



Relay Panel Specification

City of Negaunee
Irontown Substation



Seth Packwood
8/29/23

Prepared by:

Power System Engineering, Inc.

August 29th, 2023

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Relay Panel Specification

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SECTION 00 11 16 – ADVERTISEMENT

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

Furnish and deliver (2) Relay Panels
For City of Negaunee, Negaunee, Michigan

City of Negaunee, Negaunee, Michigan will receive sealed bids to furnish and deliver, including any necessary labor and materials needed to provide the equipment for two (2) new relay panels.

Sealed Bids will be received at City of Negaunee City Hall, 319 West Case Street, P.O. Box 70, Negaunee, MI 49866, until September 26th, 2023 at 11:00 a.m. EST at which time the bids will be opened and publicly read aloud.

Bids shall be addressed to City of Negaunee, Attn: City Clerk, 319 West Case Street, P.O. Box 70, Negaunee, MI 49866 and shall be marked "SEALED BID – IRONTOWN SUBSTATION RELAY PANEL - Submitted by (Bidder's name)".

The Bidder shall include evidence of having satisfactorily furnished and delivered similar relay panels for at least five (5) similar installations during the past five (5) years.

Specifications and bid documents may be examined at or obtained from the Consulting Engineering Firm: Power System Engineering, Inc., Attn: Jill Igl, 2424 Rimrock Road, Suite 300, Madison, WI 53713. Ph# 608-268-3574 or by email at iglj@powersystem.org. The bidding documents will be issued electronically.

No proposal will be accepted unless accompanied by a certified check or bid bond for at least five percent (5%) of the amount of the proposal, payable to the Owner.

The Owner reserves the right to reject any or all bids, to waive any informalities in a bid, and to make awards in the interest of the Owner.

Published by authority of City of Negaunee City Clerk, and duly authorized agent for City of Negaunee Public Works.

SECTION 00 21 13 – INSTRUCTIONS TO BIDDERS

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

PART 1 - GENERAL

1.1 INDEX

- A. Part 1 - General
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 - 4. Contract Documents Identification
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 - 12. Bid Form Requirements
 - 13. Selection and Award of Bids
 - 14. Bid Opening
 - 15. Duration of Offer
 - 16. Acceptance of Offer

1.2 CONTRACT TIME

- A. Identify the Contract Time in the Bid Form. The completion date in the Agreement shall be the Contract Time added to the commencement date.
- B. The Owner requires the work of this Contract be completed as quickly as possible. Consideration may be given to time of completion when reviewing submitted Bids.

1.3 DEFINITIONS

- A. Bidding Documents: Contract Documents supplemented with Advertisement to Bid, Instructions to Bidders, Bid Form, bid securities, and other documents identified on the Table of Contents (Section 000110).
- B. Bid: Executed Bid Form and required attachments submitted in accordance with these Instructions to Bidders.
- C. Bid Price: Monetary sum identified by the Bidder in the Bid Form.
- D. The term "BIDDER" means one who submits a Bid directly to the Owner, as distinct from a Sub-bidder, who submits a Bid to a Bidder. The term "Bidding Documents" includes the Advertisement or Invitation to Bid, Instructions to Bidders, the Proposal

Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Proposals).

- E. The OWNER of this project is City of Negaunee and may also be referred to as the Purchaser or Buyer.
- F. The term "CONTRACTOR" or "SUPPLIER" shall be held to mean the firm which is given a Purchase Order and/or Contract for material purchase.
- G. The ENGINEER for this project is Power System Engineering, 2424 Rimrock Road, Madison, WI.
- H. The terms "Bid" and "Proposal" have the same meaning.

1.4 CONTRACT DOCUMENTS IDENTIFICATION

- A. The Contract Documents are identified as the Irontown Substation Relay Panel specifications for City of Negaunee as prepared by Power System Engineering, Inc., located at 2424 Rimrock Road, Madison WI, 53713.

1.5 AVAILABILITY OF DOCUMENTS

- A. Bidding Documents may be obtained from the Engineer as stated in Advertisement to Bid.
- B. Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- C. Bidding Documents are made available only for the purpose of obtaining offers for this Project. Their use does not grant a license for other purposes.

1.6 EXAMINATION OF DOCUMENTS

- A. Bidding Documents may be viewed at the office of Power System Engineering, 2424 Rimrock Road, Madison WI, 53713. The Bidding Documents will be issued electronically.
- B. Upon receipt of Bidding Documents, verify that documents are complete. Notify the Engineer if documents are incomplete.
- C. Immediately notify the Engineer upon finding discrepancies or omissions in Bidding Documents.
- D. The submission of a Bid will constitute an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of this Section, that without exception the Bid is premised upon performing and furnishing the equipment required by the Contract Documents as may be indicated in or required by the Contract

Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the equipment.

1.7 INQUIRIES AND ADDENDA

- A. Direct questions in writing or via e-mail to the Engineer, at the office of the Engineer.
- B. Verbal answers are not binding on any party.
- C. It is the Bidder's responsibility to verify with the Engineer that all Addenda have been received prior to submitting a Bid.
- D. Submit questions not less than eight days before the date set for receipt of Bids. Replies will be made by Addenda.
- E. Addenda may be issued during the bidding period. Addenda will be sent to known Bidders. Addenda become part of the Contract Documents. Oral and other interpretations or clarifications will be without legal effect. Include resultant costs in the Bid Price.

1.8 BIDDER QUALIFICATIONS

- A. The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or equal" item of material or equipment may be furnished or used by the Contractor if acceptable to Engineer, application for such acceptance will not be considered by the Engineer until after the Effective Date of the Agreement or issuance of a Purchase Order.
- B. The Bidder shall include evidence of having satisfactorily provided similar services to similar users for at least five installations during the past five years.

1.9 SUBMISSION PROCEDURE

- A. Bidders shall be solely responsible for delivery of Bids in the manner and time prescribed in the Advertisement.
- B. Submit one copy of the executed offer on the Bid Forms provided, signed and sealed with the required security deposit in a closed opaque envelope, clearly identified with the Bidder's name, Project name, and Owner's name on the outside.
- C. Improperly completed information, irregularities in security deposit or Bid Bond, will be cause not to open the Bid Form envelope and declare the Bid invalid or informal.
- D. An abstract summary of submitted Bids will be made available to all Bidders following the Bid Opening.

1.10 BID INELIGIBILITY

- A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, or that contain arithmetical errors, erasures, alterations, or irregularities of any kind, will be declared unacceptable at the Owner's discretion.
- B. Bid Forms, Appendices, and enclosures which are improperly prepared will be declared unacceptable at the Owner's discretion.
- C. Failure to provide the security deposit, bonds, or insurance requirements will invalidate the Bid at the discretion of the Owner.

1.11 BID SECURITY

- A. Each Bid must be accompanied by Bid Security made payable to the Owner in an amount and in the form as defined in the Advertisement. If the amount of Bid Security is not defined in the Advertisement, the Bid security shall be five percent (5%) of the Bidder's maximum Bid Price and in the form of a certified or bank check or a Bid Bond (on form attached, if a form is prescribed) issued by a surety meeting the requirements. All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act. If the surety on any Bond furnished by the Bidder is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the above requirements, the Bidder shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to the Owner. The security deposit of the accepted Bidder will be returned after delivery to the Engineer of the required Performance Bond by the accepted Bidder.
- B. Bid, Performance, and Payment Bonds shall be issued by a surety company licensed to do business in the state of the Owner and Owner's project. The Performance Bond shall be equal to 100% of the contract price.
- C. The Bid Security is used as a guarantee that if the Proposal is accepted, the Bidder will execute and file three (3) completed copies of the required proper Contract and Performance Bond within fifteen (15) days after award of the Contract.
- D. The Bid Security of the successful Bidder will be retained until such Bidder has executed the Agreement or accepted the Purchase Order and furnished the required Contract Security, whereupon the Bid Security will be returned. If the Successful Bidder fails to execute and deliver the Agreement or accept the Purchase Order within fifteen days after the Notice of Award or issuance of Purchase Order, the Owner may annul the Notice of Award or Purchase Order and the Bid Security of that Bidder will be forfeited. The Bid Security of other Bidders whom the Owner believes to have a reasonable chance of receiving the award may be retained by the Owner until the earlier of the

seventh day after the Effective Date of the Agreement or the forty-sixth day after the Bid Opening, whereupon Bid Security furnished by such Bidders will be returned. Bid Security with Bids which are not competitive will be returned on acceptance of the Contract.

E. If no Contract is awarded, security deposits will be returned.

1.12 BID FORM REQUIREMENTS

A. Complete requested information in the Proposal Form and Bidding Documents.

B. Provide additional Bid data as outlined in the technical specification.

1.13 SELECTION AND AWARD OF BIDS

A. Bids will be evaluated and selected based on the lowest evaluated, responsible, acceptable total base Bid price with full consideration of alternates.

1.14 BID OPENING

A. Bids will be opened publicly immediately after the time for receipt of Bids noted in the Advertisement or any Addendums adjusting the timeframe.

1.15 DURATION OF OFFER

A. Bids shall remain open to acceptance for a period of 60 days after the bid closing date.

B. No Bid shall be withdrawn after the opening of Bids without written consent of the Owner for a period of sixty (60) days after the scheduled time of receiving the Bids.

1.16 ACCEPTANCE OF OFFER

A. The Owner reserves the right to reject any and all Bids, to waive any and all informalities not involving price, time or changes in the work and to negotiate Contract terms with the successful Bidder and the right to disregard all nonconforming, non-responsive, unbalanced or conditional Bids. Also, the Owner reserves the right to reject the Bid of any Bidder if the Owner believes that it would not be in the best interest of the project to make an award to that Bidder, whether because the Bid is not responsive, or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the Owner.

B. After acceptance by the Owner, the Engineer, on behalf of the Owner, will issue to the accepted Bidder a written Notice of Award.

C. The Owner may conduct such investigations as the Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, Suppliers and other persons and organizations to perform and furnish

the equipment in accordance with the Contract Documents to the Owner's satisfaction within the prescribed time.

- D. If the Contract is to be awarded, it will be awarded to the Bidder whose Bid offer, as evaluated by the Owner, indicates to the Owner that the award will result in the lowest overall project cost at completion and be in the best interests of the project and the Owner.
- E. Notwithstanding delay in the preparation and execution of the Agreement, the accepted Bidder shall be prepared, upon written Notice of Award, to commence work immediately following receipt of official written order of the Owner to proceed, or on a date stipulated in such order.
- F. The accepted Bidder shall assist and cooperate with the Owner to prepare the Agreement, and within fifteen days following its presentation shall execute the Agreement and return it to the Owner.

END OF SECTION

SECTION 00 41 13 – PROPOSAL

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

*All bids shall be in U.S. Dollars in lawful money of the United States of America.

TO: City of Negaunee (Hereinafter called the “Owner”)

1. Base Bid - Total firm price to furnish two (2) relay panels, in accordance with the Specifications:

Quoted Price – two (2) relay panels \$ _____

\$ _____ dollars and _____ cents.

2. Alternate Bid - Manufacturer suggested alternate, assuming alternates are acceptable:

Quoted Price – two (2) relay panels \$ _____

\$ _____ dollars and _____ cents.

3. Price for one (1) lot of special handling, assembly, and maintenance tools

\$ _____

4. Delivery: Shipping ARO

_____ Weeks

5. Shop drawing submittal schedule:

For Review ARO

Final ARO

6. The equipment proposed is in accordance with the specifications:

Yes No - (If not, list all exceptions on a separate sheet & identify as “Exceptions”)

7. Options:

[List as required for each application]

8. The following Addenda have been received. The modifications to the Contract Documents noted therein have been considered and all costs thereto are included in the Bid Price.

Date	Addendum #
_____	_____
_____	_____

- (a) BIDDER has familiarized itself with the nature and extent of the Contract Documents, Work, Site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the materials and equipment.
- (b) BIDDER has given ENGINEER written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER.
- (c) BIDDER certifies that this proposal is made and submitted without fraud or collusion with any other firm or corporation whatsoever. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.
- (d) The BIDDER acknowledges the right of the OWNER to reject any or all Bids, waive any irregularities or informalities therein and award the Contract to other than the lowest evaluated Bidder if, in its discretion, the interests of the OWNER would be best served thereby.

14. City of Negaunee is a tax exempt entity. Tax exempt information can be provided to the successful bidder if required.

15. The following documents are attached to and made a condition of this Bid:

Required bid security in the form of a Certified Check or Bid Bond, being at least five percent (5%) of the amount bid, and made payable to the OWNER.

SELLER: _____

ADDRESS: _____

AUTHORIZED REPRESENTATIVE: _____

SIGNATURE: _____

DATE: _____

TITLE: _____

TELEPHONE NUMBER: _____

Proposal contact person: _____

Email address of proposal contact person: _____

Phone number of proposal contact person: _____

SECTION 00 42 00 – BID BOND

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

BIDDER
(Name and Address):

SURETY
(Name and Address of Principal Place of Business):

OWNER (Name and Address)

City of Negaunee
319 West Case Street
P.O. Box 70
Negaunee, MI 49866

BID

BID DUE DATE: September 26th, 2023

PROJECT: Relay Panels

BOND

BOND NUMBER: _____

DATE: (Not later than Bid Due Date): _____

PENAL SUM: _____

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the following page hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER

(Seal)
Bidder's Name and Corporate Seal

SURETY

(Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title

By: _____
Signature and Title (Attach Power of Attorney)

Attest: _____
Signature and Title

Attest: _____
Signature and Title

Note: (1) Above addresses are to be used for giving required notice.
(2) Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents.
3. This obligation shall be null and void if:
 - a. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents, or
 - b. All Bids are rejected by Owner, or
 - c. Owner fails to issue a notice of award to Bidder within the time specified in the Bidding Documents (or any extensions thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder, provided that the time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety, and in no case later than one year after Bid Due Date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the project is located.
8. Notice required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of the Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein included a bid, offer or proposal as applicable.

END OF SECTION

SECTION 00 52 00 – CONTRACT

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

THIS CONTRACT, made this ____ day of _____, by and between _____ hereinafter called the "CONTRACTOR", and City of Negaunee, 319 West Case Street, P.O. Box 70, Negaunee, MI 49866 hereinafter called the "OWNER".

WITNESSETH: That the Contractor and the Owner for the consideration stated herein agree as follows:

ARTICLE I, SCOPE OF WORK: The Contractor shall perform everything required to be performed and shall provide and furnish the labor, and/or equipment, materials, necessary tools, expendable equipment and all utility and transportation services required to:

furnish and deliver two (2) Relay Panels as defined in the specifications

all in accordance with the drawings and specifications, including any and all addenda, prepared by POWER SYSTEM ENGINEERING, INC., "ENGINEER", which drawings and specifications are made part of this Contract; and in strict compliance with the Contractor's proposal and other component parts of the Contract Documents herein mentioned, which are a part of this Contract. The Contractor shall do everything required by this Contract including all the component parts of the Contract Documents constituting a part hereof.

ARTICLE II, CONTRACT PRICE: The Owner shall pay to the Contractor for the performance of this Contract, subject to any addition or deduction provided therein, in current United States funds, the amount of _____ Dollars and _____ Cents (\$ _____). This said amount includes

Payments are to be made to the Contractor in accordance with and subject to the provisions embodied in the Contract Documents made a part of this Contract.

ARTICLE III, CONTRACT DOCUMENTS: The Contract Documents consist of the following component parts, all of which are as fully a part of this Contract as if herein set out verbatim or, if not attached, as if hereto attached:

1. All documents as outlined in the Table of Contents.
2. Agreed upon clarifications between the Owner and Contractor after receipt of proposal.
3. The Contractor's proposal.
4. All other documents affixed to this Contract.

In the event that any of the provisions in any of the above component parts of this Contract conflict with any provision in any other of the component parts, the provision in the component part first enumerated above shall govern over any other component part which follows it numerically, except as may be otherwise specifically stated.

ARTICLE IV, CONTRACT EXECUTION: This Contract is executed in triplicate.

IN WITNESS WHEREOF: The parties hereto have caused this instrument to be executed the day and year first above written.

CONTRACTOR:

Attest:

By _____

By _____

(CORPORATE SEAL)

(CORPORATE SEAL)

Print Name _____

Print Name _____

Title _____

Title _____

OWNER:

City of Negaunee
600 Cherry Street
Negaunee, MI 49866

Attest:

By _____

By _____ (Seal)

Print Name _____

Print Name _____

Title _____

Title _____

INSTRUCTIONS FOR EXECUTING THE CONTRACT

The full name and business address of the Contractor shall be inserted and the Contract shall be signed with an official signature. The name of the signing party or parties shall be printed legibly under all signatures to the Contract.

If the Contractor be a corporation the following certificate shall be executed:

I, _____, certify that I am the _____ secretary of the corporation named as

Contractor herein; that _____ who signed the foregoing Contract on behalf of the

Contractor was then _____ of said Corporation; that said Contract was duly signed for and in behalf of said Corporation by authority of its governing body, and is within the scope of its corporate powers.

By _____ (Seal)

Title _____

In lieu of the foregoing certificate there may be attached to the Contract, a certified copy of the resolution of the board of directors of the corporation evidencing the authority of such official to sign the Contract.

The Contract shall also bear the attesting signature of the secretary or the assistant secretary of the corporation, and impressions of the corporate seal where indicated if a seal exists. Contracts which are signed by the secretary of the corporation shall be attested by some other officer of the corporation. If the corporation has no seal, include a statement or notation stating that the corporation has no seal.

If the Contractor be a partnership, the trade name (if the Contractor be operating under a trade name) shall be indicated in the Contract and the Contract shall be signed by each partner. If the Contract is not signed by each partner, there shall be attached to the Contract, a duly authenticated power of attorney executed by the partners evidencing the signer's authority to sign such Contract for and in behalf of the partnership or the partner.

If the Contractor be an individual, the trade name (if the Contractor be operating under a trade name) shall be indicated in the Contract and the Contract shall be signed by such individual. If the Contract is signed by one other than the individual, there shall be attached to the Contract, a duly authenticated power of attorney executed by the individual evidencing the signer's authority to sign such Contract for and in behalf of the individual.

END OF SECTION

SECTION 00 61 13 – PERFORMANCE BOND

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

KNOW ALL MEN BY THESE PRESENTS that

we _____

_____ as Principal, and _____

_____ as Surety, are held and firmly

bound unto _____ hereinafter

called the Owner, in the penal sum of _____ Dollars

(\$ _____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The Condition of the obligation is such that whereas the Principal has executed the attached Contract dated

_____, 2023, to:

furnish and deliver two (2) relay panels per the plans and specifications.

NOW THEREFORE, if the Principal shall:

well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said Contract during the terms of said Contract and any extensions thereof that may be granted by the Owner, with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived; and

promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said Contract, and any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived;

then this obligation to be void, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounden parties have executed this document under their several seals this

_____ day of _____, 2023, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In the presence of: Witness

Individual Principal

By _____
(Seal)

By _____

Corporate Principal

Business Address
(Affix)
By _____ (Corporate)
(Seal)

Attest:

By _____

Title

Title

Corporate Surety

Business Address
(Affix)
By _____ (Corporate)
(Seal)

Title

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____ Secretary of the Corporation named as Principal in the within bond, that _____

who signed the said bond on behalf of the Principal was _____ of said Corporation; that I know his signature, and his signature thereto is genuine, and that said bond was duly signed, sealed, and attested for in behalf of said Corporation by authority of its governing body.

By _____ (Affix)
(Corporate)
(Seal)

END OF SECTION

SECTION 00 61 14 – PAYMENT BOND

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

That “the **Contractor**,” _____, a corporation____, individual____, partnership____, joint venture____ of the State of _____, qualified to do business in the State of Michigan, as Principal, and “the Surety,” _____, of the State of _____, as surety, are held bound unto the City of Negaunee, “the **Owner**,” as Obligee, in the amount of _____ Dollars (\$ _____), for the payment of which the **Contractor** and Surety bind themselves, their respective heirs, successors, legal representatives and assigns, jointly and severally, in compliance with 1963 PA 213, as amended, MCL 129.201 et seq.

The Contractor has entered into “the Contract” with the **Owner** for _____ “the Work,” covered by the Contract Document which are incorporated into this Payment Bond by this reference:

If the Contractor promptly pays all claimants supplying labor or materials to the **Contractor** or to the **Contractor's** Subcontractors in the prosecution of the Work, then THIS OBLIGATION IS VOID, OTHERWISE TO REMAIN IN FULL FORCE AND EFFECT.

- A. All rights and remedies on this Payment Bond are solely for the protection of all claimants supplying labor and materials to the **Contractor** or the **Contractor's** Subcontractors in the prosecution of the Work, and must be determined in accordance with Michigan Law.
- B. No change in Contract Price or Contract Time, "or equal" or substitution or modification of the Contract Documents (including addition, deletion or other revision) must release the Surety of its obligations under this Payment Bond. The Surety hereby expressly waives notice of any such change in Contract Price or Contract Time, "or equal" or substitution or modification of the Contract Documents (including addition, deletion or other revision).
- C. It is the intention of the **Contractor** and Surety that they must be bound by all terms and conditions of the Contract Documents (including, but not limited to this Payment Bond). However, this Payment Bond is executed pursuant to 1963 PA 213, as amended, MCL 129.201 et seq., and if any provision(s) of this Payment Bond is/are illegal, invalid or unenforceable, all other provisions of this Payment Bond must nevertheless remain in full force and effect, and the **Owner** must be protected to the full extent provided by 1963 PA 213, as amended, MCL 129.201 et seq.

IMPORTANT: The Surety must be authorized to do business in the State of Michigan by the Department of Licensing and Regulatory Affairs - Insurance Bureau, must be listed on the current U.S. Department of the Treasury Circular 570, and, unless otherwise authorized by the Owner in writing, must have at least an A- Best's rating and a Class VII or better financial size category per current A. M. Best Company ratings.

Name, Address, and Telephone of the Surety

Address and Telephone of Agent, who is either a resident of, or whose principal office is maintained in the State of Michigan

Signed and sealed this ____ day of _____, 20__.

THE **CONTRACTOR**: (Print Full Name and Sign) By: _____

WITNESS _____

Name & Title: _____

Telephone No: _____

THE **SURETY**: (Print Full Name and Sign)

Agent: _____

WITNESS _____

Attorney-in-Fact: _____

Telephone No: _____

SECTION 00 65 20 – WAIVER AND RELEASE OF LIEN

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

WHEREAS, the undersigned, _____ has furnished to
manufacturer, materialman, contractor or subcontractor

_____ the following: _____
name of contractor kind of material and services furnished

in the construction of a project belonging to _____, known as
name of owner

_____.
project designation

NOW, THEREFORE, the undersigned, _____ (name of manufacturer,
materialman or subcontractor), for and in consideration \$_____, and other good and
valuable consideration, the receipt whereof is hereby acknowledged, do(es) hereby waive and
release any and all liens, or right to or claim of lien, on the above described project and premises,
under any law, common or statutory, on account of labor or materials, or both, heretofore or
hereafter furnished by the undersigned to or for the account of said _____ for
said project. name of contractor

Given under my (our) hand(s) and seal(s) this ____ day of _____, 2023.

name of manufacturer, materialman or subcontractor

By _____, president, vice president, partner or owner, or, if signed by other
than one of the foregoing, accompanied by power of attorney signed by one of the foregoing in
favor of the signer (use designation applicable).

SECTION 00 72 00 – GENERAL CONDITIONS

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

PART 1 - GENERAL

1.1 INDEX

- A. Part 1 - General
 - 1. Index
 - 2. Intent of the Contract Documents
 - 3. Definitions
 - 4. Performance Bond and Payment Bond
 - 5. Assignment of Contract
 - 6. Chattel Mortgages
 - 7. Liens
 - 8. Contract Completion Date
 - 9. Termination for Breach of Contract
 - 10. Specifications and Submittals
 - 11. Record Data
 - 12. Equipment, Materials, and Workmanship
 - 13. Damages
 - 14. Authority of Engineer
 - 15. Payment to Contractor
 - 16. Delays
 - 17. Owner's Right to Withhold Payment
 - 18. Payment for Additional or Omitted Work
 - 19. Final Payment
 - 20. Deduction for Incorrect Work
 - 21. Correction of Work After Final Payment
 - 22. Royalties and Patents
 - 23. Warranties and Guarantees
 - 24. Compliance with Statutes and Regulations
 - 25. Supplementary Conditions

1.2 INTENT OF THE CONTRACT DOCUMENTS

- A. It is the intent of the Contract Documents to describe a functionally complete Project, or a portion thereof, to be furnished in accordance with the Contract Documents.
- B. The costs of equipment, materials, labor, documentation, supplies, and services as may be necessary to furnish the purchased equipment, materials, and/or labor of construction, except as expressly omitted, shall be included as part of the Work in the Contract Documents.
- C. Any equipment, materials, labor, documentation, supplies, and services that may reasonably be inferred from the Contract Documents, or from prevailing custom or trade

usage as being required to produce the intended result, shall be furnished whether or not specifically called for at no additional cost to the Owner.

- D. The Contract Documents are complimentary; what is called for by one is as binding as if called for by all.
- E. In interpreting the Contract Documents, words describing the Work that have a well-known technical or trade meaning, unless otherwise specifically defined in the Contract Documents, shall be construed in accordance with such well-known meaning recognized by architects, engineers, or the trade.
- F. These General Conditions will be included in the Contract Documents to furnish equipment, materials, labor of construction, or any combination thereof.

1.3 DEFINITIONS

- A. Definitions are described in the Instructions to Bidders.

1.4 PERFORMANCE BOND AND PAYMENT BOND

- A. The Performance and Payment Bonds shall be provided as described in the Instructions to Bidders.

1.5 ASSIGNMENT OF CONTRACT

- A. The Contractor may not assign the Work, or any portion thereof, without the Owner's written consent. No assignment will be valid unless it contains a provision indicating that funds to be paid to the assignee are subject to a prior lien for equipment, materials, and/or labor of construction furnished in performance of the Work, in favor of all persons, firms, or corporations furnishing such equipment, materials, and/or labor of construction.

1.6 CHATTEL MORTGAGES

- A. No equipment or material items may be purchased by the Contractor or a Subcontractor subject to a chattel mortgage or under conditional sale or agreement by which an interest is retained by the Seller. The Contractor warrants he will have good title to equipment and/or material items used in the Work.

1.7 LIENS

- A. If within thirty (30) days after the Work herein has been completed and accepted by the Owner any person claiming to have furnished equipment, materials, and/or labor of construction in completion of the Work has filed a lien or claim against the Contractor for said equipment, materials, and/or labor of construction, the Owner shall retain from monies under its control then due, or to become due under this Contract, such monies sufficient to pay off, satisfy, and discharge such lien or claim, together with the

reasonable cost of any such action or actions brought, or that may be brought, to enforce such claim or lien.

1.8 CONTRACT COMPLETION DATE

- A. Neither a time extension beyond the date affixed herein for completion of the Work, nor delivery of articles called for in the Work after the time herein specified for completion, shall be deemed to be a waiver of abandonment or delay in the manner herein provided and/or of the right to abrogate this Contract or to enforce other provisions of this Contract.

1.9 TERMINATION FOR BREACH OF CONTRACT

- A. In the event the Contractor or his Subcontractor violates a provision of the Contract Documents, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate such contract within ten (10) days after serving such notice. Such notice shall contain the reasons for intent to terminate the contract. In the event of termination, the Owner shall immediately serve notice thereof upon the Contractor and the Surety, and if the Surety does not commence performance thereof within thirty (30) days from the date of the mailing to such Surety of notice of termination, the Owner may take over the Work and prosecute the same to completion by contract for the account and at the expense of the Contractor, and the Contractor and his Surety shall be liable to the Owner for excess costs occasioned the Owner thereby, and in such event the Owner may take possession of and utilize in completing the Work such materials, appliances, and plant as may be on the site of the Work and necessary therefore.

1.10 SPECIFICATIONS AND SUBMITTALS

- A. The Work shall be executed in conformance with the specifications, drawings, and issued addenda that are included in the Contract Documents.
- B. The Contractor shall perform no Work prior to obtaining Engineer-approved submittals as specifically described in the Project Requirements and technical sections of the Contract Documents or as requested by the Engineer. Equipment, materials, and/or installation methods used without the Engineer's prior approval may be subject to rejection.

1.11 RECORD DATA

- A. The Contractor shall provide record data as specifically described in the General Requirements and technical sections of the Contract Documents or as requested by the Engineer.

1.12 EQUIPMENT, MATERIALS, AND WORKMANSHIP

- A. Unless otherwise stipulated in the Contract Documents, the equipment, materials, and Workmanship incorporated in the Work covered by this Contract shall be new and of the best grade of their respective types for the purpose. The Contractor will, if required,

furnish such evidence as to the type and quality of equipment, materials, and/or Workmanship.

- B. The equipment, materials, and Workmanship furnished under this Contract shall be furnished and performed in accordance with well known, established practices and standards recognized by architects, engineers, and the trade.

1.13 DAMAGES

- A. The Contractor shall pay all damages for injury to real or personal property, for any injury sustained by any person growing out of any act or deed of said Contractor, his Subcontractors, or of his or their employees, that is in the nature of a legal liability, and shall indemnify and save the Owner harmless against suits or actions of every name and description brought against said Owner for, or on account of, any such injuries to real or personal property, injuries received or sustained by any person or persons caused by said Contractor, his servants, agents or employees, in the execution of said Work or by or in consequence of any negligence in guarding his agents or employees, and the said Contractor further agrees that so much of the money due to him under and by virtue of this contract, as shall be considered necessary by the Owner, may be retained by the Owner to protect itself against loss until such suit or claim for damage shall have been settled, and evidence to that effect shall have been furnished to the satisfaction of the Owner.

1.14 AUTHORITY OF ENGINEER

- A. The Work contemplated and described in this Contract, and in the specifications, plans, profiles, and drawings, shall be done under the direction and supervision of and to the satisfaction of the Engineer, who shall be the sole judge as to the fitness of materials, and shall have the right of correcting errors or omissions in the Contract Documents when such corrections are necessary for proper completion of the Work herein stipulated and for the proper fulfillment of their intention, the action of such correction to date from the time the Engineer gives due notice not increase the respective prices herein set forth in the Owner Contractor Agreement.

1.15 PAYMENT TO CONTRACTOR

- A. For equipment and/or material contracts, the Contractor shall submit an invoice to the Owner after the equipment and/or material item(s) have been shipped as instructed with the record data as specified in the General Requirements and technical sections of the Contract Documents. The Engineer will review each invoice and make a recommendation regarding payment.
 - 1. Ninety percent (90%) of the prorated Contract amount on each item of equipment and/or group of materials will be paid within thirty (30) days after receipt of the equipment and/or materials or in the next scheduled monthly payment review period.
 - 2. Ten percent (10%) of the Contract amount will be paid within thirty (30) days after final testing is completed, the equipment is accepted by the Owner, and record data

as described in these General Conditions, General Requirements, and technical sections is received by the Engineer.

- B. For labor of construction contracts, the Contractor shall submit to the Owner an estimate of Work performed by the Contractor during a calendar month or a time agreed between the Contractor and the Owner. The Engineer will review each invoice and make a recommendation regarding payment.
 - 1. Ninety percent (90%) of each approved monthly billing will be paid within thirty (30) days of receipt or in the next scheduled monthly payment review period.
 - 2. Ten percent (10%) of each approved monthly billing will be retained until completion of the Work. Final payment will be made to the Contractor within thirty (30) days after the Work is completed to the satisfaction of the Owner and Engineer, and record data as requested in these General Conditions General Requirements and technical sections is received by the Engineer.

1.16 DELAYS

- A. If the Contractor is delayed in Work completion due to an act of neglect by the Owner or another contractor employed by the Owner, or due to strike, fire, unavoidable casualty, or cause beyond the Contractor's control, the time of completion shall be extended for a reasonable time. The Contractor shall, within five (5) days from the beginning of a delay, notify the Owner in writing as to the cause of such delay.

1.17 OWNER'S RIGHT TO WITHHOLD PAYMENT

- A. In addition to payment retained by the Owner under the preceding provisions of these General Conditions, the Owner may withhold payment otherwise due the Contractor as the result of:
 - 1. Payments earned or due for just labor or material legal claims pertaining to Work under this Contract.
 - 2. Defective Work not remedied.
 - 3. The Contractor's failure to make proper payment to his Subcontractor.
- B. The Owner may withhold from the Contractor payment due as may be necessary to protect the Owner from loss due to defective Work not remedied, injury to persons, or damage to the Work or property of others caused by an act of neglect by the Contractor or any of his Subcontractors. The Owner shall have the right, as agent for the Contractor, to apply such amounts so withheld as the Owner may deem proper to satisfy such claims or to secure such protection. Such application of money shall be deemed payment for the Contractor's account.

1.18 PAYMENT FOR ADDITIONAL OR OMITTED WORK

- A. Upon proper action, the Owner may authorize changes in, additions to, or deductions from the Work to be performed pursuant to provisions of the Contract Documents.
- B. Adjustment in an amount to be paid to the Contractor by reason of a change, addition, or deduction shall be determined by one or more of the following methods:

1. Unit pricing that was included the Contractor's Proposal form and incorporated into the Contract Documents.
 2. A supplemental price schedule that was included with the Contractor's Proposal form and incorporated into the Contract Documents.
 3. A proposal from the Contractor that is acceptable to the Owner.
- C. No claim for additional payment to the Contractor shall be valid unless authorized as aforesaid and by a written order of the Owner or the Engineer.

1.19 FINAL PAYMENT

- A. When the Contractor shows to the satisfaction of the Owner and the Engineer that liens, claims, and demands for payment of equipment, materials, and/or labor of construction costs are fully satisfied, that the Work completed is fully released from such liens, claims, and demands, and that the Contractor has completely performed the Work, the Engineer shall certify the same in writing. A lien waiver form is included as part of these Contract Documents and shall be completed for each primary Contractor or Subcontractor used for the Work. Each lien waiver shall be returned before final payment is released.
- B. When said certificate has been filed with the Owner, the Owner will pay to the Contractor the sum due out of the aforementioned fund set aside to meet and defray the expenses of such Work, the whole amount of money accruing to the Contractor for the Work, excepting such sum or sums as shall have been paid to the Contractor under the foregoing provisions of the Contract Documents and such as may be lawfully retained under the provisions of the Contract Documents, provided that no such certificate or payment for the Work shall be held to be an acceptance on the Owner's part of defective Workmanship or improper materials used by the Contractor in performance of the Work, or as waiver on the Owner's part of any claim or demands for, or on account of, such defective Workmanship or improper materials or as a waiver of a breach of the Contract Documents.

1.20 DEDUCTION FOR INCORRECT WORK

- A. If the Owner deems it expedient to accept Work injured or not done in accordance with the Contract Documents, the difference in value, together with a fair allowance for damages, shall be deducted.

1.21 CORRECTION OF WORK AFTER FINAL PAYMENT

- A. Neither final payment, nor a provision in the Contract Documents, shall relieve the Contractor of responsibility for negligence, faulty materials, or faulty Workmanship within the extent and period provided by law. Upon written notice, the Contractor shall remove defects due thereto and shall pay for damage due to other Work resulting therefrom which shall appear within one (1) year after the date of completion and acceptance.

1.22 ROYALTIES AND PATENTS

- A. The Contractor shall pay for royalties and patents, shall defend suits or claims for infringement on a patent right, and shall save the Owner harmless from loss on account thereof.

1.23 WARRANTIES AND GUARANTEES

- A. The Contractor shall furnish warranties and/or guarantees as specifically described in the General Requirements and technical sections of the Contract Documents.
- B. Delivery of warranties and/or guarantees shall not relieve the Contractor of obligations under the Contract Documents.

1.24 COMPLIANCE WITH STATUTES AND REGULATIONS

- A. The Contractor shall comply with applicable statutes, ordinances, rules, and regulations pertaining to the Work as prescribed by federal, state, or local governmental and administrative authorities.
- B. Each Bidder shall be responsible for consideration and verification of the site conditions, laws, construction methods, etc. that may affect the performance, warranty, or furnishing of the Work.

1.25 SUPPLEMENTARY CONDITIONS

- A. Refer to the Supplementary Conditions section for additional conditions if provided with the Bidding and Contract Documents.

END OF SECTION

SECTION 00 72 01 – SUPPLEMENTARY CONDITIONS

CITY OF NEGAUNEE

IRONTOWN SUBSTATION RELAY PANELS

PART 1 GENERAL

1.1 SUPPLEMENTARY CONDITIONS

- A. These Supplementary Conditions modify the General Conditions of the Contract for Construction, and other provisions of the Contract Documents as indicated below. All provisions which are not so modified remain in full force and effect.
- B. The terms used in these Supplementary Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

1.2 BASIC DEFINITIONS

1.2.1	Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
1.2.2	Furnish: To supply and deliver and inspect for damage.
1.2.3	Install: To unload, unpack, assemble, erect, apply, place, finish, cure, protect, clean, and make ready for use.
1.2.4	Provide: To furnish and install.

1.3 CONTRACTOR'S LIABILITY INSURANCE

- A. If the Contractor is providing labor of installing, unloading, or testing, the Contractor shall secure and maintain such insurance from an insurance company authorized to write casualty insurance in the State where the work is located as will protect himself, his Subcontractors and which shall indemnify and save harmless the Owner and the Engineer and their officers, agents, and employees from and against all claims for bodily injury, death or property damage which may arise from the Contractor's operations under this Contract, whether such operations be by himself or any Subcontractor or by anyone directly or indirectly employed by the Contractor or Subcontractor.
- B. The Contractor shall not commence labor of installation, unloading, or testing under this Contract until he has obtained all insurance required under this section and shall have filed the certificate of insurance with the Owner and a copy with the Owner's attorney. Each insurance policy shall contain a clause assuring the insurance company will not cancel the insurance without thirty days written notice to the Owner, the Owner's attorney, and the Engineer of intention to cancel.

The amounts of such insurance shall be not less than the following, or greater if required by law:

1. Worker's Compensation:
 - a. State Statutory
 - b. Applicable Federal
 - c. Employer's Liability:
 - 1) \$100,000 Each occurrence

2. Commercial General Liability (including Premises-Operations; Independent Contractors' Protective; products and Completed Operations; Broad Form Property Damage):
 - a. Bodily Injury and Property Damage (Name Owner as additional insured):
 - 1) \$1,500,000 Each occurrence
 - 2) \$3,000,000 Annual aggregate
 - b. Products and Completed Operations to be maintained for two years after final payment.
 - c. Property Damage Liability Insurance shall provide X, C, or U coverage as applicable.
 - d. Contractual Liability to be included.

3. Comprehensive Carrier Vehicle Liability:
 - a. Bodily Injury:
 - 1) \$1,000,000 CSL Each Person
 - 2) \$(Included) Each Occurrence
 - b. Property Damage:
 - 1) \$(Included) Each Occurrence
 - 2) Note: The State of Minnesota has a no-fault vehicle insurance requirement. The Contractor shall be certain coverage is provided which conforms to any specific stipulation in the law.

4. Umbrella Excess Liability: Name Owner as additional insured:
 - a. Excess Liability:
 - 1) \$1,000,000 Over primary insurance
 - 2) \$10,000 Retention for self-insured hazards each occurrence.

END OF SECTION

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01 10 00 – INFORMATION AND REQUIREMENTS

SECTION INDEX

1. Location of Project
 2. Scope of Project
 3. Owner Furnished Materials and Labor
 4. Work by Others
 5. Permits and Regulations
 6. Applications for Payment
 7. Trade Names and Catalog References
 8. Progress Meetings
 9. Field Engineering and Staking
 10. Codes and Standards
-

1 LOCATION OF THE PROJECT

The project is located at the south end of Peninsula Street in Negaunee, Michigan. Coordinates of the substation are approximately 46°29'39.0"N 87°36'43.2"W.

2 SCOPE OF THE PROJECT

2.1 The project consists of furnishing and delivering two (2) new relay panels for use at the City of Negaunee Irontown Substation. Technical specifications for the equipment are included as part of the specification.

2.2 Optional costs are requested for unloading, assembly, and testing the equipment provided under this specification by the manufacturer.

3 OWNER FURNISHED MATERIALS AND LABOR

3.1 The Owner may choose to perform or subcontract unloading, assembly, and testing.

4 WORK BY OTHERS

4.1 Work by others includes all work items not associated with furnishing and delivering the relay panels.

5 PERMITS AND REGULATIONS

5.1 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be obtained and paid for by the Contractor, such as shipping permits, etc., other than those noted as being provided by the Owner.

A. The Owner will obtain the building permit if required. All other permits for the relay panel delivery are by the Contractor.

5.2 The Contractor shall give all notices and comply with all laws, ordinances, building and construction codes, rules, and regulations applicable to the work. If the Contractor observes that the plans or specifications are at variance therewith, the Contractor shall promptly notify the Engineer.

6 APPLICATIONS FOR PAYMENT

6.1 Due to the possibility of grant funds and other requirements pre-payment/progress payments are not anticipated.

6.2 Submit invoices directly to the Owner. It is also recommended to send (email) a copy of the invoice to the Engineer for review and recommendation for payment. Applications for payment shall show the scheduled value of each item, total completed from the previous application, work completed this period, total completed, and percent completed. A 10% retainage shall be applied to the invoicing until the project is complete. The Owner will process payments based on its normal payment cycle, which

is typically once a month. The payment timeframe will be reviewed with the successful Bidder.

- 6.3 The cost breakdown from the unit prices in the Contractor's Proposal should be used for the price breakdown for payment.
- 6.4 Final payment and contract closeout can be completed when all material, labor, testing, and records are provided as outlined in the technical specifications.

7 TRADE NAMES AND CATALOG REFERENCES

- 7.1 References in the specifications or on the plans to a manufacturer's name, make, model or catalog number is intended to be descriptive as to type and quality of equipment and material required and is not necessarily intended to preclude the use of another make of equipment as material equal in quality and performance. Substitute equipment and materials will be considered under the following conditions:
 - A. No manufacturer or product name specified: Any product meeting the specifications may be used.
 - B. Manufacturer or product name(s), or equal, specified: Any product meeting the specifications may be substituted.
 - C. Manufacturer or product name(s), or approved equal, specified: Substitutes must be approved by the Engineer.
 - D. Manufacturer or product name(s) specified, without stating an equal or approved equal: no substitutions allowed. Furnish the product or one of the products specified.
- 7.2 The Contractor shall be responsible for investigating the proposed substitute and determining that it meets or exceeds the specified product for coordination of installation, and for any other changes which may be required for the work to be completed in all respects. The Contractor shall provide verification to the Engineer.

8 PROGRESS MEETINGS

- 8.1 At the request of the Owner, conference calls may be required to determine the progress of the work, to receive instructions from the Engineer or the Owner and to expedite completion of the project. Subcontractors present at such meetings shall be represented by a person with full authority to act on behalf of the Subcontractor.

9 FIELD ENGINEERING AND STAKING

- 9.1 Field engineering and staking are not required for this contract.

10 CODES AND STANDARDS

10.1 Laws, Codes and Regulations: The Contractor shall comply with and the work shall be performed in compliance with all laws, ordinances, building and construction codes, rules and regulations applicable to the work, including the following:

- National Electrical Safety Code (NESC)
- National Fire Protection Association (NFPA)
- National Electric Code (NEC)
- Occupational Safety and Health Act (OSHA)

10.2 Standards: All equipment and materials shall be furnished, installed and tested in conformance with the latest revisions of the following standards, as applicable:

- American National Standards Institute, Inc. (ANSI)
- American Society for Testing and Materials (ASTM)
- Edison Electric Institute (EEI)
- Institute of Electrical and Electronic Engineers, Inc. (IEEE)
- Insulated Power Cable Engineers Association (IPCEA)
- National Electrical Manufacturers' Association (NEMA)
- Underwriters' Laboratories, Inc. (UL)

10.3 Conflicts: Where conflicts occur between codes and standards, or between codes and standards and Specifications and Plans, the one establishing the more stringent requirements shall be followed.

END OF SECTION

RELAY PANEL SPECIFICATION

SECTION INDEX

1. General
 2. Shipping Instructions
 3. Warranty
 4. Data with Proposals
 5. Standards
 6. Fabrication
 7. Wiring
 8. Components
 9. Function Description and Drawings
 10. Tests Required
 11. Drawings and Instruction Materials
 12. Payment
-

1 PART 1 – GENERAL

1.1 Number of relay panels required: Two (2).

1.2 Relay panel type:

1.2.1 Relay panel RP1 and RP2: Standard 19” rack mounted panel 30”W x 90”H x 24”D with Front Hinged Swing Door

1.3 Expected Delivery: April 2023

2 SHIPPING INSTRUCTIONS

2.1 Delivery shall be FOB destination with freight pre-paid and allowed to the Owner’s Substation located at: 504 Peninsula Street, Negaunee, MI 49866. An alternate delivery location in Negaunee may be the utility shop at 600 Cherry Street. Delivery shall be coordinated with the Owner and the Engineer and the approximate delivery date of the relay panels.

2.2 The Seller shall notify the Owner at least two weeks before the day of shipment of the shipping date and approximate anticipated date of arrival at the destination.

2.3 The Seller (or shipper) shall also provide two normal business days’ advance notice of arrival to the Owner. Delivery shall only be made during the hours of 8:00 a.m. to 3:00 p.m. Central Time on normal work week business days, Monday through Friday. The Owner will have to agree to any other time.

2.4 Owner:

City of Negaunee
600 Cherry Street
Negaunee, MI 49866

Attn: Mark Wainio
Phone: (906) 475-9993
Email: dpwelectric2@cityofnegaunee.com

3 WARRANTY

3.1 The equipment shall be warrantied for at least one (1) year from the date of placing in service, or at least 18 months from the date of delivery, whichever comes first.

4 DATA WITH PROPOSALS

4.1 Furnish outline drawings, descriptive sheets, and electrical and mechanical data, in duplicate, to clearly describe the construction and operation of the equipment offered.

4.2 Indicate items which are shipped unassembled and require assembly by the customer.

- 4.3 Furnish a description and a separate price for any special handling, assembly, or maintenance tools or devices which may be required.
- 4.4 State where the relay panel is to be designed and manufactured.
- 4.5 State delivery time after receipt of an order.
- 4.6 State tests performed by the manufacturer prior to shipment which are in addition to the tests specified herein.
- 4.7 State the manufacturer of relays and devices proposed to be furnished which are not specified herein by the manufacturer's name.
- 4.8 Statement that the relay panel proposed is to be furnished in accordance with the specifications and, if not list all exceptions.

5 STANDARDS

- 5.1 The relay panels shall be designed, manufactured, and tested in accordance with all applicable ANSI and NEMA standards, including ANSI C37.21.

6 FABRICATION

- 6.1 The relay panels shall be constructed from stretcher leveled quality, hot rolled, pickled and oiled sheet steel. Fronts and backs shall be minimum #11 USS Gauge and enclosing sides and top shall be minimum #13 USS Gauge. Fronts and backs, whether doors or fixed, shall be formed panels with edges neatly bent. The inside radius of all bends shall be 1/8 inch. Provide framing, bracing, and stiffeners to form a rigid self-supporting structure capable of supporting all components and to prevent. The design shall permit cables to enter either the top or the bottom.
- 6.2 The design shall permit cables to enter either the top or the bottom with a minimum of two 6"x 6" trim locked cable entry on the top.
- 6.3 The front of each relay panel shall have a hinged door with fully concealed type hinges and a three-point latch with locking handle. Doors shall swing 105° and shall be provided with limiting stops. Clearance shall be uniform and shall not exceed 1/8 inch between the edges of doors and adjacent panel framing.
- 6.4 The front panel mounted devices and components shall be mounted in precut openings such that the device will hide the opening and the device will be securely held in place. Panel openings shall be provided for both the devices being installed and the equipment noted as "future". The openings for the future equipment shall be furnished with removable covers, painted to match the exterior of the panel.
- 6.5 The panel be a 19-inch rack mount panel, such that all equipment mounting shall be installed in various rack unit dimension sizes of 1RU, 2RU 3RU, etc.

- 6.6 Components inside the relay panels shall be mounted on subpanels and/or supports provided for that purpose.
- 6.7 All steel parts shall be de-greased, cleaned and given a phosphate treatment, or equal, prior to painting. Both interior and exterior surfaces shall be painted with a primer and then painted with finish coats of paint. The switchboards shall be finished on the inside with a white lacquer and on the outside with an ANSI 61 light gray lacquer.

7 WIRING

- 7.1 The relay panels shall be completely shop wired in a neat and workmanlike manner. Bends shall be made at right angles and wires shall be secured with clips, ties, and holders as required and/or in covered wire channels. Wire fill of wire channels shall not exceed 60 percent. All wiring shall terminate at terminal blocks located on the sides.
- 7.2 A copper ground bus bar shall be provided near the bottom of the relay panels with tapped holes for terminating wires and with lugs for connecting to the station ground system. The size of the grounding bar shall be a minimum of 29-1/2 “long, 1/4” thick and 1” wide. There shall be at least two 1/2” diameter holes for grounding lugs – one on each other end of the grounding bar. The grounding bar shall have a minimum of 15 – 10/32” threaded taped holes for panel grounding wiring.
- 7.3 All control wiring shall be #12 AWG, stranded, tinned copper, 600-volt, type SIS gray relay panel wire, or approved equal. Hinge wire shall be 65-strand.
- 7.4 All CT wiring shall be minimum #10 AWG, 600-volt, type SIS gray relay panel wire, or approved equal. Hinge wire shall be 65-strand.
- 7.5 All wires shall be terminated with compression type, insulated, ring type lugs, and identified with Brady labels or approved equal.
- 7.6 Terminal blocks shall be heavy duty, washer-head connecting screw type, #10 screw, 30 ampere, 600 volt, with insulating barriers and marking strips, General Electric Type EB-25 and EB-27, or approved equal. Provide legible permanent marking on the terminals.
- 7.7 Enough terminal blocks shall be provided for the wiring of the devices and equipment being installed plus 10% spare.

8 COMPONENTS

- 8.1 The relay panel manufacturer shall furnish and install as specified all equipment, devices and components as shown on the drawing set, including all auxiliary relays, switches, instruments, auxiliary transformers, terminal blocks, fuses, and miscellaneous items to fulfill the function specifications.
- 8.2 All devices mounted on the front and rear shall be semi-flush mounted unless specified otherwise. All devices mounted inside shall be surface mounted and front connected with wiring terminals readily accessible.

- 8.3 Fuses shall be cartridge type, class K-5, suitable for use on 250V AC or 125V DC systems. Fuses shall be Bussmann type FRN or NON, or approved equal. Provide a minimum of six (6) spare fuses of each size.
- 8.4 Indicating lights shall be round light emitting diodes (LEDs) with a voltage rating as required, General Electric LED Type ET-16, or as specified on the drawings or approved equal. Provide a minimum of three (3) spare LEDs for each color furnished.
- 8.5 The control voltage will be 125 volts DC.
- 8.6 Nameplates shall be provided to identify each relay panel unit, all relays, instruments, switches, and other devices on the relay panels. All fuse blocks and auxiliary devices inside the units shall be identified with nameplates. Nameplates shall be black lamacoid with white lettering unless specified otherwise. Nameplate sizes are indicated on the drawings for each relay panel. Terminal blocks shall be identified with nameplates or labels. All test switch nameplates shall use size 8 and be labeled as per the electrical schematics as to what each test switch is used for.
- 8.7 The relay panels shall comply with the bill of material for each relay panel, as listed on the drawings.
- 8.8 Each Relay Panel shall be equipped with a 120 volt AC, 15 amp GFI duplex receptacle mounted near the bottom of the panel.
- 8.9 Each Relay Panel shall be equipped with an inside 2700k (800 lumens), 9 watt warm white A19 LED light bulb in porcelain fixture with guard. The fixture is to be mounted near the top inside the panel. A 120 volt AC, 15 amp light door switch mounted near the top of the door/panel.

9 FUNCTION DESCRIPTION AND DRAWINGS

- 9.1 The relay panels shall function as per the schematics and wiring drawings attached. Please note drawings IRT-16-12 and IRT-16-22 are breaker elementary drawings based on a comparable unit for bidding purposes. The approved manufacturer drawings will be provided for design.

10 TESTS REQUIRED

- 10.1 Control wiring dielectric tests shall be performed in accordance with ANSI C37.21.
- 10.2 Electrical operation, sequence, and wiring tests shall be performed in accordance with ANSI C37.21. Tests to verify correctness, including polarities, of the wiring shall be made, preferably by actual electrical operation of the circuits and devices and functionally testing the system, supplemented with circuit continuity checks as necessary.
- 10.3 Instruments shall be tested to ensure that displays operate properly.
- 10.4 Submit two (2) certified copies of test data and reports to the Owner.

11 DRAWINGS AND INSTRUCTION MATERIALS

- 11.1 Furnish one (1) set of shop approval drawings electronically to the Owner's Engineer for approval prior to manufacture. Shop drawings for approval must show dimensions and list parts; catalog sheets alone are not acceptable. The shop drawings for approval shall include, but not be limited to, the following:
- 11.1.1 Steel construction details, device and equipment layout, and material lists.
 - 11.1.2 Complete wiring diagram with an address system to each device and device terminal. Tabular wire address systems and systems based on a drawing grid are not acceptable. See section 11.1.3 for using PSE DWG drawings.
 - 11.1.3 Panel manufacturer shall use the Power System Engineering DWG drawings for terminal block layout drawings indicating the field incoming cables terminated on the relay panel terminal blocks with the manufacturer's internal panel wiring of the panel devices super-imposed onto the PSE DWG drawings. One drawing is to be used for each relay panel indicating the field wiring cables terminated and the internal relay panel wiring from the terminal blocks to each device.
 - 11.1.4 Nameplate list, including nameplates internal to the panel(s). The internal nameplates shall be designated as such on the list.

- 11.2 Furnish one (1) PDF copy of instruction books to the Owner's Engineer.

Owner's Engineer:

Power System Engineering, Inc.
2424 Rimrock Road, Suite 300
Madison, WI 53713

Contact: Nicole Hall
Phone: (763) 783-5361
Email: halln@powersystem.org

- 11.3 One (1) complete set of final drawings and one (1) copy of each applicable instruction book shall be shipped in a weatherproof envelope with the equipment.
- 11.4 The Seller shall provide the Owner and the Owner's Engineer, via email or file transfer, in AutoCAD DWG file format, a digital copy, of all "For Record" drawings.
- 11.5 Furnish two (2) paper copies and one (1) PDF copy of drawings and instruction books to the Owner.

Owner:

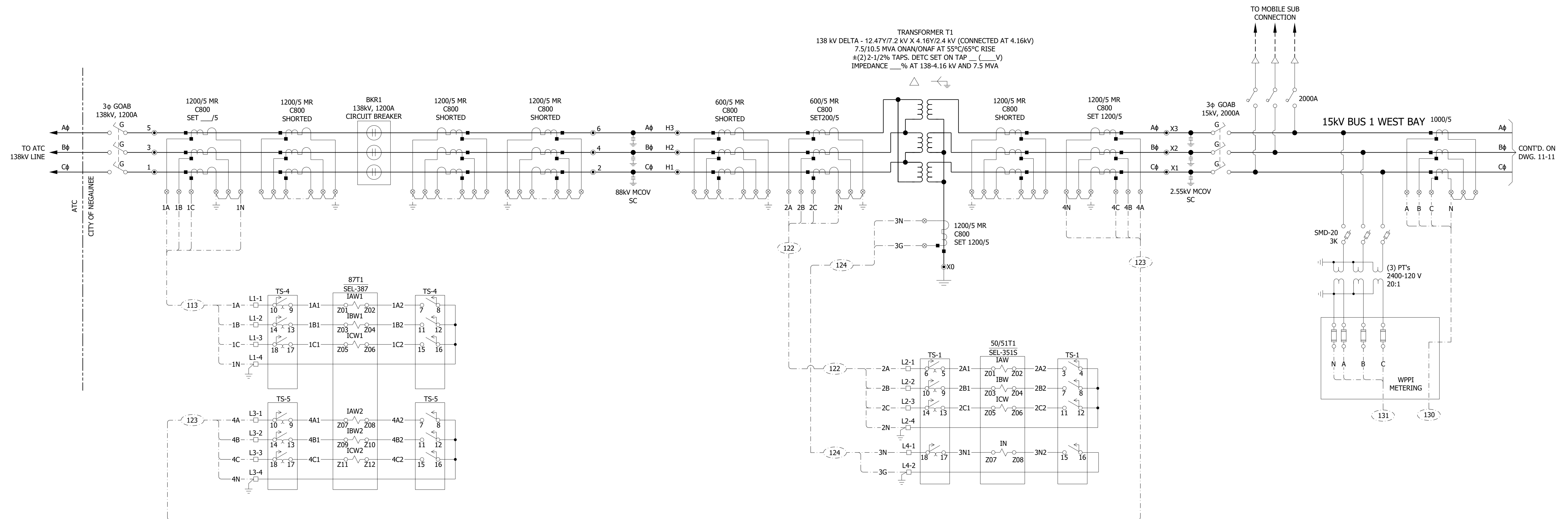
City of Negaunee
600 Cherry Street
Negaunee, MI 49866

Attn: Mark Wainio
Phone: (906) 475-9993
Email: dpwelectric2@cityofnegaunee.com

12 PAYMENT

12.1 Payment of ninety percent (90%) of the equipment price will be made by the Owner after the panel is received, provided that such payment will not be deemed approval of the workmanship or materials. Payment of the remaining ten percent (10%) will be made by the Owner after the equipment has been in continuous successful commercial service for at least thirty (30) days. However, no payment shall be due while the Seller is in default in respect to any of the provisions of this specification.

END OF SECTION

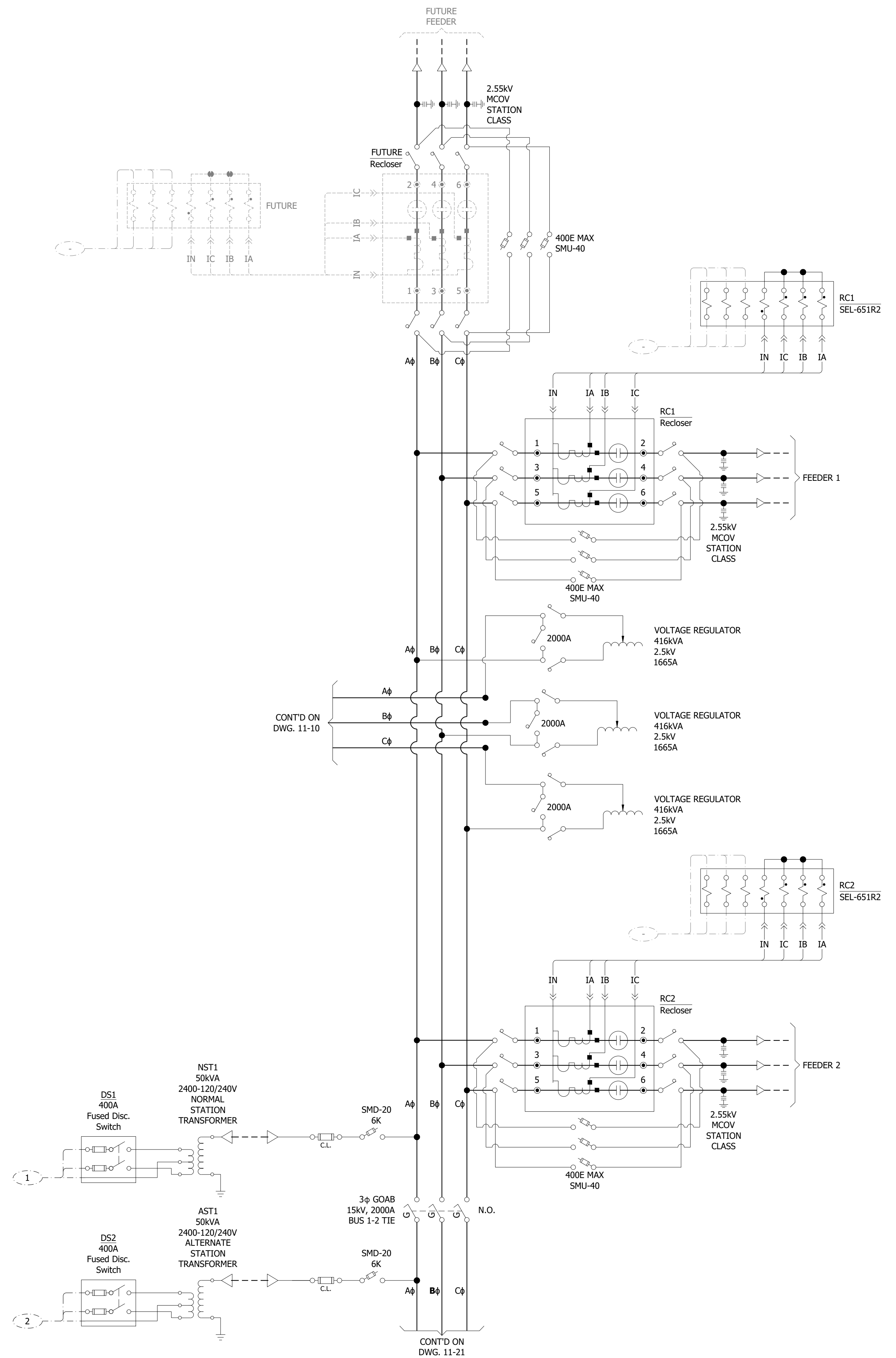


LEGEND			
	FUSED DISCONNECT SWITCH		LIGHTNING ARRESTER
	GANG OPERATED AIR BREAK SWITCH		METER
	HOOK STICK SWITCH		VOLTAGE REGULATOR
	BUSHING CURRENT TRANSFORMER		U.G. CABLE
	CURRENT TRANSFORMER		OVERHEAD TO UNDERGROUND TERMINATOR
	FUSE		POTENTIAL TRANSFORMER
	EXTERNAL EQUIPMENT SHORTING TERMINAL		CURRENT LIMITING
	RELAY PANEL SHORTING TERMINAL BLOCK		EQUIPMENT BUSHING

NOTES
 1. BUS 1 OPERATES AT 4.16 KV, RATED 15 KV.

PRELIMINARY
NOT FOR
CONSTRUCTION

NO.		REVISION AND RECORD OF ISSUE			BY	ENGR.	DATE	PSE Power System Engineering, Inc.		3-LINE DIAGRAM IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
2	ISSUED FOR BID	GB	NH	05/16/2023			www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895		SCALE	NONE	PROJECT NO.
1	ISSUED FOR REVIEW	GB	NH	02/21/2023			ENGR. N. HALL	CHK'D/APP'D. S. PACKWOOD	FILE NAME	IRT-11-10	DRAWING NO.
							DWN BY G. BODENSTEIN	DATE 5/11/2022			MI0592107

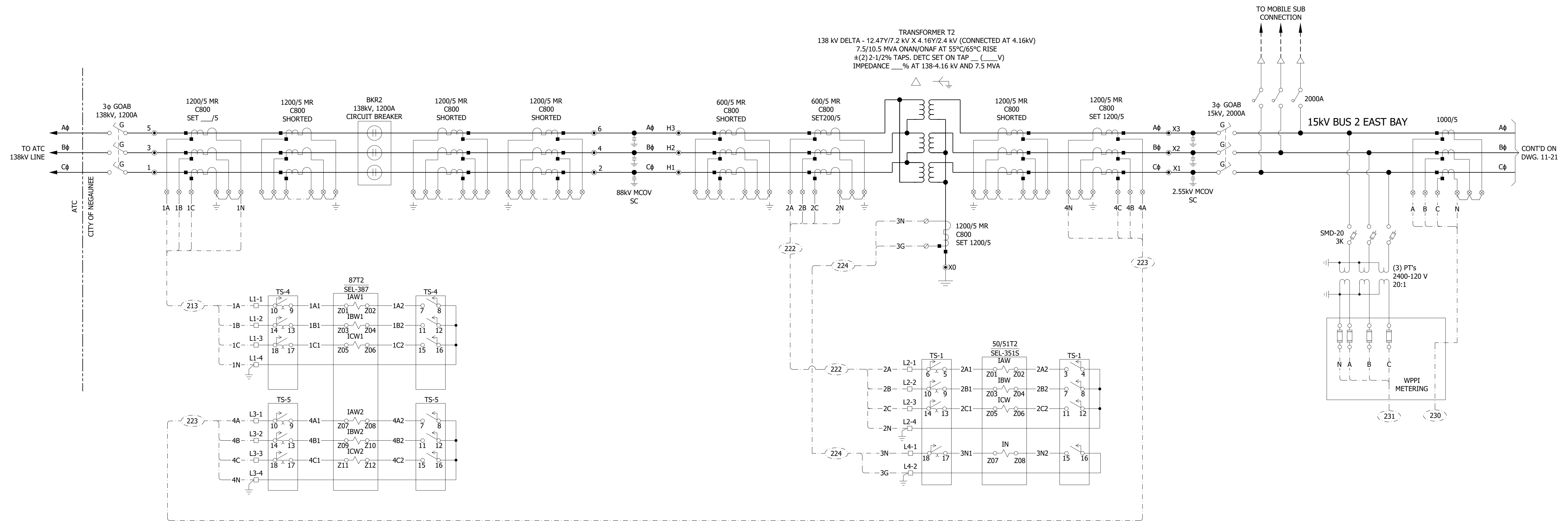


LEGEND

	FUSED DISCONNECT SWITCH		LIGHTNING ARRESTER		FUSE		EXTERNAL EQUIPMENT SHORTING TERMINAL
	GANG OPERATED AIR BREAK SWITCH		METER		POTENTIAL TRANSFORMER		RELAY PANEL SHORTING TERMINAL BLOCK
	HOOK STICK SWITCH		VOLTAGE REGULATOR		CURRENT LIMITING		EQUIPMENT BUSHING
	BUSHING CURRENT TRANSFORMER		U.G. CABLE				
	CURRENT TRANSFORMER		OVERHEAD TO UNDERGROUND TERMINATOR				

PRELIMINARY
NOT FOR
CONSTRUCTION

				PSE Power System Engineering, Inc.		3-LINE DIAGRAM IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI		
				www.powersystem.org		2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 800.825.8895		
2	ISSUED FOR BID	GB	NH	05/16/2023	ENGR	N. HALL	CHK'D	S. PACKWOOD
1	ISSUED FOR REVIEW	GB	NH	02/21/2023	DWN	G. BODENSTEIN	DATE	5/11/2022
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	SCALE	NONE	PROJECT NO.	MI0592107
					FILE NAME	IRT-11-01	DRAWING NO.	11-11

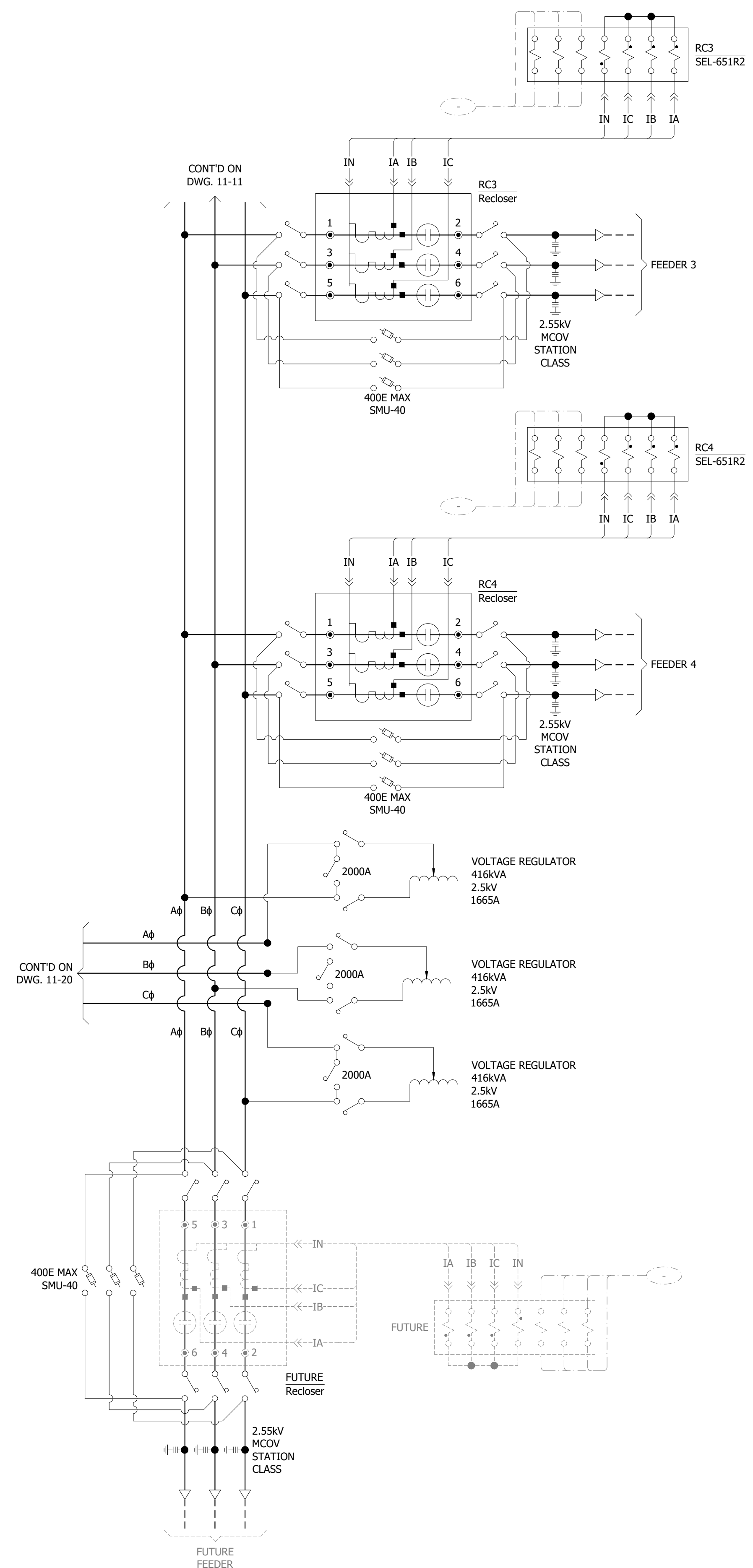


LEGEND			
	FUSED DISCONNECT SWITCH		LIGHTNING ARRESTER
	GANG OPERATED AIR BREAK SWITCH		METER
	HOOK STICK SWITCH		VOLTAGE REGULATOR
	BUSHING CURRENT TRANSFORMER		U.G. CABLE
	CURRENT TRANSFORMER		OVERHEAD TO UNDERGROUND TERMINATOR
	FUSE		POTENTIAL TRANSFORMER
	EXTERNAL EQUIPMENT SHORTING TERMINAL		CURRENT LIMITING
	RELAY PANEL SHORTING TERMINAL BLOCK		EQUIPMENT BUSHING

NOTES
 1. BUS 2 OPERATES AT 4.16 kV, RATED 15 kV.

PRELIMINARY
NOT FOR
CONSTRUCTION

				PSE Power System Engineering, Inc.		3-LINE DIAGRAM IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
				www.powersystem.org		2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895	
2	ISSUED FOR BID	GB	NH	05/16/2023	ENGR	N. HALL	SCALE NONE
1	ISSUED FOR REVIEW	GB	NH	02/21/2023	ENGR	S. PACKWOOD	PROJECT NO. MI0592107
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DWN BY	G. BODENSTEIN	DRAWING NO. 11-20
					DATE	5/11/2022	FILE NAME IRT-11-20

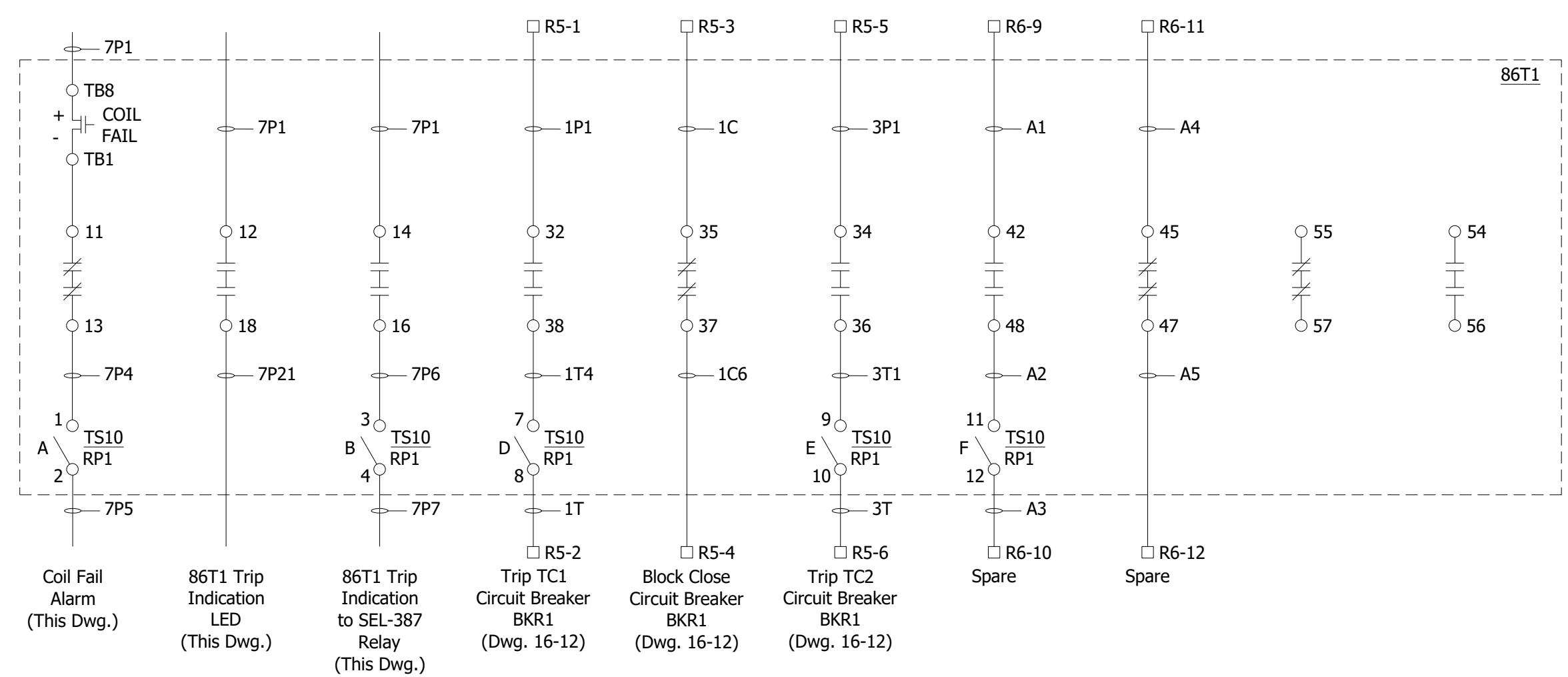
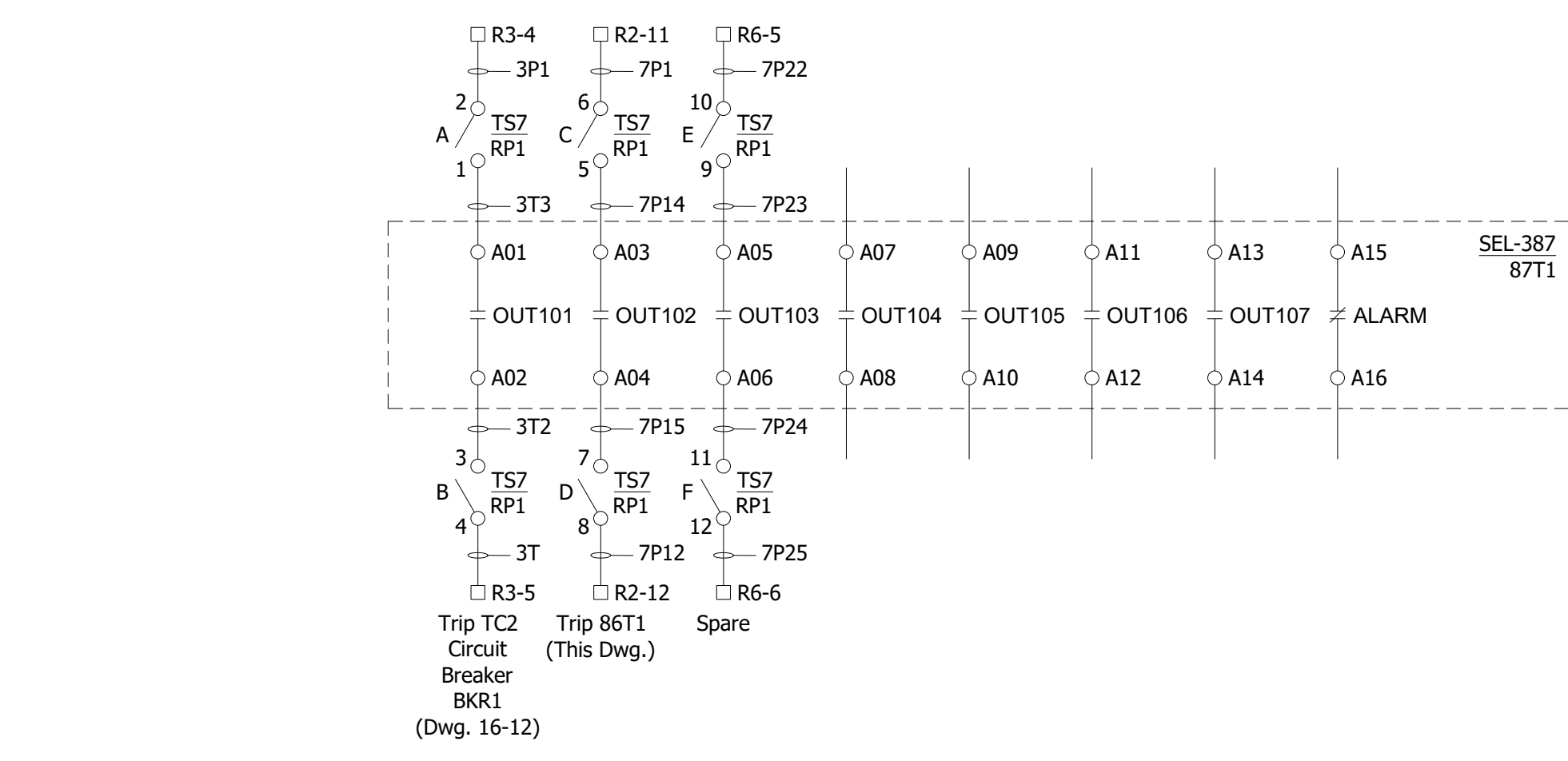
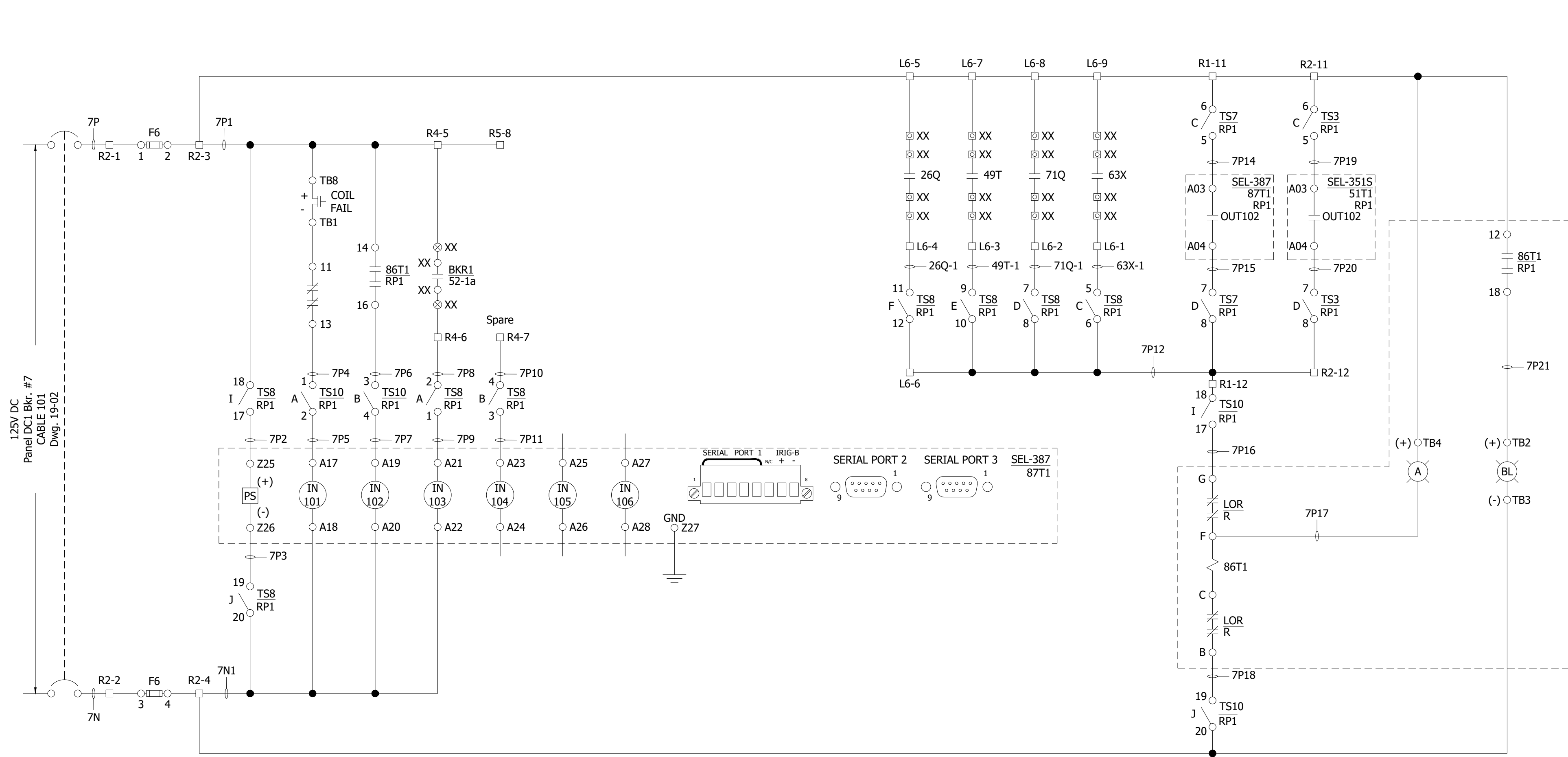


LEGEND

	FUSED DISCONNECT SWITCH		LIGHTNING ARRESTER		FUSE		EXTERNAL EQUIPMENT SHORTING TERMINAL
	GANG OPERATED AIR BREAK SWITCH		METER		POTENTIAL TRANSFORMER		RELAY PANEL SHORTING TERMINAL BLOCK
	HOOK STICK SWITCH		VOLTAGE REGULATOR		CURRENT LIMITING		EQUIPMENT BUSHING
	BUSHING CURRENT TRANSFORMER		U.G. CABLE		OVERHEAD TO UNDERGROUND TERMINATOR		
	CURRENT TRANSFORMER						

PRELIMINARY
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CONSTRUCTION

				PSE Power System Engineering, Inc.		3-LINE DIAGRAM IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI						
				www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895								
2	ISSUED FOR BID	GB	NH	05/16/2023	ENGR	N. HALL	CHK'D APP'D	S. PACKWOOD	SCALE	NONE	PROJECT NO.	DRAWING NO.
1	ISSUED FOR REVIEW	GB	NH	02/21/2023	DWN	G. BODENSTEIN	DATE	5/11/2022	FILE NAME	IRT-11-21	MI0592107	11-21
NO.	REVISION AND RECORD OF ISSUE			BY	ENGR.	DATE						



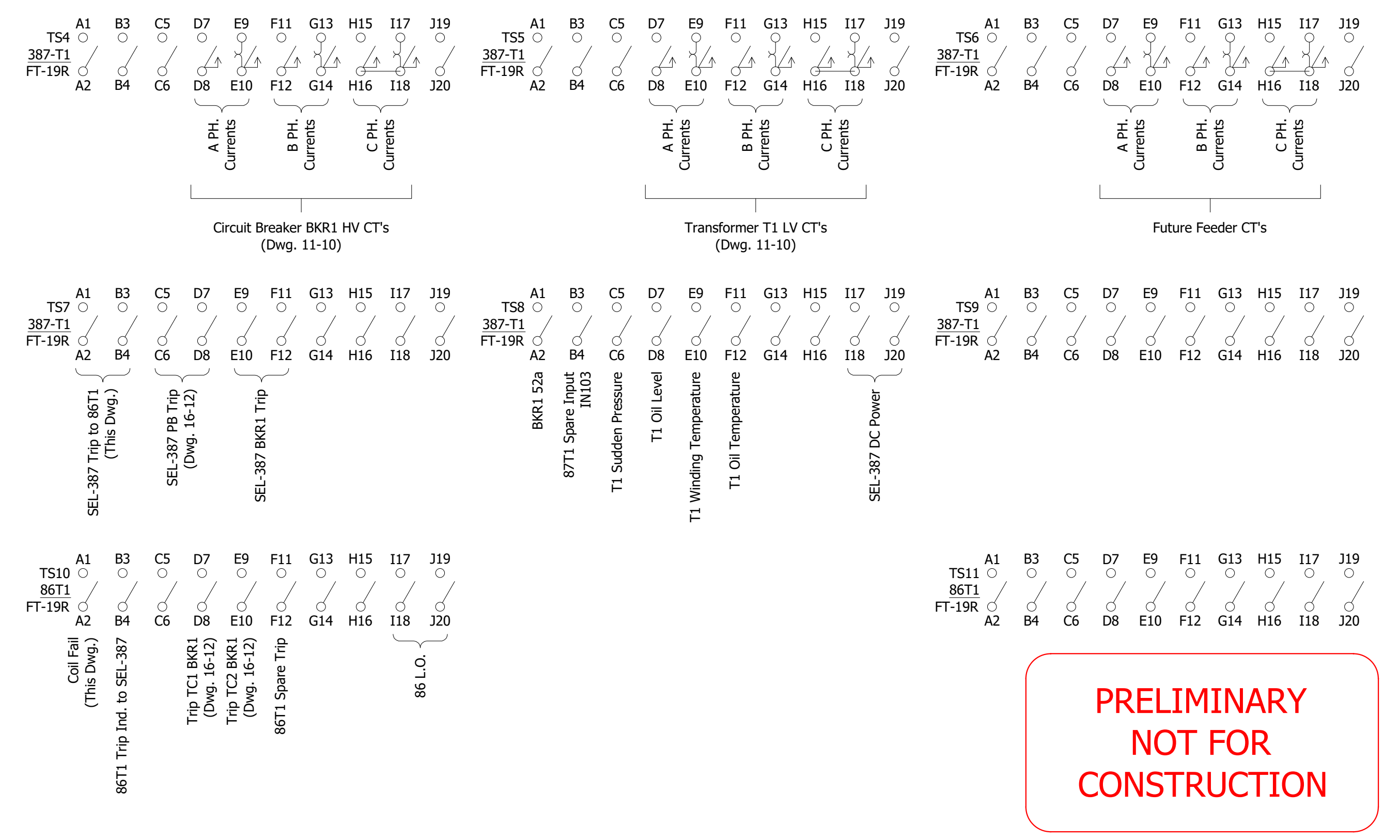
LEGEND		
DEVICE	TYPE	DESCRIPTION
387	SEL	CURRENT DIFFERENTIAL AND OVERCURRENT RELAY
86T1	Electroswitch	Lockout Relay
87T1	SEL	Differential Relay
TS	ABB	TEST SWITCH
43L/S		LOCAL/SUPERVISORY SWITCH
26Q		TRANSFORMER OIL TEMPERATURE
49T		TRANSFORMER WINDING TEMPERATURE
63X		TRANSFORMER SUDDEN PRESSURE
71Q		TRANSFORMER OIL LEVEL
○		DEVICE TERMINAL POINT
⊗		TERMINAL POINT IN CIRCUIT BREAKER BKR1
⊙		TERMINAL POINT IN TRANSFORMER T1
□		TERMINAL BLOCK IN PANEL RP1
▣		TERMINAL BLOCK IN PANEL RP2

Lockout Contact Schedule

86T1 CONTACT USAGE

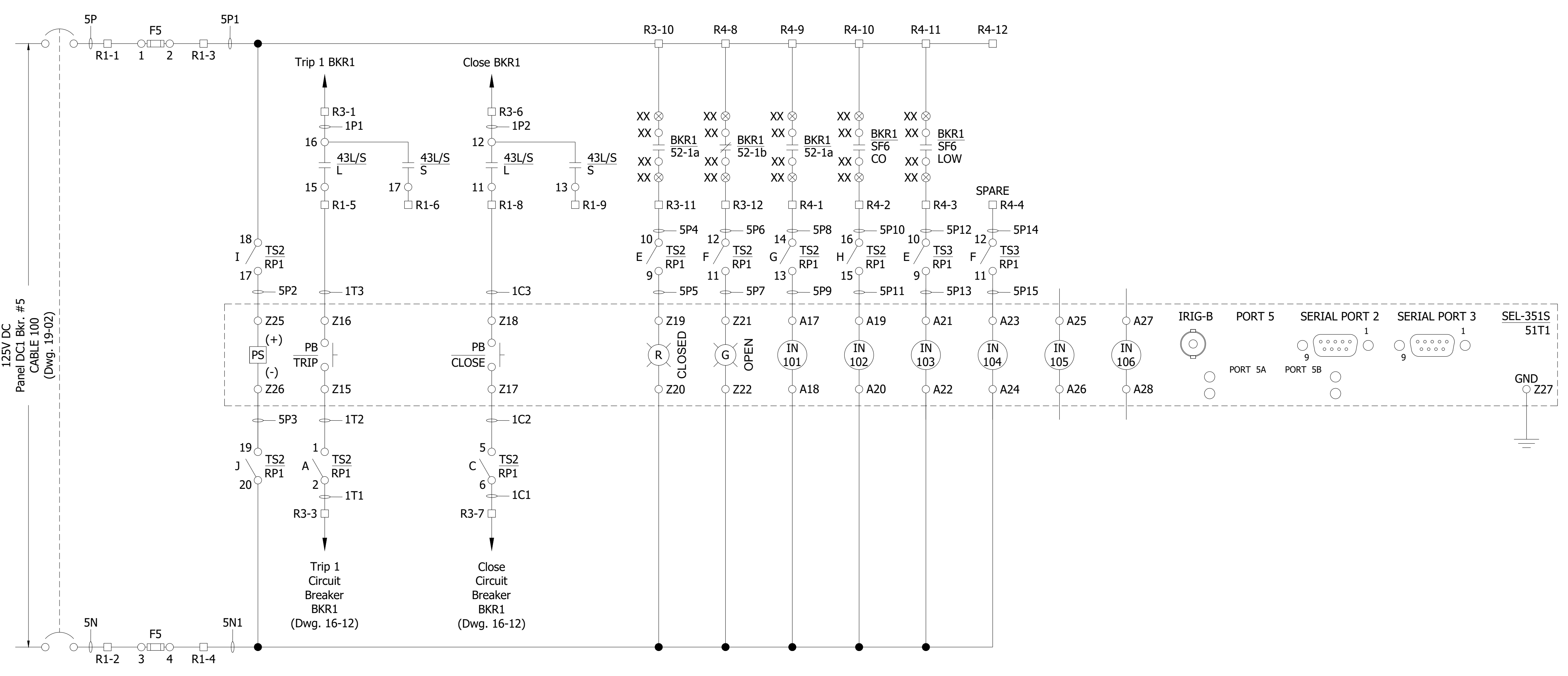
DECK	CONTACT	POSITION		FUNCTION
		Trip	Reset	
1	B	X		LOCKOUT COIL
	F	X		LOCKOUT COIL
	TS8	-	-	COIL FAIL ALARM
2	11		X	
	12	X		86T1 Trip Indication LED
	15		X	
	14	X		86T1 Trip Indication to SEL-387
3	21		X	
	22	X		
	24	X		
	31		X	
4	32	X		TC1 Circuit Breaker BKR1
	35	X		Block Close Circuit Breaker BKR1
	34	X		TC2 Circuit Breaker BKR1
5	41		X	
	42	X		Spare
	45	X		Spare
	44	X		
5	51		X	
	52	X		
	55		X	
54	X			

ELECTROSWITCH CAT. NO. 78PB05MU



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CONSTRUCTION

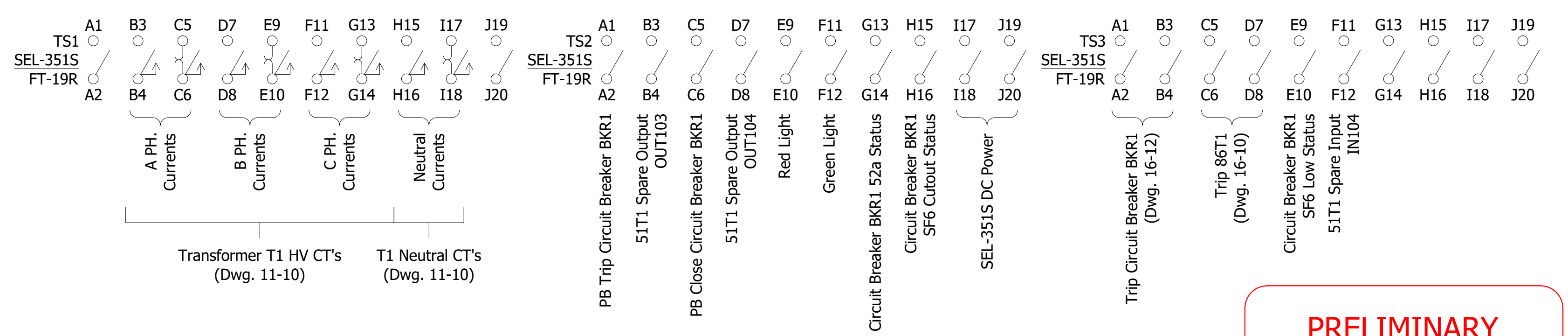
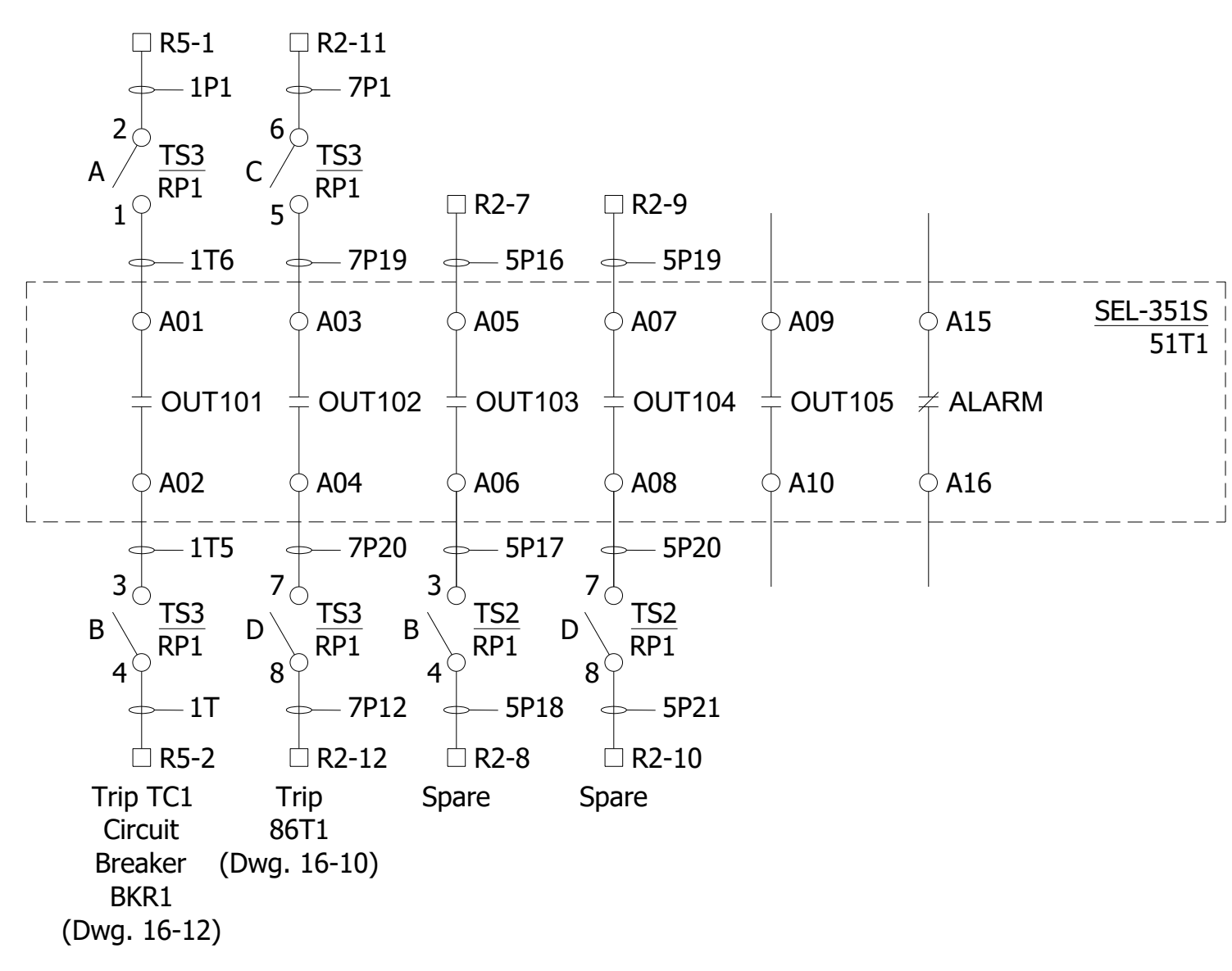
				PSE Power System Engineering, Inc.		DC SCHEMATIC 86T1, 87T1 SEL-387 RP1 IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
				www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8995			
0	ISSUED FOR BID	GB	NH	08/23/2023	ENGR N. HALL	SCALE NONE	PROJECT NO. MI0592107
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DWN BY G. BODENSTEIN	SCALE FILE NAME IRT-16-10	DRAWING NO. 16-10



LEGEND		
DEVICE	TYPE	DESCRIPTION
351S	SEL	PHASE & GROUND DISTANCE/DIRECTIONAL GROUND OVERCURRENT RELAY
TS	ABB	TEST SWITCH
○		DEVICE TERMINAL POINT
⊗		TERMINAL POINT IN CIRCUIT BREAKER BKR1
□		TERMINAL BLOCK IN PANEL RP1
⊠		TERMINAL BLOCK IN PANEL RP2

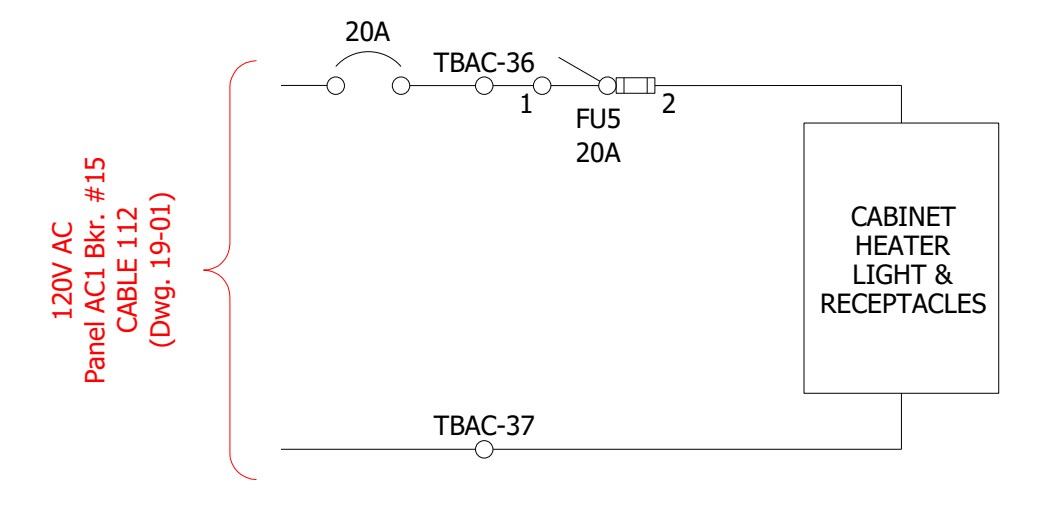
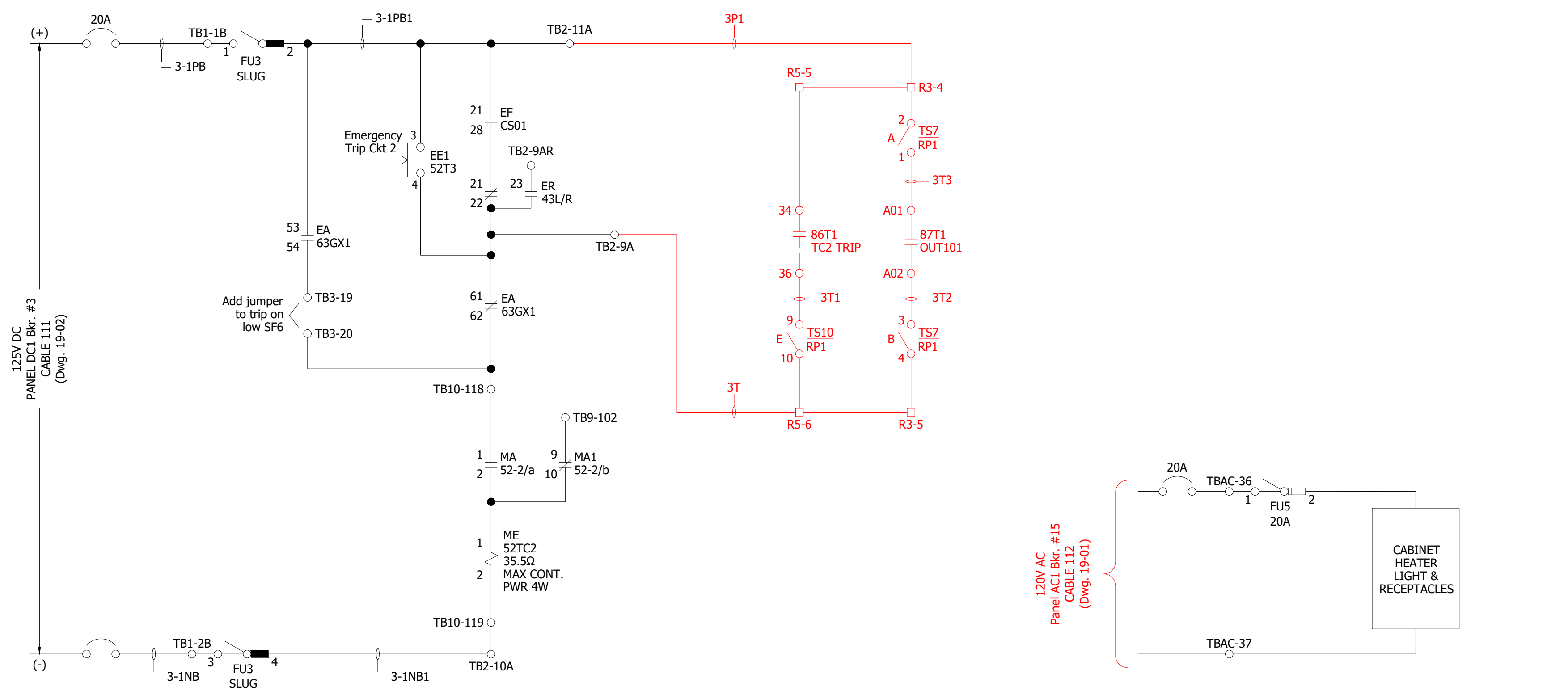
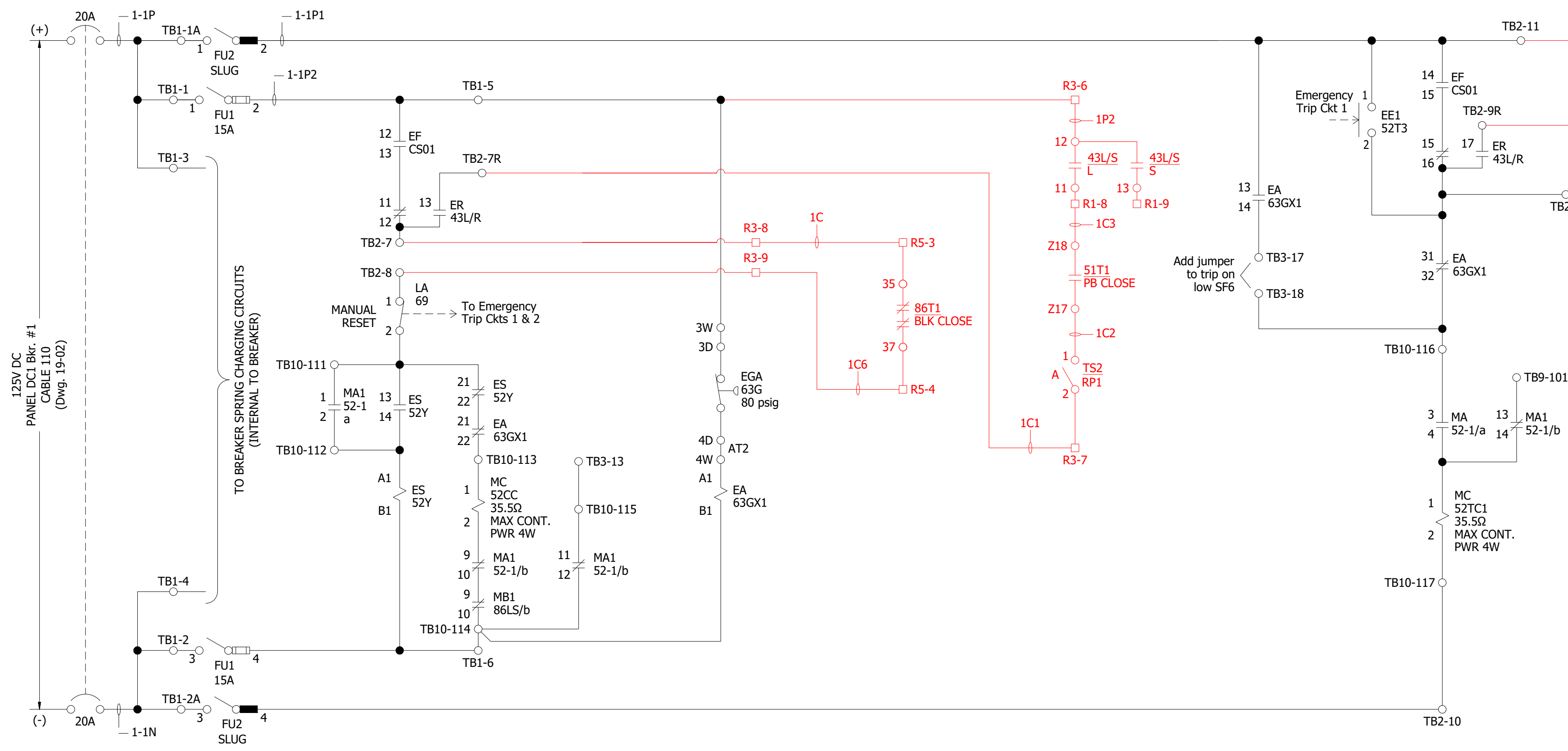
43L/S IN RP1

DECK	CONTACTS FRONT END	SWITCH POSITION		USED
		LOCAL	REMOTE	
1	12	X		● This Dwg.
	13		X	● This Dwg.
	15	X		● This Dwg.
2	16		X	● This Dwg.
	17		X	Spare
	21	X		Spare
	23		X	Spare
3	26	X		Spare
	25		X	Spare
	27		X	Spare
	31	X		Spare
	33		X	Spare
	35	X		Spare
	37		X	Spare



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CONSTRUCTION

				PSE Power System Engineering, Inc.		DC SCHEMATIC 51T1 SEL-351S RP1 IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
				www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8995			
0	ISSUED FOR BID	GB	NH	08/23/2023	ENGR N. HALL	SCALE NONE	PROJECT NO. MI0592107
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DWN BY G. BODENSTEIN	DATE 12/28/2022	DRAWING NO. 16-11



LEGEND		
DEVICE	TYPE	DESCRIPTION
351	SEL	PHASE & GROUND DISTANCE/DIRECTIONAL OVERCURRENT RELAY
387	SEL	CURRENT DIFFERENTIAL & OVERCURRENT RELAY
43L/S	24	LOCAL/REMOTE TRANSFER SWITCH
52	-	SF6 GAS CIRCUIT BREAKER AUXILIARY CONTACT 52a, 52b
52TC1, 52TC2	-	SF6 GAS CIRCUIT BREAKER TRIP COILS 1 & 2
52CC	-	SF6 GAS CIRCUIT BREAKER CLOSE COIL
79CO	-	RECLOSER ON/OFF SWITCH
79SCO/ENABLE	-	SCADA RECLOSING ENABLE/DISABLE LATCHING RELAY
86T1	-	TRANSFORMER T1 LOCKOUT RELAY
FU	-	FUSE BLOCK
TS	ABB	TEST SWITCH
○		DEVICE TERMINAL POINT
⊗		TERMINAL POINT IN CIRCUIT BREAKER BKR1
⊙		TERMINAL POINT IN TRANSFORMER T1
□		TERMINAL BLOCK IN PANEL RP1
▣		TERMINAL BLOCK IN PANEL RP2

43L/S IN RP1

LOCAL/SUPERVISORY TRANSFER SW.				
DECK	CONTACTS FRONT END	SWITCH POSITION		
		LOCAL	REMOTE	
1	12 → 11	X		
	12 → 13		X	
	16 → 15	X		X
2	22 → 21	X		X
	22 → 23		X	
	26 → 25	X		X
3	32 → 31	X		X
	32 → 33		X	
	36 → 35	X		X

ER 43L/R AT BREAKER

DECK	CONTACTS FRONT END	SWITCH POSITION	
		LOCAL	REMOTE
1	12 → 11	X	
	12 → 13		X
	16 → 15	X	X
2	22 → 21	X	X
	22 → 23		X
	26 → 25	X	X
3	32 → 31	X	X
	32 → 33		X
	36 → 35	X	X

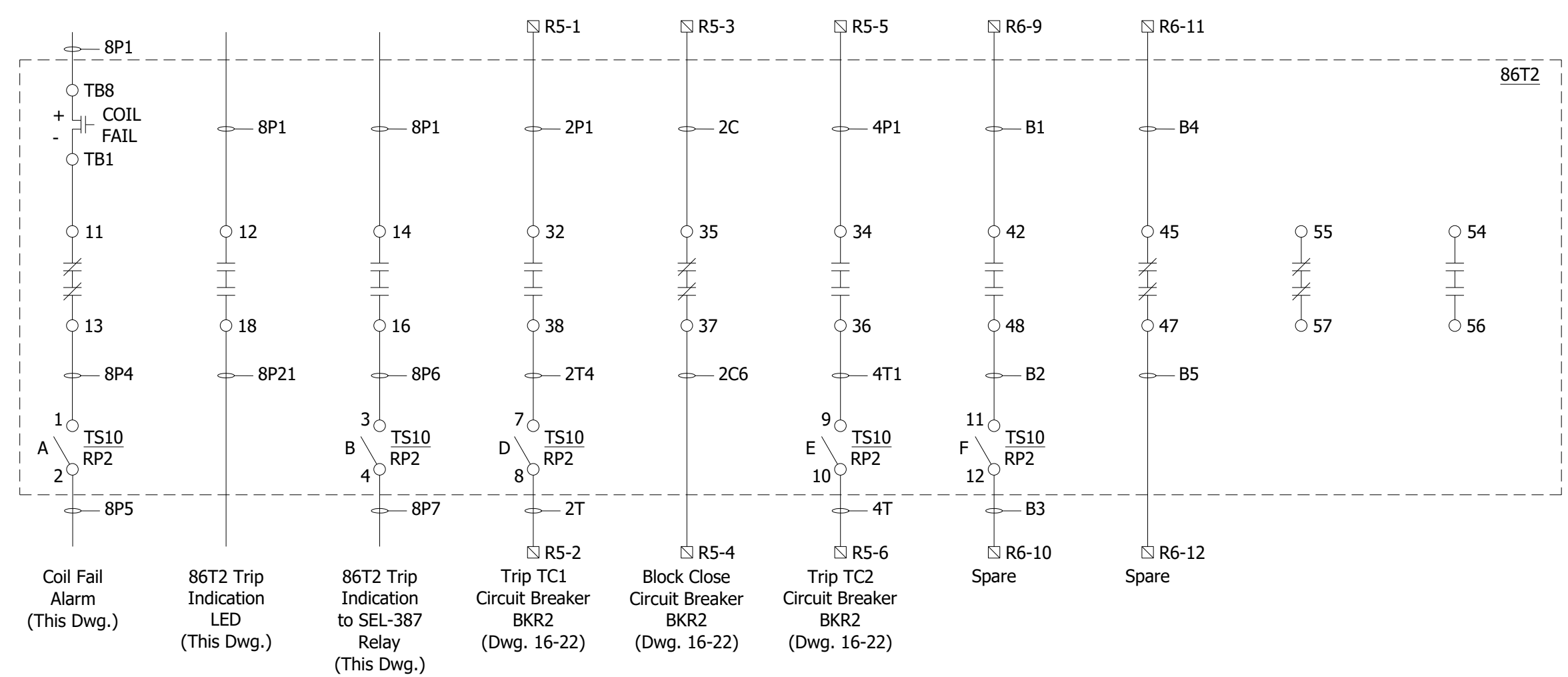
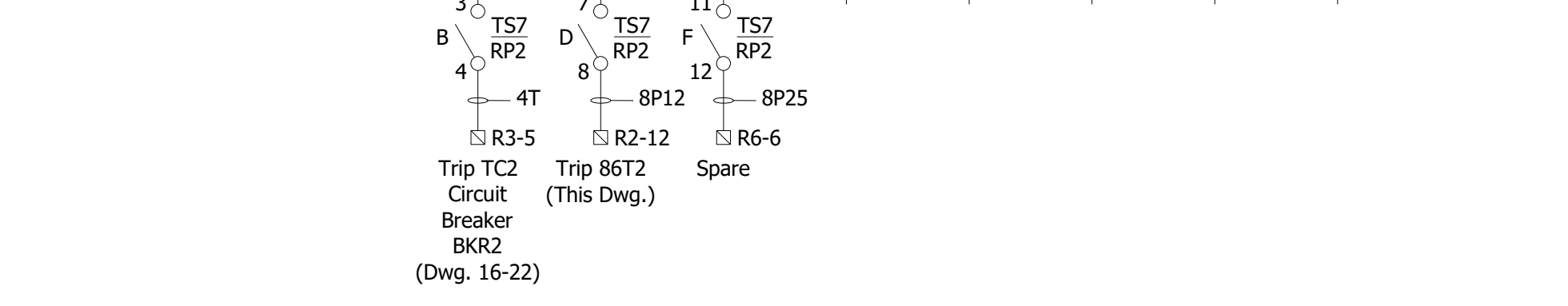
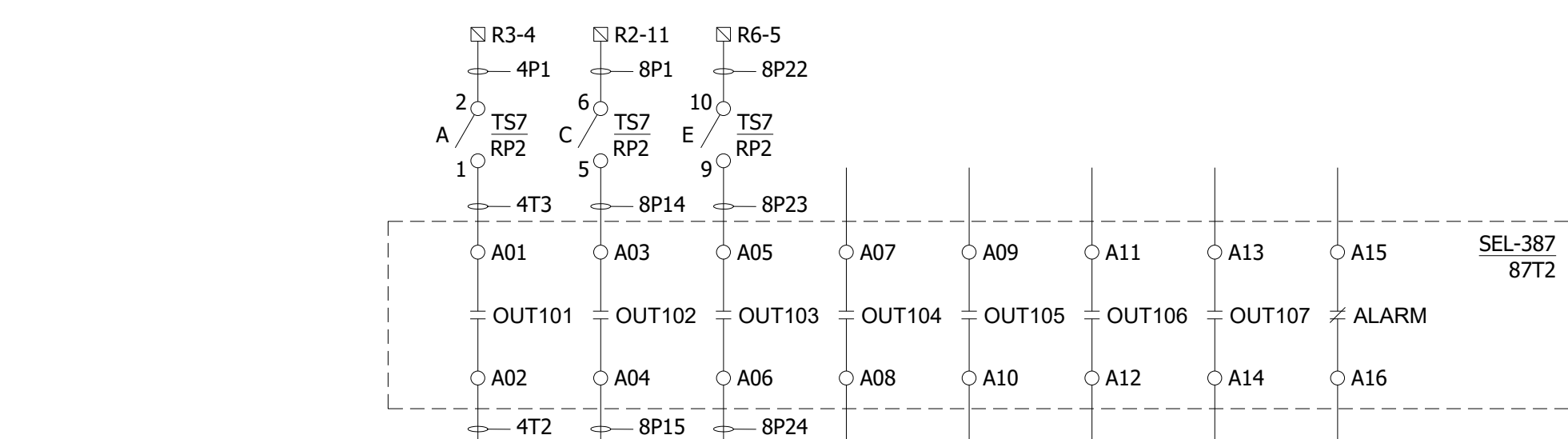
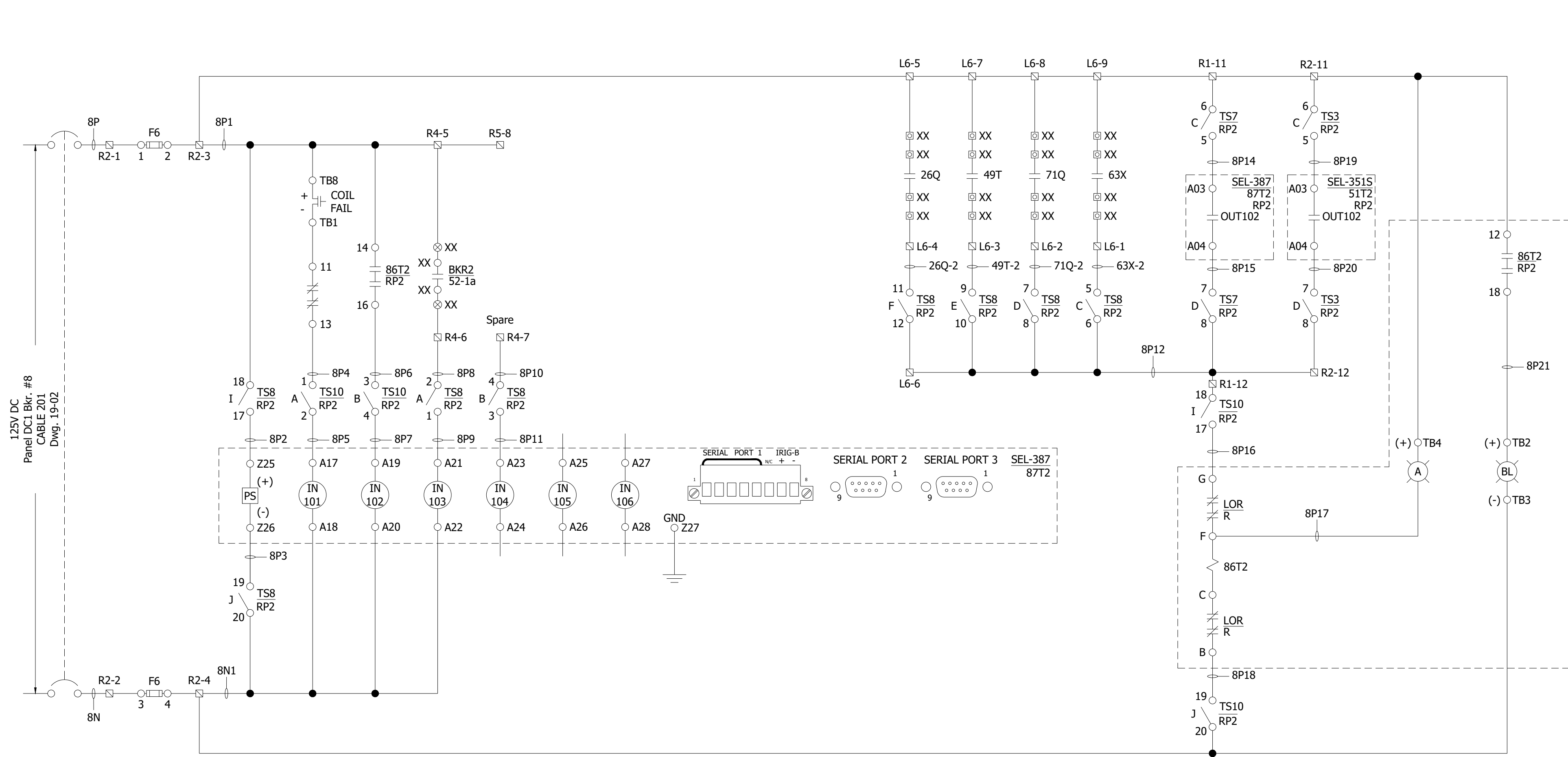
EF CS01 AT BREAKER

DECK	CONTACTS FRONT END	SWITCH POSITION	
		TRIP	CLOSE
1	11 → 18	X	
	12 → 13		X
	15 → 14	X	
2	21 → 28	X	
	22 → 23		X
	25 → 24	X	
3	26 → 27	X	X
	32 → 31	X	
	32 → 33		X

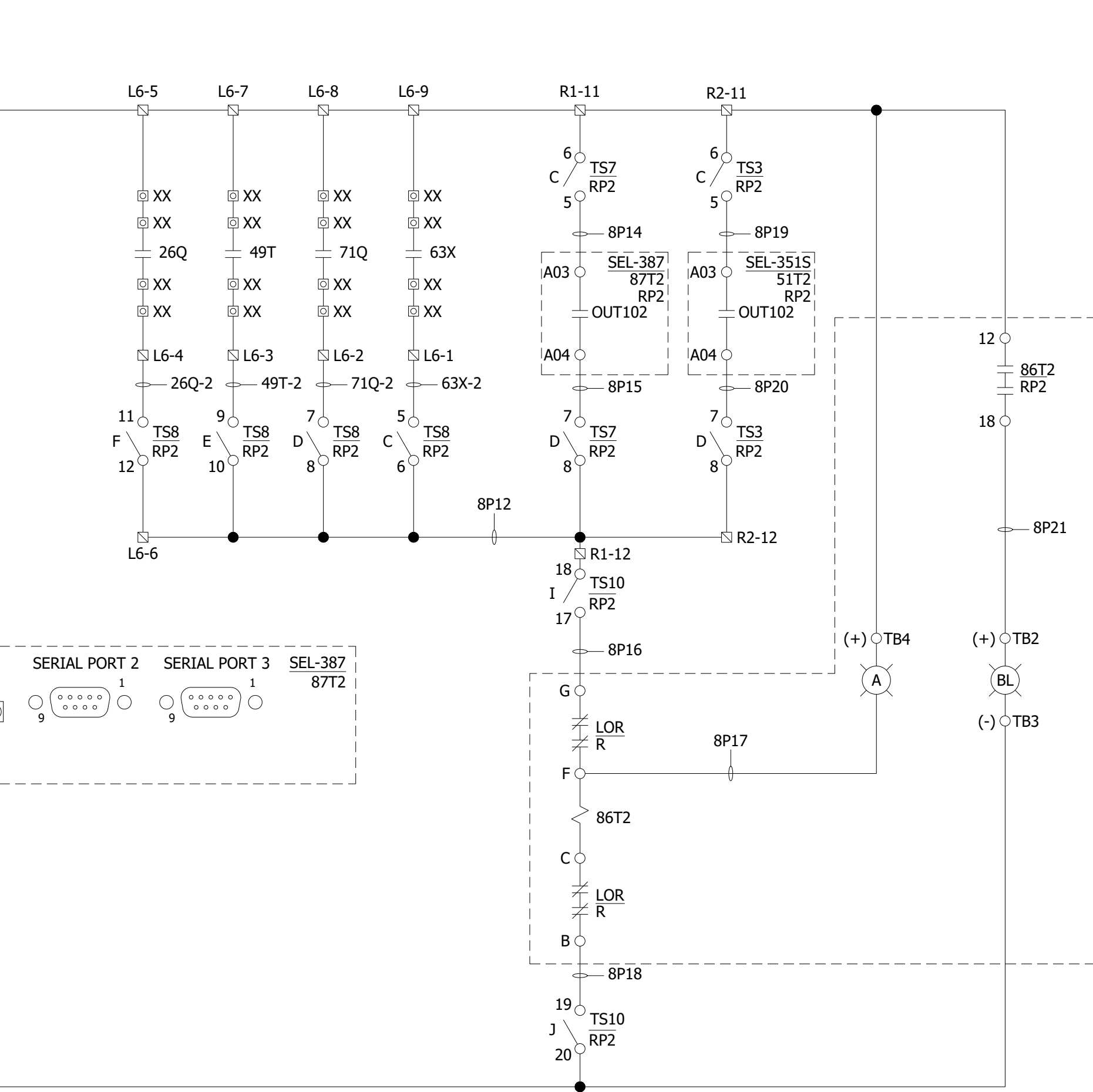
STOP SCREWS AT 2 AND 7

PRELIMINARY
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CONSTRUCTION

				PSE Power System Engineering, Inc.		ELEMENTARY DRAWING CIRCUIT BREAKER BKR1 CONTROL IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
				www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8995			
0	ISSUED FOR BID	GB	NH	08/23/2023	ENGR N. HALL	SCALE NONE	PROJECT NO. MI0592107
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DWN BY G. BODENSTEIN	DATE 12/28/2022	DRAWING NO. 16-12



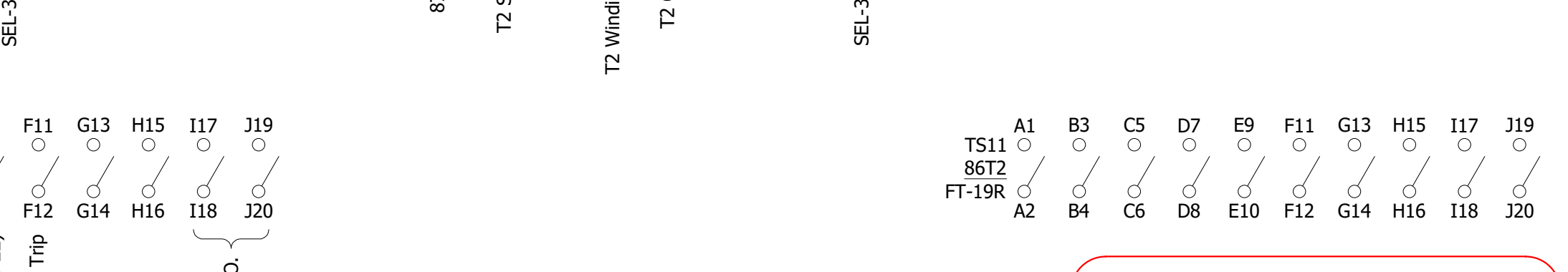
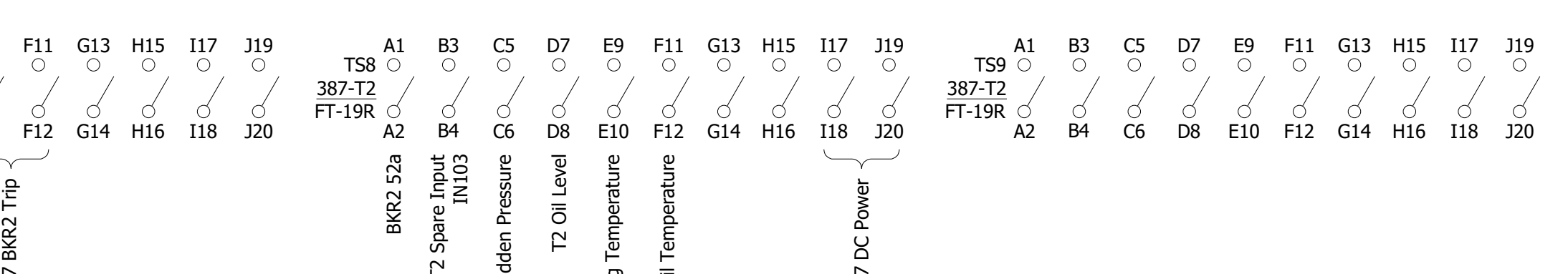
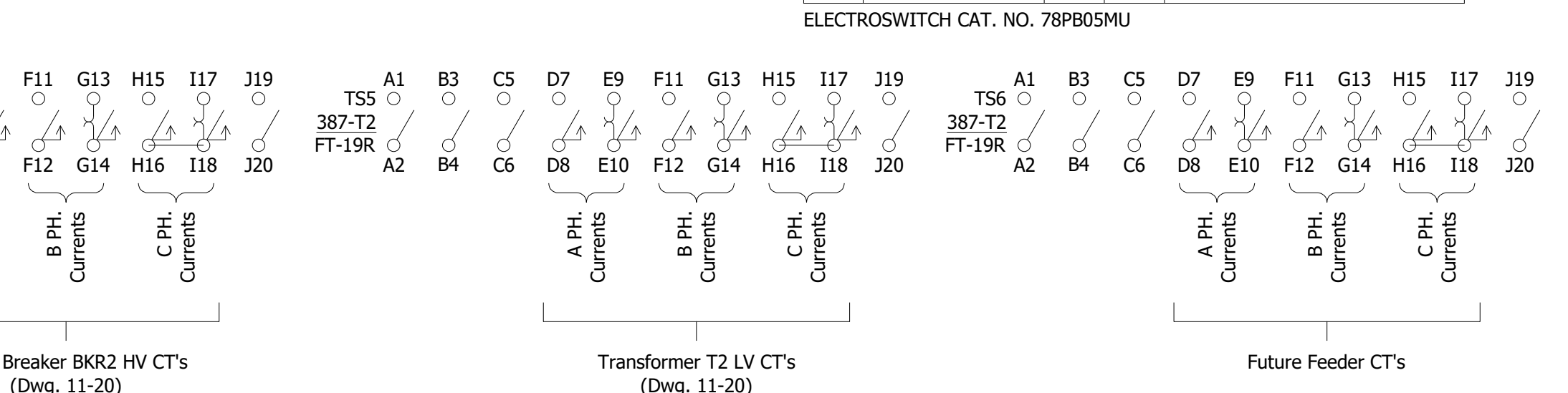
Coil Fail Alarm (This Dwg.)
 86T2 Trip Indication LED (This Dwg.)
 86T2 Trip Indication to SEL-387 Relay (This Dwg.)
 Trip TC1 Circuit Breaker BKR2 (Dwg. 16-22)
 Block Close Circuit Breaker BKR2 (Dwg. 16-22)
 Trip TC2 Circuit Breaker BKR2 (Dwg. 16-22)
 Spare
 Spare



Coil Fail Alarm (This Dwg.)
 86T2 Trip Ind. to SEL-387 (This Dwg.)
 Trip TC1 BKR2 (Dwg. 16-22)
 Trip TC2 BKR2 (Dwg. 16-22)
 86T2 Spare Trip
 86 L.O.

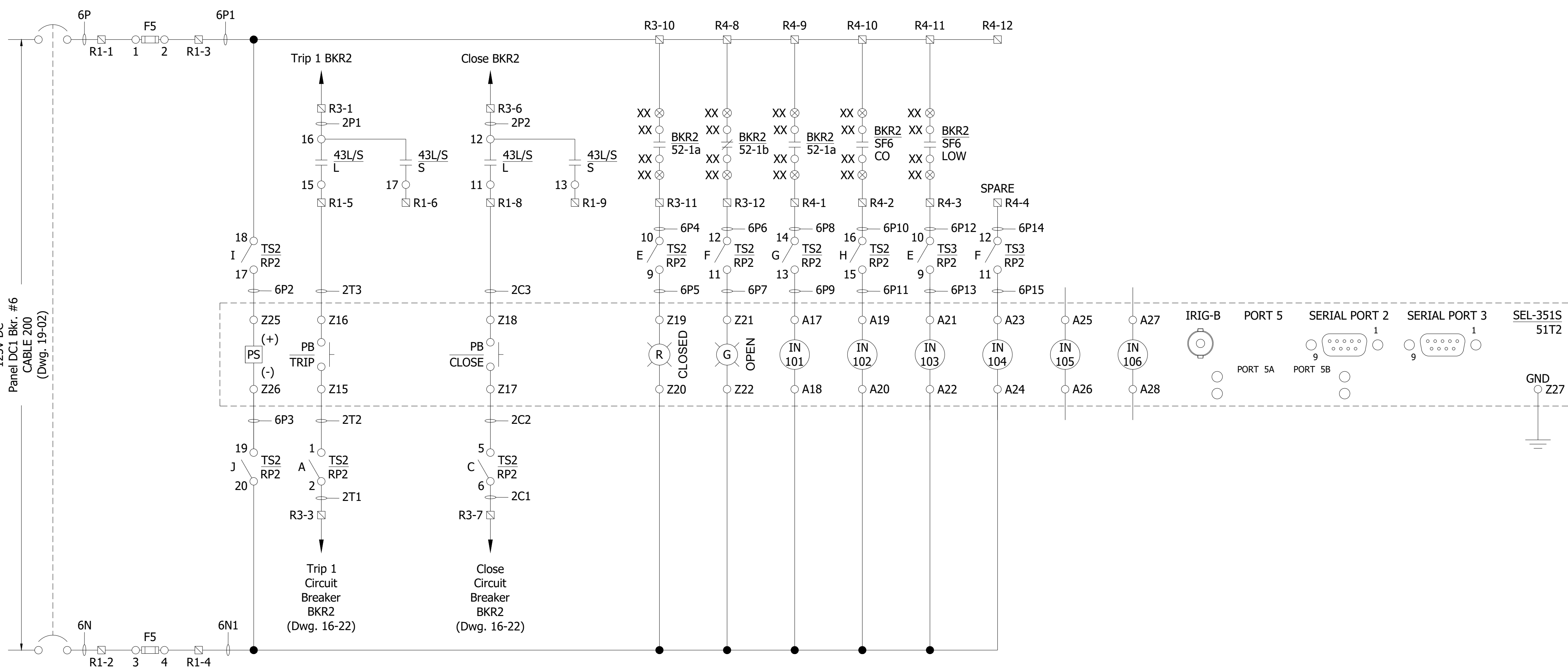
LEGEND		
DEVICE	TYPE	DESCRIPTION
387	SEL	CURRENT DIFFERENTIAL AND OVERCURRENT RELAY
86T2	Electroswitch	Lockout Relay
8772	SEL	Differential Relay
TS	ABB	TEST SWITCH
43L/S		LOCAL/SUPERVISORY SWITCH
26Q		TRANSFORMER OIL TEMPERATURE
49T		TRANSFORMER WINDING TEMPERATURE
63X		TRANSFORMER SUDDEN PRESSURE
71Q		TRANSFORMER OIL LEVEL
○		DEVICE TERMINAL POINT
⊗		TERMINAL POINT IN CIRCUIT BREAKER BKR2
⊙		TERMINAL POINT IN TRANSFORMER T2
□		TERMINAL BLOCK IN PANEL RP1
⊠		TERMINAL BLOCK IN PANEL RP2

Lockout Contact Schedule			
86T2 CONTACT USAGE			
DECK	CONTACT	POSITION Trip Reset	FUNCTION
	B	X	LOCKOUT COIL
	F	X	LOCKOUT COIL
	TB8	-	COIL FAIL ALARM
1	11	X	
	12	X	86T2 Trip Indication LED
	15	X	
2	14	X	86T2 Trip Indication to SEL-387
	21	X	
	22	X	
	24	X	
3	31	X	
	32	X	TC1 Circuit Breaker BKR2
	35	X	Block Close Circuit Breaker BKR2
	34	X	TC2 Circuit Breaker BKR2
4	41	X	
	42	X	Spare
	45	X	Spare
	44	X	
5	51	X	
	52	X	
	55	X	
	54	X	



PRELIMINARY
 NOT FOR
 CONSTRUCTION

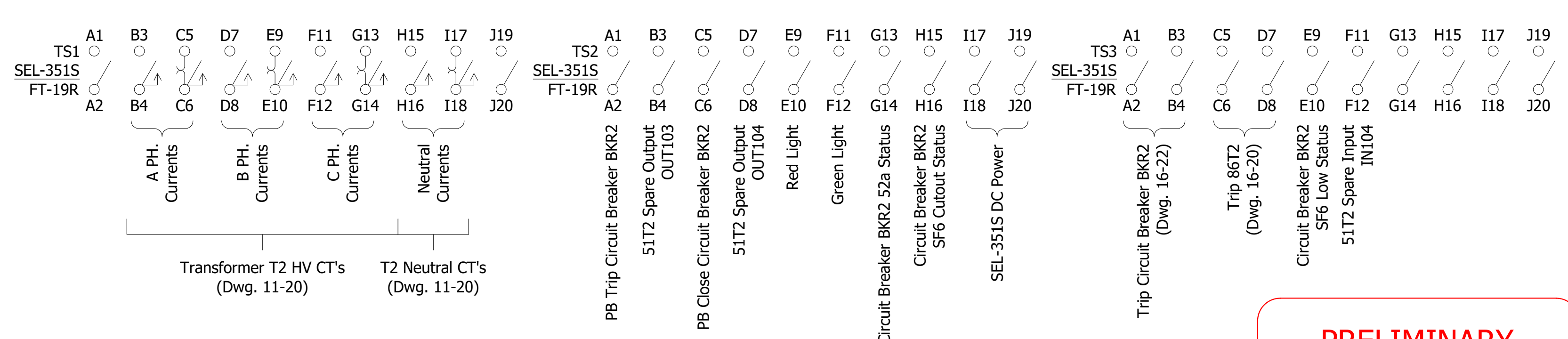
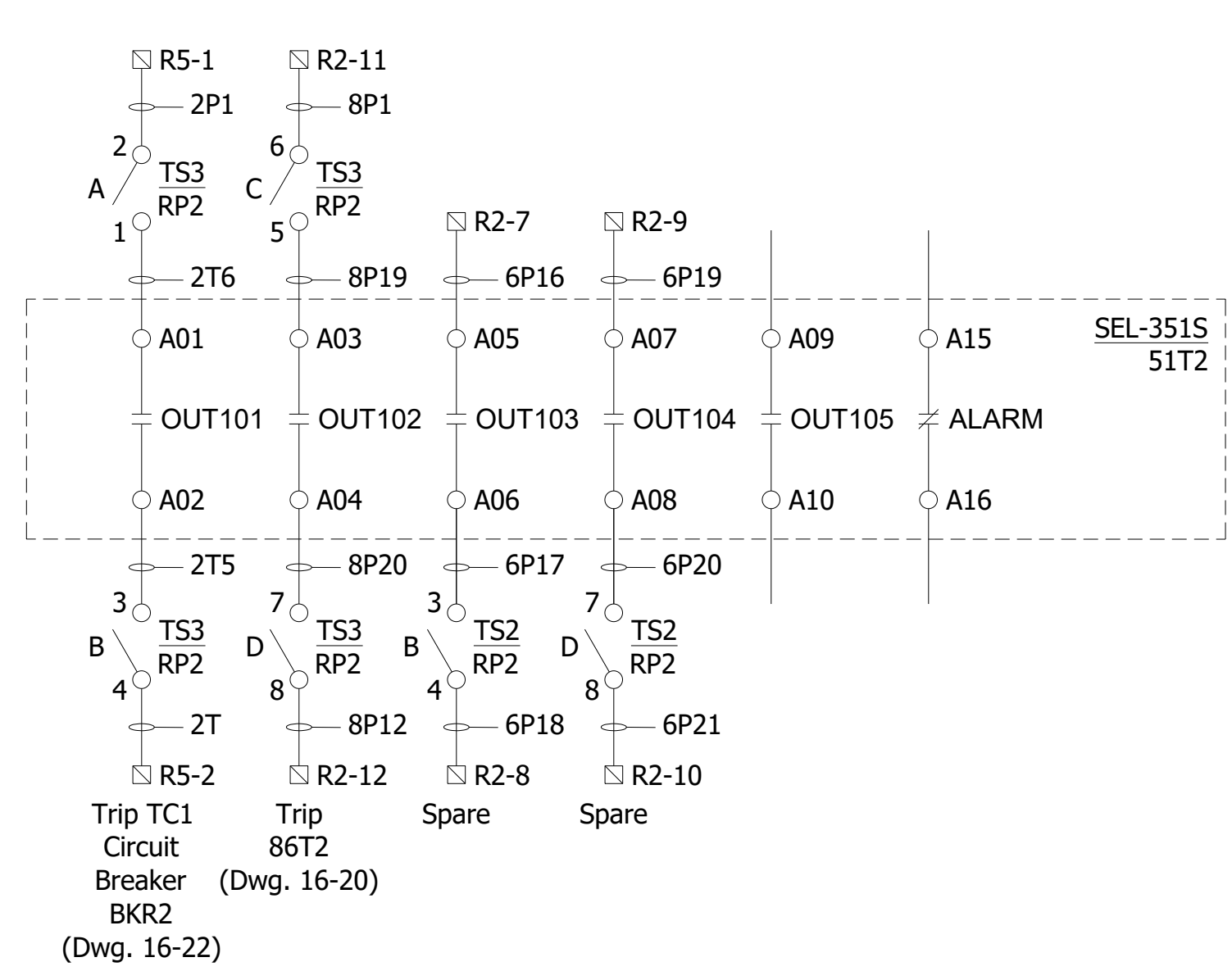
PSE Power System Engineering, Inc.		2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8995	
DC SCHEMATIC 86T2, 8772 SEL-387 RP2 IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI		PROJECT NO. MI0592107 DRAWING NO. 16-20	
0	ISSUED FOR BID	GB	NH
ENGR	N. HALL	CHK'D	---
DWN	G. BODENSTEIN	DATE	12/28/2022
SCALE	NONE	FILE NAME	IRT-16-20



LEGEND		
DEVICE	TYPE	DESCRIPTION
351S	SEL	PHASE & GROUND DISTANCE/DIRECTIONAL GROUND OVERCURRENT RELAY
TS	ABB	TEST SWITCH
○		DEVICE TERMINAL POINT
⊗		TERMINAL POINT IN CIRCUIT BREAKER BKR2
⊠		TERMINAL BLOCK IN PANEL RP1
⊞		TERMINAL BLOCK IN PANEL RP2

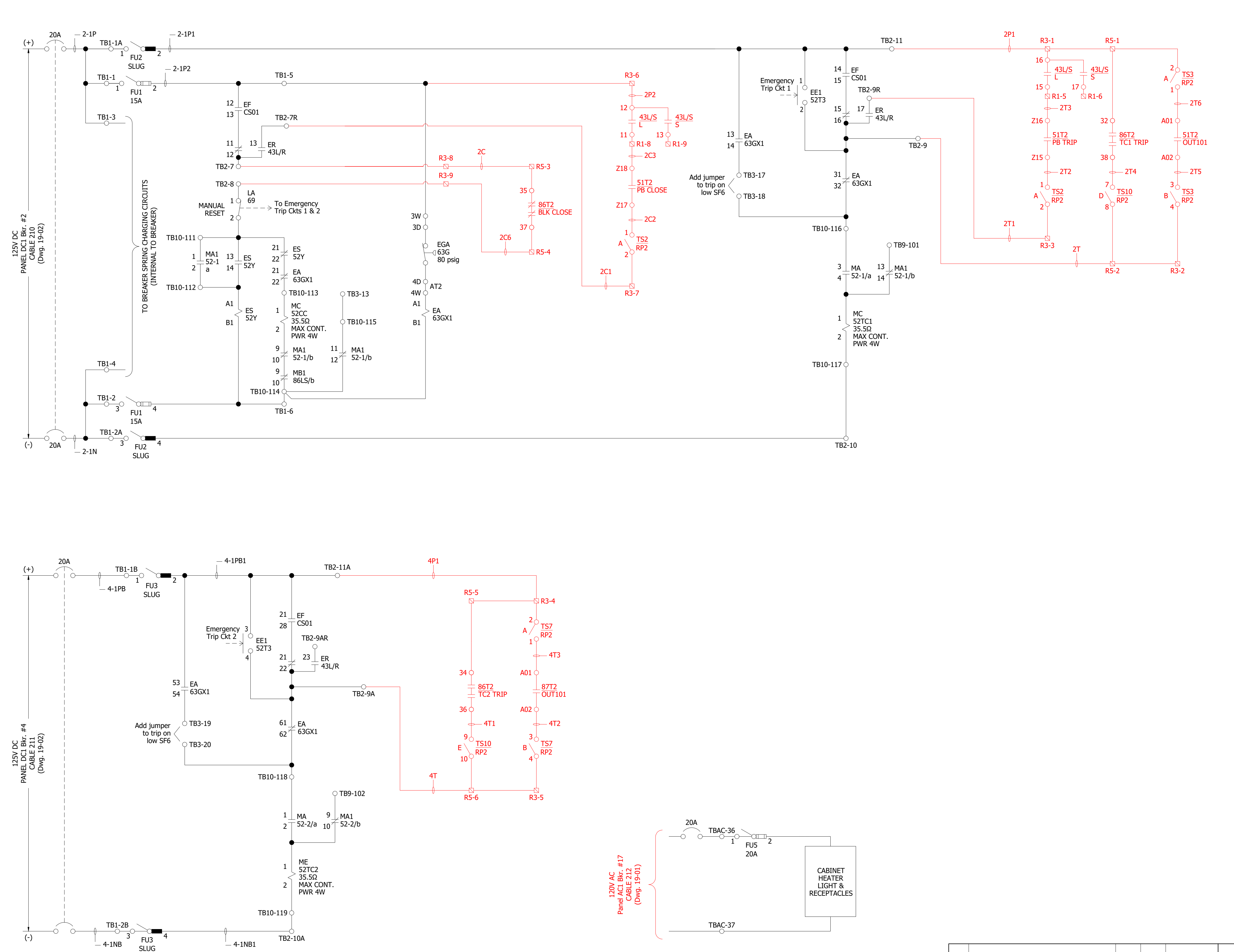
43L/S IN RP2

DECK	CONTACTS FRONT END	SWITCH POSITION		USED
		LOCAL	REMOTE	
1	12	X		● This Dwg.
	13		X	● This Dwg.
	16	X		● This Dwg.
2	22		X	○ Spare
	23		X	○ Spare
	26	X		○ Spare
	27		X	○ Spare
3	32	X		○ Spare
	33		X	○ Spare
	36	X	X	○ Spare



PRELIMINARY
NOT FOR
CONSTRUCTION

				PSE Power System Engineering, Inc.		DC SCHEMATIC 51T2 SEL-351S RP2 IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
				www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8995			
0	ISSUED FOR BID	GB	NH	08/23/2023	ENGR N. HALL	SCALE NONE	PROJECT NO. MI0592107
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DWN BY G. BODENSTEIN	FILE NAME IRT-16-21	DRAWING NO. 16-21



LEGEND		
DEVICE	TYPE	DESCRIPTION
351	SEL	PHASE & GROUND DISTANCE/DIRECTIONAL OVERCURRENT RELAY
387	SEL	CURRENT DIFFERENTIAL & OVERCURRENT RELAY
43L/S	24	LOCAL/REMOTE TRANSFER SWITCH
52	-	SF6 GAS CIRCUIT BREAKER AUXILIARY CONTACT 52a, 52b
52TC1, 52TC2	-	SF6 GAS CIRCUIT BREAKER TRIP COILS 1 & 2
52CC	-	SF6 GAS CIRCUIT BREAKER CLOSE COIL
79CO	-	RECLOSE ON/OFF SWITCH
79SCO/ENABLE	-	SCADA RECLOSE ENABLE/DISABLE LATCHING RELAY
86T2	-	TRANSFORMER T2 LOCKOUT RELAY
FU	-	FUSE BLOCK
TS	ABB	TEST SWITCH
○		DEVICE TERMINAL POINT
⊗		TERMINAL POINT IN CIRCUIT BREAKER BKR2
⊙		TERMINAL POINT IN TRANSFORMER T2
□		TERMINAL BLOCK IN PANEL RP1
▣		TERMINAL BLOCK IN PANEL RP2

43L/S IN RP2

LOCAL/SUPERVISORY TRANSFER SW.				
DECK	CONTACTS FRONT END	SWITCH POSITION		
		LOCAL	REMOTE	
1	12 → 11	X		
	12 → 13		X	
	16 → 15	X		
2	22 → 21	X		
	22 → 23		X	
	26 → 25	X		
3	32 → 31	X		
	32 → 33		X	
	36 → 35	X		
	36 → 37		X	

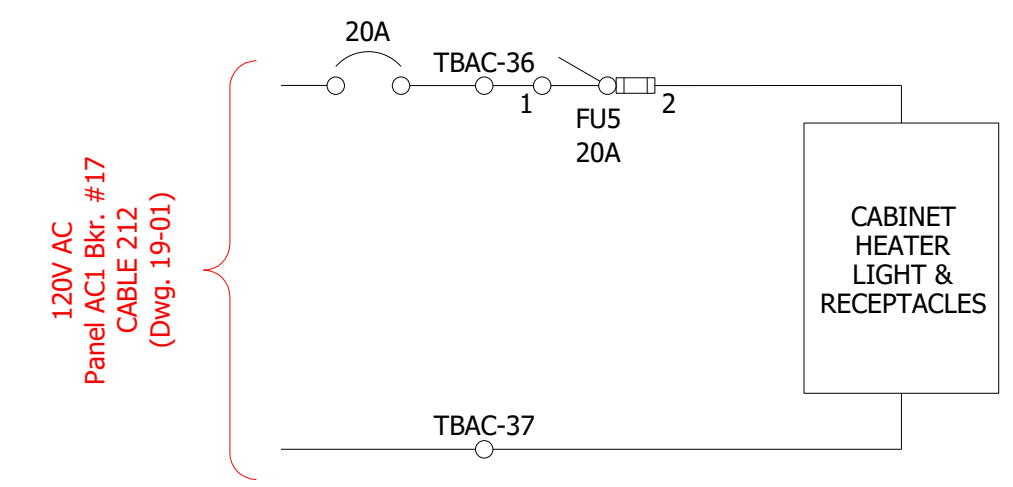
ER 43L/R AT BREAKER

DECK	CONTACTS FRONT END	SWITCH POSITION	
		LOCAL	REMOTE
1	12 → 11	X	
	12 → 13		X
	16 → 15	X	
2	22 → 21	X	
	22 → 23		X
	26 → 25	X	
3	32 → 31	X	
	32 → 33		X
	36 → 35	X	
	36 → 37		X

EF CS01 AT BREAKER

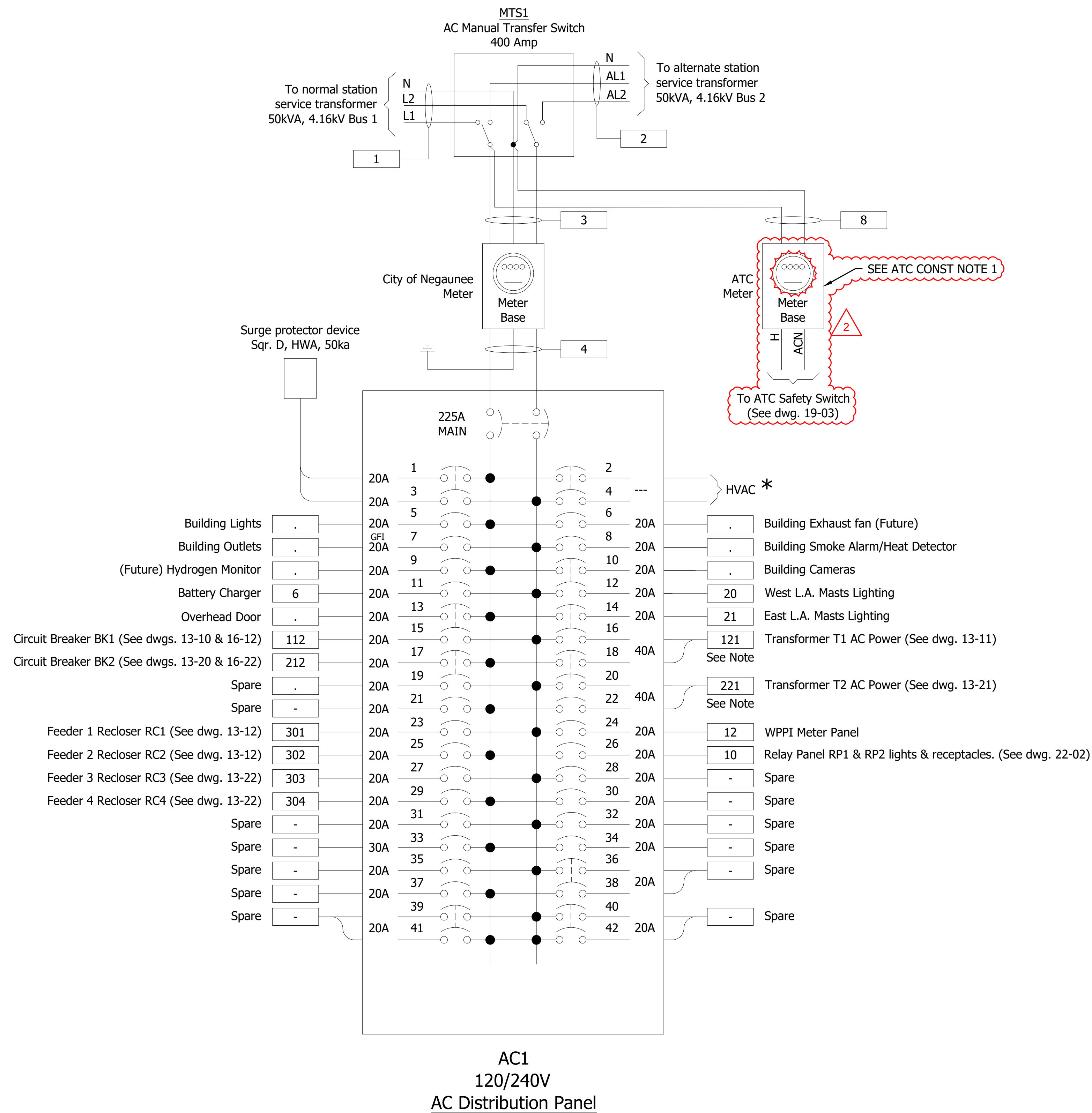
DECK	CONTACTS FRONT END	SWITCH POSITION	
		TRIP	CLOSE
1	11 → 18	X	
	12 → 13		X
	15 → 14	X	
2	21 → 28	X	
	22 → 23		X
	25 → 24	X	
	26 → 27		X

STOP SCREWS AT 2 AND 7



PRELIMINARY
NOT FOR
CONSTRUCTION

				PSE Power System Engineering, Inc.		ELEMENTARY DRAWING CIRCUIT BREAKER BKR2 CONTROL IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
				www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8995			
0	ISSUED FOR BID	GB	NH	08/23/2023	ENGR. N. HALL	SCALE NONE	PROJECT NO. MI0592107
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DWN BY G. BODENSTEIN	DATE 12/28/2022	DRAWING NO. 16-22

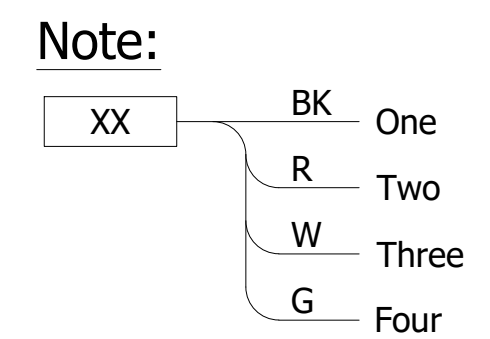


ISSUED FOR CONSTRUCTION

- NOTES:**
1. The final breaker/circuit layout is dependent on the building manufacturer design.
 2. AC wiring is anticipated to be E1(K1) color scheme of B,R,W,G.

2 **ATC CONSTRUCTION NOTES:**
 1. ATC IS ONLY RESPONSIBLE FOR METER BASE INSTALLATION AND CONNECTIONS TO LOAD.

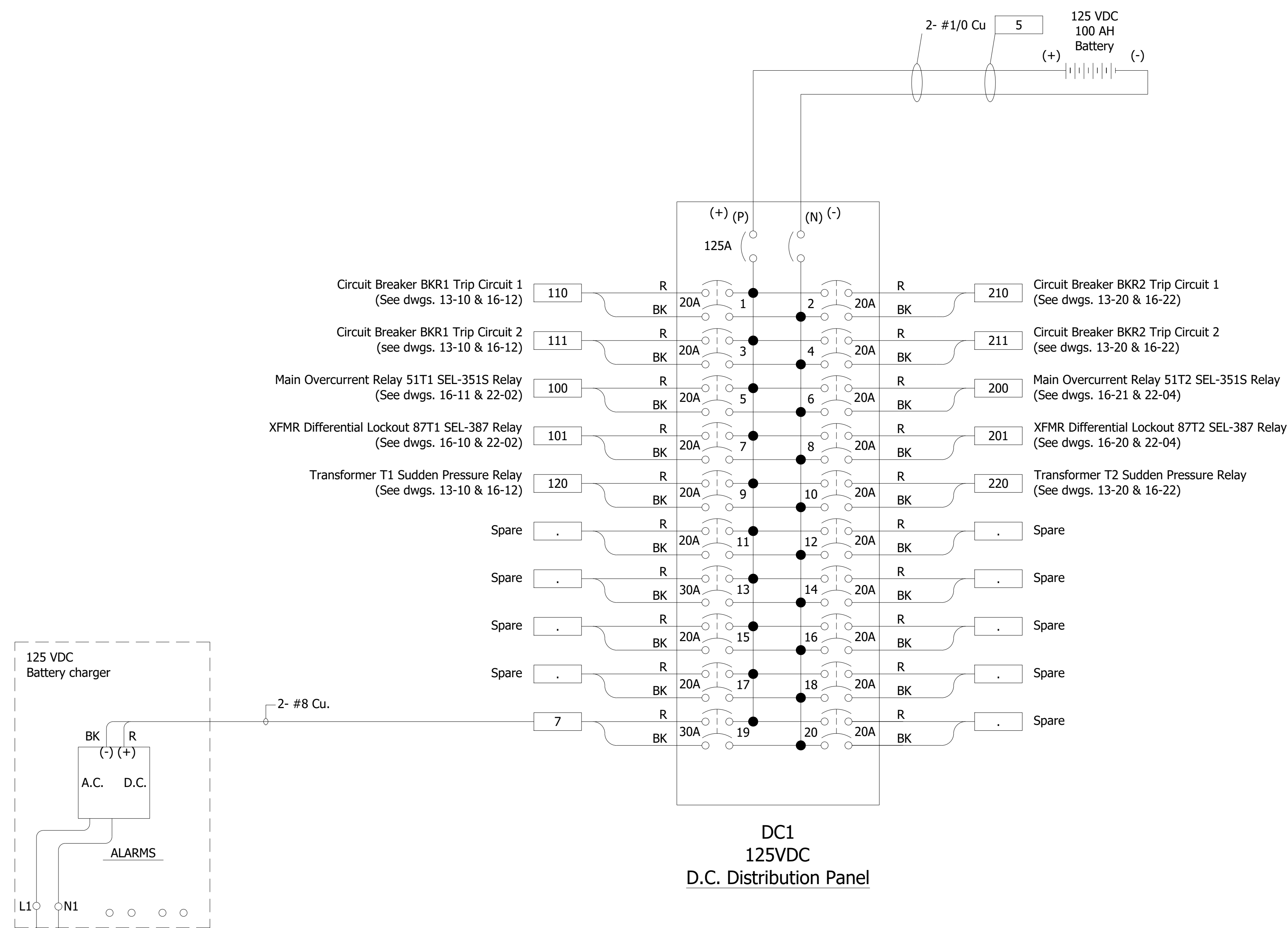
2 **DRAWING ISSUED FOR CONSTRUCTION BY ATC**
 This ATC issued drawing is presently in the construction stage. Contact ATC Project Manager DORN SIEGLER at (906) 779-7913 on all construction related matters. For technical issues, proposed revisions to this drawing, and to return "Field Mark-ups", contact the ATC Lead Engineer DEREK PARKER at (906) 779-7903
 Field Mark-ups Performed By: _____
 Date: _____
 Contact Number: _____



* HVAC Contractor to size breaker for equipment

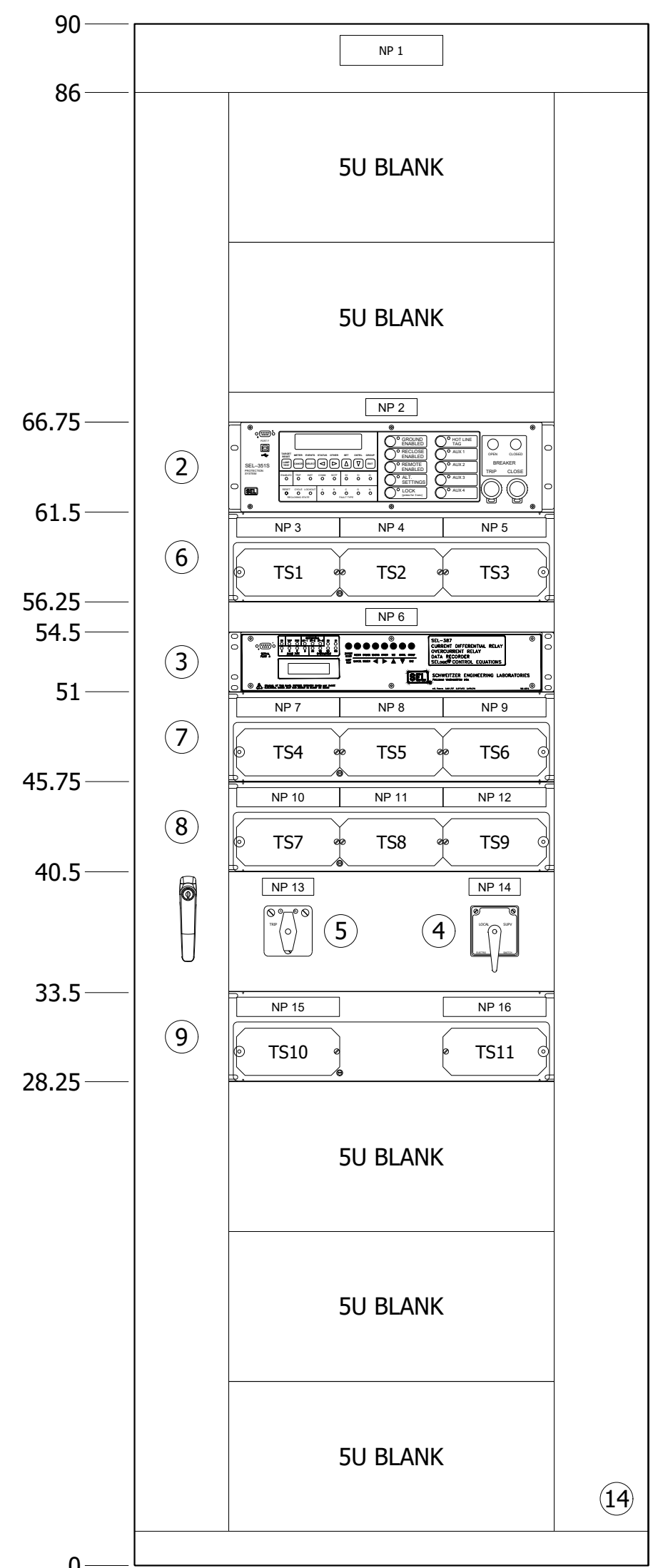
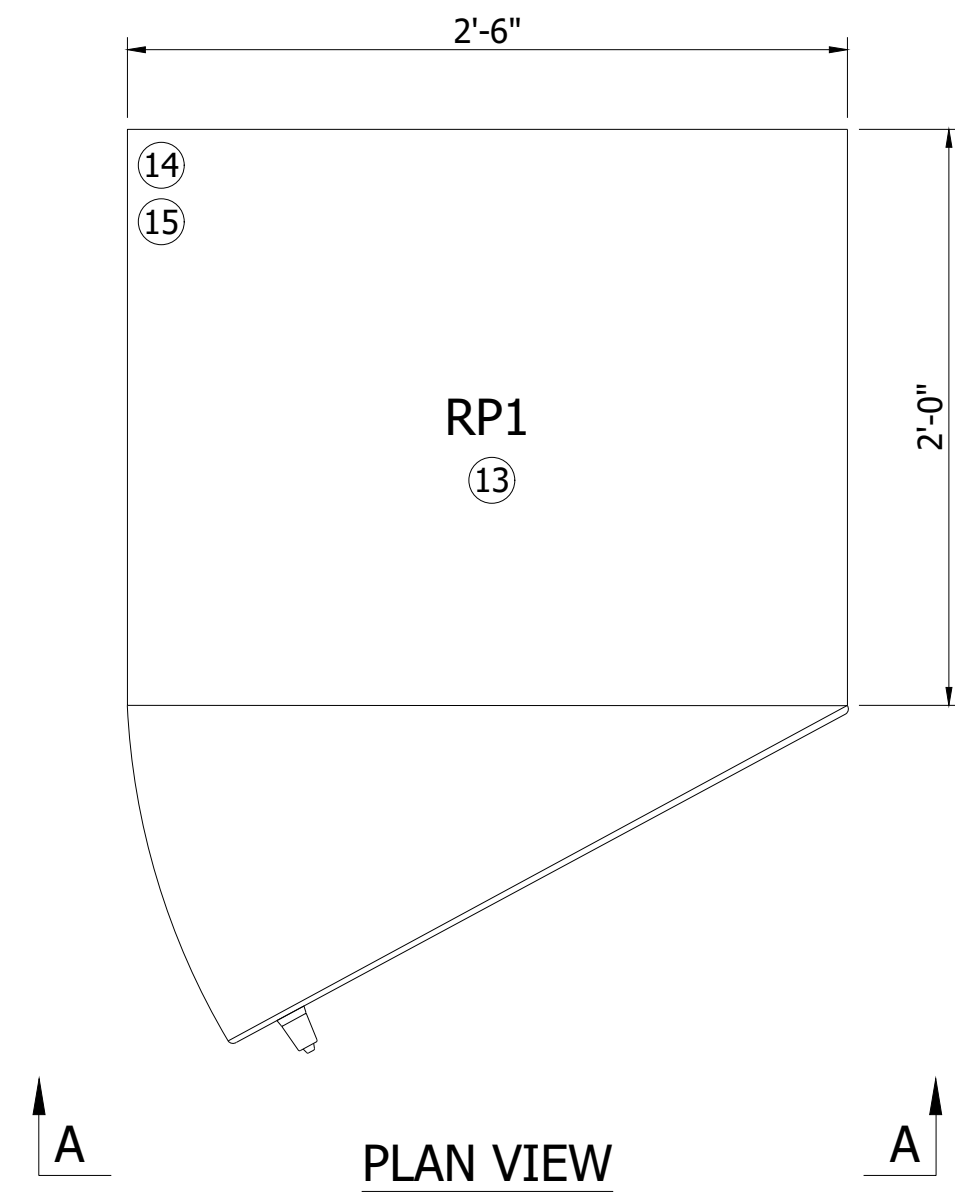
2 **REV CLOUD LEGEND**
 = REVISION CLOUD FOR ATC W.O. #605015

	3 ISSUED FOR CONSTRUCTION	GB	NH	7/17/2023	 www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895	AC PANEL WIRING IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI				
	2 ISSUED FOR CONSTRUCTION - ATC W.O. #605015	NJM	TAS	06/13/2023						
	1 ISSUED FOR BID	GB	NH	5/16/2023						
	0 ISSUED FOR REVIEW - ATC W.O. #605015	NJM	TAS	03/22/2023						
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	ENGR. N. HALL	CHK'D/ APP'D ---	DATE 12/28/2022	SCALE NONE	PROJECT NO. MI0592107	DRAWING NO. 19-01



ISSUED FOR
CONSTRUCTION

				PSE Power System Engineering, Inc. www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8995		DC PANEL WIRING IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
1	ISSUED FOR CONSTRUCTION	GB	NH	7/17/2023	ENGR. N. HALL	CHK'D BY S. PACKWOOD	SCALE NONE
0	ISSUED FOR BID	GB	NH	5/16/2023	DWN BY G. BODENSTEIN	DATE 12/28/2022	PROJECT NO. MI0592107
NO. REVISION AND RECORD OF ISSUE				BY	ENGR.	DATE	DRAWING NO. 19-02



RELAY PANEL RP1
View A-A

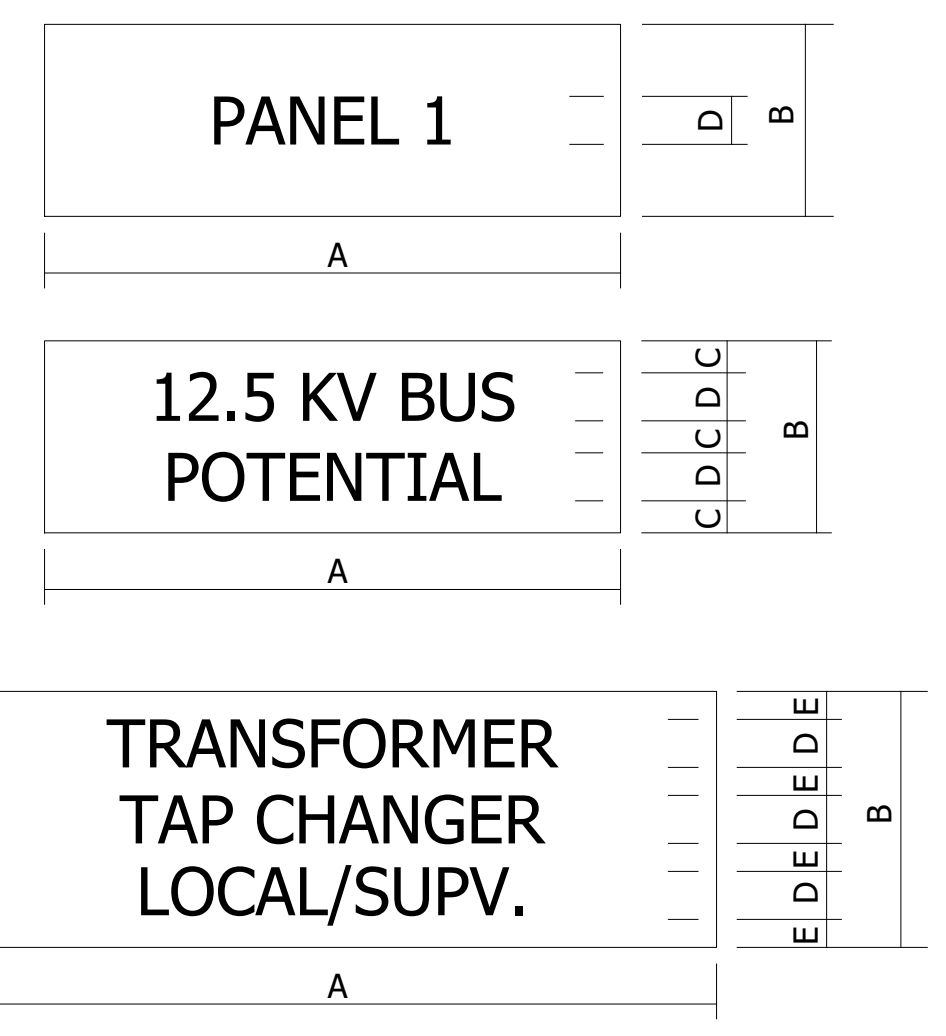
ITEM	DESCRIPTION	QUANTITY	MANUFACTURER	CATALOG #
1	30"W X 90"H X 24"D RELAY RACK PANEL	1		
2	SEL-351S, FEEDER OVER CURRENT PROTECTION AND CONTROL, 3 VOLTAGE INPUTS, HORIZONTAL RACK, STANDARD INTERFACE INCLUDING USB PLUS INDOOR SAFELock TRIP/CLOSE PUSHBUTTONS, 125VDC, (2)10/100 BASE-T, E1A-485 5AMP PHASE/NEUTRAL, STANDARD PROTOCOL	1	SEL	0351S7XHD3E54X1
3	SEL-387, CURRENT DIFFERENTIAL AND OVERCURRENT RELAY, STANDARD FIRMWARE, 125VDC, 5AMP PHASE/NEUTRAL/ HORIZONTAL RACK MOUNT, STANDARD PROTOCOL	1	SEL	0387003X5HXX4XX
4	43L/S LOCAL/SUPERVISORY CONTROL SWITCH -- TWO DECK -- MAINTAINED CONTACTS -- NO OFF POSITION -- WITH PISTOL GRIP HANDLE -- NAMEPLATE ENGRAVING: TITLE "43L/S", POSN #1 "LOCAL", POSN #2 "SUPV" (ENGRAVING CODE 010D-2L14L).	1	ELECTROSWITCH	24202D
5	86LO, MANUAL RESET LOCKOUT RELAY - SERIES 24 - 125 VOLTS DC - COIL STYLE "D" 20 MAIN CONTACTS: 10 NORMALLY OPEN, 10 NORMALLY CLOSED - WITH TARGET. "TRIP" (RED) AND "RESET" (BLACK) - OVAL FIXED HANDLE, 86, WITH LED LIGHTS, AMBER/BLUE, 125 VOLTS DC	1	ELECTROSWITCH	78PB05MU
6	TEST SWITCH, RACK MOUNT ASSEMBLY, POSITION "A" (1)8C,2P, POSITION "B" (1)10P, POSITION "C" (1)10P WITH 3 RACK UNIT MOUNTING PLATE, SWITCHES IN LOWER POSITION FT19R-3RU	1	ABB	FRXH018001001B
7	TEST SWITCH, RACK MOUNT ASSEMBLY, POSITION "A", "B", "C" (3)6C,4P WITH 3 RACK UNIT MOUNTING PLATE, SWITCHES IN LOWER POSITION FT19R-3RU	1	ABB	FRXH014014014B
8	TEST SWITCH, RACK MOUNT ASSEMBLY, POSITION "A", "B", "C" (3)10P WITH 3 RACK UNIT MOUNTING PLATE, SWITCHES IN LOWER POSITION FT19R-3RU	1	ABB	FRXH001001001B
9	TEST SWITCH, RACK MOUNT ASSEMBLY, POSITION "A" (1)10P, POSITION "B" BLANK, POSITION "C" (1)10P WITH 3 RACK UNIT MOUNTING PLATE, SWITCHES IN LOWER POSITION FT19R-3RU	1	ABB	FRXH001000001B
10	TERMINAL BLOCK, 12 POINT, GE TYPE EB-25	AS REQUIRED	GE	12EB25B12
11	SHORTING TERMINAL BLOCK, 4 POINT, GE TYPE EB-27	AS REQUIRED	GE	4EB27B04
12	TWO POLE FUSE BLOCK, 250V WITH NON FUSES. FUSE SIZES AS PER DRAWINGS	AS REQUIRED	BUSSMANN	H25030-2
13	RELAY PANEL 2700K (800 LUMENS) 9 WATT LED A19 LIGHT BULB WITH PORCELAIN FIXTURE AND GUARD. MOUNTED AT TOP.	1		
14	RELAY PANEL 120 VAC, 15AMP SINGLE POLE DOOR LIGHT SWITCH. MOUNTED NEAR TOP OF DOOR PANEL	1		
15	RELAY PANEL 120 VAC, 15AMP GFI DUPLEX RECEPTACLE, MOUNTED NEAR BOTTOM OF PANEL	1		

NOTES:

1. PROVIDE SUFFICIENT TERMINAL BLOCKS FOR THE WIRING OF THE EQUIPMENT BEING INSTALLED AND THEIR ASSOCIATED CABLES, PLUS 10% SPARE.
2. PROVIDE A LIKE AMOUNT OF TERMINAL BLOCKS AND SPARES FOR ANY FUTURE EQUIPMENT.

PANEL NAMEPLATES					
NP	SIZE	DESCRIPTION	NP	SIZE	DESCRIPTION
1	7	RP1 Transformer T1 Protection	11	8	TS8 SEL-387 (87T1) Test Switches
2	5	SEL-351S (51T1) Main Overcurrent Relay	12	8	TS9 SEL-387 (87T1) Test Switches
3	8	TS1 SEL-351S (51T1) Main CT's	13	5	86T1 Transformer Lockout Relay
4	8	TS2 SEL-351S (51T1) Main Test Switches	14	5	43L/S Local Supervisory Switch L S
5	8	TS3 SEL-351S (51T1) Main Test Switches	15	8	TS10 86T1 Test Switches
6	5	SEL-387 (87T1) Transformer Differential Relay	16	8	TS11 43L/S T1 Test Switches
7	8	TS4 SEL-387 Breaker BKR1 CT's HV Side			
8	8	TS5 SEL-387 Transformer T1 CT's LV Side			
9	8	TS6 SEL-387 Feeder 1 CT's			
10	8	TS7 SEL-387 (87T1) Test Switches			

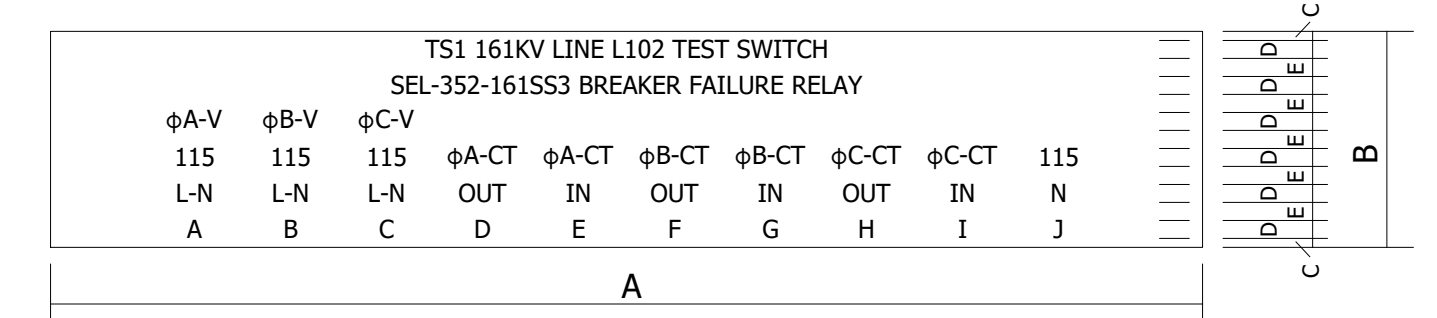
TYPICAL NAMEPLATE DETAIL



NAMEPLATE SIZE NO.	NAMEPLATE DIMENSIONS				
	A	B	C	D	E
1	1 1/8	7/16	1/16	1/8	-
2	1 1/2	9/16	1/8	3/32	-
3	1 3/4	5/8	1/8	1/8	-
4	2 1/4	3/4	1/8	3/16	-
5	3	1	7/32	3/16	7/64
6	4	1 1/4	1/4	1/4	1/8
7	6	1 3/4	3/8	5/16	13/64
8	6	1 1/8	3/64	3/32	3/32

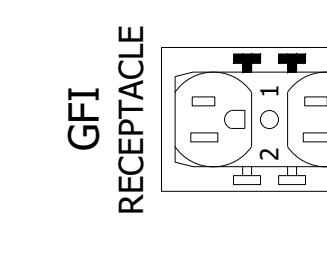
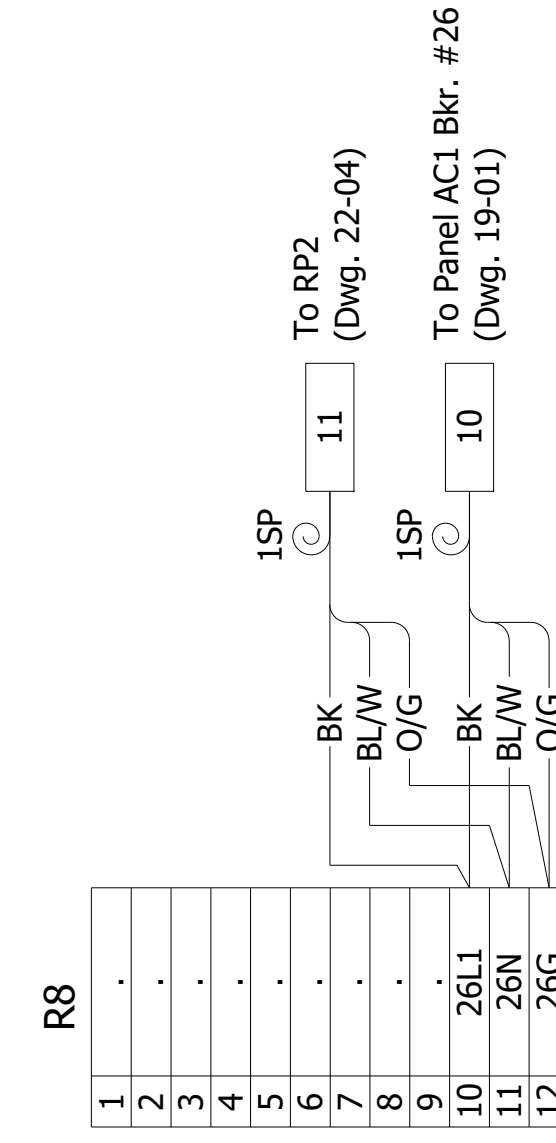
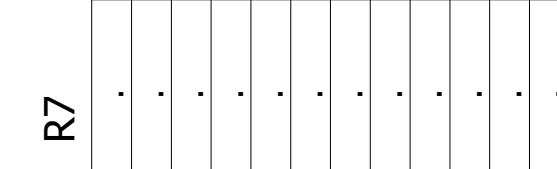
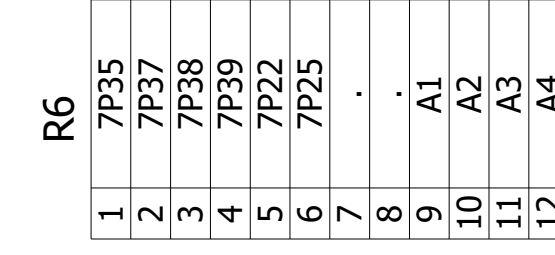
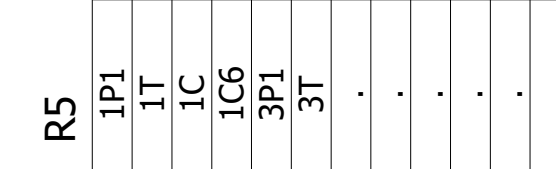
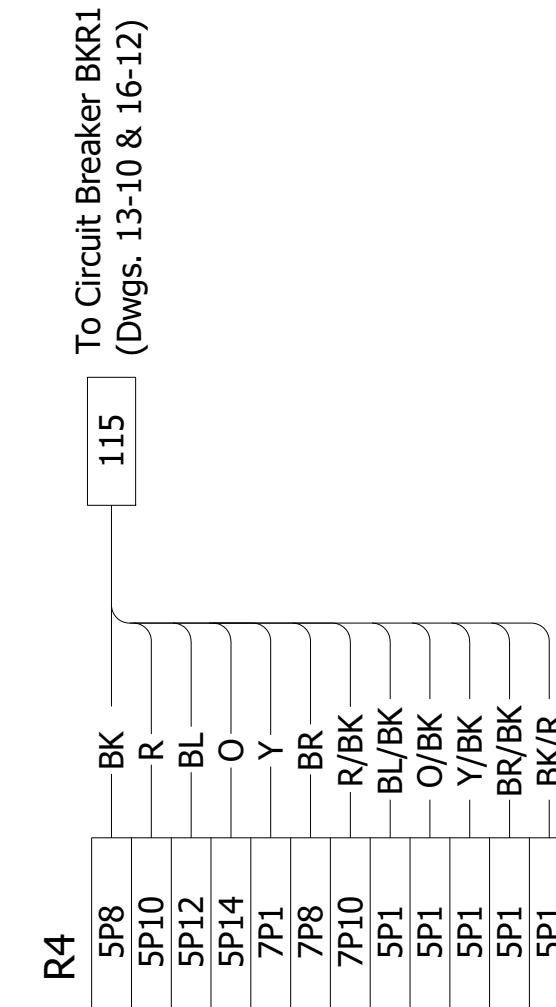
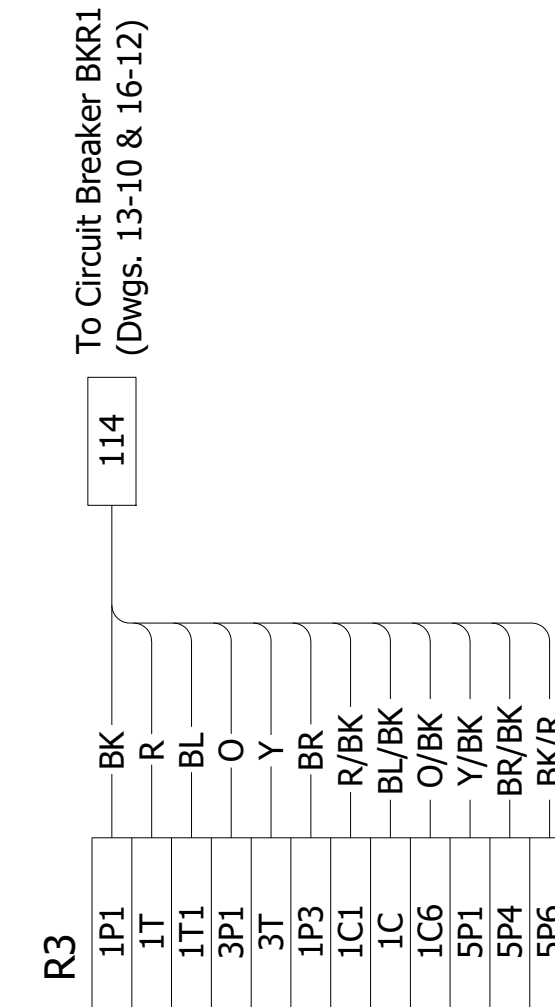
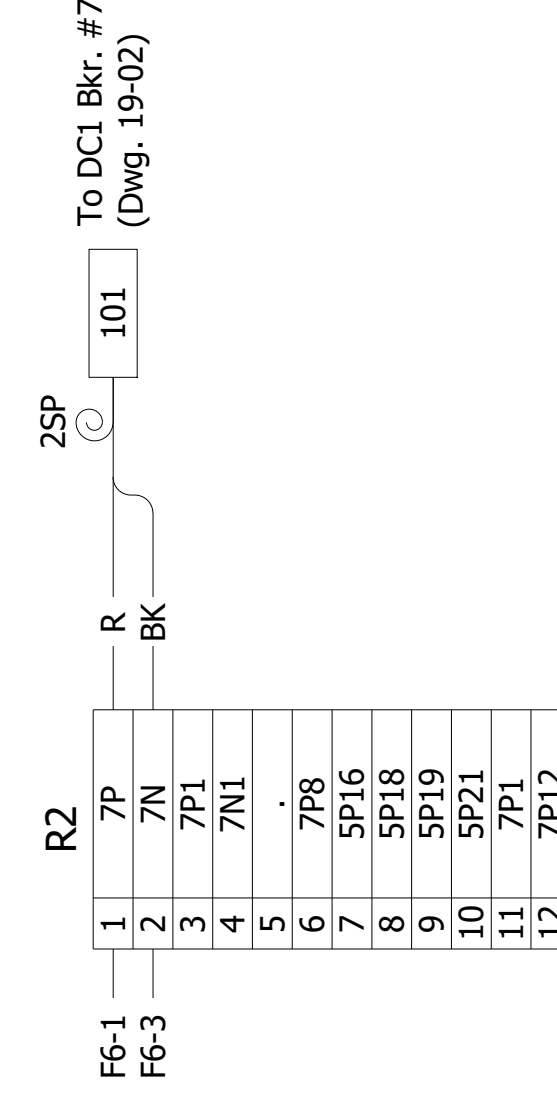
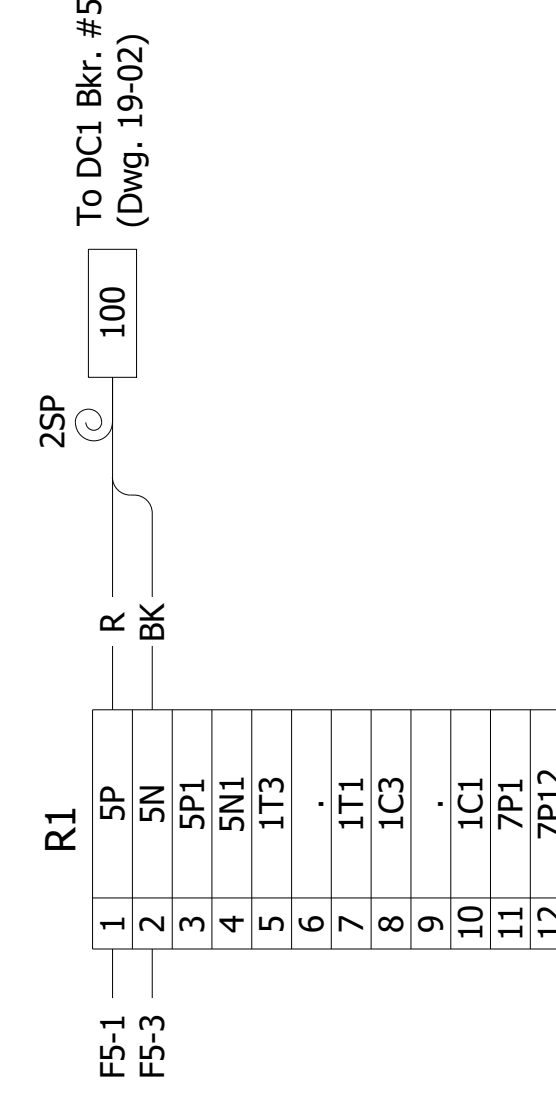
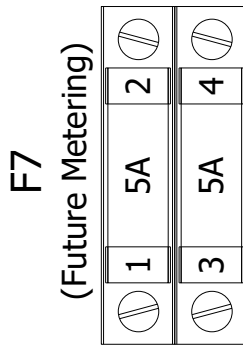
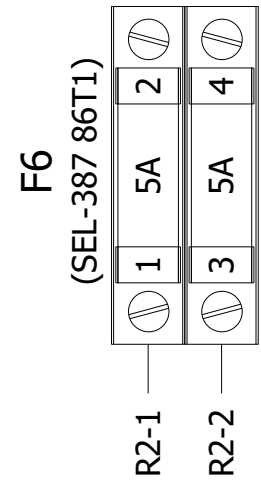
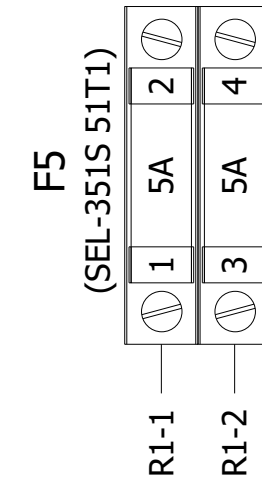
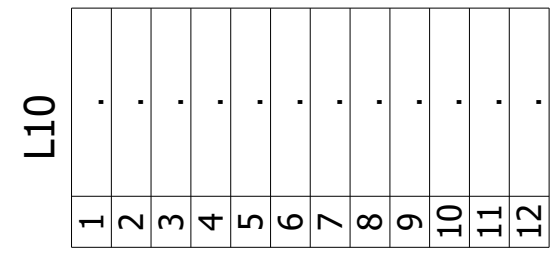
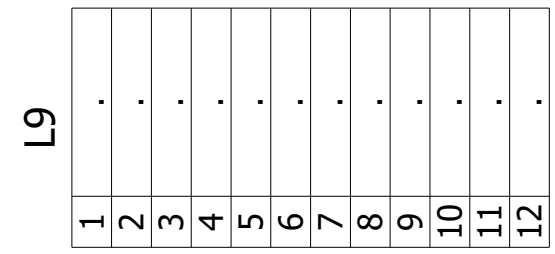
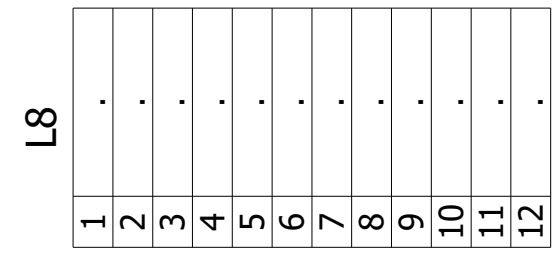
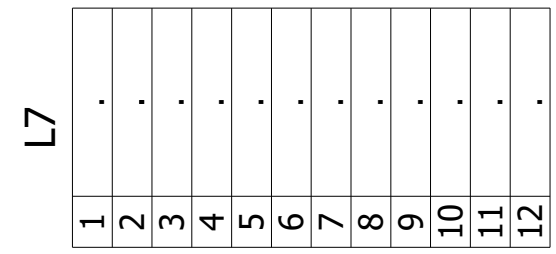
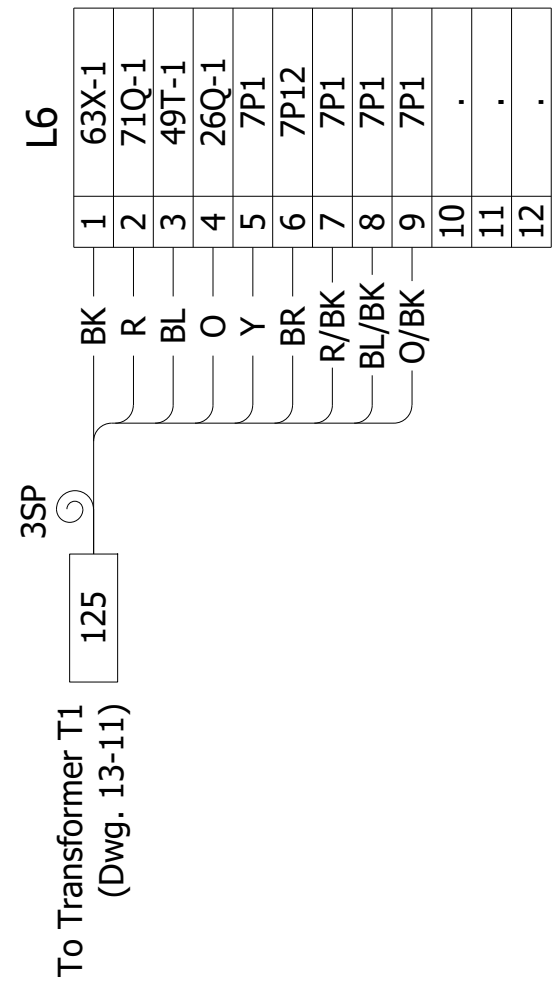
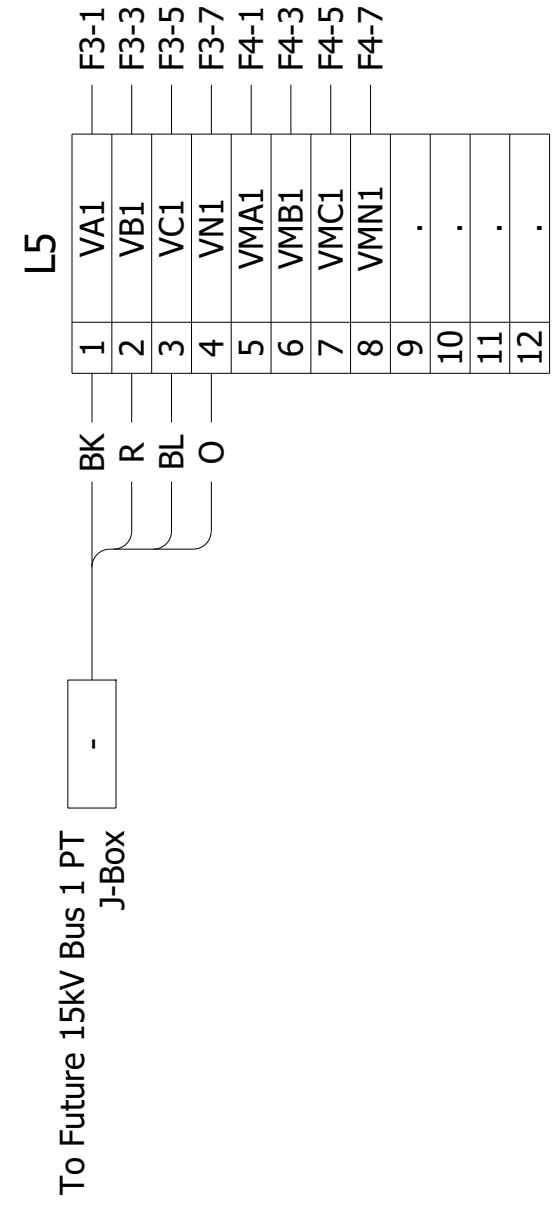
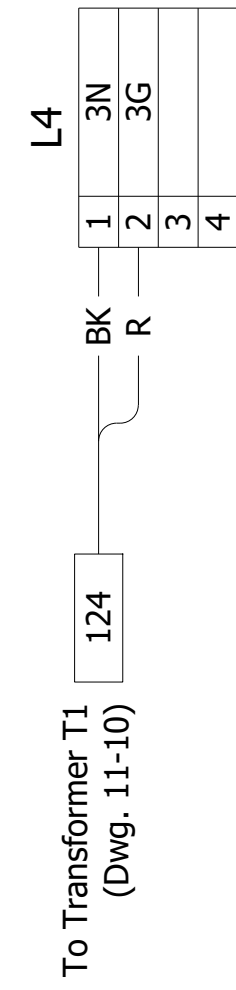
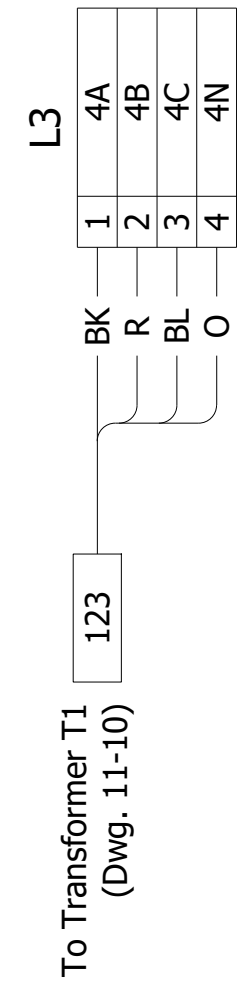
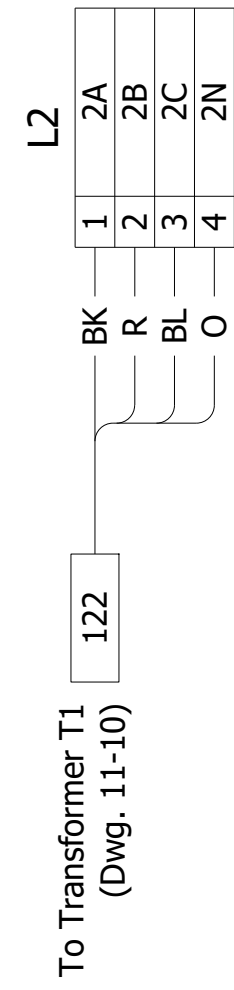
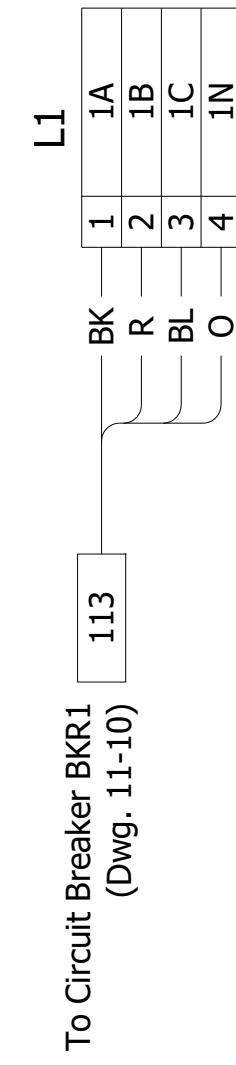
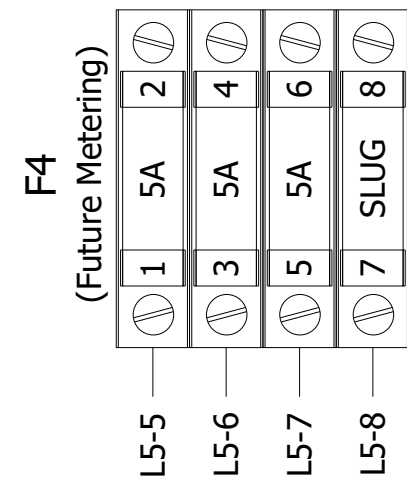
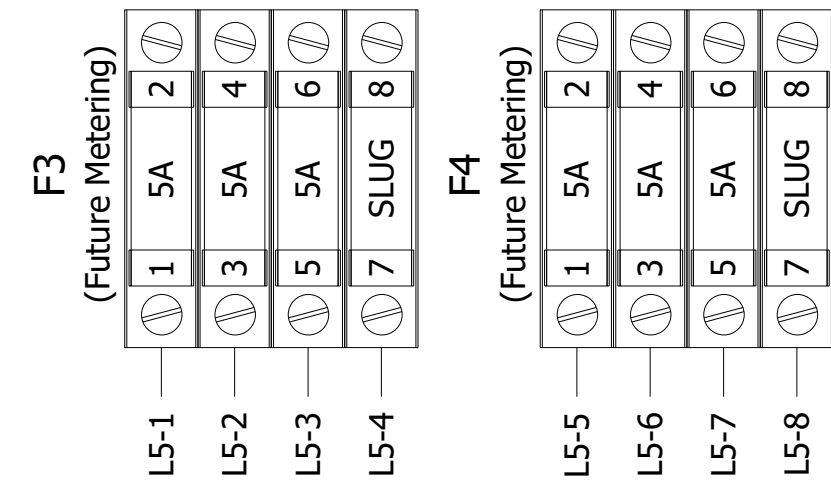
NAME PLATE NOTES:

1. PROVIDE BLACK NAMEPLATES WITH WHITE ENGRAVED LETTERS.



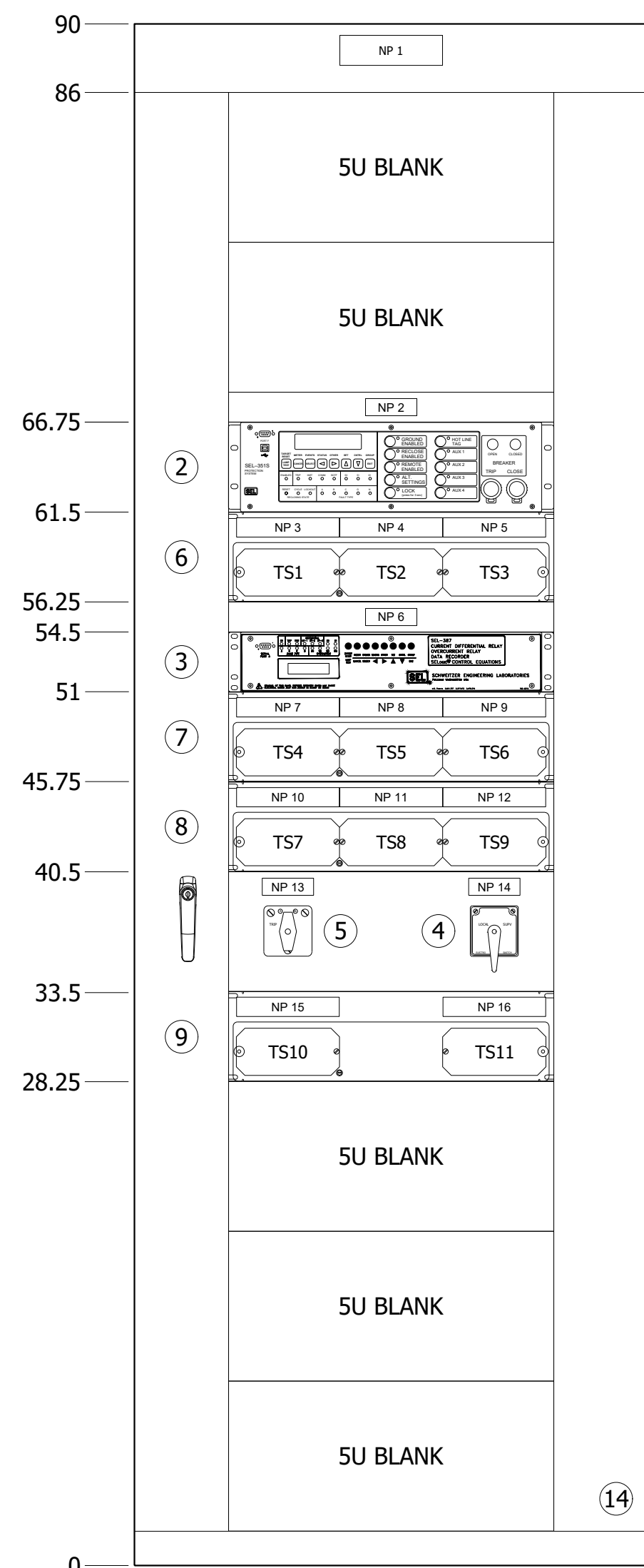
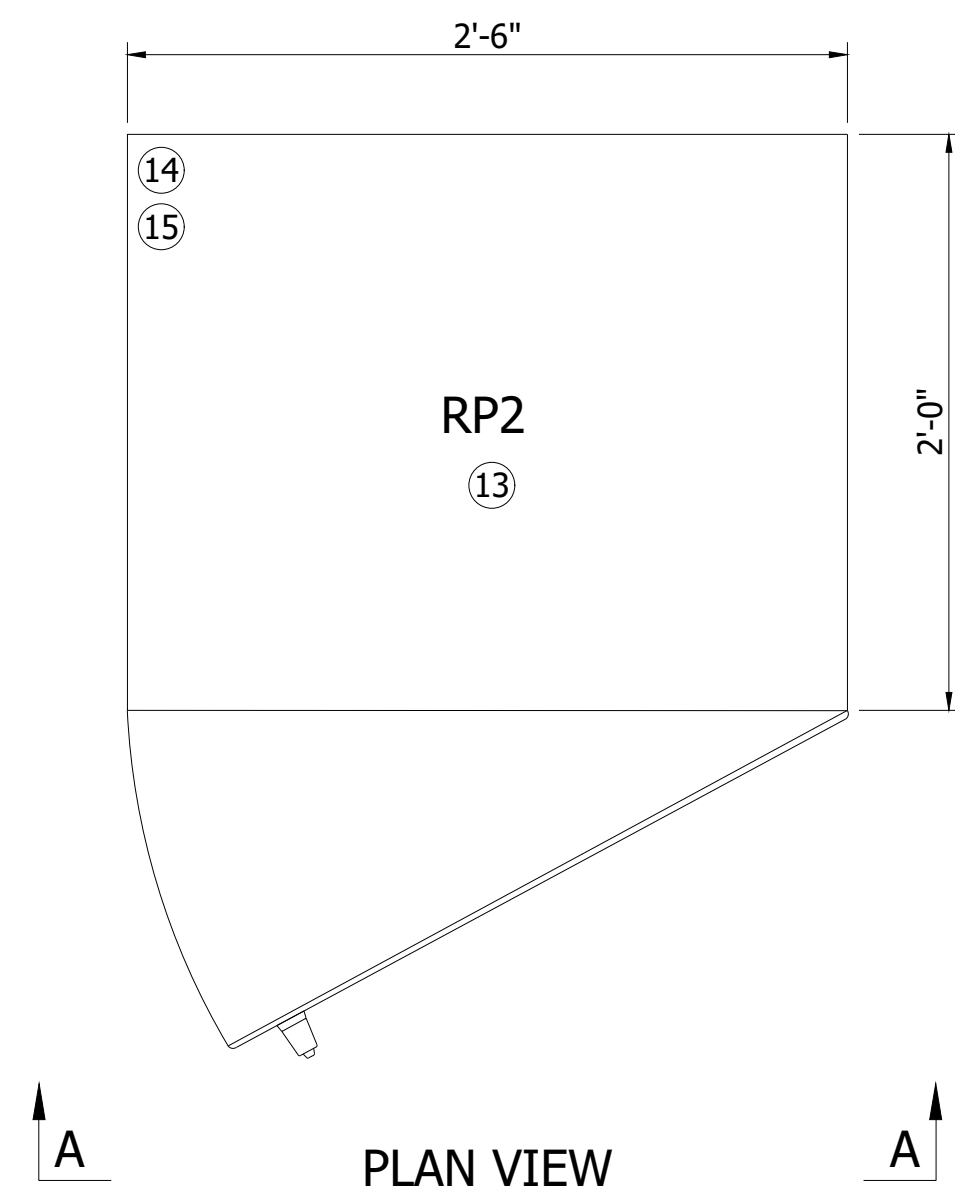
PRELIMINARY
NOT FOR
CONSTRUCTION

						RP1 RELAY PANEL LAYOUT TRANSFORMER T1 IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
				www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895			
0	ISSUED FOR BID	GB	NH	5/16/2023	ENGR. N. HALL	CRK'D BY S. PACKWOOD	SCALE NONE
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	OWN BY G. BODENSTEIN	DATE 12/28/2022	FILE NAME IRT-22-01
						PROJECT NO. MI0592107	DRAWING NO. 22-01



**PRELIMINARY
NOT FOR
CONSTRUCTION**

		2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895		RP1 RELAY PANEL WIRING IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
0 NO.	ISSUED FOR BID REVISION AND RECORD OF ISSUE	GB BY	NH ENGR.	5/16/2023 DATE	ENGR N. HALL
					CHK'D S. PACKWOOD
					DWN G. BODENSTEIN
					DATE 12/28/2022
					SCALE NONE
					FILE IRT-22-02
					PROJECT NO. MI0592107
					DRAWING NO. 22-02



RELAY PANEL RP2
View A-A

SEL-351S (51T2)

SEL-387 (87T2)

ITEM	DESCRIPTION	QUANTITY	MANUFACTURER	CATALOG #
1	30"W X 90"H X 24"D RELAY RACK PANEL	1		
2	SEL-351S, FEEDER OVER CURRENT PROTECTION AND CONTROL, 3 VOLTAGE INPUTS, HORIZONTAL RACK, STANDARD INTERFACE INCLUDING USB PLUS INDOOR SAFELock TRIP/CLOSE PUSHBUTTONS, 125VDC, (2)10/100 BASE-T, E1A-485 5AMP PHASE/NEUTRAL, STANDARD PROTOCOL	1	SEL	0351S7XHD3E54X1
3	SEL-387, CURRENT DIFFERENTIAL AND OVERCURRENT RELAY, STANDARD FIRMWARE, 125VDC, 5AMP PHASE/NEUTRAL/ HORIZONTAL RACK MOUNT, STANDARD PROTOCOL	1	SEL	0387003X5HXX4XX
4	43L/S LOCAL/SUPERVISORY CONTROL SWITCH -- TWO DECK -- MAINTAINED CONTACTS -- NO OFF POSITION -- WITH PISTOL GRIP HANDLE -- NAMEPLATE ENGRAVING: TITLE "43L/S", POSN #1 "LOCAL", POSN #2 "SUPV" (ENGRAVING CODE 010D-2L14L).	1	ELECTROSWITCH	24202D
5	86LO, MANUAL RESET LOCKOUT RELAY - SERIES 24 - 125 VOLTS DC - COIL STYLE "D" 20 MAIN CONTACTS: 10 NORMALLY OPEN, 10 NORMALLY CLOSED - WITH TARGET. "TRIP" (RED) AND "RESET" (BLACK) - OVAL FIXED HANDLE, 86, WITH LED LIGHTS, AMBER/BLUE, 125 VOLTS DC	1	ELECTROSWITCH	78PB05MU
6	TEST SWITCH, RACK MOUNT ASSEMBLY, POSITION "A" (1)8C,2P, POSITION "B" (1)10P, POSITION "C" (1)10P WITH 3 RACK UNIT MOUNTING PLATE, SWITCHES IN LOWER POSITION FT19R-3RU	1	ABB	FRXH018001001B
7	TEST SWITCH, RACK MOUNT ASSEMBLY, POSITION "A", "B", "C" (3)6C,4P WITH 3 RACK UNIT MOUNTING PLATE, SWITCHES IN LOWER POSITION FT19R-3RU	1	ABB	FRXH014014014B
8	TEST SWITCH, RACK MOUNT ASSEMBLY, POSITION "A", "B", "C" (3)10P WITH 3 RACK UNIT MOUNTING PLATE, SWITCHES IN LOWER POSITION FT19R-3RU	1	ABB	FRXH001001001B
9	TEST SWITCH, RACK MOUNT ASSEMBLY, POSITION "A" (1)10P, POSITION "B" BLANK, POSITION "C" (1)10P WITH 3 RACK UNIT MOUNTING PLATE, SWITCHES IN LOWER POSITION FT19R-3RU	1	ABB	FRXH001000001B
10	TERMINAL BLOCK, 12 POINT, GE TYPE EB-25	AS REQUIRED	GE	12EB25B12
11	SHORTING TERMINAL BLOCK, 4 POINT, GE TYPE EB-27	AS REQUIRED	GE	4EB27B04
12	TWO POLE FUSE BLOCK, 250V WITH NON FUSES. FUSE SIZES AS PER DRAWINGS	AS REQUIRED	BUSSMANN	H25030-2
13	RELAY PANEL 2700K (800 LUMENS) 9 WATT LED A19 LIGHT BULB WITH PORCELAIN FIXTURE AND GUARD. MOUNTED AT TOP.	1		
14	RELAY PANEL 120 VAC, 15AMP SINGLE POLE DOOR LIGHT SWITCH. MOUNTED NEAR TOP OF DOOR PANEL	1		
15	RELAY PANEL 120 VAC, 15AMP GFI DUPLEX RECEPTACLE, MOUNTED NEAR BOTTOM OF PANEL	1		

NOTES:

1. PROVIDE SUFFICIENT TERMINAL BLOCKS FOR THE WIRING OF THE EQUIPMENT BEING INSTALLED AND THEIR ASSOCIATED CABLES, PLUS 10% SPARE.
2. PROVIDE A LIKE AMOUNT OF TERMINAL BLOCKS AND SPARES FOR ANY FUTURE EQUIPMENT.

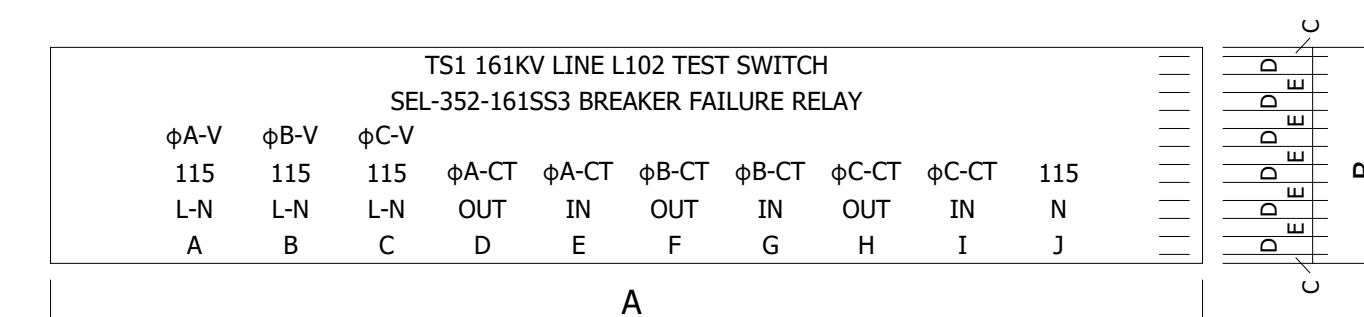
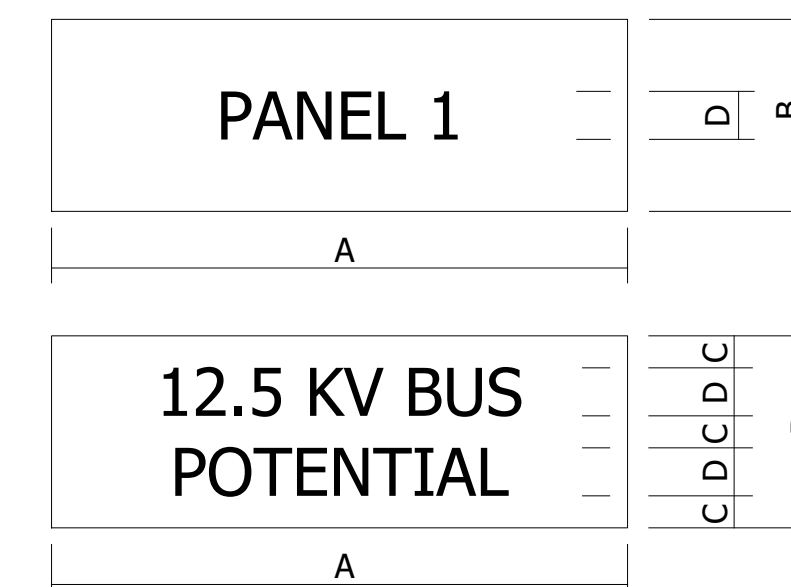
NAMEPLATE SIZE NO.	NAMEPLATE DIMENSIONS				
	A	B	C	D	E
1	1 1/8	7/16	1/16	1/8	-
2	1 1/2	9/16	1/8	3/32	-
3	1 3/4	5/8	1/8	1/8	-
4	2 1/4	3/4	1/8	3/16	-
5	3	1	7/32	3/16	7/64
6	4	1 1/4	1/4	1/4	1/8
7	6	1 3/4	3/8	5/16	13/64
8	6	1 1/8	3/64	3/32	3/32

NAME PLATE NOTES:

1. PROVIDE BLACK NAMEPLATES WITH WHITE ENGRAVED LETTERS.

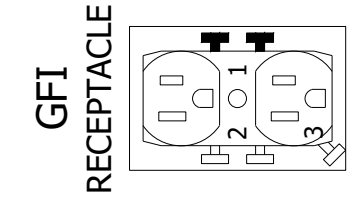
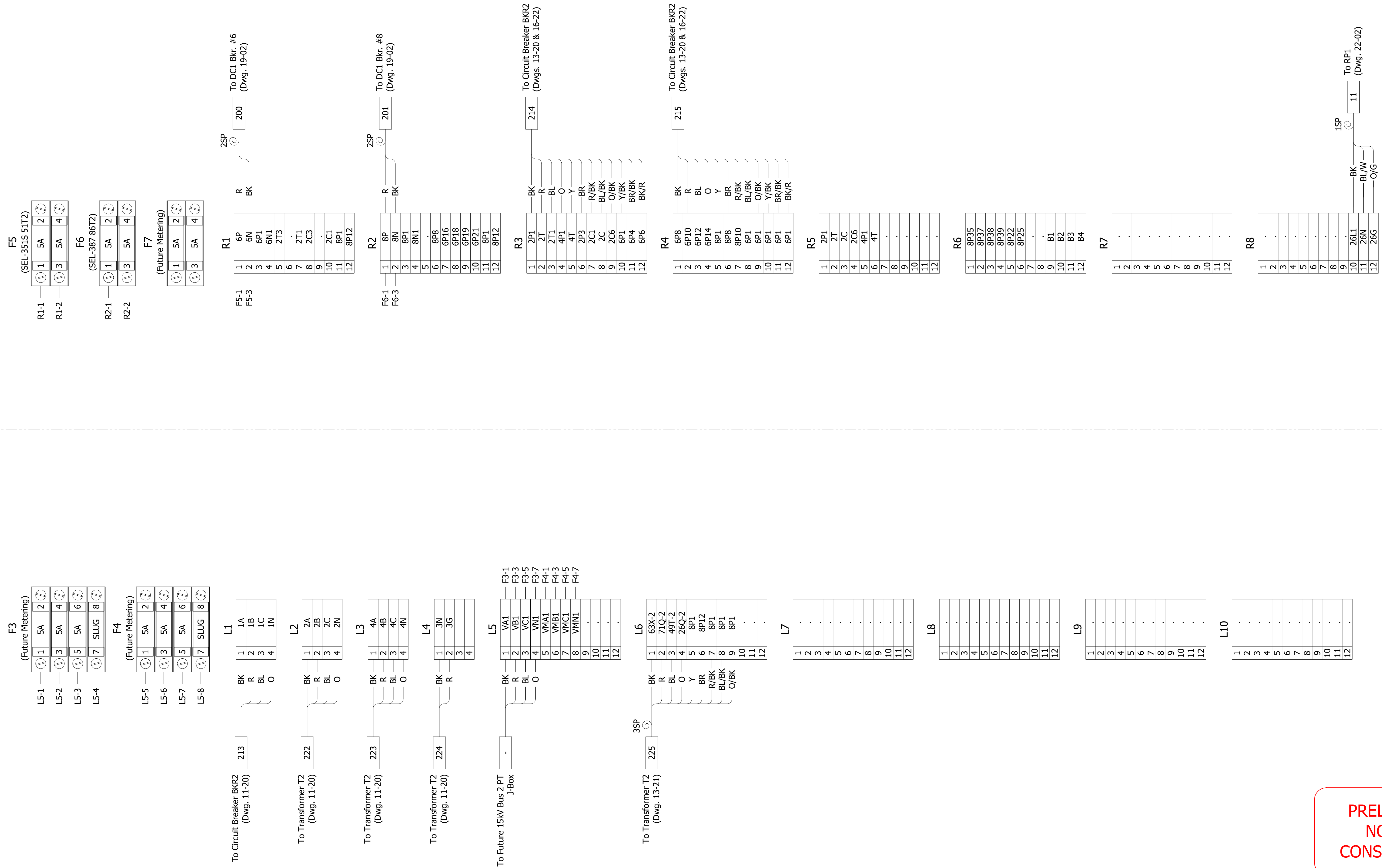
PANEL NAMEPLATES					
NP	SIZE	DESCRIPTION	NP	SIZE	DESCRIPTION
1	7	RP2 Transformer T2 Protection	11	8	TS8 SEL-387 (87T2) Test Swtches
2	5	SEL-351S (51T2) Main Overcurrent Relay	12	8	TS9 SEL-387 (87T2) Test Swtches
3	8	TS1 SEL-351S (51T2) Main CT's	13	5	86T2 Transformer Lockout Relay
4	8	TS2 SEL-351S (51T2) Main Test Swtches	14	5	43L/S Local Supevisory Switch L S
5	8	TS3 SEL-351S (51T2) Main Test Swtches	15	8	TS10 86T2 Test Swtches
6	5	SEL-387 (87T2) Transformer Differential Relay	16	8	TS11 43L/S T2 Test Swtches
7	8	TS4 SEL-387 Breaker BKR2 CT's HV Side			
8	8	TS5 SEL-387 Transformer T2 CT's LV Side			
9	8	TS6 SEL-387 Feeder 2 CT's			
10	8	TS7 SEL-387 (87T2) Test Swtches			

TYPICAL NAMEPLATE DETAIL



**PRELIMINARY
NOT FOR
CONSTRUCTION**

						RP2 RELAY PANEL LAYOUT TRANSFORMER T2 IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
				www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895			
0	ISSUED FOR BID	GB	NH	5/16/2023	ENGR. N. HALL	CRK'D BY S. PACKWOOD	SCALE NONE
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	OWN BY G. BODENSTEIN	DATE 12/28/2022	FILE NAME IRT-22-03
						PROJECT NO. MI0592107	DRAWING NO. 22-03



PRELIMINARY
NOT FOR
CONSTRUCTION

GND 1 2 3 4 5 6 7 8 9 10 11 12

				2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895	
RP2 RELAY PANEL WIRING IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI		SCALE: NONE PROJECT NO.: MI0592107		DRAWING NO.: 22-04	
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DATE
0	ISSUED FOR BID	GB	NH	5/16/2023	12/28/2022
ENGR. N. HALL DWN BY G. BODENSTEIN		CHK'D BY S. PACKWOOD		DATE 12/28/2022 FILE NAME IRT-22-04	