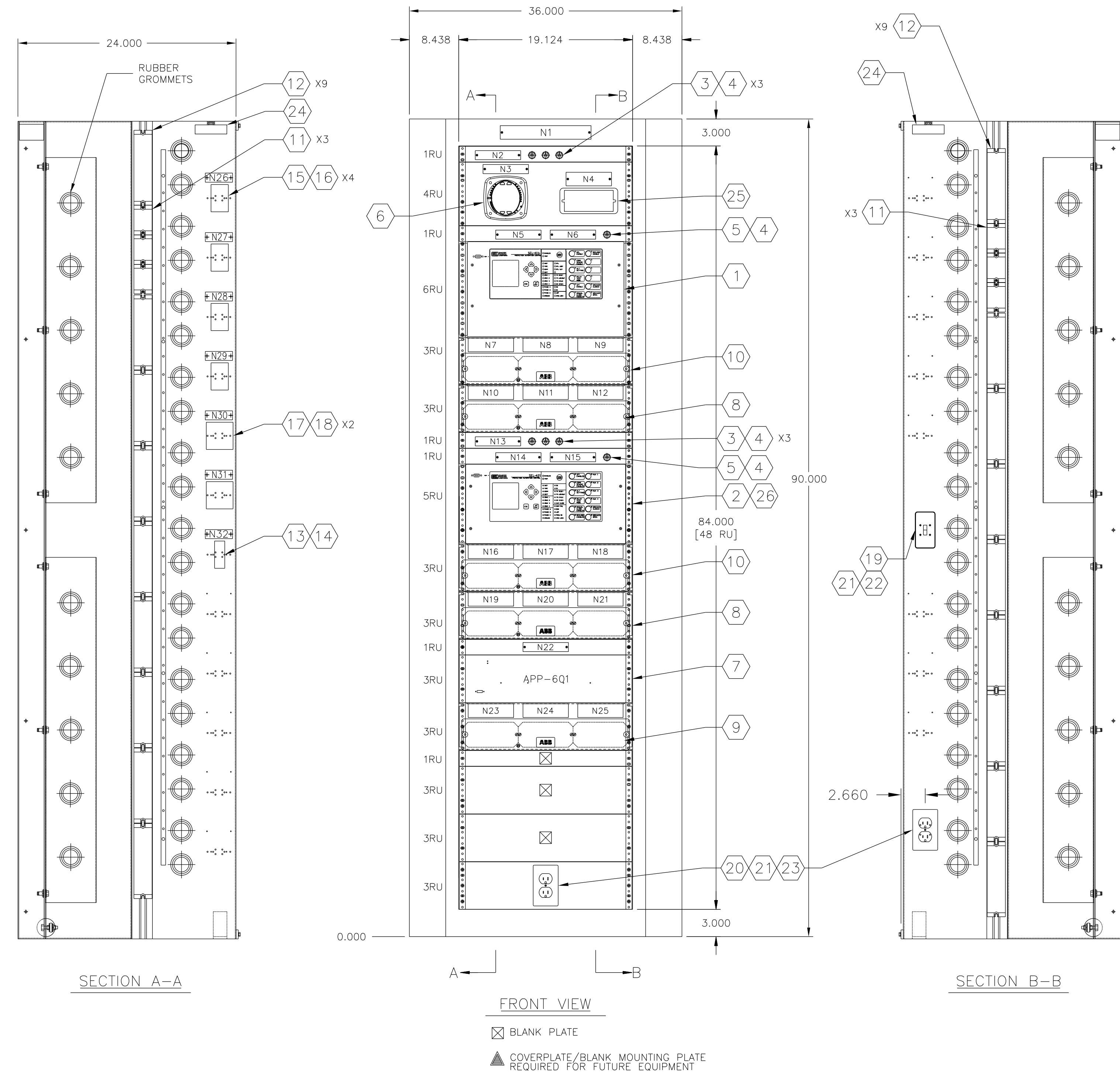


PRELIMINARY - NOT
FOR CONSTRUCTION

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
BURNS & MCDONNELL ENGINEERING COMPANY, INC. 3400 WARD PARKWAY KANSAS CITY, MO 64111		
THE REGISTRANT OF THE NEWLY APPLIED SEAL ASSUMES RESPONSIBILITY FOR THE CHANGES AS INDICATED BY THE FOLLOWING REVISION NUMBER _____.		

NAMEPLATE LIST					
NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N1	PNL 3 (941 TO BRANDY BRANCH)			1 1/2 X 10"	1/2"
N2	X WDG 230KV BUS			1 X 5"	1/2"
N3	SHARK METER-941			1 X 5"	1/2"
N4	SEE DETAIL "A"			1 1/2 X 5"	5/32"
N5	87L-941			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"

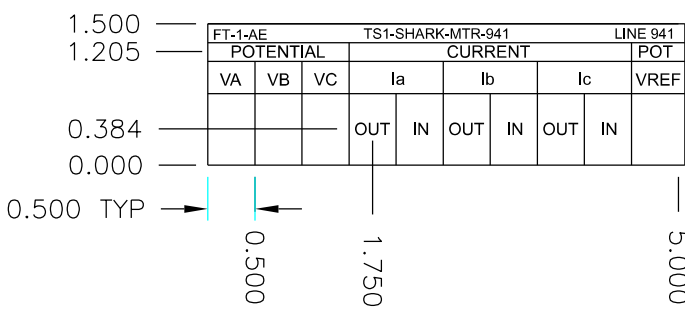


NAMEPLATE LIST - CONTINUED

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-941			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-941			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 5/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

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'B'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'E'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'H'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'K'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'N'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'C'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'F'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'I'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'L'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'O'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'D'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'G'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'J'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'M'
SCALE 4:1

FT-1-00		TS1-01-941		BREAKER 9702	
POTENTIAL	CURRENT	POTENTIAL	CURRENT	POTENTIAL	CURRENT
VA	VB	VC	IA	IB	IC
OUT	IN	OUT	IN	OUT	IN

DETAIL 'P'
SCALE 4:1

BILL OF MATERIALS

ITEM	STYLE NUMBER	QTY	MFR	DESCRIPTION
1	0411L1X6X5C6ECXH624E4E4	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#8K6C
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#8K6C
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-V3-02-485P-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 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 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 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	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	129A514G01	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

NOTES:
* 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 EXPOSE 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				REVISIONS TO DRAWING				REVISIONS TO DRAWING				REVISIONS TO DRAWING			
NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE	ENGINEERING	BY	DATE
0	MILLER SUBSTATION INSTALLATION	JAS	08/2025	RCH						DESIGNED	JAS	08/2025	DESIGNED	JAS	08/2025
										CHECKED	CBW	08/2025	CHECKED	CBW	08/2025
										APPROVED	RCH	08/2025	APPROVED	RCH	08/2025
										DRAFTING	BY	DATE	DRAFTING	BY	DATE
										PRELIMINARY			PRELIMINARY		
										FINAL DESIGN			FINAL DESIGN		
										PLOTTED	BMCD	04/2025	PLOTTED	BMCD	04/2025

MILLER SUBSTATION

LAYOUT DIAGRAM

230KV LINE 941 PANEL 3

SYSTEM PROTECTION & CONTROL PROJECTS 20413

DESIGN FILENAME:

MLL01.DGN

DRAWING NO:

MLL01

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

BURNS & MCDONNELL
 BURNS & MCDONNELL
 ENGINEERING COMPANY, INC.
 9420 WARD PARKWAY
 CHICAGO, CITY, MD. 5414

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

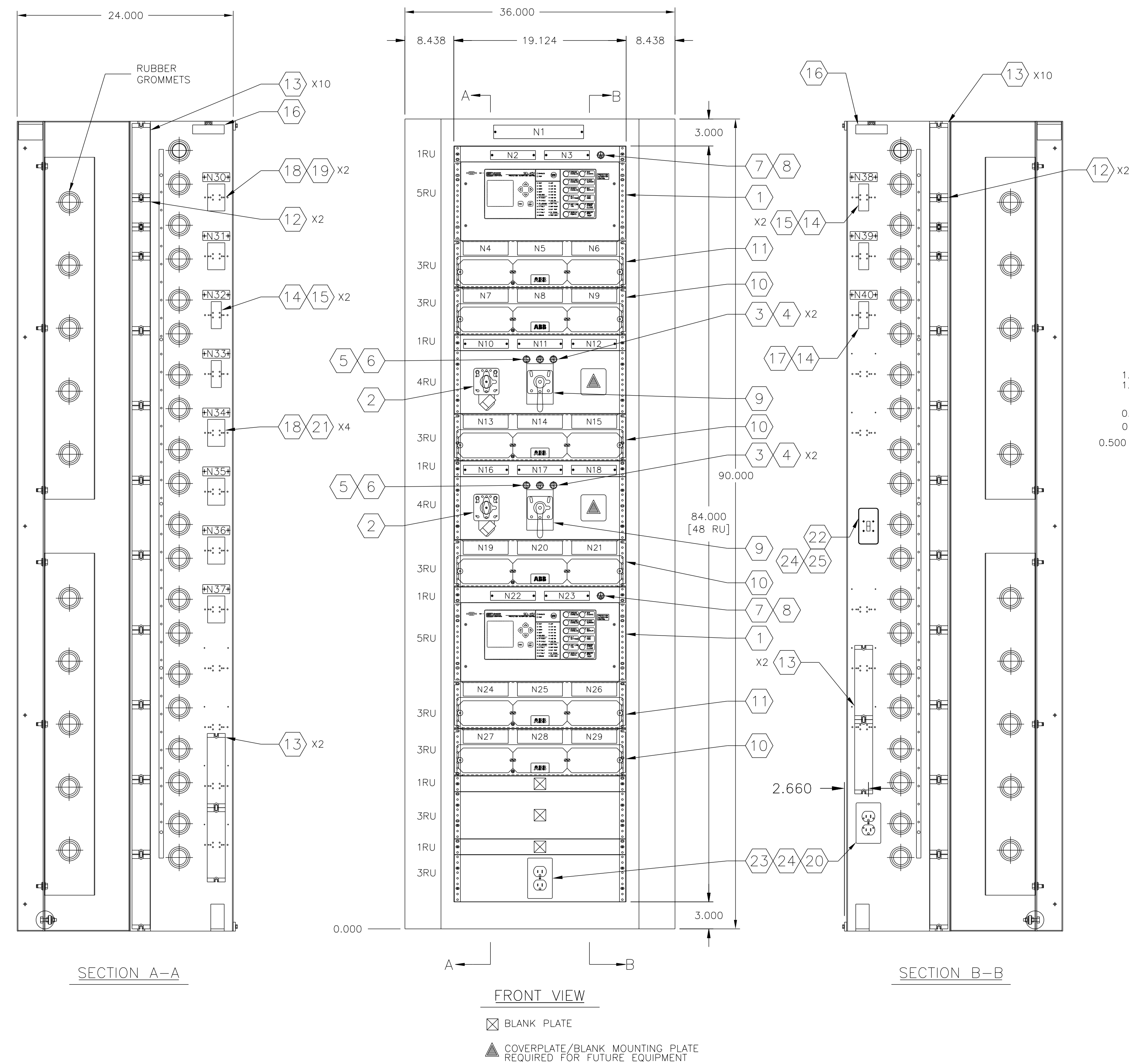
C	04-25	ISSUED FOR CTRL BLDG BID
B	03-25	ISSUED FOR 30% APPROVAL
A	02-25	ISSUED FOR 30% REVIEW
REV	DATE	DESCRIPTION

BURNS & MCDONNELL
 BURNS & MCDONNELL
 ENGINEERING COMPANY, INC.
 9420 WARD PARKWAY
 CHICAGO, CITY, MD. 5414

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

BURNS & MCDONNELL
BURNS & MCDONNELL
ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

THE REGISTRANT 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 4 (BKR 94188/98811)			1 1/2 x 10"	1/2"
N2	25/BF - 94188			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 - 94188			1 X 5"	1/2"
N11	52CS - 94188			1 X 5"	1/2"

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	86BF – 988T1			1 x 5"	1/2"
N17	52CS – 988T1			1 x 5"	1/2"
N18	FUTURE			1 x 5"	1/2"
N19	SEE DETAIL "J"			1 1/2 x 5"	5/32"
N20	SEE DETAIL "K"			1 1/2 x 5"	5/32"
N21	SEE DETAIL "L"			1 1/2 x 5"	5/32"
N22	25/BF – 988T1			1 x 5"	1/2"
N23	ALARM RECEIVED			1 x 5"	1/2"
N24	SEE DETAIL "M"			1 1/2 x 5"	5/32"
N25	SEE DETAIL "N"			1 1/2 x 5"	5/32"
N26	SEE DETAIL "O"			1 1/2 x 5"	5/32"
N27	SEE DETAIL "P"			1 1/2 x 5"	5/32"
N28	SEE DETAIL "Q"			1 1/2 x 5"	5/32"
N29	SEE DETAIL "R"			1 1/2 x 5"	5/32"
N30	FU1	94188–451–PS		1 x 3"	1/2"
N31	FU2	988T1–451–PS		1 x 3"	1/2"
N32	FU4	94188–VBV POT		1 x 3"	1/2"
N33	FU5	94188–VBZ POT		1 x 3"	1/2"
N34	FU6	94188–TC1		1 x 3"	1/2"
N35	FU7	988T1–TC1		1 x 3"	1/2"
N36	FU8	94188–TC2		1 x 3"	1/2"
N37	FU9	988T1–TC2		1 x 3"	1/2"
N38	FU10	988T1–VBV POT		1 x 3"	1/2"
N39	FU11	988T1–VBZ POT		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.					

BILL OF MATERIALS				
ITEM	STYLE NUMBER	QTY	MFR	DESCRIPTION
1	04515615C0X4H78484XX	2	SEL	RELAY, SEL-451, 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. 451#9304
2	78PB07D	2	ELECTRO-SWITCH	LOCKOUT RELAY, SERIES 24, MANUAL RESET, 7 DECKS, 125 VDC, GREEN AND RED LED'S, ENGRAVING CODE 102C-2L22 (TITLE "LOCK-OUT RELAY", "TRIP" "RESET")
3	116B6708G3-R	4	GE	INDICATING LIGHT, GE ET-16, 125VDC, INCANDESCENT BULB, RED CAP
4	BSD-1118-001	4	LEDTRONICS	BULB, LED, RED
5	116B6708G3-G	2	GE	INDICATING LIGHT, GE ET-16, 125VDC, INCANDESCENT BULB, GREEN CAP
6	BSD-1118-006	2	LEDTRONICS	BULB, LED, GREEN
7	116B6708G3-C	2	GE	INDICATING LIGHT, GE ET-16, 125VDC, INCANDESCENT BULB, CLEAR CAP
8	BSD-1118-026	2	LEDTRONICS	BULB, LED, PALE WHITE
9	376A1127G1X2	2	GE	CONTROL SWITCH, TYPE SB-10, SPRING RETURN TO POSITION 2, 4 DECKS, LARGE PISTOL GRIP HANDLE, ENGRAVED, TITLE: "PULL OUT FOR SUP", POSITION 1 "TRIP", POSITION 2 ("PULL OUT), POSITION 3 "CLOSE"
10	FRXG-001-001-001	4	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
11	FRXG-083-001-001	2	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
12	EB27B04S	4	GE	TERMINAL BLOCK, GE EB-27, 4 POLE, 600V, 30A, STANDARD CONNECTORS WITH SHORT CIRCUITING BAR
13	1512STD	24	MARATHON	TERMINAL BLOCK, MARATHON 1500 SERIES, 12 POLE, 600V, 30A, STANDARD CONNECTORS
14	F30A1S	5	MARATHON	FUSE BLOCK, CLASS H, 1 POLE, 250V, 30A
15	NON-6	4	BUSSMAN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 6A
16	NUD8818/30WH	1	NORA LIGHTING	LED LIGHT FIXTURE, 18", 120V, 11W
17	NON-15	1	BUSSMAN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 15A
18	F30A2S	6	MARATHON	FUSE BLOCK, CLASS H, 2 POLE, 250V, 30A
19	NON-10	4	BUSSMAN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 10A
20	58 C 7	2	THOMAS & BETTS	COVER PLATE, FOR SINGLE DUPLEX RECEPTACLE, GALVANIZED, FITS ON 2" x 4" HANDY BOX
21	NON-30	8	BUSSMAN	FUSE, TYPE NON, CLASS K5 & H, 125VDC, 30A
22	CS115I	1	HUBBELL	SWITCH, SINGLE POLE, 15A, 120/277 VOLTS
23	CR15I	2	HUBBELL	RECEPTACLE, DUPLEX, 120 VAC, 15A, IVORY.
24	58361 1/2	3	THOMAS & BETTS	HANDY BOX, 2" x 4", 1-7/8" DEPTH, 1/2" KNOCKOUTS
25	58 C 30	1	HUBBELL	COVER PLATE, FOR SINGLE TOGGLE SWITCH, FITS ON 2" x 4" HANDY BOX

NOTES:

- * 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.

No.	Revisions To Drawing	By	Date	Approved	No.	Revisions To Drawing	By	Date	Approved	Engineering	By	Date
0	MILLER SUBSTATION INSTALLATION	JAS	08/2025	RCH						DESIGNED	JAS	08/2025
										CHECKED	CBW	08/2025
										APPROVED	RCH	08/2025
										DRAFTING	BY	DATE
										PRELIMINARY		
										FINAL DESIGN		
										PLOTTED	BMCD	04/2025

MILLER SUBSTATION

DESIGN FILENAME:
MLL02.DGN

DRAWING NO:
MLL02

SHEET NO.:

LAYOUT DIAGRAM

230kV BREAKER 94188 AND 988T1 PANEL 4

SYSTEM PROTECTION & CONTROL PROJECTS 20413

SCALE: NO

SYSTEM PROTECTION & CONTROL PROJECTS 20413



JEA
BUILDING COMMUNITIES

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

BURNS & MCDONNELL
 BURNS & MCDONNELL
 ENGINEERING COMPANY, INC.
 202 WARD PARKWAY
 KANSAS CITY, MO 64114

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

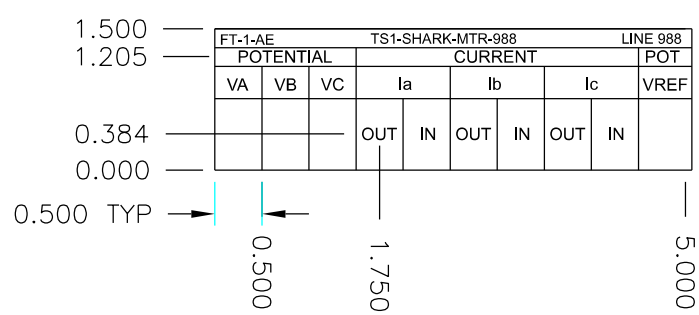
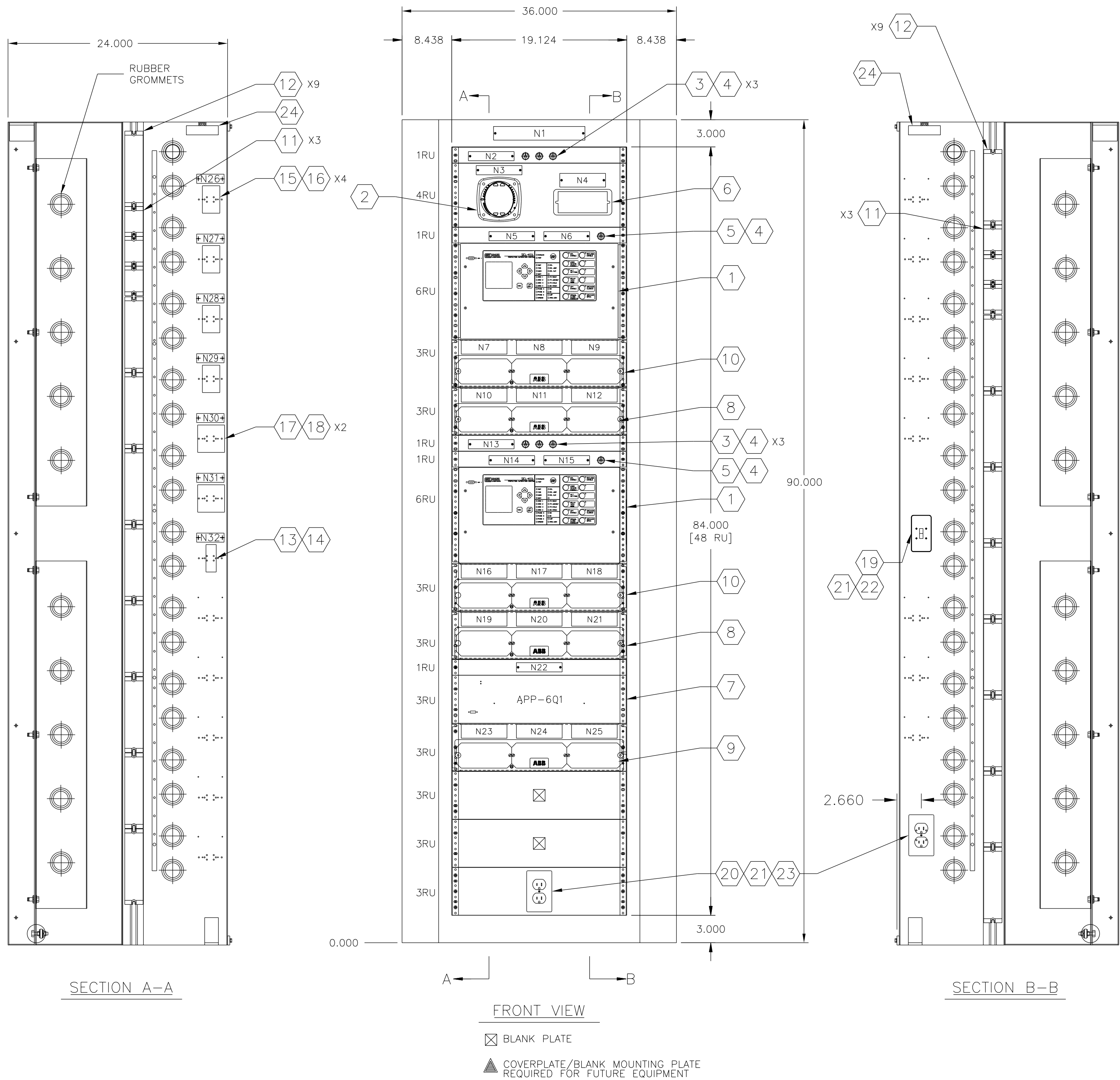
NAMEPLATE LIST					
NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N1	PNL 5 (988 TO DUCK SOLAR (FRP))			1 1/2 x 10"	1/2"
N2	X WDG 230KV BUS			1 x 5"	1/2"
N3	SHARK METER-988			1 x 5"	1/2"
N4	SEE DETAIL "A"			1 1/2 x 5"	5/32"
N5	87L1-988			1 x 5"	1/2"
N6	ALARM RECEIVED			1 x 5"	1/2"
N7	SEE DETAIL "B"			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	87L2-988			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-988			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.

BILL OF MATERIALS				
ITEM	STYLE NUMBER	QTY	MFR	DESCRIPTION
1	0411X65X5C6EEXH624E4E4	2	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#7K5
2	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
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	129A514G01	1	ABB	TEST SWITCH, FT-1, ARRANGED AS (P P P C-C C-C P), BLACK COVER, SCREW TERMINALS
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 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 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	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"
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



DETAIL 'A'

SCALE 4:1

FT-1-CD			TS1-87L1-2685			BREAKER 94185		
POTENTIAL			CURRENT					POT
VAY	VBY	VCY	IAW		IBW		ICW	VN
			OUT	IN	OUT	IN	OUT	IN

DETAIL 'B'

SCALE 4:1

FT-1-CB		TS2-87L1-988				BREAKER 988T1			
87L1		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-088									
87L1											
IN 201 52A	IN 202 52A	IN 203 RLY	IN 204 COM	IN 205 RLY	IN 206 86BF	IN 207 86BF	IN 301*	IN 302*	IN 303 DTT		
94188	968T1	FAIL 87L2	FAIL 87L2	FAIL 236F 94188	TRIP 94188	TCM 94188					

DETAIL 'D'

SCALE 4:1

FT-1-DC		TS4-87L1-988							
		87L1							
OUT 301 TRIP 94188 TC-1	OUT 301 TRIP 94188 TC-1	OUT 302 TRIP 968T1 TC-1	OUT 302 TRIP 968T1 TC-1	OUT 303*	OUT 303*	OUT 304*	OUT 304*	OUT 305*	OUT 305*

DETAIL 'E'

SCALE 4:1

FT-1DB		TS5-87L1-888							
		87L1							
OUT 405*	OUT 405*	OUT 407*	OUT 407*	OUT 408*	OUT 408*	OUT 203 COM FAIL CFR	OUT 204 RLY TRIP DFR	OUT 205 DTT TRIP DFR	OUT 206 RLY FAIL ANN

DETAIL 'F'

SCALE 4:1

FT-1-DA		TS6-67L1-988							
		57L1							
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*
94188	94188	94188	94188	95871	95871	95871	95871		

DETAIL 'G'

SCALE 4:1

FT-1-JE			TS1-87L2-985			BREAKER 985T1		
POTENTIAL			CURRENT					POT
VAY	VBY	VCY	IAW		IBW		ICW	VN
			OUT	IN	OUT	IN	OUT	IN

DETAIL 'H'

SCALE 4:1

FT-1-JD		TS2-87L2-985				BREAKER 94158	
87L2		CURRENT					
OUT 201 WRL	OUT 202 COM FAIL ANN	IAX		IBX		ICX	
		OUT	IN	OUT	IN	OUT	IN

DETAIL 'I'
SCALE 4:1

FT-1-JC		TS3-87L2-988									
87L2											
IN 201 52A 94188	IN 202 52A 988T1	IN 203 RLY FAIL 87L1	IN 204 COM FAIL 87L1	IN 205 RLY FAIL 988T1	IN 206 888F TRIP 988T1	IN 207*	IN 301*	IN 302*	IN 303 DTT		

DETAIL 'J'

SCALE 4:1

FT-1-KC		TS4-5712-988							
87L2									
OUT 301	OUT 301	OUT 302	OUT 302	OUT 303	OUT 303	OUT 304	OUT 304	OUT 305	OUT 305
TRIP	TRIP	TRIP	TRIP						
94185	94185	94185	94185	94185	94185	94185	94185	94185	94185
TC-2	TC-2	TC-2	TC-2						

DETAIL 'K'
SCALE 4:1

FT-1-KB		TS5-87L2-888							
87L2									
OUT 405*	OUT 406*	OUT 407*	OUT 407*	OUT 408*	OUT 408*	OUT 203 COMM FAIL DFR	OUT 204 RLY TRIP DFR	OUT 205 DTT TRIP DFR	OUT 208 RLY FAIL ANN

DETAIL 'L'

SCALE 4:1

FT-1-KA				TS6-87L2-958					
87L2									
OUT 401* RI 94188	OUT 401* RI 94188	OUT 402 BF1 94188	OUT 402 BF1 94188	OUT 403* RI 958T1	OUT 403* RI 958T1	OUT 404 BF1 958T1	OUT 404 BF1 958T1	OUT 405*	OUT 405*

DETAIL 'M'

SCALE 4:1

FT-1-WC		TS1-CFR-885 BREAKER 94185 & 988T1							
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-DFR-985					
POTENTIAL				DFR					
AΦ	BΦ	CΦ	N	IN 01*	IN 02*	IN 03*	IN 04*	IN 05 07L OTT SEND	IN 06 07L OTT SEND

DETAIL 'O'

SCALE 4:1

FT-1-VA		TSJ-OFR-988									
OFR											
IN 01	IN 02	IN 03	IN 04	IN 05	IN 06	IN 07	IN 08	IN 01	IN 02		
52B	52B	87L1	87L1	87L1	868F	868F	87L2	87L2	87L2	87L2	
94188	988T1	CH FAIL	TRIP 988	DTT TRIP	TRIP 94188	TRIP 988T1	CH FAIL	RLY TRIP	DTT TRIP		

DETAIL 'P'

SCALE 4:1

NOTES:

* 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	MILLER SUBSTATION LAYOUT DIAGRAM 230kV LINE 988 PANEL 5 			DESIGN FILENAME:	
0	MILLER SUBSTATION INSTALLATION				JAS	08/2025	RCH							DESIGNED	JAS	08/2025	MLL03.DGN					
														CHECKED	CBW	08/2025	DRAWING NO:					
														APPROVED	RCH	08/2025	MLL03					
														DRAFTING	BY	DATE	SHEET NO:					
														PRELIMINARY								
														FINAL DESIGN								
														PLOTTED	BMCD	02/2025	SCALE:	SYSTEM PROTECTION & CONTROL PROJECTS 20413				
																	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 REGISTRANT 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 8 (BKR 97512)			1 1/2 x 10"	1/2"
N2				1 X 5"	1/2"
N3				1 X 5"	1/2"
N4				1 1/2 x 5"	5/32"
N5				1 1/2 x 5"	5/32"
N6				1 1/2 x 5"	5/32"
N7				1 1/2 x 5"	5/32"
N8				1 1/2 x 5"	5/32"
N9				1 1/2 x 5"	5/32"
N10				1 X 5"	1/2"
N11				1 X 5"	1/2"

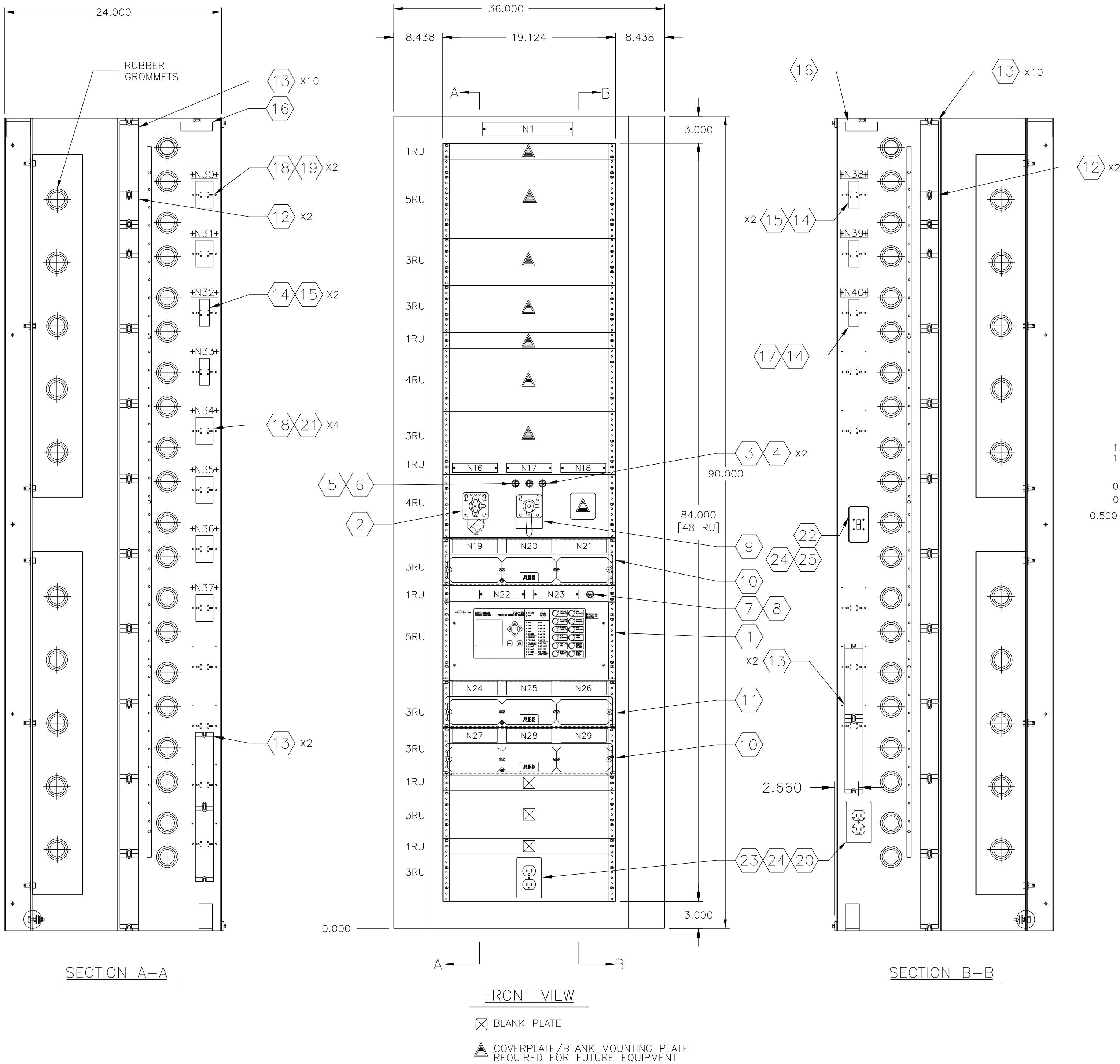
[illegible]

NOTES:

- * 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	MILLER SUBSTATION LAYOUT DIAGRAM 230kV BREAKER 975T2 PANEL 8 SCALE: NONE SYSTEM PROTECTION & CONTROL PROJECTS 2013 IFB NO:		
0	MILLER SUBSTATION INSTALLATION			JAS	08/2025	RCH								DESIGNED	JAS	08/2025				
														CHECKED	CBW	08/2025				
														APPROVED	RCH	08/2025				
														DRAFTING	BY	DATE				
														PRELIMINARY						
														FINAL DESIGN						
														PLOTTED	BMCD	04/2025				



MILLER SUBSTATION

LAYOUT DIAGRAM

230kV BREAKER 975T2 PANEL 8

SYSTEM PROTECTION & CONTROL PROJECTS 20413



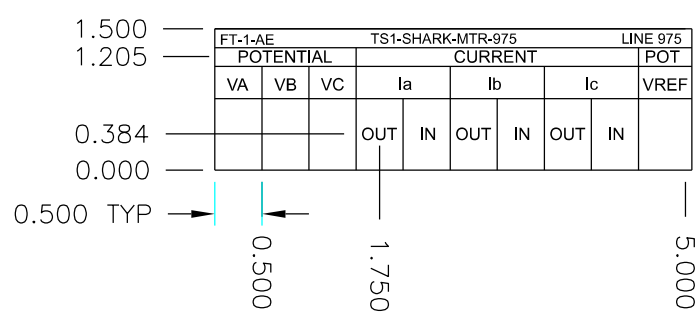
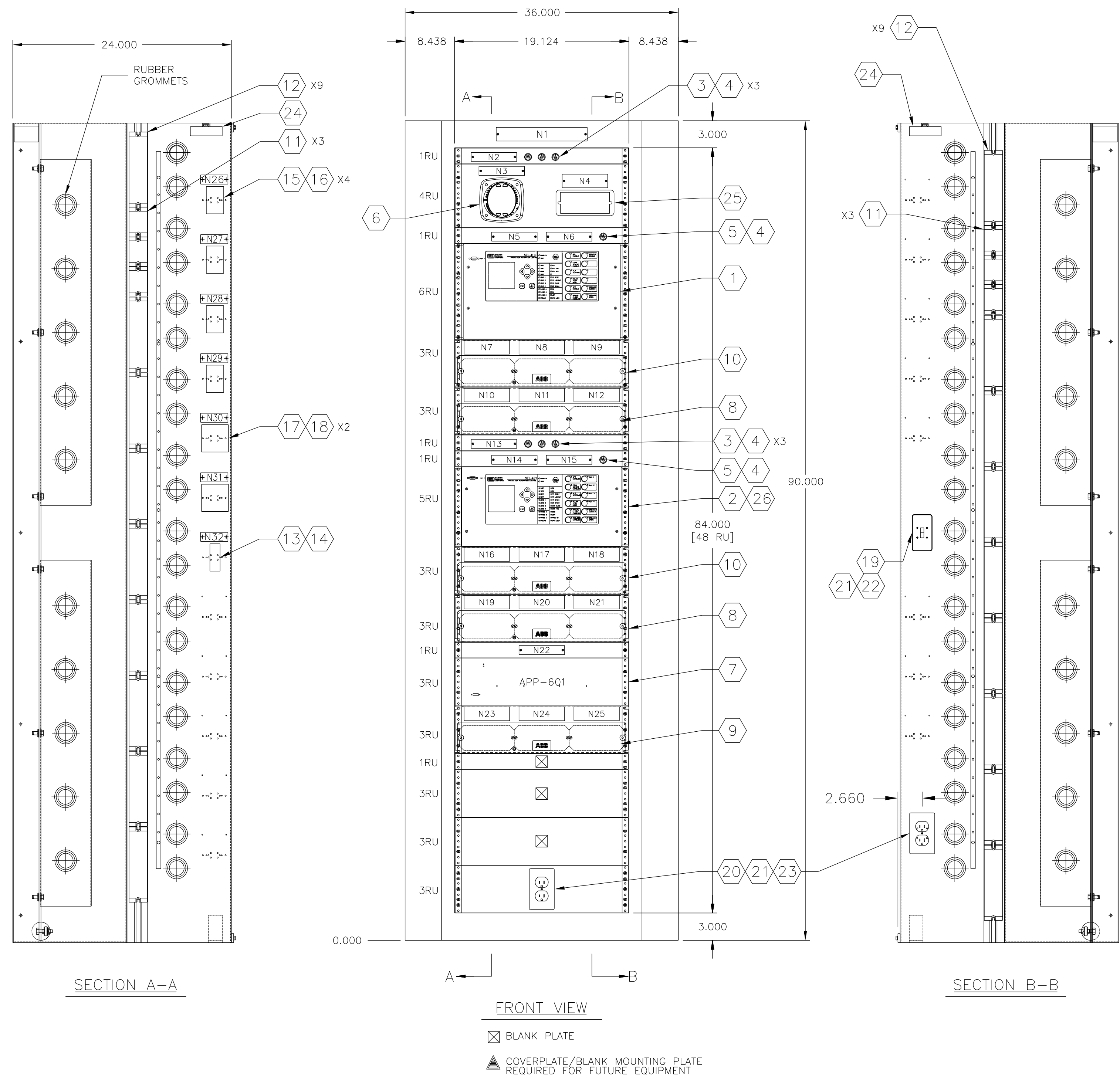
JEA
BUILDING COMMUNITIES

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 <u>0</u> .

NAMEPLATE LIST					
NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE	TEXT
N1	PNL 9 (975 TO NORMANDY)			1 1/2 x 10"	1/2"
N2	X WDG 230KV BUS			1 X 5"	1/2"
N3	SHARK METER-975			1 X 5"	1/2"
N4	SEE DETAIL "A"			1 1/2 x 5"	5/32"
N5	87L-975			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-975			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-975			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	04111X6X5C6CXH624E4E4	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. 411#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	116B6708C7-C	6	GE	INDICATING LIGHT, GE ET-16, 70VAC, INCANDESCENT BULB, CLEAR CAP
4	BSD-1118-026	8	LEDTRONICS	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-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 C-C 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	CS11S1	1	HUBBELL	SWITCH, SINGLE POLE, 15A, 120/277 VOLTS
20	CR1S1	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 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



DETAIL 'A'
SCALE 4:1

FT-1-CD			TS1-87L-975				BREAKER 98871		
POTENTIAL			CURRENT						POT
VAY	VBY	VCY	IAW		IBW		ICW		VN
			OUT	IN	OUT	IN	OUT	IN	

DETAIL 'B'

SCALE 4:1

FT1-CB		TS2-57L-975				BREAKER 975T2	
87L		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		TS3-97L-975									
87L											
IN 201 52A	IN 202 52A	IN 203 RCL	IN 204 COM	IN 205 RCL	IN 206 868F	IN 207 868F	IN 301*	IN 302*	IN 303 DTT		
968T1	975T2	FAIL 21L	FAIL 21L	FAIL 25BF 968T1	TRIP 968T1	TCM 968T1					

DETAIL 'D'

SCALE 4:1

FT-1-DC				TS4-97L-97S					
87L									
OUT 301 TRIP 988T1 TC-1	OUT 301 TRIP 988T1 TC-1	OUT 302 TRIP 975T2 TC-1	OUT 302 TRIP 975T2 TC-1	OUT 303*	OUT 303*	OUT 304*	OUT 304*	OUT 305*	OUT 305*

DETAIL 'E'

SCALE 4:1

FT-1-DB		TS5-07L-075							
		87L							
OUT 406*	OUT 406*	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-875									
87L											
OUT 401* RI	OUT 401* RI	OUT 402 BF	OUT 402 BF	OUT 403* RI	OUT 403* RI	OUT 404 BF	OUT 404 BF	OUT 405*	OUT 405*		
986T1	986T1	986T1	988T1	975T2	975T2	975T2	975T2				

DETAIL 'G'
SCALE 4:1

FT-1-JE			TS1-21L-975				BREAKER 975T2		
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-975				BREAKER 908T1	
21L		CURRENT					
OUT 101 W/L	OUT 102 COM FAIL ANN	IAX		IBX		ICX	
		OUT	IN	OUT	IN	OUT	IN

DETAIL 'I'
SCALE 4:1

TS3-21L-975									
21L									
IN 101 52A 988T1	IN 102 52A 975T2	IN 103 RLY FAL 87L	IN 104 COM FAL 87L	IN 105 RLY FAL 975T2	IN 106 888F TRBP 975T2	IN 107*	IN 201*	IN 202*	IN 203 DTT

DETAIL 'J'

SCALE 4:1

TS4-21L-975									
21L									
OUT 201 TRIP 668T1 TC-2	OUT 201 TRIP 668T1 TC-2	OUT 202 TRIP 668T1 TC-2	OUT 202 TRIP 975T2 TC-2	OUT 203*	OUT 203*	OUT 204*	OUT 204*	OUT 205*	OUT 205*

DETAIL 'K'
SCALE 4:1

TS5-21L-975									
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 OTT TRIP DFR	OUT 108 RLY FAIL ANN

DETAIL 'L'

SCALE 4:1

FT-1-KA		TS6-21L-975							
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*
968T1	968T1	968T1	968T1	975T2	975T2	975T2	975T2		

DETAIL 'M'

SCALE 4:1

FT-1-VC		TS1-CFR-975 BREAKER 98B1 & 975T2							
CURRENT									
CH1 1A		CH2 1B		CH3 1C		CH4 1N			
OUT	IN	OUT	IN	OUT	IN	OUT	IN		

DETAIL 'N'
SCALE 4:1

FT-1-J/B				TS2-DFR-975					
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-WA		TS3-DFR-975									
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
52B	52B	87L	87L	06	868F	07	P08T	01	21L	02	21L
988T1	975T2	CH	TRIP	DTT	TRIP	TRIP	CH	RLY	TRIP	DTT	TRIP
		FAIL	975	TRIP	988T1	975T2	FAIL				

DETAIL 'P'
SCALE 4:1

NOTES:

* 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.

NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
0	MILLER SUBSTATION INSTALLATION	JAS	08/2025	RCH						DESIGNED	JAS	08/2025
										CHECKED	CBW	08/2025
										APPROVED	RCH	08/2025
										DRAFTING	BY	DATE
										PRELIMINARY		
										FINAL DESIGN		
										PLOTTED	BMCD	04/2025

MILLER SUBSTATION

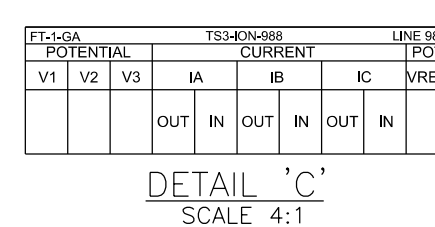
LAYOUT DIAGRAM

230kV LINE 975 PANEL 9

SYSTEM PROTECTION & CONTROL PROJECTS 20413

SCALE: NONE

	DESIGN FILENAME: MLL05.DGN
	DRAWING NO.: MLL05
	SHEET NO.:
IFB.NO.:	



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.

SHEET NO. 2