



FAYETTEVILLE PUBLIC WORKS COMMISSION

PROCUREMENT DEPARTMENT

<https://www.faypwc.com/bids/>

Bid Addendum

PWC Number: PWC2324035

Bid Title : Relay Control Houses

Bid Opening Date and Time: Thursday, February 1, 2024 at 2:00 P.M. ET

Addendum Number: I

Addendum Date: January 17, 2024

Procurement Advisor: *Victoria McAllister, Procurement Manager*

procurement@faypwc.com

-
1. Return one properly executed copy of this addendum with bid response or prior to the Bid Opening Date/Time listed above.

 2. The solicitation is hereby modified as follows:
 - M1. IFB SCHEDULE**
The bid opening date and time has been extended until **Thursday, February 1, 2024 at 2:00 P.M. ET.**

 - M2. ATTACHMENT A: TECHNICAL SPECIFICATIONS & DRAWINGS**
It was found that the subject referenced section did not include the associated drawings. Those drawings have been included in this addendum for reference.

 - M3. ATTACHMENT B: BID PRICING FORM**
The line items on the bid pricing form to reflect the correct dimensions. The bid pricing form description has been updated. Bidders must use the form attached to this addendum upon submission.

Failure to acknowledge receipt of this addendum may result in rejection of the response.

Check ONE of the following options:

- Bid has not been mailed. Any changes resulting from this addendum are included in our bid response.
- Bid has been mailed. No changes resulted from this addendum.
- Bid has been mailed. Changes resulting from this addendum are as follows:

Execute Addendum:

Offeror: _____

Authorized Signature: _____

Name and Titled (Typed): _____

Date: _____

1

Booth & Associates, LLC
Drawing List

**PUBLIC WORKS COMMISSION
FAYETTEVILLE, NORTH CAROLINA**

**SPECIFICATIONS AND BID DOCUMENTS
FOR A PREFABRICATED RELAY CONTROL HOUSE FOR THE
CUMBERLAND ROAD SUBSTATION AND PO HOFFER SUBSTATION**

LIST OF DRAWINGS

The work shall conform to the following Drawings by Booth and Associates, LLC, 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 HOUSE

Sheet No.	Title
CH1 of 2	Control House Plan & Sections
CH2 of 2	Control House Details
E037	AC-1 & AC-2 Panels Interconnection Diagram
E038	DC Breaker Panels Interconnection Diagram
E039	Switchboard No. 1 Interconnection Diagram
E040	Switchboard No. 2 Interconnection Diagram
E041	Switchboard No. 3 Interconnection Diagram
E042	Switchboard No. 4 Interconnection Diagram
E052	Termination Cabinet Interconnection Diagram
C3	Conduit and Cable Schedule

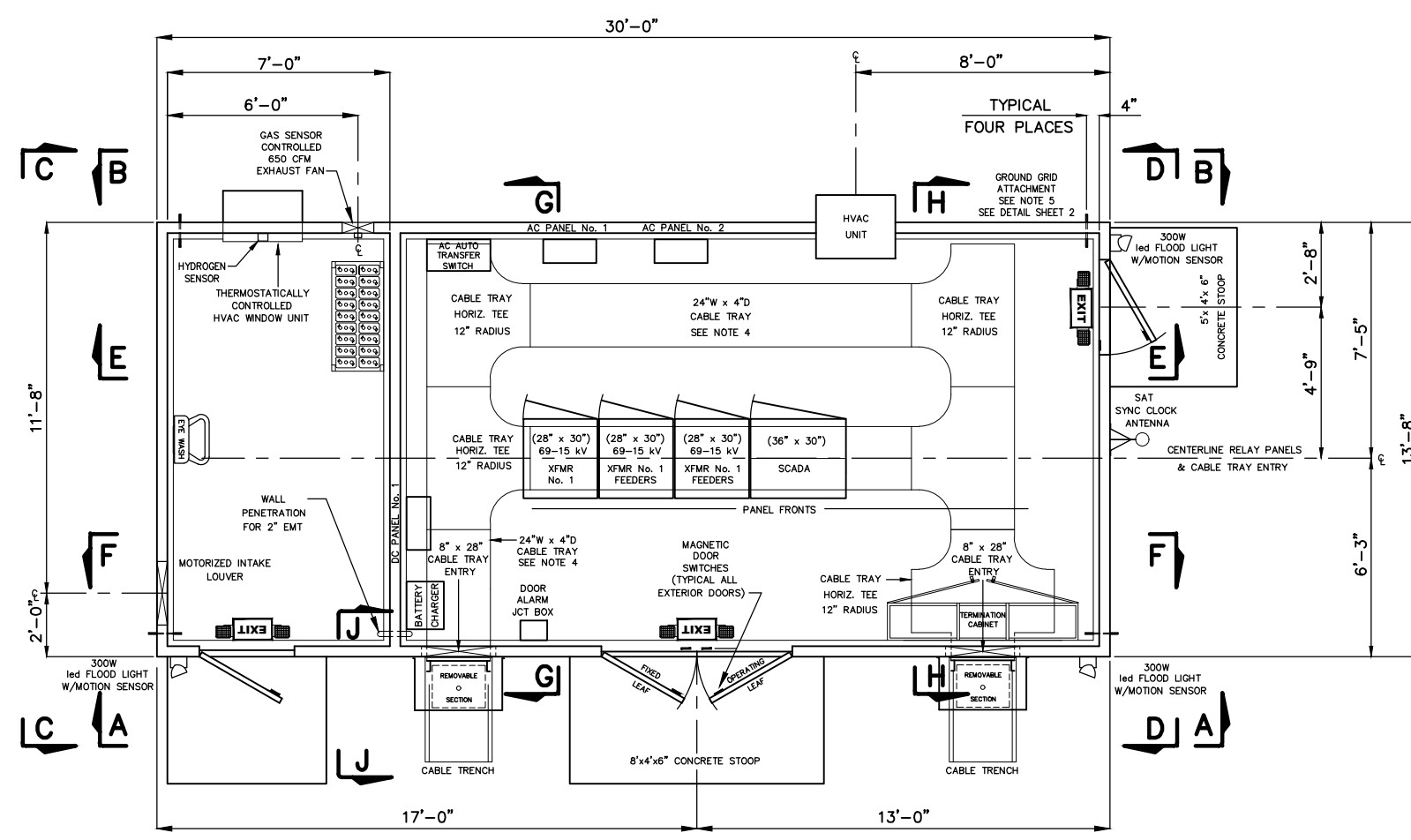
CUMBERLAND RD.
DRAWINGS

NO.	DATE	REVISIONS
A	05/04/23	ISSUED FOR BID
B	07/10/24	ISSUED FOR BID

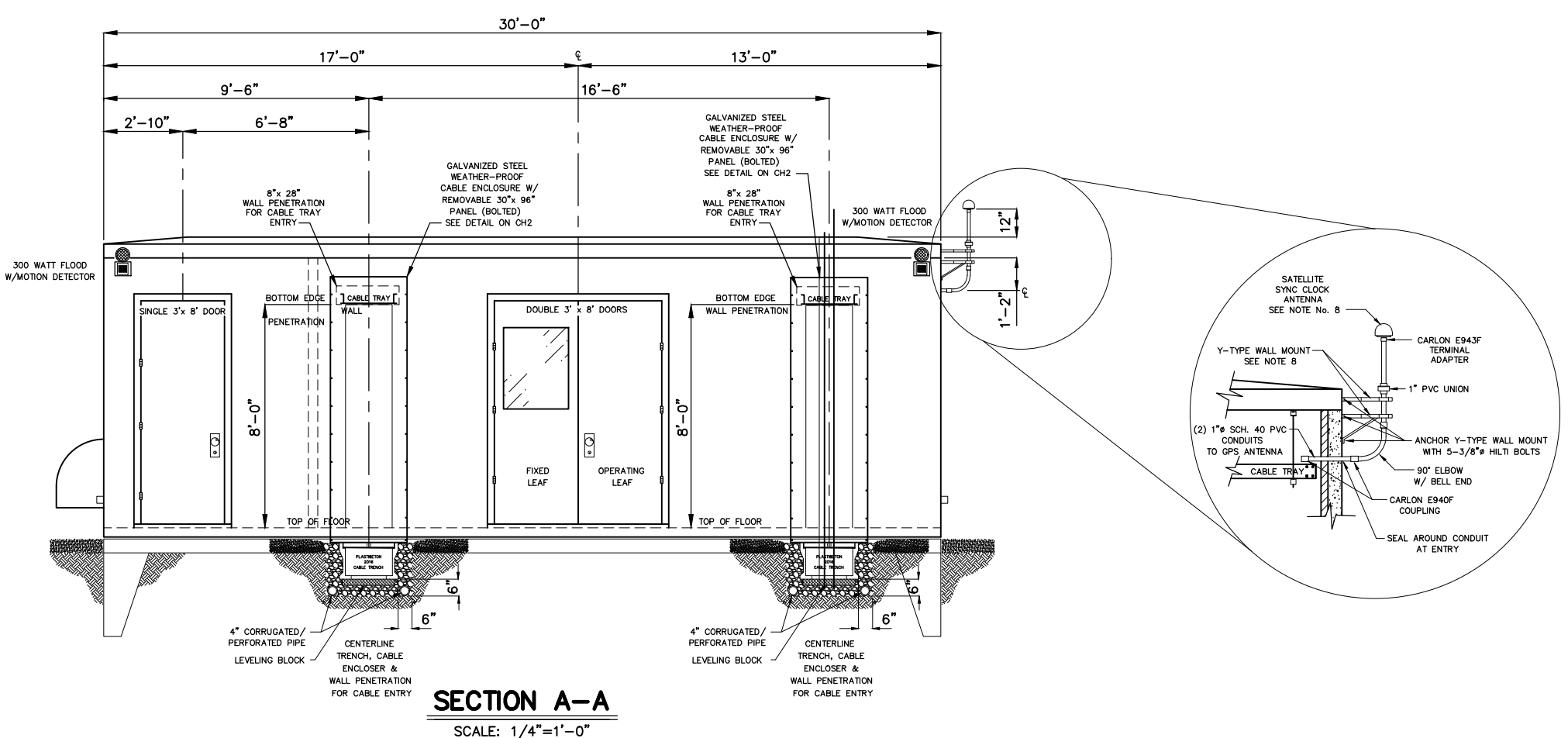
PROJECT NAME:
**CUMBERLAND ROAD
 69 TO 15 X 25 KV SUBSTATION**

DRAWING TITLE:
CONTROL HOUSE PLAN AND SECTIONS

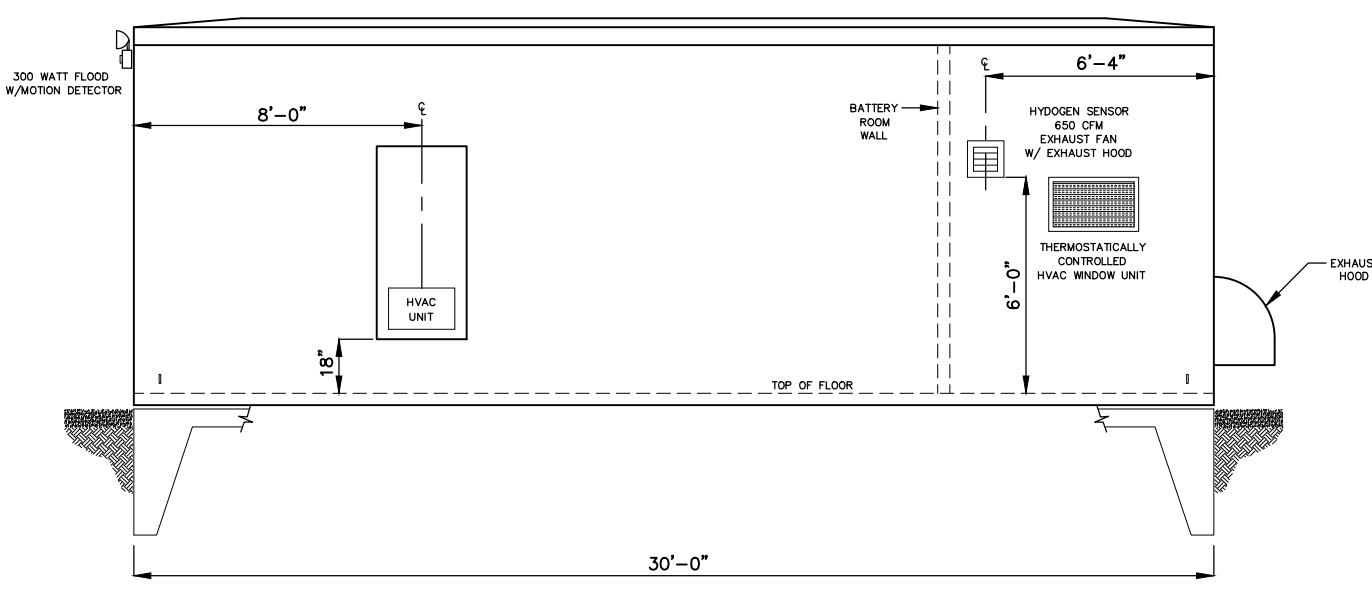
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CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	3/16"=1'-0"
FILE NUMBER:	12510
SHEET:	



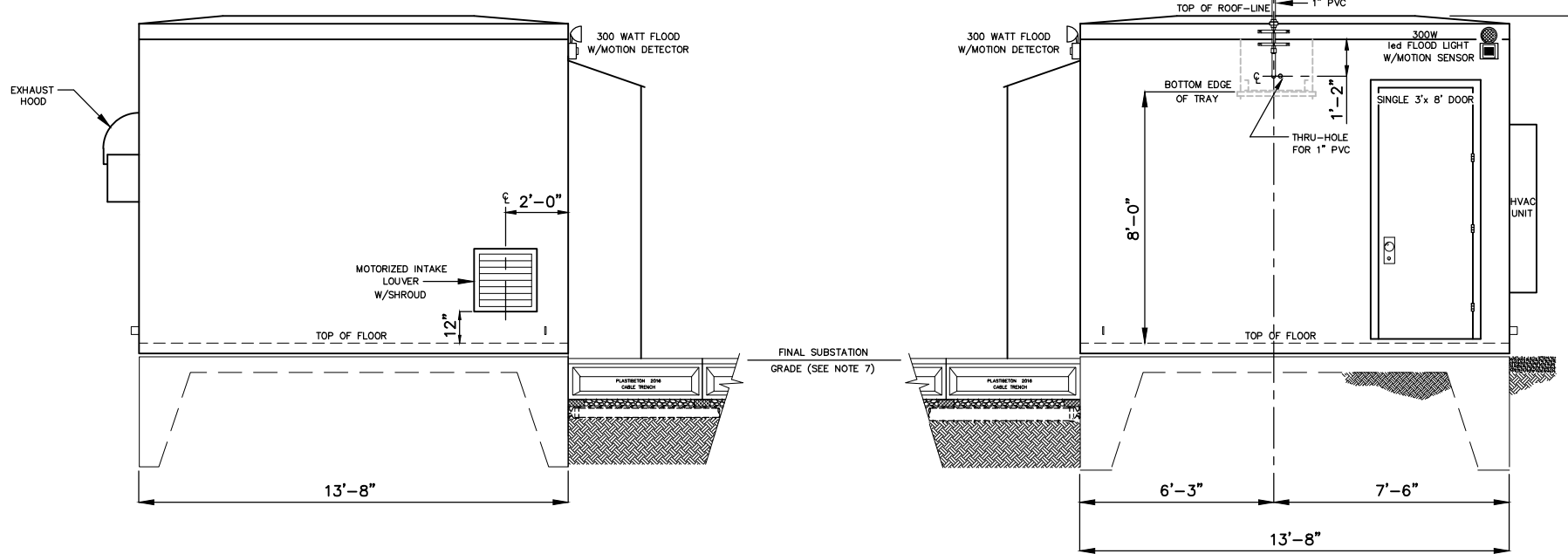
PLAN VIEW
 SCALE: 1/4"=1'-0"



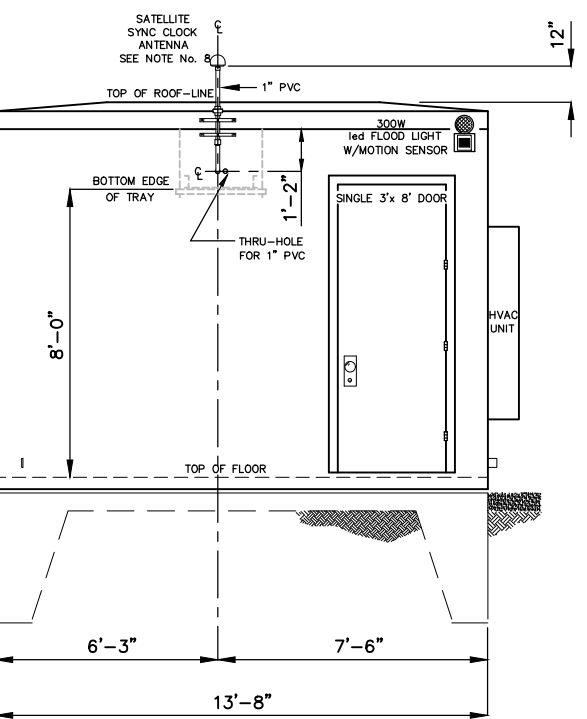
SECTION A-A
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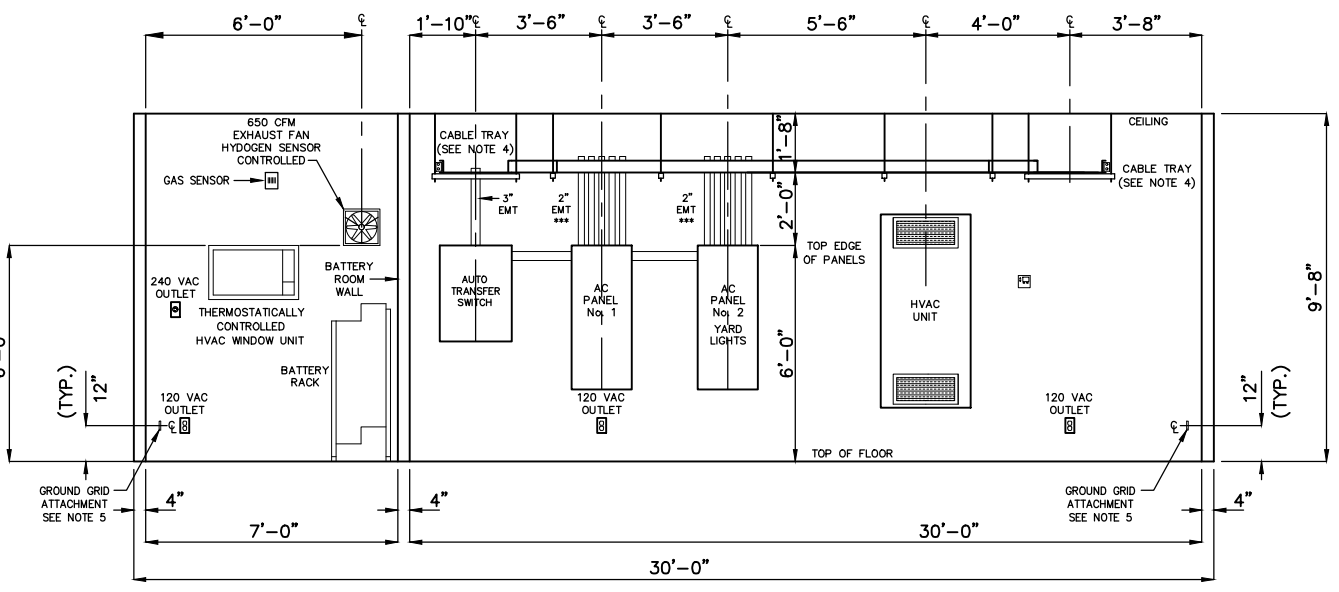
SECTION B-B
 SCALE: 1/4"=1'-0"



SECTION C-C
 SCALE: 1/4"=1'-0"

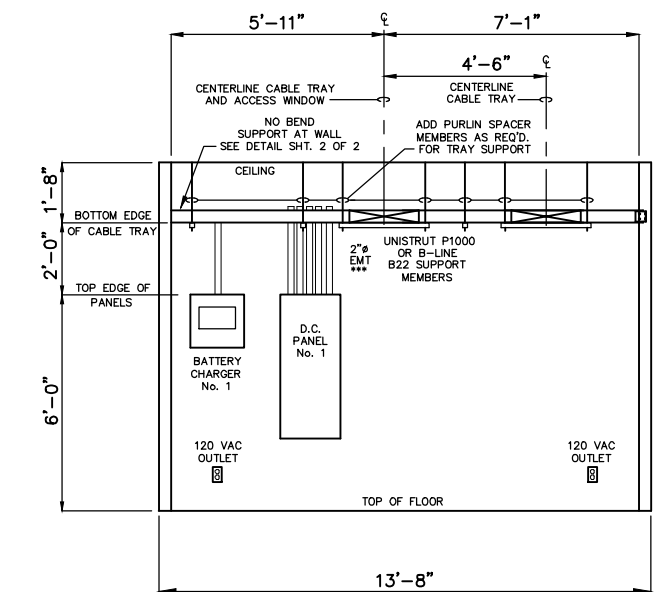


SECTION D-D
 SCALE: 1/4"=1'-0"

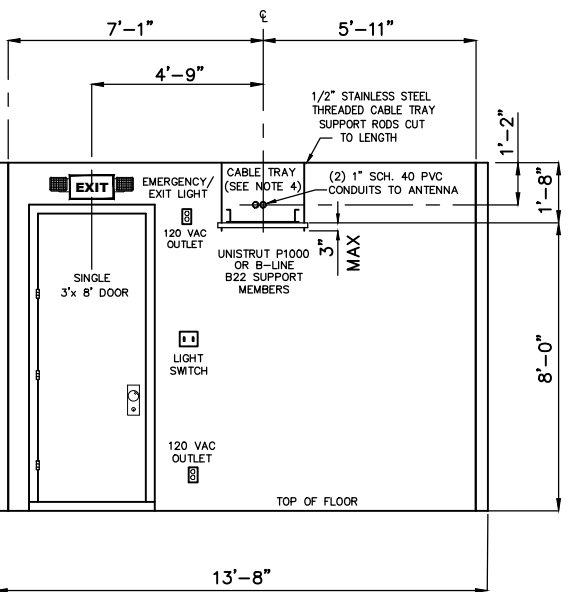


SECTION E-E
 SCALE: 1/4"=1'-0"

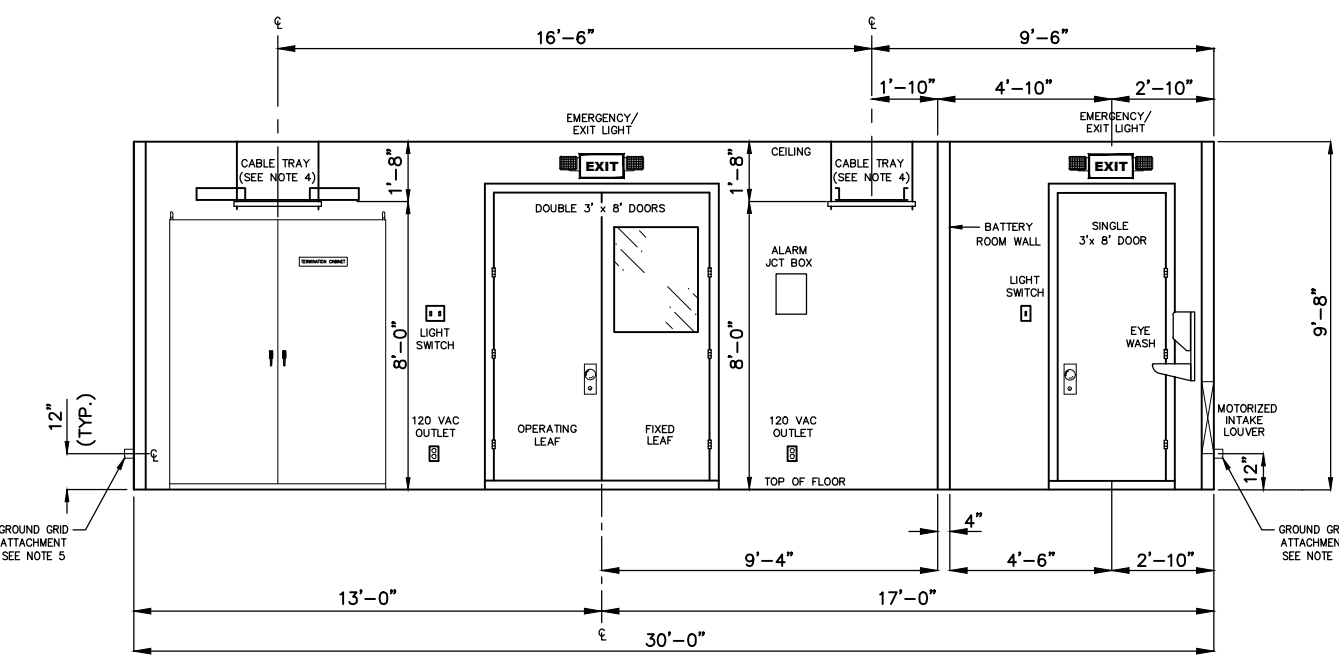
*** BUILDING CONTRACTOR TO
 INSTALL AS MANY 2" EMT CONDUITS
 AS WILL PRACTICALLY FIT FROM
 TOP OF PANELS TO CABLE TRAY.
 SEE EMT TERMINATION DETAIL AT CABLE TRAY
 SHEET CH2 OF 2
 SUBSTATION CABLEING TO BE RUN BY OTHERS



SECTION G-G
 SCALE: 1/4"=1'-0"



SECTION H-H
 SCALE: 1/4"=1'-0"



SECTION F-F
 SCALE: 1/4"=1'-0"

LEGEND

- led EMERGENCY EXIT LIGHTING UNIT WITH SELF-CONTAINED BATTERY AND CHARGING CIRCUIT.
- SINGLE RECEPTACLE 240V, GROUND.
- DUPLEX RECEPTACLE 120V, 20AMP, GROUND.

NOTES:

1. PANELS TO BE GROUNDED (VIA CABLE TRAY) TO SUBSTATION GRID AT TWO SEPARATE LOCATIONS ON DIAGONALLY OPPOSITE CORNERS. BONDING CONDUCTOR SHALL BE 2/0 AWG STRANDED COPPER.
2. ALL ENTRANCES TO BUILDING SHALL BEAR "NO SMOKING OR OPEN FLAME" WARNING SIGNS ON EXTERIOR.
3. BUILDING CONTRACTOR SHALL FURNISH AND INSTALL CONTROL HOUSE, CABLE TRAY, SUPPORT ROOFS, HVAC UNITS, AND COMPLETE ELECTRICAL WIRING FOR BUILDING OUTLETS, SWITCHES, RECEPTACLES, VENTILATION AND LIGHT FIXTURES.
4. CABLE TRAY STRAIGHT SECTIONS AND FITTINGS TO BE NEMA LOAD/SPAN RATING 12C, ALUMINUM LADDER-TYPE 24" WIDE, 3" DEEP W/4" WALLS & 9" RING SPACING, CHAUFANT SYSTEM NO "24" OR APPROVED EQUAL.
5. HOUSE TO BE ATTACHED TO STATION GROUND GRID AT INDICATED CORNERS BY USE OF 1/4" x 3" COPPER BUS BAR, INSTALLED THROUGH WALL 12" ABOVE FLOOR LEVEL. 4-HOLE NEMA SPACING, INSIDE & OUT. SEE GROUNDING PAD DETAIL ON SHEET 2 OF 2.
6. ALL LIGHTING FOR CONTROL HOUSE SHALL BE led FIXTURES. THIS INCLUDES EXIT, EMERGENCY AND OUTDOOR FLOOD LIGHTING.
7. WHERE THE FINAL SUBSTATION GRADE IS DISTURBED DURING CONSTRUCTION, A TOTAL OF AT LEAST 6" OF STONE (1" OF WASHED STONE PLUS 3" OF CRUSHER RUN) IS TO BE ADDED BACK TO ACHIEVE FINAL SUBSTATION GRADE.
8. HOUSE FABRICATOR TO PROVIDE Y-TYPE STANDOFF BRACKET WITH MOUNTING BOLTS FOR ATTACHMENT OF THE SATELLITE SYNC CLOCK ANTENNA. THE ANTENNA AND COAX CABLE TO BE PROVIDED BY THE OWNER.

EARTHQUAKE DESIGN DATA FOR CONCRETE SHELTERS:

- DESIGN OF THE BUILDING SHALL USE THE SEISMIC PROVISIONS OF ONE OF THE FOLLOWING CODES/STANDARDS:
- 2003 NFPA 5000 BUILDING CONSTRUCTION AND SAFETY CODE.
 - 2002 AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) 7, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
 - 2003 INTERNATIONAL CODE COUNCIL (ICC) INTERNATIONAL BUILDING CODE.
1. SEISMIC IMPORTANCE FACTOR = 1.0 & OCCUPANCY CATEGORY = 1
 2. MAPPED SPECTRAL RESPONSE ACCELERATIONS, SS = 1.85, S1 = 0.10
 3. SITE CLASS = "D"
 4. SPECTRAL RESPONSE COEFFICIENTS SDS = 1.24, SD1 = 0.19
 5. SEISMIC DESIGN CATEGORY = D
 6. ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE PROCEDURE
- THE MANUFACTURER OF THE BUILDING SHALL FURNISH DESIGN CERTIFICATIONS REQUIRED BY 7 CFR 1792.104 SEISMIC ACKNOWLEDGMENTS.

REFERENCE:

- PLAN VIEW 12510 GA1
- FOUNDATION PLAN 12510 FP1, FP2
- CONTROL HOUSE DETAILS 12510 CH2



**PRELIMINARY -
DO NOT USE FOR
CONSTRUCTION**

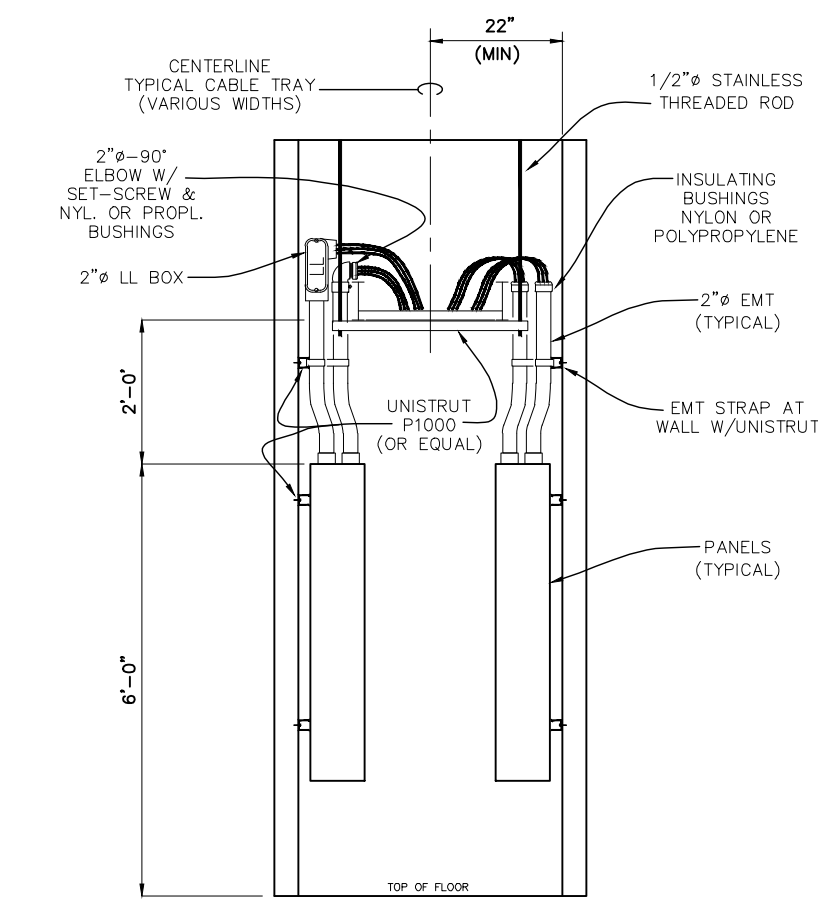
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NO.	REVISIONS	ENG.	DATE
A	ISSUED FOR BID	B/W	05/04/23
B	ISSUED FOR BID	B/W	01/10/24

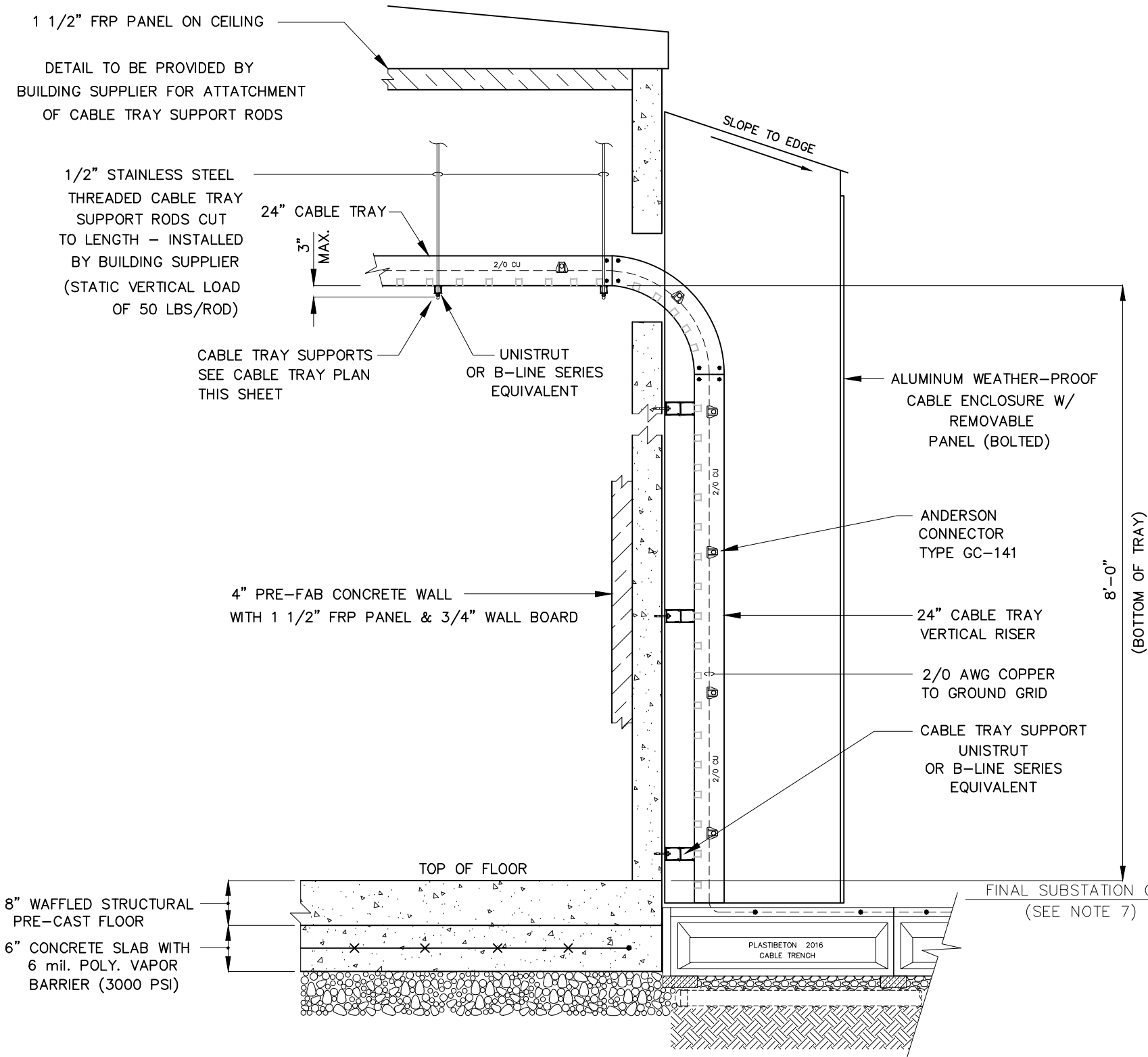
PROJECT NAME:
**CUMBERLAND ROAD
69 TO 15 X 25 kV SUBSTATION**

DRAWING TITLE:
CONTROL HOUSE PLAN AND DETAILS

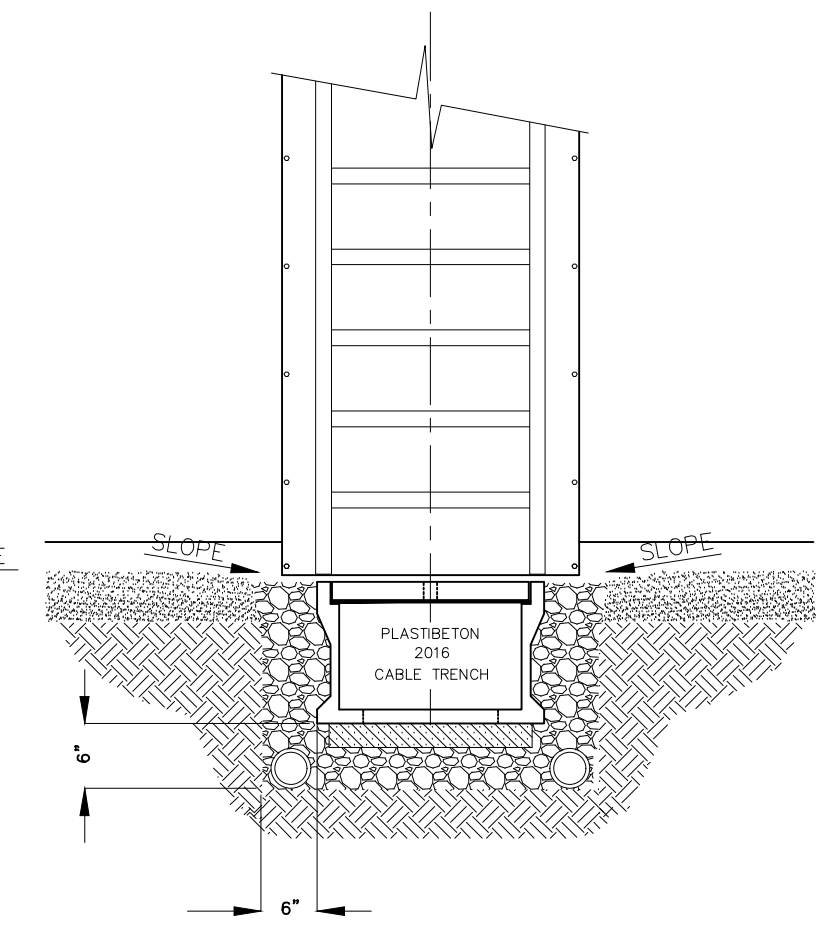
DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	



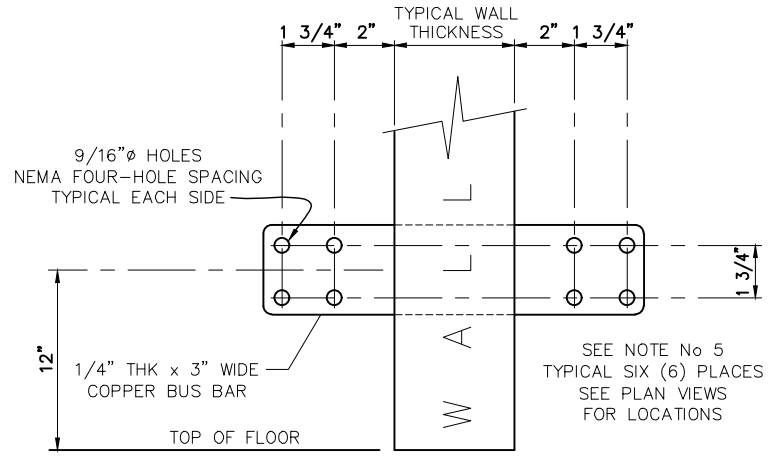
EMT TERMINATION DETAIL AT CABLE TRAY
SHOWING VARIOUS TERMINATION OPTIONS
SCALE: NONE



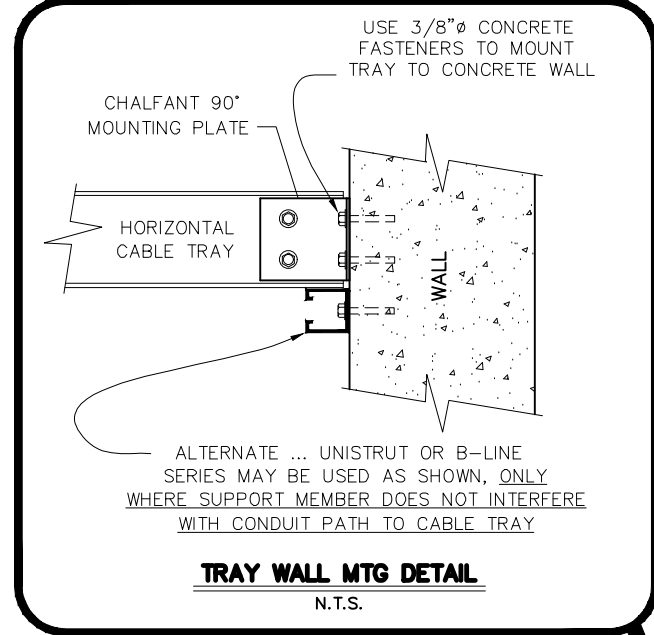
SECTION J-J
SCALE: NONE



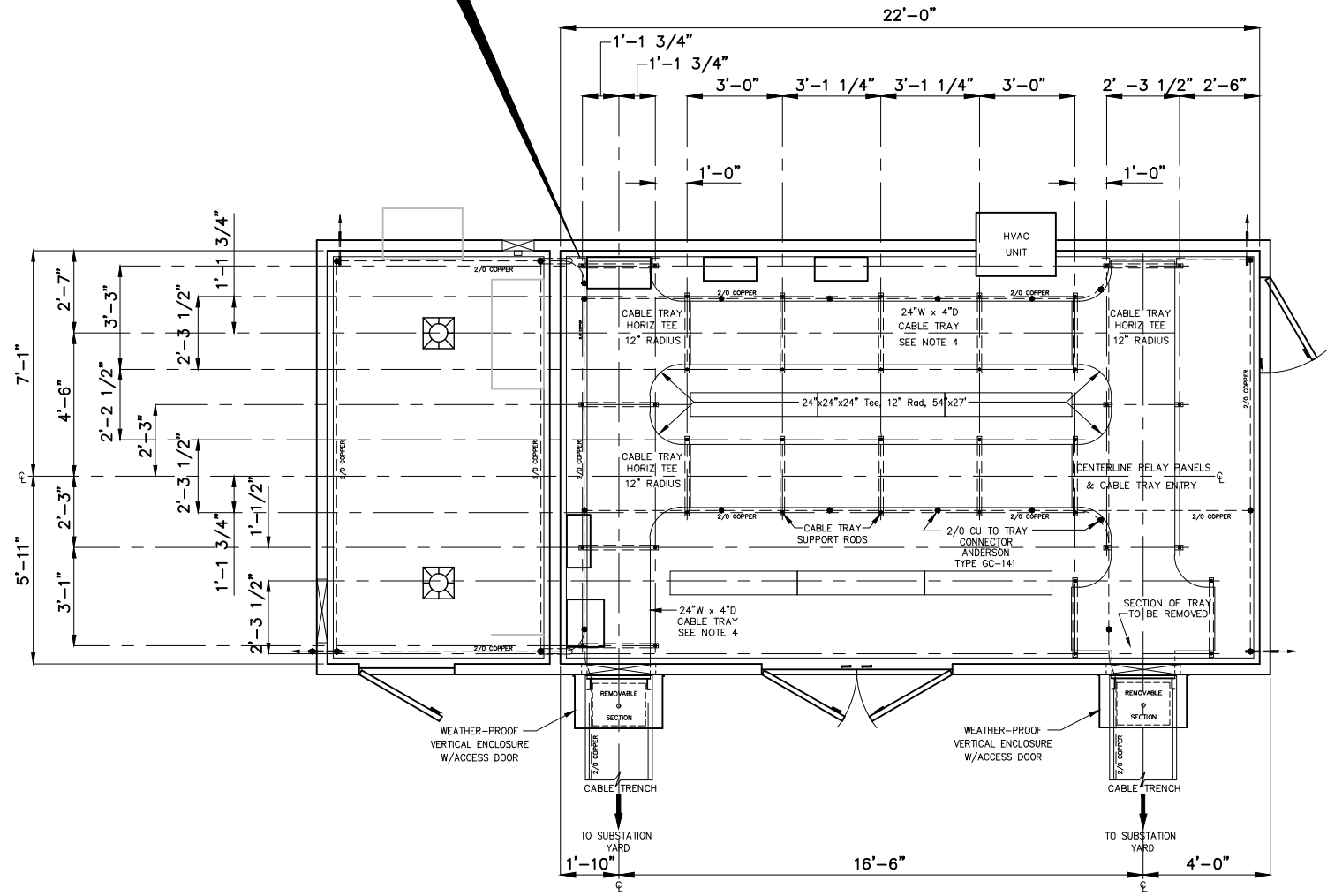
TRAY AT TRENCH
SCALE: NONE



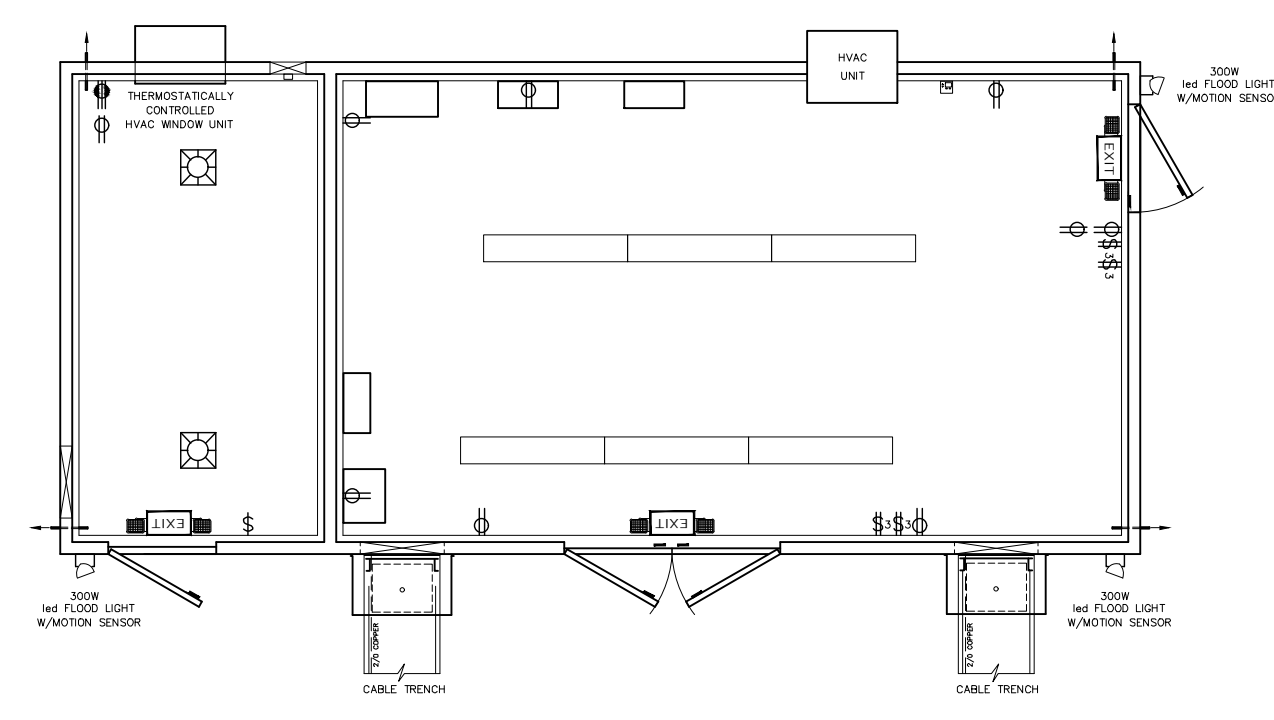
GROUNDING PAD DETAIL
SCALE: NONE



TRAY WALL MTG DETAIL
N.T.S.



CABLE TRAY PLAN
SCALE: 1/4"=1'-0"



ELECTRICAL PLAN
SCALE: 1/4"=1'-0"

ELECTRICAL LEGEND

- ⌘ SINGLE POLE TOGGLE SWITCH 20AMP, 120V.
- ⌘ SINGLE POLE DOUBLE THROW 3-WAY TOGGLE SWITCH 20AMP, 120V.
- ⌘ DUPLEX RECEPTACLE 120V, 20AMP
- ⌘ SINGLE RECEPTACLE 240V, GROUNDED.
- ⌘ TWO TUBE led FIXTURE 120V.
- EXIT led EMERGENCY EXIT LIGHTING UNIT WITH SELF-CONTAINED BATTERY AND CHARGING CIRCUIT.
- ⌘ THERMOSTAT
- ⌘ 120 V.A.C. 100 WATT EQUIVALENT led FIXTURE (EXPLOSION PROOF).
- ⌘ 120 V.A.C. 300 WATT EQUIVALENT led FLOOD LIGHT W/ MOTION SENSOR.
- ⌘ THERMOSTAT
- ⌘ MAGNETIC DOOR SWITCH

REFERENCE:

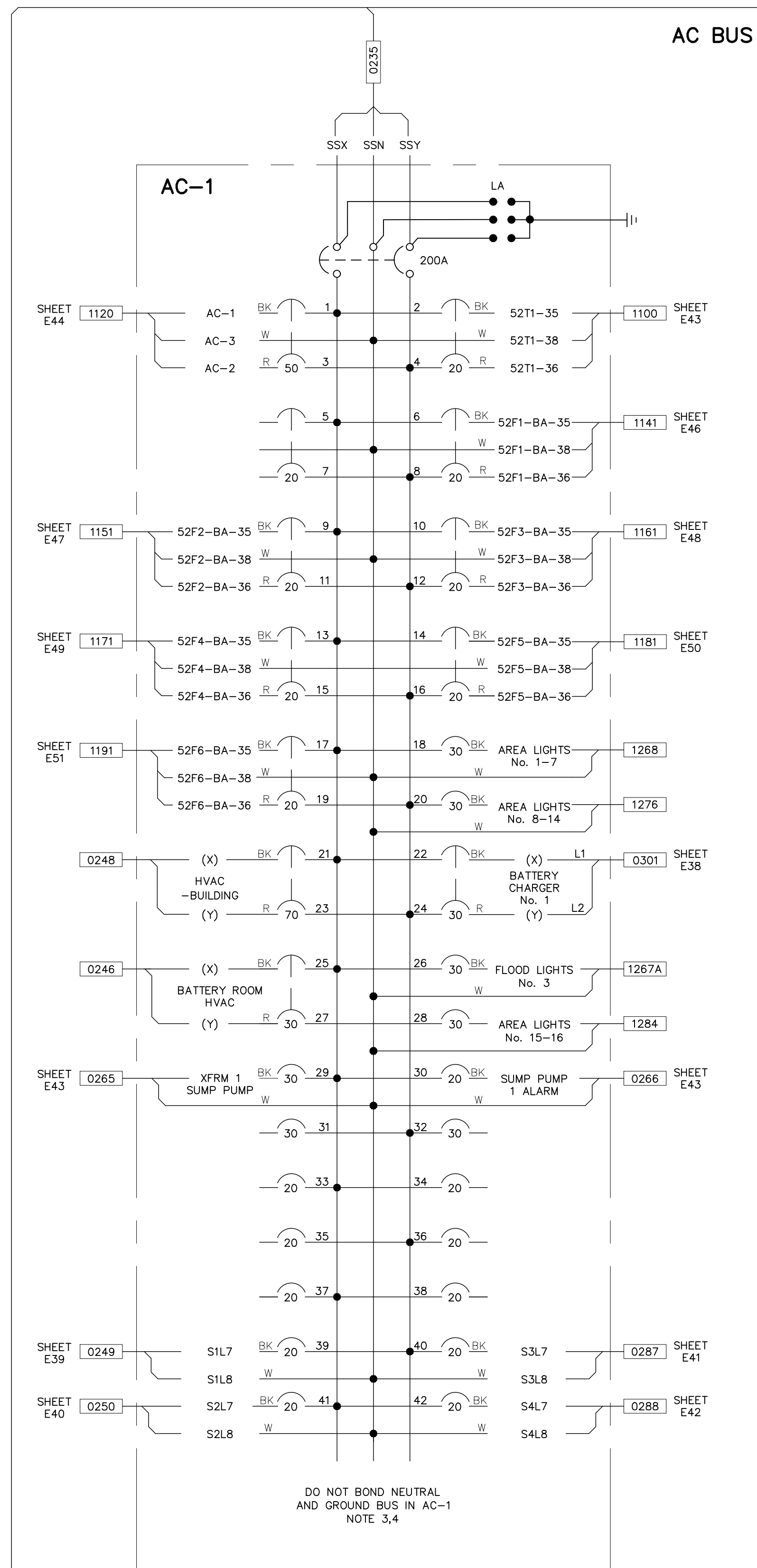
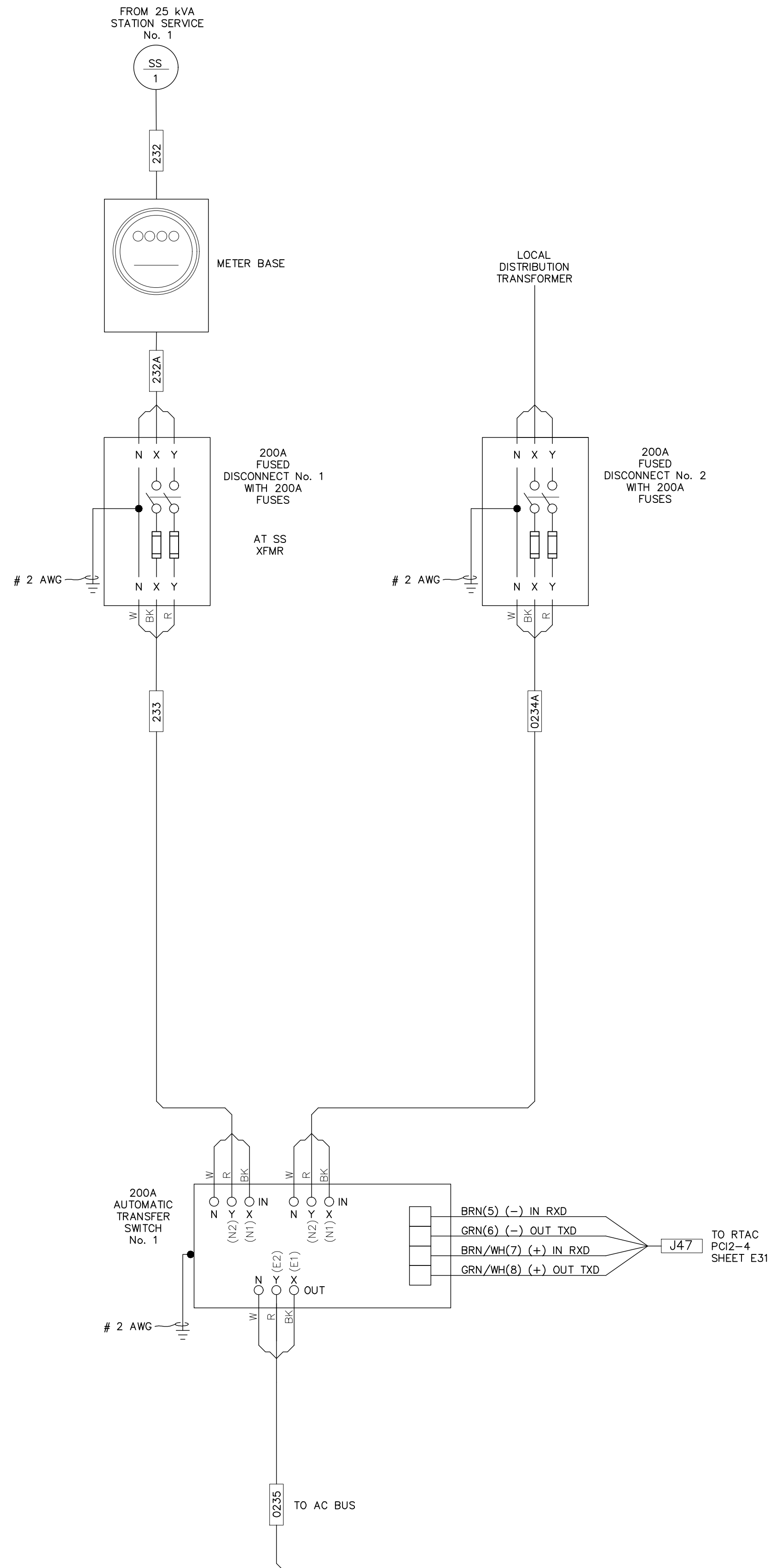
CONTROL HOUSE PLAN & SECTIONS 12510 CH1
GROUNDING PLAN & DETAILS 12510 GI, G2

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:	



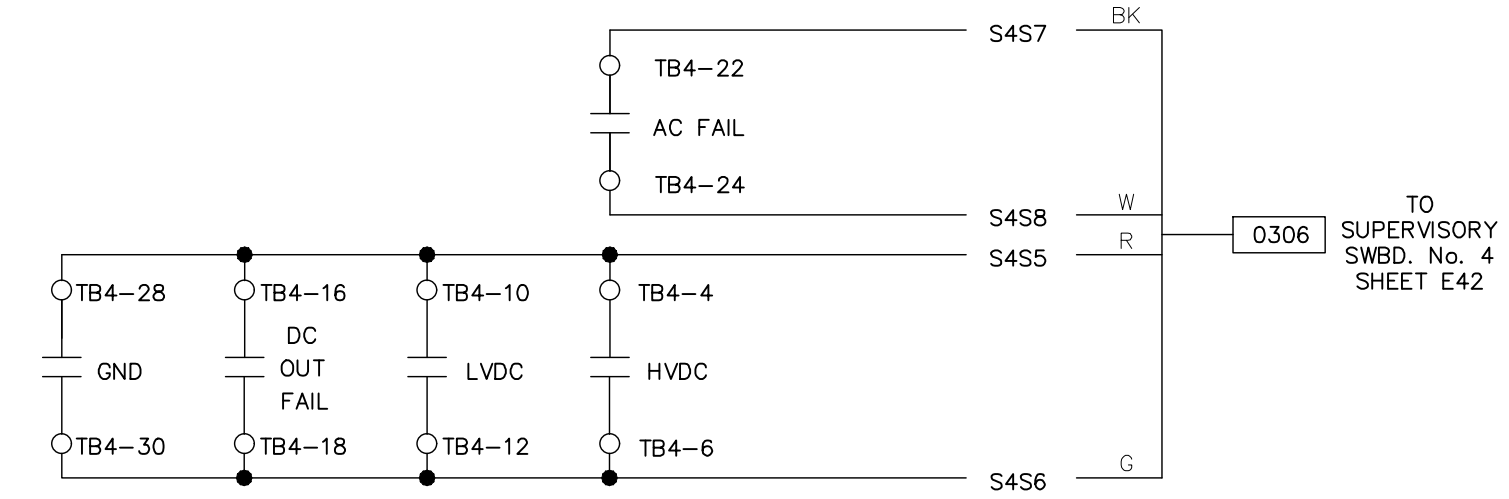
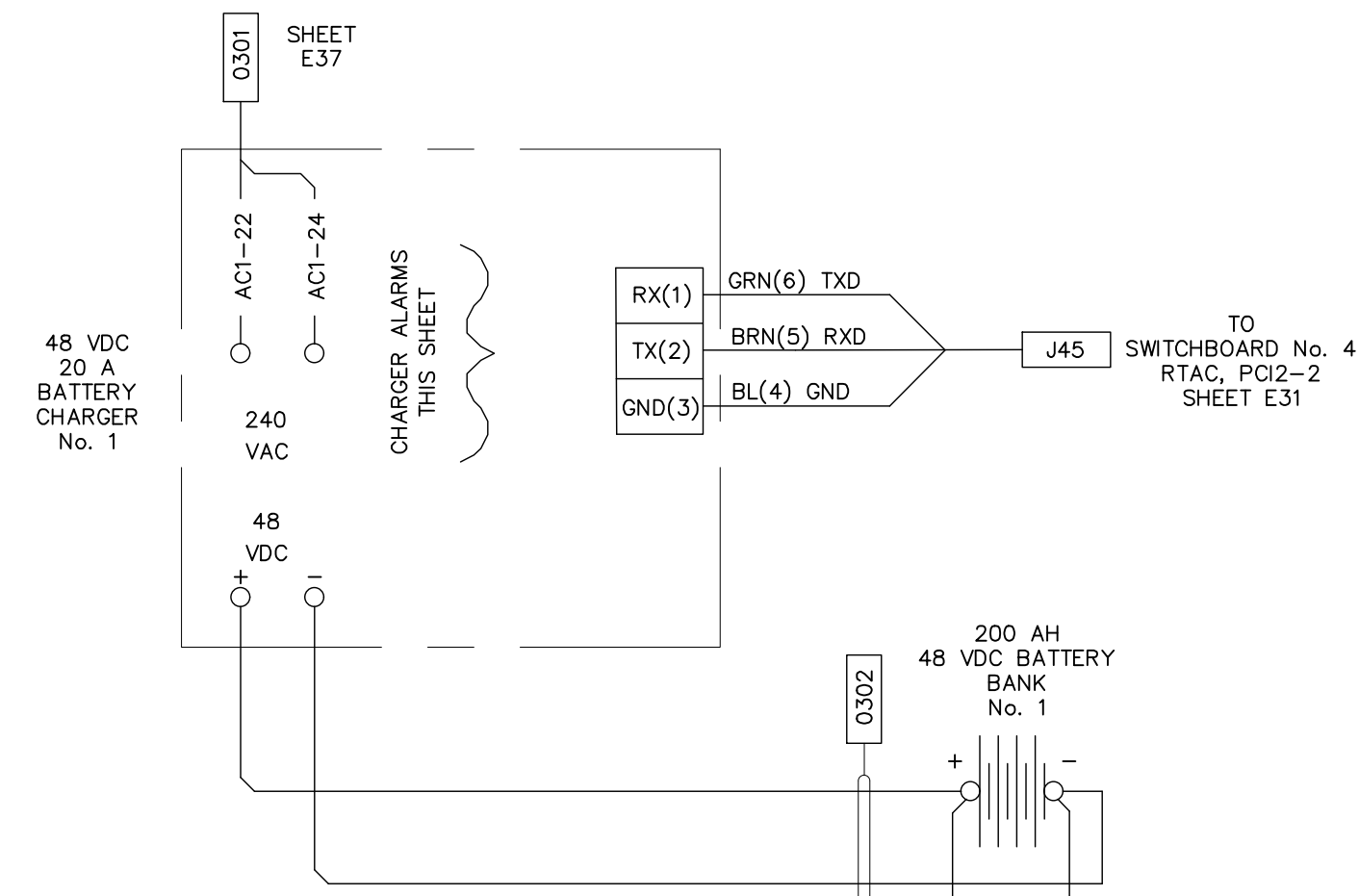
NOTES:

- 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.

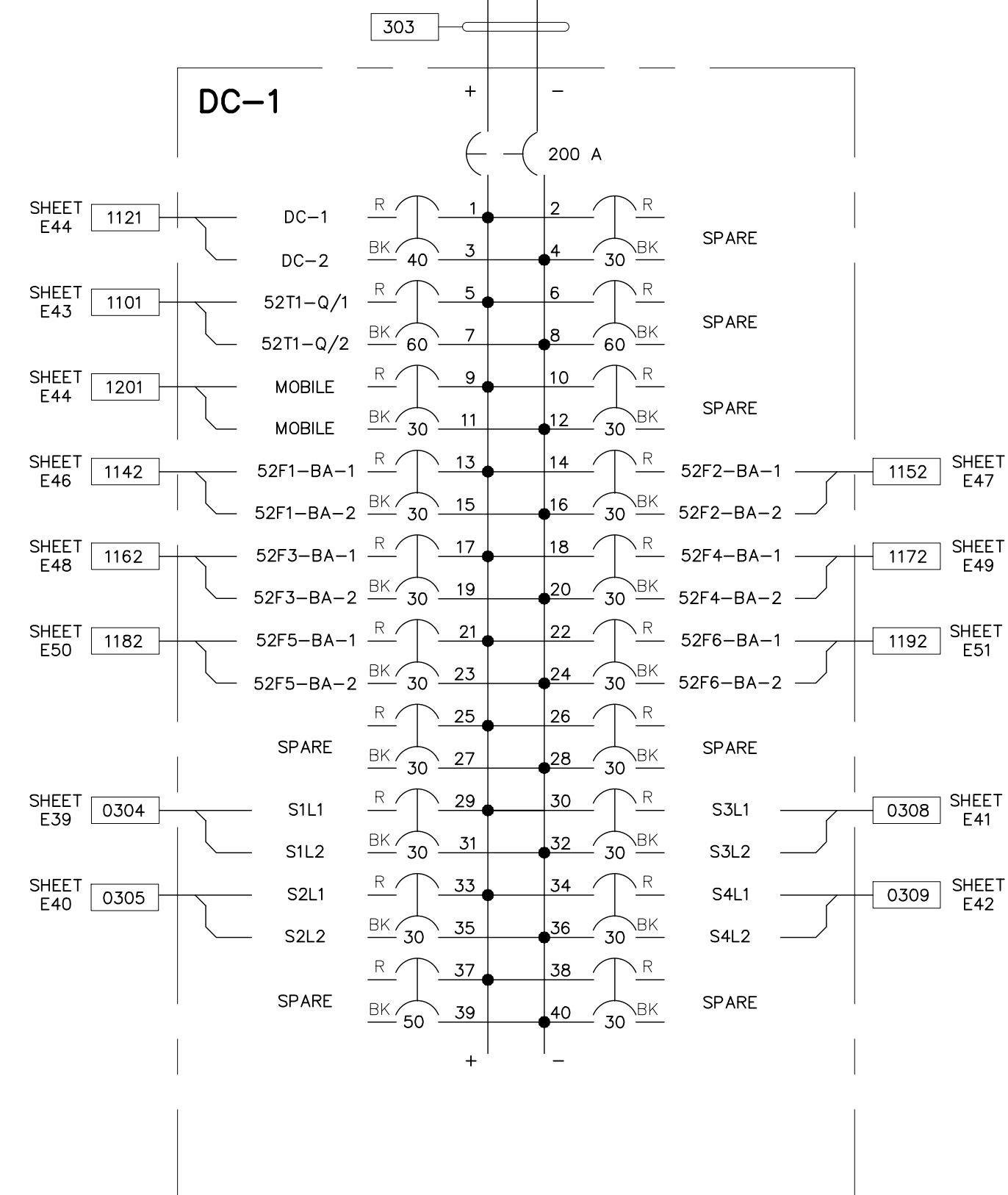
DEVICE CODES

- | | |
|------|--------------------------------|
| 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 -
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CONSTRUCTION

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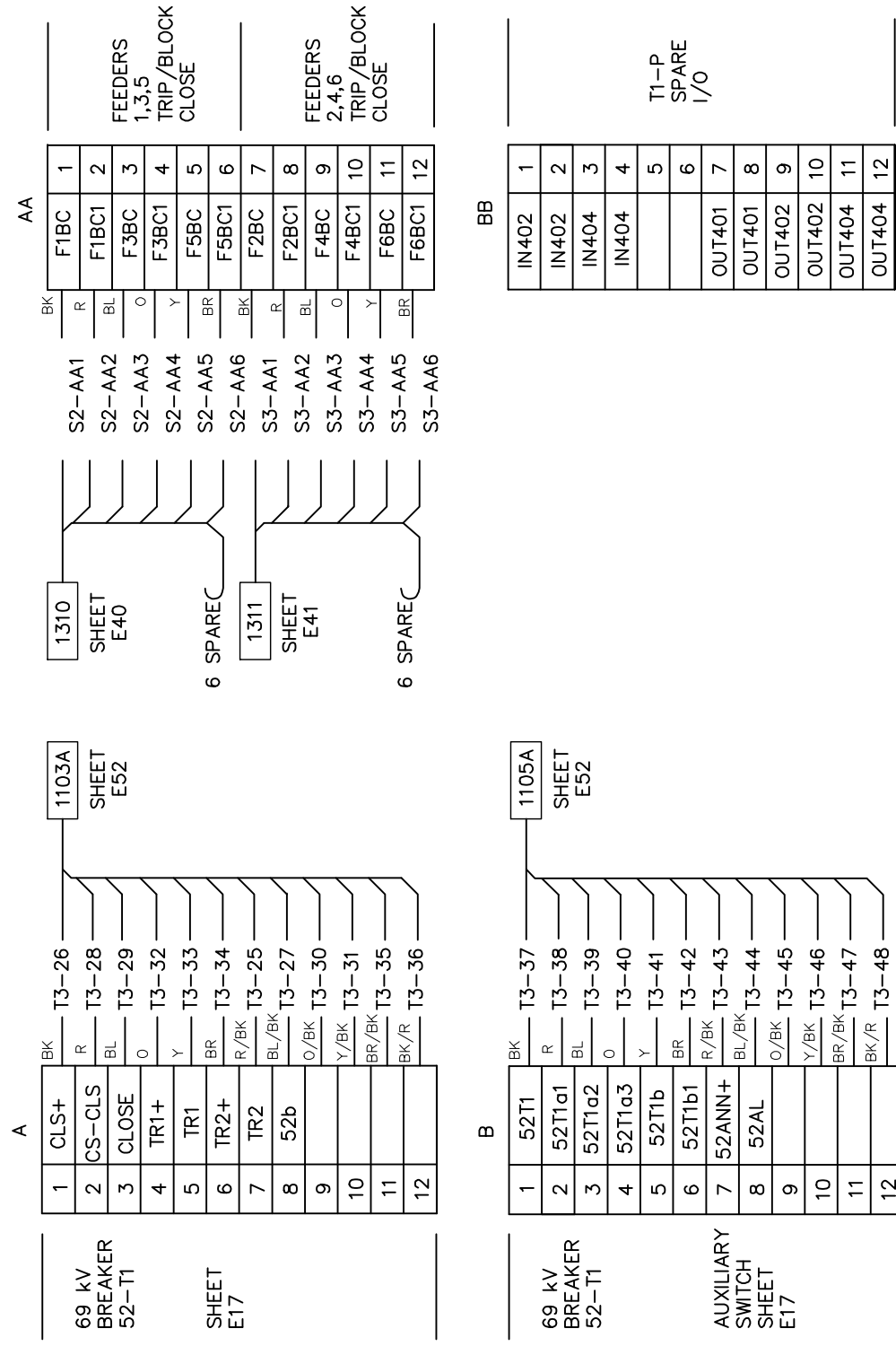
NO.	ISSUED FOR	REVISIONS	ENG.	DATE
1	A		EWJ	09/24/2023

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

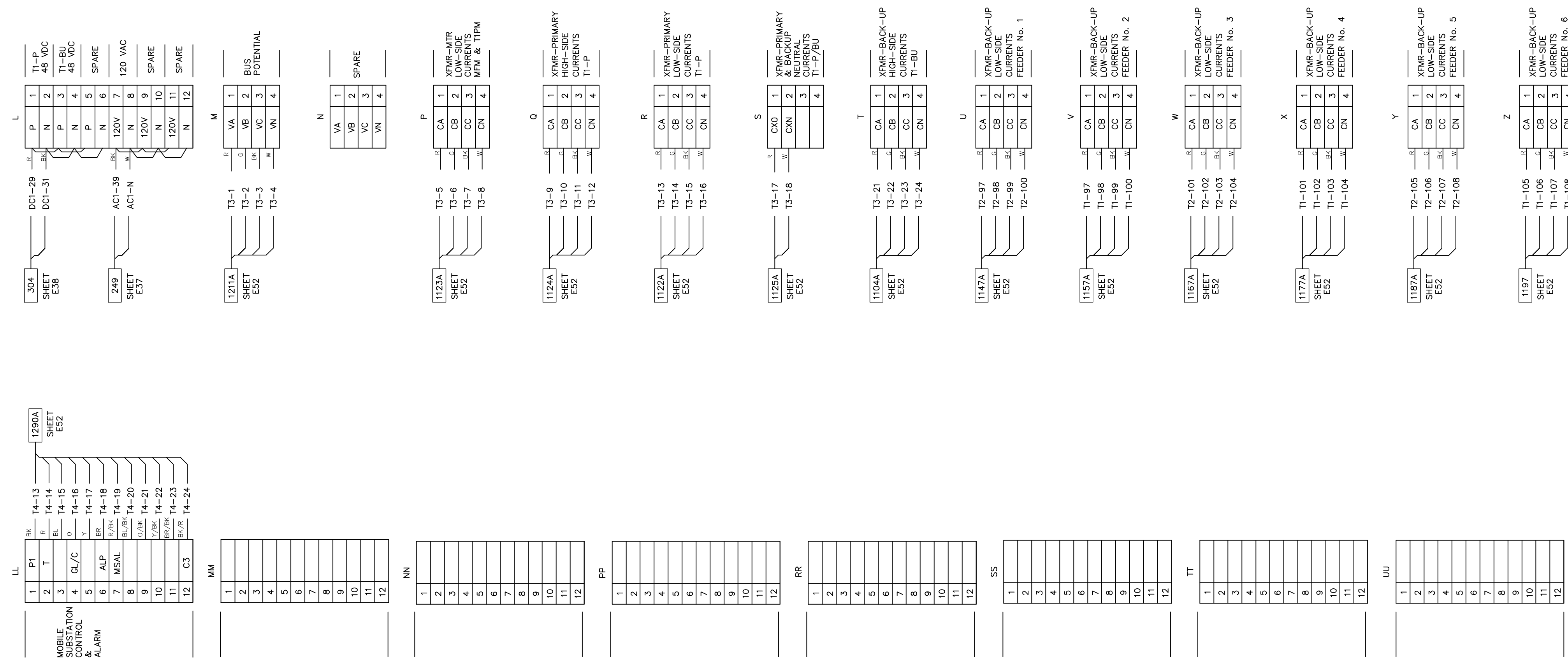
DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12510
SHEET:	

SWITCHBOARD No. 1 - S1
69 kV LINE No. 1

LEFT SIDE



RIGHT SIDE



PRELIMINARY

FRONT
SWITCHBOARD No. 1 - S1
PANEL REAR VIEW

CONTROL AND INDICATION

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

CT & PT

A	R
B	G
C	BK
N	W

AC

X	BK
Y	R
N	W
G	O

DC

POS	R
NEG	BK

WIRE COLOR CODE

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

DRAWING TITLE:
SWITCHBOARD NO.1
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

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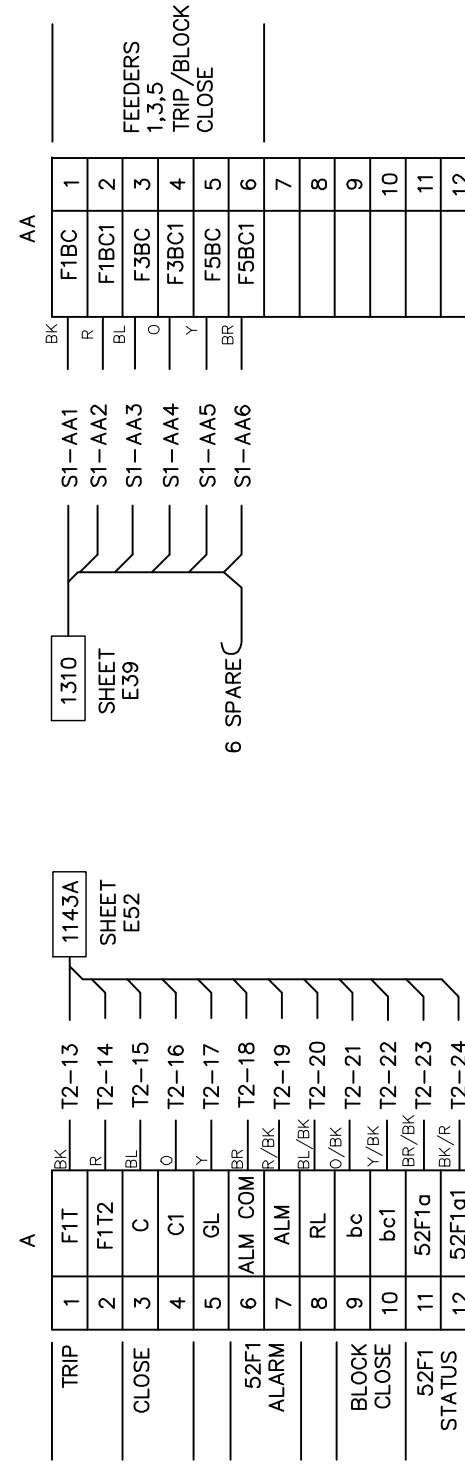
PA Booth & Associates
2209 Rewoods Drive Sula, Raleigh, NC 27627
NC F-021

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

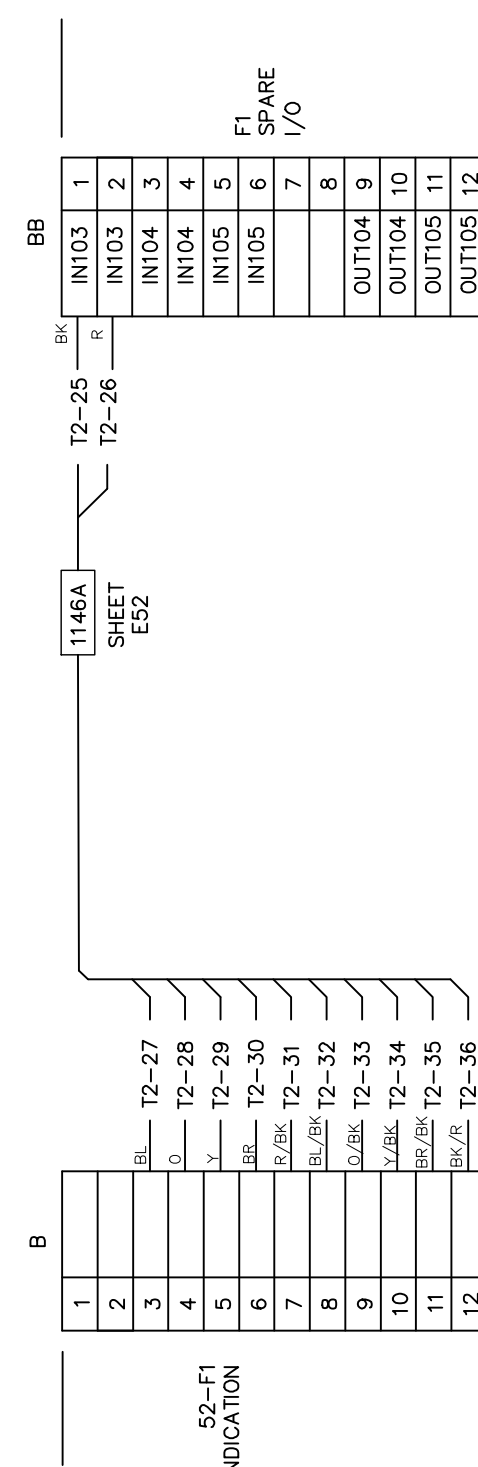


SWITCHBOARD No. 2 - S2
15 kV FEEDERS No. 1, 3, 5

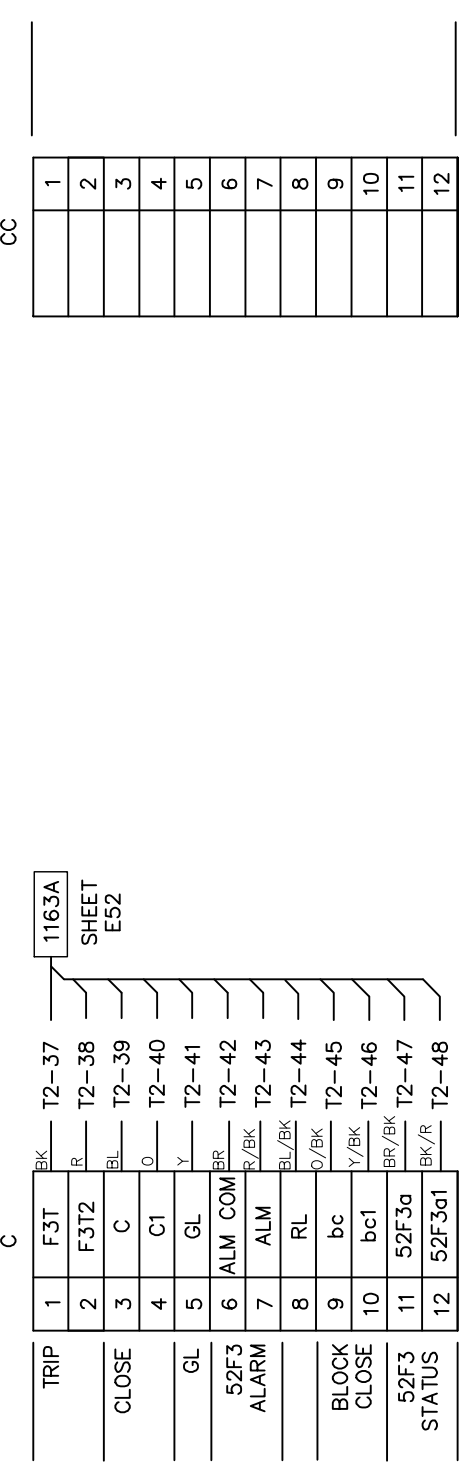
LEFT SIDE



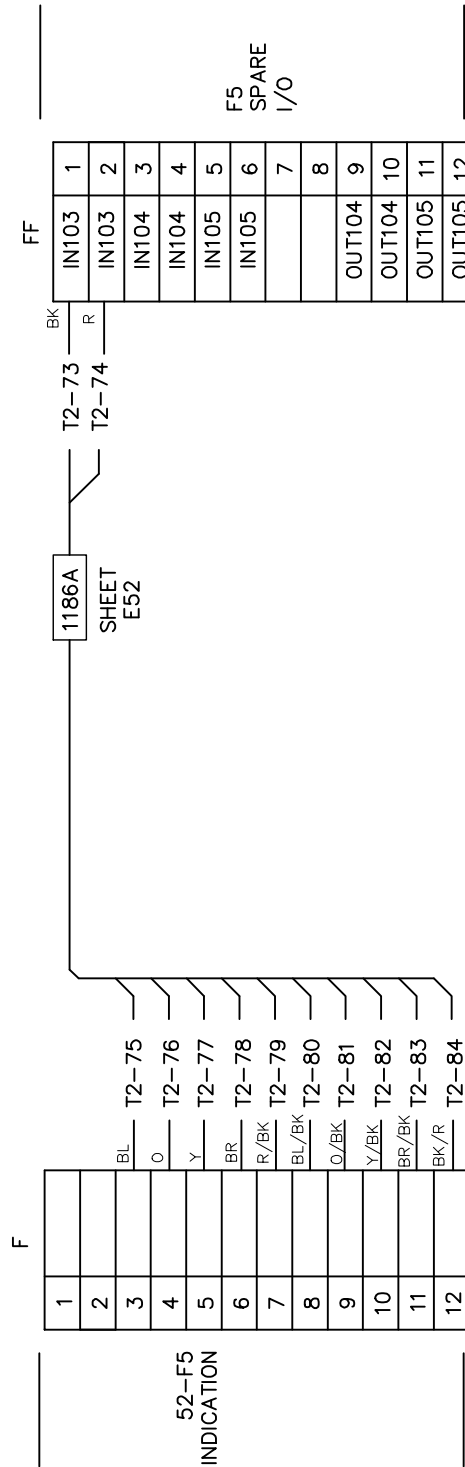
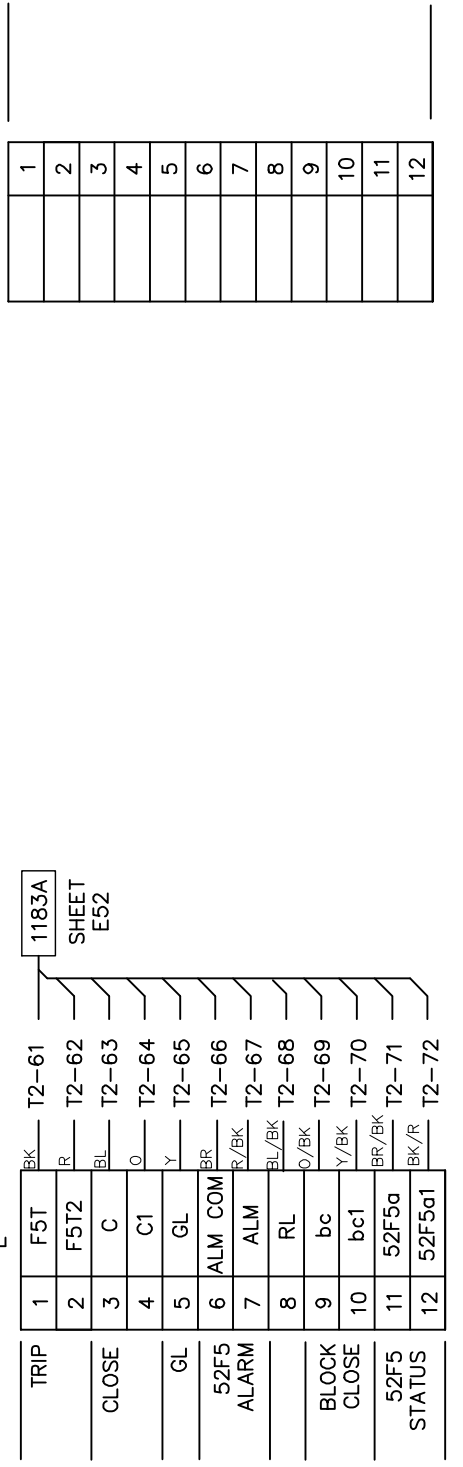
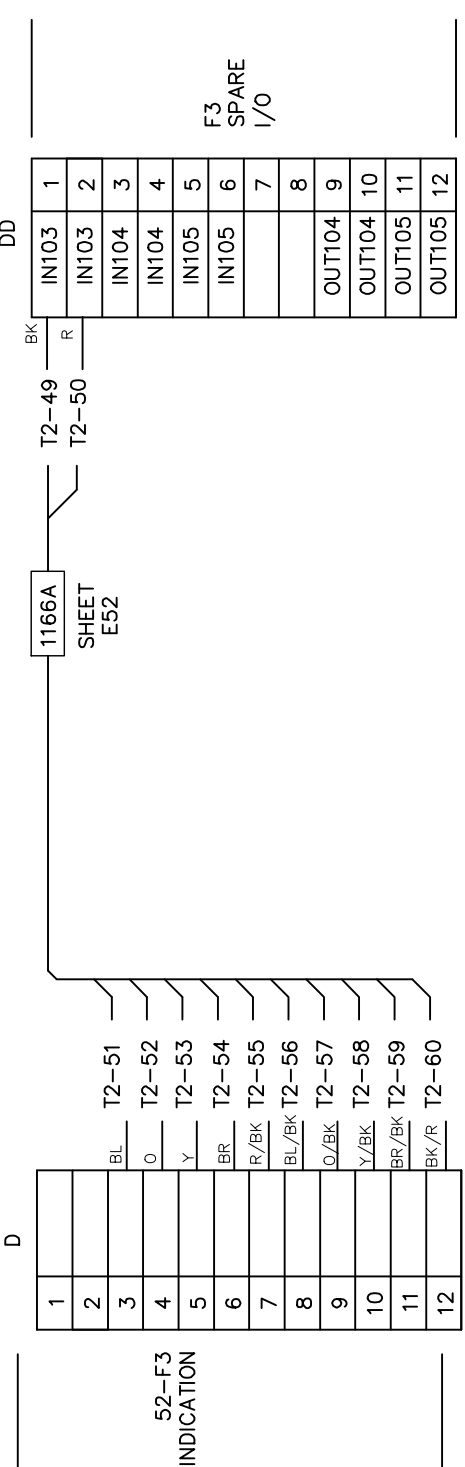
BKR No. 52F1



BKR No. 52F3

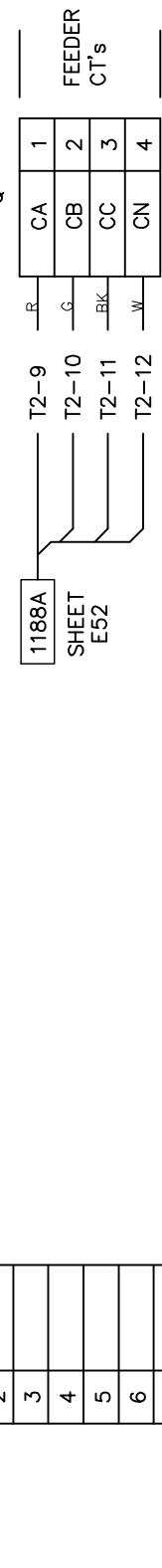
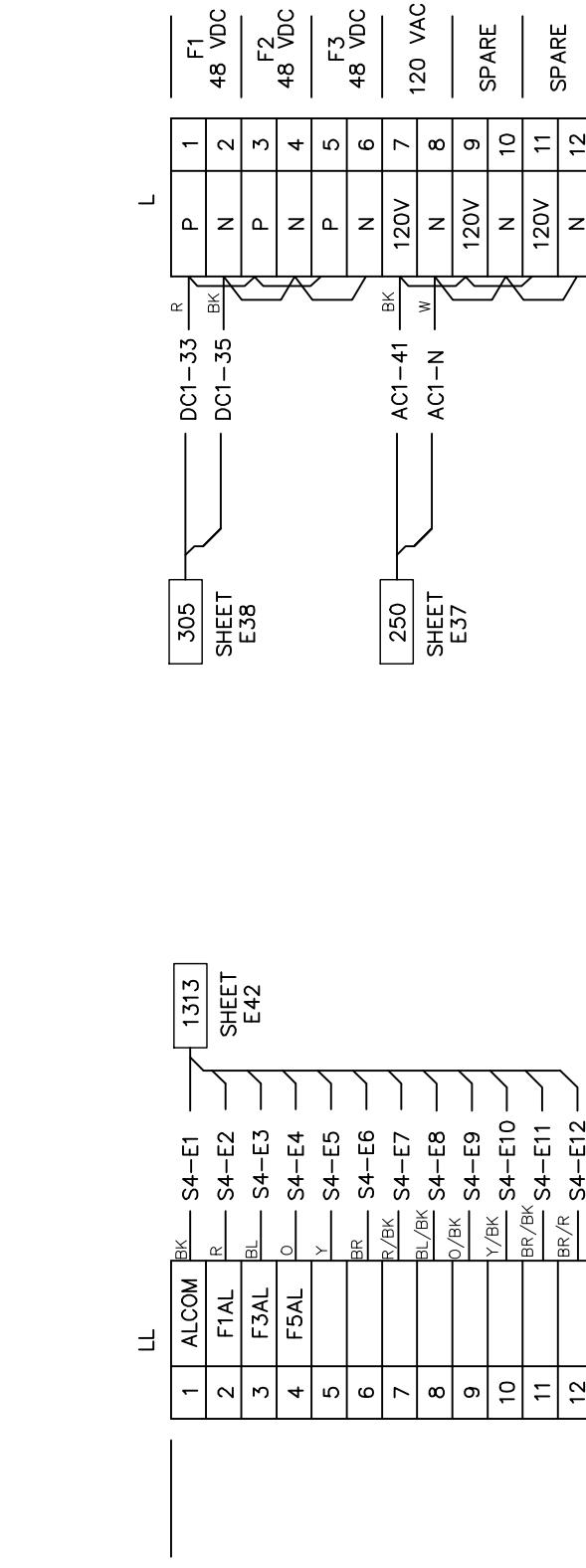


BKR No. 52F5



PRELIMINARY

RIGHT SIDE



LEFT SIDE

FRONT

RIGHT SIDE

SWITCHBOARD No. 2 - S2
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	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

Table A: TRIP, CLOSE, GL, ALARM, BLOCK, 52F4, 52F20, STATUS indicators for terminals T1-13 to T1-24.

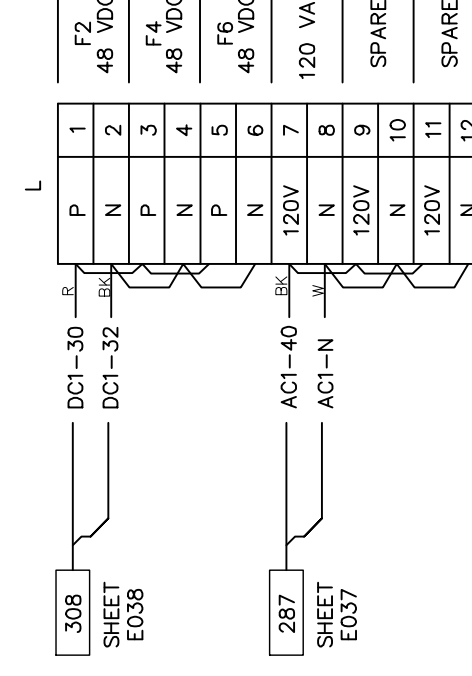
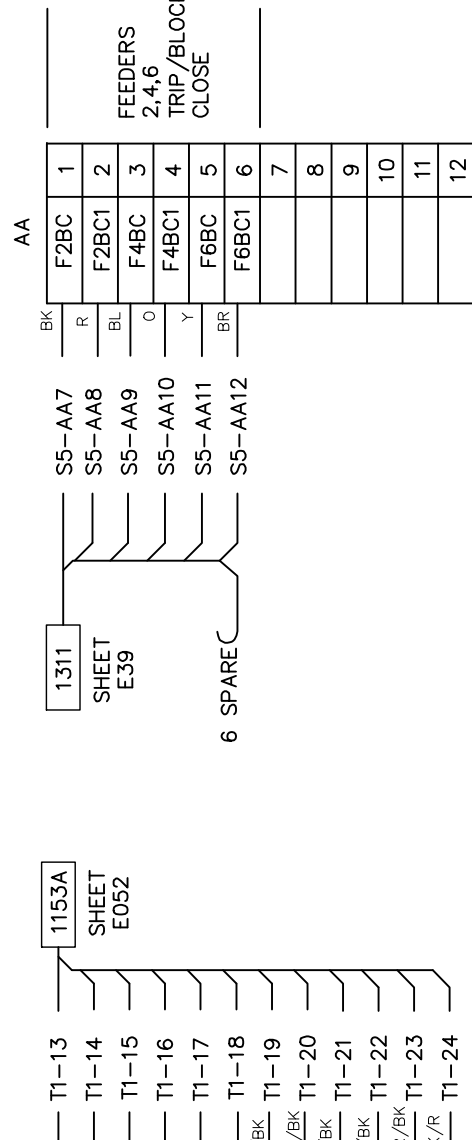


Table B: 52-F2 INDICATION terminals from T1-25 to T1-36.

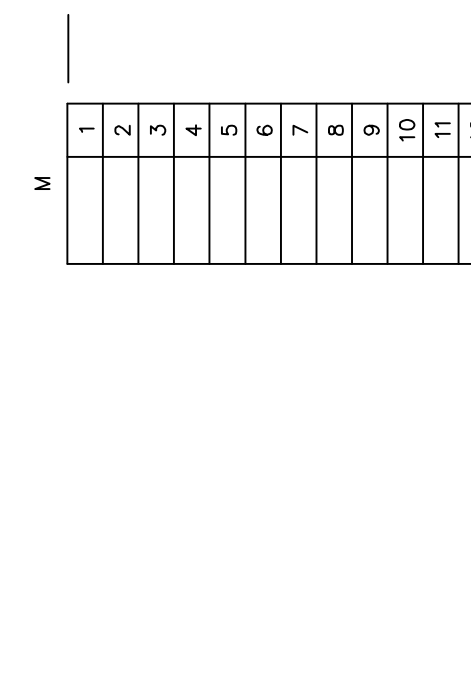
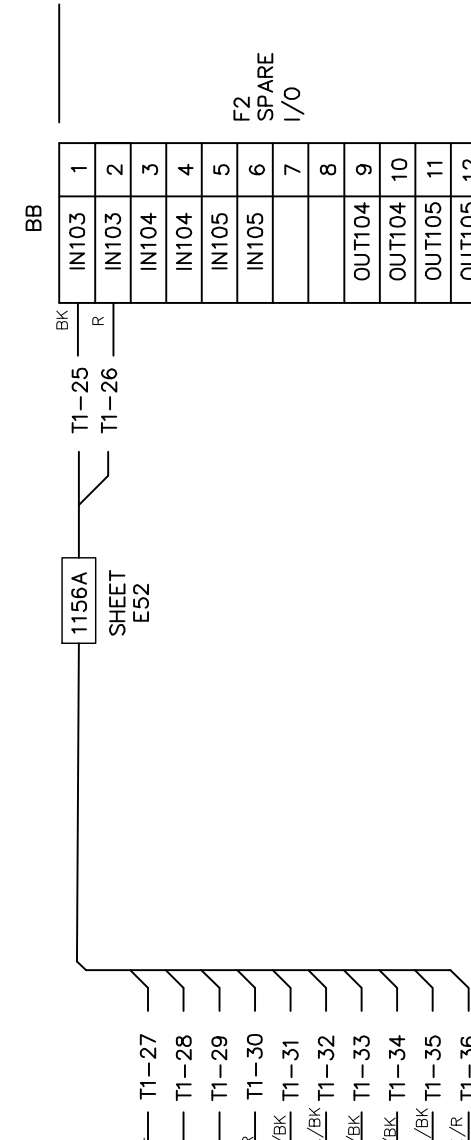


Table C: TRIP, CLOSE, GL, ALARM, BLOCK, 52F4, 52F40, STATUS indicators for terminals T1-37 to T1-48.

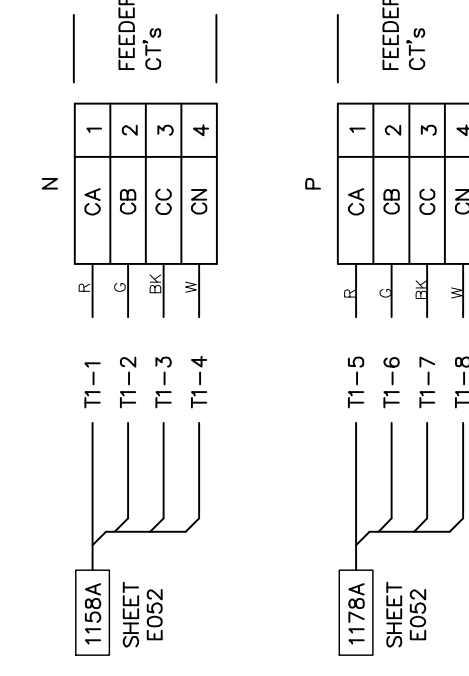


Table D: 52-F4 INDICATION terminals from T1-49 to T1-60.

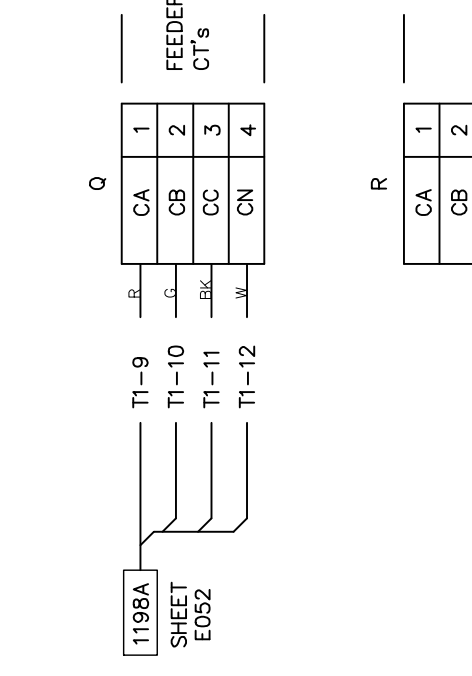
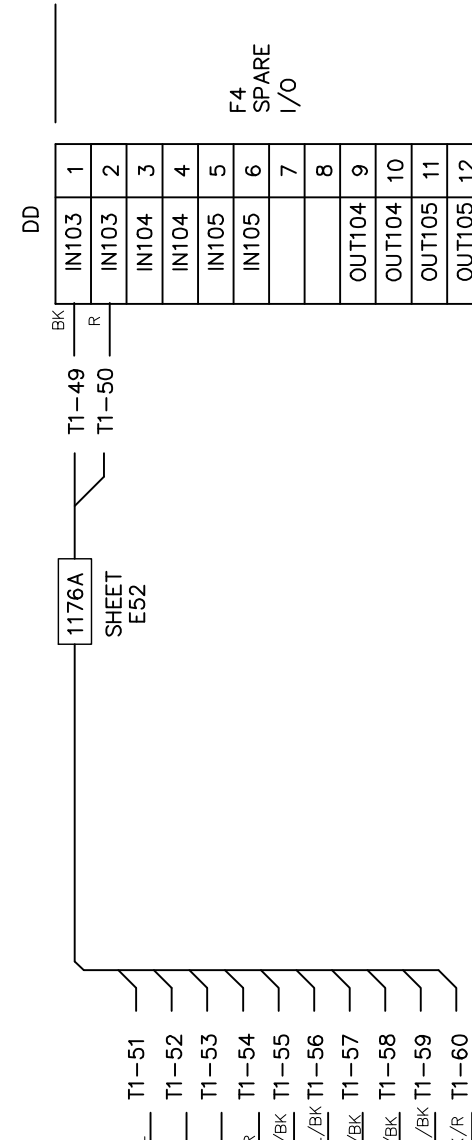


Table E: TRIP, CLOSE, GL, ALARM, BLOCK, 52F6, 52F60, STATUS indicators for terminals T1-61 to T1-72.

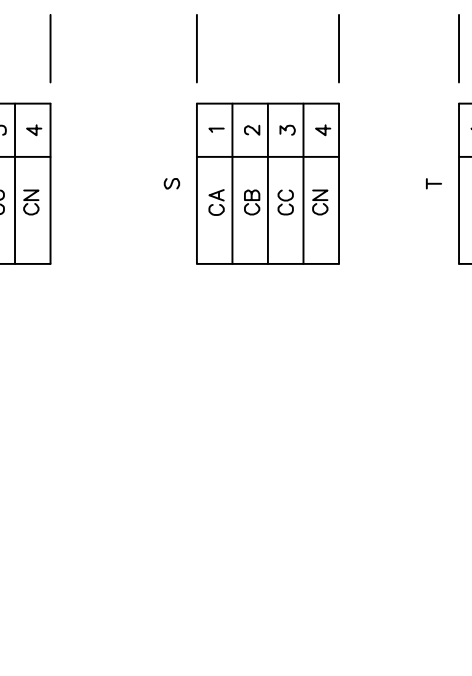


Table F: 52-F6 INDICATION terminals from T1-73 to T1-84.

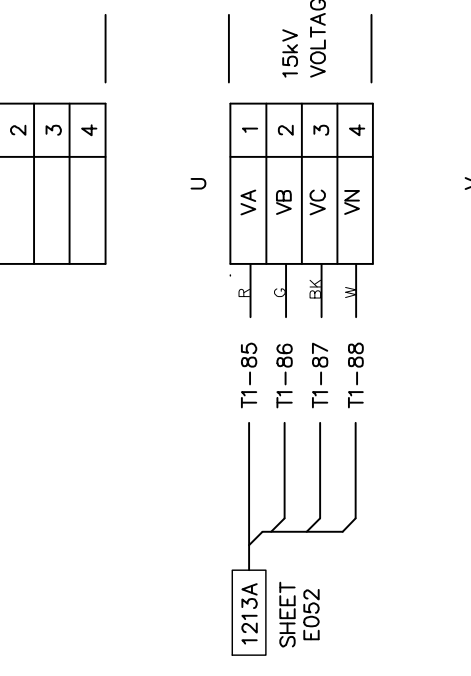
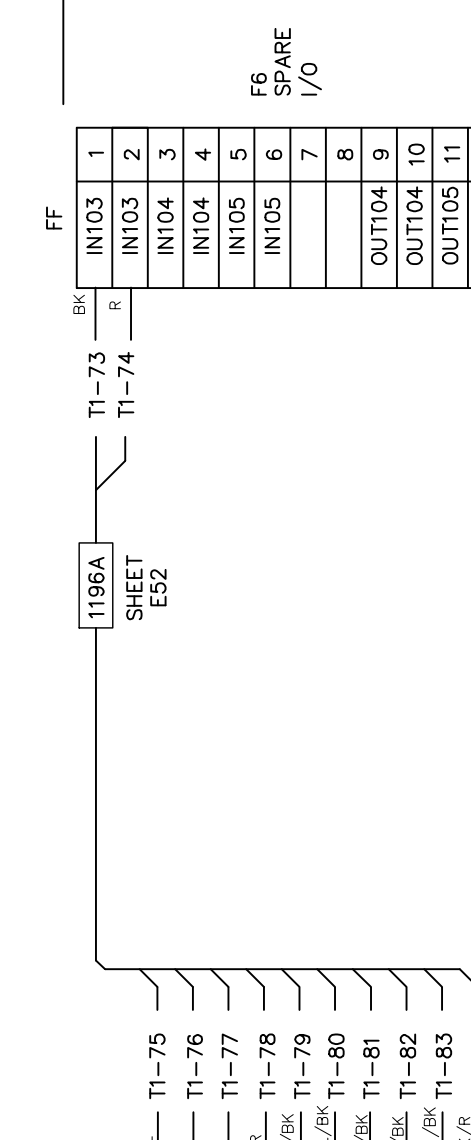


Table G: Terminals G1 to G12.

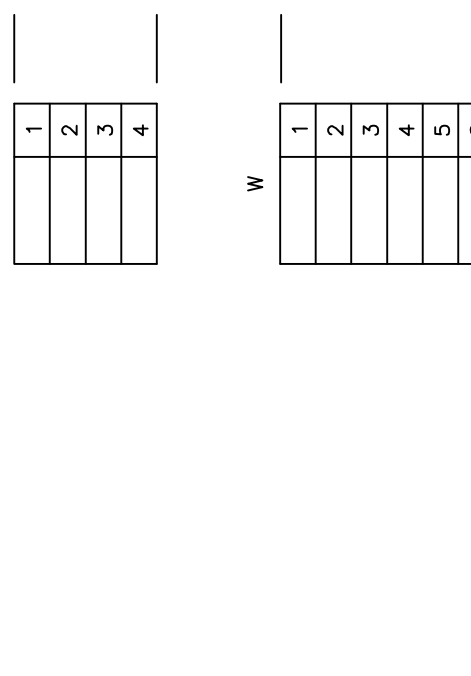


Table H: Terminals H1 to H12.

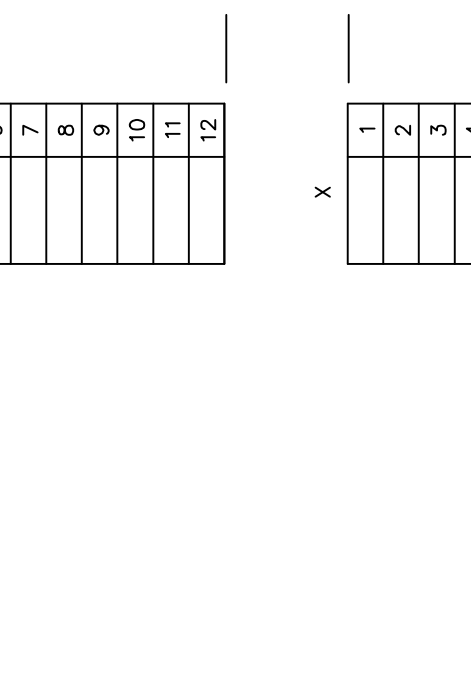
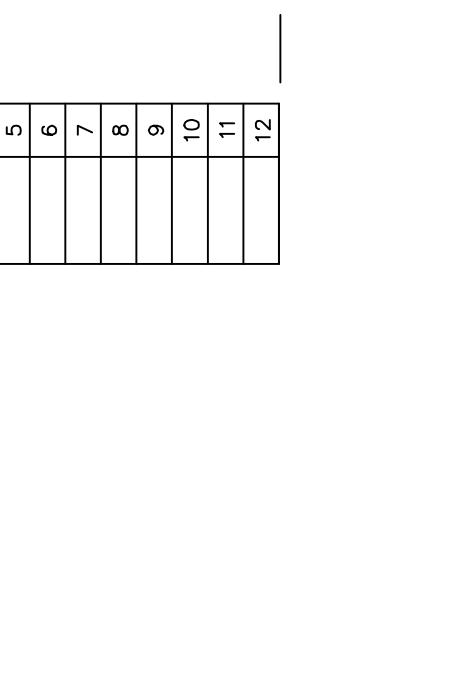


Table I: Terminals I1 to I12.



PRELIMINARY

FRONT
SWITCHBOARD No. 3 - S3
PANEL REAR VIEW

RIGHT SIDE

CONTROL AND INDICATION: Legend for terminals 1-12 with codes BK, R, BK, O, O, Y, BK, R/BK, O/BK, Y/BK, BK/R, BK/R.

CT & PT: Legend for terminals A, B, C, N, W.

AC: Legend for terminals X, Y, N, G, O.

DC: Legend for terminals POS, NEG.

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. NO. NO. REVISIONS

PRELIMINARY - DO NOT USE FOR CONSTRUCTION
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2209 Reewoods Drive Sula 300, Raleigh, NC 27627
NC F-021



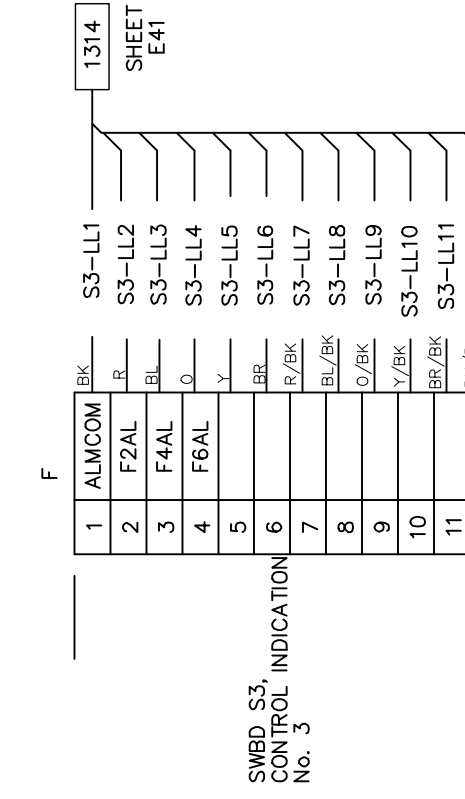
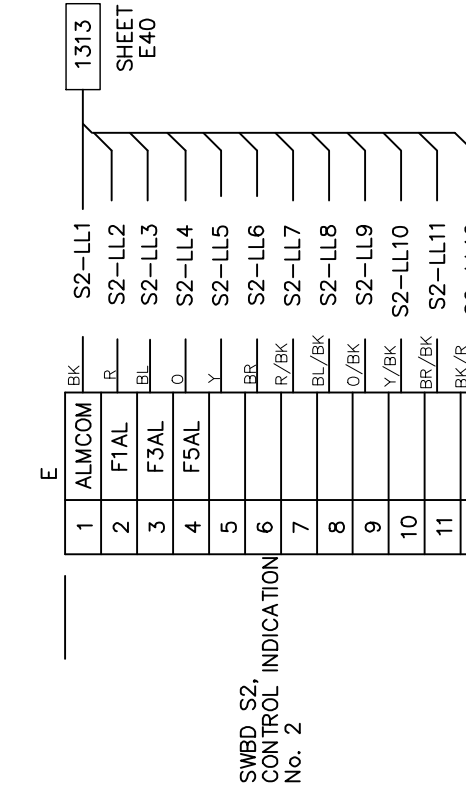
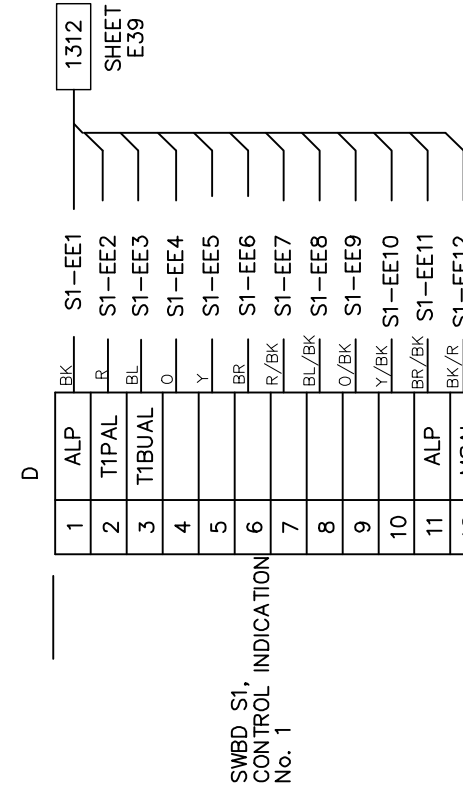
SWITCHBOARD No. 4 - S4
INTEGRATION & COMMUNICATIONS

LEFT SIDE

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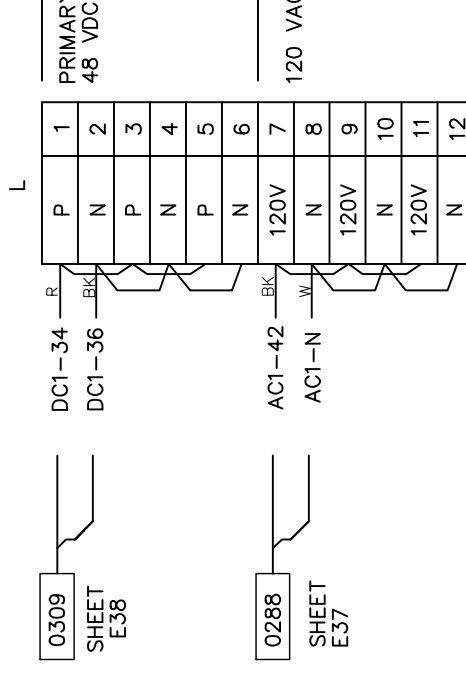
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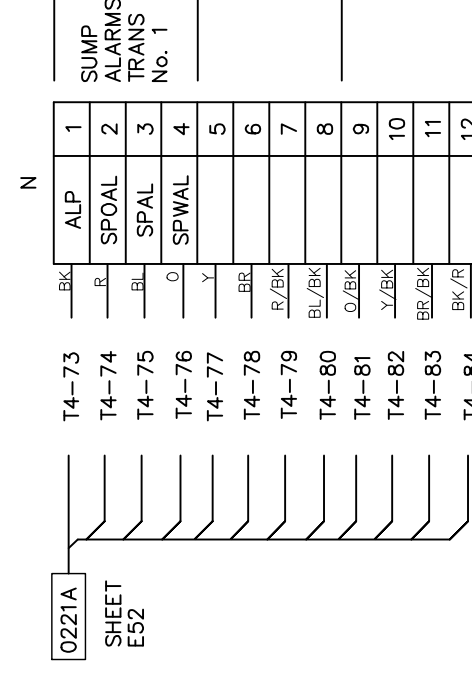
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1	OUT04
2	OUT04b
3	OUT05
4	OUT05b
5	OUT06
6	OUT06b
7	ALP
8	IN312
9	
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11	
12	

RIGHT SIDE



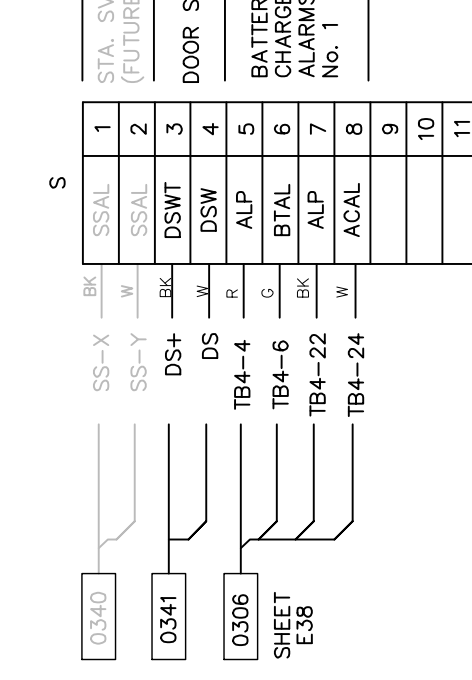
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1	OUT01
2	OUT01b
3	OUT02
4	OUT02b
5	OUT03
6	OUT03b
7	DPAC
8	DPAC
9	DPAC
10	DPAC
11	DPAC
12	DPAC

LEFT SIDE

FRONT

RIGHT SIDE

SWITCHBOARD No. 4 - S4
PANEL REAR VIEW

PRELIMINARY

CONTROL AND INDICATION

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

CT & PT

A	R
B	G
C	BK
N	W

AC

X	BK
Y	R
N	W
G	C

DC

POS	R
NEG	BK

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.	ISSUED FOR	REVISIONS	ENG.	DATE
A			BMJ	09/24/2023

PRELIMINARY -
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CONSTRUCTION



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NC F-021

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INTERIOR LEFT SUBPANEL

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1158, 1178, 1198, 1199.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1153, 1154.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1156.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1173.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1176.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1193.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1196.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1213.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1157, 1177, 1197.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1148, 1168, 1188.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1143.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1146.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1163.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1166.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1183.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1186.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1212.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1147, 1167, 1187.

PANEL T1 INTERIOR REAR SUBPANEL

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1211, 1123, 1104.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1122, 1125, 1124.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1103.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1105.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1106.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1127.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1129.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1131.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1144, 1164, 1184.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1104.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1290.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1103A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1105A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1107.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1126.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1221.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1131A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1144A, 1164A, 1184A.

INTERIOR RIGHT SUBPANEL

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1104.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1122A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1103A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1105A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1107A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1126A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1221A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheet 1131A.

Table with 4 columns: SHEET, WIRE ID, PANEL, and SHEET. Includes sheets 1144A, 1164A, 1184A.



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Table with columns: NO., REVISIONS, ENG., DATE, ISSUED FOR BID.

PROJECT NAME: CUMBERLAND ROAD 69 TO 15 X 25 KV SUBSTATION
DRAWING TITLE: TERMINATION CABINET WIRING INTERCONNECTION DIAGRAM

DRAWN BY: JRT
CHECKED BY: DAW
APPROVED BY: MJW
DATE: 3/16/2022
SCALE: NONE
FILE NUMBER: 12510
SHEET: E52

PRELIMINARY

Cumberland Road 69kV to 15kV Substation

Conduit & Cable Schedules

12502C3.xlsx

for the
Public Works Commission of Fayetteville, NC

June 6, 2022



Booth & Associates

2300 Rexwoods Drive, Raleigh, NC 27607
NC License No. F-0221

Rev.	Description	Date	By	Appr.

Cumberland Road 69 kV to 15 kV Substation

DRAWING: 12502C3

LEGEND AND NOTES

CONDUIT INSTALLATION:

NOTE:

1	ALL METALLIC JUNCTION BOXES, RACEWAYS, CABLE TRAYS, PANELS, AND ENCLOSURES SHALL BE BONDED TO THE SUBSTATION GROUND GRID.
2	ALL CONDUIT IS 2" SCHEDULE 40 PVC UNLESS OTHERWISE NOTED ON DRAWING.
3	FUTURE EQUIPMENT. CONDUIT TO BE INSTALLED BUT CAPPED AT LOCATION OF FUTURE EQUIPMENT.
4	FUTURE CONDUIT. SHOWN FADED ON CONDUIT PLAN.
	FOR CONDUIT BEARING FIBER OPTIC CABLES (FOC): 1) HAVE NO LESS THAN 8.0 INCH BEND RADIUS. 2) USE OF "LB" FITTINGS SHALL NOT BE PERMITTED. 3) SLOW BENDS AND COMBINATIONS OF 45 DEGREE BENDS OF MINIMUM 8.0 INCH RADIUS ARE PREFERRED. 4) ENSURE BENDS OTHER THAN 90 DEGREES ALSO ENFORCE MINIMUM BEND RADIUS.

CABLE INSTALLATION:

NOTE:

	ALL AC SERVICE NEUTRALS SHALL BE BONDED TO GROUND AT THE SERVICE PANEL AND AT THE POINT OF TERMINATION.
13	THESE COPPER OR FIBER JUMPERS SUPPLIED WITH SWITCHBOARDS FROM THE SWITCHBOARD VENDOR. USE AVAILABLE HORIZONTAL AND VERTICAL CABLE MANAGERS TO ROUTE FIBER AND COPPER JUMPERS. USE VELCRO TO SECURE JUMPERS TO ONE ANOTHER AND ELSEWHERE AS NEEDED. WIRE TIES NOT ALLOWED.
14	ALL AC BRANCH FEEDERS SHALL OBSERVE THE FOLLOWING COLOR CODE ACCORDING TO ICEA METHOD E1 CABLE: X - BLACK Y - RED N - WHITE G - GREEN
15	ALL DC BRANCH FEEDERS SHALL OBSERVE THE FOLLOWING COLOR CODE: POSITIVE (+) - RED NEGATIVE (-) - BLACK
16	SECONDARYS FOR CURRENT TRANSFORMERS AND VOLTAGE TRANSFORMERS SHALL HAVE CONDUCTORS COLOR CODED ACCORDING TO ICEA METHOD E1 (i.e. RD, GN, BK, WH) UNLESS OTHERWISE NOTED. A - RED B - GREEN C - BLACK N - WHITE
17	TERMINATE GENERAL CONTROL CABLE CONDUCTOR COLORS AT RELAY PANEL TERMINAL BLOCKS IN ORDER OF CONDUCTOR NUMBER (ICEA METHOD E2): BK, RD, BL, OR, YL, BR, RD/BK, BL/BK, OR/BK, YL/BK, BR/BK, BK/RD. TERMINATE EQUIPMENT END AS NECESSARY TO MATCH FUNCTION.
18	COIL 30 FEET OF CABLE INSIDE SWBD #4 FOR FUTURE USE. TAPE OFF INDIVIDUAL WIRES IN EACH PAIR. TAPE OFF FOIL AND DRAIN WIRE AT BOTH ENDS.
19	CONTROL HOUSE MANUFACTURER TO INSTALL AND TERMINATE THESE CABLES AND JUMPERS. APPLY LABELS TO ENDS OF CABLES AND JUMPERS PER CABLE AND CONDUIT SCHEDULE (12502C3, THIS DOCUMENT).

INTERIOR LEFT SUBPANEL

PANEL T1
INTERIOR REAR SUBPANEL

INTERIOR RIGHT SUBPANEL

Table with 4 columns: SHEET, Description, R, S. Rows include SHEET E47 (1158) and SHEET E41 (1178, 1198).

Table with 4 columns: SHEET, Description, R, S. Rows include SHEET E41 (1153) and SHEET E41 (1156).

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Table with 4 columns: SHEET, Description, R, S. Rows include SHEET E40 (1183) and SHEET E40 (1186).

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NC #0222



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Table with 2 columns: ENG, DATE. Row 1: BWJ, 05/06/23.

Table with 2 columns: REVISIONS. Header: NO., DESCRIPTION.

Table with 2 columns: NO., DESCRIPTION. Rows 1-5.

Table with 2 columns: NO., DESCRIPTION. Rows 6-10.

Table with 2 columns: NO., DESCRIPTION. Rows 11-15.

Table with 2 columns: NO., DESCRIPTION. Rows 16-20.

PROJECT NAME: PO HOFFER 69 TO 15 X 25 kV SUBSTATION
DRAWING TITLE: TERMINATION CABINET WIRING INTERCONNECTION DIAGRAM

Table with 2 columns: DRAWN BY, CHECKED BY, APPROVED BY, DATE, SCALE, FILE NUMBER, SHEET.

DRAWN BY: JRT
CHECKED BY: DAW
APPROVED BY: MJW
DATE: 3/16/2022
SCALE: NONE
FILE NUMBER: 12513
SHEET: E52

Cumberland Road 69 kV to 15 kV Substation

DRAWING: 12502C3

LEGEND AND NOTES

FIBER OPTIC CABLE / CONDUIT INSTALLATION:

NOTE:

20	<p>1) OUTSIDE PLANT (OSP) FIBER OPTIC CABLES (FOC) SHALL HAVE NO LESS THAN 8 (EIGHT) INCH BEND RADIUS DURING INSTALLATION AND NO LESS THAN 4 (FOUR) INCH BEND RADIUS IN PLACE AFTER INSTALLATION.</p> <p>2) PULLING TENSION NOT TO EXCEED MAXIMUM PER MANUFACTURER'S SPECIFICATION.</p> <p>3) NEED 10 FEET OF CABLE IN EQUIPMENT</p>
21	<p>1) FIBER OPTIC CABLE (FOC) DUPLEX JUMPERS SHALL HAVE NO LESS THAN 1.5 INCH BEND RADIUS.</p> <p>2) PULLING TENSION NOT TO EXCEED MAXIMUM PER MANUFACTURER'S SPECIFICATION.</p> <p>3) USE PANDUIT GUIDES IN SWBD #4 TO PROTECT SLACK.</p> <p>4) "SM" JUMPERS ARE YELLOW IN COLOR.</p> <p>5) MAKE AND PLACE CABLE NUMBER LABELS AND "DESTINATION" LABELS ON DUPLEX JUMPERS BEFORE INSTALLATION, SEE PRINTS.</p> <p>6) USE VELCRO STRAPS (BELDEN PN AX100783 OR EQUIVALENT) TO DRESS DUPLEX JUMPERS IN LOOPS TO TAKE UP SLACK IF NEEDED, RESPECTING BEND RADIUS. WIRE TIES ARE NOT PERMITTED AT ANY TIME.</p>
22	<p>MEASURING AND INSTALLING PRE-TERMINATED FIBER CABLE:</p> <p>WIREMAN MUST OBTAIN FIBER CABLE PULLING SPECIFICATIONS WELL AHEAD OF INSTALLATION STEPS. WIREMAN MUST KNOW MINIMUM BEND RADIUS FOR THE CABLE BOTH DURING PULL AND WHEN CABLE IN PLACE, MBR DURING PULL IS LARGER THAN THAT WHEN CABLE IS RESTING IN PLACE. WIREMAN MUST KNOW MAXIMUM PULL TENSION FOR THE CABLE BOTH DURING PULL AND WHEN CABLE IN PLACE, MAXIMUM PULL TENSION DURING PULL IS LARGER THAN THAT WHEN CABLE IS IN PLACE.</p> <p>WIREMAN MUST BE FAMILIAR WITH RADIUS GUIDES, ROLLERS, PULLEYS AND TENSION MEASUREMENT EQUIPMENT BEFORE PERFORMING INSTALL..</p> <p>1) WIREMAN TO DETERMINE REQUIRED LENGTH OF FIBER OPTIC CABLES FROM YARD BREAKERS AND TRANSFORMER TO APPROPRIATE PATCH PANEL MOUNTED IN SWITCHBOARD S4 BEFORE PLACING ORDER FROM DISTRIBUTOR. SEE PRINTS FOR FIBER ROUTING IN SWITCHBOARD AND CABLE & CONDUIT SCHEDULE FOR DIRECTION TO DETERMINE ORDER LENGTH.</p> <p>2) AFTER CONDUIT, TRENCH, WIRE TRAY AND SWITCHBOARDS ARE INSTALLED, MEASURE LENGTH FOR EACH PRE-TERMINATED FIBER CABLE. MEASURE FROM CONDUIT IN YARD CABINET TO CABLE BRACKET MOUNTED ON EACH PATCH PANEL, SEE CABLE AND CONDUIT SCHEDULE AND SWITCHBOARD PRINTS FOR DETAILS. USE TABLE IN PRINTS TO ADD REQUIRED SLACK.</p>

Cumberland Road 69 kV to 15 kV Substation

DRAWING: 12502C3

LEGEND AND NOTES

<p>22</p> <p>CONTINUED</p>	<p>3) ORDER CABLE FROM ANIXTER, MORRISILLE, NC. SEE LABOR SPECIFICATION FOR DETAILS TO ORDER.</p> <p>3A- PART NUMBER FOR PRE-TERMINATED CABLE IS: D18-0710-1. SPECIFY LENGTH OF CABLE, AS DETERMINED FOR EACH CABLE NUMBER, SPECIFY CABLE NUMBER FOR EACH CABLE FROM THIS DRAWING.</p>
	<p>4) MAKE AND PLACE CABLE NUMBER LABELS AND "DESTINATION" LABELS ON BOTH ENDS OF CABLE BEFORE INSTALLATION, SEE CABLE AND CONDUIT SCHEDULE FOR "FROM" AND "TO" DESTINATION TEXT . REPLACE LABELS IF DAMAGED DURING PULL.</p>
	<p>5) PULL CABLE OFF SHIPPING BOX USING PULL ROPE WITH SWIVEL ATTACHED TO PULLING EYE FITTING ON END OF CABLE.</p> <ul style="list-style-type: none"> -RESPECT MINIMUM BEND RADIUS (INSTALL) AND MAXIMUM PULL TENSION (INSTALL). -DO NOT ALLOW CABLE TO BEND LESS THAN MBR WHILE WAITING FOR NEXT PORTION OF PULL OR AT END POINTS DURING AND AFTER PULL. -PULL BY ROPE OR TAPE ATTACHED TO SWIVEL. -ROUTE CABLES WITH CARE. -MULTIPLE CABLES MAY BE PULLED BUNDLED TOGETHER THRU TRAY AND TRENCH SEPARATING THEM AS NEEDED TO PULL IN CONDUIT. -USE RADIUS GUIDES, ROLLERS OVER EDGES, PULLEYS AND ASSISTANTS AS NEEDED TO FACILITATE INSTALL.
<p>22</p>	<p>7) IF NECESSARY, COIL CABLE ON ITSELF INSIDE SWITCHBOARD, RESPECTING MINIMUM BEND RADIUS AND SECURE COIL WITH WIRE TIES. ALLOW COILS TO BE DIFFERENT LENGTHS AS NEEDED. CABLE JACKET MAY NOT BE DEFORMED BY WIRE TIES.</p>
	<p>8) TO CONTAIN CABLE SLACK, CABLE MAY LAY IN OVERHEAD TRAY, IN AN AREA PAST THE SWITCHBOARDS AND LOOPING BACK TO ENTER SWBD #4. IF CABLE MUST BE COILED IN OVERHEAD TRAY, ENSURE COIL OCCURS FAR DOWN LENGTH OF TRAY IN A CLEAR AREA SO OTHER CABLES ARE NOT OBSCURED BY THE COILS.</p> <p>9) AFTER INSTALLATION, GROUP CABLES WHICH ENTER SAME PLACE ON THE PATCH PANEL TOGETHER WITH WIRE TIES. CABLE JACKET MAY NOT BE DEFORMED BY WIRE TIES.</p>
	<p>10) MINIMUM BEND RADIUS FOR FIBER CABLE DURING INSTALL IS: 8 (EIGHT) INCHES. MAXIMUM PULL TENSION FOR FIBER CABLE DURING INSTALL IS: 100 POUNDS. MINIMUM BEND RADIUS FOR FIBER CABLE WHEN IN PLACE IS: 4 (FOUR) INCHES. MAXIMUM PULL TENSION FOR FIBER CABLE WHEN IN PLACE IS: 90 POUNDS.</p> <p>OTHER FIBER OPTIC CABLE ON SITE MAY HAVE DIFFERENT SPECIFICATIONS.</p>

Cumberland Road 69 kV to 15 kV Substation

DRAWING: 12502C3

LEGEND AND NOTES

23	<p>CONDUIT BEARING FIBER OPTIC CABLES (FOC):</p> <ol style="list-style-type: none"> 1) SHALL HAVE NO LESS THAN 8.0 INCH BEND RADIUS. 2) USE OF "LB" FITTINGS SHALL NOT BE PERMITTED. 3) SLOW BENDS AND COMBINATIONS OF 45 DEGREE BENDS OF MINIMUM 8.0 INCH RADIUS ARE PREFERRED. 4) ENSURE BENDS OTHER THAN 90 DEGREES ALSO ENFORCE MINIMUM BEND RADIUS.
24	<ol style="list-style-type: none"> 1) OUTSIDE PLANT (OSP) FIBER OPTIC CABLE (FOC) FROM BUILDING TO FEEDER BREAKERS AND OTHER YARD DEVICES TO BE PULLED BY WIREMAN. 2) FIBER PATCH PANEL AND FIBER SPLICE PANEL (AS NEEDED) AT THE BREAKER CABINETS AND SCADA SWITCHBOARD TO BE INSTALLED BY CONTRACTOR. 3) FIBER "JUMPER" CABLES (CABLE NOS. J24 THRU J52 AND J103 THRU J228) SUPPLIED FROM SWITCHBOARD MANUFACTURER WITH SWITCHBOARD.
25	COAXIAL CABLES (FOR CABLE SEL-C961-025, C961-050) SHALL HAVE NO LESS THAN 6 1/2 INCH BEND RADIUS (13 INCH CIRCLE) DURING INSTALLATION.
ZLC2M	Corning 2 fiber Zipcord Jumper, 2.0mm subunit, multimode, 62.5 micron, OM1 , LC duplex to LC duplex connectors. Minimum Bend Radius during install is 2.0 inches, during operation 0.4 inches. Maximum tensile strength during install is 50 lbf. Length 7 feet. No substitutions. PN: 050502K51200tF
ZLC3M	Corning 2 fiber Zipcord Jumper, 2.0mm subunit, multimode, 62.5 micron, OM1 , LC duplex to LC duplex connectors. Minimum Bend Radius during install is 2.0 inches, during operation 0.4 inches. Maximum tensile strength during install is 50 lbf. Length 3 meters. No substitutions. PN: 050502K5120003M
ZLC3S	Corning 2 fiber Zipcord Jumper, 2.0mm subunit, multimode, 9 micron, OS1 , LC duplex to LC duplex connectors. Minimum Bend Radius during install is 2.0 inches, during operation 0.4 inches. Maximum tensile strength during install is 50 lbf. Length 3 meters. No substitutions. PN: 040402G512000003M
CA605C-xxx	SEL CAT5E Shielded Patch Cord , STP, RJ-45 connectors both ends, jacket color Blue. Length is xxx feet as indicated in part number. PN: CA605CBXxxx. CAT5-04, CAT5-08
C605A-xxx	SEL EIA-232 , DB9 connectors both ends. Length is xxx feet as indicated in part number. PN: C605Axxx. C605A-36, C605A-25
C961-xxx	SEL Coaxial cable , LMR400 cable, TNC connectors both ends. Length is xxx feet as indicated in part number. PN: C961-xxx. C961-25, C961-50
C953-xxx	SEL Coaxial cable , IRIG, RG58 cable, BNC connectors both ends. Length is xxx feet as indicated in part number. PN: C953-xxx. C953-6, C953-15, C953-25

Cumberland Road 69 kV to 15 kV Substation

DRAWING: 12502C3

Conduit Schedule

CONDUIT NO.	CONDUIT SCHEDULE		CONDUIT SIZE/TYPE	REMARKS
	FROM	TO		
C101	MANHOLE #1	TRENCH	2" PVC	
C102	MANHOLE #2	TRENCH	2" PVC	
C103	MANHOLE #3	TRENCH	2" PVC	
C111	CIRCUIT EXIT	MANHOLE #1	6" PVC	
C112	CIRCUIT EXIT	MANHOLE #2	6" PVC	
C113	CIRCUIT EXIT	MANHOLE #1	6" PVC	
C114	CIRCUIT EXIT	MANHOLE #2	6" PVC	
C115	CIRCUIT EXIT	MANHOLE #3	6" PVC	
C116	CIRCUIT EXIT	MANHOLE #3	6" PVC	
C180	FIBER HAND BOX	TRENCH	2" PVC	
C181	FIBER HAND BOX	TRENCH	2" PVC	
C201	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C202	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C203	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C204	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C205	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C211	No.1 TRANSFORMER	TRENCH	2" PVC	
C212	No.1 TRANSFORMER	TRENCH	2" PVC	
C213	No.1 TRANSFORMER	TRENCH	2" PVC	
C214	No.1 TRANSFORMER	TRENCH	2" PVC	
C215	No.1 TRANSFORMER	TRENCH	2" PVC	
C216	No.1 TRANSFORMER	TRENCH	2" PVC	NOTE 23
C217	No.1 TRANSFORMER	TRENCH	2" PVC	
C221	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	
C222	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	
C223	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	NOTE 23
C224	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	
C225	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	
C231	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	
C232	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	
C233	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	NOTE 23
C234	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	
C235	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	
C241	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	
C242	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	
C243	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	NOTE 23
C244	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	
C245	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	
C251	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	
C252	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	
C253	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	NOTE 23
C254	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	
C255	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	

Cumberland Road 69 kV to 15 kV Substation

DRAWING: 12502C3

Conduit Schedule

CONDUIT NO.	CONDUIT SCHEDULE		CONDUIT SIZE/TYPE	REMARKS
	FROM	TO		
C261	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	
C262	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	
C263	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	NOTE 23
C264	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	
C265	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	
C271	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	
C272	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	
C273	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	NOTE 23
C274	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	
C275	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	
C290	15kV BUS NO. 1 VT JUNCTION BOX	VOLTAGE TRANSFORMERS	1" PVC	ABOVE GROUND
C291	15kV BUS NO. 1 VT JUNCTION BOX	TRENCH	2" PVC	
C292	15kV BUS NO. 1 VT JUNCTION BOX	TRENCH	2" PVC	
C293	15kV BUS NO. 1 VT JUNCTION BOX	TRENCH	2" PVC	
C294	15kV BUS NO. 1 VT JUNCTION BOX	TRENCH	2" PVC	
C300	STATION SERVICE TRANSF. No.1	STA. SERVICE METER BODY	2" PVC	ABOVE GROUND
C301	STA. SERVICE METER BODY	STA. SERVICE NO.1 DISCONNECT	2" PVC	ABOVE GROUND
C302	STA. SERVICE No.1 DISCONNECT	TRENCH	2" PVC	
C303				
C304	STATION SERVICE FEED FROM STREET	TRENCH	2" PVC	
C341	YARD RECEPTACLE No. 1	TRENCH	1" PVC	
C342	YARD RECEPTACLE No. 2	TRENCH	1" PVC	
C343	YARD RECEPTACLE No. 3	TRENCH	1" PVC	
C344	YARD RECEPTACLE No. 4	TRENCH	1" PVC	
C345	SUMP PUMP NO. 1	TRENCH	2" PVC	
C346	SUMP PUMP NO. 1 CONTROL	TRENCH	1" PVC	
C347	SWITCH BOX #15,16	TRENCH	2" PVC	
C347A	SWITCH BOX #15,16	LIGHT #15,16	1" PVC	ABOVE GROUND
C348	SWITCH BOX #1,2	TRENCH	2" PVC	
C350	SWITCH BOX #1,2	LIGHT #1,2	1" PVC	ABOVE GROUND
C351	LIGHT JUNCTION #3,4	TRENCH	2" PVC	
C353	LIGHT JUNCTION #3,4	LIGHT #3,4	1" PVC	ABOVE GROUND
C354	LIGHT JUNCTION #5,6	TRENCH	2" PVC	
C355	LIGHT JUNCTION #5,6	LIGHT #5,6	1" PVC	ABOVE GROUND
C357	SWITCH BOX #7	TRENCH	2" PVC	
C358	SWITCH BOX #7	LIGHT #7	1" PVC	ABOVE GROUND
C359	SWITCH BOX #8,9	TRENCH	2" PVC	
C360	SWITCH BOX #8,9	LIGHT #8,9	1" PVC	ABOVE GROUND
C363	SWITCH BOX #10,11	TRENCH	2" PVC	
C364	SWITCH BOX #10,11	LIGHT #10,11	1" PVC	ABOVE GROUND
C366	SWITCH BOX #12,13	TRENCH	2" PVC	
C367	SWITCH BOX #12,13	LIGHT #12,13	1" PVC	ABOVE GROUND

Cumberland Road 69 kV to 15 kV Substation

DRAWING: 12502C3

Conduit Schedule

CONDUIT NO.	CONDUIT SCHEDULE		CONDUIT SIZE/TYPE	REMARKS
	FROM	TO		
C368	SWITCH BOX #14	TRENCH	2" PVC	
C369	SWITCH BOX #14	LIGHT #14	1" PVC	ABOVE GROUND
C370	240VAC 30A, RECEPTACLE No. 5	TRENCH	2" PVC	
C371	240VAC 50A, RECEPTACLE No. 6	TRENCH	2" PVC	
C375	MOBILE SUBSTATION JUNCTION BOX	TRENCH	2" PVC	
C376	MOBILE SUBSTATION JUNCTION BOX	TRENCH	2" PVC	
C384	FLOOD LIGHT SWITCH BOX #1	TRENCH	2" PVC	
C385	FLOOD LIGHT SWITCH BOX #1	FLOOD LIGHT #1,#2	1" PVC	ABOVE GROUND
C386	FLOOD LIGHT SWITCH BOX #3	TRENCH	2" PVC	
C387	FLOOD LIGHT SWITCH BOX #3	FLOOD LIGHT #3	1" PVC	ABOVE GROUND
C401	SECURITY CAMERA SYSTEM POLE	TRENCH	2" PVC	
C402	SECURITY CAMERA SYSTEM POLE	SECURITY CAMERA SYSTEM POLE	2" PVC	EXISTING
C403	SECURITY CAMERA SYSTEM POLE	TRENCH	2" PVC	
C404	SECURITY CAMERA SYSTEM POLE	SECURITY CAMERA SYSTEM POLE	2" PVC	EXISTING
C405	SECURITY CARD READER	TRENCH	2" PVC	

Cumberland Road 69 kV to 15 kV Substation
DRAWING: 12502C3
 Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
221	C101	SUMP PUMP #1 AC POWER	SUMP PUMP #1 AC IN (MANHOLE #1)	AC PANEL No. 2	4/C, #10	
222	C102	SUMP PUMP #2 AC POWER	SUMP PUMP #2 AC IN (MANHOLE #2)	AC PANEL No. 2	4/C, #10	
223	C103	SUMP PUMP #3 AC POWER	SUMP PUMP #3 AC IN (MANHOLE #3)	AC PANEL No. 2	4/C, #10	
232	C300	240VAC STA. SERVICE NO. 1	STA. SERVICE TRANSFORMER No. 1	METER BASE No. 1	3-1/C, #4/0	
232A	C301	240VAC STA. SERVICE NO. 1	METER BASE No. 1	STA. SERVICE No. 1 DISCONNECT	3-1/C, #4/0	
233	C302	240VAC STA. SERVICE NO. 1	STA. SERVICE No.1 DISCONNECT	AUTO TRANSFER SWITCH	3-1/C, #4/0	
234A	C105	240VAC SUPPLY	OFFSITE STA. SERVICE DISCONNECT	AUTO TRANSFER SWITCH	3-1/C, #4/0	
235	N/A	240VAC SUPPLY DUCT	AUTO TRANSFER SWITCH	240VAC SPLICE IN DUCT	3-1/C, #4/0	NOTE 19
235	N/A	240VAC SUPPLY DUCT	AC PANEL No.1, MAIN	240VAC SPLICE IN DUCT	3-1/C, #4/0	NOTE 19
235	N/A	240VAC SUPPLY DUCT	AC PANEL No.2, MAIN	240VAC SPLICE IN DUCT	3-1/C, #4/0	NOTE 19
241	N/A	120VAC- BUILDING LIGHTS	AC PANEL No. 2	BUILDING LIGHTS	3-1/C, #12	NOTE 19
242	N/A	120VAC- BLDG EMERGENCY LIGHT	AC PANEL No. 2	BUILDING EMERGENCY LIGHTS	3-1/C, #12	NOTE 19
243	N/A	120VAC- BATTERY ROOM LIGHTS	AC PANEL No. 2	BATTERY ROOM LIGHTS	3-1/C, #12	NOTE 19
244	N/A	120VAC- BUILDING RECEPTACLES	AC PANEL No. 2	BUILDING RECEPTACLES No.2	3-1/C, #12	NOTE 19
245	N/A	120VAC- BUILDING RECEPTACLES	AC PANEL No. 2	BUILDING RECEPTACLES No.1	3-1/C, #12	NOTE 19
246	N/A	240VAC- BATTERY ROOM HEATER	AC PANEL No. 1	BATTERY ROOM HVAC	3-1/C, #12	NOTE 19
247	N/A	120VAC- BATTERY ROOM FAN	AC PANEL No. 2	BATTERY ROOM FAN	3-1/C, #12	NOTE 19
248	N/A	240VAC- BUILDING HVAC	AC PANEL No. 1	BUILDING HVAC	3-1/C, #8	NOTE 19
249	N/A	120VAC- SWITCHBOARD No. S1	AC PANEL No. 1	SWBD #1	4/C, #10	NOTE 19
250	N/A	120VAC- SWITCHBOARD No. S2	AC PANEL No. 1	SWBD #2	4/C, #10	NOTE 19
251	N/A	120VAC- BLDG FLOOD LIGHTS	AC PANEL No. 2	BUILDING FLOOD LIGHTS	4/C, #10	NOTE 19
252	N/A	120VAC- BLDG EMERGENCY LIGHT	AC PANEL No. 2	BATTERY ROOM EMERGENCY LTS	3-1/C, #12	NOTE 19
265	C345	120VAC- SUMP PUMP AC POWER	AC PANEL No. 1	SUMP PUMP No. 1 AC IN	4/C, #10	NOTE 14
266	C345	120VAC- SUMP CONTROLLER AC	AC PANEL No. 1	SUMP PUMP No. 1 CONTROLLER AC IN	4/C, #10	NOTE 14
287	N/A	120VAC- SWITCHBOARD No. S3	AC PANEL No. 1	SWBD #3	4/C, #10	NOTE 14
288	N/A	120VAC- SWITCHBOARD No. S4	AC PANEL No. 1	SWBD #4	4/C, #10	NOTE 19
301	N/A	120VAC- BATTERY CHARGER	AC PANEL No. 1	BATTERY CHARGER No. 1 AC INPUT	4/C, #10	NOTE 19
302	N/A	48VDC SUPPLY	BATTERY CHARGER No. 1 DC OUT	BATTERY BANK No. 1 TERMINALS	2/C, #10	NOTE 19
303	N/A	48VDC SUPPLY	BATTERY BANK No. 1 TERMINALS	DC PANEL No.1	2-1/C, #4/0	NOTE 19
304	N/A	48VDC SUPPLY	DC PANEL No.1	SWBD #1	2/C, #10	NOTE 15
305	N/A	48VDC SUPPLY	DC PANEL No.1	SWBD #2	2/C, #10	NOTE 15
306	N/A	BATTERY CHARGER ALARMS	BATTERY CHARGER	SWBD #4	4/C, #16	NOTE 19, 17
308	N/A	48VDC SUPPLY	DC PANEL No.1	SWBD #3	2/C, #10	NOTE 15
309	N/A	48VDC SUPPLY	DC PANEL No.1	SWBD #4	2/C, #10	NOTE 15
340	TRAY	STATION SERV. TRANSFER ALARM	STA. SERVICE TRANSFER SWITCH	SWBD #4	4/C, #16	NOTE 19
341	TRAY	DOOR ALARMS	DOOR SWITCH JUNCTION BOX	SWBD #4	4/C, #16	NOTE 19
351	C180	PWC-F SITE1, UPSTREAM	OUTSIDE FIBER JUNCTION BOX	SWBD #4, PATCH PANEL No. PP1	SM OSP CABLE	NOTE 20,23,24
352	C180	PWC-F SITE2, DOWNSTREAM	OUTSIDE FIBER JUNCTION BOX	SWBD #4, PATCH PANEL No. PP1	SM OSP CABLE	NOTE 20,23,24
1100	C201	AC POWER SUPPLY	69KV LINE BKR 52-T1	AC PANEL No.1	4/C #10	NOTE 14
1101	C201	DC POWER SUPPLY	69KV LINE BKR 52-T1	DC PANEL No.1	2- 1/C #6	NOTE 15
1103	C202	CONTROL	69KV LINE BKR 52-T1	TERMINATION CABINET	12/C #10	NOTE 17
1103A	N/A	CONTROL	TERMINATION CABINET	SWBD #1	12/C #10	NOTE 17
1104	C203	LINE PRI RELAY CT'S	69KV LINE BKR 52-T1	TERMINATION CABINET	4/C #10	NOTE 16
1104A	N/A	LINE PRI RELAY CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1105	C203	CONTROL/ INDICATION	69KV LINE BKR 52-T1	TERMINATION CABINET	12/C #10	NOTE 17
1105A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #1	12/C #10	NOTE 17
1106	C204	INDICATION	69KV LINE BKR 52-T1	TERMINATION CABINET	12/C #14	NOTE 17
1106A	N/A	INDICATION	TERMINATION CABINET	SWBD #1	12/C #14	NOTE 17
1107	C204	INDICATION	69KV LINE BKR 52-T1	TERMINATION CABINET	12/C #14	NOTE 17
1107A	N/A	INDICATION	TERMINATION CABINET	SWBD #1	12/C #14	NOTE 17
	C205	SPARE	69KV LINE BKR 52-T1	TRENCH		
1120	C211	AC POWER SUPPLY	No.1 TRANSFORMER	AC PANEL No.1	3/C, #6	NOTE 14
1121	C211	DC POWER SUPPLY	No.1 TRANSFORMER	DC PANEL No.1	4/C #10	NOTE 15
1122	C212	L.V. BANK RELAY CT'S	No.1 TRANSFORMER	TERMINATION CABINET	4/C #10	NOTE 16

Cumberland Road 69 kV to 15 kV Substation
DRAWING: 12502C3
 Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
1122A	N/A	L.V. BANK RELAY CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1123	C212	L.V. METERING CT's	No.1 TRANSFORMER	TERMINATION CABINET	4/C #10	NOTE 16
1123A	N/A	L.V. METERING CT's	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1124	C213	H.V. BANK RELAY CT'S	No.1 TRANSFORMER	TERMINATION CABINET	4/C #10	NOTE 16
1124A	N/A	H.V. BANK RELAY CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1125	C213	X0 RELAY CT	No.1 TRANSFORMER	TERMINATION CABINET	2/C #10	NOTE 16
1125A	N/A	X0 RELAY CT	TERMINATION CABINET	SWBD #1	2/C #10	NOTE 16
1126	C214	SPARE	No.1 TRANSFORMER	TERMINATION CABINET	12/C #14	NOTE 17
1126A	N/A	SPARE	TERMINATION CABINET	SWBD #1	12/C #14	NOTE 17
1127	C214	LTC VOLTAGE REDUCTION	No.1 TRANSFORMER	TERMINATION CABINET	12/C #10	NOTE 17
1127A	N/A	LTC VOLTAGE REDUCTION	TERMINATION CABINET	SWBD #1	12/C #10	NOTE 17
1128	C215,C293	LTC CONTROL POTENTIAL	No.1 TRANSFORMER	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1129	C215	CONTROL/ INDICATION	No.1 TRANSFORMER	TERMINATION CABINET	12/C, #14	NOTE 17
1129A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #1	12/C, #14	NOTE 17
1130	C216	SCADA, ETM2, ATC2	No.1 TRANSFORMER	SWBD #4, PP3, A1-A6	FIBER-PT	NOTE 20,22,23
1131	C216	TRIP	No.1 TRANSFORMER	TERMINATION CABINET	12/C, #10	NOTE 17
1131A	N/A	TRIP	TERMINATION CABINET	SWBD #1	12/C, #10	NOTE 17
	C217	SPARE	No.1 TRANSFORMER	TRENCH		
1141	C221	AC POWER SUPPLY	FEEDER BREAKER No. 52-F1	AC PANEL No.1	4/C #10	NOTE 14
1142	C221	DC POWER SUPPLY	FEEDER BREAKER No. 52-F1	DC PANEL No.1	2- 1/C #6	NOTE 15
1143	C222	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F1	TERMINATION CABINET	12/C #10	NOTE 17
1143A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #10	NOTE 17
1144	C222,C291	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F1	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1145	C223	SCADA, PM	FEEDER BREAKER No. 52-F1	SWBD #4, PP3, B1-B6	FIBER-PT	NOTE 20,22,23
1146	C223	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F1	TERMINATION CABINET	12/C #14	NOTE 17
1146A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #14	NOTE 17
1147	C224	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F1	TERMINATION CABINET	4/C #10	NOTE 16
1147A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1148	C224	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F1	TERMINATION CABINET	4/C #10	NOTE 16
1148A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #2	4/C #10	NOTE 16
	C225	SPARE	FEEDER BREAKER No. 52-F1	TRENCH		
1151	C231	AC POWER SUPPLY	FEEDER BREAKER No. 52-F2	AC PANEL No.1	4/C #10	NOTE 14
1152	C231	DC POWER SUPPLY	FEEDER BREAKER No. 52-F2	DC PANEL No.1	2- 1/C #6	NOTE 15
1153	C232	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F2	TERMINATION CABINET	12/C #10	NOTE 17
1153A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #10	NOTE 17
1154	C232,C291	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F2	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1155	C233	SCADA, PM	FEEDER BREAKER No. 52-F2	SWBD #4, PP3, B7-B12	FIBER-PT	NOTE 20,22,23
1156	C233	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F2	TERMINATION CABINET	12/C #14	NOTE 17
1156A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #14	NOTE 17
1157	C234	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F2	TERMINATION CABINET	4/C #10	NOTE 16
1157A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1158	C234	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F2	TERMINATION CABINET	4/C #10	NOTE 16
1158A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #3	4/C #10	NOTE 16
	C235	SPARE	FEEDER BREAKER No. 52-F2	TRENCH		
1161	C241	AC POWER SUPPLY	FEEDER BREAKER No. 52-F3	AC PANEL No.1	4/C #10	NOTE 14
1162	C241	DC POWER SUPPLY	FEEDER BREAKER No. 52-F3	DC PANEL No.1	2- 1/C #6	NOTE 15
1163	C242	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F3	TERMINATION CABINET	12/C #10	NOTE 17
1163A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #10	NOTE 17
1164	C242,C291	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F3	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1165	C243	SCADA, PM	FEEDER BREAKER No. 52-F3	SWBD #4, PP3,C1-C6	FIBER-PT	NOTE 20,22,23
1166	C243	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F3	TERMINATION CABINET	12/C #14	NOTE 17
1166A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #14	NOTE 17
1167	C244	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F3	TERMINATION CABINET	4/C #10	NOTE 16
1167A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1168	C244	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F3	TERMINATION CABINET	4/C #10	NOTE 16
1168A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #2	4/C #10	NOTE 16
	C245	SPARE	FEEDER BREAKER No. 52-F3	TRENCH		

Cumberland Road 69 kV to 15 kV Substation
DRAWING: 12502C3
 Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
1171	C251	AC POWER SUPPLY	FEEDER BREAKER No. 52-F4	AC PANEL No.1	4/C #10	NOTE 14
1172	C251	DC POWER SUPPLY	FEEDER BREAKER No. 52-F4	DC PANEL No.1	2- 1/C #6	NOTE 15
1173	C252	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F4	TERMINATION CABINET	12/C #10	NOTE 17
1173A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #10	NOTE 17
1174	C252,C292	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F4	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1175	C253	SCADA, PM	FEEDER BREAKER No. 52-F4	SWBD #4, PP3, C7-C12	FIBER-PT	NOTE 20,22,23
1176	C253	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F4	TERMINATION CABINET	12/C #14	NOTE 17
1176A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #14	NOTE 17
1177	C254	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F4	TERMINATION CABINET	4/C #10	NOTE 16
1177A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1178	C254	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F4	TERMINATION CABINET	4/C #10	NOTE 16
1178A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #3	4/C #10	NOTE 16
	C255	SPARE	FEEDER BREAKER No. 52-F4	TRENCH		
1181	C261	AC POWER SUPPLY	FEEDER BREAKER No. 52-F5	AC PANEL No.1	4/C #10	NOTE 14
1182	C261	DC POWER SUPPLY	FEEDER BREAKER No. 52-F5	DC PANEL No.1	2- 1/C #6	NOTE 15
1183	C262	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F5	TERMINATION CABINET	12/C #10	NOTE 17
1183A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #10	NOTE 17
1184	C262,C292	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F5	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1185	C263	SCADA, PM	FEEDER BREAKER No. 52-F5	SWBD #4, PP3, D1-D6	FIBER-PT	NOTE 20,22,23
1186	C263	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F5	TERMINATION CABINET	12/C #14	NOTE 17
1186A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #14	NOTE 17
1187	C264	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F5	TERMINATION CABINET	4/C #10	NOTE 16
1187A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1188	C264	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F5	TERMINATION CABINET	4/C #10	NOTE 16
1188A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #2	4/C #10	NOTE 16
	C265	SPARE	FEEDER BREAKER No. 52-F5	TRENCH		
1191	C271	AC POWER SUPPLY	FEEDER BREAKER No. 52-F6	AC PANEL No.1	4/C #10	NOTE 14
1192	C271	DC POWER SUPPLY	FEEDER BREAKER No. 52-F6	DC PANEL No.1	2- 1/C #6	NOTE 15
1193	C272	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F6	TERMINATION CABINET	12/C #10	NOTE 17
1193A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #10	NOTE 17
1194	C272,C292	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F6	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1195	C273	SCADA, PM	FEEDER BREAKER No. 52-F6	SWBD #4, PP3, D7-D12	FIBER-PT	NOTE 20,22,23
1196	C273	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F6	TERMINATION CABINET	12/C #14	NOTE 17
1196A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #14	NOTE 17
1197	C274	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F6	TERMINATION CABINET	4/C #10	NOTE 16
1197A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1198	C274	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F6	TERMINATION CABINET	4/C #10	NOTE 16
1198A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #3	4/C #10	NOTE 16
	C275	SPARE	FEEDER BREAKER No. 52-F6	TRENCH		
1210	C290	15KV BUS POTENTIAL FROM VT	15KV BUS No. 1 VT JCT BOX	15KV BUS VT- VA, VB, VC, VN	4/C #10	NOTE 16
1211	C293	15KV BUS POTENTIAL TO DEVICES	15KV BUS No. 1 VT JCT BOX	TERMINATION CABINET	4/C #10	NOTE 16
1211A	N/A	15KV BUS POTENTIAL TO DEVICES	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1212	C293	15KV BUS POTENTIAL TO DEVICES	15KV BUS No. 1 VT JCT BOX	TERMINATION CABINET	4/C #10	NOTE 16
1212A	N/A	15KV BUS POTENTIAL TO DEVICES	TERMINATION CABINET	SWBD #2	4/C #10	NOTE 16
1213	C293	15KV BUS POTENTIAL TO DEVICES	15KV BUS No. 1 VT JCT BOX	TERMINATION CABINET	4/C #10	NOTE 16
1213A	N/A	15KV BUS POTENTIAL TO DEVICES	TERMINATION CABINET	SWBD #3	4/C #10	NOTE 16
1221	C346	SUMP PUMP NO. 1 ALARMS (OIL CONTAINMENT)	SUMP PUMP No. 1 ALARMS OUT	TERMINATION CABINET	4/C, #16	
1221A	N/A	SUMP PUMP NO. 1 ALARMS (OIL CONTAINMENT)	TERMINATION CABINET	SWBD #4	4/C, #16	
1261	C341	120VAC- YARD RECEPTACLE No.1	AC PANEL No. 2	YARD RECEPTACLE No. 1	4/C,#10	NOTE 14
1262	C342	120VAC- YARD RECEPTACLE No.2	AC PANEL No. 2	YARD RECEPTACLE No. 2	4/C,#10	NOTE 14
1263	C343	120VAC- YARD RECEPTACLE No.3	AC PANEL No. 2	YARD RECEPTACLE No. 3	4/C,#10	NOTE 14
1264	C344	120VAC- YARD RECEPTACLE No.4	AC PANEL No. 2	YARD RECEPTACLE No. 4	4/C,#10	NOTE 14

Cumberland Road 69 kV to 15 kV Substation
DRAWING: 12502C3
 Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
1267A	C386	120VAC- FLOOD LIGHTS #3	AC PANEL No. 1	FLOOD LIGHT SWITCH BOX No. 3	4/C,#10	NOTE 14
1267B	C386	120VAC- FLOOD LIGHTS #3	FLOOD LIGHT SWITCH BOX No. 3	FLOOD LIGHT No. 3	4/C,#10	NOTE 14
1267C	C384	120VAC- FLOOD LIGHTS #1,2	FLOOD LIGHT SWITCH BOX No. 3	FLOOD LIGHT SWITCH BOX No. 1,2	4/C,#10	NOTE 14
1267D	C385	120VAC- FLOOD LIGHTS #1,2	FLOOD LIGHT SWITCH BOX No. 1,2	FLOOD LIGHT No. 1,2	4/C,#10	NOTE 14
1268	C348	120VAC- BAY 1- LIGHTS #1,2	AC PANEL No. 1	SWITCH BOX No. 1,2	4/C,#10	NOTE 14
1269	C350	120VAC- BAY 1- LIGHTS #1,2	SWITCH BOX No. 1,2	LIGHT No. 1,2	4/C,#10	NOTE 14
1270	C348, C351	120VAC- BAY 1- LIGHTS #3,4	SWITCH BOX No. 1,2	SWITCH BOX No. 3,4	4/C,#10	NOTE 14
1271	C353	120VAC- BAY 1- LIGHTS #3,4	SWITCH BOX No. 3,4	LIGHT No. 3,4	4/C,#10	NOTE 14
1272	C351,C354	120VAC- BAY 1- LIGHTS #5,6	SWITCH BOX No. 3,4	SWITCH BOX No. 5,6	4/C,#10	NOTE 14
1273	C355	120VAC- BAY 1- LIGHTS #5,6	SWITCH BOX No. 5,6	LIGHTS No. 5,6	4/C,#10	NOTE 14
1274	C354,C357	120VAC- BAY 2- LIGHT #7	SWITCH BOX No. 5,6	SWITCH BOX No. 7	4/C,#10	NOTE 14
1275	C358	120VAC- BAY 2- LIGHT #7	SWITCH BOX No. 7	LIGHT No. 7	4/C,#10	NOTE 14
1276	C359	120VAC- BAY 1- LIGHT #8-9	AC PANEL No. 1	SWITCH BOX No. 8,9	4/C,#10	NOTE 14
1277	C360	120VAC- BAY 1- LIGHT #8-9	SWITCH BOX No. 8,9	LIGHT No. 8,9	4/C,#10	NOTE 14
1278	C359,C363	120VAC- BAY 2- LIGHTS #10,11	SWITCH BOX No. 8,9	SWITCH BOX No. 10,11	4/C,#10	NOTE 14
1279	C364	120VAC- BAY 2- LIGHTS #10,11	SWITCH BOX No. 10,11	LIGHT No. 10,11	4/C,#10	NOTE 14
1280	C363,C366	120VAC- BAY 3- LIGHTS #12,13	SWITCH BOX No. 10,11	SWITCH BOX No. 12,13	4/C,#10	NOTE 14
1281	C367	120VAC- BAY 3- LIGHTS #12,13	SWITCH BOX No. 12,13	LIGHTS No. 12,13	4/C,#10	NOTE 14
1282	C366,C368	120VAC- BAY 3- LIGHT #14	SWITCH BOX No. 12,13	SWITCH BOX No. 14	4/C,#10	NOTE 14
1283	C369	120VAC- BAY 3- LIGHT #14	SWITCH BOX No. 14	LIGHT No. 14	4/C,#10	NOTE 14
1284	C347, C347A	120VAC- HIGH SIDE LIGHTS #15,16	AC PANEL No. 1	LIGHTS No. 15,16	4/C,#10	NOTE 14
1285	C370	240VAC SUPPLY	AC PANEL No. 2	240VAC 30A, RECEPTACLE No. 5	4/C, #10	NOTE 14
1286	C371	240VAC SUPPLY	AC PANEL No. 2	240VAC 50A, RECEPTACLE No. 6	4/C, #8	NOTE 14
1289	C376	MOBILE SUB, SCADA	MOBILE SUBSTATION J-BOX	SWBD #4, PP3, A11-A12	FIBER-PT	NOTE 20,22,23
1290	C375	MOBILE SUB, CONTROL & ALARM	MOBILE SUBSTATION J-BOX	TERMINATION CABINET	12/C, #10	NOTE 17
1290A	N/A	MOBILE SUB, CONTROL & ALARM	TERMINATION CABINET	SWBD #1	12/C, #10	NOTE 17
1291	C375	DC POWER SUPPLY	MOBILE SUBSTATION J-BOX	DC PANEL No.1	4/C #10	NOTE 15
1310	N/A	CNTL/ IND S1 TO S2	SWBD #1	SWBD #2	12/C #14	NOTE 17
1311	N/A	CNTL/ IND S1 TO S3	SWBD #1	SWBD #3	12/C #14	NOTE 17
1312	N/A	CNTL/ IND S1 TO S4	SWBD #1	SWBD #4	12/C #14	NOTE 17
1313	N/A	CNTL/ IND S2 TO S4	SWBD #2	SWBD #4	12/C #14	NOTE 17
1314	N/A	CNTL/ IND S3 TO S4	SWBD #3	SWBD #4	12/C #14	NOTE 17
J24	N/A	IRIG TO 351S, 2,4,6	SWBD #4-CLK, IRIG T05	SWBD #2- F2-2, TEE	C953-25	NOTE 13
J25	N/A	IRIG TO 351S, 2,4,6	SWBD #2- F2-2, TEE	SWBD #2- F4-2, TEE	C953-6	NOTE 13
J26	N/A	IRIG TO 351S, 2,4,6	SWBD #2- F4-2, TEE	SWBD #2- F6-2, TEE	C953-6	NOTE 13
J27	N/A	IRIG TO 351S, 1,3,5	SWBD #2- F6-2, TEE	SWBD #3- F1-2, TEE	C953-15	NOTE 13
J28	N/A	IRIG TO 351S, 1,3,5	SWBD #3- F1-2, TEE	SWBD #3- F3-2, TEE	C953-6	NOTE 13
J29	N/A	IRIG TO 351S, 1,3,5	SWBD #3- F3-2, TEE	SWBD #3- F5-2	C953-6	NOTE 13
J30	N/A	IRIG TO T1P, T1BU, T1M	SWBD #4-CLK, IRIG T06	SWBD #1- T1-P TEE	C953-25	NOTE 13
J31	N/A	IRIG TO T1P TO T1BU	SWBD #1- T1-P TEE	SWBD #1- T1-BU TEE	C953-6	NOTE 13
J32	N/A	IRIG TO T1BU TO T1M	SWBD #1- T1-BU TEE	SWBD #1- T1-M IRIG IN	C953-6	NOTE 13
J33		CLK ANTENNA IN	SEL ANTENNA	SEL SURGE PROTECTOR	C961-025	NOTE 25
J34	TRAY	CLK ANTENNA IN	SEL SURGE PROTECTOR	SCADA SWBD #4- CLK, ANT	C961-050	NOTE 25
J35	N/A	IRIG TO RTAC	SWBD #4-CLK, IRIG T08	SCADA SWBD #4- RTAC, IRIG-B IN	C953-6	NOTE 13
J36	N/A	IRIG TO ICON1	SWBD #4-CLK, IRIG T07	SCADA SWBD #4- ICON1, IRIG-B	C953-6	NOTE 13
J37	N/A	IRIG TO DPAC	SWBD #4-CLK, IRIG T03	SCADA SWBD #4-DPAC, IRIG-B IN	C953-6	NOTE 13
J38	N/A	IRIG TO GW1	SWBD #4-CLK, IRIG T04	SCADA SWBD #4- GW1, IRIG-B IN	C953-6	NOTE 13
J41	N/A	FIBER JUMPER, PWC-F SITE1, UP	SWBD #4-ICON1, #1-AB	SWBD #4-PP1-A1/A2, SITE1	ZLC3S	NOTE 13
J42	N/A	FIBER JUMPER, PWC-F SITE2, DOWN	SWBD #4-ICON1, #2-AB	SWBD #4-PP1-B1/B2, SITE2	ZLC3S	NOTE 13
J43	N/A	SCADA, ETSW1 TO RTAC	SWBD #4-ETSW1, PORT8	SWBD #4-RTAC, ETH1	CA605C-008	NOTE 13
J44	N/A	SITE COMM, ICON1 TO GW1	SWBD #4-ICON1, #4-5	SWBD #4-GW1, ETH1	CA605C-008	NOTE 13
J45	N/A	SCADA, BATTERY CHARGER NO. 1	BATTERY CHARGER No. 1	SWBD #4, RTAC, PCI2-2	C605A-36	NOTE 13

Cumberland Road 69 kV to 15 kV Substation
DRAWING: 12502C3
 Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
J47	N/A	SCADA, TRANSFER SWITCH- 485	AUTOMATIC TRANSFER SWITCH	SWBD #4, RTAC, PCI2-4	C605A-50	NOTE 13
J48	N/A	SITE COMM, GW1 TO SWITCH	SWBD #4-ETSW3, PORT7	SWBD #4-GW1, ETH2	CA605C-008	NOTE 13
J49	N/A	NTP TIME, SYSTEM (ETHERNET)	SWBD #4-ETSW2, PORT 7	SWBD #4-CLK, ETH1	CA605C-004	NOTE 13
J50	N/A	SWITCH NETWORK (ETHERNET)	SWBD #4-ETSW1, PORT 7	SWBD #4-ETSW3, PORT 7	CA605C-008	NOTE 13
J51	N/A	SCADA, DPAC (ETHERNET)	SWBD #4-ETSW1, PORT 6	SWBD #4-DPAC-ETH1	CA605C-008	NOTE 13
J52	N/A	SWITCH NETWORK (ETHERNET)	SWBD #4-ETSW1, PORT 5	SWBD #4-ETSW2, PORT 5	CA605C-004	NOTE 13
J103	N/A	SCADA, IO_F1_2	SWBD #4, ETSW1, 19	SWBD #4, PP3, B3B4	ZLC2M	NOTE 13,19
J104	N/A	SCADA, IO_F2_2	SWBD #4, ETSW1, 20	SWBD #4, PP3, B9B10	ZLC2M	NOTE 13,19
J105	N/A	SCADA, IO_F3_2	SWBD #4, ETSW1, 21	SWBD #4, PP3, C3C4	ZLC2M	NOTE 13,19
J106	N/A	SCADA, IO_F4_2	SWBD #4, ETSW1, 22	SWBD #4, PP3, C9C10	ZLC2M	NOTE 13,19
J107	N/A	SCADA, IO_F5_2	SWBD #4, ETSW1, 23	SWBD #4, PP3, D3D4	ZLC2M	NOTE 13,19
J108	N/A	SCADA, IO_F6_2	SWBD #4, ETSW1, 24	SWBD #4, PP3, D9D10	ZLC2M	NOTE 13,19
J123	N/A	SCADA, 2411 BREAKER No. 52F1_2	52F1_2 PATCH PANEL (SPH01P)	IO_F1_2-PORT 1A	ZLC3M	NOTE 13,19
J124	N/A	SCADA, 2411 BREAKER No. 52F2_2	52F2_2 PATCH PANEL (SPH01P)	IO_F2_2-PORT 1A	ZLC3M	NOTE 13,19
J125	N/A	SCADA, 2411 BREAKER No. 52F3_2	52F3_2 PATCH PANEL (SPH01P)	IO_F3_2-PORT 1A	ZLC3M	NOTE 13,19
J126	N/A	SCADA, 2411 BREAKER No. 52F4_2	52F4_2 PATCH PANEL (SPH01P)	IO_F4_2-PORT 1A	ZLC3M	NOTE 13,19
J127	N/A	SCADA, 2411 BREAKER No. 52F5_2	52F5_2 PATCH PANEL (SPH01P)	IO_F5_2-PORT 1A	ZLC3M	NOTE 13,19
J128	N/A	SCADA, 2411 BREAKER No. 52F6_2	52F6_2 PATCH PANEL (SPH01P)	IO_F6_2-PORT 1A	ZLC3M	NOTE 13,19
J201	N/A	SCADA, ETM1_2	SWBD #4, ETSW1, 9	SWBD #4, PP3, A1A2	ZLC2M	NOTE 13,19
J202	N/A	SCADA, LTC1_2	SWBD #4, ETSW1, 10	SWBD #4, PP3, A3A4	ZLC2M	NOTE 13,19
J203	N/A	SCADA, PMF1_2	SWBD #4, ETSW1, 11	SWBD #4, PP3, B1B2	ZLC2M	NOTE 13,19
J204	N/A	SCADA, PMF2_2	SWBD #4, ETSW1, 12	SWBD #4, PP3, B7B8	ZLC2M	NOTE 13,19
J205	N/A	SCADA, PMF3_2	SWBD #4, ETSW1, 13	SWBD #4, PP3, C1C2	ZLC2M	NOTE 13,19
J206	N/A	SCADA, PMF4_2	SWBD #4, ETSW1, 14	SWBD #4, PP3, C7C8	ZLC2M	NOTE 13,19
J207	N/A	SCADA, PMF5_2	SWBD #4, ETSW1, 15	SWBD #4, PP3, D1D2	ZLC2M	NOTE 13,19
J208	N/A	SCADA, PMF6_2	SWBD #4, ETSW1, 16	SWBD #4, PP3, D7D8	ZLC2M	NOTE 13,19
J209	N/A	SCADA, MOBILE	SWBD #4, ETSW1, 18	SWBD #4, PP3, A11A12	ZLC2M	NOTE 13,19
J211	N/A	SCADA, T1P	SWBD #4, ETSW2, 6	SWBD #1, T1P, PORT5	CA605C-19	NOTE 13,19
J212	N/A	SCADA, T1BU	SWBD #4, ETSW2, 9	SWBD #1, T1BU, PORT5	CA605C-19	NOTE 13,19
J213	N/A	SCADA, T1PM	SWBD #4, ETSW2, 10	SWBD #1, T1PM, PORT1	CA605C-19	NOTE 13,19
J214	N/A	SCADA, RELAY 52-1_2	SWBD #4, ETSW2, 11	SWBD #2, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J215	N/A	SCADA, RELAY 52-2_2	SWBD #4, ETSW2, 12	SWBD #3, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J216	N/A	SCADA, RELAY 52-3_2	SWBD #4, ETSW2, 13	SWBD #2, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J217	N/A	SCADA, RELAY 52-4_2	SWBD #4, ETSW2, 14	SWBD #3, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J218	N/A	SCADA, RELAY 52-5_2	SWBD #4, ETSW2, 15	SWBD #2, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J219	N/A	SCADA, RELAY 52-6_2	SWBD #4, ETSW2, 16	SWBD #3, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J221	N/A	SCADA, TRANSFORMER T1 ETM	T1 PATCH PANEL (SPH01P)	ETM1_1_SEL-2414, PORT 5A	ZLC3M	NOTE 13,19
J222	N/A	SCADA, TRANSFORMER T1 LTC	T1 PATCH PANEL (SPH01P)	LTC1, PORT 5A	ZLC3M	NOTE 13,19
J223	N/A	SCADA, PM BREAKER No. 52F1_2	52F1_2 PATCH PANEL (SPH01P)	PMF1_2-PORT 5A	ZLC3M	NOTE 13,19
J224	N/A	SCADA, PM BREAKER No. 52F2_2	52F2_2 PATCH PANEL (SPH01P)	PMF2_2-PORT 5A	ZLC3M	NOTE 13,19
J225	N/A	SCADA, PM BREAKER No. 52F3_2	52F3_2 PATCH PANEL (SPH01P)	PMF3_2-PORT 5A	ZLC3M	NOTE 13,19
J226	N/A	SCADA, PM BREAKER No. 52F4_2	52F4_2 PATCH PANEL (SPH01P)	PMF4_2-PORT 5A	ZLC3M	NOTE 13,19
J227	N/A	SCADA, PM BREAKER No. 52F5_2	52F5_2 PATCH PANEL (SPH01P)	PMF5_2-PORT 5A	ZLC3M	NOTE 13,19
J228	N/A	SCADA, PM BREAKER No. 52F6_0	52F6_2 PATCH PANEL (SPH01P)	PMF6_2-PORT 5A	ZLC3M	NOTE 13,17
J229	N/A	SCADA, MOBILE XFRM	PATCH PANEL (SPH01P)	PMF5_2-PORT 5A	ZLC3M	NOTE 13,19
		END OF CABLE SCHEDULE	END OF CABLE SCHEDULE	END OF CABLE SCHEDULE		

Cumberland Road 69 kV to 15 kV Substation
DRAWING: 12502C3
 FIBER PRE-TERM ORDER

DETERMINING PRE-TERMINATED ASSEMBLY LENGTHS FOR ORDER:

- 1) SEE PRINTS FOR DETAILED CONNECTIONS. VERIFY "CABLE NUMBER" AND "TO DEVICE".
- 2) WRITE IN "B- MEASURED PATH LENGTH" AS ACTUALLY MEASURED.
- 3) CALCULATE "E- ORDER LENGTH" AS SHOWN.
- 4) ORDER ALL CABLES TOGETHER TO ENSURE BULK CABLE AVAILABLE IN NEEDED QUANTITY.
- 5) SPECIFY LENGTH NEEDED PER ITEM ORDERED.
- 6) SPECIFY CABLE NUMBER (CABLE NUMBER IN THIS TABLE) FOR LABELS PER ITEM ORDERED.

Bank No. 1...

FIBER-PT

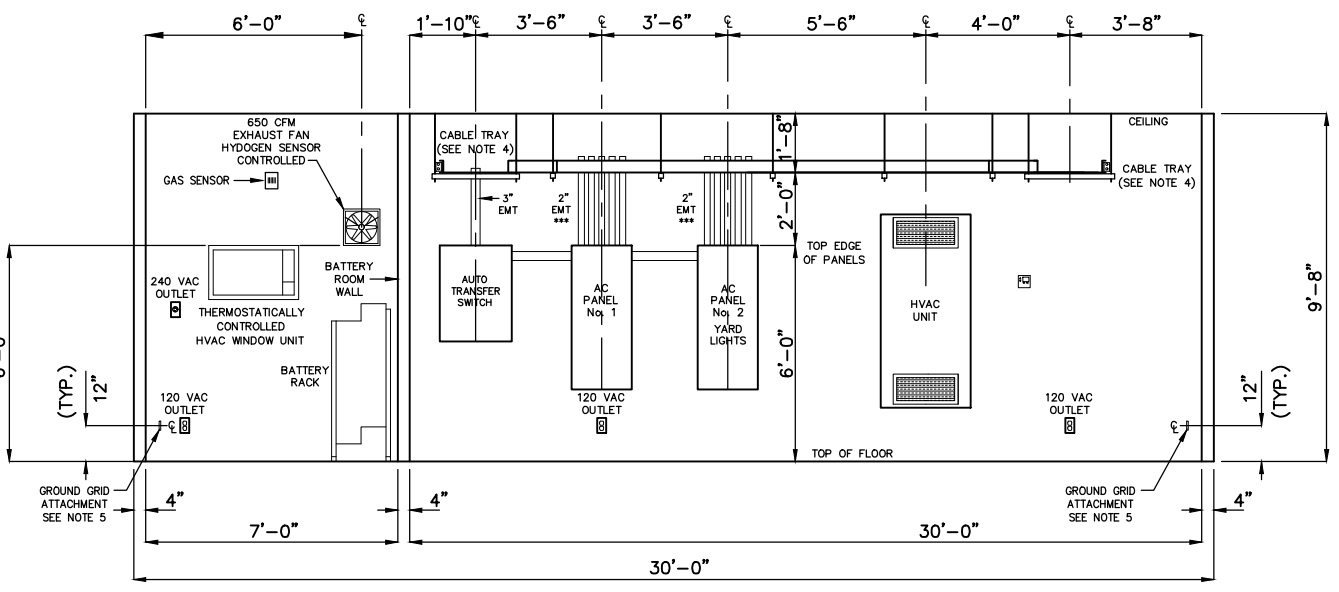
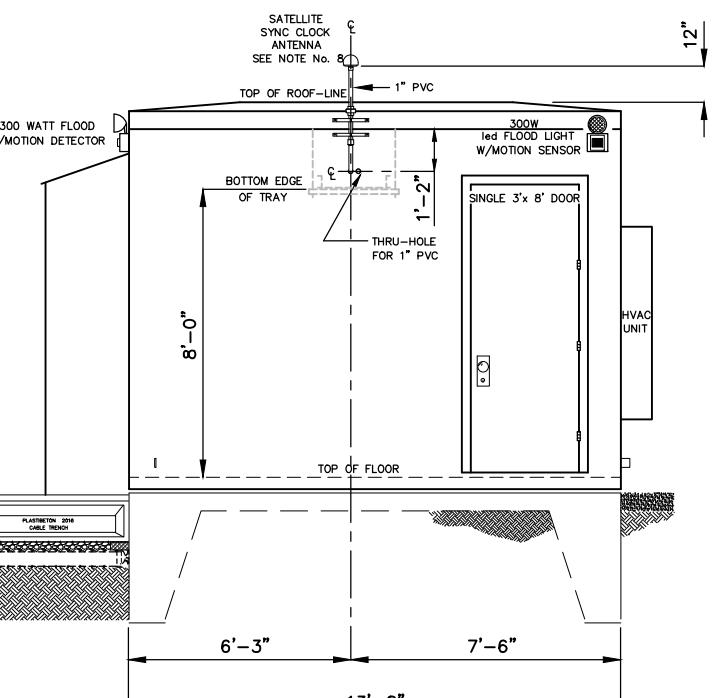
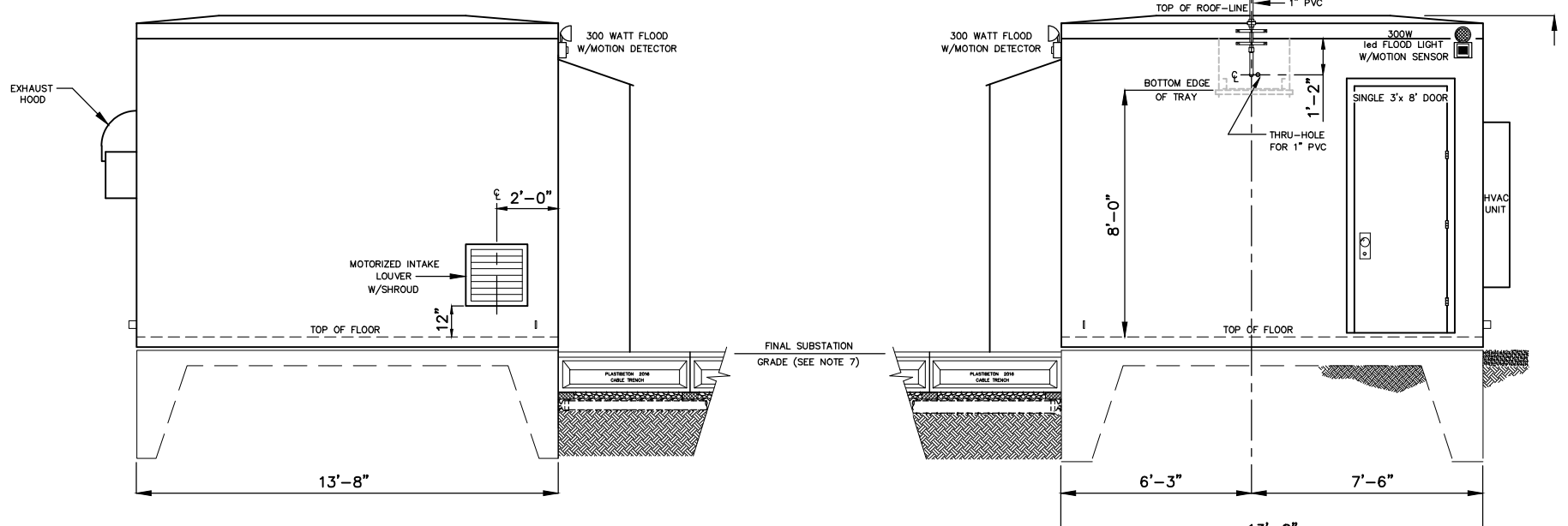
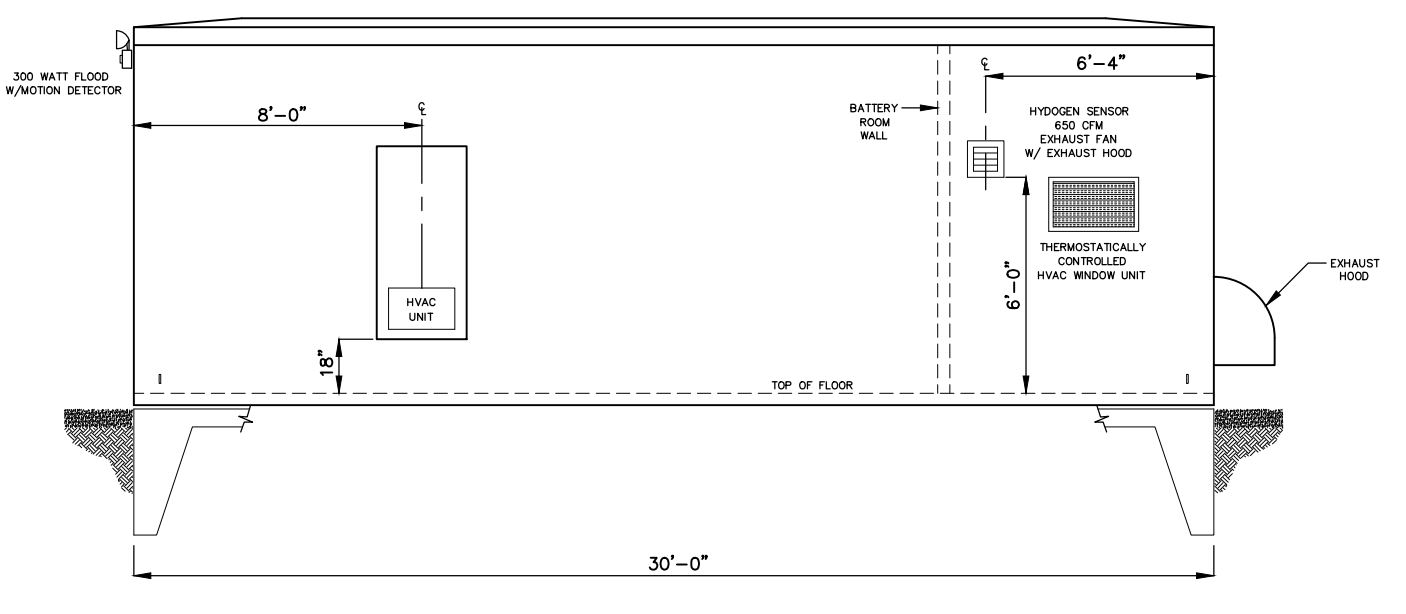
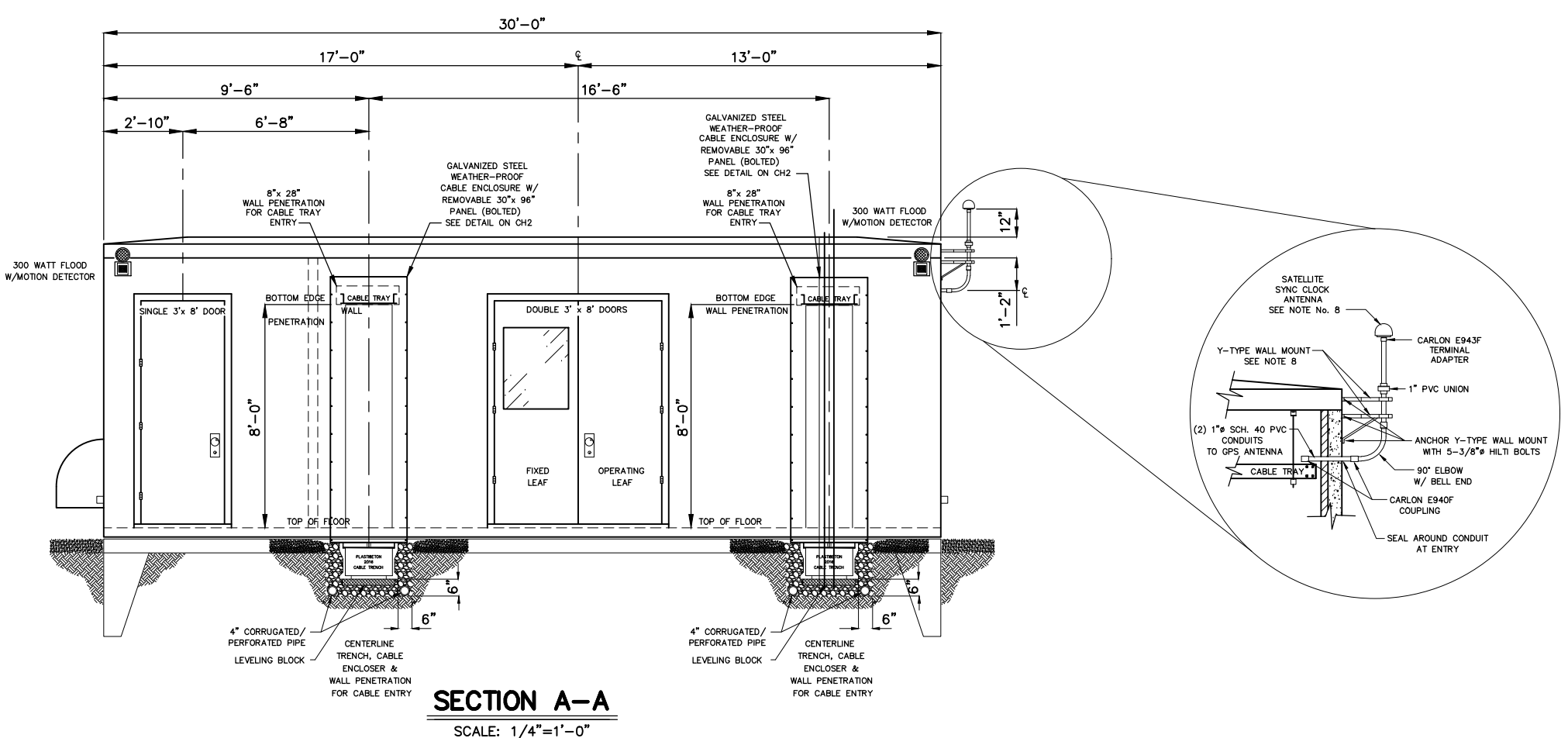
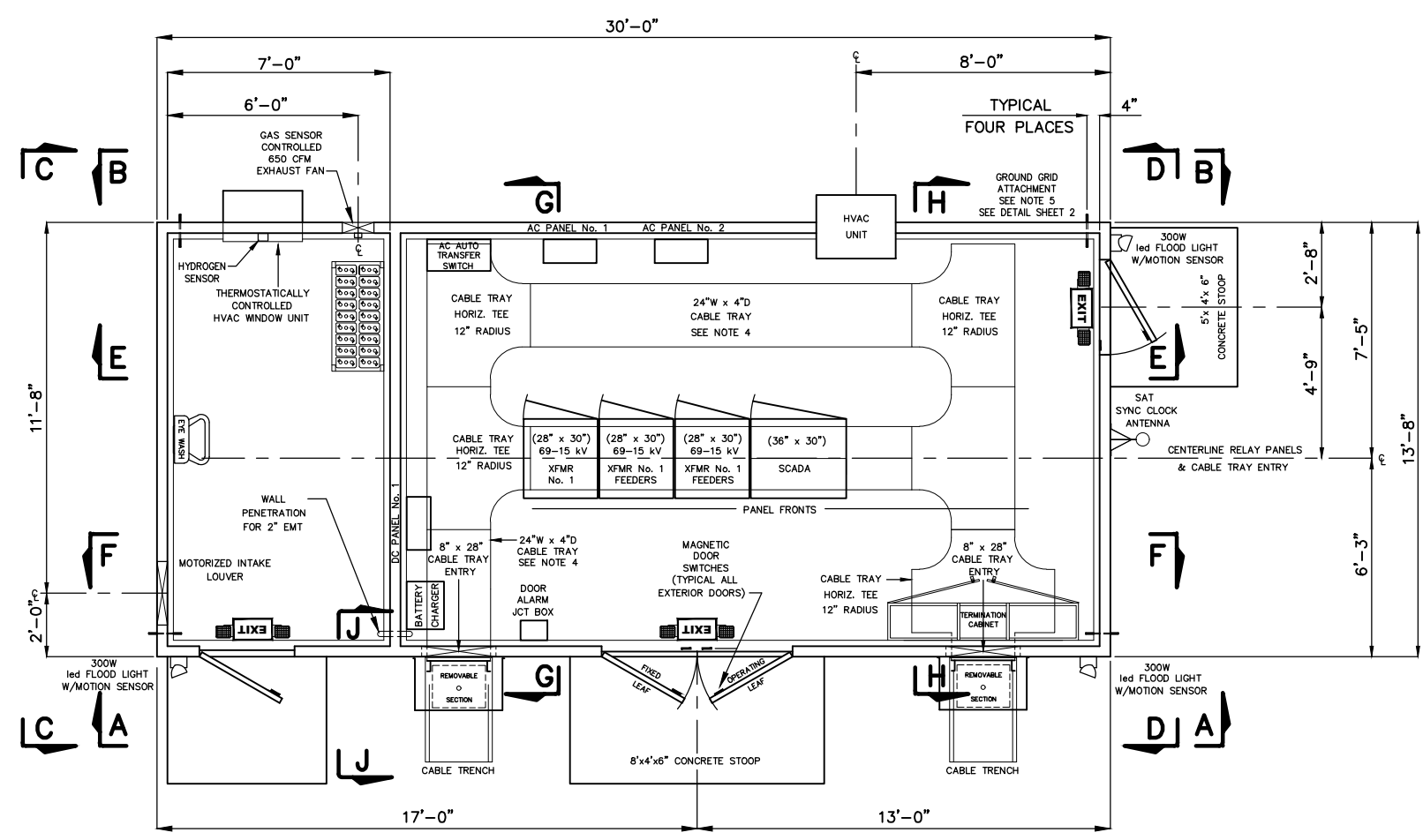
CABLE NUMBER (SPECIFY IN ORDER)	TO DEVICE	A - LENGTH IN YARD CABINET	B - MEASURED PATH LENGTH (SEE NOTE BELOW)	C - TURN LOOP LENGTH	D - JUST-IN-CASE LENGTH	E - ORDER LENGTH: ADD A+B+C+D	ORDER PART NO. with 4-digit Length, Feet, and 4-digit Cable No. (SPECIFY IN ORDER)
1130	TRANSFORMER	10 FEET		2 FEET	10 FEET		
1145	FEEDER No. 1 52F1	10 FEET		2 FEET	10 FEET		
1155	FEEDER No. 2 52F2	10 FEET		2 FEET	10 FEET		
1165	FEEDER No. 3 52F3	10 FEET		2 FEET	10 FEET		
1175	FEEDER No. 4 52F4	10 FEET		2 FEET	10 FEET		
1185	FEEDER No. 5 52F5	10 FEET		2 FEET	10 FEET		
1195	FEEDER No. 6 52F6	10 FEET		2 FEET	10 FEET		
1289	MOBILE TRANSFORMER	5 FEET		2 FEET	10 FEET		

NOTE: B-MEASURED PATH LENGTH - MEASURE FROM MOUTH OF CONDUIT INSIDE YARD CABINET THRU CONDUIT, TRENCH, TRAY, DROP INTO SWBD #4 THRU LEFT OR RIGHT CABLE OPENING, TO EDGE OF DESIGNATED PATCH PANEL. TAKE CARE TO ROUND CORNERS USING FIBER MINIMUM BEND RADIUS, NOT WITH SHARP BENDS.

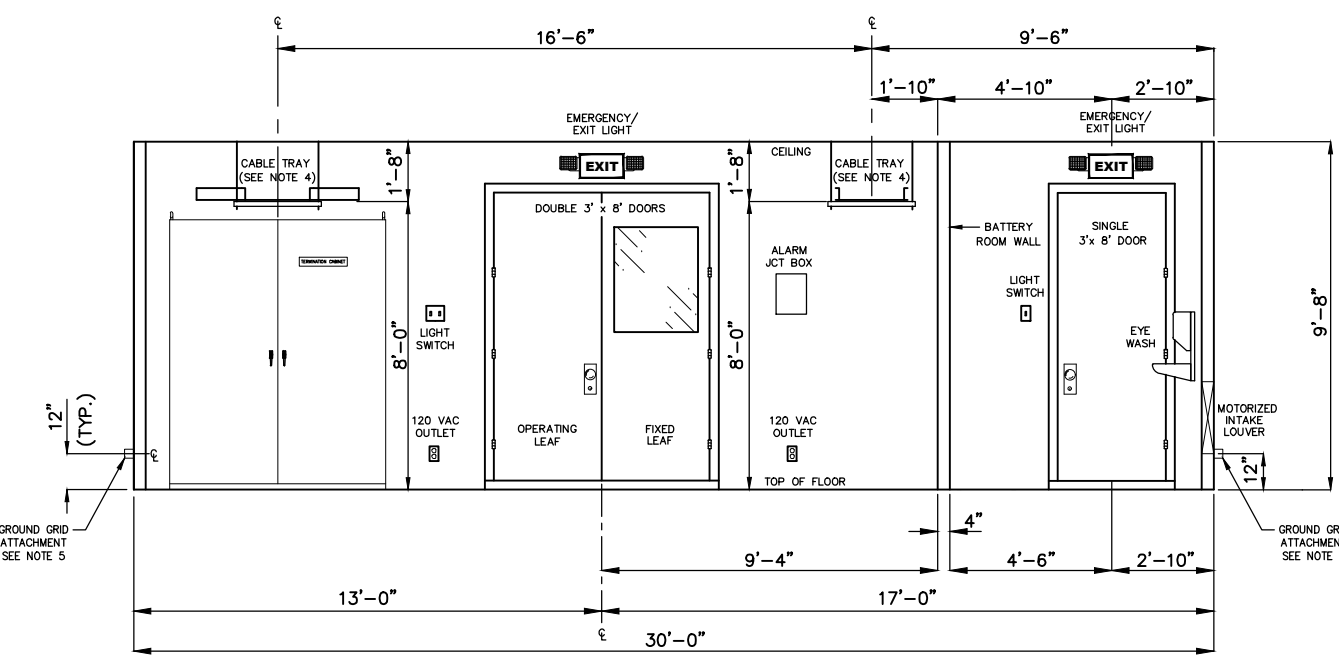
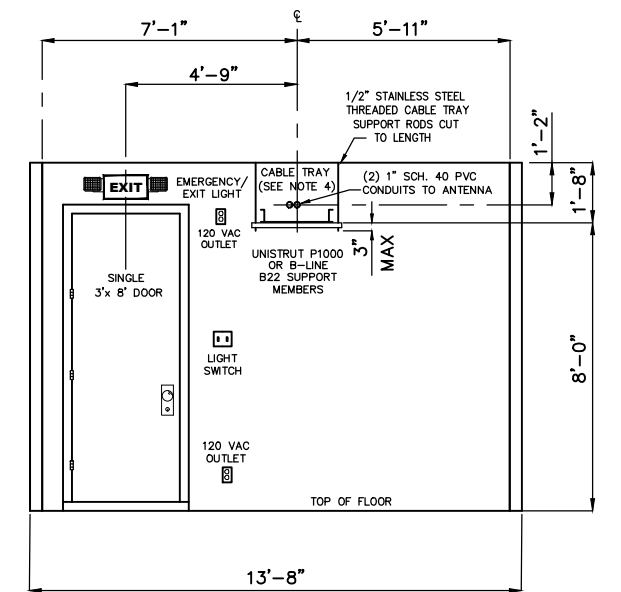
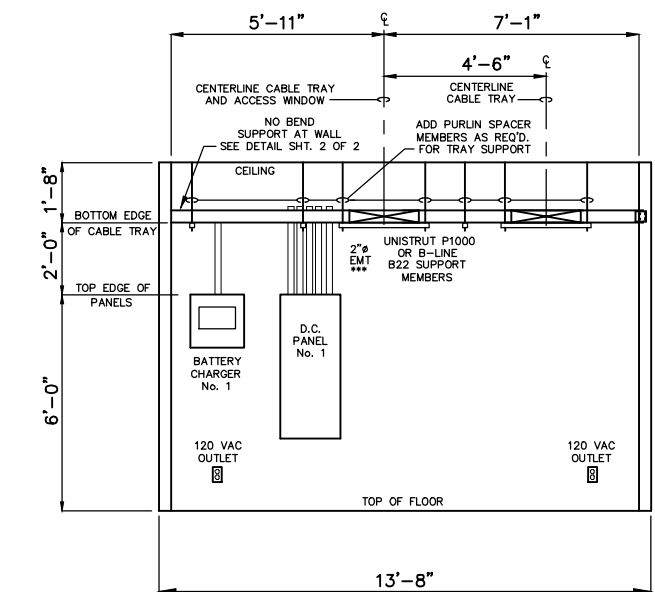
P.O. HOFFER
DRAWINGS

NO.	ISSUED FOR	DATE	ENG.	DATE
A	ISSUED FOR BID	05/05/23	BWJ	05/05/23
B	ISSUED FOR BID	07/10/24	BWJ	07/10/24

PROJECT NAME: PO HOFFER 69 TO 15 X 25 kV SUBSTATION	DRAWING TITLE: CONTROL HOUSE PLAN AND SECTIONS
DRAWN BY: JRT	CHECKED BY: DAW
APPROVED BY: M/W	DATE: 3/16/2022
SCALE: 3/16"=1'-0"	FILE NUMBER: 12513
SHEET:	



*** BUILDING CONTRACTOR TO
INSTALL AS MANY 2" EMT CONDUITS
AS WILL PRACTICALLY FIT FROM
TOP OF PANELS TO CABLE TRAY.
SEE EMT TERMINATION DETAIL AT CABLE TRAY
SHEET CH2 OF 2
SUBSTATION CABLEING TO BE RUN BY OTHERS



LEGEND

- led EMERGENCY EXIT LIGHTING UNIT WITH SELF-CONTAINED BATTERY AND CHARGING CIRCUIT.
- SINGLE RECEPTACLE 240V, GROUND.
- DUPLEX RECEPTACLE 120V, 20AMP, GROUND.

NOTES:

1. PANELS TO BE GROUNDED (VIA CABLE TRAY) TO SUBSTATION GRID AT TWO SEPARATE LOCATIONS ON DIAGONALLY OPPOSITE CORNERS. BONDING CONDUCTOR SHALL BE 2/0 AWG STRANDED COPPER.
2. ALL ENTRANCES TO BUILDING SHALL BEAR "NO SMOKING OR OPEN FLAME" WARNING SIGNS ON EXTERIOR.
3. BUILDING CONTRACTOR SHALL FURNISH AND INSTALL CONTROL HOUSE, CABLE TRAY, SUPPORT ROOFS, HVAC UNITS, AND COMPLETE ELECTRICAL WIRING FOR BUILDING OUTLETS, SWITCHES, RECEPTACLES, VENTILATION AND LIGHT FIXTURES.
4. CABLE TRAY STRAIGHT SECTIONS AND FITTINGS TO BE NEMA LOAD/SPAN RATING 12C, ALUMINUM LADDER-TYPE 24" WIDE, 3" DEEP W/4" WALLS & 9" RING SPACING, CHAUFANT SYSTEM NO "24" OR APPROX. EQUAL.
5. HOUSE TO BE ATTACHED TO STATION GROUND GRID AT INDICATED CORNERS BY USE OF 1/4" x 3" COPPER BUS BAR, INSTALLED THROUGH WALL 12" ABOVE FLOOR LEVEL. 4-HOLE NEMA SPACING, INSIDE & OUT. SEE GROUNDING PAD DETAIL ON SHEET 2 OF 2.
6. ALL LIGHTING FOR CONTROL HOUSE SHALL BE led FIXTURES. THIS INCLUDES EXIT, EMERGENCY AND OUTDOOR FLOOD LIGHTING.
7. WHERE THE FINAL SUBSTATION GRADE IS DISTURBED DURING CONSTRUCTION, A TOTAL OF AT LEAST 6" OF STONE (1" OF WASHED STONE PLUS 3" OF CRUSHER RUN) IS TO BE ADDED BACK TO ACHIEVE FINAL SUBSTATION GRADE.
8. HOUSE FABRICATOR TO PROVIDE Y-TYPE STANDOFF BRACKET WITH MOUNTING BOLTS FOR ATTACHMENT OF THE SATELLITE SYNC CLOCK ANTENNA. THE ANTENNA AND COAX CABLE TO BE PROVIDED BY THE OWNER.

EARTHQUAKE DESIGN DATA FOR CONCRETE SHELTERS:

- DESIGN OF THE BUILDING SHALL USE THE SEISMIC PROVISIONS OF ONE OF THE FOLLOWING CODES/STANDARDS:
- 2003 NFPA 5000 BUILDING CONSTRUCTION AND SAFETY CODE.
 - 2002 AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) 7, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
 - 2003 INTERNATIONAL CODE COUNCIL (ICC) INTERNATIONAL BUILDING CODE.
1. SEISMIC IMPORTANCE FACTOR = 1.0 & OCCUPANCY CATEGORY = 1
 2. MAPPED SPECTRAL RESPONSE ACCELERATIONS, SS = 1.85, S1 = 0.10
 3. SITE CLASS = "D"
 4. SPECTRAL RESPONSE COEFFICIENTS SDS = 1.24, SD1 = 0.19
 5. SEISMIC DESIGN CATEGORY = D
 6. ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE PROCEDURE
- THE MANUFACTURER OF THE BUILDING SHALL FURNISH DESIGN CERTIFICATIONS REQUIRED BY 7 CFR 1792.104 SEISMIC ACKNOWLEDGMENTS.

REFERENCE:

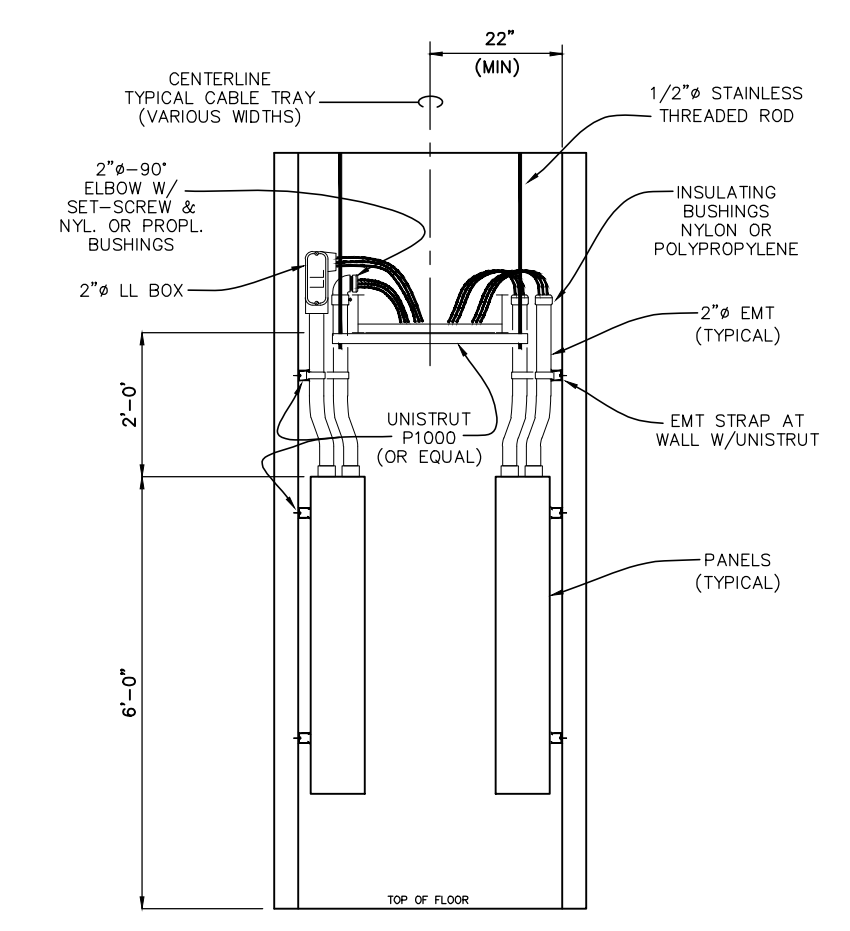
- PLAN VIEW 12513 GA1
- FOUNDATION PLAN 12513 FP1, FP2
- CONTROL HOUSE DETAILS 12513 CH2

**PRELIMINARY -
DO NOT USE FOR
CONSTRUCTION**

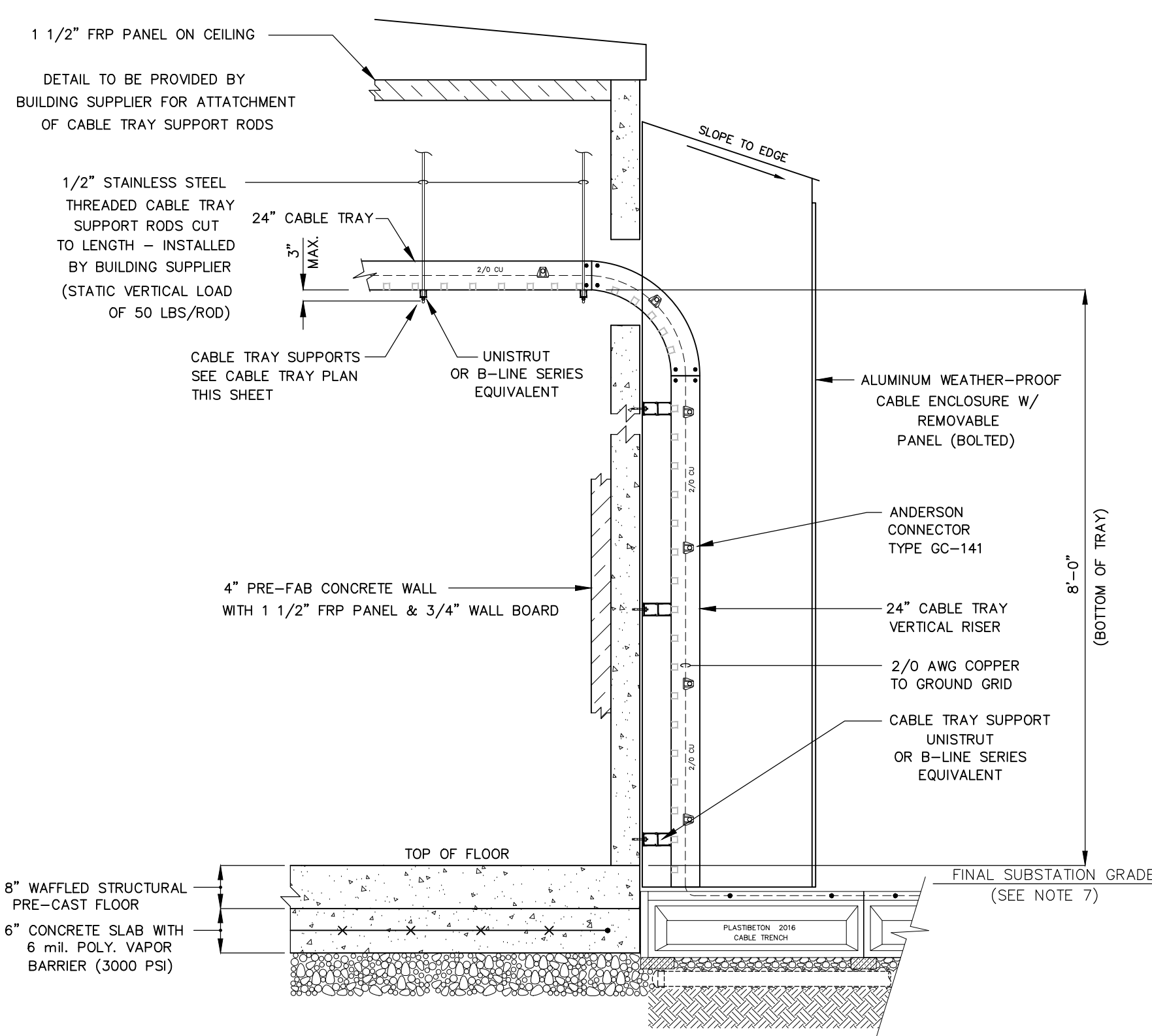
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NO.	REVISIONS	ENG.	DATE
A	ISSUED FOR BID	BWJ	05/05/23
B	ISSUED FOR BID	BWJ	07/10/24

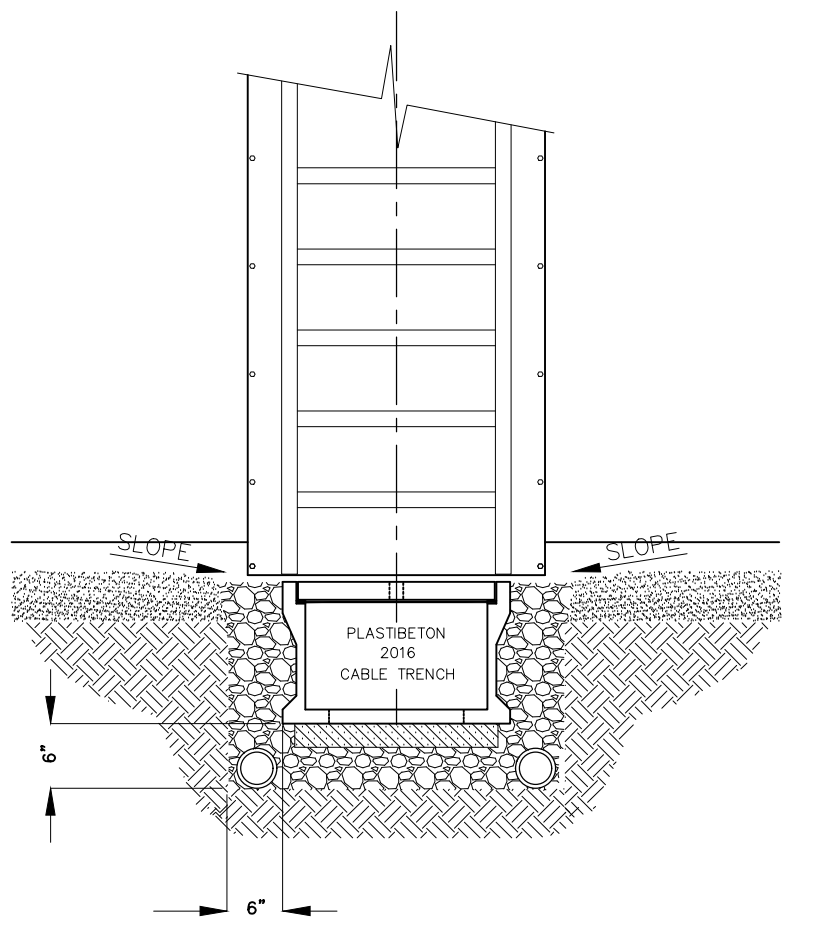
PROJECT NAME:	PO HOFFER 69 TO 15 X 25 kV SUBSTATION
DRAWING TITLE:	CONTROL HOUSE PLAN AND DETAILS
DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12513
SHEET:	



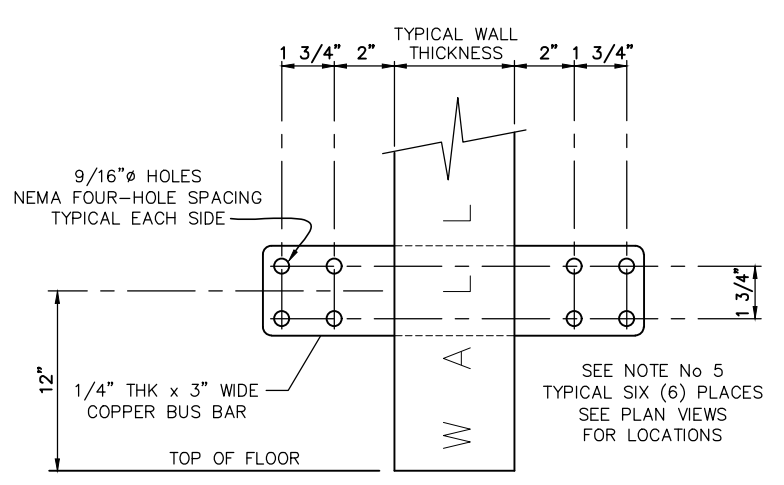
EMT TERMINATION DETAIL AT CABLE TRAY
SHOWING VARIOUS TERMINATION OPTIONS
SCALE: NONE



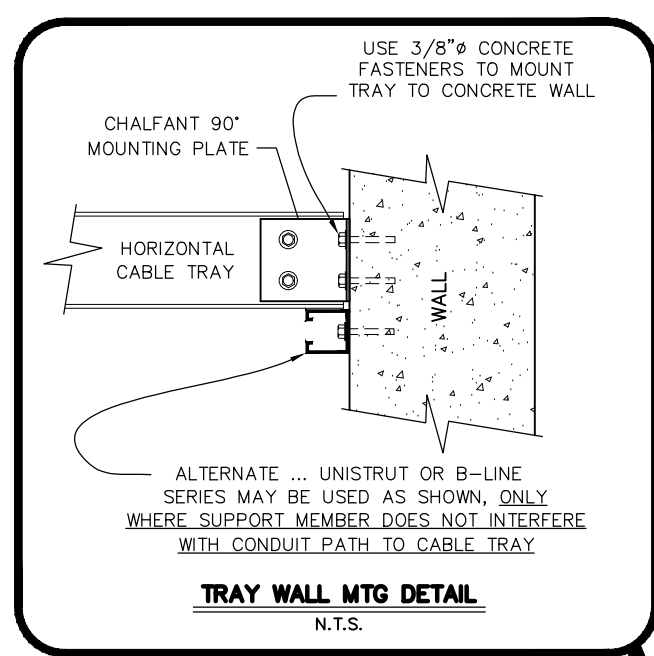
SECTION J-J
SCALE: NONE



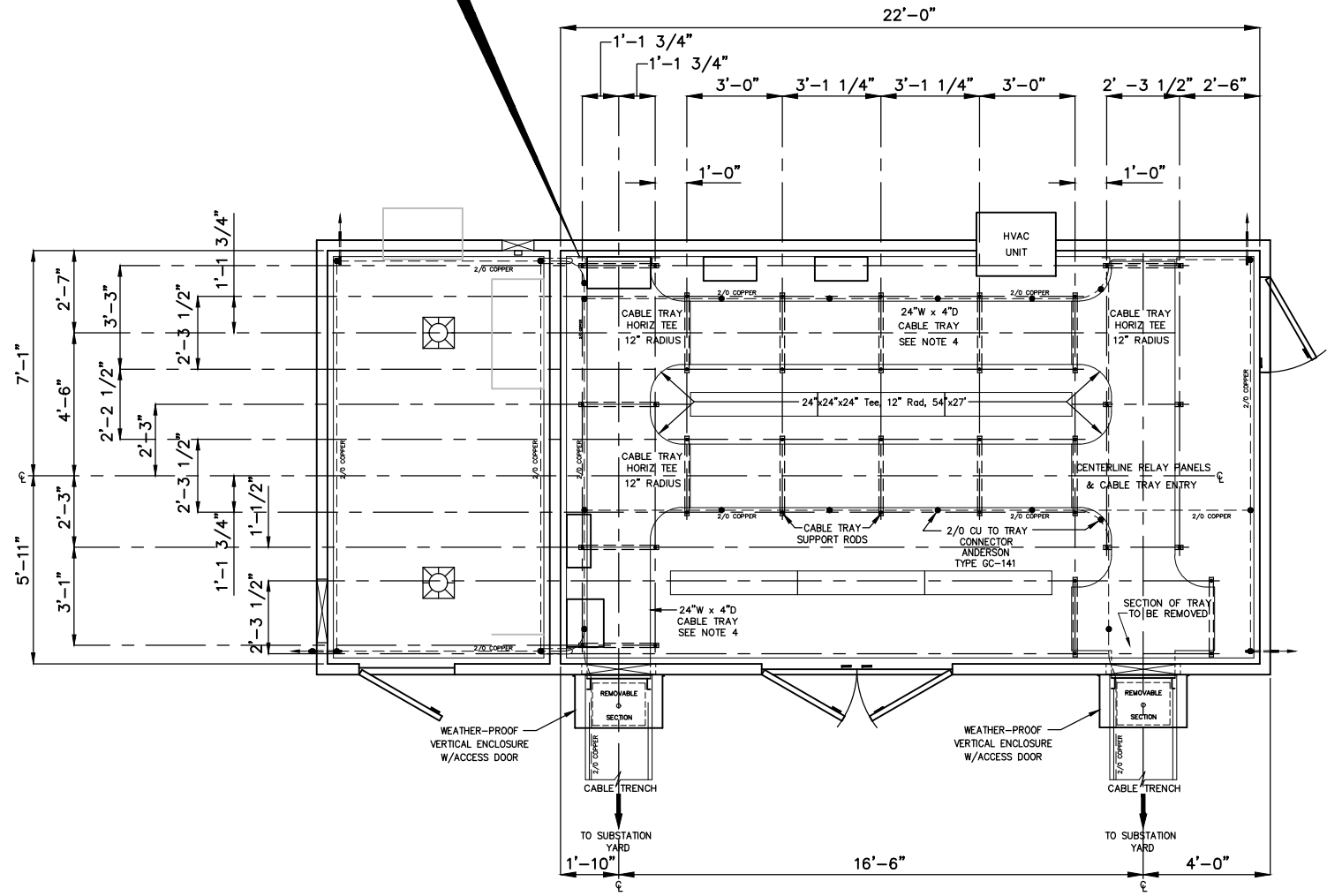
TRAY AT TRENCH
SCALE: NONE



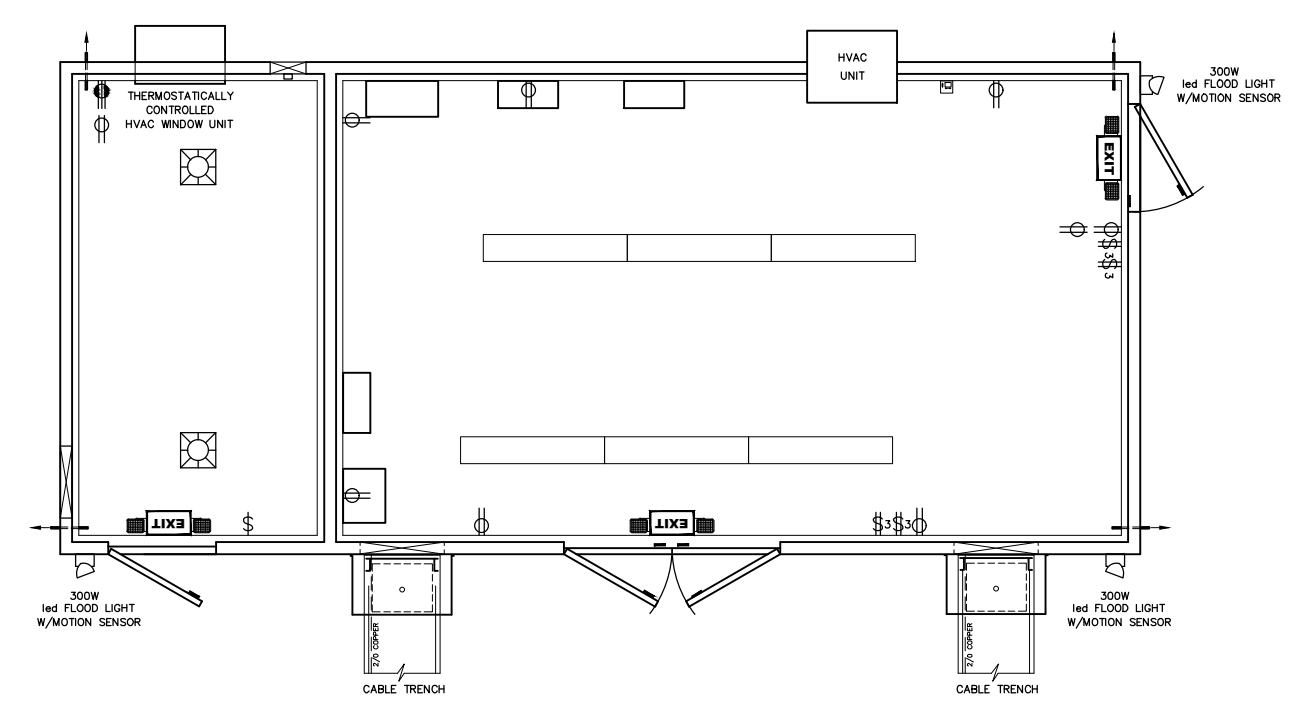
GROUNDING PAD DETAIL
SCALE: NONE



TRAY WALL MTG DETAIL
N.T.S.



CABLE TRAY PLAN
SCALE: 1/4"=1'-0"



ELECTRICAL PLAN
SCALE: 1/4"=1'-0"

ELECTRICAL LEGEND

- ⌘ SINGLE POLE TOGGLE SWITCH 20AMP, 120V.
- ⌘ SINGLE POLE DOUBLE THROW 3-WAY TOGGLE SWITCH 20AMP, 120V.
- ⌘ DUPLEX RECEPTACLE 120V, 20AMP
- ⌘ SINGLE RECEPTACLE 240V, GROUNDED.
- ⌘ TWO TUBE led FIXTURE 120V.
- EXIT led EMERGENCY EXIT LIGHTING UNIT WITH SELF-CONTAINED BATTERY AND CHARGING CIRCUIT.
- ⌘ THERMOSTAT
- ⌘ 120 V.A.C. 100 WATT EQUIVALENT led FIXTURE (EXPLOSION PROOF).
- ⌘ 120 V.A.C. 300 WATT EQUIVALENT led FLOOD LIGHT W/ MOTION SENSOR.
- ⌘ THERMOSTAT
- ⌘ MAGNETIC DOOR SWITCH

REFERENCE:

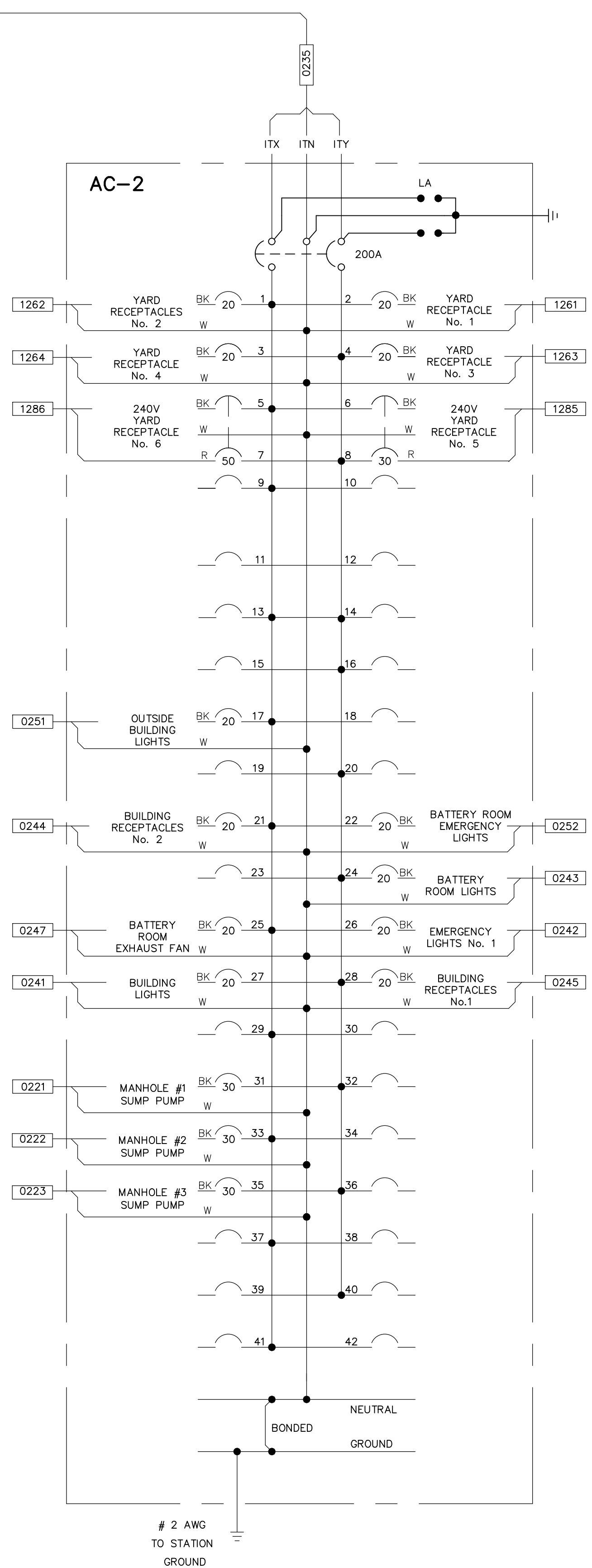
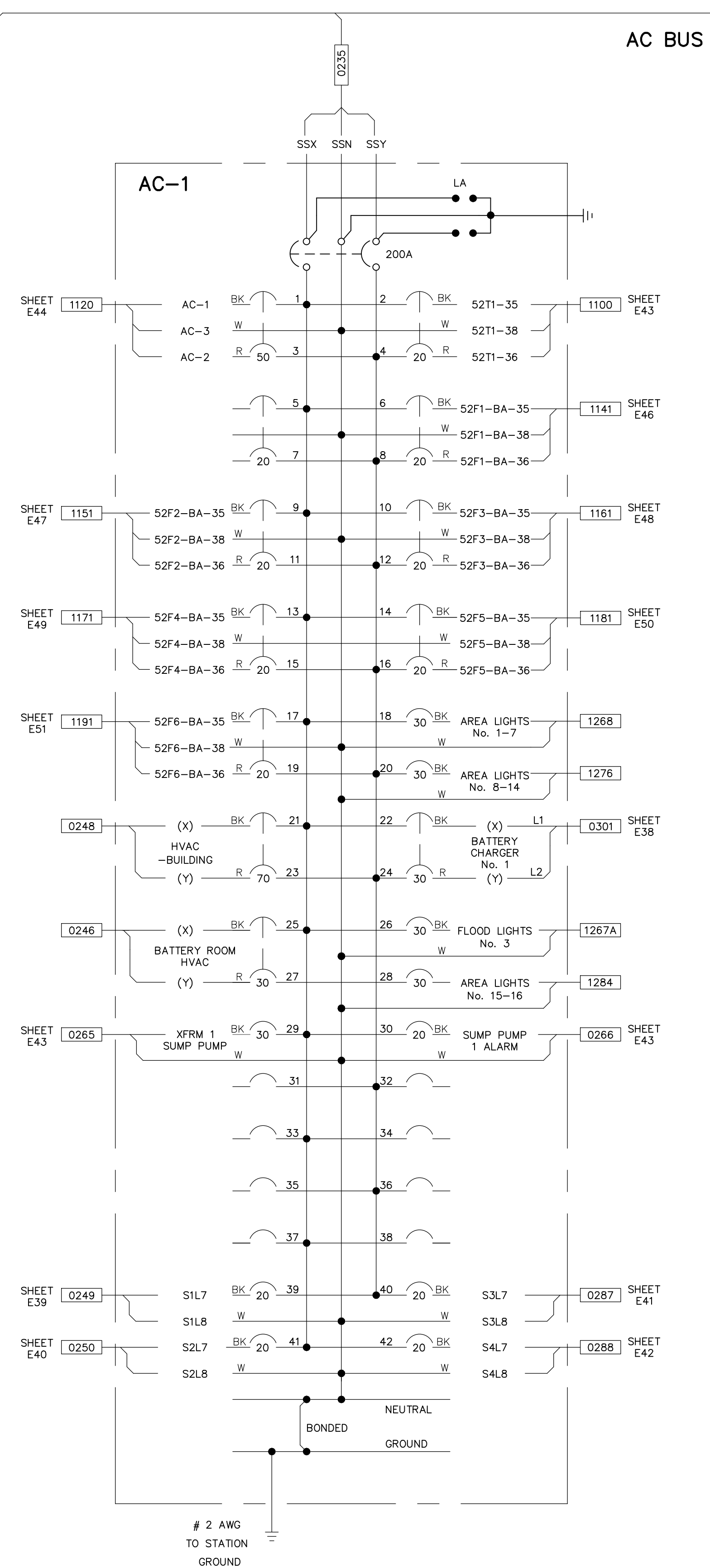
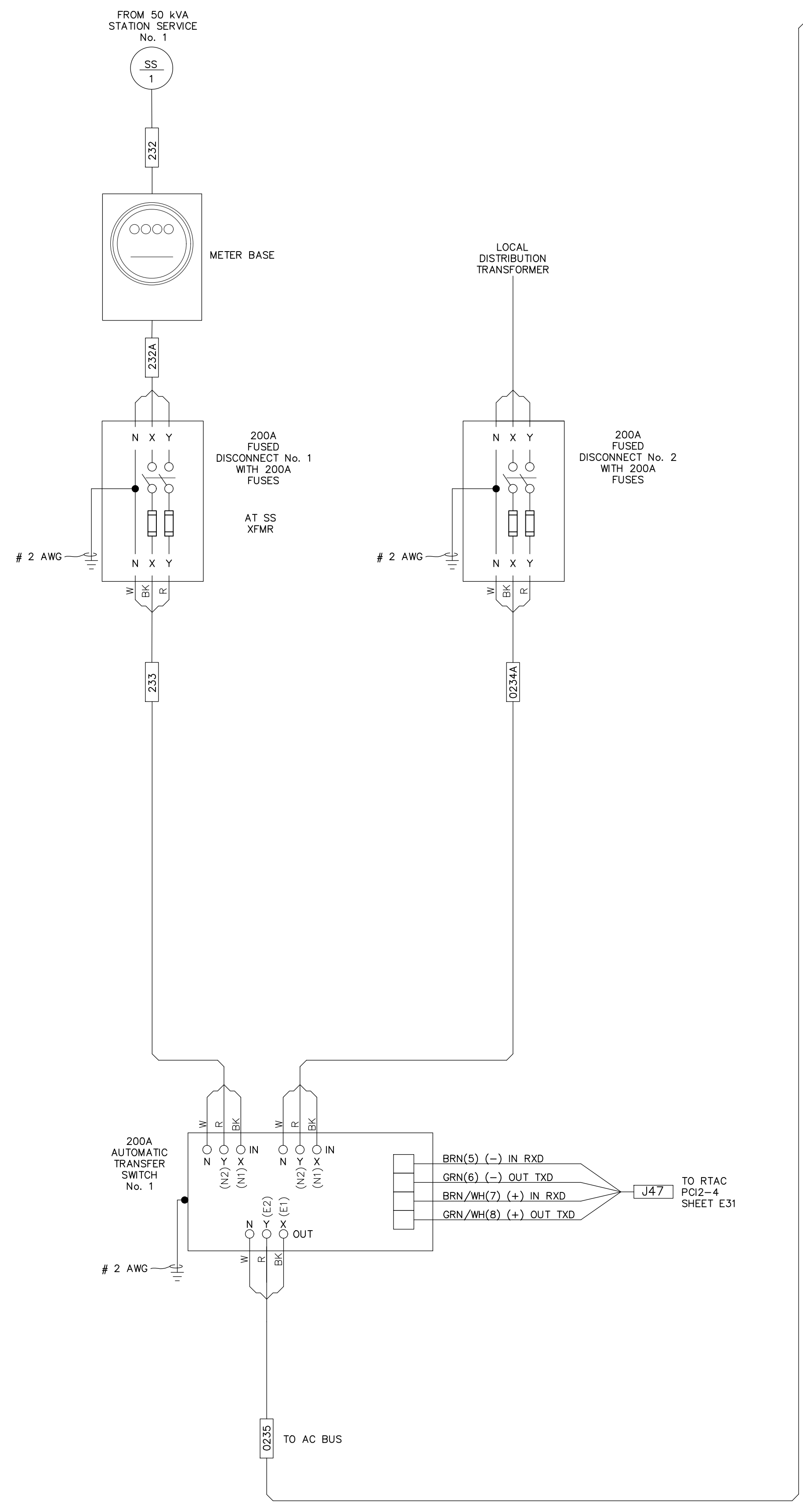
- CONTROL HOUSE PLAN & SECTIONS: 12513 CH1
- GROUNDING PLAN & DETAILS: 12513 G1, G2

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

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NO.	ISSUED FOR	REVISIONS	ENG.	DATE
A	ISSUED FOR BID		BMJ	05/05/23

PROJECT NAME:	PO HOFFER TO 15 X 25 kV SUBSTATION
DRAWING TITLE:	AC-1/AC-2/AC-3 PANELS INTERCONNECTION DIAGRAM
DRAWN BY:	JRT
CHECKED BY:	DAW
APPROVED BY:	MJW
DATE:	3/16/2022
SCALE:	NTS
FILE NUMBER:	12513
SHEET:	



NOTES:

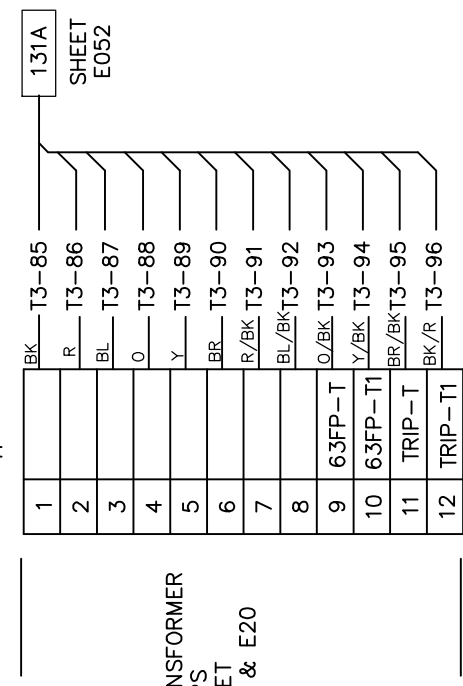
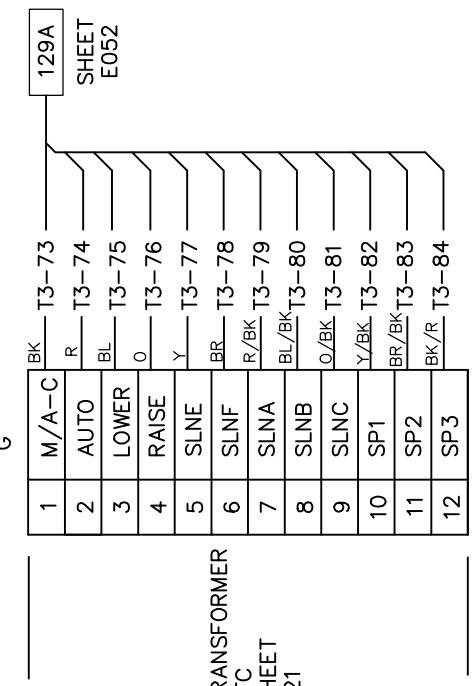
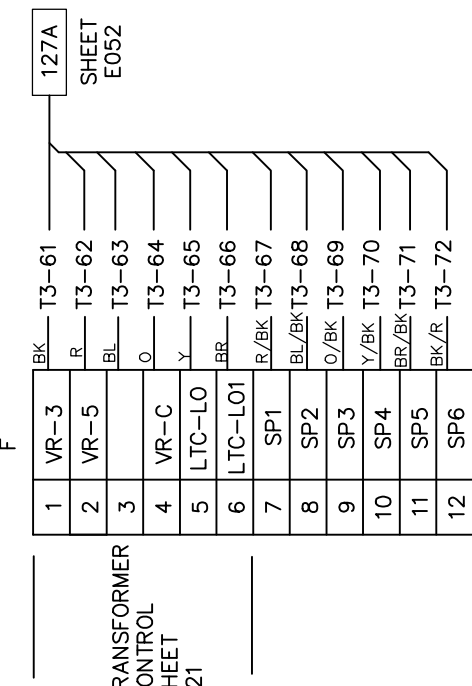
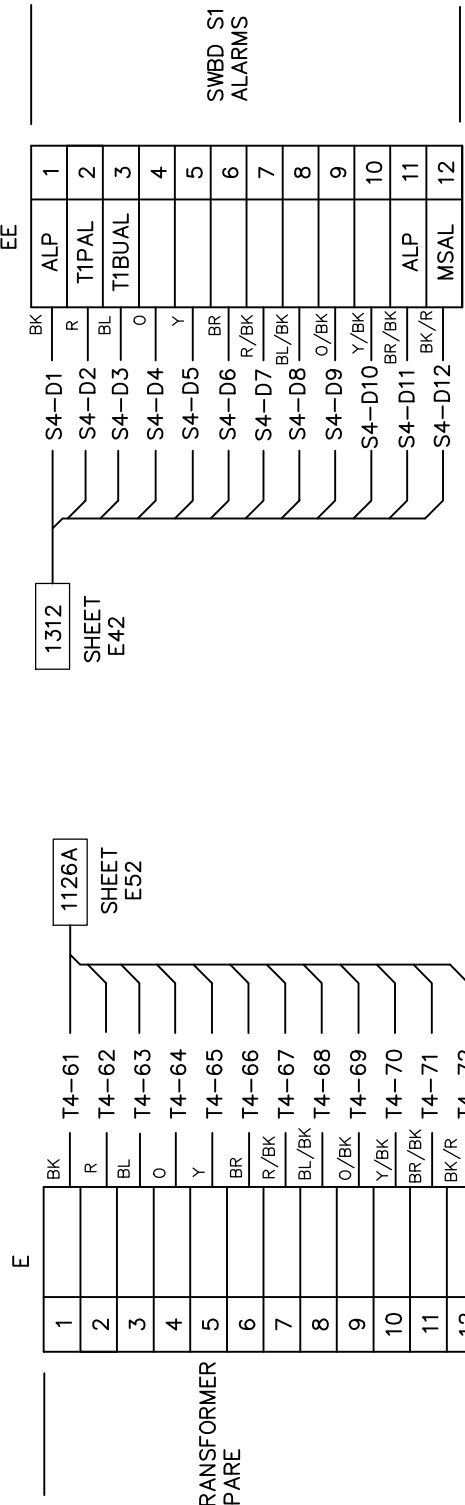
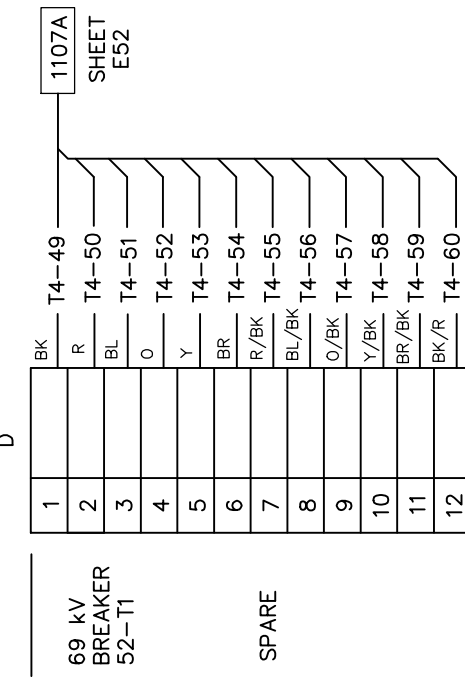
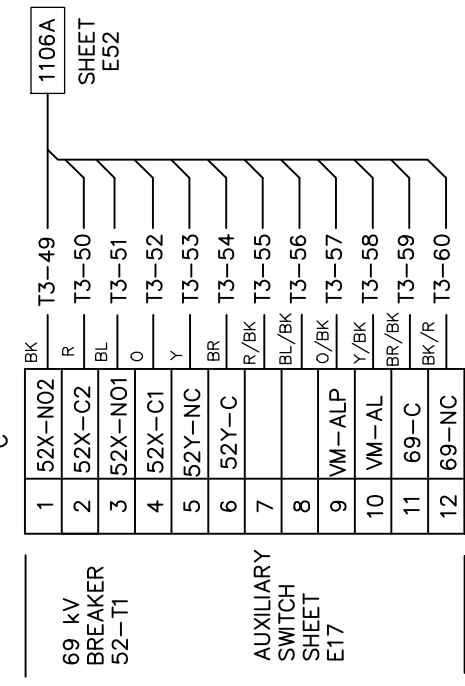
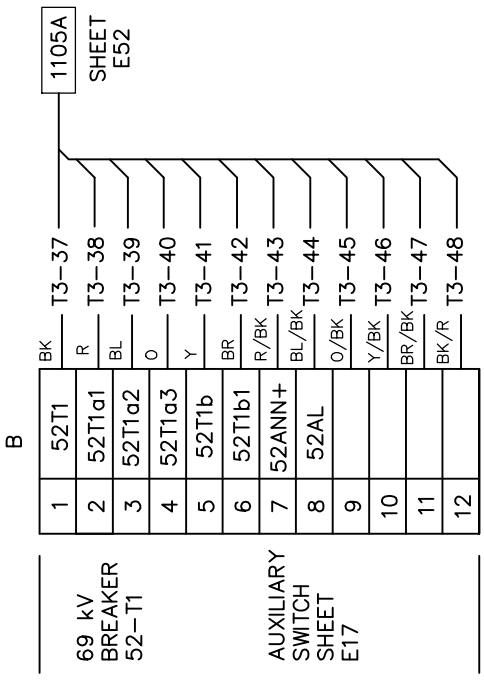
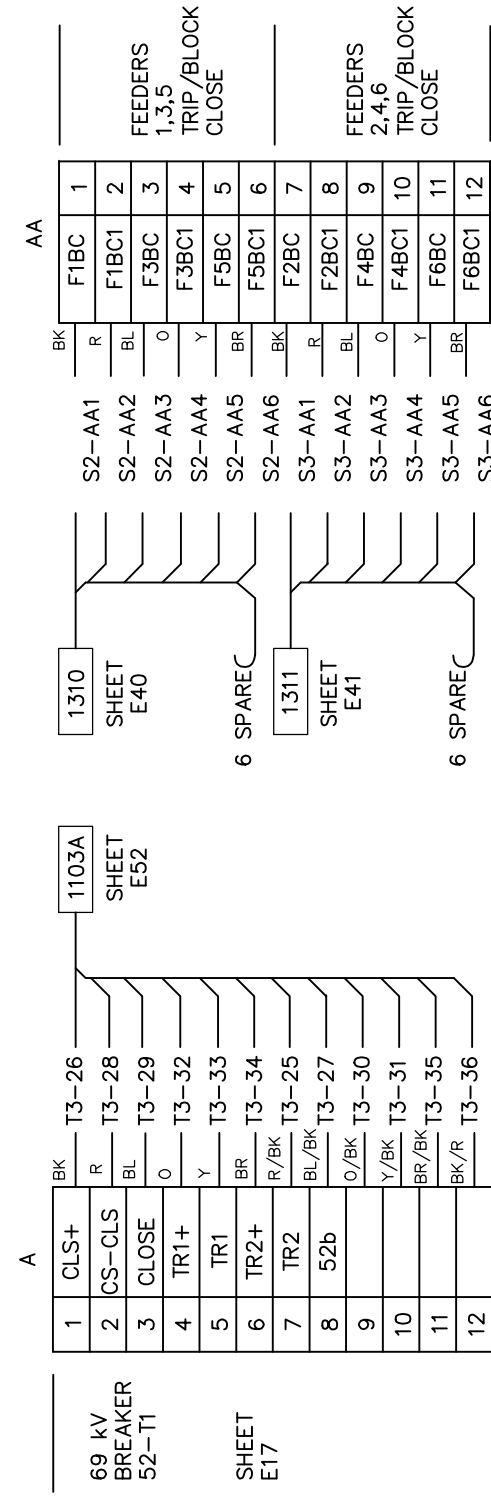
- ALL AC BRANCH FEEDERS SHALL OBSERVE THE FOLLOWING COLOR CODE:
X-BLACK Y-RED N-WHITE G-GREEN
- CONTRACTOR SHALL ONLY BE RESPONSIBLE FOR INSTALLATION OF METER SOCKET. METER UNIT WILL BE INSTALLED BY OWNER.
- GROUND WIRES ARE USED BUT NOT SHOWN.

DEVICE CODES

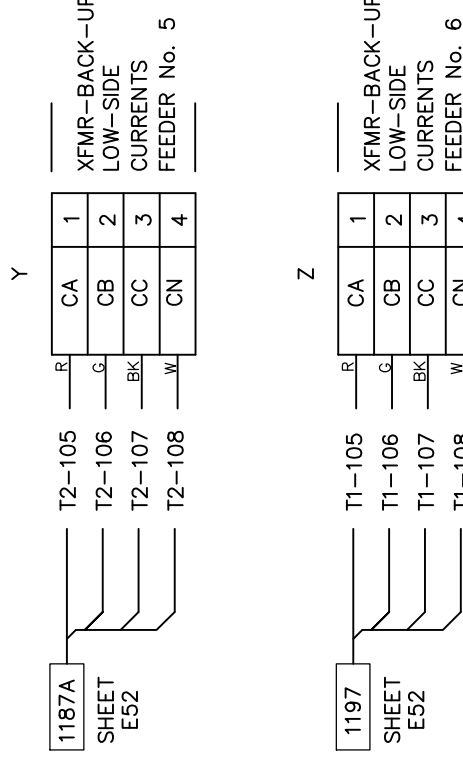
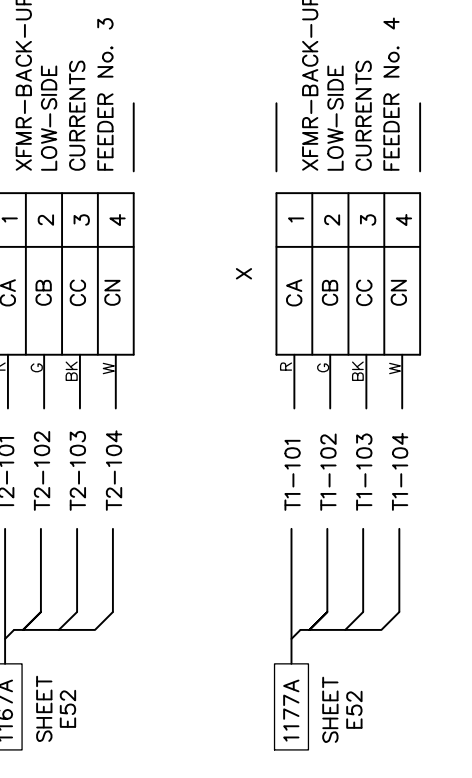
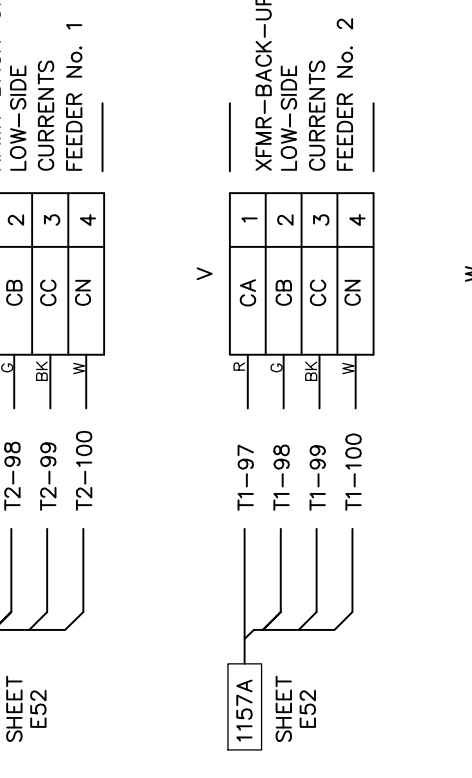
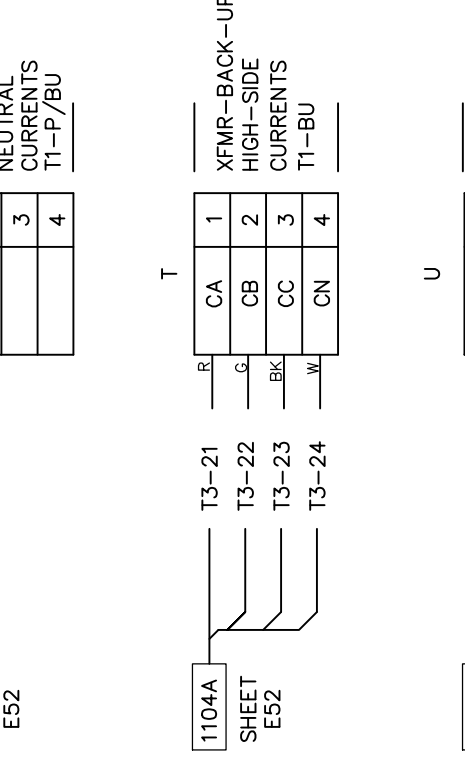
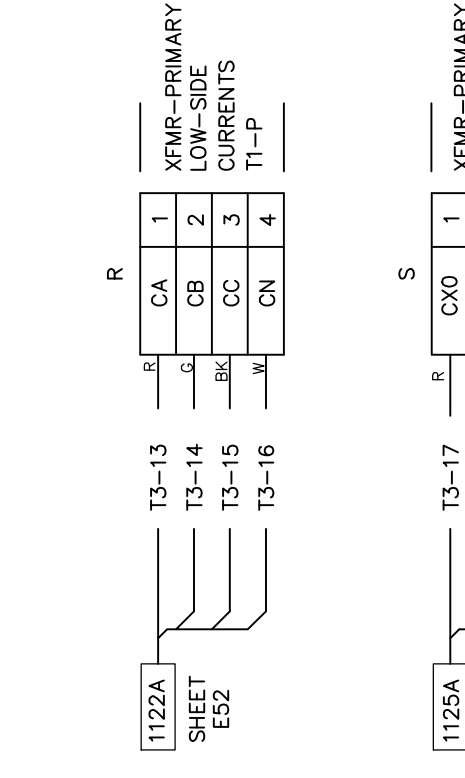
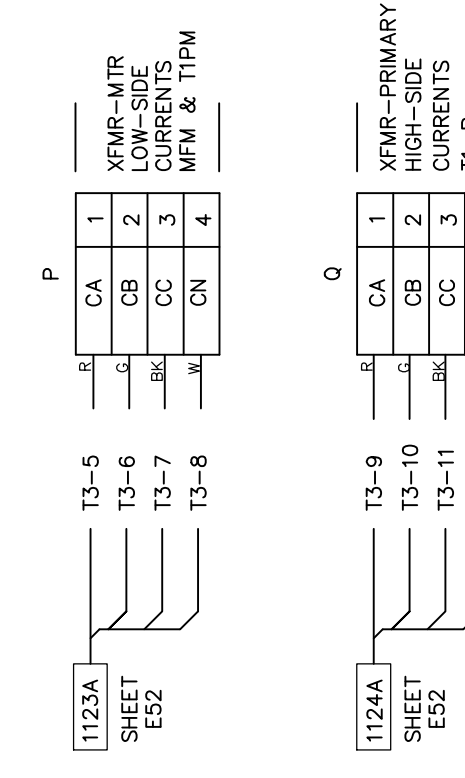
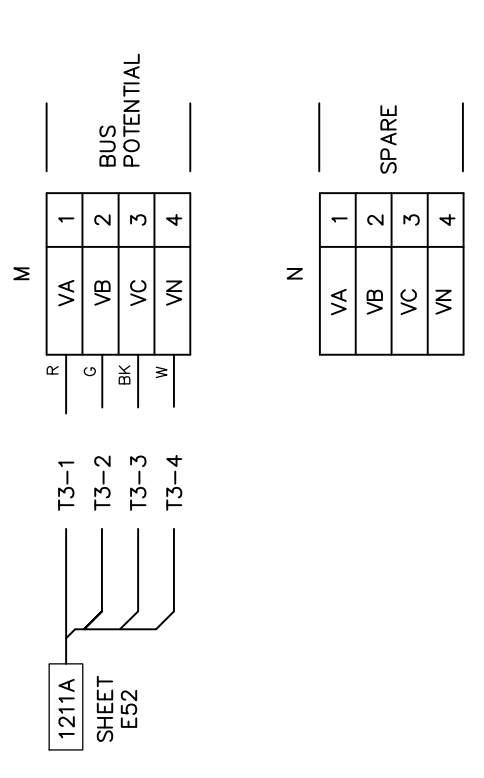
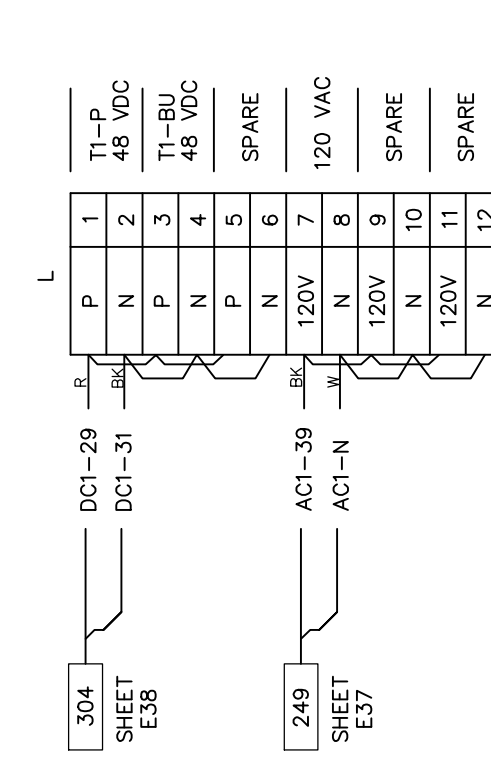
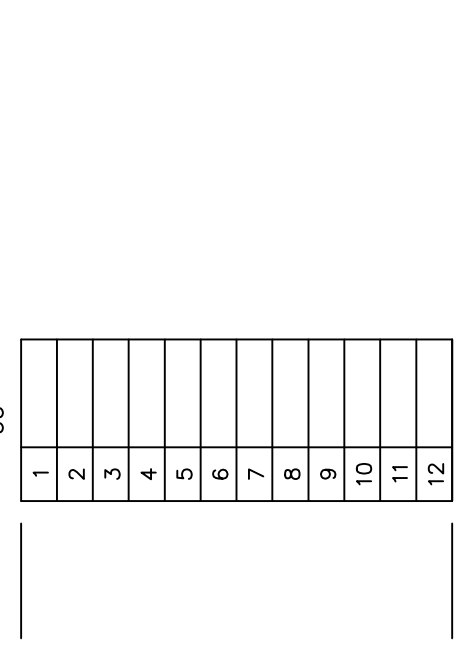
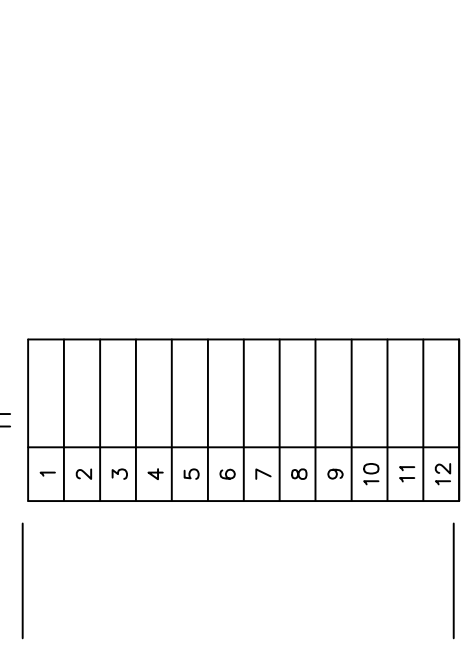
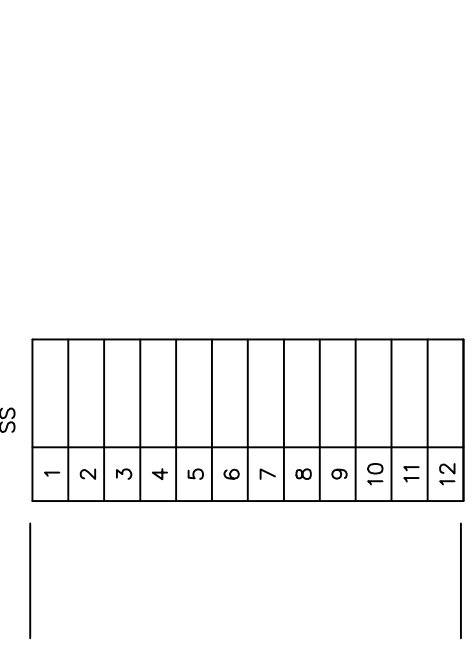
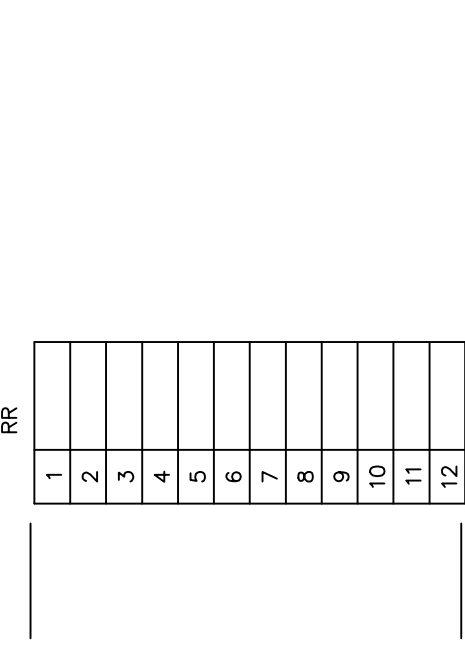
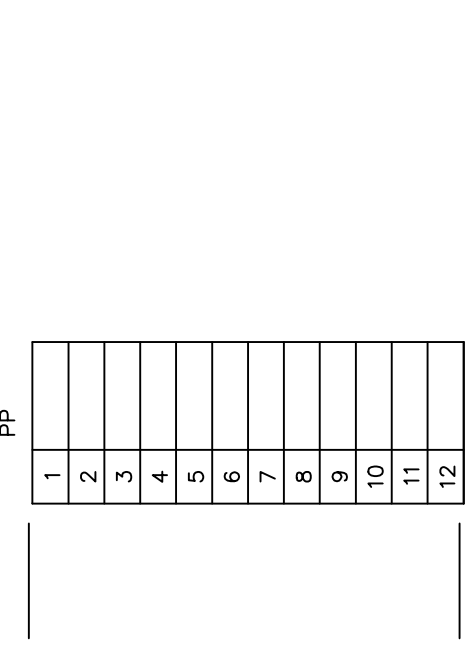
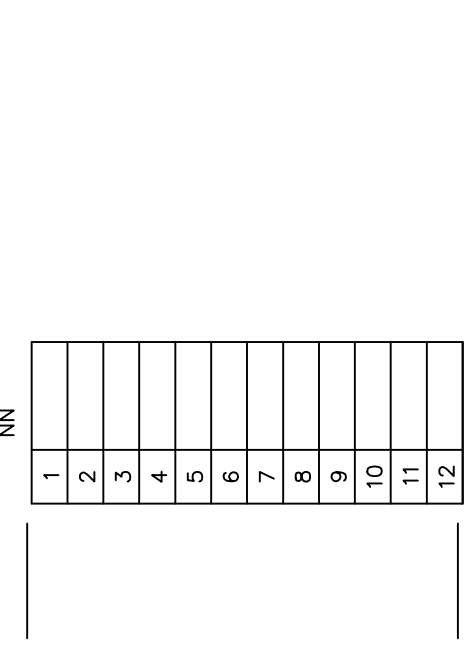
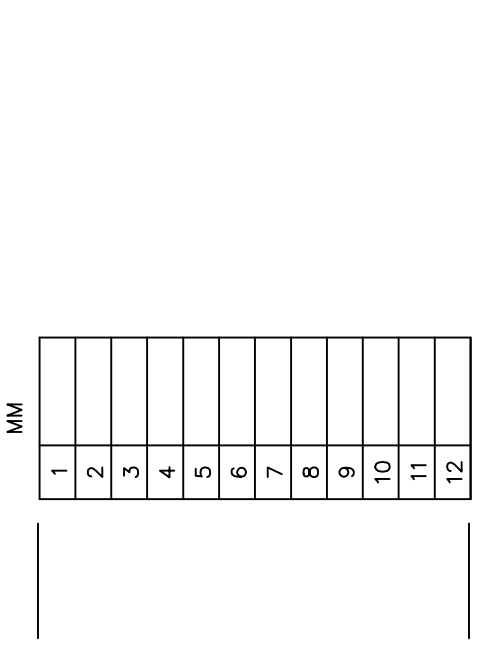
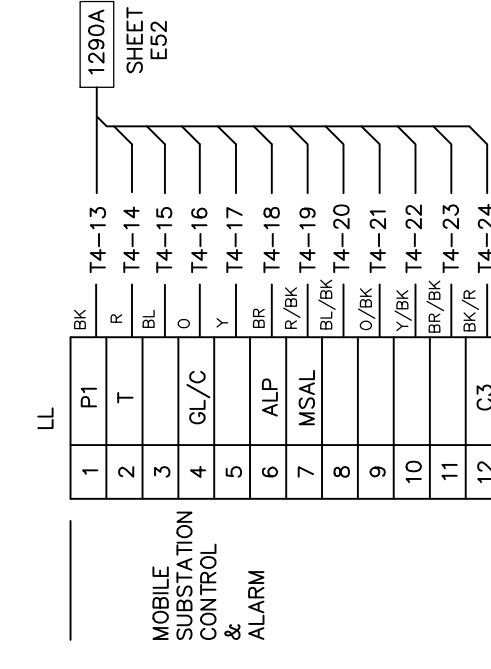
- | | |
|------|--------------------------------|
| AC-X | AC SERVICE BREAKER PANEL No. x |
| SX | SWITCHBOARD No. x |
| TX | TRANSFORMER No. x |
| 52-X | BREAKER No. x |

SWITCHBOARD No. 1 - S1
69 kV LINE No. 1

LEFT SIDE



RIGHT SIDE



FRONT
SWITCHBOARD No. 1 - S1
PANEL REAR VIEW

LEFT SIDE

RIGHT SIDE

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	G
C	BR
N	W

AC

X	BR
Y	R
N	W
G	G

DC

POS	R
NEG	BR

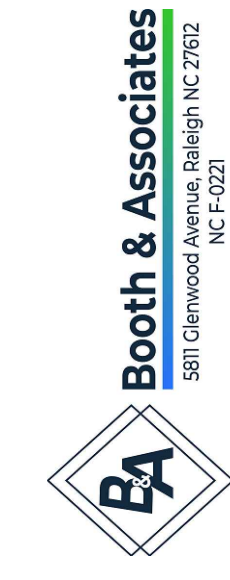
REVISIONS

NO.	ISSUED FOR BID	ENG.	DATE
A		BWJ	05/06/23

PROJECT NAME: PO HOFFER
69 TO 15 X 25 kV
SUBSTATION

DRAWING TITLE: SWITCHBOARD NO.1
INTERCONNECTION DIAGRAM

DRAWN BY: JRT
CHECKED BY: DAW
APPROVED BY: MJW
DATE: 3/16/2022
SCALE: NTS
FILE NUMBER: 12513
SHEET:



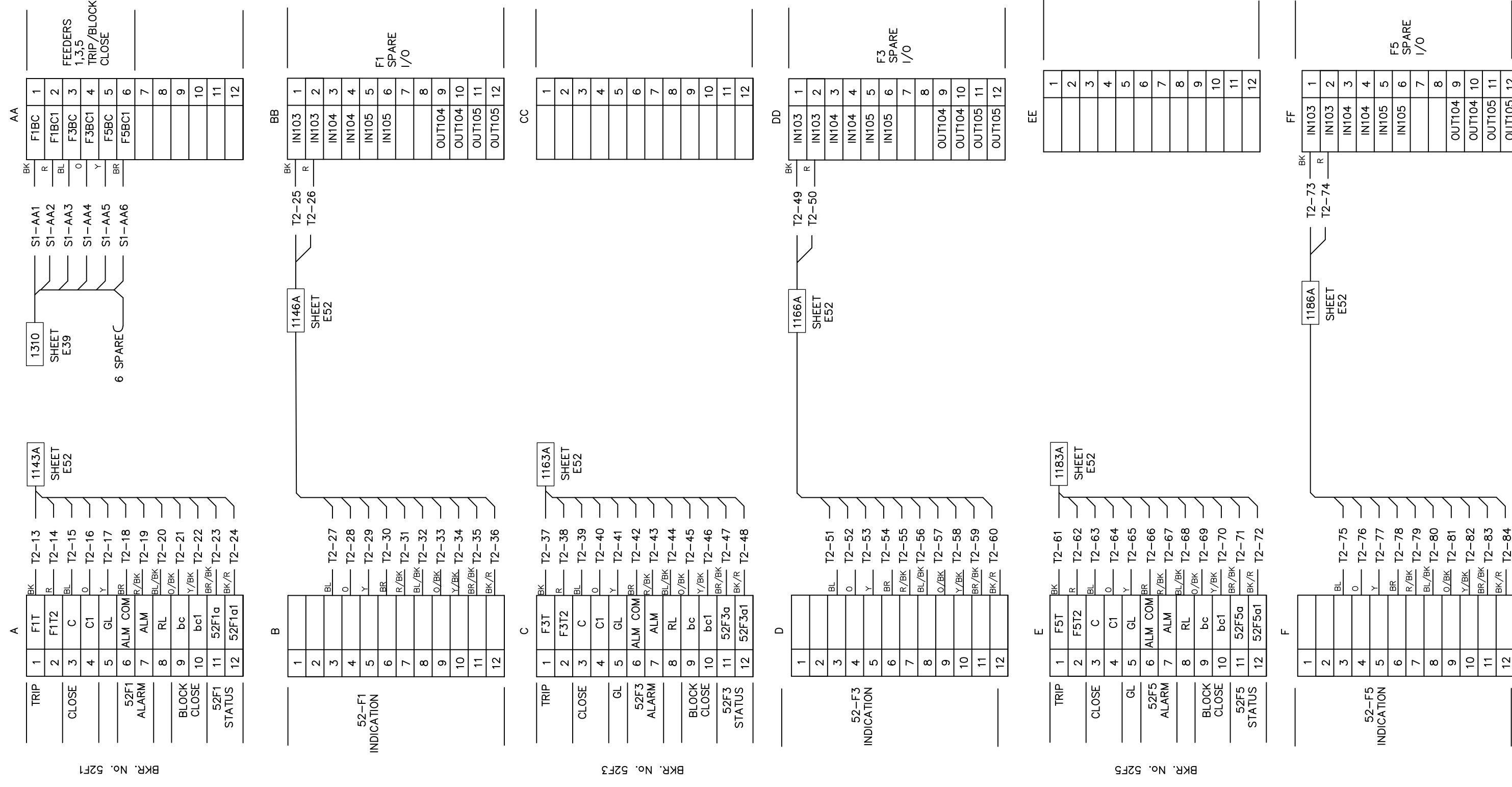
PRELIMINARY -
DO NOT USE FOR
CONSTRUCTION

WIRE COLOR CODE

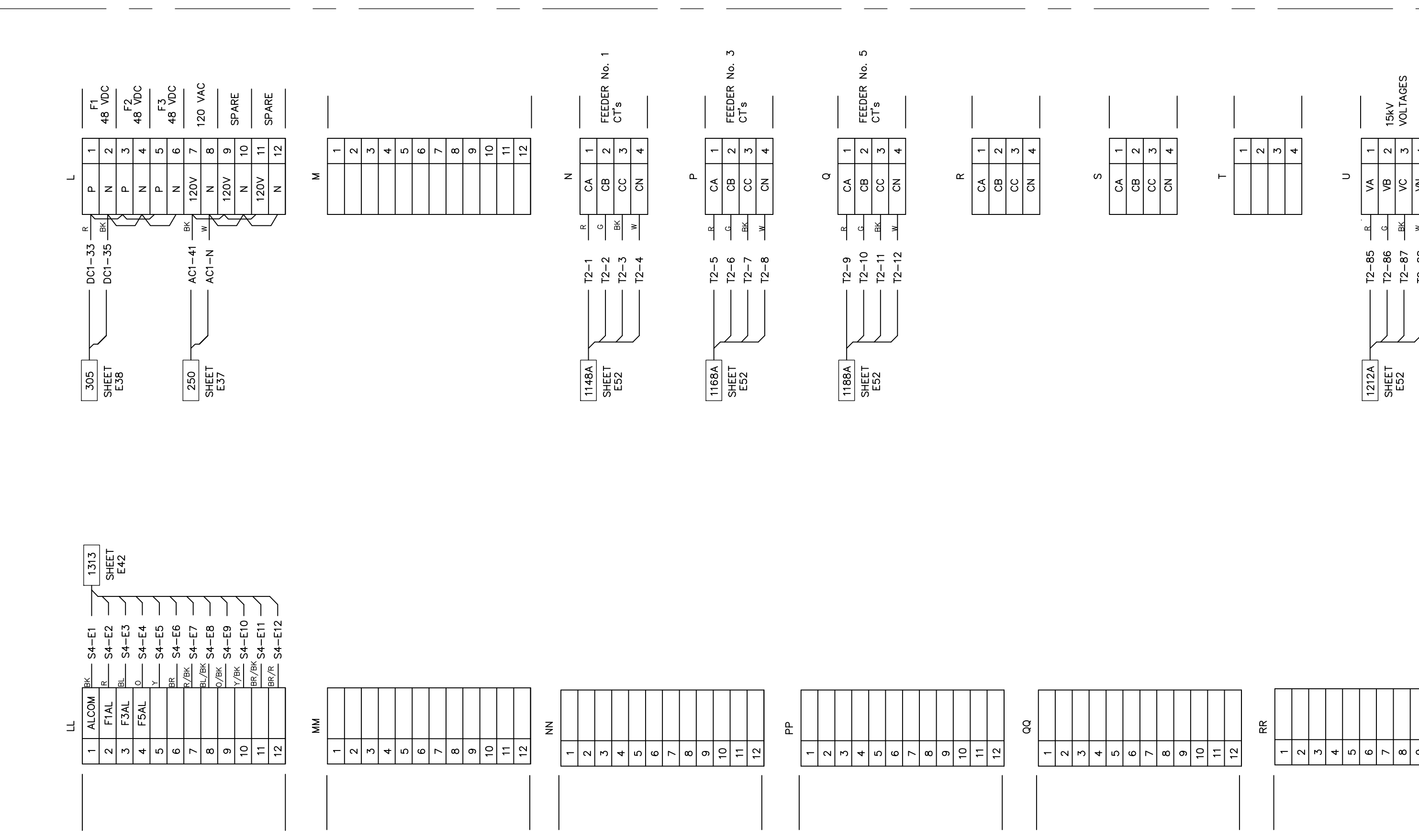


SWITCHBOARD No. 2 - S2
15 kV FEEDERS No. 1, 3, 5

LEFT SIDE



RIGHT SIDE



LEFT SIDE

FRONT

SWITCHBOARD No. 2 - S2
PANEL REAR VIEW

RIGHT SIDE

CONTROL AND INDICATION

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

CT & PT

A	R
B	O
C	BR
N	W

AC

X	BR
Y	R
N	W
G	O

DC

POS	R
NEG	BR

WIRE COLOR CODE

PROJECT NAME: PO HOFFER 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: 12513
SHEET:

NO.	ISSUED FOR BID	REVISIONS	ENG.	DATE
1			BWJ	05/06/23

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BA Booth & Associates
5811 Glenwood Avenue, Raleigh, NC 27612
NC E-021

ETWC Fayetteville's HOME TOWN UTILITY

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

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

LEFT SIDE

TRIP	1	F2T	BK	T1-13
CLOSE	2	F2T1	BL	T1-14
	3	C	RL	T1-15
	4	C1	Y	T1-16
	5	GL	Y	T1-17
52F2	6	ALM COM	BK	T1-18
ALARM	7	ALM	Y/BK	T1-19
	8	RL	Y/BK	T1-20
BLOCK	9	bc	Y/BK	T1-21
CLOSE	10	bc1	Y/BK	T1-22
52F2	11	52F2a	BR/YA	T1-23
STATUS	12	52F2a1	BR/YA	T1-24

SS-AA7	BK	F2BC1	1
SS-AA8	BL	F2BC1	2
SS-AA9	G	F2BC1	3
SS-AA10	Y	F2BC1	4
SS-AA11	BR	F2BC1	5
SS-AA12	BR	F2BC1	6
			7
			8
			9
			10
			11
			12

	1	F4T	BK	T1-25
	2	F4T1	BL	T1-26
	3	C	RL	T1-27
	4	C1	Y	T1-28
	5	GL	Y	T1-29
	6	ALM COM	BK	T1-30
	7	ALM	Y/BK	T1-31
	8	RL	Y/BK	T1-32
	9	bc	Y/BK	T1-33
	10	bc1	Y/BK	T1-34
	11	52F4a	BR/YA	T1-35
	12	52F4a1	BR/YA	T1-36

INIO3	1	INIO3	1
INIO4	2	INIO4	2
INIO5	3	INIO5	3
OUTO4	4	OUTO4	4
OUTO5	5	OUTO5	5
OUTO5	6	OUTO5	6
OUTO5	7	OUTO5	7
OUTO5	8	OUTO5	8
OUTO5	9	OUTO5	9
OUTO5	10	OUTO5	10
OUTO5	11	OUTO5	11
OUTO5	12	OUTO5	12

TRIP	1	F4T	BK	T1-37
CLOSE	2	F4T1	BL	T1-38
	3	C	RL	T1-39
	4	C1	Y	T1-40
	5	GL	Y	T1-41
52F4	6	ALM COM	BK	T1-42
ALARM	7	ALM	Y/BK	T1-43
	8	RL	Y/BK	T1-44
BLOCK	9	bc	Y/BK	T1-45
CLOSE	10	bc1	Y/BK	T1-46
52F4	11	52F4a	BR/YA	T1-47
STATUS	12	52F4a1	BR/YA	T1-48

INIO3	1	INIO3	1
INIO4	2	INIO4	2
INIO5	3	INIO5	3
OUTO4	4	OUTO4	4
OUTO5	5	OUTO5	5
OUTO5	6	OUTO5	6
OUTO5	7	OUTO5	7
OUTO5	8	OUTO5	8
OUTO5	9	OUTO5	9
OUTO5	10	OUTO5	10
OUTO5	11	OUTO5	11
OUTO5	12	OUTO5	12

52-F4	INDICATION	1	52-F4	INDICATION	1
		2	52-F4	INDICATION	2
		3	52-F4	INDICATION	3
		4	52-F4	INDICATION	4
		5	52-F4	INDICATION	5
		6	52-F4	INDICATION	6
		7	52-F4	INDICATION	7
		8	52-F4	INDICATION	8
		9	52-F4	INDICATION	9
		10	52-F4	INDICATION	10
		11	52-F4	INDICATION	11
		12	52-F4	INDICATION	12

INIO3	1	INIO3	1
INIO4	2	INIO4	2
INIO5	3	INIO5	3
OUTO4	4	OUTO4	4
OUTO5	5	OUTO5	5
OUTO5	6	OUTO5	6
OUTO5	7	OUTO5	7
OUTO5	8	OUTO5	8
OUTO5	9	OUTO5	9
OUTO5	10	OUTO5	10
OUTO5	11	OUTO5	11
OUTO5	12	OUTO5	12

TRIP	1	F6T	BK	T1-61
CLOSE	2	F6T1	BL	T1-62
	3	C	RL	T1-63
	4	C1	Y	T1-64
	5	GL	Y	T1-65
52F6	6	ALM COM	BK	T1-66
ALARM	7	ALM	Y/BK	T1-67
	8	RL	Y/BK	T1-68
BLOCK	9	bc	Y/BK	T1-69
CLOSE	10	bc1	Y/BK	T1-70
52F6	11	52F6a	BR/YA	T1-71
STATUS	12	52F6a1	BR/YA	T1-72

INIO3	1	INIO3	1
INIO4	2	INIO4	2
INIO5	3	INIO5	3
OUTO4	4	OUTO4	4
OUTO5	5	OUTO5	5
OUTO5	6	OUTO5	6
OUTO5	7	OUTO5	7
OUTO5	8	OUTO5	8
OUTO5	9	OUTO5	9
OUTO5	10	OUTO5	10
OUTO5	11	OUTO5	11
OUTO5	12	OUTO5	12

52-F6	INDICATION	1	52-F6	INDICATION	1
		2	52-F6	INDICATION	2
		3	52-F6	INDICATION	3
		4	52-F6	INDICATION	4
		5	52-F6	INDICATION	5
		6	52-F6	INDICATION	6
		7	52-F6	INDICATION	7
		8	52-F6	INDICATION	8
		9	52-F6	INDICATION	9
		10	52-F6	INDICATION	10
		11	52-F6	INDICATION	11
		12	52-F6	INDICATION	12

INIO3	1	INIO3	1
INIO4	2	INIO4	2
INIO5	3	INIO5	3
OUTO4	4	OUTO4	4
OUTO5	5	OUTO5	5
OUTO5	6	OUTO5	6
OUTO5	7	OUTO5	7
OUTO5	8	OUTO5	8
OUTO5	9	OUTO5	9
OUTO5	10	OUTO5	10
OUTO5	11	OUTO5	11
OUTO5	12	OUTO5	12

	1	F8T	BK	T1-75
	2	F8T1	BL	T1-76
	3	C	RL	T1-77
	4	C1	Y	T1-78
	5	GL	Y	T1-79
	6	ALM COM	BK	T1-80
	7	ALM	Y/BK	T1-81
	8	RL	Y/BK	T1-82
	9	bc	Y/BK	T1-83
	10	bc1	Y/BK	T1-84
	11	52F8a	BR/YA	T1-85
	12	52F8a1	BR/YA	T1-86

INIO3	1	INIO3	1
INIO4	2	INIO4	2
INIO5	3	INIO5	3
OUTO4	4	OUTO4	4
OUTO5	5	OUTO5	5
OUTO5	6	OUTO5	6
OUTO5	7	OUTO5	7
OUTO5	8	OUTO5	8
OUTO5	9	OUTO5	9
OUTO5	10	OUTO5	10
OUTO5	11	OUTO5	11
OUTO5	12	OUTO5	12

	1	F10T	BK	T1-87
	2	F10T1	BL	T1-88
	3	C	RL	T1-89
	4	C1	Y	T1-90
	5	GL	Y	T1-91
	6	ALM COM	BK	T1-92
	7	ALM	Y/BK	T1-93
	8	RL	Y/BK	T1-94
	9	bc	Y/BK	T1-95
	10	bc1	Y/BK	T1-96
	11	52F10a	BR/YA	T1-97
	12	52F10a1	BR/YA	T1-98

INIO3	1	INIO3	1
INIO4	2	INIO4	2
INIO5	3	INIO5	3
OUTO4	4	OUTO4	4
OUTO5	5	OUTO5	5
OUTO5	6	OUTO5	6
OUTO5	7	OUTO5	7
OUTO5	8	OUTO5	8
OUTO5	9	OUTO5	9
OUTO5	10	OUTO5	10
OUTO5	11	OUTO5	11
OUTO5	12	OUTO5	12

	1	F12T	BK	T1-99
	2	F12T1	BL	T1-100
	3	C	RL	T1-101
	4	C1	Y	T1-102
	5	GL	Y	T1-103
	6	ALM COM	BK	T1-104
	7	ALM	Y/BK	T1-105
	8	RL	Y/BK	T1-106
	9	bc	Y/BK	T1-107
	10	bc1	Y/BK	T1-108
	11	52F12a	BR/YA	T1-109
	12	52F12a1	BR/YA	T1-110

INIO3	1	INIO3	1
INIO4	2	INIO4	2
INIO5	3	INIO5	3
OUTO4	4	OUTO4	4
OUTO5	5	OUTO5	5
OUTO5	6	OUTO5	6
OUTO5	7	OUTO5	7
OUTO5	8	OUTO5	8
OUTO5	9	OUTO5	9
OUTO5	10	OUTO5	10
OUTO5	11	OUTO5	11
OUTO5	12	OUTO5	12

	1	F14T	BK	T1-111
	2	F14T1	BL	T1-112
	3	C	RL	T1-113
	4	C1	Y	T1-114
	5	GL	Y	T1-115
	6	ALM COM	BK	T1-116
	7	ALM	Y/BK	T1-117
	8	RL	Y/BK	T1-118
	9	bc	Y/BK	T1-119
	10	bc1	Y/BK	T1-120
	11	52F14a	BR/YA	T1-121
	12	52F14a1	BR/YA	T1-122

INIO3	1	INIO3	1
INIO4	2	INIO4	2
INIO5	3	INIO5	3
OUTO4	4	OUTO4	4
OUTO5	5	OUTO5	5
OUTO5	6	OUTO5	6
OUTO5	7	OUTO5	7
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OUTO5	9	OUTO5	9
OUTO5	10	OUTO5	10
OUTO5	11	OUTO5	11
OUTO5	12	OUTO5	12

RIGHT SIDE

DCI-30	BK	F2	1
DCI-32	BL	F2	2
	G	F2	3
	Y	F2	4
	BR	F2	5
	BR	F2	6
			7
			8
			9
			10
			11
			12

DCI-30	BK	F2	1
DCI-32	BL	F2	2
	G	F2	3
	Y	F2	4
	BR	F2	5
	BR	F2	6
			7
			8
			9
			10
			11
			12

	1	F2	1
	2	F2	2
	3	F2	3
	4	F2	4
	5	F2	5
	6	F2	6
	7	F2	7
	8	F2	8
	9	F2	9
	10	F2	10
	11	F2	11
	12	F2	12

CA	1	CA	1
CB	2	CB	2
CC	3	CC	3
CN	4	CN	4

	1	F4	1
	2	F4	2
	3	F4	3
	4	F4	4
	5	F4	5
	6	F4	6
	7	F4	7
	8	F4	8
	9	F4	9
	10	F4	10
	11	F4	11
	12	F4	12

CA	1	CA	1
CB	2	CB	2
CC	3	CC	3
CN	4	CN	4

	1	F6	1
	2	F6	2
	3	F6	3
	4	F6	4
	5	F6	5
	6	F6	6
	7	F6	7
	8	F6	8
	9	F6	9
	10	F6	10
	11	F6	11
	12	F6	12

CA	1	CA	1
CB	2	CB	2
CC	3	CC	3
CN	4	CN	4

	1	F8	1
	2	F8	2
	3	F8	3
	4	F8	4
	5	F8	5
	6	F8	6
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	8	F8	8
	9	F8	9
	10	F8	10
	11	F8	11
	12	F8	12

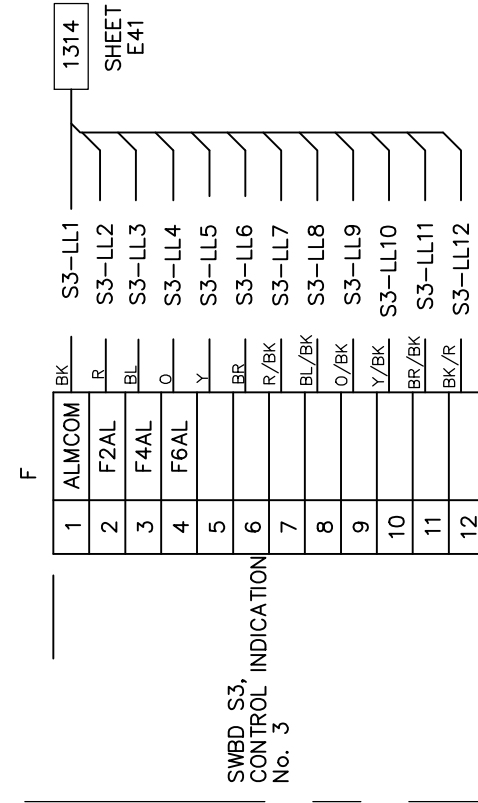
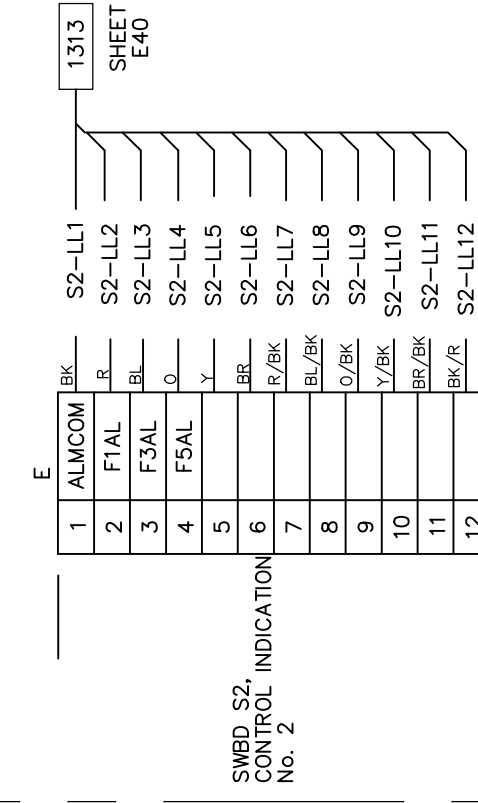
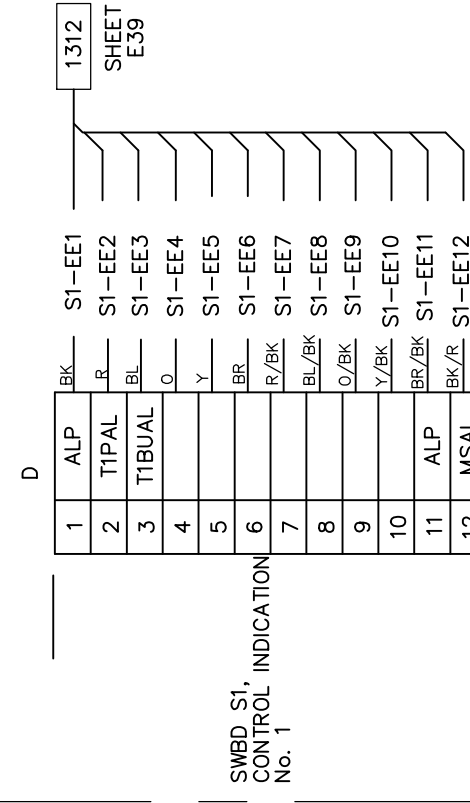
SWITCHBOARD No. 4 - S4
INTEGRATION & COMMUNICATIONS

LEFT SIDE

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1	OUT04
2	OUT04b
3	OUT05
4	OUT05b
5	OUT06
6	OUT06b
7	ALP
8	INS32
9	
10	
11	
12	

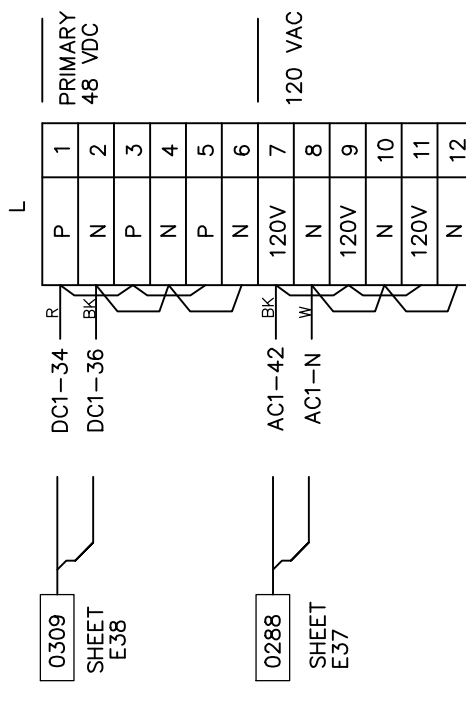
LEFT SIDE

FRONT

SWITCHBOARD No. 4 - S4
PANEL REAR VIEW

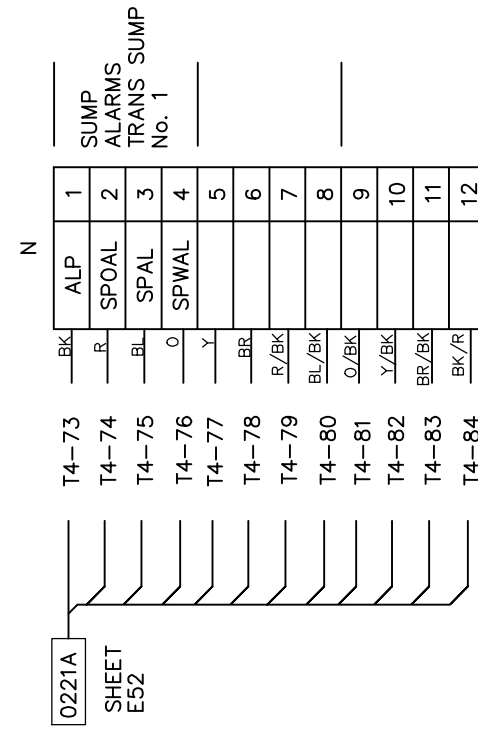
RIGHT SIDE

RIGHT SIDE



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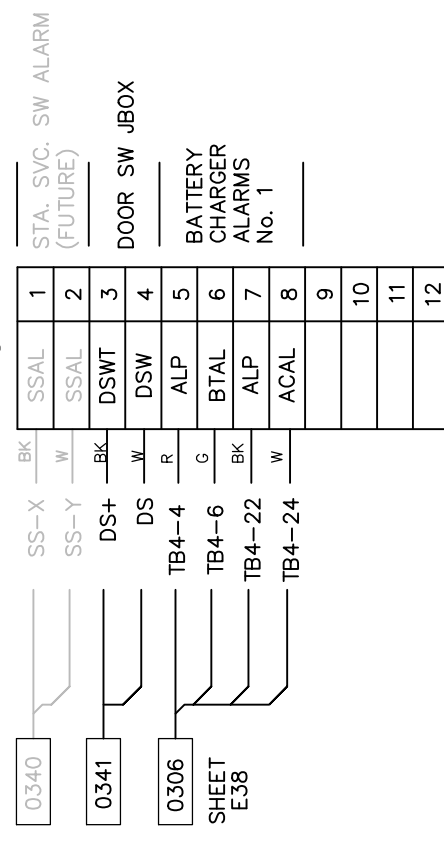
Q

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R

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S



T

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

CONTROL AND INDICATION

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

CT & PT

A	R
B	G
C	BK
N	W

AC

X	BK
Y	R
N	W
G	C

DC

POS	R
NEG	BK

WIRE COLOR CODE

PROJECT NAME: PO HOFFER TO 15 X 25 kV SUBSTATION

DRAWING TITLE: SWITCHBOARD NO.4 INTERCONNECTION DIAGRAM

DRAWN BY: JRT

CHECKED BY: DAW

APPROVED BY: MIW

DATE: 3/16/2022

SCALE: NTS

FILE NUMBER: 12513

SHEET:

NO.	ISSUED FOR BID	REVISIONS	ENG.	DATE
A			BWJ	05/05/23

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

© 03/2022

Booth & Associates
5811 Glenwood Avenue, Raleigh, NC 27612
NC F-021



PO Hoffer 69kV to 15kV Substation

Conduit & Cable Schedules

12510C3.xlsx

for the
Public Works Commission of Fayetteville, NC

January 10, 2024



Booth & Associates

2300 Rexwoods Drive, Raleigh NC 27607
NC F-0221

Rev.	Description	Date	By	Appr.
0	ISSUED FOR BIDS		BWJ	BWJ

DRAWING: 12513C3
LEGEND AND NOTES

CONDUIT INSTALLATION:**NOTE:**

1	ALL METALLIC JUNCTION BOXES, RACEWAYS, CABLE TRAYS, PANELS, AND ENCLOSURES SHALL BE BONDED TO THE SUBSTATION GROUND GRID.
2	ALL CONDUIT IS 2" SCHEDULE 40 PVC UNLESS OTHERWISE NOTED ON DRAWING.
3	FUTURE EQUIPMENT. CONDUIT TO BE INSTALLED BUT CAPPED AT LOCATION OF FUTURE EQUIPMENT.
4	FUTURE CONDUIT. SHOWN FADED ON CONDUIT PLAN.
	FOR CONDUIT BEARING FIBER OPTIC CABLES (FOC): 1) HAVE NO LESS THAN 8.0 INCH BEND RADIUS. 2) USE OF "LB" FITTINGS SHALL NOT BE PERMITTED. 3) SLOW BENDS AND COMBINATIONS OF 45 DEGREE BENDS OF MINIMUM 8.0 INCH RADIUS ARE PREFERRED. 4) ENSURE BENDS OTHER THAN 90 DEGREES ALSO ENFORCE MINIMUM BEND RADIUS.

CABLE INSTALLATION:**NOTE:**

	ALL AC SERVICE NEUTRALS SHALL BE BONDED TO GROUND AT THE SERVICE PANEL AND AT THE POINT OF TERMINATION.
13	THESE COPPER OR FIBER JUMPERS SUPPLIED WITH SWITCHBOARDS FROM THE SWITCHBOARD VENDOR. USE AVAILABLE HORIZONTAL AND VERTICAL CABLE MANAGERS TO ROUTE FIBER AND COPPER JUMPERS. USE VELCRO TO SECURE JUMPERS TO ONE ANOTHER AND ELSEWHERE AS NEEDED. WIRE TIES NOT ALLOWED.
14	ALL AC BRANCH FEEDERS SHALL OBSERVE THE FOLLOWING COLOR CODE ACCORDING TO ICEA METHOD E1 CABLE: X - BLACK Y - RED N - WHITE G - GREEN
15	ALL DC BRANCH FEEDERS SHALL OBSERVE THE FOLLOWING COLOR CODE: POSITIVE (+) - RED NEGATIVE (-) - BLACK
16	SECONDARYS FOR CURRENT TRANSFORMERS AND VOLTAGE TRANSFORMERS SHALL HAVE CONDUCTORS COLOR CODED ACCORDING TO ICEA METHOD E1 (i.e. RD, GN, BK, WH) UNLESS OTHERWISE NOTED. A - RED B - GREEN C - BLACK N - WHITE
17	TERMINATE GENERAL CONTROL CABLE CONDUCTOR COLORS AT RELAY PANEL TERMINAL BLOCKS IN ORDER OF CONDUCTOR NUMBER (ICEA METHOD E2): BK, RD, BL, OR, YL, BR, RD/BK, BL/BK, OR/BK, YL/BK, BR/BK, BK/RD. TERMINATE EQUIPMENT END AS NECESSARY TO MATCH FUNCTION.
18	COIL 30 FEET OF CABLE INSIDE SWBD #4 FOR FUTURE USE. TAPE OFF INDIVIDUAL WIRES IN EACH PAIR. TAPE OFF FOIL AND DRAIN WIRE AT BOTH ENDS.

**DRAWING: 12513C3
LEGEND AND NOTES**

19	CONTROL HOUSE MANUFACTURER TO INSTALL AND TERMINATE THESE CABLES AND JUMPERS. APPLY LABELS TO ENDS OF CABLES AND JUMPERS PER CABLE AND CONDUIT SCHEDULE (12502C3, THIS DOCUMENT).
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FIBER OPTIC CABLE / CONDUIT INSTALLATION:

NOTE:

20	<p>1) OUTSIDE PLANT (OSP) FIBER OPTIC CABLES (FOC) SHALL HAVE NO LESS THAN 8 (EIGHT) INCH BEND RADIUS DURING INSTALLATION AND NO LESS THAN 4 (FOUR) INCH BEND RADIUS IN PLACE AFTER INSTALLATION.</p> <p>2) PULLING TENSION NOT TO EXCEED MAXIMUM PER MANUFACTURER'S SPECIFICATION.</p> <p>3) NEED 10 FEET OF CABLE IN EQUIPMENT</p>
21	<p>1) FIBER OPTIC CABLE (FOC) DUPLEX JUMPERS SHALL HAVE NO LESS THAN 1.5 INCH BEND RADIUS.</p> <p>2) PULLING TENSION NOT TO EXCEED MAXIMUM PER MANUFACTURER'S SPECIFICATION.</p> <p>3) USE PANDUIT GUIDES IN SWBD #4 TO PROTECT SLACK.</p> <p>4) "SM" JUMPERS ARE YELLOW IN COLOR.</p> <p>5) MAKE AND PLACE CABLE NUMBER LABELS AND "DESTINATION" LABELS ON DUPLEX JUMPERS BEFORE INSTALLATION, SEE PRINTS.</p> <p>6) USE VELCRO STRAPS (BELDEN PN AX100783 OR EQUIVALENT) TO DRESS DUPLEX JUMPERS IN LOOPS TO TAKE UP SLACK IF NEEDED, RESPECTING BEND RADIUS. WIRE TIES ARE NOT PERMITTED AT ANY TIME.</p>
22	<p>MEASURING AND INSTALLING PRE-TERMINATED FIBER CABLE:</p> <p>WIREMAN MUST OBTAIN FIBER CABLE PULLING SPECIFICATIONS WELL AHEAD OF INSTALLATION STEPS. WIREMAN MUST KNOW MINIMUM BEND RADIUS FOR THE CABLE BOTH DURING PULL AND WHEN CABLE IN PLACE, MBR DURING PULL IS LARGER THAN THAT WHEN CABLE IS RESTING IN PLACE. WIREMAN MUST KNOW MAXIMUM PULL TENSION FOR THE CABLE BOTH DURING PULL AND WHEN CABLE IN PLACE, MAXIMUM PULL TENSION DURING PULL IS LARGER THAN THAT WHEN CABLE IS IN PLACE.</p> <p>WIREMAN MUST BE FAMILIAR WITH RADIUS GUIDES, ROLLERS, PULLEYS AND TENSION MEASUREMENT EQUIPMENT BEFORE PERFORMING INSTALL..</p> <p>1) WIREMAN TO DETERMINE REQUIRED LENGTH OF FIBER OPTIC CABLES FROM YARD BREAKERS AND TRANSFORMER TO APPROPRIATE PATCH PANEL MOUNTED IN SWITCHBOARD S4 BEFORE PLACING ORDER FROM DISTRIBUTOR. SEE PRINTS FOR FIBER ROUTING IN SWITCHBOARD AND CABLE & CONDUIT SCHEDULE FOR DIRECTION TO DETERMINE ORDER LENGTH.</p> <p>2) AFTER CONDUIT, TRENCH, WIRE TRAY AND SWITCHBOARDS ARE INSTALLED, MEASURE LENGTH FOR EACH PRE-TERMINATED FIBER CABLE. MEASURE FROM CONDUIT IN YARD CABINET TO CABLE BRACKET MOUNTED ON EACH PATCH PANEL, SEE CABLE AND CONDUIT SCHEDULE AND SWITCHBOARD PRINTS FOR DETAILS. USE TABLE IN PRINTS TO ADD REQUIRED SLACK.</p>

DRAWING: 12513C3
LEGEND AND NOTES

<p style="text-align: center;">22</p> <p>CONTINUED</p>	<p>3) ORDER CABLE FROM ANIXTER, MORRISILLE, NC. SEE LABOR SPECIFICATION FOR DETAILS TO ORDER.</p> <p>3A- PART NUMBER FOR PRE-TERMINATED CABLE IS: D18-0710-1. SPECIFY LENGTH OF CABLE, AS DETERMINED FOR EACH CABLE NUMBER, SPECIFY CABLE NUMBER FOR EACH CABLE FROM THIS DRAWING.</p> <p>4) MAKE AND PLACE CABLE NUMBER LABELS AND "DESTINATION" LABELS ON BOTH ENDS OF CABLE BEFORE INSTALLATION, SEE CABLE AND CONDUIT SCHEDULE FOR "FROM" AND "TO" DESTINATION TEXT . REPLACE LABELS IF DAMAGED DURING PULL.</p> <p>5) PULL CABLE OFF SHIPPING BOX USING PULL ROPE WITH SWIVEL ATTACHED TO PULLING EYE FITTING ON END OF CABLE.</p> <ul style="list-style-type: none"> -RESPECT MINIMUM BEND RADIUS (INSTALL) AND MAXIMUM PULL TENSION (INSTALL). -DO NOT ALLOW CABLE TO BEND LESS THAN MBR WHILE WAITING FOR NEXT PORTION OF PULL OR AT END POINTS DURING AND AFTER PULL. -PULL BY ROPE OR TAPE ATTACHED TO SWIVEL. -ROUTE CABLES WITH CARE. -MULTIPLE CABLES MAY BE PULLED BUNDLED TOGETHER THRU TRAY AND TRENCH SEPARATING THEM AS NEEDED TO PULL IN CONDUIT. -USE RADIUS GUIDES, ROLLERS OVER EDGES, PULLEYS AND ASSISTANTS AS NEEDED TO FACILITATE INSTALL.
<p style="text-align: center;">22</p>	<p>7) IF NECESSARY, COIL CABLE ON ITSELF INSIDE SWITCHBOARD, RESPECTING MINIMUM BEND RADIUS AND SECURE COIL WITH WIRE TIES. ALLOW COILS TO BE DIFFERENT LENGTHS AS NEEDED. CABLE JACKET MAY NOT BE DEFORMED BY WIRE TIES.</p> <p>8) TO CONTAIN CABLE SLACK, CABLE MAY LAY IN OVERHEAD TRAY, IN AN AREA PAST THE SWITCHBOARDS AND LOOPING BACK TO ENTER SWBD #4. IF CABLE MUST BE COILED IN OVERHEAD TRAY, ENSURE COIL OCCURS FAR DOWN LENGTH OF TRAY IN A CLEAR AREA SO OTHER CABLES ARE NOT OBSCURED BY THE COILS.</p> <p>9) AFTER INSTALLATION, GROUP CABLES WHICH ENTER SAME PLACE ON THE PATCH PANEL TOGETHER WITH WIRE TIES. CABLE JACKET MAY NOT BE DEFORMED BY WIRE TIES.</p> <p>10) MINIMUM BEND RADIUS FOR FIBER CABLE DURING INSTALL IS: 8 (EIGHT) INCHES. MAXIMUM PULL TENSION FOR FIBER CABLE DURING INSTALL IS: 100 POUNDS. MINIMUM BEND RADIUS FOR FIBER CABLE WHEN IN PLACE IS: 4 (FOUR) INCHES. MAXIMUM PULL TENSION FOR FIBER CABLE WHEN IN PLACE IS: 90 POUNDS. OTHER FIBER OPTIC CABLE ON SITE MAY HAVE DIFFERENT SPECIFICATIONS.</p>

DRAWING: 12513C3
LEGEND AND NOTES

23	<p>CONDUIT BEARING FIBER OPTIC CABLES (FOC):</p> <ol style="list-style-type: none"> 1) SHALL HAVE NO LESS THAN 8.0 INCH BEND RADIUS. 2) USE OF "LB" FITTINGS SHALL NOT BE PERMITTED. 3) SLOW BENDS AND COMBINATIONS OF 45 DEGREE BENDS OF MINIMUM 8.0 INCH RADIUS ARE PREFERRED. 4) ENSURE BENDS OTHER THAN 90 DEGREES ALSO ENFORCE MINIMUM BEND RADIUS.
24	<ol style="list-style-type: none"> 1) OUTSIDE PLANT (OSP) FIBER OPTIC CABLE (FOC) FROM BUILDING TO FEEDER BREAKERS AND OTHER YARD DEVICES TO BE PULLED BY WIREMAN. 2) FIBER PATCH PANEL AND FIBER SPLICE PANEL (AS NEEDED) AT THE BREAKER CABINETS AND SCADA SWITCHBOARD TO BE INSTALLED BY CONTRACTOR. 3) FIBER "JUMPER" CABLES (CABLE NOS. J24 THRU J52 AND J103 THRU J228) SUPPLIED FROM SWITCHBOARD MANUFACTURER WITH SWITCHBOARD.
25	COAXIAL CABLES (FOR CABLE SEL-C961-025, C961-050) SHALL HAVE NO LESS THAN 6 1/2 INCH BEND RADIUS (13 INCH CIRCLE) DURING INSTALLATION.
ZLC2M	Corning 2 fiber Zipcord Jumper, 2.0mm subunit, multimode, 62.5 micron, OM1 , LC duplex to LC duplex connectors. Minimum Bend Radius during install is 2.0 inches, during operation 0.4 inches. Maximum tensile strength during install is 50 lbf. Length 7 feet. No substitutions. PN: 050502K51200tF
ZLC3M	Corning 2 fiber Zipcord Jumper, 2.0mm subunit, multimode, 62.5 micron, OM1 , LC duplex to LC duplex connectors. Minimum Bend Radius during install is 2.0 inches, during operation 0.4 inches. Maximum tensile strength during install is 50 lbf. Length 3 meters. No substitutions. PN: 050502K5120003M
ZLC3S	Corning 2 fiber Zipcord Jumper, 2.0mm subunit, multimode, 9 micron, OS1 , LC duplex to LC duplex connectors. Minimum Bend Radius during install is 2.0 inches, during operation 0.4 inches. Maximum tensile strength during install is 50 lbf. Length 3 meters. No substitutions. PN: 040402G512000003M
CA605C-xxx	SEL CAT5E Shielded Patch Cord , STP, RJ-45 connectors both ends, jacket color Blue. Length is xxx feet as indicated in part number. PN: CA605CBXxxx. CAT5-04, CAT5-08
C605A-xxx	SEL EIA-232 , DB9 connectors both ends. Length is xxx feet as indicated in part number. PN: C605Axxx. C605A-36, C605A-25
C961-xxx	SEL Coaxial cable , LMR400 cable, TNC connectors both ends. Length is xxx feet as indicated in part number. PN: C961-xxx. C961-25, C961-50
C953-xxx	SEL Coaxial cable , IRIG, RG58 cable, BNC connectors both ends. Length is xxx feet as indicated in part number. PN: C953-xxx. C953-6, C953-15, C953-25

DRAWING: 12510C3
Conduit Schedule

CONDUIT NO.	CONDUIT SCHEDULE		CONDUIT SIZE/TYPE	REMARKS
	FROM	TO		
C101	MANHOLE #1	TRENCH	2" PVC	
C102	MANHOLE #2	TRENCH	2" PVC	
C103	MANHOLE #3	TRENCH	2" PVC	
C111	CIRCUIT EXIT	MANHOLE #1	6" PVC	
C112	CIRCUIT EXIT	MANHOLE #2	6" PVC	
C113	CIRCUIT EXIT	MANHOLE #1	6" PVC	
C114	CIRCUIT EXIT	MANHOLE #2	6" PVC	
C115	CIRCUIT EXIT	MANHOLE #3	6" PVC	
C116	CIRCUIT EXIT	MANHOLE #3	6" PVC	
C180	FIBER HAND BOX	TRENCH	2" PVC	
C181	FIBER HAND BOX	TRENCH	2" PVC	
C201	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C202	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C203	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C204	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C205	69KV LINE BKR 52-T1	TRENCH	2" PVC	
C211	No.1 TRANSFORMER	TRENCH	2" PVC	
C212	No.1 TRANSFORMER	TRENCH	2" PVC	
C213	No.1 TRANSFORMER	TRENCH	2" PVC	
C214	No.1 TRANSFORMER	TRENCH	2" PVC	
C215	No.1 TRANSFORMER	TRENCH	2" PVC	
C216	No.1 TRANSFORMER	TRENCH	2" PVC	NOTE 23
C217	No.1 TRANSFORMER	TRENCH	2" PVC	
C221	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	
C222	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	
C223	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	NOTE 23
C224	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	
C225	FEEDER BREAKER No. 52-1	TRENCH	2" PVC	
C231	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	
C232	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	
C233	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	NOTE 23
C234	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	
C235	FEEDER BREAKER No. 52-2	TRENCH	2" PVC	
C241	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	
C242	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	
C243	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	NOTE 23
C244	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	
C245	FEEDER BREAKER No. 52-3	TRENCH	2" PVC	
C251	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	
C252	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	
C253	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	NOTE 23
C254	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	
C255	FEEDER BREAKER No. 52-4	TRENCH	2" PVC	
C261	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	

DRAWING: 12510C3
Conduit Schedule

CONDUIT NO.	CONDUIT SCHEDULE		CONDUIT SIZE/TYPE	REMARKS
	FROM	TO		
C262	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	
C263	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	NOTE 23
C264	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	
C265	FEEDER BREAKER No. 52-5	TRENCH	2" PVC	
C271	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	
C272	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	
C273	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	NOTE 23
C274	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	
C275	FEEDER BREAKER No. 52-6	TRENCH	2" PVC	
C290	15kV BUS NO. 1 VT JUNCTION BOX	VOLTAGE TRANSFORMERS	1" PVC	ABOVE GROUND
C291	15kV BUS NO. 1 VT JUNCTION BOX	TRENCH	2" PVC	
C292	15kV BUS NO. 1 VT JUNCTION BOX	TRENCH	2" PVC	
C293	15kV BUS NO. 1 VT JUNCTION BOX	TRENCH	2" PVC	
C294	15kV BUS NO. 1 VT JUNCTION BOX	TRENCH	2" PVC	
C300	STATION SERVICE TRANSF. No.1	STA. SERVICE METER BODY	2" PVC	ABOVE GROUND
C301	STA. SERVICE METER BODY	STA. SERVICE NO.1 DISCONNECT	2" PVC	ABOVE GROUND
C302	STA. SERVICE No.1 DISCONNECT	TRENCH	2" PVC	
C303				
C304	STATION SERVICE FEED FROM STREET	TRENCH	2" PVC	
C341	YARD RECEPTACLE No. 1	TRENCH	1" PVC	
C342	YARD RECEPTACLE No. 2	TRENCH	1" PVC	
C343	YARD RECEPTACLE No. 3	TRENCH	1" PVC	
C344	YARD RECEPTACLE No. 4	TRENCH	1" PVC	
C345	SUMP PUMP NO. 1	TRENCH	2" PVC	
C346	SUMP PUMP NO. 1 CONTROL	TRENCH	1" PVC	
C347	SWITCH BOX #15,16	TRENCH	2" PVC	
C347A	SWITCH BOX #15,16	LIGHT #15,16	1" PVC	ABOVE GROUND
C348	SWITCH BOX #1,2	TRENCH	2" PVC	
C350	SWITCH BOX #1,2	LIGHT #1,2	1" PVC	ABOVE GROUND
C351	LIGHT JUNCTION #3,4	TRENCH	2" PVC	
C353	LIGHT JUNCTION #3,4	LIGHT #3,4	1" PVC	ABOVE GROUND
C354	LIGHT JUNCTION #5,6	TRENCH	2" PVC	
C355	LIGHT JUNCTION #5,6	LIGHT #5,6	1" PVC	ABOVE GROUND
C357	SWITCH BOX #7	TRENCH	2" PVC	
C358	SWITCH BOX #7	LIGHT #7	1" PVC	ABOVE GROUND
C359	SWITCH BOX #8,9	TRENCH	2" PVC	
C360	SWITCH BOX #8,9	LIGHT #8,9	1" PVC	ABOVE GROUND
C363	SWITCH BOX #10,11	TRENCH	2" PVC	
C364	SWITCH BOX #10,11	LIGHT #10,11	1" PVC	ABOVE GROUND
C366	SWITCH BOX #12,13	TRENCH	2" PVC	
C367	SWITCH BOX #12,13	LIGHT #12,13	1" PVC	ABOVE GROUND

DRAWING: 12510C3
Conduit Schedule

CONDUIT NO.	CONDUIT SCHEDULE		CONDUIT SIZE/TYPE	REMARKS
	FROM	TO		
C368	SWITCH BOX #14	TRENCH	2" PVC	
C369	SWITCH BOX #14	LIGHT #14	1" PVC	ABOVE GROUND
C370	240VAC 30A, RECEPTACLE No. 5	TRENCH	2" PVC	
C371	240VAC 50A, RECEPTACLE No. 6	TRENCH	2" PVC	
C375	MOBILE SUBSTATION JUNCTION BOX	TRENCH	2" PVC	
C376	MOBILE SUBSTATION JUNCTION BOX	TRENCH	2" PVC	
C384	FLOOD LIGHT SWITCH BOX #1	TRENCH	2" PVC	
C385	FLOOD LIGHT SWITCH BOX #1	FLOOD LIGHT #1,#2	1" PVC	ABOVE GROUND
C386	FLOOD LIGHT SWITCH BOX #3	TRENCH	2" PVC	
C387	FLOOD LIGHT SWITCH BOX #3	FLOOD LIGHT #3	1" PVC	ABOVE GROUND
C401	SECURITY CAMERA SYSTEM POLE	TRENCH	2" PVC	
C402	SECURITY CAMERA SYSTEM POLE	SECURITY CAMERA SYSTEM POLE	2" PVC	
C403	SECURITY CAMERA SYSTEM POLE	TRENCH	2" PVC	
C404	SECURITY CAMERA SYSTEM POLE	SECURITY CAMERA SYSTEM POLE	2" PVC	
C405	SECURITY CARD READER	TRENCH	2" PVC	

DRAWING: 12510C3**Cable Schedule**

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
221	C101	SUMP PUMP #1 AC POWER	SUMP PUMP #1 AC IN (MANHOLE #1)	AC PANEL No. 2	4/C, #10	
222	C102	SUMP PUMP #2 AC POWER	SUMP PUMP #2 AC IN (MANHOLE #2)	AC PANEL No. 2	4/C, #10	
223	C103	SUMP PUMP #3 AC POWER	SUMP PUMP #3 AC IN (MANHOLE #3)	AC PANEL No. 2	4/C, #10	
232	C300	240VAC STA. SERVICE NO. 1	STA. SERVICE TRANSFORMER No. 1	METER BASE No. 1	3-1/C,#4/0	
232A	C301	240VAC STA. SERVICE NO. 1	METER BASE No. 1	STA. SERVICE No.1 DISCONNECT	3-1/C,#4/0	
233	C302	240VAC STA. SERVICE NO. 1	STA. SERVICE No.1 DISCONNECT	AUTO TRANSFER SWITCH	3-1/C,#4/0	
234A	C105	240VAC SUPPLY	OFFSITE STA. SERVICE DISCONNECT	AUTO TRANSFER SWITCH	3-1/C,#4/0	
235	N/A	240VAC SUPPLY DUCT	AUTO TRANSFER SWITCH	240VAC SPLICE IN DUCT	3-1/C,#4/0	NOTE 19
235	N/A	240VAC SUPPLY DUCT	AC PANEL No.1, MAIN	240VAC SPLICE IN DUCT	3-1/C,#4/0	NOTE 19
235	N/A	240VAC SUPPLY DUCT	AC PANEL No.2, MAIN	240VAC SPLICE IN DUCT	3-1/C,#4/0	NOTE 19
241	N/A	120VAC- BUILDING LIGHTS	AC PANEL No. 2	BUILDING LIGHTS	3-1/C, #12	NOTE 19
242	N/A	120VAC- BLDG EMERGENCY LIGHT	AC PANEL No. 2	BUILDING EMERGENCY LIGHTS	3-1/C, #12	NOTE 19
243	N/A	120VAC- BATTERY ROOM LIGHTS	AC PANEL No. 2	BATTERY ROOM LIGHTS	3-1/C, #12	NOTE 19
244	N/A	120VAC- BUILDING RECEPTACLES	AC PANEL No. 2	BUILDING RECEPTACLES No.2	3-1/C, #12	NOTE 19
245	N/A	120VAC- BUILDING RECEPTACLES	AC PANEL No. 2	BUILDING RECEPTACLES No.1	3-1/C, #12	NOTE 19
246	N/A	240VAC- BATTERY ROOM HEATER	AC PANEL No. 1	BATTERY ROOM HVAC	3-1/C, #12	NOTE 19
247	N/A	120VAC- BATTERY ROOM FAN	AC PANEL No. 2	BATTERY ROOM FAN	3-1/C, #12	NOTE 19
248	N/A	240VAC- BUILDING HVAC	AC PANEL No. 1	BUILDING HVAC	3-1/C, #8	NOTE 19
249	N/A	120VAC- SWITCHBOARD No. S1	AC PANEL No. 1	SWBD #1	4/C, #10	NOTE 19
250	N/A	120VAC- SWITCHBOARD No. S2	AC PANEL No. 1	SWBD #2	4/C, #10	NOTE 19
251	N/A	120VAC- BLDG FLOOD LIGHTS	AC PANEL No. 2	BUILDING FLOOD LIGHTS	4/C, #10	NOTE 19
252	N/A	120VAC- BLDG EMERGENCY LIGHT	AC PANEL No. 2	BATTERY ROOM EMERGENCY LTS	3-1/C, #12	NOTE 19
265	C345	120VAC- SUMP PUMP AC POWER	AC PANEL No. 1	SUMP PUMP No. 1 AC IN	4/C,#10	NOTE 14
266	C345	120VAC- SUMP CONTROLLER AC	AC PANEL No. 1	SUMP PUMP No. 1 CONTROLLER AC IN	4/C,#10	NOTE 14
287	N/A	120VAC- SWITCHBOARD No. S3	AC PANEL No. 1	SWBD #3	4/C, #10	NOTE 14
288	N/A	120VAC- SWITCHBOARD No. S4	AC PANEL No. 1	SWBD #4	4/C, #10	NOTE 19
301	N/A	120VAC- BATTERY CHARGER	AC PANEL No. 1	BATTERY CHARGER No. 1 AC INPUT	4/C, #10	NOTE 19
302	N/A	48VDC SUPPLY	BATTERY CHARGER No. 1 DC OUT	BATTERY BANK No. 1 TERMINALS	2/C, #10	NOTE 19
303	N/A	48VDC SUPPLY	BATTERY BANK No. 1 TERMINALS	DC PANEL No.1	2-1/C, #4/0	NOTE 19
304	N/A	48VDC SUPPLY	DC PANEL No.1	SWBD #1	2/C, #10	NOTE 15
305	N/A	48VDC SUPPLY	DC PANEL No.1	SWBD #2	2/C, #10	NOTE 15
306	N/A	BATTERY CHARGER ALARMS	BATTERY CHARGER	SWBD #4	4/C, #16	NOTE 19, 17
308	N/A	48VDC SUPPLY	DC PANEL No.1	SWBD #3	2/C, #10	NOTE 15
309	N/A	48VDC SUPPLY	DC PANEL No.1	SWBD #4	2/C, #10	NOTE 15
340	TRAY	STATION SERV. TRANSFER ALARM	STA. SERVICE TRANSFER SWITCH	SWBD #4	4/C, #16	NOTE 19
341	TRAY	DOOR ALARMS	DOOR SWITCH JUNCTION BOX	SWBD #4	4/C, #16	NOTE 19
351	C180	PWC-F SITE1, UPSTREAM	OUTSIDE FIBER JUNCTION BOX	SWBD #4, PATCH PANEL No. PP1	SM OSP CABLE	NOTE 20,23,24
352	C180	PWC-F SITE2, DOWNSTREAM	OUTSIDE FIBER JUNCTION BOX	SWBD #4, PATCH PANEL No. PP1	SM OSP CABLE	NOTE 20,23,24
1100	C201	AC POWER SUPPLY	69KV LINE BKR 52-T1	AC PANEL No.1	4/C #10	NOTE 14
1101	C201	DC POWER SUPPLY	69KV LINE BKR 52-T1	DC PANEL No.1	2- 1/C #6	NOTE 15
1103	C202	CONTROL	69KV LINE BKR 52-T1	TERMINATION CABINET	12/C #10	NOTE 17
1103A	N/A	CONTROL	TERMINATION CABINET	SWBD #1	12/C #10	NOTE 17

DRAWING: 12510C3
Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
1104	C203	LINE PRI RELAY CT'S	69KV LINE BKR 52-T1	TERMINATION CABINET	4/C #10	NOTE 16
1104A	N/A	LINE PRI RELAY CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1105	C203	CONTROL/ INDICATION	69KV LINE BKR 52-T1	TERMINATION CABINET	12/C #10	NOTE 17
1105A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #1	12/C #10	NOTE 17
1106	C204	INDICATION	69KV LINE BKR 52-T1	TERMINATION CABINET	12/C #14	NOTE 17
1106A	N/A	INDICATION	TERMINATION CABINET	SWBD #1	12/C #14	NOTE 17
1107	C204	INDICATION	69KV LINE BKR 52-T1	TERMINATION CABINET	12/C #14	NOTE 17
1107A	N/A	INDICATION	TERMINATION CABINET	SWBD #1	12/C #14	NOTE 17
	C205	SPARE	69KV LINE BKR 52-T1	TRENCH		
1120	C211	AC POWER SUPPLY	No.1 TRANSFORMER	AC PANEL No.1	3/C, #6	NOTE 14
1121	C211	DC POWER SUPPLY	No.1 TRANSFORMER	DC PANEL No.1	4/C #10	NOTE 15
1122	C212	L.V. BANK RELAY CT'S	No.1 TRANSFORMER	TERMINATION CABINET	4/C #10	NOTE 16
1122A	N/A	L.V. BANK RELAY CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1123	C212	L.V. METERING CT'S	No.1 TRANSFORMER	TERMINATION CABINET	4/C #10	NOTE 16
1123A	N/A	L.V. METERING CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1124	C213	H.V. BANK RELAY CT'S	No.1 TRANSFORMER	TERMINATION CABINET	4/C #10	NOTE 16
1124A	N/A	H.V. BANK RELAY CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1125	C213	X0 RELAY CT	No.1 TRANSFORMER	TERMINATION CABINET	2/C #10	NOTE 16
1125A	N/A	X0 RELAY CT	TERMINATION CABINET	SWBD #1	2/C #10	NOTE 16
1126	C214	SPARE	No.1 TRANSFORMER	TERMINATION CABINET	12/C #14	NOTE 17
1126A	N/A	SPARE	TERMINATION CABINET	SWBD #1	12/C #14	NOTE 17
1127	C214	LTC VOLTAGE REDUCTION	No.1 TRANSFORMER	TERMINATION CABINET	12/C #10	NOTE 17
1127A	N/A	LTC VOLTAGE REDUCTION	TERMINATION CABINET	SWBD #1	12/C #10	NOTE 17
1128	C215,C293	LTC CONTROL POTENTIAL	No.1 TRANSFORMER	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1129	C215	CONTROL/ INDICATION	No.1 TRANSFORMER	TERMINATION CABINET	12/C, #14	NOTE 17
1129A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #1	12/C, #14	NOTE 17
1130	C216	SCADA, ETM2, ATC2	No.1 TRANSFORMER	SWBD #4, PP3, A1-A6	FIBER-PT	NOTE 20,22,23
1131	C216	TRIP	No.1 TRANSFORMER	TERMINATION CABINET	12/C, #10	NOTE 17
1131A	N/A	TRIP	TERMINATION CABINET	SWBD #1	12/C, #10	NOTE 17
	C217	SPARE	No.1 TRANSFORMER	TRENCH		
1141	C221	AC POWER SUPPLY	FEEDER BREAKER No. 52-F1	AC PANEL No.1	4/C #10	NOTE 14
1142	C221	DC POWER SUPPLY	FEEDER BREAKER No. 52-F1	DC PANEL No.1	2- 1/C #6	NOTE 15
1143	C222	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F1	TERMINATION CABINET	12/C #10	NOTE 17
1143A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #10	NOTE 17
1144	C222,C291	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F1	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1145	C223	SCADA, PM	FEEDER BREAKER No. 52-F1	SWBD #4, PP3, B1-B6	FIBER-PT	NOTE 20,22,23
1146	C223	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F1	TERMINATION CABINET	12/C #14	NOTE 17
1146A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #14	NOTE 17
1147	C224	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F1	TERMINATION CABINET	4/C #10	NOTE 16
1147A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1148	C224	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F1	TERMINATION CABINET	4/C #10	NOTE 16
1148A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #2	4/C #10	NOTE 16
	C225	SPARE	FEEDER BREAKER No. 52-F1	TRENCH		
1151	C231	AC POWER SUPPLY	FEEDER BREAKER No. 52-F2	AC PANEL No.1	4/C #10	NOTE 14
1152	C231	DC POWER SUPPLY	FEEDER BREAKER No. 52-F2	DC PANEL No.1	2- 1/C #6	NOTE 15
1153	C232	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F2	TERMINATION CABINET	12/C #10	NOTE 17
1153A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #10	NOTE 17
1154	C232,C291	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F2	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1155	C233	SCADA, PM	FEEDER BREAKER No. 52-F2	SWBD #4, PP3, B7-B12	FIBER-PT	NOTE 20,22,23
1156	C233	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F2	TERMINATION CABINET	12/C #14	NOTE 17
1156A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #14	NOTE 17
1157	C234	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F2	TERMINATION CABINET	4/C #10	NOTE 16
1157A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1158	C234	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F2	TERMINATION CABINET	4/C #10	NOTE 16
1158A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #3	4/C #10	NOTE 16
	C235	SPARE	FEEDER BREAKER No. 52-F2	TRENCH		
1161	C241	AC POWER SUPPLY	FEEDER BREAKER No. 52-F3	AC PANEL No.1	4/C #10	NOTE 14
1162	C241	DC POWER SUPPLY	FEEDER BREAKER No. 52-F3	DC PANEL No.1	2- 1/C #6	NOTE 15
1163	C242	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F3	TERMINATION CABINET	12/C #10	NOTE 17

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Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
1163A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #10	NOTE 17
1164	C242,C291	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F3	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1165	C243	SCADA, PM	FEEDER BREAKER No. 52-F3	SWBD #4, PP3,C1-C6	FIBER-PT	NOTE 20,22,23
1166	C243	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F3	TERMINATION CABINET	12/C #14	NOTE 17
1166A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #14	NOTE 17
1167	C244	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F3	TERMINATION CABINET	4/C #10	NOTE 16
1167A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1168	C244	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F3	TERMINATION CABINET	4/C #10	NOTE 16
1168A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #2	4/C #10	NOTE 16
	C245	SPARE	FEEDER BREAKER No. 52-F3	TRENCH		
1171	C251	AC POWER SUPPLY	FEEDER BREAKER No. 52-F4	AC PANEL No.1	4/C #10	NOTE 14
1172	C251	DC POWER SUPPLY	FEEDER BREAKER No. 52-F4	DC PANEL No.1	2- 1/C #6	NOTE 15
1173	C252	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F4	TERMINATION CABINET	12/C #10	NOTE 17
1173A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #10	NOTE 17
1174	C252,C292	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F4	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1175	C253	SCADA, PM	FEEDER BREAKER No. 52-F4	SWBD #4, PP3, C7-C12	FIBER-PT	NOTE 20,22,23
1176	C253	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F4	TERMINATION CABINET	12/C #14	NOTE 17
1176A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #14	NOTE 17
1177	C254	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F4	TERMINATION CABINET	4/C #10	NOTE 16
1177A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1178	C254	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F4	TERMINATION CABINET	4/C #10	NOTE 16
1178A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #3	4/C #10	NOTE 16
	C255	SPARE	FEEDER BREAKER No. 52-F4	TRENCH		
1181	C261	AC POWER SUPPLY	FEEDER BREAKER No. 52-F5	AC PANEL No.1	4/C #10	NOTE 14
1182	C261	DC POWER SUPPLY	FEEDER BREAKER No. 52-F5	DC PANEL No.1	2- 1/C #6	NOTE 15
1183	C262	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F5	TERMINATION CABINET	12/C #10	NOTE 17
1183A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #10	NOTE 17
1184	C262,C292	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F5	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1185	C263	SCADA, PM	FEEDER BREAKER No. 52-F5	SWBD #4, PP3, D1-D6	FIBER-PT	NOTE 20,22,23
1186	C263	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F5	TERMINATION CABINET	12/C #14	NOTE 17
1186A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #2	12/C #14	NOTE 17
1187	C264	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F5	TERMINATION CABINET	4/C #10	NOTE 16
1187A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1188	C264	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F5	TERMINATION CABINET	4/C #10	NOTE 16
1188A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #2	4/C #10	NOTE 16
	C265	SPARE	FEEDER BREAKER No. 52-F5	TRENCH		
1191	C271	AC POWER SUPPLY	FEEDER BREAKER No. 52-F6	AC PANEL No.1	4/C #10	NOTE 14
1192	C271	DC POWER SUPPLY	FEEDER BREAKER No. 52-F6	DC PANEL No.1	2- 1/C #6	NOTE 15
1193	C272	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F6	TERMINATION CABINET	12/C #10	NOTE 17
1193A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #10	NOTE 17
1194	C272,C292	RELAY/ METERING POTENTIAL	FEEDER BREAKER No. 52-F6	15KV BUS No. 1 VT JCT BOX	4/C #10	NOTE 16
1195	C273	SCADA, PM	FEEDER BREAKER No. 52-F6	SWBD #4, PP3, D7-D12	FIBER-PT	NOTE 20,22,23
1196	C273	CONTROL/ INDICATION	FEEDER BREAKER No. 52-F6	TERMINATION CABINET	12/C #14	NOTE 17
1196A	N/A	CONTROL/ INDICATION	TERMINATION CABINET	SWBD #3	12/C #14	NOTE 17
1197	C274	DIFFERENTIAL CT'S	FEEDER BREAKER No. 52-F6	TERMINATION CABINET	4/C #10	NOTE 16
1197A	N/A	DIFFERENTIAL CT'S	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1198	C274	OVERCURRENT CT'S	FEEDER BREAKER No. 52-F6	TERMINATION CABINET	4/C #10	NOTE 16
1198A	N/A	OVERCURRENT CT'S	TERMINATION CABINET	SWBD #3	4/C #10	NOTE 16
	C275	SPARE	FEEDER BREAKER No. 52-F6	TRENCH		
1210	C290	15KV BUS POTENTIAL FROM VT	15KV BUS No. 1 VT JCT BOX	15KV BUS VT- VA, VB, VC, VN	4/C #10	NOTE 16
1211	C293	15KV BUS POTENTIAL TO DEVICES	15KV BUS No. 1 VT JCT BOX	TERMINATION CABINET	4/C #10	NOTE 16
1211A	N/A	15KV BUS POTENTIAL TO DEVICES	TERMINATION CABINET	SWBD #1	4/C #10	NOTE 16
1212	C293	15KV BUS POTENTIAL TO DEVICES	15KV BUS No. 1 VT JCT BOX	TERMINATION CABINET	4/C #10	NOTE 16

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Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
1212A	N/A	15KV BUS POTENTIAL TO DEVICES	TERMINATION CABINET	SWBD #2	4/C #10	NOTE 16
1213	C293	15KV BUS POTENTIAL TO DEVICES	15KV BUS No. 1 VT JCT BOX	TERMINATION CABINET	4/C #10	NOTE 16
1213A	N/A	15KV BUS POTENTIAL TO DEVICES	TERMINATION CABINET	SWBD #3	4/C #10	NOTE 16
1221	C346	SUMP PUMP NO. 1 ALARMS (OIL CONTAINMENT)	SUMP PUMP No. 1 ALARMS OUT	TERMINATION CABINET	4/C, #16	
1221A	N/A	SUMP PUMP NO. 1 ALARMS (OIL CONTAINMENT)	TERMINATION CABINET	SWBD #4	4/C, #16	
1261	C341	120VAC- YARD RECEPTACLE No.1	AC PANEL No. 2	YARD RECEPTACLE No. 1	4/C,#10	NOTE 14
1262	C342	120VAC- YARD RECEPTACLE No.2	AC PANEL No. 2	YARD RECEPTACLE No. 2	4/C,#10	NOTE 14
1263	C343	120VAC- YARD RECEPTACLE No.3	AC PANEL No. 2	YARD RECEPTACLE No. 3	4/C,#10	NOTE 14
1264	C344	120VAC- YARD RECEPTACLE No.4	AC PANEL No. 2	YARD RECEPTACLE No. 4	4/C,#10	NOTE 14
1267A	C386	120VAC- FLOOD LIGHTS #3	AC PANEL No. 1	FLOOD LIGHT SWITCH BOX No. 3	4/C,#10	NOTE 14
1267B	C386	120VAC- FLOOD LIGHTS #3	FLOOD LIGHT SWITCH BOX No. 3	FLOOD LIGHT No. 3	4/C,#10	NOTE 14
1267C	C384	120VAC- FLOOD LIGHTS #1,2	FLOOD LIGHT SWITCH BOX No. 3	FLOOD LIGHT SWITCH BOX No. 1,2	4/C,#10	NOTE 14
1267D	C385	120VAC- FLOOD LIGHTS #1,2	FLOOD LIGHT SWITCH BOX No. 1,2	FLOOD LIGHT No. 1,2	4/C,#10	NOTE 14
1268	C348	120VAC- BAY 1- LIGHTS #1,2	AC PANEL No. 1	SWITCH BOX No. 1,2	4/C,#10	NOTE 14
1269	C350	120VAC- BAY 1- LIGHTS #1,2	SWITCH BOX No. 1,2	LIGHT No. 1,2	4/C,#10	NOTE 14
1270	C348, C351	120VAC- BAY 1- LIGHTS #3,4	SWITCH BOX No. 1,2	SWITCH BOX No. 3,4	4/C,#10	NOTE 14
1271	C353	120VAC- BAY 1- LIGHTS #3,4	SWITCH BOX No. 3,4	LIGHT No. 3,4	4/C,#10	NOTE 14
1272	C351,C354	120VAC- BAY 1- LIGHTS #5,6	SWITCH BOX No. 3,4	SWITCH BOX No. 5,6	4/C,#10	NOTE 14
1273	C355	120VAC- BAY 1- LIGHTS #5,6	SWITCH BOX No. 5,6	LIGHTS No. 5,6	4/C,#10	NOTE 14
1274	C354,C357	120VAC- BAY 2- LIGHT #7	SWITCH BOX No. 5,6	SWITCH BOX No. 7	4/C,#10	NOTE 14
1275	C358	120VAC- BAY 2- LIGHT #7	SWITCH BOX No. 7	LIGHT No. 7	4/C,#10	NOTE 14
1276	C359	120VAC- BAY 1- LIGHT #8-9	AC PANEL No. 1	SWITCH BOX No. 8,9	4/C,#10	NOTE 14
1277	C360	120VAC- BAY 1- LIGHT #8-9	SWITCH BOX No. 8,9	LIGHT No. 8,9	4/C,#10	NOTE 14
1278	C359,C363	120VAC- BAY 2- LIGHTS #10,11	SWITCH BOX No. 8,9	SWITCH BOX No. 10,11	4/C,#10	NOTE 14
1279	C364	120VAC- BAY 2- LIGHTS #10,11	SWITCH BOX No. 10,11	LIGHT No. 10,11	4/C,#10	NOTE 14
1280	C363,C366	120VAC- BAY 3- LIGHTS #12,13	SWITCH BOX No. 10,11	SWITCH BOX No. 12,13	4/C,#10	NOTE 14
1281	C367	120VAC- BAY 3- LIGHTS #12,13	SWITCH BOX No. 12,13	LIGHTS No. 12,13	4/C,#10	NOTE 14
1282	C366,C368	120VAC -BAY 3- LIGHT #14	SWITCH BOX No. 12,13	SWITCH BOX No. 14	4/C,#10	NOTE 14
1283	C369	120VAC- BAY 3- LIGHT #14	SWITCH BOX No. 14	LIGHT No. 14	4/C,#10	NOTE 14
1284	C347, C347A	120VAC- HIGH SIDE LIGHTS #15,16	AC PANEL No. 1	LIGHTS No. 15,16	4/C,#10	NOTE 14
1285	C370	240VAC SUPPLY	AC PANEL No. 2	240VAC 30A, RECEPTACLE No. 5	4/C, #10	NOTE 14
1286	C371	240VAC SUPPLY	AC PANEL No. 2	240VAC 50A, RECEPTACLE No. 6	4/C, #8	NOTE 14
1289	C376	MOBILE SUB, SCADA	MOBILE SUBSTATION J-BOX	SWBD #4, PP3, A11-A12	FIBER-PT	NOTE 20,22,23
1290	C375	MOBILE SUB, CONTROL & ALARM	MOBILE SUBSTATION J-BOX	TERMINATION CABINET	12/C, #10	NOTE 17
1290A	N/A	MOBILE SUB, CONTROL & ALARM	TERMINATION CABINET	SWBD #1	12/C, #10	NOTE 17
1291	C375	DC POWER SUPPLY	MOBILE SUBSTATION J-BOX	DC PANEL No.1	4/C #10	NOTE 15

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Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
1310	N/A	CNTL/ IND S1 TO S2	SWBD #1	SWBD #2	12/C #14	NOTE 17
1311	N/A	CNTL/ IND S1 TO S3	SWBD #1	SWBD #3	12/C #14	NOTE 17
1312	N/A	CNTL/ IND S1 TO S4	SWBD #1	SWBD #4	12/C #14	NOTE 17
1313	N/A	CNTL/ IND S2 TO S4	SWBD #2	SWBD #4	12/C #14	NOTE 17
1314	N/A	CNTL/ IND S3 TO S4	SWBD #3	SWBD #4	12/C #14	NOTE 17
J24	N/A	IRIG TO 351S, 2,4,6	SWBD #4-CLK, IRIG T05	SWBD #2- F2-2, TEE	C953-25	NOTE 13
J25	N/A	IRIG TO 351S, 2,4,6	SWBD #2- F2-2, TEE	SWBD #2- F4-2, TEE	C953-6	NOTE 13
J26	N/A	IRIG TO 351S, 2,4,6	SWBD #2- F4-2, TEE	SWBD #2- F6-2, TEE	C953-6	NOTE 13
J27	N/A	IRIG TO 351S, 1,3,5	SWBD #2- F6-2, TEE	SWBD #3- F1-2, TEE	C953-15	NOTE 13
J28	N/A	IRIG TO 351S, 1,3,5	SWBD #3- F1-2, TEE	SWBD #3- F3-2, TEE	C953-6	NOTE 13
J29	N/A	IRIG TO 351S, 1,3,5	SWBD #3- F3-2, TEE	SWBD #3- F5-2	C953-6	NOTE 13
J30	N/A	IRIG TO T1P, T1BU, T1M	SWBD #4-CLK, IRIG T06	SWBD #1- T1-P TEE	C953-25	NOTE 13
J31	N/A	IRIG TO T1P TO T1BU	SWBD #1- T1-P TEE	SWBD #1- T1-BU TEE	C953-6	NOTE 13
J32	N/A	IRIG TO T1BU TO T1M	SWBD #1- T1-BU TEE	SWBD #1- T1-M IRIG IN	C953-6	NOTE 13
J33		CLK ANTENNA IN	SEL ANTENNA	SEL SURGE PROTECTOR	C961-025	NOTE 25
J34	TRAY	CLK ANTENNA IN	SEL SURGE PROTECTOR	SCADA SWBD #4- CLK, ANT	C961-050	NOTE 25
J35	N/A	IRIG TO RTAC	SWBD #4-CLK, IRIG T08	SCADA SWBD #4- RTAC, IRIG-B IN	C953-6	NOTE 13
J36	N/A	IRIG TO ICON1	SWBD #4-CLK, IRIG T07	SCADA SWBD #4- ICON1, IRIG-B	C953-6	NOTE 13
J37	N/A	IRIG TO DPAC	SWBD #4-CLK, IRIG T03	SCADA SWBD #4-DPAC, IRIG-B IN	C953-6	NOTE 13
J38	N/A	IRIG TO GW1	SWBD #4-CLK, IRIG T04	SCADA SWBD #4- GW1, IRIG-B IN	C953-6	NOTE 13
J41	N/A	FIBER JUMPER, PWC-F SITE1, UP	SWBD #4-ICON1, #1-AB	SWBD #4-PP1-A1/A2, SITE1	ZLC3S	NOTE 13
J42	N/A	FIBER JUMPER, PWC-F SITE2, DOWN	SWBD #4-ICON1, #2-AB	SWBD #4-PP1-B1/B2, SITE2	ZLC3S	NOTE 13
J43	N/A	SCADA, ETSW1 TO RTAC	SWBD #4-ETSW1, PORT8	SWBD #4-RTAC, ETH1	CA605C-008	NOTE 13
J44	N/A	SITE COMM, ICON1 TO GW1	SWBD #4-ICON1, #4-5	SWBD #4-GW1, ETH1	CA605C-008	NOTE 13
J45	N/A	SCADA, BATTERY CHARGER NO. 1	BATTERY CHARGER No. 1	SWBD #4, RTAC, PCI2-2	C605A-36	NOTE 13
J47	N/A	SCADA, TRANSFER SWITCH- 485	AUTOMATIC TRANSFER SWITCH	SWBD #4, RTAC, PCI2-4	C605A-50	NOTE 13
J48	N/A	SITE COMM, GW1 TO SWITCH	SWBD #4-ETSW2, PORT7	SWBD #4-GW1, ETH2	CA605C-008	NOTE 13
J49	N/A	NTP TIME, SYSTEM (ETHERNET)	SWBD #4-ETSW2, PORT 7	SWBD #4-CLK, ETH1	CA605C-004	NOTE 13
J50	N/A	SWITCH NETWORK (ETHERNET)	SWBD #4-ETSW1, PORT 7	SWBD #4-ETSW3, PORT 7	CA605C-008	NOTE 13
J51	N/A	SCADA, DPAC (ETHERNET)	SWBD #4-ETSW1, PORT 6	SWBD #4-DPAC-ETH1	CA605C-008	NOTE 13
J52	N/A	SWITCH NETWORK (ETHERNET)	SWBD #4-ETSW1, PORT 5	SWBD #4-ETSW2, PORT 5	CA605C-004	NOTE 13
J103	N/A	SCADA, IO_F1_2	SWBD #4, ETSW1, 19	SWBD #4, PP3, B3B4	ZLC2M	NOTE 13,19
J104	N/A	SCADA, IO_F2_2	SWBD #4, ETSW1, 20	SWBD #4, PP3, B9B10	ZLC2M	NOTE 13,19
J105	N/A	SCADA, IO_F3_2	SWBD #4, ETSW1, 21	SWBD #4, PP3, C3C4	ZLC2M	NOTE 13,19
J106	N/A	SCADA, IO_F4_2	SWBD #4, ETSW1, 22	SWBD #4, PP3, C9C10	ZLC2M	NOTE 13,19
J107	N/A	SCADA, IO_F5_2	SWBD #4, ETSW1, 23	SWBD #4, PP3, D3D4	ZLC2M	NOTE 13,19
J108	N/A	SCADA, IO_F6_2	SWBD #4, ETSW1, 24	SWBD #4, PP3, D9D10	ZLC2M	NOTE 13,19
J123	N/A	SCADA, 2411 BREAKER No. 52F1_2	52F1_2 PATCH PANEL (SPH01P)	IO_F1_2-PORT 1A	ZLC3M	NOTE 13,19
J124	N/A	SCADA, 2411 BREAKER No. 52F2_2	52F2_2 PATCH PANEL (SPH01P)	IO_F2_2-PORT 1A	ZLC3M	NOTE 13,19
J125	N/A	SCADA, 2411 BREAKER No. 52F3_2	52F3_2 PATCH PANEL (SPH01P)	IO_F3_2-PORT 1A	ZLC3M	NOTE 13,19
J126	N/A	SCADA, 2411 BREAKER No. 52F4_2	52F4_2 PATCH PANEL (SPH01P)	IO_F4_2-PORT 1A	ZLC3M	NOTE 13,19
J127	N/A	SCADA, 2411 BREAKER No. 52F5_2	52F5_2 PATCH PANEL (SPH01P)	IO_F5_2-PORT 1A	ZLC3M	NOTE 13,19
J128	N/A	SCADA, 2411 BREAKER No. 52F6_2	52F6_2 PATCH PANEL (SPH01P)	IO_F6_2-PORT 1A	ZLC3M	NOTE 13,19
J201	N/A	SCADA, ETM1_2	SWBD #4, ETSW1, 9	SWBD #4, PP3, A1A2	ZLC2M	NOTE 13,19
J202	N/A	SCADA, LTC1_2	SWBD #4, ETSW1, 10	SWBD #4, PP3, A3A4	ZLC2M	NOTE 13,19
J203	N/A	SCADA, PMF1_2	SWBD #4, ETSW1, 11	SWBD #4, PP3, B1B2	ZLC2M	NOTE 13,19

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Cable Schedule

CABLE NO.	CONDUIT NO.	FUNCTION	CABLE SCHEDULE		CABLE WIRE NO. & SIZE	REMARKS
			FROM	TO		
J204	N/A	SCADA, PMF2_2	SWBD #4, ETSW1, 12	SWBD #4, PP3, B7B8	ZLC2M	NOTE 13,19
J205	N/A	SCADA, PMF3_2	SWBD #4, ETSW1, 13	SWBD #4, PP3, C1C2	ZLC2M	NOTE 13,19
J206	N/A	SCADA, PMF4_2	SWBD #4, ETSW1, 14	SWBD #4, PP3, C7C8	ZLC2M	NOTE 13,19
J207	N/A	SCADA, PMF5_2	SWBD #4, ETSW1, 15	SWBD #4, PP3, D1D2	ZLC2M	NOTE 13,19
J208	N/A	SCADA, PMF6_2	SWBD #4, ETSW1, 16	SWBD #4, PP3, D7D8	ZLC2M	NOTE 13,19
J209	N/A	SCADA, MOBILE	SWBD #4, ETSW1, 18	SWBD #4, PP3, A11A12	ZLC2M	NOTE 13,19
J211	N/A	SCADA, T1P	SWBD #4, ETSW2, 6	SWBD #1, T1P, PORT5	CA605C-19	NOTE 13,19
J212	N/A	SCADA, T1BU	SWBD #4, ETSW2, 9	SWBD #1, T1BU, PORT5	CA605C-19	NOTE 13,19
J213	N/A	SCADA, T1PM	SWBD #4, ETSW2, 10	SWBD #1, T1PM, PORT1	CA605C-19	NOTE 13,19
J214	N/A	SCADA, RELAY 52-1_2	SWBD #4, ETSW2, 11	SWBD #2, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J215	N/A	SCADA, RELAY 52-2_2	SWBD #4, ETSW2, 12	SWBD #3, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J216	N/A	SCADA, RELAY 52-3_2	SWBD #4, ETSW2, 13	SWBD #2, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J217	N/A	SCADA, RELAY 52-4_2	SWBD #4, ETSW2, 14	SWBD #3, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J218	N/A	SCADA, RELAY 52-5_2	SWBD #4, ETSW2, 15	SWBD #2, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J219	N/A	SCADA, RELAY 52-6_2	SWBD #4, ETSW2, 16	SWBD #3, 351S RELAY PORT5	CA605C-19	NOTE 13,19
J221	N/A	SCADA, TRANSFORMER T1 ETM	T1 PATCH PANEL (SPH01P)	ETM1_1_SEL-2414, PORT 5A	ZLC3M	NOTE 13,19
J222	N/A	SCADA, TRANSFORMER T1 LTC	T1 PATCH PANEL (SPH01P)	LTC1, PORT 5A	ZLC3M	NOTE 13,19
J223	N/A	SCADA, PM BREAKER No. 52F1_2	52F1_2 PATCH PANEL (SPH01P)	PMF1_2-PORT 5A	ZLC3M	NOTE 13,19
J224	N/A	SCADA, PM BREAKER No. 52F2_2	52F2_2 PATCH PANEL (SPH01P)	PMF2_2-PORT 5A	ZLC3M	NOTE 13,19
J225	N/A	SCADA, PM BREAKER No. 52F3_2	52F3_2 PATCH PANEL (SPH01P)	PMF3_2-PORT 5A	ZLC3M	NOTE 13,19
J226	N/A	SCADA, PM BREAKER No. 52F4_2	52F4_2 PATCH PANEL (SPH01P)	PMF4_2-PORT 5A	ZLC3M	NOTE 13,19
J227	N/A	SCADA, PM BREAKER No. 52F5_2	52F5_2 PATCH PANEL (SPH01P)	PMF5_2-PORT 5A	ZLC3M	NOTE 13,19
J228	N/A	SCADA, PM BREAKER No. 52F6_0	52F6_2 PATCH PANEL (SPH01P)	PMF6_2-PORT 5A	ZLC3M	NOTE 13,17
J229	N/A	SCADA, MOBILE XFRM	PATCH PANEL (SPH01P)	PMF5_2-PORT 5A	ZLC3M	NOTE 13,19
		END OF CABLE SCHEDULE	END OF CABLE SCHEDULE	END OF CABLE SCHEDULE		

**DRAWING: 12510C3
FIBER PRE-TERM ORDER**

DETERMINING PRE-TERMINATED ASSEMBLY LENGTHS FOR ORDER:

- 1) SEE PRINTS FOR DETAILED CONNECTIONS. VERIFY "CABLE NUMBER" AND "TO DEVICE".
- 2) WRITE IN "B- MEASURED PATH LENGTH" AS ACTUALLY MEASURED.
- 3) CALCULATE "E- ORDER LENGTH" AS SHOWN.
- 4) ORDER ALL CABLES TOGETHER, TO ENSURE BULK CABLE AVAILABLE IN NEEDED QUANTITY.
- 5) SPECIFY LENGTH NEEDED PER ITEM ORDERED.
- 6) SPECIFY CABLE NUMBER (CABLE NUMBER IN THIS TABLE) FOR LABELS PER ITEM ORDERED.

Bank No. 1...

FIBER-PT

CABLE NUMBER (SPECIFY IN ORDER)	TO DEVICE	A - LENGTH IN YARD CABINET	B - MEASURED PATH LENGTH (SEE NOTE BELOW)	C - TURN LOOP LENGTH	D - JUST-IN-CASE LENGTH	E - ORDER LENGTH: ADD A+B+C+D	ORDER PART NUMBER with 4 digit Length, Feet, and 4 digit Cable No. (SPECIFY IN ORDER)
1130	TRANSFORMER	10 FEET		2 FEET	10 FEET		
1145	FEEDER No. 1 52F1	10 FEET		2 FEET	10 FEET		
1155	FEEDER No. 2 52F2	10 FEET		2 FEET	10 FEET		
1165	FEEDER No. 3 52F3	10 FEET		2 FEET	10 FEET		
1175	FEEDER No. 4 52F4	10 FEET		2 FEET	10 FEET		
1185	FEEDER No. 5 52F5	10 FEET		2 FEET	10 FEET		
1195	FEEDER No. 6 52F6	10 FEET		2 FEET	10 FEET		
1289	MOBILE TRANSFORMER	5 FEET		2 FEET	10 FEET		
NOTE:	B-MEASURED PATH LENGTH - MEASURE FROM MOUTH OF CONDUIT INSIDE YARD CABINET THRU CONDUIT, TRENCH, TRAY, DROP INTO SWBD #4 THRU LEFT OR RIGHT CABLE OPENING, TO EDGE OF DESIGNATED PATCH PANEL. TAKE CARE TO ROUND CORNERS USING FIBER MINIMUM BEND RADIUS, NOT WITH SHARP BENDS.						

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	1	EA	Design, furnish, and install 13'-8" x 30 x 10'-6". Prefabricated Relay Control House for the Cumberland Road Substation , all as per Specifications, including delivery to the site, and unloading.		
2	1	EA	Design, furnish, and install 13'-8" x 30 x 10'-6". Prefabricated Relay Control House for the PO Hoffer Substation , all as per Specifications, including delivery to the site, and unloading.		
Subtotal:					
State Sales Tax (If Applicable)					
TOTAL BID:					
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					

*Number of consecutive calendar days (NOT business days) after receipt of written orders from the Commission.

- (1) Submittal of drawings to the Engineer shall follow promptly after issuance of Purchase Order. Delaying drawings because manufacturing/delivery schedule allows for it is not acceptable.
- (2) Allow two (2) weeks for Engineer's review and turnaround for all Drawing submittals.

BID FORM CONTINUED

BIDDER NAME: _____

CUMBERLAND ROAD STATION

Proposed HVAC Unit - Main

Manufacturer: _____

Model No.: _____

EER: _____

Proposed HVAC Unit – Battery:

Manufacturer: _____

Model No.: _____

EER: _____

PO HOFFER SUBSTATION

Proposed HVAC Unit - Main

Manufacturer: _____

Model No.: _____

EER: _____

Proposed HVAC Unit – Battery:

Manufacturer: _____

Model No.: _____

EER: _____