

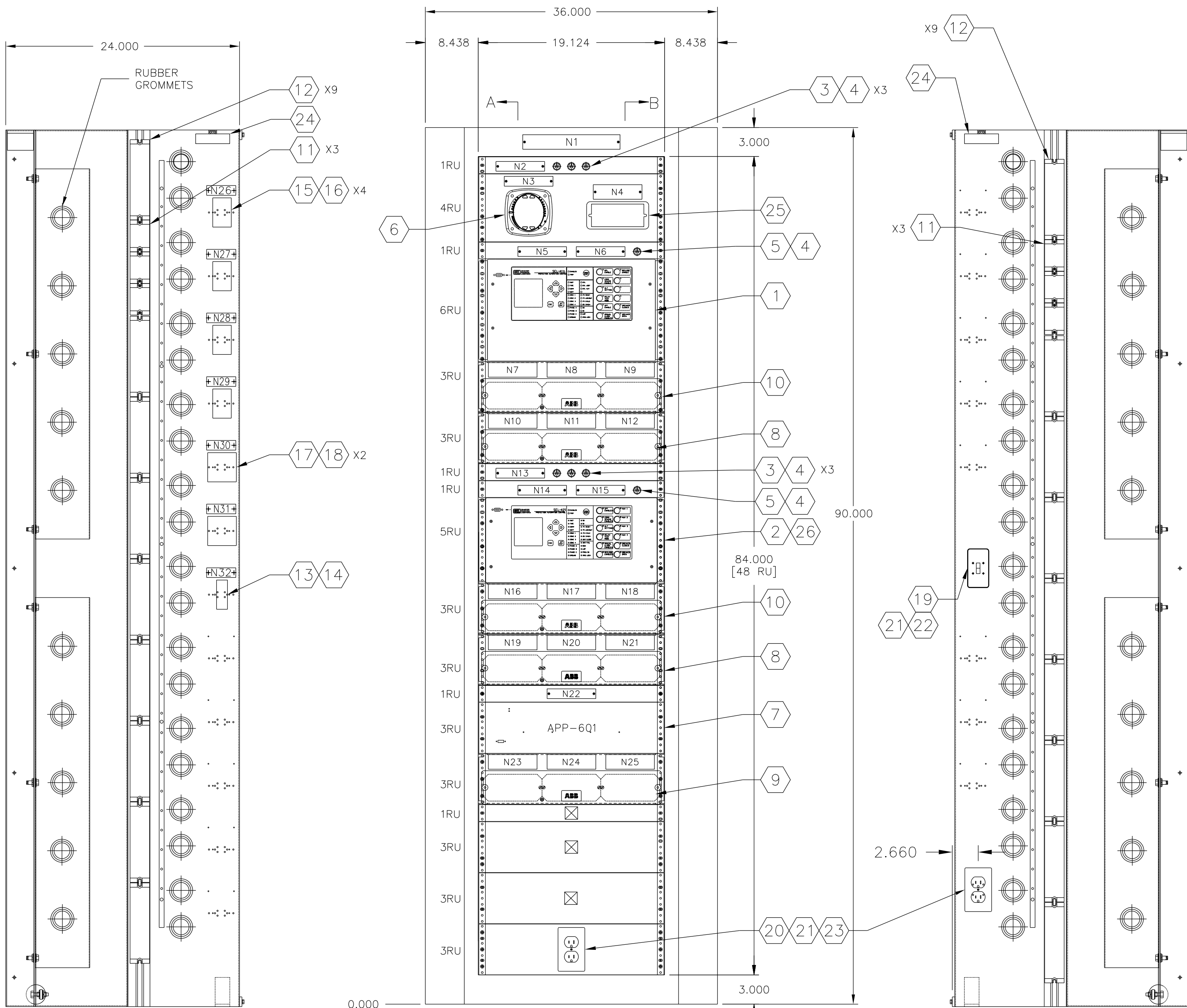
C	04-25	ISSUED FOR CTRL BLDG BID
B	03-25	ISSUED FOR 30% APPROVAL
A	02-25	ISSUED FOR 30% REVIEW

REV	DATE	DESCRIPTION
THE REGISTRANT OF THE NEWLY APPLIED SEAL ASSUMES RESPONSIBILITY FOR THE CHANGES AS INDICATED BY THE FOLLOWING REVISION NUMBER 0		

BURNS & McDONNELL
 ENGINEERING COMPANY, INC.
 3400 WARD PARKWAY
 SUITE 1000
 CHICAGO, IL 60641

NAMEPLATE LIST					
NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N1	PNL 1 (957 TO BRANDY BRANCH)			1 1/2 x 10"	1/2"
N2	X WDG 230KV BUS			1 x 5"	1/2"
N3	SHARK METER-957			1 x 5"	1/2"
N4	SEE DETAIL "A"			1 1/2 x 5"	5/32"
N5	87L-957			1 x 5"	1/2"
N6	ALARM RECEIVED			1 x 5"	1/2"
N7	SEE DETAIL "B"			1 1/2 x 5"	5/32"
N8	SEE DETAIL "C"			1 1/2 x 5"	5/32"
N9	SEE DETAIL "D"			1 1/2 x 5"	5/32"
N10	SEE DETAIL "E"			1 1/2 x 5"	5/32"
N11	SEE DETAIL "F"			1 1/2 x 5"	5/32"

NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N12	SEE DETAIL "G"			1 1/2 x 5"	5/32"
N13	Y WDG 230KV BUS			1 x 5"	1/2"
N14	21L-957			1 x 5"	1/2"
N15	ALARM RECEIVED			1 x 5"	1/2"
N16	SEE DETAIL "H"			1 1/2 x 5"	5/32"
N17	SEE DETAIL "I"			1 1/2 x 5"	5/32"
N18	SEE DETAIL "J"			1 1/2 x 5"	5/32"
N19	SEE DETAIL "K"			1 1/2 x 5"	5/32"
N20	SEE DETAIL "L"			1 1/2 x 5"	5/32"
N21	SEE DETAIL "M"			1 1/2 x 5"	5/32"
N22	DFR-DAU-957			1 x 5"	1/2"
N23	SEE DETAIL "N"			1 1/2 x 5"	5/32"
N24	SEE DETAIL "O"			1 1/2 x 5"	5/32"
N25	SEE DETAIL "P"			1 1/2 x 5"	5/32"
N26	FU1	87L-PS		1 x 3"	1/2"
N27	FU2	21L-PS		1 x 3"	1/2"
N28	FU3	DFR-PS		1 x 3"	1/2"
N29	FU4	MTR-PS		1 x 3"	1/2"
N30	FU10	RS1-POT		1 x 3"	1/2"
N31	FU11	RS2-POT		1 x 3"	1/2"
N32	FU13	RCPT		1 x 3"	1/2"
UNLESS OTHERWISE NOTED:		-NAMEPLATE MOUNTING SHALL BE VIA S/S PAN HEAD SCREWS. -TEST SWITCH NAMEPLATES SHALL BE MOUNTED WITH DOUBLE ADHESIVE TAPE. -COLOR SHALL BE BLACK WITH WHITE TEXT.			



 COVERPLATE/BLANK MOUNTING PLATE
REQUIRED FOR FUTURE EQUIPMENT

DETAIL 'A'

SCALE 4:1

FT-1-CD			TS1-87L-957						BREAKER 95779	
POTENTIAL			CURRENT						POT	
VAY	VBY	VCY	IAW		IBW		ICW		VN	
			OUT	IN	OUT	IN	OUT	IN		

DETAIL 'B'

SCALE 4:1

FT-1-CB		TS2-87L-957				BREAKER 957B5	
57L		CURRENT					
OUT 201 WL	OUT 202 COM FAIL ANN	IAX		IBX		ICX	
		OUT	IN	OUT	IN	OUT	IN

DETAIL 'C'

SCALE 4:1

FT-1-CA			TS3-87L-957						
57L									
IN 201 52A 95779	IN 202 52A 95785	IN 203 RLY FAIL 21L	IN 204 COM FAIL 21L	IN 205 RLY FAIL 25BF 95779	IN 206 868F TRIP 95779	IN 207 868F TCM 95779	IN 301*	IN 302 AIN FAIL	IN 303 DTT

DETAIL 'D'
SCALE 4:1

FT-1-DC		TS4-87L-857							
		87L							
OUT 301 TRIP 95779 TC-1	OUT 301 TRIP 95779 TC-1	OUT 302 TRIP 95785 TC-1	OUT 302 TRIP 95785 TC-1	OUT 303*	OUT 303*	OUT 304*	OUT 304*	OUT 305*	OUT 305*

DETAIL 'E'

SCALE 4:1

FT-1-DB		TS5-87L-857							
87L									
OUT 405*	OUT 406*	OUT 407*	OUT 407*	OUT 408*	OUT 408*	OUT 203 COM FAIL CFR	OUT 204 RLY TRIP DFR	OUT 205 OTT TRIP CFR	OUT 208 RLY FAIL ANN

DETAIL 'F'

SCALE 4:1

FT-1-DA		TS6-87L-957							
87L									
OUT 401° RI	OUT 401° RI	OUT 402 BFI	OUT 402 BFI	OUT 403° RI	OUT 403° RI	OUT 404 BFI	OUT 404 BFI	OUT 405°	OUT 405°
95779	95779	95779	95779	95785	95785	95785	95785		

DETAIL 'G
SCALE 4:1

FT-1-JE			TS1-21L-967				BREAKER 95785		
POTENTIAL			CURRENT						POT
VAY	VBY	VCY	IAW		IBW		ICW		VN
			OUT	IN	OUT	IN	OUT	IN	

DETAIL 'H'

SCALE 4:1

FT-1-JD		TS2-21L-957				BREAKER 95779	
21L		CURRENT					
OUT 101 W/L	OUT 102 COM FAL ANN	IAX		IBX		ICX	
		OUT	IN	OUT	IN	OUT	IN

DETAIL '1'
SCALE 4:1

FT-1-JC		TS3-21L-857								
21L										
IN 101 52A 95779	IN 102 52A 95785	IN 103 RLY 87L	IN 104 COM 87L	IN 105 RLY FAIL 25/BF 95785	IN 106 38BF TRIP 95785	IN 107*	IN 201*	IN 202*	IN 203 DTT	

DETAIL 'J'
SCALE 4:1

FT-1-KC		TS4-21L-957							
21L									
OUT 201 TRIP 95779 TC-2	OUT 201 TRIP 95779 TC-2	OUT 202 TRIP 95785 TC-2	OUT 202 TRIP 95785 TC-2	OUT 203*	OUT 203*	OUT 204*	OUT 204*	OUT 205*	OUT 205*

DETAIL 'K'
SCALE 4:1

FT-14KB		TS5-21L-957							
21L									
OUT 306*	OUT 306*	OUT 307*	OUT 307*	OUT 308*	OUT 308*	OUT 103 POTT FAIL CFR	OUT 104 RLY TRIP DFR	OUT 105 DTT TRIP DFR	OUT 108 RLY FAIL ANN

DETAIL 'L'

SCALE 4:1

FT-1-KA		TS6-21L-957							
21L									
OUT 301* RI	OUT 301* RI	OUT 302 BFI	OUT 302 BFI	OUT 303* RI	OUT 303* RI	OUT 304 BFI	OUT 304 BFI	OUT 305*	OUT 305*
95785	95779	95779	95779	95785	95785	95785	95785		

DETAIL 'M
SCALE 4:1

FT-1-VC		TS1-OFB-957 BREAKER 95779 & 95785							
CURRENT									
CH1 IA		CH2 IB		CH3 IC		CH4 IN			
OUT	IN	OUT	IN	OUT	IN	OUT	IN		

DETAIL 'N'
SCALE 4:1

FT-1-VB				TS2-DPR-957					
POTENTIAL				DPR					
AΦ	BΦ	CΦ	N	IN 01*	IN 02*	IN 03*	IN 04*	IN 05 87L DTT SEND	IN 06 21L DTT SEND

DETAIL 'O'

SCALE 4:1

FT-1-VA		TSJ-DFR-957									
DFR											
IN 01	IN 02	IN 03	IN 04	IN 05	IN 06	IN 07	IN 08	IN 09	IN 10	IN 11	IN 12
528	528	87L	87L	87L	868F	868F	POTT	21L	21L	21L	21L
95779	95785	CH	TRIP	DTT	TRIP	TRIP	CH	RLY	TRIP	DTT	TRIP
		FAIL	957	TRIP	95779	95785	FAIL				

DETAIL 'P'
SCALE 4:1

ITEM	STYLE NUMBER	QTY	MFR	DESCRIPTION
1	0411L1X6X5C6CXH624E4E4	1	SEL	RELAY, SEL-411L, STANDARD PLUS SUB-CYCLE DISTANCE ELEMENTS, SERIES COMPENSATION LOGIC AND TRAVELING WAVE FAULT LOCATION FIRMWARE, 125/250 VDC OR 120/240 VAC POWER SUPPLY, FOUR 10/100BASE-T CONNECTORS, 125 VDC INPUT VOLTAGE, HORIZONTAL RACK MOUNT, 6RU, S.I.NO. 411L#BPGW
2	04214615XC04H75X5XXX	1	SEL	RELAY, SEL-421, STANDARD FIRMWARE, 125/250 VDC OR 120/240 VAC POWER SUPPLY, TWO 10/100BASE-T CONNECTORS, 125 VDC MAINBOARD INPUT VOLTAGE, HORIZONTAL RACK MOUNT, 5RU, S.I. NO. 421H#BK4
3	116B6708G7-C	6	GE	INDICATING LIGHT, GE ET-16, 70VAC, INCANDESCENT BULB, CLEAR CAP
4	BSD-1118-026	8	LETRONICS	BULB, LED, PALE WHITE
5	116B6708C3-C	2	GE	INDICATING LIGHT, GE ET-16, 125VDC, INCANDESCENT BULB, CLEAR CAP
6	100-60-10-V3-D2-485P-X	1	ELECTRO INDUSTRIES	METER, SHARK 100, 60 HZ, 5A, 90-265 VAC OR 100-370 VDC, RS485+ COM
7	APP-601-D-09A-24E-0-4	1	APP ENGINEERING	DFR ACQUISITION UNIT, APP-601 DAU CHASSIS, 125VDC INCLUDES: SLOT 1, 2, 3 - ANALOG INPUT CARDS SLOT 7 - DSP CARD SLOT 8, 9 - DIGITAL INPUT CARD WITH INTERNAL WETTING SLOT 10 - DIGITAL INPUT CARD WITH EXTERNAL WETTING SLOT 12 - ALARM CARD APP-00037 10AWG GROUND ASSEMBLY 10'
8	FRXG-001-001-001	2	ABB	TEST SWITCH, FT-19R, ARRANGED AS (P P P P P P P P P) (P P P P P P P P P) (P P P P P P P P P), 3RU LOW SWITCHES, STEEL, ANSI 61 GRAY, SCREW TERMINALS, FULL CLEAR COVER
9	FRXG-083-001-001	1	ABB	TEST SWITCH, FT-19R, ARRANGED AS (C-C C-C C-C C-C P P) (P P P P P P P P P) (P P P P P P P P P), 3RU LOW SWITCHES, STEEL, ANSI 61 GRAY, SCREW TERMINALS, FULL CLEAR COVER
10	FRXG-014-014-001	2	ABB	TEST SWITCH, FT-19R, ARRANGED AS (P P P C-C C-C C P) (P P P C-C C-C C-C P) (P P P P P P P P P), 3RU LOW SWITCHES, STEEL, ANSI 61 GRAY, SCREW TERMINALS, FULL CLEAR COVER
11	EB27B04S	6	GE	TERMINAL BLOCK, GE EB-27, 4 POLE, 600V, 30A, STANDARD CONNECTORS WITH SHORT CIRCUITING BAR
12	1512STD	18	MARATHON	TERMINAL BLOCK, MARATHON 1500 SERIES, 12 POLE, 600V, 30A, STANDARD CONNECTORS
13	F30A1S	1	MARATHON	FUSE BLOCK, CLASS H, 1 POLE, 250V, 30A
14	NON-15	1	BUSSMANN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 15A
15	F30A2S	4	MARATHON	FUSE BLOCK, CLASS H, 2 POLE, 250V, 30A
16	NON-10	8	BUSSMANN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 10A
17	F30A3S	2	MARATHON	FUSE BLOCK, CLASS H, 3 POLE, 250V, 30A
18	NON-6	6	BUSSMANN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 6A
19	CS115I	1	HUBBELL	SWITCH, SINGLE POLE, 15A, 120/277 VOLTS
20	CR15I	2	HUBBELL	RECEPTACLE, DUPLEX, 120 VAC, 15A, IVORY,
21	58361 1/2	3	THOMAS & BETTS	HANDY BOX, 2" x 4", 1-7/8" DEPTH, 1/2" KNOCKOUTS
22	58 C 30	1	HUBBELL	COVER PLATE, FOR SINGLE TOGGLE SWITCH, FITS ON 2" x 4" HANDY BOX
23	58 C 7	2	THOMAS & BETTS	COVER PLATE, FOR SINGLE DUPLEX RECEPTACLE, GALVANIZED, FITS ON 2" x 4" HANDY BOX
24	NUD8818/30WH	1	NORA LIGHTING	LED LIGHT FIXTURE, 18", 120V, 11W
25	129A514C01	1	ABB	TEST SWITCH, FT-1, ARRANGED AS (P P P C-C C-C C-C P), BLACK COVER, SCREW TERMINALS
26	2894MXX	2	SEL	CONVERTER, SEL-2894, EIA-232 TO IEEE C37.94 INTERFACE CONVERTER, MALE DB-9 EIA-232 CONNECTOR

* FUNCTION NOT IMPLEMENTED (FUTURE)

UNLESS OTHERWISE NOTED:

- 1) ALL DIMENSIONS ARE IN INCHES.
- 2) PANELS SHALL BE FABRICATED FROM 11 GA CRS.
- 3) PANELS TO BE BRACED AS REQUIRED TO INSURE A SMOOTH AND LEVEL SURFACE. ALL EXPOSED WELDS TO BE GROUND SMOOTH.
- 4) INTERIOR FINISH TO BE - ANSI 61 SATIN GRAY.
EXTERIOR FINISH TO BE - ANSI 61 SATIN GRAY.

REVISIONS TO DRAWING			BY	DATE	APPROVED	NO.	REVISIONS TO DRAWING			BY	DATE	APPROVED	ENGINEERING	BY	DATE	CALDWELL SWITCHYARD LAYOUT DIAGRAM 230kV LINE 957 PANEL 1 			DESIGN FILENAME:		
0	CALDWELL SUBSTATION INSTALLATION		IMP	08/2025	RCH							DESIGNED	IMP	08/2025	CWL01.DGN						
												CHECKED	CBW	08/2025	DRAWING NO:						
												APPROVED	RCH	08/2025	CWL01						
												DRAFTING	BY	DATE	SHEET NO:						
												PRELIMINARY									
												FINAL DESIGN									
												PLOTTED	BMCD	05/25							
															SCALE:	NONE	SYSTEM PROTECTION & CONTROL PROJECTS 20413			IFB NO:	

C	04-25	ISSUED FOR CTRL BLDG BID
B	03-25	ISSUED FOR 30% APPROVAL
A	02-25	ISSUED FOR 30% REVIEW
REV	DATE	DESCRIPTION
		THE REGISTRANT OF THE NEWLY APPLIED SEAL ASSUMES RESPONSIBILITY FOR THE CHANGES AS INDICATED BY THE FOLLOWING REVISION NUMBER <u>0</u> .

NAMEPLATE LIST				
NO.	FIRST LINE	SECOND LINE	THIRD LINE	TEXT
N1	PNL 2 (BKR 95779/95785)			1 1/2 x 10" 1/2"
N2	25/BF - 95779			1 X 5" 1/2"
N3	ALARM RECEIVED			1 X 5" 1/2"
N4	SEE DETAIL "A"			1 1/2 X 5" 5/32"
N5	SEE DETAIL "B"			1 1/2 X 5" 5/32"
N6	SEE DETAIL "C"			1 1/2 X 5" 5/32"
N7	SEE DETAIL "D"			1 1/2 X 5" 5/32"
N8	SEE DETAIL "E"			1 1/2 X 5" 5/32"
N9	SEE DETAIL "F"			1 1/2 X 5" 5/32"
N10	86BF - 95779			1 X 5" 1/2"
N11	52CS - 95779			1 X 5" 1/2"

Figure 10 displays 12 S-boxes for 128-bit and 256-bit AES, arranged in a 4x3 grid. The sub-diagrams are labeled DETAIL 'A' through DETAIL 'P'. Each sub-diagram shows a 16x16 grid of hex values representing the S-box for a specific key. The sub-diagrams are arranged in a 4x3 grid. The first column (DETAIL 'A' to 'D') shows 128-bit S-boxes for keys 1540, 1541, 1542, and 1543. The second column (DETAIL 'E' to 'H') shows 128-bit S-boxes for keys 1544, 1545, 1546, and 1547. The third column (DETAIL 'I' to 'P') shows 256-bit S-boxes for keys 1548, 1549, 1550, and 1551. Each sub-diagram includes a title, a key identifier, and a 16x16 grid of hex values. The grids are labeled with 'IN' and 'OUT' values for each row and column. The sub-diagrams are arranged in a 4x3 grid. The first column (DETAIL 'A' to 'D') shows 128-bit S-boxes for keys 1540, 1541, 1542, and 1543. The second column (DETAIL 'E' to 'H') shows 128-bit S-boxes for keys 1544, 1545, 1546, and 1547. The third column (DETAIL 'I' to 'P') shows 256-bit S-boxes for keys 1548, 1549, 1550, and 1551. Each sub-diagram includes a title, a key identifier, and a 16x16 grid of hex values. The grids are labeled with 'IN' and 'OUT' values for each row and column.

NOTES:

- * FUNCTION NOT IMPLEMENTED (FUTURE)

- 1) ALL DIMENSIONS ARE IN INCHES.
- 2) PANELS SHALL BE FABRICATED FROM 11 GA CRS.
- 3) PANELS TO BE BRACED AS REQUIRED TO INSURE A SMOOTH AND LEVEL SURFACE. ALL EXPOSED WELDS TO BE GROUND SMOOTH.
- 4) INTERIOR FINISH TO BE - ANSI 61 SATIN GRAY.
EXTERIOR FINISH TO BE - ANSI 61 SATIN GRAY.

NO.				REVISIONS TO DRAWING				BY	DATE	APPROVED	NO.	REVISIONS TO DRAWING				BY	DATE	APPROVED	ENGINEERING	BY	DATE
0	CALDWELL SUBSTATION INSTALLATION				IMP	08/2025	RCH												DESIGNED	IMP	08/2025
																			CHECKED	CBW	08/2025
																			APPROVED	RCH	08/2025
																			DRAFTING	BY	DATE
																			PRELIMINARY		
																			FINAL DESIGN		
																			PLOTTED	BMCD	05/25

LAYOUT DIAGRAM

SYSTEM PROTECTION & CONTROL PROJECTS 20413

SYSTEM PROTECTION & CONTROL PROJECTS 20413

SHEET NO.:

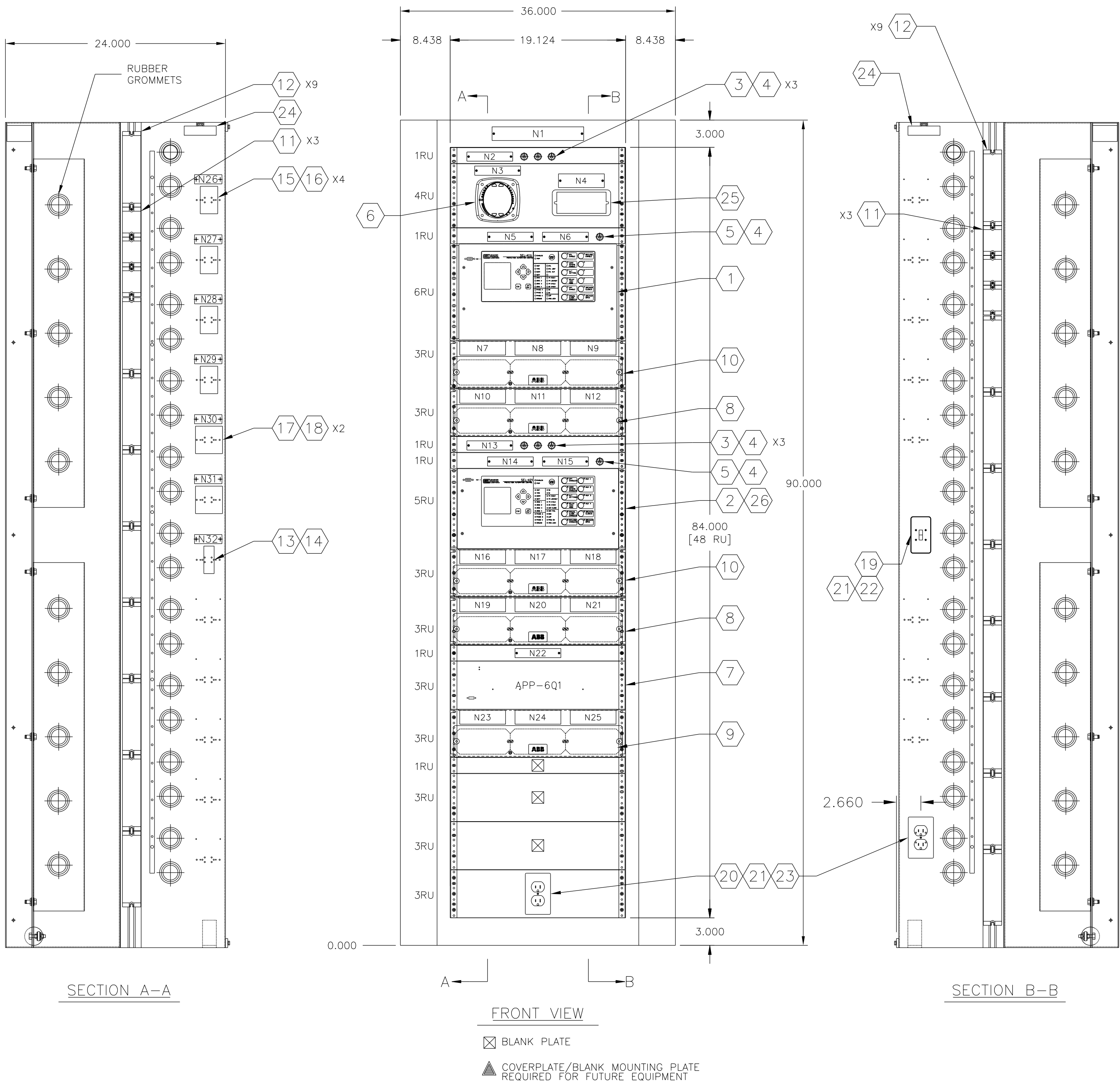


C	04-25	ISSUED FOR CTRL BLDG BID
B	03-25	ISSUED FOR 30% APPROVAL
A	02-25	ISSUED FOR 30% REVIEW
REV	DATE	DESCRIPTION
		THE REGISTRAR OF THE NEWLY APPLIED SEAL ASSUMES RESPONSIBILITY FOR THE CHANGES AS INDICATED BY THE FOLLOWING REVISION NUMBER 0

NAMEPLATE LIST					
NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N1	PNL 3 (985 TO CECIL COMMERCE CENTER N)			1 1/2 x 10"	1/2"
N2	X WDG 230KV BUS		1 X 5"	1/2"	
N3	SHARK METER-985		1 X 5"	1/2"	
N4	SEE DETAIL "A"			1 1/2 X 5"	5/32"
N5	87L-985			1 X 5"	1/2"
N6	ALARM RECEIVED			1 X 5"	1/2"
N7	SEE DETAIL "B"			1 1/2 X 5"	5/32"
N8	SEE DETAIL "C"			1 1/2 X 5"	5/32"
N9	SEE DETAIL "D"			1 1/2 X 5"	5/32"
N10	SEE DETAIL "E"			1 1/2 X 5"	5/32"
N11	SEE DETAIL "F"			1 1/2 X 5"	5/32"

NAMEPLATE LIST – CONTINUED					
NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N12	SEE DETAIL "G"			1 1/2 x 5"	5/32"
N13	Y WDG 230KV BUS			1 x 5"	1/2"
N14	21L-985			1 x 5"	1/2"
N15	ALARM RECEIVED			1 x 5"	1/2"
N16	SEE DETAIL "H"			1 1/2 x 5"	5/32"
N17	SEE DETAIL "I"			1 1/2 x 5"	5/32"
N18	SEE DETAIL "J"			1 1/2 x 5"	5/32"
N19	SEE DETAIL "K"			1 1/2 x 5"	5/32"
N20	SEE DETAIL "L"			1 1/2 x 5"	5/32"
N21	SEE DETAIL "M"			1 1/2 x 5"	5/32"
N22	DFR-DAU-985			1 x 5"	1/2"
N23	SEE DETAIL "N"			1 1/2 x 5"	5/32"
N24	SEE DETAIL "O"			1 1/2 x 5"	5/32"
N25	SEE DETAIL "P"			1 1/2 x 5"	5/32"
N26	FU1	87L-PS		1 x 3"	1/2"
N27	FU2	21L-PS		1 x 3"	1/2"
N28	FU3	DFR-PS		1 x 3"	1/2"
N29	FU4	MTR-PS		1 x 3"	1/2"
N30	FU10	RS1-POT		1 x 3"	1/2"
N31	FU11	RS2-POT		1 x 3"	1/2"
N32	FU13	RCPT		1 x 3"	1/2"
UNLESS OTHERWISE NOTED: -NAMEPLATE MOUNTING SHALL BE VIA S/S PAN HEAD SCREWS. -TEST SWITCH NAMEPLATES SHALL BE MOUNTED WITH DOUBLE ADHESIVE TAPE. -COLOR SHALL BE BLACK WITH WHITE TEXT.					

BILL OF MATERIALS				
ITEM	STYLE NUMBER	QTY	MFR	DESCRIPTION
1	0411L1X6XS6CECXH624E4E4	1	SEL	RELAY, SEL-411L, STANDARD PLUS SUB-CYCLE DELAY ELEMENTS, SERIES COMPENSATION LOGIC AND TRAVELING WAVE FAULT LOCATION FIRMWARE, 125/250 VDC OR 120/240 VAC POWER SUPPLY, FOUR 10/100BASE-T CONNECTORS, 125 VDC INPUT VOLTAGE, HORIZONTAL RACK MOUNT, 6RU, S.I. NO. 411L#8PWC
2	04214615XC0X4H75X5XXX	1	SEL	RELAY, SEL-421, STANDARD FIRMWARE, 125/250 VDC OR 120/240 VAC POWER SUPPLY, TWO 10/100BASE-T CONNECTORS, 125 VDC MAINBOARD INPUT VOLTAGE, HORIZONTAL RACK MOUNT, 5RU, S.I. NO. 421#8KG4
3	116B6708G7-C	6	GE	INDICATING LIGHT, GE ET-16, 70VAC, INCANDESCENT BULB, CLEAR CAP
4	BSD-1118-026	8	LEDTRONICS	BULB, LED, PALE WHITE
5	116B6708G3-C	2	GE	INDICATING LIGHT, GE ET-16, 125VDC, INCANDESCENT BULB, CLEAR CAP
6	100-60-10-V3-D2-485P-X	1	ELECTRO INDUSTRIES	METER, SHARK 100, 60 HZ, 5A, 90-265 VAC OR 100-370 VDC. RS485+ COM
7	APP-601-D-09A-24E-2-4	1	APP ENGINEERING	DFR ACQUISITION UNIT, APP-601 DAU CHASSIS, 125VDC INCLUDES: SLOT 1, 2, 3 - ANALOG INPUT CARDS SLOT 7 - DSP CARD SLOT 8, 9 - DIGITAL INPUT CARD WITH INTERNAL WETTING SLOT 10 - DIGITAL INPUT CARD WITH EXTERNAL WETTING APP-00037 10AWG GROUND ASSEMBLY 10'
8	FRXG-001-001-001	2	ABB	TEST SWITCH, FT-19R, ARRANGED AS (P P P P P P P P P P) (P P P P P P P P P P) (P P P P P P P P P P), 3RU LOW SWITCHES, STEEL, ANSI 61 GRAY, SCREW TERMINALS, FULL CLEAR COVER
9	FRXG-083-001-001	1	ABB	TEST SWITCH, FT-19R, ARRANGED AS (C-C C-C C-C C-C C-C P P) (P P P P P P P P P P) (P P P P P P P P P P), 3RU LOW SWITCHES, STEEL, ANSI 61 GRAY, SCREW TERMINALS, FULL CLEAR COVER
10	FRXG-014-014-001	2	ABB	TEST SWITCH, FT-19R, ARRANGED AS (P P P C-C C-C C-C P) (P P P P C-C C-C C-C P) (P P P P P P P P P P), 3RU LOW SWITCHES, STEEL, ANSI 61 GRAY, SCREW TERMINALS, FULL CLEAR COVER
11	EB27B04S	6	GE	TERMINAL BLOCK, GE EB-27, 4 POLE, 600V, 30A, STANDARD CONNECTORS WITH SHORT CIRCUITING BAR
12	1512STD	18	MARATHON	TERMINAL BLOCK, MARATHON 1500 SERIES, 12 POLE, 600V, 30A, STANDARD CONNECTORS
13	F30A1S	1	MARATHON	FUSE BLOCK, CLASS H, 1 POLE, 250V, 30A
14	NON-15	1	BUSSMANN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 15A
15	F30A2S	4	MARATHON	FUSE BLOCK, CLASS H, 2 POLE, 250V, 30A
16	NON-10	8	BUSSMANN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 10A
17	F30A3S	2	MARATHON	FUSE BLOCK, CLASS H, 3 POLE, 250V, 30A
18	NON-6	6	BUSSMANN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 6A
19	CS1151	1	HUBBELL	SWITCH, SINGLE POLE, 15A, 120/277 VOLTS
20	CR151	2	HUBBELL	RECEPTACLE, DUPLEX, 120 VAC, 15A, IVORY.
21	58361 1/2	3	THOMAS & BETTS	HANDY BOX, 2" x 4", 1-7/8" DEPTH, 1/2" KNOCKOUTS
22	58 C 30	1	HUBBELL	COVER PLATE, FOR SINGLE TOGGLE SWITCH, FITS ON 2" x 4" HANDY BOX
23	58 C 7	2	THOMAS & BETTS	COVER PLATE, FOR SINGLE DUPLEX RECEPTACLE, GALVANIZED, FITS ON 2" x 4" HANDY BOX
24	NUD8818/30WH	1	NORA LIGHTING	LED LIGHT FIXTURE, 18", 120V, 11W
25	129A514G01	1	ABB	TEST SWITCH, FT-1, ARRANGED AS (P P P C-C C-C C-C C-C P), BLACK COVER, SCREW TERMINALS
26	2894MXX	2	SEL	CONVERTER, SEL-2894, EIA-232 TO IEEE C37.94 INTERFACE CONVERTER, MALE DB-9 EIA-232 CONNECTOR



PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Symbol	V _A	V _B	V _C	I _A	I _B	I _C	VREF	OUT	IN	IN	IN	OUT	IN	VREF

Dimensions (inches): 1.500, 1.205, 0.384, 0.000, 0.500 TYP, 0.500, 1.750, 5.000

DETAIL 'A'

SCALE 4:1

FT-1-CO			TS-1-SL-005				BREAKER 97005		
POTENTIAL			CURRENT						POT
VAY	VBY	VCY	IAW		IBW		ICW		VN
			OUT	IN	OUT	IN	OUT	IN	

DETAIL 'B'

SCALE 4:1

FT-1-CB		TS2-87L-065				BREAKER 05765	
87L		CURRENT					
OUT 201 WIL	OUT 202 COM FAIL ANN	IAX		IBX		ICX	
		OUT	IN	OUT	IN	OUT	IN

DETAIL 'C'
SCALE 4:1

FT-1-CA		TS3-87L-985									
87L											
IN 201 52A	IN 202 52A	IN 203 RLY	IN 204 COM	IN 205 RLY	IN 206 868F	IN 207 868F	IN 301*	IN 302*	IN 303 DTT		
97985	95785	FAIL 21L	FAIL 21L	FAIL 258F 95785	TRIP 95785	TCM 95785					

DETAIL 'D'
SCALE 4:1

FT-1-DC				TS4-87L-885					
87L									
OUT 301 TRIP	OUT 301 TRIP	OUT 302 TRIP	OUT 302 TRIP	OUT 303*	OUT 303*	OUT 304*	OUT 304*	OUT 305*	OUT 305*
97985	97985	95785	95785						
TC-1	TC-1	TC-1	TC-1						

DETAIL 'E'

SCALE 4:1

FT-1-DB		TS5-67L-685							
87L									
OUT 406*	OUT 405*	OUT 407*	OUT 407*	OUT 408*	OUT 408*	OUT 203 COM FAIL DFR	OUT 204 RLY TRIP DFR	OUT 205 DTT TRIP DFR	OUT 208 RLY FAIL ANN

DETAIL 'F'

SCALE 4:1

FT-1-DA		TS6-87L-885									
87L											
OUT 401* RI	OUT 401* RI	OUT 402 BFI	OUT 402 BFI	OUT 403* RI	OUT 403* RI	OUT 404 BFI	OUT 404 BFI	OUT 405*	OUT 405*		
97985	97985	97985	97985	95785	95785	95785	95785				

DETAIL 'G
SCALE 4:1

FT-1-JE			TS1-21L-985				BREAKER 96785		
POTENTIAL			CURRENT						POT
VAY	VBY	VCY	IAW		IBW		ICW		VN
			OUT	IN	OUT	IN	OUT	IN	

DETAIL 'H'

SCALE 4:1

FT-1JD		TS2-21L-905				BREAKER 97985	
21L		CURRENT					
OUT 101 WL	OUT 102 COM FAIL ANN	IAX		IBX		ICX	
		OUT	IN	OUT	IN	OUT	IN

DETAIL 'I'

SCALE 4:1

FT-1-JC		TS3-21L-985									
21L											
IN 101 52A 97985	IN 102 52A 96795	IN 103 103 FAIL 87L	IN 104 COM FAIL 87L	IN 105 RYL FAIL 97985	IN 106 88BF TRIP 97985	IN 107*	IN 201*	IN 202*	IN 203 DTT		

DETAIL 'J'
SCALE 4:1

FT-14C		TS4-21L-685							
21L									
OUT 201 TRIP 97985 TC-2	OUT 201 TRIP 97985 TC-2	OUT 202 TRIP 95785 TC-2	OUT 202 TRIP 95785 TC-2	OUT 203*	OUT 203*	OUT 204*	OUT 204*	OUT 205*	OUT 205*

DETAIL 'K'
SCALE 4:1

FT-1KB		TSS-21L-985							
21L									
OUT 306*	OUT 306*	OUT 307*	OUT 307*	OUT 308*	OUT 308*	OUT 103 POTT FAIL DFR	OUT 104 RLY TRIP DFR	OUT 105 DTT TRIP DFR	OUT 108 RLY FAIL ANN

DETAIL 'L'
SCALE 4:1

FT-1-KA		TS6-21L-985									
Z1L											
OUT 301* RI	OUT 301* RI	OUT 302 BFI	OUT 302 BFI	OUT 303* RI	OUT 303* RI	OUT 304 BFI	OUT 304 BFI	OUT 305*	OUT 305*		
97985	97985	97985	97985	95785	95785	95785	95785				

DETAIL 'M
SCALE 4:1

FT-1-VC		TS1-OFB-805		BREAKER 85785 & 97965	
CURRENT					
CH1 IA		CH2 IB		CH3 IC	
CH4 IN					
OUT	IN	OUT	IN	OUT	IN

DETAIL 'N'
SCALE 4:1

FT-1-VB				TS2-DFR-885					
POTENTIAL				DFR					
AΦ	BΦ	CΦ	N	IN 01*	IN 02*	IN 03*	IN 04*	IN 05 87L DTT SEND	IN 06 21L DTT SEND

DETAIL 'O
SCALE 4:1

FT-1-VA		TS3-DFR-885									
DFR											
IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN
01	02	03	04	05	06	07	08	09	10	11	12
528	528	87L	87L	87L	868F	868F	POTT	21L	21L	01	02
97985	95785	CH	TRIP	DTT	TRIP	TRIP	CH	RLY	DTT	TRIP	TRIP
		FAIL	985	TRIP	97985	95785	FAIL	TRIP			

DETAIL 'P'
SCALE 4:1

NOTES:

- * FUNCTION NOT IMPLEMENTED (FUTURE)

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- 3) PANELS TO BE BRACED AS REQUIRED TO INSURE A SMOOTH AND LEVEL SURFACE. ALL EXPOSED WELDS TO BE GROUND SMOOTH.
- 4) INTERIOR FINISH TO BE - ANSI 61 SATIN GRAY.
EXTERIOR FINISH TO BE - ANSI 61 SATIN GRAY.

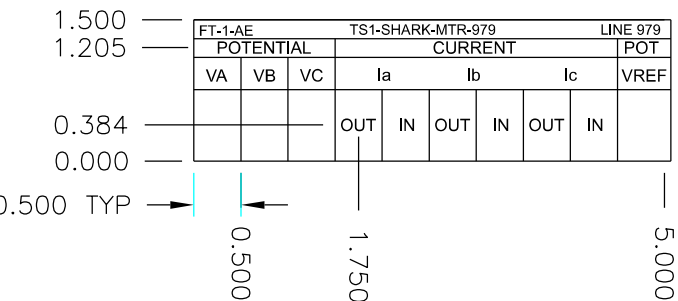
NO.				REVISIONS TO DRAWING				BY	DATE	APPROVED	ENGINEERING	BY	DATE	CALDWELL SWITCHYARD LAYOUT DIAGRAM 230KV LINE 985 PANEL 3 SCALE: NONE SYSTEM PROTECTION & CONTROL PROJECTS 20413 IPB NO:			DESIGN FILENAME:
0	CALDWELL SUBSTATION INSTALLATION				IMP	08/2025	RCH				DESIGNED	IMP	08/2025				CWL03.DGN
											CHECKED	CBW	08/2025				DRAWING NO:
											APPROVED	RCH	08/2025				CWL03
											DRAFTING	BY	DATE				SHEET NO:
											PRELIMINARY						
											FINAL DESIGN						
											PLOTTED	BMCD	05/2025				

PRELIMINARY - NOT FOR CONSTRUCTION

C	04-25	ISSUED FOR CTRL BLDG BID
B	03-25	ISSUED FOR 30% APPROVAL
A	02-25	ISSUED FOR 30% REVIEW
REV	DATE	DESCRIPTION
THE REGISTRANT OF THE NEWLY APPLIED SEAL ASSUMES RESPONSIBILITY FOR THE CHANGES AS INDICATED BY THE FOLLOWING REVISION NUMBER _____.		
BURNS & MCDONNELL ENGINEERING COMPANY, INC. 3400 WARD PARKWAY KANSAS CITY, MO 64114		

NAMEPLATE LIST					
NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N1	PNL 8 (979 TO NUTHATCH SOLAR (FRP))			1 1/2 X 10"	1/2"
N2	X WDG 230KV BUS			1 X 5"	1/2"
N3	SHARK METER-979			1 X 5"	1/2"
N4	SEE DETAIL "A"			1 1/2 X 5"	5/32"
N5	87L1-979			1 X 5"	1/2"
N6	ALARM RECEIVED			1 X 5"	1/2"
N7	SEE DETAIL "B"			1 1/2 X 5"	5/32"
N8	SEE DETAIL "C"			1 1/2 X 5"	5/32"
N9	SEE DETAIL "D"			1 1/2 X 5"	5/32"
N10	SEE DETAIL "E"			1 1/2 X 5"	5/32"
N11	SEE DETAIL "F"			1 1/2 X 5"	5/32"

NAMEPLATE LIST - CONTINUED					
NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N12	SEE DETAIL "G"			1 1/2 X 5"	5/32"
N13	Y WDG 230KV BUS			1 X 5"	1/2"
N14	87L2-979			1 X 5"	1/2"
N15	ALARM RECEIVED			1 X 5"	1/2"
N16	SEE DETAIL "H"			1 1/2 X 5"	5/32"
N17	SEE DETAIL "I"			1 1/2 X 5"	5/32"
N18	SEE DETAIL "J"			1 1/2 X 5"	5/32"
N19	SEE DETAIL "K"			1 1/2 X 5"	5/32"
N20	SEE DETAIL "L"			1 1/2 X 5"	5/32"
N21	SEE DETAIL "M"			1 1/2 X 5"	5/32"
N22	DFR-DAU-979			1 X 5"	1/2"
N23	SEE DETAIL "N"			1 1/2 X 5"	5/32"
N24	SEE DETAIL "O"			1 1/2 X 5"	5/32"
N25	SEE DETAIL "P"			1 1/2 X 5"	5/32"
N26	FU1	87L1-PS		1 X 3"	1/2"
N27	FU2	87L2-PS		1 X 3"	1/2"
N28	FU3	DFR-PS		1 X 3"	1/2"
N29	FU4	MTR-PS		1 X 3"	1/2"
N30	FU10	RS1-POT		1 X 3"	1/2"
N31	FU11	RS2-POT		1 X 3"	1/2"
N32	FU13	RCPT		1 X 3"	1/2"
UNLESS OTHERWISE NOTED: -NAMEPLATE MOUNTING SHALL BE VIA S/S PAN HEAD SCREWS. -TEST SWITCH NAMEPLATES SHALL BE MOUNTED WITH DOUBLE ADHESIVE TAPE. -COLOR SHALL BE BLACK WITH WHITE TEXT.					



DETAIL 'A'
SCALE 4:1

DETAIL 'B'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'B'
SCALE 4:1

DETAIL 'C'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'C'
SCALE 4:1

DETAIL 'D'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'D'
SCALE 4:1

DETAIL 'E'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'E'
SCALE 4:1

DETAIL 'F'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'F'
SCALE 4:1

DETAIL 'G'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'G'
SCALE 4:1

DETAIL 'H'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'H'
SCALE 4:1

DETAIL 'I'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'I'
SCALE 4:1

DETAIL 'J'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'J'
SCALE 4:1

DETAIL 'K'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'K'
SCALE 4:1

DETAIL 'L'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'L'
SCALE 4:1

DETAIL 'M'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'M'
SCALE 4:1

DETAIL 'N'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

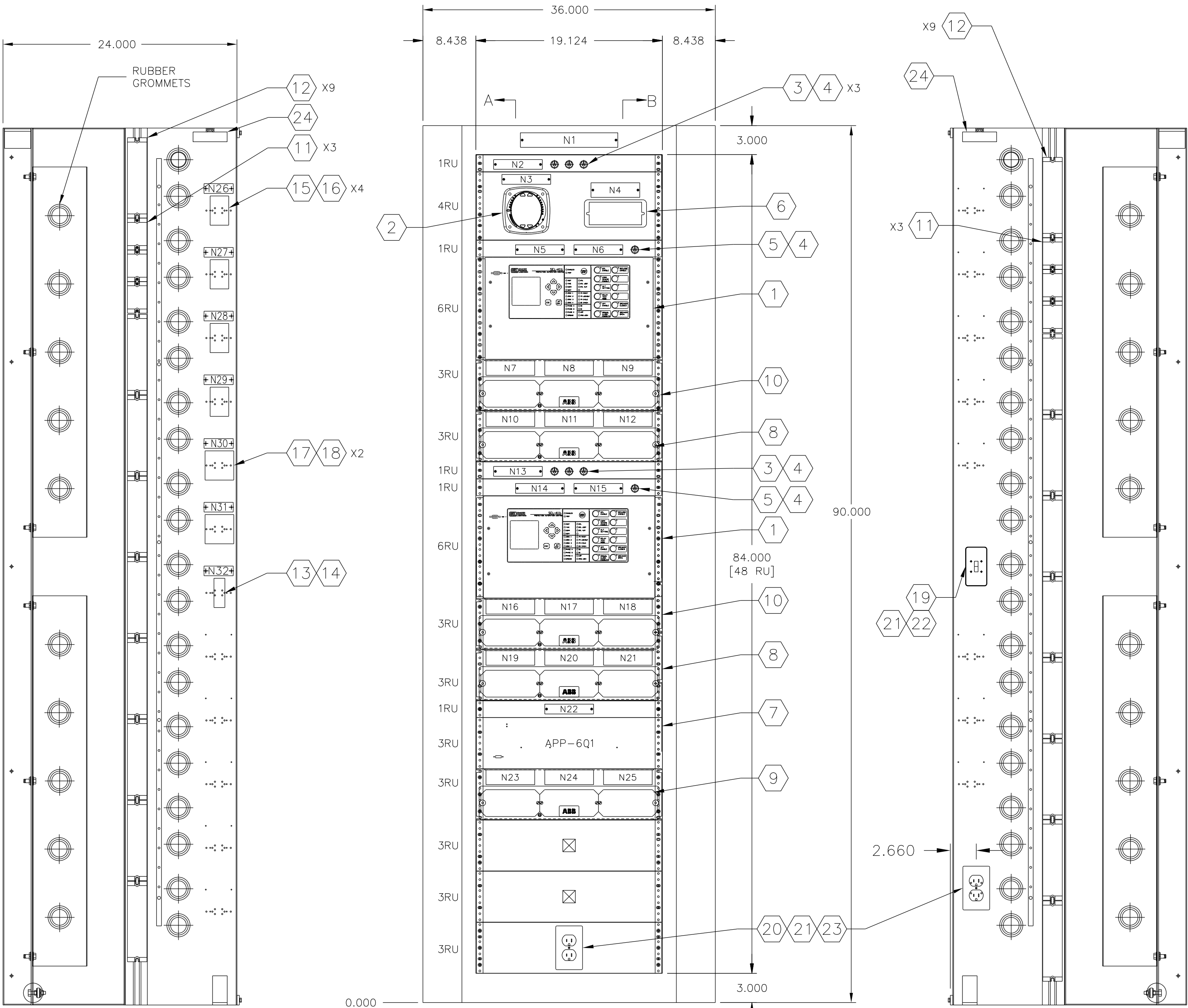
DETAIL 'N'
SCALE 4:1

DETAIL 'O'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'O'
SCALE 4:1

DETAIL 'P'					
POTENTIAL		CURRENT		POT	
VA	VB	VC	Ia	Ib	Ic
OUT	IN	OUT	IN	OUT	IN

DETAIL 'P'
SCALE 4:1



SECTION A-A

SECTION B-B

FRONT VIEW

☒ BLANK PLATE

▲ COVERPLATE/BLANK MOUNTING PLATE REQUIRED FOR FUTURE EQUIPMENT

CONSTRUCTION NOTES:

1. LINE RELAY PART NUMBER TO BE COORDINATED WITH REMOTE ENDS BEFORE IFC.

NOTES:

- * FUNCTION NOT IMPLEMENTED (FUTURE)

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- 2) PANELS SHALL BE FABRICATED FROM 11 GA CRS.
- 3) PANELS TO BE BRACED AS REQUIRED TO INSURE A SMOOTH AND LEVEL SURFACE. ALL EXPOSED WELDS TO BE GROUND SMOOTH.
- 4) INTERIOR FINISH TO BE - ANSI 61 SATIN GRAY. EXTERIOR FINISH TO BE - ANSI 61 SATIN GRAY.

NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
0	CALDWELL SUBSTATION INSTALLATION	IMP	08/2025	RCH						DESIGNED	IMP	08/2025
										CHECKED	CBW	08/2025
										APPROVED	RCH	08/2025
										DRAFTING	BY	DATE
										PRELIMINARY		
										FINAL DESIGN		
										PLOTTED	BMCD	05/25

CALDWELL SWITCHYARD

LAYOUT DIAGRAM

230KV LINE 979 PANEL 8

SYSTEM PROTECTION & CONTROL PROJECTS 20413

DESIGN FILENAME:

CWL05.DGN

DRAWING NO:

CWL05

SHEET NO:



SCALE:

NONE

IPR NO:

C	04-25	ISSUED FOR CTRL BLDG BID
B	03-25	ISSUED FOR 30% APPROVAL
A	02-25	ISSUED FOR 30% REVIEW
REV	DATE	DESCRIPTION
		THE REGISTAR OF THE NEWLY APPLIED SEAL ASSUMES RESPONSIBILITY FOR THE CHANGES AS INDICATED BY THE FOLLOWING REVISION NUMBER _____
BURNS & MCDONNELL ENGINEERING COMPANY, INC. 8402 MARO PARKWAY KANSAS CITY, MO. 64114		

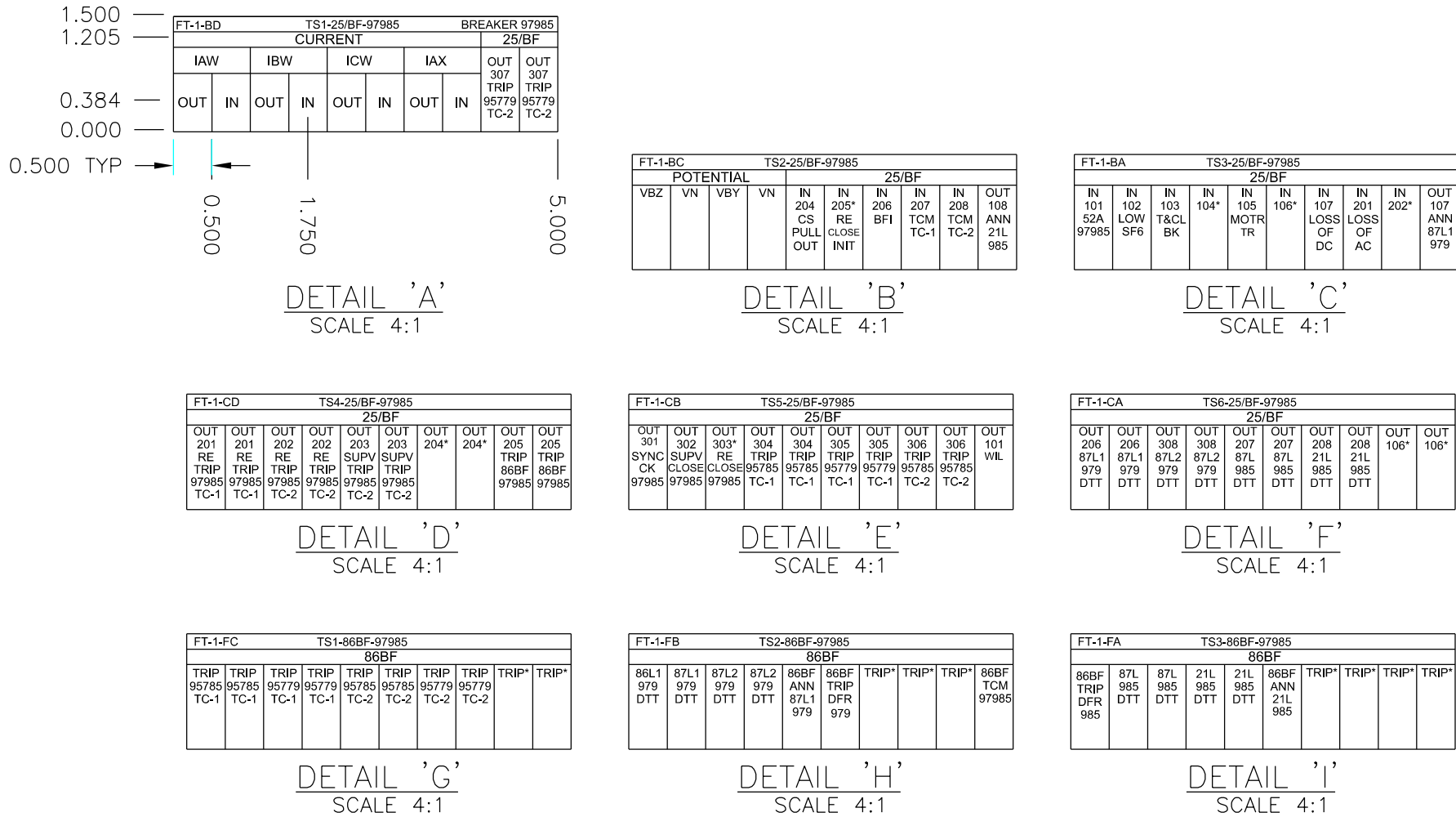
NAMEPLATE LIST – CONTINUED					
NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N12	FUTURE			1 x 5"	1/2"
N13	SEE DETAIL "G"			1 1/2 x 5"	5/32"
N14	SEE DETAIL "H"			1 1/2 x 5"	5/32"
N15	SEE DETAIL "I"			1 1/2 x 5"	5/32"
N16				1 x 5"	1/2"
N17				1 1/2 x 5"	5/32"
N18				1 1/2 x 5"	5/32"
N19				1 1/2 x 5"	5/32"
N20				1 1/2 x 5"	5/32"
N21				1 1/2 x 5"	5/32"
N22				1 x 5"	1/2"
N23				1 x 5"	1/2"
N24				1 1/2 x 5"	5/32"
N25				1 1/2 x 5"	5/32"
N26				1 1/2 x 5"	5/32"
N27				1 1/2 x 5"	5/32"
N28				1 1/2 x 5"	5/32"
N29				1 1/2 x 5"	5/32"
N30	FU1	97985-451-PS		1 x 3"	1/2"
N31	FU2			1 x 3"	1/2"
N32	FU4	97985-VBY POT		1 x 3"	1/2"
N33	FU5	97985-VBZ POT		1 x 3"	1/2"
N34	FU6	97985-TC1		1 x 3"	1/2"
N35	FU7			1 x 3"	1/2"
N36	FU8	97985-TC2		1 x 3"	1/2"
N37	FU9			1 x 3"	1/2"
N38	FU10			1 x 3"	1/2"
N39	FU11			1 x 3"	1/2"
N40	FU15	RCPT		1 x 3"	1/2"
UNLESS OTHERWISE NOTED:			-NAMEPLATE MOUNTING SHALL BE VIA S/S PAN HEAD SCREWS. -TEST SWITCH NAMEPLATES SHALL BE MOUNTED WITH DOUBLE ADHESIVE TAPE. -COLOR SHALL BE BLACK WITH WHITE TEXT.		

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0						CALDWELL SUBSTATION INSTALLATION				IMP	08/2025	RCH										DESIGNED	IMP	08/2025
																						CHECKED	CBW	08/2025
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																						DRAFTING	BY	DATE
																						PRELIMINARY		
																						FINAL DESIGN		
																						PLOTTED	BMCD	05/2025

CALDWELL SWITCHYARD

LAYOUT DIAGRAM

230KV BREAKER 97985 PANEL 10

SYSTEM PROTECTION & CONTROL PROJECTS 20413

SCALE: NONE

SYSTEM PROTECTION & CONTROL PROJECTS 20413

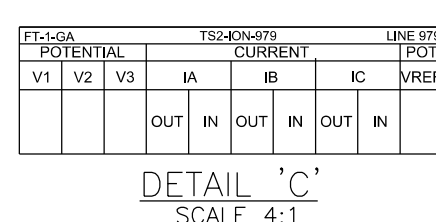


JEA
BUILDING COMMUNITIES

DESIGN FILENAME:
CWL06.DGN

DRAWING NO.:
CWL06

SHEET NO.:



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0	CALDWELL SUBSTATION INSTALLATION	IMP	08/2025	RCH						DESIGNED	IMP	08/2025
										CHECKED	CBW	08/2025
										APPROVED	RCH	08/2025
										DRAFTING	BY	DATE
										PRELIMINARY		
										FINAL DESIGN		
										PLOTTED	BMCD	05/2025

IFB NO.

SHEET NO.:

