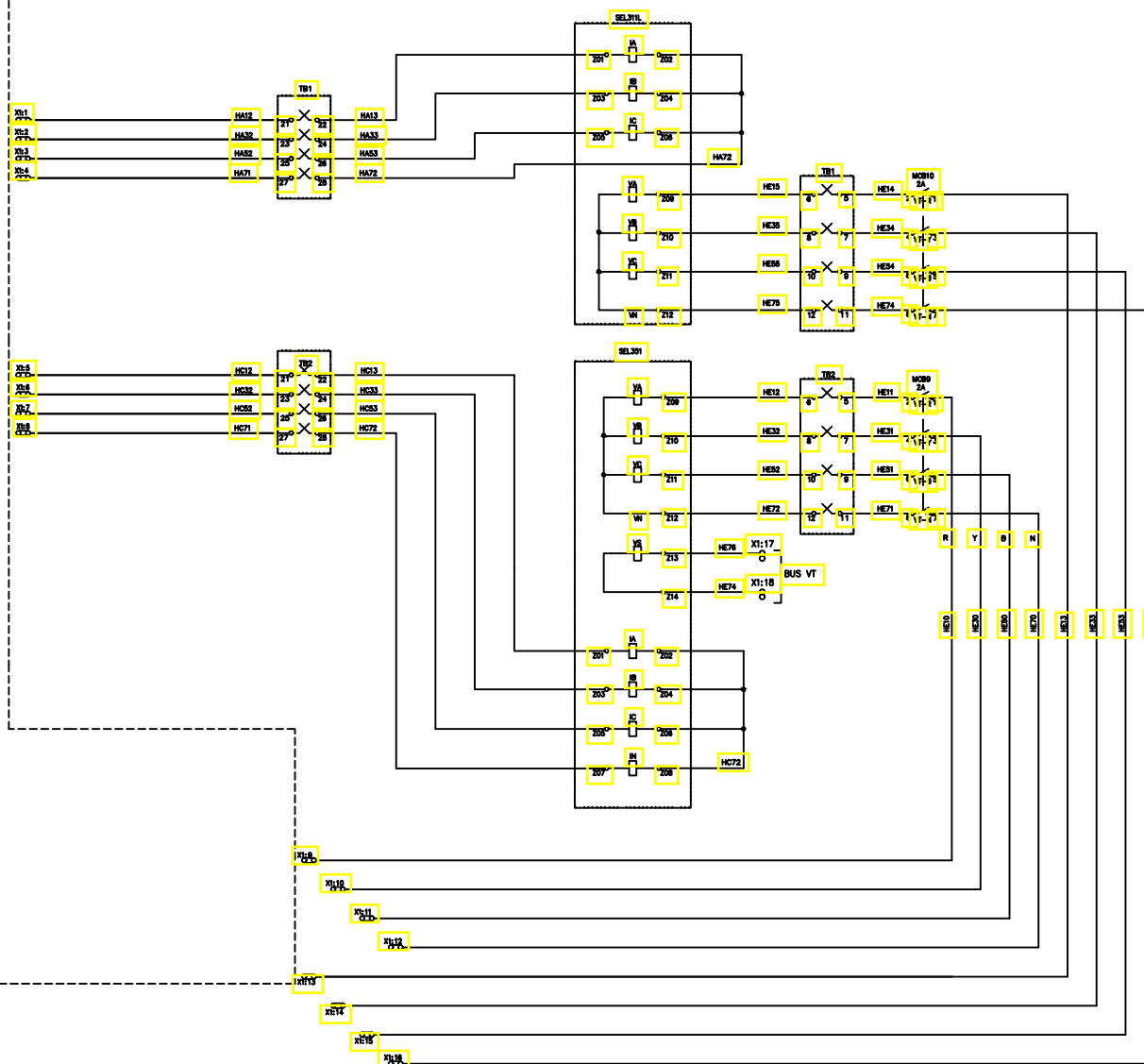


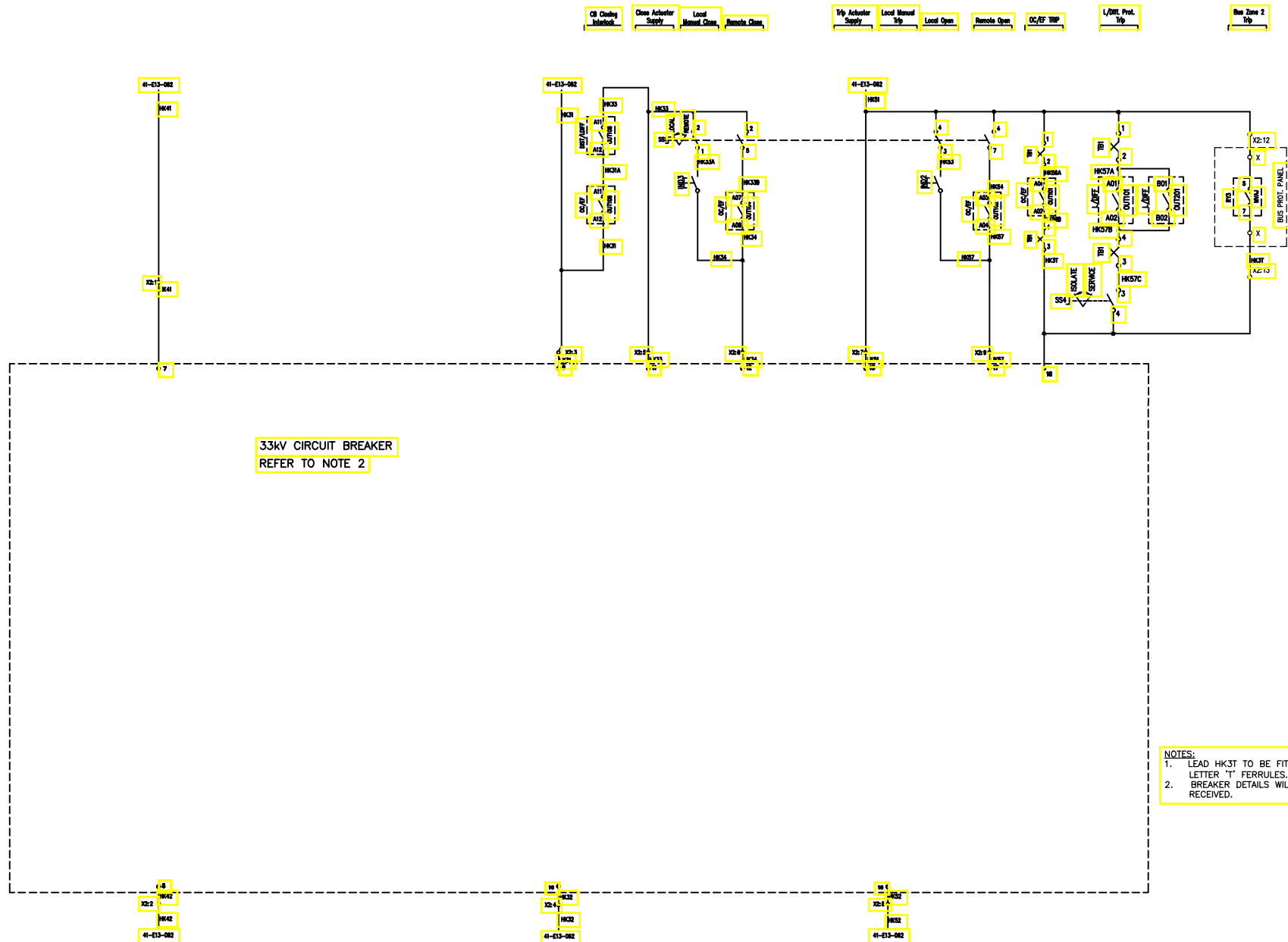
PLANT EXTERNAL TO CONTROL CURBULE

REFER TO NOTE 1



NOTE
1. BREAKER DETAILS WILL BE
ADDED ONCE DETAILS IS
RECEIVED

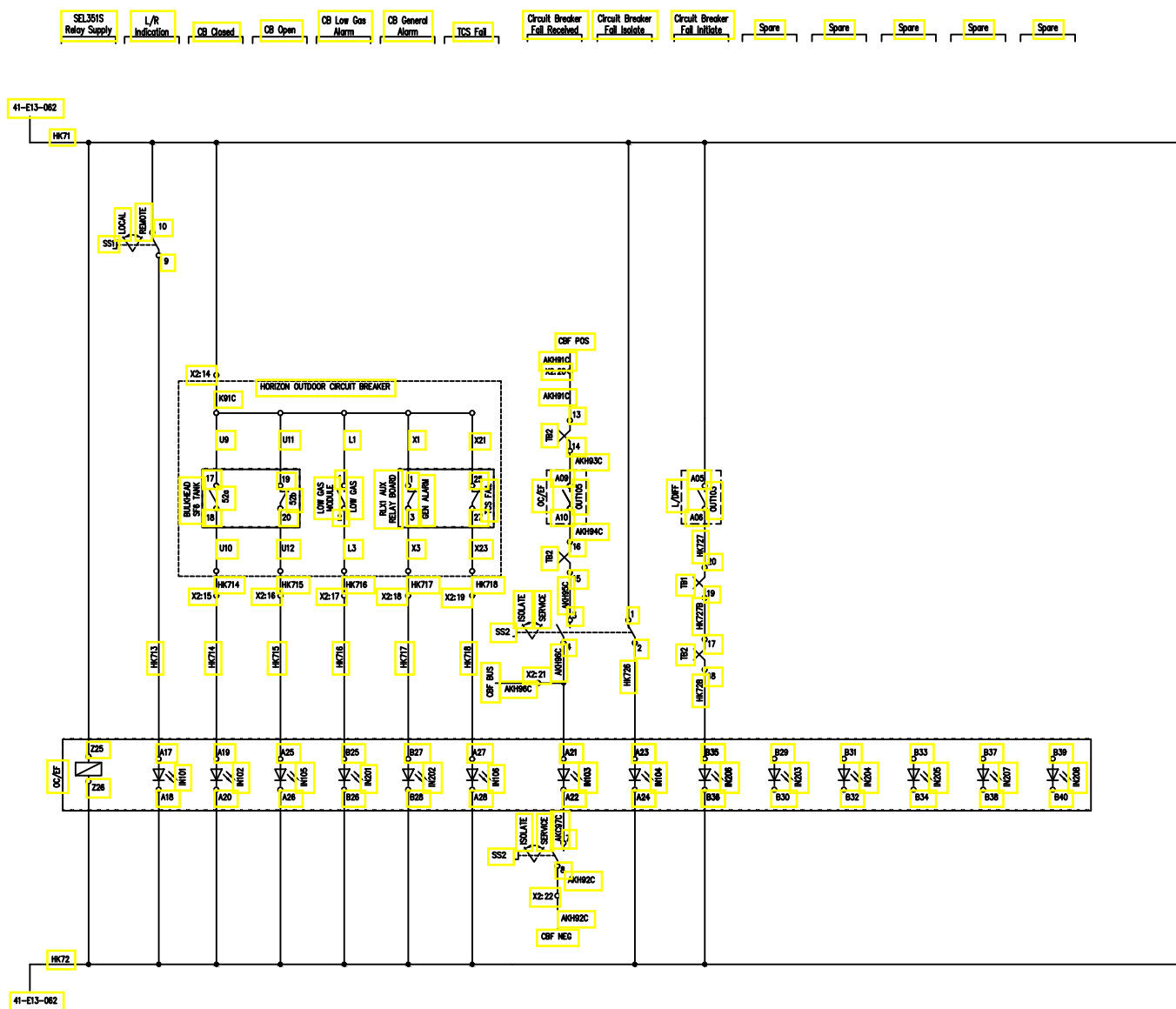
[illegible]



33kV CIRCUIT BREAKER
REFER TO NOTE 2

NOTES:
1. LEAD HK3T TO BE FITTED WITH RED LETTER 'T' FERRULES.
2. BREAKER DETAILS WILL BE ADDED ONCE DETAILS RECEIVED.

DRAWN				LUKE. T				20/08/19				ENERGY FIJI LIMITED			
CHECKED				KRISHNEELP				26/08/19				WAQADRA 33/11kV SUBSTATION			
CHIEF DRAUGHTSMAN												DENARAU CIRCUIT			
TEAM LEADER												33kV CB 4H10			
ENGINEER												DC CIRCUIT DIAGRAM - PART 1			
HEAD OF DEPARTMENT												DRAWING NUMBER			
												A3 41 E13 057 0			
												SCALE			
												NTS			

[illegible]

DRAWN	LUKE. T	20/08/19
CHECKED	KRISHNEEL P	26/08/19
CHIEF DRAUGHTSMAN		
TEAM LEADER		
ENGINEER		
HEAD OF DEPARTMENT		

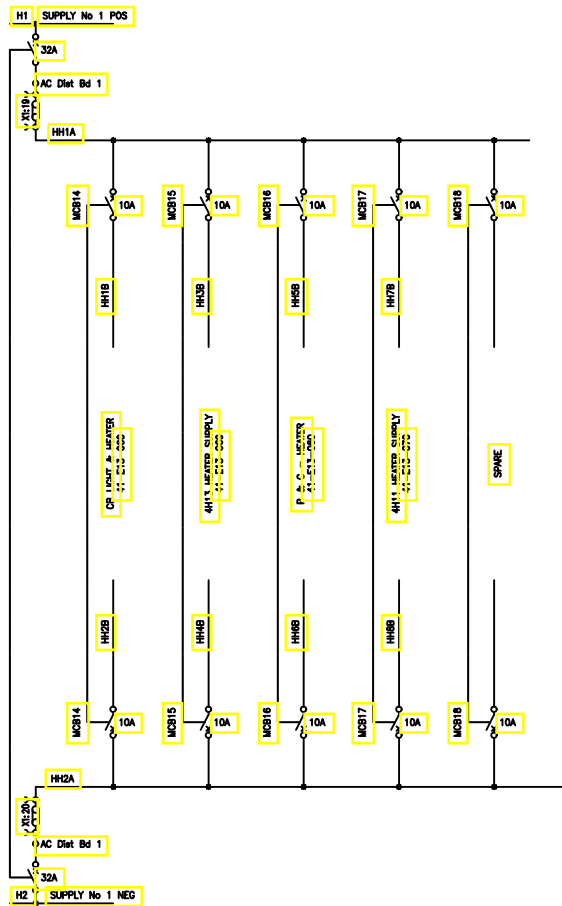
ENERGY FIJI LIMITED

WAQADRA 33/11KV SUBSTATION
DENARAU CIRCUIT
33KV CB 4H10
DC CIRCUIT DIAGRAM – PART 2

DRAWING NUMBER

A3	41	E13	058	0
----	----	-----	-----	---

SCALE SCALE

[illegible]

DRAWN	LUKE. T	20/08/19
CHECKED	KRISHNEEL P	26/08/19
CHIEF DRAUGHTSMAN		
TEAM LEADER		
ENGINEER		
HEAD OF DEPARTMENT		

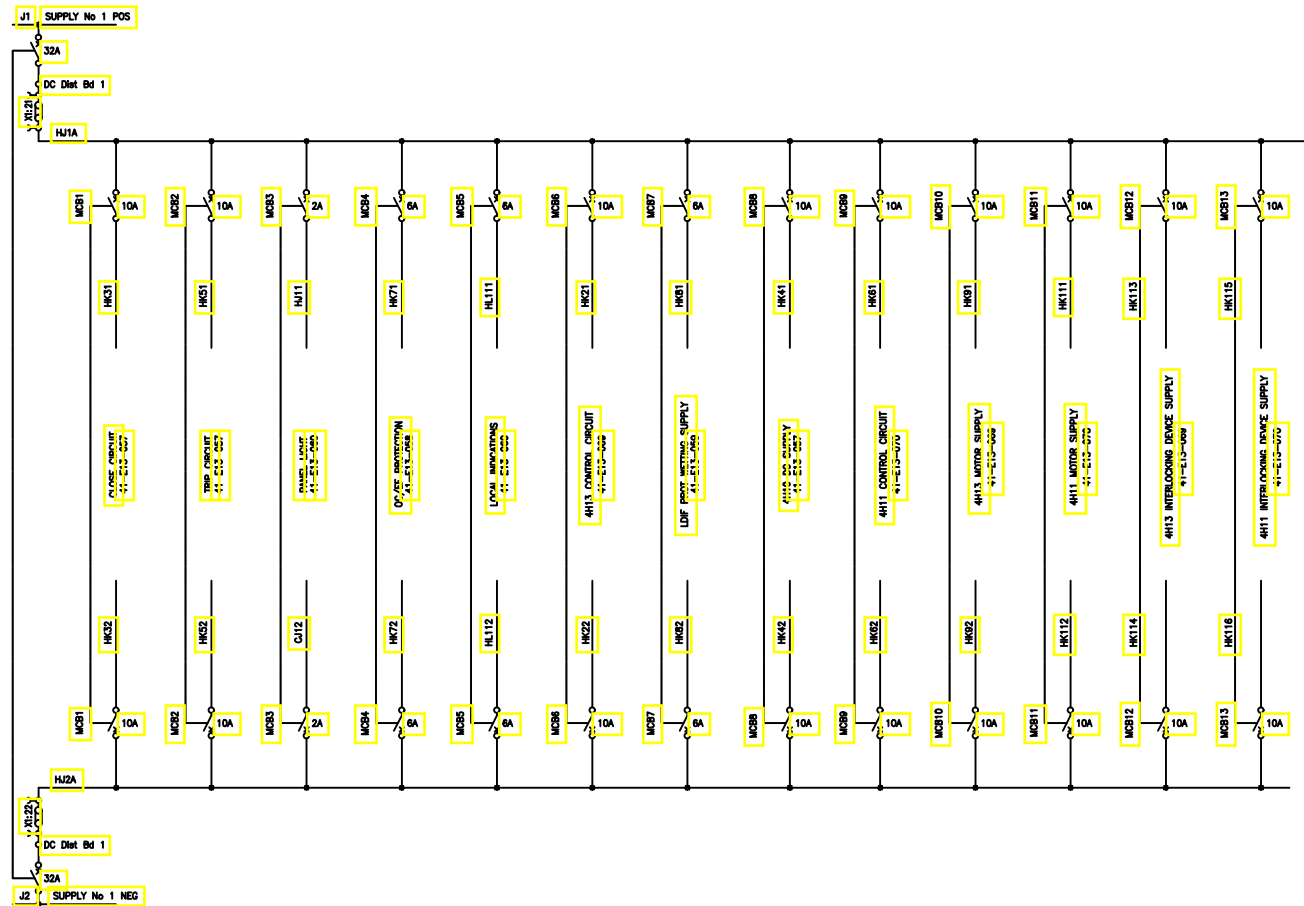
ENERGY FIJI LIMITED

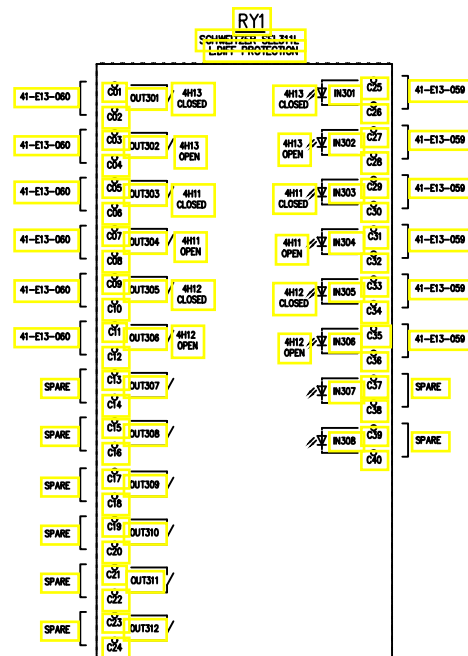
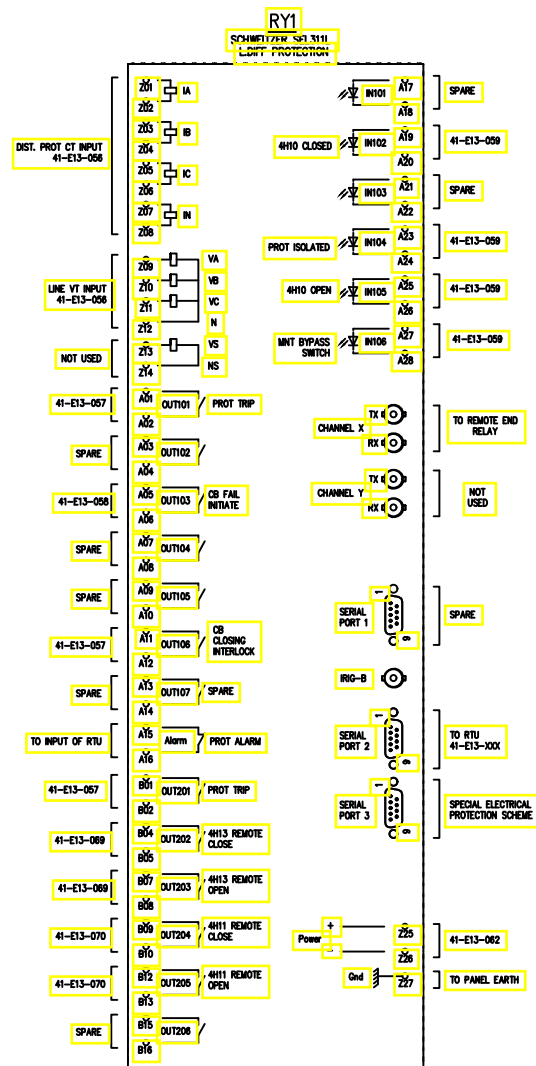
WAQADRA 33/11KV SUBSTATION
DENARAU CIRCUIT
33KV CB 4H10
AC SUPPLY CIRCUIT DIAGRAM

DRAWING NUMBER

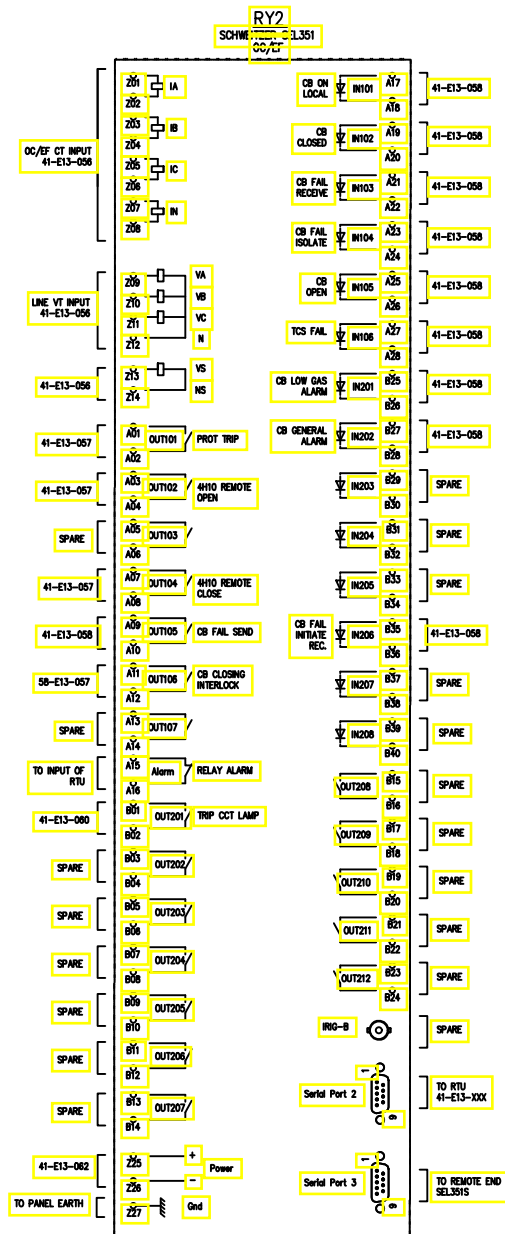
A3	41	E13	061	0
----	----	-----	-----	---

SCALE	SCALE
-------	-------





TEST BLOCK 01		
AREVA HMIG-02		
TERMINAL	DESCRIPTION	REF
1 _c 2 _a	PROT TRIP	41-E13-057
3 _c 4 _a	PROT TRIP	41-E13-057
5 _c 6 _a	VT3 Φ	41-E13-056
7 _c 8 _a	VT3 Φ	41-E13-056
9 _c 10 _a	VT3 Φ	41-E13-056
11 _c 12 _a	VT3 N	41-E13-056
13 _c 14 _a	SPARE	
15 _c 16 _a	SPARE	
17 _c 18 _a	SPARE	
19 _c 20 _a	CB FAIL INITIATE	41-E13-058
21 _c 22 _a	CT R Φ	41-E13-056
23 _c 24 _a	CT Y Φ	41-E13-056
25 _c 26 _a	CT B Φ	41-E13-056
27 _c 28 _a	CT N	41-E13-056



TEST BLOCK 02		
APR/VA MM/LIS-UZ		
TERMINAL	DESCRIPTION	REF
1 _c 2 _d	OC/EF TRIP	41-E13-057
3 _c 4 _d	OC/EF TRIP	41-E13-057
5 _c 6 _d	VT3 \overline{R}	41-E13-056
7 _c 8 _d	VT3 \overline{V}	41-E13-056
9 _c 10 _d	VT3 $\overline{3}$	41-E13-056
11 _c 12 _d	VT3 N	41-E13-056
13 _c 14 _d	CB FAIL SEND	41-E13-058
15 _c 16 _d	CB FAIL SEND	41-E13-058
17 _c 18 _d	CB FAIL INITIATE REC.	41-E13-058
19 _c 20 _d	SPARE	
21 _c 22 _d	OC/EF CT \overline{N}	41-E13-056
23 _c 24 _d	OC/EF CT \overline{V}	41-E13-056
25 _c 26 _d	OC/EF CT \overline{N}	41-E13-056
27 _c 28 _d	OC/EF CT N	41-E13-056

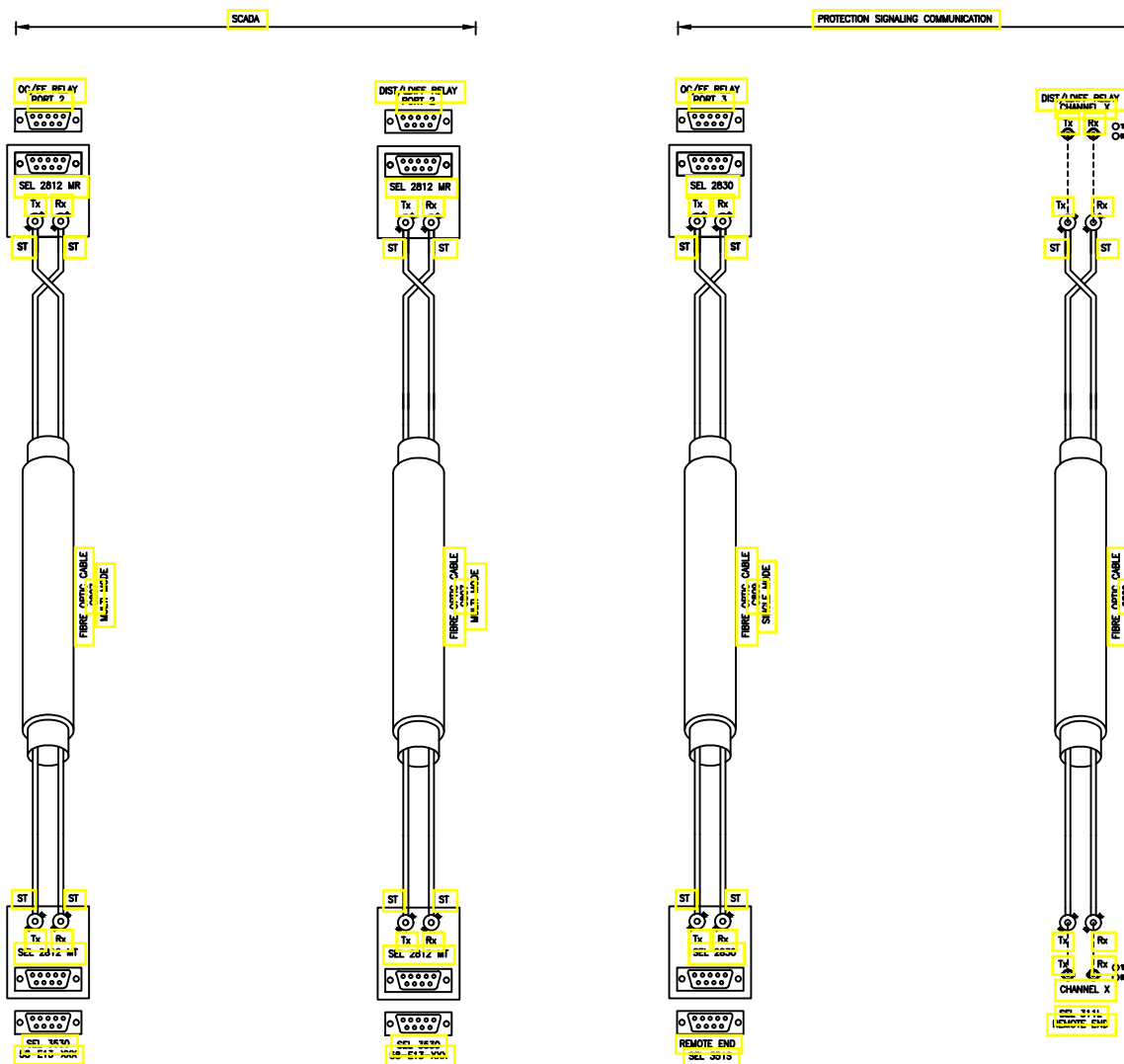
[illegible]

DRAWN	LUKE. T	20/08/19
CHECKED	KRISHNEEL.P	26/08/19
CHIEF DRAUGHTSMAN		
TEAM LEADER		
ENGINEER		
HEAD OF DEPARTMENT		

ENERGY FIJI LIMITED

WAQADRA 33/11KV SUBSTATION
DENARAU CIRCUIT
33KV CB 4H10
ASSEMBLED FORM - PART 2

DRAWING NUMBER				
A3	41	E13	064	0
SCALE	NTS			



RELAY NAME	RELAY DESCRIPTION	RELAY TYPE
DISH/LIFT	DIS/LIFT PROTECTION	SEL 311L
UL/EP	OVERCURRENT RELAY	SEL 301
RTU	REAL TIME AUTOMATION CONTROLLER	SEL 3030

KEY
ST CONNECTORS

NOTE:
1. TOW SCADA TO CONFIRM THE PORT CONNECTION NUMBER ON RTU END OF SERIAL CONNECTION.

0. ISSUED FOR PROCUREMENT.				20.08.19				L.T.				K.P.				REFERENCE				DRAWING No.				TITLE			
No.				DATE	BY	CHK	PSD	APP																			

DRAWN	LUKE. T	20/08/19
CHECKED	KRISHNIEELP	26/08/19
CHIEF DRAUGHTSMAN		
TEAM LEADER		
ENGINEER		
HEAD OF DEPARTMENT		

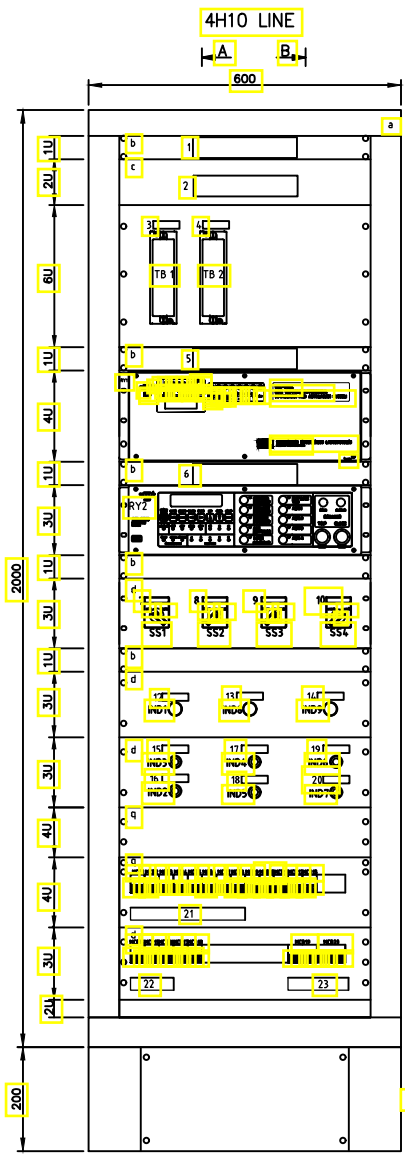
ENERGY FIJI LIMITED

WAQADRA 33/11KV SUBSTATION
DENARAU CIRCUIT
33KV CB 4H10
SERIAL CONNECTIONS

DRAWING NUMBER

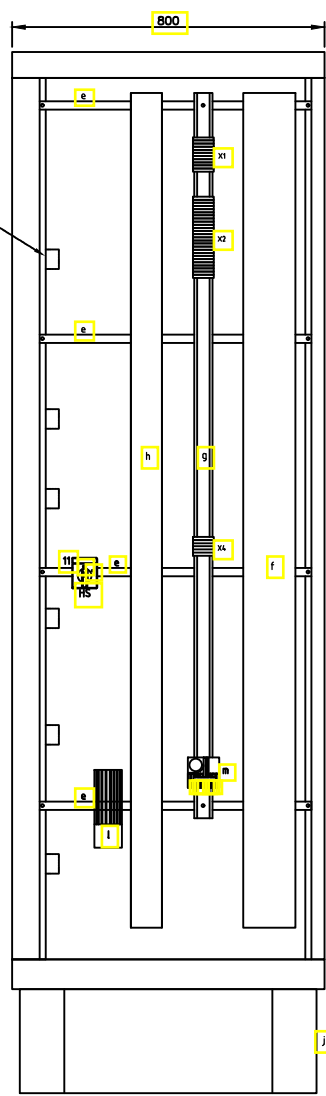
A3 41 E13 065 0

SCALE NTS



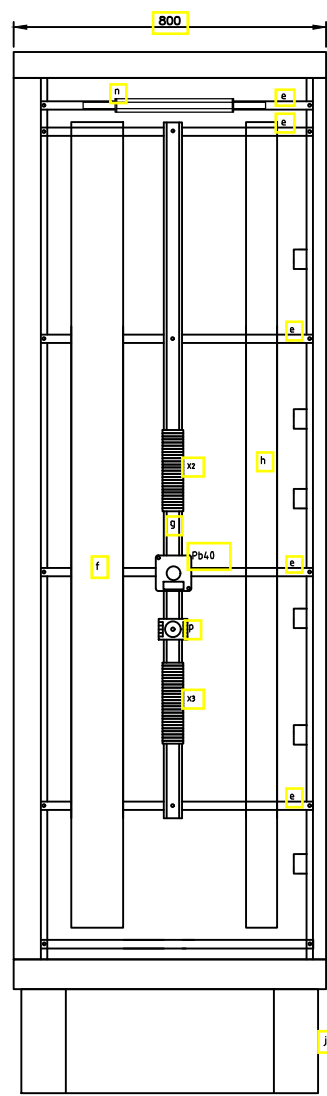
PANEL FRONT
FRONT DOOR REMOVED
NTS

REFER TO NOTE 3

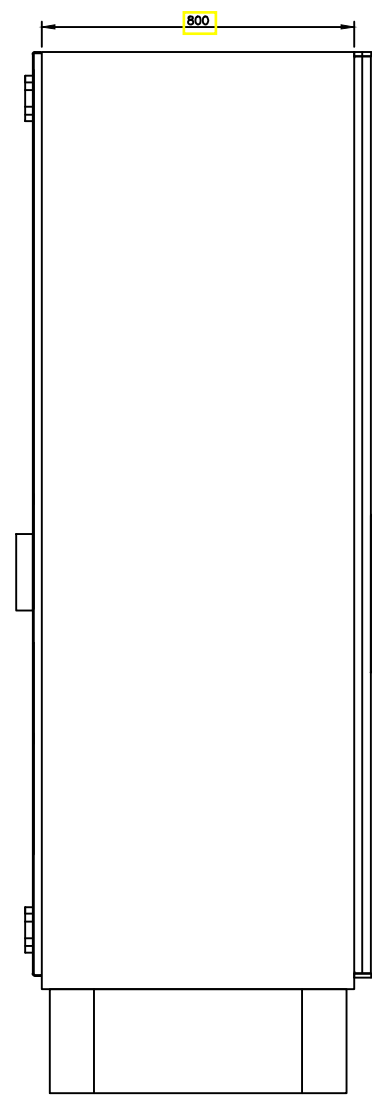


A-A
NTS

NOTE:
1. SECTION VIEWS DO NOT SHOW THE MOUNTING FRAME AND FRONT PANEL COMPONENTS.
2. DRAWINGS ARE TO BE READ TOGETHER WITH TENDER/PANEL SPECIFICATIONS.
3. SLOTTED DUCTS USED FOR WIRING OF RELAYS, MVAJ, SWITCHES AND INDICATION LIGHTS.



SECTION B-B
NTS



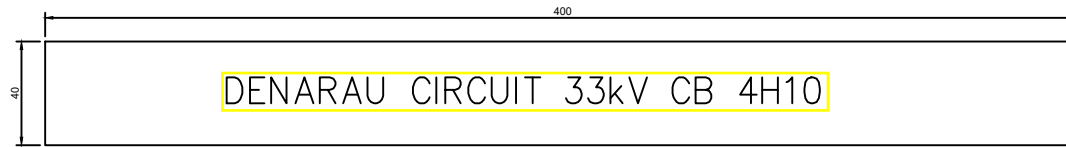
SIDE VIEW
NTS

FRONT DOOR
(PERSPEX)

ISSUED FOR PROCUREMENT				DATE				BY				CHK				PSD				APP				REFERENCE				DRAWING No.				TITLE			
No.				20.08.19	10	KT	KP																												

DRAWN	L.TUSINU	20/08/19
CHECKED	K.PRASAD	26/08/19
CHIEF DRAUGHTSMAN		
TEAM LEADER		
ENGINEER	K.PRASAD	
HEAD OF DEPARTMENT	O.D.S	

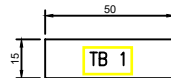
ENERGY FIJI LIMITED				DRAWING NUMBER			
WAQADRA 33kV/11kV SUBSTATION				A3 41 E13 066 0			
DENARAU CIRCUIT				SCALE			
33kV CB 4H10				NTS			
RELAY PANEL LAYOUT							



TEXT HEIGHT: 10mm

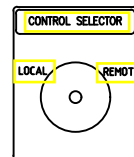
LABEL	INSCRIPTION	QTY
1	AS SHOWN	2

REFER TO NOTE 1



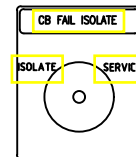
TEXT HEIGHT: 5mm

LABEL	INSCRIPTION	QTY
3	AS SHOWN	1
4	TB 2	1
12	TRIP CCT OK	1
13	4H12 CLOSED	1
14	4H12 OPEN	1
15	4H10 CLOSED	1
16	4H10 OPEN	1
17	4H13 CLOSED	1
18	4H13 OPEN	1
19	4H11 CLOSED	1
20	4H11 OPEN	1



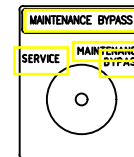
DIMENSIONS TO SUIT KRAUS & NAIMER SWITCH

LABEL	INSCRIPTION	QTY
7	AS SHOWN	1



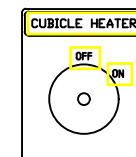
DIMENSIONS TO SUIT KRAUS & NAIMER SWITCH

LABEL	INSCRIPTION	QTY
8	AS SHOWN	1
9	PROTECTION ISOLATE	1



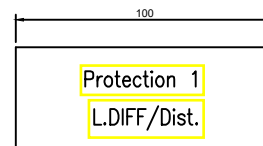
DIMENSIONS TO SUIT KRAUS & NAIMER SWITCH

LABEL	INSCRIPTION	QTY
10	AS SHOWN	1

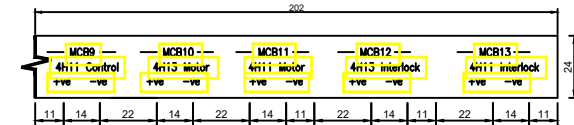
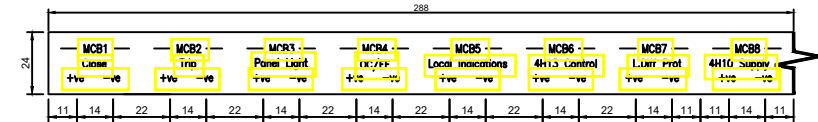


DIMENSIONS TO SUIT KRAUS & NAIMER SWITCH

LABEL	INSCRIPTION	QTY
11	AS SHOWN	1

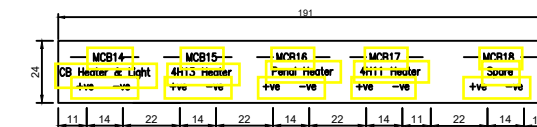


LABEL	INSCRIPTION LINE 1	INSCRIPTION LINE 2	QTY
5	AS SHOWN	AS SHOWN	1
6	Protection 2	OC/EF	1



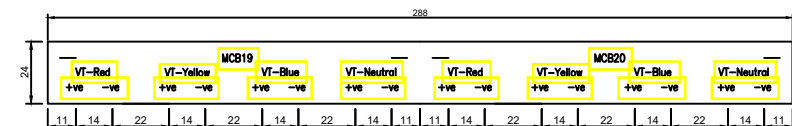
TEXT HEIGHT: 3mm

LABEL	INSCRIPTION	QTY
21	AS SHOWN	1



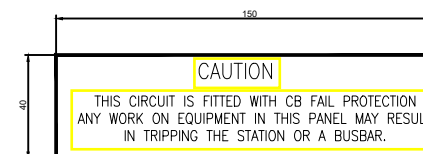
TEXT HEIGHT: 3mm

LABEL	INSCRIPTION	QTY
22	AS SHOWN	1



TEXT HEIGHT: 3mm

LABEL	INSCRIPTION	QTY
23	AS SHOWN	1

TEXT HEIGHT: 6mm & 4mm
BLACK LETTERING ON YELLOW BACKGROUND

LABEL	INSCRIPTION	QTY
2	AS SHOWN	2

REFER TO NOTE 2

NOTES:

1. SECOND LABEL IS TO BE PLACED AT REAR OF PANEL ON TOP OF THE PANEL FRAME.

2. SECOND LABEL IS TO BE PLACED ADJACENT TO THE REAR DOOR HANDLE

No.	ISSUED FOR PROCUREMENT.	DATE	BY	CHK	PSD	APP	REFERENCE	DRAWING No.	TITLE
0.		20/08/19	LT	K.P.					

DRAWN	LUKE. T	20/08/19
CHECKED	KRISHNIEEL P	26/08/19
CHIEF DRAUGHTSMAN		
TEAM LEADER		
ENGINEER		
HEAD OF DEPARTMENT		

ENERGY FIJI LIMITED

WAQADRA 33/11kV SUBSTATION
DENARAU CIRCUIT
33kV CB 4H10
RELAY PANEL LABELS & SWITCHES

DRAWING NUMBER

A3 41 E13 067 0

SCALE NTS

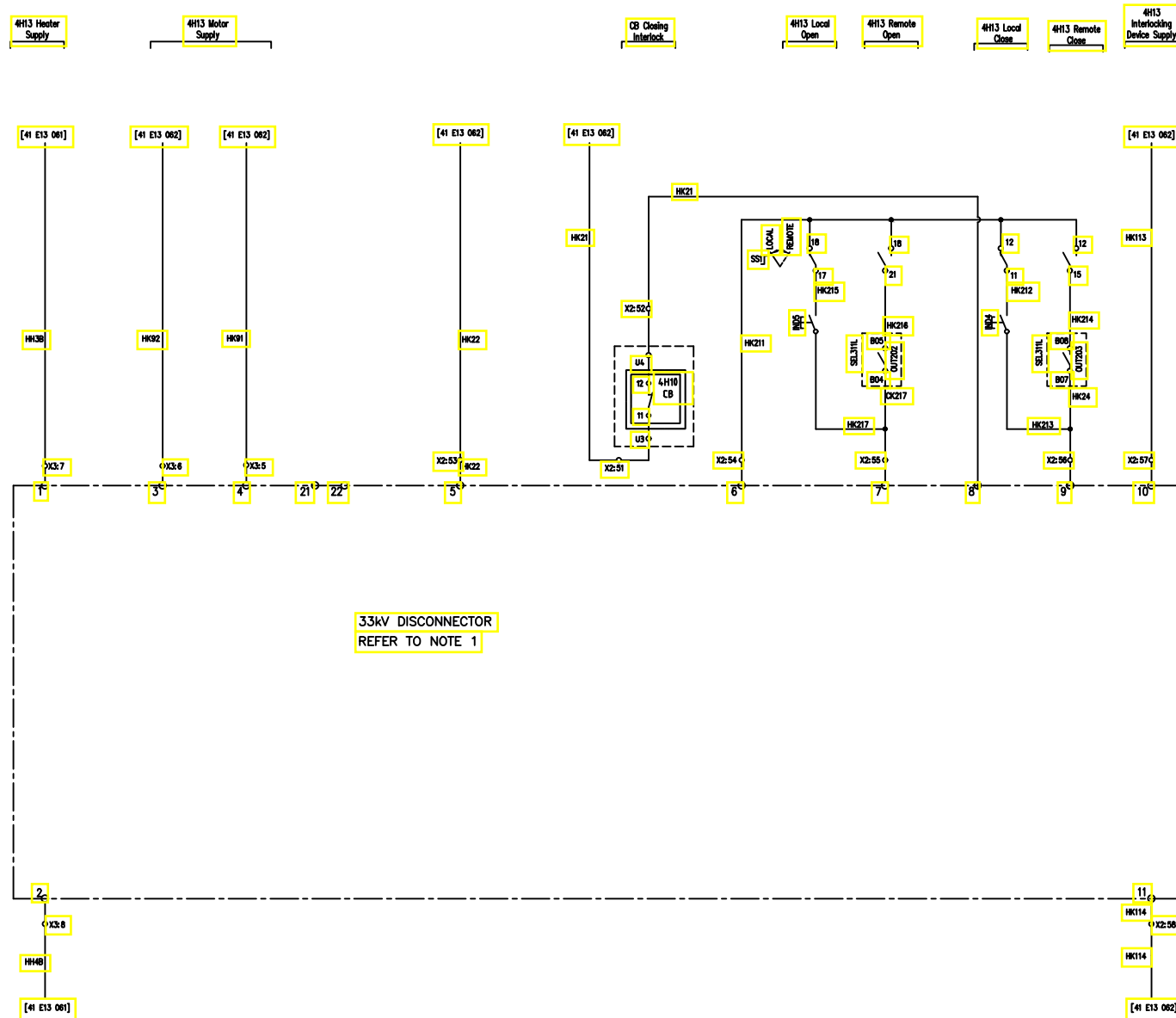
EQUIPMENT SCHEDULE

CODE	TEM	DESCRIPTION	TYPE	QTY	SUPPLIED BY	COMMENTS
	a	Panel 600(W) X 800(D) X 2000(H)	Rittal TS IT, OK 5530.120, 8608.500	1	Contractor	With glazed door and as per details in EFL specification
		ALL BLANKING PLATES TO HAVE A FINISH COLOUR	RAL7035		Contractor	AS PER EFL SPECS
	b	BU Blanking Plate	Cold Rolled Steel 2.5mm thick	5	Contractor	Model# DK7151.035, Finish color RAL7035
	c	BU Blanking Plate	Cold Rolled Steel 2.5mm thick	1	Contractor	Model# DK7152.035, Finish color RAL7035
RY1		Line Differential Protection Relay	SEL311L	1	EFL	P# 0311L7JEE3213242X
TB1, TB2		Test Block 1, Test Block 2	Areva MMLG02	2	Contractor	P# MMLG02R1AA001E
IND1		Trip Circuit Supervision Indication Lamp - White LED + COLLAR	ZB5AV013, ZBVBG1, ZB5A2009	1	Contractor	DC
IND8		Isolator 4H12 Close Indication Lamp - Red LED + COLLAR	ZB5AV033, ZBVBG3, ZB5A2009	1	Contractor	DC
IND9		Isolator 4H12 Open Indication Lamp - Green LED + COLLAR	ZB5AV043, ZBVBG4, ZB5A2009	1	Contractor	DC
SS1		Switch - Control Selector (Local or Remote)	KRAUS & NAIMER CA10-A371-600	1	Contractor	F76 Rectangular Escutcheon Plate; CB Local/Remote Switch
SS2		Switch - Circuit Breaker Fall Isolate	KRAUS & NAIMER CA10-A715	1	Contractor	F76 Rectangular Escutcheon Plate; Open/Close Switch
SS3		Switch - Protection Isolate	KRAUS & NAIMER CA10-A721	1	Contractor	F76 Rectangular Escutcheon Plate
SS4		Switch - Maintenance Bypass Switch	KRAUS & NAIMER CA10-A721	1	Contractor	for bay isolator electrical interlock bypass
IND3		Push Button Switch - Circuit Breaker Control (Close Switch + Indication)	Schneider XB5AW3465	1	Contractor	
IND2		Push Button Switch - Circuit Breaker Control (Open Switch + Indication)	Schneider XB5AW3365	1	Contractor	
IND4, IND6		Push Button Switch - Isolator Control (Close Switch + Indication)	Schneider XB5AW3465	2	Contractor	
IND5, IND7		Push Button Switch - Isolator Control (Open Switch + Indication)	Schneider XB5AW3365	2	Contractor	
RY2		Overcurrent/Earth Fault Relay	SEL351S	1	EFL	P# 0351S7XH03E1322
HS		Switch - Heater	KRAUS & NAIMER CA10-A201	1	Contractor	F76 Rectangular Escutcheon Plate
MCB 1, 2, 6, 8, 9, 10, 11, 12, 13		Miniature Circuit Breaker 110VDC, 10A	Schneider A9N-61528	6	Contractor	
MCB 3		Miniature Circuit Breaker 110VDC, 2A	Schneider A9N-61522	3	Contractor	
MCB 4, 5, 7		Miniature Circuit Breaker 110VDC, 6A	Schneider A9N-61526	3	Contractor	
MCB 14, 15, 16, 17, 18		Miniature Circuit Breaker 240VAC, 10A	Schneider A9F-44210	4	Contractor	
	d	BU Blanking Plate	Cold Rolled Steel 2.5mm thick	4	Contractor	Model# DK7153.035, Finish color RAL7035
	q	BU Blanking Plate	Cold Rolled Steel 2.5mm thick	2	Contractor	Model# DK7154.035, Finish color RAL7035
	e	Internal Punched Section	Rittal 8612.080	10	Contractor	
	f	Cable Trunking	Dritchley Betaduct	2	Contractor	
	g	DIN Rail	Weldmuller TS35	2	Contractor	
X1		Measuring Disconnect Terminal	Weldmuller WTL 6/1/STB	13	Contractor	Terminal Block to have label, X1 above X1:1. Each Terminal to be numbered
X2		Terminal	Phoenix Contact UT8(Grey)	80	Contractor	Terminal Block to have label, X2 above X2:1. Each Terminal to be numbered
X3		Terminal	Phoenix Contact UT8(Grey)	20	Contractor	Terminal Block to have label, X3 above X3:1. Each Terminal to be numbered
	h	Cable Trunking 2	Dritchley Betaduct	1	Contractor	
	j	Plinth	Rittal 8602.080, 8602.600	1	Contractor	
	k	BU Blanking Plate	Cold Rolled Steel 2.5mm thick	1	Contractor	With cutout for Test Block. Model# DK7156.035, Finish color RAL7035
	l	Panel Heater-30W	Rittal	1	Contractor	Model# 3106120, 110-240V
	m	Thermostat	Rittal	1	Contractor	Model# 3110000, 24-240VAC
	PB40	Push Button (PB40)	Telemecanique Harmony 5 XALD102	1	Contractor	Green PB + 1 NO Contact (Also RS 330-8464)
	p	Panel Light Time Delay Relay	Rockwell 700-Ha32a01 + 700-HL3 Timer Module	1	Contractor	1/w Hnz04 Base & Retainer Clips
	n	Panel Light LED's (White)	innovec Control LEDTL/18 / 100 125VDC/95VAC	1	Contractor	1/w Bracket and 1m Lead
MCB 19, 20		Miniature Circuit Breaker 110 Vac, 2Amps	Schneider A9F-54402	2	Contractor	

NOTE:
2.DRAWINGS ARE TO BE READ TOGETHER WITH TENDER/PANEL SPECIFICATIONS.

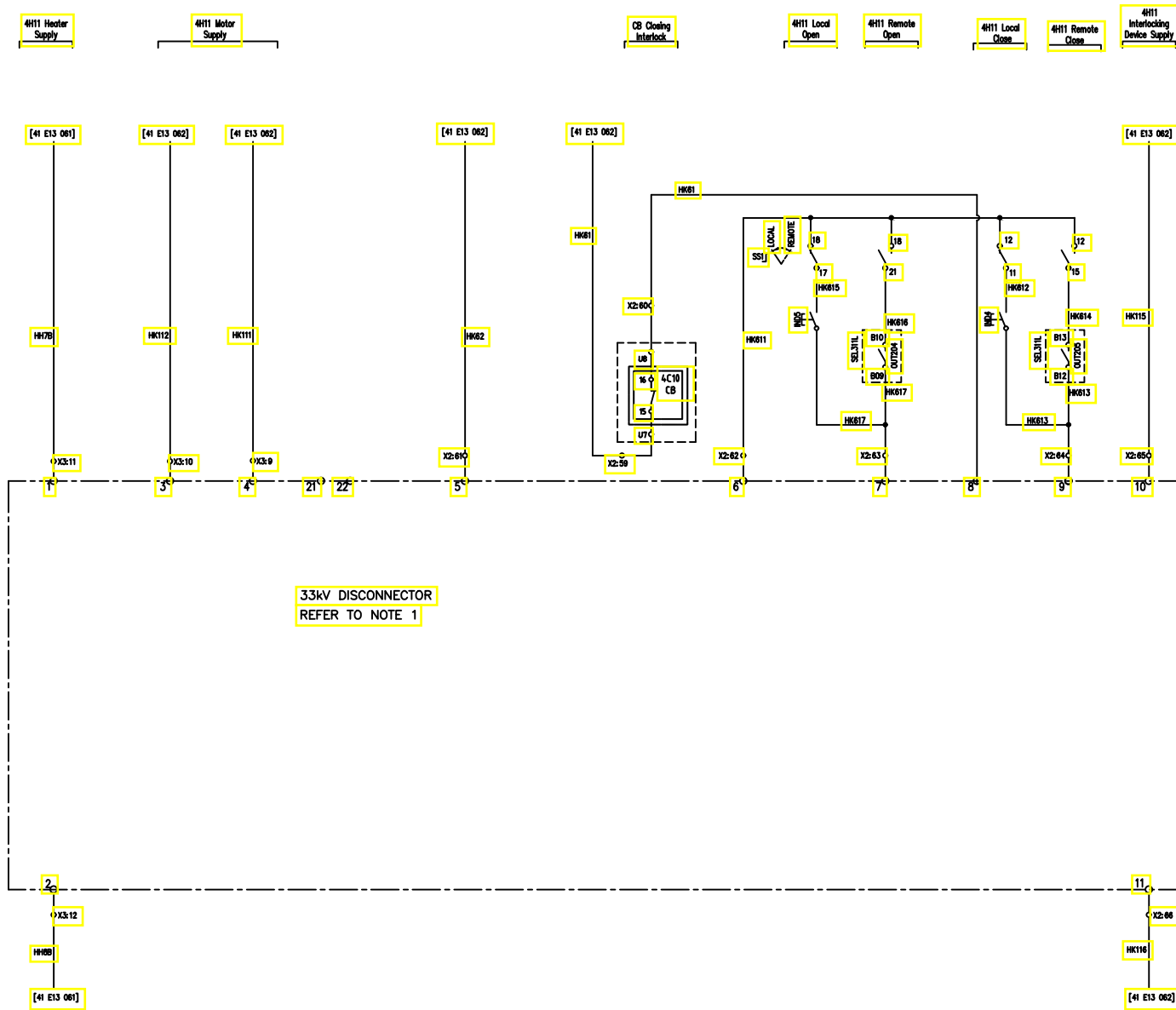
DRAWN		LUKE. T	20/08/19	ENERGY FIJI LIMITED WAQADRA 33/11kV SUBSTATION DENARAU CIRCUIT 33kV CB 4H10 RELAY PANEL - EQUIPMENT SCHEDULE		DRAWING NUMBER	
CHECKED		KRISHNEELP	26/08/19			A3 41 E13 068 0	
CHIEF DRAUGHTSMAN						SCALE	
TEAM LEADER						NTS	
ENGINEER							
HEAD OF DEPARTMENT							

0.	ISSUED FOR PROCUREMENT.	20.08.19	LT	K.P.	REFERENCE	DRAWING No.	TITLE
No.		DATE	BY	CHK	PSD	APP	



NOTE
1. DISCONNECTOR DETAILS WILL BE
ADDED ONCE DETAILS RECEIVED

DRAWN				LUKE. T				20/08/19				ENERGY FIJI LIMITED			
CHECKED				KRISHNEELP				26/08/19				WAQADRA 33/11kV SUBSTATION			
CHIEF DRAUGHTSMAN												DENARAU CIRCUIT			
TEAM LEADER												33kV CB 4H10			
ENGINEER												ISOLATOR CONTROL CIRCUIT DIAGRAM -			
HEAD OF DEPARTMENT												PART 1			
DRAWING No.				TITLE				DRAWING NUMBER				A3 41 E13 069 0			
No.				DATE				SCALE				NTS			



NOTE
1. DISCONNECTOR DETAILS WILL BE
ADDED ONCE DETAILS RECEIVED

[illegible]