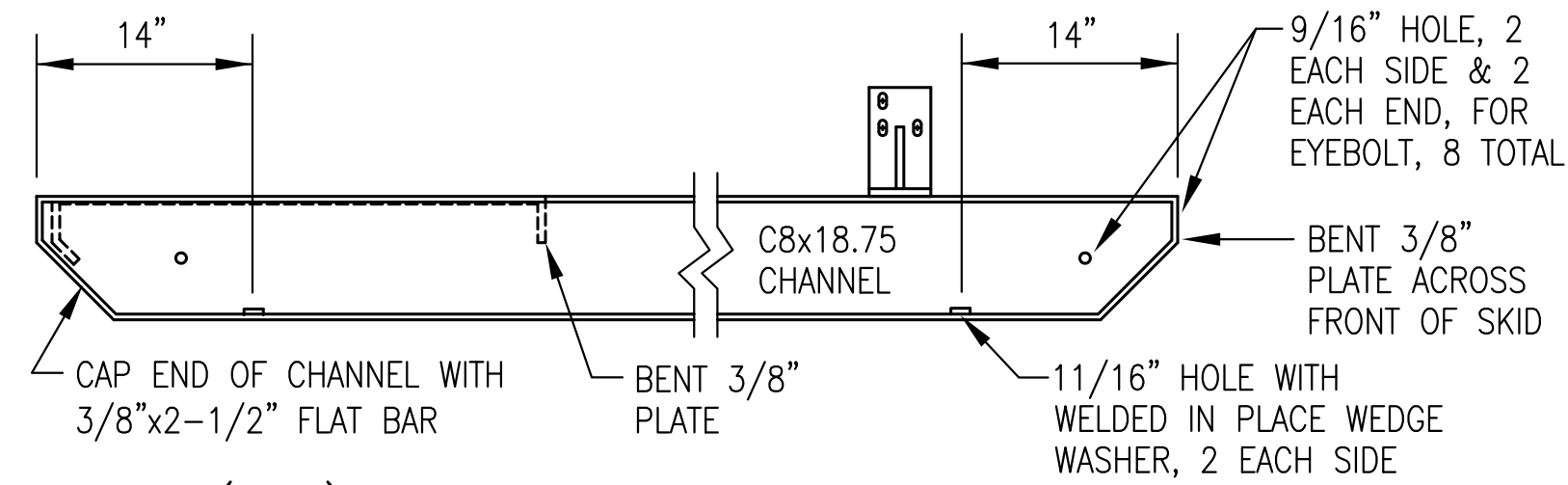


SECTION A-A

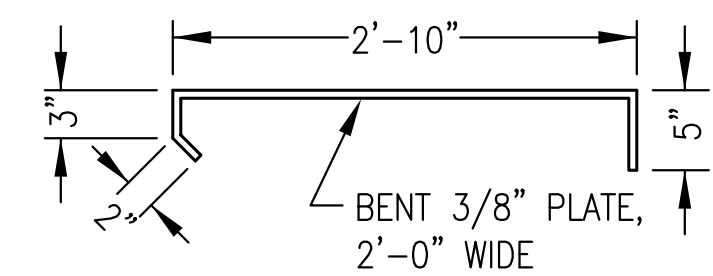
**1** FUEL/OIL HOSE & BATTERY CABLE INSTALLATION ON SKID  
M3 NO SCALE



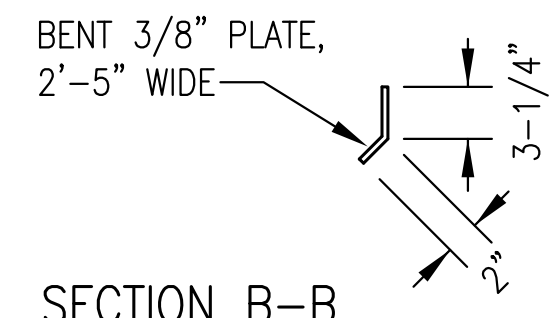
PLAN (TOP) VIEW



ELEVATION (SIDE) VIEW



SECTION A-A

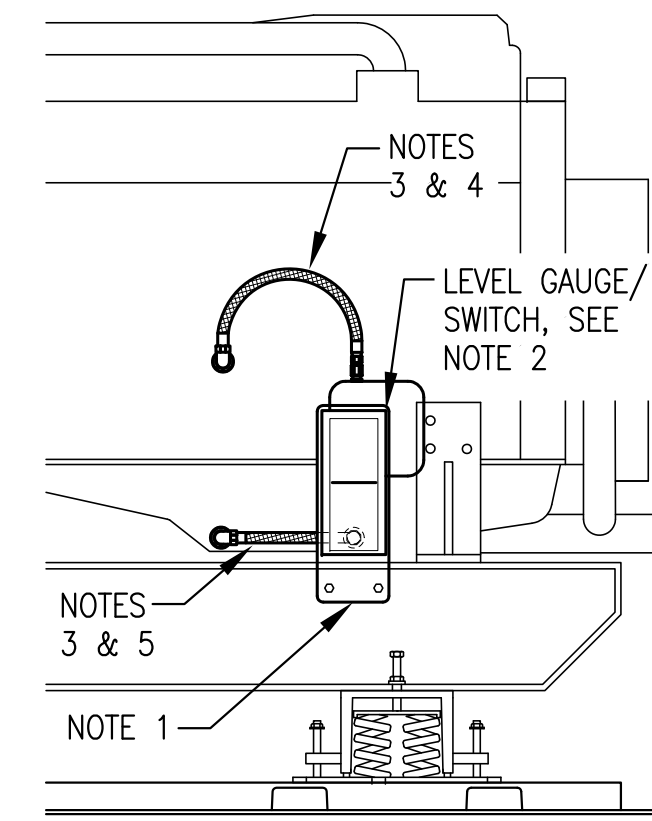


SECTION B-B

NOTES:

- 1) FABRICATE FROM ASTM A-36 STEEL. BEND PLATES & CUT ENDS OF CHANNELS AT 90° & 45° AS SHOWN.
- 2) EXCEPT WHERE INDICATED AS BOLTED MAKE ALL CONNECTIONS WITH CONTINUOUS WELDS (FILLET OR FULL-PENETRATION GROOVE AS REQUIRED) IN ACCORDANCE WITH CURRENT AWS STANDARD CODE.
- 3) ROUND ALL CORNERS & GRIND WELDS SMOOTH AFTER FABRICATION. PAINT TO MATCH ENGINE-GENERATOR.
- 4) PLACE UNIT ON SKID SO THAT THE EXHAUST RISER CENTERLINE IS 3'-3" FROM THE FRONT OF THE SKID.

**2** TYPICAL GENERATOR SKID FABRICATION  
M3 NO SCALE



**3** TYPICAL OIL LEVEL GAUGE/SWITCH INSTALLATION  
M3 NO SCALE

NOTES:

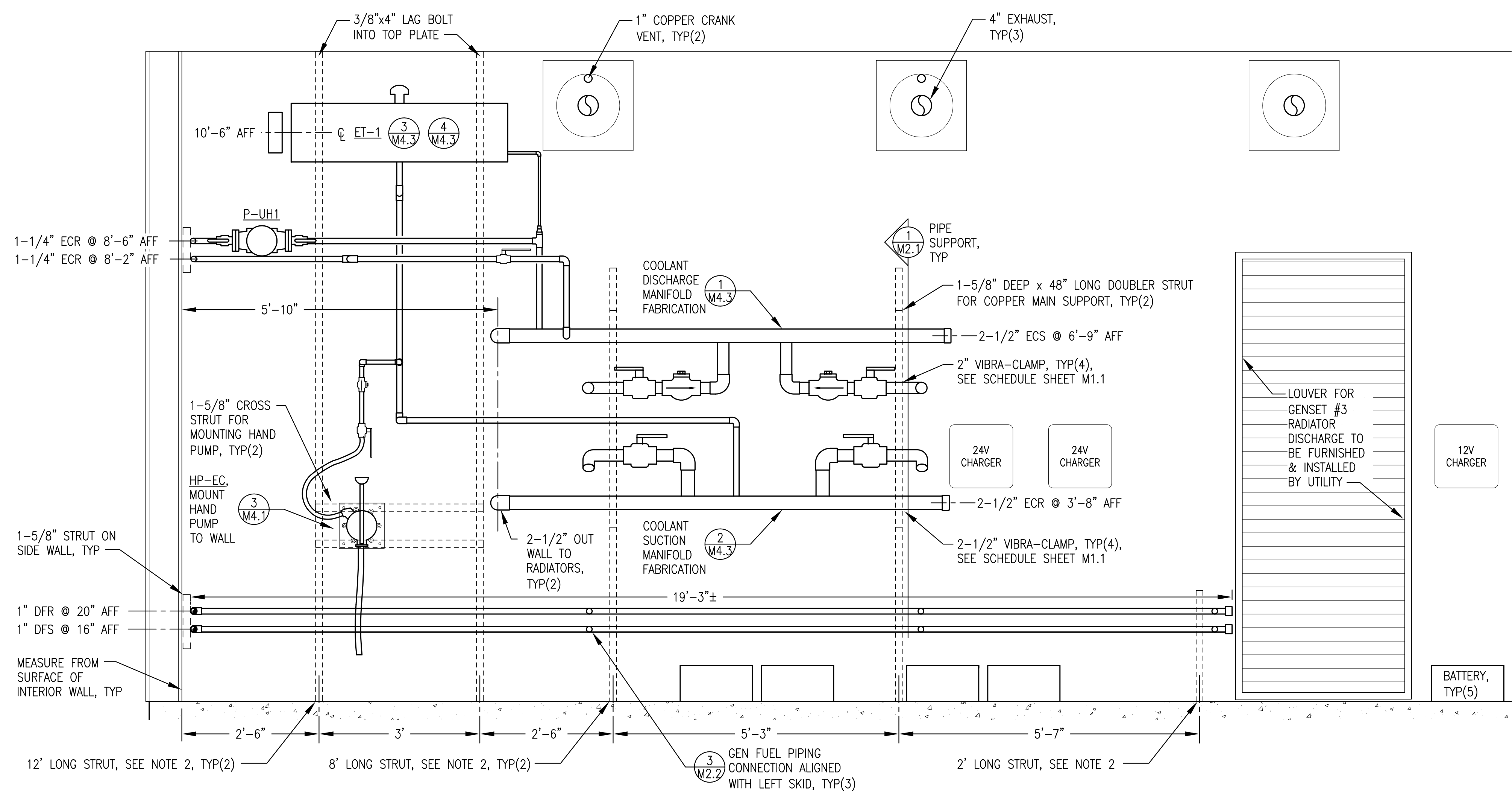
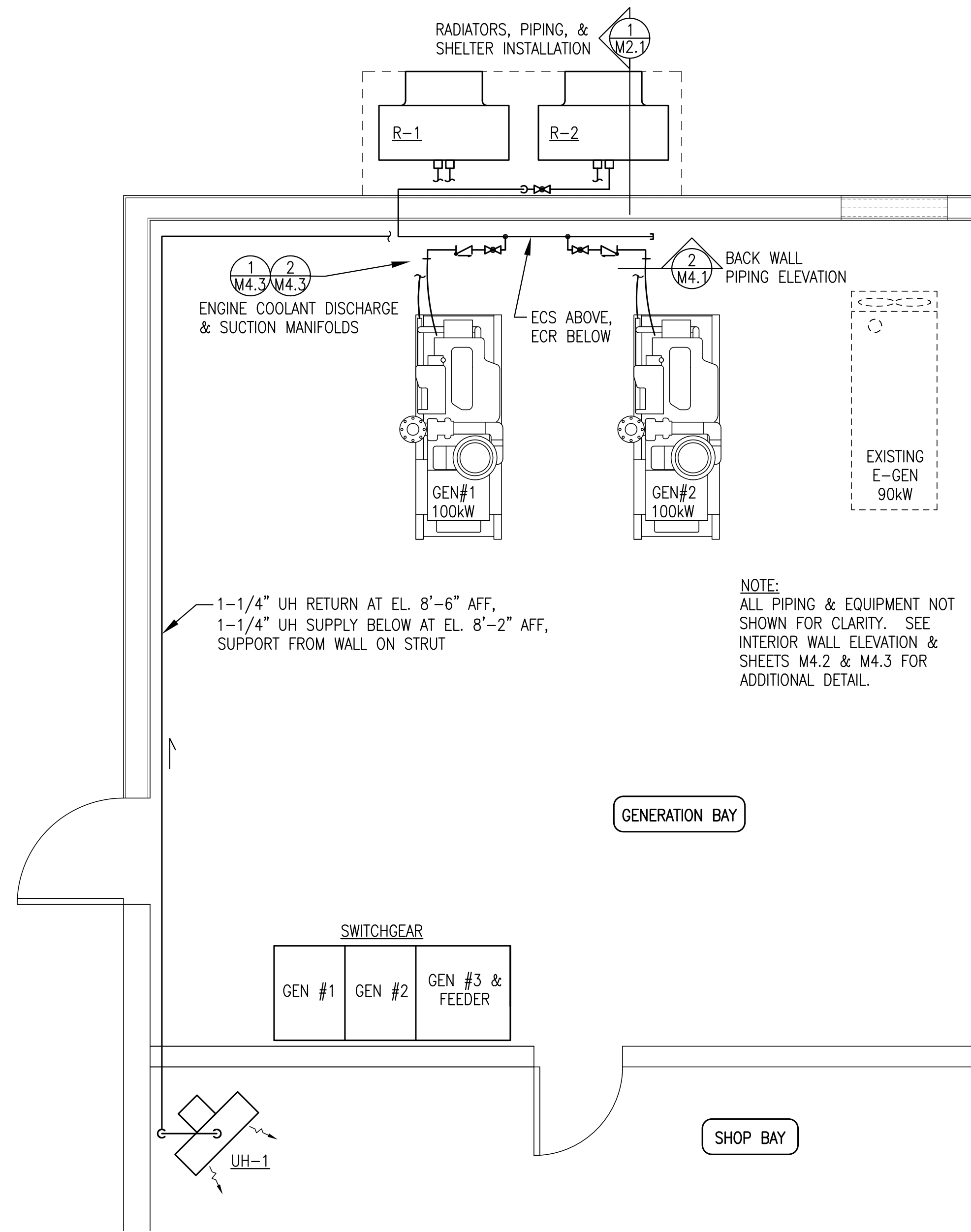
- 1) 1/4" STEEL SUPPORT PLATE PRE-DRILLED TO MATCH GAUGE/SWITCH MOUNTS, CHANNEL SKID HOLES AND BOTTOM HOSE ENTRANCE. BOLT TO INSIDE (BACK) OF CHANNEL SKID AT HEIGHT AS REQUIRED TO CENTER GAUGE AT NORMAL FULL OIL LEVEL. ADJUST SWITCH CONTACTS 1/2" ABOVE & BELOW.
- 2) SEE ENGINE GENERATOR SPECIFICATIONS FOR LEVEL/GUAGE SWITCH. MOUNT TO STEEL SUPPORT PLATE WITH RUBBER SHOCK MOUNTS.
- 3) #8 HOSE WITH 1/2" OR 3/8" NPT JIC SWIVEL ENDS AS REQUIRED.
- 4) CONNECT TOP (VENT) PORT TO ENGINE CRANK CASE WITH HOSE. ROUTE UPPER HOSE TO AVOID LOW POINT TRAPS.
- 5) CONNECT BOTTOM PORT TO ENGINE OIL PAN WITH HOSE. DO NOT TEE INTO OIL DRAIN LINE. ROUTE LOWER HOSE BACK THROUGH PRE-DRILLED HOLE IN STEEL PLATE.

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*John Daloz*  
DATE: 12/30/20

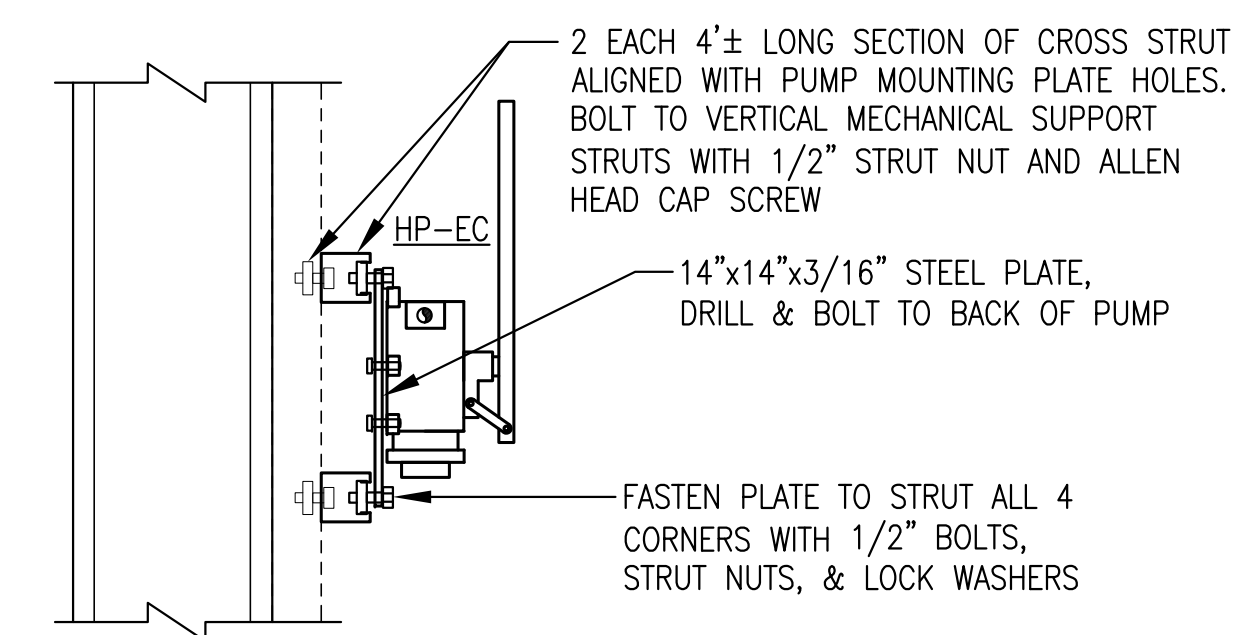
PROJECT: FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE	
TITLE: GENSET FABRICATION DETAILS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 3/18/20
FILE NAME: CIRDERA M1-4A	SHEET: M3 OF 4
PROJECT NUMBER:	

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**1**  
**M4.1** 3/8"=1'-0"

**2**  
**M4.1** 3/4"=1'-0"



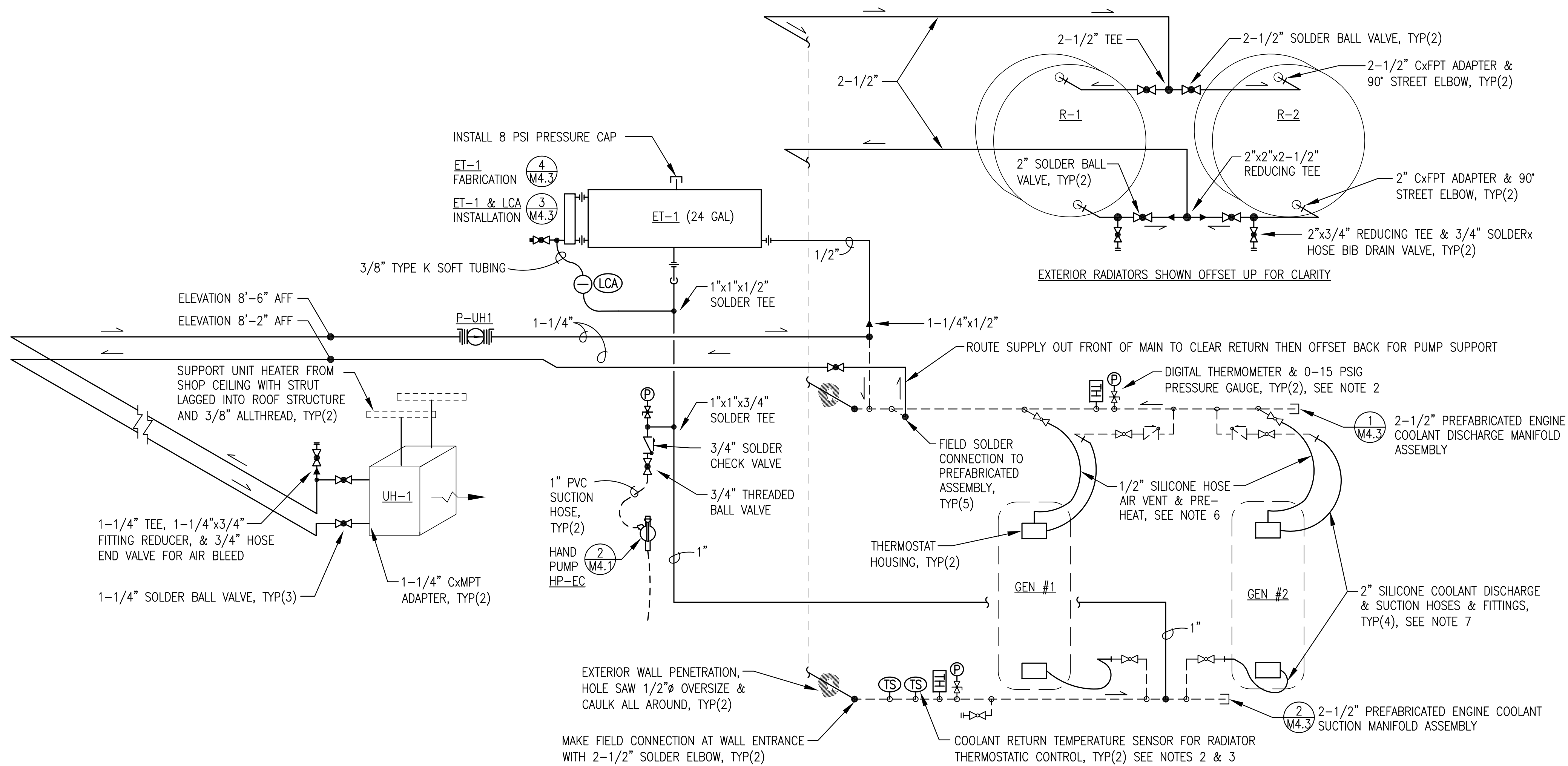
**3**  
**M4.1** NO SCALE

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*John Daleson*

DATE: 12/30/20

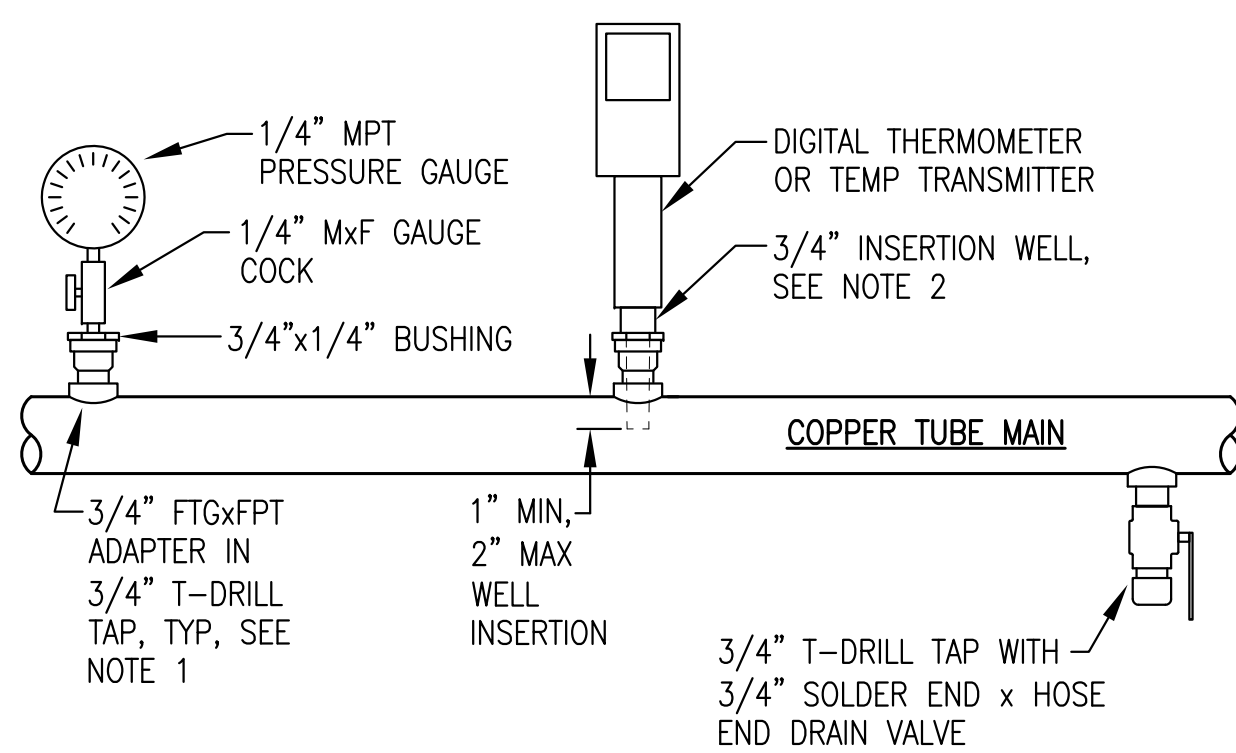
PROJECT:	FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE		
TITLE:	PIPING & EQUIPMENT INSTALLATION PLAN, ELEVATION, & DETAILS		
DRAWN BY:	JTD	SCALE:	AS NOTED
DESIGNED BY:	BCG	DATE:	3/18/20
FILE NAME:	CIRDERA M1-4A	SHEET:	<b>M4.1</b> OF 4
PROJECT NUMBER:	P.O. 111405, Anchorage, AK 99511 (907)349-0100		



**COOLING SYSTEM ISOMETRIC NOTES:**

- ALL PIPING SHOWN THIS ISOMETRIC TYPE "L" COPPER WITH SOLDER JOINTS, 2-1/2" Ø EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE. FIELD INSTALLED PIPING SHOWN WITH DARK SOLID LINES AND PREFABRICATED SHOP ASSEMBLES SHOWN WITH LIGHT DASHED LINES.
- MAKE ALL CONNECTIONS FOR INSTRUMENTATION WITH AS SHOWN ON DETAIL 2/M4.2.
- SEE ELECTRICAL INSTRUMENTATION SCHEDULE FOR TEMPERATURE SENSORS.
- UPON COMPLETION OF FABRICATION VALVE OFF CABINET UNIT HEATER AND FLUSH PIPING TO REMOVE ALL DEBRIS, SEE SPECIFICATIONS.
- ALL PIPING NOT INSULATED.
- AS PART OF DERA PROJECT FURNISH AND INSTALL 3/4" MPTx5/8" BARB BRASS KING NIPPLE, 1/2" SILICONE HOSE AND HOSE CLAMPS FOR ENGINE VENT & PRE-HEAT.
- AS PART OF DERA PROJECT FURNISH AND INSTALL 2" MPTx2" BARB BRASS KING NIPPLE, 2" SILICONE HOSE AND HOSE CLAMPS FOR ENGINE COOLING.

**1 COOLING SYSTEM PIPING ISOMETRIC**  
M4.2 NO SCALE



**NOTES:**

- USE T-DRILL TAPS AS SHOWN FOR INSTALLATIONS IN 1-1/4" AND LARGER COPPER MAINS. USE LINE SIZE TEE FITTINGS FOR INSTALLING INSTRUMENTATION IN 1" AND SMALLER MAINS.
- TEMPERATURE TRANSMITTER INSTALLATION SIMILAR TO THERMOMETER EXCEPT USE 3/4"x1/2" BUSHING.
- FOR MAINS SMALLER THAN 2" USE COPPER TUBE RISER AS SHOWN, LENGTH AS REQUIRED FOR 1" TO 2" WELL INSERTION INTO MAIN. FOR LARGER PIPES OMIT RISER AND INSERT 3/4" FT CxFT ADAPTER INTO T-DRILL TAP.

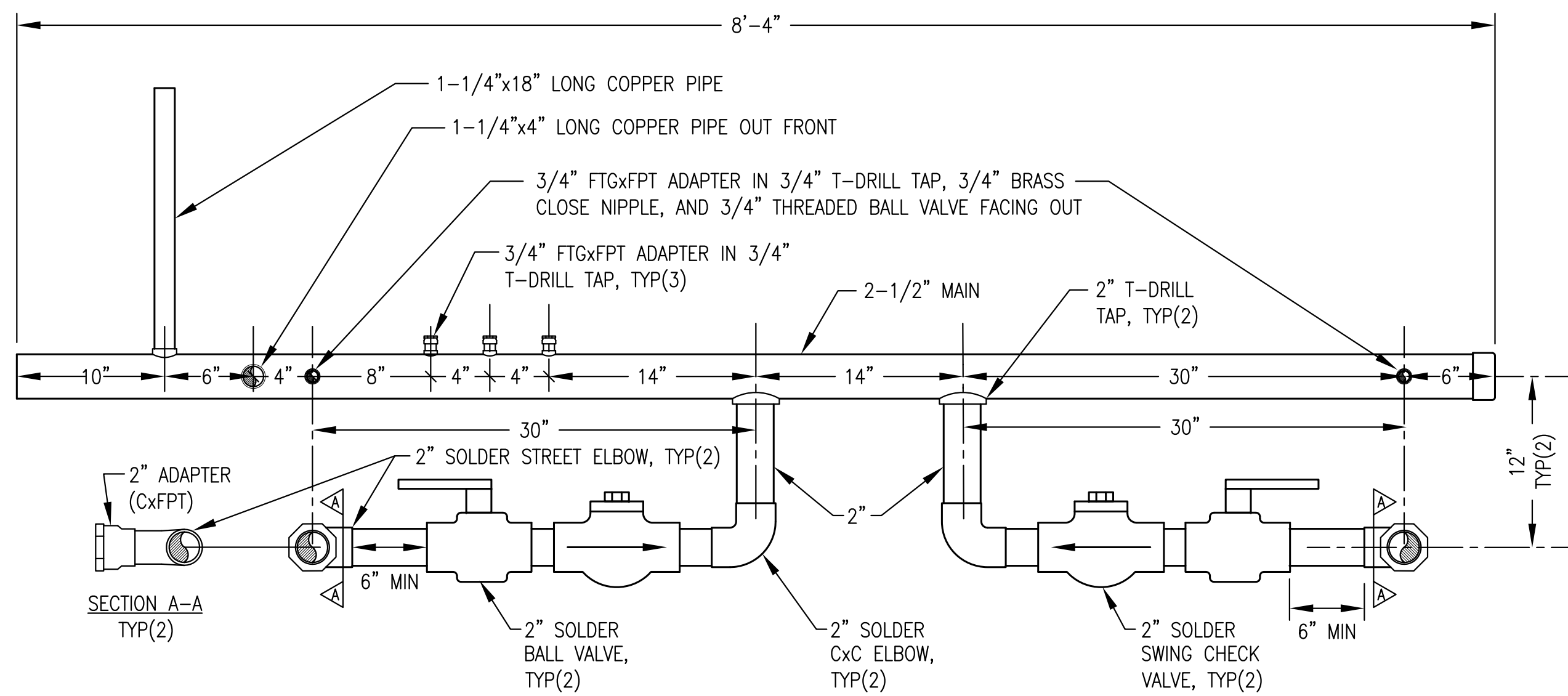
**2 TYPICAL INSTRUMENT INSTALLATION**  
M4.2 NO SCALE

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*John Daloz*

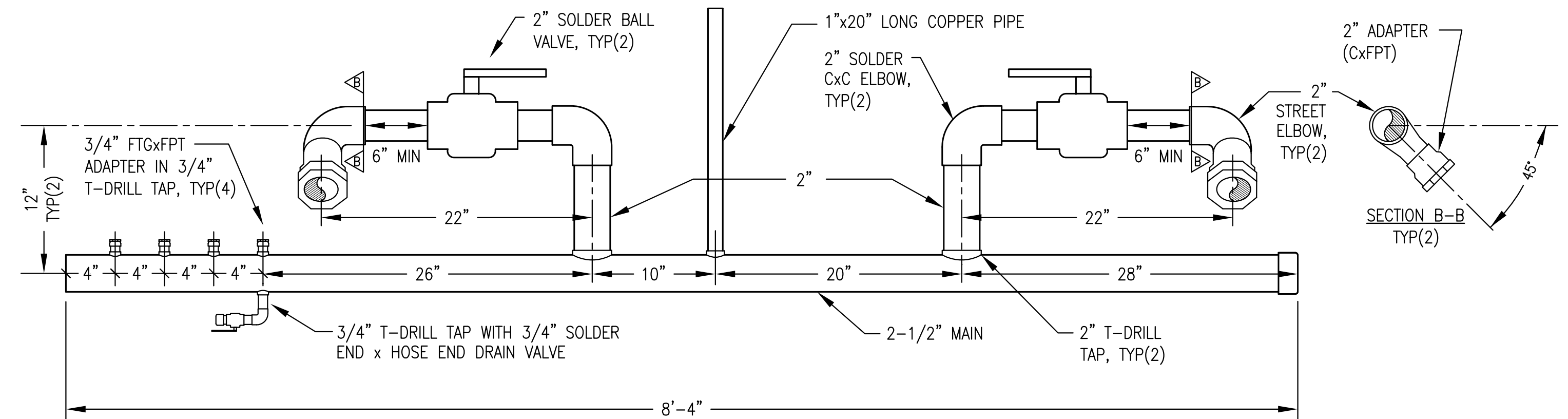
DATE: 12/30/20

PROJECT:	FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE		
TITLE:	COOLANT PIPING ISOMETRIC & DETAILS		
DRAWN BY:	JTD	SCALE:	AS NOTED
DESIGNED BY:	BCG	DATE:	3/18/20
FILE NAME:	CIRDERA M1-4A	SHEET:	M4.2 OF 4
PROJECT NUMBER:	P.O. 111405, Anchorage, AK 99511 (907)349-0100		



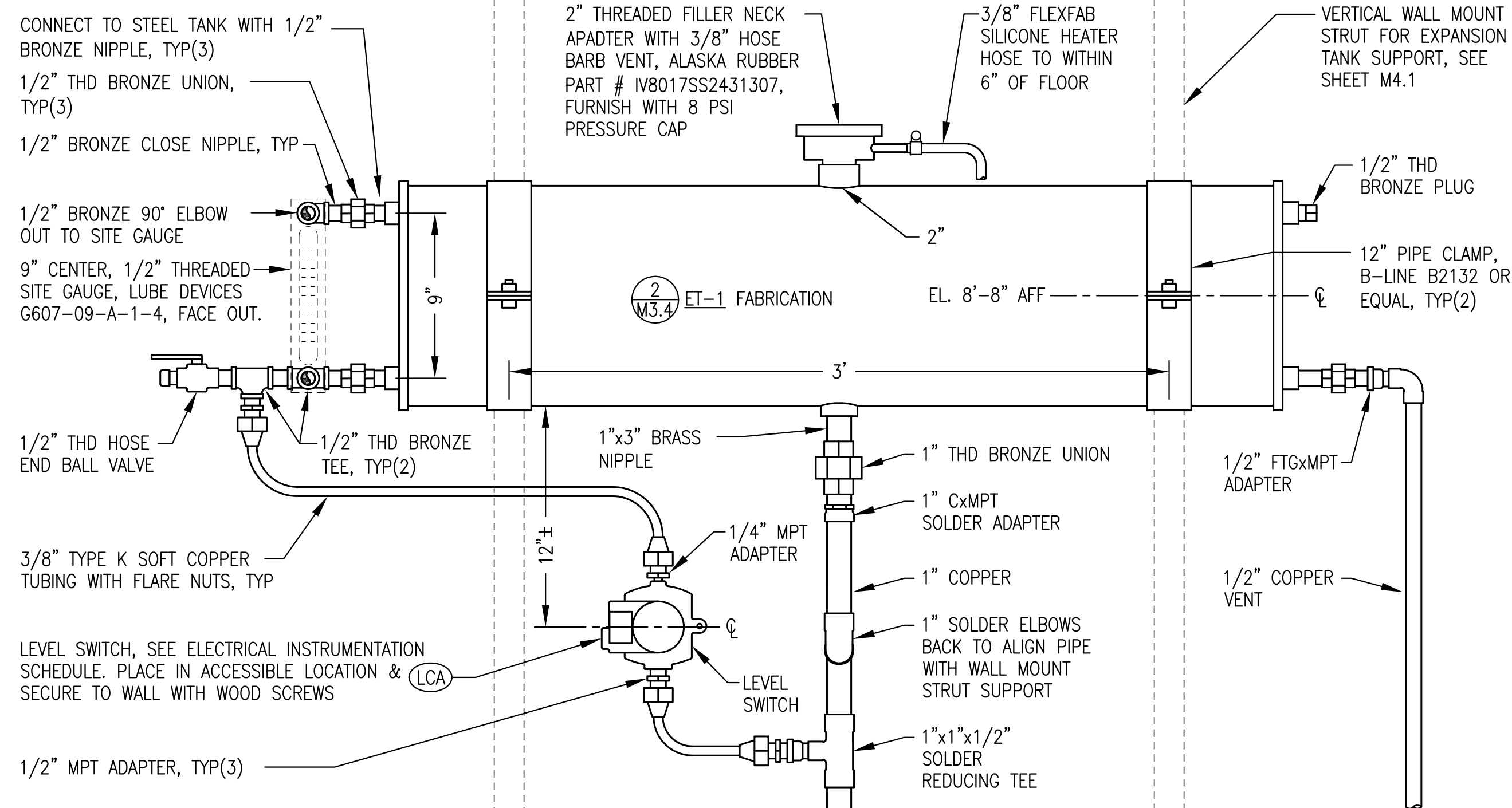
- NOTES:
- 1) ALL PIPING TYPE L COPPER TUBE, SIZE AS INDICATED.
  - 2) MAKE ALL MAIN & INSTRUMENTATION BRANCH CONNECTIONS WITH BRAZED T-DRILL TAPS.

**1** PREFABRICATED COOLANT DISCHARGE MANIFOLD  
 M4.3 1-1/2"=1'-0"

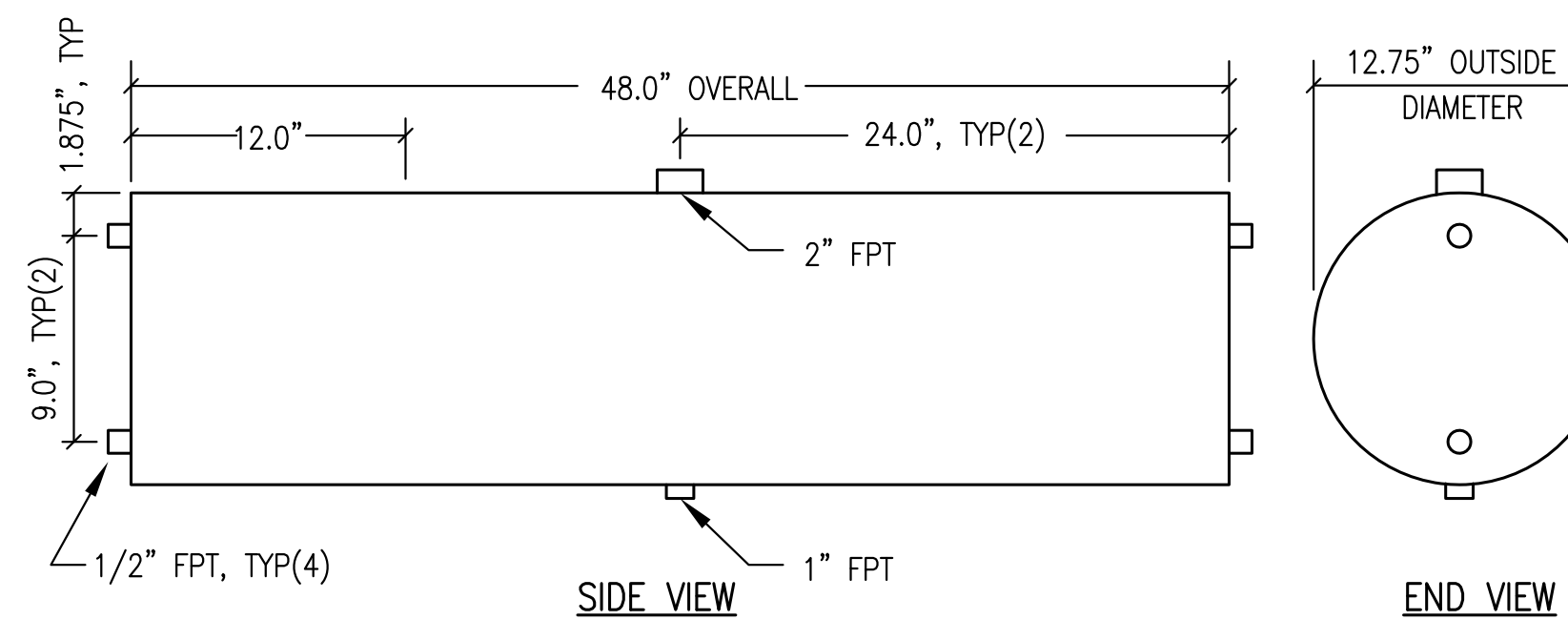


- NOTES:
- 1) ALL PIPING TYPE L COPPER TUBE, SIZE AS INDICATED.
  - 2) MAKE ALL BRANCH CONNECTIONS WITH BRAZED T-DRILL TAPS.

**2** PREFABRICATED COOLANT SUCTION MANIFOLD  
 M4.3 1-1/2"=1'-0"



**3** 24 GAL EXPANSION TANK ET-1 INSTALLATION  
 M4.3 NO SCALE



**4** 24 GALLON GLYCOL EXPANSION TANK ET-1 FABRICATION  
 M4.3 1-1/2"=1'-0"

EXPANSION TANK GENERAL NOTES:

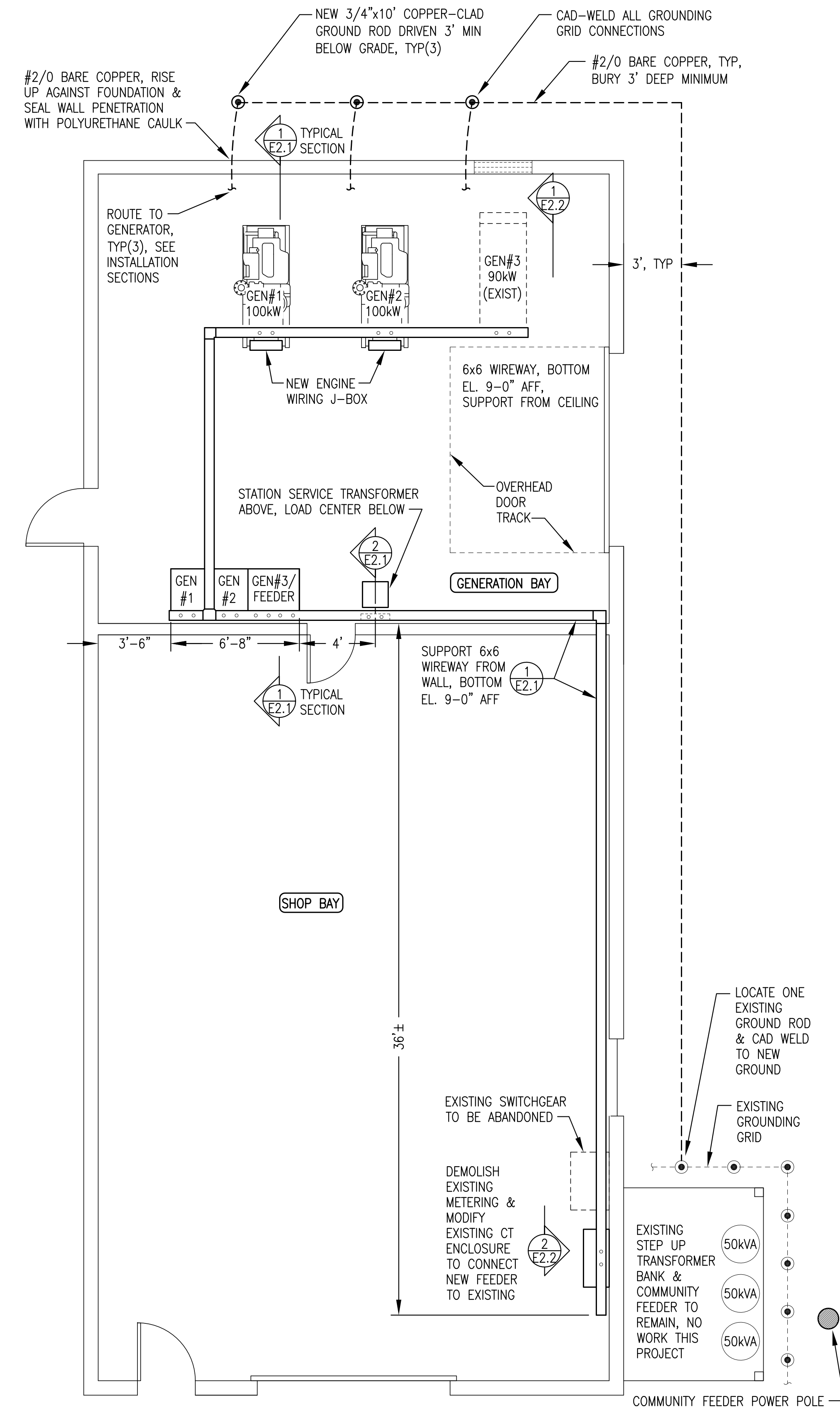
1. FABRICATE SINGLE WALL 24 GALLON NOMINAL CAPACITY GLYCOL EXPANSION TANK.
2. FABRICATE SHELL FROM MINIMUM 10 GAUGE ASTM A-36 PLATE STEEL ROLLED AND WELDED OR SCHEDULE 5 LIGHTWALL ASTM A53 STEEL PIPE. FABRICATE HEADS FROM 3/16" THICK ASTM A-36 PLATE STEEL. MAKE ALL JOINTS WITH CONTINUOUS FULL-PENETRATION WELDS.
3. PROVIDE WITH ALL OPENINGS INDICATED USING MINIMUM 3000# FORGED STEEL PIPE HALF COUPLINGS IN ACCORDANCE WITH U.L. 142 FIGURE 7.1 #2.
4. PRESSURE TEST COMPLETED ASSEMBLY TO 15 PSIG MINIMUM.
5. UPON COMPLETION OF FABRICATION, ROUND ALL CORNERS AND SHARP EDGES. SANDBLAST TANK EXTERIOR AND ALL ATTACHMENTS IN ACCORDANCE WITH SSPC-SP-6. PRIME WITH RED OXIDE PRIMER, PPG MULTIPRIME 4160 OR APPROVED EQUAL. FINISH WITH TWO COATS OF ALKYD ENAMEL, PPG DEVGUARD 4308 OR APPROVED EQUAL, COLOR ANSI 61 GRAY.
6. UPON COMPLETION FLUSH INTERIOR OF TANK TO REMOVE ALL DIRT AND DEBRIS, AIR DRY INTERIOR, AND SEAL ALL TANK OPENINGS WITH PLASTIC PLUGS.

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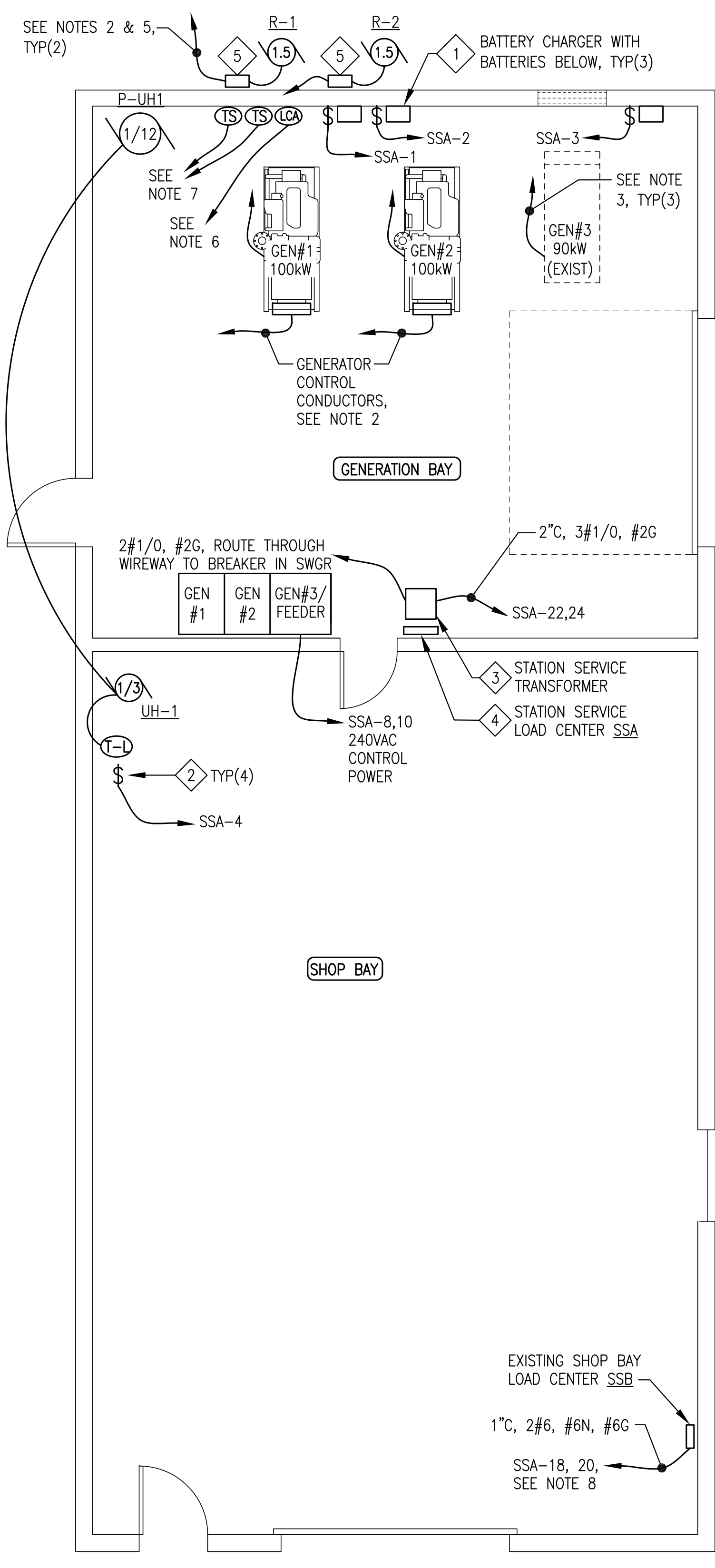
*John Daloz*  
 DATE: 12/30/20

PROJECT: FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE	
TITLE: COOLANT PIPING DETAILS	
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: BCG	DATE: 3/18/20
FILE NAME: CIRDERA M1-4A	SHEET: M4.3 OF 4
PROJECT NUMBER:	





**1** WIREWAY, POWER, AND GROUNDING PLAN  
1/4"=1'-0"



**2** STATION SERVICE & INSTRUMENTATION PLAN  
1/4"=1'-0"

SCHEDULE OF DRAWINGS:	
E1 ELECTRICAL WORK PLAN & EQUIPMENT SCHEDULE	E3.1 SWITCHGEAR LAYOUT, ONE-LINE, & SCHEMATICS
E2.1 TYPICAL GENERATION BAY SECTION & DETAILS	E3.2 GENSET #1 & #2 24V ENGINE WIRING JUNCTION BOX
E2.2 DETAILS & GENSET #3 SECTION	

- GENERAL NOTES:**
- EXISTING EQUIPMENT TO BE RELOCATED AND REMAIN IN SERVICE SHOWN WITH LIGHT DASHED LINES.
  - NEW EQUIPMENT TO BE INSTALLED SHOWN WITH DARK SOLID LINES.

- STATION SERVICE NOTES:**
- ALL WIRING RUNS 2#12, #12G UNLESS SPECIFICALLY NOTED OTHERWISE.
  - SEE SWITCHGEAR SHOP DRAWINGS FOR TERMINATION OF ALL POWER AND CONTROL WIRING.
  - ROUTE EXTRA-FLEX BATTERY CABLES FROM SKID TO BATTERIES, SEE INSTALLATION SECTIONS.
  - MOUNT BATTERY CHARGER TO WALL AND BATTERIES IN RACK BELOW, SEE DETAIL 3/E2.2.
  - 3/4"C, 3#12, #12G RADIATOR POWER CONDUCTORS, ROUTE THROUGH WIREWAY TO SWITCHGEAR.
  - INSTALL LOW COOLANT LEVEL ALARM SWITCH WHERE SHOWN ON DETAIL 3/M4.3. CONNECT TO N.C. SWITCH (WHITE & RED) AND ROUTE 2#14 IN WIREWAY TO SWITCHGEAR. SEE NOTE 2.
  - INSTALL SENSORS FOR RADIATOR THERMOSTATIC CONTROL WHERE SHOWN ON PIPING ISOMETRIC 1/M4.2. ROUTE #18 SHIELDED PAIR FROM EACH TO SWITCHGEAR THROUGH WIREWAY. SEE NOTE 2.
  - EXISTING 240V, SINGLE PHASE SHOP BAY LOAD CENTER SSB TO BE SUB-FED FROM 60A 2-POLE BREAKER IN NEW GENERATION BAY LOAD CENTER SSB. ROUTE CONDUCTORS IN WIREWAY WITH FEEDER CONDUCTORS.

ELECTRICAL EQUIPMENT/DEVICE SCHEDULE			
SYMBOL	SERVICE	DESCRIPTION	MANUFACTURER/MODEL
⬡1	BATTERY CHARGER	12/24-VOLT SOLID STATE 20-AMP AUTO-EQUALIZING BATTERY CHARGER FOR 120 VAC INPUT, WITH OPTIONAL HIGH/LOW VOLTAGE, AC POWER FAILURE, & REMOTE SUMMARY ALARM RELAYS	SENS NRG22-20-RCLS
⬡2	1Ø SMALL MOTOR DISCONNECT	SINGLE POLE SNAP SWITCH WITH RED PILOT LIGHT, 120V, 20A, 1-1/2HP RATED, INSTALL IN 4"x4" STEEL BOX WITH METAL COVER	HUBBELL 1221-PL
⬡3	STATION SERVICE TRANSFORMER	DRY TYPE, ENCLOSURE TYPE 3R WITH INTEGRAL WALL MOUNT BRACKETS, SINGLE PHASE, 25kVA, HV 240X480, LV 120/240	HAMMOND HPS SENTINEL G SG3N0025LE
⬡4	STATION SERVICE PANELBOARD	COPPER BUS, SINGLE PHASE, SURFACE MOUNT, NEMA 1, 3-WIRE, 120/240V, 125A, 24 CIRCUITS, PLUG-IN BREAKERS QUANTITY & RATING AS INDICATED ON DETAIL	SIEMENS OR SQUARE D
⬡5	RADIATOR MOTOR DISCONNECT	NON-FUSED LOCKABLE SAFETY SWITCH, NEMA 3R ENCLOSURE, 3PST, 240V, 30A, 3HP RATED	SIEMENS GNF321

ELECTRICAL INSTRUMENTATION SCHEDULE			
SYMBOL	SERVICE	DESCRIPTION	MANUFACTURER/MODEL
Ⓢ	TEMPERATURE SENSOR	PTC TEMPERATURE PROBE FOR PENN CONTROLLER IN SWITCHGEAR WITH 2.0 METER LONG PVC JACKETED CABLE & 1/2" NPT WELL	PENN A99BA-200C SENSOR PENN WEL11A-601R WELL
ⓁCA	GLYCOL TANK LOW COOLANT ALARM	LOW COOLANT LEVEL ALARM FLOAT SWITCH, SEE MECHANICAL FOR INSTALLATION DETAILS	MURPHY EL-150-K1
Ⓢ-L	LINE VOLTAGE THERMOSTAT	HEATING/COOLING THERMOSTAT, 16 FLA @ 120V, SPDT, 50F TO 80F RANGE.	DAYTON 1UHH2

EQUIPMENT REQUIREMENTS FOR APPROVED EQUALS (APPLIES ALL SCHEDULES):  
 SPECIFIC PARTS MANUFACTURER AND MODEL SELECTED NOT ONLY TO MEET PERFORMANCE FUNCTION BUT ALSO TO COORDINATE AND INTERFACE WITH OTHER DEVICES AND SYSTEMS. APPROVED EQUAL SUBSTITUTIONS WILL BE ALLOWED ONLY BY ENGINEER'S APPROVAL. TO OBTAIN APPROVAL, SUBMITTALS MUST CLEARLY DEMONSTRATE HOW SUBSTITUTE ITEM MEETS OR EXCEEDS SPECIFIED ITEM QUALITY AND PERFORMANCE CHARACTERISTICS AND ALSO COMPLIES WITH MECHANICAL AND/OR ELECTRICAL CONNECTIONS AND PHYSICAL LAYOUT REQUIREMENTS.

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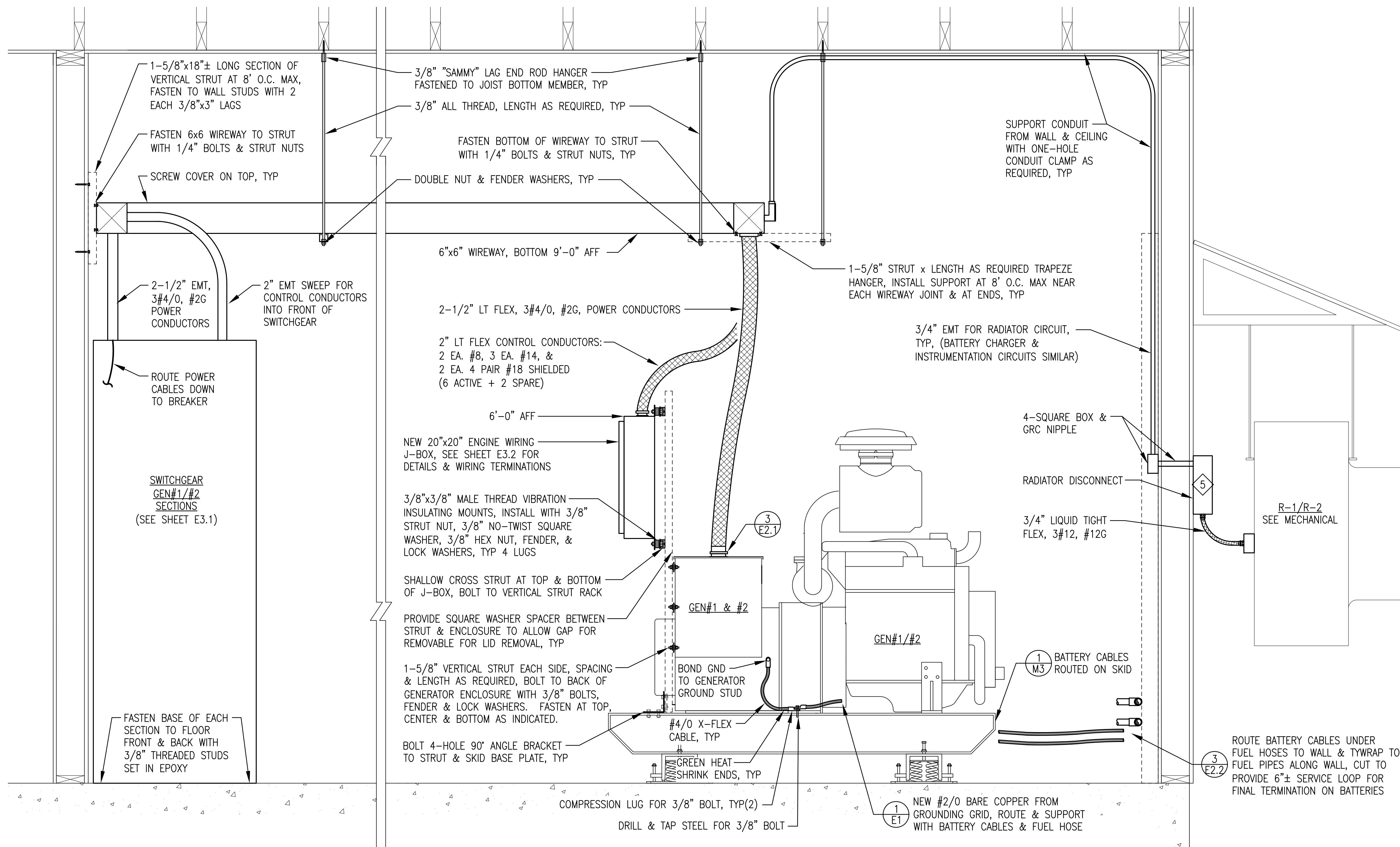
*John D. Johnson*  
 DATE: 12/30/20

PROJECT: FFY17-18 DERA PROJECT  
 CIRCLE POWER PLANT UPGRADE

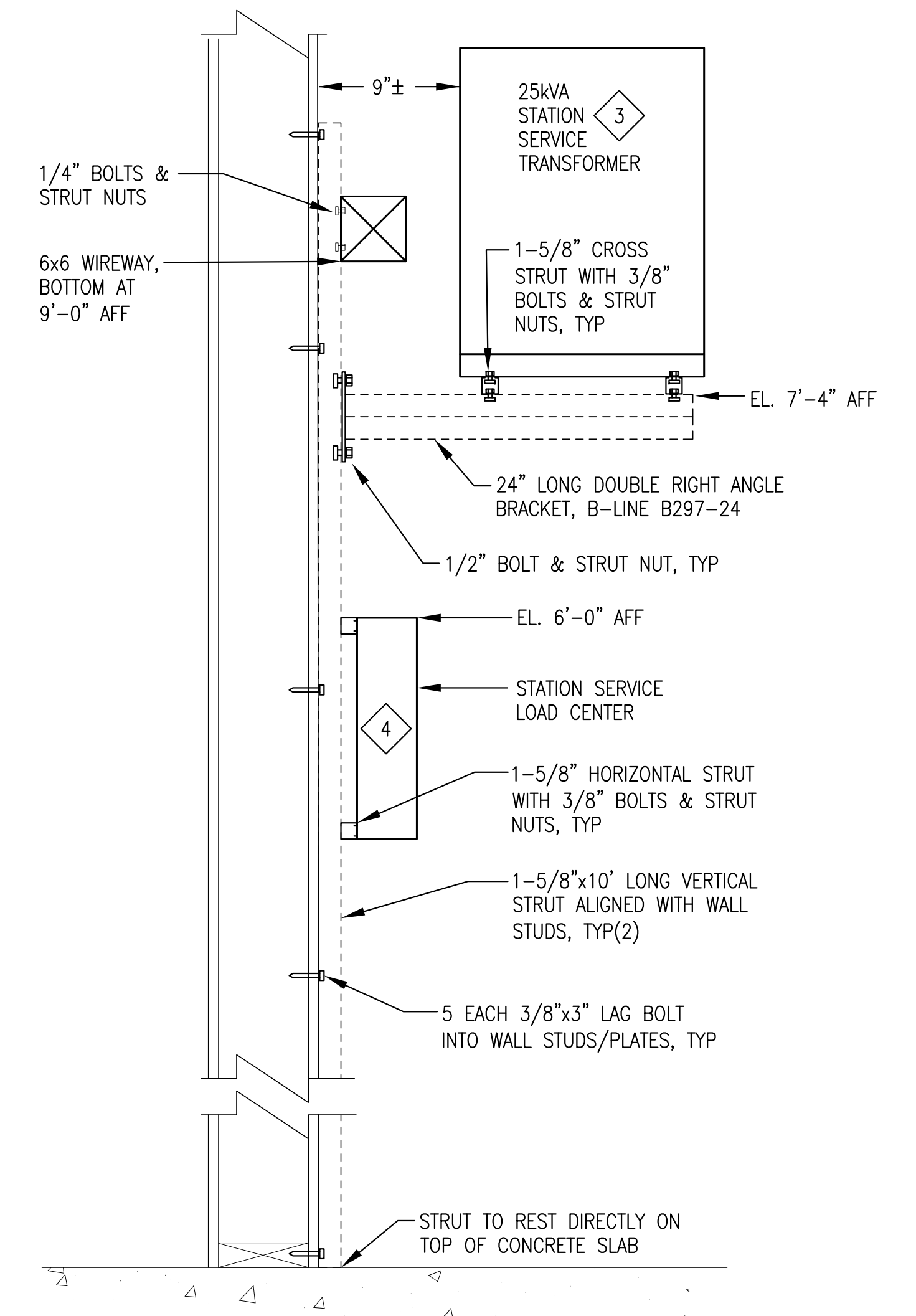
TITLE: ELECTRICAL WORK PLAN & EQUIPMENT SCHEDULE

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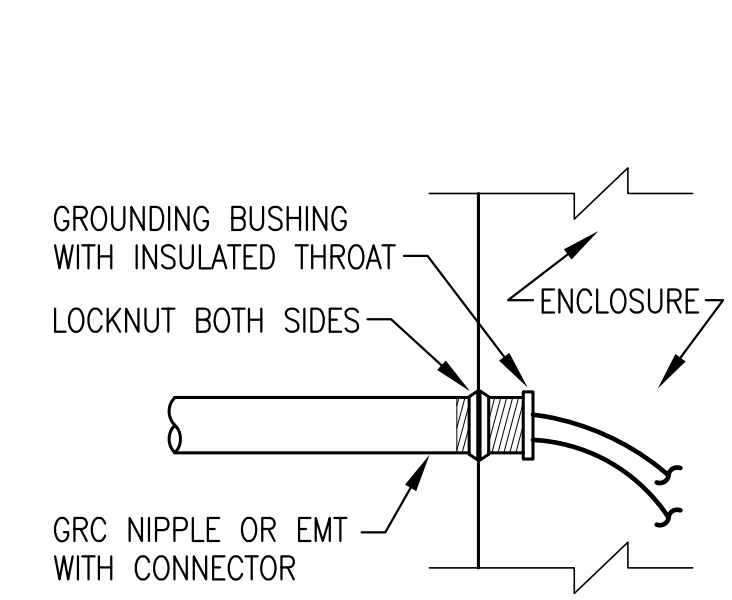
DRAWN BY: JTD	SCALE: AS NOTED
DESIGNED BY: CWB/BCG	DATE: 3/18/20
FILE NAME: CIRDERA E1-3A	SHEET: E1 OF 3
PROJECT NUMBER:	



**1** TYPICAL GENERATION BAY SECTION  
E2.1 1"=1'-0"



**2** STATION SERVICE TRANSFORMER & LOAD CENTER SUPPORT  
E2.1 NO SCALE



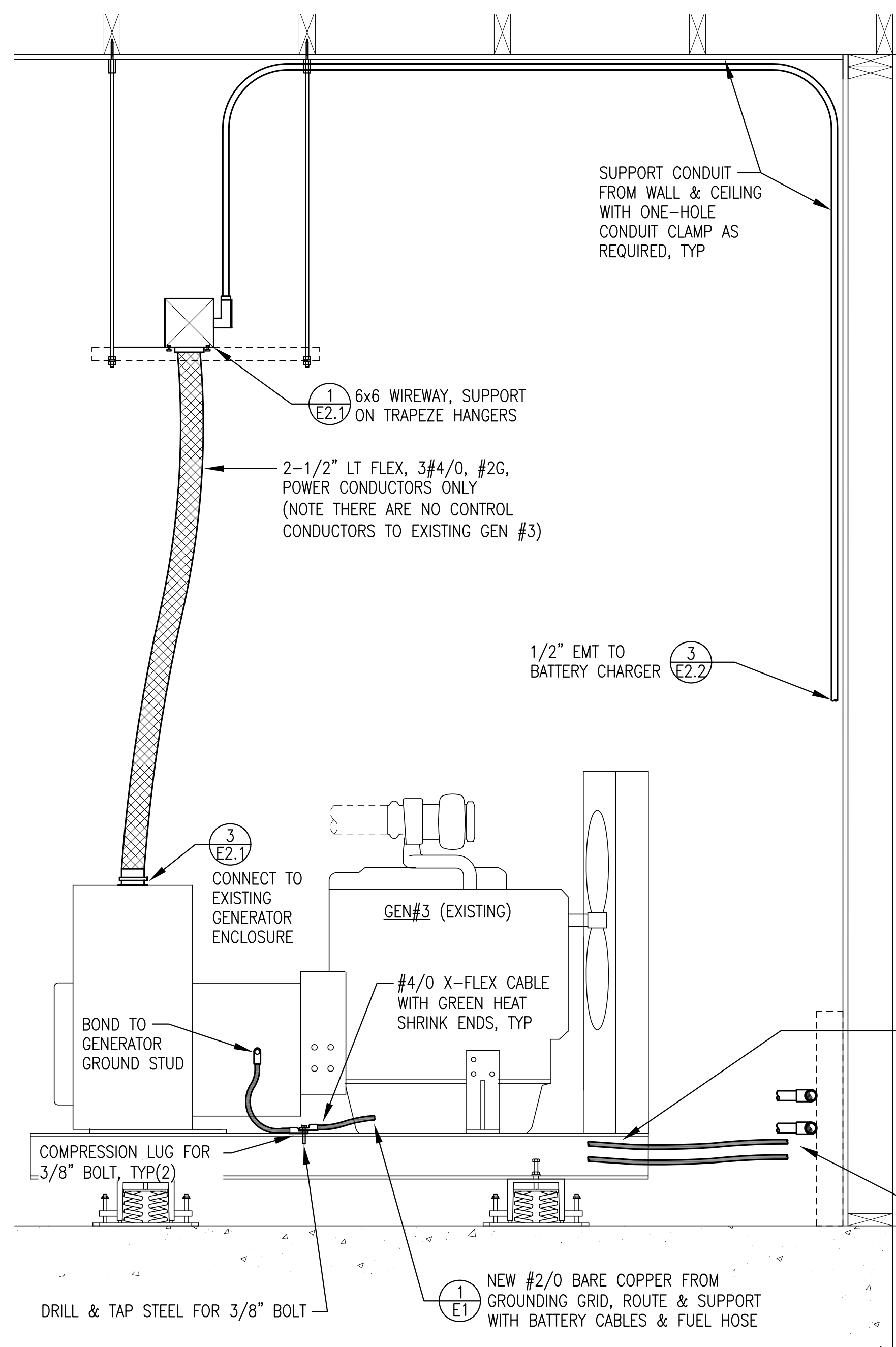
**3** TYP ENCLOSURE CONNECTION  
E2.1 NO SCALE

- NOTES:**
- 1) THIS DETAIL APPLIES TO CONNECTIONS TO WIREWAY, GENERATOR ENCLOSURES, SWITCHGEAR, AND PANELS.
  - 2) AT A MINIMUM INSTALL GROUNDING BUSHING ON ALL GENERATOR POWER CONDUIT, COMMUNITY FEEDER CONDUIT, STATION SERVICE FEEDERS, AND WHERE OTHERWISE INDICATED OR REQUIRED. BOND GROUNDING BUSHING TO EQUIPMENT GROUNDING CONDUCTOR.
  - 3) INSTALL PLASTIC BUSHING WHERE GROUNDING BUSHING IS NOT REQUIRED.
  - 4) ON GENERATOR ENCLOSURES MAKE ALL CONNECTIONS AS TIGHT AS POSSIBLE.

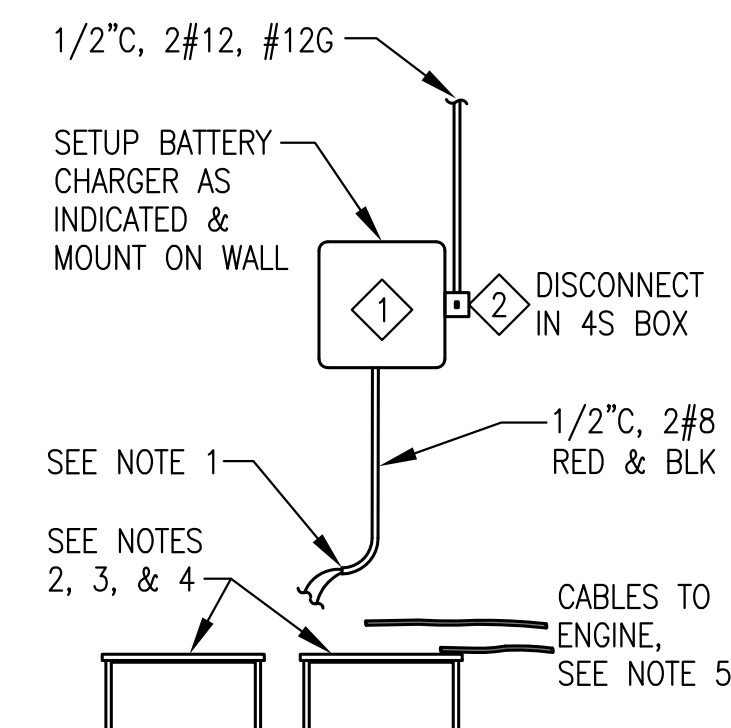
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*John Daleson*  
DATE: 12/30/20

PROJECT: FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE	
TITLE: TYPICAL GENERATION BAY SECTION & DETAILS	
DRAWN BY: JTD	SCALE: NO SCALE
DESIGNED BY: CWV/BCG	DATE: 3/18/20
FILE NAME: CIRDERA E1-3A	SHEET: E2.1 OF 3
PROJECT NUMBER:	



**1** GENSET #3 SECTION  
E2.2 1"=1'-0"



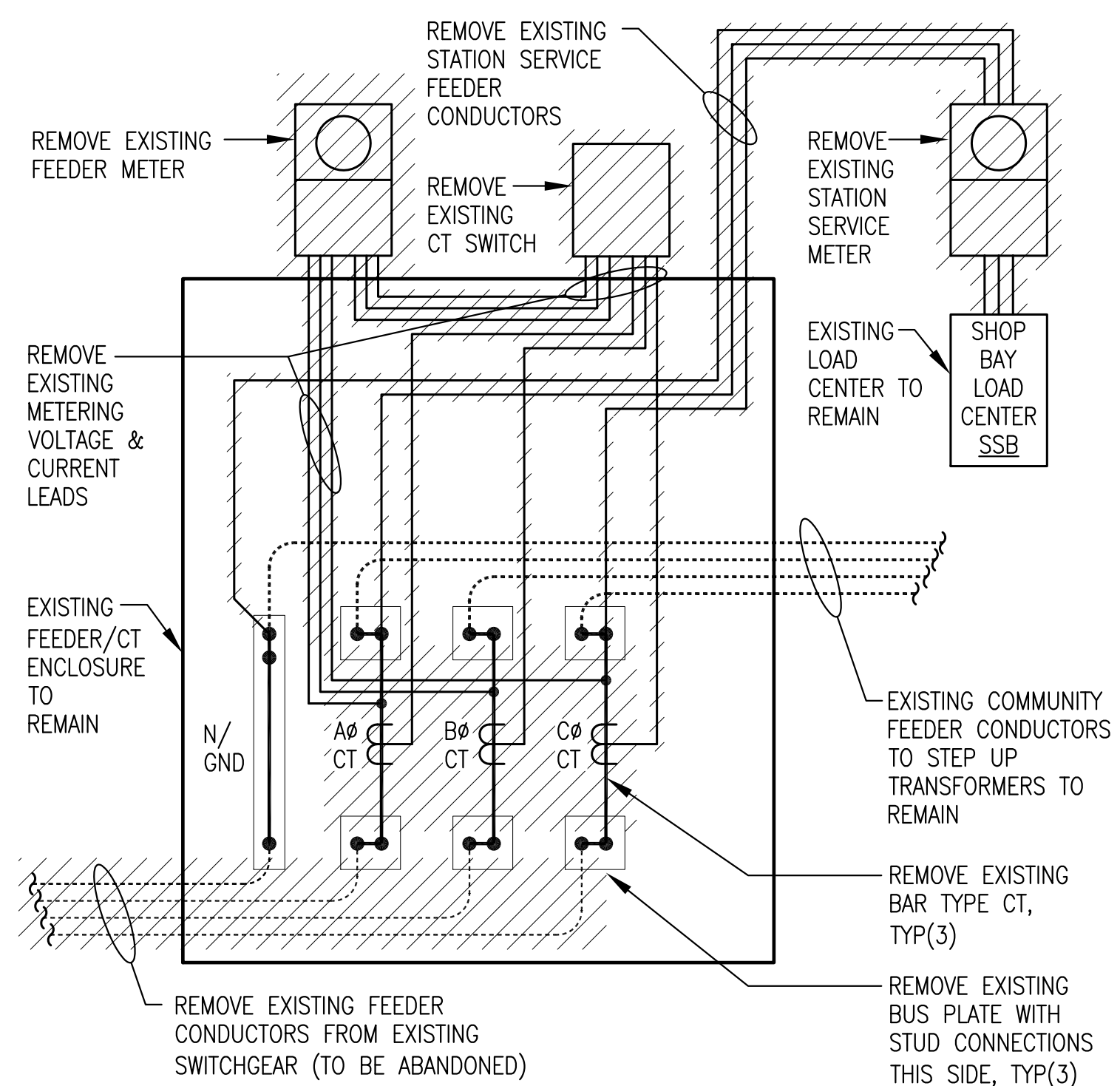
**3** BATTERIES, CHARGER, & CABLE INSTALLATION  
E2.2 NO SCALE

**BATTERY INSTALLATION NOTES:**

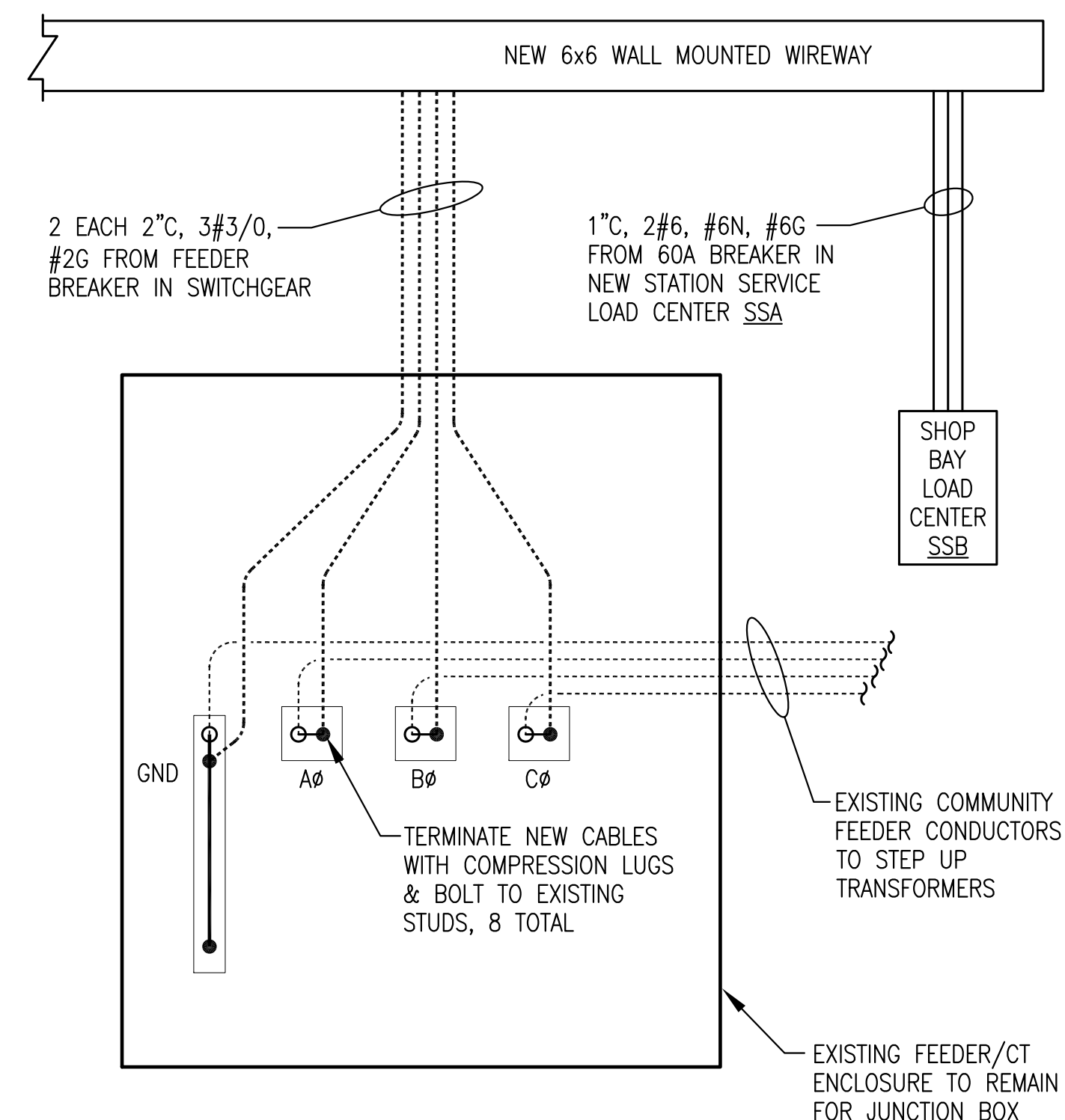
- 1) INSTALL BUSHING IN END OF EMT & ROUTE 2#8 CHARGING LEADS TO BATTERY.
- 2) GENSETS #1 & #2 (24V): PROVIDE TWO EACH MINIMUM 800 COLD CRANK AMP 12-VOLT STARTING BATTERIES FOR EACH GENERATOR. BATTERIES SHALL BE SEALED MAINTENANCE FREE, OPTIMA RED TOP NAPA PART# BAT N993478RED OR APPROVED EQUAL. PLACE BATTERIES OUT OF TRAFFIC AREA IN CONVENIENT LOCATION NEAR BACK WALL.
- 3) GENSET #3 (12V): IDENTICAL TO GENSETS #1 & #2 EXCEPT ONLY ONE BATTERY FOR EXISTING 12V ENGINE.
- 4) INSTALL EACH BATTERY IN A RACK SIZED TO SECURELY HOLD THE BATTERY.
- 5) X-FLEX BATTERY CABLES TO GENSET, SEE INSTALLATION SECTIONS FOR SIZE, ROUTING, AND SUPPORT.

**BATTERY CHARGER SETUP NOTES:**

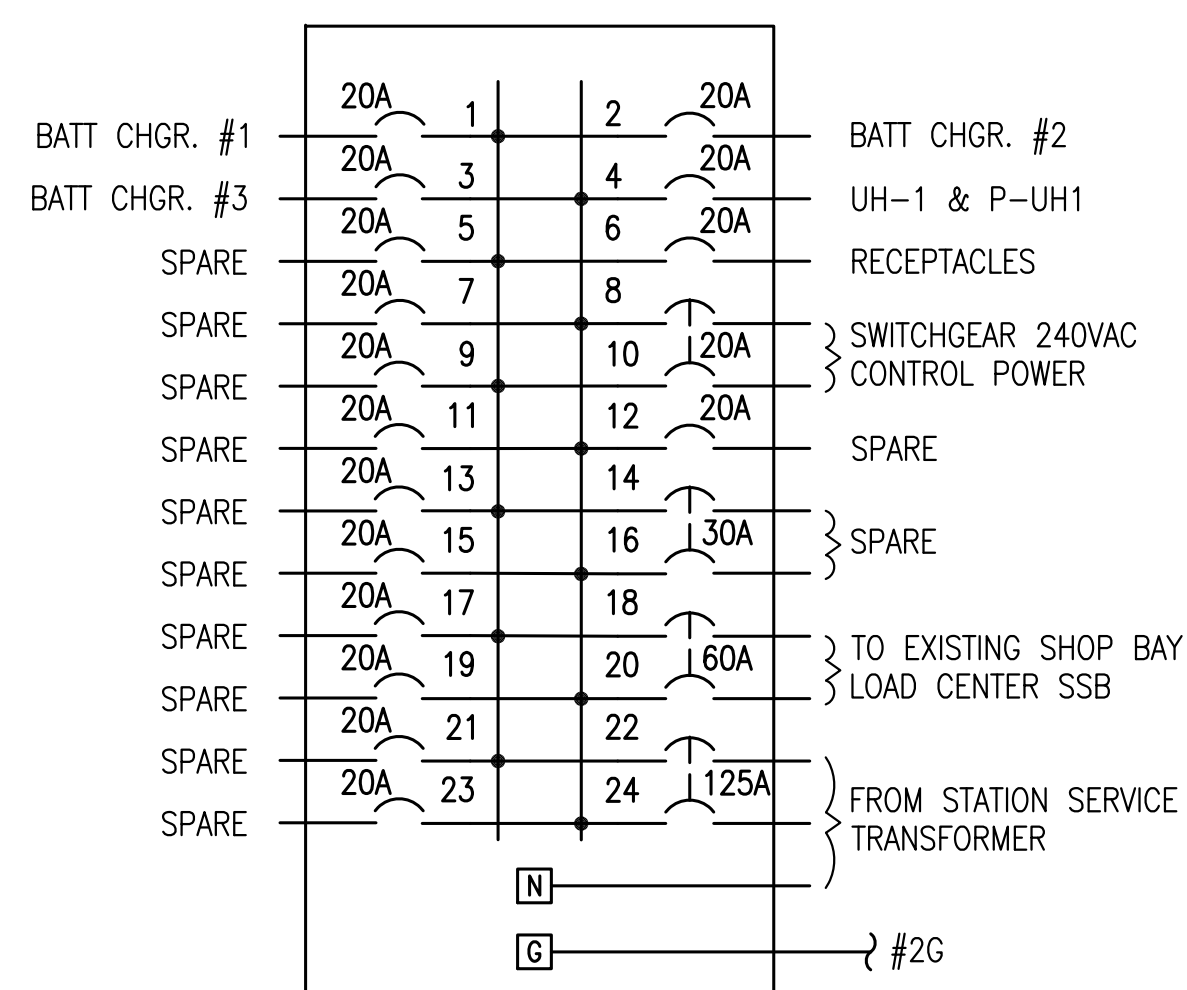
- MAKE THE FOLLOWING SETTINGS PRIOR TO ENERGIZING:
- A) AC LINE VOLTAGE SWITCH TO "115V".
  - B) AUTO BOOST JUMPER TO "NORM".
  - C) FLOAT VOLTAGE JUMPER TO "13.50/27.00" (FOR GEL CELL).
  - D) BATTERY RANGE JUMPER TO "24V" (FOR GENSETS #1 & #2).
  - E) BATTERY RANGE JUMPER TO "12V" (FOR GENSET #3).



**2** EXISTING FEEDER/CT ENCLOSURE 3-LINE MODIFICATION SCHEMATIC  
E2.2 NO SCALE



NEW WORK SCHEMATIC



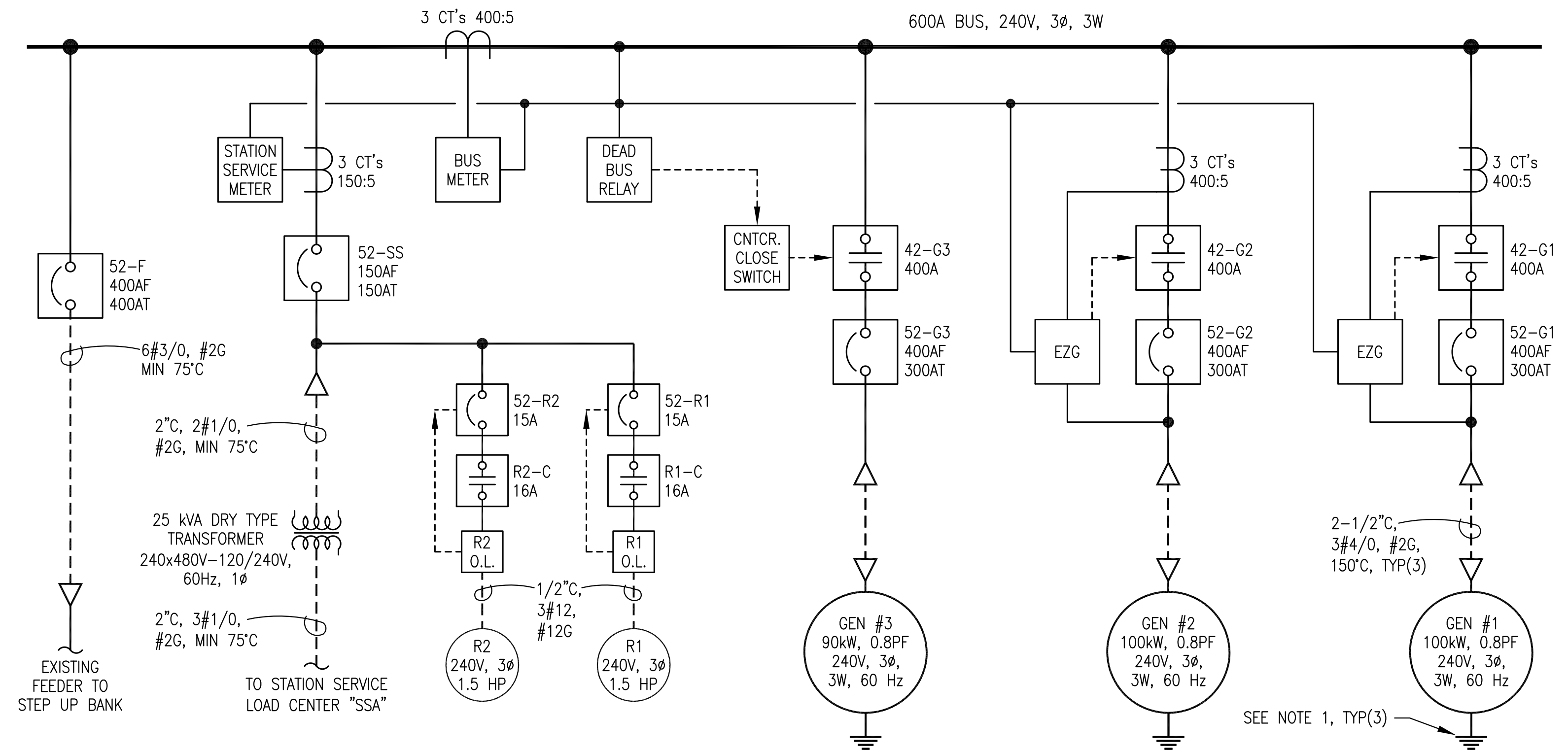
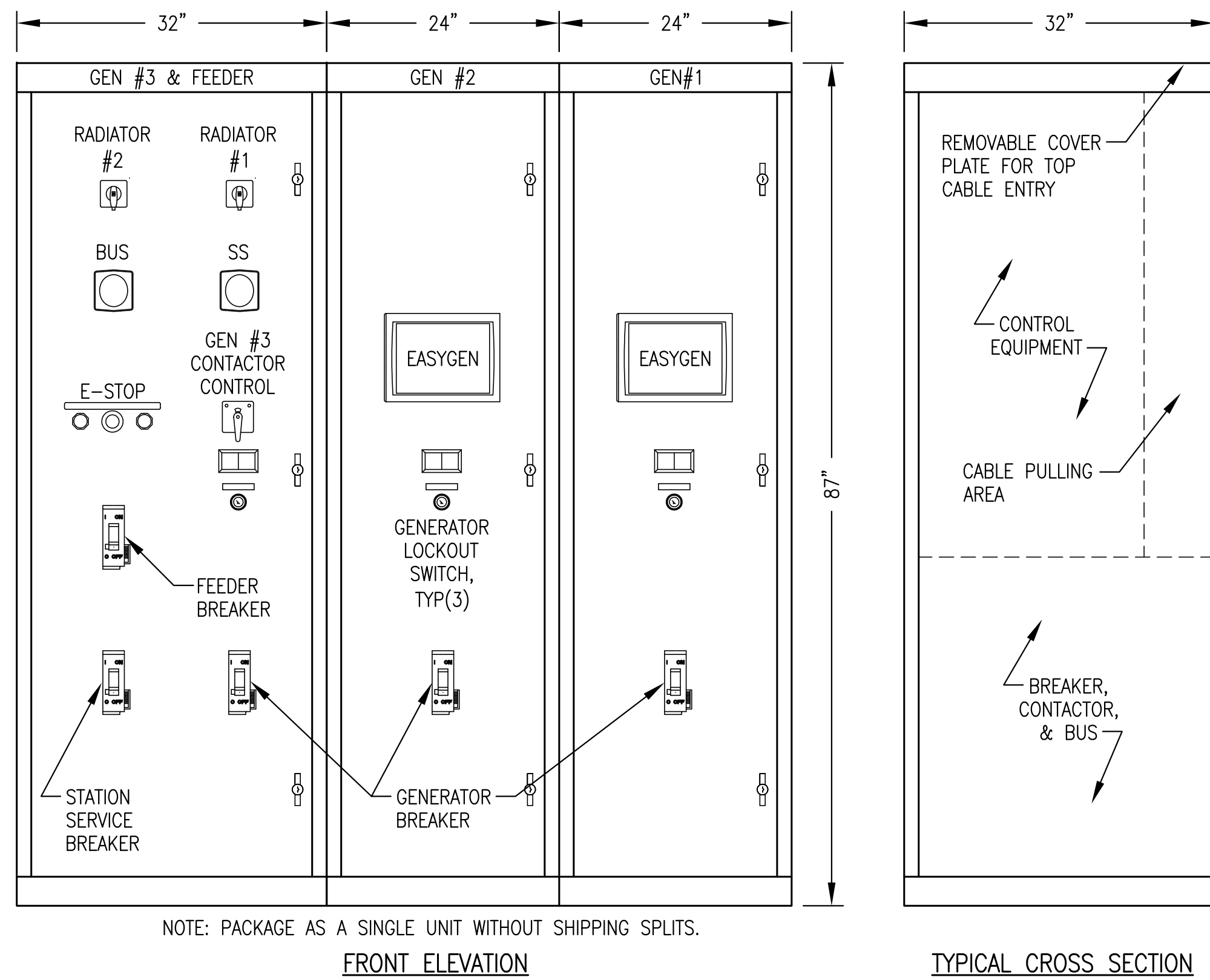
**4** NEW LOAD CENTER "SSA"  
E2.2 NO SCALE

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*John D. Johnson*  
DATE: 12/30/20

PROJECT: FFY17-18 DERA PROJECT	
CIRCLE POWER PLANT UPGRADE	
TITLE: DETAILS & GENSET #3 SECTION	
DRAWN BY: JTD	SCALE: NO SCALE
DESIGNED BY: CWV/BCG	DATE: 3/18/20
FILE NAME: CIRDERA E1-3A	SHEET: E2.2 OF 3
PROJECT NUMBER:	

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**NOTES:**

- CONNECT EACH GENERATOR 3 PHASE 240V DELTA. INDEPENDENTLY GROUND EACH GENERATOR FRAME TO SWITCHGEAR GROUND BUS & PROVIDE SECOND GROUND DIRECTLY TO GROUND GRID.
- ALL GENERATOR POWER CONDUCTORS 150°C CABLE. TERMINATE WITH COPPER COMPRESSION LUGS RATED FOR THE FULL AMPACITY OF THE CABLE AT RATED TEMPERATURE. ALL FEEDER AND STATION SERVICE CONDUCTORS MINIMUM 75°C.

**1 SWITCHGEAR ENCLOSURE LAYOUT**  
E3.1 NO SCALE

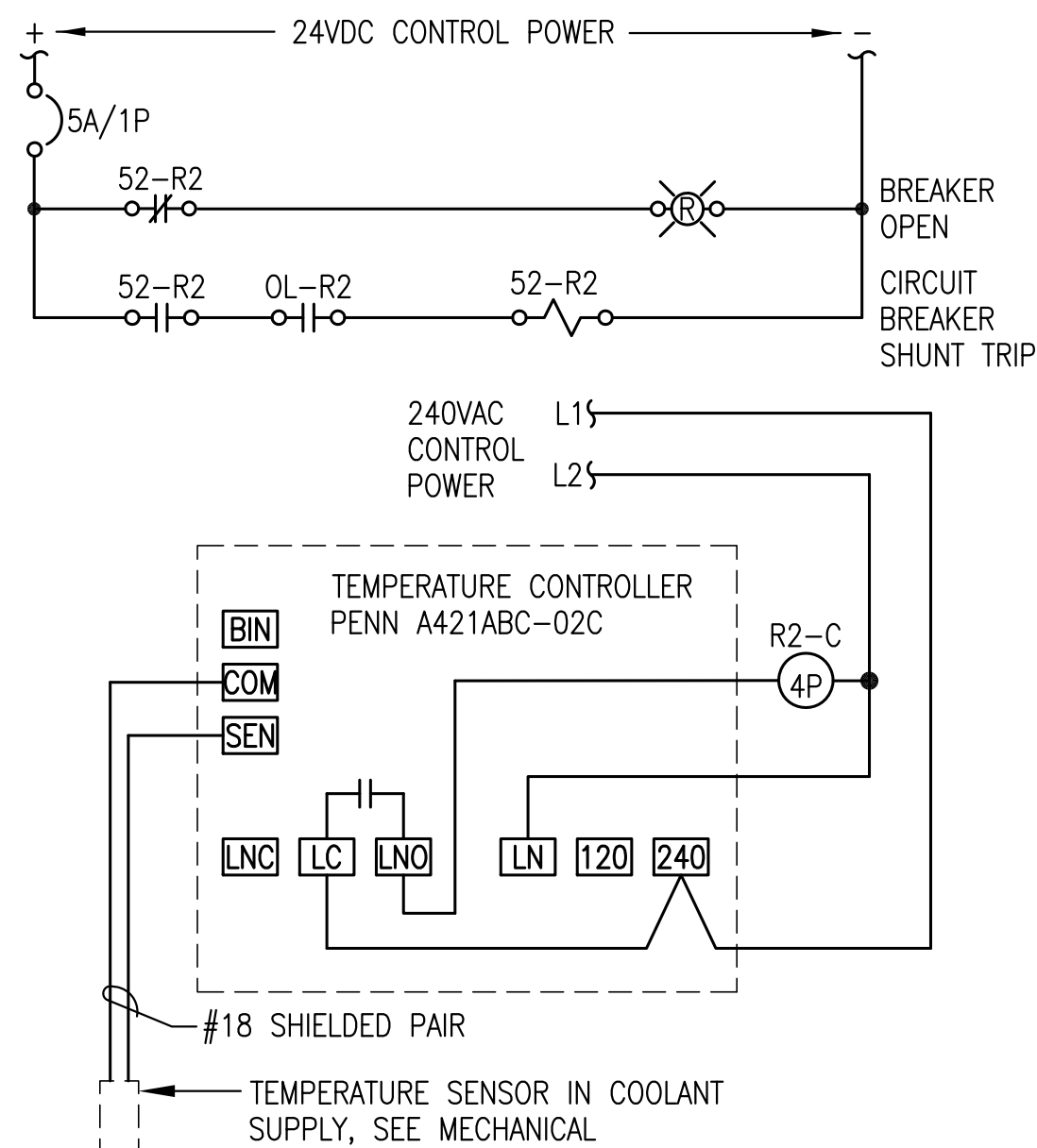
**2 SWITCHGEAR ONE-LINE DIAGRAM**  
E3.1 NO SCALE

**RADIATOR R1 SETTINGS:**

175F = ON  
165F = OFF  
AFTER SELECTING VALUES INSTALL JUMPER FOR RESTRICTED MODE

**RADIATOR R2 SETTINGS:**

180F = ON  
170F = OFF



**3 TYPICAL RADIATOR CONTROL LOGIC DIAGRAM**  
E3.1 NO SCALE

ELECTRICAL CONDUCTOR SCHEDULE				
SERVICE/FUNCTION	DESCRIPTION	MANUFACTURER/MODEL	NOTES:	
GENERATOR LEADS & FEEDERS (480V) & ENGINE STARTER CABLES (24VDC)	HIGH TEMPERATURE, EXTRA FLEXIBLE CABLE, TIN COATED COPPER CONDUCTOR. THERMOSET EPDM INSULATION, UL 3340/3374, MINIMUM 600V, LISTED 150°C FOR NON-FLEXING	COBRA CABLE, BELDEN, OR OMNI	TERMINATE WITH COPPER COMPRESSION LUGS RATED FOR THE FULL AMPACITY OF THE CABLE AT 150°C.	COLOR CODING - UNLESS SPECIFICALLY INDICATED OTHERWISE COLOR CODE CONDUCTORS AS FOLLOWS: 120/240 VOLT POWER CONDUCTORS PHASE A - BLACK PHASE B - RED PHASE C - BLUE NEUTRAL - WHITE 24 VOLT DC CONDUCTORS +24VDC - RED -24VDC - BLACK CONTROL & INSTRUMENT CONDUCTORS COLOR CODED PER MANUFACTURER'S STANDARD
GENERAL USE CONDUCTORS	CLASS B CONCENTRIC STRANDED, SOFT DRAWN COPPER, TYPE XHHW INSULATION, 600V AND 75C RATED.			
SHIELDED/TWISTED INSTRUMENT & CONTROL & CANBUS CONDUCTORS	#18 AWG STRANDED TINNED COPPER CONDUCTORS, 600V POLYETHYLENE INSULATION, 100% COVERAGE ALUMINUM FOIL-POLYESTER TAPE SHIELD WITH STRANDED TINNED COPPER DRAIN WIRE & PVC OUTER JACKET	BELDEN PART #'S SINGLE PAIR: #1120A FOUR PAIR: #1049A SINGLE TRIAD: #1121A	GROUND SHIELD DRAIN WIRE AT PANEL END ONLY.	

**NOTES:**

- FOR NO. 6 AWG AND SMALLER CONDUCTORS COLOR CODING SHALL BE PROVIDED BY USING CONDUCTORS WITH CONTINUOUS COLOR EMBEDDED IN THE INSULATION. FOR ALL CONDUCTORS LARGER THAN NO. 6 SCOTCH 35 MARKING TAPE OR EQUIVALENT MAY BE USED TO COLOR CODE THE CABLE. WHERE MARKING TAPE IS USED THE CABLE SHALL BE IDENTIFIED AT EVERY ACCESSIBLE LOCATION. PROVIDE A MINIMUM OF 2 INCHES OF TAPE AT EACH LOCATION.
- GROUNDING - PROVIDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN EACH RACEWAY. DO NOT USE THE CONDUIT AS AN EQUIPMENT GROUNDING CONDUCTOR. EQUIPMENT GROUNDING CONDUCTORS SHALL BE OF THE SAME TYPE AS THE PHASE CONDUCTORS AND SHALL BE SIZED AS INDICATED ON THE DRAWINGS. CONDUCTORS NOT INDICATED SHALL BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

SWITCHGEAR SYMBOL LEGEND			
	TRANSFORMER PT=POTENTIAL XFRMR CPT=CONTROL POWER XFRMR		CIRCUIT BREAKER AT=AMP TRIP RATING AF=AMP FRAME RATING
	CURRENT TRANSFORMER M.R. - INDICATES MULTIRATIO CT'S RATING FACTOR RF=2.0		WOODWARD EASYGEN SETPOINT CONTROLLER
			SHOP INSTALLED POWER WIRING/BUS
			FIELD INSTALLED POWER WIRING
			SHOP INSTALLED CONTROL WIRING

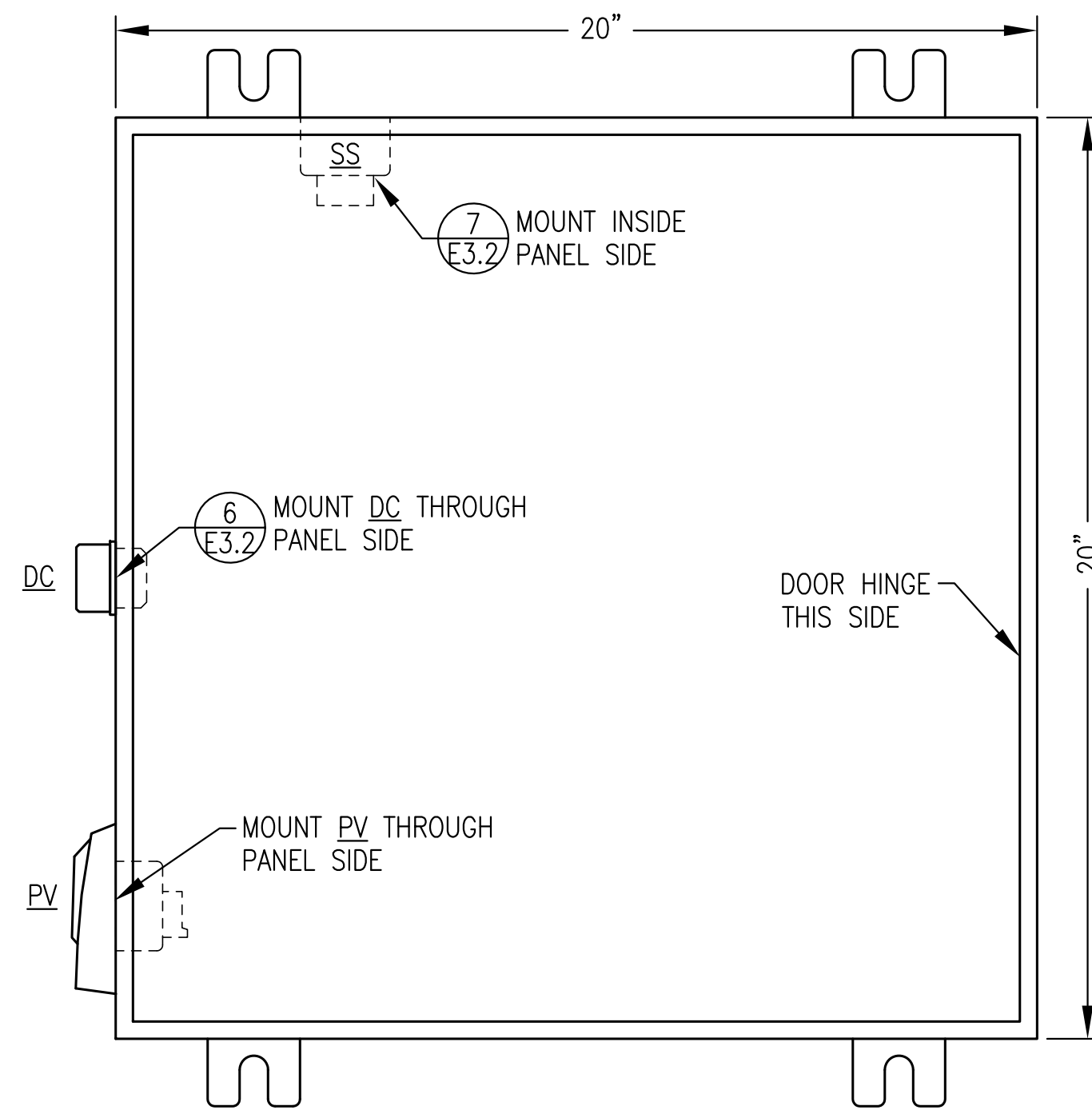
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*John Daloz*

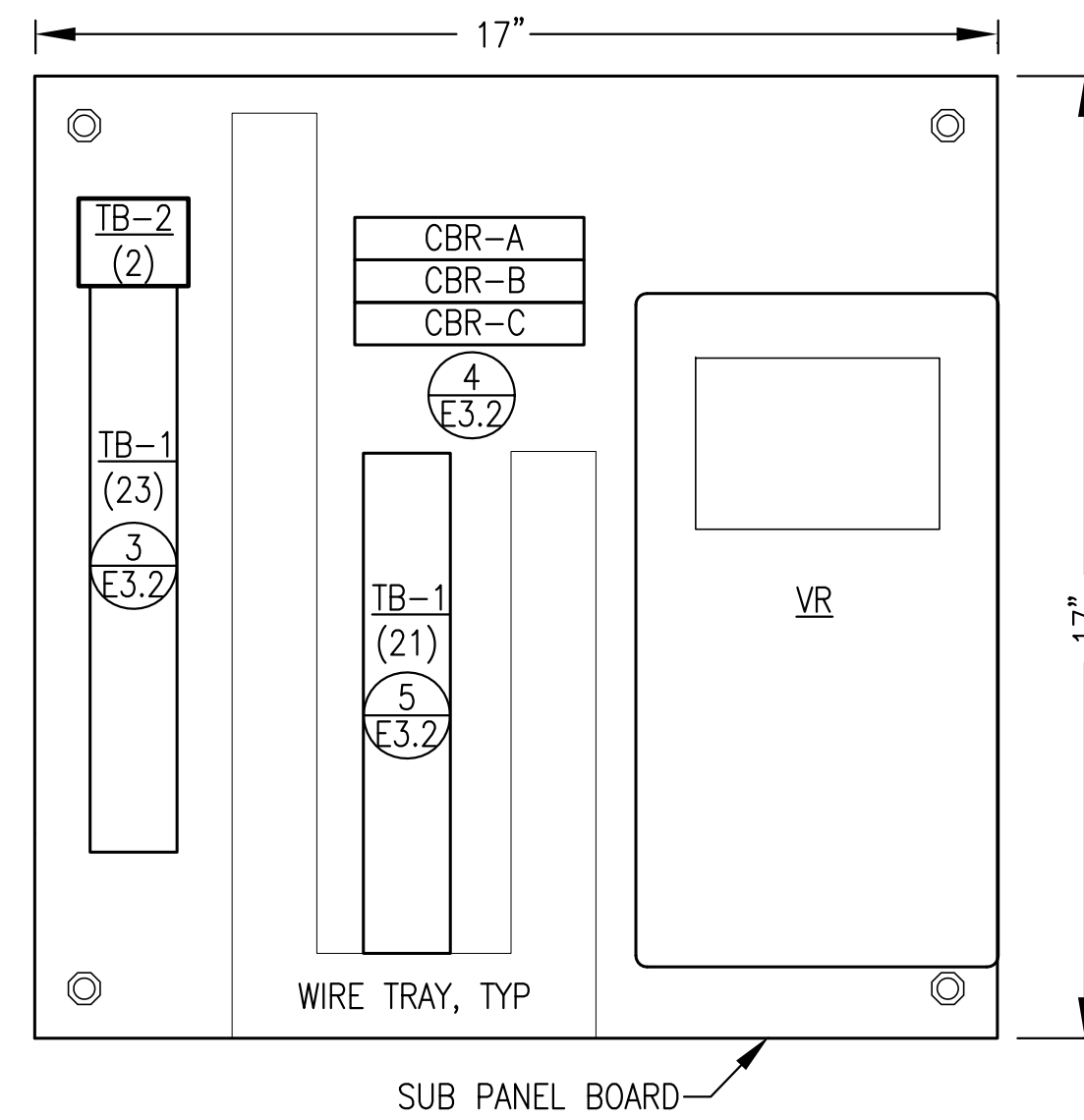
DATE: 12/30/20

PROJECT:	FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE		
TITLE:	SWITCHGEAR LAYOUT, ONE-LINE, SCHEMATICS, & CONDUCTOR SCHEDULE		
DRAWN BY:	JTD	SCALE:	NO SCALE
DESIGNED BY:	CWV/BCG	DATE:	3/18/20
FILE NAME:	CIRDERA E1-3A	SHEET:	E3.1 OF 3
PROJECT NUMBER:			

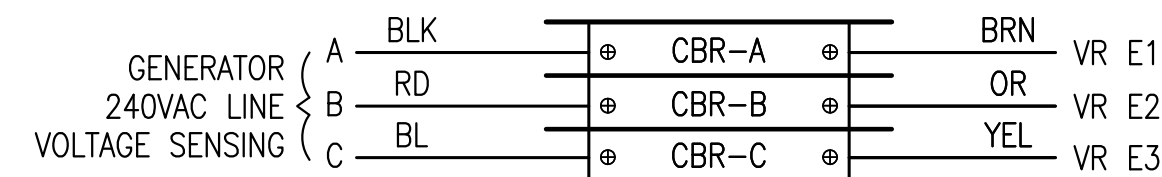
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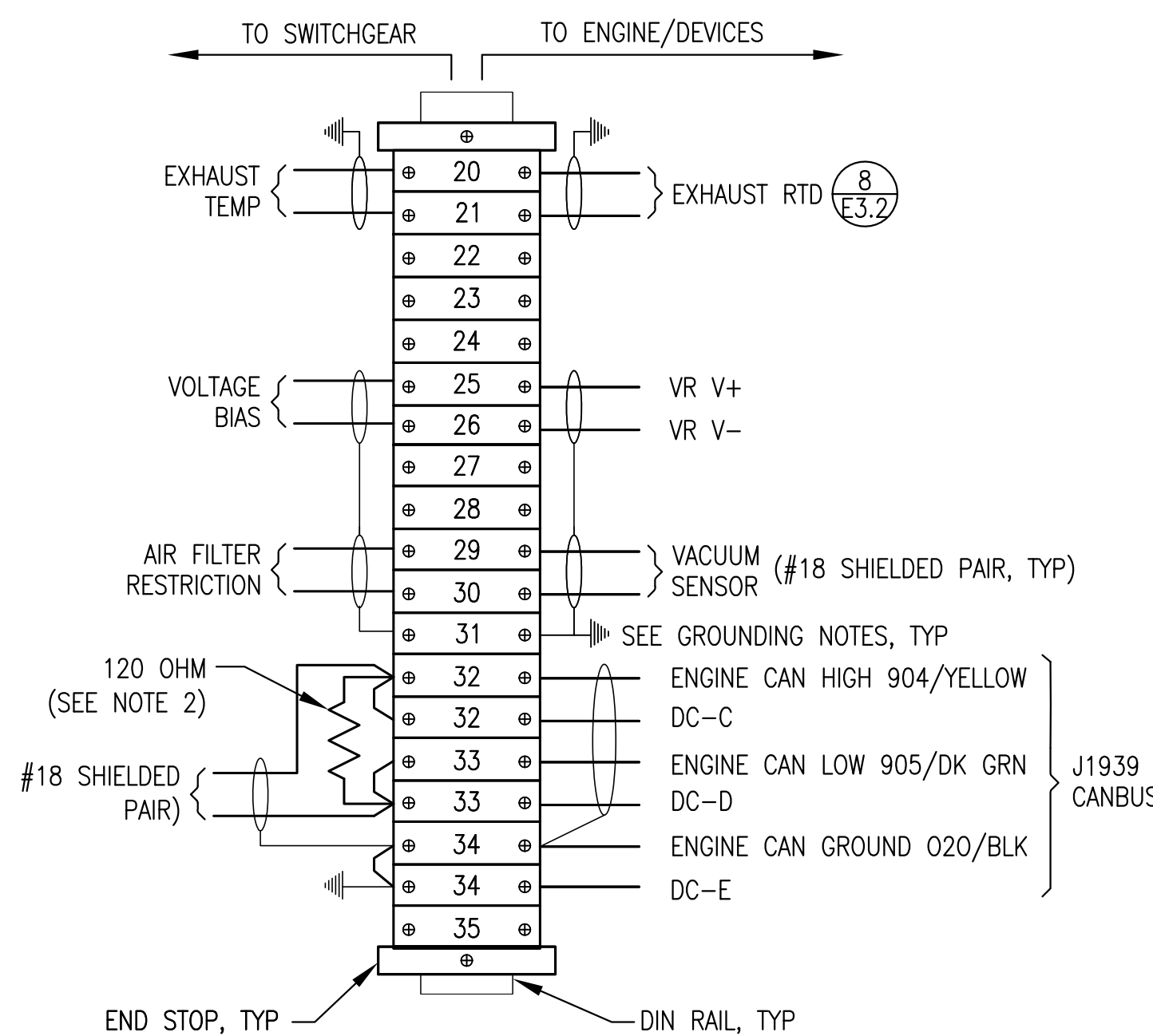
**1** JUNCTION BOX FRONT PANEL LAYOUT  
E3.2 NO SCALE



**2** JUNCTION BOX SUB PANEL LAYOUT  
E3.2 NO SCALE

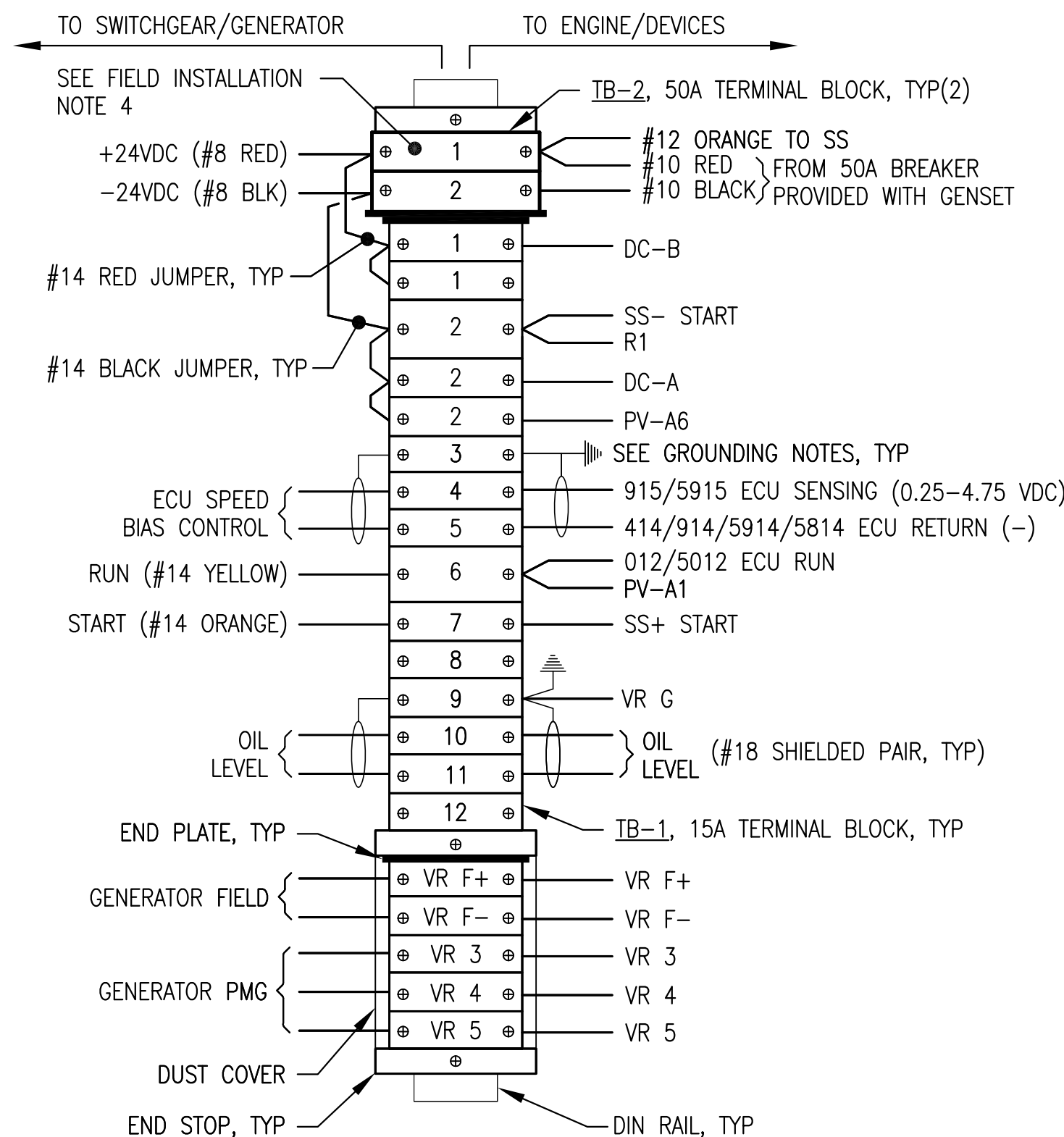


**4** CIRCUIT BREAKER CONNECTIONS  
E3.2 NO SCALE



NOTES: 1) ALL RESISTORS 0.25W.  
2) REMOVE RESISTOR IF ENGINE WIRING HARNESS HAS 120 OHM END OF LINE RESISTOR.

**5** TERMINAL STRIP CONNECTIONS  
E3.2 NO SCALE



NOTE: TYPICAL JOHN DEERE ECU CONNECTION NUMBERS SHOWN. SEE WIRING HARNESS FOR EACH ENGINE FOR ACTUAL ECU CONNECTIONS.

**3** TERMINAL STRIP CONNECTIONS  
E3.2 NO SCALE

TAG	MANUFACTURER	MODEL	DESCRIPTION
ENCL.	HOFFMAN	A20H20ALP	20x20x8" NEMA 12 BACK PANEL
VR	HOFFMAN	A20P20	DIGITAL VOLTAGE REGULATOR
CBR	BASLER	DECS-150 5NS1V1N1S	RAIL MOUNT CIRCUIT BREAKER, 1-POLE, 1A
DC	ALLEN-BRADLEY	1489-M1-C010	DIAGNOSTIC CONNECTOR, 9-PIN, CAN-BUS
	JOHN DEERE	57M7919	CONNECTOR STRAIN RELIEF
	DEUTSCH	HD18-009	CONNECTOR PROTECTIVE DUST CAP
	DEUTSCH	HDC16-9	CONNECTOR GASKET
	DEUTSCH	HD10-9-GKT	CONNECTOR LANYARD
	DEUTSCH	JDL062397	POWER VIEW W/HARNESS
PV	MURPHY	PV101-C-MSTD	STARTER AUXILIARY SOLENOID, 24V
SS	CATERPILLAR	9X-8124	15A DIN RAIL-MOUNT TERMINAL BLOCK
TB-1	IDEC	BNH15LW	50A DIN RAIL-MOUNT TERMINAL BLOCK
TB-2	IDEC	BNH50W	

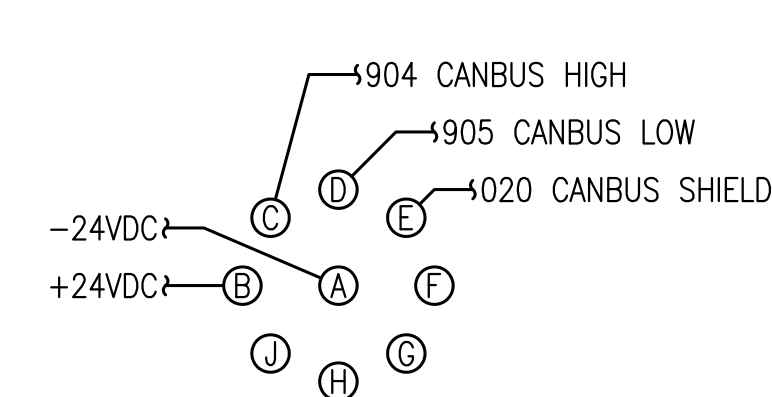
NOTE: SPECIFIC PARTS MANUFACTURER AND MODEL SELECTED NOT ONLY TO MEET PERFORMANCE FUNCTION BUT ALSO TO COORDINATE AND INTERFACE WITH OTHER DEVICES AND SYSTEMS. APPROVED EQUAL SUBSTITUTIONS WILL BE ALLOWED ONLY BY ENGINEER'S APPROVAL. TO OBTAIN APPROVAL, SUBMITTALS MUST CLEARLY DEMONSTRATE HOW SUBSTITUTE ITEM MEETS OR EXCEEDS SPECIFIED ITEM QUALITY AND PERFORMANCE CHARACTERISTICS AND ALSO COMPLIES WITH MECHANICAL AND/OR ELECTRICAL CONNECTIONS AND PHYSICAL LAYOUT REQUIREMENTS.

**SHOP FABRICATION NOTES:**

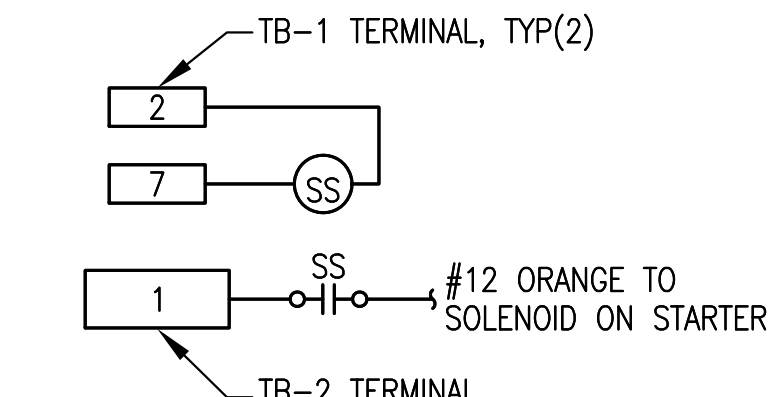
- 1) PROVIDE ASSEMBLY WITH ALL DEVICES AND WIRING INDICATED.
- 2) INSTALL IN A NEMA 12 ENCLOSURE WITH MOUNTING FLANGES AT BACK, A MIN 14 GAUGE INTERIOR BACK PANEL AND HINGED LOCKABLE DOOR. SIZE AS INDICATED.
- 3) PROVIDE DIN RAIL, TERMINAL END PLATES, TERMINAL END STOPS, TERMINAL DUST COVERS AND OTHER MISCELLANEOUS HARDWARE AS REQUIRED TO MATCH TERMINALS. LABEL ALL TERMINALS EXACTLY AS INDICATED ON THE DETAILS.
- 4) ALL WIRE #14AWG EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE. LABEL BOTH ENDS OF ALL JUMPERS WITH THE ENGINE PANEL TERMINAL NUMBER.
- 5) PROVIDE MECHANICAL GROUND LUGS FASTENED TO BACK PANEL AND GROUNDED TO ENGINE-GENERATOR. GROUND ALL SHIELD DRAIN WIRES TO LUGS AT PANEL END ONLY.
- 6) PROVIDE WIRING HARNESSES FOR CONNECTION TO GENERATOR AND TO ENGINE. INSTALL WIRES IN LIQUID TIGHT FLEX OR FLEXIBLE PLASTIC WIRE LOOM AND PROVIDE SERVICE LOOPS IN ACCORDANCE WITH SPECIFICATIONS.
- 7) SHOP TEST EACH ENGINE-GENERATOR WITH ASSOCIATED JUNCTION BOX PERMANENTLY CONNECTED. UPON COMPLETION OF TESTING, COIL WIRING HARNESSES AND SECURE JUNCTION BOX TO GENERATOR FOR SHIPPING.

**FIELD INSTALLATION NOTES:**

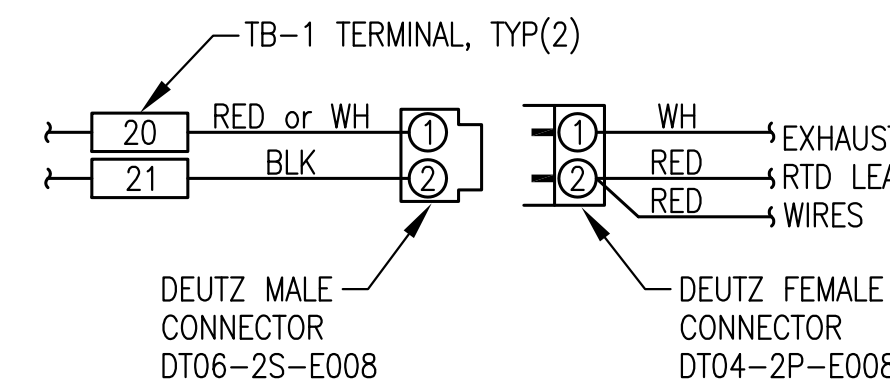
- 1) PERFORM ALL FIELD WIRING IN ACCORDANCE WITH SPECIFICATIONS. LABEL BOTH ENDS OF ALL FIELD WIRING WITH THE ENGINE PANEL TERMINAL NUMBER.
- 2) ON SHIELDED CONDUCTORS GROUND ALL SHIELD DRAIN WIRES TO LUGS AT PANEL END ONLY.
- 3) FIELD CONDUCTORS FROM GENERATOR TO SWITCHGEAR ARE EXISTING. USE EXISTING UNUSED SHIELDED TRIADS TO SERVE AS SHIELDED PAIRS AND PULL ADDITIONAL #18 SHIELDED PAIRS AS REQUIRED. FOR ALL UNUSED CONDUCTORS COIL, TAPE ENDS, & LEAVE IN PLACE.
- 4) RELABEL ALL TERMINALS IN SWITCHGEAR TO MATCH NEW J-BOX TERMINAL NUMBERS



**6** DIAGNOSTIC CONNECTOR WIRING  
E3.2 NO SCALE



**7** STARTER AUX SOLENOID SS WIRING  
E3.2 NO SCALE



**8** EXHAUST RTD CONNECTOR  
E3.2 NO SCALE

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*John Dalson*  
DATE: 12/30/20

PROJECT: FFY17-18 DERA PROJECT CIRCLE POWER PLANT UPGRADE	
TITLE: GENSET #1 & #2 24V ENGINE WIRING JUNCTION BOX	
DRAWN BY: JTD	SCALE: NO SCALE
DESIGNED BY: CWV/BCG	DATE: 3/18/20
FILE NAME: CIRDERA E1-3	SHEET: E3.2 OF 3
PROJECT NUMBER:	

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