



INVITATION FOR BID

PWC2324033

RELAY CONTROL SWITCHBOARDS

Date of Issue: 11/6/2023

**Date of Opening: 12/1/2023
2:00 p.m.**

Direct all inquiries concerning this IFB to:

**Victoria McAllister
Senior Procurement Advisor
procurement@faypwc.com**

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**ADVERTISEMENT FOR BID
FAYETTEVILLE PUBLIC WORKS COMMISSION
RELAY CONTROL SWITCHBOARDS**

**Cumberland County
North Carolina**

Bids are solicited and will be received at Fayetteville Public Works Commission, Administration Building, Conference Room 107, 955 Old Wilmington Road, Fayetteville, NC 28301, until **Friday, December 1, 2023 2:00 p.m., EST** for the **RELAY CONTROL SWITCHBOARDS**.

Enclosed please find the Instructions to Bidders, Detailed Specifications, and Bid Pricing Form. Bids shall be submitted on the forms provided herein, or exact copies thereof, and the bidder shall return one copy of the entire bid packet along with the completed Bid Pricing Form and any other information specified in the bid documents.

Questions regarding this bid must be submitted in writing to the attention of Victoria McAllister, Senior Procurement Advisor, at procurement@faypwc.com no later than **5:00 p.m., EST Wednesday, November 8, 2023**, in order to be considered for a response.

Mailed bids must be addressed to **Victoria McAllister**, Senior Procurement Advisor, Fayetteville Public Works Commission, 955 Old Wilmington Road, Fayetteville, North Carolina 28301. The outside of the envelope must be marked **BID: PWC2324033- RELAY CONTROL SWITCHBOARD** and shall indicate the name, and address of the bidder.

Fayetteville Public Works Commission reserves the right to reject any or all bids for any reason determined by PWC to be in its best interest, or to award the bid to the lowest responsible bidder or bidders, taking into consideration quality, performance, and the time specified in the bids for the performance of the contract.

FAYETTEVILLE PUBLIC WORKS COMMISSION
Candice S. Kirtz
Director of Supply Chain

**INSTRUCTIONS TO BIDDERS
FAYETTEVILLE PUBLIC WORKS COMMISSION
RELAY CONTROL SWITCHBOARDS**

PURPOSE AND BACKGROUND

Fayetteville Public Works Commission intends to solicit bid from qualified vendors to furnish and deliver all materials and equipment (except materials and equipment specified to be furnished by the Owner) complete and conforming to the specifications for the Relay Control Switchboards for the P.O. Hoffer 69 to 15 x 25kV Substation, Cumberland Road 69 to 15 kV substation, College Lakes 69 to 15 kV substation, and (2) future substations all as set forth in the Bid Schedules.

OBJECTIVE OF THE REQUEST

It is the intent of this bid invitation to obtain pricing for **RELAY CONTROL SWITCHBOARDS** within the detailed specifications section of this Invitation for Bid (IFB). You are requested to submit your bid on the enclosed Bid Pricing Form. PWC will purchase all SEL devices and ship them to the panel manufacturer for assembly. Please see the panel layout notes.

IFB SCHEDULE

The following table shows the schedule of events to prepare your organization’s response. The key deadlines and targeted dates for this process are as follows:

Action	Responsibility	Date/Time
Submit Written Questions	Bidders	Wednesday, November 8, 2023, by 5:00 P.M. ET.
Provide Response to Questions	PWC	Friday, November 10, 2023, by 5:00 P.M. ET
Submit IFB	Bidders	Friday, December 1, 2023, 2:00 P.M. ET
Target Commission Date	PWC	Wednesday, December 13, 2023,
Target Council Date	PWC	TBD
Award /Sale of Goods Agreement	PWC	TBD

QUESTIONS

Written questions shall be e-mailed to procurement@faypwc.com by the date and time specified in the IFB schedule. Bidders will enter “**IFB PWC2324033– Questions**” as the subject of the email.

Questions received prior to the submission deadline date, the Procurement Advisor’s response, and any additional information deemed necessary by PWC will be posted in the form of an addendum to the PWC website and shall become an Addendum to this IFB. No information, instruction, or advice provided orally or informally by any PWC personnel, whether made in response to a question or otherwise concerning this IFB, shall be considered authoritative or binding. Firms shall rely only on written material contained in an Addendum to this IFB.

Inquiries should be submitted no later than the date and time noted in the IFB schedule. Questions answered verbally will be followed up by written addenda as deemed necessary; oral interpretations shall have no effect.

MINORITY, WOMEN, AND DISADVANTAGED BUSINESS ENTERPRISE (MWDBE) PROGRAM / SMALL LOCAL SUPPLIER (SLS) PROGRAM

PWC is committed to promoting the utilization of Minority, Women, and Disadvantaged Businesses in PWC's geographical statistical area (GSA) by providing equal opportunity for participating in all aspects of PWC's contracting and procurement programs. The GSA consists of NCDOT division areas 3-8, and 10. PWC is also committed to promoting the utilization of small, local businesses in the Fayetteville Metropolitan Statistical Area (MSA) by increasing opportunities for those businesses to participate in PWC procurements. The MSA consists of Cumberland County, Hoke County, and Harnett County.

PWC requires Firms to report efforts to utilize Minority, Women, and Disadvantaged Business Enterprises (MWDBEs) and Historically Underutilized Businesses (HUBs) for specific projects and requires all Firms to report all such efforts for MWDBEs, HUBs, and Small Local Suppliers regardless of the requirements of a specific project. **Bidders shall document any good-faith efforts and utilization in the MWDBE forms provided within Attachment F.**

In accordance with PWC's MWDBE Program, the goal shall be to award four percent (4%) of the total contract dollars to MBE firms and four percent (4%) to WBE firms. A complete copy of PWC's MWDBE Program is available for inspection at PWC Procurement Department.

The following is a list of the efforts that should be made by the prime service provider to encourage MWDBE participation. In order to receive credit for having made "good faith efforts", the prime service provider should document all actions taken to include the following:

- 1) Attending pre-bid meetings scheduled by the department;
- 2) Identifying selected specific items of the project which could be executed by a MWDBE;
- 3) Soliciting MWDBE service provider participation in a reasonable time before the proposals are due through advertisements in circulation media, trade publications, and minority-focused media;
- 4) Contacting local firms, firms owned by minorities or women, and associations or business development centers which disseminate information to local businesses and businesses owned by minorities or women in a timely manner to allow sufficient time for MWDBEs to respond;
- 5) Following up on initial solicitations of interest by contacting the MWDBE to determine whether the MWDBE was interested in performing specific items of the project;
- 6) Attempting to enter into joint venture or partnership arrangements with MWDBEs and provide interested MWDBEs with information about the requirements for the project;
- 7) Providing assistance to MWDBEs in the review of proposals and work to be done by sub-service providers;
- 8) Using available directories of certified MWDBEs and other available resources;

- 9) Ensuring that the proposer negotiated in good faith with the MWDBE and did not unjustifiably reject as unsatisfactory quotes prepared by any Minority, Women, or Disadvantaged Business Enterprise;
- 10) Making every effort to obtain Minority, Women, or Disadvantaged Business Enterprise participation that could reasonably be expected to produce a level of participation sufficient to meet the goals of PWC; and
- 11) Providing interested minority, women, and disadvantaged businesses with information relative to project requirements

REFERENCES

Bidders shall provide at least three (3) different references for which your company has supplied the exact model of equipment offered. PWC may contact these references to determine the commodity provided are substantially similar in scope to those requested in Attachment A and that the bidder’s performance has been satisfactory. The information obtained shall be considered in the evaluation of the bid. If PWC is referenced, it cannot be counted towards your three (3) required references but may be included in addition to.

COMPANY NAME	CONTACT NAME	TELEPHONE NUMBER	EMAIL
Fayetteville Public Works Commission, if applicable			

SUBMISSION INSTRUCTIONS

- 1) Bids should be complete and carefully worded and should convey all the information requested in the IFB. Bids should be prepared simply and economically, providing a straightforward, concise description of the bidder’s capabilities to satisfy the requirements of the IFB. Emphasis should be on completeness and clarity of content. If the bid includes any comment over and above the specific information requested in the IFB, the bidder should include this information as a separate appendix to its bid. Bids that include clarifications or modifications to any of the IFB’s contractual requirements, or a bidder’s standard terms and conditions, may be deemed non-responsive and not considered for award at PWC’s discretion. Unsolicited bid samples or descriptive literature will not be examined or tested, will not be used to determine responsiveness, and will not be deemed to vary any of the provisions of the IFB. Failure to comply with these requirements shall constitute sufficient cause to reject a bid without further consideration. PWC reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to award of a Sale of Goods Agreement, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders the reasons for PWC’s action.

- 2) Bids may be withdrawn by the bidder only in writing and if receipt of such withdrawal is

acknowledged by PWC prior to the time for the bid submittal deadline identified in the Advertisement for Bidders (or such later date included in an Addendum). Written withdrawal requests shall be submitted on the bidder's letterhead and signed by an official of the bidder duly authorized to make such request. Any withdrawal request made after the bid submittal deadline shall be allowed only if the price bid was based upon a mistake that constituted a substantial error, provided the bid was submitted in good faith, and then only pursuant to the terms of N.C.G.S. § 143-129.1.

- 3) Bids submitted in an envelope must have the bid title, date, and time of the bid submittal deadline on the front of the envelope no later than the bid due date and time. The bid will be due at the **Fayetteville Public Works Commission, Administration Building, Procurement Department, 955 Old Wilmington Road, Fayetteville, NC 28301** unless electronically submitted.
- 4) Bids will be examined promptly after the due date and an award will be made at the earliest possible date. Bids must be held firm for PWC for a period of sixty (60) days after the bid due date. A purchase order will be issued to the awarded bidder.
- 5) Bidders shall submit bids only on the Bid Pricing Forms provided herein, or exact copies thereof (**See Exhibit B – Bid Pricing Form**). Failure to provide full and complete Bid Pricing Forms may result in a bid being deemed non-responsive.
- 6) All bids must be signed by an authorized official of the bidder. Bids may be rejected for any omission, alteration of form, additions not called for, conditional bid, or any irregularities of any kind.
- 7) Do not submit alternate bids unless specifically called for on the Bid Pricing Forms.

QUANTITIES AND PRICING

- 1) Quantities listed are estimates ONLY based on historical usage. PWC does not guarantee a minimum or maximum quantity to be purchased.
- 2) All bidders are advised to include all costs incurred by the bidder in delivering the **RELAY CONTROL SWITCHBOARDS** to the vendor responsible for the related control houses in their bid submittal. The invoice submitted for payment shall not reflect any other costs (fuel surcharge, toll, etc.).

EVALUATION AND AWARD

- 1) An award of a contract is subject to the approval by the Board of Commissioners of PWC and the Fayetteville, North Carolina City Council.
- 2) PWC reserves the right to inspect, at a reasonable time, the equipment, item, plant, or other facilities of a prospective Bidder prior to award, and during the Sale of Goods Agreement term, as PWC deems necessary to determine that such equipment, item, plant, or other facilities conform with the specifications/requirements and are adequate and suitable for the proper and effective performance of the Sale of Goods Agreement.

- 3) PWC reserves the right to request additional information from bidders to aid in the evaluation process. This information may include but is not limited to, financial statements, a reference list of contracts of similar size, etc.
- 4) PWC reserves the right to make a single award for all items or may award separate contracts to multiple bidders for various items to the lowest responsive, responsible bidder or bidders, taking into consideration product quality, performance to PWC, and conformity with the specifications in these bid documents. PWC may also consider, among other things, the Bidder's past performance conduct on other contracts, and other information as PWC deems necessary to assist in the evaluation of any bid.
- 5) PWC personnel will place orders via email, on an as-needed basis throughout the life of the Sale of Goods Agreement. Bidder shall confirm receipt of each order by e-mail stating the product ordered, quantity ordered, and the expected service date/s.
- 6) The Sale of Goods Agreement It is the intent of PWC that all pricing remains firm for the initial one (1) year contract period and bidders shall take this into account when submitting their bids. In the event the Sale of Goods Agreement is extended for an additional period, the bidder may request a price increase. Justification for any increase must be based on the prevailing market index or detailed data showing the basis for, and the amount of the proposed increase. PWC reserves the right to accept or reject any request for an increase. Such action by PWC shall occur not later than 30 days after receipt by PWC of a properly documented request.

DELIVERY AND PAYMENT

- 1) Payment for equipment, material, supplies, etc. purchased pursuant to this bid shall be made by Public Works Commission approximately thirty days after the same has been delivered, inspected, approved and the invoice received in the PWC Accounts Payable Office, P.O. Box 1089, Fayetteville, North Carolina 28302.
- 2) **SEE TECHNICAL SPECIFICATIONS FOR MORE INFORMATION REGARDING DELIVERY.**

ATTACHMENT A: TECHNICAL SPECIFICATIONS & DRAWINGS

TECHNICAL SPECIFICATIONS

**PUBLIC WORKS COMMISSION
OF THE CITY OF FAYETTEVILLE, NORTH CAROLINA**

**RELAY CONTROL SWITCHBOARDS FOR THE
PO HOFFER, CUMBERLAND ROAD, AND
COLLEGE LAKES SUBSTATIONS**

TECHNICAL SPECIFICATIONS

1.0 Scope

These Specifications cover the design, manufacture, and delivery in good order for one (3) Transformer Relay and Control Switchboard, two (6) Feeder Relay and Control Switchboards, one (3) SCADA and Communications Switchboard and one (2) Termination Cabinet, as specified herein and as required for the operation of the PO Hoffer 69 to 15 x 25 kV, Cumberland Road 69 to 15 kV, and College Lakes 69 to 15kV substations.

2.0 General Conditions

- 2.1 All materials and equipment shall be new.
- 2.2 These Specifications describe the type, size, and characteristics of the various materials, and equipment required to be furnished. The Drawings indicate general arrangement, equipment location, and equipment spacing.
- 2.3 Strict adherence to these general Specifications and Drawings is requested to facilitate checking and consideration of the Proposal.
- 2.4 Proposals shall include the following:
 - 2.4.1 A complete bill of materials, identifying each item by catalog number, manufacturer, ratings, characteristics, types, sizes, etc., of all materials and equipment included. A simple statement that all necessary materials and equipment will be provided is not acceptable.
 - 2.4.2 The Bidder shall state Exceptions in his Proposal for any variations to the specified manner in which the switchboards will be shipped.
- 2.5 Prices shall include the cost of delivery to the control house manufacturer – to be determined.
- 2.6 All construction shall be performed in a workmanlike manner and shall conform to the Drawings and Specifications. The installation shall conform to the latest editions of the National Electric Code.
- 2.7 The Drawings and Specifications are complementary, one to the other. That which is shown on the Drawings or called for in the Specifications shall be as binding as if both were called for and shown. The intention of the Drawings and Specifications is to include all labor, materials, transportation, equipment, and any other items necessary to do a complete job.

3.0 Special Conditions

- 3.1 Defective Materials, Equipment, and Workmanship
 - 3.1.1 All materials and equipment furnished hereunder shall be subject to the inspection, tests, and approval of the Owner, and the Bidder shall furnish all information required concerning the nature or source of any materials and equipment and provide adequate facilities for testing and inspecting the materials and equipment at the plant of the Bidder.
 - 3.1.2 The materials and equipment furnished hereunder shall become the property of the Owner when delivered at the point to which shipment is to be made, provided, however, that the Owner may reject any such materials and equipment as does not comply with the Specifications for materials and equipment and warranties of the Bidder and manufacturers. Recognition and subsequent rejection of any defective materials and equipment may occur either before or after incorporation of such

materials and equipment into the facilities; provided such rejection is made within one (1) year from date of delivery of the materials and equipment. Upon any such rejection, the Bidder shall replace the rejected materials and equipment with materials and equipment complying with the Specifications for materials and equipment and warranties, F.O.B. truck at a suitable destination. The Owner shall return the rejected materials F.O.B. truck at the same destination. In the event of the failure of the Bidder to so replace rejected materials and equipment, the Owner may make such replacement and the cost and expense thereof shall be paid by and recoverable from the Bidder.

3.2 Miscellaneous

The Bidder shall hold harmless and indemnify the Owner, its agents and employees, from any and all claims, suits and proceedings for infringement of any patent or patents covering materials and equipment purchased hereunder. The Bidder shall defend any suit or proceeding brought against the Owner, its agents or employees, based upon a claim that the materials and equipment or any part thereof constitutes an infringement of any patent, or if the Bidder shall fail to defend such suit or proceeding, the Owner may do so and the Bidder shall make reimbursement for the expense of such litigation. If the materials and equipment, or any part thereof is enjoined, the Bidder shall, at its own expense; either procure for the Owner the right to continue to use the materials and equipment, or such part thereof, or shall replace the materials and equipment, or such part thereof, with non-infringing materials and equipment.

4.0 Standards

All equipment and materials covered by these Specifications and all tests applied thereto shall, unless otherwise stated herein, be in accordance with the applicable provisions of the latest editions of the Standards of the ASTM, ANSI, AEIC, NEMA, NESC, and IEEE.

Where the term "Standards" is used in the Specifications, it shall be understood to refer to the above Standards.

5.0 Drawings

The Bidder shall provide adequate documentation to fully describe the equipment being furnished. Each set of Approval and Final Drawings and documentation shall include, but not be limited to, the following information. Booth will provide ac / dc schematics and point-to-point wiring diagrams.

- 5.1 Control Switchboard Arrangement Drawings including steel fabrication if equipment furnished does not agree with the Engineer's Drawings.
- 5.2 List of Material which shall include a complete description of all items furnished including quantity, catalog numbers, ratings, and manufacturer.
- 5.3 Control switch contact development(s) with escutcheon engraving, each on an 8-1/2" x 11" Drawing, complete with switch manufacturer's catalog number.
- 5.4 Drawings Furnished by Manufacturer

5.4.1 Approval Drawings

Before proceeding with fabrication, the manufacturer shall submit, for review and approval to the Owner sufficient Drawings to demonstrate that all parts conform to the requirements and intent of these Specifications and Drawings. Each set of Drawings shall include those Drawings as outlined in Section 5.0.

For Drawing approval, the manufacturer shall submit four (4) sets each of the Drawings, hard copy and electronically.

Approval of Drawings shall not be held to relieve the manufacturer of obligations to meet all requirements in the Specifications, of responsibility for correctness of the Drawings, or of responsibility to meet original shipping promise on the basis of the Owner being allowed two (2) weeks for approval.

Receipt of Approval Drawings by the manufacturer constitutes authorization for

manufacture, based upon the corrections found thereon.

The Owner may require a second submittal of Shop Drawings if, in the opinion of the Owner, such is required due to the extent of changes required on the first submittal. If an extension of time is required due to a protracted Drawing approval process, the price will remain as quoted for the quoted delivery.

5.4.2 Final Drawings

Contingent upon Approval Drawing review and product manufacture, the Bidder shall issue final documentation as follows:

- 1) One (1) complete set of all Drawings, revised to "as-built" status.
- 2) Two (2) complete sets of all Drawings, revised to "as-built" status, released on separate CD-ROM's, compatible with AutoCAD 2004.
- 3) The specified number of copies of applicable bound instruction books, including one (1) print each of all Drawings representing physical and electrical details as furnished per paragraph 5.0 plus one (1) copy each of renewal parts catalog.
- 4) Two (2) copies of bound Instruction Books and Drawings shall be furnished for each control house.
- 5) Two (2) copies of certified test reports corresponding to functional performance measurements after final assembly.
- 6) All Drawings are to be certified correct and supplied within a reasonable length of time prior to shipment of the equipment.
- 7) Complete set of all documentation in .PDF format on CD ROM.

6.0 Shipping

- 6.1 Equipment shall be shipped upright to the control house manufacturer in an open-top truck so as to facilitate crane or fork truck unloading.
- 6.2 Before shipment, the control switchboards shall be completely assembled, wired, and tested to perform the functions required.
- 6.3 The method of packing and loading shall be such as to protect all parts from dampness, corrosion, breakage, or vibration damage that might be reasonably encountered in transportation and handling.
- 6.4 Release for shipment is to be granted based upon the manufacturer's compliance with the following:
 - 6.4.1 Forty-eight (48) hours notification of factory testing so the Owner may have a representative present to witness the testing.
 - 6.4.2 Furnishing of the required number of copies of the Final Drawings, test reports, and instruction books as called for in the Specifications.
 - 6.4.3 Coordination of manufacture and delivery with the Owner's construction schedule as may be noted in the Specifications.
 - 6.4.4 Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to delivery.

7.0 Switchboard and Panel Construction

The switchboards and panel shall be manufactured by those regularly engaged in the design and manufacture of control switchboards for electric utilities and shall be completely familiar with metering, relaying, and control of utility system Substations.

7.1 Cabinetry

The switchboard cabinets shall be a separate freestanding indoor enclosure manufactured per Booth & Associates, LLC Relay Standard Dual Panel Details and featuring:

- 7.1.1 A front panel for flush and semi-flush mounting of relays, meters, indication lamps, controls switches, nameplates, and similar instrumentation and control.
- 7.1.2 Nineteen-inch (19") rack rails with EIA standard RS-310-D screw spacing **welded** to the front panel are required for all panels. Rack-mount relays and plates shall be mounted to the rack rails using 10-32 size screws designed for rack mounting. These are typically pan-head screws with non-marring washers ("beauty rings") to protect the front of the relays and plates.
- 7.1.3 Fully enclosed left and right side panels complete with wiring troughs and with mounting provisions for terminal blocks, fuse blocks, and auxiliary relays, transducers, and service equipment.
- 7.1.4 Fully brace top with lifting angle and open for top entry cableways with mounting provisions for wireways and convenience lighting.
- 7.1.5 Provisions for anchoring the enclosure to the concrete floor.
- 7.1.6 Overhead interior lighting system consisting of LED lamp, light switch, and fused ac service wiring for 120 volts ac.
- 7.1.7 Provisions for bolting together one control switchboard to another using bolts at standard heights per Booth & Associates, LLC Relay Standard Dual Panel Details, Sheet S2.
- 7.1.8 All sheet steel panels shall be constructed from 11-gauge (0.125 inch) stretcher steel per U.S. Standard Sheet and Plate. All bends shall be made using proper tooling to present sharp, square, and smooth bends. The front panel shall be punched and drilled for mounting of semi-flush instruments, relays, and equipment. The top sheet shall be cut as shown on the Drawing and shall have edges rolled to protect the cables entering the cabinet.
- 7.1.9 The switchboards shall be properly constructed with provisions for bolting to a floor. Flush type drop-in anchors with one-half inch ($\frac{1}{2}$ ") stainless steel anchor bolts shall be furnished for bolting the switchboards to a concrete floor.
- 7.1.10 A copper ground bus shall be mounted on stand-off brackets on the inside of the front switchboards with provisions for connecting to the ground bus in an adjacent switchboard.
- 7.1.11 All surface areas and all edges of the switchboard which are exposed to wiring are to be finished to present a smooth surface to wiring insulation. Finished surface of switchboard is of critical importance. Switchboard exterior edges, corners, and welds are to be ground smooth to provide a good appearance and present evidence of high quality workmanship. Panel interior must present a smooth surface for wire insulation. All corners, edges, welds, drilled or punched holes, threaded holes with or without screws installed, and any other similar areas must be ground or filed smooth. Failure to comply with this requirement will result in the Owner requiring the Bidder to travel to the Owner's location at the Bidder's expense to grind or file and finish rough or sharp areas on the switchboards.

Each part of the switchboards shall be painted inside and outside with one (1) coat of rust resistant primer prior to assembly. Welded areas are to be touched up with primer. After assembly, the interior and exterior of the switchboards shall be painted with two (2) coats of medium gray low sheen acrylic paint, ANSI-61, Code IC-0702 on the exterior and two (2) coats of white on the interior. Switchboards shall not be painted with relays and equipment mounted.

7.2 Relaying and Metering Equipment

- 7.2.1 All electrical components including relays, meters, indicating instruments, control switches, indicating lights and circuit breakers shall be furnished and installed and wired in the cabinet. The equipment to be furnished is listed and described in the Drawings. Materials and components are identified by Item Numbers, which correspond to the Control Switchboard Arrangement Drawings.
- 7.2.2 Each piece of equipment shall be identified on the front and rear panels using engraved, white lettering on black background, laminated phenolic nameplates per the Nameplate Engraving Schedule Drawing for each panel. Nameplates shall be one inch by three inch (1" x 3") and one inch by one and one-half inch (1" x 1½") as specified and shall be bonded to the panels using stainless steel screws. Two (2) two inch by six inch (2" x 6") panel identification nameplates shall be similarly affixed to the upper center of the front and rear panels.
- 7.2.3 SEL-351S relays, on each panel where used, shall have the configurable nametag inserts for the pushbuttons prepared and installed per the Nameplate Engraving Schedule Drawing.
- 7.2.4 Terminal blocks shall be mounted as shown on the Drawings and in a manner to give clear access to all terminals for making wire connections. **White marking strips on terminal blocks shall be labeled with the signal name shown on the Switchboard Interconnection Drawing.**
- 7.2.5 Each panel shall be equipped with a 120 Vac, 15 ampere duplex outlet completely wired, protected by a fuse. Each panel shall also be equipped with an overhead interior LED light, complete with light switch and wiring, protected by a fuse.

7.3 Wiring

- 7.3.1 All devices within the switchboards shall be completely wired, connected, identified, dressed neatly and tied.
- 7.3.2 All conductors for current transformer circuits shall be sized No. 10 AWG. These conductors shall be 600 volt insulation, Type SIS, 105 strand.
- 7.3.3 Ground wires from current transformer circuit ground terminal points to the panel ground bus bar shall be Green, 600 volt insulation, No.10 AWG.
- 7.3.4 The cases of all solid-state relays, meters, and instruments shall be grounded directly to the relay ground bus with at least No. 12 AWG, Green, stranded copper wire.
- 7.3.5 All conductors for low-level signal outputs from transducers shall be sized No. 18 AWG. Conductors shall be 600 volt insulation, twisted, shielded pairs, stranded, with copper drain wire, PVC insulation, and PVC jacket.
- 7.3.6 All conductors for relay, control, and metering functions not otherwise specified above shall be sized No. 14 AWG. Conductors shall be 600 volt insulation, Type SIS, 41 strand.
- 7.3.7 All wiring shall be continuous from device terminal to device terminal; no splices shall be permitted. **All wiring shall be connected using ring-type terminals; spade-type terminals shall not be used. All connections shall be made using silicon bronze lock washers unless the terminating device is equipped with another inherently locking-type connector.**
- 7.3.8 All wiring shall be tagged with permanent labels at each end using the device identifications and device terminal numbers shown on the Drawings to be issued to the Successful Bidder. The wire markers shall indicate the destination of the wire, not the origin. For example, the end terminated on Device 50/5, Terminal 2, whose other end is on Device 87T, Terminal 2, shall be labeled 87T-2.

7.3.9 Wiring shall be done in an orderly manner to permit the addition of Owner's wiring and for troubleshooting wire tracing. Wiring from terminal boards to devices shall be run in the wireway to the locations adjacent to the devices. No more than two wires per terminal shall be used.

7.4 Device Identification Letters

7.4.1 Identification letters shall be used to define and locate devices of a panel in agreement with the interconnection/ wiring diagrams. Decals with the device identification letter(s) shall be affixed adjacent to device locations or on the rear of devices when viewing the panel from the rear as shown on the wiring diagram, but not on removable covers. **Identification letters shall be of at least ¼ inch high with black text on a yellow or white background.**

7.4.2 Letter designations shall be as assigned as follows:

- 1) Terminal Blocks: Single letter designations are used for terminal blocks (outside row) or the same letter repeated (ex. "C" or "AA") (inside row).
- 2) Other Devices: Shall be labeled per the wiring diagrams.

8.0 Protective Relaying and Control Switchboard

8.1 General

Described herein are one (3) Transformer Relay and Control Switchboard, two (6) Feeder Relay and Control Switchboards, one (3) SCADA and Communication Cabinet and one (2) Termination Cabinet as listed below complete with relay and control equipment and accessories for installation in a substation control house. Equipment requirements are specified in the sections indicated:

PO Hoffer 69 to 15 x 25 kV Substation:

Switchboard No. 1- 69/15 x 25kV Bank No.1 Relay & Control

Switchboard Nos. 2 & 3- Bank No. 1 Feeder Relay & Control Switchboard

Switchboard No. 4- SCADA and Communications

Cumberland Road Substation:

Switchboard No. 1- 69/15 x 25kV Bank No.1 Relay & Control

Switchboard Nos. 2 & 3- Bank No. 1 Feeder Relay & Control Switchboard

Switchboard No. 4- SCADA and Communications

College Lakes Substation:

Switchboard No. 1- 69/15 x 25kV Bank No.1 Relay & Control

Switchboard Nos. 2 & 3- Bank No. 1 Feeder Relay & Control Switchboard

Switchboard No. 4- SCADA and Communications

(2) Future Substations

(2)Switchboard No. 1- 69/15 x 25kV Bank No.1 Relay & Control

(2)Switchboard Nos. 2 & 3- Bank No. 1 Feeder Relay & Control Switchboard

(2)Switchboard No. 4- SCADA and Communications

8.2 Service Conditions and Nominal Ratings

8.2.1 The switchboard will be installed in a heated and cooled substation control house.

8.2.2 Nominal voltage, current, and frequency ratings for the switchboards are listed as follows:

Frequency:	60 Hz
Station Service Voltage:	120/240 Vac, 1-phase
PT Nominal Secondary Voltage:	115 Vac phase-to-ground
CT Nominal Secondary Current:	5 amps
Dc Voltage:	48 Vdc

8.3 The AC power for the switchboard will be provided by the Contractor at the substation site. The DC power to the switchboard shall be provided from batteries installed in the control house by the Contractor. Power supply requirements for all protective equipment shall be taken from the DC service. Power supply requirements for all electronic meters and other electronic equipment shall be taken from the AC station service. Electronic power supplies shall not be connected to substation metering voltage transformers.

8.4 The detailed BOM for all Relay Panels is located on the Drawings.

9.0 **Spare Parts**

The Bidder shall provide prices for spare relays and devices as listed below as a separate line item on the Bidder's Proposal, page P-4.

9.1 One (3) of each type Lockout Relays as specified on Drawings. PN: 78PA06CH-001.

9.2 One (3) of each type control switch as specified on Drawings. PN: 24PA202PN.

9.3 Five (15) each size (10 amp, 20 amp, 30 amp). Spare fuses as used in the panel requirements above. PN: Gould A2K-R or Reliance NCLR-R.

9.4 Spare 48/125V DC LED bulbs for Electro-switch lighted nameplates as used in the panel requirements above; two (6) each color. Color RED: PN: 658-402-1; Color WHITE: PN: 658-405-1.

9.5 One (3) SecuControl STSA10002BA configured [VVVVVVVVVVV].

9.6 One (3) SecuControl STSA10028AA configured [TTTTTTTTTTT].

9.7 One (3) SecuControl STSA10008AO configured [C-C C-C C-C C-C VV].

10.0 **Production Tests**

The following tests shall be made to verify that the switchboard is manufactured to Specifications. The Owner reserves the right to be in attendance at such testing.

10.1 **Control Wiring Dielectric Test**

Tests made to verify that switchboard wiring has an adequate insulation level to ground include the following three alternatives:

- a. A test voltage two (2) times rated circuit voltage plus 1000 V (minimum 1500 V), 60 Hz to ground for one minute.
- b. A test voltage 20% higher than the one (1) minute value (minimum 1800 V), 60 Hz to ground for one (1) second.
- c. An insulation-resistance test using a dc voltage level no less than the ac level listed in (1) above times 1.414 for not more than 1 min with a minimum measured insulation resistance of 1 MΩ.

The procedure is based on the type of circuits and devices on the switchboard. Devices that have been individually tested may be disconnected during the test. Some devices, such as transducers and electronic meters, must be disconnected because the applicable industry standard involves a lower or different permissible dielectric test. Equipment and circuits that operate at 50 V or less, unless otherwise specified, shall be tested in the same manner as above using a test voltage of 500 V, 60 Hz for one (1) minute (Test and Test Procedures, ANSI/NEMA ICS1-1983[6]).

10.2 Electrical Operation, Sequence, and Wiring Tests

Tests shall be made to verify the correctness (including polarities) of the wiring in a switchboard. Verification shall be made preferably by actual electric operation of the circuit and devices to ensure that the devices function in the proper and intended sequence (functional test) or by individual circuit continuity checks (ring-out).

Instruments shall be tested to ensure that pointers move in proper direction. This does not require tests using primary voltage and current.

11.0 Installation

All equipment and materials included in these Specifications are for installation in the control house by others. Installation is not included in these Specifications.

APPENDICES:

- 1. Booth & Associates, LLC
Drawing List**

1

Drawing List

Booth & Associates, LLC

**PUBLIC WORKS COMMISSION
FAYETTEVILLE, NORTH CAROLINA**

**PO HOFFER, CUMBERLAND ROAD, AND
COLLEGE LAKES SUBSTATIONS**

LIST OF DRAWINGS

The work shall conform to the following Booth and Associates, LLC Drawings, all of which form a part of these Specifications. The Contractor is responsible for contacting the Engineer if any drawings not indicated to be furnished at a later date are missing from their bid package. If the Bidder does not contact the Engineer regarding any drawings, their bid will be considered based on all Drawings and Specifications, as issued for bids.

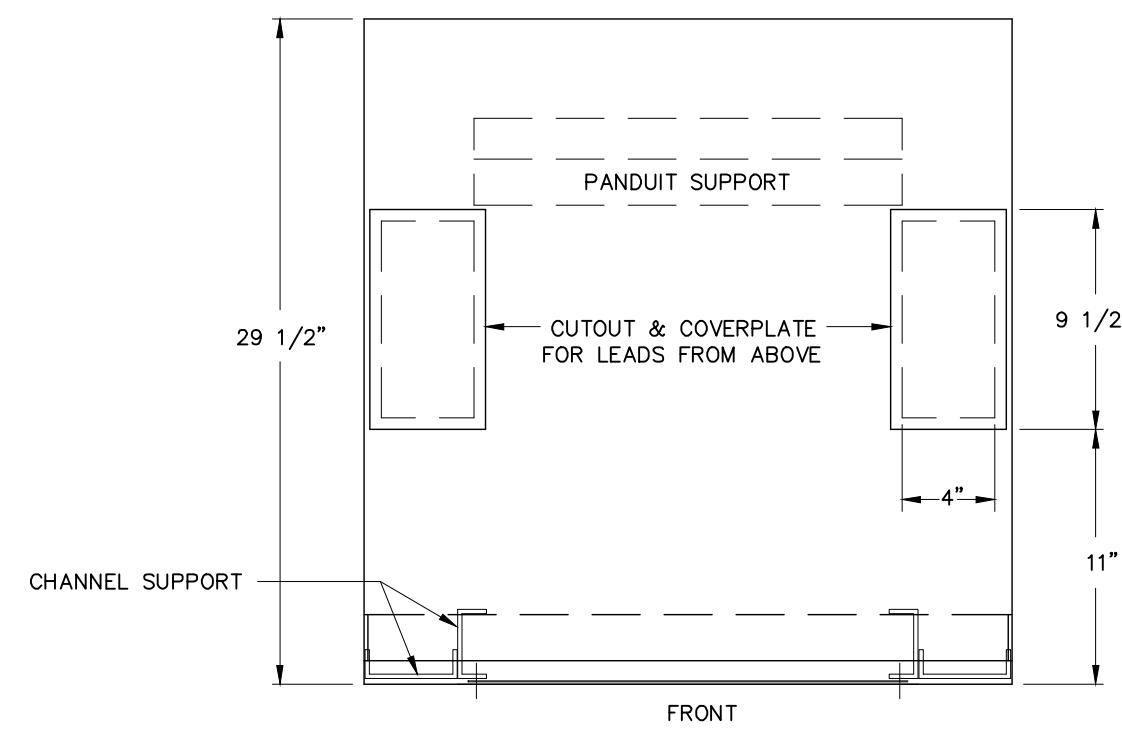
RELAY CONTROL PANEL AND SCADA

Sheet No.	Title
E06	Switchboard No. 1 Arrangement & Details
E07	Switchboard No. 1 NP Engraving Schedule and BOM
E08	Switchboard No. 2 Arrangement & Details
E09	Switchboard No. 2 NP Engraving Schedule and BOM
E10	Switchboard No. 3 Arrangement & Details
E11	Switchboard No. 3 NP Engraving Schedule and BOM
E12	Switchboard No. 4 Arrangement & Details
E13	Switchboard No. 4 Bill of Material
E14	Termination Cabinet Panel
E37	AC-1, AC-2 Panels Interconnection Diagram
E38	DC-1 Panel Interconnection Diagram
E39	Switchboard No. 1 Interconnection Diagram
E40	Switchboard No. 2 Interconnection Diagram
E41	Switchboard No. 3 Interconnection Diagram
E42	Switchboard No. 4 Interconnection Diagram
E52	Termination Cabinet Interconnection Diagram

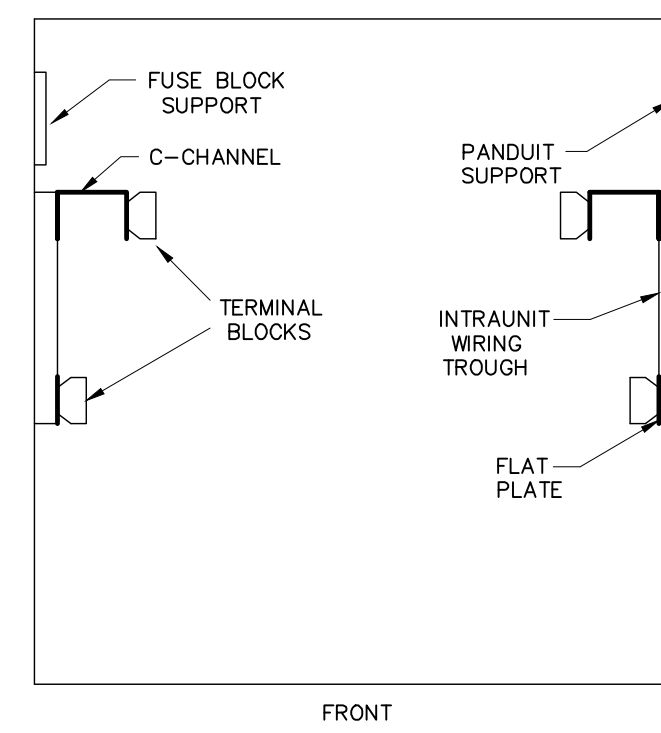
Standard Booth & Associates, LLC Drawings pertaining to the steel fabrication of the relay panel are:

<u>Sheet No.</u>	<u>Title</u>
S1 - S8	Relay Standard Dual Panel Details

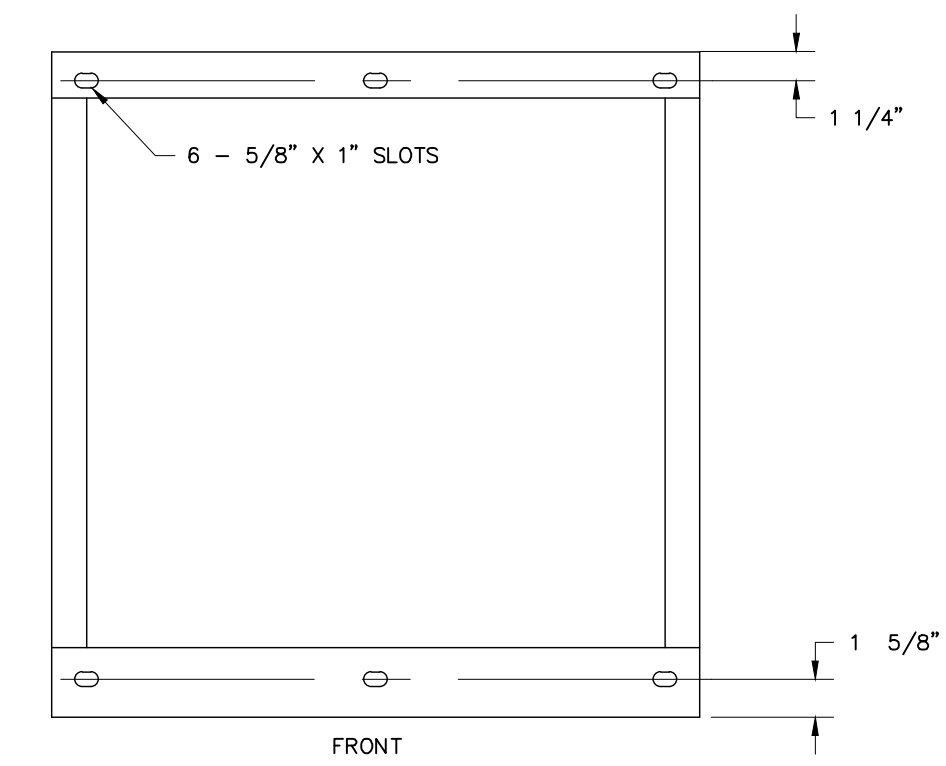
These are standard Drawings prepared to show the maximum design of the stations and do not represent the number of components required by this Specification. The quantities of equipment to be furnished by this Specification are described in the material list of this Specification.



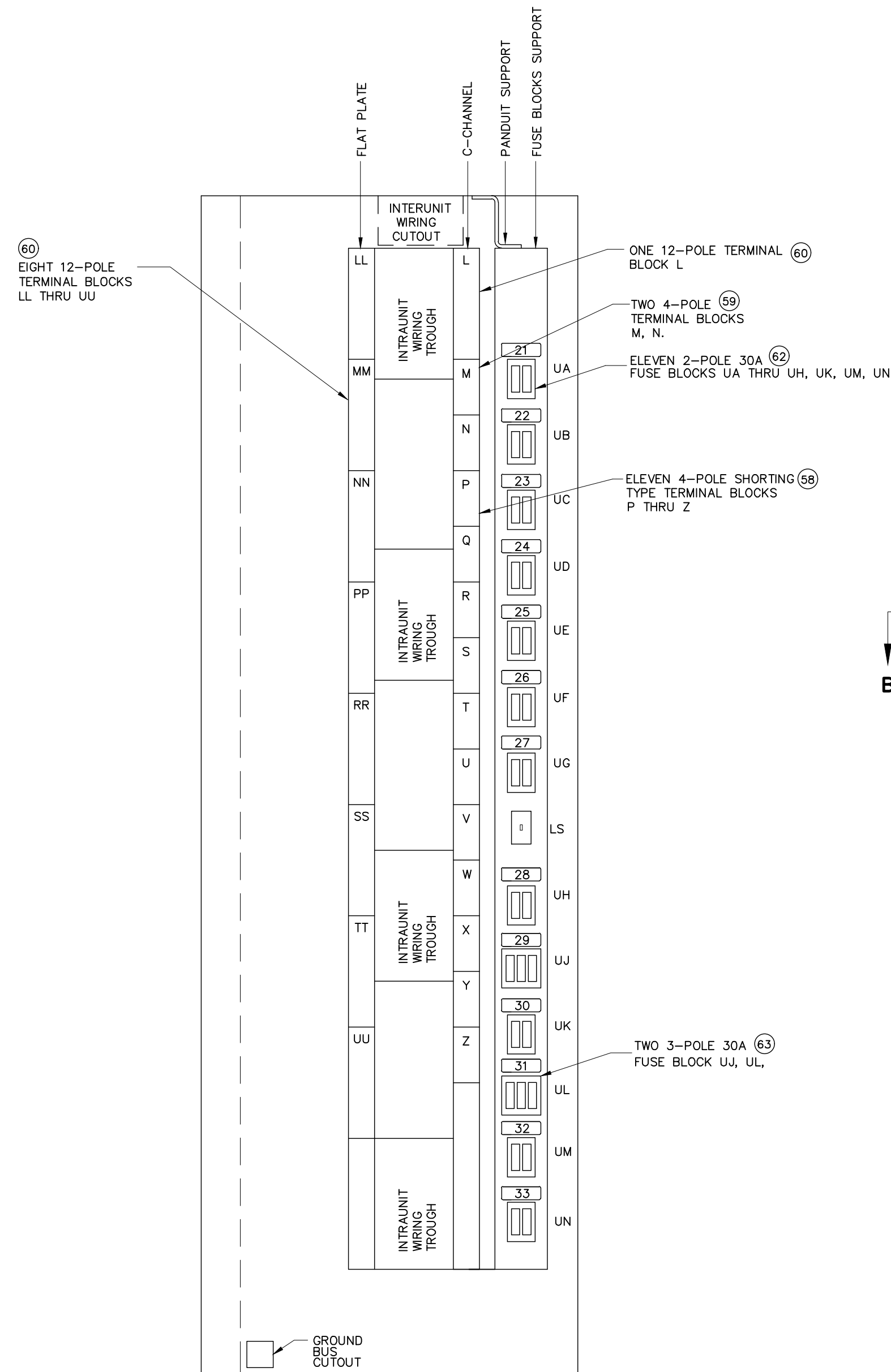
SECTION A-A



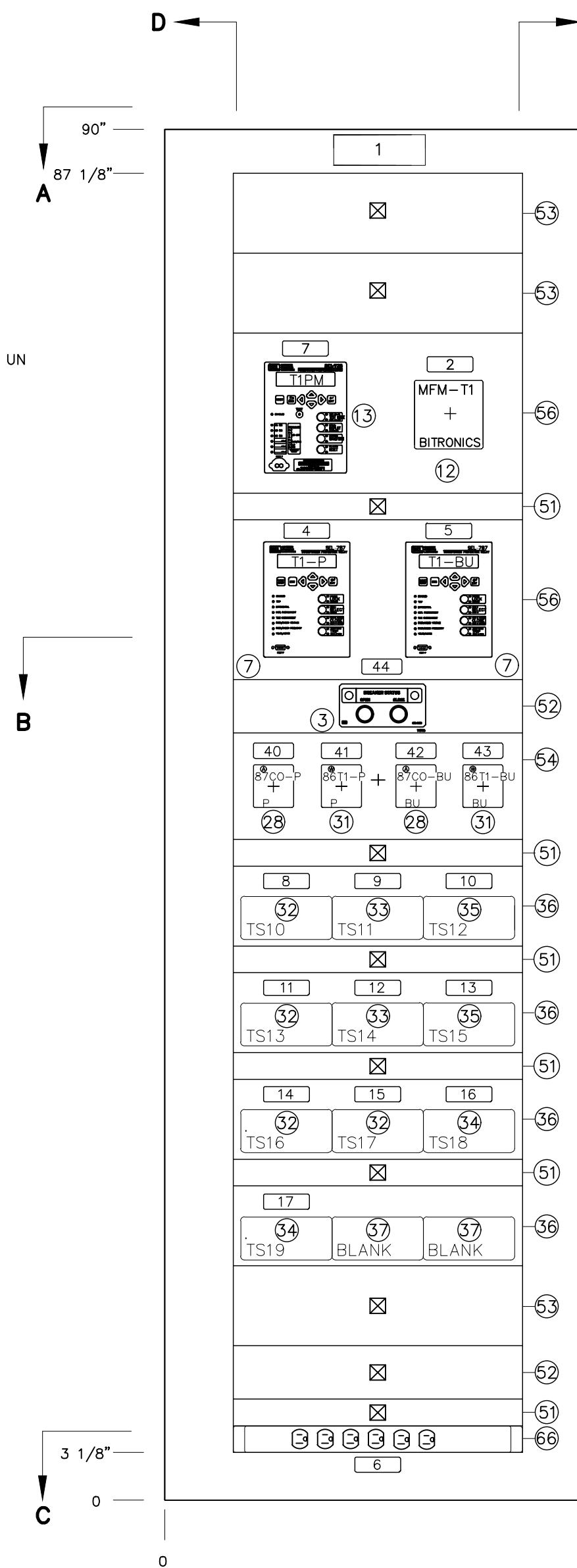
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

NOTES:

1.) ① INDICATES MATERIAL ITEM NUMBER

*There will be a total of 5 switchboards with this design

PRELIMINARY

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

© 03/2022

NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A	FOR BID		BMJ	09/24/2023

PROJECT NAME:
**CUMBERLAND ROAD
69 TO 15 X 25 KV SUBSTATION**

DRAWING TITLE:
**SWITCHBOARD NO.1
ARRANGEMENT AND DETAILS**


DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NONE
FILE NUMBER:	12510
SHEET:	


SWITCHBOARD No. 1							
NAMEPLATE ENGRAVING SCHEDULE							
Name Plate No.	Size	Text Size	First Line	Second Line	Third Line	Qty.	Remarks
1	2" x 6"	1/4"	SWITCHBOARD No. 1	TRANSFORMER No. 1	RELAY AND CONTROL	2	
2	1" x 3"	1/8"	MFM	TRANSFORMER No. 1	15 KV METERING	1	
4	1" x 3"	1/8"	T1-P	XFMR DIFFERENTIAL	PRIMARY RELAY	1	
5	1" x 3"	1/8"	T1-BU	XFMR DIFFERENTIAL	BACKUP RELAY	1	
6	1" x 3"	1/8"	RECEPTACLE No. 1			1	
7	1" x 3"	1/8"	T1PM	TRANSFORMER No. 1	POWER METER	1	
8	1" x 3"	1/8"	TS10	T1-P HIGH-SIDE	CURRENTS	1	
9	1" x 3"	1/8"	TS11	T1-P LOW-SIDE	CURRENTS	1	
10	1" x 3"	1/8"	TS12	T1-P	TRIPS/CLOSE	1	
11	1" x 3"	1/8"	TS13	T1-BU HIGH-SIDE	CURRENTS	1	
12	1" x 3"	1/8"	TS14	T1-BU LOW-SIDE	CURRENTS	1	
13	1" x 3"	1/8"	TS15	T1-BU	TRIPS	1	
14	1" x 3"	1/8"	TS16	TRANSFORMER No. 1	POWER METER	1	
15	1" x 3"	1/8"	TS17	TRANSFORMER No. 1	MULTIFUNCTION METER	1	
16	1" x 3"	1/8"	TS18	86T1-P LOCKOUT	TRIPS	1	
17	1" x 3"	1/8"	TS19	86T1-BU LOCKOUT	TRIPS	1	
21	1" x 3"	1/8"	POWER METER	(UA) 48 Vdc	P-10A N-10A	1	
22	1" x 3"	1/8"	SPARE	(UB) 48 Vdc	P-10A N-10A	1	
23	1" x 3"	1/8"	T1-P XFMR RELAY	(UC) 48 Vdc	P-10A N-10A	1	
24	1" x 3"	1/8"	86T1 PRIMARY L.O.	(UD) 48 Vdc	P-30A N-30A	1	
25	1" x 3"	1/8"	T1-BU XFMR RELAY	(UE) 48 Vdc	P-10A N-10A	1	
26	1" x 3"	1/8"	86T1 BACKUP L.O.	(UF) 48 Vdc	P-30A N-30A	1	
27	1" x 3"	1/8"	SPARE	(UG)		1	
28	1" x 3"	1/8"	LIGHT & RECEPTACLE	(UH) 120 Vac	X-15A	1	
29	1" x 3"	1/8"	SPARE	(UJ)		1	
30	1" x 3"	1/8"	SPARE	(UK)		1	
31	1" x 3"	1/8"	LOW-SIDE BUS POTENTIAL	(UL) 120 Vac	A-15A B-15A C-15A	1	
32	1" x 3"	1/8"	MFM	(UM) 48 Vdc	P-10A N-10A	1	
33	1" x 3"	1/8"	SPARE	(UN)		1	
40	1" x 3"	1/8"	87CO-P	PRIMARY	DIFF CUT-OFF	1	
41	1" x 3"	1/8"	86T1-P	PRIMARY	LOCKOUT	1	
42	1" x 3"	1/8"	87CO-BU	BACKUP	DIFF CUT-OFF	1	
43	1" x 3"	1/8"	86T1-BU	BACKUP	LOCKOUT	1	
44	1" x 3"	1/8"	69kV BREAKER 52-T1	CONTROL		1	

Item	Quantity	MFR Part Number	Description	Remarks
3*	1 each	SEL 9510 Model No. 951021B2	SEL-9510 Control Switch Module, 48VDC LED voltage, Open=Green, Closed=Red, with Pushbutton Guards, with Configurable Labels.	PURCHASED BY COMMISSION
7*	2 each	SEL 787 Model No. 0787EX2CCCC75850620	SEL-787 Transformer Protection Relay Firmware: Standard with REF plus Voltage Sensing, VHz Element, Over/Under Voltage and Frequency, and Power Elements; Slot A Power Supply 24-48 Vdc (SELECT PSIO / 2 DI / 3 DO); 48 Vdc/Vac Digital Input; Slot B: Processor Board (SELECT CPU/COM); All Slot B options include EIA-232 Front, IIRG-B, Fiber Optic Serial Multimode ST, SEL ASCII, Compressed ASCII, Fast Meter, Fast Operate, Fast Message, Mirrored Bk, and Modbus RTU; Slot B: Ethernet/Rear Serial Options; Dual 10/100Base-T Ethernet, EIA-232 Rear; Slot B: Protocols: Standard plus DNP3; Slot C: 4 Digital Input / 4 Digital Output (SELECT 4 DI / 4 DO); 48 Vdc/Vac DI, Fast High Current Interrupting DO; Slot D: 4 Digital Input / 4 Digital Output (SELECT 4 DI / 4 DO); 48 Vdc/Vac DI, Fast High Current Interrupting DO; Slot E: Neutral AC Current Input / 3-Phase AC Voltage (300 Vac) Input (SELECT 1 ACI / 3 AVI); 5 Amp Neutral; Slot Z: 6 AC Current Input (SELECT 6 ACI); 5 Amp Winding 1, 5 Amp Winding 2	PURCHASED BY COMMISSION T1-P, T1-BU
12	1 each	Bitronics Model No. M850M3P511	Multifunction Advanced 3-phase, Alphanumeric Meter, 48-250VDC/55-240VAC power (with monitoring), Signal Input Range: 120 VAC, 0-5A. Serial (Programmable RS-232/RS-485), Ethernet RJ45 10/100 Mb protocols enabled.	MFA-T1
13*	1 each	SEL 735 Model No. 0735BX20922CFB2XX16101XX Key Code: 1029	Power Quality and Revenue Meter, Chassis Vertical Panel Mount, EIA-232 Port, Power Quality and Recording Option Advanced PQ and Recording* Meter Form Form 9 (Four-Wire Wye, 3 PTs, 3 CTs); Slot A: Power Supply 24/48 Vdc; Slot A: Control Input Voltage 48 Vdc or Vac, 3 Contact Outputs, 2 Inputs; Main Board Communications Two EIA-232 Ports and One 10/100BASE-T Ethernet Port; Slot D: Boards 4 Electromechanical Outputs, 4 Inputs; Slot D: Control Input Voltage 48 Vdc or Vac; Slot Z: Current and Voltage Inputs Current Class CL210/20, Optimized for Low-End Accuracy; System Frequency 60 Hz; Communications Protocol SEL ASCII, SEL LMD, SEL Fast Meter, SEL Compressed ASCII, MV 90 Translation™, Modbus® RTU/TCP, MIRRORRED BITS® Communications, Telnet, DNP3 Level 2 Outstation and LAN/WAN(3), and Synchrophasors(3), Standard Communications Protocols Front-Panel Labeling ANSI Labeling	PURCHASED BY COMMISSION T1PM
14*	1 each	SEL PN: 926073	SEL 735 Label Kit - vertical & horizontal 3 sheets	PURCHASED BY COMMISSION
15*	1 each	SEL PN: PM735-01	SEL 735 Printed Instruction Manual	PURCHASED BY COMMISSION
28	2 each	Electroswitch Cat. No. 24PA202PN	Electroswitch Series 24 Control Switch, two (2) decks. Nameplate Code No. 150D-2D24, 1="NORMAL", 2="CUT OFF", title engraved "DIFFERENTIAL", lighted nameplate, one (1) LED light: Amber.	87CO-P, 87CO-BU
31	2 each	Electroswitch Cat. No. 78PA06C-001	Electroswitch Lockout Relay (LOR), hand reset Electroswitch LOR lockout relay, 48 Vdc trip coil "C", six (6) decks with two (2) N.C. and two (2) contacts per deck, hand reset, nameplate engraved "LOCKOUT RELAY", with lighted nameplate (one LED, White)	86T1-BU, 86T1-P
32	4 each	SecuControl Part Number: STSA10004AE	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [C-C-C-C-C-V-V-V-V]	TS10, TS13, TS16, TS17
33	2 each	SecuControl Part Number: STSA10008AO	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [C-C-C-C-C-V-V-V]	TS11, TS14,
34	2 each	SecuControl Part Number: STSA10028AA	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [I I I I I I I I I I]	TS18, TS19
35	2 each	SecuControl Part Number: STSA10073AD	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [I I I I I I I I V V]	TS12, TS15
36	4 each	SecuControl Part Number: FTx3UA101010AG	Safety Test Switch 19" Rack Plates 3RU, standard 19" rack plates, 2mm thick with standard cutouts; cutout for three 10-pole ST Switches, Color: ANSI-grey #81	
37	2 each	SecuControl Part Number: FTBC10AG	Covers for 19" Safety Test Switch Rack Plate Cutouts 10-pole cover; Color: ANSI-grey #81	
51	6 each	Hoffman P19RP1UP or equivalent	19-inch rack cover plates - 1-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
52	2 each	Hoffman P19RP2UP or equivalent	19-inch rack cover plates - 2-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
53	3 each	Hoffman P19RP3UP or equivalent	19-inch rack cover plates - 3-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
54	1 each	Hoffman P19RP4UP or equivalent	19-inch rack cover plates - 4-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
56	2 each	Hoffman P19RP6UP or equivalent	19-inch rack cover plates - 6-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
58	11 each	Marathon Cat. No. 1504SC	Shorting Terminal Block, 4P, 600V, barrier-type with screw type terminals	
59	2 each	Marathon Cat. No. 1504	Terminal Block, 4P, 600V, white marking strip, barrier type, with screw type terminals	
60	25 each	Marathon Cat. No. 1512	Terminal Block, 12P, 600V, white marking strip barrier type, with screw type terminals	
62	11 each	Marathon Cat. No. RF30A2S or equivalent	Fuse Block, 2P, 30A, 250V, Class H with screw type terminals and spring reinforcing clips. Ceramic blocks are not acceptable	
63	2 each	Marathon Cat. No. RF30A3S or equivalent	Fuse Block, 3P, 30A, 250V, Class H with screw type terminals and spring reinforcing clips, ceramic blocks are not acceptable	
66	1 each	Tripp Lite Model No. RS-1215	Power Strip, Rackmount (1RU), 120VAC 15 Amperes (12 Outlets 6 front and back)	
---	1 each		Overhead Interior Lighting System, 120Vac overhead interior lighting system complete with LED lamp, light switch, and fused ac service wiring for 120 volts ac.	1 for each panel
---	1 lot		Engraved Nameplates as required, all 1" x 3" except top panel plate on front & rear which shall be 2" x 6"	As required for each panel
---	4 each	Hilti Drop-In Item No. 00336433, description HDI (SS303) 2	Hilti Drop-In anchors, flush-type Four (4) Hilti Drop-In anchors flush-type with 5/8" x 2" stainless steel bolt	4 for each panel
---	1 each		Ground bus bar, copper, 1/4" x 1" x 25"	
---	TBD by Vendor	Gould A2K-R or Bussmann KTN-R	Fuse blocks shall be supplied with non-renewable type fiberglass body cartridge fuses. See drawing for quantities and sizes. Five(5) spare fuses of each size are to be included.	5 spares for each panel of each size

*Items 3, 7, 13, 14, and 15 will be purchased by PWC and shipped to winning panel manufacturer

1.) QUANTITIES ARE PER SWITCHBOARD
2.) There will be a total of 5 switchboards with this NP Engraving Schedule and BOM





PRELIMINARY - DO NOT USE FOR CONSTRUCTION

REVISIONS		ENC.	DATE
NO.	BY	DATE	DESCRIPTION

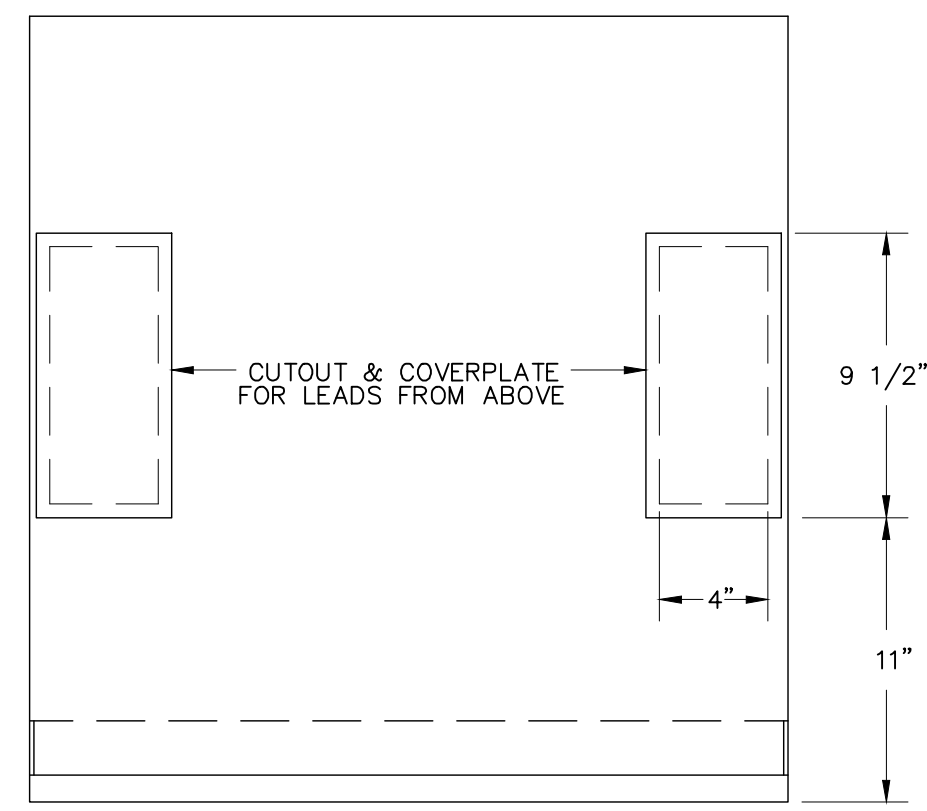
PROJECT NAME: CUMBERLAND ROAD

69 TO 15 X 25 KV SUBSTATION

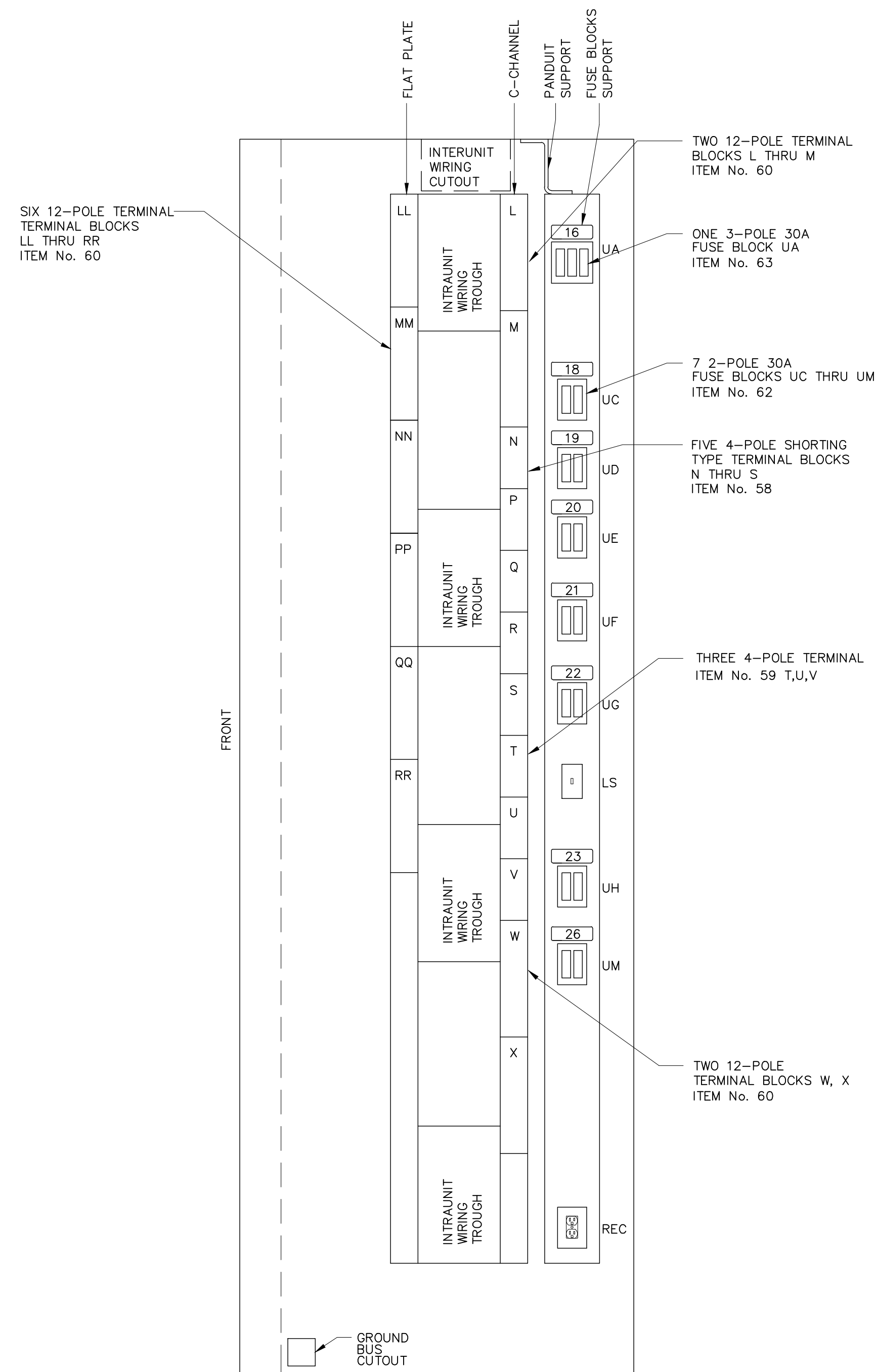
DRAWING TITLE: SWITCHBOARD NO.1 NP ENGRAVING SCHEDULE AND BOM

DRAWN BY: JRT	CHECKED BY: DAW
APPROVED BY: MJW	DATE: 3/16/2022
SCALE: NTS	FILE NUMBER: 12510
SHEET:	

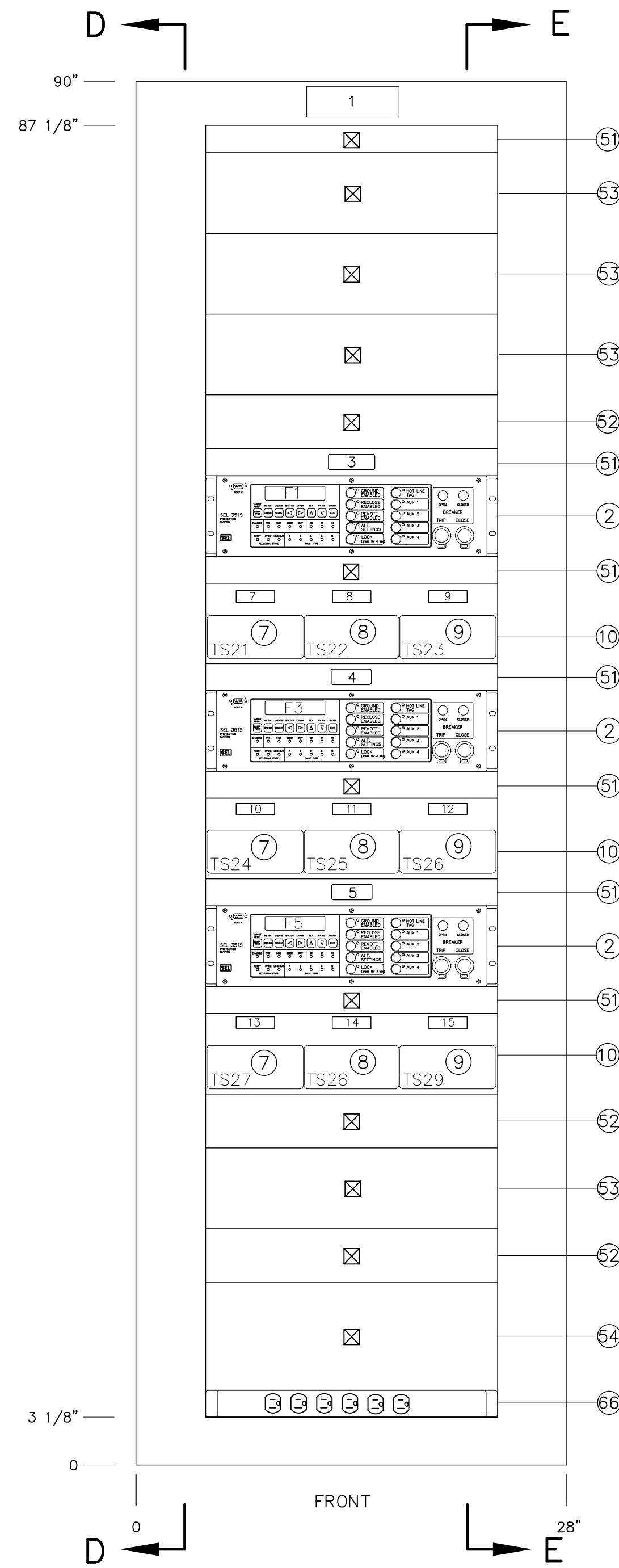
E07



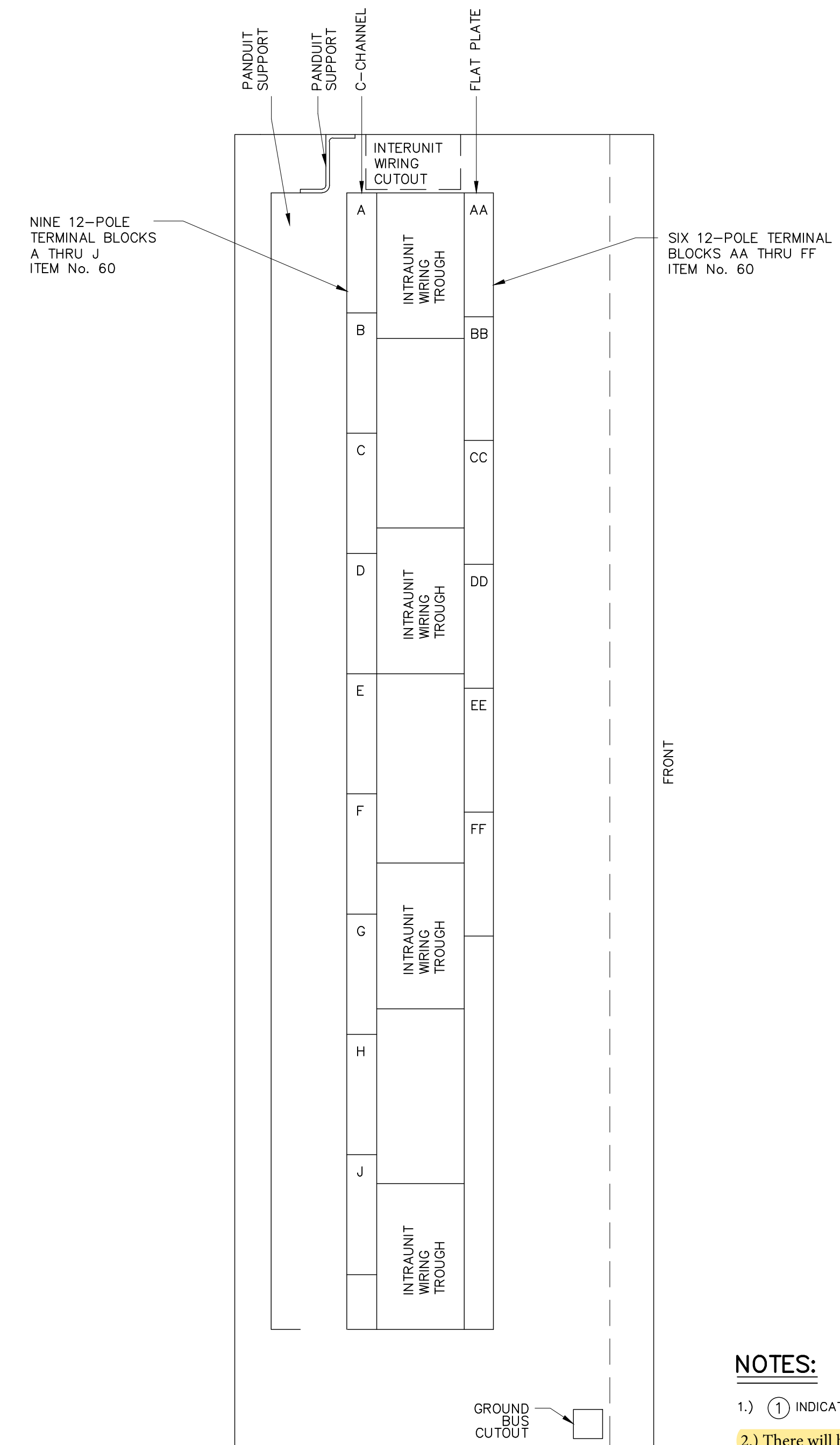
FRONT
PANEL TOP



SECTION D-D



FRONT



SECTION E-E

NOTES:

- 1.) ① INDICATES MATERIAL ITEM NUMBER
- 2.) There will be a total of 5 switchboards with this design

NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A	ISSUED FOR BID		BMJ	09/24/2023

PROJECT NAME:	CUMBERLAND ROAD 69 TO 15 X 25 KV SUBSTATION
DRAWING TITLE:	SWITCHBOARD NO.2 ARRANGEMENTS AND DETAILS
DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	

SWITCHBOARD No. 2							
NAMEPLATE ENGRAVING SCHEDULE							
Name Plate No.	Size	Text Size	First Line	Second Line	Third Line	Qty.	Remarks
1	2" x 6"	1/4"	FEEDERS No. 1, 3, 5	SWITCHBOARD No. 2	RELAY AND CONTROL	2	
2							
3	1" x 3"	3/16"	FEEDER BREAKER No. 1	PROTECTION	RELAY	1	
4	1" x 3"	3/16"	FEEDER BREAKER No. 3	PROTECTION	RELAY	1	
5	1" x 3"	3/16"	FEEDER BREAKER No. 5	PROTECTION	RELAY	1	
6							
7	1" x 3"	3/16"	F1 FEEDER RELAY	TEST SWITCH	TS21	1	
8	1" x 3"	3/16"	F1 FEEDER RELAY	TEST SWITCH	TS22	1	
9	1" x 3"	3/16"	F1 FEEDER RELAY	TEST SWITCH	TS23	1	
10	1" x 3"	3/16"	F3 FEEDER RELAY	TEST SWITCH	TS24	1	
11	1" x 3"	3/16"	F3 FEEDER RELAY	TEST SWITCH	TS25	1	
12	1" x 3"	3/16"	F3 FEEDER RELAY	TEST SWITCH	TS26	1	
13	1" x 3"	3/16"	F5 FEEDER RELAY	TEST SWITCH	TS27	1	
14	1" x 3"	3/16"	F5 FEEDER RELAY	TEST SWITCH	TS28	1	
15	1" x 3"	3/16"	F5 FEEDER RELAY	TEST SWITCH	TS29	1	
16	1" x 3"	3/16"	LOW-SIDE BUS POTENTIAL	UA 120V PHASE - GROUND	A-15A B-15A C-15A	1	
17							
18	1" x 3"	3/16"	FEEDER No. 1 RELAY	UC 48VDC	P-10A N-10A	1	
19	1" x 3"	3/16"	FEEDER No. 3 RELAY	UD 48VDC	P-10A N-10A	1	
20	1" x 3"	3/16"	FEEDER No. 5 RELAY	UE 48VDC	P-10A N-10A	1	
21	1" x 3"	3/16"	SPARE	UF 48VDC	P-10A N-10A	1	
22	1" x 3"	3/16"	SPARE	UG 48VDC	P-10A N-10A	1	
23	1" x 3"	3/16"	SPARE	UH 48VDC	P-10A N-10A	1	
24							
25	1" x 3"	3/16"	PANEL AC	UM 120VAC	X-15A X-15A	1	
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							

Item	Quantity	MFR Part Number	Description	Remarks
2*	3 each	SEL 351S Model No. 0351S7XHD3E5221	Protection and Breaker Control Relay , Standard plus Power Elements, Voltage Sag/Swell/Interruption, additional I/O board with twelve (12) standard outputs and eight (8) inputs, horizontal rack mounting, Standard Interface including USB plus Indoor SafeLock Trip/Close Pushbuttons and Configurable Labels; 48/125 Vdc or 120 Vac power supply, 48Vdc Control Input Voltage, 5 amp phase and neutral secondary input currents, Two (2) 10/100 Base-T, EIA-485, standard communications protocol	F1, F3, F5
7	3 each	SecuControl Part Number: STSA10002BA	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [V V V V V V V V V V]	TS21, TS24, TS27
8	3 each	SecuControl Part Number: STSA10028AA	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [T T T T T T T T]	TS22, TS25, TS28
9	3 each	SecuControl Part Number: STSA10008AO	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [C - C C - C C - C V V]	TS23, TS26, TS29
10	3 each	SecuControl Part Number: FTX3UA101010AG	Safety Test Switch 19" Rack Plates 3RU, standard 19" rack plates, 2mm thick with standard cutouts; cutout for three 10-pole ST Switches; Color, ANSI-grey #61	
51	7 each	Hoffman P19RP1UP or equivalent	19-inch rack cover plates – 1-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
52	3 each	Hoffman P19RP2UP or equivalent	19-inch rack cover plates – 2-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
53	4 each	Hoffman P19RP3UP or equivalent	19-inch rack cover plates – 3-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
54	1 each	Hoffman P19RP4UP or equivalent	19-inch rack cover plates – 4-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
55	0 each	Hoffman P19RP5UP or equivalent	19-inch rack cover plates – 5-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
56	0 each	Hoffman P19RP6UP or equivalent	19-inch rack cover plates – 6-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
58	5 each	Marathon Cat. No. 1504SC	Shorting Terminal Block, 4P, 600V , barrier-type with screw type terminals	
59	3 each	Marathon Cat.No. 1504	Terminal Block, 4P, 600V , white marking strip, barrier type, with screw type terminals	
60	25 each	Marathon Cat. No. 1512	Terminal Block, 12P, 600V , white marking strip barrier type, with screw type terminals	
62	7 each	Marathon Cat. No. RF30A2S or equivalent	Fuse Block, 2P, 30A, 250V, Class H with screw type terminals and spring reinforcing clips. Ceramic blocks are not acceptable.	
63	1 each	Marathon Cat. No. RF30A3S or equivalent	Fuse Block, 3P, 30A, 250V, Class H with screw type terminals and spring reinforcing clips, ceramic blocks are not acceptable	
66	1	Tripp Lite Model No. RS-1215	Power Strip , Rackmount (1RU), 120VAC 15 Amperes (12 Outlets 6 front and back)	
---	TBD by Vendor	Gould A2K-R or Bussmann KTN-R	Fuse blocks shall be supplied with non-renewable type fiberglass body cartridge fuses. See drawings for quantities and sizes. Four (4) spare fuses of each size are to be included.	4 spares for each panel of each size
---	1 each		Receptacle, Duplex, 120 Vac, 15A	1 for each panel
---	1 each		Overhead Interior Lighting System, 120Vac overhead interior lighting system complete with LED lamp, light switch, and fused ac service wiring for 120 volts ac.	1 for each panel
---	1 lot		Engraved Nameplates as required, all 1" x 3" except top panel plate on front & rear which shall be 2" x 6".	As required for each panel
---	4 each	Hilti Drop-In Item No. 00336433, description HDI (SS303) 2	Hilti Drop-In anchors , flush-type Four (4) Hilti Drop-In anchors flush-type with 5/8" x 2" stainless steel bolt	4 for each panel
---	1 each		Ground bus bar , copper, 1/4" x 1" x 25"	

TO BE PURCHASED BY COMMISSION



PRELIMINARY - DO NOT USE FOR CONSTRUCTION

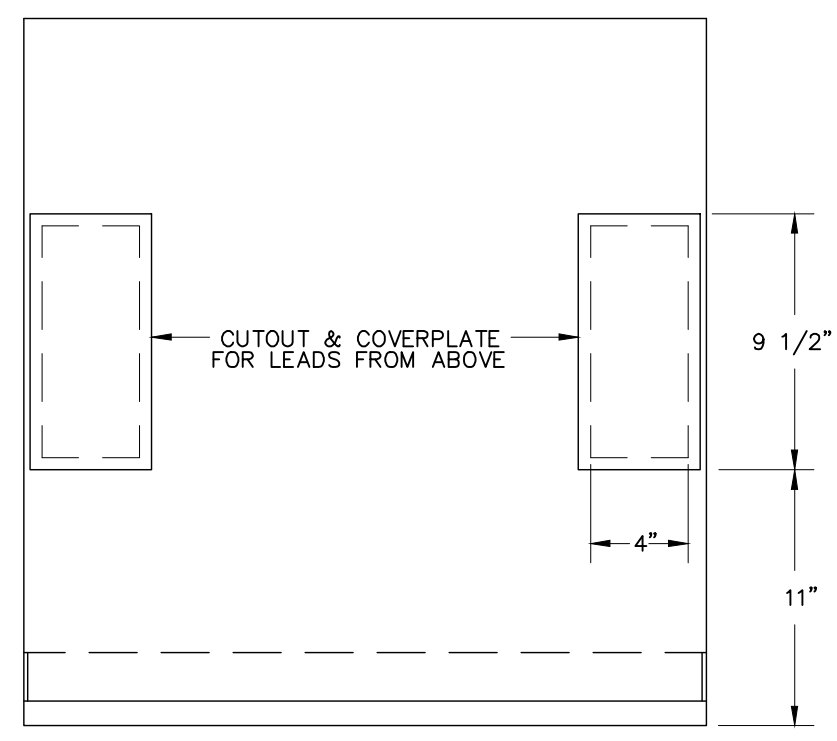
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NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A			BWJ	09/24/2023

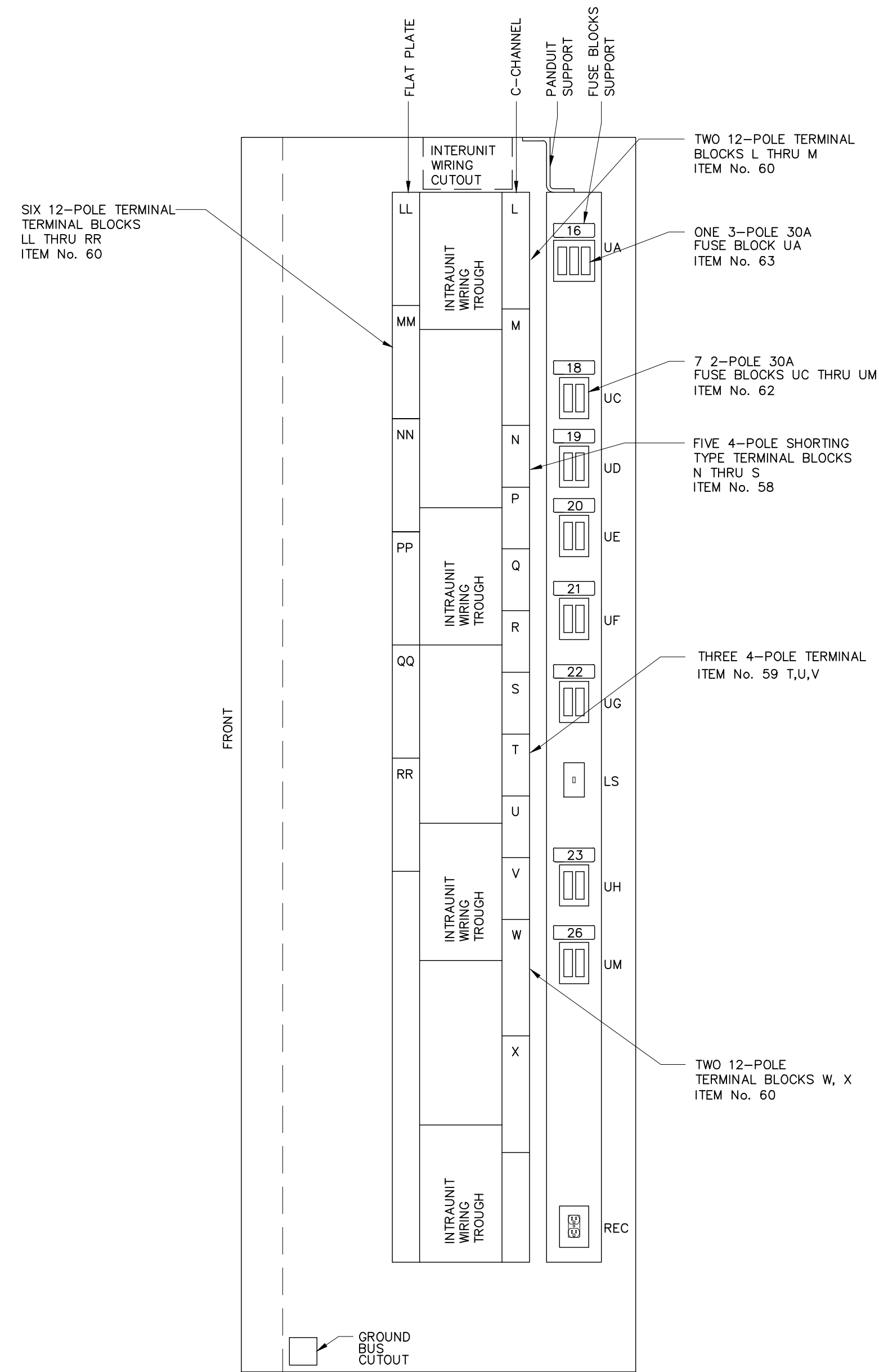
PROJECT NAME: CUMBERLAND ROAD 69 TO 15 X 25 KV SUBSTATION
DRAWING TITLE: SWITCHBOARD NO.2 NP ENGRAVING SCHEDULE AND BOM

DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	

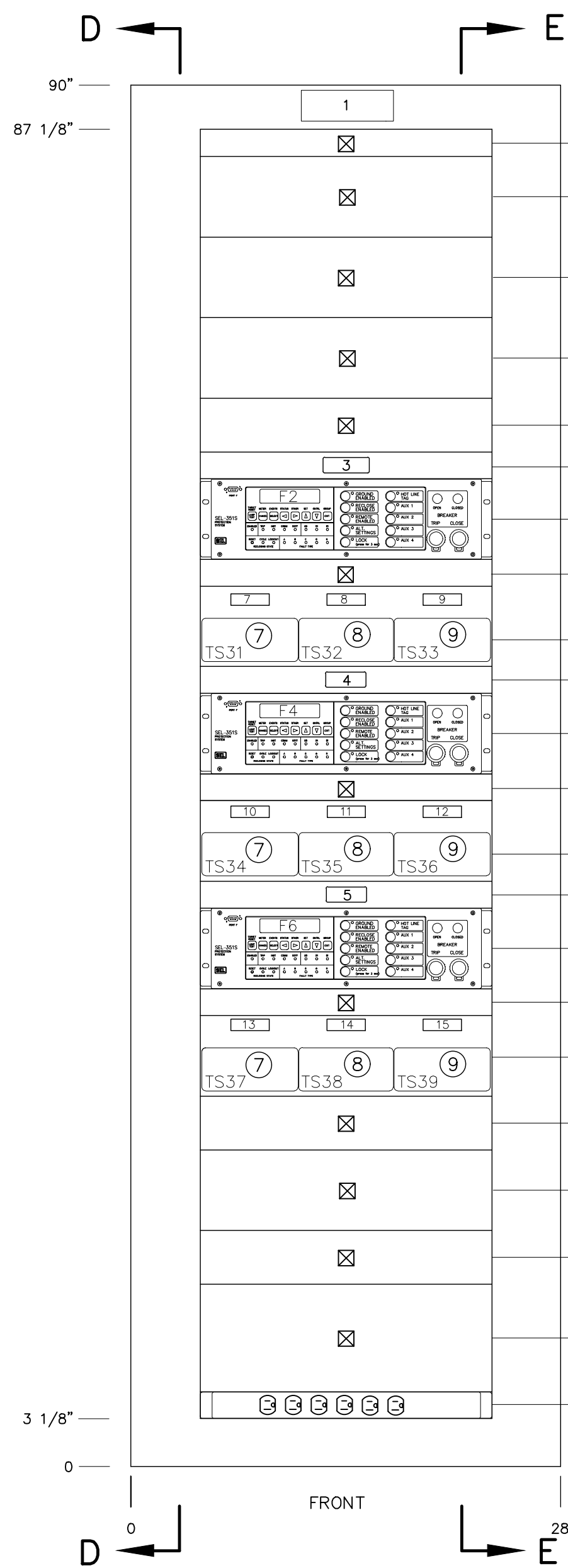
1) THERE WILL BE A TOTAL OF 5 SWITCHBOARDS WITH THIS DESIGN
2.) QUANTITIES ARE PER SWITCHBOARD



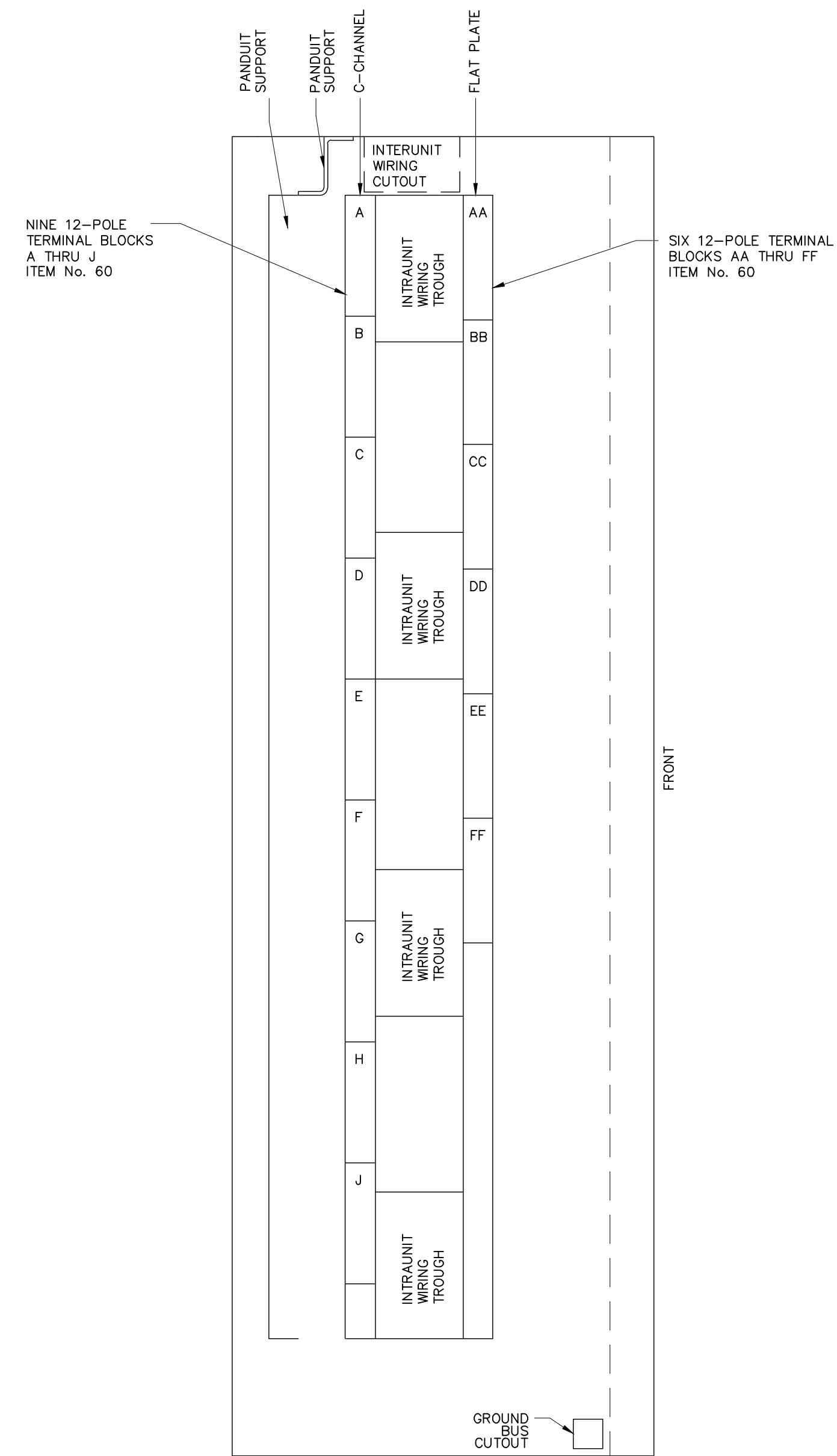
PANEL TOP



SECTION D-D



FRONT



SECTION E-E

NOTES:

- 1.) ① INDICATES MATERIAL ITEM NUMBER
- 2.) There will be 5 switchboards with this design



PRELIMINARY - DO NOT USE FOR CONSTRUCTION

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NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A	ISSUED FOR BID		EWJ	09/24/2023

PROJECT NAME: CUMBERLAND ROAD 69 TO 15 X 25 KV SUBSTATION
 DRAWING TITLE: SWITCHBOARD NO.3 ARRANGEMENTS AND DETAILS

DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	

SWITCHBOARD No. 3							
NAMEPLATE ENGRAVING SCHEDULE							
Name Plate No.	Size	Text Size	First Line	Second Line	Third Line	Qty.	Remarks
1	2" x 6"	1/4"	FEEDERS No. 2, 4, 6	SWITCHBOARD No. 3	RELAY AND CONTROL	2	
2							
3	1" x 3"	3/16"	FEEDER BREAKER No. 2	PROTECTION	RELAY	1	
4	1" x 3"	3/16"	FEEDER BREAKER No. 4	PROTECTION	RELAY	1	
5	1" x 3"	3/16"	FEEDER BREAKER No. 6	PROTECTION	RELAY	1	
6							
7	1" x 3"	3/16"	F2 FEEDER RELAY	TEST SWITCH	TS31	1	
8	1" x 3"	3/16"	F2 FEEDER RELAY	TEST SWITCH	TS32	1	
9	1" x 3"	3/16"	F2 FEEDER RELAY	TEST SWITCH	TS33	1	
10	1" x 3"	3/16"	F4 FEEDER RELAY	TEST SWITCH	TS34	1	
11	1" x 3"	3/16"	F4 FEEDER RELAY	TEST SWITCH	TS35	1	
12	1" x 3"	3/16"	F4 FEEDER RELAY	TEST SWITCH	TS36	1	
13	1" x 3"	3/16"	F6 FEEDER RELAY	TEST SWITCH	TS37	1	
14	1" x 3"	3/16"	F6 FEEDER RELAY	TEST SWITCH	TS38	1	
15	1" x 3"	3/16"	F6 FEEDER RELAY	TEST SWITCH	TS39	1	
16	1" x 3"	3/16"	LOW-SIDE BUS POTENTIAL	UA 120V PHASE - GROUND	A-15A B-15A C-15A	1	
17							
18	1" x 3"	3/16"	FEEDER No. 2 RELAY	UC 48VDC	P-10A N-10A	1	
19	1" x 3"	3/16"	FEEDER No. 4 RELAY	UD 48VDC	P-10A N-10A	1	
20	1" x 3"	3/16"	FEEDER No. 6 RELAY	UE 48VDC	P-10A N-10A	1	
21	1" x 3"	3/16"	SPARE	UF 48VDC	P-10A N-10A	1	
22	1" x 3"	3/16"	SPARE	UG 48VDC	P-10A N-10A	1	
23	1" x 3"	3/16"	SPARE	UH 48VDC	P-10A N-10A	1	
24							
25	1" x 3"	3/16"	PANEL AC	UM 120VAC	X-15A X-15A	1	
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							

Item	Quantity	MFR Part Number	Description	Remarks
2*	3 each	SEL 351S Model No. 0351S7XHD3E5221	Protection and Breaker Control Relay , Standard plus Power Elements, Voltage Sag/Swell/Interruption, additional I/O board with twelve (12) standard outputs and eight (8) inputs, horizontal rack mounting, Standard Interface including USB plus Indoor SafeLock Trip/Close Pushbuttons and Configurable Labels; 48/125 Vdc or 120 Vac power supply, 48Vdc Control Input Voltage, 5 amp phase and neutral secondary input currents, Two (2) 10/100 Base-T, EIA-485, standard communications protocol	F2, F4, F6
7	3 each	SecuControl Part Number: STSA10002BA	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [V V V V V V V V V V]	TS31, TS34, TS37
8	3 each	SecuControl Part Number: STSA10028AA	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [T T T T T T T T T T]	TS32, TS35, TS38
9	3 each	SecuControl Part Number: STSA10008AO	SecuControl Safety Test Switch with banana jacks Screw connections and status windows with transparent lids trip/potential/current pole configuration of: [C-C-C-C-C-C-C-C V V]	TS33, TS36, TS39
10	3 each	SecuControl Part Number: FTx3UA101010AG	Safety Test Switch 19" Rack Plates 3RU, standard 19" rack plates, 2mm thick with standard cutouts; cutout for three 10-pole ST Switches; Color: ANSI-grey #61	
51	7 each	Hoffman P19RP1UP or equivalent	19-inch rack cover plates – 1-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
52	3 each	Hoffman P19RP2UP or equivalent	19-inch rack cover plates – 2-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
53	4 each	Hoffman P19RP3UP or equivalent	19-inch rack cover plates – 3-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
54	1 each	Hoffman P19RP4UP or equivalent	19-inch rack cover plates – 4-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
55	0 each	Hoffman P19RP5UP or equivalent	19-inch rack cover plates – 5-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
56	0 each	Hoffman P19RP6UP or equivalent	19-inch rack cover plates – 6-rack unit 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing	
58	5 each	Marathon Cat. No. 1504SC	Shorting Terminal Block, 4P, 600V , barrier-type with screw type terminals	
59	3 each	Marathon Cat.No. 1504	Terminal Block, 4P, 600V , white marking strip, barrier type, with screw type terminals	
60	25 each	Marathon Cat. No. 1512	Terminal Block, 12P, 600V , white marking strip barrier type, with screw type terminals	
62	7 each	Marathon Cat. No. RF30A2S or equivalent	Fuse Block, 2P, 30A, 250V, Class H with screw type terminals and spring reinforcing clips. Ceramic blocks are not acceptable.	
63	1 each	Marathon Cat. No. RF30A3S or equivalent	Fuse Block, 3P, 30A, 250V, Class H with screw type terminals and spring reinforcing clips, ceramic blocks are not acceptable	
66	1	Tripp Lite Model No. RS-1215	Power Strip , Rackmount (1RU), 120VAC 15 Amperes (12 Outlets 6 front and back)	
---	TBD by Vendor	Gould A2K-R or Bussmann KTN-R	Fuse blocks shall be supplied with non-renewable type fiberglass body cartridge fuses. See drawings for quantities and sizes. Four (4) spare fuses of each size are to be included.	4 spares for each panel of each size
---	1 each		Receptacle, Duplex, 120 Vac, 15A	1 for each panel
---	1 each		Overhead Interior Lighting System, 120Vac overhead interior lighting system complete with LED lamp, light switch, and fused ac service wiring for 120 volts ac.	1 for each panel
---	1 lot		Engraved Nameplates as required, all 1" x 3" except top panel plate on front & rear which shall be 2" x 6".	As required for each panel
---	4 each	Hilti Drop-In Item No. 00336433, description HDI (SS303) 2	Hilti Drop-In anchors , flush-type Four (4) Hilti Drop-In anchors flush-type with 5/8" x 2" stainless steel bolt	4 for each panel
---	1 each		Ground bus bar , copper, 1/4" x 1" x 25"	

TO BE PURCHASED BY COMMISSION

1.) THERE WILL BE 5 SWITCHBOARDS WITH THIS DESIGN
2.) QUANTITIES ARE PER SWITCHBOARD



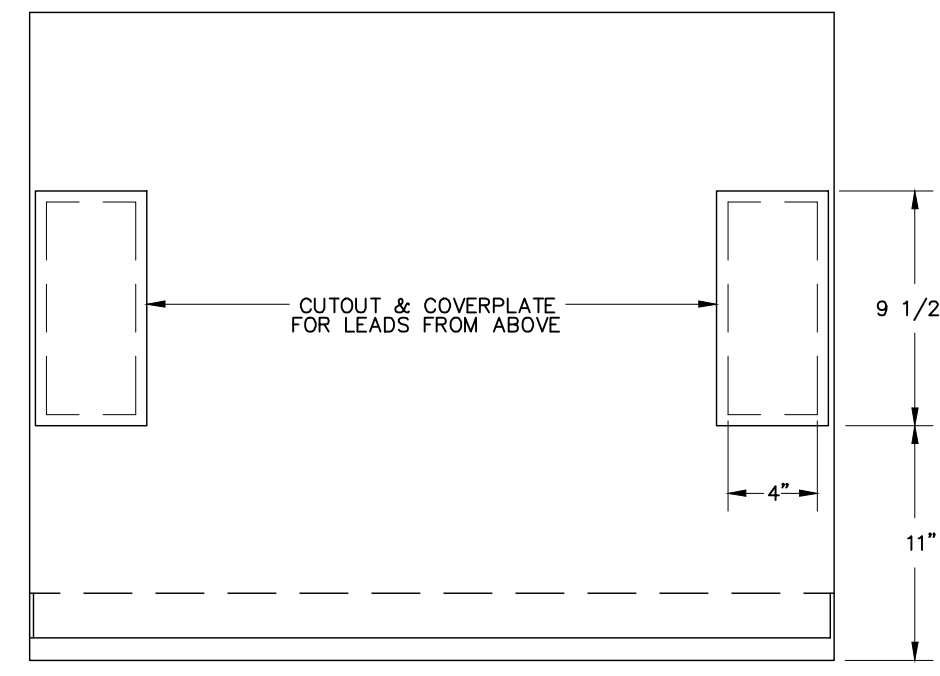
PRELIMINARY - DO NOT USE FOR CONSTRUCTION

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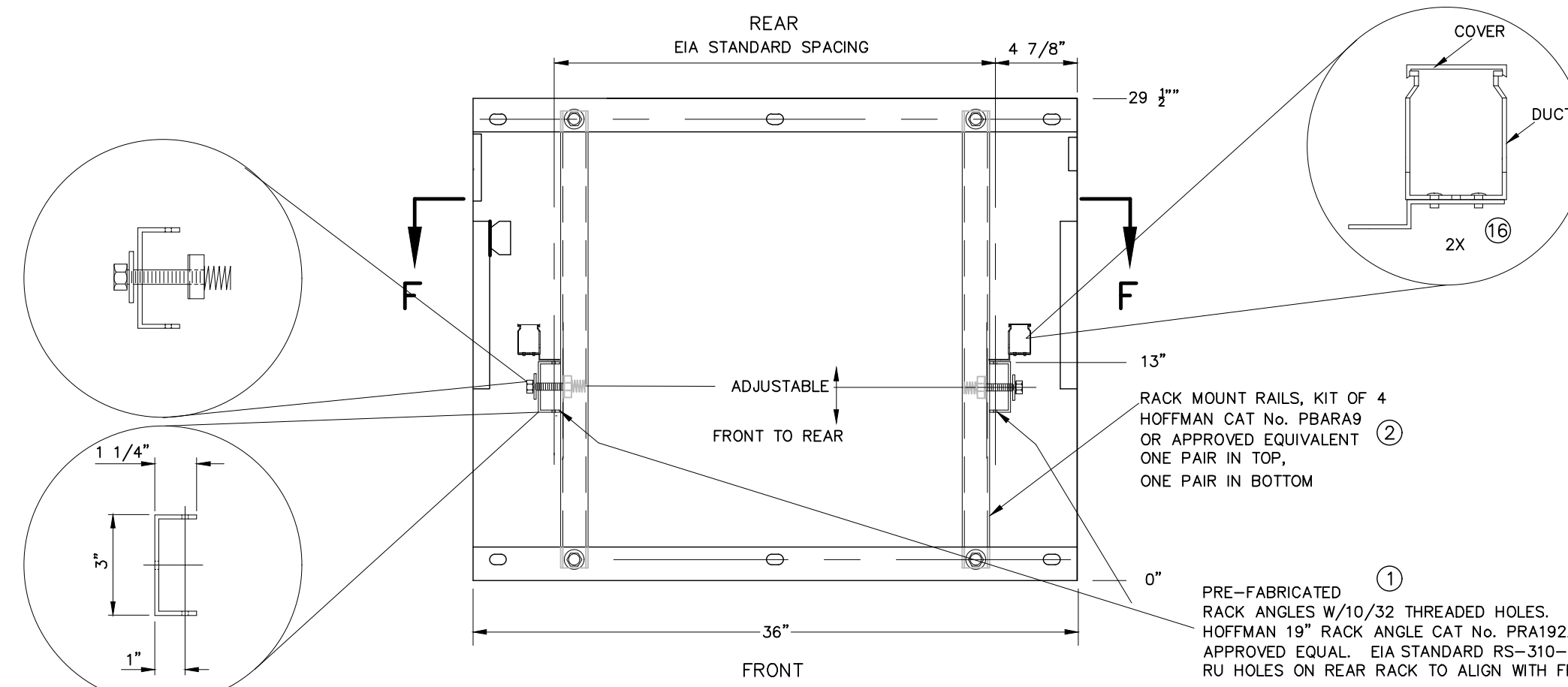
NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A	ISSUED FOR BID		BWJ	03/24/2023

PROJECT NAME: CUMBERLAND ROAD 69 TO 15 X 25 KV SUBSTATION
DRAWING TITLE: SWITCHBOARD NO.3 NP ENGRAVING SCHEDULE AND BOM

DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	

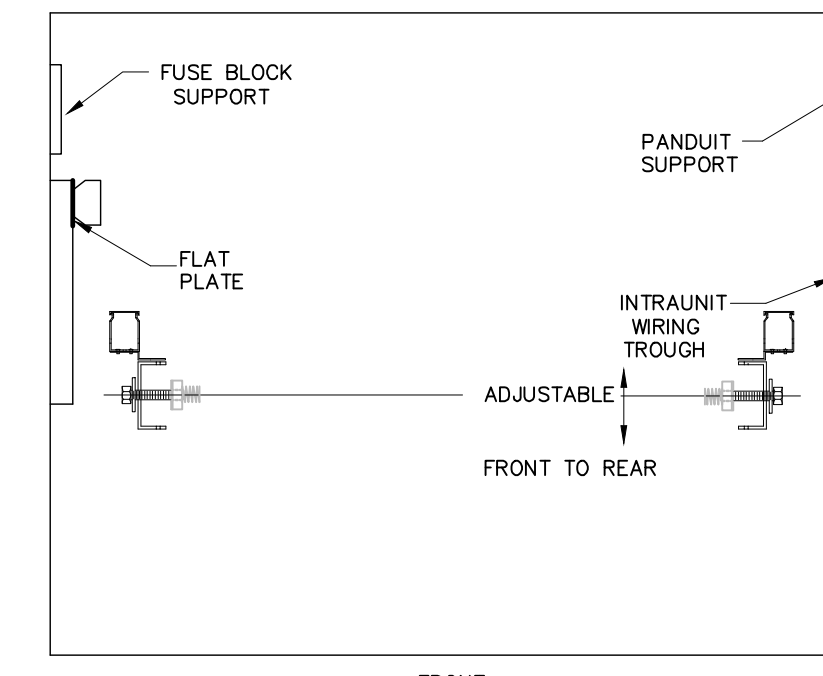


PANEL TOP

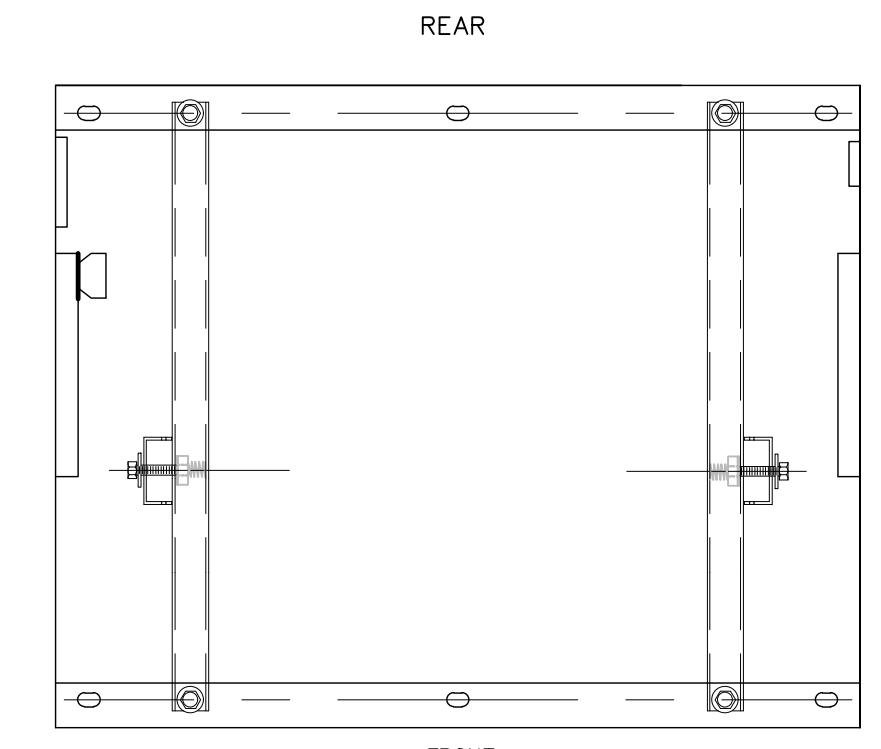


SECTION A-A

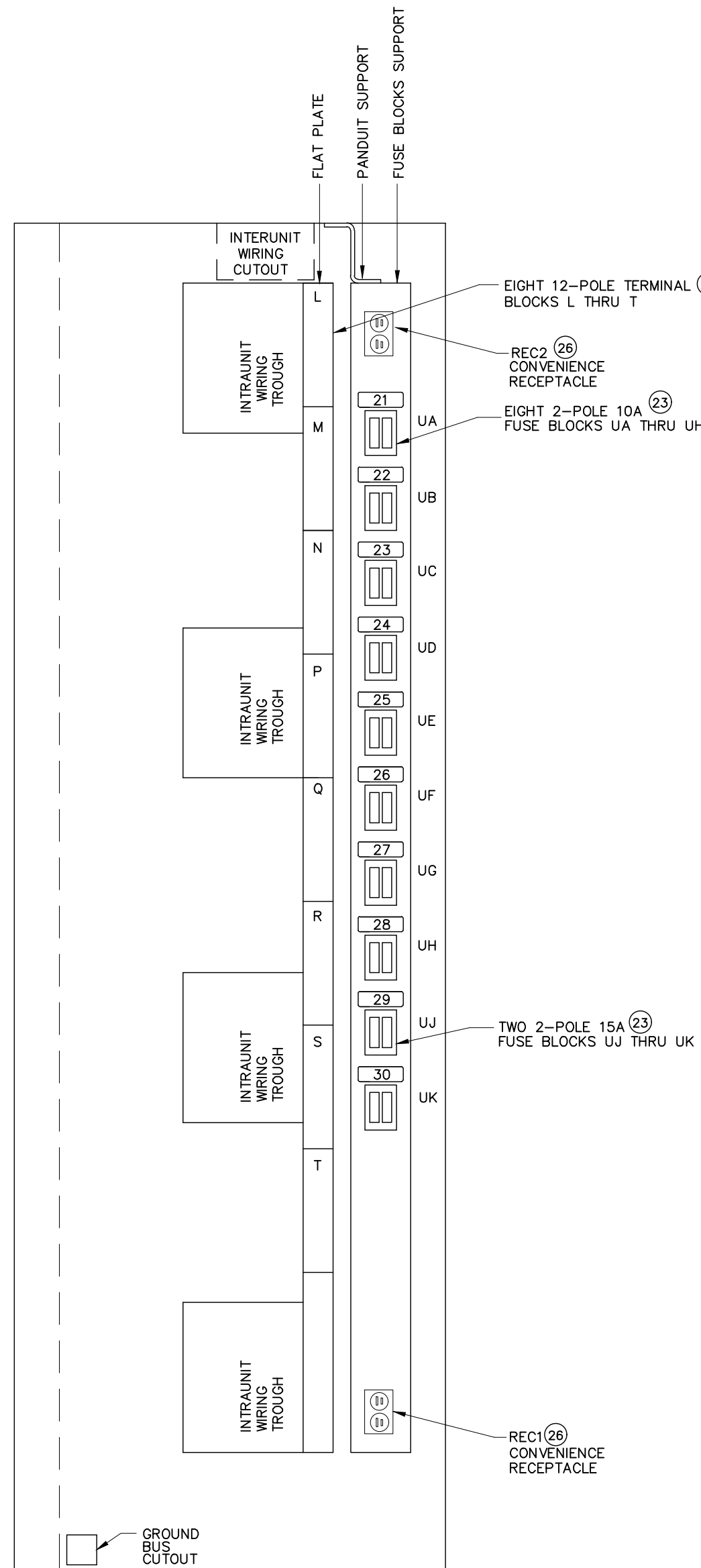
ANGLE DETAIL ①
N.T.S.



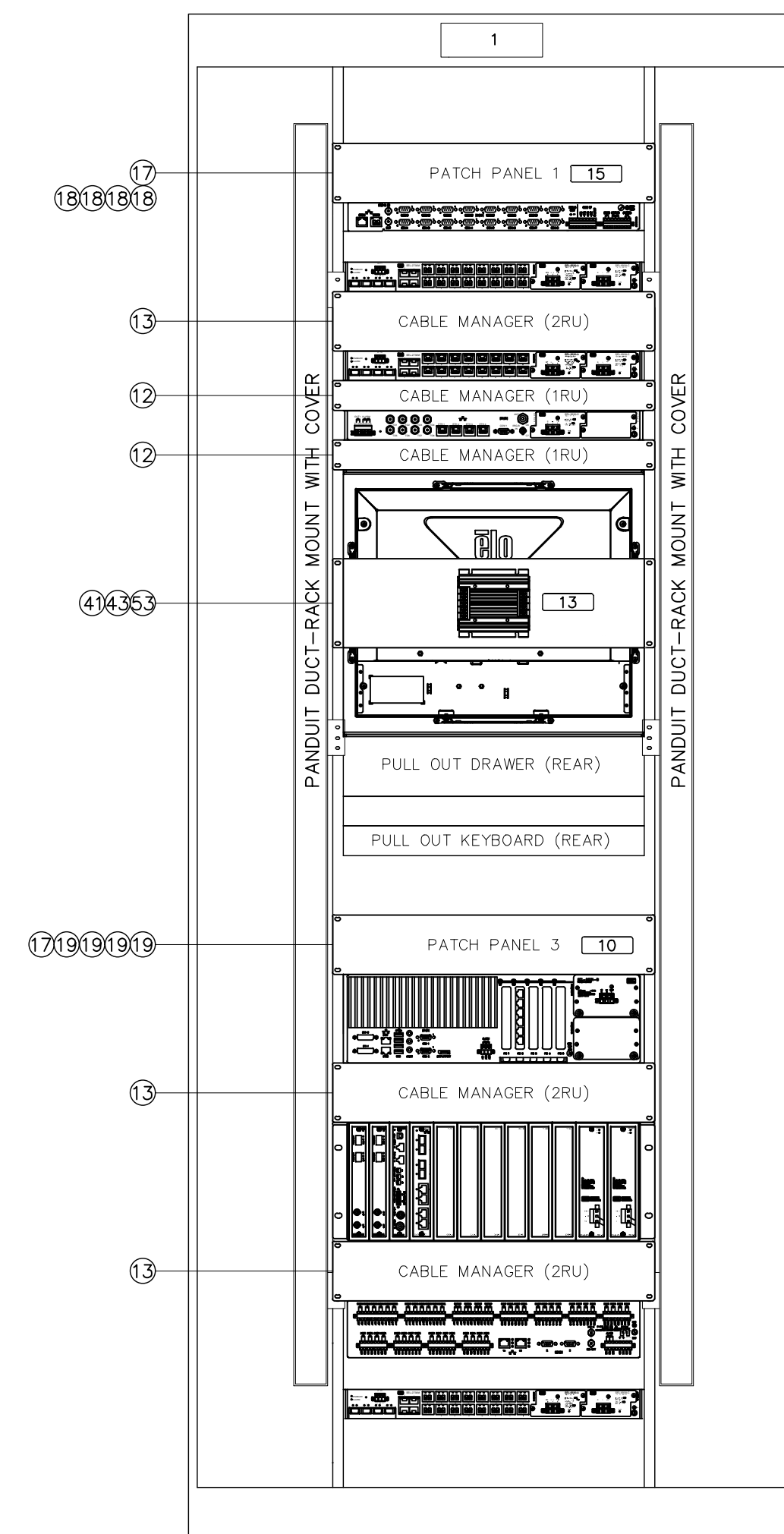
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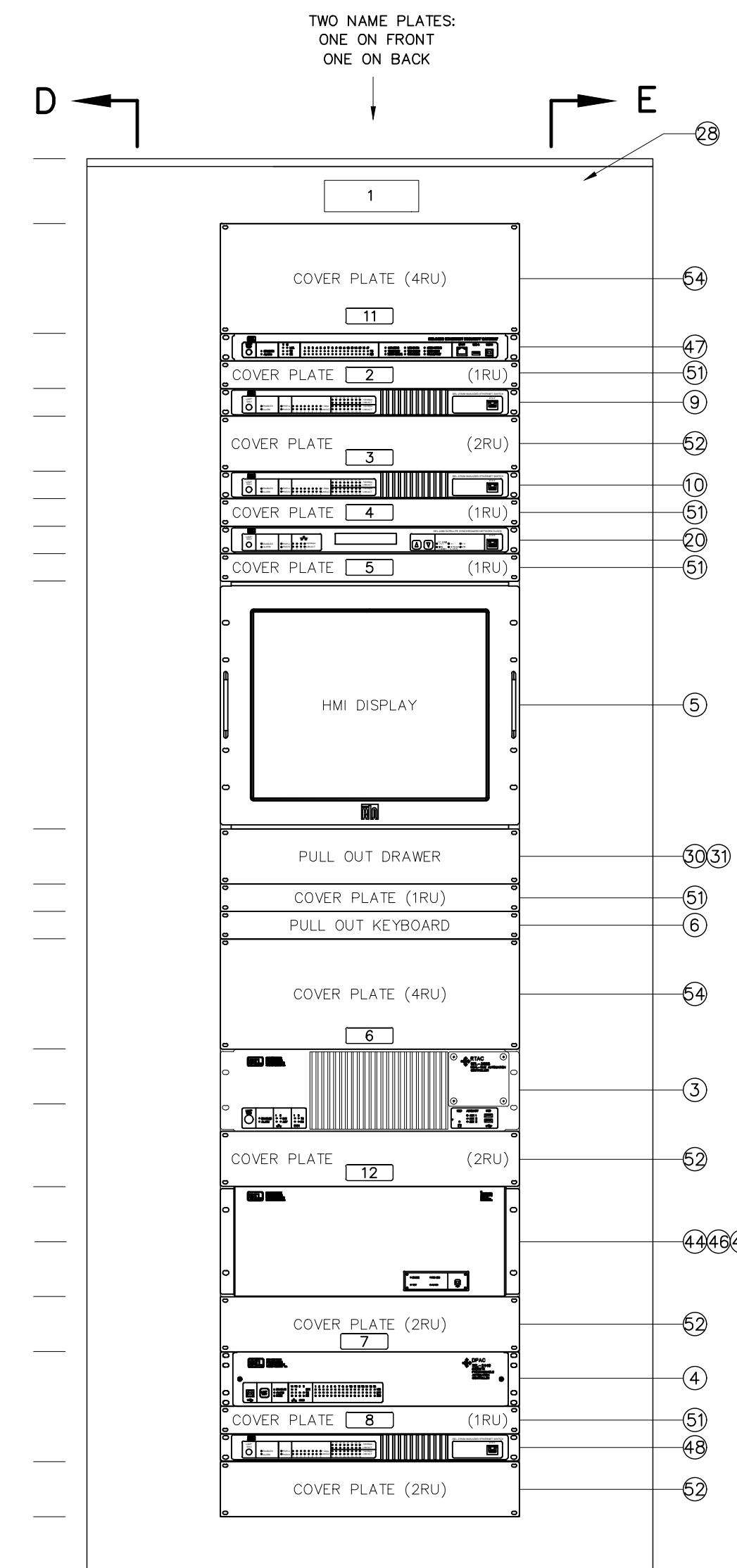
SECTION C-C



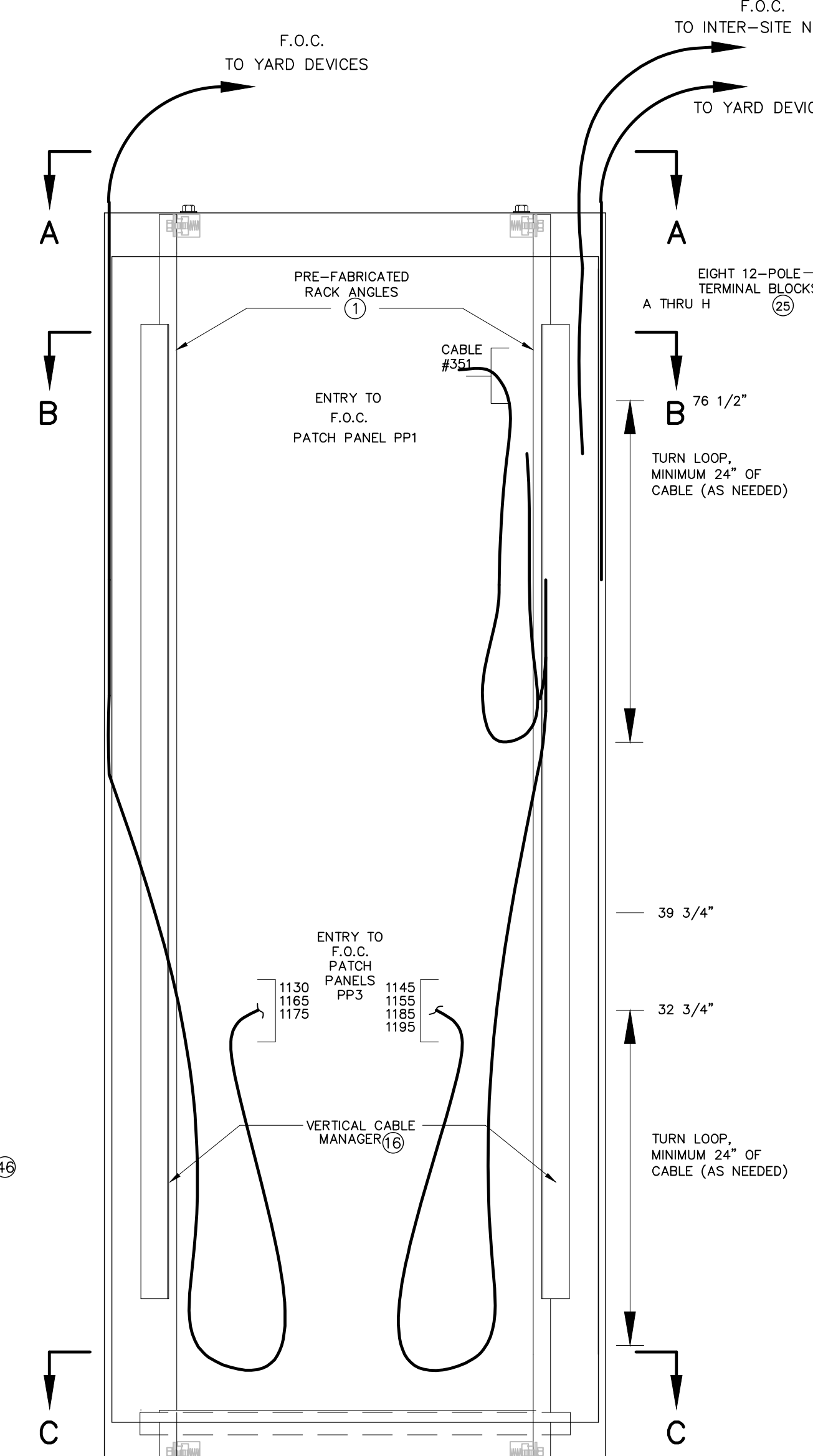
SECTION D-D



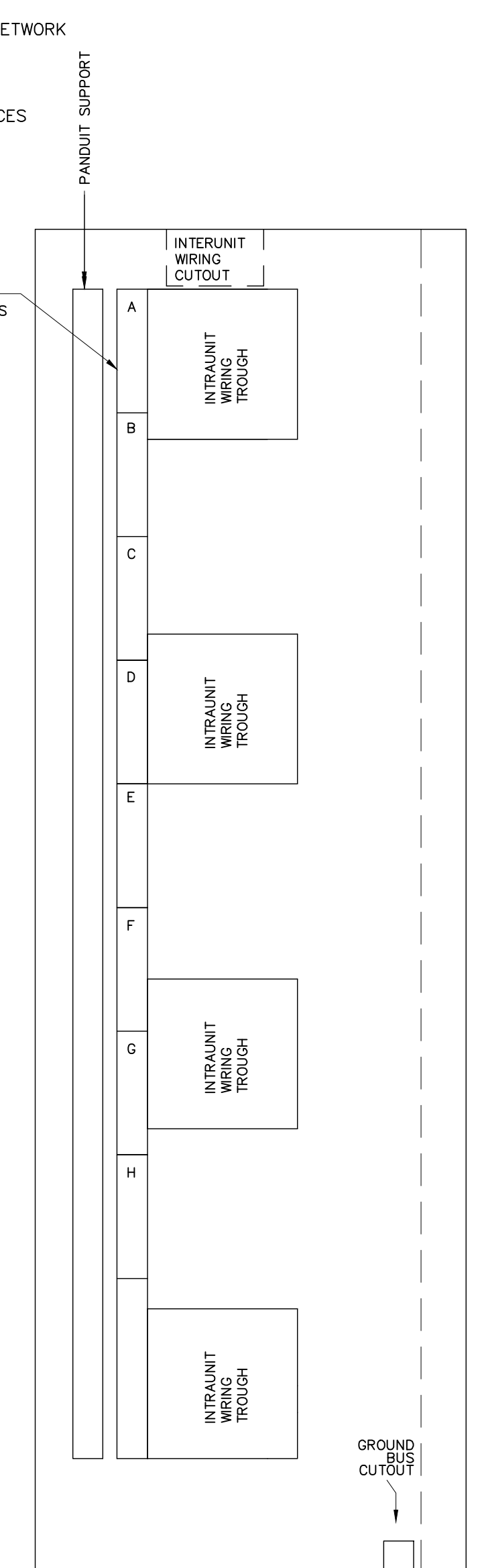
REAR



FRONT



SECTION F-F



SECTION E-E

LEGEND

F.O.C. FIBER OPTIC CABLE

NOTES:

- REMOVE DUCT FINGERS (SIDE OF DUCT ADJACENT TO DEVICES) ON LEFT & RIGHT SIDES OF RACK AS NEEDED.
- THERE WILL BE 5 SWITCHBOARDS WITH THIS DESIGN

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

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NO.	ISSUED FOR	DATE	REVISIONS
A	ISSUED FOR BID	09/24/2023	

PROJECT NAME: CUMBERLAND ROAD 69 TO 15 X 25 KV SUBSTATION
DRAWING TITLE: SWITCHBOARD NO.4 ARRANGEMENTS AND DETAILS

DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	

NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A			BWJ	09/24/2023

PROJECT NAME:
**CUMBERLAND ROAD
69 TO 15 X 25 KV SUBSTATION**

DRAWING TITLE:
**SWITCHBOARD NO.4
BILL OF MATERIAL**

DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	

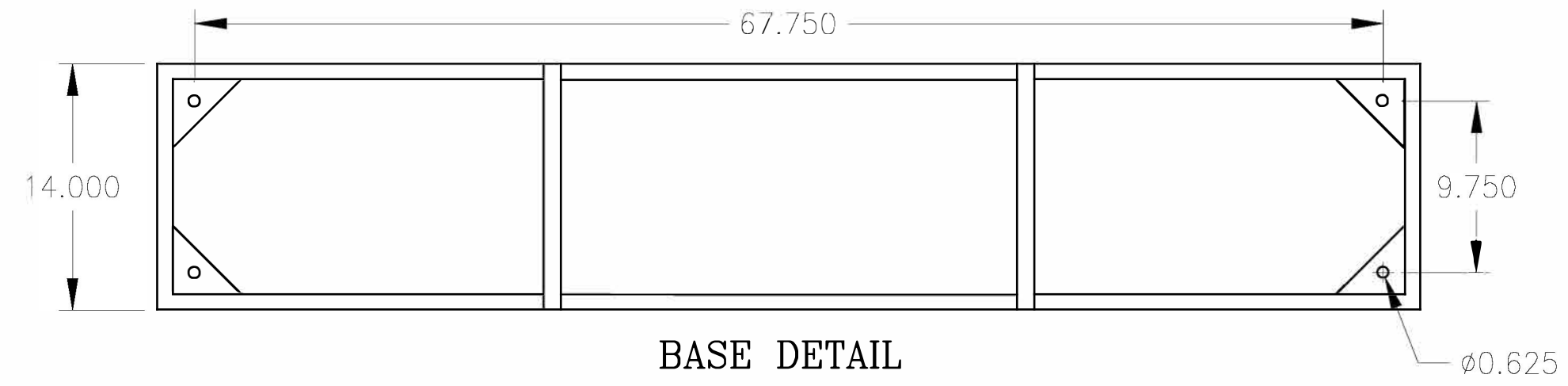
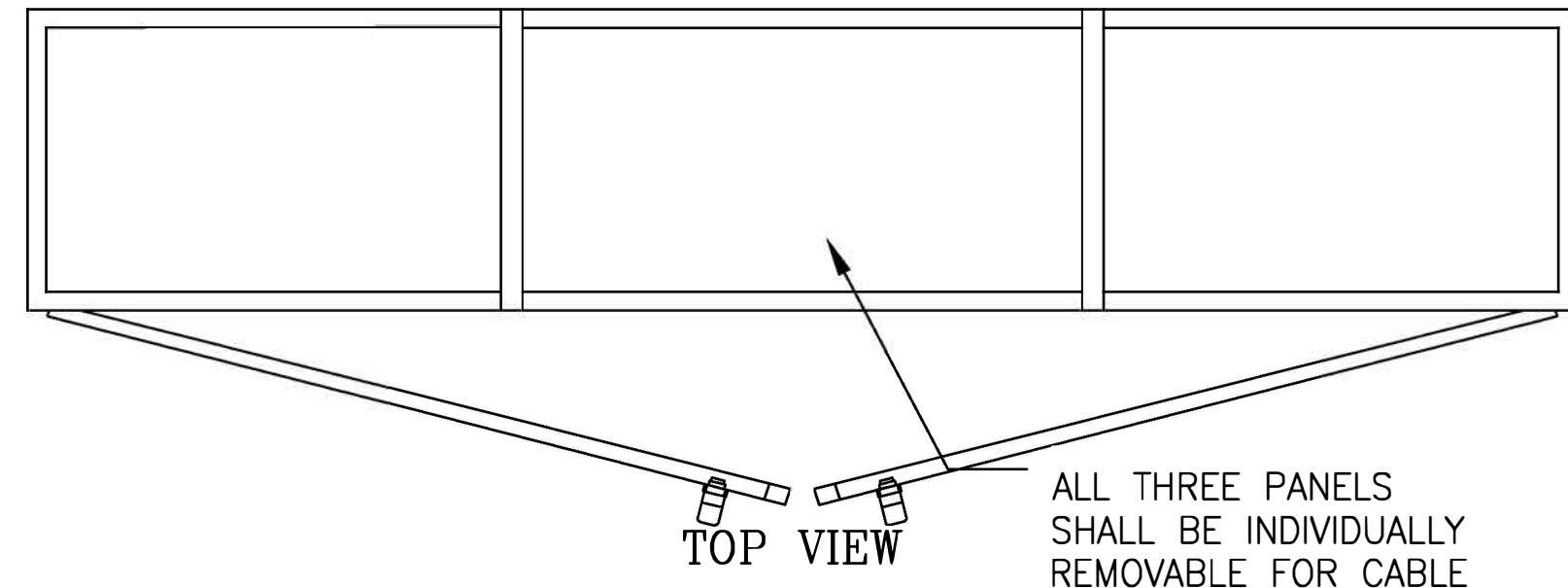
- 1.) * ALL SEL RELAYS TO BE PURCHASED BY COMMISSION
- 2.) THERE WILL BE 5 SWITCHBOARDS WITH THIS DESIGN
- 3.) QUANTITIES ARE PER SWITCHBOARD

SWITCHBOARD No. 4 NAMEPLATE ENGRAVING SCHEDULE							
Name Plate No.	Size	Text Size	First Line (25 char. max.)	Second Line (25 char. max.)	Third Line (25 char. max.)	Qty.	Remarks
1	2" x 6"	1/4"	SWITCHBOARD No. 4	INTEGRATION	& COMMUNICATION	2	
2	1" x 3"	3/16"	ETHERNET SWITCH No. 1	NETWORK	ETSW1	1	
3	1" x 3"	3/16"	ETHERNET SWITCH No. 2	NETWORK	ETSW2	1	
4	1" x 3"	3/16"	IRIG CLOCK		CLK	1	
5	1" x 3"	3/16"	HMI DISPLAY		HMI	1	
6	1" x 3"	3/16"	REAL TIME AUTOMATION	CONTROLLER	RTAC	1	
7	1" x 3"	3/16"	DIGITAL PROGRAMMABLE	AUTOMATION CTRLR	DPAC	1	
8	1" x 3"	3/16"	ETHERNET SWITCH No. 3	NETWORK	ETSW3	1	
10	1" x 3"	3/16"	PATCH PANEL	No. 3	PP3	1	
11	1" x 3"	3/16"	NETWORK	GATEWAY	GW1-3620	1	
12	1" x 3"	3/16"	SITE TO SITE	FIBER COMM	ICON1	1	
13	1" x 3"	3/16"	48 VDC TO 12 VDC	CONVERTER	M6	1	
15	1" x 3"	3/16"	PATCH PANEL	No. 1	PP1	1	
21	1" x 3"	3/16"	ETHERNET SWITCH No. 1	UA 48VDC	P-10A N-10A	1	
22	1" x 3"	3/16"	ETHERNET SW. No. 2, No. 3	UB 48VDC	P-10A N-10A	1	
23	1" x 3"	3/16"	3620 GW1 & ICON	UC 48VDC	P-10A N-10A	1	
24	1" x 3"	3/16"	ICON	UD 48VDC	P-10A N-10A	1	
25	1" x 3"	3/16"	RTAC	UE 48VDC	P-10A N-10A	1	
26	1" x 3"	3/16"	48-12 VDC CONVERTER	UF 48VDC	P-10A N-10A	1	
27	1" x 3"	3/16"	IRIG CLOCK	UG 48VDC	P-10A N-10A	1	
28	1" x 3"	3/16"	DPAC	UH 48VDC	P-10A N-10A	1	
29	1" x 3"	3/16"	PANEL AC, L1	UJ 120VAC	X-15A X-15A	1	
30	1" x 3"	3/16"	REC2 (1&2), ETSW3 (3&4)	UK 120VAC	X-15A X-15A	1	

**Ship these components loose in over pack carton with itemized shipping manifest.
Quantity for some items doubled for second bank.**

Item	Qty.	MFR Part Number	Description	Remarks
61*	16	SEL C478A-002	RJ-45 TO 9 Pin RS232, Connector Length 2 Feet as shown in PN suffix	
62*	1	SEL C256-1	SEL RG-58 Cables with BNC to DB9. IRIG only, length 1 foot as shown in PN suffix.	
63*	1	SEL C780	Ribbon Cable, 6" long with DBM-DBF connectors	
64*	1	SEL 2725D-02X20	SEL Eithemet Switch 2 fiber ports, 3 copper points, 48VDC, multimode	
71*	1	SEL C478N-1	EIA-232 Serial Adapter Cable with IRIG-B, length 1 feet as shown in PN suffix.	
72	15	Corning 050502K5120007F	Fiber Optic Jumper, Cable Code K5120, 2 Fiber, LC Duplex to LC Duplex connectors, Zipcord Tight-Buffered Cable, Riser, with 2.0 mm legs, 62.5 μm multimode (OM1), 7 feet long. Source ONLY from a Corning CAH Gold Partner Program certified assembler.	ZLC2M 103-108 201-209
73	15	Corning 050502K5120003M	Fiber Optic Jumper, Cable Code K5120, 2 Fiber, LC Duplex to LC Duplex connectors, Zipcord Tight-Buffered Cable, Riser, with 2.0 mm legs, 62.5 μm multimode (OM1), 3 meters long. Source ONLY from a Corning CAH Gold Partner Program certified assembler.	ZLC3M 123-128 221-23D
76	8	Panduit 0-HLT2I-X0 (OR APPROVED EQUAL)	Velcro Straps, 8" long, package of 10, color black (prefix 0), with slot for pre-wrap of bundle.	
77*	5	SEL CA605CBX008	CAT5E Patch Cord, UTP, RJ-45 connectors both ends, jacket color Blue. Length is 8 feet as indicated in part number.	J43, J44, J48, J50, J51
78*	9	SEL CA605CBX019	CAT5E Patch Cord, UTP, RJ-45 connectors both ends, jacket color Blue. Length is 19 feet as indicated in part number.	CA605C-019 211-219
79*	2	SEL CA605CBX004	CAT5E Patch Cord, UTP, RJ-45 connectors both ends, jacket color Blue. Length is 4 feet as indicated in part number.	J49, J52
80	15	Corning CCH-CP06-A8	Closet Connector Housing Panel, Multi-Mode fiber, 6 positions, LC Duplex Connector.	For Transformer & FDRS Breaker
81	15	Corning SPH-01P	Single-Panel Housing, wall-mountable, holds 1 CCH connector panel. Install Item 80 into housing.	For Transformer & FDRS Breaker
82*	1	SEL C605A-36	EIA-232 Cable, length 36 feet as shown in pn suffix	J45
83*	1	SEL C605A-50	EIA-232 Cable, length 50 feet as shown in pn suffix	J47
84	2	Corning 040402G5120003M	Fiber Optic Jumper, Cable Code G5120, 2 Fiber, LC Duplex to LC Duplex connectors, Zipcord Tight-Buffered Cable, with 2.0 mm legs, single mode (OS2), 3 meters long. Source ONLY from a Corning CAH Gold Partner Program certified assembler.	ZLC3S ICON/PP1 J41,J42
85	1	Panasonic CF-5417189VM	Substation Controller, Windows 10 Pro, Intel Core i7 660U 2.60GHz, 14.0" HD LCD, 512GB Solid State Drive, 16GB (8+8), Wi Fi, Bluetooth, Insertable Smartcard Reader (bottom flush), 4th USB, Serial, DVD Super MULTI Drive, VGA, TPM 2.0, Backlit Emissive Keyboard	
86	1	Panasonic TBC54A0CS-P	Carrying Case	
87	1	Panasonic CF-VEB541AU	Desktop Dock	

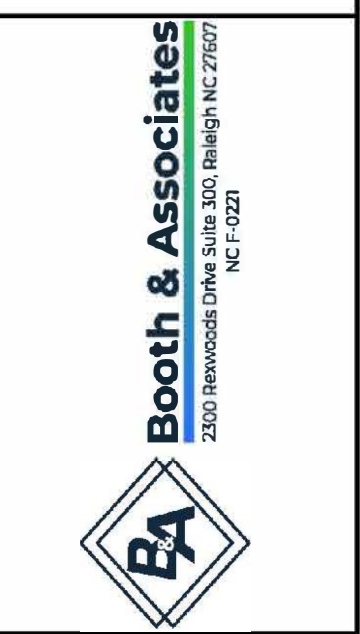
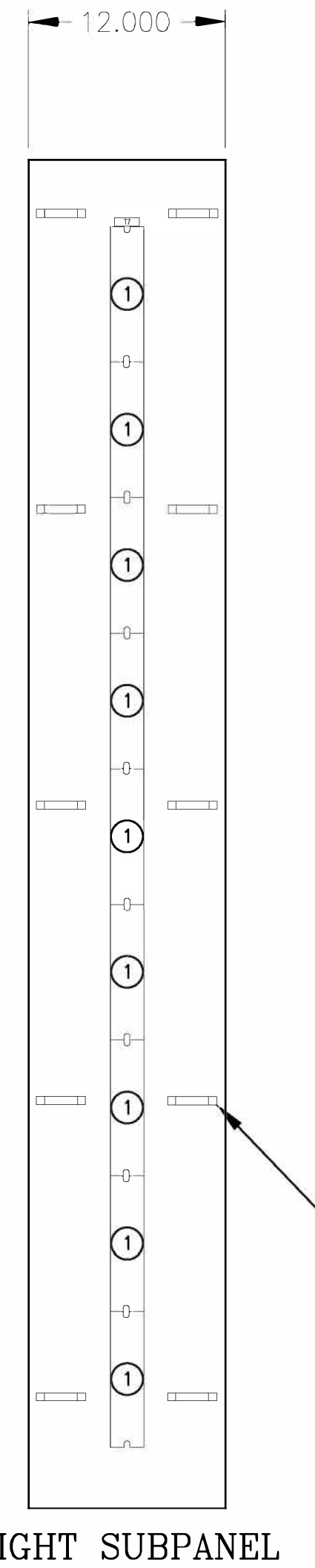
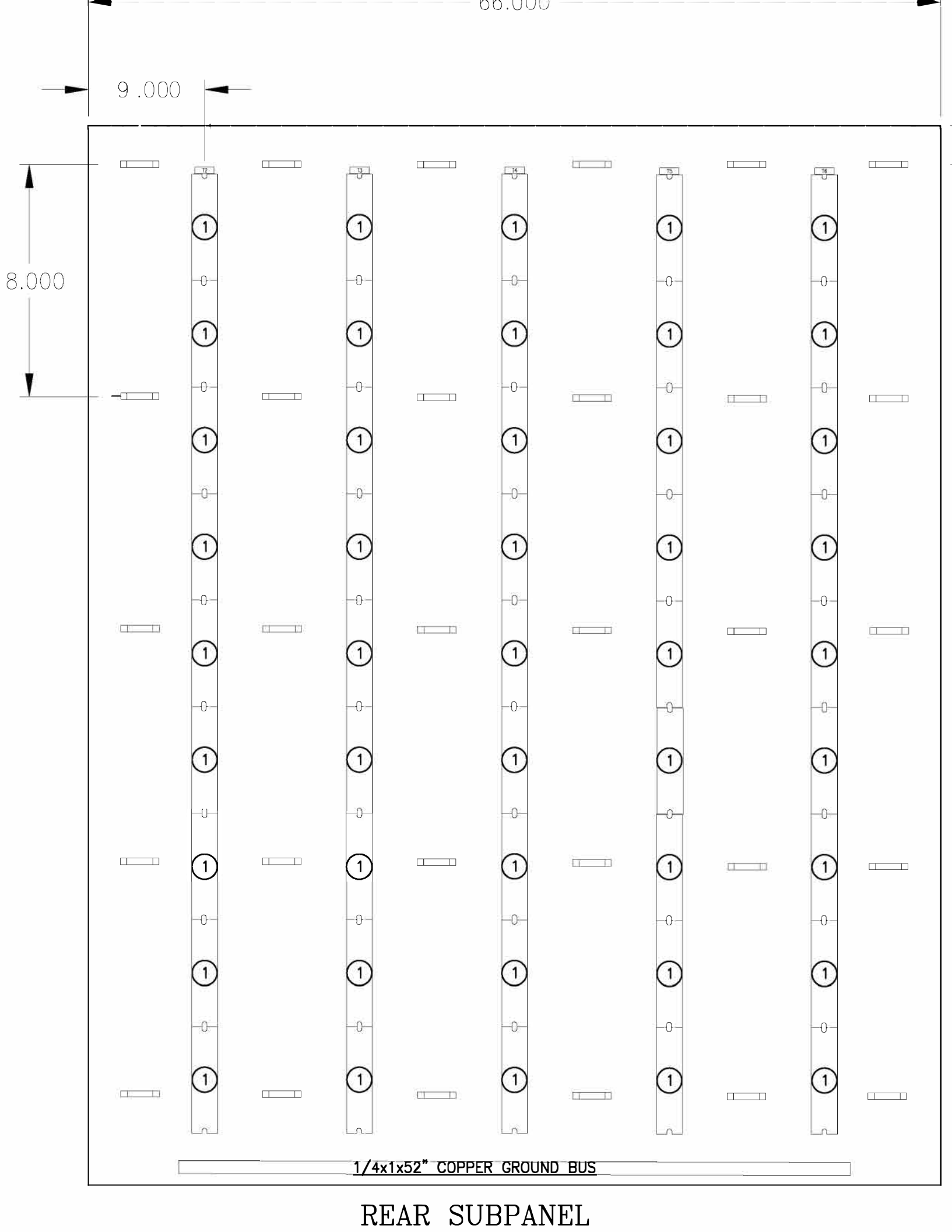
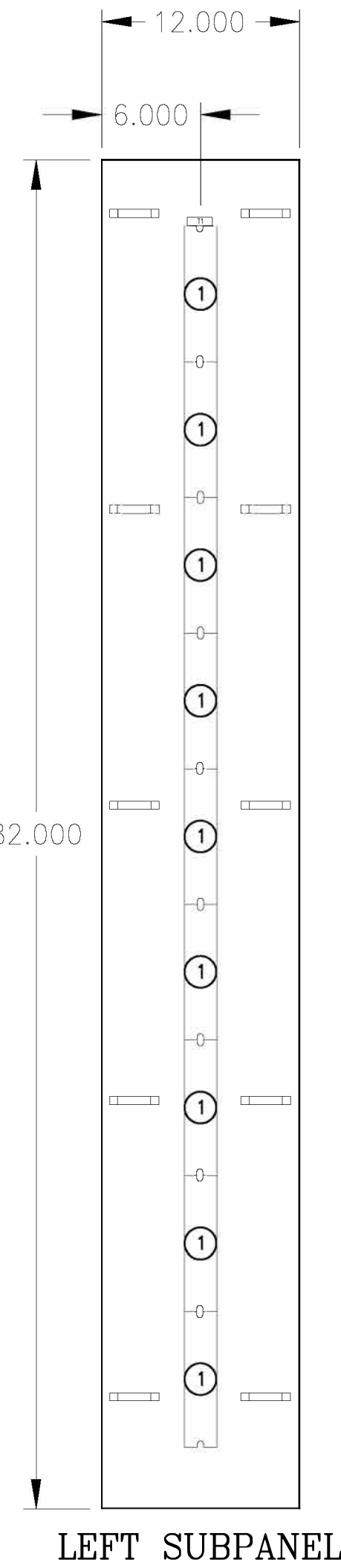
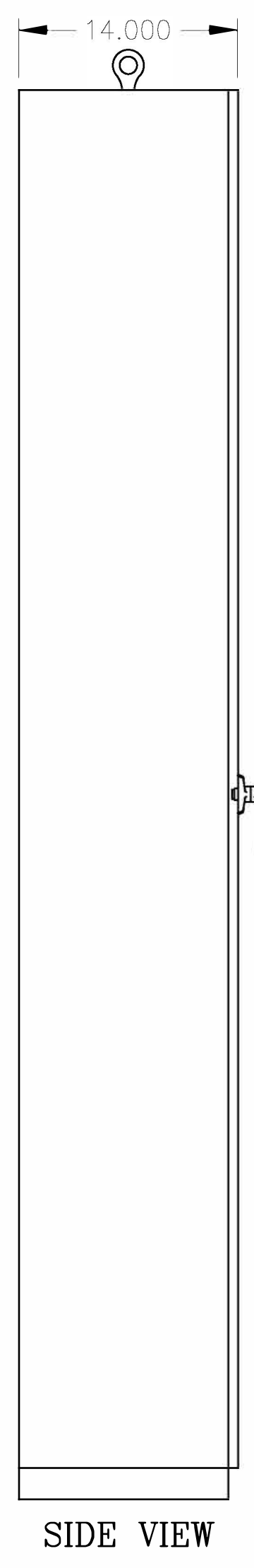
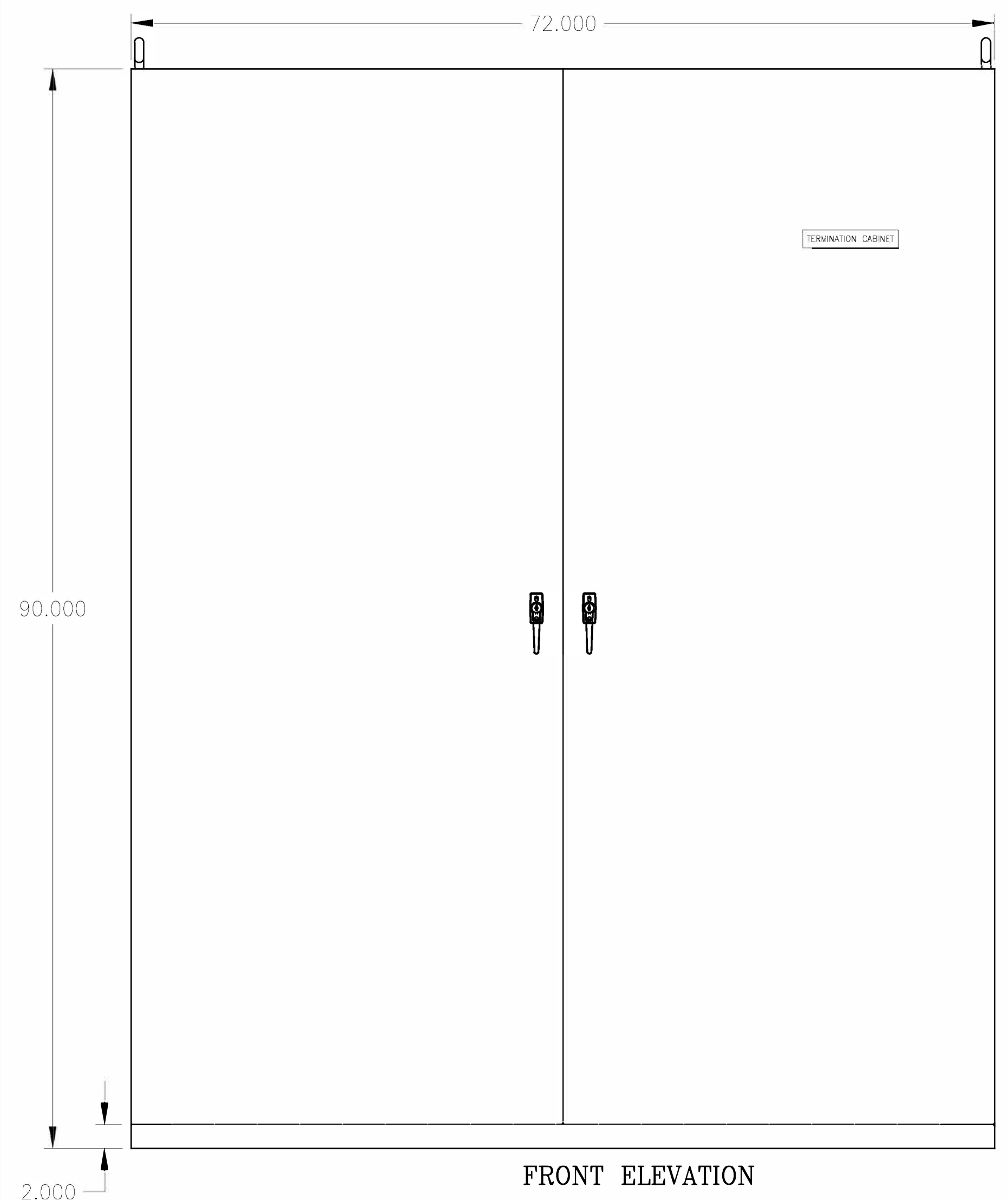
Item	Qty.	Manufacturer Part Number	Description	Remarks
N/A	1		Freestanding Switchboard Enclosure. 30"W, 30"D, 10/32" tapped holes.	
1	1	Hoffman PRA1922TP	Hoffman Rack Angles, 10/32" tapped holes, set of 2 pieces, length 82.27 inches, 47RU.	
2	1	Hoffman PBARAB	Hoffman Rack Rails, set of 4 pieces, length 27.98 inches.	
3*	1	SEL 3555#24NG	SEL 3555, 3RU Rack mount; Intel i7-3555LE Dual Core 2.5GHz	RTAC
4*	1	SEL 24402H11C1C11640	SEL 2440	DPAC
5*	1	SEL 91610054	SEL Touchscreen Monitor, with a 19" Rack Mount Bracket, 125/250 Vdc or 120/240 Vac Power Adapter to DC supply.	HMI
6*	1	SEL 91610049	Rack-Mount USB Keyboard/Drawer with Track Ball	M12
7	1	Quicktron 2102-26956-ADT	DVI Male to HD15 VGA Female Video Adapter.	
9*	1	SEL 2730M0ARCC2222AAAAX0	Managed Ethernet Switch, 4 SFP Cages (Ports 1-4), 4-Ports Copper 10/100/1000 Mbps (Ports 5-8), 16-Ports 100BASE-FX Multimode	ETHSW1
10*	1	SEL 2730M0ARCC1111AAAAX0	Managed Ethernet Switch, 4 SFP Cages (Ports 1-4), 4-Ports Copper 10/100/1000 Mbps (Ports 5-8), 16-Ports 10/100BASE-T Copper	ETHSW2
12	2	Panduit NCMHF1	NetManager Horizontal Cable Manager, 1.75"H x 19.0"W x 3.7"D. Mount on REAR RACK in positions shown.	
13	3	Panduit NCMHF2	NetManager Horizontal Cable Manager, 3.5"H x 19.0"W x 3.7"D. Mount on REAR RACK in positions shown.	
16	2	Panduit CWMPV3340	Vertical Panel Cable Manager, 70"H x 3.25"W x 3"D, Front mount on left and right of REAR rack.	
17	2	Corning CCH-02U	Closet Connector Housing, 2RU high, rack mount. Hang patch panel on REAR RACK in RU positions shown.	PP1, PP3
18	4	Corning CCH-CP12-A9	Closet Connector Housing Panel, Single-Mode fiber, 12 positions, LC Duplex Connector. Install in Patch Panels per Prints.	
19	4	Corning CCH-CP12-A8	Closet Connector Housing Panel, Multi-Mode fiber, 12 positions, LC Duplex Connector. Install in Patch Panels per Prints.	
20*	1	SEL 24880RCX1181AX23X	SEL-2488, Satellite-Synchronized Network Clock Complete Kit	CLK
23	10	Marathon RF30A2S	Fuse Block, 2P, 30A, 250V, Class H with screw type terminals and spring reinforcing clips. Ceramic blocks are not acceptable.	
25	16	Marathon 1512STD	Terminal Block, 12P, 600V, white marking strip barrier type, with screw type terminals	
	lot	Hoffman AS1032	Screw Package, 20 per package, 10-32 thread by 5/8 inch, combo head. Ship 1 full package for future uses.	NO SUBSTITUTIONS
	lot	Fastenal 1133143	Finishing Cup Washer, "Beauty Ring", number 10. Install with screws AS1032.	OR EQUIVALENT
26	2		Receptacle, Duplex, 120 Vac, 15A	
28	1		Overhead Interior Lighting System, 120Vac overhead interior lighting system complete with LED lamp, light switch, and fused ac service wiring for 120 volts ac.	
30	1	Hoffman P19DR2US	Rack-Angle Mounted Drawer (2RU)	
31	1	Hoffman P19WS	Writing Surface	
41	1	CUI INC VHK50W-Q48-S12	DC-DC Converter 50W 48VDC to 12 VDC Converter	M6
43	1	TENSILITY 053-0186R (CA-2187)	Cable 5.5x2.1x12 mm DC plug with 18 AWG wire	
44*	1	SEL 9163XICN6479-03B-2	ICON hardware, software, services suite, Fayetteville Node 48VDC version. Includes 2x 8011-03 48Vdc Supplies and 6x 8120 OC48 SFP's for spare parts.	
46*	2	SEL 8120	OC-48, SFP 1310nm, LC, 2km. Plug into protected line modules per prints.	
47*	1	SEL 3620XHB0XX0	SEL 3620 GATEWAY, TWO 10/100TX COPPER ETHERNET PORTS, 48VDC POWER SUPPLY	GW1
48*	1	SEL 2730M0ARCC2233AAAAX0	SEL 2730M ETHERNET SWITCH, 4 SFP CAGES, 4 10/100/1000 MBPS (PORTS 5-8), 8 PORTS 100BASEFX MULTIMODE FIBER, 8 PORTS 100BASELX10 SINGLE MODE FIBER, TWO (2) 48 VDC POWER SUPPLIES	ETHSW3
51	5	Hoffman A19RP1U (or equal)	19-inch Rack Cover Plates, 1 Rack Unit high, 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing.	OR EQUIVALENT
52	4	Hoffman A19RP2U	19-inch Rack Cover Plates, 2 Rack Unit high, 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing.	OR EQUIVALENT
53	1	Hoffman A19RP3U	19-inch Rack Cover Plates, 3 Rack Unit high, 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing.	OR EQUIVALENT
54	2	Hoffman A19RP4U	19-inch Rack Cover Plates, 4 Rack Unit high, 12-gauge steel, light gray (match panel paint color), EIA standard RS-310-D screw spacing.	OR EQUIVALENT
1			Ground bus bar, copper, 1/4" x 1" x 25"	



BILL OF MATERIAL				
ITEM NO.	QTY.	MANUF.	PART NO.	DESCRIPTION
1	63	GE	EB25B12	12 POINT TERMINAL BLOCK

NAMEPLATE LEGEND				
NPLT NO.	LINE 1	LINE 2	LINE 3	SIZE
TERMINATION CABINET				8 X 1.5
T1, T2, T3, T4, T5, T6, T7				0.5 X 1.5

- NOTES:**
1. NAMEPLATES ARE ---- BLACK WITH WHITE LETTERS.
 2. PROVIDE NAMEPLATES FOR FUSE BLOCKS, TERMINAL BLOCKS AND ANY OTHER INTERIOR DEVICE IDENTIFICATIONS.



PRELIMINARY - DO NOT USE FOR CONSTRUCTION

© 03/2022

NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A			BMJ	09/24/2023

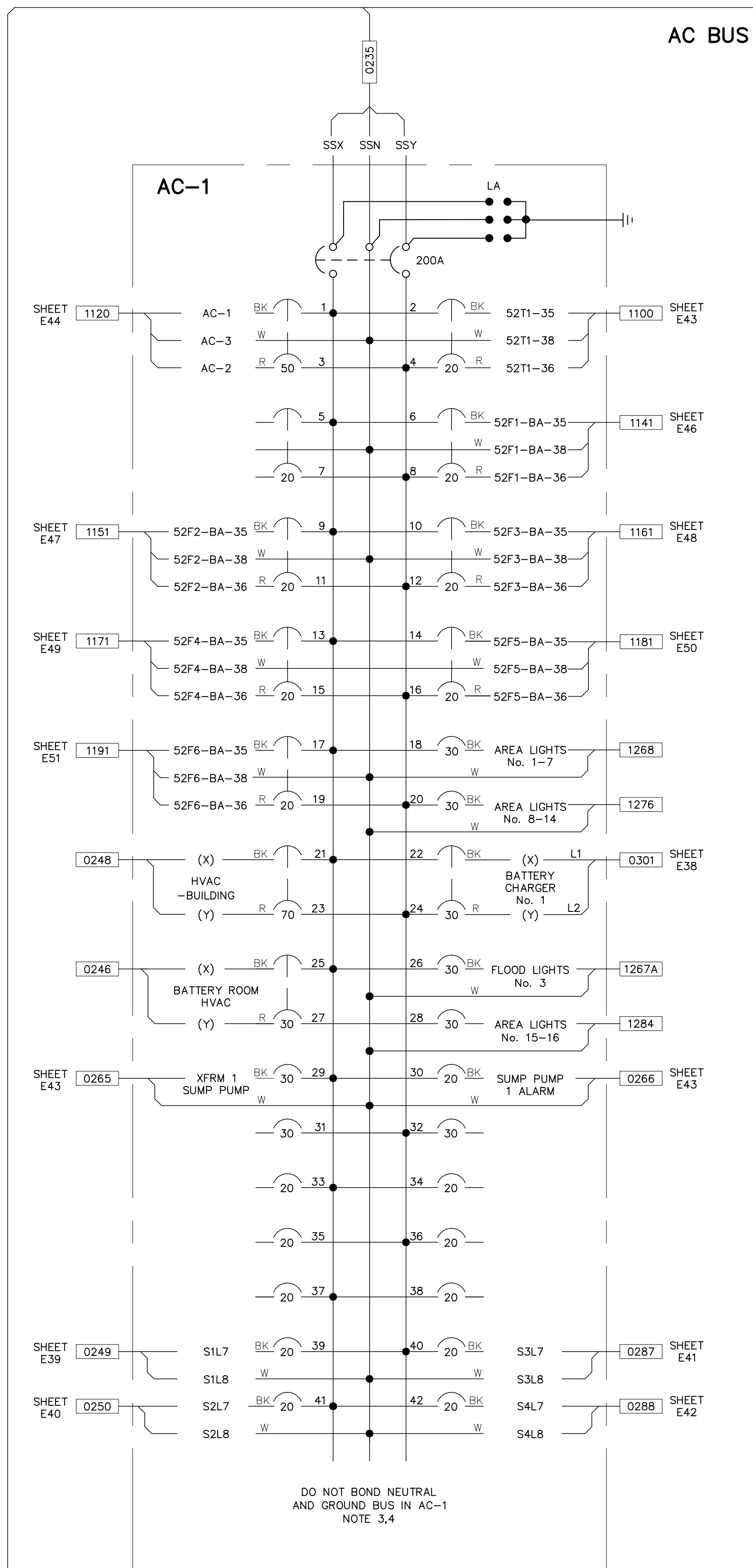
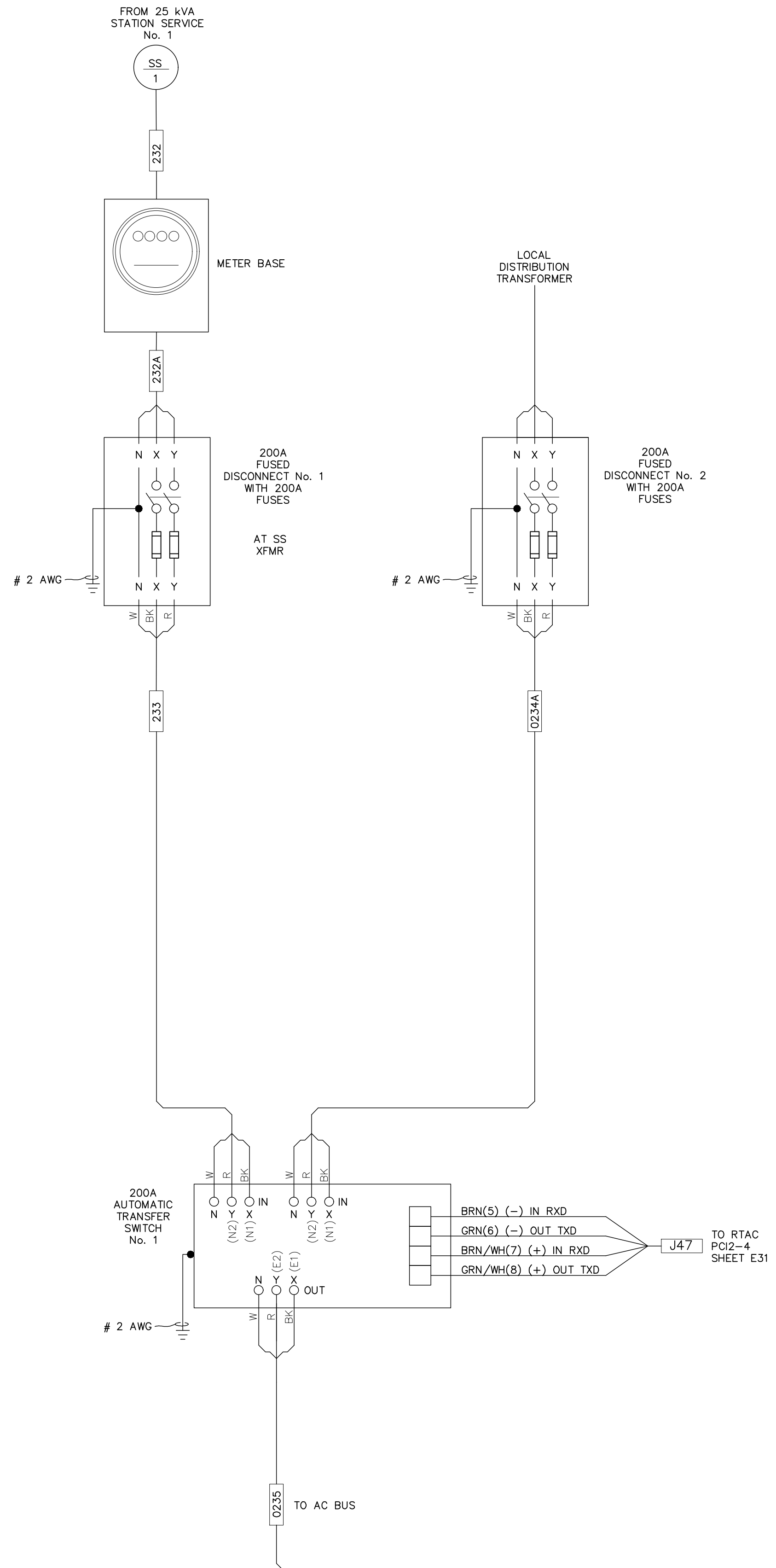
PROJECT NAME:	CUMBERLAND ROAD 69 TO 15 X 25 KV SUBSTATION
DRAWING TITLE:	TERMINATION CABINET OUTLINE
DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	E14

THERE WILL BE 3 SWITCHBOARDS WITH THIS DESIGN

NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A	ISSUED FOR BID		BMJ	09/24/2023

PROJECT NAME: CUMBERLAND ROAD 69 TO 15 X 25 KV SUBSTATION
 DRAWING TITLE: AC-1 & AC-2 PANELS INTERCONNECTION DIAGRAM

DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	



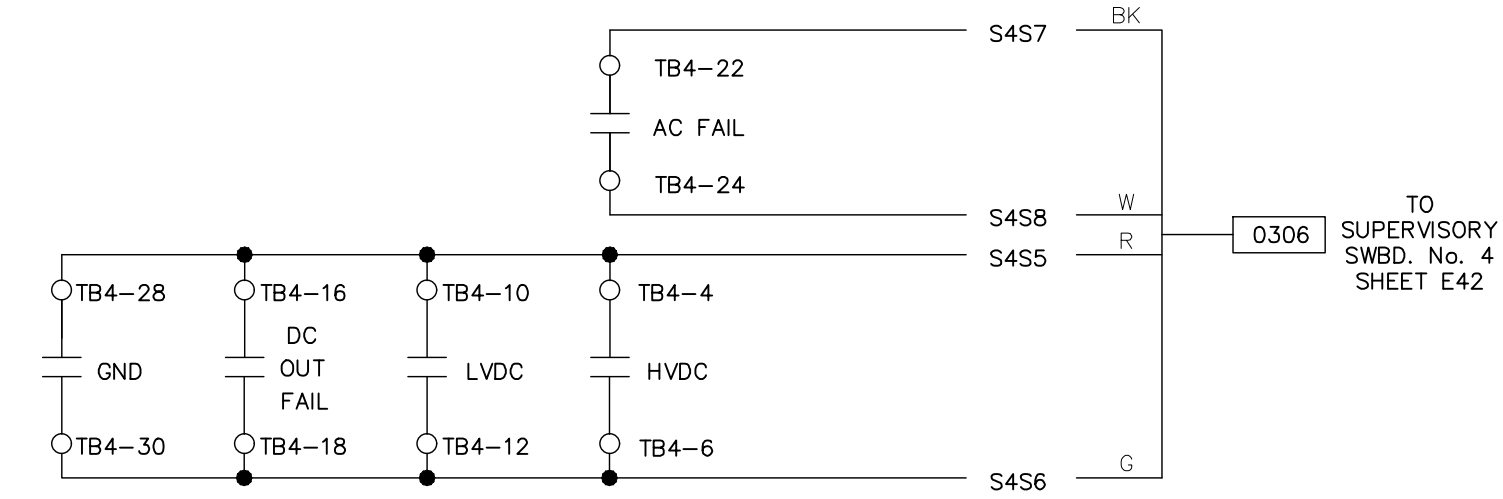
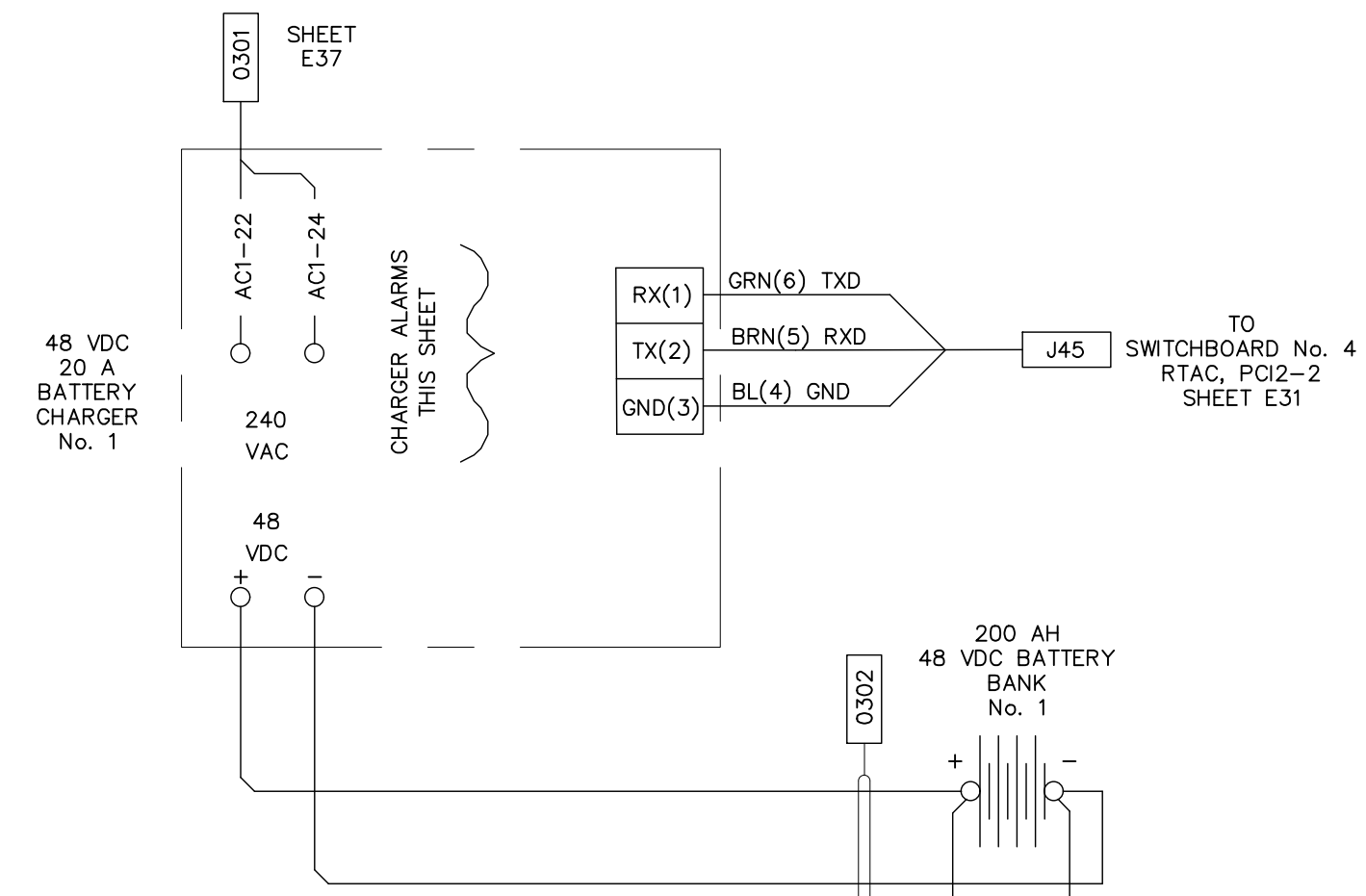
NOTES:

- ALL AC BRANCH FEEDERS SHALL OBSERVE THE FOLLOWING COLOR CODE:
X-BLACK Y-RED N-WHITE G-GREEN
- CONTRACTOR SHALL ONLY BE RESPONSIBLE FOR INSTALLATION OF METER SOCKET. METER UNIT WILL BE INSTALLED BY OWNER.
- GROUND WIRES ARE USED BUT NOT SHOWN.
- NEUTRAL TO BE GROUNDED ONCE AT STATION SERVICE DISCONNECT AND ONCE AT DISTRIBUTION TRANSFORMER DISCONNECT.

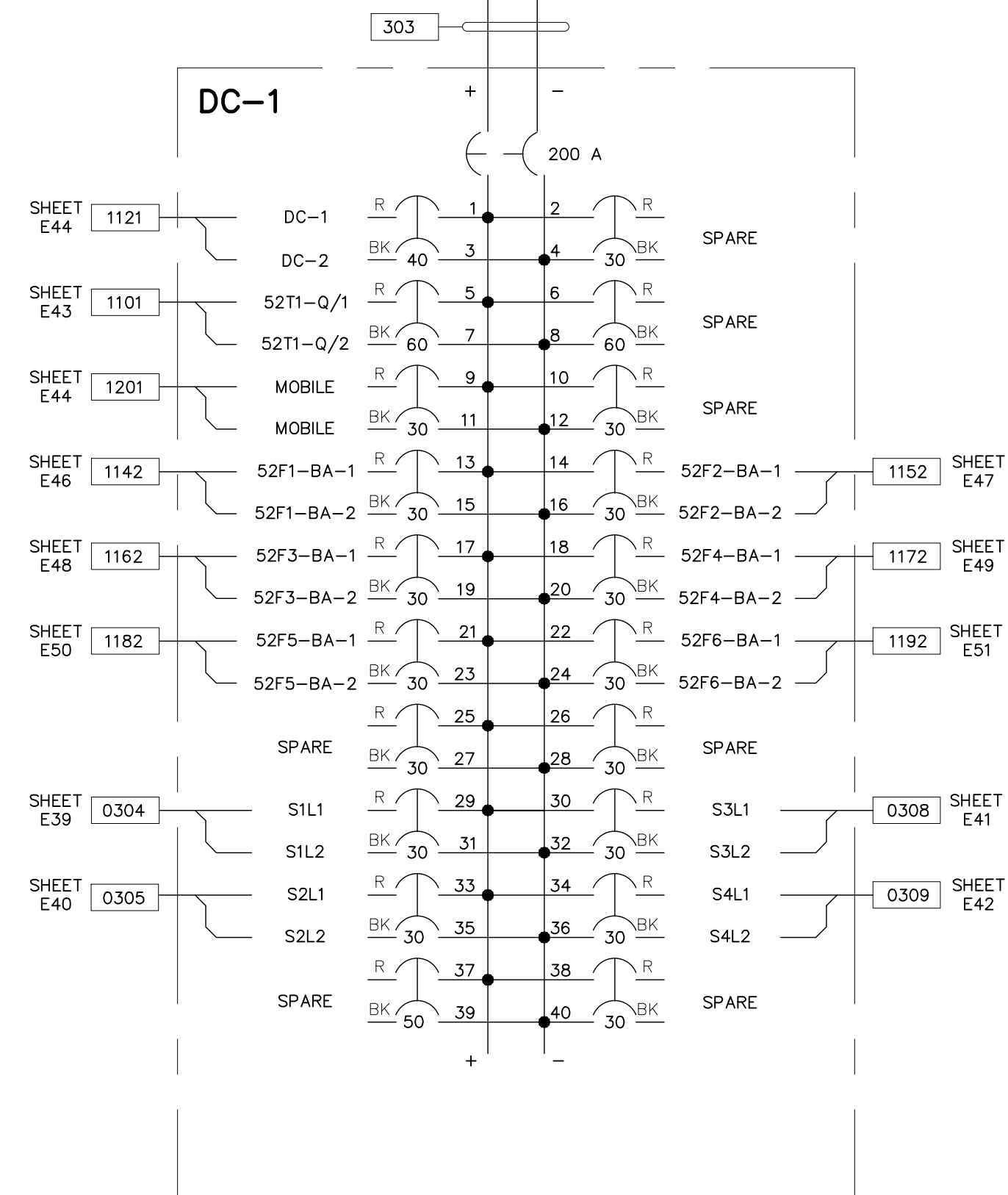
DEVICE CODES

- AC-X AC SERVICE BREAKER PANEL No. x
 SX SWITCHBOARD No. x
 TX TRANSFORMER No. x
 52-X BREAKER No. x

PRELIMINARY



CHARGER No. 1 ALARM CONTACTS



225 AMP, 42 CKT PANEL

NOTES:

1. ALL METALLIC JUNCTION BOXES, RACEWAYS, CABLE TRAYS, PANELS AND ENCLOSURES SHALL BE BONDED TO THE SUBSTATION GRID.
2. ALL DC BRANCH FEEDERS SHALL OBSERVE THE FOLLOWING COLOR CODE:
POSITIVE (+) - RED NEGATIVE (-) - BLACK

DEVICE CODES

DC-X DC PANEL No. x
 SX SWITCHBOARD No. x
 TX TRANSFORMER No. x
 52-X BREAKER No. x

PRELIMINARY



PRELIMINARY - DO NOT USE FOR CONSTRUCTION

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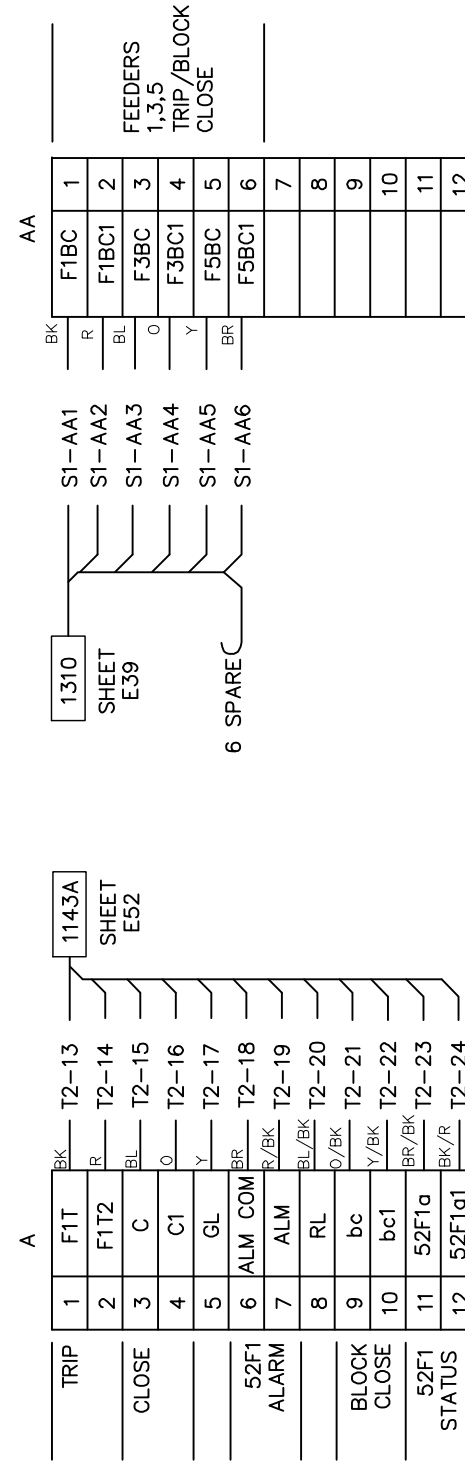
NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A	FOR BID		EWJ	09/24/2023

PROJECT NAME: CUMBERLAND ROAD 69 TO 15 X 25 KV SUBSTATION
 DRAWING TITLE: DC BREAKER PANEL INTERCONNECTION DIAGRAM

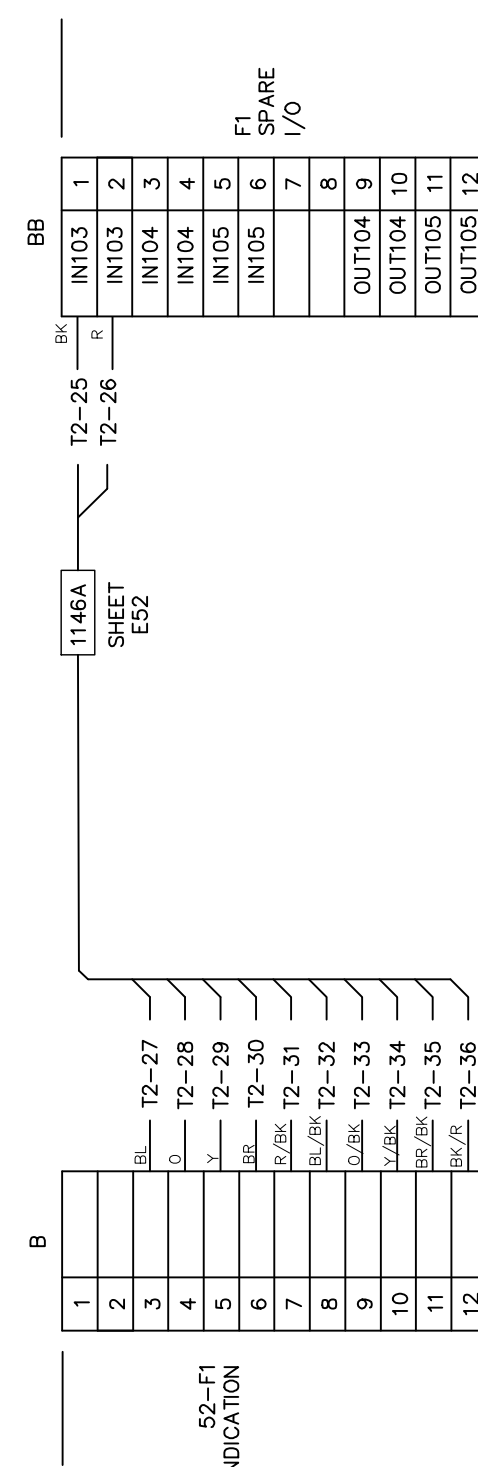
DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	

SWITCHBOARD No. 2 - S2
15 kV FEEDERS No. 1, 3, 5

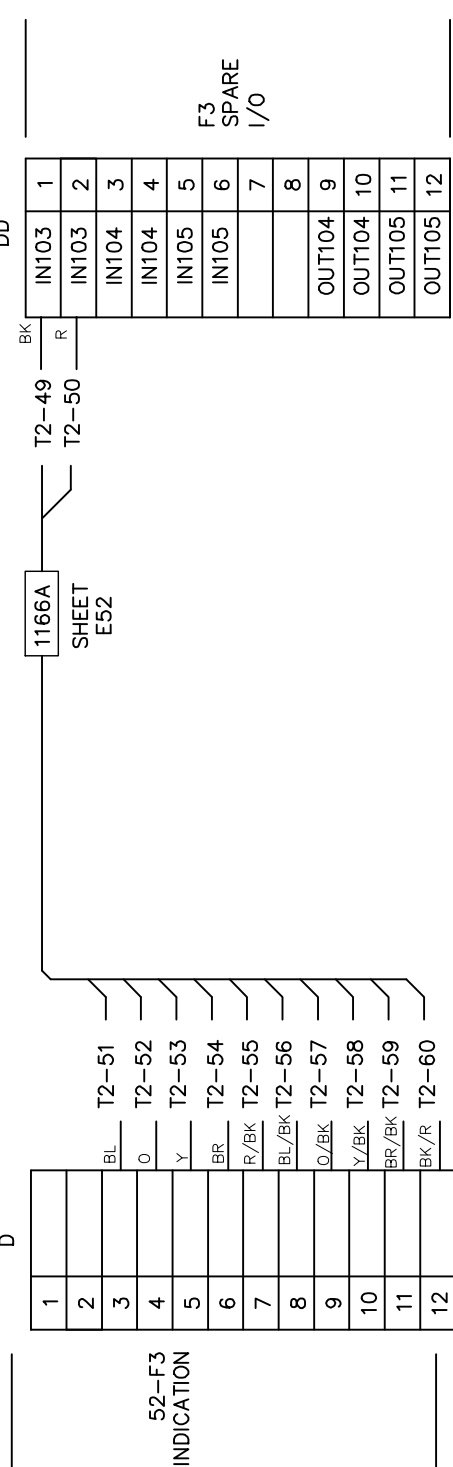
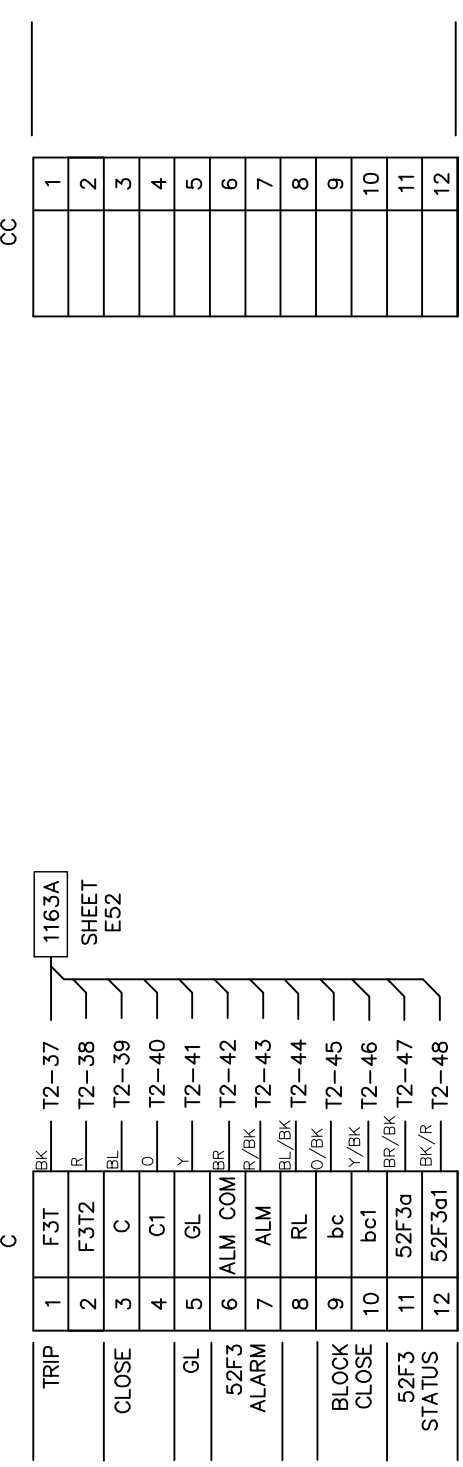
LEFT SIDE



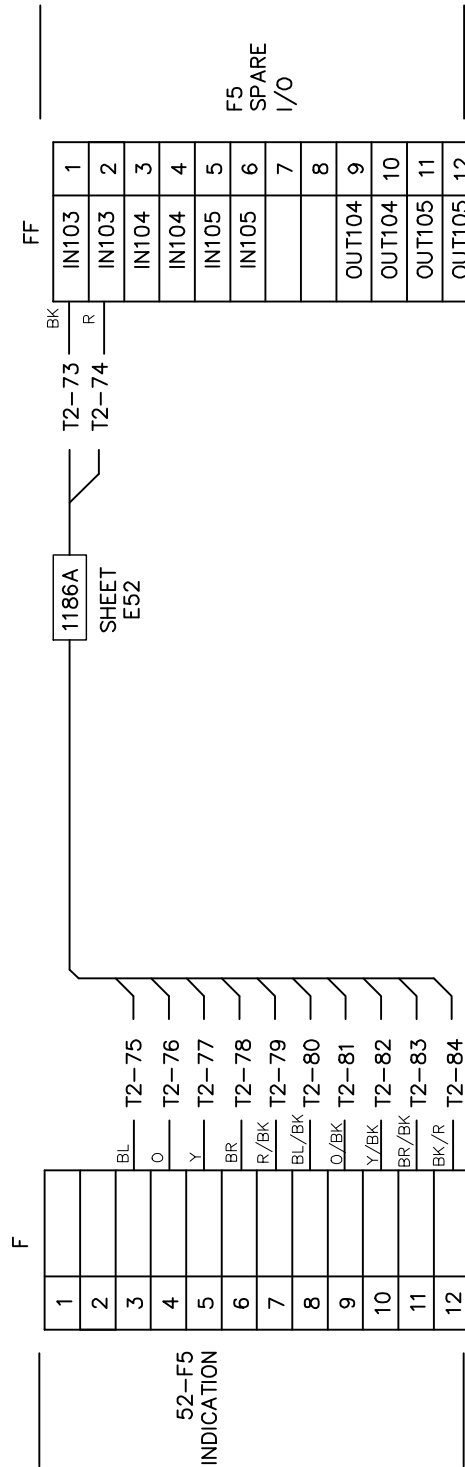
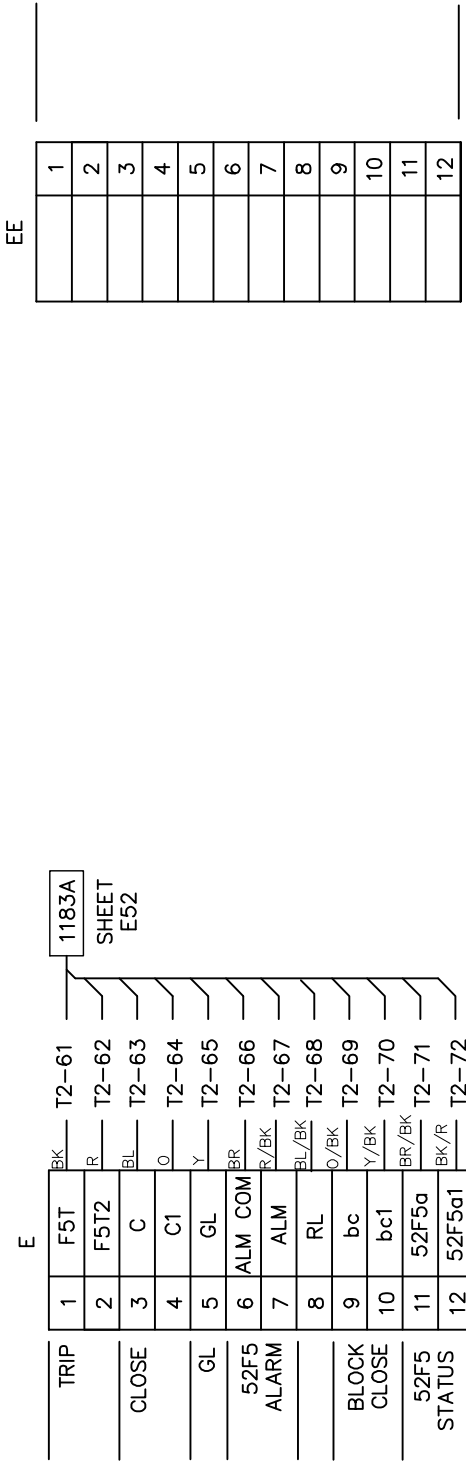
BKR No. 52F1



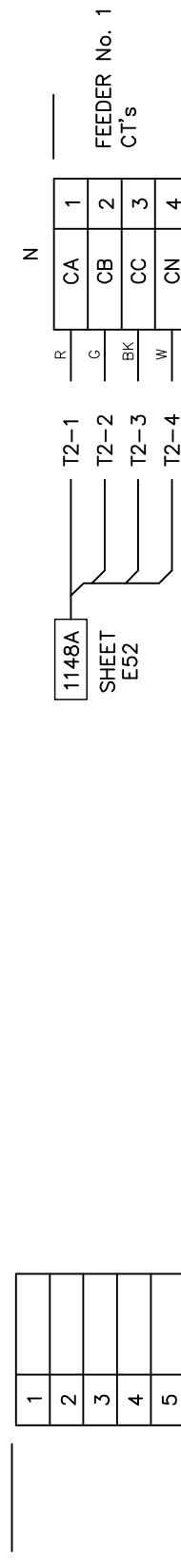
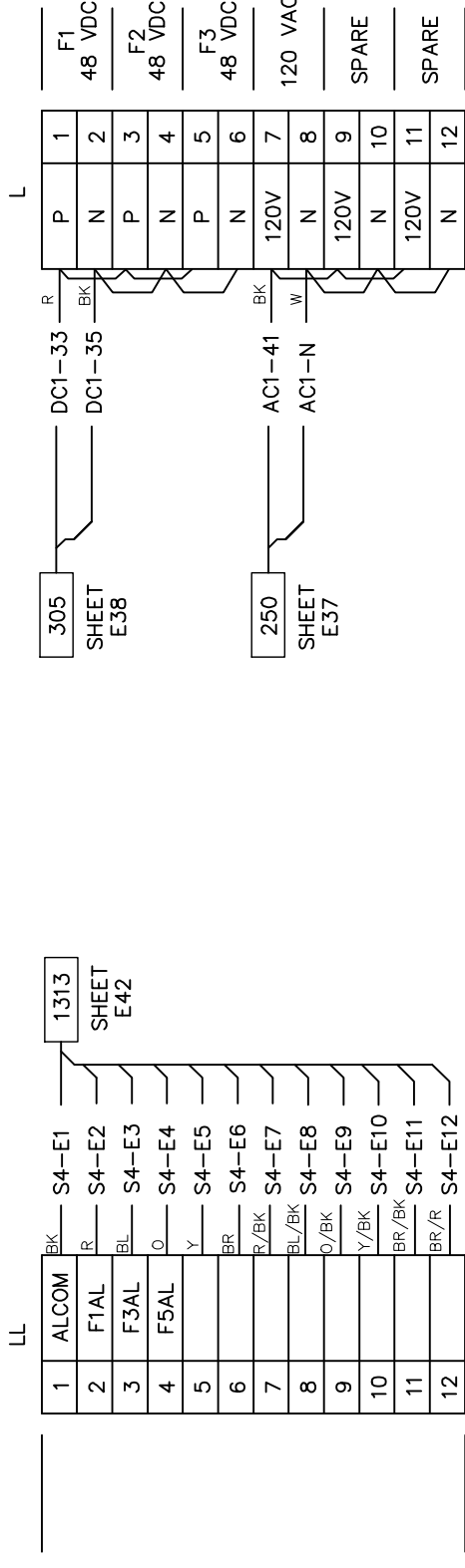
BKR No. 52F3



BKR No. 52F5



RIGHT SIDE



LEFT SIDE

FRONT

SWITCHBOARD No. 2 - S2
PANEL REAR VIEW

RIGHT SIDE

PRELIMINARY

CONTROL AND INDICATION

1	BR
2	R
3	BL
4	O
5	Y
6	BR
7	R/BR
8	BL/BR
9	O/BR
10	Y/BR
11	BR/BR
12	BR/R

CT & PT

A	R
B	O
C	BR
N	W
N	W

AC

X	BR
Y	R
N	W
G	G

DC

POS	R
NEG	BR

WIRE COLOR CODE

NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A	ISSUED FOR BID		BMJ	09/24/2023

PROJECT NAME:
CUMBERLAND ROAD
69 TO 15 X 25 kV SUBSTATION

DRAWING TITLE:
SWITCHBOARD NO.2
INTERCONNECTION DIAGRAM

DRAWN BY: JRT
CHECKED BY: DAW
APPROVED BY: MJW
DATE: 3/16/2022
SCALE: NTS
FILE NUMBER: 12510
SHEET:



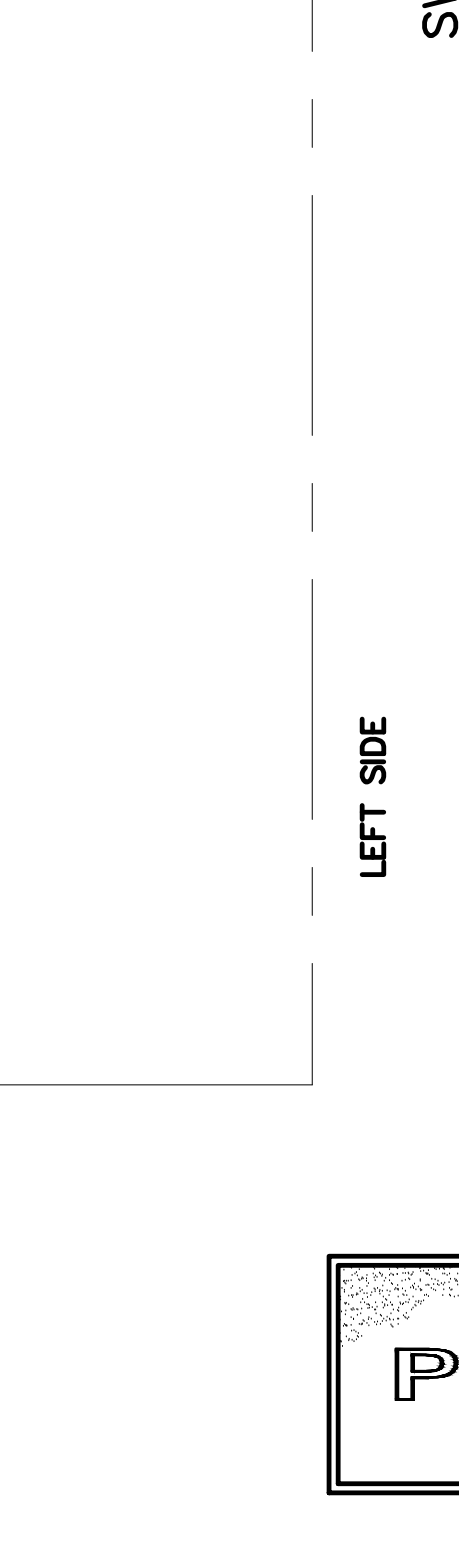
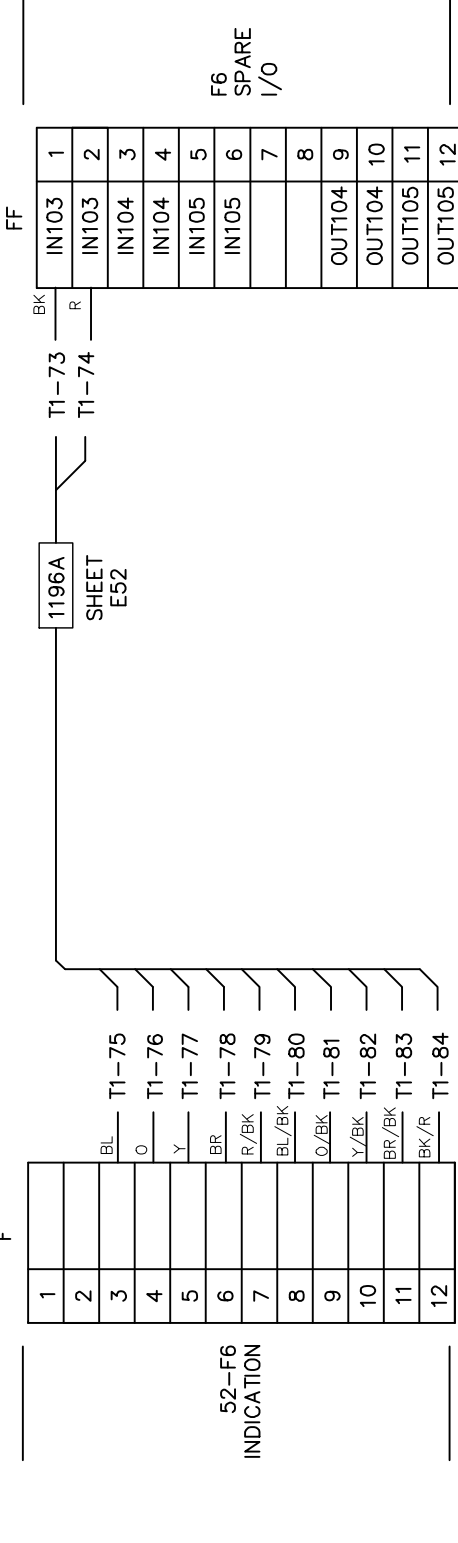
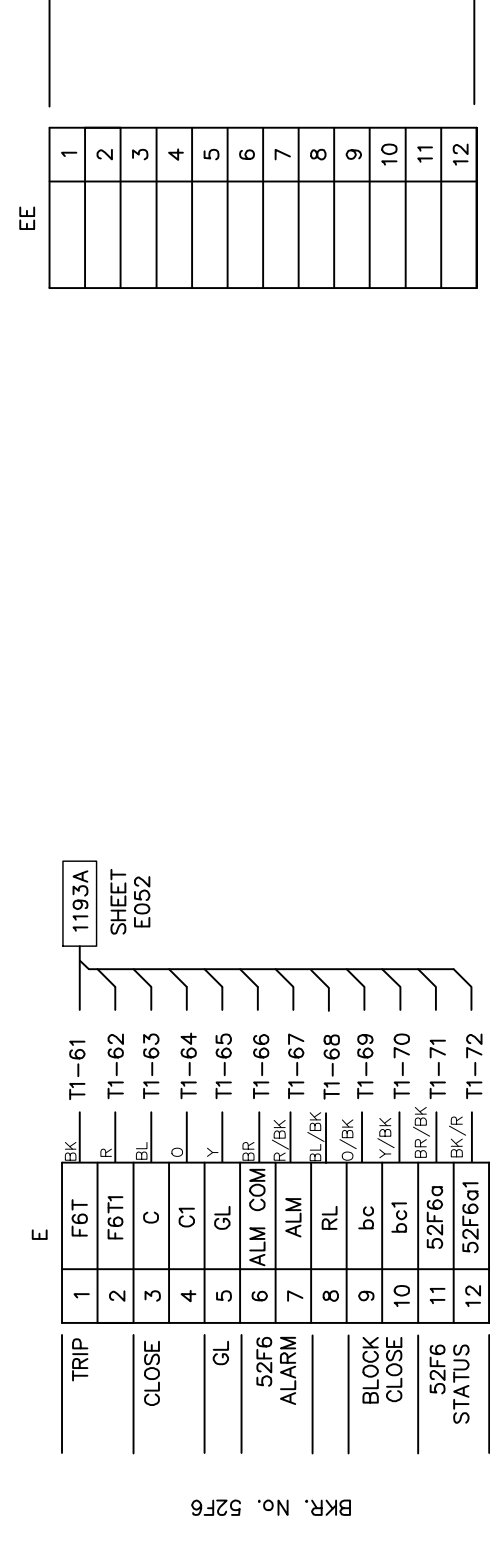
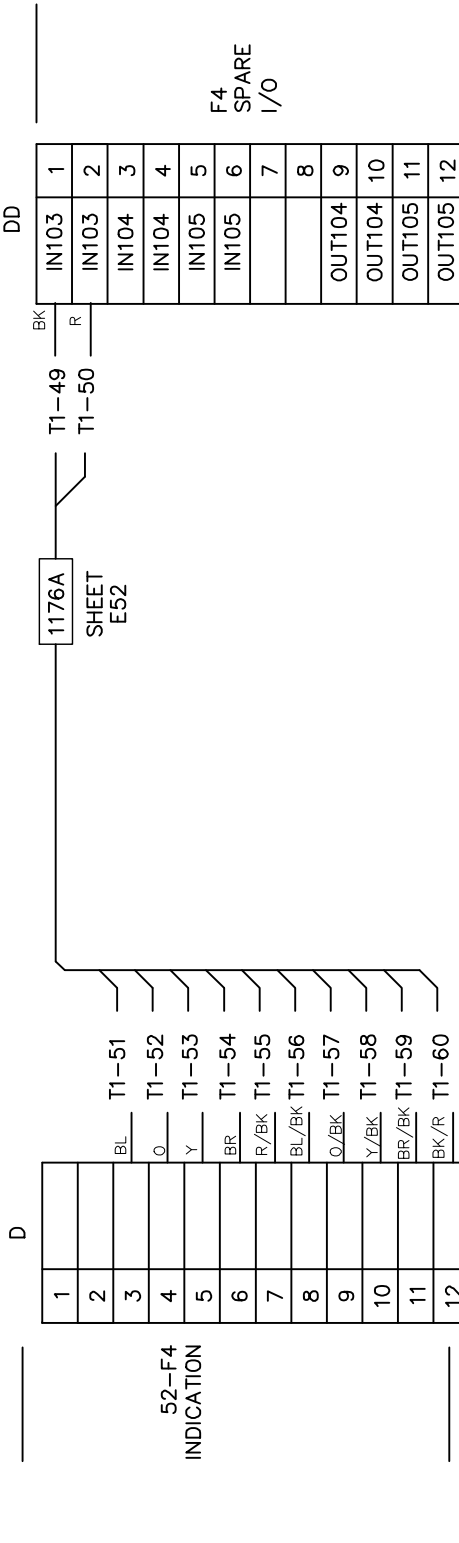
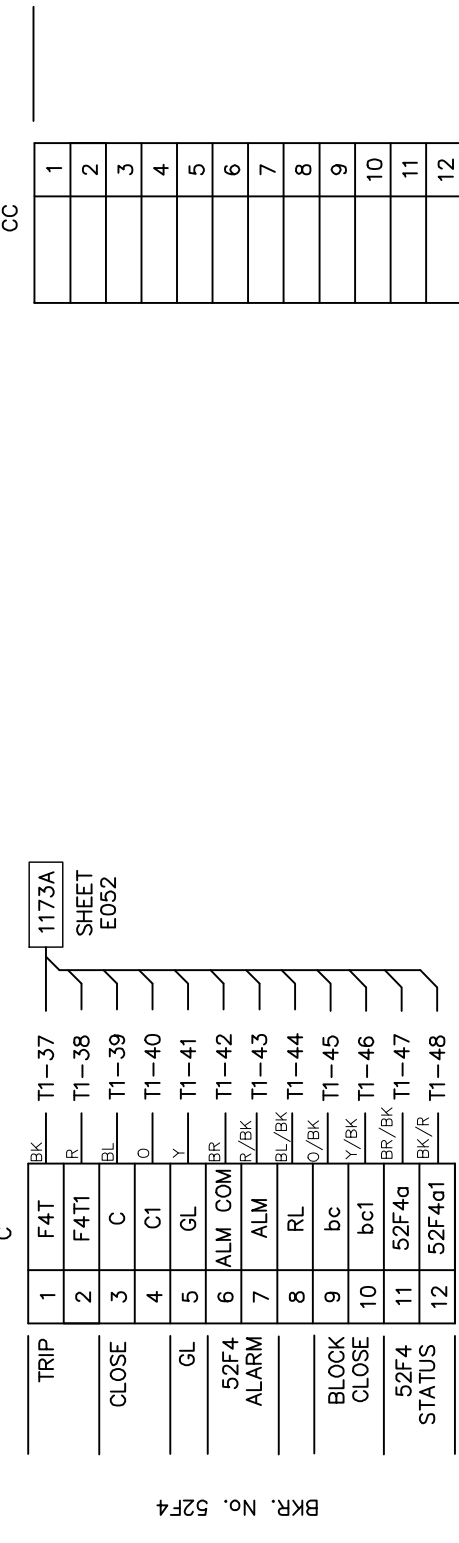
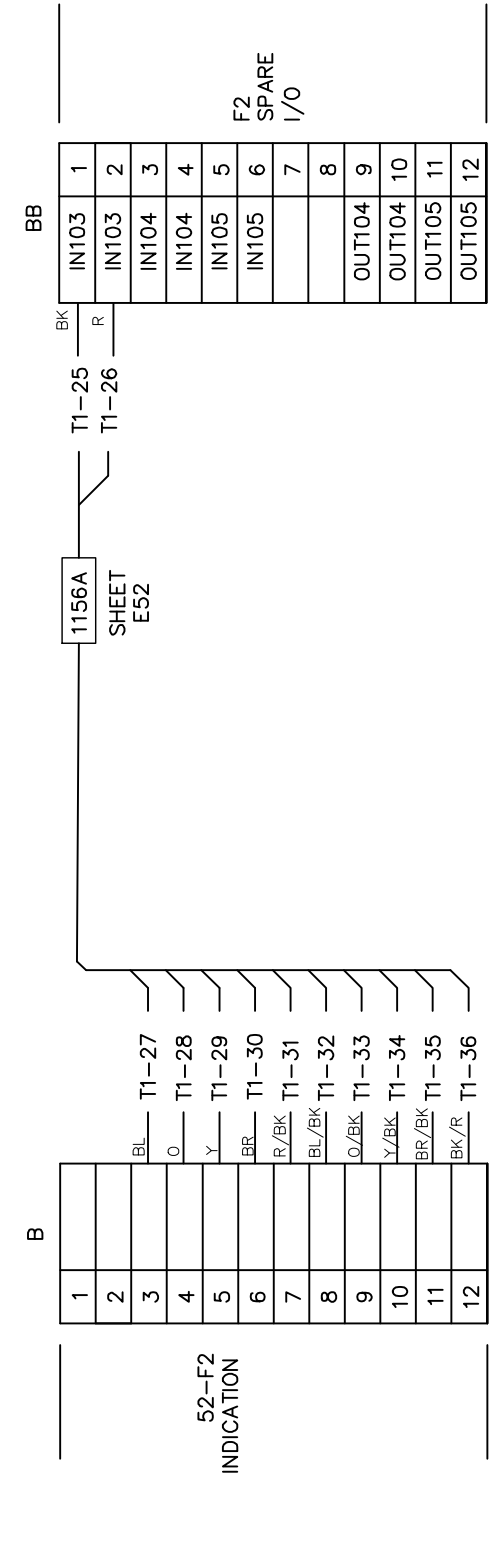
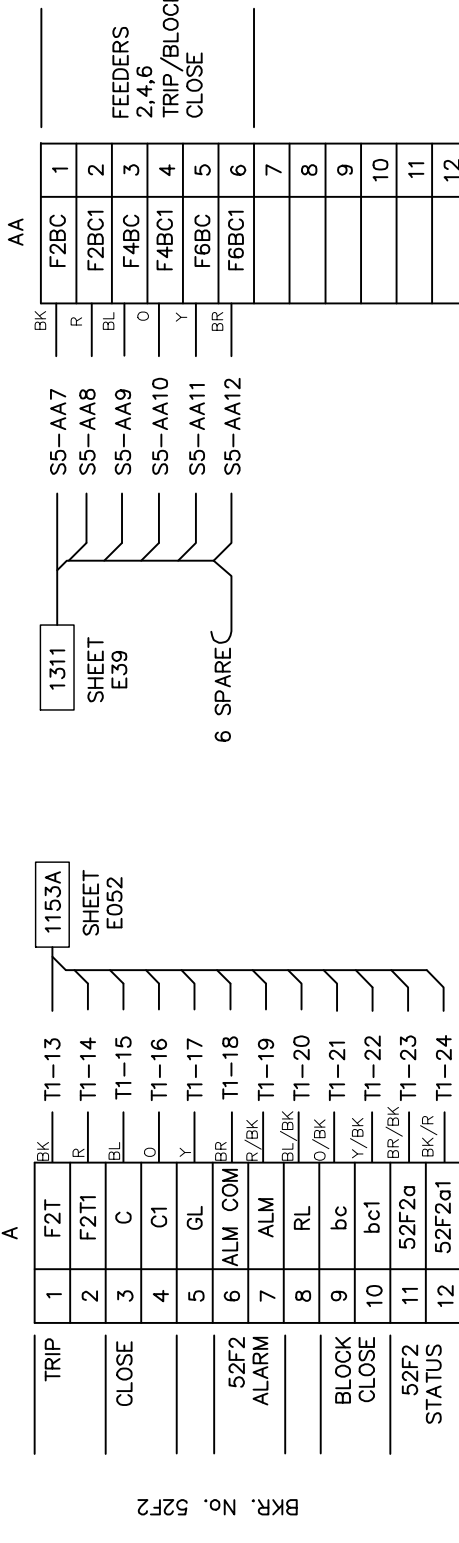
PRELIMINARY -
DO NOT USE FOR
CONSTRUCTION

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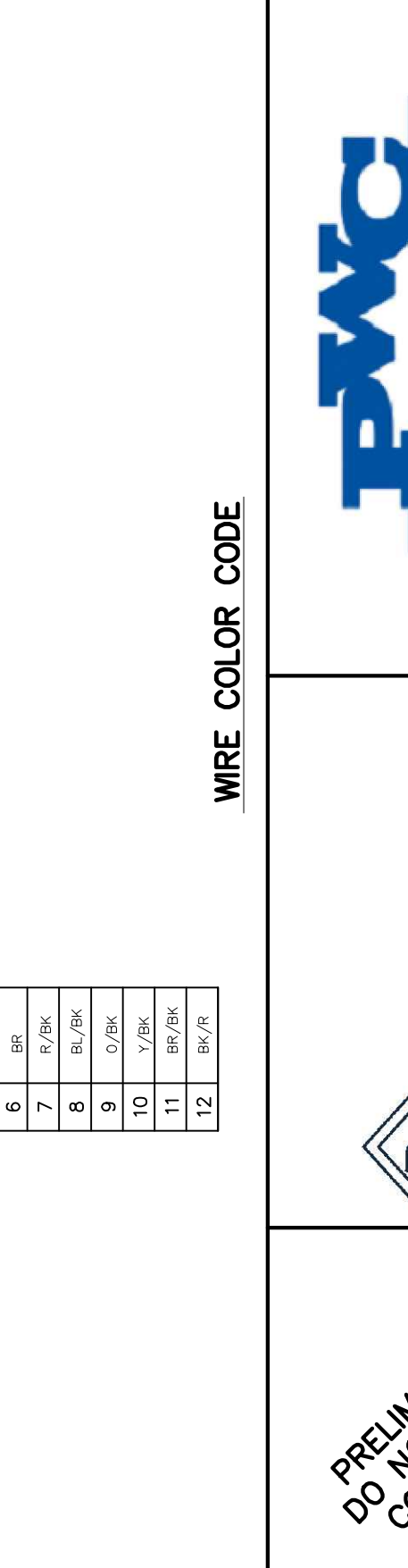
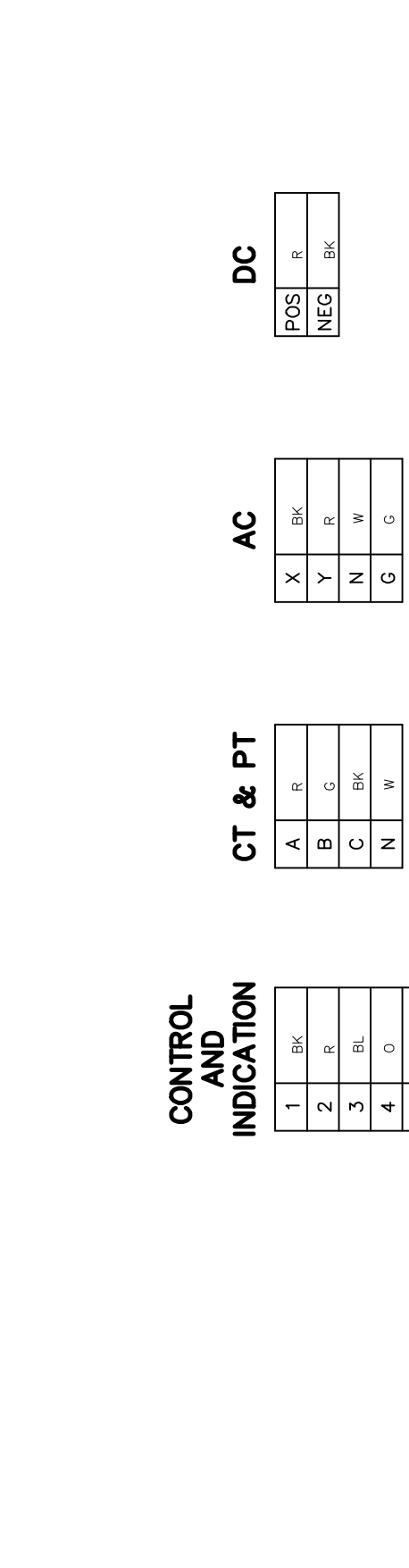
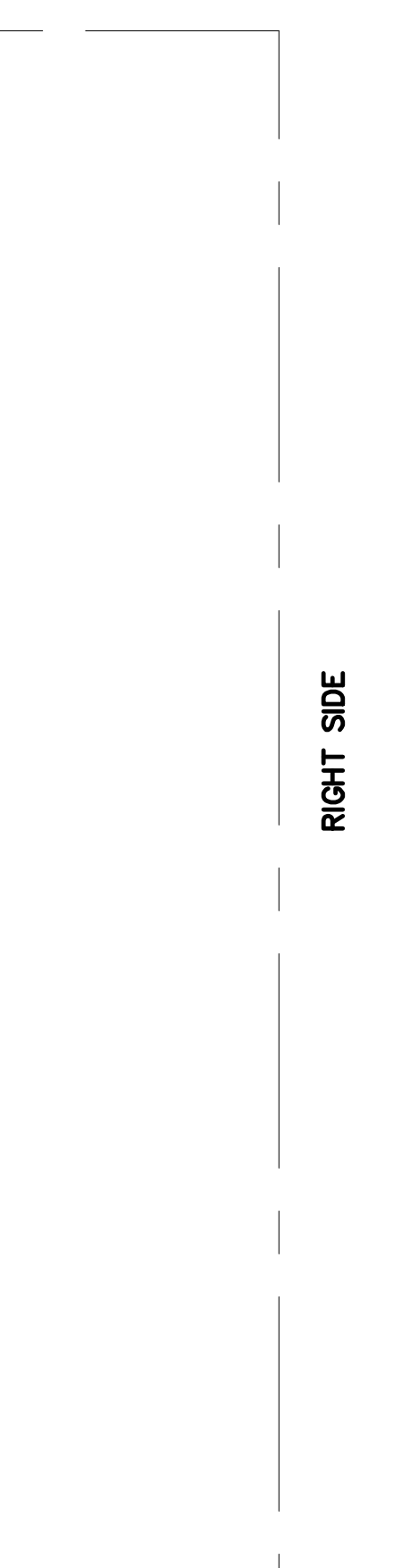
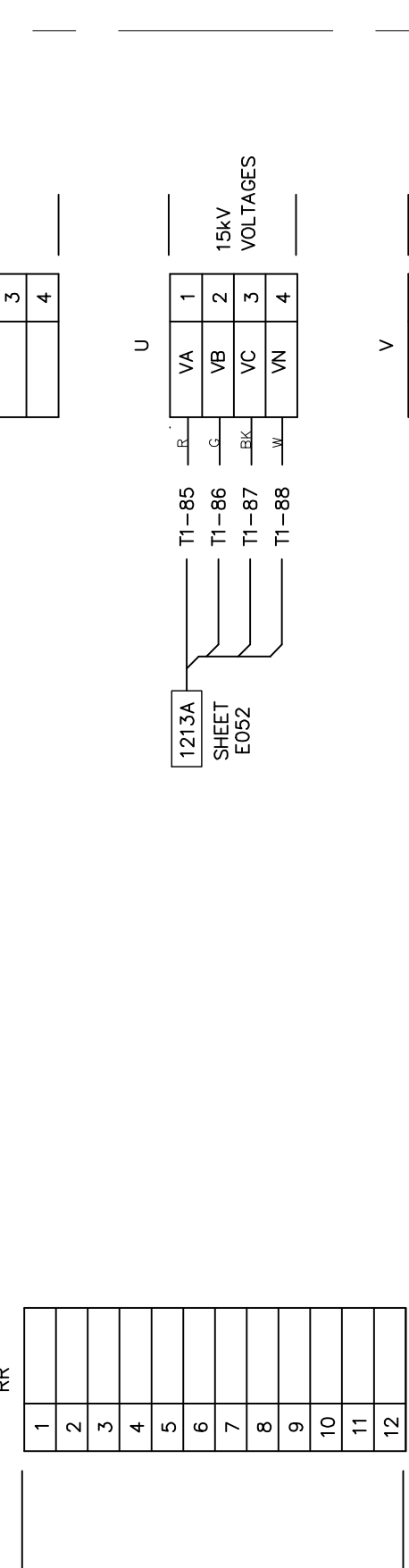
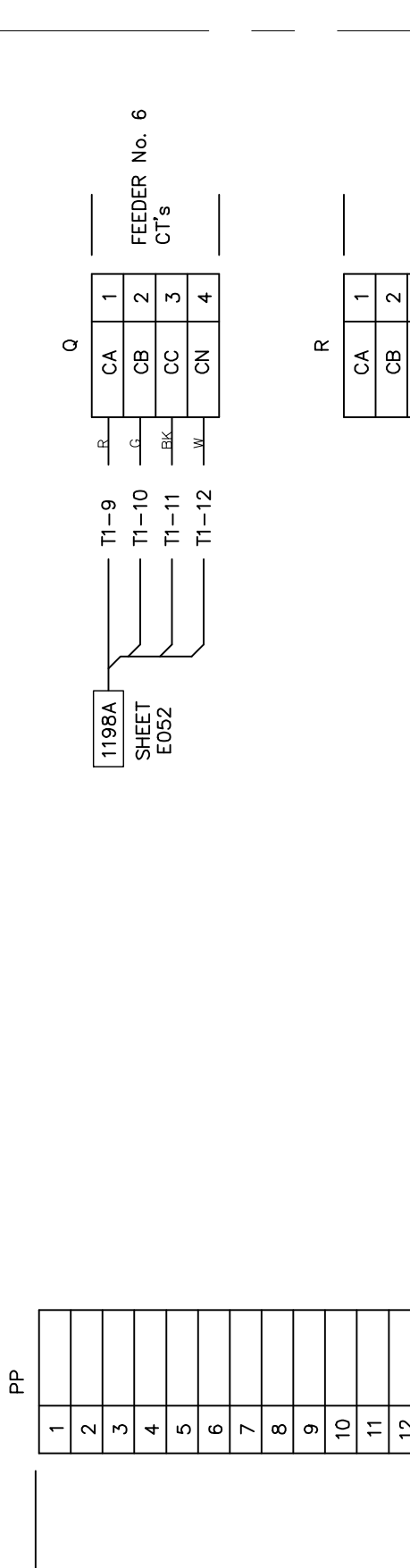
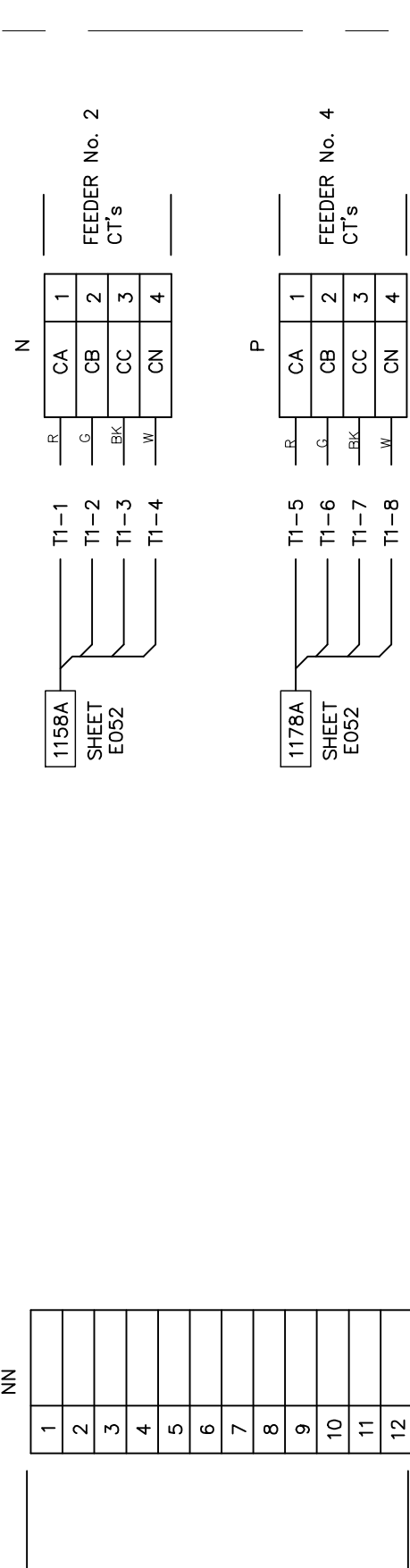
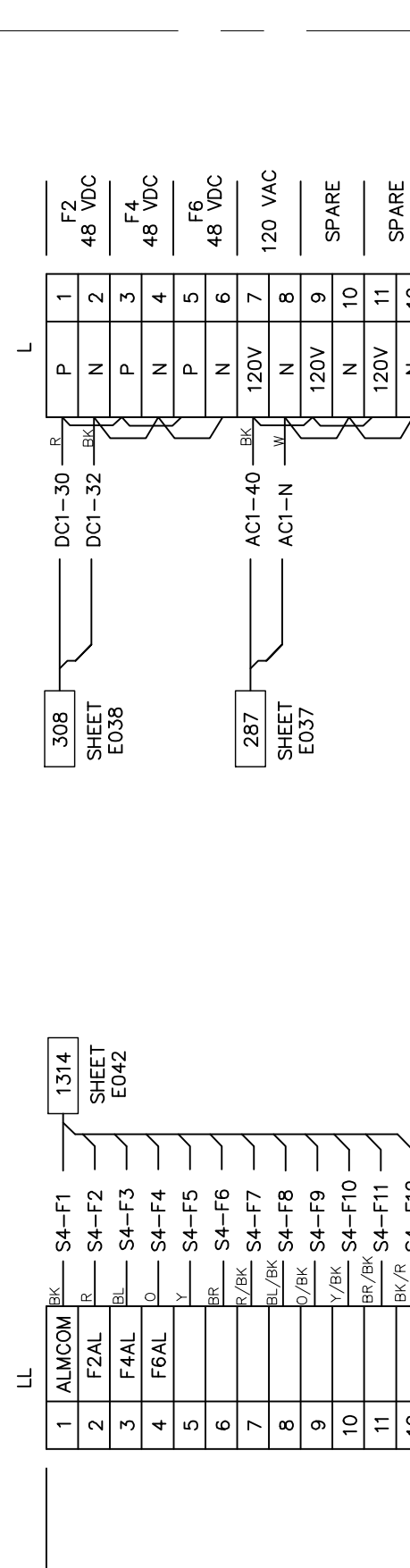


SWITCHBOARD No. 3 - S3
15 kV FEEDERS No. 2, 4, 6

LEFT SIDE



RIGHT SIDE



PRELIMINARY

FRONT
SWITCHBOARD No. 3 - S3
PANEL REAR VIEW

CONTROL AND INDICATION

1	BR
2	R
3	BL
4	O
5	Y
6	BR
7	R/BR
8	BL/BR
9	O/BR
10	Y/BR
11	BR/BR
12	BL/BR

CT & PT

A	R
B	O
C	BR
N	W

AC

X	BR
Y	R
N	R
G	O

DC

POS	BR
NEG	BR

WIRE COLOR CODE

PROJECT NAME: CUMBERLAND ROAD
69 TO 15 X 25 kV SUBSTATION
DRAWING TITLE: SWITCHBOARD NO.3 INTERCONNECTION DIAGRAM

DRAWN BY: JRT
CHECKED BY: DAW
APPROVED BY: MJW
DATE: 3/16/2022
SCALE: NTS
FILE NUMBER: 12510
SHEET:

NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A	ISSUED FOR BID		BMW	09/24/2023

PRELIMINARY - DO NOT USE FOR CONSTRUCTION



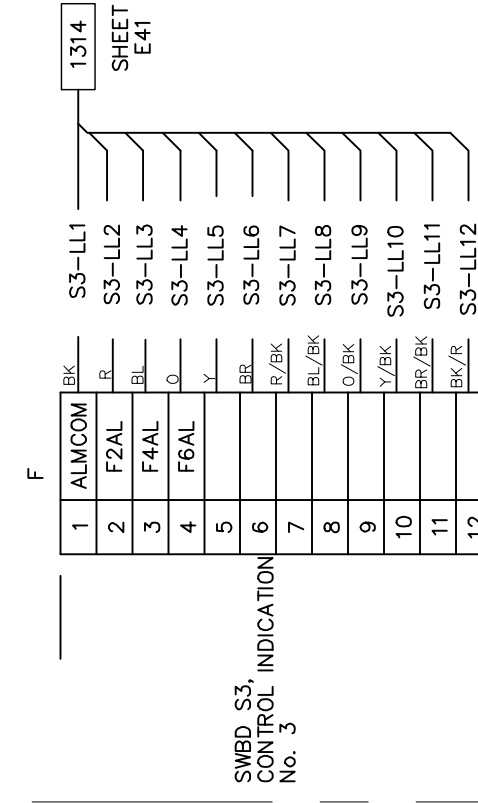
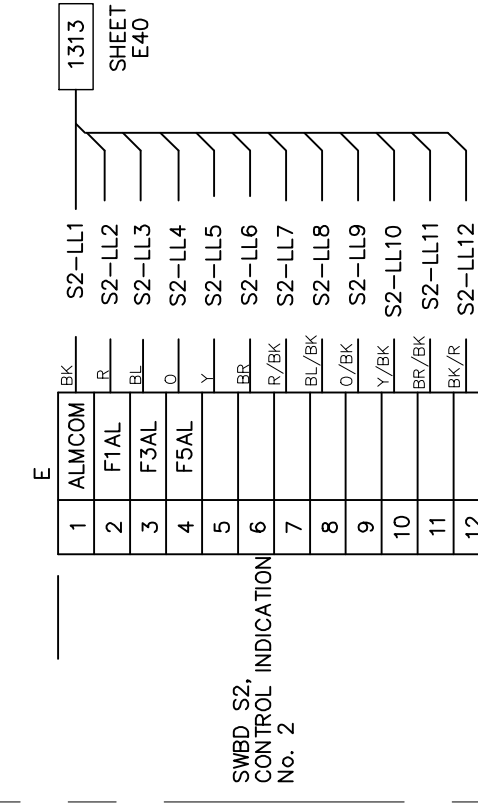
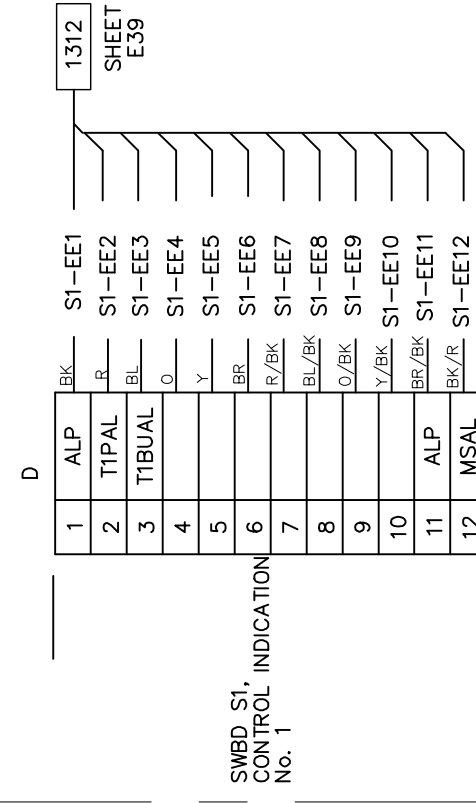
SWITCHBOARD No. 4 - S4
INTEGRATION & COMMUNICATIONS

LEFT SIDE

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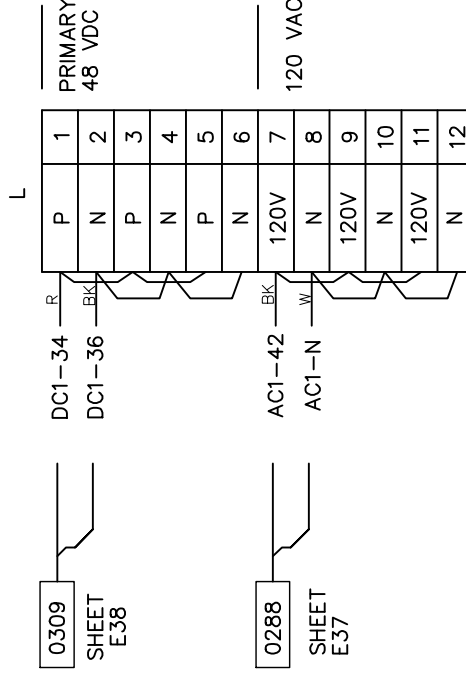
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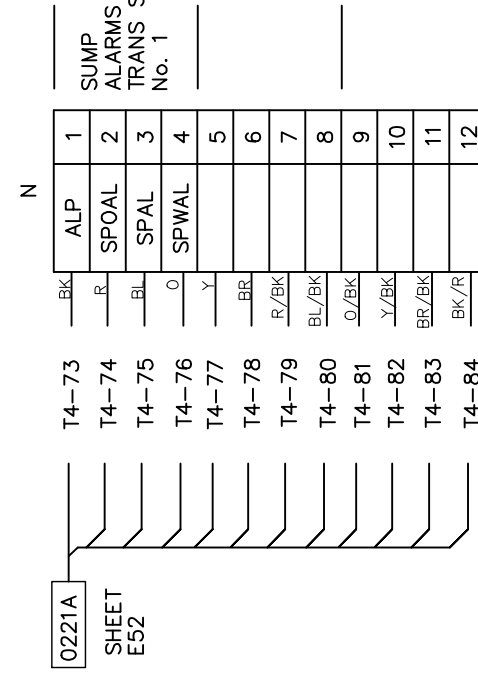
1	
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12	

1	OUT04
2	OUT04b
3	OUT05
4	OUT05b
5	OUT06
6	OUT06b
7	ALP
8	IN312
9	
10	
11	
12	

RIGHT SIDE



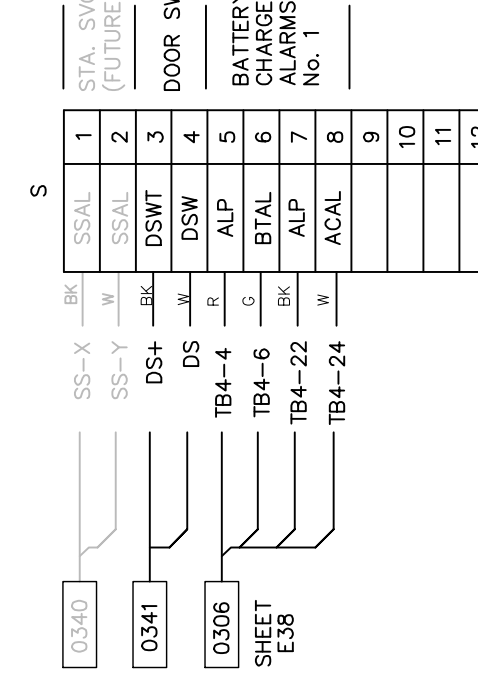
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10	
11	
12	



1	OUT01
2	OUT01b
3	OUT02
4	OUT02b
5	OUT03
6	OUT03b
7	DPAC
8	DPAC
9	DPAC
10	DPAC
11	DPAC
12	DPAC

LEFT SIDE

FRONT

RIGHT SIDE

SWITCHBOARD No. 4 - S4
PANEL REAR VIEW

PRELIMINARY

CONTROL AND INDICATION

1	BL
2	R
3	BL
4	O
5	Y
6	BR
7	R/BR
8	BL/BR
9	O/BR
10	Y/BR
11	BR/BR
12	BR/R

CT & PT

A	R
B	G
C	BR
N	W

AC

X	BR
Y	R
N	W
G	C

DC

POS	R
NEG	BR

WIRE COLOR CODE

PROJECT NAME:
CUMBERLAND ROAD
69 TO 15 X 25 KV SUBSTATION

DRAWING TITLE:
SWITCHBOARD NO.4
INTERCONNECTION DIAGRAM

DRAWN BY: JRT
CHECKED BY: DAW
APPROVED BY: M/LW
DATE: 3/16/2022
SCALE: NTS
FILE NUMBER: 12510
SHEET:

NO. A

ISSUED FOR BID

REVISIONS

ENG. DATE
BWJ 09/24/2023

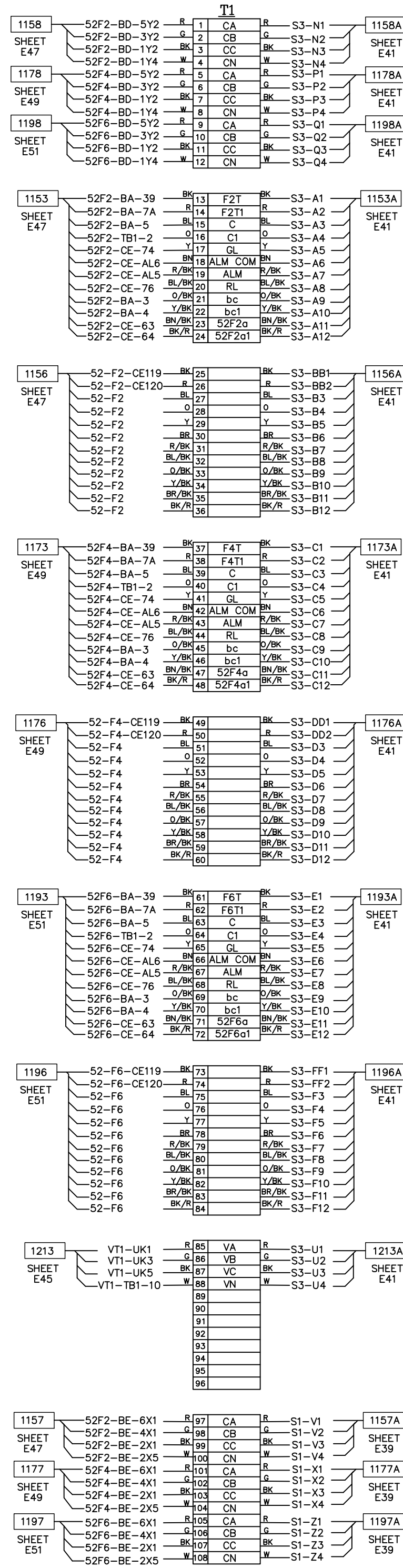
PRELIMINARY -
DO NOT USE FOR
CONSTRUCTION



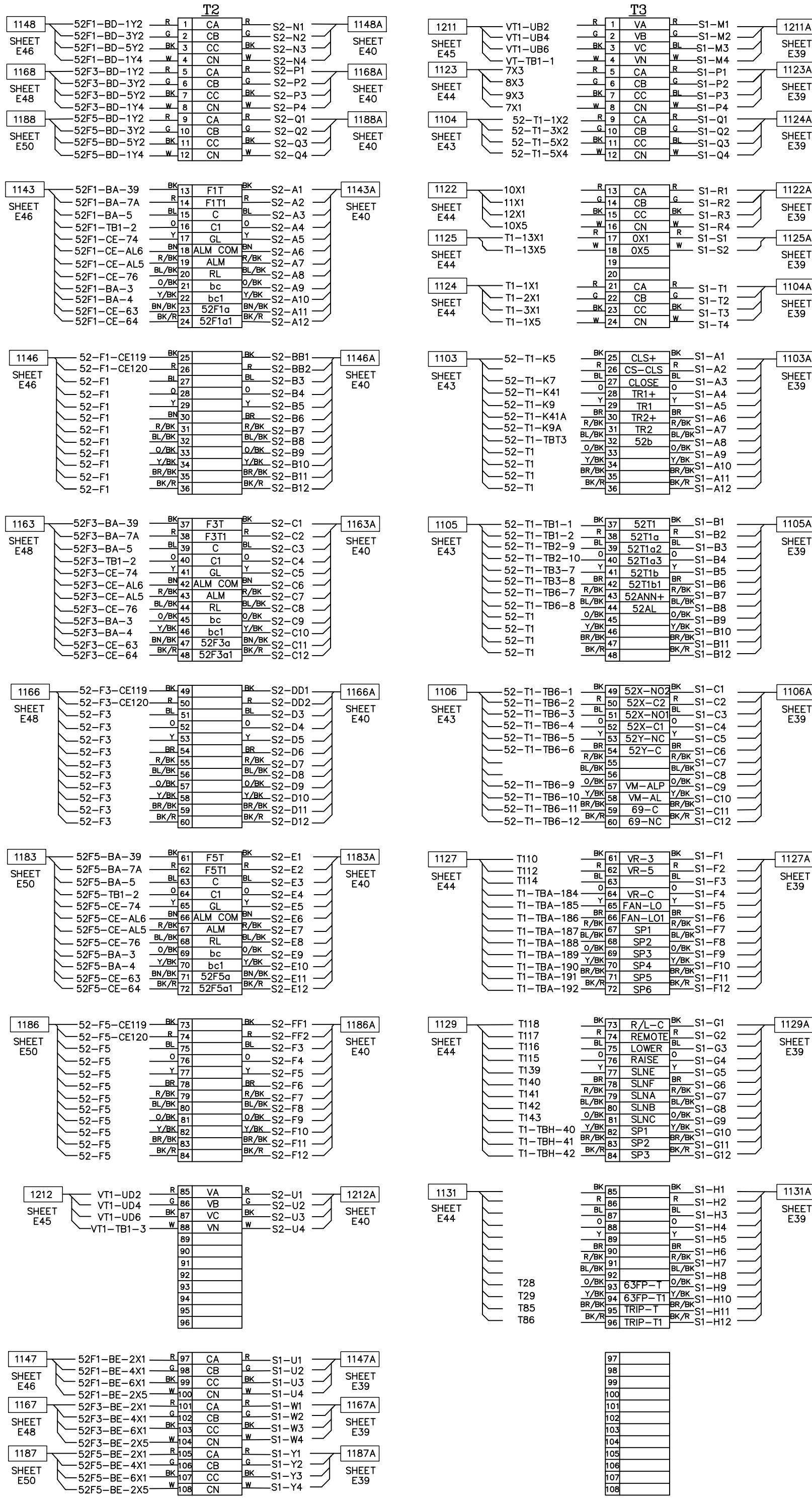
Booth & Associates
2200 Remondos Drive Suite 300, Raleigh, NC 27627
NC F-021

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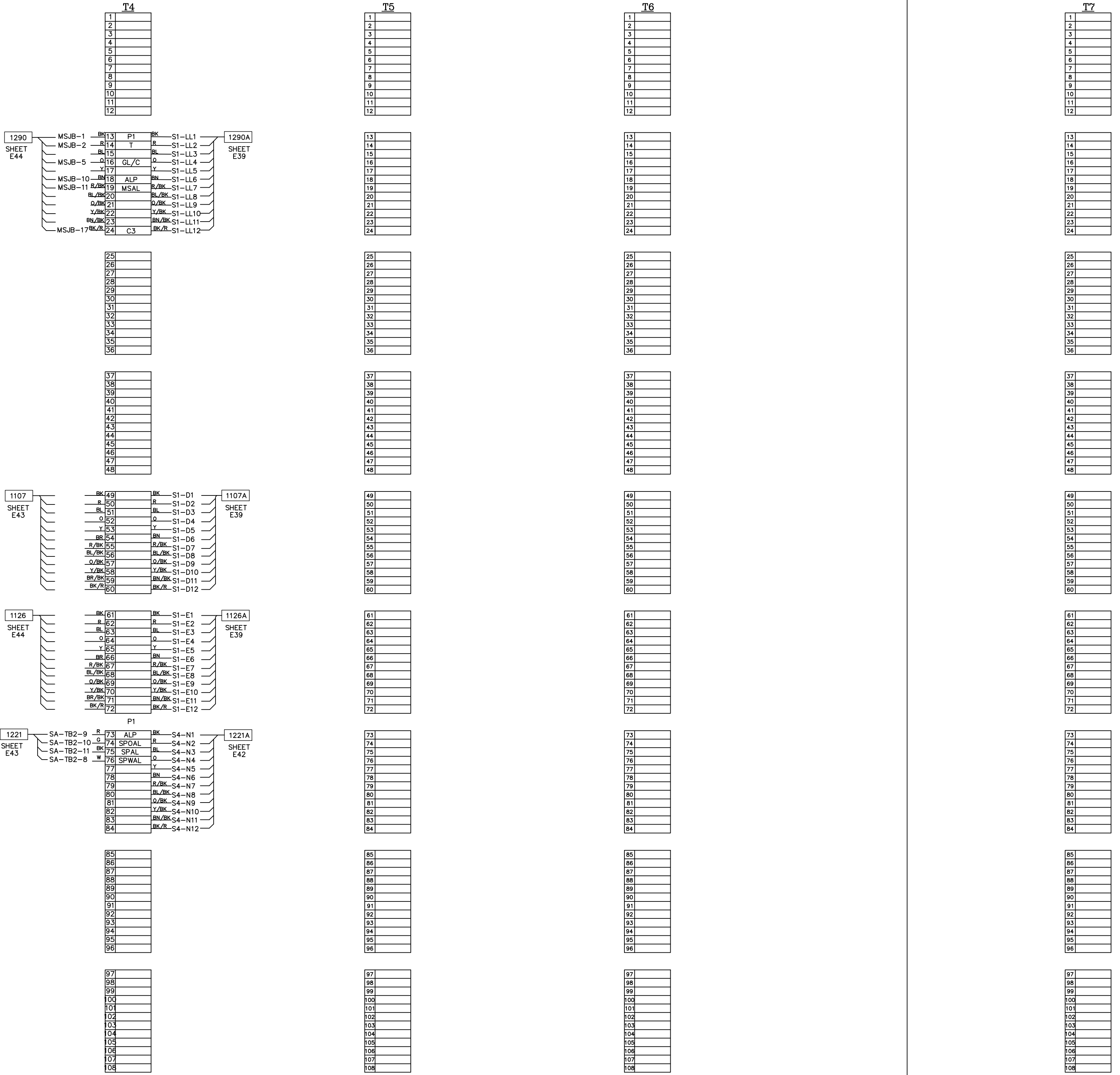
INTERIOR LEFT
SUBPANEL



PANEL T1
INTERIOR REAR
SUBPANEL



INTERIOR RIGHT
SUBPANEL



PRELIMINARY -
DO NOT USE FOR
CONSTRUCTION

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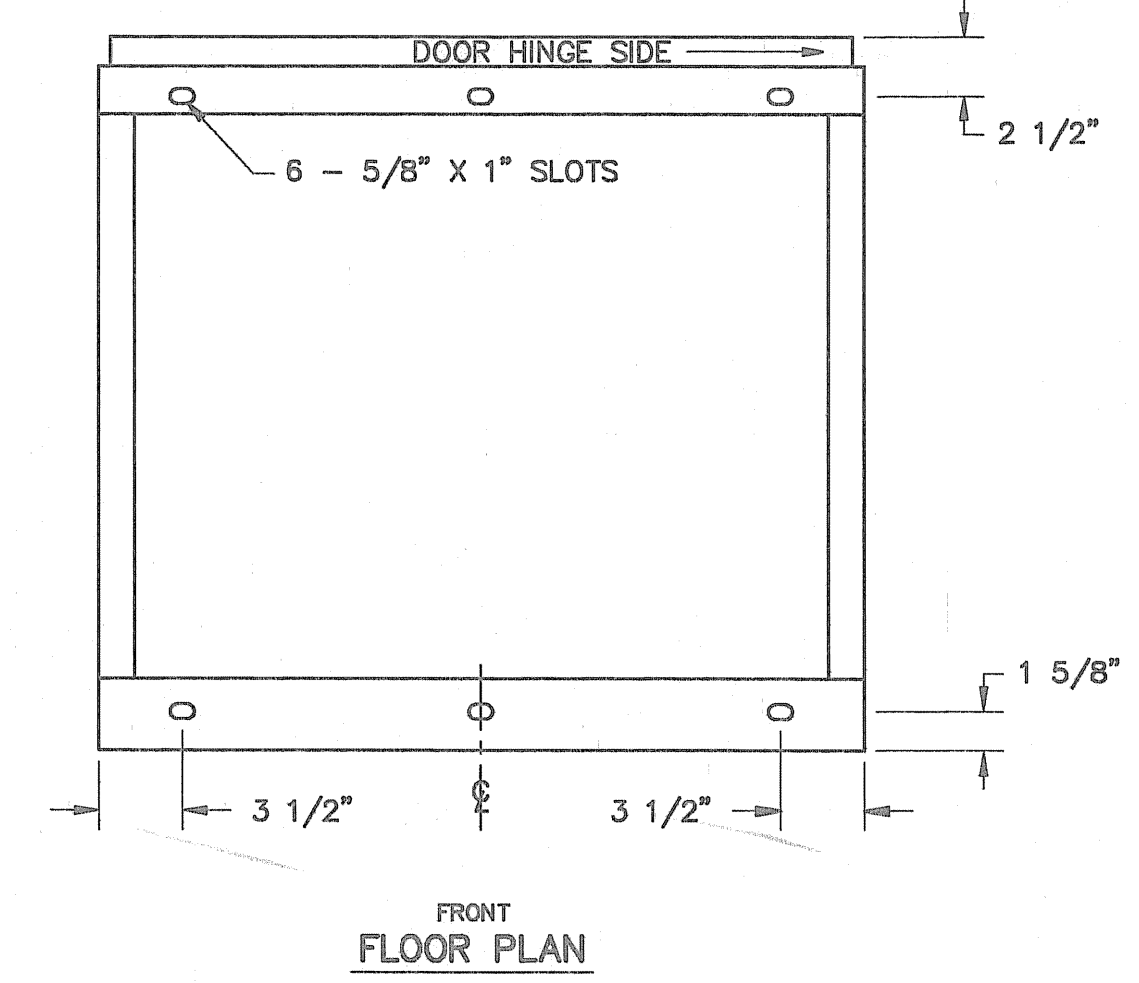
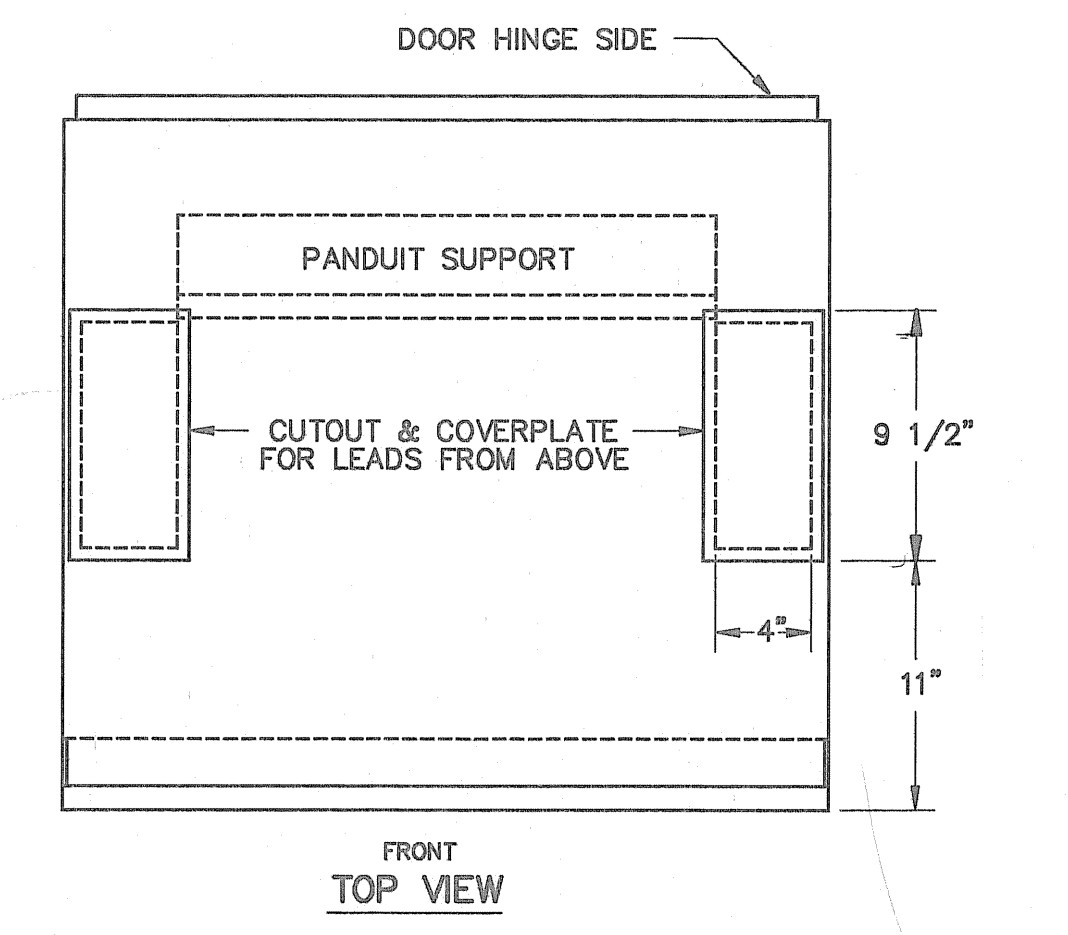
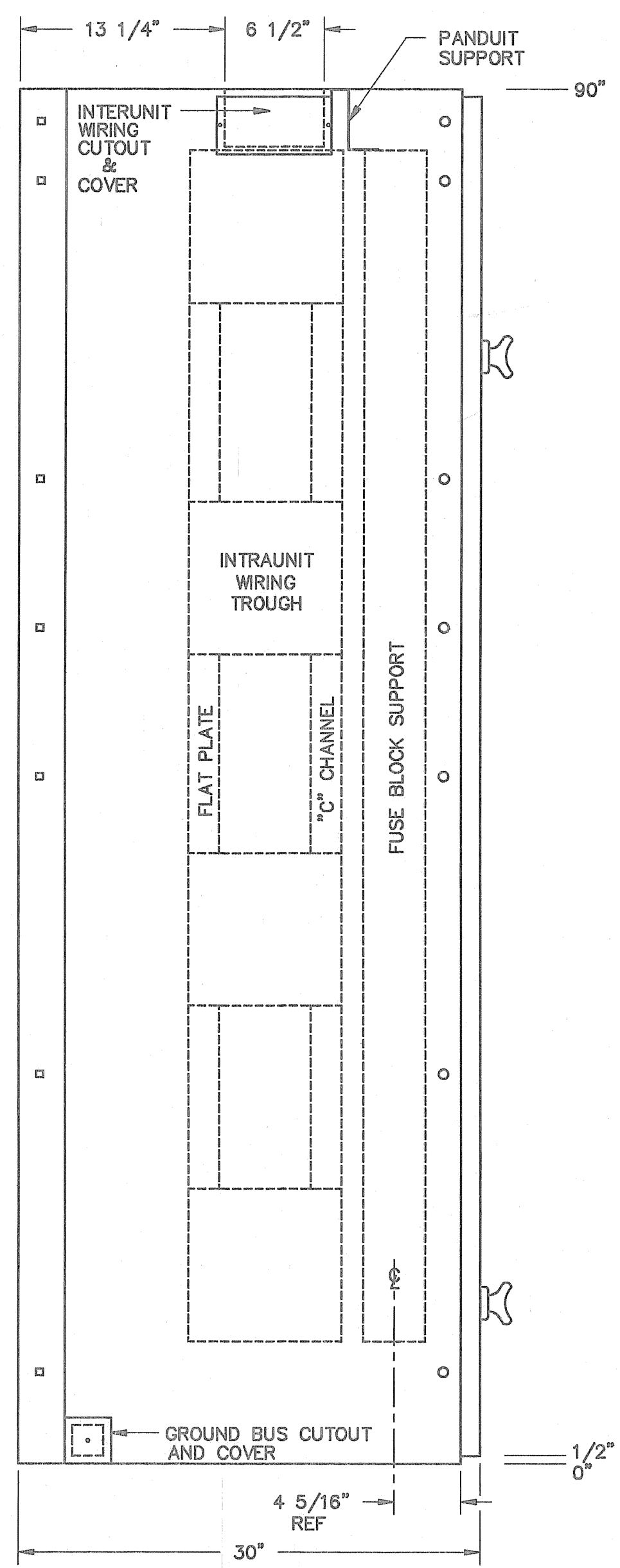
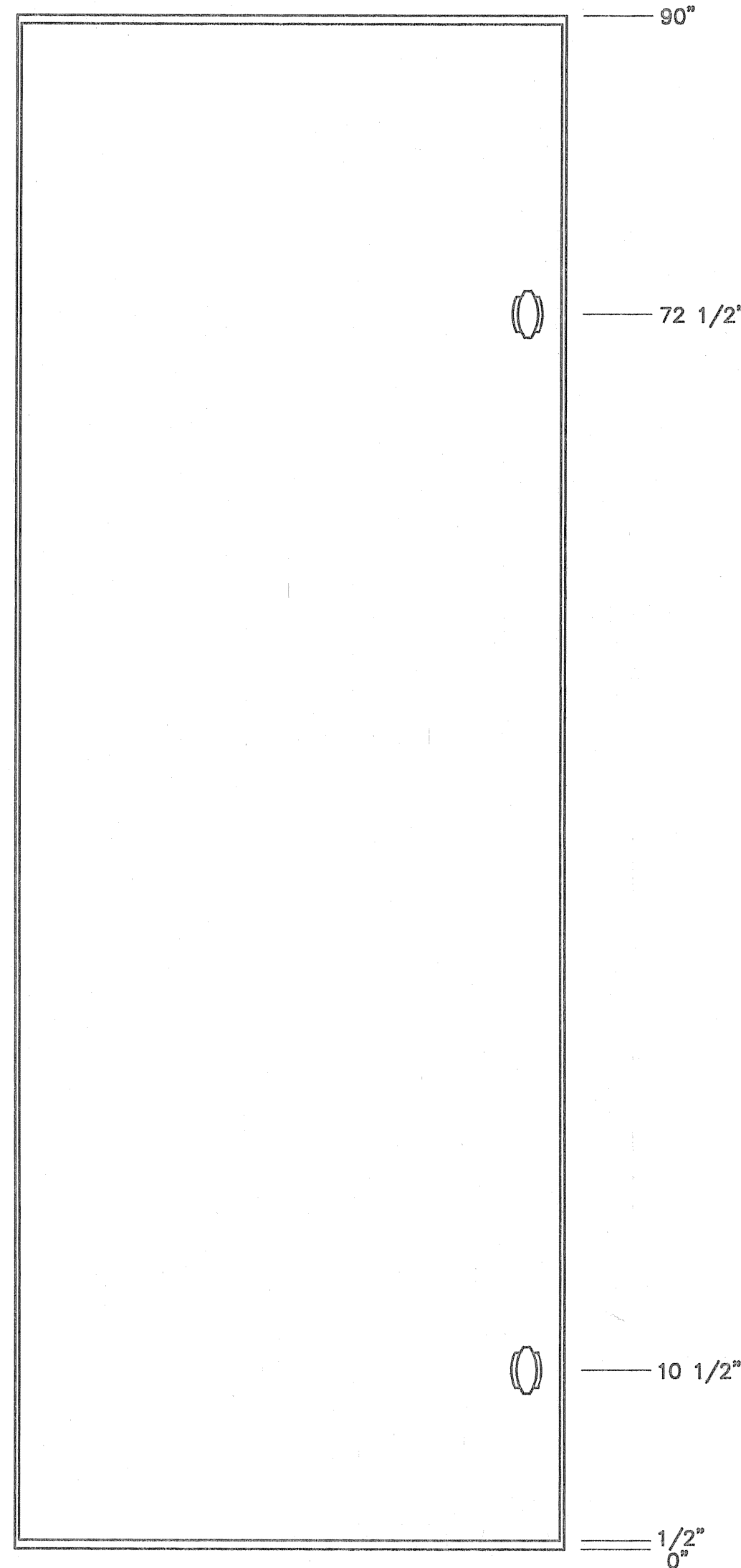
NO.	ISSUED FOR	REVISIONS	ENG. DATE	
			ENG.	DATE
1	A		BMJ	09/24/2023

PROJECT NAME:
**CUMBERLAND ROAD
69 TO 15 X 25 KV SUBSTATION**

DRAWING TITLE:
**TERMINATION CABINET WIRING
IN INTERCONNECTION DIAGRAM**

DRAWN BY: JRT
CHECKED BY: DAW
APPROVED BY: MJW
DATE: 3/16/2022
SCALE: NONE
FILE NUMBER: 12510
SHEET:

PRELIMINARY

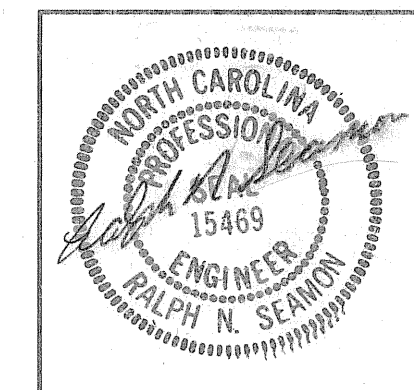


REAR VIEW

SIDE VIEW

FRONT TOP VIEW

FRONT FLOOR PLAN



NO.	REVISIONS	DATE
1	REMOVE DASHED LINES FROM FRONT PANEL	11/20/08

RELAY STANDARD

DUAL PANEL DETAILS
(UNWIRED SWBD PANELS)
REAR, SIDE, TOP, FLOOR

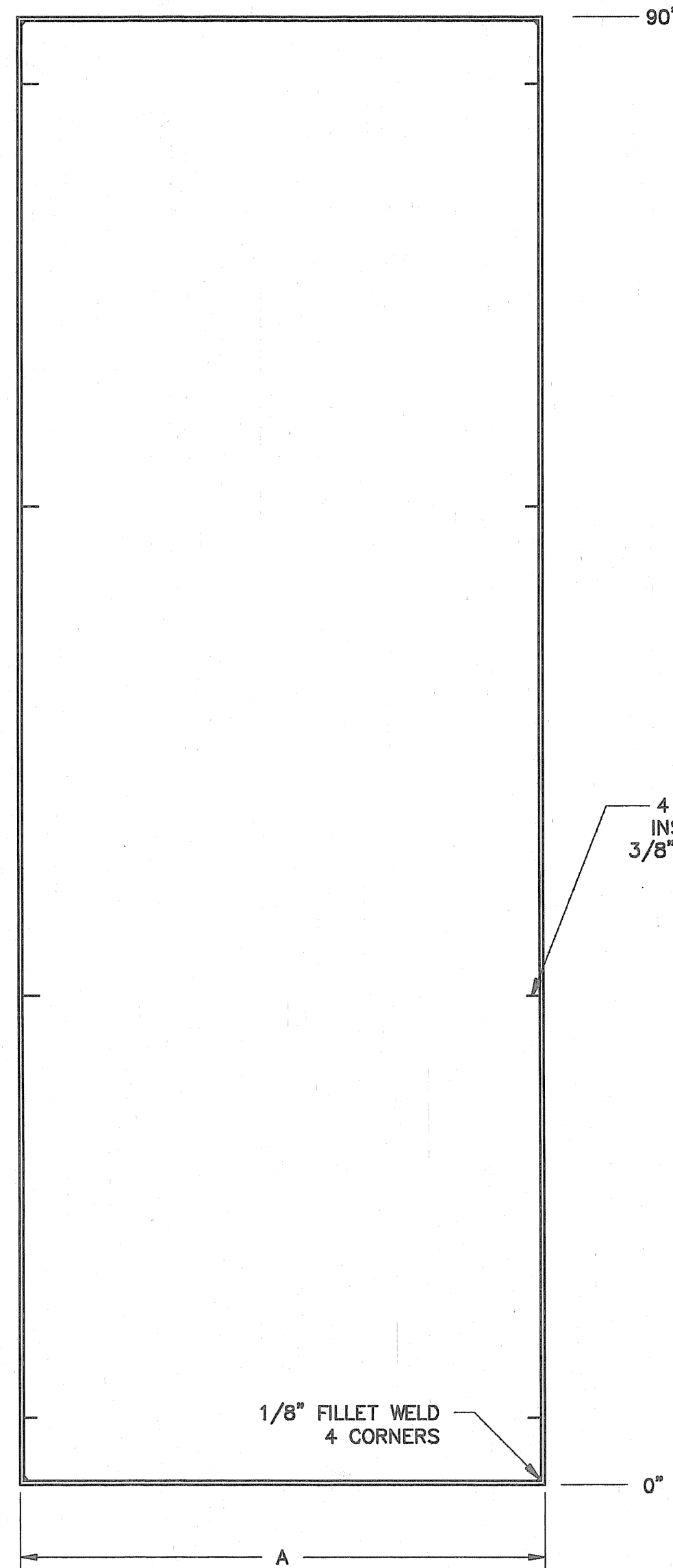
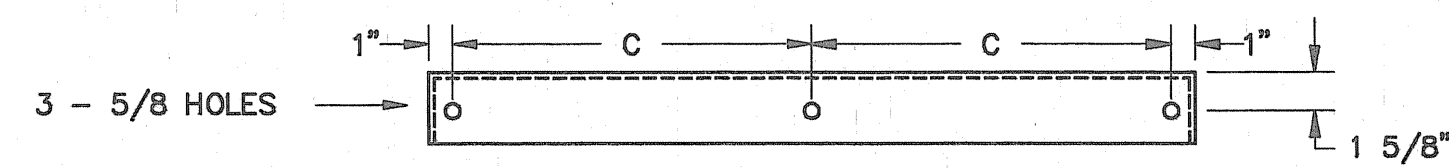
BOOTH & ASSOCIATES, INC.
CONSULTING ENGINEERS
RALEIGH, N.C.

DWN. AWD DATE 1/25/01 DWG. NO.
CKD. RNS APPD. RCR S1 OF 8

SCALE 1/8"=1"

3/8/01

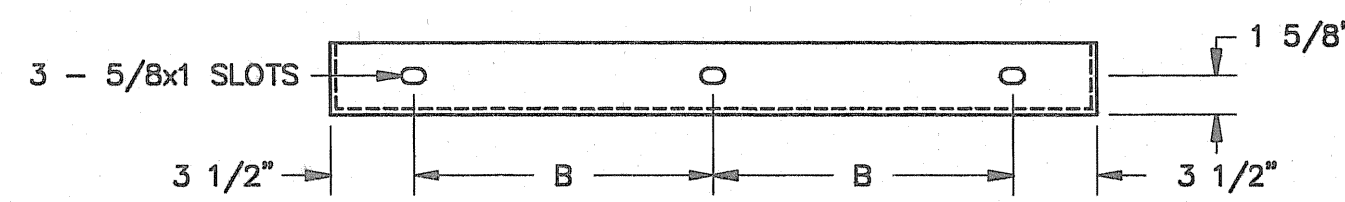
UNIT FRONT PANEL - 11 GA. STEEL



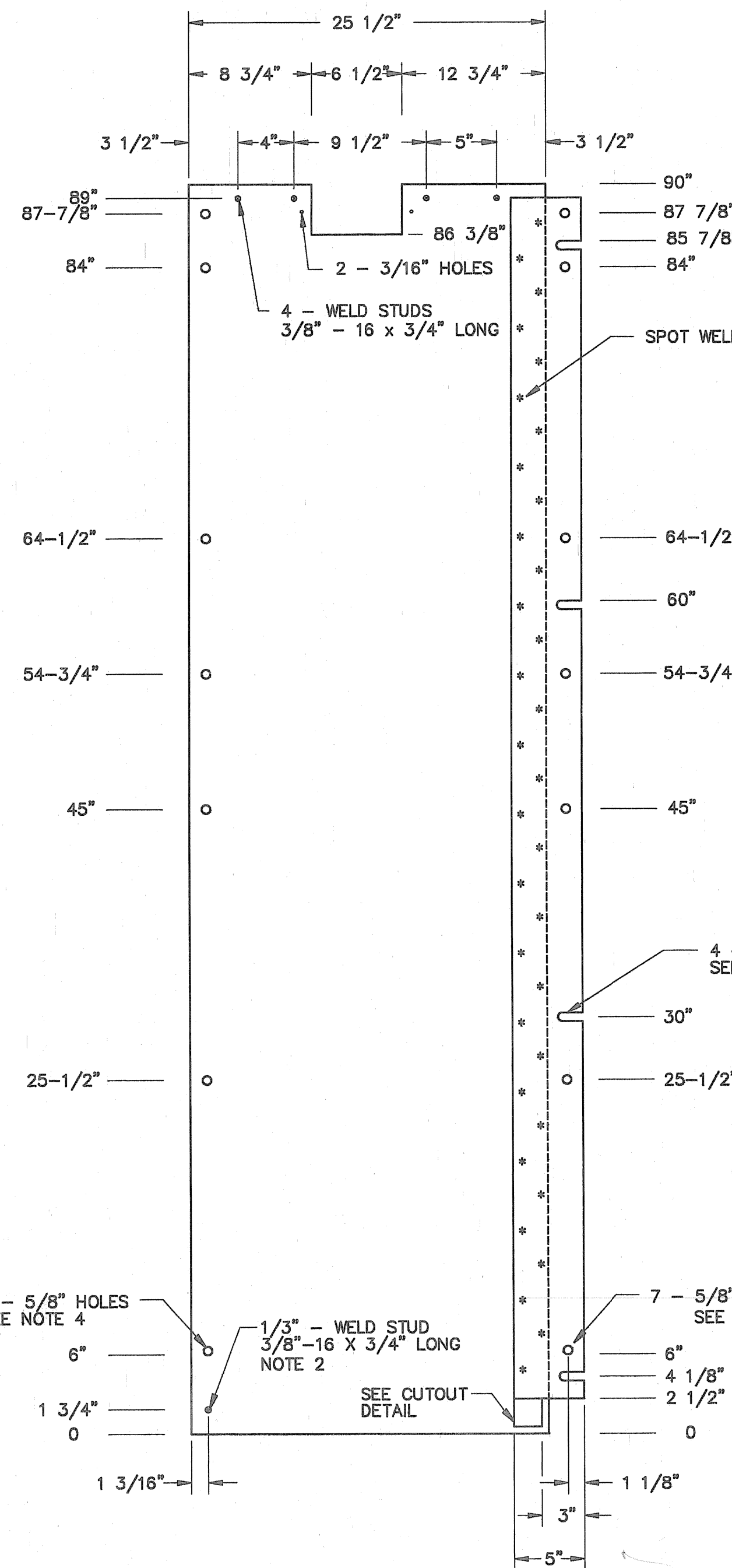
1/8" FILLET WELD
4 CORNERS

4 - WELD STUDS
INSIDE - EACH SIDE
3/8" - 16 x 3/4" LONG

7 - 7/16" SQ. HOLES
EACH SIDE

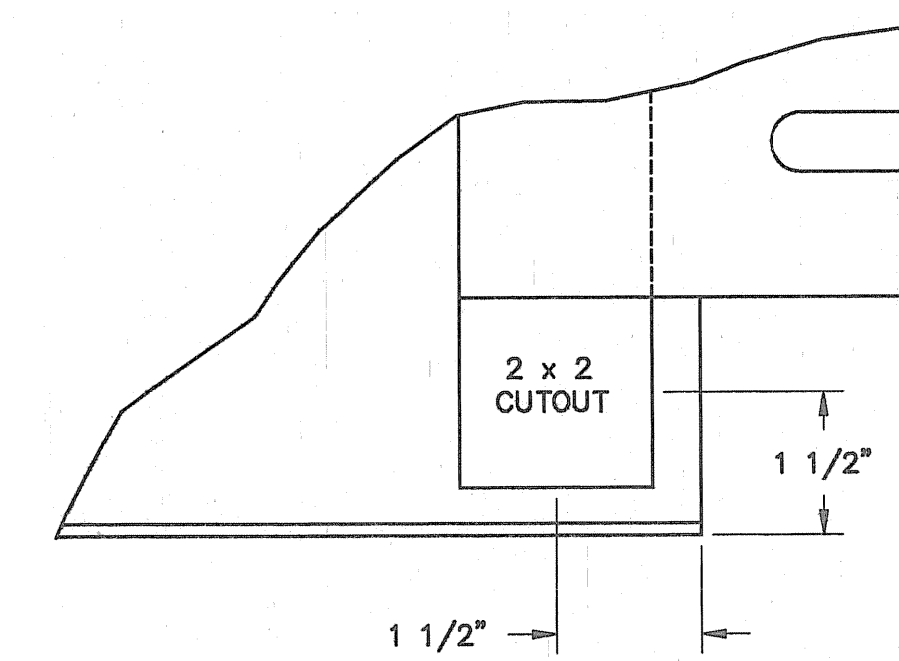


SIDE SHEET - 11 GA. STEEL



UNIT WIDTH		DIMENSION	
"A"	"B"	"C"	
28"	10 1/2"	13"	
32"	12 1/2"	15"	

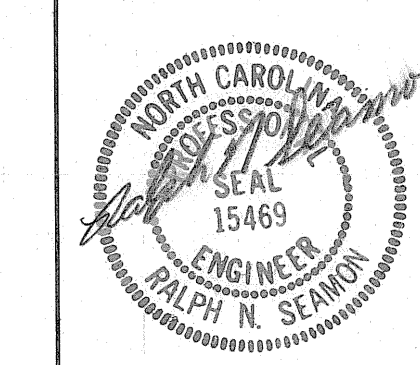
- NOTE 1 ASSEMBLE WITH FOUR 3/8"-16 NUTS, FLAT WASHER AND LOCK WASHER - EACH SIDE.
- NOTE 2 ASSEMBLE WITH ONE 3/8"-16 NUT, FLAT WASHER AND LOCK WASHER - EACH SIDE.
- NOTE 3 ASSEMBLE WITH SEVEN 3/8"-16 x 1 1/4" CARRIAGE BOLT, NUT, FLAT WASHER AND LOCK WASHER - EACH SIDE.
- NOTE 4 ASSEMBLE WITH SEVEN 3/8"-16 x 1 1/2" BOLT, NUT, FLAT WASHER AND LOCK WASHER - EACH SIDE.



GROUND BUS DETAIL CUTOUT DETAIL
NTS

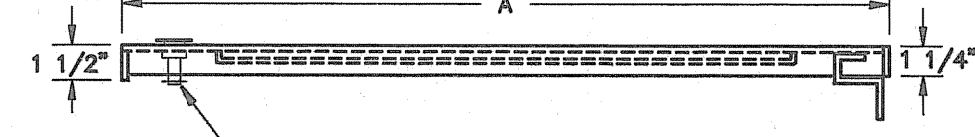
NOTE:
INSIDE VIEW OF RIGHT HAND SIDE SHEET SHOWN. LEFT HAND SIDE SHEET TO BE SAME BUT OPPOSITE HAND.

NO.		REVISIONS	DATE	RELAY STANDARD	
				DUAL PANEL DETAILS (UNWIRED SWBD PANELS) FRONT SHEET, SIDE SHEET	
				BOOTH & ASSOCIATES, INC.	
				RALEIGH, N.C.	
CONSULTING ENGINEERS					
DWN. AWD	DATE	1/25/91	DWG. NO.		
CKD. RNS	APPD. RGR		S2 OF 8		
SCALE 1/8"=1"					

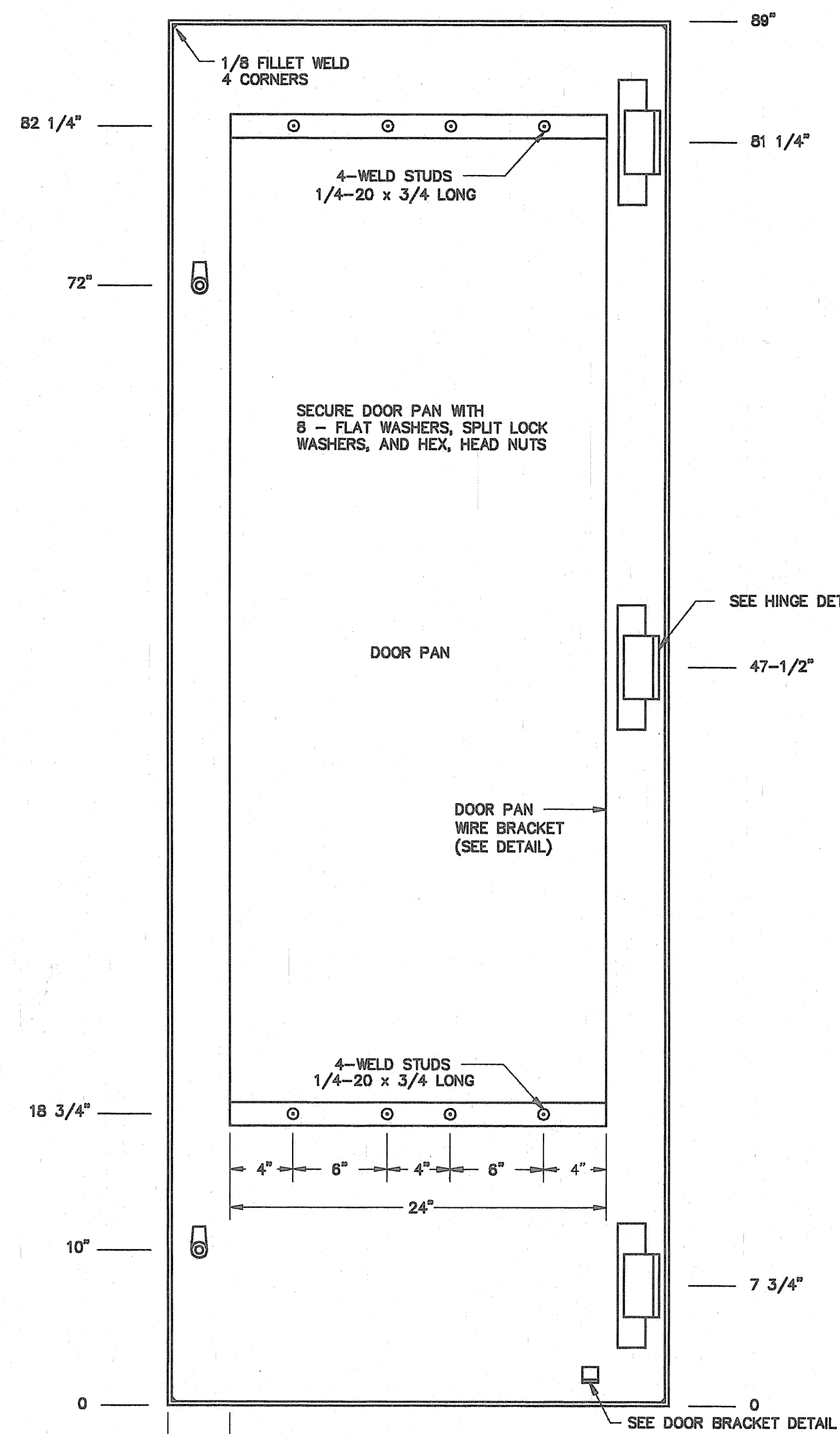


UNIT WIDTH		DIMENSION		
28"	32"	"A"	"B"	"C"
		27 3/4"	20"	2"
		31 3/4"	24"	4"

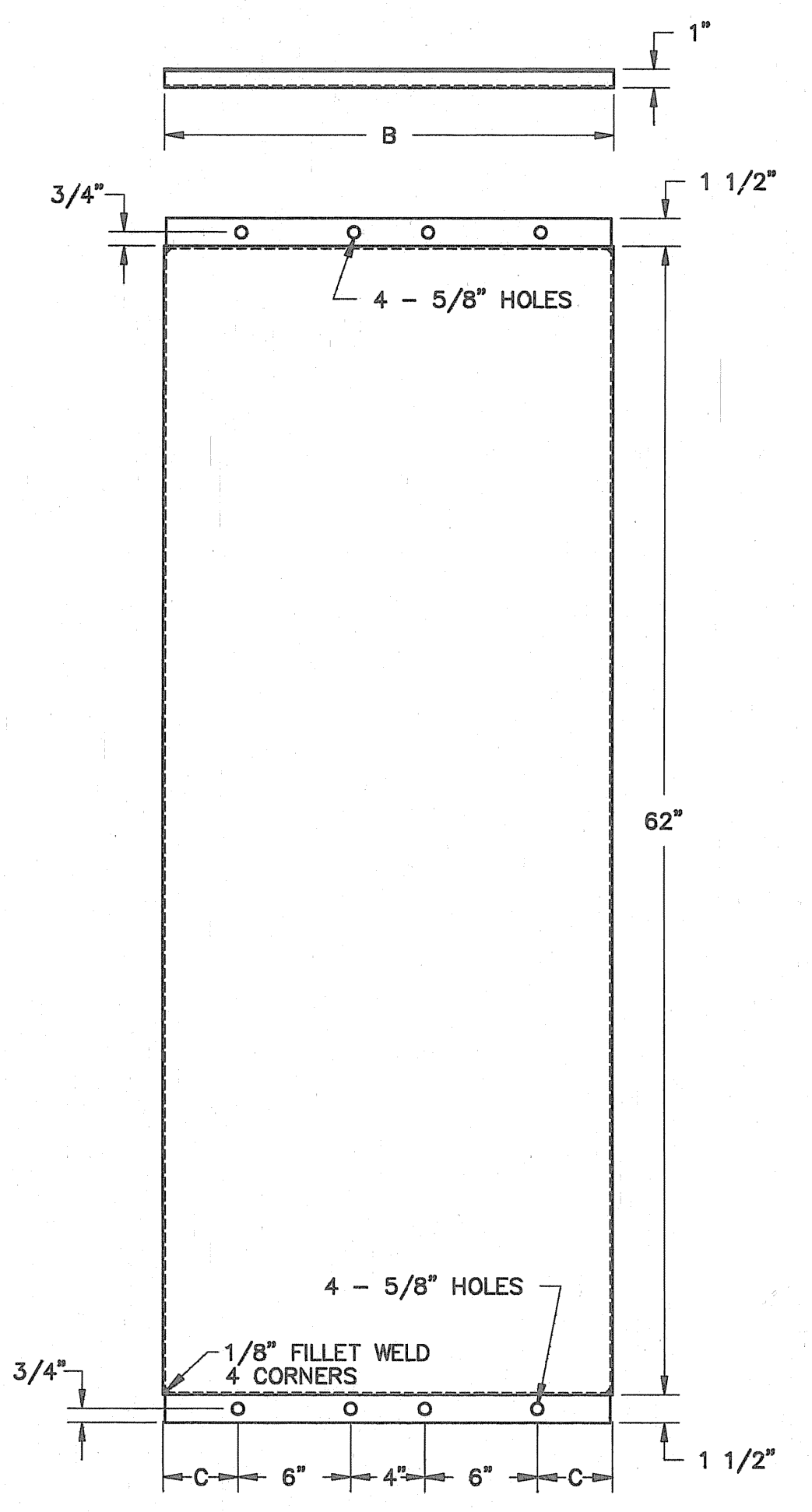
UNIT REAR DOOR - 11 GA. STEEL



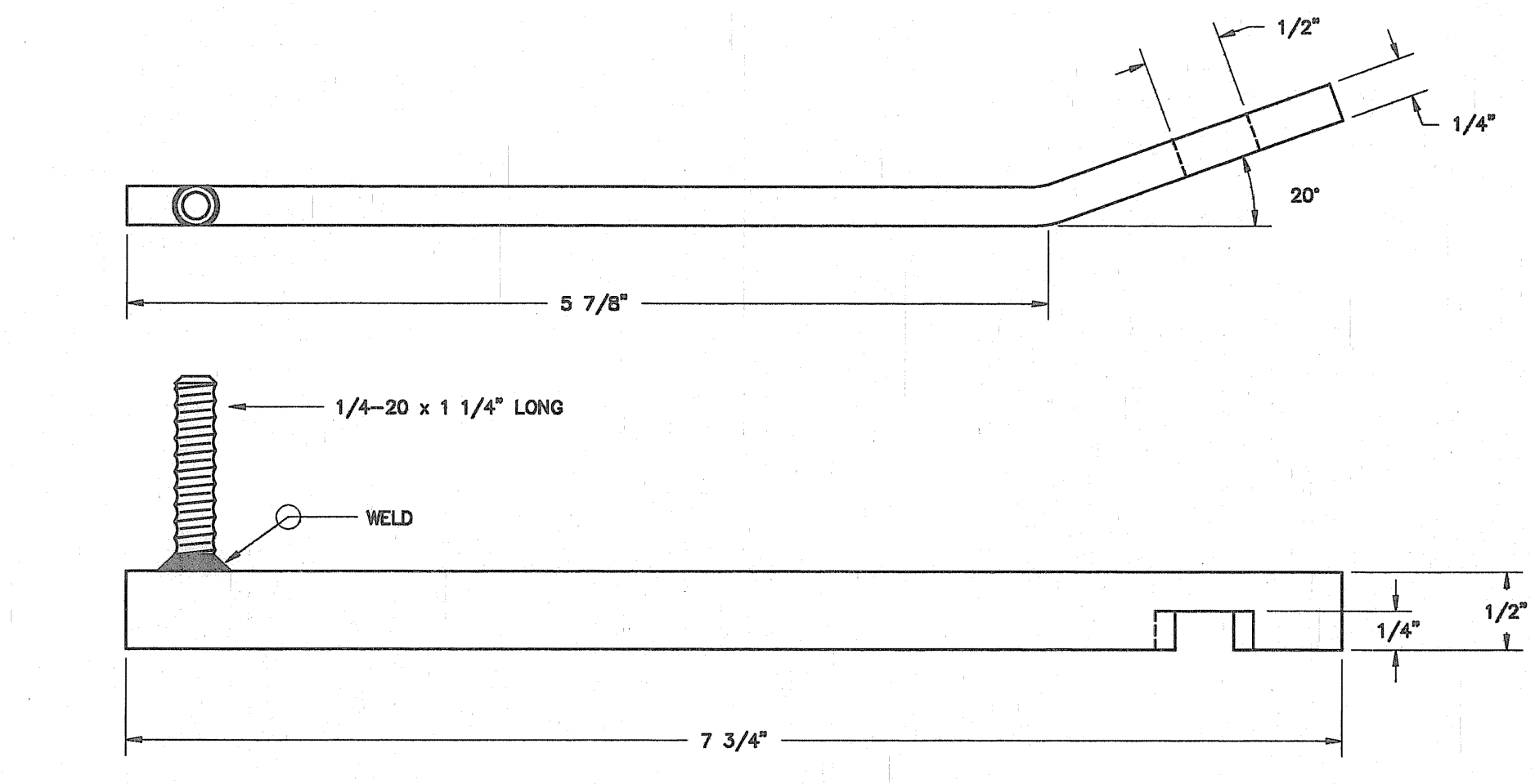
PIEDMONT EQUIPMENT CO.
 1" HANDLE NON-LOCKING
 No. 245000177(1001A-35 SATIN CHROME RH)
 3-1/2 THREADED SHAFT WITH
 No. 245000021 (RIZZINO) CAM AND
 No. 245000031 (H3ZINC) HOLDING PLATE
 2 REQUIRED



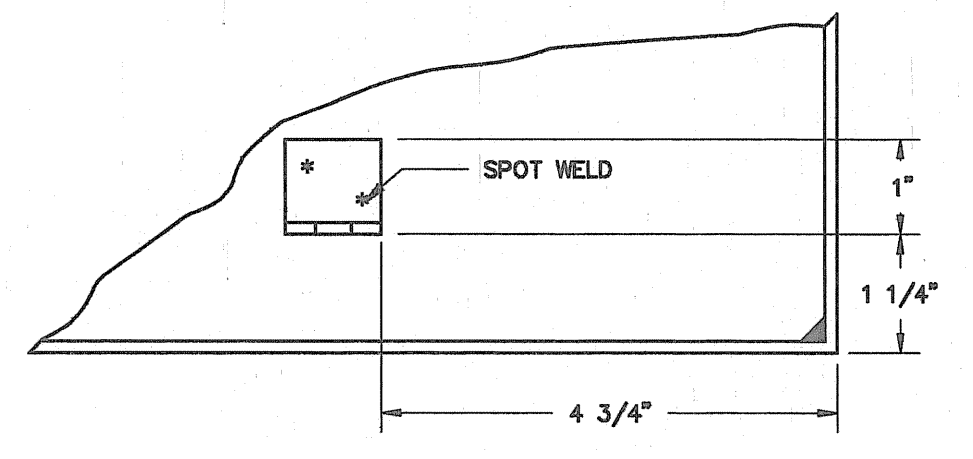
INSIDE VIEW
 (SCALE: 1/8"=1")



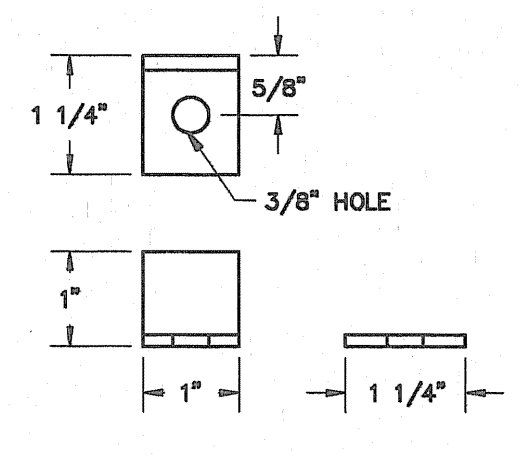
DOOR PAN
 11 GA. STEEL
 (SCALE: 1/8"=1")



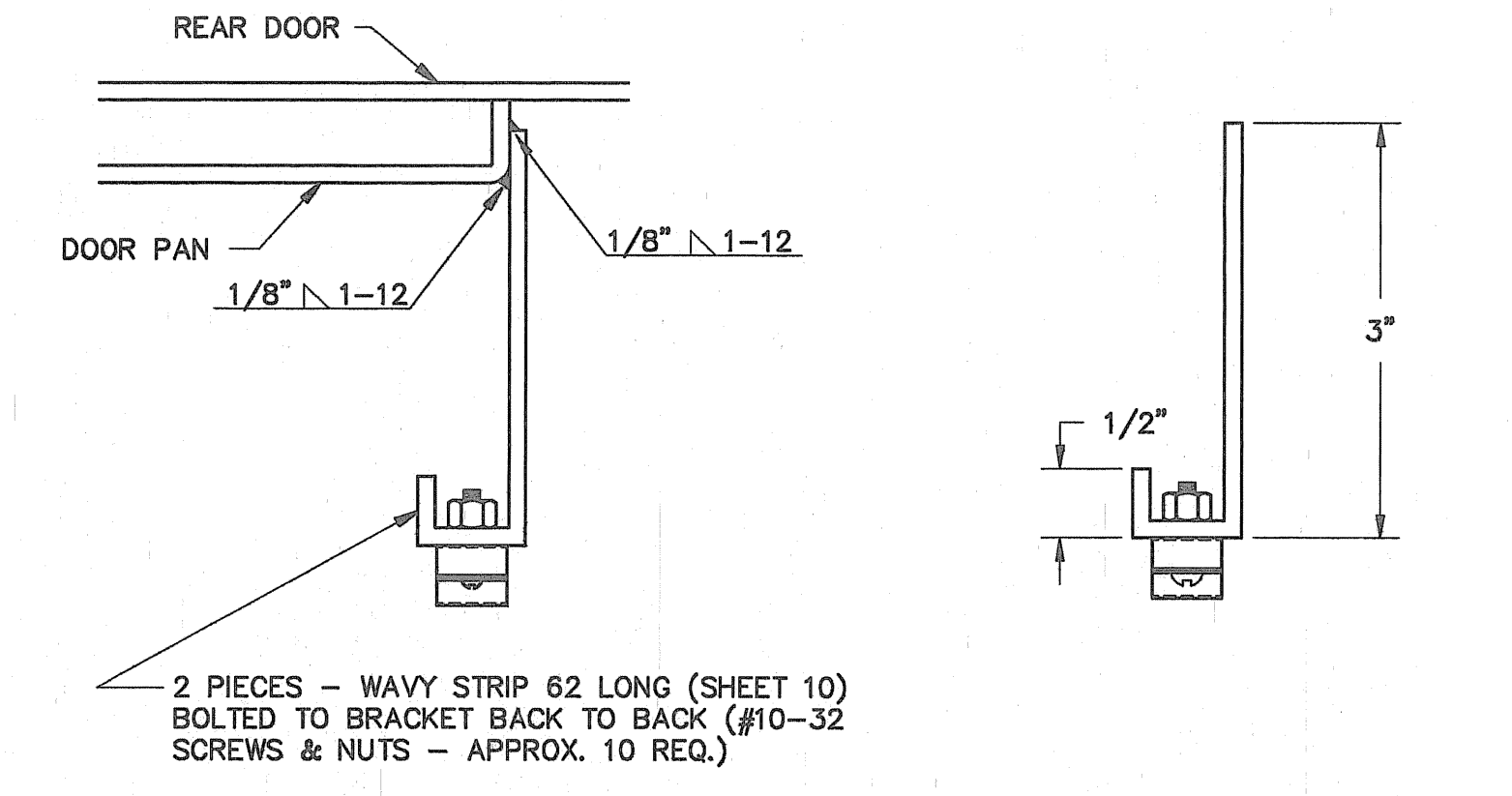
DOOR STOP PAW
 1/4" x 1 1/2" BAR STOCK
 SECURE PAW IN BRACKET WITH STOP NUT (1 REQ)
 (SCALE: FULL)



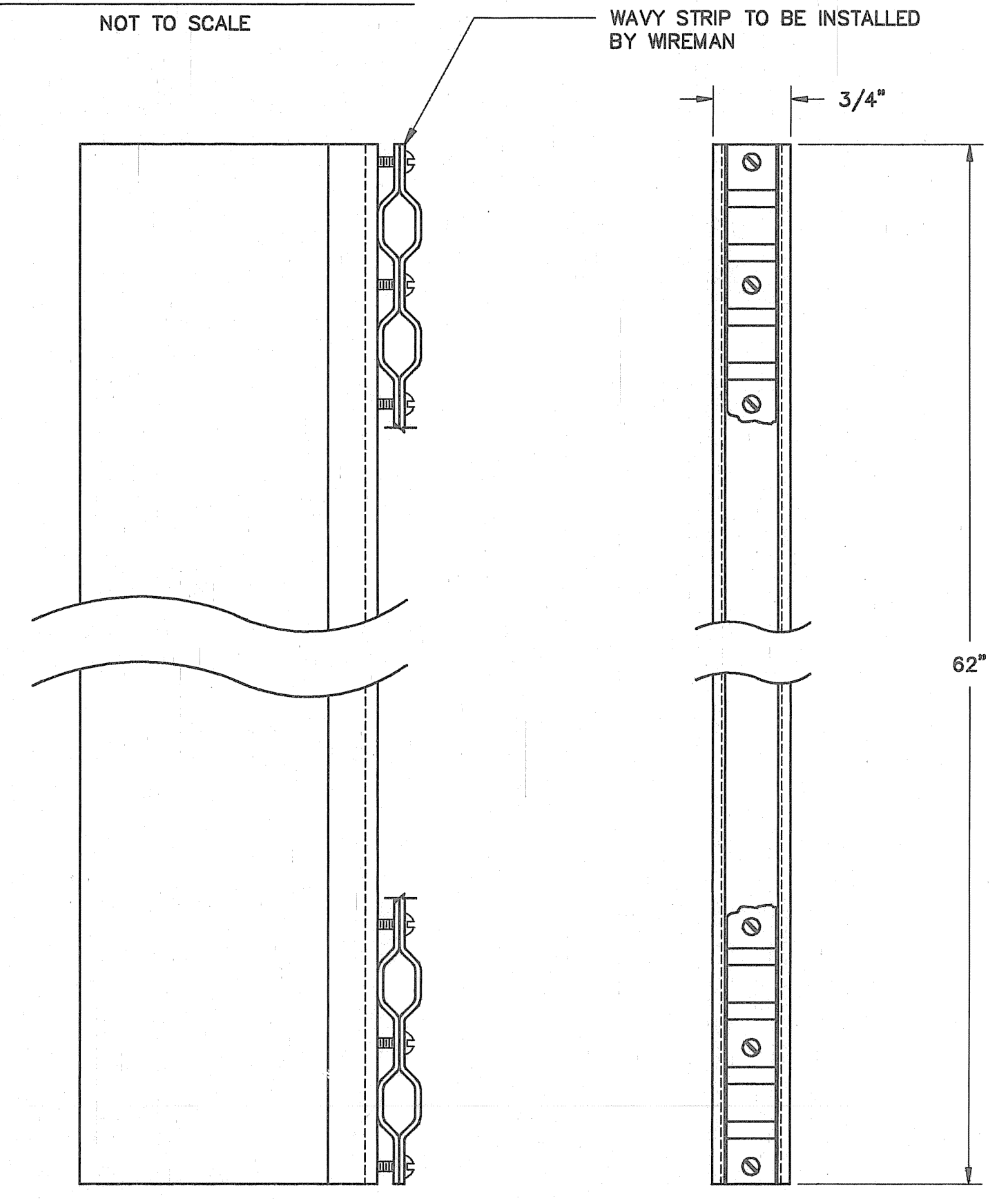
DOOR STOP BRACKET DETAIL
 (SCALE: 1/2"=1")



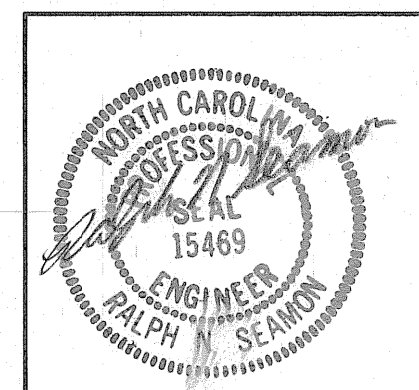
DOOR STOP BRACKET
 11 GA. STEEL
 (SCALE: 1/2"=1")



DOOR PAN - WIRE BRACKET DETAIL
 NOT TO SCALE



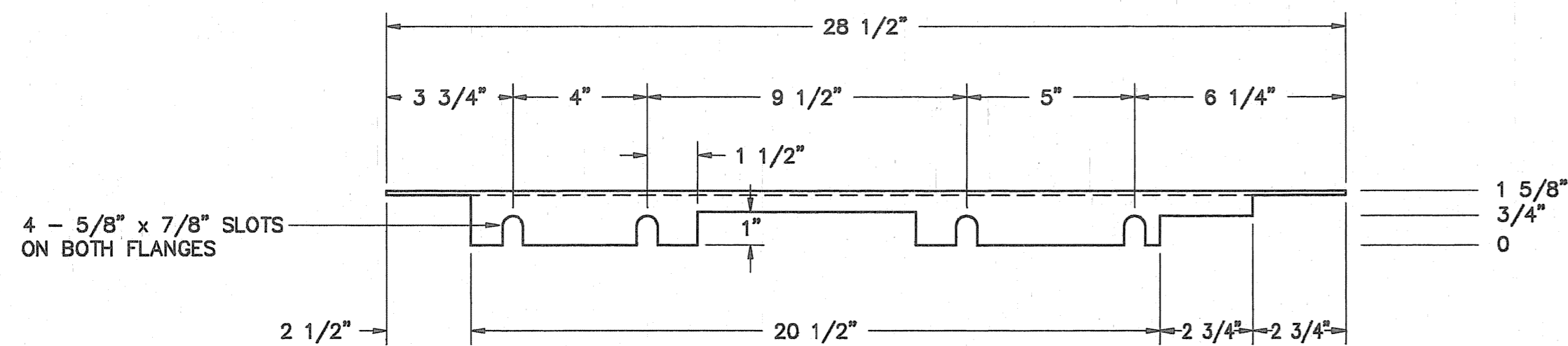
DOOR PAN WIRE BRACKET
 11 GA. STEEL
 (SCALE: 3/4"=1")



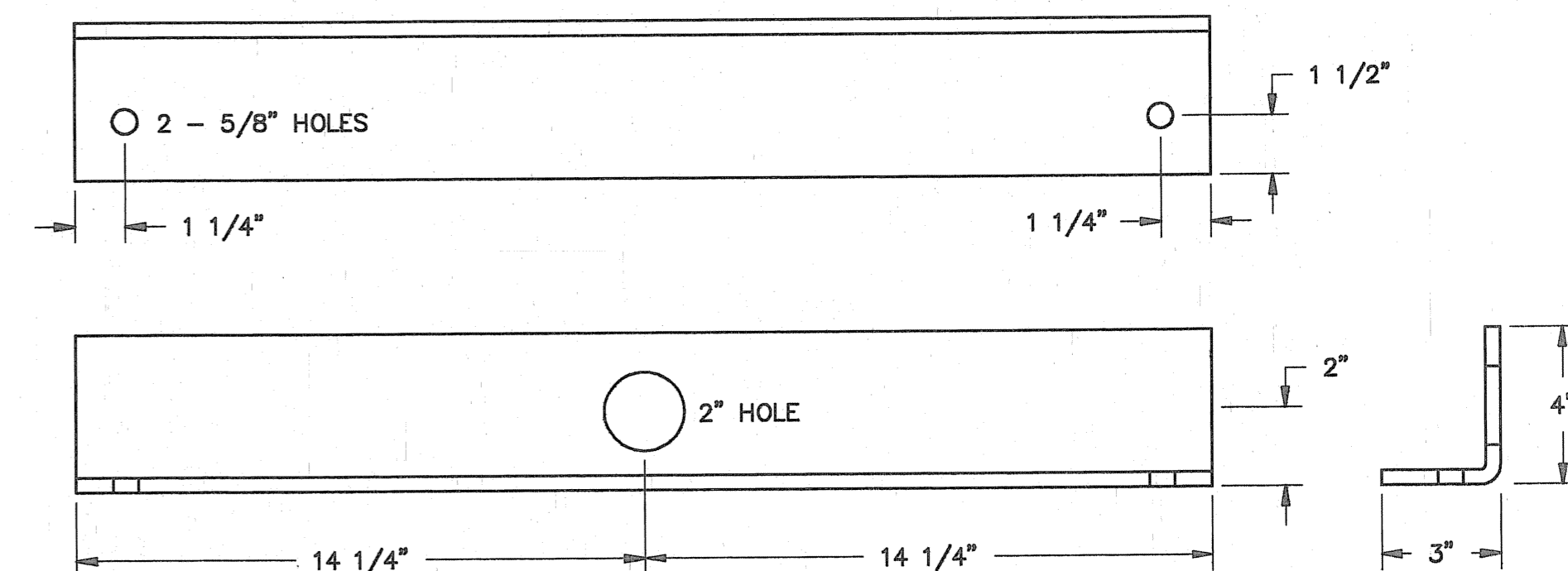
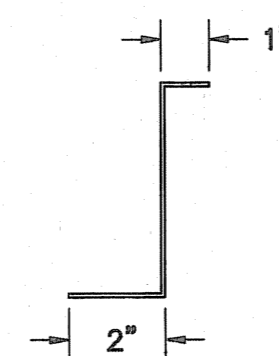
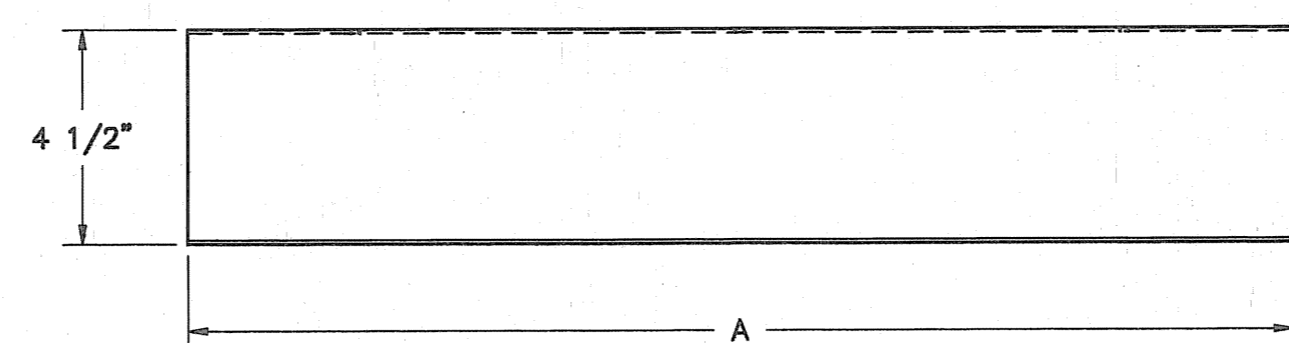
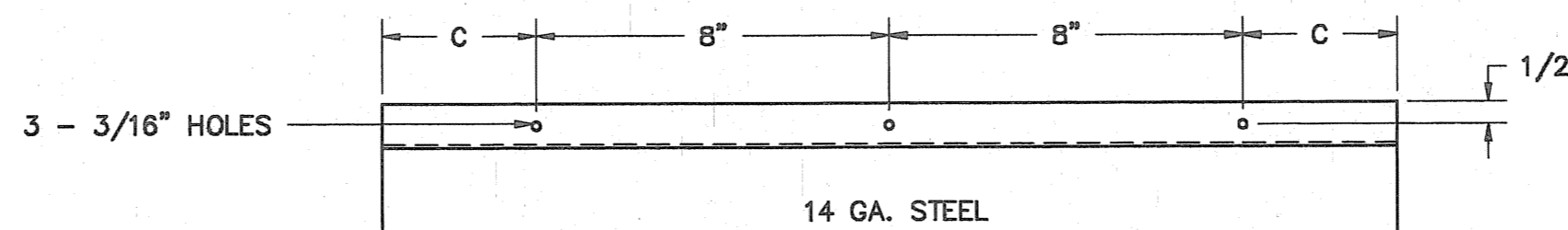
NO.	REVISIONS	DATE	RELAY STANDARD	
			DUAL PANEL DETAILS (UNWIRED SWBD PANELS) DOOR, DOOR PAN	
			BOOTH ASSOCIATES INC.	
			CONSULTING ENGINEERS	RALEIGH, N.C.
			DWN. AWD	DATE 1/31/91
			CKD. RNS	APPD. RCR
			SCALE AS NOTED	DWG. NO. S3 OF 8

3/8/91

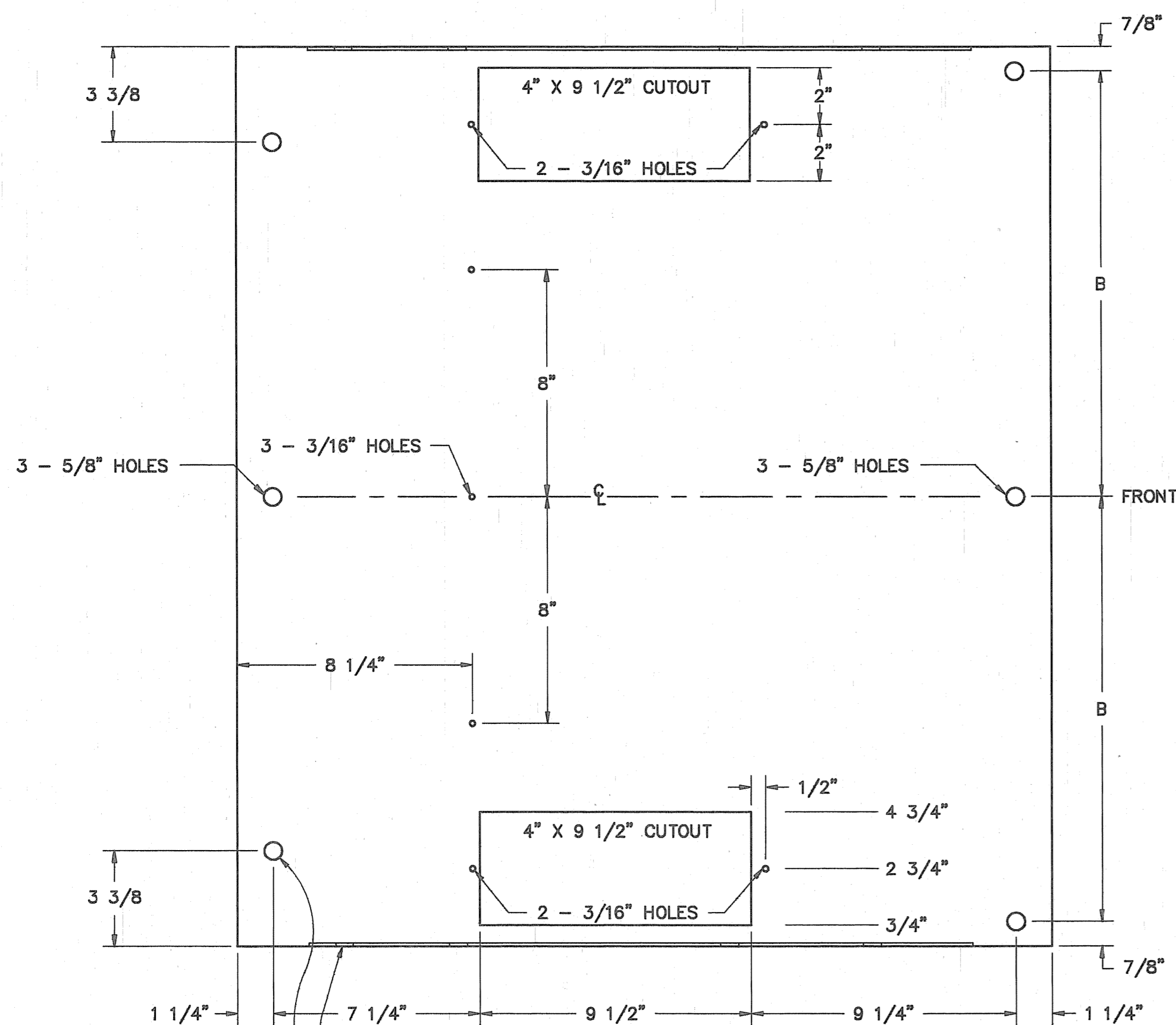
UNIT COVER - 11 GA. STEEL



UNIT WIDTH	DIMENSION		
	"A"	"B"	"C"
28"	19"	13"	1 1/2"
32"	23"	15"	3 1/2"



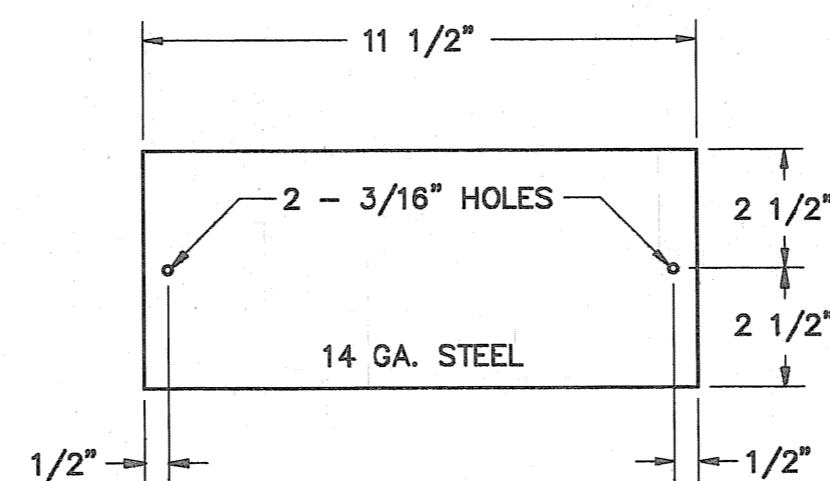
LIFTING ANGLE - 3/8" STEEL
1 REQ'D
(SCALE: 1/4" = 1")



FURNISH ASSEMBLED WITH EIGHT 3/8"-16 NUTS, FLAT WASHER AND LOCK WASHER

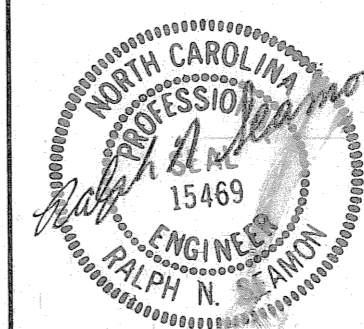
FURNISH ASSEMBLED WITH SIX 3/8"-16 x 1 1/4" BOLTS, NUTS, FLAT WASHERS AND LOCK WASHERS

PANDUIT SUPPORT - 1 REQ.
SECURE TO COVER WITH (3) 10-32 MACH. SCREWS, LOCK WASHERS AND NUTS

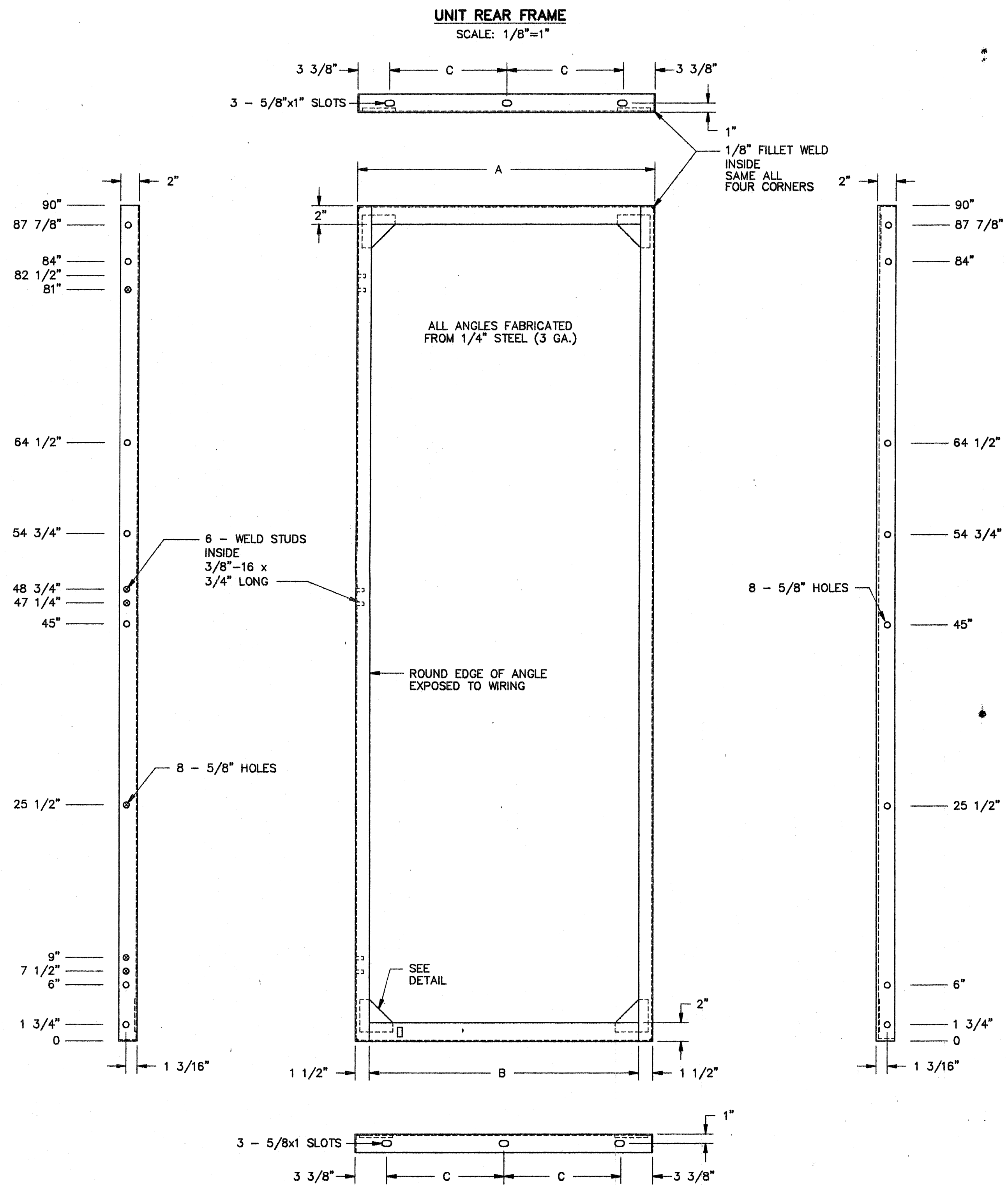


CUTOUT COVER - 2 REQ.
SECURE WITH (2) 10-32 MACH. SCREWS AND NUTS PER PLATE

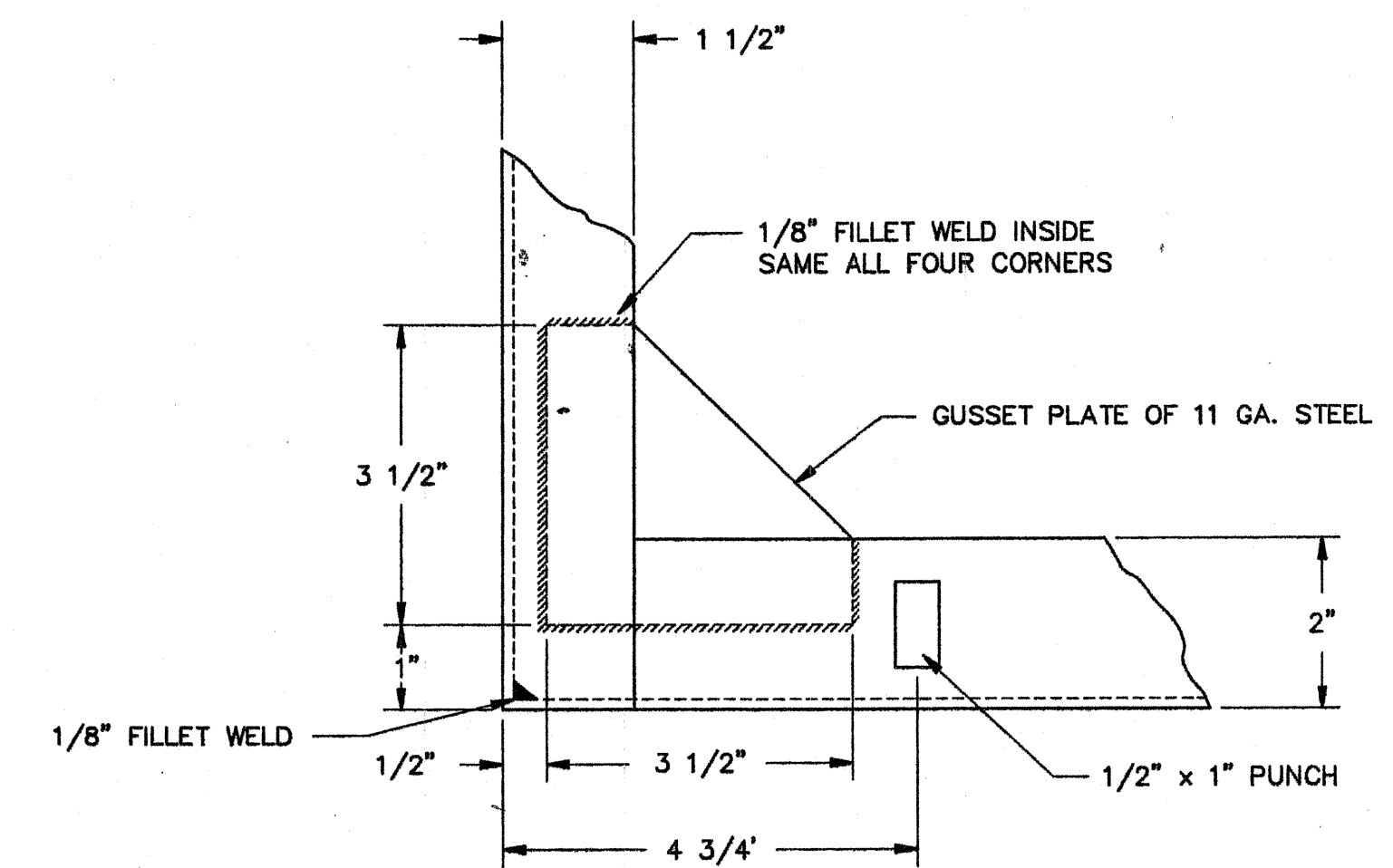
NO.	REVISIONS	DATE	RELAY STANDARD	
			DUAL PANEL DETAILS (UNWIRED SWBD PANELS) TOP, LIFTING ANGLE	
			BOOTH & ASSOCIATES, INC. RALEIGH, N.C.	
			CONSULTING ENGINEERS	
			DWN. AWD	DATE 1/31/91
			CKD. RNS	APPD. RGR
			SCALE 1/4"=1"	DWG. NO. S4 OF 8



3/8/91



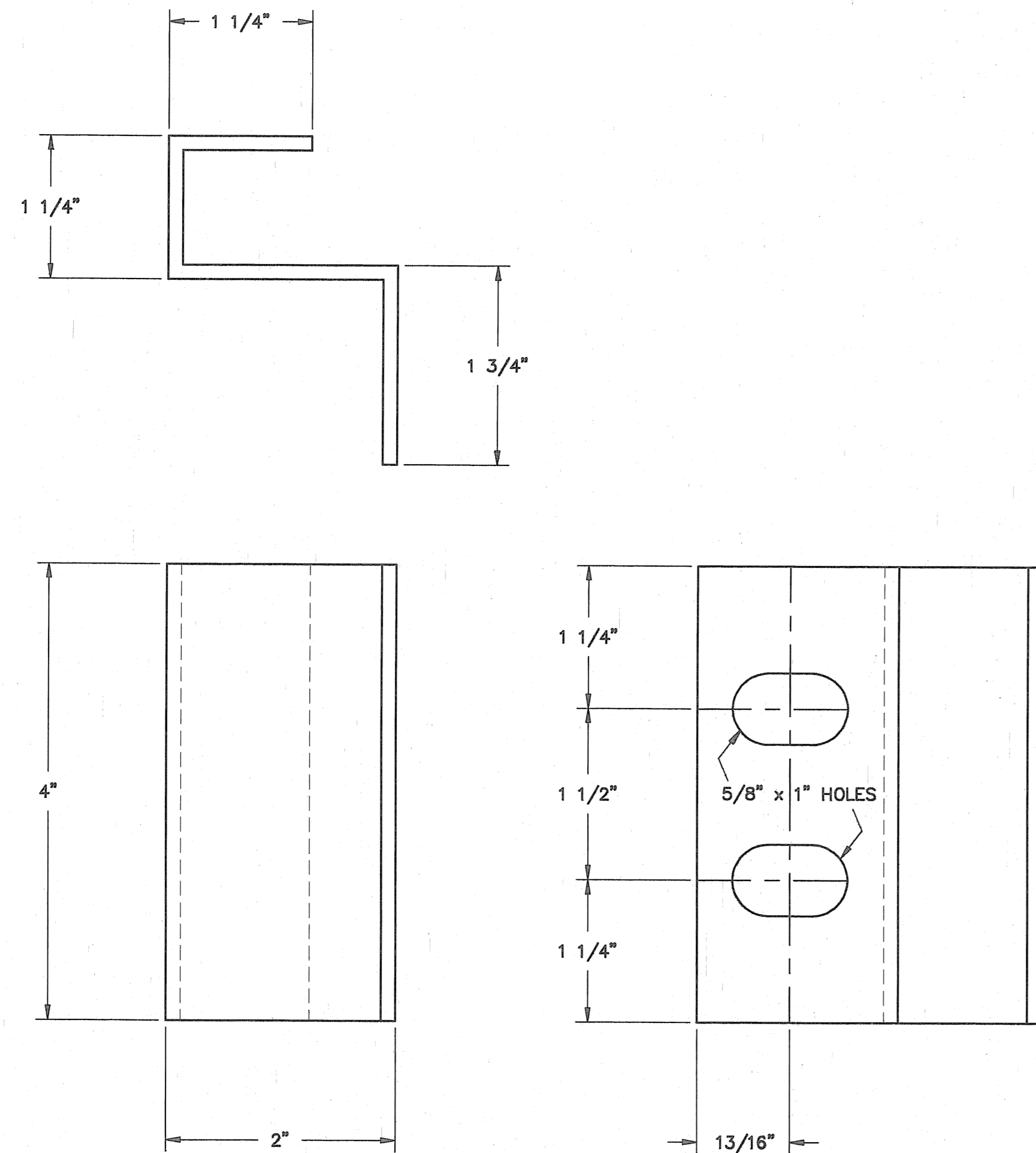
UNIT WIDTH	DIMENSIONS		
	"A"	"B"	"C"
28"	27 3/4"	24 3/4"	10 1/2"
32"	31 3/4"	28 3/4"	12 1/2"



GUSSET PLATE & DOOR STOP PUNCH DETAIL
(SCALE: 1/2"=1")

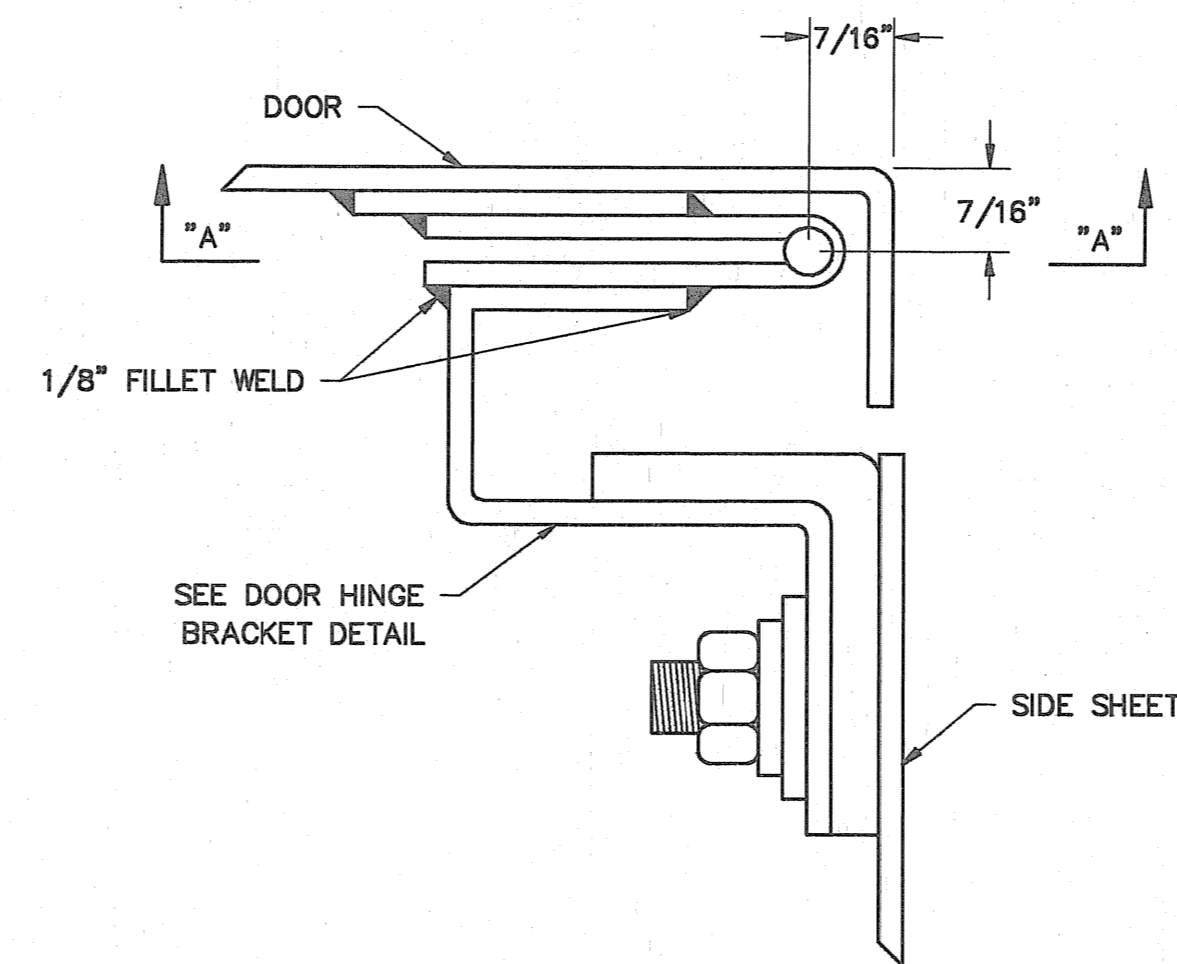
	NO.	REVISIONS	DATE	RELAY STANDARD DUAL PANEL DETAILS (UNWIRED SWBD PANELS) REAR FRAME BOOTH C ASSOCIATES, INC. <small>CONSULTING ENGINEERS RALEIGH, N.C.</small>
	DWN. AWD	DATE	2/1/81	DWG. NO. S5 OF 8
	CKD. RNS	APPD. RCR		
	SCALE AS NOTED			

3/9/91



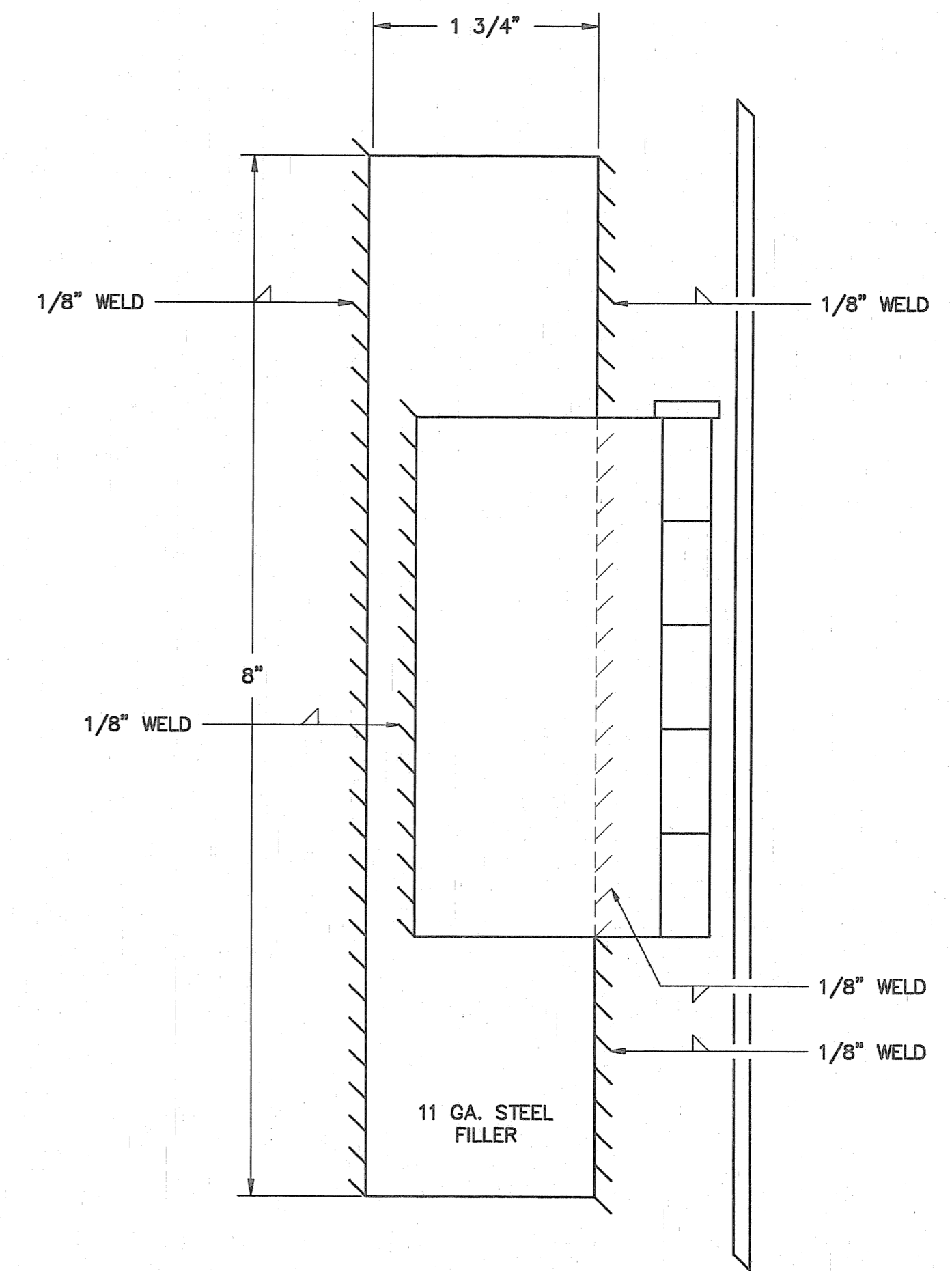
DOOR HINGE BRACKET - 11 GA. STEEL

3-REQ'D.
SCALE: 1"=1"



DOOR HINGE DETAIL

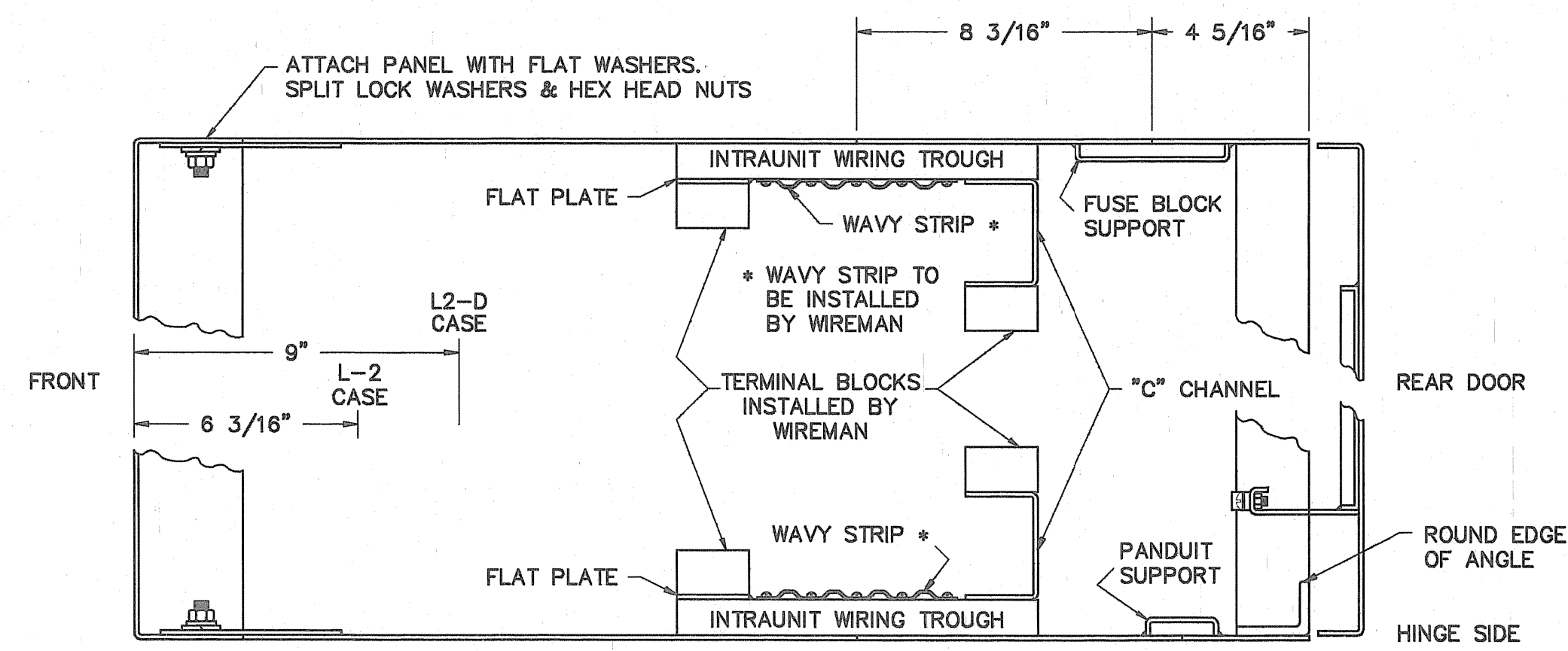
SCALE: 1"=1"



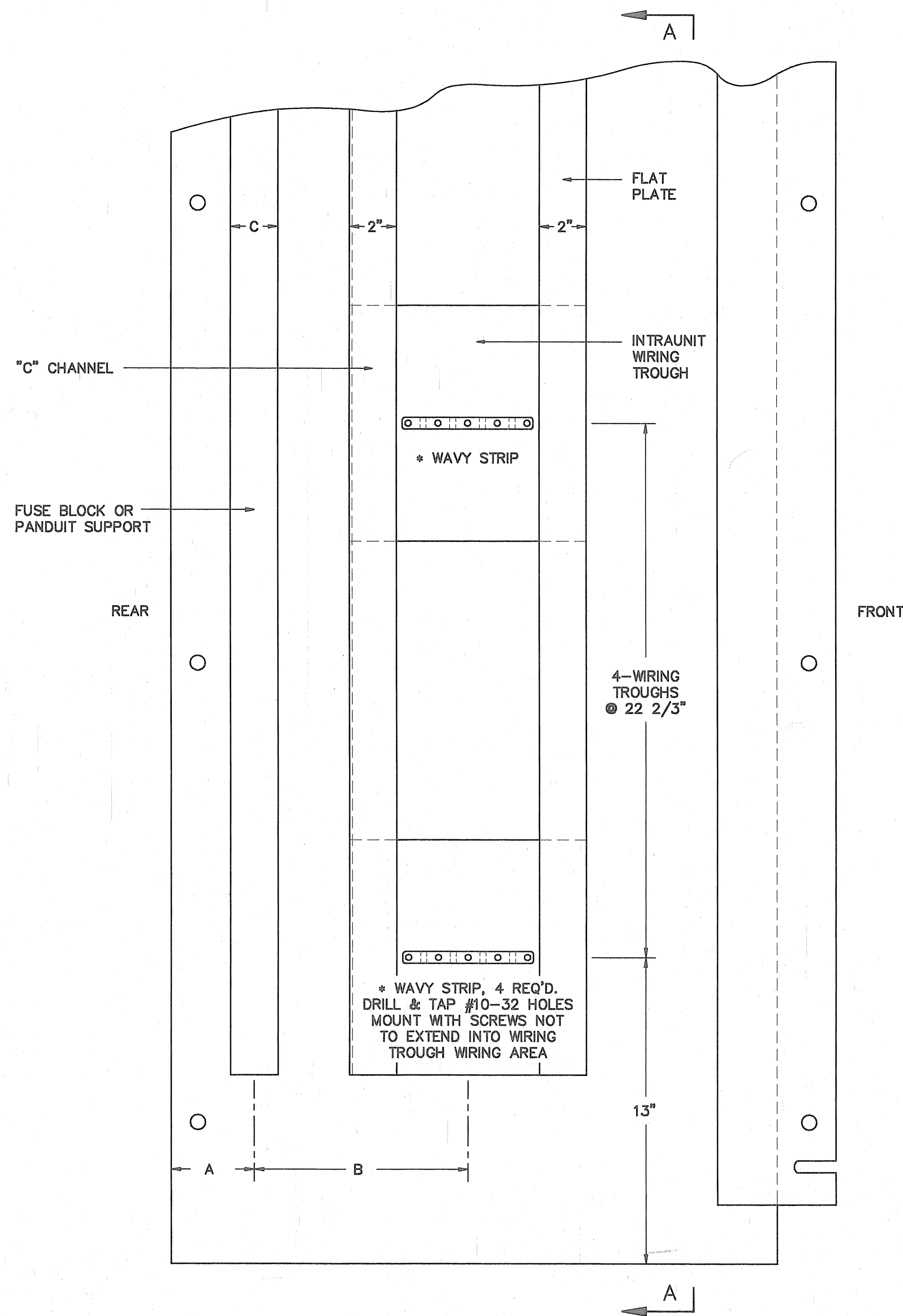
HINGE SECTION "A-A"

SCALE: 1"=1"

	NO.	REVISIONS	DATE	RELAY STANDARD	
				DUAL PANEL DETAILS	
				UNWIRED SWBD PANELS	
				HINGE	
				BOOTH & ASSOCIATES, INC.	
CONSULTING ENGINEERS			RALIGH, N.C.		
DWN. B.A.B.	DATE	3/7/91	DWG. NO.		
CKD. R.N.S.	APPD.		S6 OF 8		
SCALE 1"=1"					



UNIT SECTIONAL VIEW
SCALE: 1/4"=1"

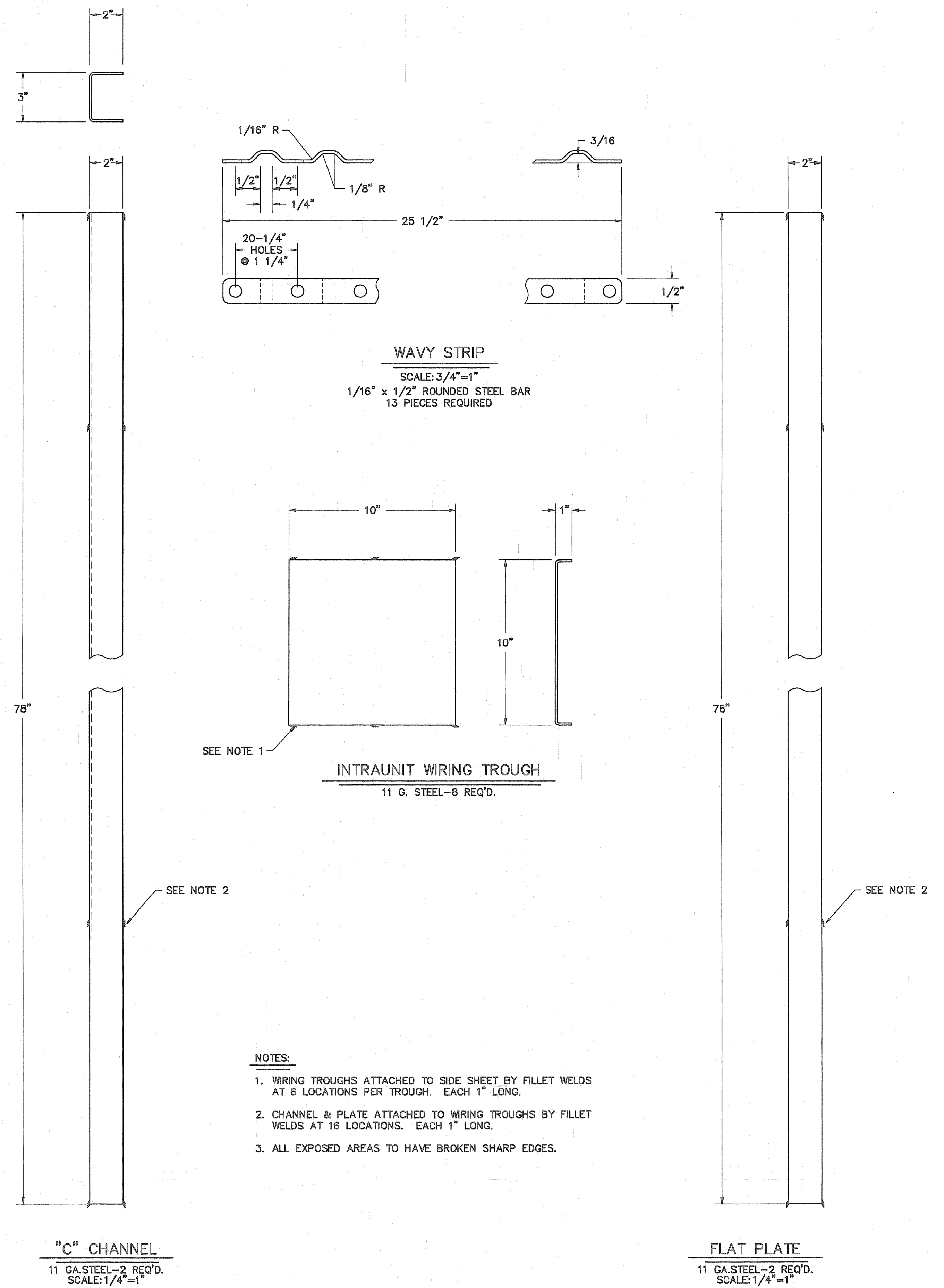
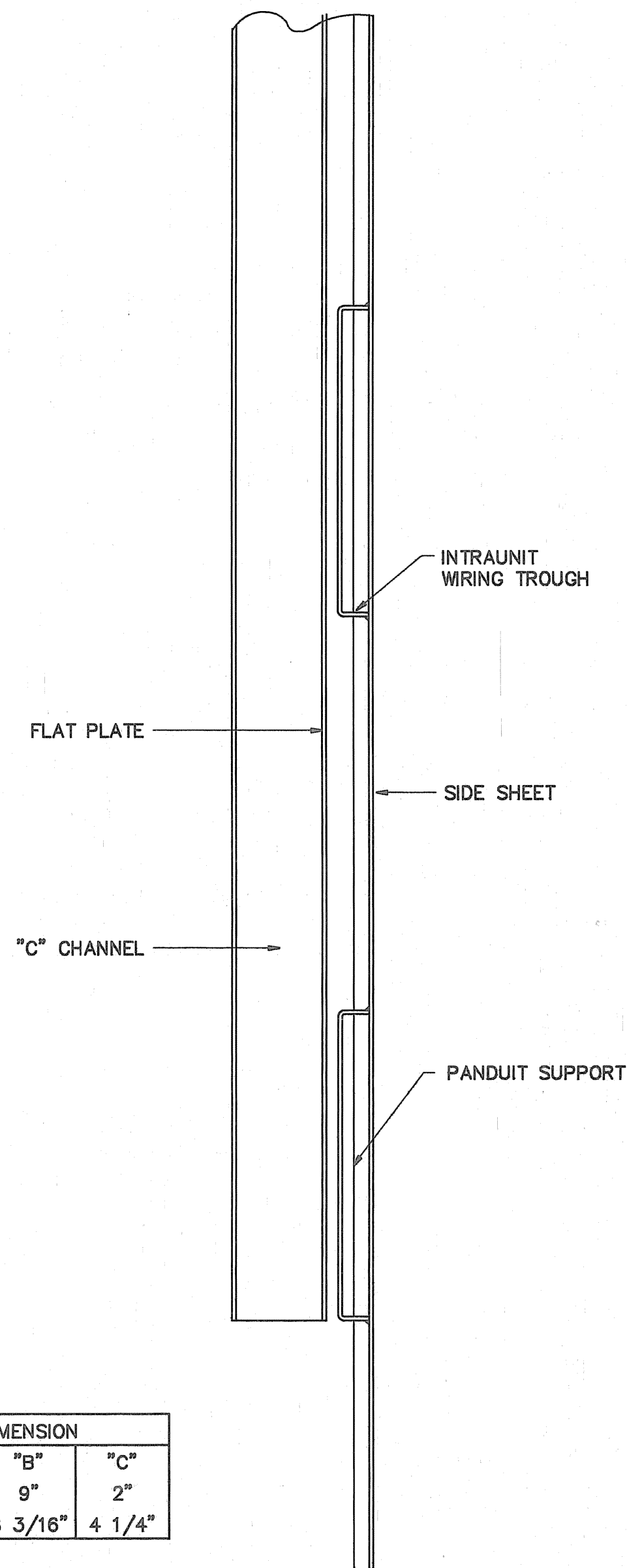


SIDE SHEET DETAILS
SCALE: 1/4"=1"

NOTE:
INSIDE VIEW OF RIGHT HAND SIDE SHEET SHOWN;
LEFT HAND SIDE SHEET TO BE SIMILAR BUT
OPPOSITE HAND.

SIDE SHEET	DIMENSION		
	"A"	"B"	"C"
RIGHT	3 1/2"	9"	2"
LEFT	4 5/16"	8 3/16"	4 1/4"

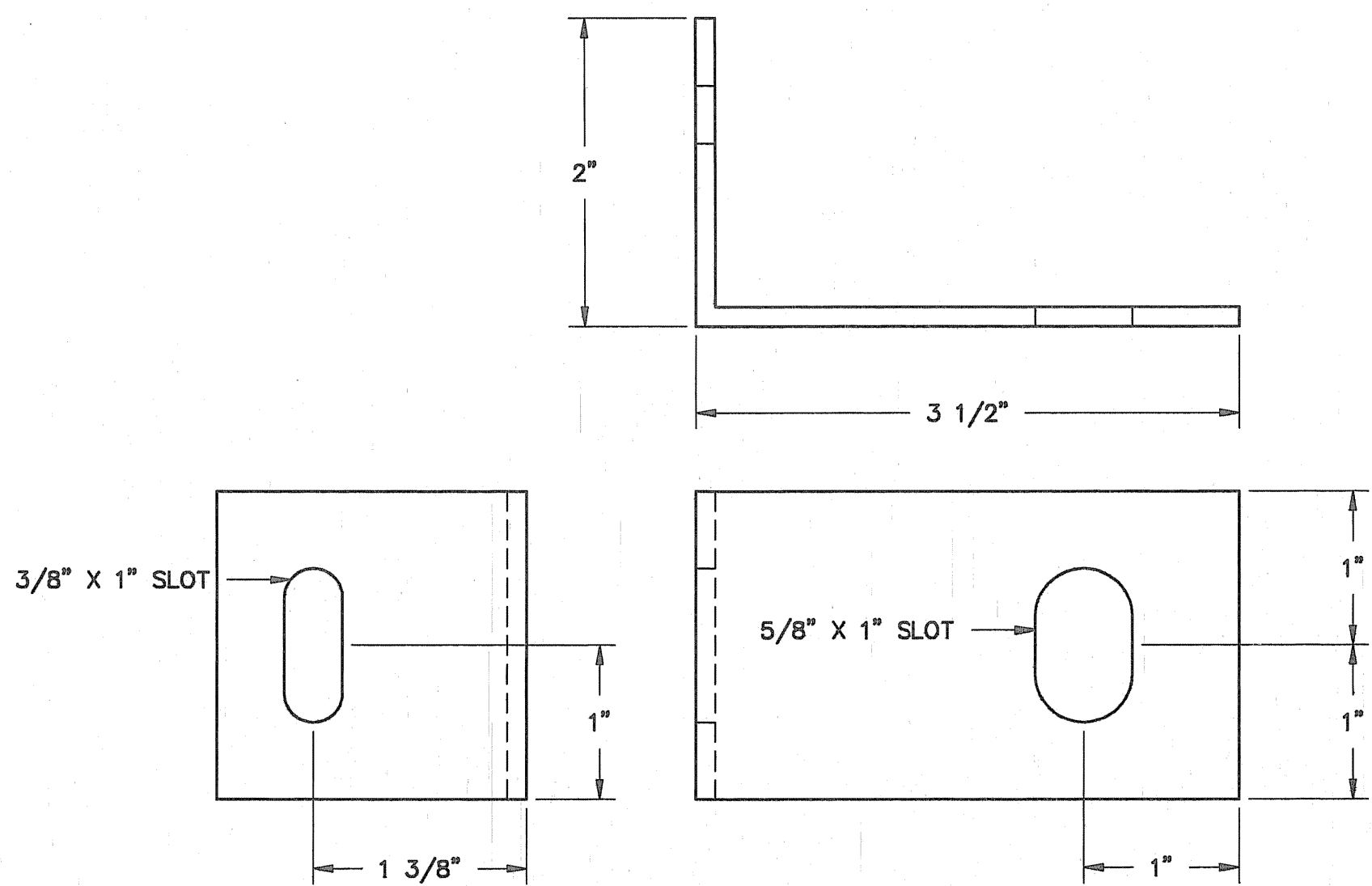
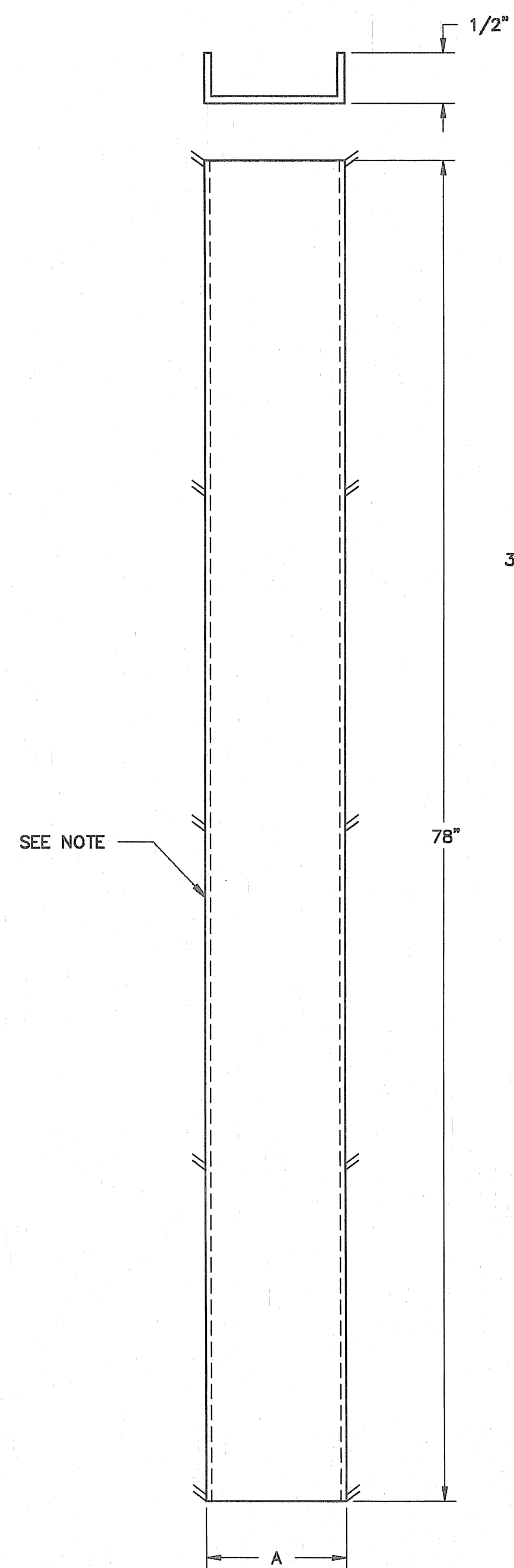
SECTION A-A
SCALE: 1/4"=1"



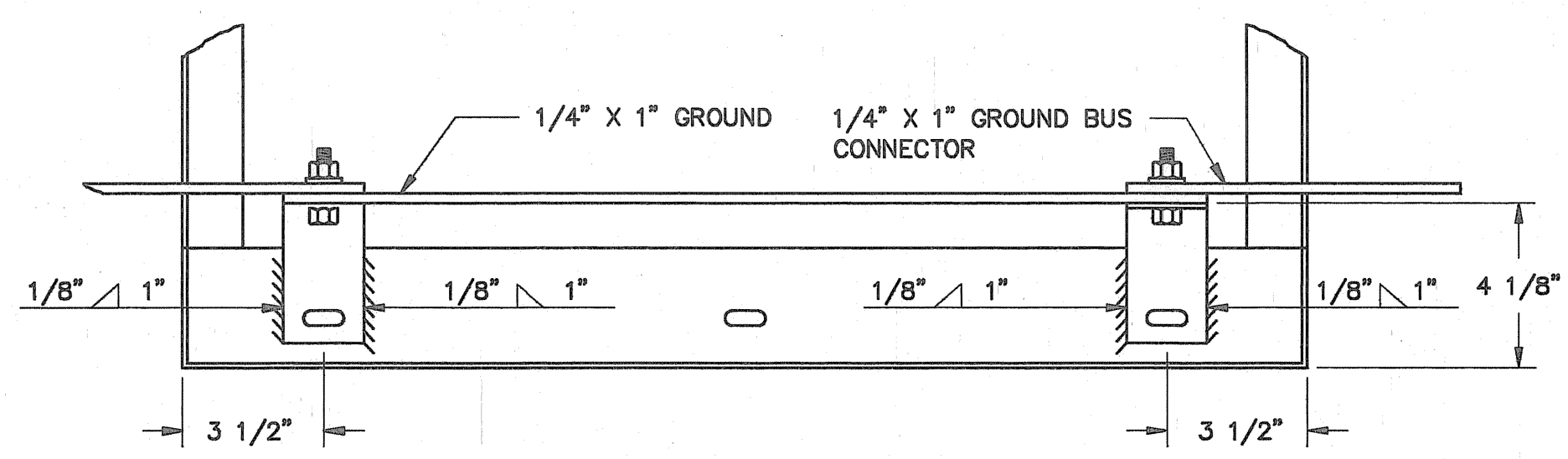
NOTES:

1. WIRING TROUGHS ATTACHED TO SIDE SHEET BY FILLET WELDS AT 6 LOCATIONS PER TROUGH. EACH 1" LONG.
2. CHANNEL & PLATE ATTACHED TO WIRING TROUGHS BY FILLET WELDS AT 16 LOCATIONS. EACH 1" LONG.
3. ALL EXPOSED AREAS TO HAVE BROKEN SHARP EDGES.

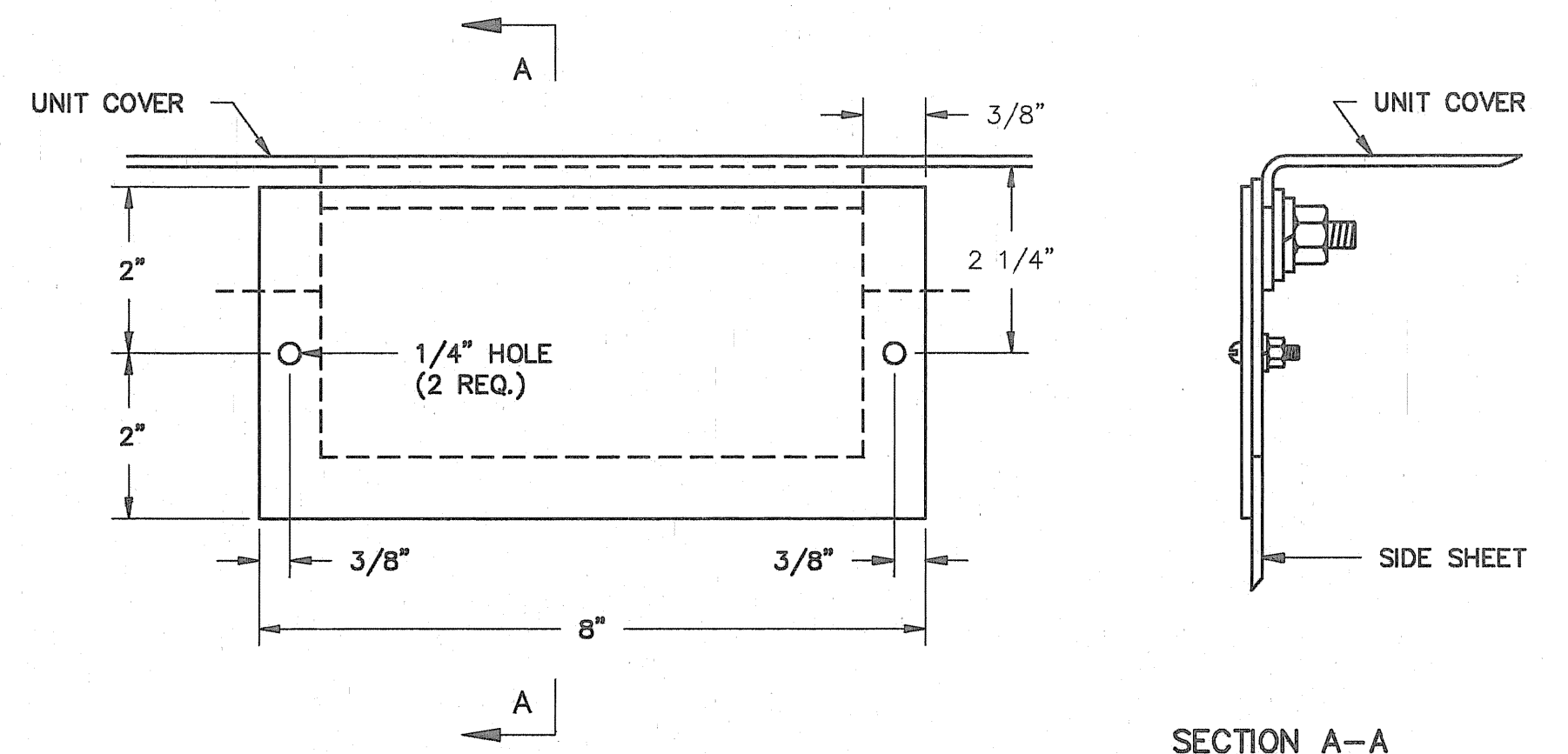
	NO.	REVISIONS	DATE	RELAY STANDARD DUAL PANEL DETAILS (UNWIRED SWBD PANELS) SIDE SHEET ASSEMBLY T.B. MOUNTING PLATES-WAVY STRIP BOOTH & ASSOCIATES, INC. CONSULTING ENGINEERS RALEIGH, N.C.	
	DWG. B.A.B. DATE 3/7/91 DWG. NO.				
	CKD. R.N.S. APPD.		SCALE AS NOTED	S7 OF 8	
	3/8/91			STDRPSH7	



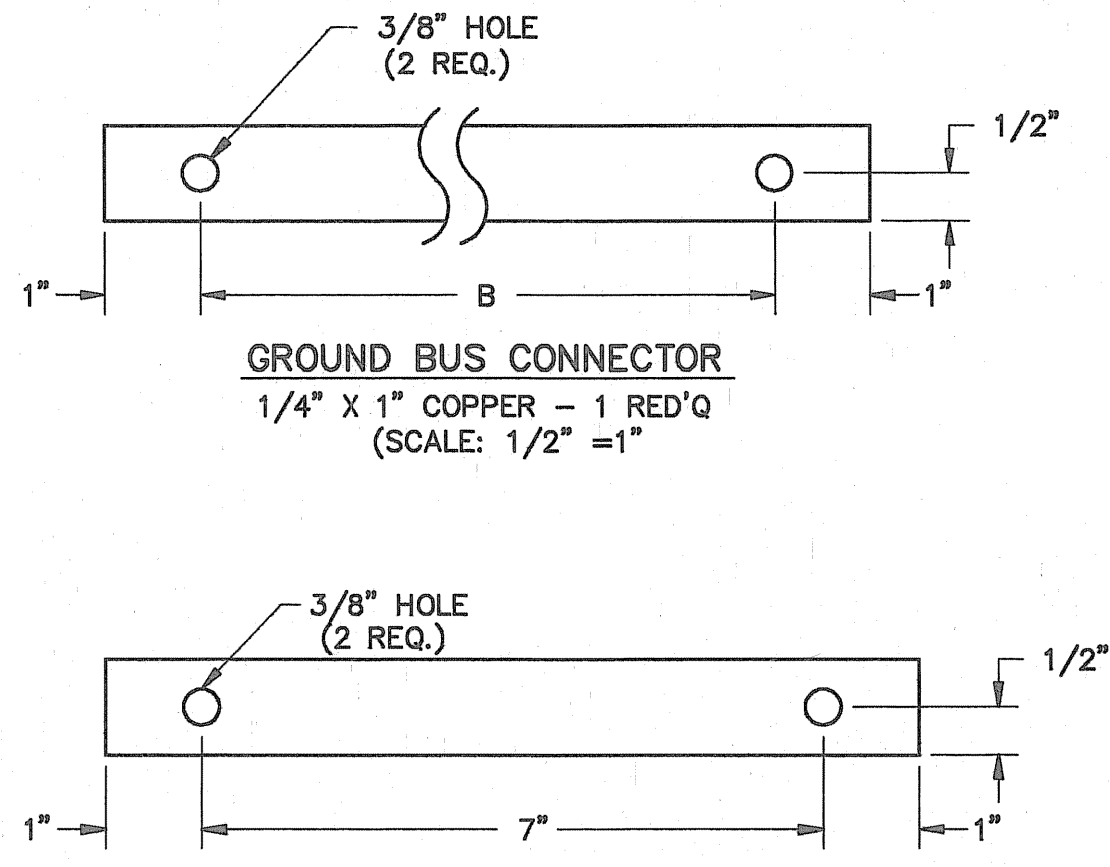
GROUND BUS SUPPORT BRACKET
11 GA. - 2 REQ'D
(FULL SCALE)



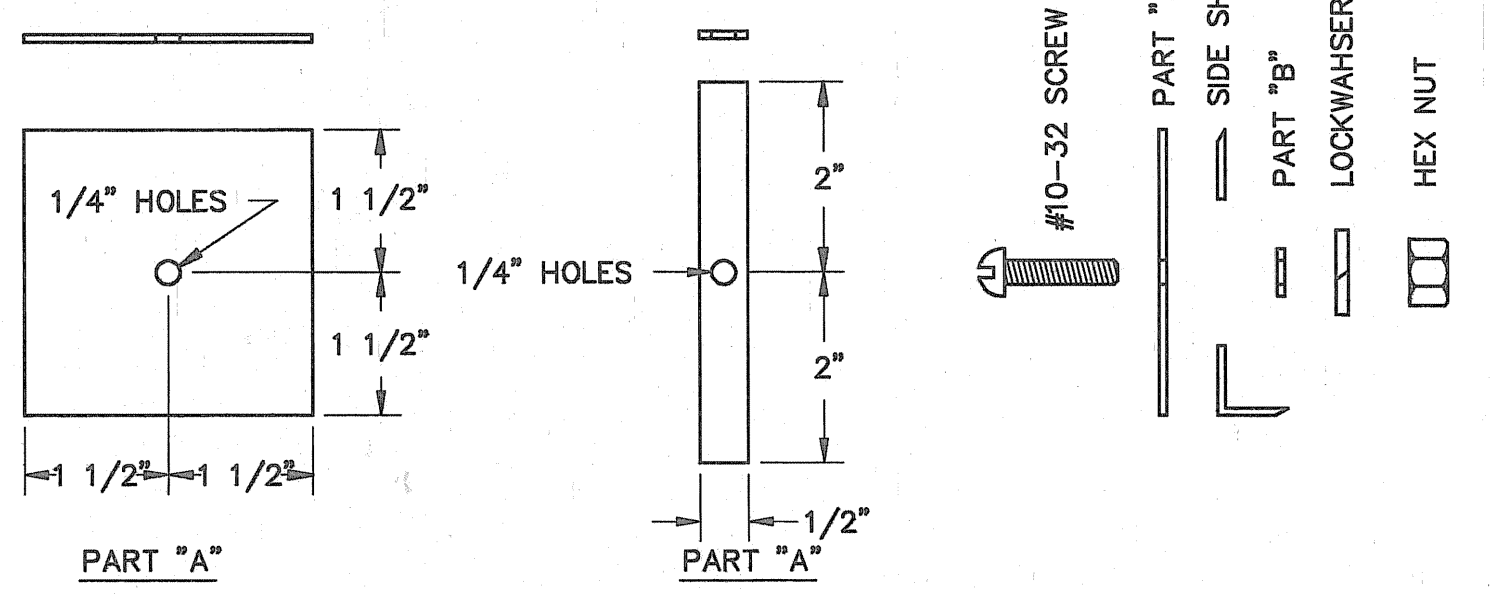
GROUND BUS LOCATION DETAIL
(SCALE: 1/4" = 1")



INTERUNIT WIRING CUTOUT COVER PLATE DETAIL - 14 GA. STEEL
SECURE COVER PLATE WITH 2, #10-32 MACHINE SCREWS, LOCKWASHERS & HEX. HEAD NUTS
(SCALE: 1/2" = 1")



GROUND BUS CONNECTOR
1/4" X 1" COPPER - 1 REQ'D
(SCALE: 1/2" = 1")



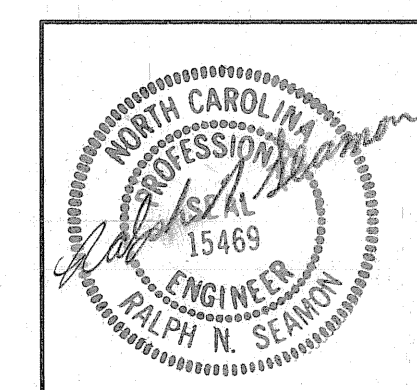
GROUND BUS SIDE SHEET CUTOUT COVER
14 GA. STEEL
(SCALE: 1/2" = 1")

FUSE BLOCK & PANDUIT SUPPORT
11 GA. STEEL
(NOT TO SCALE)

FUSE BLOCK SUPPORT "A" = 4 1/4"
PANDUIT SUPPORT "A" = 2"

NOTE:
SUPPORTS ATTACHED TO SIDE SHEETS BY FILLET WELDS AT 10 LOCATIONS, EACH 1" LONG

UNIT WIDTH	DIMENSIONS
28"	"B" 21"
32"	25"



3/8/91

NO.	REVISIONS	DATE	RELAY STANDARD	
			DUAL PANEL DETAILS (UNWIRED SWBD PANELS) GROUND BUS & COVER PLATE	
			BODDH & ASSOCIATES, INC. CONSULTING ENGINEERS RALEIGH, N.C.	
			DWN. AWD	DATE 2/1/91
			CKD. RNS	APPD. RCR
				DWG. NO. SB OF 8

ATTACHMENT B: BID PRICING FORM

Bidder Information:

Name of Company

Address

Phone Number

Email Address

Federal ID No.

**Is the business SDBE,
MWBE, DBE, or HUB
Printed Name**

Title

Signature

Date

BID PRICING FORM

BIDDER NAME: _____

Furnish And Deliver:

Item #	QTY.	UOM	DESCRIPTION	UNIT PRICE	EXTENDED PRICE
1	5	EA	SCADA and Communications Switchboard		
2	2	EA	Termination Cabinet		
3	5	EA	Transformer Relay and Control Switchboard		
4	10	EA	Feeder Relay and Control Switchboard		
Subtotal:					
State Sales Tax (If Applicable)					
TOTAL BID:					
Spare Parts:					
Delivery Schedule (Days)*					
Approval Drawings ⁽¹⁾					
Final Drawings ⁽¹⁾					
Delivery ⁽²⁾					
Field Service Engineering (Per Day Rate)					
Per Day Rate (including expenses) for field service engineering for additional days					

ATTACHMENT C: CERTIFICATION OF PRIMARY PARTICIPANT REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

The Primary Participant, _____ (major third party contractor), certifies to the best of its knowledge and belief, that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
2. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and
4. Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(If the primary participant is unable to certify to any of the statements in this certification, the participant shall attach an explanation to this certification.)

THE PRIMARY PARTICIPANT _____ CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET. SEQ. ARE APPLICABLE THERETO.

Signature

Title

Printed Name

Date

PWC At a Glance



Customers



- In operation since 1905 (116 years)
- Provide Electric, Water and Wastewater Services
- Total Customers: 119,380
- Number of Services: 273,794
 - Electric: 82,304
 - Water: 90,430
 - Wastewater: 89,913
- Customers with 2+ services: 75%
- Annual Customer Turnover: 20-25%

Customer Service



- Annual Customer Contacts: 433,794
- Average Monthly Calls: 31,452
- Annual Bills Generated: 1.4 Million
- Customer Incentive Programs: 13
- Annual Water Leak Notifications: 21,850

Employees



- Number of Employees: 651
- Average Tenure of Employees: 10.37 years
- Average Age: 44.59
- Annual Turnover: 6.0%*
- Annual Hours Worked: 1.2 Million

*non retirement

Facilities



- Butler-Warner Generation Plant (268 MW)
- PO Hoffer Water Treatment Facility (39.5 MGD)
- Glenville Lake Water Treatment Facility (18.0 MGD)
- Cross Creek Water Reclamation Facility (25 MGD)
- Electric Service Area: 147 Sq. Miles
- Water Service Area: 163 Sq. Miles
- Wastewater Service Area: 142 Sq. Miles

Electric Operations



- Purchase Wholesale Power from Duke Energy
- Only NC municipal system to own/operate a generation plant (Dispatched for use by Duke Energy)
- Generation Capacity: 268 MW
- Annual MWH Sold: 1.9 Million
- System Peak: 499 MW (Feb. 9, 2015)
- Reliability Rate: 99.9906%
- Electric Distribution Substations: 32
- Distribution Lines: 1,351 miles
- Transmission Lines: 142 miles
- Streetlights/Area Lights: 37,441

Water/Wastewater Operations



- Population Served: 225,000
- Drinking Water Treated: 11.2 Billion Gallons/Year
- 100% Complaint for all EPA Drinking Water Standards
- Daily Water Treatment Capacity: 57.5 Million Gallons
- Daily Wastewater Treatment Capacity: 46 Million Gallons
- Water/Wastewater Infrastructure: 2,700 miles
- Hydrants: 8,300
- Sanitary Sewer Lift Stations: 82

Financial



- Annual Operating Budget: \$405.2 Million
- Total Assets: \$1.44 Billion
- Bond Rating: Aa2 (Moody's), AA (Standard and Poor), AA (Fitch)
- Annual Local Purchases: \$25 Million
- Operations & Maintenance Expenses per Customer: \$432 (\$556 National Median)
- Annual Contributions to City of Fayetteville in Lieu of Taxes: \$11.4 Million
- Annual Streetlight Services: \$3.9 Million
- Annual Economic Development: \$1.2 Million (thru 2021)

SALE OF GOODS AGREEMENT

This Sale of Goods Agreement (“Agreement”) is made by and between the City of Fayetteville (the “City”), by and through the Fayetteville Public Works Commission (“PWC”), a North Carolina public authority, and _____ [insert seller’s full legal name] (“Seller”), a _____ [identify the legal entity and State in which formation was accomplished] (each of PWC and Seller is a “Party” and both are collectively the “Parties”) as of the date of execution last written below (the “Effective Date”). In consideration of the mutual covenants and agreements contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, The Parties agree as follows:

1. Sale of Goods. Seller shall sell to PWC and PWC shall purchase from Seller the following [Identify the goods specifically] (the “Goods”). PWC may issue a purchase order for the Goods that specifies any additional applicable terms and conditions set forth for the purchase (a “Purchase Order”), but such Purchase Order is subject to the terms of this Agreement. In the event of a conflict between the provisions of this Agreement and the provisions of any Contract Documents, attachment, exhibit or Purchase Order made pursuant to this Agreement, the terms of this Agreement shall govern.

2. Contract Documents. “Contract Documents” means, collectively, the following documents that were either made available to Seller by PWC during the bid solicitation process (including Drawings) or executed by the Parties, or both, which are all incorporated by reference herein:

- a. This Agreement
- b. Notice to Prospective Bidders
- c. Definitions
- d. Instructions to Bidders
- e. General Conditions
- f. Materialman’s Proposal
- g. Bid Bond
- h. Technical Specifications
- i. Purchase Order(s)
- j. Addenda

3. Delivery of Goods. Seller shall deliver the Goods [EITHER: “on or before _____” OR “as specified in the Contract Documents or an applicable Purchase Order issued by PWC” OR “as otherwise agreed in writing by the Parties”] (the “Delivery Date”). Timely delivery of the Goods is of the essence. If Seller fails to deliver the Goods on or before the Delivery Date, PWC may, without any liability to Seller, terminate this Agreement immediately by providing written notice to Seller. Unless otherwise specified in an applicable Purchase Order or the Contract Documents, excluding this Agreement, all Goods shall be delivered to PWC’s Warehouse at 955 Old Wilmington Road, Fayetteville, North Carolina 28301 (the “Delivery Point”) during PWC’s normal business hours. Delivery shall be made FOB Delivery Point.

4. Title and Risk of Loss. Title of the Goods passes to PWC upon delivery of the Goods to the Delivery Point. Seller bears all risk of loss or damage to the Goods until delivery of the Goods to the Delivery Point.

5. Packaging. Seller shall properly pack, mark, and ship the Goods as instructed by PWC and otherwise in accordance with applicable law and industry standards and shall provide PWC with all shipment documentation showing the quantity of pieces in shipment, the number of cartons or containers in shipment, Seller's name, the airway bill or bill of lading number, and the state of origin.

6. Inspection and Rejection of Nonconforming Goods. PWC has the right to inspect the Goods on or after the Delivery Date. PWC, at its sole option, may inspect all or a sample of the Goods, and may reject all or any portion of the Goods if it determines the Goods are nonconforming or defective. If PWC rejects any portion of the Goods, PWC has the right, effective upon written notice to Seller, to: (a) terminate this Agreement in its entirety and require Seller to remove the Goods in a commercially reasonable time period or pay the full cost and expense to have the rejected Goods returned to Seller; or (b) reject the Goods and require replacement of the rejected Goods at Seller's sole expense. If PWC requires replacement of the Goods, Seller shall, at its sole expense and in the lesser of ninety (90) days or the number of days between any applicable Purchase Order of PWC and the Delivery Date, replace the nonconforming Goods and pay for all related expenses, including, but not limited to, transportation charges for the return of the defective goods and the delivery of replacement Goods. Any inspection or other action by PWC under this Section shall not reduce or otherwise affect Seller's obligations under this Agreement, including Seller's warranties, and PWC shall have the right to conduct further inspections after Seller has carried out its remedial actions.

7. Price. PWC shall purchase the Goods from Seller in the total amount of \$_____ ("Price"). The Price includes all packaging, transportation costs to the Delivery Location, insurance, fees, and applicable taxes, including, but not limited to, all sales, use, or excise taxes. No increase in the Price is effective, whether due to increased material, labor, transportation costs or otherwise, without the prior written consent of PWC.

8. Billing and Payment. Seller shall invoice PWC within thirty (30) days after the completion of the delivery of the Goods. PWC shall pay the undisputed portion of the invoice within forty-five (45) calendar days after PWC's receipt of the invoice. All payments from PWC to Seller shall be transferred electronically to Seller's designated financial institution, and Seller shall, prior to delivery of its invoice to PWC, supply the name of Seller's financial institution, routing number, and account number on the form available from PWC and provide to PWC a completed and signed IRS Form W-9. Seller has the right to impose a late payment charge of one percent (1%) per month for amounts unpaid by PWC by the date due.

Provider shall comply with all of the following requirements so that PWC may recover the full amount of sales and use tax under North Carolina law permitted under the law:

- a. Furnish PWC documentary evidence showing the material used, sales tax paid, and County paid (County of sale). The documentary evidence shall include Provider's certified statement showing total purchases of materials from each separate vendor and total sales taxes charged to PWC and paid by Provider. The documentary evidence shall also include Provider's certified statement as to the amount paid by PWC for sales tax on the Goods. A certified form is required even if no sales tax was paid for the pay request period. Materials used from Provider's warehouse stock shall be shown in a

- certified statement at warehouse stock prices and amount of County of Use Tax charged to PWC and paid by Provider;
- b. Provider shall furnish to PWC invoices or copies of invoices for all materials purchased for said work within pay request period, and such invoices shall state the amount of North Carolina Sales Tax, if any, paid for the Goods. Provider shall also furnish to PWC invoices identifying the amount paid for the sales and use tax on Services that are subject to such taxation under North Carolina law; and
 - c. Provider shall not include any tax paid on supplies, tools, and equipment that Provider uses to perform its obligations under this Agreement.

9. Warranties. Seller warrants to PWC that for a period of twenty-four (24) months from the Delivery Date, all Goods will: (a) be free from any defects in workmanship, material and design; (b) conform to applicable specifications, drawings, designs, samples and other requirements set forth in the Contract Documents or as specified by PWC and agreed to by Seller; (c) be fit for their intended purpose and operate as intended; (d) be free and clear of all liens, security interests, or other encumbrances; and (e) not infringe or misappropriate any third party's patent or other intellectual property rights. These warranties survive any delivery, inspection, acceptance or payment of or for the Goods by PWC. These warranties are cumulative and in addition to any other warranty provided by law or equity. Any applicable statute of limitations runs from the date of PWC's discovery of the noncompliance of the Goods with the foregoing warranties. If PWC gives Seller notice of noncompliance with this Section 9, Seller shall, at its own cost and expense, within thirty (30) days replace or repair the defective or nonconforming Goods and pay for all related expenses, including, but not limited to, transportation charges for the return of the defective or nonconforming goods to Seller and the delivery of repaired or replacement Goods to PWC.

10. Termination. Notwithstanding any other or additional remedies that may be provided under this Agreement, PWC may terminate this Agreement with immediate effect upon written notice to the Seller, either before or after the acceptance of the Goods, if: (a) Seller repudiates, or threatens to repudiate, any of its obligations under this Agreement; (b) Seller is in breach of, or threatens to breach, any representation, warranty, or covenant of Seller under this Agreement and either the breach cannot be cured or, if the breach can be cured, it is not cured by Seller within a commercially reasonable period of time under the circumstances, in no case exceeding seven (7) days following Seller's receipt of Notice of such breach; (c) Seller fails to, or threatens to fail to, timely deliver Goods conforming to the requirements of, and otherwise in accordance with, the terms and conditions of this Agreement; or (d) Seller becomes insolvent, files a petition for bankruptcy, or commences or has commenced against it proceedings relating to bankruptcy, receivership, reorganization, or assignment for the benefit of creditors. PWC shall be obligated to pay Seller only for work performed and reasonable expenses incurred until delivery of the notice of termination.

11. Insurance. During the term of this Agreement and for a period of three (3) years after the date of this Agreement, Seller shall, at its own expense, maintain and carry insurance in full force and effect that includes, but is not limited to, commercial general liability (including product liability) with limits no less than \$1,000,000 for each occurrence and \$3,000,000 in the aggregate and umbrella liability in a sum no less than \$5,000,000, which insurance shall be placed with insurance companies authorized to do business in the State of North Carolina and rated A minus VII or better by the current edition of Best's Key Rating Guide or otherwise approved in writing by PWC. Prior to delivering any Goods, Seller shall deliver to PWC

certificates of insurance confirming each such coverage, and Seller shall direct its insurers to provide annually to PWC certificates confirming each such coverage during the coverage period. PWC shall be named as an additional insured in the insurance policy. Seller shall not reduce or allow the required insurance coverages to lapse without PWC's prior written approval. All policies for insurance must be endorsed to contain a provision giving PWC a thirty (30) calendar day prior written notice by certified mail of any cancellation of that policy or material reduction in coverage. Should a notice of cancellation be issued for non-payment of premiums or any part thereof, or should Seller fail to provide and maintain certificates as set forth herein, PWC shall have the right, but not the obligation, to pay such premium to the insurance company or to obtain such coverage and to deduct such payment from any sums that may be due or become due to Seller, or to seek reimbursement for said payments from Seller. Any such sums paid by PWC shall be due and payable immediately by Seller upon notice from PWC. The insurance provisions of this Agreement shall not be construed as a limitation on Seller's responsibilities and liabilities pursuant to the terms and conditions of this Agreement.

12. Indemnification. Seller shall indemnify, defend, and hold harmless PWC and its Commissioners, officers, employees, agents, and representatives (collectively, "Indemnitees") from and against all claims, actions, liabilities, damages, losses, costs, and expenses (including, without limitation, injury to or death of any persons and damage to property, economic and consequential damages and attorneys' fees) asserted by one or more third parties against one or more of the Indemnitees arising out of negligent or willful acts, violations of law, infringement of any patent, trademark, trade secret, copyright, or other intellectual property right of a third party, or omissions or breach of the obligations set forth in this Agreement by Seller or any of its employees, agents, representatives, and subcontractors. Seller's obligation to indemnify, defend, and hold harmless the Indemnitees shall survive the termination of this Agreement and shall include the duty to pay for the reasonable attorney's fees and costs associated with defending the Indemnitee(s) by the legal counsel of each Indemnitee's choice.

13. Notices. Any notice which either Party is required or desires to give the other shall be deemed sufficiently given if, in writing, it is delivered personally, or sent by certified U.S. mail, return-receipt requested, postage prepaid, to the addresses listed hereinbelow, or such other address as either Party shall give to the other Party by written notice in accordance herewith. Any notice given herein by personal delivery shall be deemed delivered when received. Any properly addressed notice given herein by certified mail shall be deemed delivered on the third Business Day after the same is deposited in an official United States Post Office, postage prepaid, or if sooner upon the date when the return receipt therefor is signed, or refusal to accept the mailing by the addressee is noted thereon by the postal authorities.

To PWC:
Fayetteville Public Works Commission
Attn: Timothy Bryant, CEO/General Manager
PO Box 1089
Fayetteville, NC 28302

To Seller:
[INSERT MAILING ADDRESS]

14. Compliance. Seller hereby acknowledges that "E-Verify" is the federal E-Verify program operated by the US Department of Homeland Security and other federal agencies which is used to verify the work authorization of newly hired employees pursuant to federal law

and in accordance with Article 2, Chapter 64 of the North Carolina General Statutes. Seller further acknowledges that all employers, as defined by Article 2, Chapter 64 of the North Carolina General Statutes, must use E-Verify and after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with NCGS §64-26(a). Seller hereby pledges, attests, and warrants through execution of this Agreement that Seller complies with the requirements of Article 2, Chapter 64 of the North Carolina General Statutes and further pledges, attests, and warrants that all subcontractors currently employed by or subsequently hired by Seller to provide services for PWC shall comply with all E-Verify requirements. Failure to comply with the above requirements shall be considered a breach of this Agreement. Seller hereby further acknowledges that the execution and delivery of this Agreement constitutes Seller's certification to PWC and to the North Carolina State Treasurer that, as of the Effective Date, Seller is not listed on (a) the Final Divestment List created and maintained by the North Carolina Department of State Treasurer pursuant to the Iran Divestment Act of 2015, Chapter 147, Article 6E of the General Statutes of North Carolina (the "Iran Divestment Act"); or (b) the list of companies that the North Carolina State Treasurer determines to be engaged in a boycott of Israel in accordance with Article 6G of Chapter 147 of the General Statutes of North Carolina. Seller represents and warrants to Commission that Seller, and all persons and entities owning (directly or indirectly) an ownership interest in it: (i) are not, and will not become, a person or entity with whom a party is restricted from doing business with under regulations of the Office of Foreign Asset Control ("OFAC") of the Department of the Treasury (including, but not limited to, those named on OFAC's Specially Designated and Blocked Persons list) or under any statute, executive order (including, but not limited to, the September 24, 2001, Executive Order 13224 Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit, or Support Terrorism), or other governmental action; and (ii) are not knowingly engaged in, and will not knowingly engage in, any dealings or transactions or be otherwise associated with such persons or entities described in clause (i) above. Seller also shall at all times during the term of this Agreement comply with Executive Order 11246, including but not limited to the Equal Opportunity Clause requirements set forth in 41 C.F.R. § 60-1.4. Seller shall abide by the requirements of 41 CFR 60-300.5(a) and 60-741.5(a) prohibiting discrimination against qualified individuals on the basis of protected veteran status or disability and requiring affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified protected veterans and individuals with disabilities.

15. Cumulative Remedies. All rights and remedies provided in this Agreement are cumulative and not exclusive, and the exercise by either Party of any right or remedy does not preclude the exercise of any other rights or remedies that may now or subsequently be available at law or in equity.

16. Miscellaneous Provisions. Seller is and shall remain an independent contractor. Nothing contained in this Agreement shall be deemed or construed to create the relationship of principal and agent or of partnership or of joint venture or of any association whatsoever between the Parties. No breach or non-performance of any term of this Agreement shall be deemed to be waived by either Party unless said breach or non-performance is waived in writing and signed by the Parties. No waiver of any breach or non-performance under this Agreement shall be deemed to constitute a waiver of any subsequent breach or non-performance, and for any such breach or non-performance each Party shall be entitled to such remedies as provided by law. No consent or waiver by a Party shall be effective unless it is in writing and then only to the extent specifically stated. The invalidity, illegality, or un-enforceability of any portion or provision of this Agreement shall in no way affect the validity, legality, and/or enforceability of

any other portion or provision of this Agreement. Any invalid, illegal, or unenforceable provision of this Agreement shall be deemed severed from this Agreement, and the balance of the Agreement shall be construed and enforced the same as if the Agreement had not contained any portion or provision which was invalid, illegal, or unenforceable; provided, however, severability shall not prevent this entire Agreement from being void in the event any portion or provision of this Agreement that is of the essence of this Agreement shall be void. This is the entire agreement of the Parties on the subject matter hereof, and all prior negotiations, representations, proposals, letters, agreements, understandings, or other communications between the Parties, whether written or oral, are hereby merged into the Agreement and superseded by this Agreement. This Agreement shall not be modified unless such modifications are evidenced in writing, signed by both Parties. Nothing herein shall be construed to give any right or benefits hereunder to anyone other than the Parties. This Agreement shall be governed by the laws of the State of North Carolina without the application of the laws of any other state. The exclusive venue for all mediations and litigation and any other legal proceedings regarding this Agreement shall be the State and Federal Courts serving Cumberland County, North Carolina, and Seller consents to personal jurisdiction in such courts. Seller irrevocably waives, to the fullest extent permitted by law, any objection that it may now or hereafter have to the laying of the venue of any such suit, action or proceeding in any such court serving Cumberland County or that any such suit, action or proceeding brought in any such court serving Cumberland County has been brought in an inconvenient forum. This Agreement may be executed in counterparts with the same effect as if the signatures to each counterpart were upon a single instrument, and all such counterparts together shall be deemed an original of this Agreement. For purposes of this Agreement, a facsimile copy or scanned copy or photocopy of a party's signature shall be sufficient to bind such party. This Agreement shall be subject to execution by electronic means in accordance with Article 40 of Chapter 66 of the North Carolina General Statutes. The titles of the paragraphs throughout this Agreement are for convenience only and the words contained therein shall in no way be held to explain, modify, amplify, or aid in the interpretation, construction, or meaning of the provisions of this instrument.

17. Conflicts. Except with PWC's knowledge and prior written consent, the Seller shall not engage in any activity or accept any employment, interest or contribution that would reasonably appear to compromise the Seller's professional judgment with respect to the Goods. The Seller shall disclose to PWC any business or personal relationship with any Commissioner, officer, director, manager, or supervisor of PWC.

IN WITNESS WHEREOF, the Parties have executed this Agreement by their duly authorized representatives as of the Effective Date.

Fayetteville Public Works Commission

[INSERT SELLER'S FULL LEGAL NAME]

By: _____
Timothy Bryant, CEO/General Manager

By: _____
(Printed Name), (Title)

Date: _____

Date: _____

This instrument has been preaudited in the manner required by the Local Government Budget and Fiscal Control Act (N.C. Gen. Stat. § 159-1 et seq.).

By: _____
Rhonda Haskins, Chief Financial Officer

Approved as to form:

Legal Dept.

SAMPLE

**FAYETTEVILLE PUBLIC WORKS COMMISSION'S
MWDBE COMPLIANCE PROVISIONS**

APPLICATION:

The requirements of Fayetteville Public Works Commission (PWC) Minority, Women, and Disadvantaged Business Enterprise (MWDBE) Program for participation specific contracts are hereby made part of the Contract Documents. Copies of the Program may be obtained from:

Fayetteville Public Works Commission
Economic Inclusion Programs
P.O. Box 1089
Fayetteville, North Carolina 28302
Phone (910) 223-4016 Fax (910) 483-1429
E-mail: EIProgram@faypwc.com

NCDOT DBE Directory: www.ebs.nc.gov/VendorDirectory

HUB Directory: <https://ncadmin.nc.gov/businesses/hub>

MWDBE Compliance Requirements:

1. The Bidder shall provide, with their Bid Form, at the time bids are due, the documents set forth below, properly executed. Returning executed copies indicates and establishes that the Bidder understands and agrees to any incorporated MWDBE contract provisions.
2. All Bidders must provide with their Bid Form, at the time bids are due, a properly completed and executed copy of **either:**
 - Affidavit A – Listing of Good-Faith Efforts **OR**
 - *Affidavit B – Intent to Self-Perform with Own Workforce.

*Affidavit B should **only** be used if the Contractor will perform **ALL Elements** of the Work on this project with their own forces **AND** will complete **ALL Elements** of this project **WITHOUT** the use of subcontractors, material suppliers, or providers of professional services.
3. Upon being identified as the apparent lowest responsive, responsible Bidder, a Bidder shall, within twenty-four (24) hours of PWC's notification provide a properly completed and executed copy of **either:**
 - Affidavit C – Percentage of MWDBE Participation **OR**
 - Affidavit D – Good-Faith Efforts.
4. All Bidders must provide with their Bid Form, at the time bids are due, a properly completed and executed copy of Affidavit E- Identification of MWDBE/Local Participation Form

All written statements, certifications, or intentions made by the Bidder shall become a part of the agreement between the Contractor and Fayetteville Public Works Commission for performance of this contract.

SUBCONTRACTOR PAYMENT REQUIREMENTS:

North Carolina General Statutes 143-134.1 (N.C.G.S.) states that the percentage of retainage on payments made by the prime contractor to the subcontractor shall not exceed the percentage of retainage on payments made by the Fayetteville Public Works Commission to the prime contractor. Failure to comply with this provision shall be considered a breach of the contract, and the contract may be terminated in accordance with the termination provisions of the contract.

The Contractor shall provide an itemized statement of payments to each MWDBE subcontractor before final payment is processed.

The Contractor shall provide an itemized statement of payments to each NON-MWDBE subcontractor before final payment is processed.

Contractor

Signature

Printed Name

Title

Date

Affidavit A: Listing of the Good Faith Efforts

Affidavit of _____
(Name of Bidder)

I have made a good faith effort to comply under the following areas checked:

<i>Total Available GFE Points: 155</i>		<i>Minimum Number GFE Points Required: 50</i>
Points		
10	Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government-maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.	
10	Making the construction plans, specifications and requirements available for review by prospective minority businesses or providing these documents to them at least 10 days before the bid or proposals are due.	
15	Breaking down or combining elements of work into economically feasible units to facilitate minority participation.	
10	Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.	
10	Attending any pre-bid meetings scheduled by the public owner.	
20	Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.	
15	Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.	
25	Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.	
20	Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.	
20	Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.	
Total GFE Points (Claimed by Bidder):		Total GFE Points (Assessed by PWC):

In accordance with NCGS 143-128.2(d) the undersigned will enter into a formal agreement with the firms listed in the Identification of Small Disadvantaged Business Participation schedule conditional upon execution of a contract with the Owner. Failure to abide by any applicable statutory provision may constitute a breach of the contract. The undersigned hereby certifies that he or she has read the terms of the MWDBE business commitment and is authorized to bind the Bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____



State of North Carolina, County of _____

Subscribed and sworn to before me this _____ day of 20__

Notary Public _____

My commission expires _____

Affidavit B: Intent to Perform Contract with Own Workforce

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for contract:

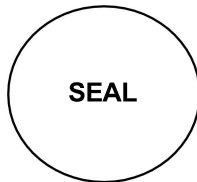
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform **all elements of the work** on this project with his/her own current workforces; and will complete all elements of this project **without** the use of subcontractors, material suppliers, or providers of professional services.

The Bidder agrees to provide any additional information or documentation requested by the Owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____



State of North Carolina, County of _____

Subscribed and sworn to before me this _____ day of 20__

Notary Public _____

My commission expires _____

Affidavit C: Percentage of MWDBE Participation

Affidavit of _____
(Name of Bidder)

I hereby certify that on contract: _____
(Name of Project)

\$ _____
(Dollar Amount of Total Bid)

I will expend a minimum of _____% of the total dollar amount of the contract with Minority, Women, and Disadvantaged Business Enterprises (MWDBE). MWDBEs will be employed as subcontractors, vendors, or providers of professional services. Such work will be subcontracted to the following firms listed below.

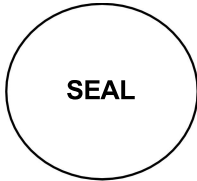
<u>Name, Address, & Phone No.</u>	<u>*MWDBE Category</u>	<u>NAICS</u>	<u>Dollar Value</u>	<u>% of Contract</u>

*MWDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

Pursuant to NCGS 143-128.2(d), the undersigned will enter into a formal agreement with MWDBEs for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the Bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____



State of North Carolina, County of _____
Subscribed and sworn to before me this _____ day of 20____
Notary Public _____
My commission expires _____

Affidavit D: Good Faith Efforts

If Owner determines using reasonable discretion that Affidavit C is insufficient, Bidder agrees to provide the following information regarding any good-faith efforts.

<u>Name, Address, & Phone No.</u>	<u>*MWDBE Category</u>	<u>NAICS</u>	<u>Dollar Value</u>

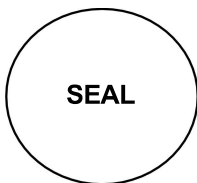
*MWDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

Bidder may be requested to provide documentation of the Bidder’s good-faith efforts. Examples of documentation may include the following:

- a. Copies of solicitations for quotes to MWDBEs. Each solicitation may include a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- b. Copies of quotes or responses received from each firm responding to the solicitation.
- c. A telephone log of follow-up calls to each firm sent a solicitation.
- d. For subcontracts where a MWDBE is not considered the lowest responsible sub- bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- e. Documentation of any contacts or correspondence to MWDBE, community or contractor organizations in an attempt to meet the goal.
- f. Copy of pre-bid roster.
- g. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for MWDBEs.
- h. Letter detailing reasons for rejection of a MWDBE due to lack of qualification.
- i. Letter documenting proposed assistance offered to MWDBEs in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive Bidder.

Date: _____ Name of Authorized Officer: _____



State of North Carolina, County of _____
 Subscribed and sworn to before me this _____ day of 20____
 Notary Public _____
 My commission expires _____

Affidavit E: Identification of MWDBE/Local Participation

(Name of Bidder)

I hereby certify that on contract: _____

(Name of Project)

We will use the following Minority, Women, and Disadvantaged Business Enterprises (MWDBE), and Local (Cumberland, Hoke, Harnett County) as construction subcontractors, vendors, suppliers, or providers of professional services.

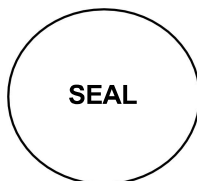
<u>Name, Address, & Phone No.</u>	<u>*MWDBE Category / **Local</u>	<u>NAICS</u>	<u>Dollar Value</u>

*MWDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

**Local: Fayetteville Metropolitan Statistical Area (MSA) comprising of Cumberland County, Hoke County, and Harnett County. PWC is requesting this information for reporting purposes only, and use of local entities will not be considered for compliance with the requirements of the MWDBE Program.

The total value of MWDBE/local business contracting will be \$ _____

Date: _____ Name of Authorized Officer: _____



State of North Carolina, County of _____

Subscribed and sworn to before me this _____ day of 20__

Notary Public _____

My commission expires _____

**FAYETTEVILLE PUBLIC WORKS COMMISSION
MWDBE ADD / CHANGE FORM**

If a MWDBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the good faith efforts set forth in the MWDBE Program if soliciting a replacement or additional subcontractor.

For MWDBE Change Request, please provide all information below:

Prime Contractor: _____

Subcontracted Work: _____

Previous Subcontractor: _____

Reason this for change request:

New Subcontractor: _____ MWDBE Category: _____

To Add MWDBE Subcontractor/Subcontracted work:

If this is a new trade being subcontracted or a subcontractor that was not documented in the original Project Bid Information submittal, then good faith efforts to solicit a MWDBE must be documented, as the original MWDBE instructions indicate. Please provide all good faith efforts below showing all the MWDBE firms contacted to perform this work along with any additional good faith efforts or evidence that there are not reasonably available firms in the work area. PWC's MWDBE Program requires that good faith efforts are to be carried out to the fullest extent practicable. If solicitations were not carried out due to being impracticable, please attach this explanation to this form.

Name, Address, & Contact Information	MBE or WBE and Certifying agency	How was this firm contacted (email, letter, or Phone) and what was the result of the solicitation? *

*Must submit copies of emails or letters. If phone calls were made this sheet can serve as documentation of calls

Date: _____ Name of Authorized Officer: _____



State of North Carolina, County of _____
 Subscribed and sworn to before me this _____ day of 20____
 Notary Public _____
 My commission expires _____

SMALL LOCAL SUPPLIER / MWDBE SUBCONTRACTOR DISCLOSURE FORM

Contractor: _____
 Address & Phone: _____
 Project: _____
 Name: _____
 Pay Application # _____

Please complete the below form by providing the necessary information for the payments made to each subcontractor, vendor, or supplier for the work associated with the identified pay application. This form must be fully completed and attached to each pay application.

Firm Name, Address, and Contact Information	Payment Amount	Type of Work/Commodity (Include NAICS Code)

Signature

Printed Name

Title

Date
