



Substation Structure and Material Package Specification

City of Negaunee
Irontown Substation



Seth Packwood
5/16/23

Prepared by:
Power System Engineering, Inc.

May 16, 2023

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CITY OF NEGAUNEE

IRONTOWN SUBSTATION STRUCTURE AND MATERIAL PACKAGE

Furnish and deliver Structure and Material Package
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 the structure and material package.

Sealed Bids will be received at City of Negaunee City Hall, 319 West Case Street, P.O. Box 70, Negaunee, MI 49866, until June 13th, 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 STRUCTURE AND MATERIAL PACKAGE - Submitted by (Bidder's name)".

The Bidder shall include evidence of having satisfactorily furnished and delivered similar structure and materials 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.

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SECTION 00 21 13 – INSTRUCTIONS TO BIDDERS

CITY OF NEGAUNEE

IRONTOWN SUBSTATION STRUCTURE AND MATERIAL PACKAGE

PART 1 - GENERAL

1.1 INDEX

- A. Part 1 - General
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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 Structure and Material Package 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 STRUCTURE AND MATERIALS PACKAGE

*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 Price to furnish and deliver the Irontown substation structure and material package as specified:

Quoted Price – structure and material package \$ _____

\$ _____ dollars and _____ cents.

Exceptions to Base Bid shall be clearly identified on a separate sheet indicating all equipment that deviates from the specifications herein. The Bidder may present exceptions to the Base Bid as an Alternative Bid and the Owner will evaluate and award the Contract with considerations to any exceptions to the Base Bid.

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

Quoted Price – structure and material package \$ _____

\$ _____ dollars and _____ cents.

The equipment proposed is strictly in accordance with the specifications; if not, list all exceptions clearly on a separate sheet and identify them as such. **(Yes/No)** _____

Is sales tax omitted as specified in the base bid. **(Yes/No)** _____

3. Delivery (after receipt of order) for Irontown substation:

a. Structural loading calculations _____ days

b. Anchor bolt plan _____ days

c. Bill of materials _____ days

d. Review drawings _____ days

4. Material delivery (after receipt of order) for Irontown substation:

a. Anchor bolts _____ days

b. Substation materials _____ days

- c. Steel structures _____ days
- d. Final drawings _____ days

5. List items which will be shipped unassembled and require assembly in the field:

6. 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.

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

8. 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: _____

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SECTION 00 42 00 – BID BOND

CITY OF NEGAUNEE

IRONTOWN SUBSTATION STRUCTURE AND MATERIAL PACKAGE

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: April 24th, 2023

PROJECT: Structure and Material Package

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 STRUCTURE AND MATERIAL PACKAGE

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 the Substation Structure and Material Package 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

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SECTION 00 61 13 – PERFORMANCE BOND

CITY OF NEGAUNEE

IRONTOWN SUBSTATION STRUCTURE AND MATERIAL PACKAGE

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 a Substation Structure and Material Package 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

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SECTION 00 61 14 – PAYMENT BOND

CITY OF NEGAUNEE

IRONTOWN SUBSTATION STRUCTURE AND MATERIAL PACKAGE

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: _____

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SECTION 00 72 00 – GENERAL CONDITIONS

CITY OF NEGAUNEE

IRONTOWN SUBSTATION STRUCTURE AND MATERIAL PACKAGE

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

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SECTION 00 72 01 – SUPPLEMENTARY CONDITIONS

CITY OF NEGAUNEE

IRONTOWN SUBSTATION STRUCTURE AND MATERIAL PACKAGE

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. Codes and Standards
 9. Submittals
-

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 providing the structural calculations, structural steel, anchor bolts, electrical components, all associated drawings, installation manuals, and other necessary components for a complete and functioning substation material package for the Irontown Substation. The project also includes the four directly embedded lightning masts.
- 2.2 The lightning masts shall include a typical protective coating for the portion of the pole that is to be buried. It shall also include a location to attach grounding and lighting provisions.
- 2.3 This project is to provide the material package for a new substation to be known as the Irontown Substation.
- 2.4 The substation material package shall be delivered to the substation site or an Owner designated storage location and shall be shipped delivery FOB destination.
- 2.5 The substation will be jointly operated by the City of Negaunee and American Transmission Company (ATC). ATC will be purchasing the 138 kV structures and materials as noted on the drawings. The ATC structures and materials are not to be included in this bid.
- 2.6 It is desired to have the calculations and anchor bolts for the project as soon as possible so that construction can proceed on the Irontown Substation.
- 2.7 The structural steel, materials, etc. can be delivered on the packager's typical schedule or as defined on the bid form. It is recommended that shipments be consolidated as much as is practical for the project.
- 2.8 The structures are preferred to be tubular steel with all mounting locations for equipment. Special attention should be taken in effort to reduce locations conducive to bird nesting.

3 OWNER FURNISHED MATERIALS AND LABOR

The Owner will provide:

- 3.1 Transformer.
- 3.2 Circuit switcher.
- 3.3 Reclosers.

3.4 Relay panels with relays.

3.5 Items as noted on the plans as being provided by the Owner.

4 WORK AND MATERIALS BY OTHERS

4.1 Work and material provided by others includes:

A. Labor of installation including, grading, fencing, foundations, conduit, ground grid, etc.

B. The substation control building with the indoor equipment and materials.

C. Unloading and installation of the structure and materials package.

D. Metering.

E. Control wiring and outgoing feeder cable installation including all terminations.

F. Ground grid materials and labor.

G. Any other items noted to be performed by others.

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 transportation permitting to ship the material package to the Owner.

A. The Owner will obtain the conditional use permit (if required), building permit, and the Erosion Control Storm Water Management Plan permit. It is not anticipated that the material packager will need permits, other than shipping permits, if required.

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 invoicing to the Owner on a monthly, quarterly, or at the end of the project basis per the Contractor's typical invoicing timeframe. It is also recommended to send 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.

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 or 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. Provide approval data to the Engineer.
 - 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 complete in all respects. Provide approval data to the Engineer.

8 CODES AND STANDARDS

- 8.1 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 Electric Safety Code (NESC)
 - National Fire Protection Association (NFPA)
 - National Electric Code (NEC)
 - Occupational Safety and Health Act (OSHA)
- 8.2 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)

8.3 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.

9 SUBMITTALS

9.1 Schedule:

- A. The Contractor shall within ten (10) days of award of the Contract submit a proposed schedule identifying the first day of each week. The schedule shall show start and completion of activities.
- B. The Contractor shall furnish with the schedule a list of delivery dates for materials furnished by the Contractor to be incorporated in the project.
- C. The schedule and the material delivery dates shall be updated as may be necessary during the course of the project because of changes in the schedule or delivery dates, or if requested to do so by the Engineer.

9.2 Shop Drawings and Product Information:

- A. The Contractor shall submit electronic copies of shop drawings and product information for the Engineer's review as soon as possible after award of the Contract, as required in each section of these specifications or as defined below.
- B. The Contractor shall provide submittals for all equipment and materials provided by the Contractor. Bill of materials, product catalog sheets, brochures, product manuals and miscellaneous items can be submitted as PDF files. Drawings, such as structural steel details, erection drawings, anchor bolt plans, control building drawings, etc. (if part of this scope of work) can be submitted as PDF files during review. Closeout or record copies of drawings shall be provided in AutoCAD and PDF files. Other file types may also be acceptable and should be verified with the Engineer.
- C. The Contractor shall perform no work without submittals that have been approved by the Engineer. Equipment, materials and/or installation methods used without prior approval may be subject to rejection.
- D. The Contractor shall be responsible for checking shop drawings and product information prior to submittal for errors, correctness of details and conformance with the Contract, and for coordination between suppliers and subcontractors. The Contractor shall indicate with his submittal that he has checked and approved the shop drawings submitted.

9.3 Record Drawings:

- E. The substation material packager shall provide electronic copies of all drawings in AutoCAD format for the Owner's use as record for the substation.

END OF SECTION

DIVISION 5 - STRUCTURAL

SECTION 05 10 00 - SUBSTATION STRUCTURAL STEEL

SECTION INDEX

1. General
 2. Codes and Standards
 3. Materials
 4. Fabrication
 5. Fasteners
 6. Delivery
 7. Repair of Galvanizing
-

1 GENERAL

1.1 Scope

This section applies to supplying materials and the fabrication of steel structures for use in electrical substations. Structural and equipment bolts, nuts, and washers are required as specified on the drawings and as typically required for substation structures.

1.2 Substation Structure Supplier

- 1.2.1 It is the intent of these specifications that complete substations be fabricated and supplied by a single manufacturer regularly engaged in the fabrication of substation structures.
- 1.2.2 The manufacturer shall assign certified welders to all structural welding tasks and upon request shall submit certificates verifying that each person has passed tests specified by ASME or AWS, as applicable.
- 1.2.3 The manufacturer shall supply loading calculations used to design the steel and provide foundation loading reactions. This information shall be provided to the Engineer and the Owner in a PDF format. See the drawings for design loading requirements.
- 1.2.4 Anchor bolt patterns are to be symmetrical to reduce installation errors. The Contractor may use a non-symmetrical anchor bolt pattern if approved by the Engineer and the Owner.
- 1.2.5 The manufacturer shall provide: general arrangement drawings (if required), anchor bolt plan and details, erection drawings, steel details, bus cutting plan, bill of materials, equipment installation manuals, and any other information required to install the materials and steel provided by the manufacturer. The Engineer's and the Owner's general arrangement drawings will be made available to the Manufacturer. Manufacturer's drawings will be provided to the Engineer and the Owner for review in PDF or AutoCAD format. The review and final bill of materials can be provided as a drawing or Microsoft Word/Excel file.
- 1.2.6 One (1) set of hard copy shall be shipped with the steel for use on the job site. One (1) set of all final information shall be emailed to the Engineer and the Owner for construction and record purposes.
- 1.2.7 All equipment and materials, unless noted otherwise, are to be "or approved equal".

2 CODES AND STANDARDS

Work shall be in accordance with applicable codes and standards of the following organizations:

- American Society of Testing and Materials (ASTM)
- American Society of Civil Engineers (ASCE)
- American Welding Society (AWS)
- American Institute of Steel Construction (AISC)
- American Iron and Steel Institute (AISI)
- National Electrical Manufacturers Association (NEMA)

3 MATERIALS

Steel substation components shall conform to the following manufacturing standards:

- Design Loads for Buildings and Other Structures: ASCE 7
- Structural steel: ASTM A36
- Connection bolts and nuts: ASTM A394 or A307 galvanized
- Steel washers: ASTM A107
- Locknuts: M-F locknuts
- Anchor bolts: ASTM A307, A36
- Galvanizing: ASTM A123, A153, and A385

4 FABRICATION

- 4.1 Tubular steel structures are requested.
- 4.2 Fabricate structures in accordance with the erection drawings and AISC standards.
- 4.3 All welds shall be made in accordance with AWS standards using E-70 electrodes.
- 4.4 The material shall be straight, clean, and free of rust.
- 4.5 All cutting shall be neat and accurate to 1/32" plus or minus unless otherwise noted. Holes shall be no more than 1/16" larger than the nominal bolt diameter and shall be located with an accuracy of 1/32" plus or minus.
- 4.6 Metal protection: Steel work shall be hot dip galvanized after fabrication, unless otherwise specified. Galvanizing, tests, and inspection shall be in accordance with the latest revision of ASTM A123.
- 4.7 Straightening: Members which are bent or out of line after galvanizing shall be carefully straightened with use of a straightening roller machine. Use of sledges or other methods in which material or its finish may be mutilated shall not be allowed.
- 4.8 Marking: Each individual piece shall be identified with the correct part number as shown on the shop drawings. Marking shall be done by stamping numerals or letters

into the metal with not less than 1/2" high characters before galvanizing. The marking shall be clearly legible after galvanizing and shall be circled with a black marker.

- 4.9 Shop assembly: Subassemblies of structures shall be preassembled in shop to the extent necessary to ensure proper fit in field. Reaming or unfair holes will not be permitted.

5 FASTENERS

- 5.1 Furnish at least 5 percent overage of each size bolt, nut, washer, and locknut as shown on erection drawings.
- 5.2 Bolts, nuts, washers, locknuts, and similar hardware shall be galvanized in accordance with ASTM A153. Excess spelter shall be removed by centrifugal spinning.

6 DELIVERY

- 6.1 Delivery to be Delivery FOB destination. The substation material package shall be delivered to the substation sites or an Owner designated storage location. The Irontown Substation 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. An alternate delivery location in Negaunee may be the utility shop at 600 Cherry Street.
- 6.2 Provide notice of shipment to the Owner and the Engineer at least two working days before shipment and ahead of arrival.

7 REPAIR OF GALVANIZING

Each hole drilled after galvanizing or any damaged galvanizing shall be re-galvanized by painting with "Galvanox" type 1 by Carboline-Subox Div., or equal. Application in accordance with the manufacturer's recommendation.

END OF SECTION

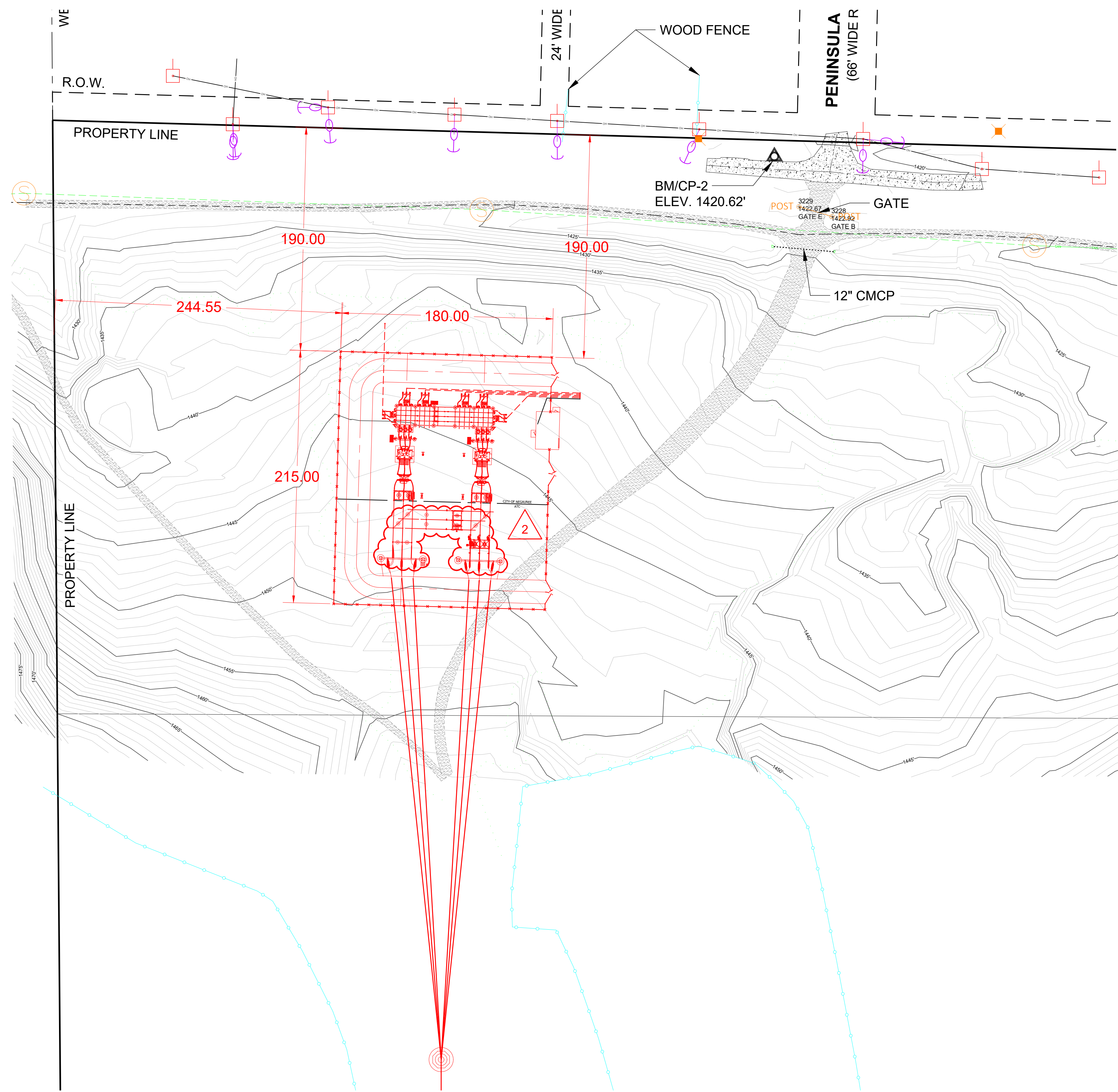
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TOPOGRAPHIC SURVEY

PREPARED FOR: POWER SYSTEM ENGINEERING, INC.

PART OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER
(SW 1/4 X SW 1/4) OF SECTION 6, TOWNSHIP 47 NORTH, RANGE 26 WEST,
CITY OF NEGAUNEE, MARQUETTE COUNTY, MICHIGAN

Bearings are referenced to Grid North NAD83 Michigan
State Plane, North Zone (2111). Elevation is referenced to
NAVD88.



LEGEND

- = POWER POLE
- = BENCHMARK / CONTROL POINT
- = TELEPHONE PEDESTAL
- = GUY ANCHOR
- = POST
- = EDGE OF ASPHALT
- = EDGE OF CRUSHED AGGREGATE
- = SANITARY CLEANOUT
- = CMCP = CORRUGATED METAL CULVERT PIPE
- = TREELINE
- = CHAIN LINK FENCE
- = SANITARY FORCEMAIN
- = ROAD CENTERLINE
- = OVERHEAD ELECTRIC
- = UNDERGROUND TELEPHONE
- = MAJOR CONTOUR (5' INTERVAL)
- = MINOR CONTOUR (1' INTERVAL)
- = PROPERTY BOUNDARY (SEE BOUNDARY SURVEY)

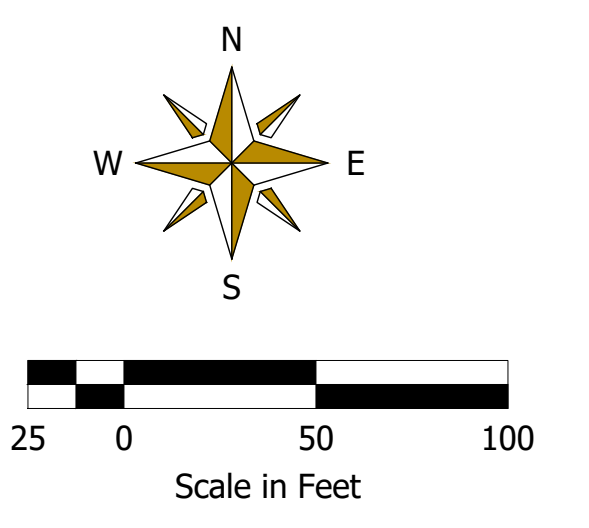
** UTILITIES LOCATED BASED ON A MISS DIG ONE-CALL UTILITY LOCATE
UTILITY LOCATIONS SHOULD BE FIELD VERIFIED BEFORE ANY EXCAVATION OR CONSTRUCTION

NOTES:

1. See drawing 02-02 for original property and topographic survey information.
2. American Transmission Company (ATC) is providing the design for the 138 kV Transmission Line and Substation loop through. A point of ownership line for the above grade structures and foundations is shown on the plan view.
3. Installation contractor to call in all locates for construction purposes.
4. Negaunee is the owner
ATC is American Transmission Company
Substation Material Packager TBD
Construction/Installation Contractor TBD
Distribution Line Contractor TBD

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

**PRELIMINARY
NOT FOR
CONSTRUCTION**



				PSE Power System Engineering, Inc.		2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8995		SITE PLAN IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
3	ISSUED FOR BID	GB	NH	5/16/2023					
2	ISSUED FOR REVIEW - ATC W.O. #605015	KAW	JWS	03-22-23					
1	ISSUED FOR REVIEW	GB	NH	02/21/2023					
NO. REVISION AND RECORD OF ISSUE		BY	ENGR.	DATE	ENGR.	DATE	FILE NAME	PROJECT NO.	DRAWING NO.
					N. HALL	8/10/2022	IRT-02-01	MI0592107	02-01

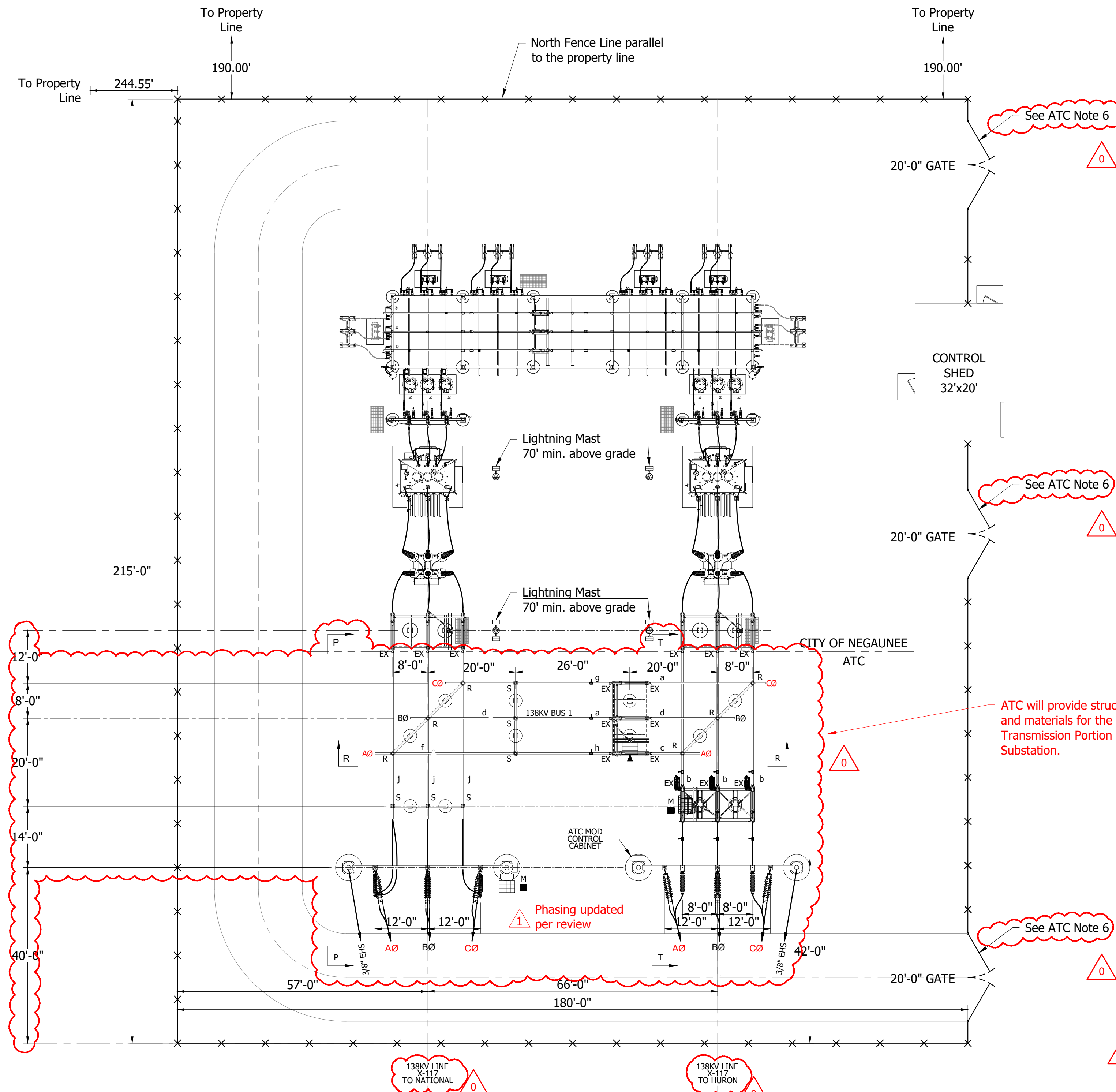
MINIMUM ELECTRICAL CLEARANCES - NEGAUNEE				
PHASE-PHASE VOLTAGE	RIGID CONDUCTORS		HEIGHT ABOVE FOUNDATION	
	TO GROUNDED PARTS	METAL TO METAL	BOTTOM OF INSULATOR OR BUSHING	TO LIVE PARTS
4.16 KV	6"	7"	8'-6"	8'-10"
14.4 KV	7"	12"	8'-6"	9'-0"
23 KV	10"	15"	8'-6"	10'-0"
34.5 KV	13"	18"	8'-6"	10'-0"
46 KV	17"	21"	8'-6"	10'-0"
69 KV	25"	31"	8'-6"	11'-0"
115 KV	42"	53"	8'-6"	12'-0"
138 KV	50"	63"	8'-6"	13'-0"
161 KV	58"	72"	8'-6"	14'-0"

TAKE-OFF STRUCTURE DESIGN LOADS SHALL BE THE MOST STRINGENT OF THE FOLLOWING:

CASE 1:
40 MPH wind load, with phase conductor tensions of 3000 lbs./wire at a ±15° vertical and ±15° horizontal pull off angle, and static wire tensions of 1500 lbs./wire at a ±15° vertical and ±20° horizontal pull off angle. Tensions include a 1/2 inch radial thickness of ice at 0° F. Loading must meet NESC rules 250B, 250C and 250D.

CASE 2:
40 Lbs./sq. ft. of wind load and the line tensions resulting from Case 1 and without ice load.

Contractor is responsible for verifying clearances and informing the engineer of any conflicts.



- NEGAUNEE NOTES:**
- See Dwg. 02-01 for the location of the substation on the property.
 - The Transmission structures and materials will be provided and installed by ATC and their contractor. This includes the expansion connector connecting to Negaunee's 138 kV Switches. See Point of interconnect line on the plan view.
 - The substation package for the Negaunee structures and materials is to provide structure calculations, anchor bolts, anchor bolt plan, steel detail & erection drawings, complete bill of materials, steel structures and electrical components as outlined in drawings 06-10 thru 06-21.
 - The Negaunee substation structure and material package will be installed by the Negaunee Construction contractor.
 - Negaunee is the common facility owner.

- ATC LEGEND:**
- R - RIGID BUS SUPPORT OR BUS TERMINAL
 - S - SLIP BUS SUPPORT
 - EX - EXPANSION BUS TERMINAL OR BUS SUPPORT
 - △ - BUS COUPLER
 - (with arrow) - LOW BUS (3 1/2" TUBULAR AL) 15'-6" BUS HEIGHT
 - (with arrow) - HIGH BUS (3 1/2" TUBULAR AL) 23'-6" BUS HEIGHT
 - ▲ - SWITCH OPERATOR (MANUAL)
 - M ■ - SWITCH OPERATOR (MOTOR)
 - (with circle) - GROUND ATTACHMENT POINT
 - (dashed) - BASE LINE
 - (dotted) - MATCHLINE
 - × - SECURITY FENCE

- ATC GENERAL NOTES:**
- CONTRACTOR SHALL FIELD DRILL A 1/4" DRAIN HOLE AT THE LOW POINT OF SAG IN EACH RUN OF TUBULAR BUS. THE LOCATION OF DRAIN HOLES SHALL BE ACCEPTABLE TO THE ENGINEER.
 - 336.4 KCML ACSR 26/7 VIBRATION DAMPENING CONDUCTOR SHALL BE INSTALLED INSIDE EACH HORIZONTAL RUN OF THE TUBULAR BUS. PRE-STRETCH CONDUCTOR PRIOR TO INSTALLATION.
 - MINIMUM ELECTRICAL CLEARANCES:
138KV PHASE TO PHASE = 63 INCHES
PHASE TO GROUND = 50 INCHES
 - BUS DESIGN SHORT CIRCUIT RATING: 40KA
 - CONTRACTOR SHALL INSTALL ALL COMPRESSION FITTINGS PER MANUFACTURER RECOMMENDATIONS AND INSTRUCTIONS.
 - TWO ATC STOCK #136794 FENCE SIGNS TO BE MOUNTED BACK TO BACK ON EACH GATE, 48-60 INCHES ABOVE GROUND SO THAT THE SIGN CAN BE READ WHEN GATE IS OPEN OR CLOSED.

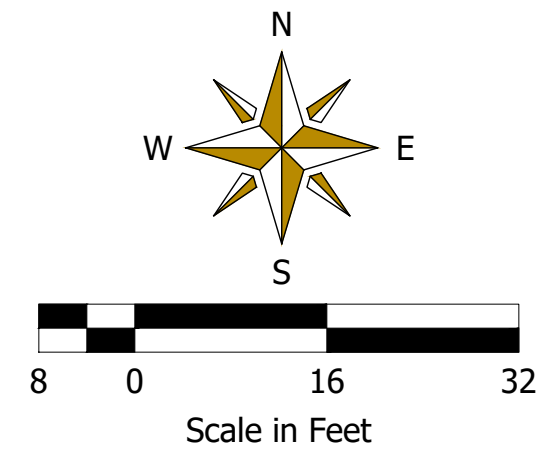
- REFERENCE DRAWINGS:**
- | | |
|-----------------------------|-----------|
| ATC 138KV SECTION - P-P | IRT-06-02 |
| ATC 138KV SECTION - R-R | IRT-06-03 |
| ATC 138KV SECTION - T-T | IRT-06-04 |
| ATC 138KV BUS DETAILS | IRT-06-05 |
| ATC MASTER BILL OF MATERIAL | IRT-09-01 |
| FOUNDATION PLAN | IRT-03-01 |

DRAWING APPROVAL
PLEASE CIRCULATE DRAWING(S) IN ORDER SHOWN BELOW:
Comments are needed by: BV, 04/17/23

	Name	Initial	Code	Date
PLN				
OPS				
PROT				
SCADA				
MAINT				
DE				
IT				
OTHER				

Codes: A = Approved for final
B = Approved with comments
C = Revise and resubmit

**PRELIMINARY
NOT FOR
CONSTRUCTION**



ATC BUS CUTTING SCHEDULE
3 1/2" SCH. 40 ALUM. TUBING

QTY.	Diagram	Dimensions
1	[Diagram a-c]	26'-0" x 11'-0"
3	[Diagram b-e]	31'-0" x 9'-0"
1	[Diagram d-f]	19'-0" x 19'-0"
1	[Diagram a-f]	27'-0" x 13'-0"
1	[Diagram g]	38'-0"
1	[Diagram h]	40'-0"
3	[Diagram j]	39'-0"
3*	[Diagram e-e]	9'-0" x 9'-0" x 9'-0" x 9'-0"

e - 138KV A-FRAME LEGS
* THE THIRD RIGID BUS ONLY NEEDS 1 CUT

REV CLOUD LEGEND
[Red cloud symbol] = REVISION CLOUD FOR ATC W.O. #605015

1 ISSUED FOR BID		GB	NH	5/16/2023	 www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895	OVERALL PLAN VIEW IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	SCALE 1/16" = 1'-0" FILE NAME IRT-06-01	PROJECT NO. MI0592107	DRAWING NO. 06-01
0 ISSUED FOR REVIEW - ATC W.O. #605015		MB	KAW	03-22-23					
ENGR	N. HALL	CHKD/APP'D	---						
DWN BY	G. BODENSTEIN	DATE	3/11/2022						

MINIMUM ELECTRICAL CLEARANCES - NEGAUNEE

PHASE-PHASE VOLTAGE	RIGID CONDUCTORS		HEIGHT ABOVE FOUNDATION	
	TO GROUNDED PARTS	METAL TO METAL	BOTTOM OF INSULATOR OR BUSHING	TO LIVE PARTS
4.16 KV	6"	7"	8'-6"	8'-10"
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138 KV	50"	63"	8'-6"	13'-0"
161 KV	58"	72"	8'-6"	14'-0"

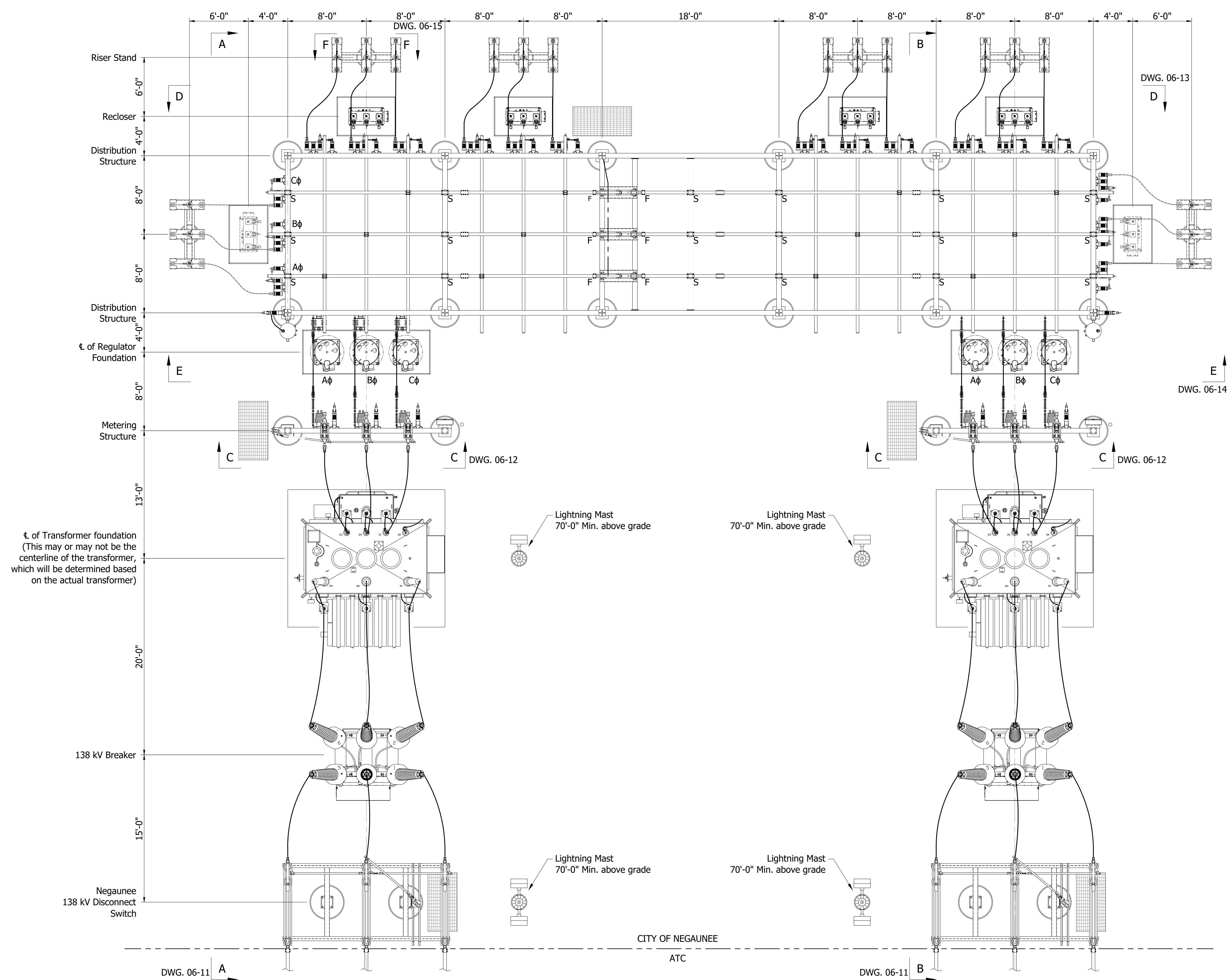
TAKE-OFF STRUCTURE DESIGN LOADS SHALL BE THE MOST STRINGENT OF THE FOLLOWING:

- CASE 1:**
40 MPH wind load, with phase conductor tensions of 3000 lbs./wire at a ±15° vertical and ±15° horizontal pull off angle, and static wire tensions of 1500 lbs./wire at a ±15° vertical and ±20° horizontal pull off angle. Tensions include a 1/2 inch radial thickness of ice at 0° F. Loading must meet NESC rules 250B, 250C and 250D.
- CASE 2:**
40 Lbs./sq. ft. of wind load and the line tensions resulting from Case 1 and without ice load.

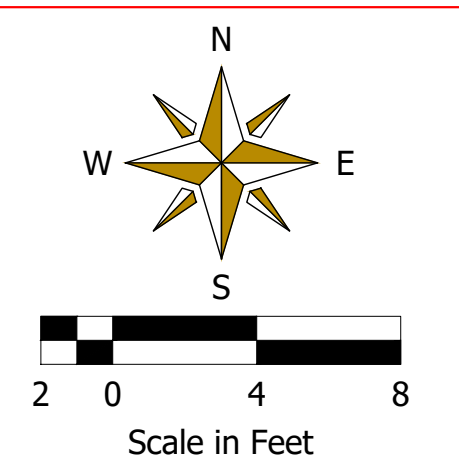
Contractor is responsible for verifying clearances and informing the engineer of any conflicts.

NOTES:

- See drawing 02-01 for the complete site plan and drawing 06-01 for the overall plan view.
- See drawing 03-01 for the foundation plan.
- Directly embedded lightning masts are to be provided by the packager as part of the substation structure & material package bid. Installation will be by the construction contractor.
- Lighting on the lightning masts will be provided and installed by the substation installation contractor.

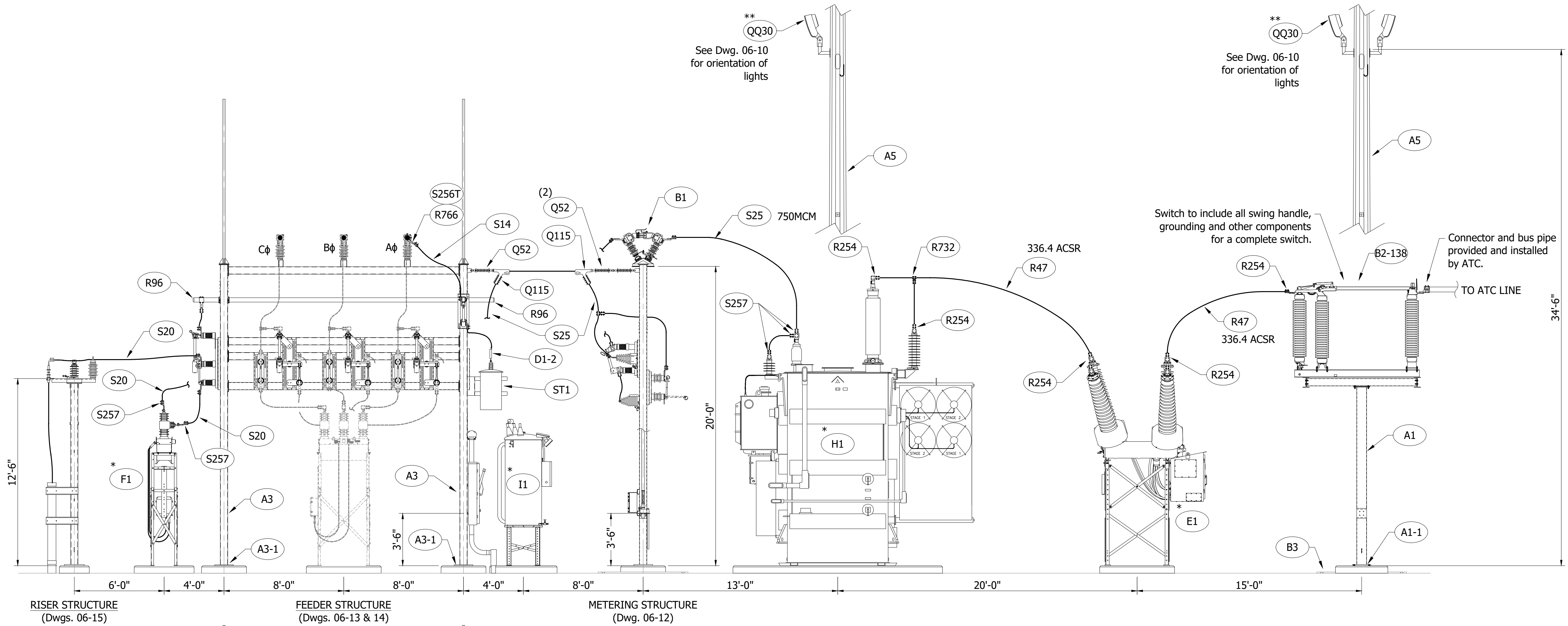


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NOT FOR
CONSTRUCTION**

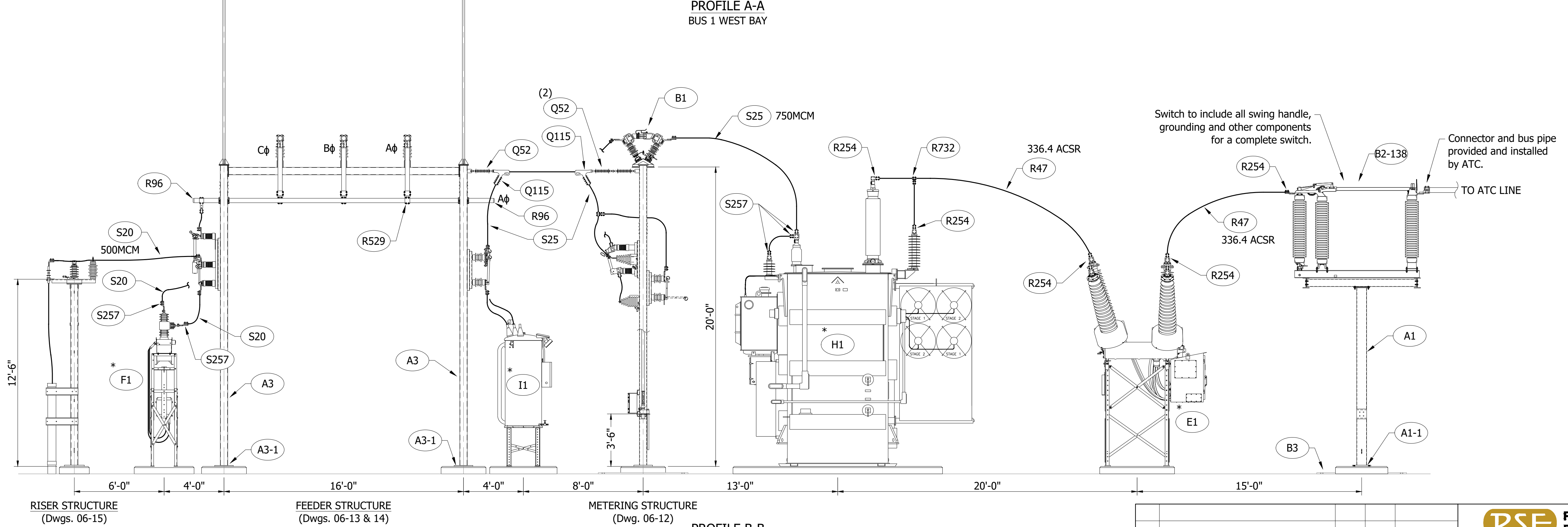


				2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895		PLAN VIEW IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI		
2	ISSUED FOR BID	GB	NH	5/16/2023	ENGR. N. HALL DWN BY G. BODENSTEIN	CHK'D APP'D. S. PACKWOOD DATE 3/11/2022	SCALE 3/16" = 1'-0" FILE NAME IRT-06-10	PROJECT NO. MI0592107 DRAWING NO. 06-10
1	ISSUED FOR REVIEW	GB	NH	02/21/2023				
NO. REVISION AND RECORD OF ISSUE					BY	ENGR.	DATE	

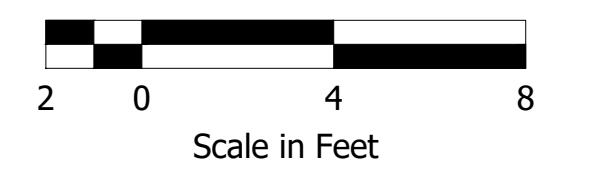
CITY OF NEGAUNEE
ATC



- NOTES:**
- * Provided by equipment manufacturer under separate contract with Negaunee, installed by installation contractor.
 - ** Provided and installed by installation contractor.
1. See drawing 06-10 for structure design loading and clearance requirements.
 2. All tubular steel structures are to accommodate grounding connections. The substation packager shall verify the grounding connector coordinates with the structure.
 3. The 138 kV Switch structure is intended to match height and strength of the ATC switch stands. See reference copy of ATC switch stands.
 4. All dimensions are approximate and the substation packager shall design the steel as necessary to accommodate the materials and equipment.
 5. All structures shall be grounded with 4/0 Awg. bare copper cable (Typical).



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NOT FOR
CONSTRUCTION**



NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE
0	ISSUED FOR BID	GB	NH	5/16/2023

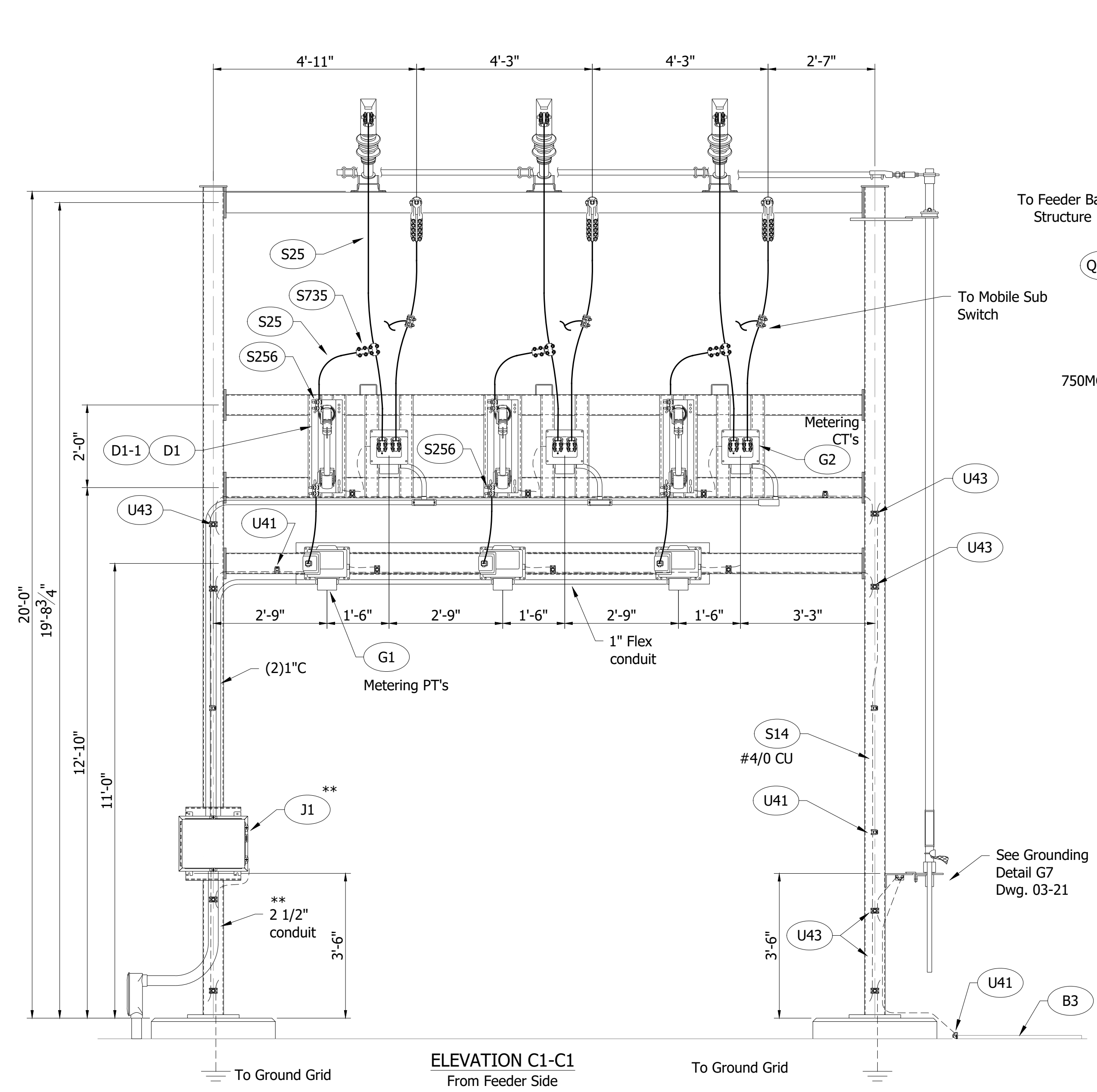
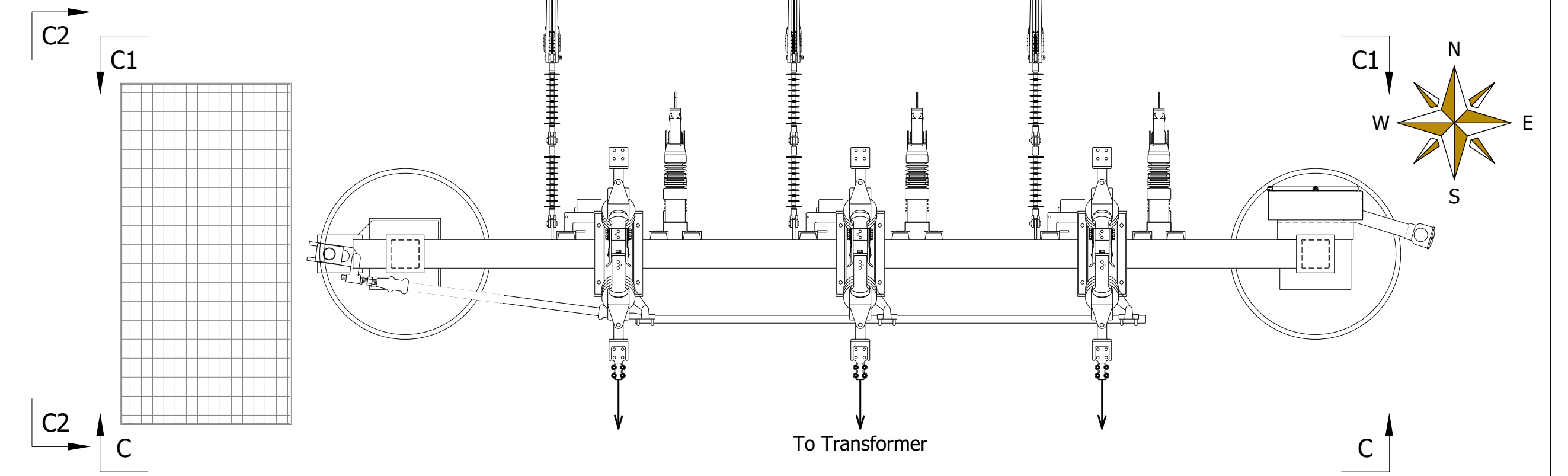
		2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895	
		ENGR. N. HALL DWN BY G. BODENSTEIN	CHG'D/APP'D. S. PACKWOOD DATE 3/11/2022
SCALE 1/4" = 1'-0"		PROJECT NO. MI0592107	DRAWING NO. 06-11
FILE NAME IRT-06-11			

PROFILE VIEWS
A-A, B-B
IRONTOWN SUBSTATION
CITY OF NEGAUNEE, MI

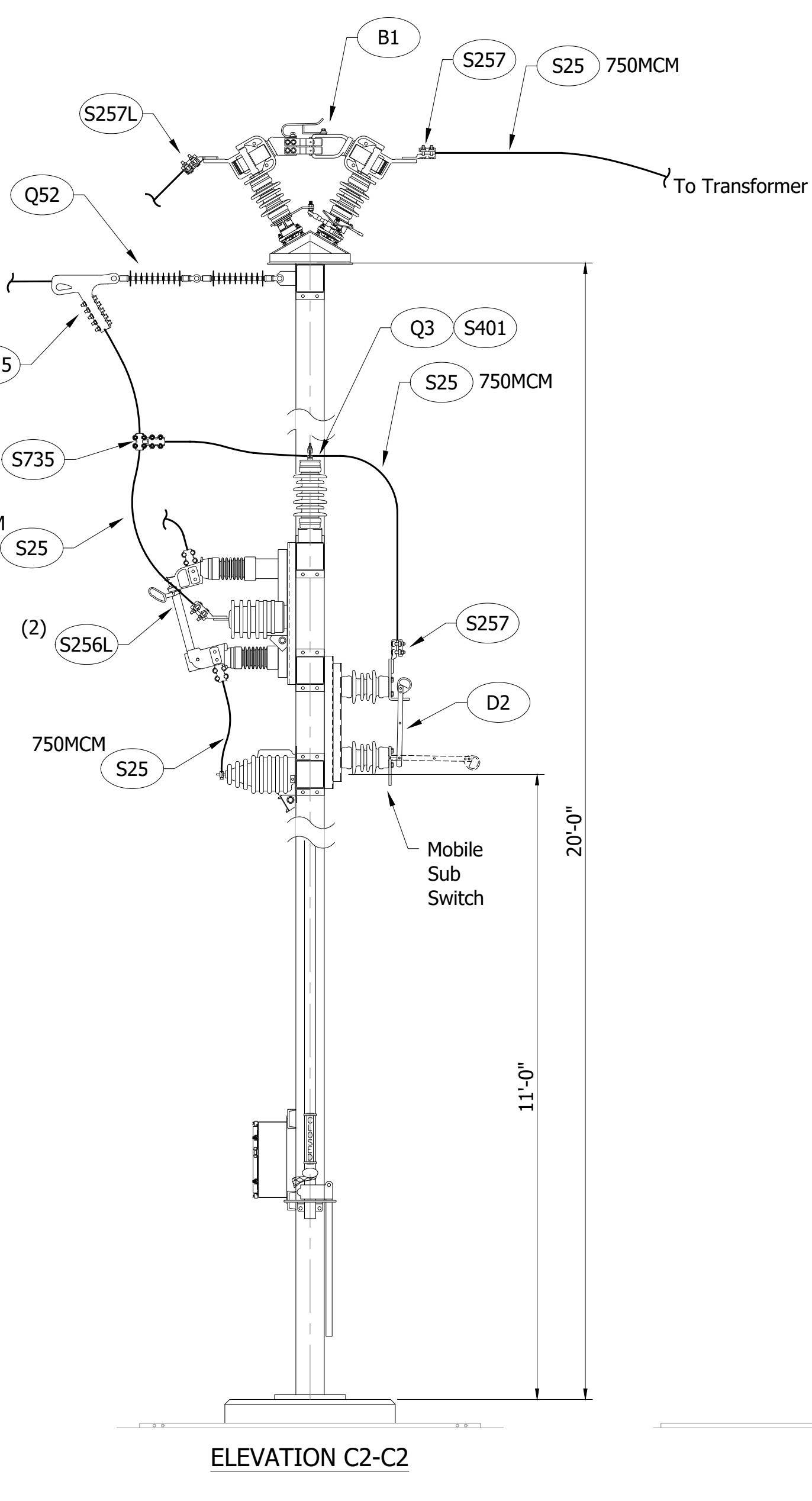
* Provided by equipment manufacturer under separate contract with Negaunee, installed by installation contractor.
 ** Provided and installed by installation contractor.

NOTES:

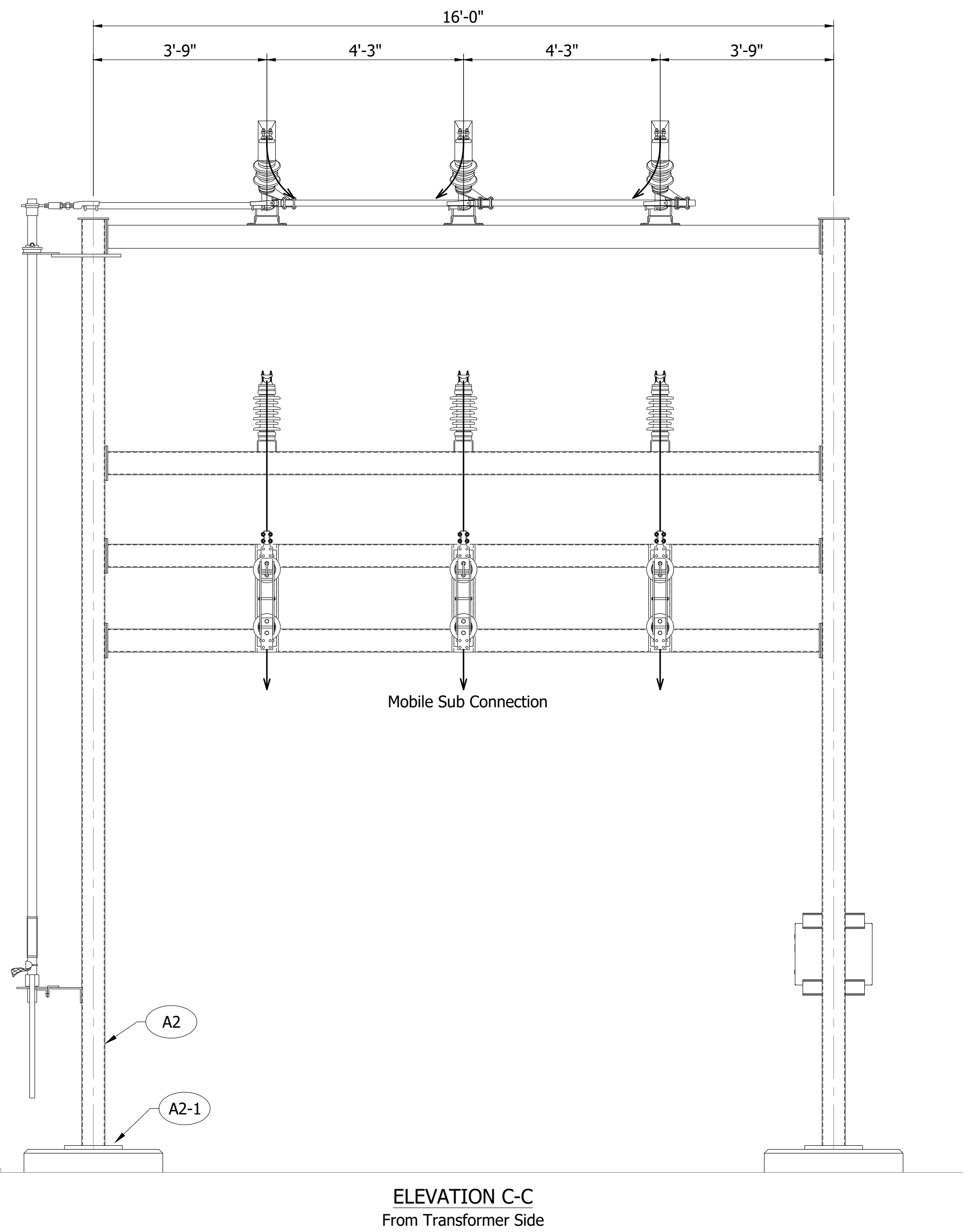
- 4/0 CU ground wire to be continuous across top of structure & down each leg for CT and VT case grounding.
- See drawing 06-10 for structure design loading and clearance requirements.



ELEVATION C1-C1
From Feeder Side



ELEVATION C2-C2

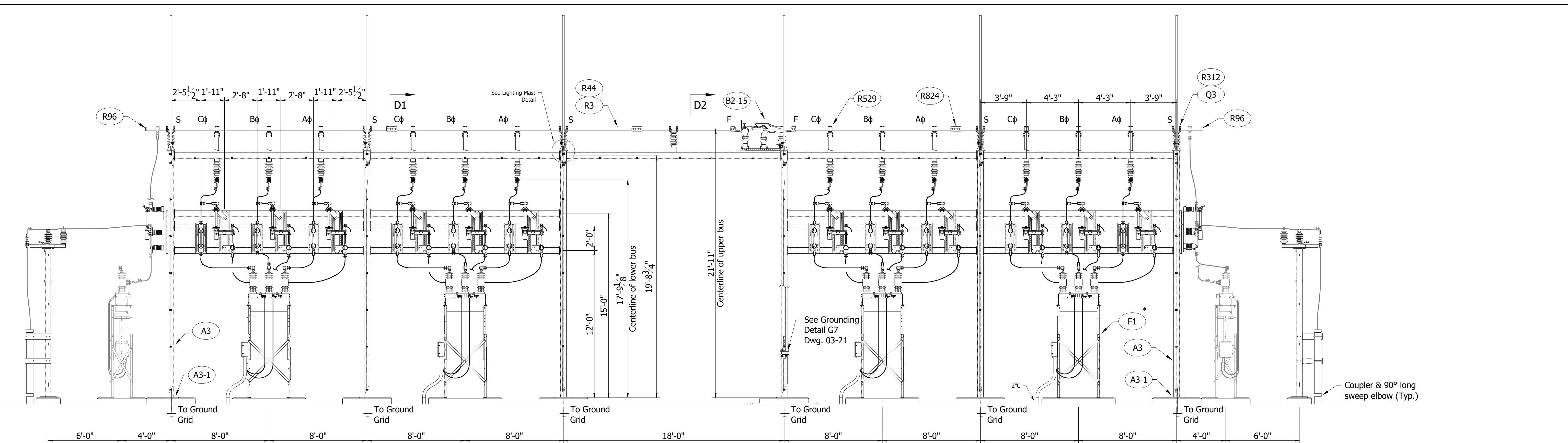


ELEVATION C-C
From Transformer Side

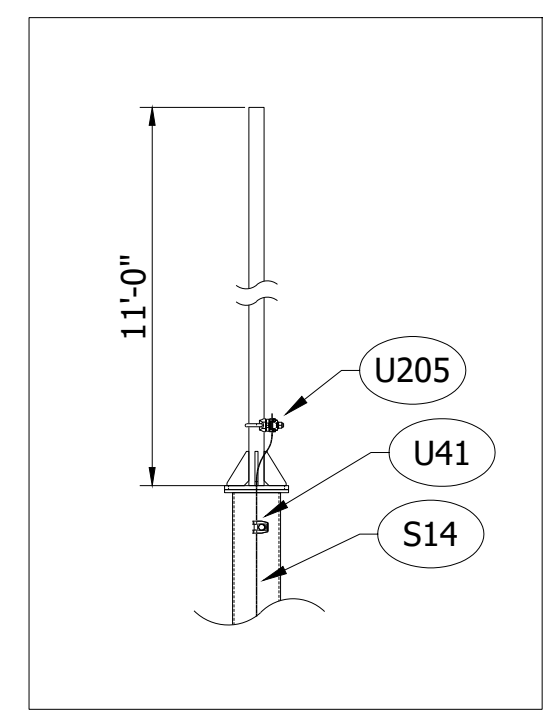
**PRELIMINARY
NOT FOR
CONSTRUCTION**



				PSE Power System Engineering, Inc.		15KV METERING STRUCTURE ELEVATIONS C-C 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	CHKD APPRD. S. PACKWOOD	SCALE 1/2" = 1'-0"
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DWN BY G. BODENSTEIN	DATE 3/11/2022	FILE NAME IRT-06-12
						PROJECT NO. MI0592107	DRAWING NO. 06-12



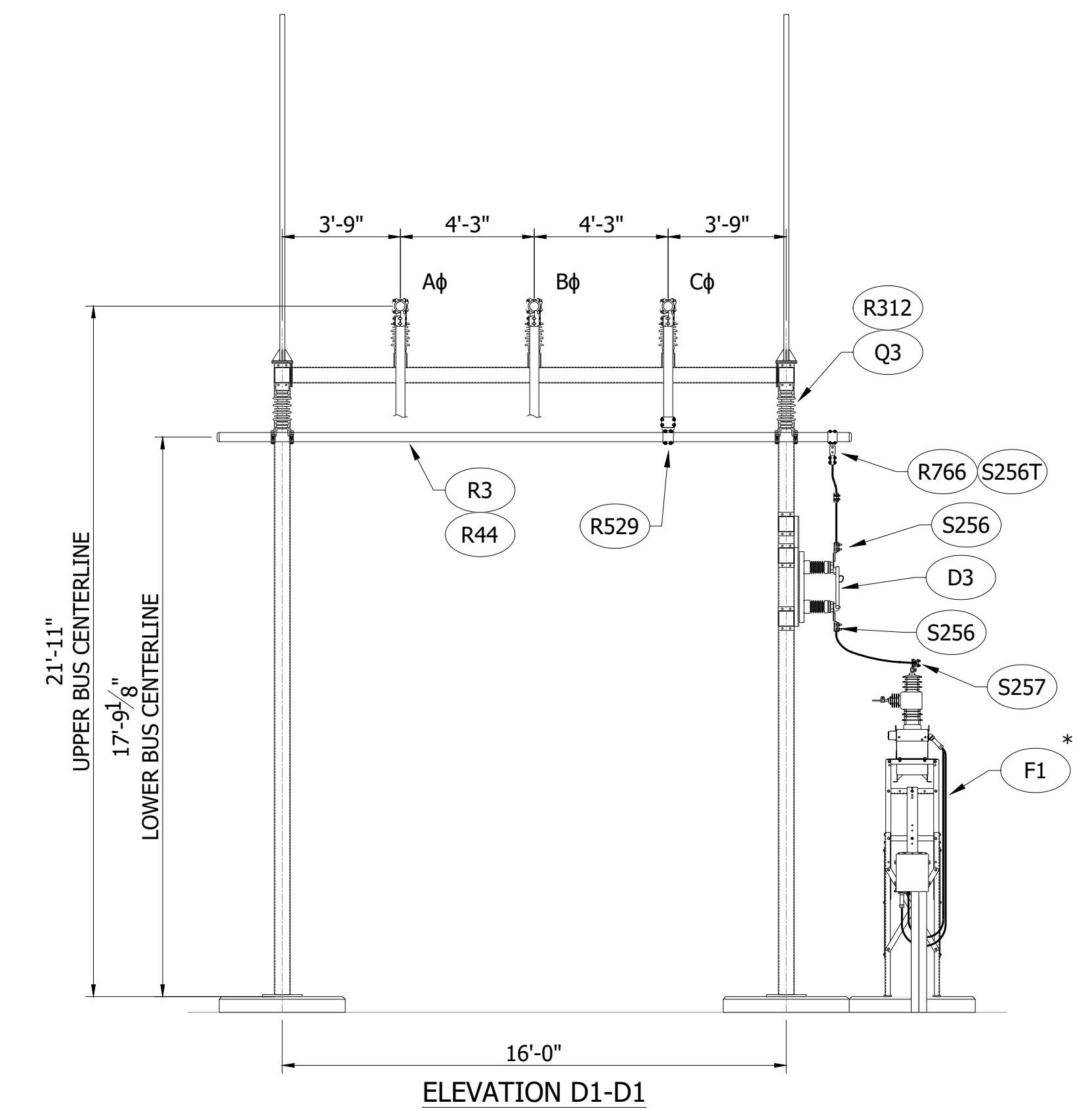
ELEVATION D-D



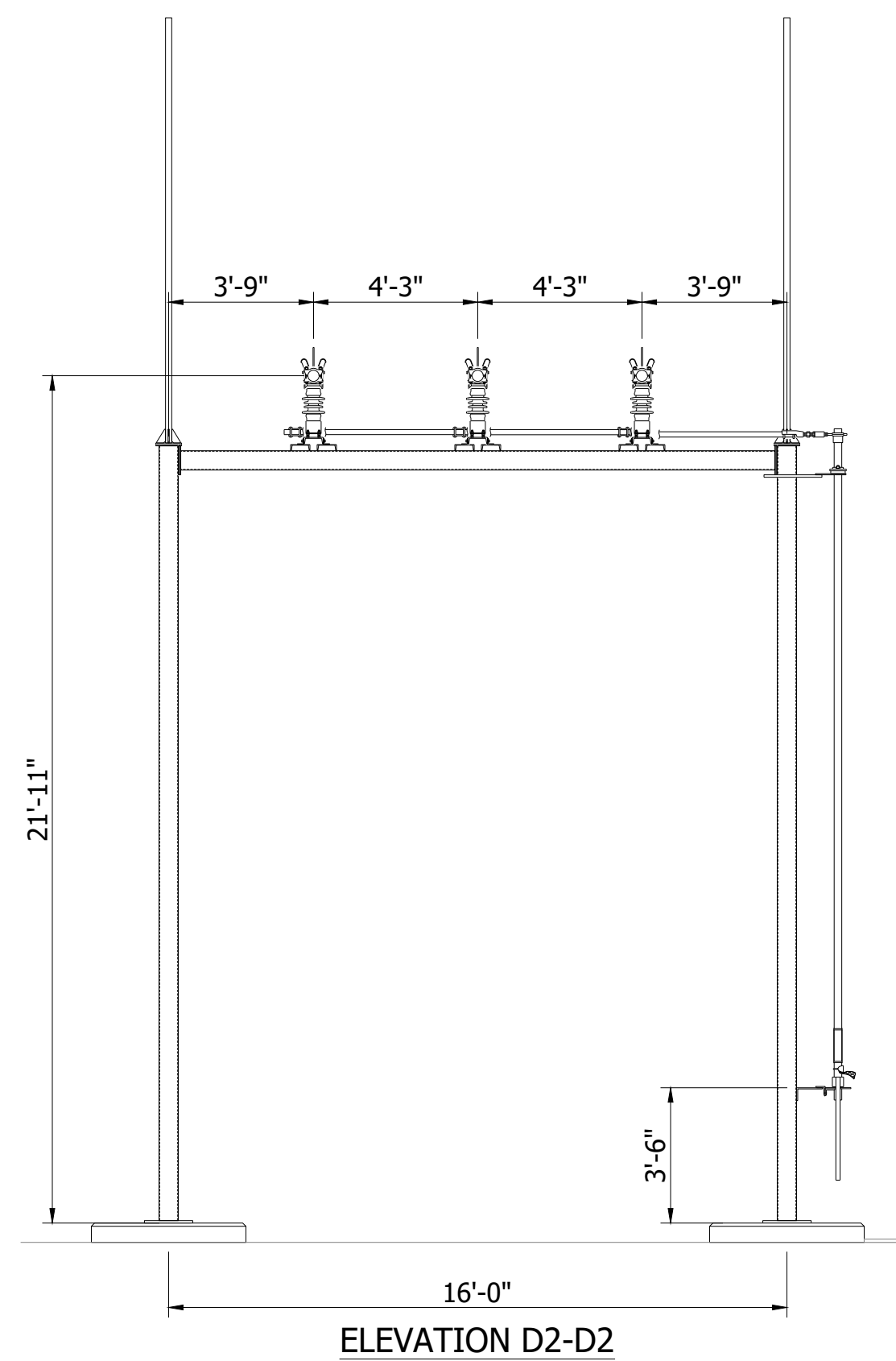
LIGHTNING MAST DETAIL

NOTES:

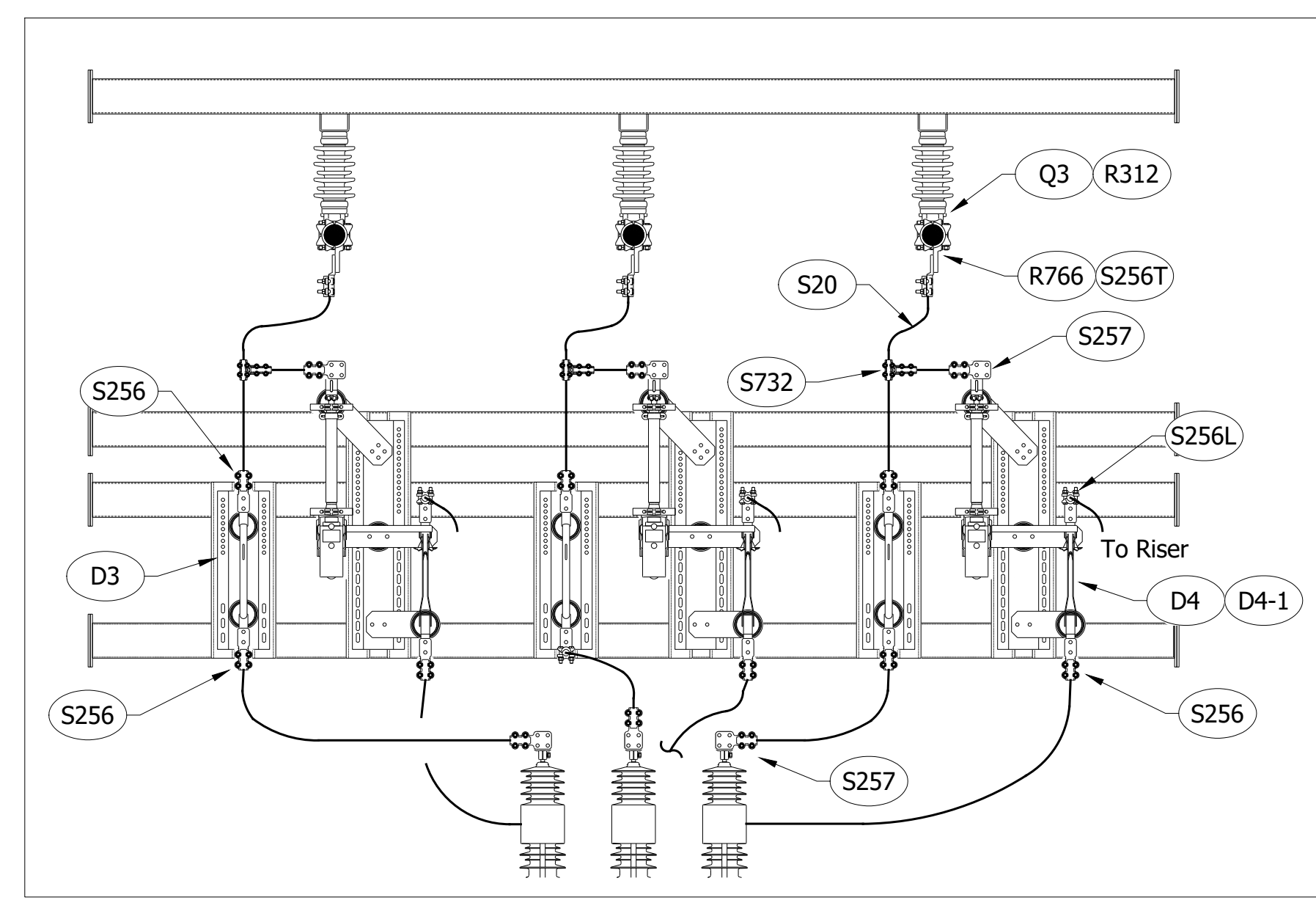
- Bus support clamping arrangement
F= Fixed bus position
S= Sliding bus position
- #4/0 Cu ground wire to be continuous across top of structure & down each leg.
- See drawing 06-10 for structure design loading and clearance requirements.
- * Provided by equipment manufacturer under separate contract with Negaunee, installed by installation contractor.
- ** Provided and installed by installation contractor.



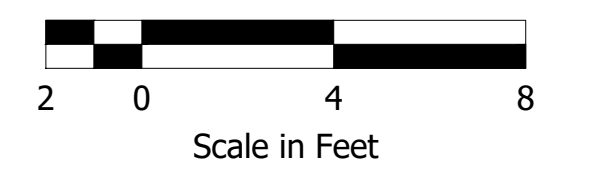
ELEVATION D1-D1



ELEVATION D2-D2



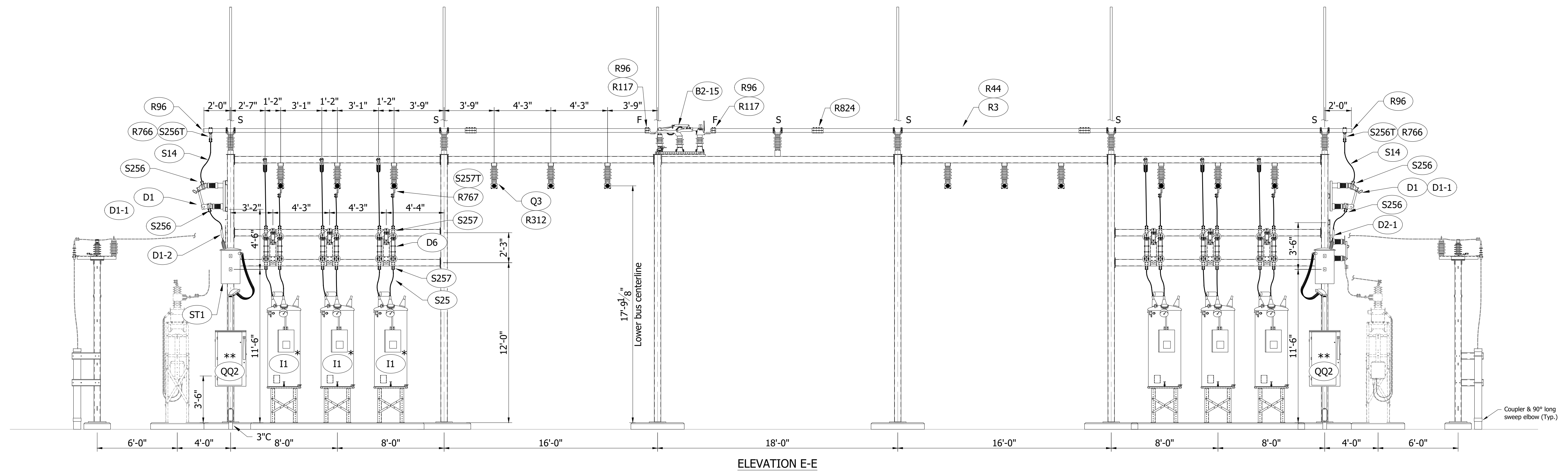
FEEDER CIRCUIT DETAIL



Scale in Feet

PRELIMINARY
NOT FOR
CONSTRUCTION

				PSE Power System Engineering, Inc.		2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895		FEEDER BAY ELEVATION D-D IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI			
0 ISSUED FOR BID				GB	NH	5/16/2023	ENGR. N. HALL	CHK'D/S. PACKWOOD	SCALE 1/4" = 1'-0"	PROJECT NO. MIO592107	DRAWING NO. 06-13
NO. REVISION AND RECORD OF ISSUE				BY	ENGR.	DATE	DWN BY G. BODENSTEIN	DATE 3/11/2022	FILE NAME IRT-06-13		



ELEVATION E-E

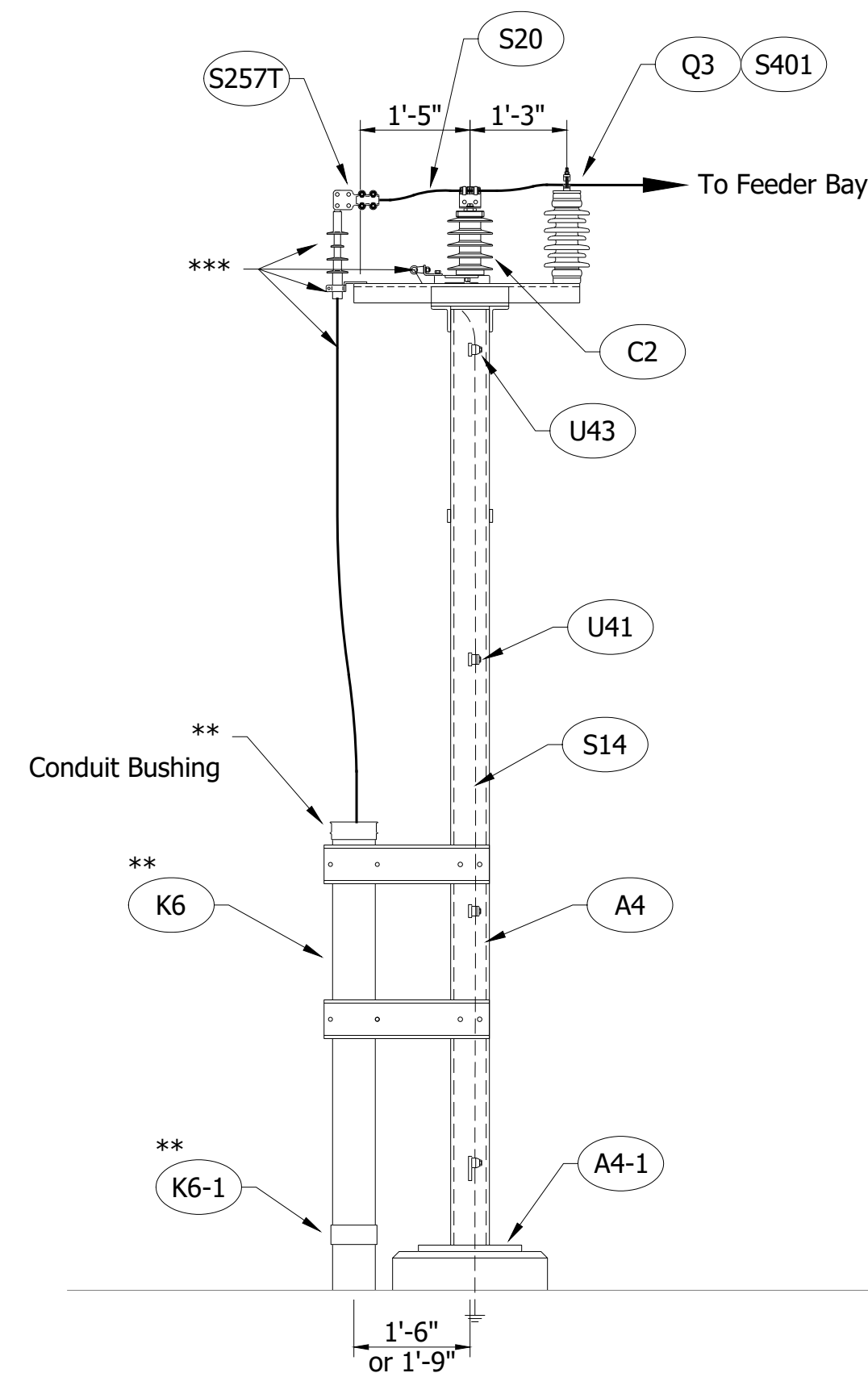
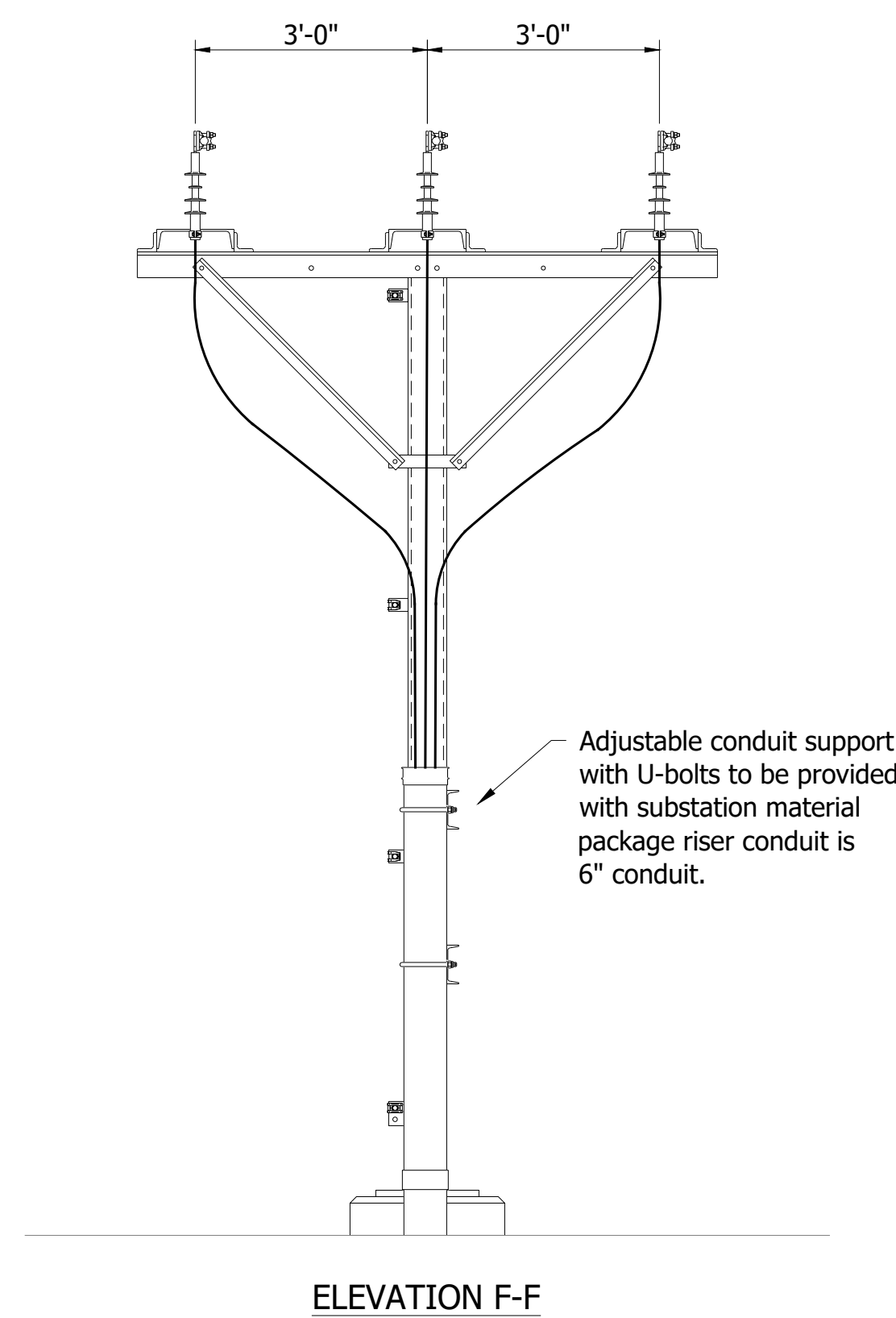
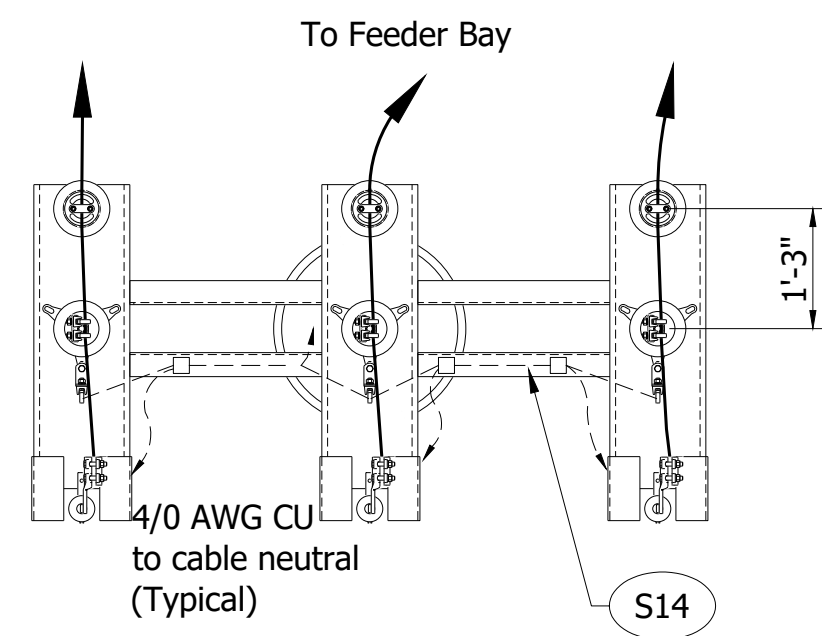
NOTES:

1. Bus support clamping arrangement
F= Fixed bus position
S= Sliding bus position
 2. #4/0 Cu ground wire to be continuous across top of structure & down each leg.
 3. See drawing 06-10 for structure design loading and clearance requirements.
- * Provided by equipment manufacturer under separate contract with Negaunee, installed by installation contractor.
** Provided and installed by installation contractor.

PRELIMINARY
NOT FOR
CONSTRUCTION



				PSE Power System Engineering, Inc.		2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895	
				www.powersystem.org		SCALE 1/4" = 1'-0"	
				ENGR. N. HALL		CHK'D/S. PACKWOOD	
				DATE 5/16/2023		DATE 3/11/2022	
				DWN BY G. BODENSTEIN		FILE NAME IRT-06-14	
				PROJECT NO. MI0592107		DRAWING NO. 06-14	



- * Provided by equipment manufacturer under separate contract with Negaunee, installed by installation contractor.
- ** Provided and installed by installation contractor.
- *** Installed by distribution line contractor.

PRELIMINARY
NOT FOR
CONSTRUCTION



						TYPICAL RISER STRUCTURE 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	CHK'D BY: S. PACKWOOD	SCALE 1/2" = 1'-0"
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DWN BY: G. BODENSTEIN	DATE: 3/11/2022	FILE NAME: IRT-06-15
						PROJECT NO. MI0592107	DRAWING NO. 06-15

138kV STRUCTURES (BUS 1 & BUS 2)

ITEM	DESCRIPTION	QUANTITY	MANUFACTURER	CATALOG NO.
A1	138 kV Switch Structure	2 Lot		
A1-1	Anchor bolt with two(2) galvanized hex nuts and washers	16 As Req'd		
B2-138	Group operated switch, three pole, vertical break, horizontal mount 138kV, 1200 amp, 650kV BIL, with quick break arching horns	2	Southern States, Mindcore, or approved equal	EV-2
* E1	Circuit breaker, 138kV, 1200A continuous	2	TBD	XXX
* H1	Transformer, 138kVA-12.47Y/7.2kV x 4.16Y/2.4kV 7.5/10.5 MVA	2	TBD	XXX
R47	Conductor, #336.4 AWG ACSR, 26/7, Linnet	140' As req'd		
R254	Terminal, aluminum, #4/0-397 MCM ACSR to 4-hole NEMA pad	30	Sefcor	AFNC-20-4A
R732	Tee, aluminum, #4/0 - 397 MCM ACSR main to #4/0 - 397 MCM ACSR tap	6	Sefcor	ACRCT-2020
S25	Conductor, 750 kcmil copper, 61 strand, S.D. bare	70' As req'd		
S257	Bronze terminal, #4/0 STR. - 1000 MCM copper to 4-hole NEMA pad	18	Sefcor	FNCT-34-4A
U41	Bronze ground connector, one #4 AWG - 300 MCM wire to a flat surface	As req'd	Sefcor	GTC-14B
U43	Bronze ground connector, two #4 AWG - 300 MCM wires of unequal size to a flat surface	As req'd	Sefcor	GTC2-14B
U163	Grounding clamp, bronze, flexible strap to a 1-1/2" IPS pipe	2	Sefcor	GBR-54
U170	Flexible copper braid (24" long), 200 Amp	2 As Req'd	Sefcor	XBG146-B-24

* Provided by equipment manufacturer under separate contract with Negaunee, installed by installation contractor.
 ** Provided and installed by installation contractor.
 *** Installed by distribution line contractor.

NOTES:

- All quantities are preliminary and are to be verified by the contractor. Contractor is responsible for providing correct materials and quantities for a functioning installation.
- Anchor bolts, bolts, nuts, and washers shall be galvanized unless noted otherwise.
- All bolted pad connections shall be made up with stainless steel (SS) 1/2"-13unc hex head machine bolt, 2 round flat washers (0.1" thick minimum), 1 bellville washer (0.089" thick minimum) and 1/2" nut. Nut shall be SS for aluminum connections and silicon bronze for copper connections.
- The packager shall provide one fuse plus a spare for each fuse assembly required, unless otherwise noted.
- All anchor bolt patterns are to be square to reduce installation errors.
- Substation packager to provide structure loading calculations for foundation design by others. Packager to provide anchor bolt plan/details for installation by others.

METERING STRUCTURE (BUS 1 & BUS 2)

ITEM	DESCRIPTION	QUANTITY	MANUFACTURER	CATALOG NO.
A2	15 kV Metering Structure	2 Lot		
A2-1	Anchor bolt with two(2) galvanized hex nuts and washers	16 As Req'd		
B1	Group operated switch, 2000 A, 110BIL, 80KA momentary, center break	2 Lot	USCO	AGCH5V-01520
D1	SMD-20 Power fuse, Station-vertical offset, excluding fuse unit, 14.4 kV, 110 kV BIL, 200 A, cypoxy station post insulators	6	S&C	192222R2-E
D1-1	Fuse unit (Include 1 spare) 14.4 kV, 3K, S&C "K" TCC 165-2	6	S&C	702003
D2	Disconnect switch, Type LCO-C, copper, hookstick operated, 15kV, 2000A, 100kA momentary, 110kV BIL, porcelain insulators, 4-hole tinned terminal pad	6	Cleveland/Price	C102A230G06
G1	Potential transformer, ratio 20:1, 2400:120V, type JVV-4, Single Bushing	6	GE	764x030016
G2	15kV current transformer, 1000:5, type JKW-5	6	GE	755x050119
J1	PT Junction box, NEMA 4 weather tight with hinged pad lockable door and fast opening clamp assembly, back panel, three phase fuse holder, 30 A, type RK-5, 3-10A 250v cartridge fuses, (with 3 spares) and terminal blocks	2 Each	Hoffman Enclosure Panel Fast clamp GE Terminal block Shorting block Bussmann Fuse block	A16H20ALP A20P16 AFC412SS EB25B06 EB27B06 H25030-3
Q3	Station post insulator, TR-208, rated 23kV, 150kV BIL, ANSI-70 light gray glaze	6	Lapp	315208-70
Q52	Dead End insulator, polymer, 15kV	12	Hubbell	4010150215
Q115	Aluminum Dead-end strain clamp, 30,000 LBS.	6	Hubbell	SD-112-N
S14	Conductor, #4/0 AWG copper, 19 strand, S.D. bare	160' As req'd		
S25	Conductor, 750 kcmil copper, 61 strand, S.D. bare	200' As req'd		
S256	Bronze terminal, #4/0 STR. - 1000 MCM copper to 2-hole NEMA pad	12	Sefcor	FNCT-34-2B
S256L	Bronze terminal, #4/0 STR. - 1000 MCM copper to 2-hole NEMA pad, 45 Degree angle	12	Sefcor	FNCT45-34-2B
S257	Bronze terminal, #4/0 STR. - 1000 MCM copper to 4-hole NEMA pad	12	Sefcor	FNCT-34-4A
S257L	Bronze terminal, #4/0 STR. - 1000 MCM copper to 4-hole NEMA pad, 45 Degree angle	6	Sefcor	FNCT45-34-4A
S401	Bronze bus support, #2 - 2000 MCM to insulator with 3" bolt circle	6	Sefcor	CJ-3
S735	Bronze tee, #4/0 - 1000 MCM copper to #4/0 - 1000 MCM copper	6	Sefcor	TCRCT-3434
U41	Bronze ground connector, one #4 AWG - 300 MCM wire to a flat surface	As req'd	Sefcor	GTC-14B
U43	Bronze ground connector, two #4 AWG - 300 MCM wires of unequal size to a flat surface	As req'd	Sefcor	GTC2-14B
U163	Grounding clamp, bronze, flexible strap to a 1-1/2" IPS pipe	4	Sefcor	GBR-54
U170	Flexible copper braid (24" long), 200 Amp	4 As Req'd	Sefcor	XBG146-B-24

PRELIMINARY
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				PSE Power System Engineering, Inc. www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895		BILL OF MATERIALS IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
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	DWN BY G. BODENSTEIN	DATE 3/14/2023	FILE NAME IRT-06-20
						PROJECT NO. M10592107	DRAWING NO. 06-20

FEEDER BAY STRUCTURE (BUS 1 & BUS 2)

ITEM	DESCRIPTION	QUANTITY	MANUFACTURER	CATALOG NO.
A3	15 kV Feeder Bay Structure	1 Lot		
A3-1	Anchor bolt with two(2) galvanized hex nuts and washers	48 As Req'd		
B2-15	Group operated switch, three pole, vertical break, horizontal mount 15kV, 2000 amp, 110kV BIL, with quick break arching horns	1 Lot	USCO	AVR-01520
D1	SMD-20 Power fuse, Station-vertical offset, excluding fuse unit, 14.4 kV, 110 kV BIL, 200 A, cypoxy station post insulators	2	S&C	192222R2-E
D1-1	Fuse unit (Include 1 spare) 14.4 kV, 6K, S&C "K" TCC 165-2	3	S&C	702006
D1-2	Current limiting fuse 8.3kV, 40K, 50,000 A.I.C. with parallel groove & spline stud (include 1 spare)	2	Cooper Power	FAH8KV40KCG-R1
D3	Disconnect switch, single pole, single throw, hookstick operated, rated 14.4kV, 110kV BIL, 600 Amps continuous, 40,000 Amp momentary, tin plated terminals, cypoxy insulators	18	S&C	14722-E
D4	Recloser bypass disconnect rated 14.4 kV, 600A continuous with SMD-40 fuse on left rated 400E max, 110 kV BIL, cypoxy station post insulators	18	S&C	192812-E
D4-1	Fuse unit, SMU-40, 14.4 kV 400E, slow speed (TCC 119-2)	18	S&C	832400
D6	Voltage regulator bypass switch, type RBI, non-sequenced, hook stick operated, 14.4kV, 110 kV BIL, 2000 amps continuous, 100,000 amps momentary, tinned terminal pads.	6	Cleveland/Price	C13A002G06
* F1	15kV Recloser, 800A	4	TBD	
* I1	Single phase voltage regulator, 416kVA, 2.5Kv, 1665A	6	TBD	
Q3	Station post insulator, TR-208, rated 23kV, 150kV BIL, ANSI-70 light gray glaze	42	Lapp	315208-70
Q52	Dead End insulator, polymer, 15kV	6	Hubbell	4010150215
Q115	Aluminum Dead-end strain clamp, 30,000 LBS.	6	Hubbell	SD-112-N
R3	3" IPS Schedule 40 Aluminum bus, 6063-T6, 20 foot lengths	500' As req'd		
R44	Conductor, #4/0 AWG ACSR, 6/1 strand, Penguin	500' As req'd		
R96	Aluminum end plug, drive-in type, 3" IPS	36	Sefcor	DP-62-AL
R117	Terminal, aluminum, 3" IPS Aluminum tube to 4-hole NEMA pad	6	Sefcor	AFNT-62-4B
R312	Bus support, aluminum, 3" IPS, 3" B.C.	42	Sefcor	ASTI-62-3
R529	Tee, aluminum, 3" IPS main to 3" IPS tap	24	Sefcor	ATTT-6262
R766	Tee, aluminum, 3" IPS aluminum tube to 2-hole NEMA pad	14	Sefcor	ATF-62-2B
R767	Tee, aluminum, 3" IPS aluminum tube to 4-hole NEMA pad	6	Sefcor	ATF-62-4A
R824	Coupler, aluminum, 3" IPS Aluminum tube main to 3" IPS Aluminum tube tap	9	Sefcor	ASCT-6262
S14	Conductor, #4/0 AWG copper, 19 strand, S.D. bare	50' As req'd		
S20	Hendrix 15kV, 500 kcmil copper, Tree Wire	200' As req'd	Hendrix	

FEEDER BAY STRUCTURE (BUS 1 & BUS 2)

ITEM	DESCRIPTION	QUANTITY	MANUFACTURER	CATALOG NO.
S25	Conductor, 750 kcmil copper, 61 strand, S.D. bare	100' As req'd		
S256	Bronze terminal, #4/0 STR. - 1000 MCM copper to 2-hole NEMA pad	40	Sefcor	FNCT-34-2B
S256L	Bronze terminal, #4/0 STR. - 1000 MCM copper to 2-hole NEMA pad, right angle	12	Sefcor	FNCT90-34-2B
S256T	Bronze terminal, #4/0 STR. - 1000 MCM copper to 2-hole NEMA pad, tin plated	14	Sefcor	FNCT-34-2B-TP
S257	Bronze terminal, #4/0 STR. - 1000 MCM copper to 4-hole NEMA pad	60	Sefcor	FNCT-34-4A
S257T	Bronze terminal, #4/0 STR. - 1000 MCM copper to 4-hole NEMA pad, tin plated	6	Sefcor	FNCT-34-4A-TP
S732	Tee, bronze, #1/0 - 500 MCM copper to #1/0 - 500 MCM copper	12	Sefcor	TCRCT-2020
U41	Bronze ground connector, one #4 AWG - 300 MCM wire to a flat surface	As req'd	Sefcor	GTC-14B
U43	Bronze ground connector, two #4 AWG - 300 MCM wires of unequal size to a flat surface	As req'd	Sefcor	GTC2-14B
U163	Grounding clamp, bronze, flexible strap to a 1-1/2" IPS pipe	2	Sefcor	GBR-54
U170	Flexible copper braid (24" long), 200 Amp	2 As Req'd	Sefcor	XBG146-B-24
U205	Grounding clamp, bronze, #4 AWG STR.-2/0 STR. ground wire to a 1-1/2" IPS pipe	12 As req'd	Sefcor	GU1-5409
QQ2	Fused disconnect switch, 400A min.	2	Square D	H225NR
ST1	Station Service Transformer, 50kVA	2		

NOTES:

- All quantities are preliminary and are to be verified by the contractor. Contractor is responsible for providing correct materials and quantities for a functioning installation.
- Anchor bolts, bolts, nuts, and washers shall be galvanized unless noted otherwise.
- All bolted pad connections shall be made up with stainless steel (SS) 1/2"-13unc hex head machine bolt, 2 round flat washers (0.1" thick minimum), 1 bellville washer (0.089" thick minimum) and 1/2" nut. Nut shall be SS for aluminum connections and silicon bronze for copper connections.
- The packager shall provide one fuse plus a spare for each fuse assembly required, unless otherwise noted.
- All anchor bolt patterns are to be square to reduce installation errors.
- Substation packager to provide structure loading calculations for foundation design by others. Packager to provide anchor bolt plan/details for installation by others.

15KV RISER STRUCTURE


ITEM	DESCRIPTION	QUANTITY	MANUFACTURER	CATALOG NO.
A4	15kV Riser Structure	6		
A4-1	Anchor bolt with two(2) galvanized hex nuts and washers	24 As req'd		
C2	Arrester, 3kV, Polymer, Station class, 2.55kV MCOV, Type EVP, ANSI NO. 70 Sky gray with NEMA 4-Hole pad	18	Ohio Brass	EVPO00300-3001
K6	Conduit, 6" PVC, schedule 40, with bushing	6 As req'd		
K6-1	Conduit, 6", 48"-90° sweep, PVC	6		
*** K17	15kV UG Cable for feeders	As req'd	By owner	
*** K17-1	Cable support / Mounting bracket for Item K17	18 As req'd	By owner	
*** K27	15kV Cable terminator and connector for Item K17	18 As req'd	By owner	
Q3	Station post insulator, TR-208, rated 23kV, 150kV BIL, ANSI-70 light gray glaze	18	Lapp	315208-70
S14	Conductor, #4/0 AWG copper, 19 strand, S.D. bare	200' As req'd		
S20	Hendrix 15kV, 500 kcmil copper, Tree Wire	50' As req'd	Hendrix	
S257T	Bronze terminal, #4/0 STR. - 1000 MCM copper to 4-hole NEMA pad, tin plated	18	Sefcor	FNCT-34-4A-TP
S401	Bronze bus support, #2 - 2000 MCM to insulator with 3" bolt circle	18	Sefcor	CJ-3
U41	Bronze ground connector, one #4 AWG-300 MCM wire to a flat surface	As req'd	Sefcor	GTC-14B
U43	Bronze ground connector, two #4 AWG-300 MCM wires of unequal size to a flat surface	As req'd	Sefcor	GTC2-14B
	Bolt assemblies for electrical connections (See Note 3)	As req'd		

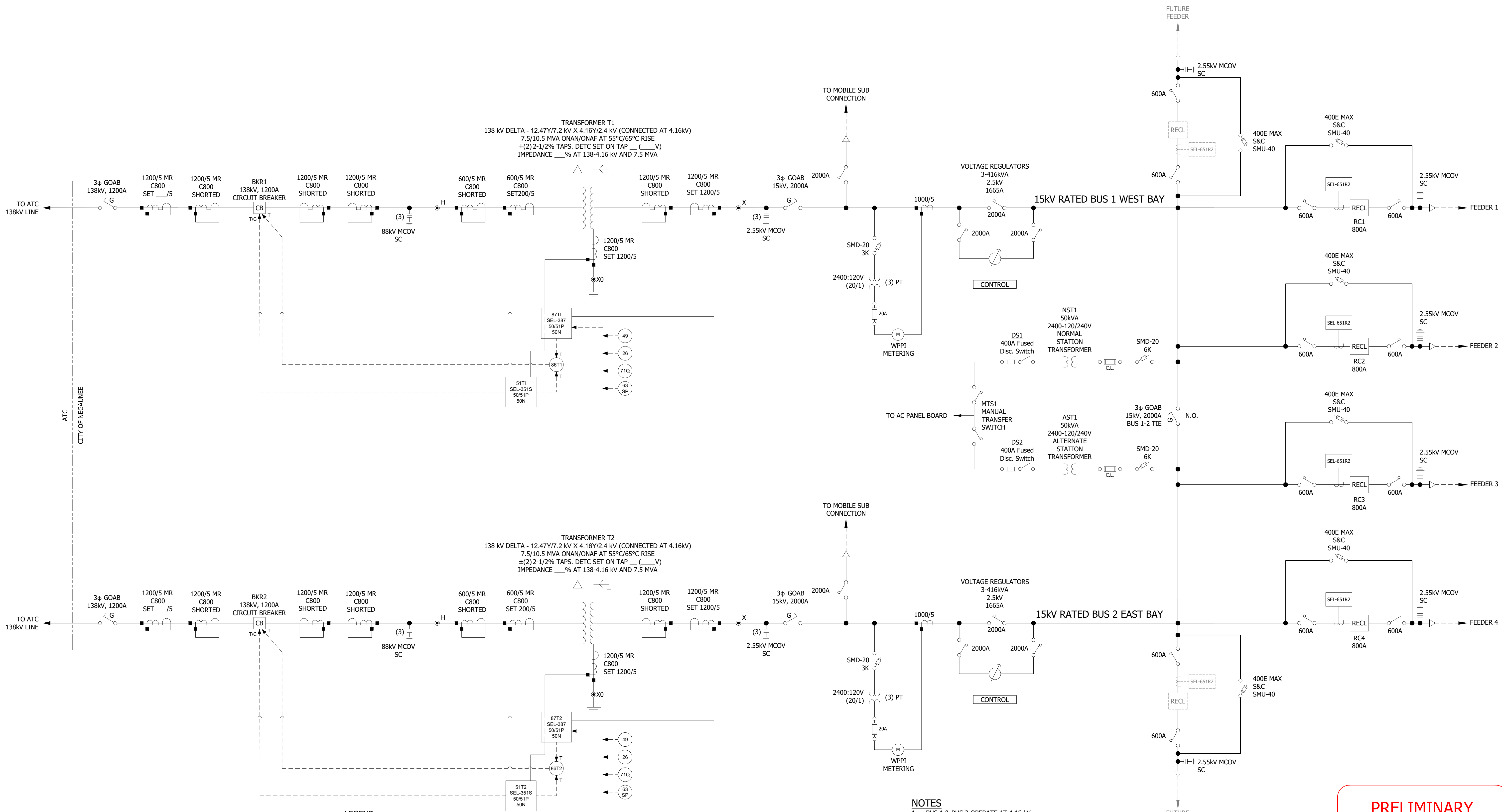
STATIC POLE

ITEM	DESCRIPTION	QUANTITY	MANUFACTURER	CATALOG NO.
A5	Lightning mast, 80', direct buried	4 EA.		
** QQ30	Small utility floodlight, 5900 Nominal Lumens, 120VAC, non-dimming, trunnion mounting, gray color, 4000K color temp, w/mounting arm (or approved equal)	6	Eaton/Streetworks	UFLD-S-C15-E-U-66-T-AP
S14	Conductor, #4/0 AWG copper, 19 strand, S.D. bare	400' As req'd		
U41	Bronze ground connector, one #4 AWG - 300 MCM wire to a flat surface	As req'd	Sefcor	GTC-14B
U43	Bronze ground connector, two #4 AWG - 300 MCM wires of unequal size to a flat surface	As req'd	Sefcor	GTC2-14B

PRELIMINARY
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CONSTRUCTION

- * Provided by equipment manufacturer under separate contract with Negaunee, installed by installation contractor.
- ** Provided and installed by installation contractor.
- *** Installed by distribution line contractor.

						2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8895		BILL OF MATERIALS IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI					
0	ISSUED FOR BID	GB	NH	5/16/2023	ENGR	N. HALL	CRKD/APP'D	S. PACKWOOD	SCALE	NONE	PROJECT NO.	DRAWING NO.	
NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE	DWN	BY	G. BODENSTEIN	DATE	3/14/2023	FILE NAME	IRT-06-21	MIO592107	06-21



NOTES
 1. BUS 1 & BUS 2 OPERATE AT 4.16 kV, RATED 15 kV.

**PRELIMINARY
NOT FOR
CONSTRUCTION**

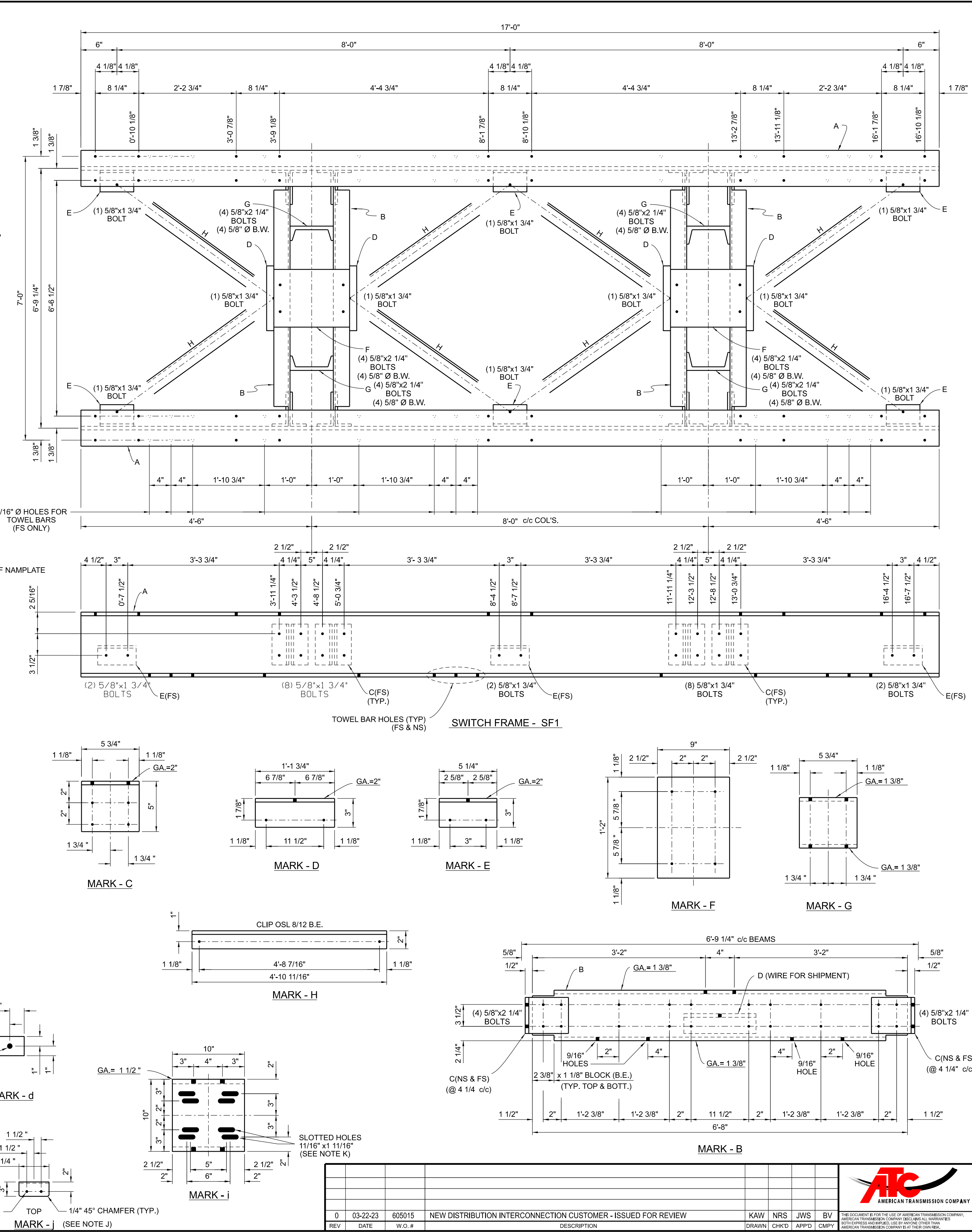
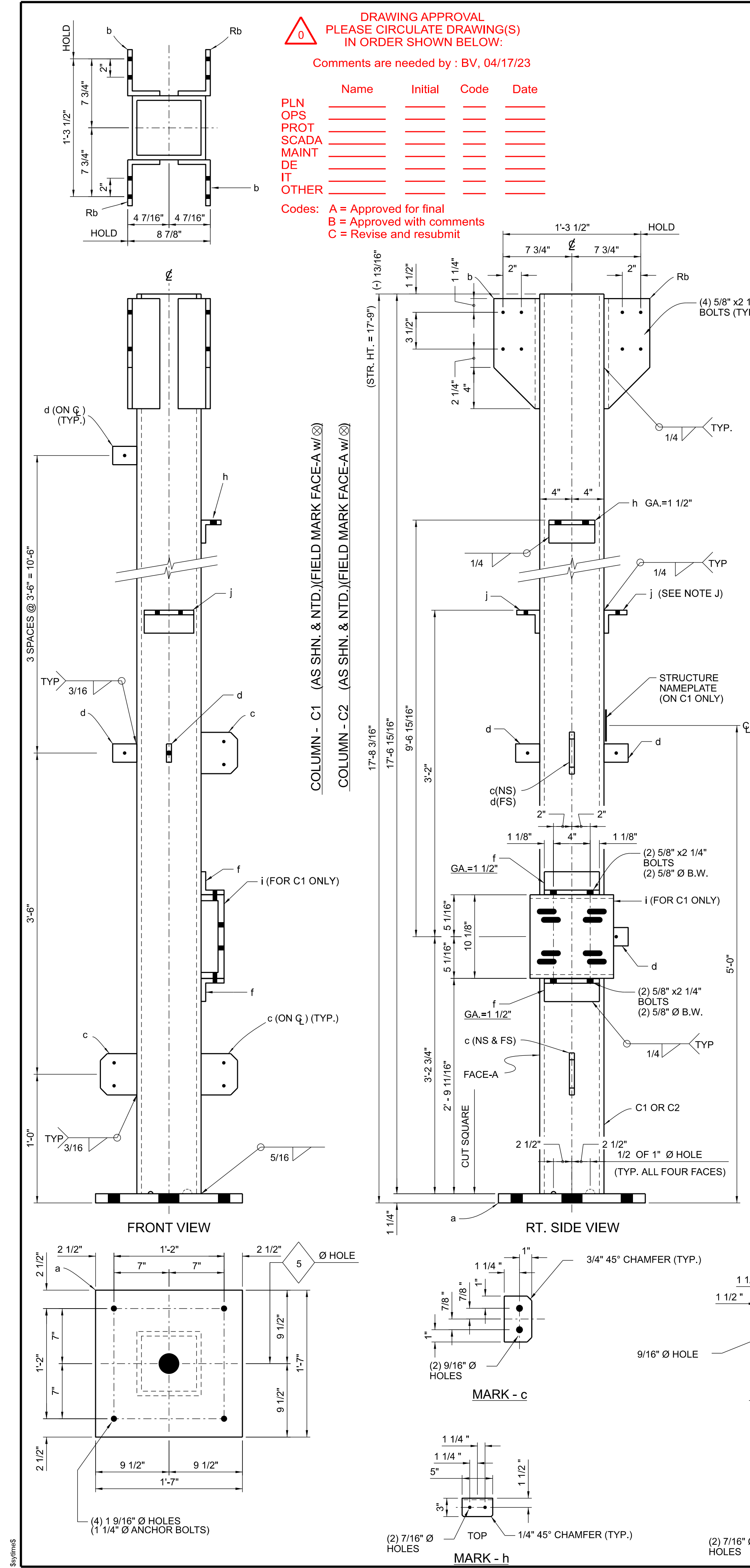
				PSE Power System Engineering, Inc.		1-LINE DIAGRAM IRONTOWN SUBSTATION CITY OF NEGAUNEE, MI	
				www.powersystem.org 2424 Rimrock Rd, Suite 300 Madison, WI 53713 Tel: 866.825.8995			
2	ISSUED FOR BID	GB	NH	5/16/2023	ENGR N. HALL	CHKD S. PACKWOOD	SCALE NONE
1	ISSUED FOR REVIEW	GB	NH	02/21/2023	DWN BY G. BODENSTEIN	DATE 3/10/2022	FILE NAME IRT-10-02
NO. REVISION AND RECORD OF ISSUE				BY	ENGR.	DATE	PROJECT NO. MI0592107
							DRAWING NO. 10-02

DRAWING APPROVAL
PLEASE CIRCULATE DRAWING(S)
IN ORDER SHOWN BELOW:

Comments are needed by : BV, 04/17/23

PLN	Name	Initial	Code	Date
OPS				
PROT				
SCADA				
MAINT				
DE				
IT				
OTHER				

Codes: A = Approved for final
B = Approved with comments
C = Revise and resubmit

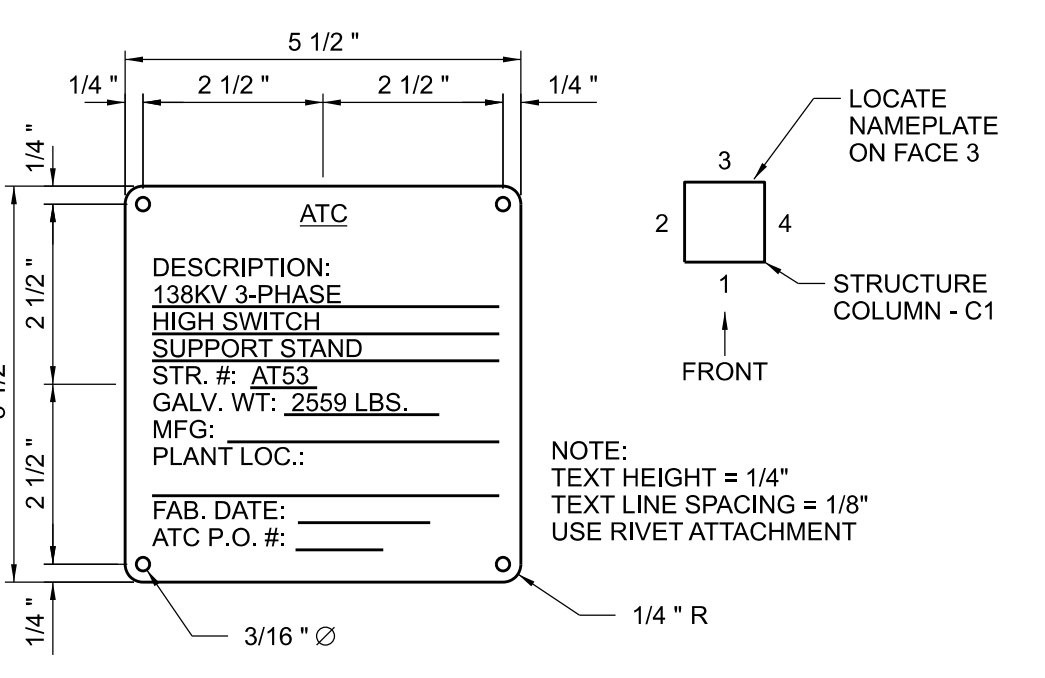
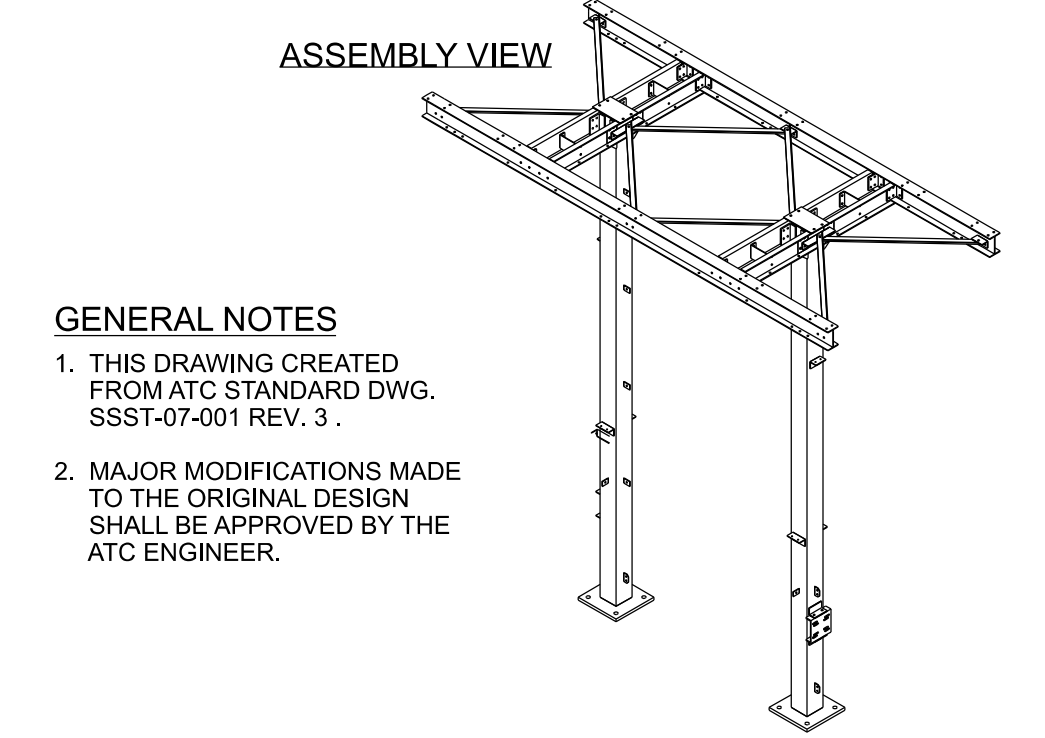
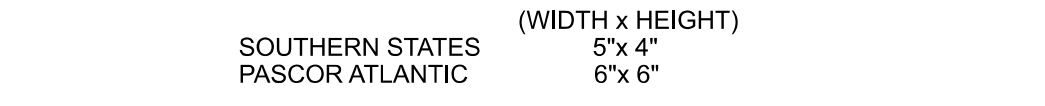


MARK	QTY.	DESCRIPTION	LENGTH FT.	INS.	REMARKS
(ONE) FOR ONE COLUMN - C1					
C1	ONE	HSS 8x8x1/4	17	6 15/16	(C.S.I.E.)
a	ONE	PL 1 1/4x19	1	7	(WELD)
b	2	L 5x3x1/2	0	11	(THUS)(WELD)
Rb	2	L 5x3x1/2	0	11	(REV)(WELD)
c	3	PL 1/4x2 1/4	0	3 3/4	(WELD)
d	7	PL 1/4x2	0	3	(WELD)
f	2	L 3x3x1/4	0	6 1/4	(WELD)
h	ONE	L 3x3x1/4	0	5	(WELD)
i	ONE	C 10x15.3	0	10	(WELD)
j	2	L 3x3x1/4	0	6 1/4	(WELD)
(ONE) FOR ONE COLUMN - C2					
C2	ONE	HSS 8x8x1/4	17	6 15/16	(C.S.I.E.)
a	ONE	PL 1 1/4x19	1	7	(WELD)
b	2	L 5x3x1/2	0	11	(THUS)(WELD)
Rb	2	L 5x3x1/2	0	11	(REV)(WELD)
c	3	PL 1/4x2 1/4	0	3 3/4	(WELD)
d	7	PL 1/4x2	0	3	(WELD)
f	2	L 3x3x1/4	0	6 1/4	(WELD)
h	ONE	L 3x3x1/4	0	5	(WELD)
j	2	L 3x3x1/4	0	6 1/4	(WELD)
(ONE) FOR ONE SWITCH FRAME - SF1					
A	2	W 8x18	17	0	
B	4	C 8x11.5	6	8	(BLOCK)
C	16	L 5x3x3/8	0	5 3/4	
D	4	L 3x3x1/4	1	1 3/4	
E	6	L 3x3x1/4	0	5 1/4	
F	2	PL 1/4x9	1	2	
G	4	C 9x13.4	0	5 3/4	
H	8	L 2x2x3/16	4	10 11/16	(CLIP)
BOLTS REQ'D (EXACT COUNT)					
62	5/8" Ø x 1 3/4" BOLTS (A-325)				
92	5/8" Ø x 2 1/4" BOLTS (A-325)				
28	5/8" Ø B. WASHERS				
154	5/8" Ø H. FLATWASHERS				
154	5/8" Ø M.F. LOCKNUTS				
154	5/8" Ø H. HEXNUTS				

TOTAL STEEL WEIGHT FOR THIS SHEET
BM=2472 GW=2559

FABRICATION NOTES:

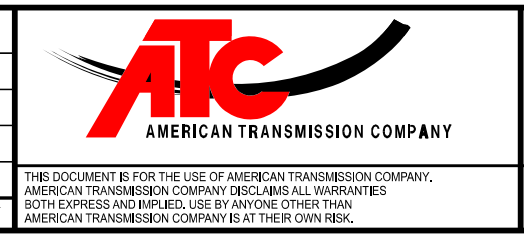
- SHAPES AND PLATES ASTM A36 U.N.
- TUBING AND PIPE ASTM A500 GRADE B (FY-46 KSI).
- ALL STEEL HOT DIP GALV. AFTER FAB. ASTM-A123.
- WELDING ELECTRODE GRADE-70.
- ALL HOLES 1/16" Ø FOR 5/8" Ø GALV. BOLTS A325 w/ ONE H.F.W. AND ONE M.F. LOCKNUT, UNLESS NOTED.
- PIECE MARKS STAMPED INTO METAL WITH NOT LESS THAN 3/8" HIGH CHARACTERS BEFORE GALV.
- GA = GAGE (PEICE VIEWED HEAD-ON, MEASURE FROM COMMON EDGE OF 2 LONG SIDES TO HOLE CENTERLINE)
- MARKS PREFIXED W/AT54
- REFER TO DRAWING S-138-03-001 FOR STRUCTURE LOADING AND DESIGN INFORMATION.
- DETAIL "J" PROVIDES PROVISION FOR MOUNTING SOUTHERN STATES AVS - AUX. CONTACT SWITCH.
- SWITCH OPERATOR MOUNTING HOLE PATTERN TO BE USED:



138KV 3 PHASE HIGH SWITCH
SUPPORT STAND - STRUCTURE AT53
IRONTOWN SUBSTATION

SCALE: N.T.S. DRAWING NO.: IRT-07-02

REV	DATE	W.O.#	DESCRIPTION	KAW	NRS	JWS	BV
0	03-22-23	605015	NEW DISTRIBUTION INTERCONNECTION CUSTOMER - ISSUED FOR REVIEW				





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Suite 300
Madison, WI 53713

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