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SUPPLY OF CRP FOR 220kV STATION

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GENERAL ARRANGEMENT, BILL OF MATERIAL, SCHEMATIC FOR 220kV FEEDER BAY CONTROL & RELAY PANEL SUBSTATION AUX. DC VOLTAGE: 220V DC QTY:2 Nos

C

C

CIRCUIT	220kV FEEDER BAY CONTROL & RELAY PANEL
PANEL	2RLA & 2RLB
GA	CZN190523DB-CRG
BOM	CZN190523DB-CRB
SCHEMATIC	CZN190523DB-CRS


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NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

03	AS PER CUSTOMER COMMENT	02.02.2024	PKS	PK	PK	PROJECT:		TITLE : TOP SHEET	PO No:	
02	AS PER CUSTOMER COMMENT	29.12.2023	PKS	PK	PK				DOC TYPE : GENERAL ARRANGEMENT	
01	AS PER CUSTOMER COMMENT	01.12.2023	RJS	PK	MVG				PANEL REF : 2RLA & 2RLB	REV : 03
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	CUSTOMER : M/s.APTRANSCO	ZIV AUTOMATION INDIA	CKT. NAME : 220kV FEEDER BAY CONTROL AND RELAY PANEL	DWG No : CZN190523DB-CRG	
REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR:			SHT : 00 CONT : NIL	


CZST-DRG-002

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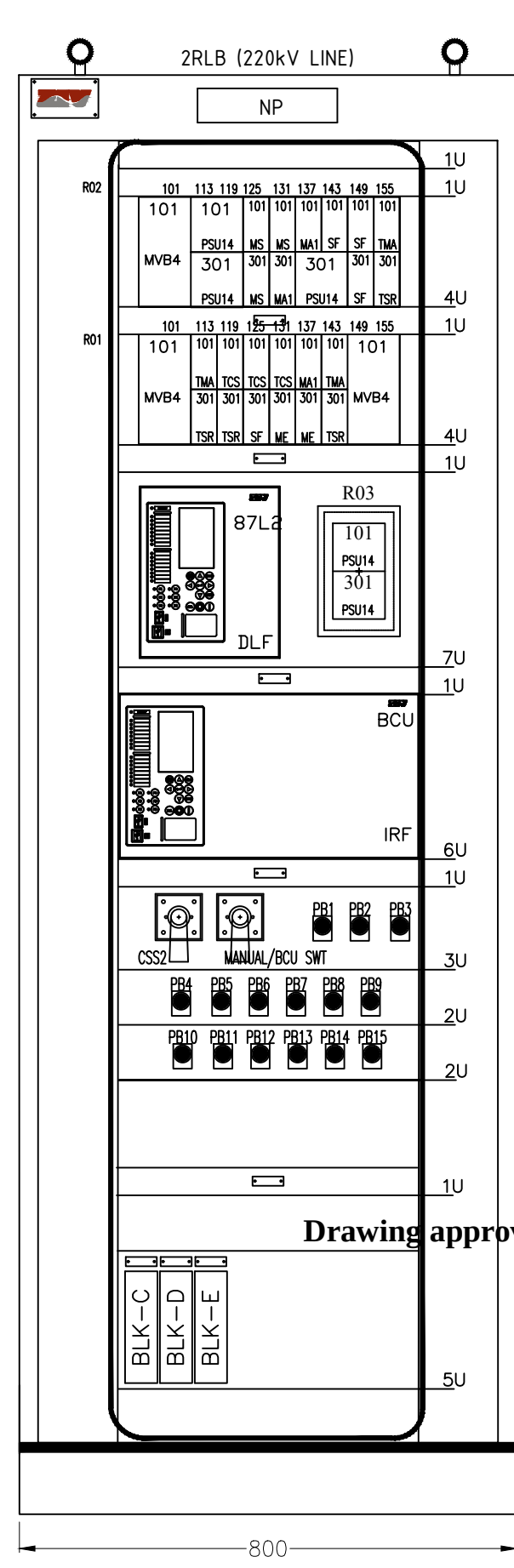
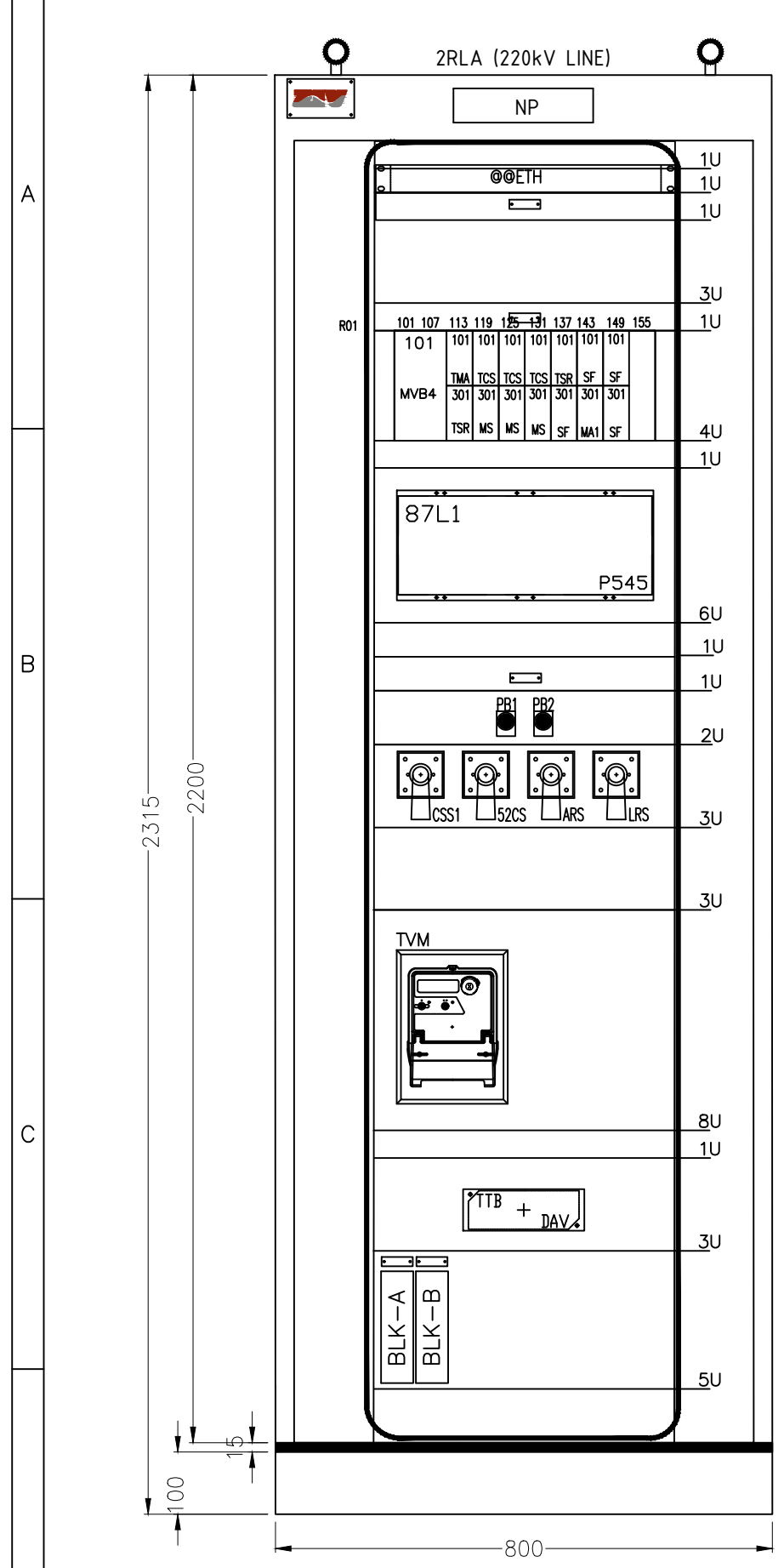
Sht. No:	Description	REV
00	LIST OF DRAWINGS	03
01	FRONT VIEW	03
02	REAR VIEW	03
03	SIDE VIEW AND FOUNDATION PLAN	03
04	CUBICLE DETAILS	03

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NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

03	AS PER CUSTOMER COMMENT	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s.APTRANSCO		TITLE : LIST OF DRAWINGS	PO No:
02	AS PER CUSTOMER COMMENT	29.12.2023	PKS	PK	PK			DOC TYPE : GENERAL ARRANGEMENT	
01	AS PER CUSTOMER COMMENT	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA & 2RLB	REV : 03
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRG	SHT : 00
REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR:		CONTROL AND RELAY PANEL	CONT : 01

CZST-DRG-002



2RLA (220KV LINE)

DEVICE / FUNCTION	LEGEND
MAIN-1 LINE DIFFERENTIAL PROTECTION RELAY	87L1
PUSH BUTTON-1 FOR 87L1 LED RESET	PB1
PUSH BUTTON-2 FOR 86A RELAY RESET	PB2
CARRIER IN/OUT SELECTOR SWITCH FOR MAIN-1	CSS1
BREAKER CONTROL SWITCH	52CS
AUTO RECLOSER SWITCH	ARS
LOCAL REMOTE SWITCH	LRS
TRIVECTOR METER	TVM
TEST TERMINAL BLOCK FOR TVM	TTB
RELAY TEST BLOCK FOR 87L1	BLK-A
RELAY TEST BLOCK FOR 87L1	BLK-B

2RLB (220KV LINE)

DEVICE / FUNCTION	LEGEND
MAIN-2 LINE DIFFERENTIAL PROTECTION RELAY	87L2
BAY CONTROL UNIT	BCU
CARRIER IN/OUT SELECTOR SWITCH FOR MAIN-2	CSS2
MANUAL - BCU CONTROL SWITCH	MANUAL/BCU SWT
PUSH BUTTON-1 FOR 87L2 LED RESET	PB1
PUSH BUTTON-2 FOR 86B RELAY RESET	PB2
PUSH BUTTON-3 FOR 96 RELAY RESET	PB3
PUSH BUTTON-4 FOR 89A ISOL. OPEN CMD	PB4
PUSH BUTTON-5 FOR 89A ISOL. CLOSE CMD	PB5
PUSH BUTTON-6 FOR 89L ISOL. OPEN CMD	PB6
PUSH BUTTON-7 FOR 89L ISOL. CLOSE CMD	PB7
PUSH BUTTON-8 FOR 89B ISOL. OPEN CMD	PB8
PUSH BUTTON-9 FOR 89B ISOL. CLOSE CMD	PB9
PUSH BUTTON-10 FOR 75C RELAY RESET	PB10
PUSH BUTTON-11 FOR LINE CVT SELECT	PB11
PUSH BUTTON-12 FOR 75D RELAY RESET	PB12
PUSH BUTTON-13 FOR BUS PT SELECT	PB13
PUSH BUTTON-14 FOR 75E RELAY RESET	PB14
PUSH BUTTON-15 FOR LINE-CVT SET FOR METERING	PB15
RELAY TEST BLOCK FOR 87L2	BLK-C
RELAY TEST BLOCK FOR 87L2	BLK-D
RELAY TEST BLOCK FOR BCU	BLK-E

2RLA (220KV LINE)

RELAY LOCATION(ANSI)	TYPE
R01.101.101(86A)	RXMVB4
R01.113.101(86AX)	RXTMA1
R01.113.301(95-86A)	TSR-B
R01.119.101(195R)	TCS
R01.125.101(195Y)	TCS
R01.131.101(195B)	TCS
R01.119.301(87L1X-R)	RXMS1
R01.125.301(87L1X-Y)	RXMS1
R01.131.301(87L1X-B)	RXMS1
R01.137.101(80A)	TSR-B
R01.137.301 (COX1)	RXSF
R01.143.101(CR-87L1/87L2)	RXSF
R01.143.301(87L1DTR)	RXMA1
R01.149.101(80CD)	RXSF
R01.149.301(80EF)	RXSF

2RLB (220KV LINE)

RELAY LOCATION(ANSI)	TYPE
R01.101.101(86B)	RXMVB4
R01.113.101(86BX)	RXTMA
R01.113.301(95-86B)	TSR-B
R01.119.101(295R)	TCS
R01.125.101(295Y)	TCS
R01.131.101(295B)	TCS
R01.119.301(80B)	TSR-B
R01.125.301(COX2)	RXSF
R01.131.301(80DCO)	RXME
R01.137.101(52X1)	RXMA1
R01.137.301(52X2)	RXME
R01.143.101(96X)	RXTMA
R01.143.301(95-96)	TSR-B
R01.149.101(96)	RXMVB4

2RLB (220KV LINE)

RELAY LOCATION(ANSI)	TYPE
R02.113.101(75C)	RXPSU14
R02.113.301(75D)	RXPSU14
R02.125.101(87L2X-R)	RXMS1
R02.125.301(87L2X-Y)	RXMS1
R02.131.101(87L2X-B)	RXMS1
R02.131.301(80C)	RXMA1
R02.137.101(87L2DTR)	RXMA1
R02.137.301(75E)	RXPSU14
R02.143.101(80GH)	RXSF
R02.149.101(80IJ)	RXSF
R02.149.301(80KL)	RXSF
R02.101.101(LBB)	RXMVB4
R02.155.101(95-LBB)	RXTMA
R02.155.301(95-LBB)	TSR

2RLB (220KV LINE)

RELAY LOCATION(ANSI)	TYPE
R03.101.101(75A)	RXPSU14
R03.101.301(75B)	RXPSU14

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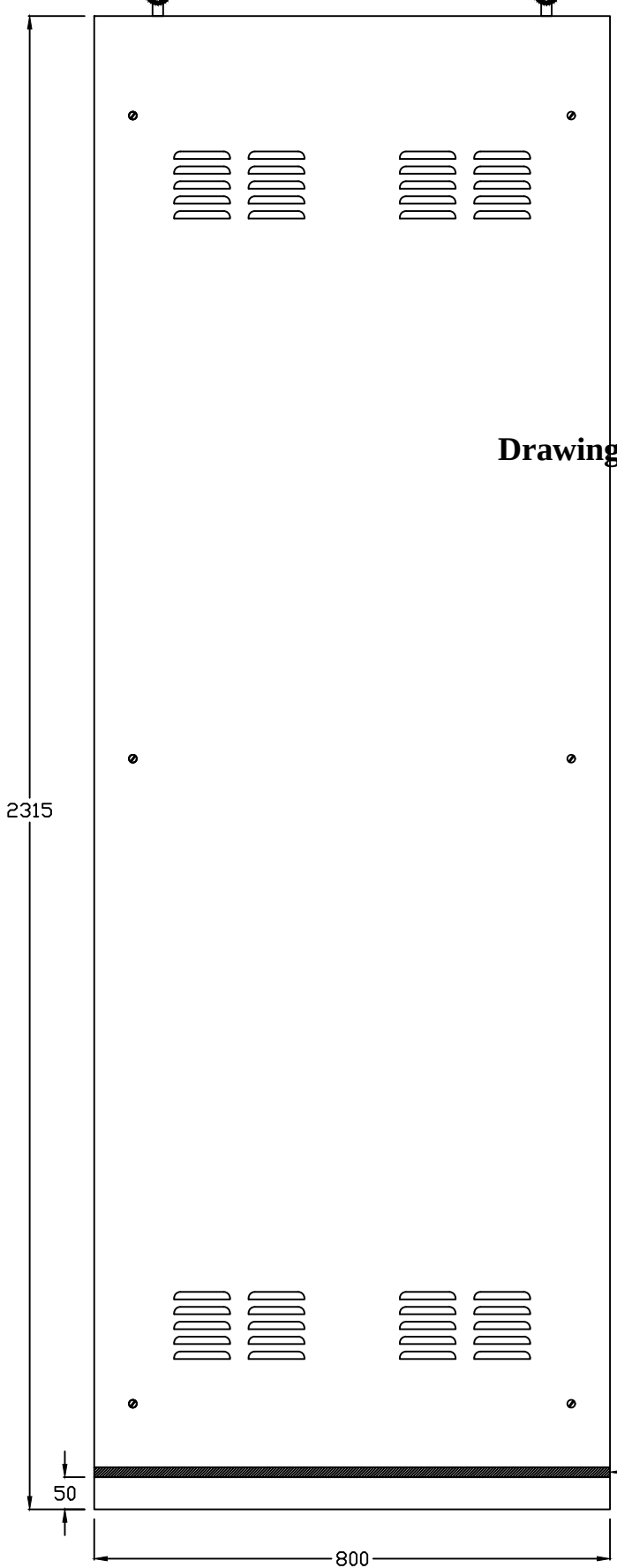
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NOTE:
@@ETH & LIU IS ONLY APPLICABLE FOR
BAYS AS PER SAS ARCHITECTURE

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING. ALL DIMENSIONS ARE IN mm ONLY & TOLERANCE +/-5mm

03	AS PER CUSTOMER COMMENT	02.02.2024	PKS	PK	PK	PROJECT:	ZIV AUTOMATION INDIA	TITLE : FRONT VIEW	PO No:			
02	AS PER CUSTOMER COMMENT	29.12.2023	PKS	PK	PK					CUSTOMER : M/s.APTRANSCO	CKT. NAME : 220KV FEEDER BAY CONTROL AND RELAY PANEL	DOC TYPE : GENERAL ARRANGEMENT
01	AS PER CUSTOMER COMMENT	01.12.2023	RJS	PK	MVG							
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	CONTRACTOR:		DWG No :	SHT : 00			
REV	REMARKS	DATE	DRWN	CHKD	APPD			CZN190523DB-CRG	CONT : 01			


PANEL REFERENCE : 2RLA/2RLB



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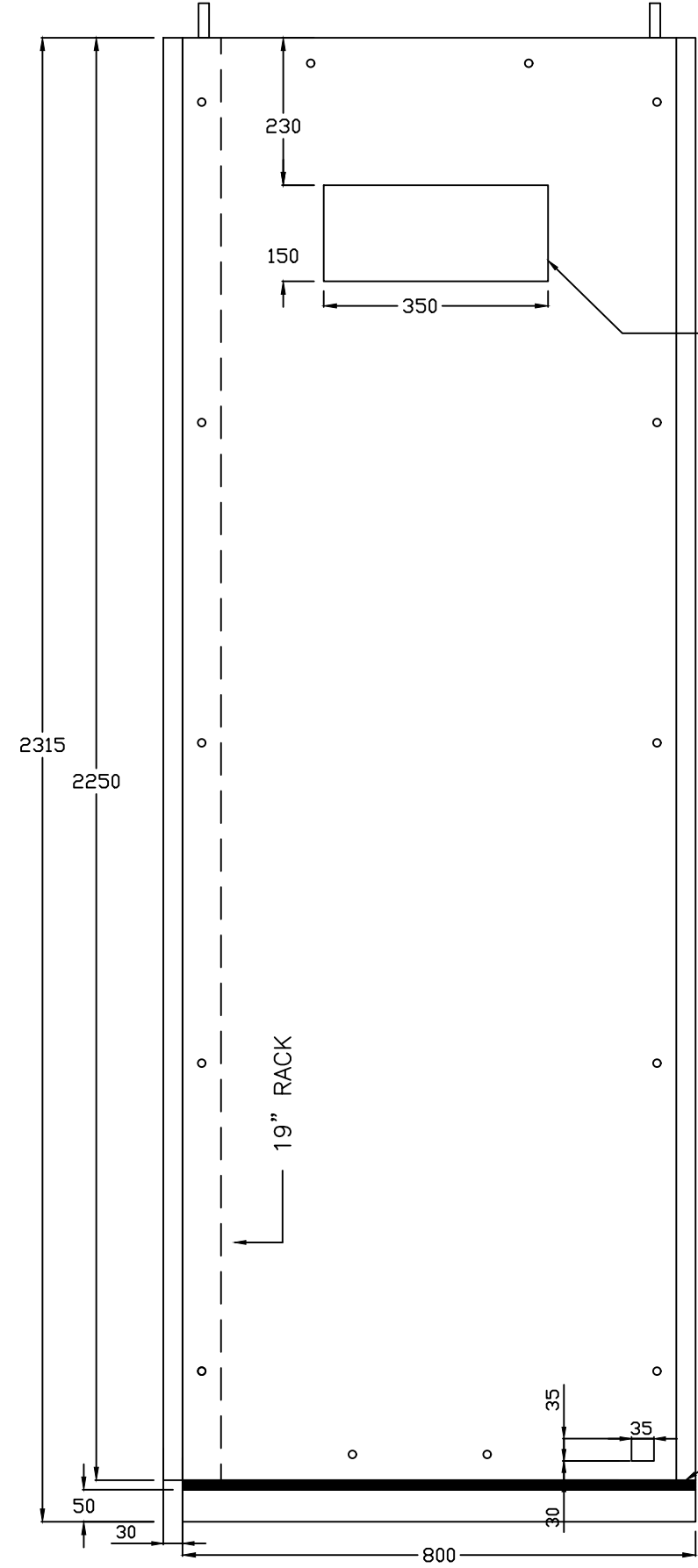
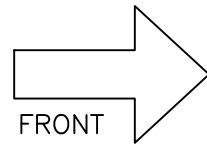
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03	AS PER CUSTOMER COMMENT	02.02.2024	PKS	PK	PK	PROJECT:	 ZIV AUTOMATION INDIA	TITLE : REAR VIEW	PO No:
02	AS PER CUSTOMER COMMENT	29.12.2023	PKS	PK	PK			DOC TYPE : GENERAL ARRANGEMENT	
01	AS PER CUSTOMER COMMENT	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA & 2RLB	REV : 03
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	CUSTOMER : M/s.APTRANSCO	CKT. NAME : 220kV FEEDER BAY CONTROL AND RELAY PANEL	DWG No :	SHT : 02
REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR:		CZN190523DB-CRG	CONT : 03

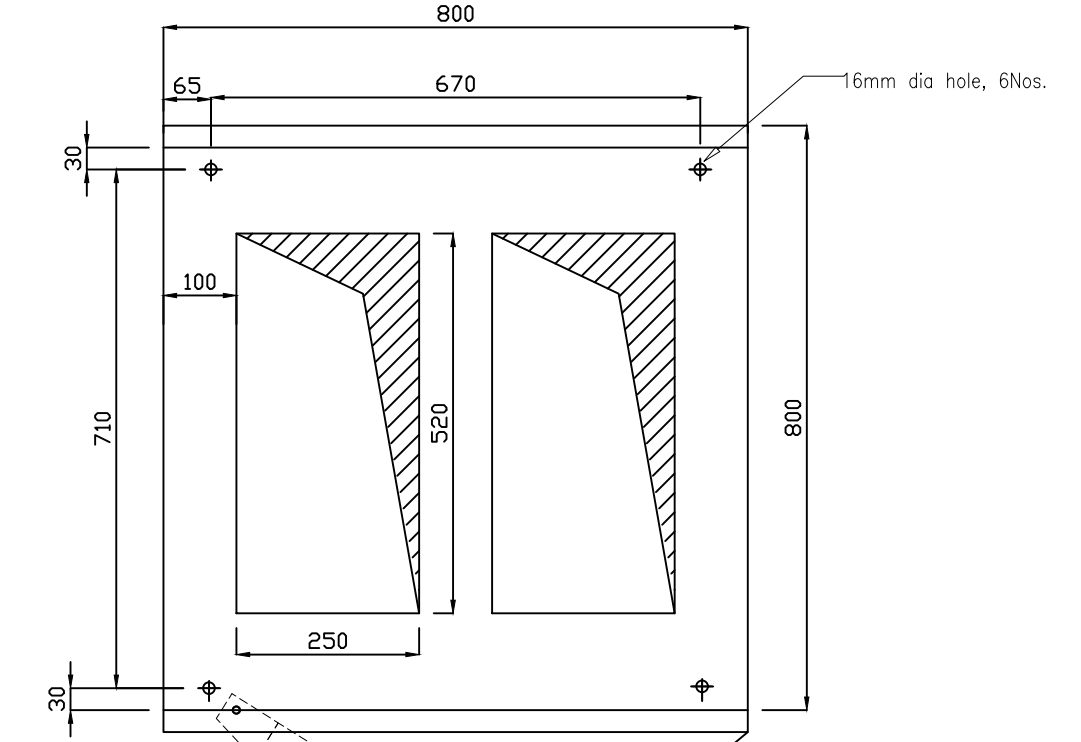
CZST-DRG-002

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BUS WIRE SLOT
(COVERED WITH BLANKING
PLATE AT BOTH END)

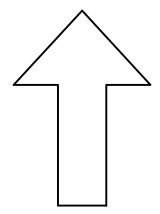
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19" RACK SWING FRAME

FRONT GLASS DOOR

FOUNDATION PLAN



NOTE:
1. ALL DIMENSIONS ARE IN mm ONLY & TOLERANCE +/-5mm

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03	AS PER CUSTOMER COMMENT	02.02.2024	PKS	PK	PK
02	AS PER CUSTOMER COMMENT	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENT	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG
REV	REMARKS	DATE	DRWN	CHKD	APPD

PROJECT:
CUSTOMER : M/s.APTRANSCO
CONTRACTOR:



TITLE : SIDE VIEW & FOUNDATION DETAIL	PO No:
CKT. NAME : 220kV FEEDER BAY CONTROL AND RELAY PANEL	DOC TYPE : GENERAL ARRANGEMENT
	PANEL REF : 2RLA & 2RLB
DWG No : CZN190523DB-CRG	REV : 03
	SHT : 03
	CONT : 04

CZST-DRG-002

CONSTRUCTION

- Cubicle Type : Simplex 19" RACK Swing frame Rack mounting With Front Glass Door
- Cubicle Size : 800(W)x800(D) Excluding Door x 2315(H) (2250(H)+15mm AV PAD+50mm Base Frame)
- Degree of protection : IP42
- Material Used : CRCA
- Earth Bus Bar : 25x6mm Tinned Copper Strip (Extension Possible on either sides through opening provided)
- Material Thickness : 3mm for 19" Rack, Front Panel, Gland plate, Swing Frame, Base frame.
2mm for Side Cover, Top Cover, Blanking Plate, Relay mounting plates & Doors
- Gasket : All doors and removable covers shall be gasket all round with EPDM/PU gaskets

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PAINT

- Paint Thickness : 60 to 80 Micron for powder coated
- Exterior : Light Grey to Shade No.631 as per IS-5,(SEMI GLOSSY)
- Interior : White, (GLOSSY)
- Base Frame : Black Glossy

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LABELS

	DIMENSIONS (mm)	LETTER HEIGHT (mm)	MATERIAL	TYPE OF INSCRIPTION
a. Circuit Label	200 x 60	10	Acrylic/Lamicoid	Laser marking—white letters on black background
b. Apparatus Label (Inside)	25 x 15	3	Aluminium anodised	Laser marking—white letters on black background
c. Apparatus Label (Front)	50 x 15	3	Aluminium anodised	Laser marking—white letters on black background
d. Item Designation Stickers (Inside)	10 x 15	5	Self Adhesive yellow stickers	Black letters
e. Flag Relay Label	30 x 30	2	Aluminium anodised	Laser marking—white letters on black background

WIRING (1100V Grade FRLS Cable)

- DC Circuits : 1.5mm sq.mm multi strand flexible Grey colour, 220V DC Control
- PT Circuits : 2X2.5 sq.mm multi strand flexible Red, Yellow, Blue and Black for phase and neutral identification for TVM and 2.5mm sq.mm for all the circuit except for ABB combiflex relays where it will be 1.5 sqmm.
- CT Circuits : 2.5mm sq.mm multi strand flexible Red, Yellow, Blue and Black for phase and neutral identification
- Earthing Circuit : 2.5mm sq.mm multi strand flexible Green
- 1ph. AC Circuit : 1.5mm sq.mm multi strand flexible White

TERMINAL BLOCKS (20% Spare TB's) – Made of Polyamide material with Captive screws of Non-ferrous material

- Disconnecting Type : CT, PT, DC & AC (Incomming) Circuit
- Non Disconnecting Type : Bus-PT, AC & DC Inter Panel, Earthing, Trip & General Circuit (STUD TYPE)

Ferrules : White Sleeve with Nos. marked in black letters. All the wire connections to the trip circuit breaker shall have RED color ferrule.

- Cubicle Illumination & Heating : 230V AC, 5W LED lamp, 60W Heater,6/16A socket with switch
- Tolerance : Unspecified coarse as per IS : 2102

NOTE :-

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1. PANEL SPECIFICATION DETAILS TO BE CONFIRMED BY THE CUSTOMER

03	AS PER CUSTOMER COMMENT	02.02.2024	PKS	PK	PK	PROJECT:		TITLE : CUBICLE DETAILS	PO No:
02	AS PER CUSTOMER COMMENT	29.12.2023	PKS	PK	PK			DOC TYPE : GENERAL ARRANGEMENT	
01	AS PER CUSTOMER COMMENT	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA & 2RLB	REV : 03
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			CUSTOMER : M/s.APTRANSCO	DWG No : CZN190523DB-CRG
REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR:			

8593241/2024/EEMRT-ENE51

DRG NO. : CZN190523DB-CRB
 REV NO. : 03
 REV DATE : 02.02.2024

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BILL OF MATERIAL FOR
 220kV FEEDER BAY CONTROL AND RELAY PANEL

SL. NO.	LEGENDS	FUNCTION	DESCRIPTION	MAKE	PART CODE	QTY./PANEL
PANEL FRONT MOUNTING COMPONENTS						
	PANEL NAME:	+2RLA	TYPE: SIMPLEX, DIM: 2315(H) (2250(H)+15mm AV PAD+50mm Base Frame) X 800(W) X 800 (EXCLUDING DOOR)(D), MOUNTING: 19" RACK SWING FRAME MOUNTING WITH FRONT GLASS DOOR, EXT. COLOUR : LIGHT GREY TO SHADE No: 631 AS PER IS-5 SEMI GLOSSY, INTERIOR COLOUR : WHITE GLOSSY FINISH,BASE FRAME: BLACK GLOSSY			1
1	-87L1	MAIN-1 LINE DIFF. PROTECTION RELAY	MODEL : MICOMP545 CT SECONDARY : 1/5A, PT SECONDARY : 100-120V AC, 50Hz AUX. SUPPLY : 110-250V DC, (100-240V AC) SIZE : 80TE/12" BINARY INPUT : 24, BINARY OUTPUT : 32 Dual FO Channel For Protn.,(100Mbit/s),IEC61850(PRP). single mode + Courier via rear RS485 port	GE	P54591RC6S0790M	1
2	-52CS	BREAKER CONTROL SWITCH	TYPE : SPRING RETURN HANDLE: PISTOL GRIP BEZEL SIZE: 75 Sq.mm No. OF POSITION: 03 (TRIP, NEUTRAL & CLOSE), No. OF WAYS: 18 (TRIP-10, N-2 & CLOSE-6) SWITCHING ANGLE: 45 DEGREE	SWITRON		1
3	-ARS	AUTO RECLOSUR SWITCH	TYPE : STAYPUT NON-LOCKABLE HANDLE: PISTOL GRIP BEZEL SIZE: 75 Sq.mm No. OF POSITION: 02 (IN & OUT), No. OF WAYS: 6 (IN-3 & OUT-3) SWITCHING ANGLE: 90 DEGREE SWITRON	SWITRON	INSWS1400-206	1
4	-ACMCB	AC MCB	DOUBLE POLE MCB, TYPE: AC SERIES RATING: 16A	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2603-216	1
5	-ACMCB,-DCMCB-1,-DCMCB-2,-DCMCB-3,-DCMCB-4,-DCMCB-5,-DCMCB-6	MCB AUX CONTACT	1NO+1NC	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2604-011	7
6	-BLK-A,-BLK-B	RELAY TEST BLOCK FOR 87L RELAY & 1-PH AUX RELAY,86A,86B RLEAY	STANDARD RTB TEST BLOCK	DAV / NELSTER / GardenPowerTech		2
7	-CIL	CUBICAL ILLUMINATION LAMP	LED TYPE, SUPPLY VOLTAGE:240V AC Rating: 5W,	HAVELLS/SPECTRUM/PHIL IPS	INLED1700-001	1
8	-ETH	ETHERNET SWITCH	TYPE:3SWT POWER SUPPLY :Isolated 80-260VAC@47-63Hz / 80-360VDC SIZE :1U x 19" 1 Rack 12 No.FO Port ,and 4 No. Gigabit ports	ZIV/Hirschmann	3SWT-MR0011M300AM	1
9	-CSS1	CARRIER SELECTOR SWITCH FOR 87L-1 RELAY	TYPE : STAYPUT LOCKABLE & KEY REMOVAL IN "OUT" POSITION HANDLE: PISTOL GRIP BEZEL SIZE: 75 Sq.mm No. OF POSITION: 02 (IN & OUT), No. OF WAYS: 6 (IN-3 & OUT-3) SWITCHING ANGLE: 45 DEGREE	SWITRON	INSWS1400-206	1
10	-DCMCB-1	DCMCB FOR MAIN SOURCE -1	DOUBLE POLE MCB, TYPE: DC SERIES RATING: 16A	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2602-016	1
11	-DCMCB-2,-DCMCB-4,-DCMCB-5,-DCMCB-6	DCMCB FOR CONTROL CIRCUIT	DOUBLE POLE MCB, TYPE: DC SERIES RATING: 4A	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2602-004	4

PROJECT NAME :
 CUSTOMER : M/s.APTRANSCO
 CONTRACTOR :

SHEET : 1 / 6

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8593241/2024/EEMRT-ENE51

DRG NO. : CZN190523DB-CRB

REV NO. : 03

REV DATE : 02.02.2024

BILL OF MATERIAL FOR 220kV FEEDER BAY CONTROL AND RELAY PANEL

SL. NO.	LEGENDS	FUNCTION	DESCRIPTION	MAKE	PART CODE	QTY./PANEL
12	-DCMCB-3	DCMCB FOR CONTROL CIRCUIT	DOUBLE POLE MCB, TYPE: DC SERIES RATING: 10A	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2602-010	1
13	-DS	DOOR LIMIT SWITCH	SUPPLY VOLTAGE: 240V AC CURRENT RATING : 0.25A, TYPE : ON/OFF, SINGLE POLE	ELMECO / JAINSON	INSWD1400-002	1
14	-FS115,-FS135,-FS155,-FS4E113,-FS4E133,-FS4E153	FUSE	RATING: 2A	EATON	INFSL2300-002	6
15	-FS115,-FS135,-FS155,-FS4E113,-FS4E133,-FS4E153,-LK1,-LK2,-LK175,-LK273	FUSE BASE AND LINK	Base for Fuse and Link Rating 2A	EATON	INFBS2300-001	10
16	-HS	HEATER SWITCH	ROTARY SWITCH SUPPLY VOLTAGE: 240V AC CURRENT RATING : 5A, TYPE : ON/OFF, SINGLE POLE	SWITRON	INSWT1400-006	1
17	-HT	HEATER	Space heater SUPPLY VOLTAGE: 240V AC RATING: 60W	SURYA/GIRESH EGO	INHET1500-002	1
18	-LK1,-LK2,-LK175,-LK4E173	LINK	NEUTRAL LINK	EATON	INNEL2300-001	4
19	-PS	POWER SOCKET	Universal Socket (Box type) With switch Rating:5A/ 15A 240V AC	Anchor/KONA	INSCK1800-001	1
20	-80A	MAIN DC-1 SUPERVISION RELAY	TYPE :ABB-TSR-B AUX. SUPPLY : 110/220V DC SIZE : 2S,6C CONTACTS : 1NO+2NC (SELF RESET CONTACTS)	ABB/EQUIVALENT	1MYN569339-A	1
21	-86A	GROUP-A 86A MASTER TRIP RELAY	TYPE : ABB-RXMVB4 AUX. SUPPLY : 48V DC SIZE : 4S,12C CONTACTS : 11NO+3NC (HAND & ELECTRICAL RESET CONTACTS)	ABB/EQUIVALENT	RK251900XR(403AH)	1
22	-86AR	RESISTOR UNIT FOR GR-A	TYPE : ABB-RXTMA1 AUX. SUPPLY : 220/250V DC SIZE : 2S,6C 4x390 OHMS, 5W RESISTOR	ABB/EQUIVALENT	INRK711004-AM	1
23	-95-86A	SUPERVISION RELAY FOR GR-A	TYPE :ABB-TSR-B AUX. SUPPLY : 110/220V DC SIZE : 2S,6C CONTACTS : 1NO+2NC (SELF RESET CONTACTS)	ABB/EQUIVALENT	1MYN569339-A	1
24	-195B,195R,195Y	TRIP COIL -01 SUPERVISION RELAY	TYPE :ABB-RXTCS AUX. SUPPLY : 220-250V DC SIZE : 2S,6C CONTACTS : 1NO+1NC+2CO (SELF RESET CONTACTS)	ABB/EQUIVALENT	1MYN569698-G	3
25	-PB1,-PB2	MASTER TRIP RELAY RESET & RELAY LED RESET	TYPE : FLUSH COLOUR : BLACK CUTOUT: 22.5mm DIA CONTACTS : 3NO	SECO/INQORE	INPSB2000-003	2
26	-TH	THERMOSTAT	SUPPLY VOLTAGE: 240V AC SETTING: 30-80 DEGREE	TEMPROL / GIRESH EGO	INTHS1600-002	1
27	-TTB	TEST TERMINAL BLOCK FOR TVM	3 PHASE 4 WIRE COMPACT, BACK CONNECTED TYPE	DAV / NELSTER/GREENPOWER TECH	INTTB2700-001	1

PROJECT NAME :
CUSTOMER : M/s.APTRANSCO
CONTRACTOR :

SHEET : 2 / 6

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8593241/2024/EEMRT-ENE51

DRG NO. : CZN190523DB-CRB
 REV NO. : 03
 REV DATE : 02.02.2024

BILL OF MATERIAL FOR
 220kV FEEDER BAY CONTROL AND RELAY PANEL

SL. NO.	LEGENDS	FUNCTION	DESCRIPTION	MAKE	PART CODE	QTY./PANEL
28	-TVM	TRIVECTOR METER	TYPE:PROGRAMABLE TIME BLOCK CTR : 1600-800-500/1A, PTR : 220kV/110VAC,50Hz 3 PHASE 4 WIRE 3 ELEMENT,SELF POWERED TYPE CLASS : 0.2s; WITH ABT,DLMS ICS COMPLIANT WITH RS485 COMMUNICATION PORT & 5/15min INTEGRATION PERIOD,	L&T	CZN155919-001	1
29	-52-X04,-89-X04,-FOTE,-X04,-X07,-X08,-X14	TERMINAL BLOCKS	TYPE:NON-DISCONNECTING STUD TYPE MATERIAL: POLYIMIDE NON FERROUS MODEL: KABT M3 / CSB3/N3	ELMEX/CONNECTWELL	INTBS1900-102	AS PER SCHEME REQ.
30	-L/R SWT	LOCAL REMOTE SWITCH	INSWS1400-206 LOCAL REMOTE SWITCH TYPE : STAYPUT NON-LOCAKBLE HANDLE: PISTOL GRIP BEZEL SIZE: 75 Sq.mm No. OF POSITION: 02 (IN & OUT), No. OF WAYS: 6 (IN-3 & OUT-3) SWITCHING ANGLE: 90 DEGREE	SWITRON	INSWS1400-206	1
31	-X01,-X03 AC,-X03 DC,-X12A,-X13 AC,-X13 DC,-X13A	TERMINAL BLOCKS	TYPE:DISCONNECTING MATERIAL: POLYIMIDE NON FERROUS MODEL: KLTD4/CBDT4U	ELMEX/CONNECTWELL	INTBS1900-002	AS PER SCHEME REQ.

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DRG NO. : CZN190523DB-CRB
 REV NO. : 03
 REV DATE : 02.02.2024

Drawing approval subject to valid Vendor Registration and for EPC works only

BILL OF MATERIAL FOR
 220kV FEEDER BAY CONTROL AND RELAY PANEL

SL. NO.	LEGENDS	FUNCTION	DESCRIPTION	MAKE	PART CODE	QTY./PANEL
	PANEL NAME:	+2RLB	TYPE: SIMPLEX, DIM: 2315(H) (2250(H)+15mm AV PAD+50mm Base Frame) X 800(W) X 800 (EXCLUDING DOOR)(D), MOUNTING: 19" RACK SWING FRAME MOUNTING WITH FRONT GLASS DOOR, EXT. COLOUR : LIGHT GREY TO SHADE No: 631 AS PER IS-5 SEMI GLOSSY, INTERIOR COLOUR : WHITE GLOSSY FINISH,BASE FRAME: BLACK GLOSSY		CZN172222-001	1
31	-87L2	MAIN-2 LINE DIFF.PROTECTION RELAY	MODEL : DLF CT SECONDARY : 1A, PT SECONDARY : 100-120Vac, 50Hz AUX. SUPPLY :110-250 Vdc (100-240 Vac) SIZE : 80TE CASE 4CT, 4VT, 38DI + 26DO Communication Interfaces: IEC 61850 100BASE-Multimode DUAL FOC Channel ST Connector FOR PROTN.SINGLE MODE	ZIV	DLF-38DI26DOHAS	1
32	-BCU	BAY CONTROL UNIT	IRF MULTIFUNCTION RELAY TYPE:IRF CT SECONDARY:1A, PT SECONDARY:110V AC, 50Hz AUX.SUPPLY:220V DC SIZE:6Ux19" 1 Rack 112DI+49DO+1 Alarm Output+10 Input Transducers (4-20mA) Communication Interfaces:IEC 61850, Edition-1 Two 100BASE-Multimode FOC ST Connector	ZIV	IRF	1
33	-ACMCB	AC MCB	DOUBLE POLE MCB, TYPE: AC SERIES RATING: 16A	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2603-216	1
34	-ACMCB,-DCMCB-11,-DCMCB-12,-DCMCB-13,-DCMCB-14,-DCMCB15,-DCMCB16,-DCMCB17,-DCMCB18,-DCMCB19,-DCMCB20,-DCMCB21	MCB AUX CONTACT	1NO+1NC	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2604-011	12
35	-BLK-C,-BLK-D,-BLK-E	RELAY TEST BLOCK FOR 87L2 & 1-PH TRIP AUX RELAY,86A,86B& BCU RELAY	STANDARD RTB TEST BLOCK	DAV / NELSTER / GardenPowerTech		3
36	-CIL	CUBICAL ILLUMINATION LAMP	LED TYPE, SUPPLY VOLTAGE:240V AC Rating: 5W,	HAVELLS/SPECTRUM/PHIL IPS	INLED1700-001	1
37	-CSS2	CARRIER SELECTOR SWITCH FOR MAIN-2 CIRCUIT	TYPE : STAYPUT LOCKABLE & KEY REMOVAL IN "OUT" POSITION HANDLE: PISTOL GRIP BEZEL SIZE: 75 Sq.mm No. OF POSITION: 02 (IN & OUT), No. OF WAYS: 6 (IN-3 & OUT-3) SWITCHING ANGLE: 45 DEGREE	SWITRON	INSWS1400-207	1
38	-DCMCB-11	DCMCB FOR MAIN SOURCE -2	DOUBLE POLE MCB, TYPE: DC SERIES RATING: 16A	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2602-016	1
39	DCMCB-12,-DCMCB-14,DCMCB-13,DCMCB-15,-DCMCB-18,-DCMCB-19,-DCMCB-21,DCMCB-22	DCMCB FOR CONTROL CIRCUIT	DOUBLE POLE MCB, TYPE: DC SERIES RATING: 4A	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2602-004	8
40	-DCMCB-16,-DCMCB-17,-DCMCB-20	DCMCB FOR CONTROL CIRCUIT	DOUBLE POLE MCB, TYPE: DC SERIES RATING: 10A	EATON/SIEMENS/ABB/SC HNEIDER	INMCB2602-010	3
41	-DS	DOOR LIMIT SWITCH	SUPPLY VOLTAGE: 240V AC CURRENT RATING : 0.25A, TYPE : ON/OFF, SINGLE POLE	ELMECO / JAINSON	INSWD1400-002	1
42	-FS113A,-FS133A,-FS15A3,-FS4E213,-FS4E233,-FS4E253	FUSE	RATING: 2A	EATON	INFSL2300-002	6
43	-FS113A,-FS133A,-FS153A,-FS4E213,-FS4E233,-FS4E253-LK1,-LK2,-LK173A,-LK175B,-LK4E273	FUSE & LINK	Base for Fuse and Link Rating 2A	EATON	INFSB2300-001	11

PROJECT NAME :
 CUSTOMER : M/s.APTRANSCO
 CONTRACTOR :

SHEET : 4 / 6


 ZIV AUTOMATION INDIA

Chief Engineer
 Projects

8593241/2024/EEMRT-ENE51

DRG NO. : CZN190523DB-CRB
 REV NO. : 03
 REV DATE : 02.02.2024

Drawing approval subject to valid Vendor Registration and for EPC works only

BILL OF MATERIAL FOR
 220kV FEEDER BAY CONTROL AND RELAY PANEL

SL. NO.	LEGENDS	FUNCTION	DESCRIPTION	MAKE	PART CODE	QTY./PANEL
44	-HS	HEATER SWITCH	ROTARY SWITCH SUPPLY VOLTAGE: 240V AC CURRENT RATING : 5A, TYPE : ON/OFF, SINGLE POLE	SWITRON	INSWT1400-006	1
45	-HT	HEATER	Space heater SUPPLY VOLTAGE: 240V AC RATING: 60W	SURYA/GIRESH EGO	INHET1500-002	1
46	-LK1,-LK2,-LK173A,-LK175B,-LK4E273	LINK	NEUTRAL LINK	EATON	INNEL2300-001	5
47	-PS	POWER SOCKET	Universal Socket (Box type) With switch Rating:5A/ 15A 240V AC	Anchor/KONA	INSCK1800-001	1
48	-80B	MAIN DC-2 SUPERVISION RELAY	TYPE :ABB-TSR-B AUX. SUPPLY : 110/220V DC SIZE : 2S,6C CONTACTS : 1NO+2NC (SELF RESET CONTACTS)	ABB/EQUIVALENT	1MYN569339-A	1
49	-86B,-96,-LBB	GROUP-B 86B MASTER TRIP RELAY & 96 BB/LBB TRIP REALY	TYPE : ABB-RXMVB4 AUX. SUPPLY : 48V DC SIZE : 4S,12C CONTACTS : 11NO+3NC (HAND & ELECTRICAL RESET CONTACTS)	ABB/EQUIVALENT	RK251900XR(403AH)	3
50	-86BR,-96R	RESISTOR UNIT FOR 86B & 96	TYPE : ABB-RXTMA1 AUX. SUPPLY : 220/250V DC SIZE : 2S,6C 4x390 OHMS, 5W RESISTOR	ABB/EQUIVALENT	INRK711004-AM	2
51	-95-86B,-95-96	SUPERVISION RELAY FOR 86B & 96	TYPE :ABB-TSR-B AUX. SUPPLY : 110/220V DC SIZE : 2S,6C CONTACTS : 1NO+2NC (SELF RESET CONTACTS)	ABB/EQUIVALENT	1MYN569339-A	2
52	-295B,-295R,-295Y	TRIP COIL -02 SUPERVISION RELAY	TYPE :ABB-RXTCS AUX. SUPPLY : 220-250V DC SIZE : 2S,6C CONTACTS : 1NO+1NC+2CO (SELF RESET CONTACTS)	ABB/EQUIVALENT	1MYN569698-G	3
53	-75A,-75B,-75C,-75D,-75E	BUS PT SELECTION RELAYS	TYPE :ABB-RXPSU14 AUX. SUPPLY : 220V DC SIZE :2S,12C CONTACTS : 12NO+2NC (ELECTRICAL RESET CONTACTS)	ABB/EQUIVALENT	1MYN563646-EAV	2
54	-PB1,-PB2,-PB3,-PB4,-PB5,-PB6,-PB7,-PB8,- PB9,-PB10,-PB11,-PB12,-PB13,-PB14,-PB15	MASTER TRIP RELAY RESET & RELAY LED RESET & ISOLATOR COMMAND,AND VT SELECTION SET/RESET	TYPE : FLUSH COLOUR : BLACK CUTOUT: 22.5mm DIA CONTACTS : 3NO	SECO/INQORE	INPSB2000-003	15
55	-TH	THERMOSTAT	SUPPLY VOLTAGE: 240V AC SETTING: 30-80 DEGREE	TEMPROL / GIRESH EGO	INTHS1600-002	1
56	-52-X04,-FOTE,-X04,-X07,-X14	TERMINAL BLOCKS	TYPE:NON-DISCONNECTING STUD TYPE MATERIAL: POLYIMIDE NON FERROUS MODEL: KABT M3 / CSB3/N3	ELMEX/CONNECTWELL	INTBS1900-102	AS PER SCHEME REQ.
57	-52X1	CB MANUAL/REMOTE TRIP RELAY	TYPE : STAYPUT NON-LOCAKBLE HANDLE: PISTOL GRIP BEZEL SIZE: 75 Sq.mm No. OF POSITION: 02 (IN & OUT), No. OF WAYS: 6 (IN-3 & OUT-3) SWITCHING ANGLE: 90 DEGREE	SWITRON	INTBS1400-206	1
58	-K1,-K2,-K3,-K4,-K5,-K6	AUXILARY CONTACT FOR CONTRIOL CIRCUIT	3RH2140-1BM40 CONTACTOR TYPE : 3RH SERIES AUX. SUPPLY : 220V DC DIN RAIL MOUNTABLE CONTACTS : 4NO	SIEMENS	3RH2140-1BM40	6

PROJECT NAME :
 CUSTOMER : M/s.APTRANSCO
 CONTRACTOR :

SHEET : 5 / 6

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 ZIV AUTOMATION INDIA

8593241/2024/EEMRT-ENE51

DRG NO. : CZN190523DB-CRB
 REV NO. : 03
 REV DATE : 02.02.2024

BILL OF MATERIAL FOR
 220kV FEEDER BAY CONTROL AND RELAY PANEL

SL. NO.	LEGENDS	FUNCTION	DESCRIPTION	MAKE	PART CODE	QTY./PANEL
59	-80CO	DC CHANGEOVER ELAY	TYPE :ABB-RXME1 AUX. SUPPLY : 220-250V DC SIZE :2S,6C CONTACTS :2NO+2NC (SELF RESET CONTACTS)	ABB/EQUIVALENT	RK221052-AS	1
60	-52CX3,-52CX4	CONTACTOR FOR CB MANUAL CLOSE AND CB AUTO RECLOSE	CONTACTOR TYPE : 3RH SERIES AUX. SUPPLY : 220V DC DIN RAIL MOUNTABLE CONTACTS : 4NO	SIEMENS	3RH2140-1BM40	2
61	-X01,-X02,-X02A,-X02B,-X03 DC,-X03B DC,-X12A,-X13 AC,-X13 DC	TERMINAL BLOCKS	TYPE:DISCONNECTING MATERIAL: POLYIMIDE NON FERROUS MODEL: KLTD4/CBTD4U	ELMEX/CONNECTWELL	INTBS1900-002	AS PER SCHEME REQ.

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8593241/2024/EEMPT-ENES Drawing approval subject to valid Vendor Registration and for EPC works only

Sht. No:	Description	REV
1	INDEX SHEET	03
2	LEGENDS	03
3	SINGLE LINE DIAGRAM	03
4	CT & PT RATIO DETAILS	03
5	TRIP MATRIX	03
6	220KV BUS-1 PT CIRCUIT	03
7	220KV BUS PT-2 CIRCUIT	03
8	220KV LINE CVT CORE	03
9	BCU RELAY MASTER SHEET	03
10	BCU RELAY MASTER SHEET	03
11	87L1 RELAY MASTER SHEET	03
12	87L2 RELAY MASTER SHEET	03
13	DC DISTERIBUTION CIRCUIT	03
14	DC DISTRIBUTION CIRCUIT	03
15	AC DISTRIBUTION CIRCUIT	03
16	BUS PT SELECTION CIRCUIT CIRCUIT	03
17	BUS PT SELECTION CIRCUIT	03
18	BUS PT/ LINE VT SELECTION CIRCUIT	03
19	PT SELECTION CIRCUIT	03
20	BUTPT/LINE PT SELECTION CIRCUIT	03
21	BUS PT/ LINE PT SELECTION CIRCUIT	03
22	PT SELECTION CIRCUIT	03
23	MAIN-1 (87L1) PROTECTION RELAY CIRCUIT	03
24	MAIN-1 (87L1) PROTECTION DI CIRCUIT	03
25	MAIN-1 (87L1) PROTECTION DI CIRCUIT	03
26	MAIN-1 (87L1) PROTECTION DI CIRCUIT	03
27	MAIN-1 (87L1) PROTECTION R-PHASE TRIP RELAY	03
28	MAIN-1 (87L1) PROTECTION Y-PHASE TRIP RELAY	03
29	MAIN-1 (87L1) PROTECTION B-PHASE TRIP RELAY	03
30	MAIN-1 (87L1) PROTECTION CARRIER CIRCUIT	03
31	DIRECT TRIP SEND CH-1 CIRCUIT	03
32	DIRECT TRIP RECEIVE CH-1	03
33	CARRIER CMR CIRCUIT	03
34	MAIN-2 (87L2) PROTN. RELAY CIRCUIT	03
35	MAIN-2 (87L2) PROTN. DI CIRCUIT	03
36	MAIN-2 (87L2) PROTN. DI & DO CIRCUIT	03
37	MAIN-2 (87L2) PROTN. DI&SPARE CIRCUIT	03

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Sht. No:	Description	REV
38	MAIN-2 (87L2) PROTN. R-PHASE TRIP RELAY	03
39	MAIN-2 (87L2) PROTN. Y-PHASE TRIP RELAY	03
40	MAIN-2 (87L2) PROTN. B-PHASE TRIP RELAY	03
41	MAIN-2 (87L2) PROTN. CARRIER CIRCUIT	03
42	DIRECT TRIP SEND CH-2 CIRCUIT	03
43	DIRECT TRIP RECEIVE CH-2	03
44	GROUP-A TRIP RELAY CIRCUIT	03
45	GROUP-B TRIP RELAY CIRCUIT	03
46	LBB TRIP RELAY CIRCUIT	03
47	CB TC-1 TRIPPING CIRCUIT	03
48	CB TC-1 TRIPPING CIRCUIT	03
49	CB TC-2 TRIPPING CIRCUIT	03
50	CB TC-2 TRIPPING CIRCUIT	03
51	CB CLOSING CIRCUIT	03
52	BCU CT/PT CIRCUIT	03
53	BAY CONTROL UNIT DI CIRCUIT	03
54	BAY CONTROL UNIT DI CIRCUIT	03
55	BAY CONTROL UNIT DI CIRCUIT	03
56	BAY CONTROL UNIT DI CIRCUIT	03
57	BAY CONTROL UNIT DI CIRCUIT	03
58	BAY CONTROL UNIT DI CIRCUIT	03
59	BCU CONTROL UNIT LOGIC CIRCUIT	03
60	BAY CONTROL UNIT DO CIRCUIT	03
61	METERING CIRCUIT	03
62	CB MANUAL TRIPPING AUX. RELAY CIRCUIT	03
63	CB MANUAL CLOSING & A/R AUX. RELAY CIRCUIT	03
64	89A & 89L ISOLATOR INTERLOCK CIRCUIT	03
65	89B ISOLATOR INTERLOCK CIRCUIT	03
66	ISOLATOR CONTROL CIRCUIT	03
67	BUSBAR PROTN. RELAY DI CIRCUIT	03
68	BUBAR TRIP RELAY CIRCUIT	03
69	SWITCH AND TEST BLOCK CONTACT DISTRIBUTION CKT	03
70	TEST BLOCK CONTACT DISTRIBUTION CIRCUIT	03
71	BCU INTERLOCK LOGIC CIRCUIT	03
72	BCU INTERLOCK LOGIC CIRCUIT	03
73	AUTO RECLOSE LOGIC CIRCUIT FOR MAIN-1	03
74	AUTO RECLOSE LOGIC CIRCUIT FOR MAIN-2	03
75	DISTURBENCE RECORDER MAIN-1/87L1	03
76	DISTURBENCE RECORDER MAIN-2/87L2	03
77	EVENTS LOGGER	03

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : INDEX SHEET	PO No :
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 1
REV	REMARKS	DATE	DRWN	CHKD	APPD			CONT : 2

8593241/2024/EEMRT-ENE51

SYMBOLS	DESCRIPTOIN	TERMINAL STRIP	DESCRIPTOIN
	CT TERMINATIONS	X01	CT CIRCUITS
	PT TERMINATIONS	X02	PT CIRCUITS
	CB TERMINATIONS	X03	AC & DC CIRCUITS
	ISOLATOR TERMINATIONS	X04	PROTECTION CIRCUITS
	BAY MARSHALLING BOX TERMINATIONS	X05, X06	CB, ISO & E/S CONTROL CIRCUITS
	DISCONNECTING TERMINAL BLOCK	X07	SPARE
	C & R PANEL TERMINAL BLOCK	X08	TRANSDUCER/DAS/OTHER CIRCUIT
	OTHER SUPPLIER'S PANEL TB	X11	INTER PANEL CT WIRING
		X12	INTER PANEL PT WIRING
		X14	ADJ. PANEL WIRING
		X15	INTER PANEL AC & DC WIRING, PROTN. CIRCUITS
			INTER PANEL CB, ISO & E/S CONTROL CIRCUITS
			INTER PANEL PROTN. CIRCUITS
			INTER PANEL WIRING BETWEEN RP & CP.

SYMBOL LIST

	MCB
	FUSE
	LINK
	RELAY COIL
	PUSH BUTTON ON CONTACT
	NO CONTACT
	NC CONTACT
	CURRENT TRANSFORMER

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REFERENCE DRAWINGS.

EQUIPMENTS	DRAWING NO.
ISOLATOR	PPSPL-BC-SD-202-A4-08
EARTH SWITCH	**
CIRCUIT BREAKER	EH4-6731-00, REV: 00
SINGLE LINE DIAGRAM	DTPL/BC/APT/UPP 02, REV: 00
CT JUNCTION BOX	BIND3335-200K2, REV: 01
CVT JUNCTION BOX	3-VAD 3389, REV: 00
DCDB DETAILS	**

FERRULE NUMBERING STANDARDS

- FERRULE - "A" : CT CIRCUIT - MAIN PROTECTION
- FERRULE - "B" : CT CIRCUIT - BUSBAR PROTECTION
- FERRULE - "C" : CT CIRCUIT - BACKUP PROTECTION
- FERRULE - "D" : CT CIRCUIT - METERING
- FERRULE - "E" : VT CIRCUIT - PROTECTION/METERING
- FERRULE - "G" : VT CIRCUIT - SYNCHRONISING
- FERRULE - "H" : AUXILIARY AC CIRCUIT
- FERRULE - "J" : AUXILIARY DC CIRCUIT
- FERRULE - "K" : CONTROL CIRCUITS
- FERRULE - "L" : INDICATION & ALARM CIRCUITS
- FERRULE - "P" : DC CIRCUIT - BUSBAR PROTECTION CIRCUITS
- FERRULE - "S" : EVENT LOGGER/DAS/SCADA/BCU CIRCUITS
- FERRULE - "U" : SPARE CONTACTS

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NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO		TITLE : LEGENDS	PO No :	
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK				DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG				PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG				DWG No : CZN190523DB-CRS	SHT : 2
REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR :	CONT : 3		

220kV MAIN BUS-2

BUS ISO. 89A

BUS ISO. 89B

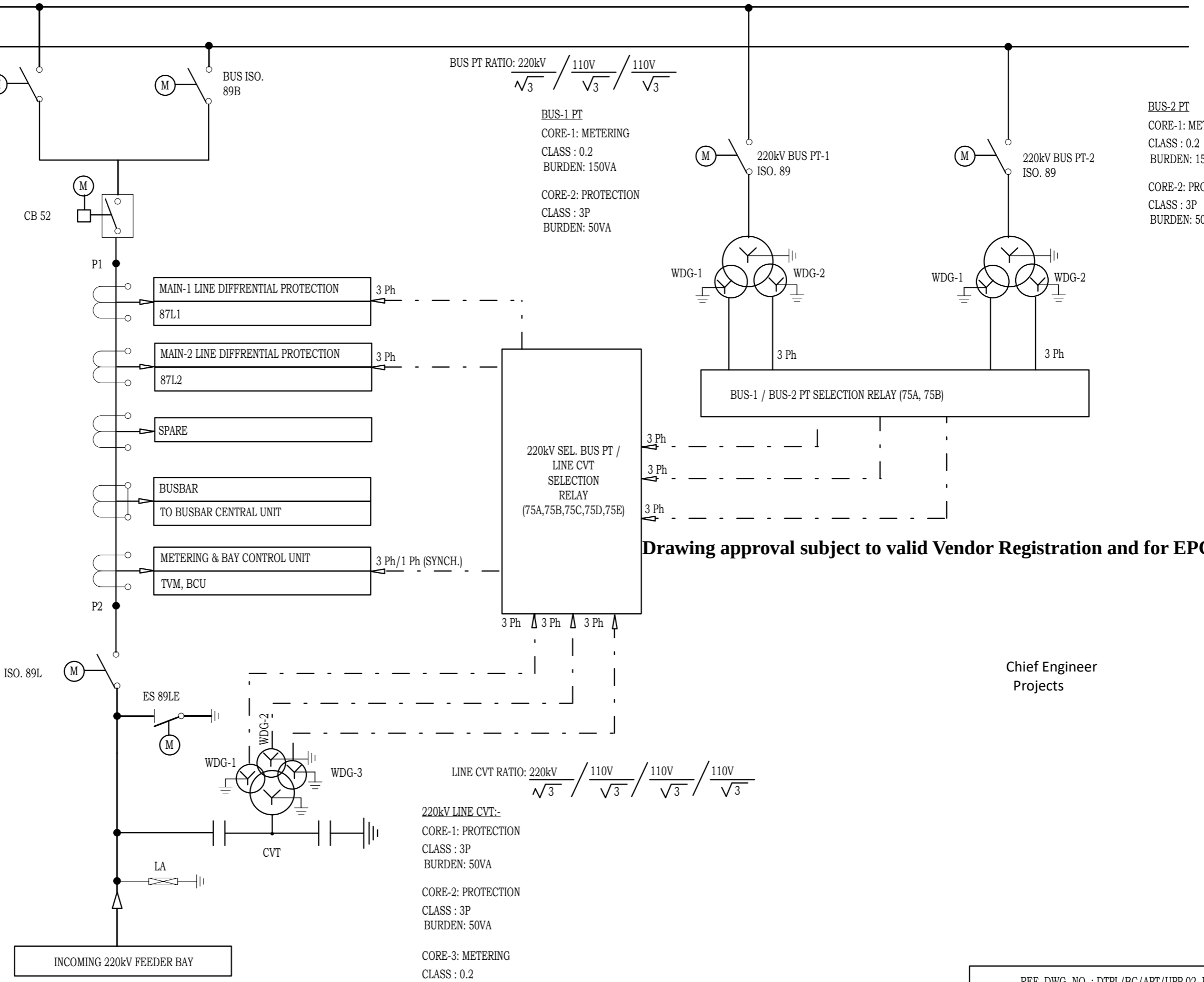
BUS PT RATIO: $\frac{220kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$

BUS-1 PT
 CORE-1: METERING
 CLASS : 0.2
 BURDEN: 150VA
 CORE-2: PROTECTION
 CLASS : 3P
 BURDEN: 50VA

BUS-2 PT
 CORE-1: METERING
 CLASS : 0.2
 BURDEN: 150VA
 CORE-2: PROTECTION
 CLASS : 3P
 BURDEN: 50VA

220kV CURRENT TRANSFORMER:

- CORE - 1
RATIO : 1600-800-500/1A
CLASS : PS
- CORE - 2
RATIO : 1600-800-500/1A
CLASS : PS
- CORE - 3
RATIO : 1600-800-500/1A
CLASS : PS
- CORE - 4
RATIO : 1600-800-500/1A
CLASS : PS
- CORE - 5
RATIO : 500/1A
CLASS : 0.2S
BURDEN : 10VA



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REF. DWG. NO. : DTPL/BC/APT/UPP 02, REV: 00
SHT. NO. : 1 OF 1

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
 CUSTOMER : M/s. APTRANSCO
 CONTRACTOR :



TITLE : SINGLE LINE DIAGRAM
 CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	3
CONT :	4

220kV CURRENT TRANSFORMER (CT) :-
8593241/2024/EEMRT-ENE51

CORE NO.	APPLICATION	CURRENT RATIO	BURDEN (VA)	ACCURACY CLASS	MIN.KNEE POINT VOLTAGE (Vk)	MAX.CT SEC. WINDING R(OHM)	MAX. EXC. CURRENT AT Vk(mA)
1	MAIN-1 LINE DIFFRENTIAL PROTECTION (87L1)	1600-800-500/1A	--	PS	500-800-1600V	≤2.5 @ 500/1A, ≤4 @ 800/1A, ≤8 @ 1600/1A	80 @ 500/1A, 50 @ 800/1A, 25 @ 1600/1A
2	MAIN-1 LINE DIFFRENTIAL PROTECTION (87L2)	1600-800-500/1A	--	PS			
3	SPARE	1600-800-500/1A	--	PS			
4	BUSBAR BAY UNIT (87BBU)	1600-800-500/1A	--	PS			
5	METERING & BAY CONTROL UNIT (BCU)	500/1A	10	0.2S	--	--	--

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220kV POTENTIAL TRANSFORMER (PT) :-

CORE NO.	APPLICATION	RATED VOLTAGE (V)	BURDEN (VA)	ACCURACY CLASS
	PRIMARY VOLTAGE =220V√3 kV			
1	METERING	110V √3	150	0.2
2	PROTECTION	110V √3	50	3P

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220kV CAPACITIVE VOLTAGE TRANSFORMER (CVT) :-

CORE NO.	APPLICATION	RATED VOLTAGE (V)	BURDEN (VA)	ACCURACY CLASS
	PRIMARY VOLTAGE =220V √3 kV			
1	PROTECTION	110V √3	50	3P
2	PROTECTION	110V √3	50	3P
3	METERING	110V √3	50	0.2

NOTE :-

1. THE ADAPTED CT & PT RATIO TO BE CONFIRMED BY THE CUSTOMER.

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : CT & PT RATIO DETAILS	PO No :
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 4
REV	REMARKS	DATE	DRWN	CHKD	APPD			CONT : 5

PROTECTION FUNCTION	DC GROUP	OUT PUT	TO CB TRIP COIL-1	TO CB TRIP COIL-2	AUTO RECLOSE INITIATION	BLOCK AUTO RECLOSE	AUTO RECLOSE LOCKOUT	LBB INITIATION	CLOSE MAIN CB	CLOSE TBC CB	1PH TRIP RELAY MAIN-1	1PH TRIP RELAY MAIN-2	3PH MASTER TRIP RELAY GROUP-A	3PH MASTER TRIP RELAY GROUP-B	DIRECT TRIP SEND CHANNEL-1	DIRECT TRIP SEND CHANNEL-2	CARRIER SEND CHANNEL-1	CARRIER SEND CHANNEL-2	BUSBAR PROTECTION	DR TRIGGER	ALARM	EVENT RECORDER
LINE DIFF.PROTECTION & ZONE-1-MAIN-1	DC-1	1-PH			(IP)						(IP)						(TP)	(TP)		(IP)	(IP)	(IP)
DEF, O/V STG-1/2-MAIN-1	DC-1	3-PH											(IP)		(TP)	(TP)				(IP)	(IP)	(IP)
LINE DIFF. PROTECTION Z2,Z3 FAULTS ,(SOTF) MAIN-1	DC-1	3-PH											(IP)							(IP)	(IP)	(IP)
LINE DIFF. PROTECTION TRIP & ZONE-1-MAIN 2	DC-2	1-PH			(IP)							(IP)					(TP)	(TP)		(IP)	(IP)	(IP)
DEF, O/V STG-1/2-MAIN-2	DC-2	3-PH												(IP)	(TP)	(TP)				(IP)	(IP)	(IP)
LINE DIFF. PROTECTION Z2,Z3 FAULTS, (SOTF) MAIN 2	DC-2	3-PH												(IP)						(IP)	(IP)	(IP)
BREAKER FAIL PROTECTION MAIN-1	BB DC	3-PH	(TP)	(TP)		(IP)									(TP)	(TP)			(IP)	(IP)	(IP)	(IP)
BUSBAR PROTECTION OPERATED/96	BB DC	3-PH	(TP)	(TP)		(IP)		(IP)	(RS)						(TP)	(TP)				(IP)	(IP)	(IP)
DIRECT TRIP RECEIVE CHANNEL-1	DC-1	3-PH											(IP)							(IP)	(IP)	(IP)
DIRECT TRIP RECEIVE CHANNEL-2	DC-2	3-PH												(IP)						(IP)	(IP)	(IP)
1-PH TRIP RELAY-MAIN-1	DC-1	1-PH	(TP)	(TP)	(IP)			(IP)														
1-PH TRIP RELAY-MAIN-2	DC-2	1-PH	(TP)	(TP)	(IP)			(IP)														
GROUP-A MASTER TRIP RELAY	DC-1	3-PH	(TP)	(TP)		(IP)		(IP)	(RS)	(RS)										(IP)	(IP)	(IP)
GROUP-B MASTER TRIP RELAY	DC-2	3-PH	(TP)	(TP)		(IP)		(IP)	(RS)	(RS)										(IP)	(IP)	(IP)
AUTO RECLOSE (RREC, 79)	DC CO	1/3-PH							(IP)													
AUTO RECLOSE LOCK OUT (MAIN)	DC CO	3-PH											(IP)	(IP)								
MANUAL TRIP MAIN CB IN NORMAL POSITION (ODS/BCU)	DC CO	3-PH	(TP)	(TP)											(TP)	(TP)						(IP)
MANUAL TRIP TBC CB IN TRANSFER POSITION (ODS/BCU)	DC CO	3-PH								(IP)					(TP)	(TP)						(IP)
SINGLE PHASE FAULT AND CARRIER 1&2 FAIL/OUT								(IP)					(IP)	(IP)								
FAULT DURING RECLAIM TIME								(IP)					(IP)	(IP)								
LBB OPERATED		3-PH	(TP)	(TP)		(IP)		(IP)		(RS)										(IP)		

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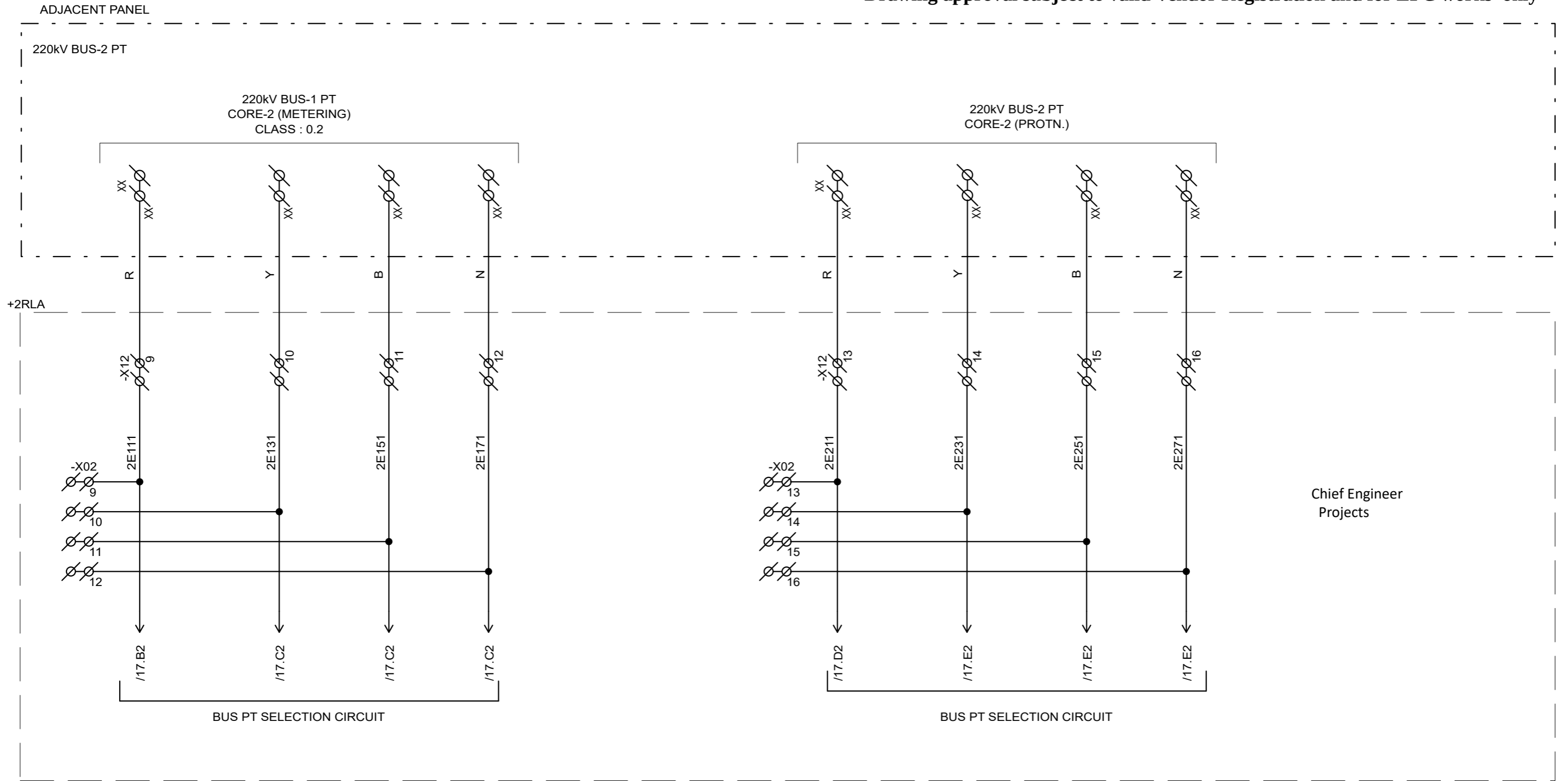
- (IP) INDICATES INITIATION FROM PROTECTION FUNCTION
- (TP) INDICATES TRIP FROM PROTECTION FUNCTION
- (RS) INDICATES RESET STATUS FOR CB CLOSING

NOTE: TRIP LOGIC SHALL BE VERIFIED AT SITE DURING COMMISSIONING

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : TRIP MATRIX	PO No :	
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK				DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG				PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG				DWG No : CZN190523DB-CRS	SHT : 5
REV	REMARKS	DATE	DRWN	CHKD	APPD			CONT : 6	

Drawing approval subject to valid Vendor Registration and for EPC works only



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Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

	AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG
REV	REMARKS	DATE	DRWN	CHKD	APPD

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : 220KV BUS PT-2 CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	7
CONT :	8

8593241/2024/EEMRT-ENE51

220KV LINE CVT

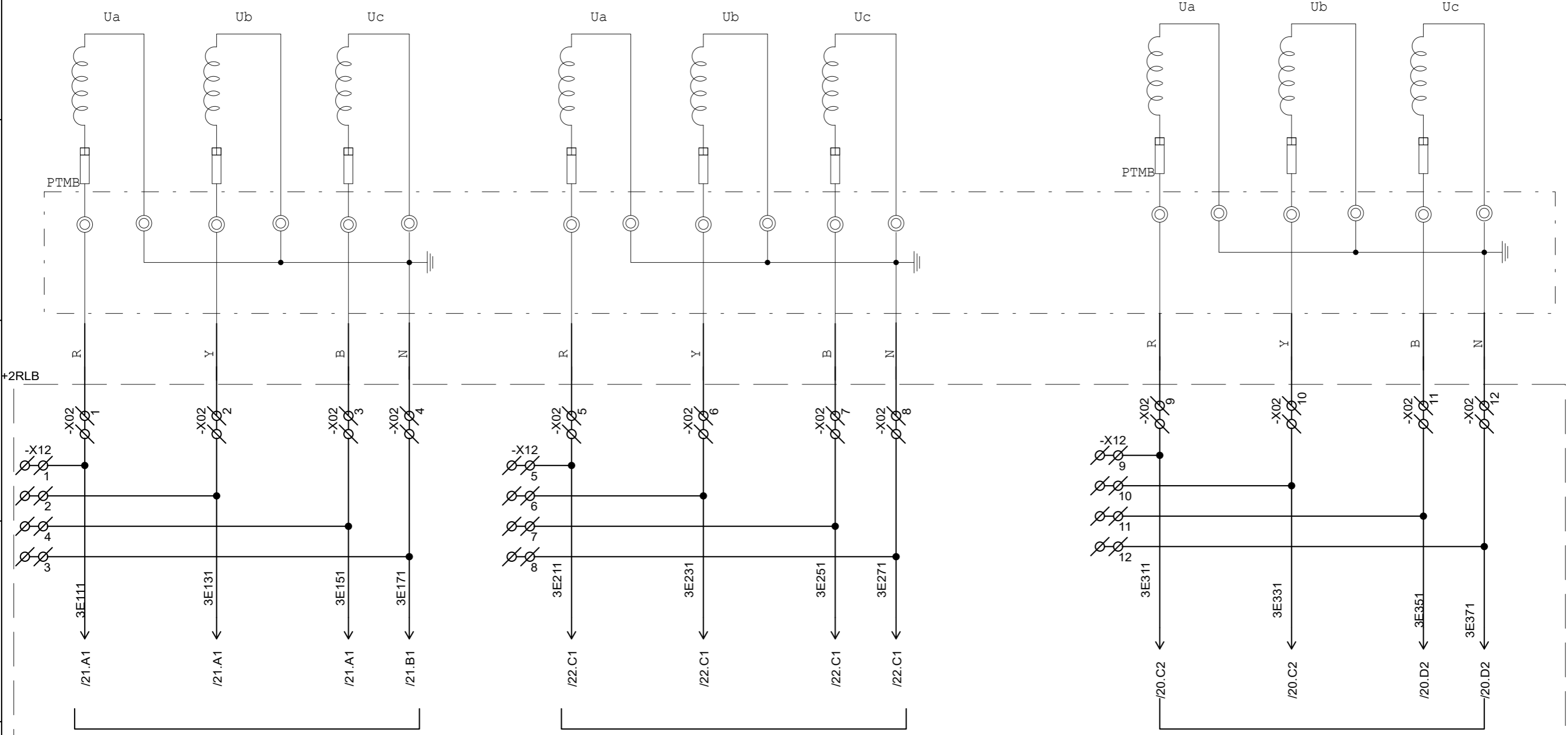
$$\text{RATIO: } \frac{220\text{KV}}{\sqrt{3}} / \frac{110\text{V}}{\sqrt{3}} / \frac{110\text{V}}{\sqrt{3}} / \frac{110\text{V}}{\sqrt{3}}$$

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CORE - 1
CL: 3P

CORE - 2
CL: 3P

CORE - 3
CL: 0.2



LINE CVT SELECTION
CIRCUIT

LINE CVT SELECTION
CIRCUIT 75C

LINE CVT SELECTION
CIRCUIT 75D

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

02	AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
00	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG
REV	REMARKS	DATE	DRWN	CHKD	APPD

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : 220KV LINE CVT CORE
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 8
PANEL REF : 2RLA&2RLB	CONT : 9
DWG No : CZN190523DB-CRS	

8593241/2024/EEMRT-ENE51

BAY CONTROL UNIT (BCU)

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - A				
A3		Power Supply		A2,A1
A6		Equipment Fail Alram		A5,A4
A7	A_OP1	CB MANUAL TRIP	/62.B4	A8
A9	A_OP2	CB MANUAL CLOSE	/63.B4	A10
A11	A_OP3	CB CLOSING CIRCUIT	/51.D4	A12
A13	A_OP4	SPARE	/60.A2	A14
A15	A_OP5	SPARE	/60.A2	A16
A17	A_OP6	SPARE	/60.B2	A18
A19	A_OP7	SPARE	/60.B2	A20
A21	A_IP1	CB R-PH OPEN		
A22	A_IP2	CB R-PH CLOSE		
A23	A_IP3	CB Y-PH OPEN		
A24	A_IP4	CB Y-PH CLOSE		
A25	A_IP5	CB B-PH OPEN	/53.B6	A26
A27	A_IP6	CB B-PH CLOSE		
A28	A_IP7	CB LOCAL POSITION SELECTED		
A29	A_IP8	CB REMOTE POSITION SELECTED		
A30	A_IP9	SF6 LOW PRESSURE LOCKOUT-1		
A31	A_IP10	SF6 LOW PRESSURE LOCKOUT-2	/53.D6	A32
A33	A_IP11	CB SPRING CHARGED R-PH		
A34	A_IP12	CB SPRING CHSRGED Y-PH		
A35	A_IP13	CB SPRING CHARGED B-PH	/55.A4	A36
A37	A_IP14	SPARE		
A38	A_IP15	89A OPEN		
A39	A_IP16	89A CLOSE	/55.C4	A40

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - B				
B1	B_OP1	89A ISO. OPEN COMMAND	/64.B1	B2
B3	B_OP2	89A ISO. CLOSE COMMAND	/64.D1	B4
B5	B_OP3	89A IL PERMISSIVE	/66.A2	B6
B7	B_OP4	96 TRIP RELAY RESET	/68.A4	B8
B9	B_OP5	86A TRIP RELAY RESET	/44.B2	B10
B13	B_OP6	86B TRIP RELAY RESET	/45.B3	B12, B11
B16	B_OP7	SPARE	/60.C2	B15, B14
B17	mA-1	CB R-POLE PRESSURE	/60.D2	B18
B19	mA-2	CB Y-POLE PRESSURE	/60.D2	B20
B21	B_IP1	DC SUPPLY-1 FAILURE		
B22	B_IP2	DC SUPPLY-2 FAILURE		
B23	B_IP3	CB AC SUPPLY FAILURE		
B24	B_IP4	CLOSING CKT SUPPLY FAILURE ALARM		
B25	B_IP5	INDICATION CKT SUPPLY FAILURE ALARM	/54.B6	B26
B27	B_IP6	POLE DISCREPANCY ALARM-1		
B28	B_IP7	POLE DISCREPANCY ALARM-2		
B29	B_IP8	GAS PRESSURE LOW ALARM		
B30	B_IP9	CB HEALTHY		
B31	B_IP10	PHASE FAILURE INDI	/54.C6	B32
B33	B_IP11	MAIN DC-1 EFS MCB FAIL		
B34	B_IP12	ADJ PANEL EFS HEALTHY		
B35	B_IP13	ADJ PNL BCU MCB TRIP	/59.A3	B36
B37	B_IP14	CARRIER SPEECH FAIL		
B38	B_IP15	SPARE		
B39	B_IP16	CARRIER RECVD CH-1	/59.B3	B40

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - C				
C1	C_OP1	89L OPEN COMMAND	/64.B5	C2
C3	C_OP2	89L CLOSE COMMAND	/64.D5	C4
C5	C_OP3	89B OPEN COMMAND	/65.A2	C6
C7	C_OP4	89B CLOSE COMMAND	/65.C2	C8
C9	C_OP5	89L IL PERMISSIVE	/66.B6	C10
C13	C_OP6	89LE IL PERMISSIVE	/66.E6	C12, C11
C16	C_OP7	89B IL PERMISSIVE	/66.D2	C15, C14
C17	mA -1	CB B-POLE PRESSURE	/60.D5	C18
C19	mA -2	KIOSK TEMP	/60.D5	C20
C21	C_IP1	TC-2 B-PH FAULTY		
C22	C_IP2	INCOMING DC-1 SUPPLY FAIL		
C23	C_IP3	INCOMING DC-2 SUPPLY FAIL		
C24	C_IP4	CARRIER CH-1 FAIL		
C25	C_IP5	CARRIER CH-2 FAIL	/56.A6	C26
C27	C_IP6	GROUP-A TRIP RELAY OPTD		
C28	C_IP7	GROUP-B TRIP RELAY OPTD.		
C29	C_IP8	SPARE		
C30	C_IP9	SPARE		
C31	C_IP10	CARR. CH-1 OUT OF SERVICE	/56.C6	C32
C33	C_IP11	CARRIER CH-2 OUT OF SERVICE		
C34	C_IP12	DT RECEIVED CH-1		
C35	C_IP13	DT RECEIVED CH-2	/57.A4	C36
C37	C_IP14	BUS-1 PT SELECTED		
C38	C_IP15	BUS-2 PT SELECTED		
C39	C_IP16	SELECTED BUS PT FOR METERING	/57.B4	C40

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - D				
D1	D_OP1	75A RESET	/16.A2	D2
D3	D_OP2	75A SET	/16.B2	D4
D5	D_OP3	75B RESET	/16.A6	D6
D7	D_OP4	75B SET	/16.B5	D8
D9	D_OP5	75C RESET	/18.A2	D10
D13	D_OP6	75C SET	/18.B2	D12, D11
D16	D_OP7	SPARE	/60.C2	D15, D14
D17	mA -1	NOT USED		D18
D19	mA -2	NOT USED		D20
D21	D_IP1	96-2 LBB TRIP		
D22	D_IP2	96-1 BB OPTD		
D23	D_IP3	AC SUPPLY FAIL		
D24	D_IP4	ACMCB TRIP/OFF		
D25	D_IP5	BAY IN LOCAL MODE	/57.A7	D26
D27	D_IP6	BAY IN REMOTE MODE		
D28	D_IP7	SPARE		
D29	D_IP8	86A TRIP RELAY FAULTY		
D30	D_IP9	86B TRIP RELAY FAULTY		
D31	D_IP10	96-1 TRIP RELAY OPTD	/57.C7	D32
D33	D_IP11	INCOMING DC-1 DC MCB FAIL		
D34	D_IP12	MAIN-1 PROTN. MCB FAIL		
D35	D_IP13	86-A DC MCB FAIL	/58.A4	D36
D37	D_IP14	SELECTED BUS PT FOR MAIN-1		
D38	D_IP15	96-2 LBB RELAY FAULTY		
D39	D_IP16	DC-1 SPARE MCB FAIL	/57.D4	D40

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - E				
E1	E_OP1	75D RESET	/18.A6	E2
E3	E_OP2	75D SET	/18.B5	E4
E5	E_OP3	75E RESET	/19.A3	E6
E7	E_OP4	75E SET	/19.B3	E8
E9	E_OP5	LBB TRIP RELAY RESET	/46.A3	E10
E13	E_OP6	NOT USED		E12, E11
E16	E_OP7	NOT USED		E15, E14
E17	mA -1	NOT USED		E18
E19	mA -2	NOT USED		E20
E21	E_IP1	SPARE		
E22	E_IP2	VT SELECTION CKT DC MCB FAIL		
E23	E_IP3	INCOMING MAIN-2 DC MCB FAUIL		
E24	E_IP4	MAIN-2 PROTN. MCB FAIL		
E25	E_IP5	86-B TRIP MCB FAIL	/58.C4	E26
E27	E_IP6	SPARE		
E28	E_IP7	DC-2 SPARE MCB FAIL		
E29	E_IP8	TC-1 DC MCB FAIL		
E30	E_IP9	ISOLATOR CONTROLDC MCB FAIL		
E31	E_IP10	89A ISO. LOCAL MODE	/58.A7	E32


TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - E				
E33	E_IP11	89A ISO. REMOTE MODE		
E34	E_IP12	89B ISO LOCAL MODE		
E35	E_IP13	89B ISO REMOTE MODE	/58.C7	E36
E37	E_IP14	89L ISO LOCAL MODE		
E38	E_IP15	89L ISO REMOTE MODE		
E39	E_IP16	CB CLOSING DC MCB FAIL	/58.D7	E40
Slot - F				
F1	F_OP1	89A OPEN I/L OK	/64.C2	F2
F3	F_OP2	89A CLOSE I/L OK	/64.E2	F4
F5	F_OP3	89L OPEN I/L OK	/64.C6	F6
F7	F_OP4	89L CLOSE I/L OK	/64.E6	F8
F9	F_OP5	89B OPEN I/L OK	/65.B3	F10
F13	F_OP6	89B CLOSE I/L OK	/65.D3	F12, F11
F16	F_OP7	NOT USED		F15, F14
F17	mA -1	NOT USED		F18
F19	mA -2	NOT USED		F20

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - F				
F21	F_IP1	89B ISOL OPEN		
F22	F_IP2	89B ISOL CLOSE		
F23	F_IP3	89L ISOL OPEN		
F24	F_IP4	89L ISOL CLOSE		
F25	F_IP5	89LE E/S OPEN	/55.A7	F26
F27	F_IP6	89LE E/S C;OSE		
F28	F_IP7	CB MANUAL CLOSE		
F29	F_IP8	CB MANUAL TRIP		
F30	F_IP9	TC-1 R-PH FAULTY		
F31	F_IP10	TC-1 Y-PH FAUTY	/55.C7	F32
F33	F_IP11	TC-1 B-PH FAULTY		
F34	F_IP12	TC-2 R-PH FULTY		
F35	F_IP13	TC-2 Y-PH FAULTY	/55.E7	F36
F37	F_IP14	NOT USED		
F38	F_IP15	NOT USED		
F39	F_IP16	NOT USED		F40

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR :
02	AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO
01	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK	
00	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG	
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	
REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR :



TITLE : BCU RELAY MASTER SHEET

CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :

DOC TYPE : SCHEMATIC DIAGRAM

PANEL REF : 2RLA&2RLB

DWG No : CZN190523DB-CRS

REV : 03

SHT : 9

CONT : 10

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - G				
G1	G_OP1	SPARE	/60.A4	G2
G3	G_OP2	SPARE	/60.A4	G4
G5	G_OP3	SPARE	/60.B4	G6
G7	G_OP4	SPARE	/60.B4	G8
G9	G_OP5	SPARE	/60.C4	G10
G13	G_OP6	SPARE	/60.A6	G12, G11
G16	G_OP7	SPARE	/60.B6	G15, G14
G17	mA -1	4-20mA	/60.D7	G18
G19	mA -2	4-20mA	/60.D7	G20
G21	G_IP1	CARRIER RECVD CH-2		
G22	G_IP2	SELECTED BUS PT FOR MAIN-2		
G23	G_IP3	CB TC-2 DC MCB FAIL		
G24	G_IP4	INDICATION DC MCB FAIL		
G25	G_IP5	SPARE	/59.D3	G26
G27	G_IP6	MAIN DC-2 EFS MCB FAIL		
G28	G_IP7	SPARE		
G29	G_IP8	SPARE		
G30	G_IP9	SPARE		
G31	G_IP10	SPARE	/59.A7	G32
G33	G_IP11	SPARE		
G34	G_IP12	SPARE		
G35	G_IP13	SPARE	/59.C7	G36
G37	G_IP14	SPARE		
G38	G_IP15	SPARE		
G39	G_IP16	SPARE	/59.D7	G40

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - K				
K11		A-Phase Current		K12
K13		B-Phase Current		K14
K15		C-Phase Current		K16
K17		IG		K18
K19		IGS		K20
K1		A-Phase Voltage		K2
K3		B-Phase Voltage		K4
K5		C-Phase Voltage		K6
K7		V Synch		K8
K9		VG		K10

Drawing approval subject to valid Vendor Registration and for EPC works only

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Projects

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AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : BCU RELAY MASTER SHEET	PO No :
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 10
REV	REMARKS	DATE	DRWN	CHKD	APPD			CONT : 11

Drawing approval subject to valid Vendor Registration and for EPC works only

-87L1/21_P545

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - D				
D3		A-Phase Current		D2
D6		B-Phase Current		D5
D9		C-Phase Current		D10
D11		IN PAR		D12
D19		A-Phase Voltage		
D20		B-Phase Voltage		
D21		C-Phase Voltage		D22
D23		V Synch		D24
Slot - M/E				
M2		Power Supply		M1
E2	IP1	CB READY	/24.B6	E1
E4	IP2	ARS SWT IN "OUT" POSITION	/24.B6	E3
E6	IP3	SOTF INITIATION	/24.B6	E5
E8	IP4	CARRIER UNHEALTHY CH-1/2	/24.C6	E7
E10	IP5	CARRIER SWT-1 OUT POS	/24.C6	E9
E12	IP6	CARRIER RECEIVE CH-1/2	/24.D6	E11
E14	IP7	DT REC CH-1/2	/24.D6	E13
E16	IP8	CB CLOSE R-PH	/25.A6	E15
Slot - C				
C2	IP9	CB CLOSE Y-PH	/25.B6	C1
C4	IP10	CB CLOSE B-PH	/25.B6	C3
C6	IP11	CB OPEN R-PH	/25.C6	C5
C8	IP12	CB OPEN Y-PH	/25.C6	C7
C10	IP13	CB OPEN B-PH	/25.C6	C9
C12	IP14	86-A/B OPTD.	/25.D6	C11
C14	IP15	96-1/2 OPTD	/26.A5	C13
C16	IP16	87L2/BCU RELAY FAULTY	/26.B5	C15
Slot - G				
G2	IP17	EXT.AR INI R-PH	/26.C5	G1
G4	IP18	EXT. AR INI. Y-PH	/26.C5	G3
G6	IP19	EXT. AR INI. B-PH	/26.D5	G5
G8	IP20	PREPARE 3PH TRIP	/26.D5	G7
G10	IP21	RELAY LED RESET	/26.D5	G9
G12	IP22	SPARE	/26.A7	G11
G14	IP23	SPARE	/26.B7	G13
G16	IP24	SPARE	/26.B8	G15

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - M/L				
M11		Equipment Fail		M12
M13		Equipment Healthy		M14
L1	OP1	R-PH TRIP(87L1/21)	/27.B3	L2
L3	OP2	Y-PH TRIP(87L1/21)	/28.B3	L4
L5	OP3	B-PH TRIP(87L1/21)	/29.B3	L6
L7	OP4	CARRIER SEND CH-1	/30.E4	L8
L9	OP5	DT SEND CH-1	/31.C3	L10
L11	OP6	86A MASTER RELAY TRIP	/44.C2	L12
L15	OP7	86B MASTER RELAY TRIP	/45.B3	L14, L13
L18	OP8	SPARE		L17, L16
Slot - K				
K1	OP9	AUTO RECLOSER COMMAND	/63.E4	K2
K3	OP10	DT SEND CH-2	/42.C4	K4
K5	OP11	MAIN-1 3P TRIP		K6
K7	OP12	MAIN-1 AR BLOCK		K8
K9	OP13	FEEDBACK CONTACT	/26.C7	K10
K11	OP14	TO 87L2 PREPARE 3PH TRIP	/37.B3	K12
K15	OP15	SPARE		K14, K13
K18	OP16	SPARE		K17, K16
Slot - J				
J1	OP17	SPARE		J2
J3	OP18	SPARE		J4
J5	OP19	SPARE		J6
J7	OP20	SPARE		J8
J9	OP21	SPARE		J10
J11	OP22	SPARE		J12
J15	OP23	SPARE		J14, J13
J18	OP24	SPARE		J17, J16
Slot - H				
H1	OP25	SPARE		H2
H3	OP26	SPARE		H4
H5	OP27	SPARE		H6
H7	OP28	SPARE		H8
H9	OP29	SPARE		H10
H11	OP30	SPARE		H12
H15	OP31	SPARE		H14, H13
H18	OP32	SPARE		H17, H16

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Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : 87L1 RELAY MASTER SHEET	PO No :
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 11
REV	REMARKS	DATE	DRWN	CHKD	APPD			CONT : 12

-87L2/21

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - A				
A3		Power Supply	/35.A6	A2,A1
A6		Equipment Fail Alram	/26.B3	A5,A4
A7	OP1	SPARE		A8
A9	OP2	CB AUTO RECLOSE	/63.D4	A10
A11	OP3	TO BCU DI		A12
A13	OP4	SPARE		A14
A15	OP5	SPARE		A16
A17	OP6	FEEDBACK CONTACT	/36.A7	A18
A19	OP7	SPARE		A20
A21	IP1	CB READY		
A22	IP2	ARS IN "OUT" POSITION		
A23	IP3	SOTF INITIATION		
A24	IP4	CARR. UNHEALTHY CH-1/2		
A25	IP5	CSS-2 IN"OUT" POSITON	/35.B6	A26
A27	IP6	CARRIER REV CH-1/2		
A28	IP7	DT TRIP REC CH-1/2		
A29	IP8	CB CLOSE R-PH		
A30	IP9	CB CLOSE Y-PH		
A31	IP10	CB CLOSE B-PH	/36.A5	A32
A33	IP11	RELAY LED RESET		
A34	IP12	SPARE		
A35	IP13	SPARE	/37.C6	A36
A37	IP14	BCU DC MCB FAIL		
A38	IP15	SPARE		
A39	IP16	SPARE	/37.D6	A40

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - B				
B1	OP1	R PHASE TRIP(87L2/21)	/38.B3	B2
B4	OP2	Y PHASE TRIP(87L2/21)	/39.B3	B5
B7	OP3	B PHASE TRIP(87L2/21)	/40.B3	B8
B10	OP4	GRP A TRIP	/44.B2	B11
B13	OP5	GRP B TRIP	/45.C3	B14
B16	OP6	DIRECT TRIP CH-2	/42.E4	B17
B19	OP7	CARRIER SEND CH-2	/41.E5	B20
B21	OP8	TO 87L1 PREPARE 3PH TRIP	/26.D3	B22
B23	OP9	SPARE		B24
B25	OP10	SPARE		B26
B29	OP11	SPARE		B28, B27
B32	OP12	SPARE		B31, B30
B33	IP1	SPARE		
B34	IP2	SPARE		
B35	IP3	SPARE		B36
B37	IP4	SPARE		
B38	IP5	SPARE		
B39	IP6	SPARE		B40

TER NO	Input/ Output	Description	Sheet Ref	TER NO
Slot - C				
C1	OP1	SPARE		C2
C3	OP2	SPARE		C4
C5	OP3	SPARE		C6
C7	OP4	TO DT SEND CH-1 CKT	/31.D4	C8
C9	OP5	NOT USED		C10
C13	OP6	NOT USED		C12, C11
C16	OP7	NOT USED		C15, C14
C17	mA IP1	NOT USED		C18
C19	mA IP2	NOT USED		C20
C21	IP1	CB OPEN R-PH		
C22	IP2	CB OPEN Y-PH		
C23	IP3	CB OPEN B-PH		
C24	IP4	86-A/B OPTD.		
C25	IP5	96-1/2 OPTD.	/36.C5	C26
C27	IP6	87L-1 RELAY FAULTY		
C28	IP7	EXT. AR INI. R-PH		
C29	IP8	EXT. AR INI. Y-PH		
C30	IP9	EXT AR INI. B-PH		
C31	IP10	PREPARE 3PH TRIP	/37.A6	C32
C33	IP11	SPARE		
C34	IP12	SPARE		
C35	IP13	SPARE		C36
C37	IP14	SPARE		
C38	IP15	SPARE		
C39	IP16	SPARE		C40
Slot - D				
D11		A-Phase Current		D12
D13		B-Phase Current		D14
D15		C-Phase Current	/34.A5	D16
D17		IG		D18
D19		IGS		D20
D1		A-Phase Voltage		D2
D3		B-Phase Voltage	/34.C5	D4
D5		C-Phase Voltage		D6
D7		V Synch		D8
D9		VG		D10

Chief Engineer
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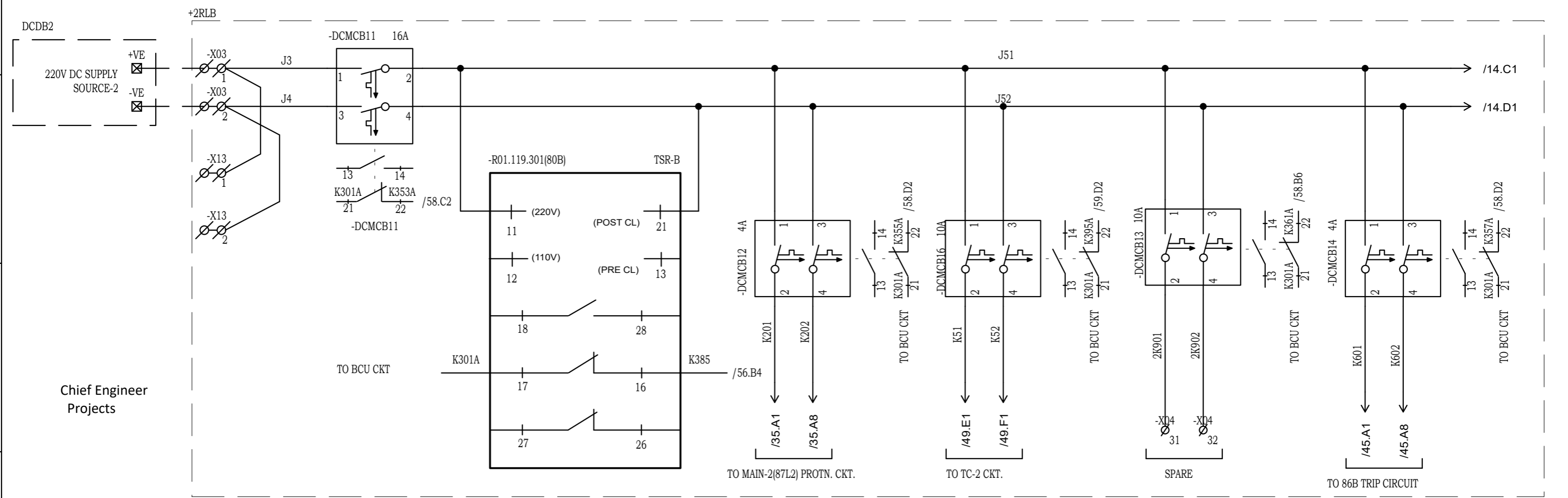
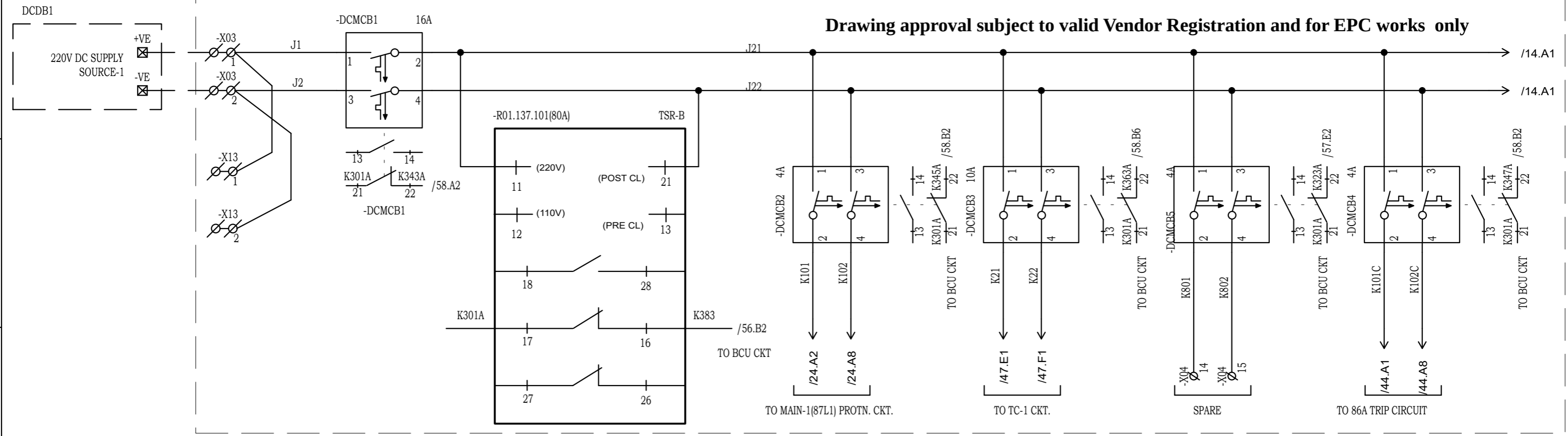
Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : 87L2 RELAY MASTER SHEET	PO No :
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
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00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 12
REV	REMARKS	DATE	DRWN	CHKD	APPD			CONT : 13

8593241/2024/EEMRT-ENE51

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Chief Engineer Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

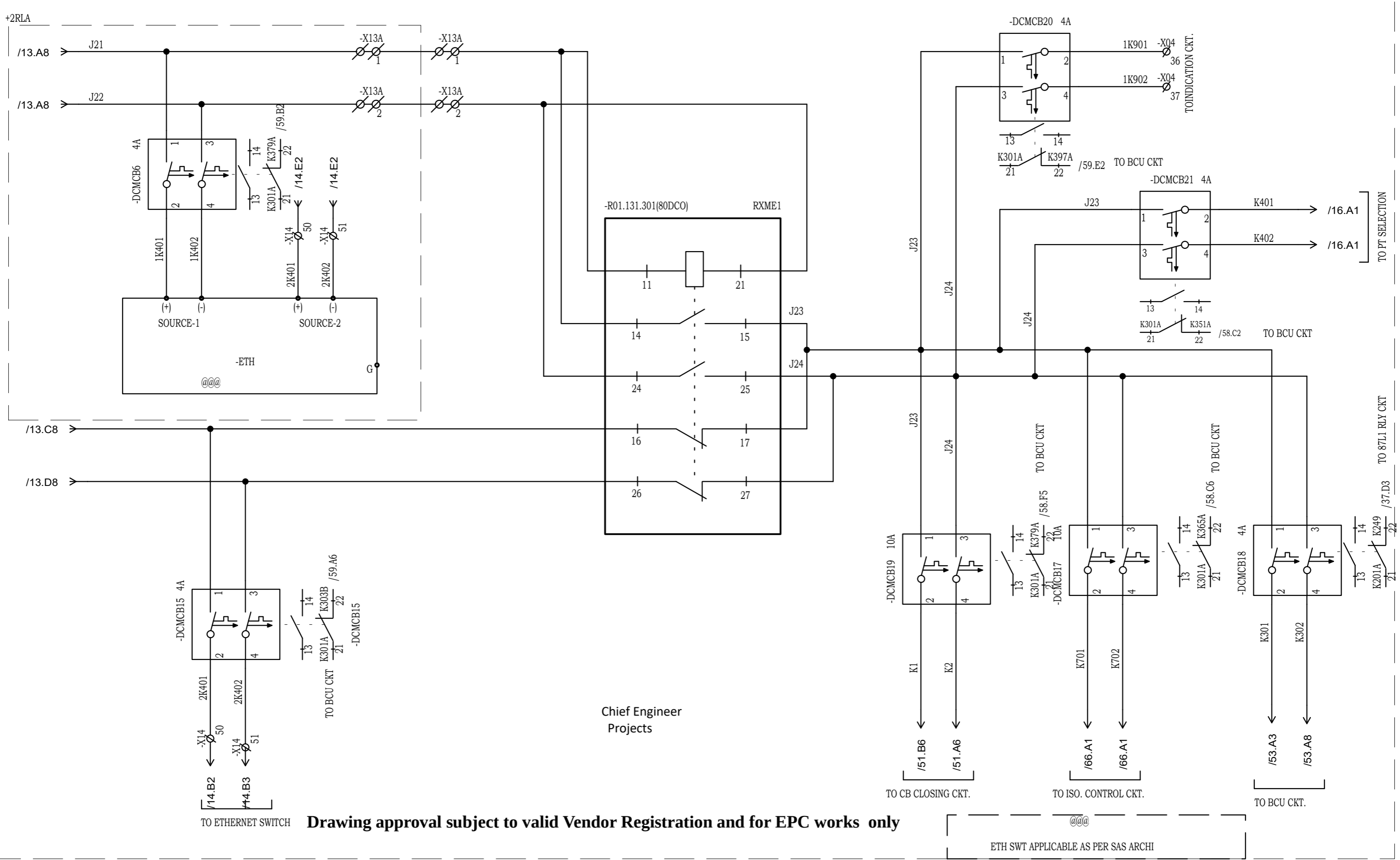
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01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG	
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	
REV	REMARKS	DATE	DRWN	CHKD	APPD



TITLE : DC DISTRIBUION CIRCUIT

CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	13
CONT :	14



Chief Engineer
Projects

Drawing approval subject to valid Vendor Registration and for EPC works only

ETH SWT APPLICABLE AS PER SAS ARCHI

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
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00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

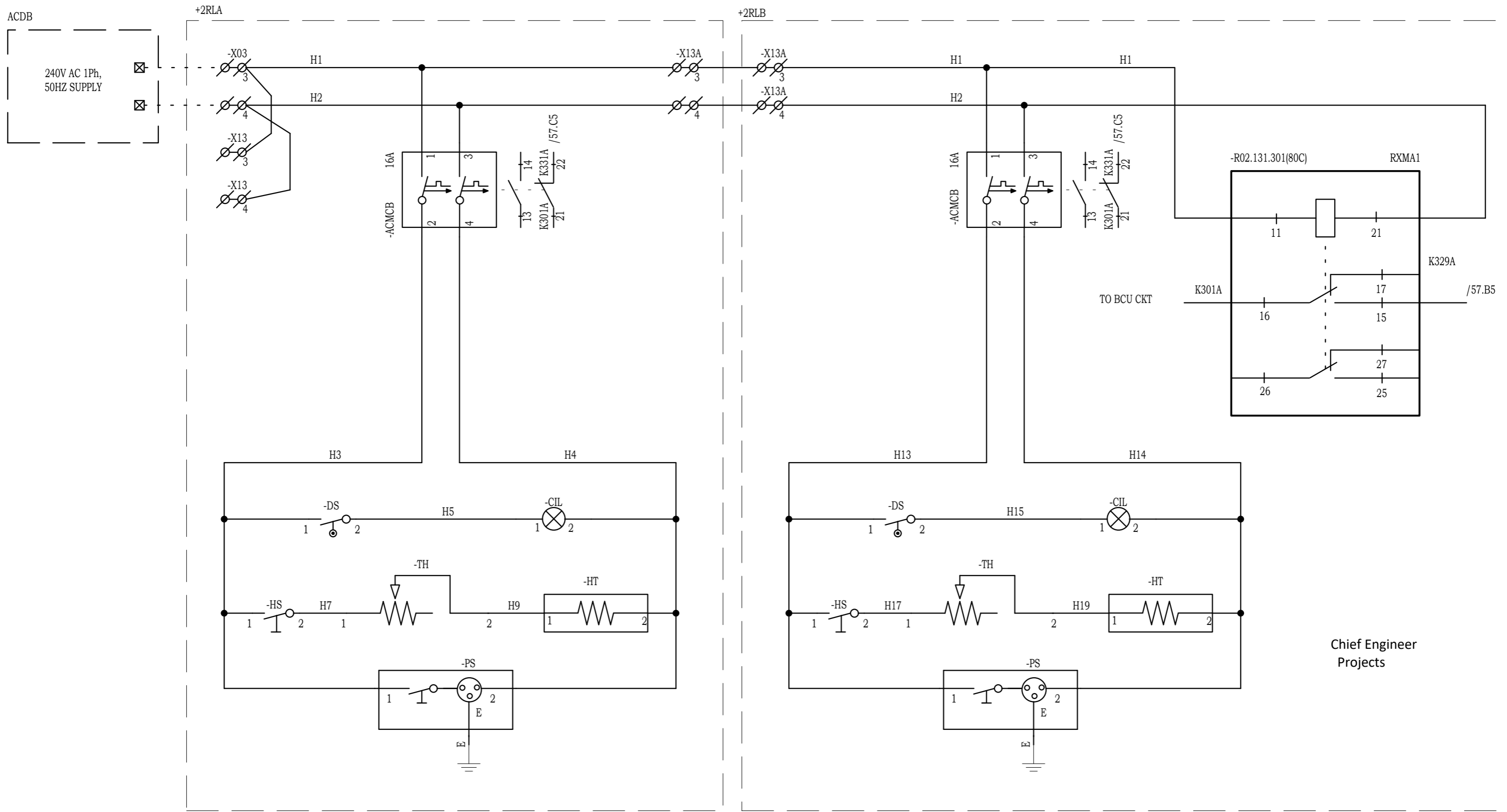
PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	DC DISTRIBUTION CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	14
CONT :	15

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Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

02	AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
00	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
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REV	REMARKS	DATE	DRWN	CHKD	APPD

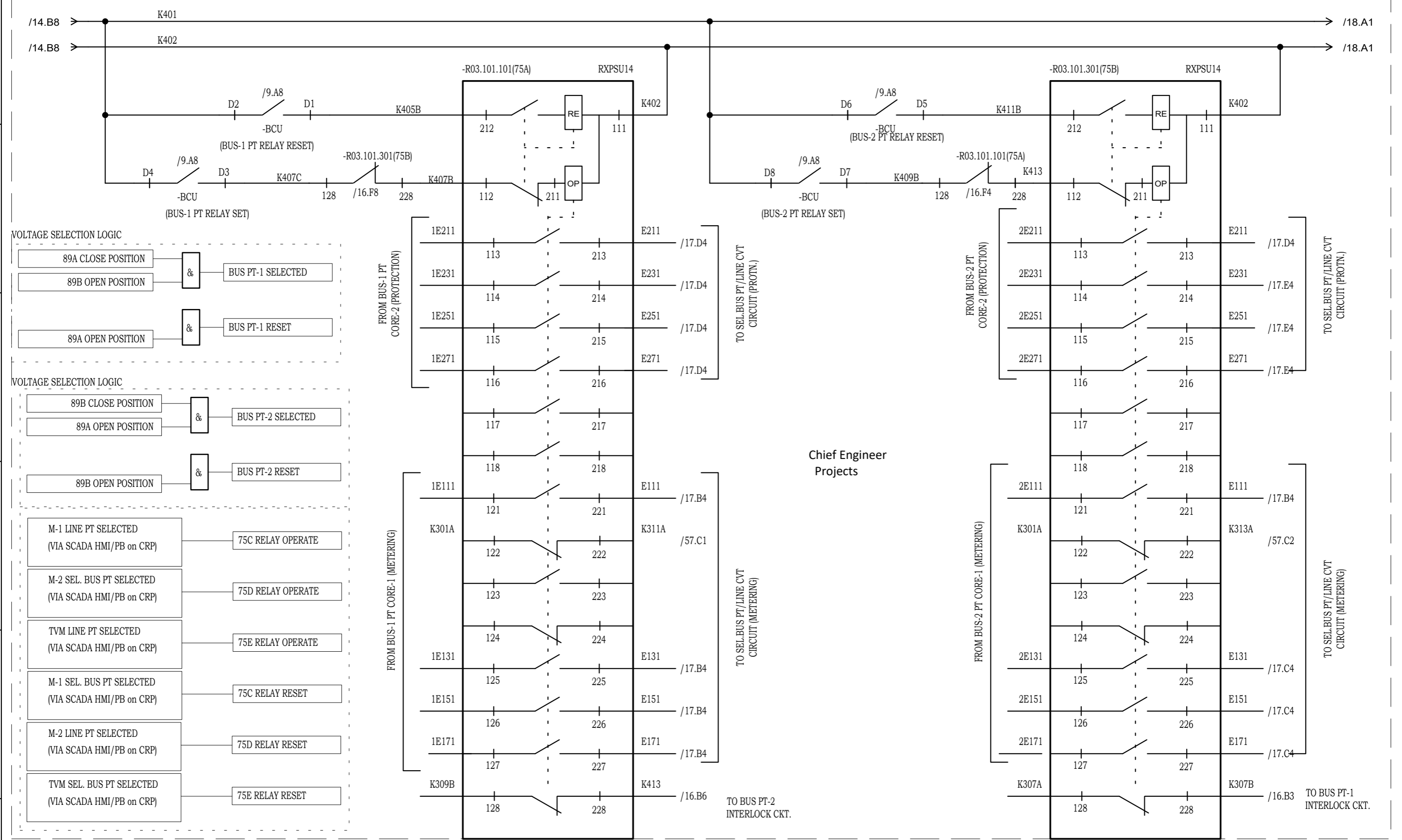
PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : AC DISTRIBUTION CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	15
CONT :	16

8593241/2024/EEMRT-ENE51



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Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

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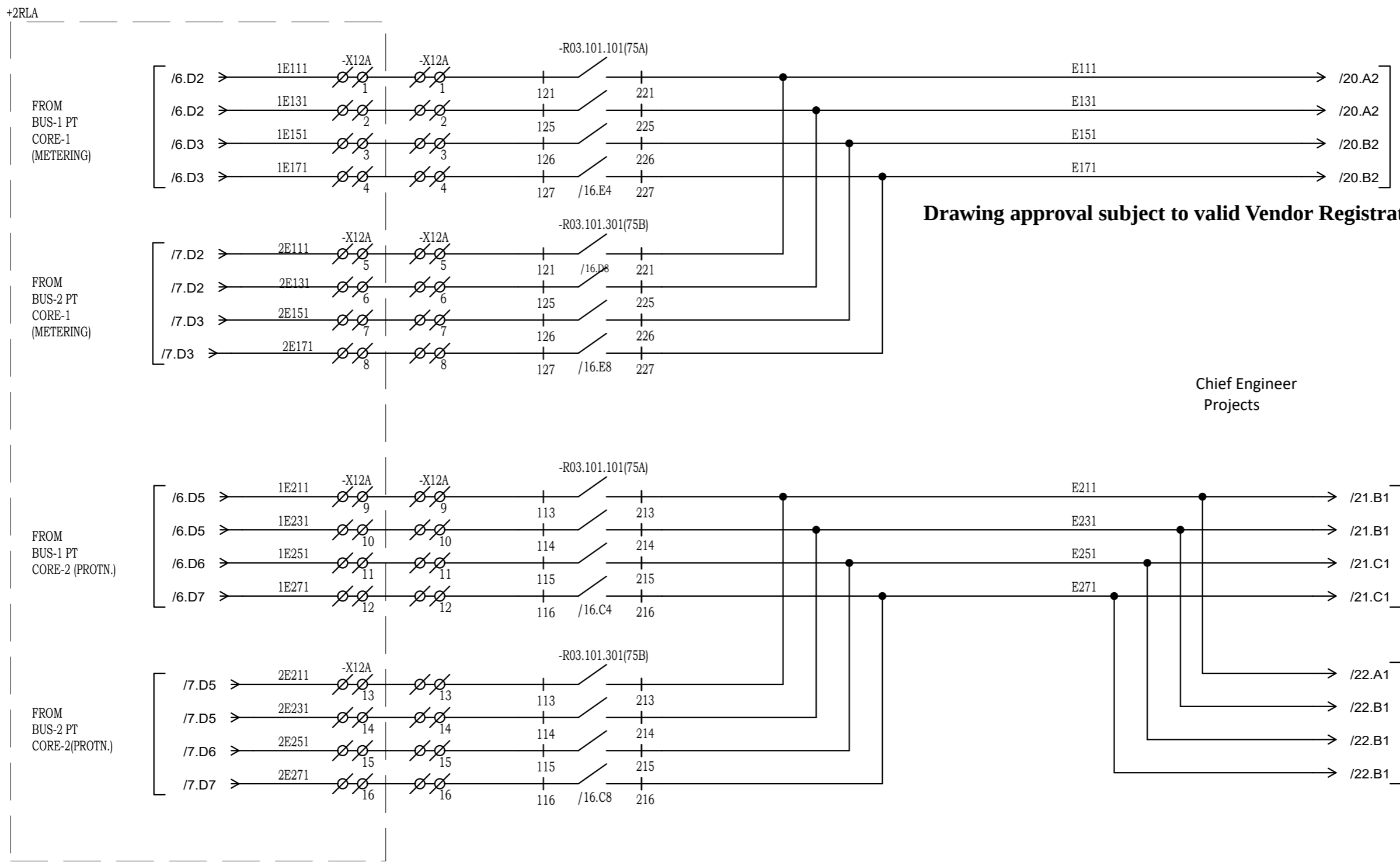
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01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG	
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	

PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	BUS PT SELECTION CIRCUIT CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	16
CONT :	17



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NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

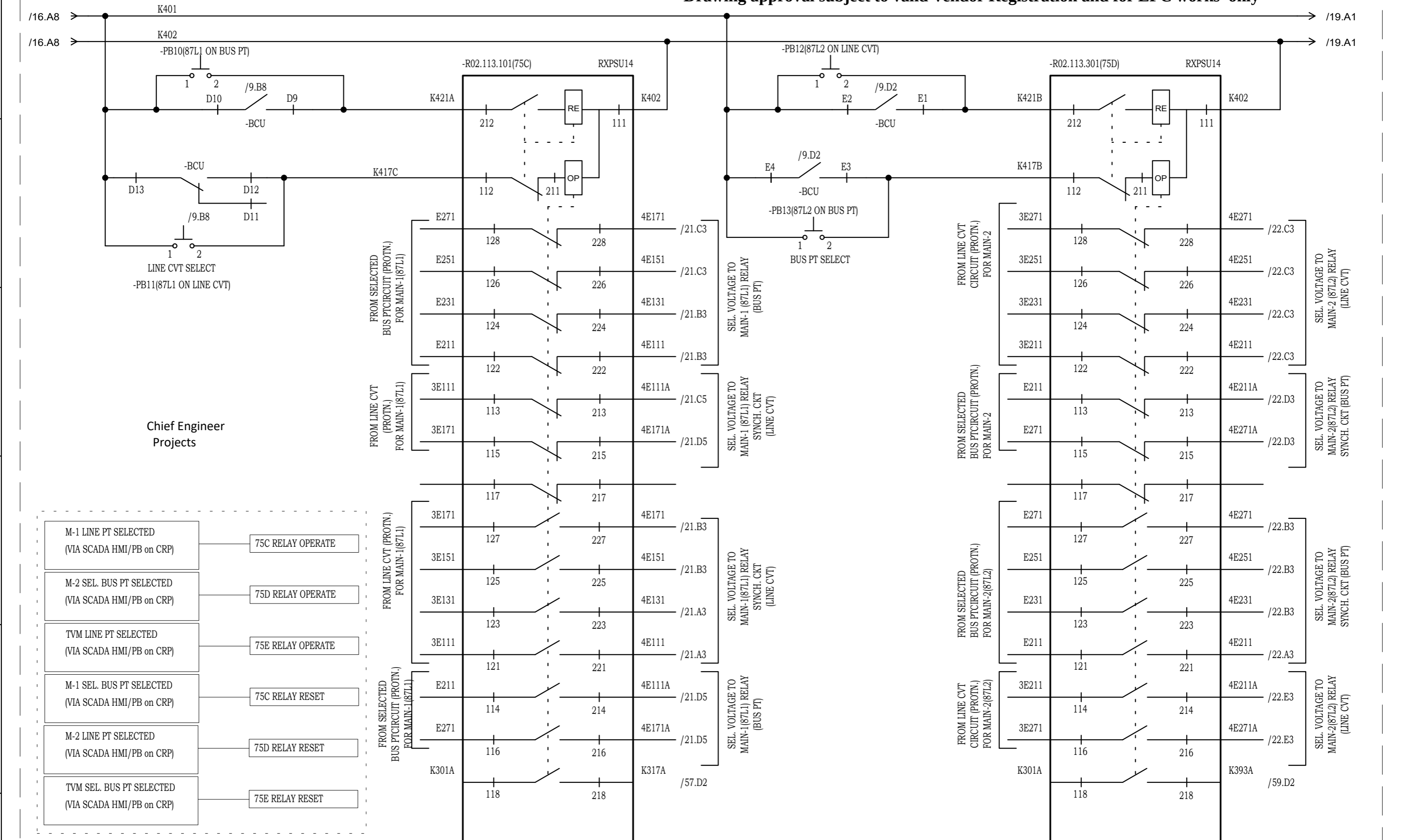
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00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	
REV	REMARKS	DATE	DRWN	CHKD	APPD

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :

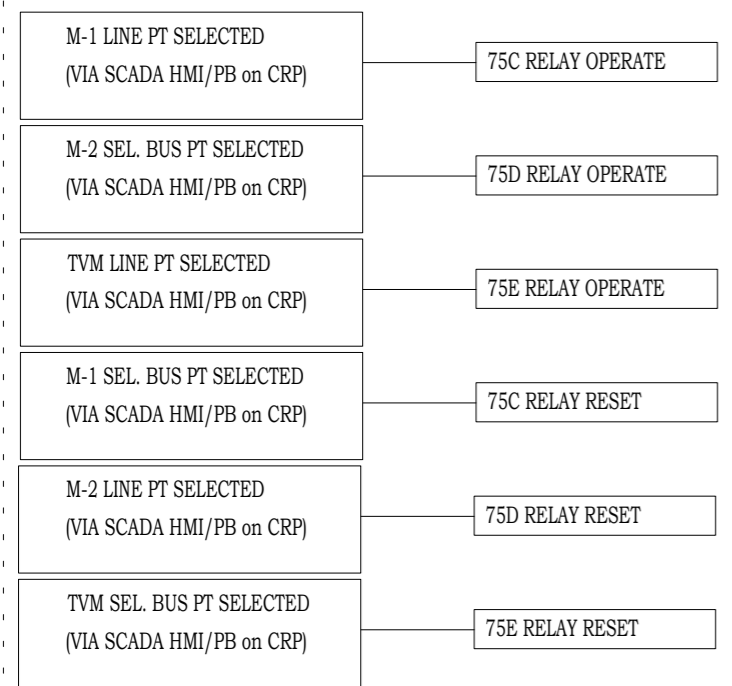


TITLE : BUS PT SELECTION CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	17
CONT :	18



Chief Engineer
Projects



NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

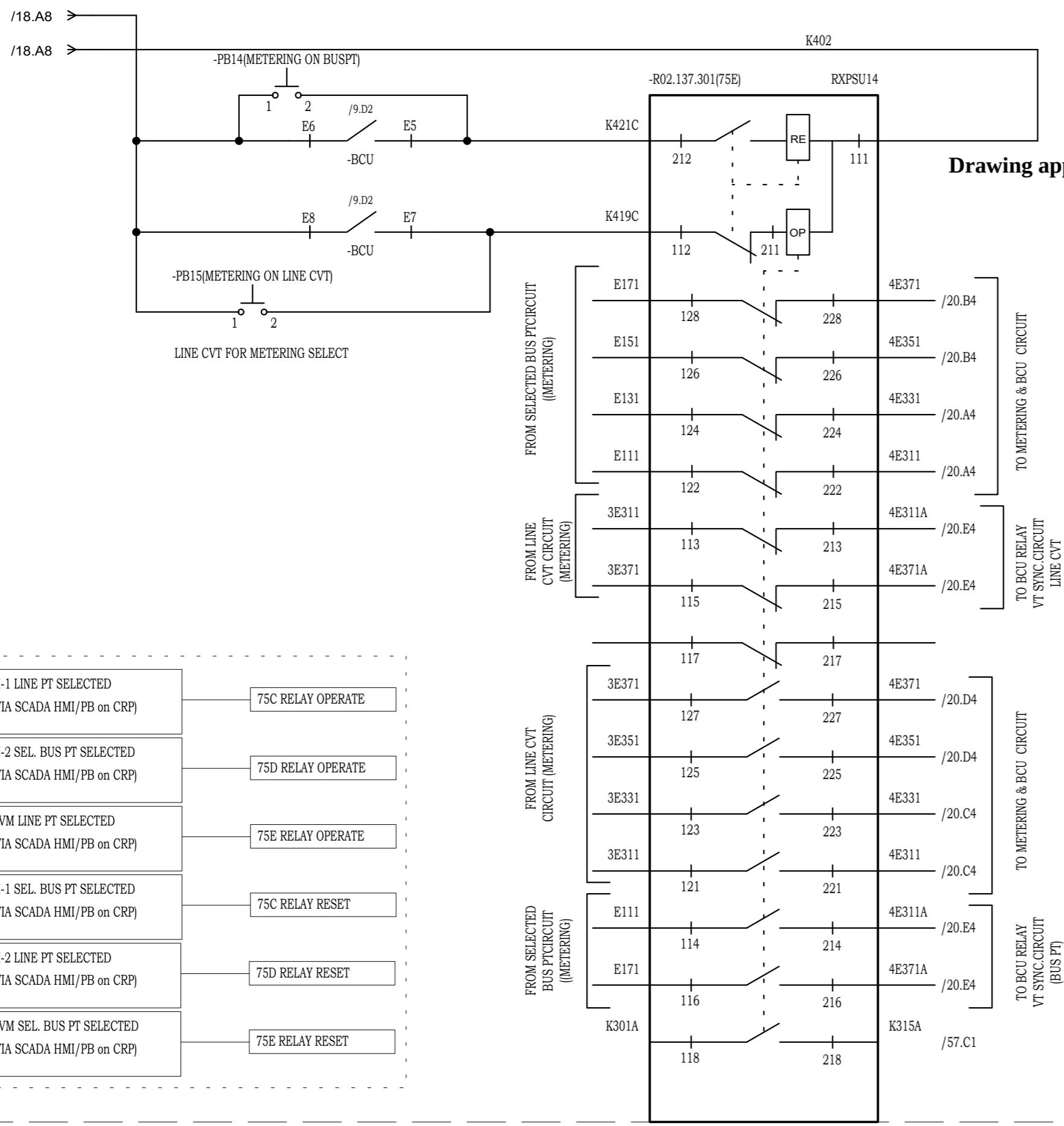
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01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG	
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	
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PROJECT:
CONTRACTOR :



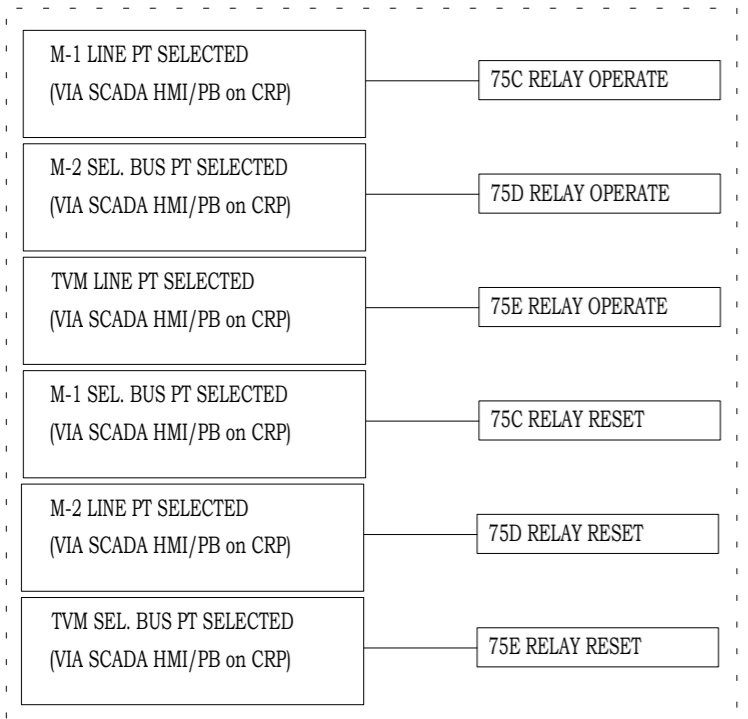
TITLE : BUS PT/ LINE VT SELECTION CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	18
CONT :	19



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NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

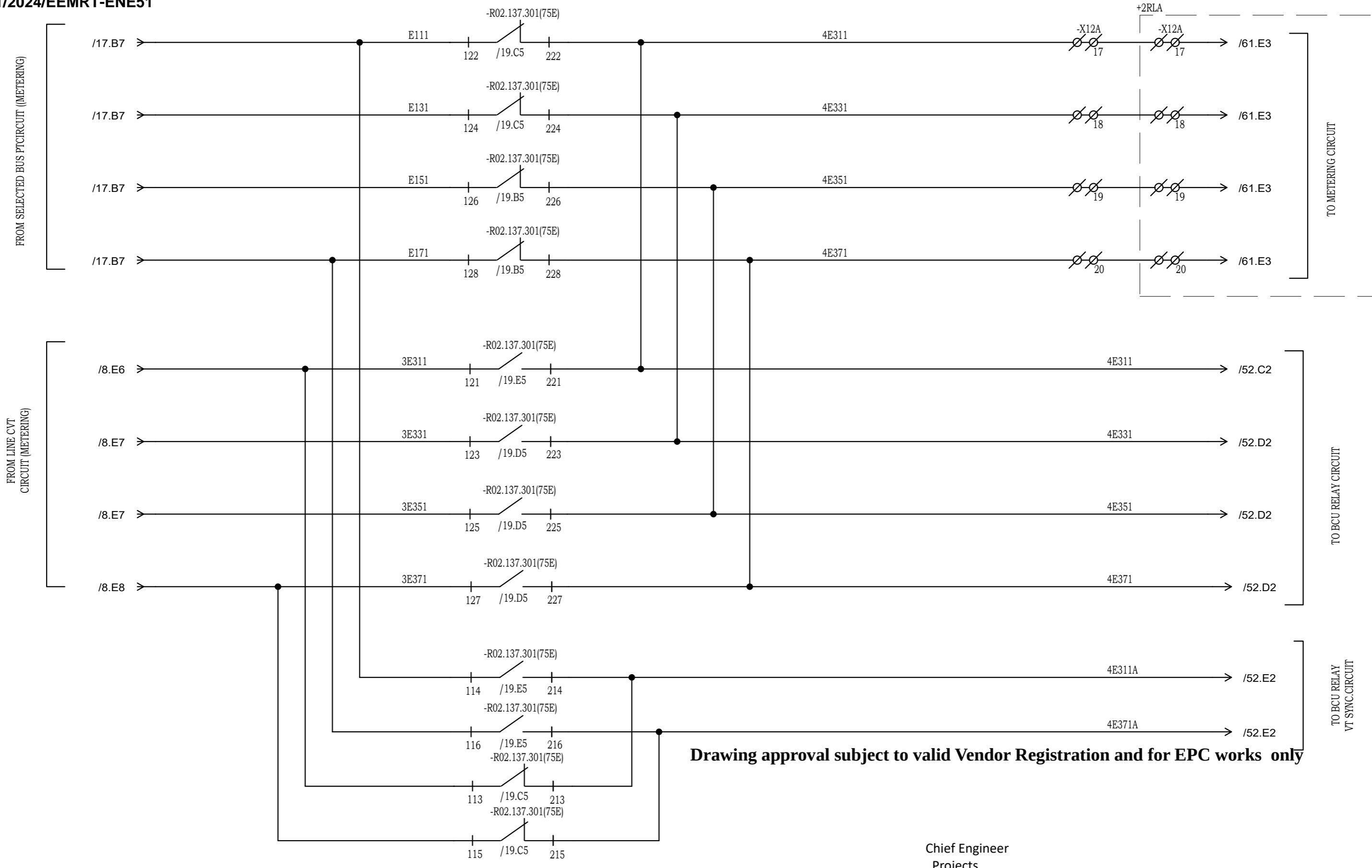
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00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : PT SELECTION CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 19
PANEL REF : 2RLA&2RLB	CONT : 20
DWG No : CZN190523DB-CRS	

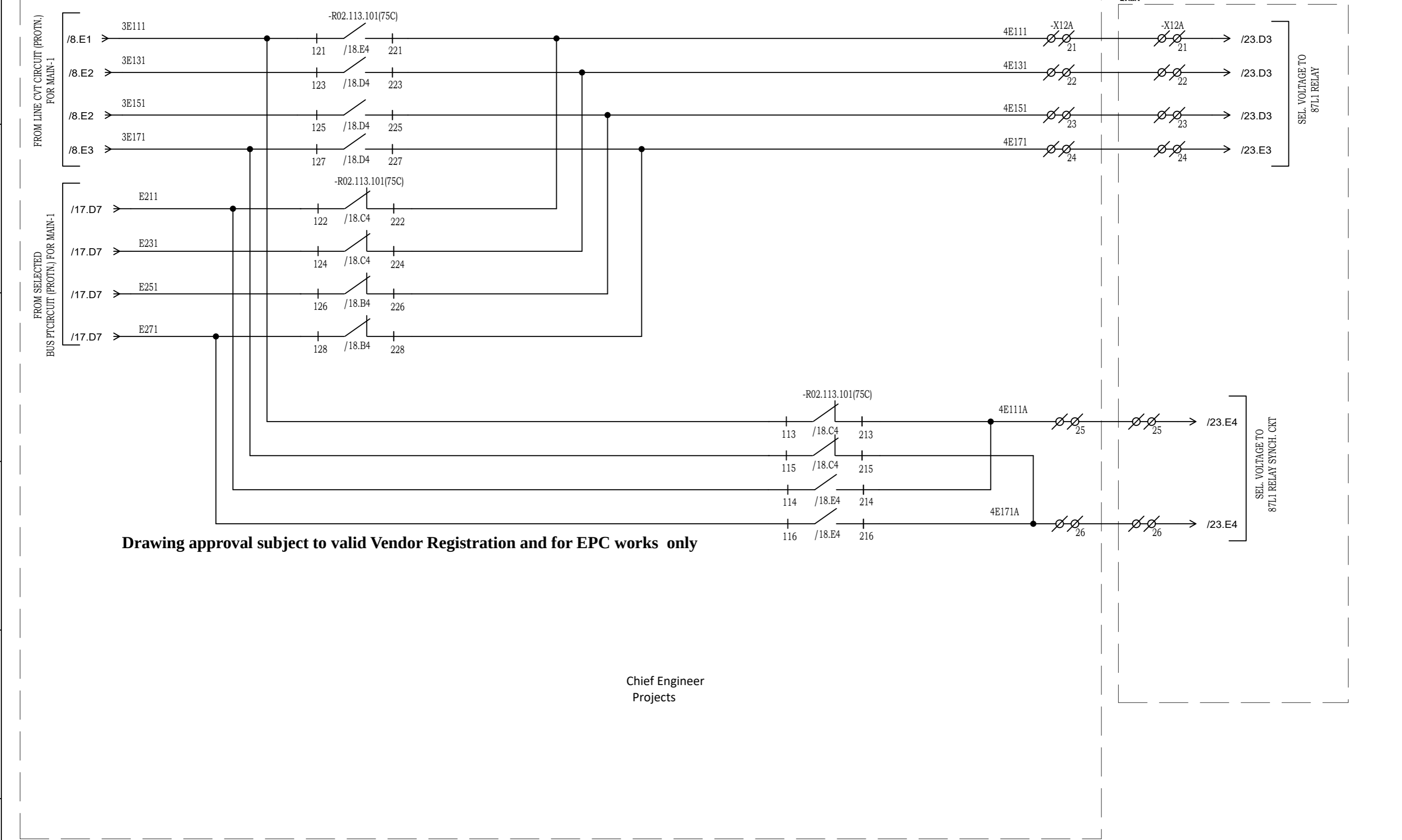


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NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : BUTPT/LINE PT SELECTION CIRCUIT	PO No :
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00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 20
REV	REMARKS	DATE	DRWN	CHKD	APPD			CONT : 21



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Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

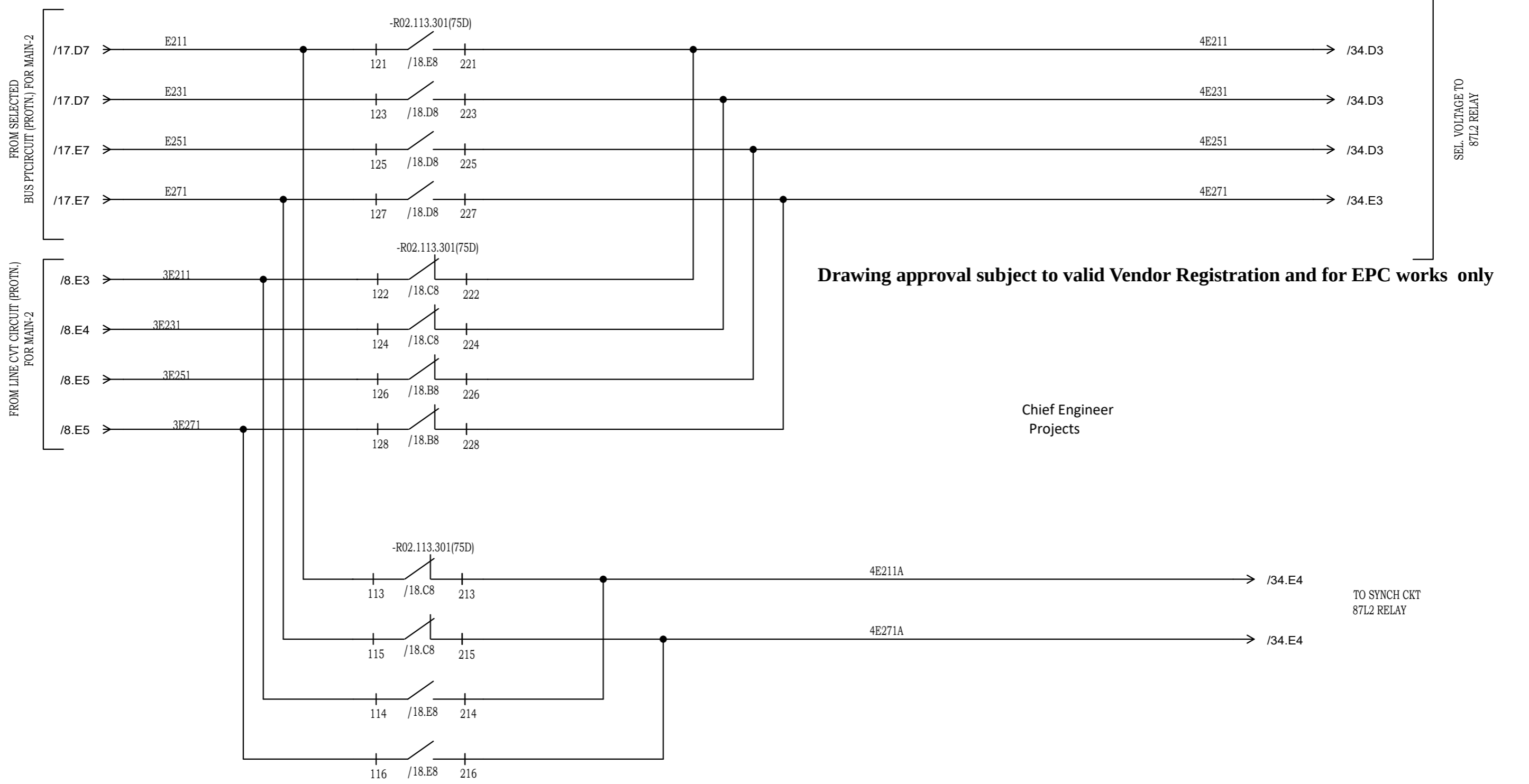
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01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : BUS PT/ LINE PT SELECTION CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	21
CONT :	22



Drawing approval subject to valid Vendor Registration and for EPC works only

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NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
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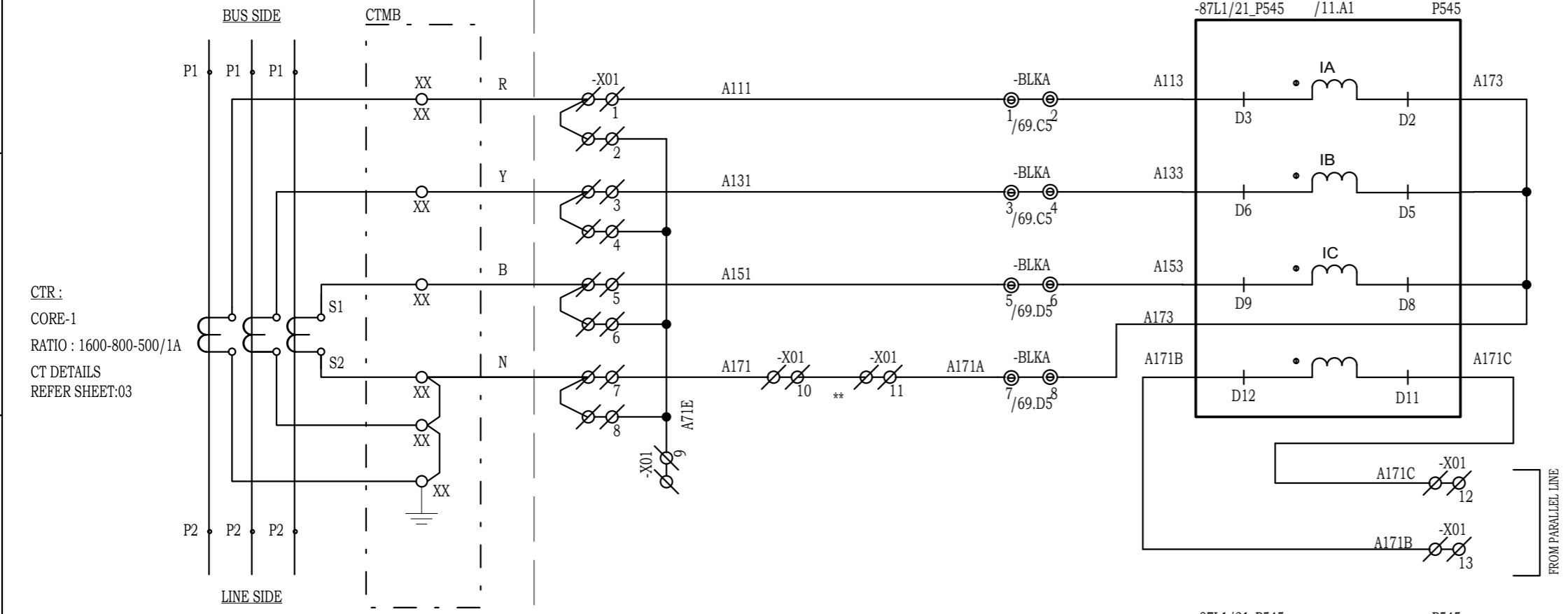
PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : PT SELECTION CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

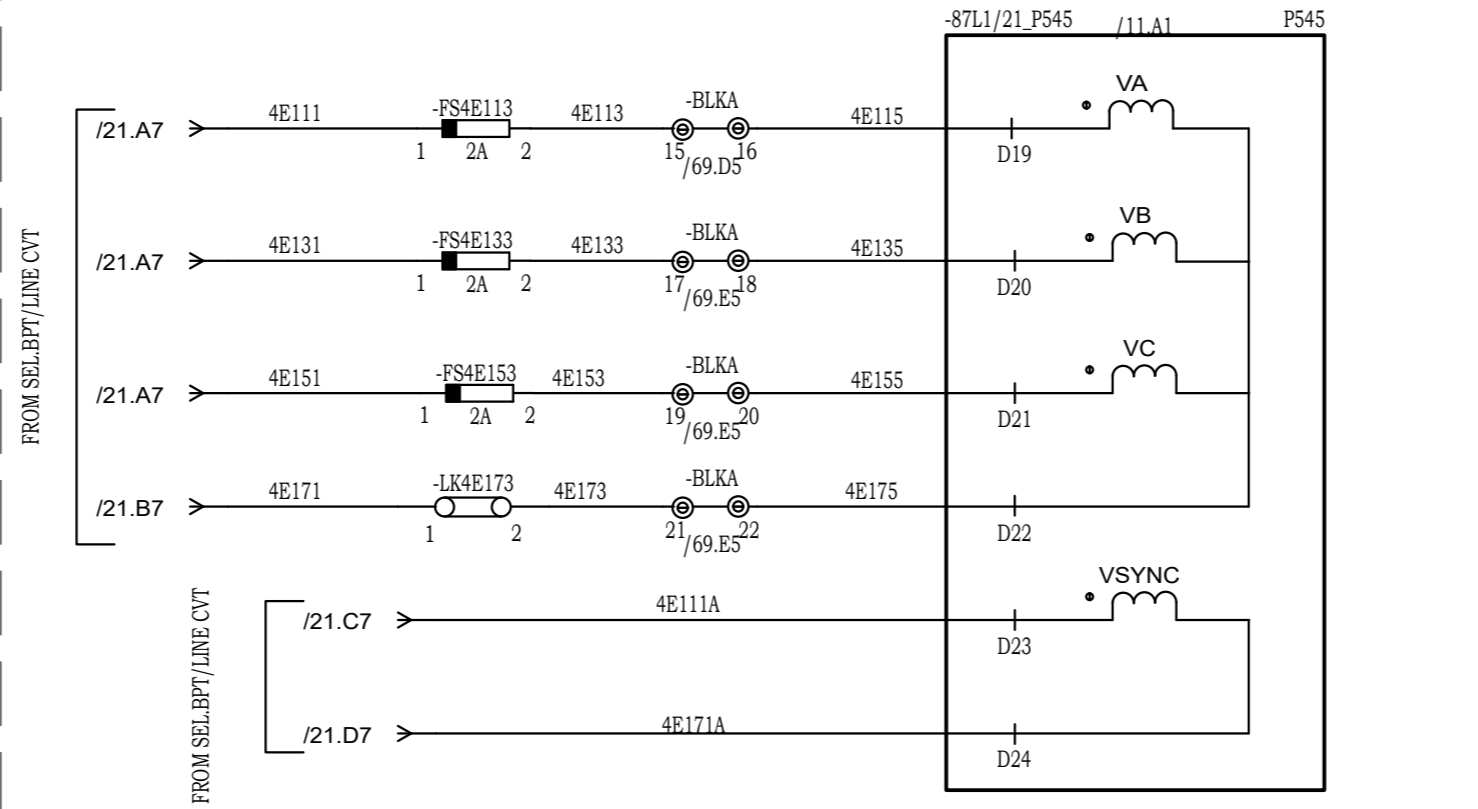
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DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	22
CONT :	23

+2RLA



CTR :
CORE-1
RATIO : 1600-800-500/1A
CT DETAILS
REFER SHEET:03

S.No:	CONFIGURABLE LED APPLICATION
1	DIFFERENTIAL PROT.N. TRIP
2	DISTANCE PROT.N. TRIP
3	R-PHASE FAULT
4	Y-PHASE FAULT
5	B-PHASE FAULT
6	GROUND FAULT TRIP
7	ZONE-1 TRIP
8	ZONE-2 TRIP
F1	ZONE-3 TRIP (Zp)
F2	ZONE-4 TRIP (REV)
F3	Z- COM TRIP
F4	AUTO RECLOSER COMMAND
F5	AUTO RECLOSER BLOCK
F6	SOTF/TOR TRIP/BRC (GREEN)
F7	VTF/FIBER CH-1 FAIL
F8	PSB(GREEN)/FIBER CH-2 FAIL
F9	DIFFERENTIAL BLOCK
F10	O/C TRIP , LED RESET



LIST OF FUNCTION AVAILABLE	
DIFFERENTIAL PROTECTION 87L	
DISTANCE PROTECTION 21M	
AUTORECLOSER PROTECTION (79)	
SOTF PROTECTION	
DIR. OVER CURRENT PROTECTION (67/67N)	
VT FUSE FAIL	
POWERING BLOCKING PROTECTION	
BROKEN CONDUCTOR PROTECTION	
DIR. EARTH FAULT PROTECTION	
EVENT RECORDER	
TRIPPING LOGICS	
WEEK END INFEEED LOGICS	
COMMUNICATION SCHEME	
16 FREELY CONFIG LED	
3PH U/V PROTECTION	

** REMOVE THE SHORTING
WHEN PARALLEL LINE IS
COMMISSIONED

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NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
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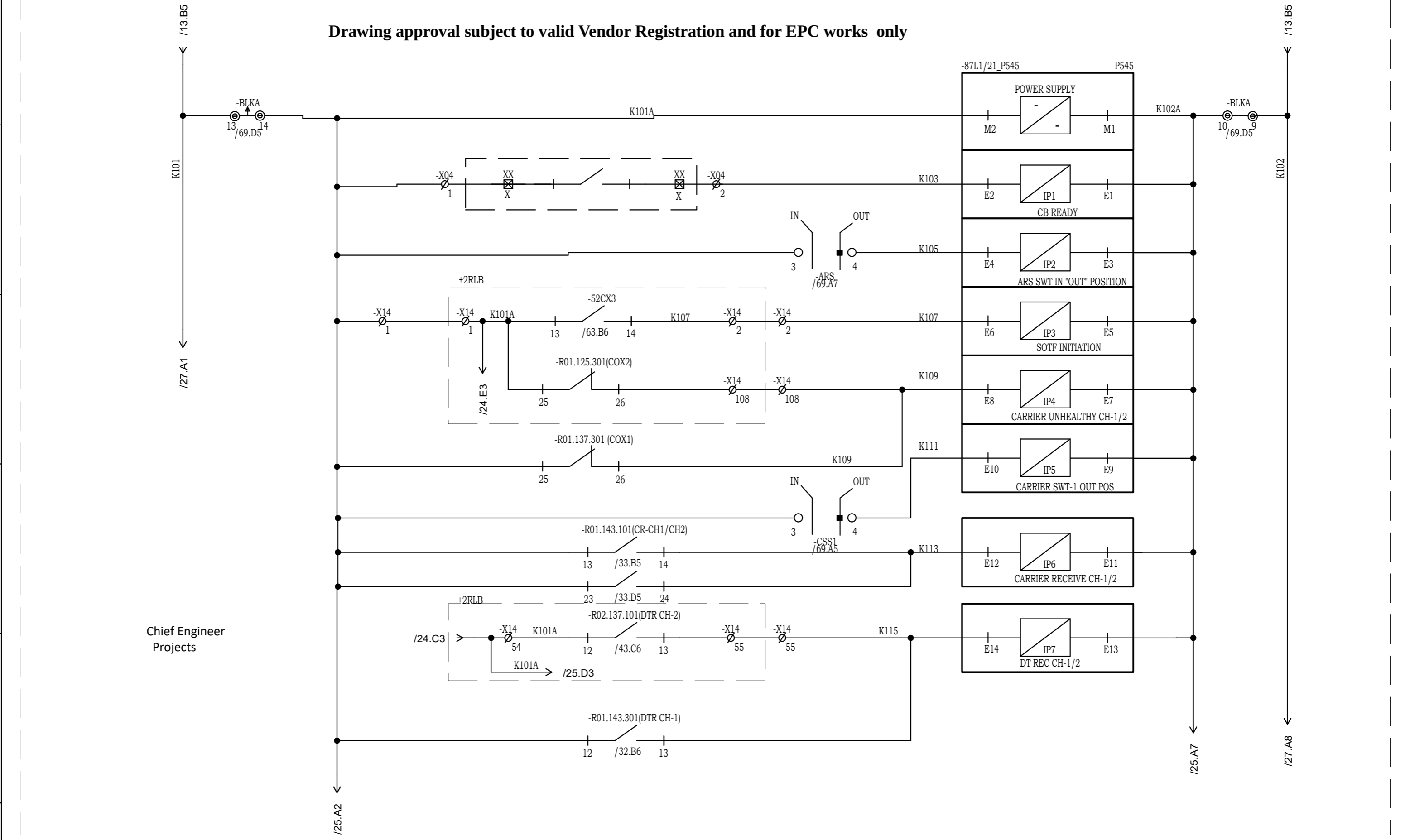
PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : MAIN-1 (87L1) PROTECTION RELAY CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	23
CONT :	24

Drawing approval subject to valid Vendor Registration and for EPC works only



NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
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00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

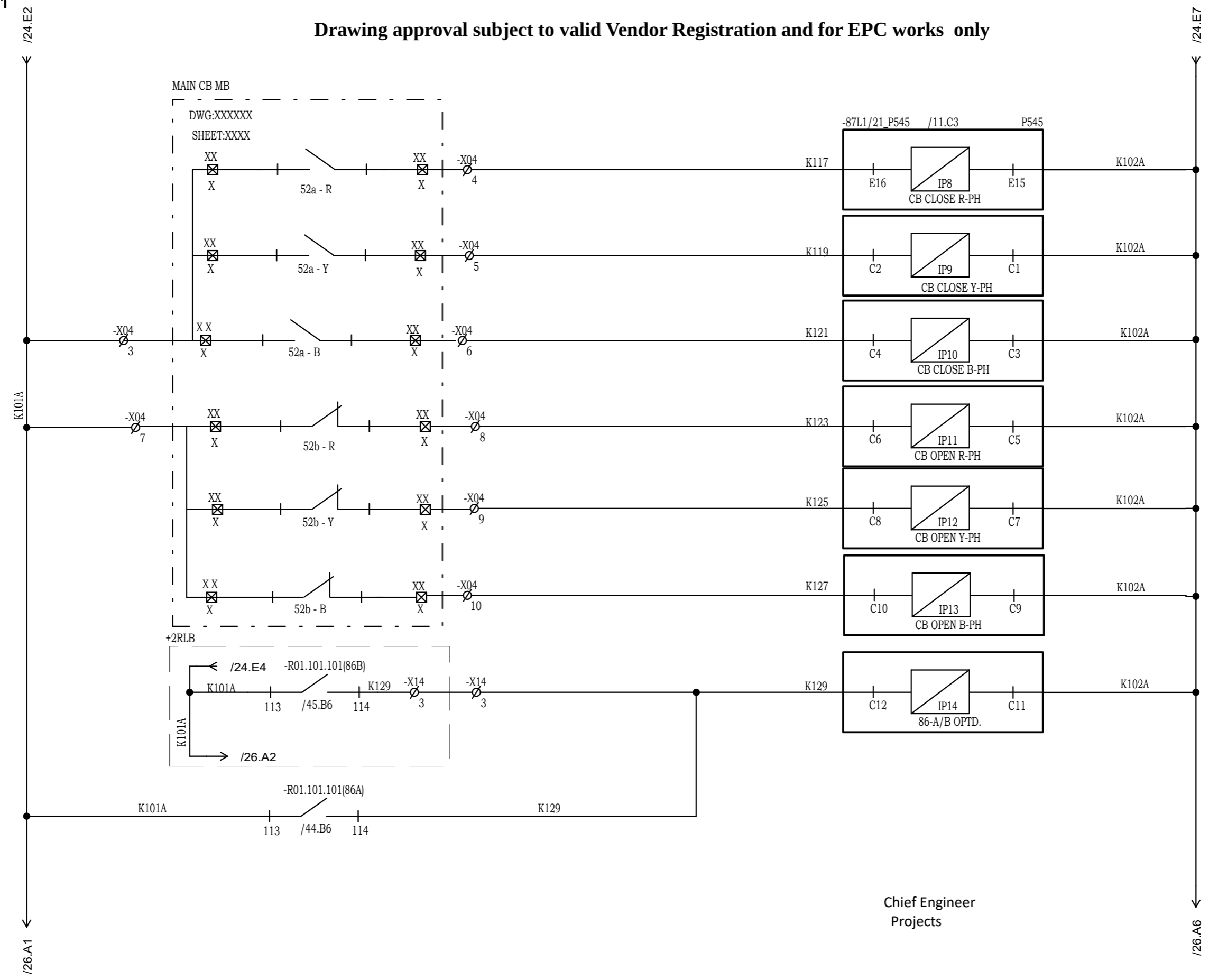
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CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	MAIN-1 (87L1) PROTECTION DI CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	24
CONT :	25

Drawing approval subject to valid Vendor Registration and for EPC works only



Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

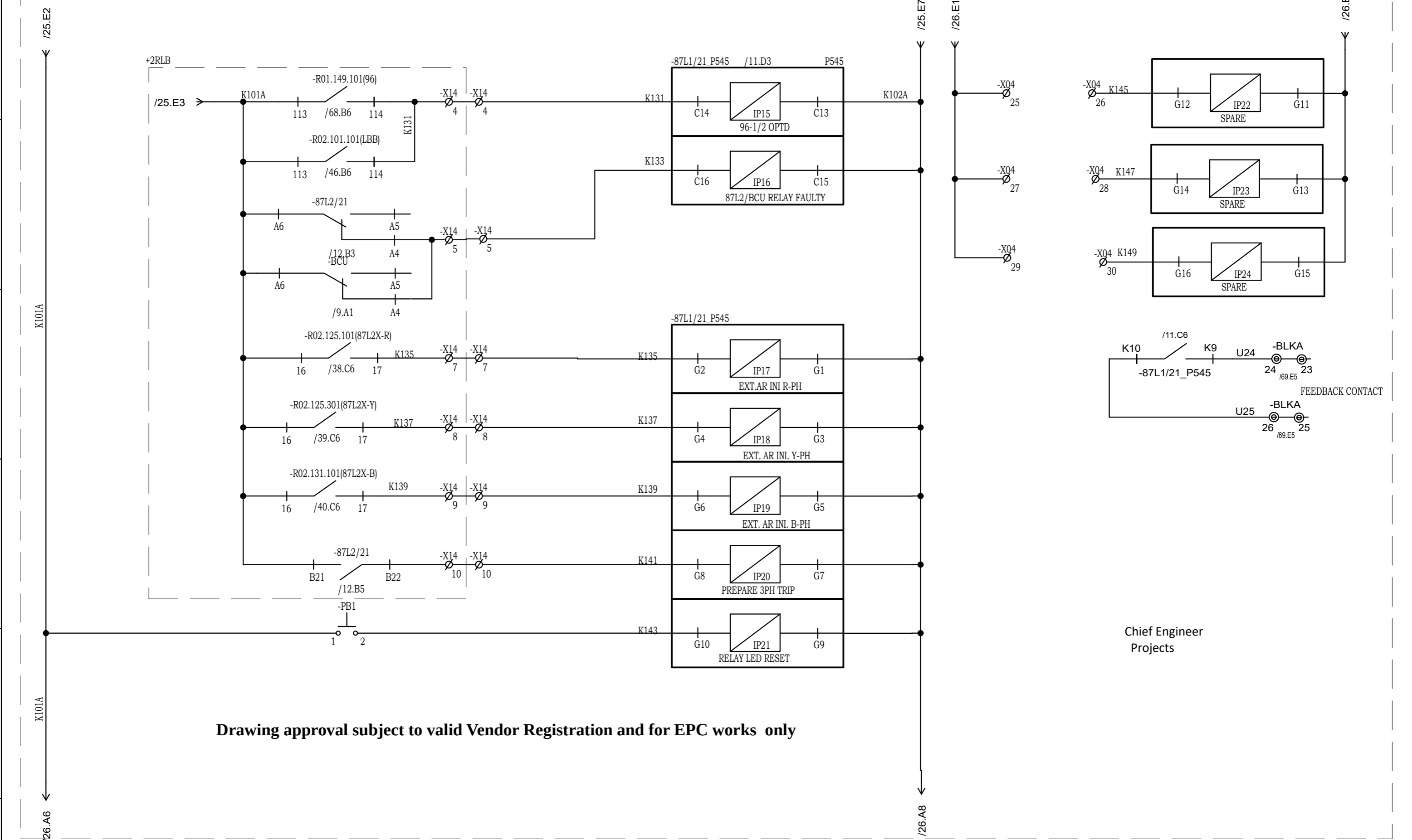
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00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : MAIN-1 (87L1) PROTECTION
DI CIRCUIT
CKT. NAME:
220KV LINE DIFFERENTIAL BAY
CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	25
CONT :	26



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Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

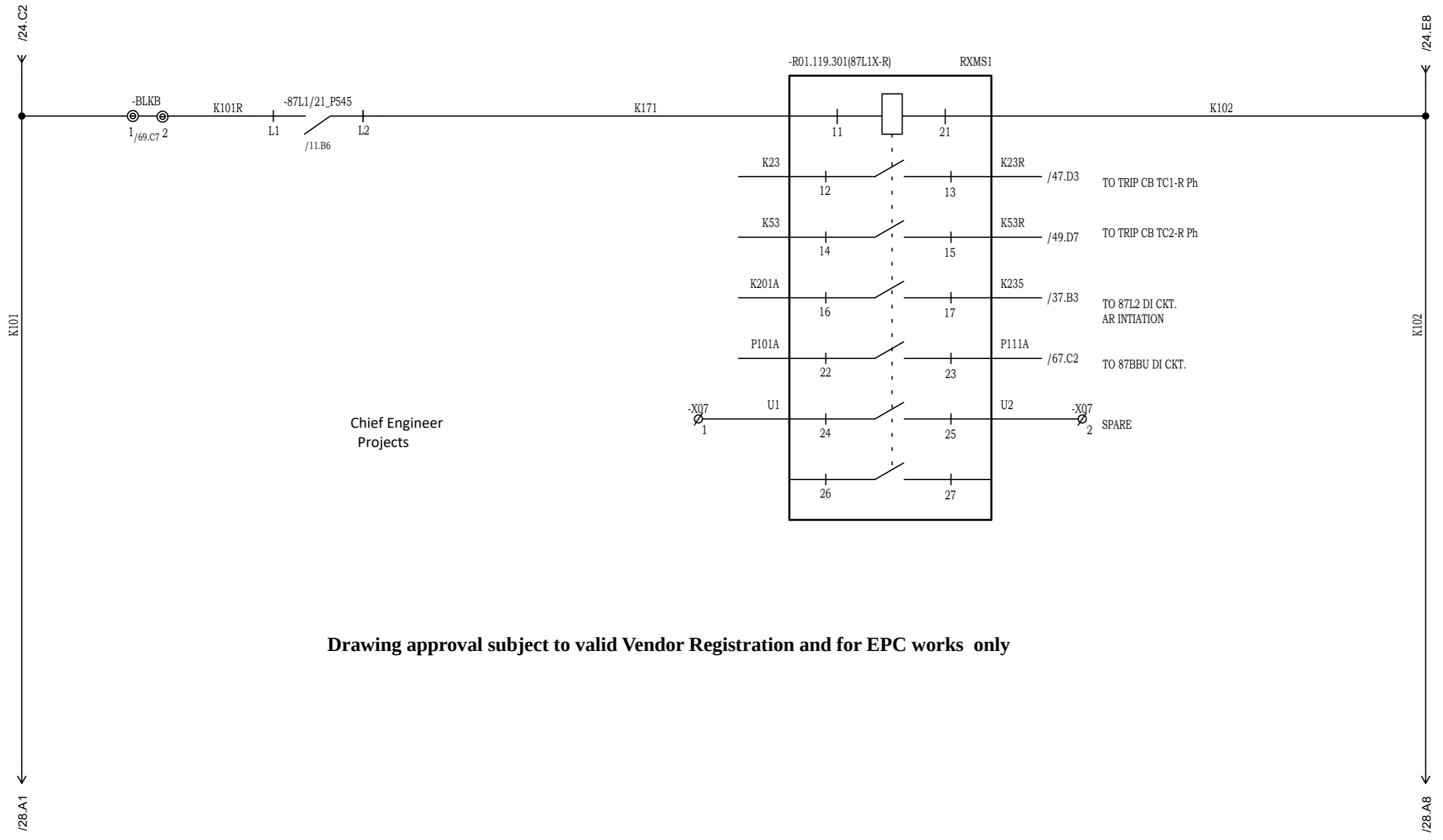
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00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : MAIN-1 (87L1) PROTECTION DI CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 26
PANEL REF : 2RLA&2RLB	CONT : 27
DWG No : CZN190523DB-CRS	



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Projects

Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

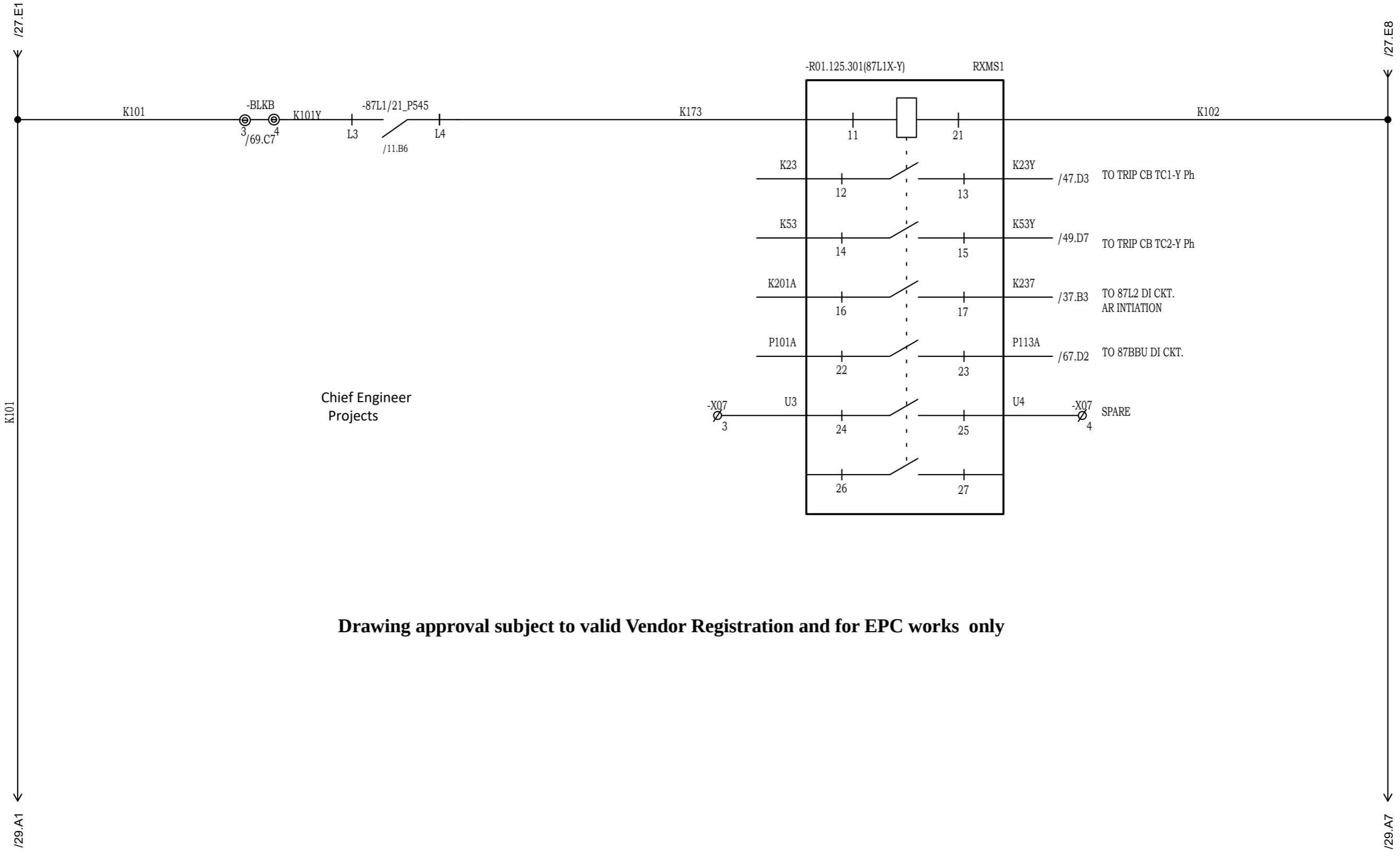
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT: _____
 CUSTOMER : M/s. APTRANSCO
 CONTRACTOR : _____



TITLE : MAIN-1 (87L1) PROTECTION R-PHASE TRIP RELAY
 CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 27
PANEL REF : 2RLA&2RLB	CONT : 28
DWG No : CZN190523DB-CRS	



Chief Engineer
Projects

Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

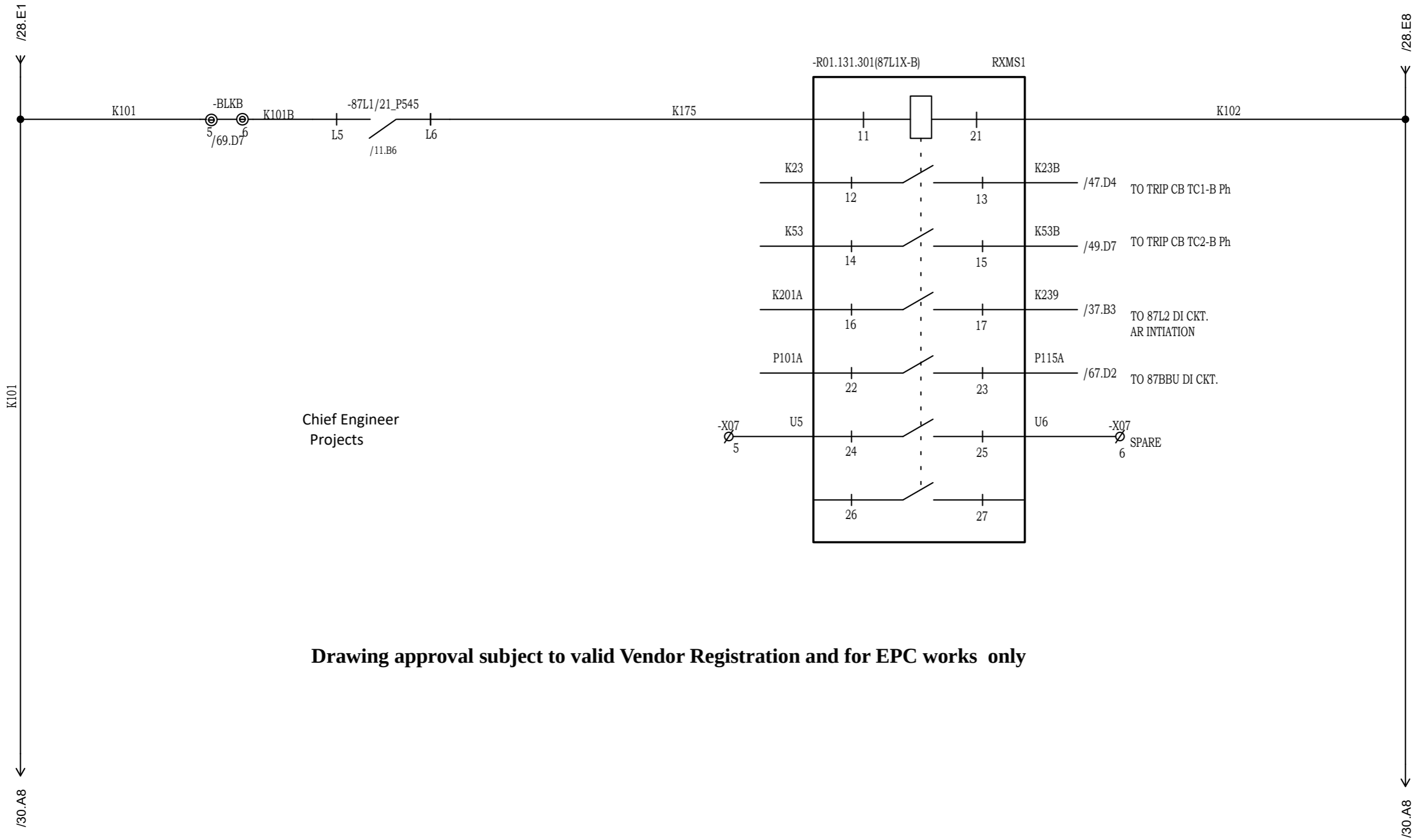
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : MAIN-1 (87L1) PROTECTION
Y-PHASE TRIP RELAY
CKT. NAME:
220KV LINE DIFFERENTIAL BAY
CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	28
CONT :	29



Chief Engineer
Projects

Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

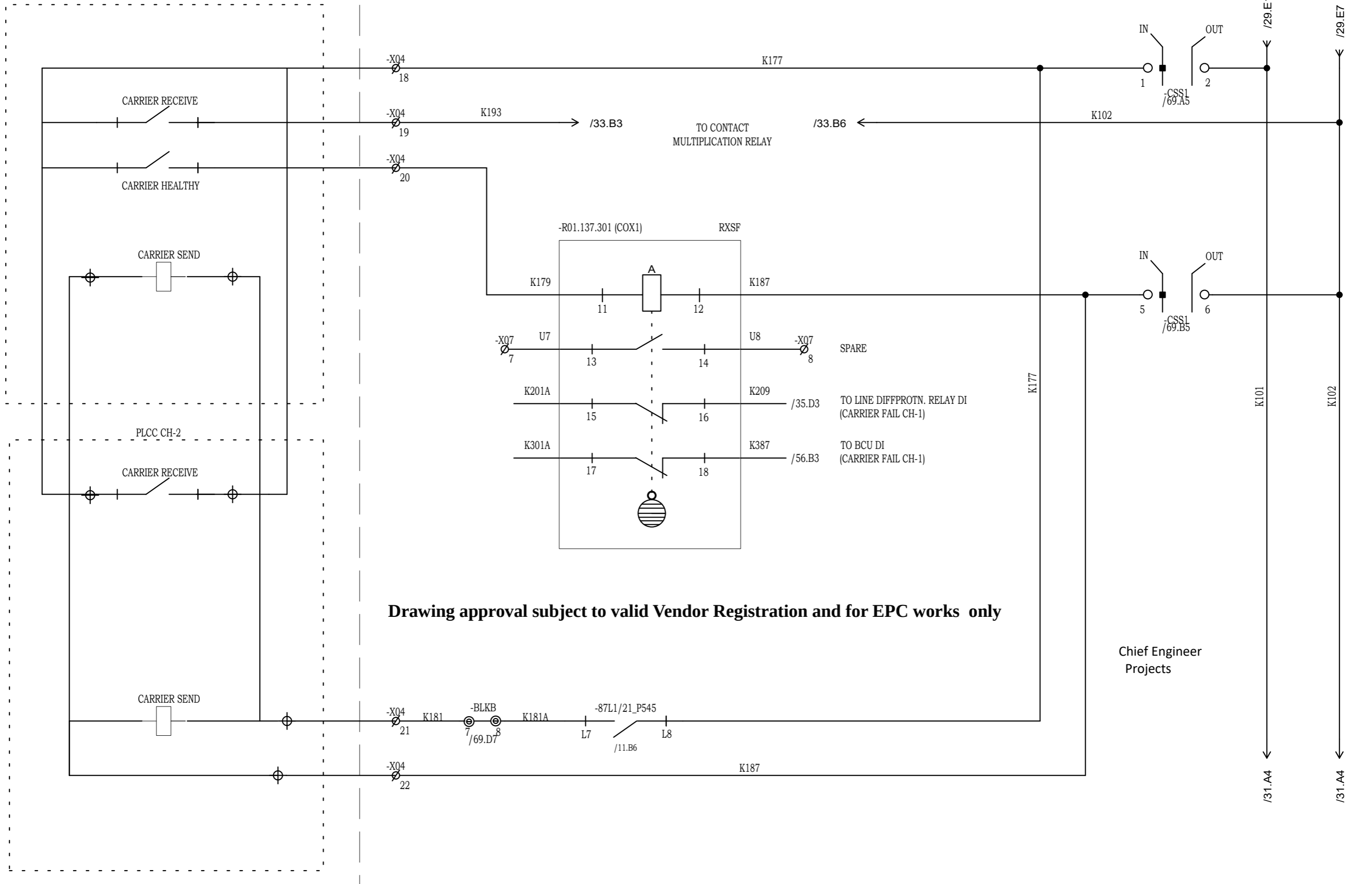
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : MAIN-1 (87L1) PROTECTION B-PHASE TRIP RELAY
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	29
CONT :	30



Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

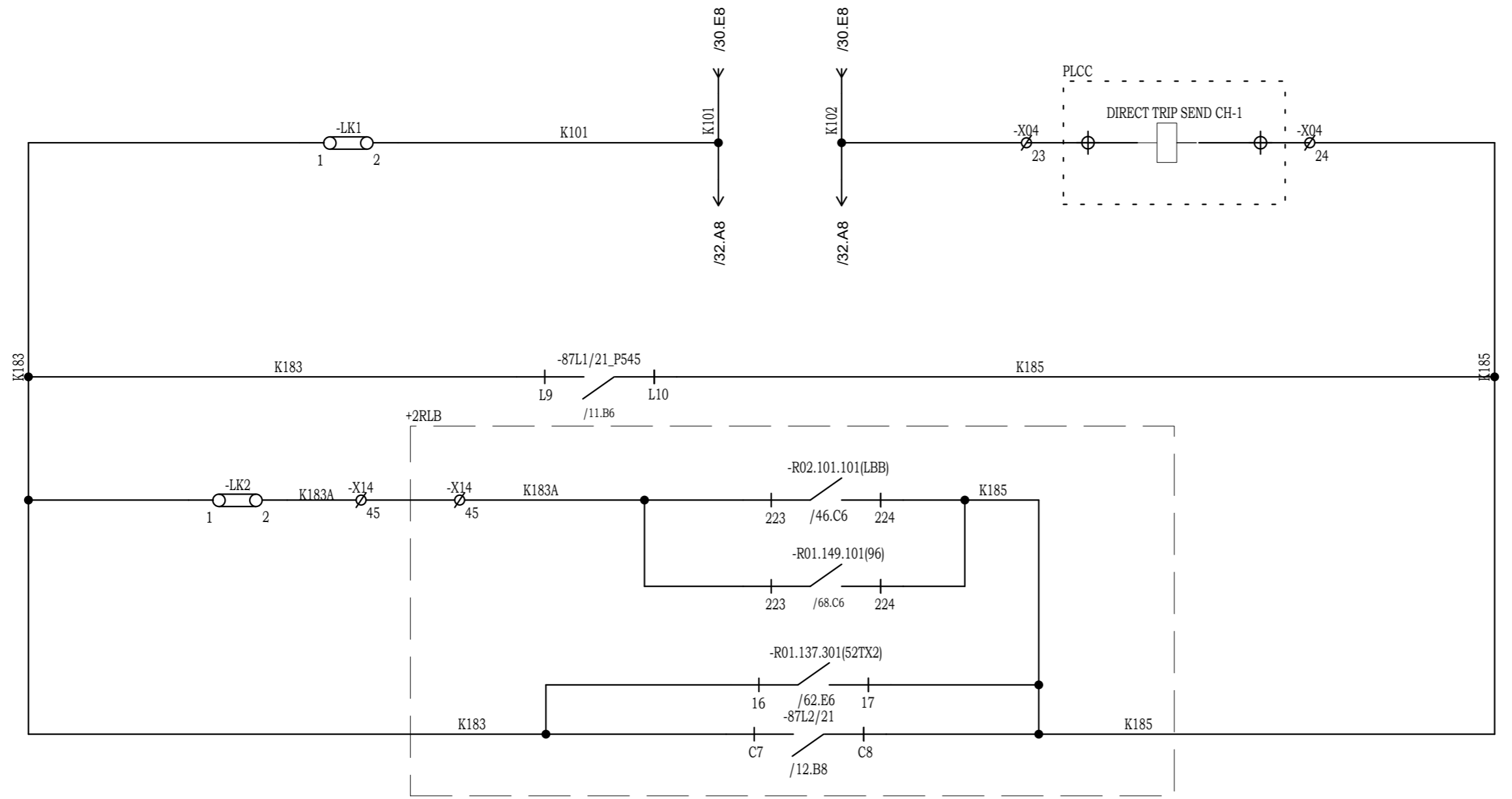
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : MAIN-1 (87L1) PROTECTION CARRIER CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 30
PANEL REF : 2RLA&2RLB	CONT : 31
DWG No : CZN190523DB-CRS	



<<87L1-DEF/OV OPTD

<<BB/LBB OPTD

<<MANUAL REMOTE TRIP

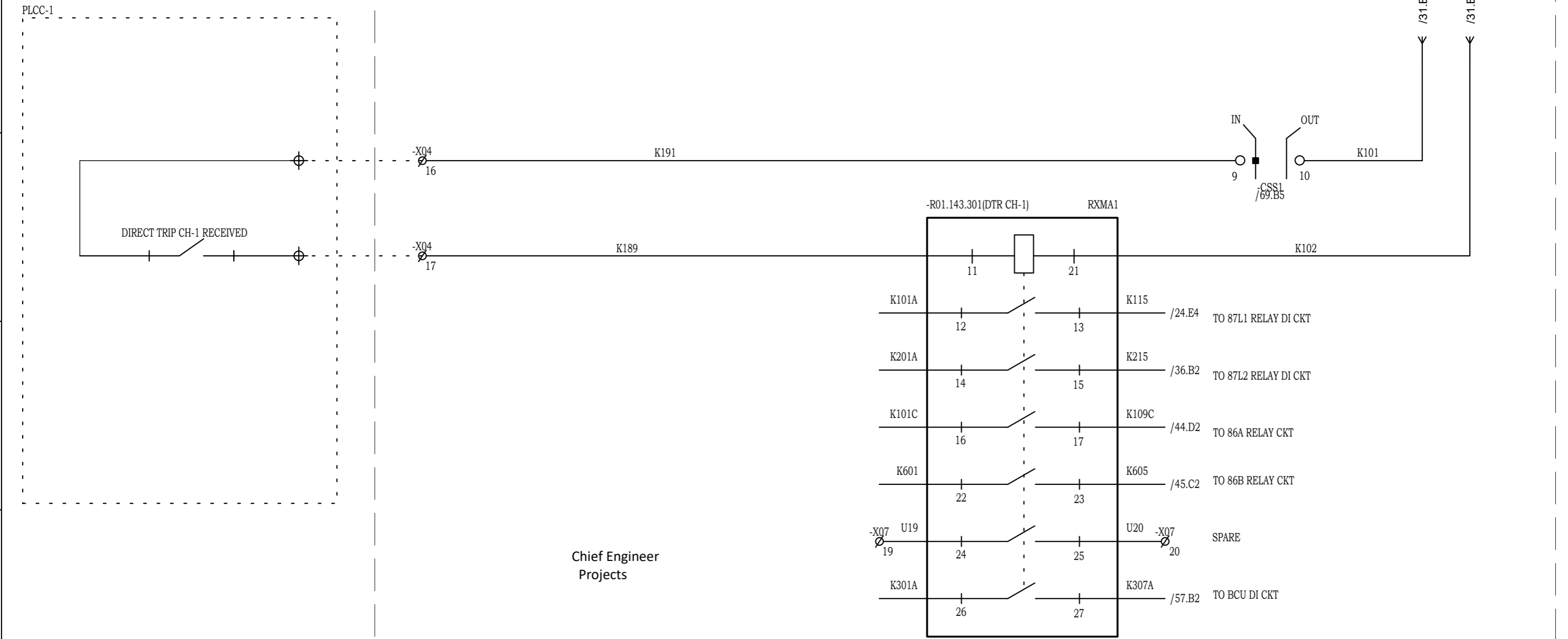
<<87L2 DEF/OV OPTD

Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

02	AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT:	ZIV AUTOMATION INDIA	TITLE : DIRECT TRIP SEND CH-1 CIRCUIT	PO No :	
01	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK				DOC TYPE : SCHEMATIC DIAGRAM	
00	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG				PANEL REF : 2RLA&2RLB	REV : 03
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	CUSTOMER : M/s. APTRANSCO	ZIV AUTOMATION INDIA	CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL	DWG No :	SHT : 31
REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR :			CZN190523DB-CRS	CONT : 32



Chief Engineer
Projects

Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

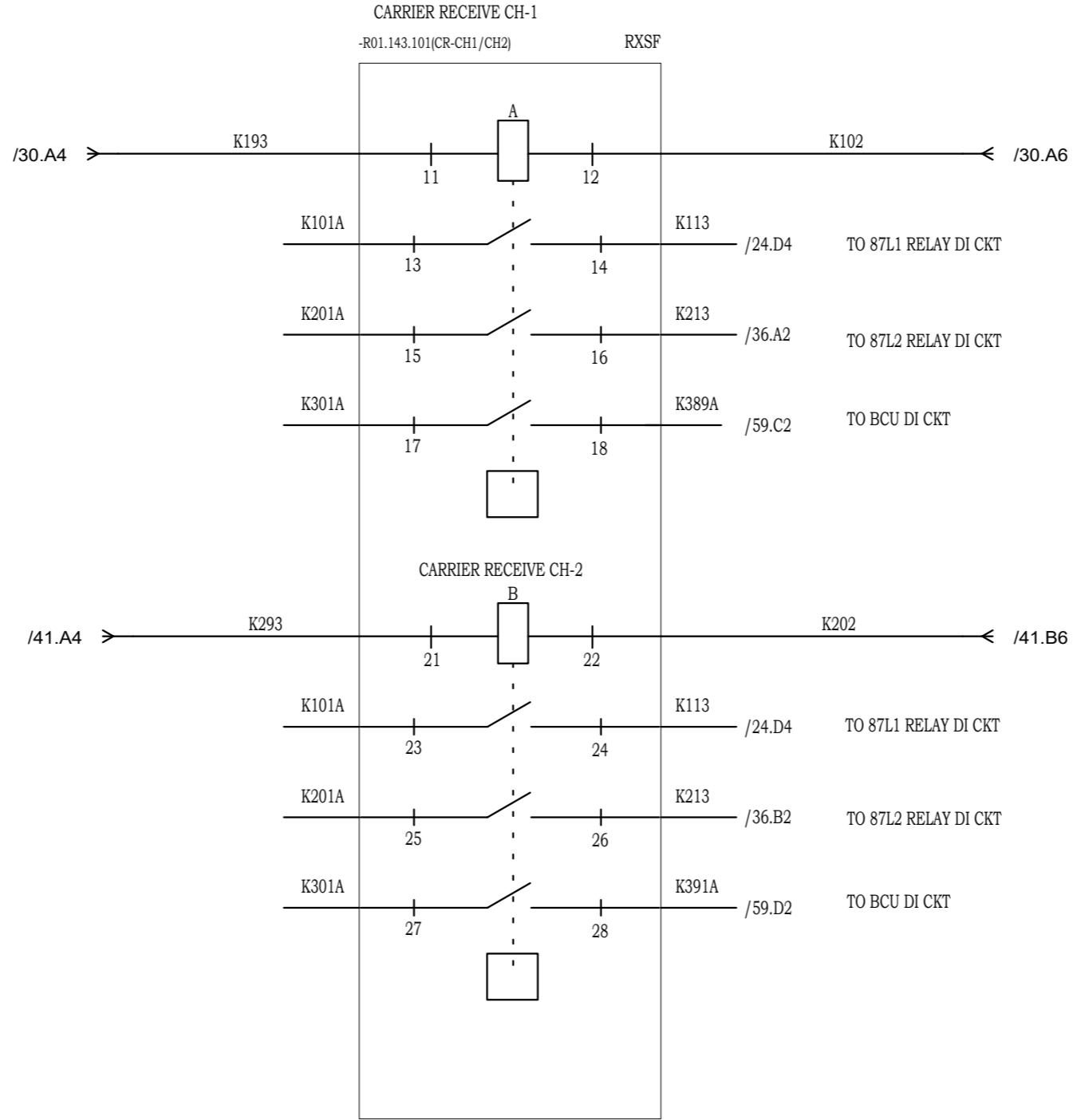
PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : DIRECT TRIP RECEIVE CH-1
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	32
CONT :	33

Drawing approval subject to valid Vendor Registration and for EPC works only



Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

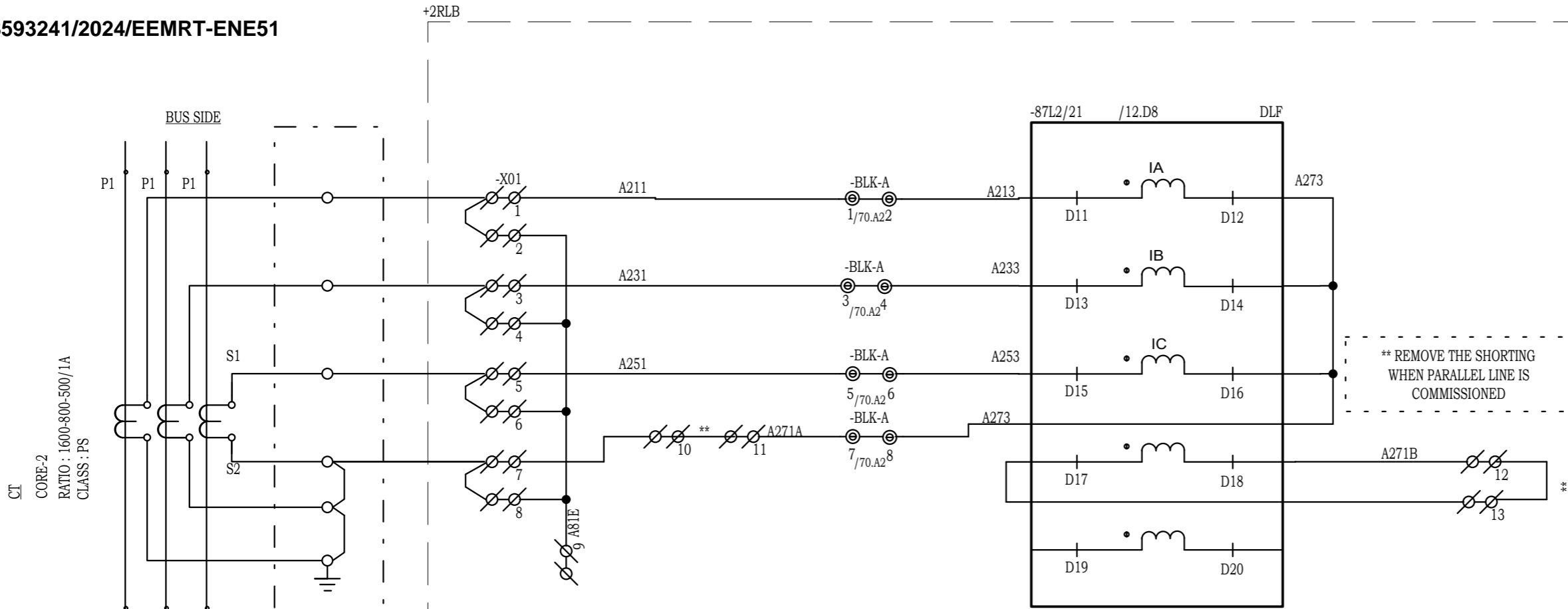
AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	
AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK	
AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG	
SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	
REV	REMARKS	DATE	DRWN	CHKD	APPD

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



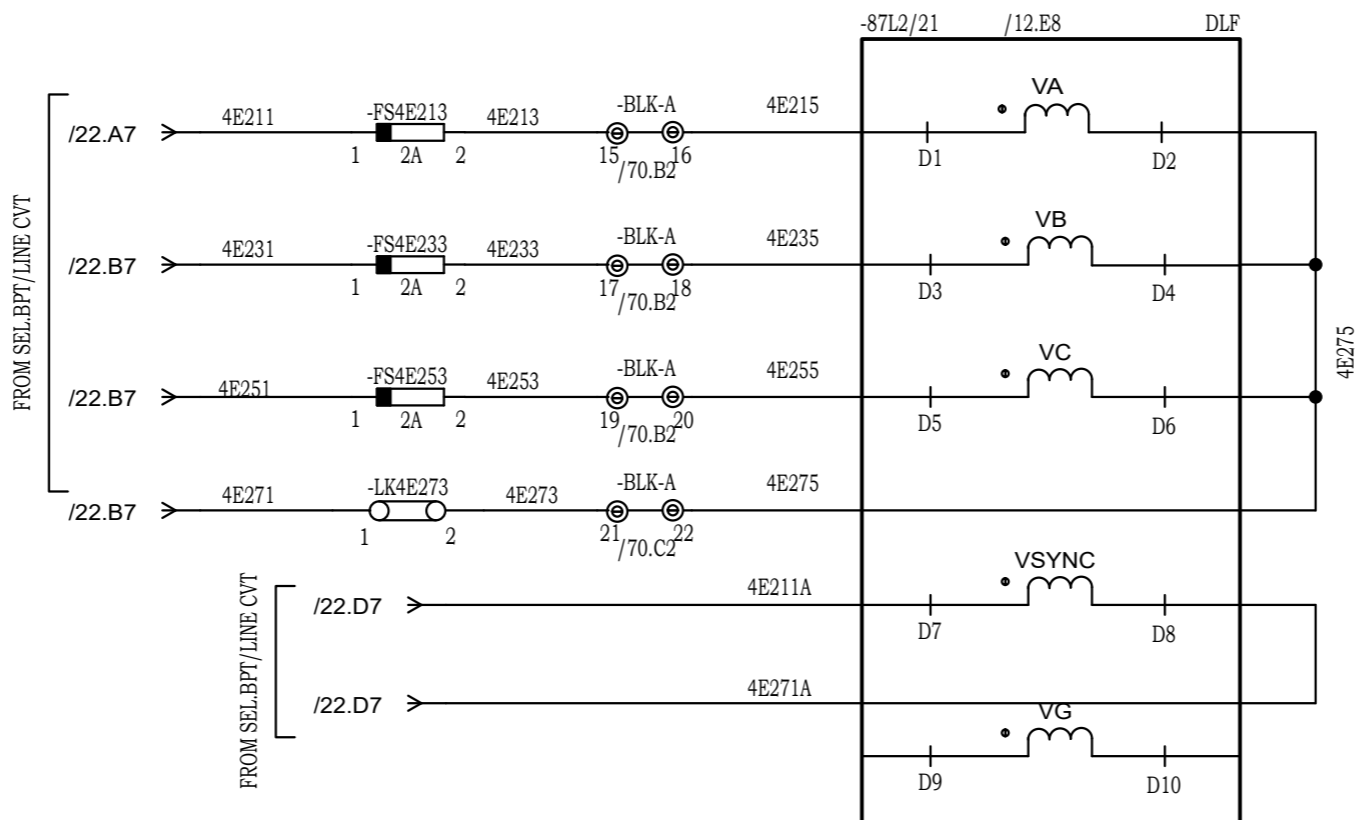
TITLE : CARRIER CMR CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	33
CONT :	34



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S.No:	CONFIGURABLE LED APPLICATION
1	DIFFERENTIAL PROTN TRIP
2	DISTANCE PROTN. TRIP
3	R-PHASE FAULT
4	Y-PHASE FAULT
5	B-PHASE FAULT
6	GROUND FAULT TRIP
7	ZONE-1 TRIP
8	ZONE-2 TRIP
9	ZONE-3 TRIP
10	ZONE-4 TRIP
11	ZONE-5 TRIP (REV)
12	Z-COM TRIP
13	SOTF/TOR TRIP
14	AUTO RECLOSER CLOSE COMMAND
15	AUTO RECLOSER BLOCK
16	O/C TRIP
P1	BRC ALARM (GREEN), FIBER CH-1 FAIL (RED)
P2	PSB (GREEN), FIBER CH-2 FAIL (RED)
P3	VTFF
P4	DIFFERENTIAL BLOCK
P5	CARRIER SEND
P6	CARRIER RECEIVE, LED RESET



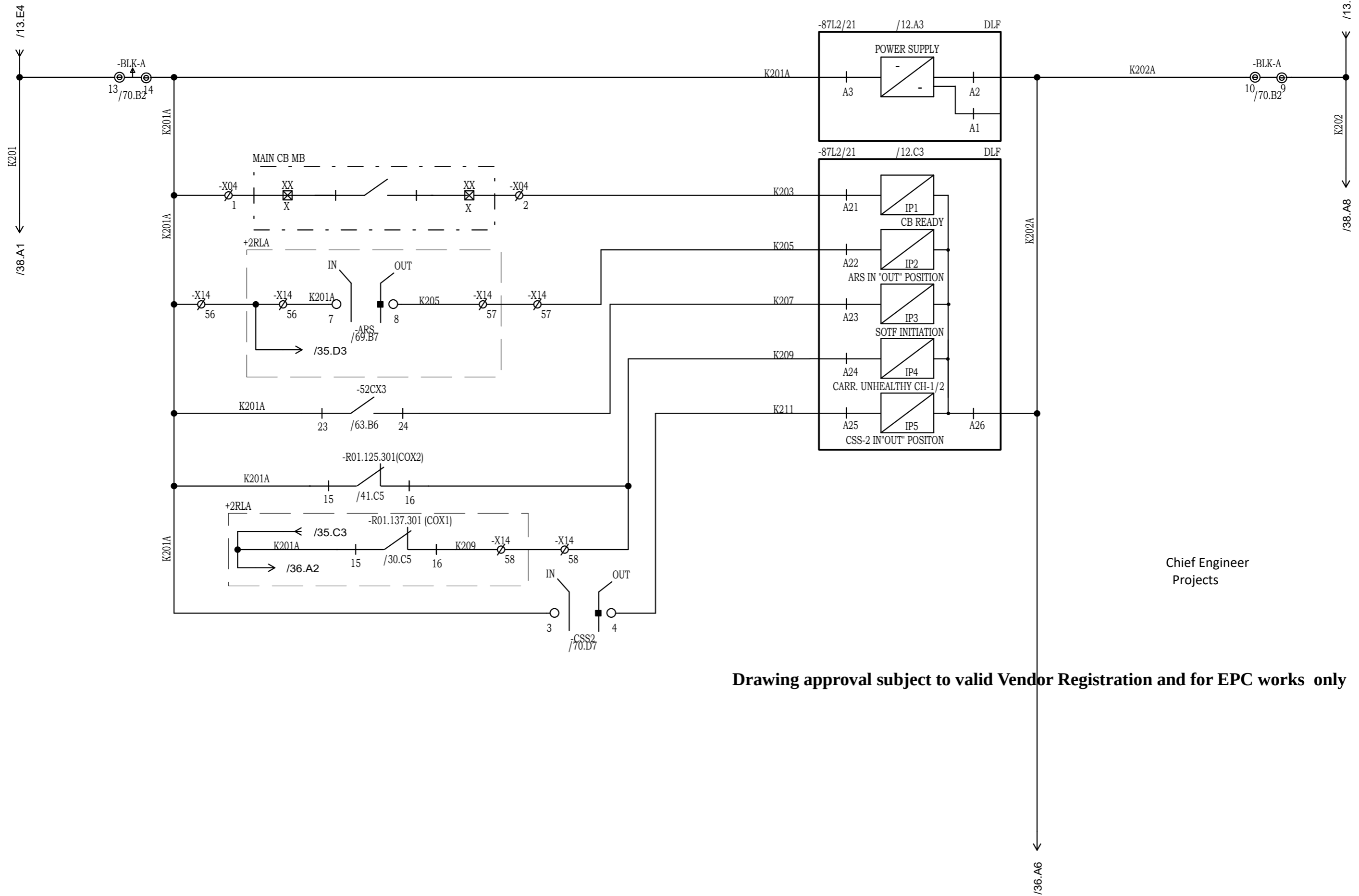
LIST OF FUNCTION AVAILABLE IN DLF RELAY	
LINE DIFFERENTIAL PROTECTION (87)	
DISTANCE PROTECTION 21M	
AUTORECLOSER PROTECTION (79)	
SOTF PROTECTION	
DIR. OVER CURRENT PROTECTION (67/67N)	
VT FUSE FAIL	
POWERING BLOCKING PROTECTION	
BROKEN CONDUCTOR PROTECTION	
DIR. EARTH FAULT PROTECTION	
EVENT RECORDER	
TRIPPING LOGICS	
WEEK END INFEEED LOGICS	
COMMUNICATION SCHEME	
16 FREELY CONFIG LED	
3PH U/V PROTECTION	

CT DETAILS REFER IN SHEET NO.3

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : MAIN-2 (87L2) PROTN. RELAY CIRCUIT	PO No :	
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK				DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG				PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG				DWG No : CZN190523DB-CRS	SHT : 34
REV	REMARKS	DATE	DRWN	CHKD	APPD			CONT : 35	



Chief Engineer
Projects

Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

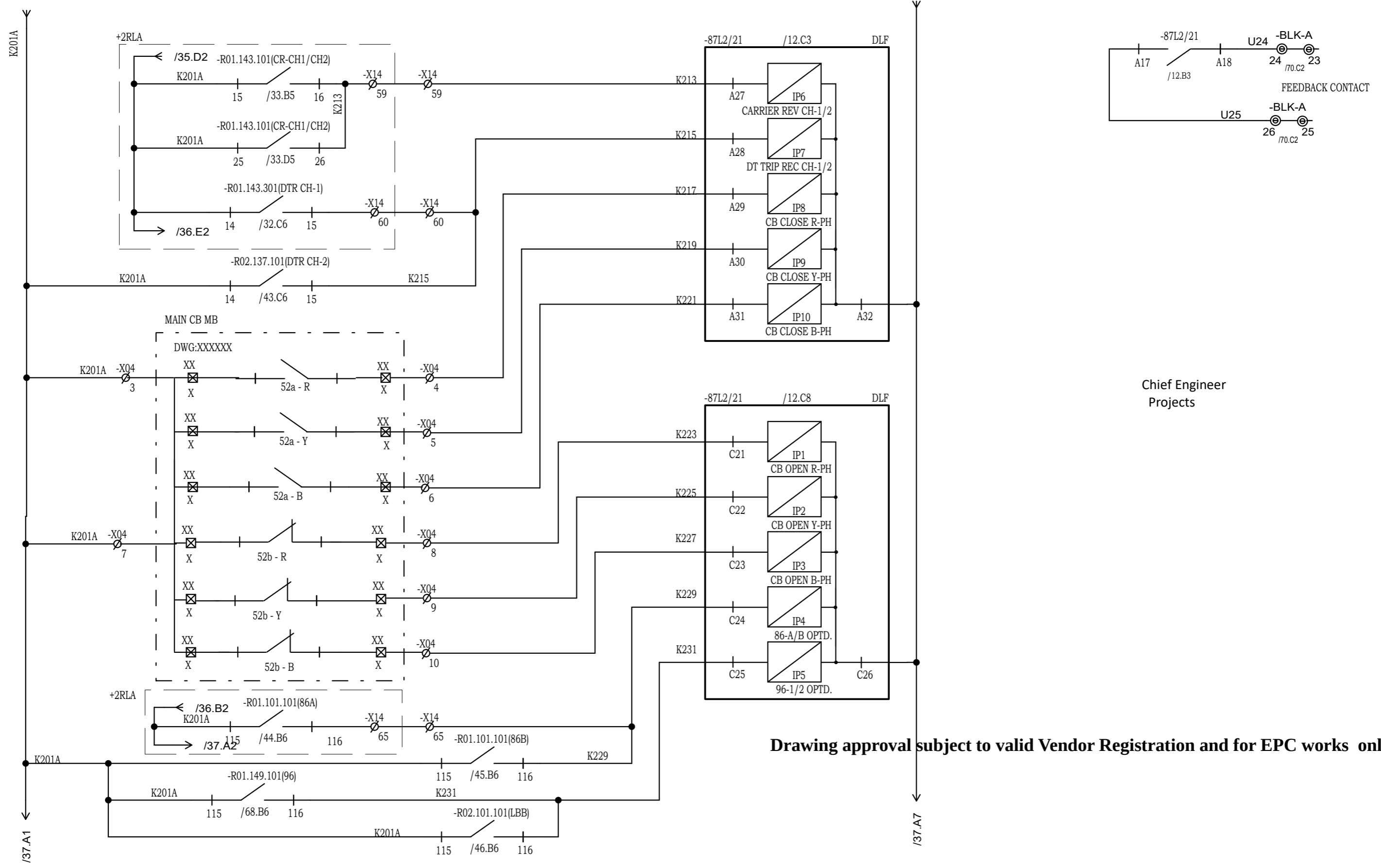
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : MAIN-2 (87L2) PROTN. DI CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	35
CONT :	36

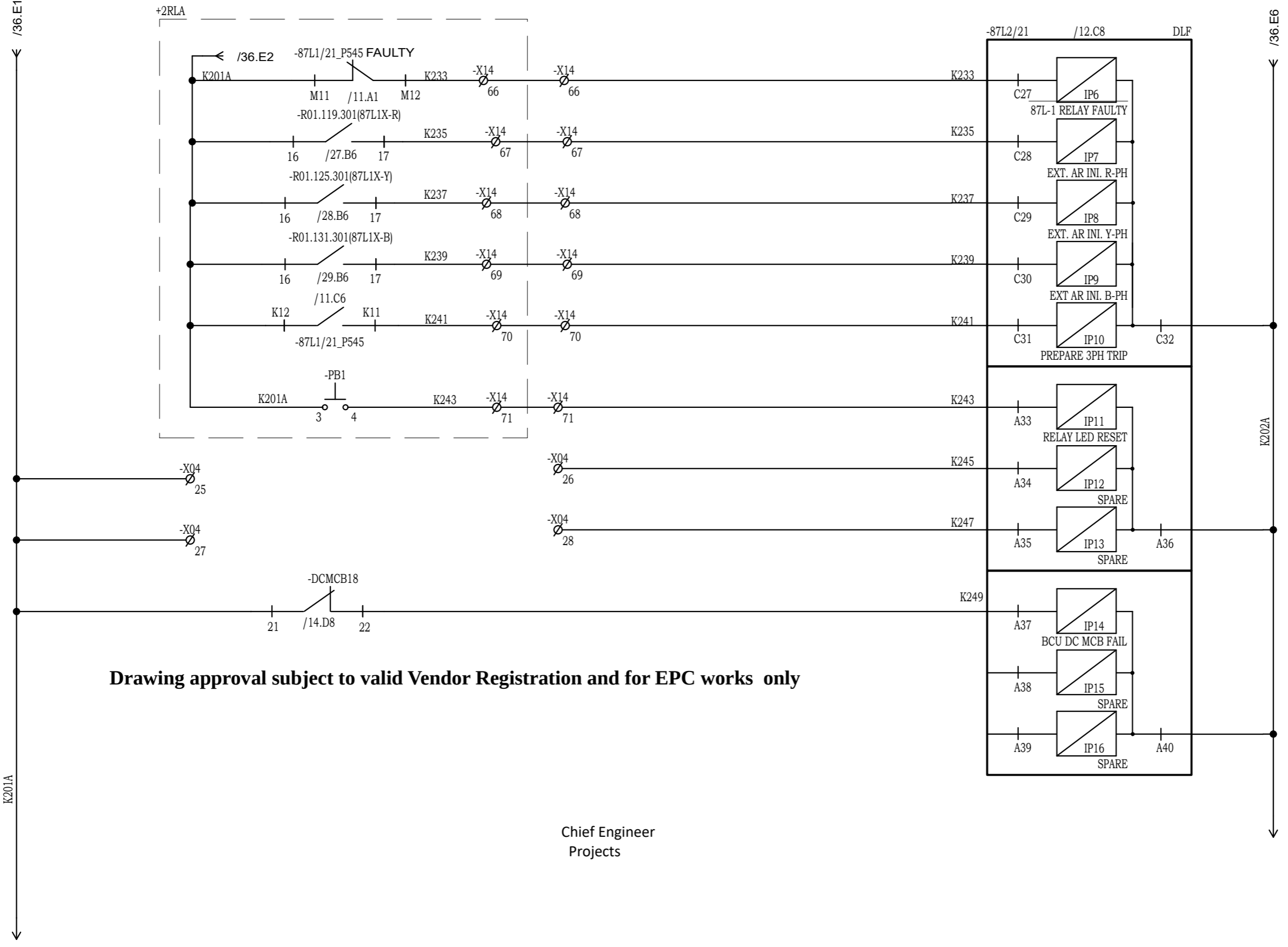


Chief Engineer
Projects

Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : MAIN-2 (87L2) PROTN. DI & DO CIRCUIT	PO No :
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL	DOC TYPE : SCHEMATIC DIAGRAM
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 36
REV	REMARKS	DATE	DRWN	CHKD			APPD	CONT : 37



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Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :

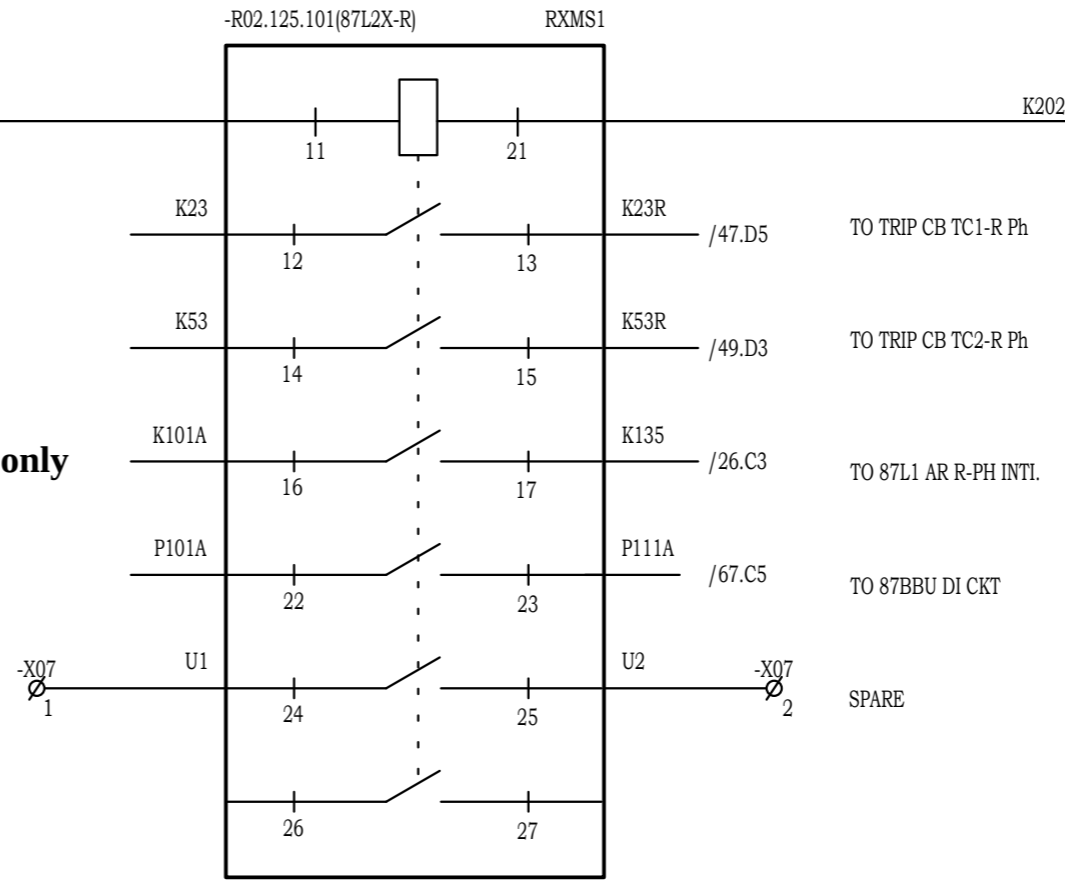


TITLE : MAIN-2 (87L2) PROTN. DI&SPARE CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	37
CONT :	38

Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects



NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT: _____
 CUSTOMER : M/s. APTRANSCO
 CONTRACTOR : _____

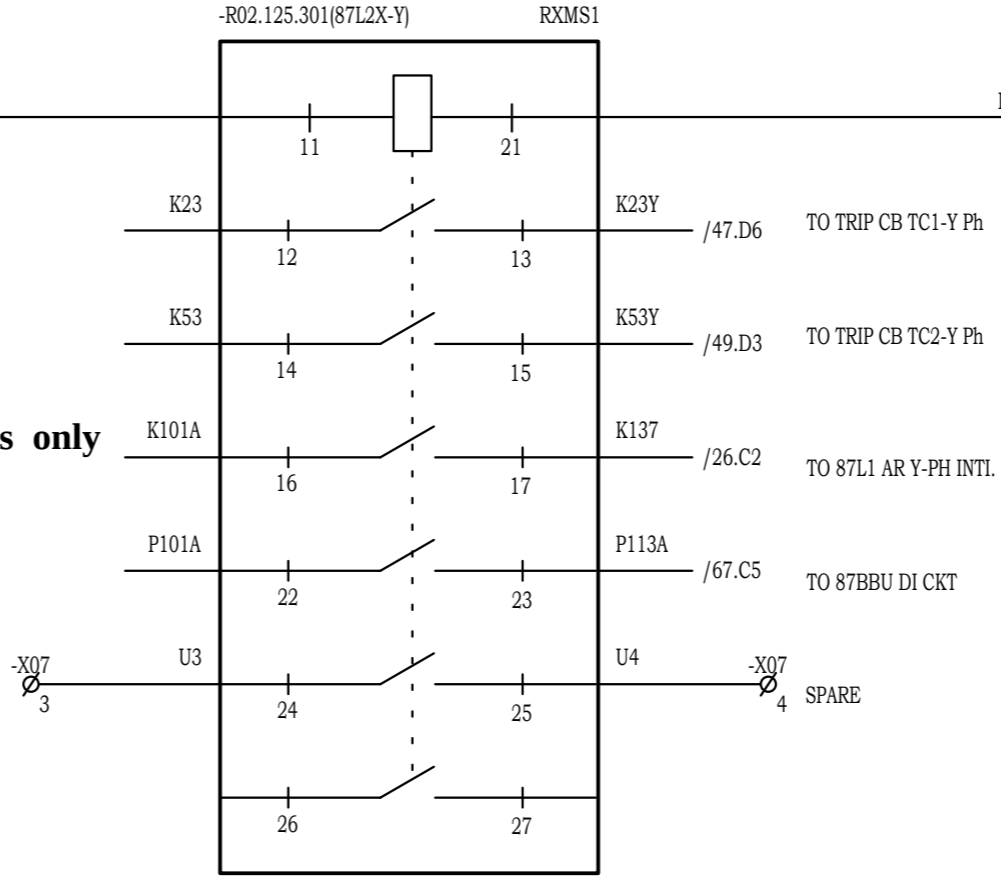


TITLE : MAIN-2 (87L2) PROTN. R-PHASE TRIP RELAY
 CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 38
PANEL REF : 2RLA&2RLB	CONT : 39
DWG No : CZN190523DB-CRS	

Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects



NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :

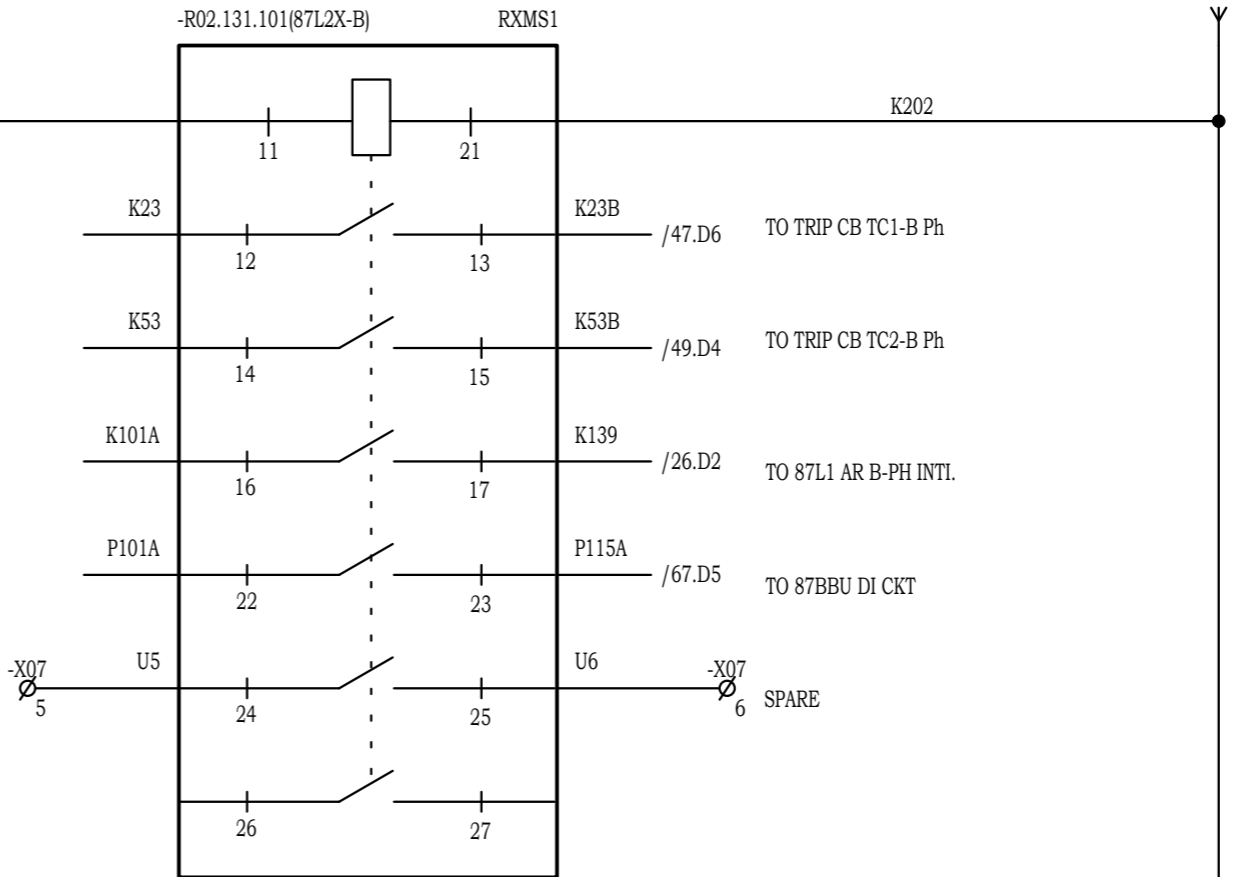


TITLE : MAIN-2 (87L2) PROTN.
Y-PHASE TRIP RELAY
CKT. NAME: 220KV LINE DIFFERENTIAL BAY
CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	39
CONT :	40

Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects



NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

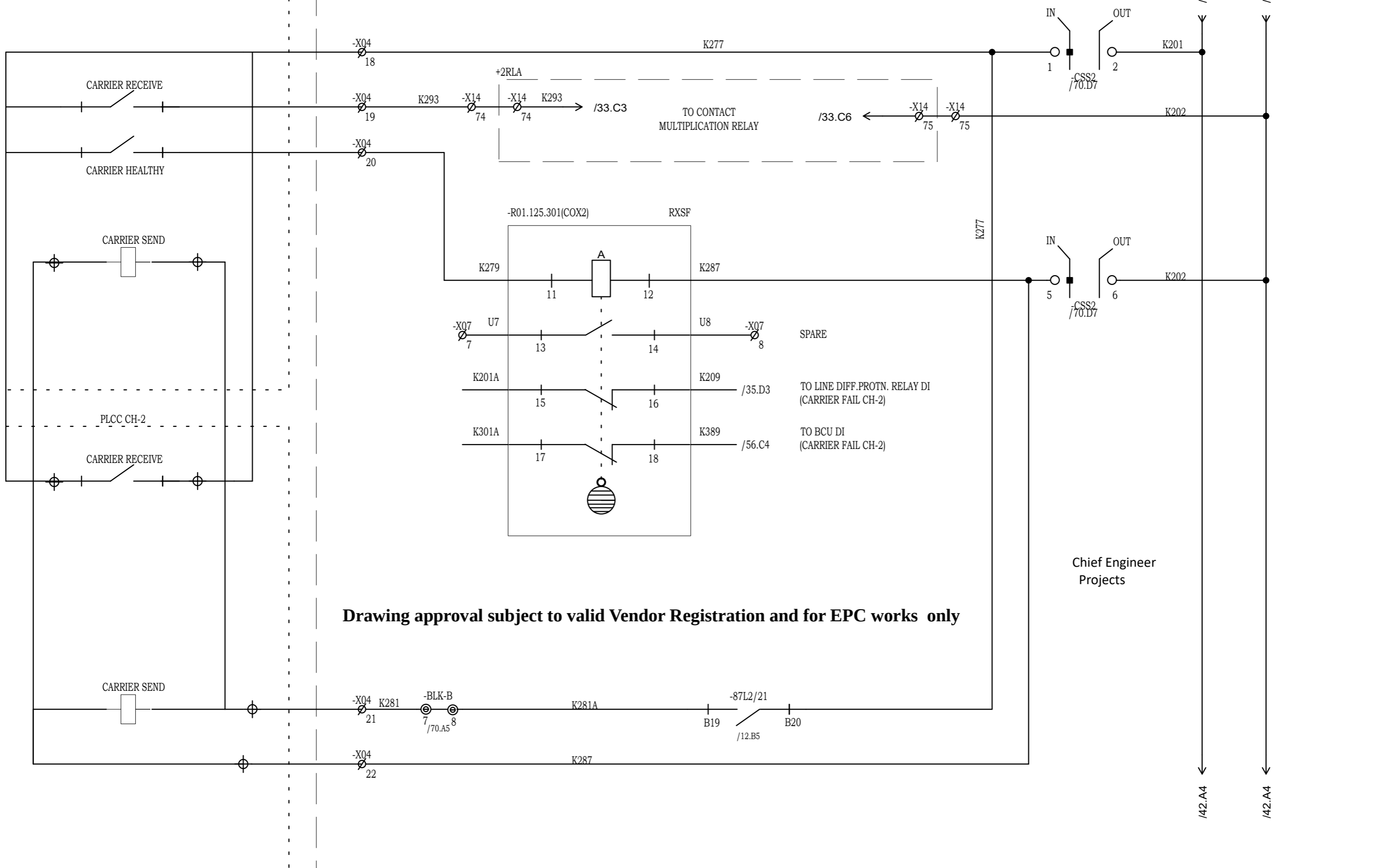
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT: _____
 CUSTOMER : M/s. APTRANSCO
 CONTRACTOR : _____



TITLE : MAIN-2 (87L2) PROTN.
 B-PHASE TRIP RELAY
 CKT. NAME: 220KV LINE DIFFERENTIAL BAY
 CONTROL AND RELAY PANEL

PO No :	_____
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	40
CONT :	41



Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

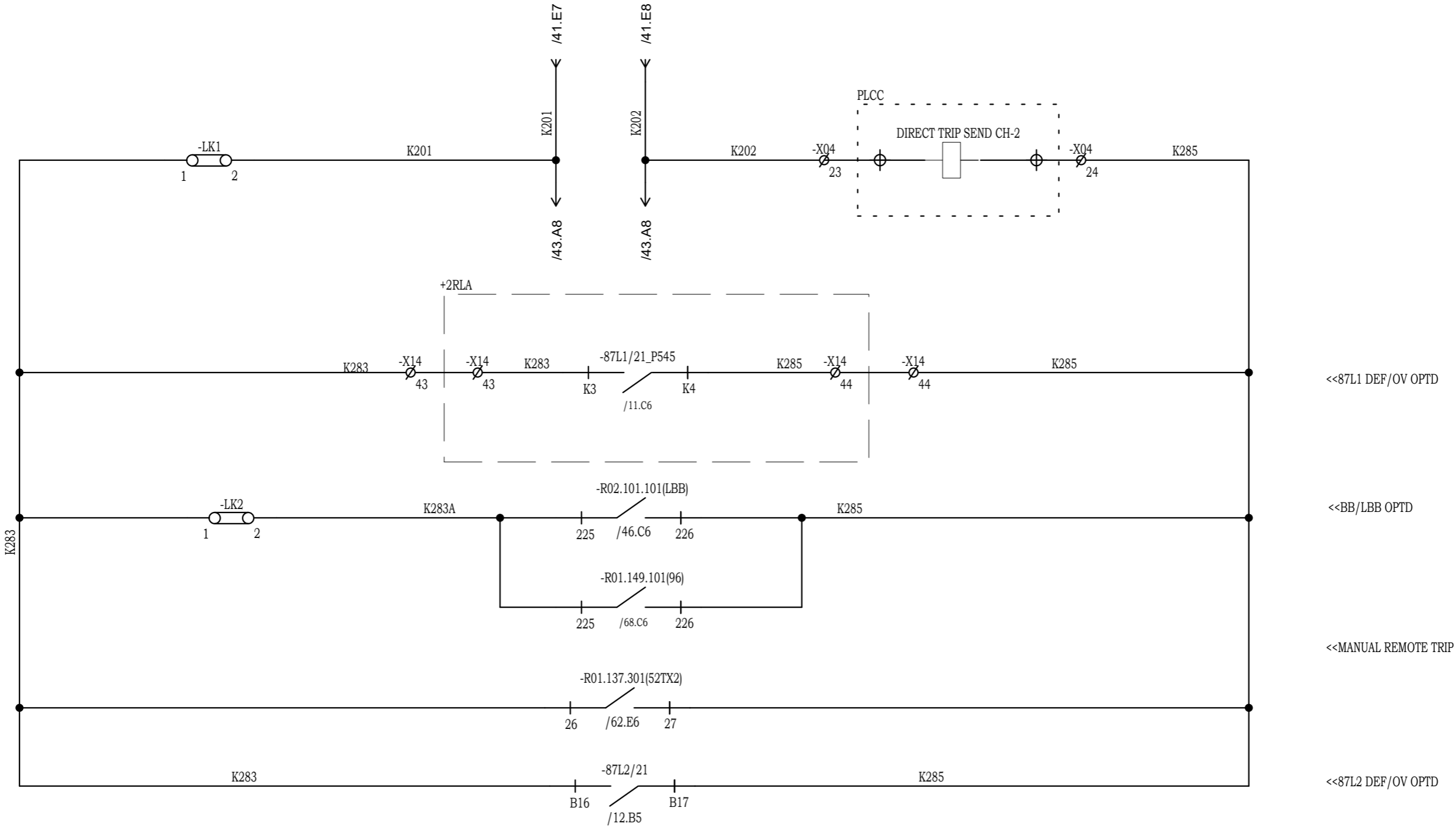
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : MAIN-2 (87L2) PROTN. CARRIER CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	41
CONT :	42

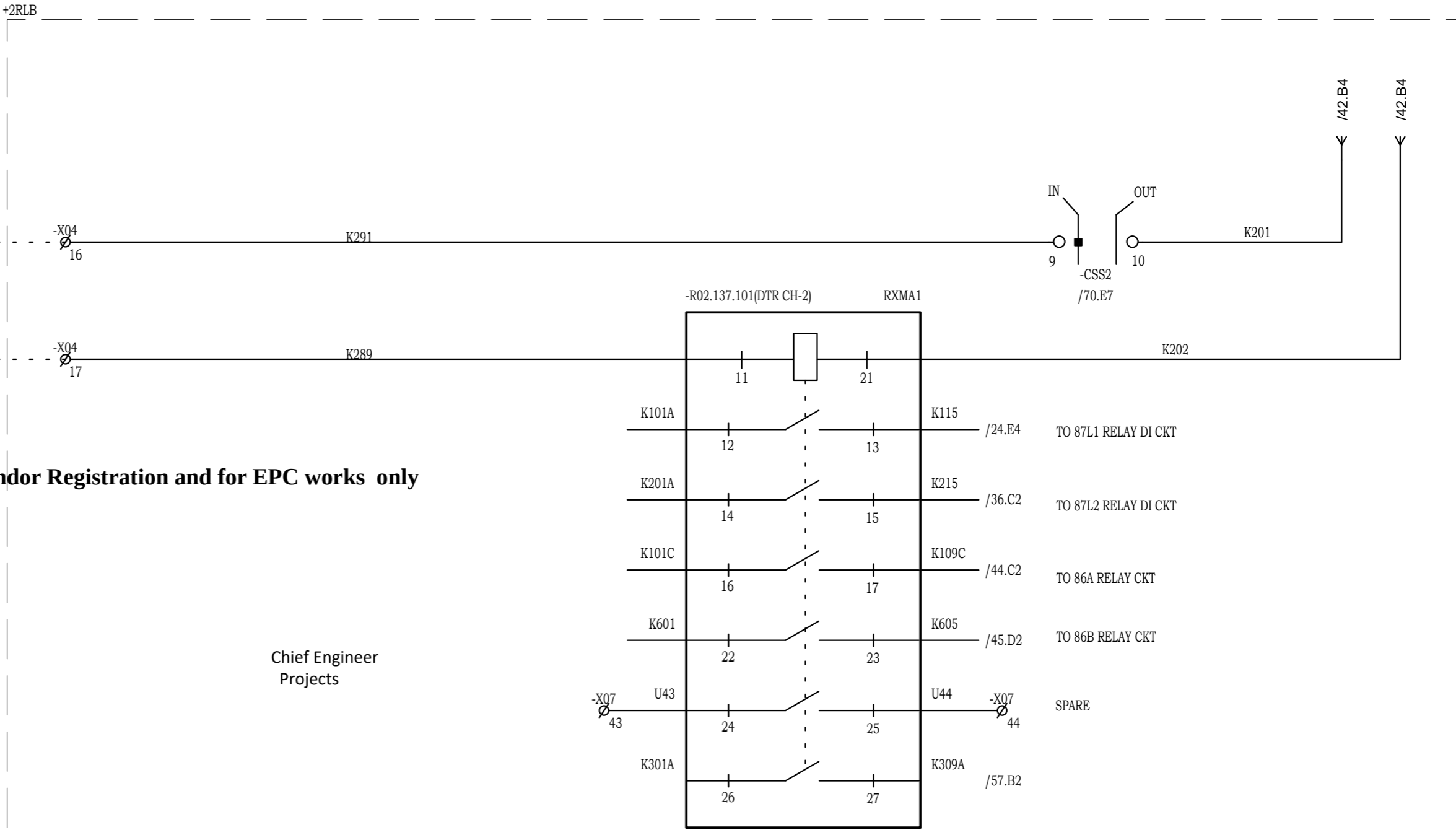
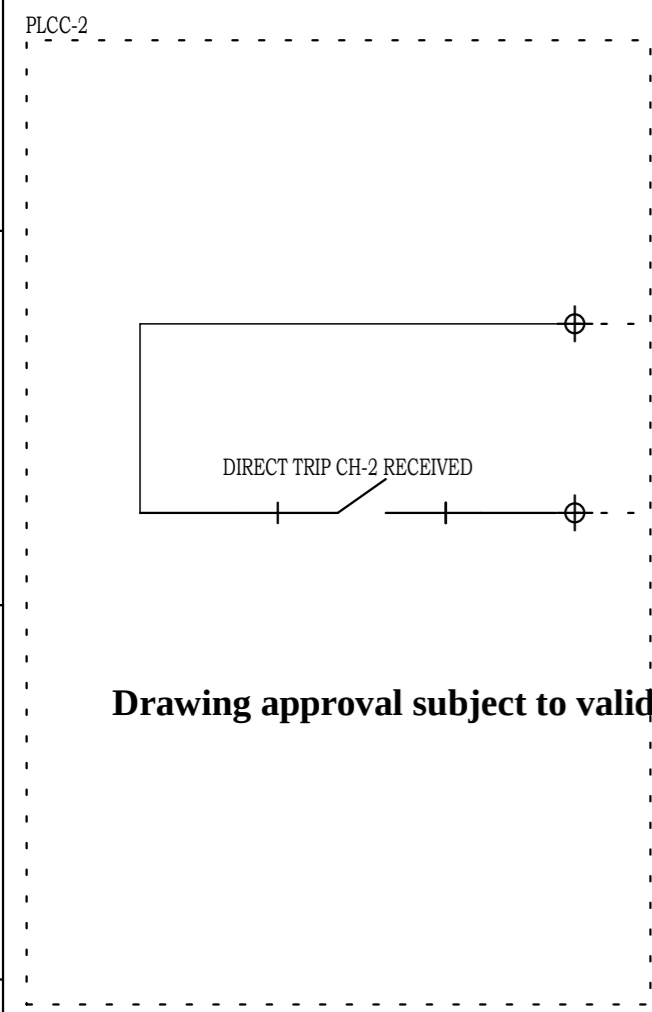


Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

02	AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : DIRECT TRIP SEND CH-2 CIRCUIT	PO No :
01	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
00	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 42
REV	REMARKS	DATE	DRWN	CHKD	APPD				CONT : 43



Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

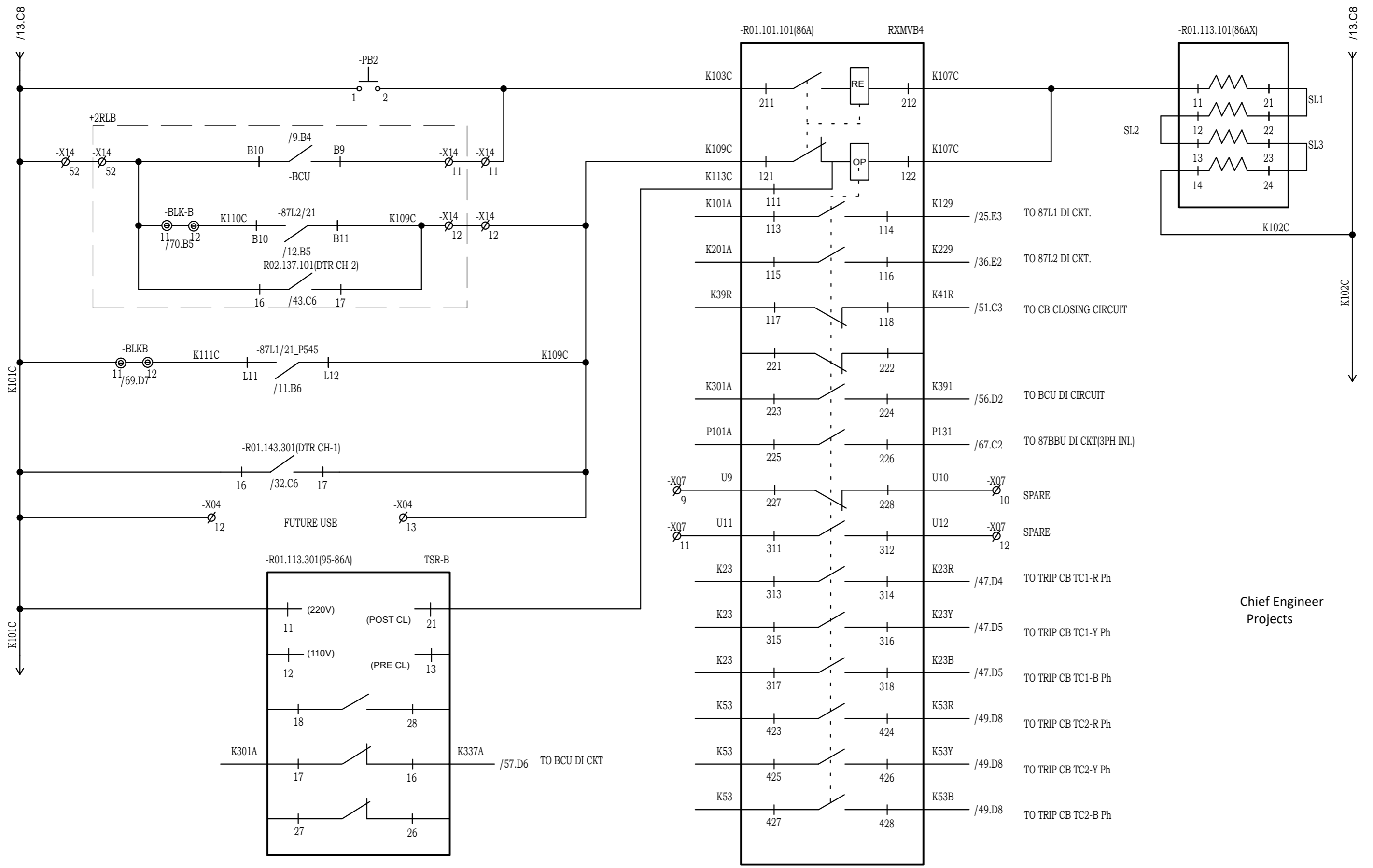
PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : DIRECT TRIP RECEIVE CH-2
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	43
CONT :	44

8593241/2024/EEMRT-ENE51



Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

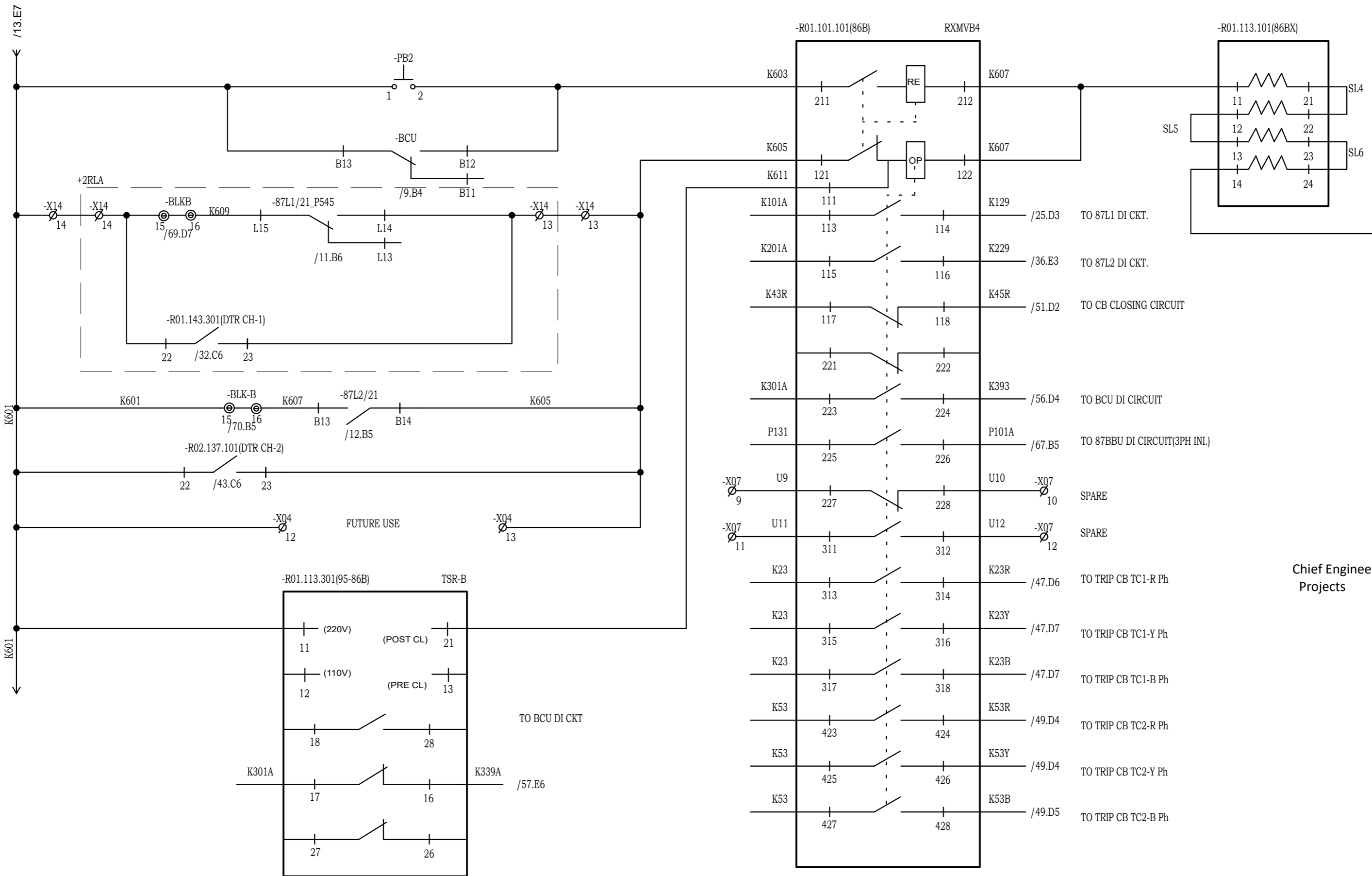
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : GROUP-A TRIP RELAY CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	44
CONT :	45



Chief Engineer Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

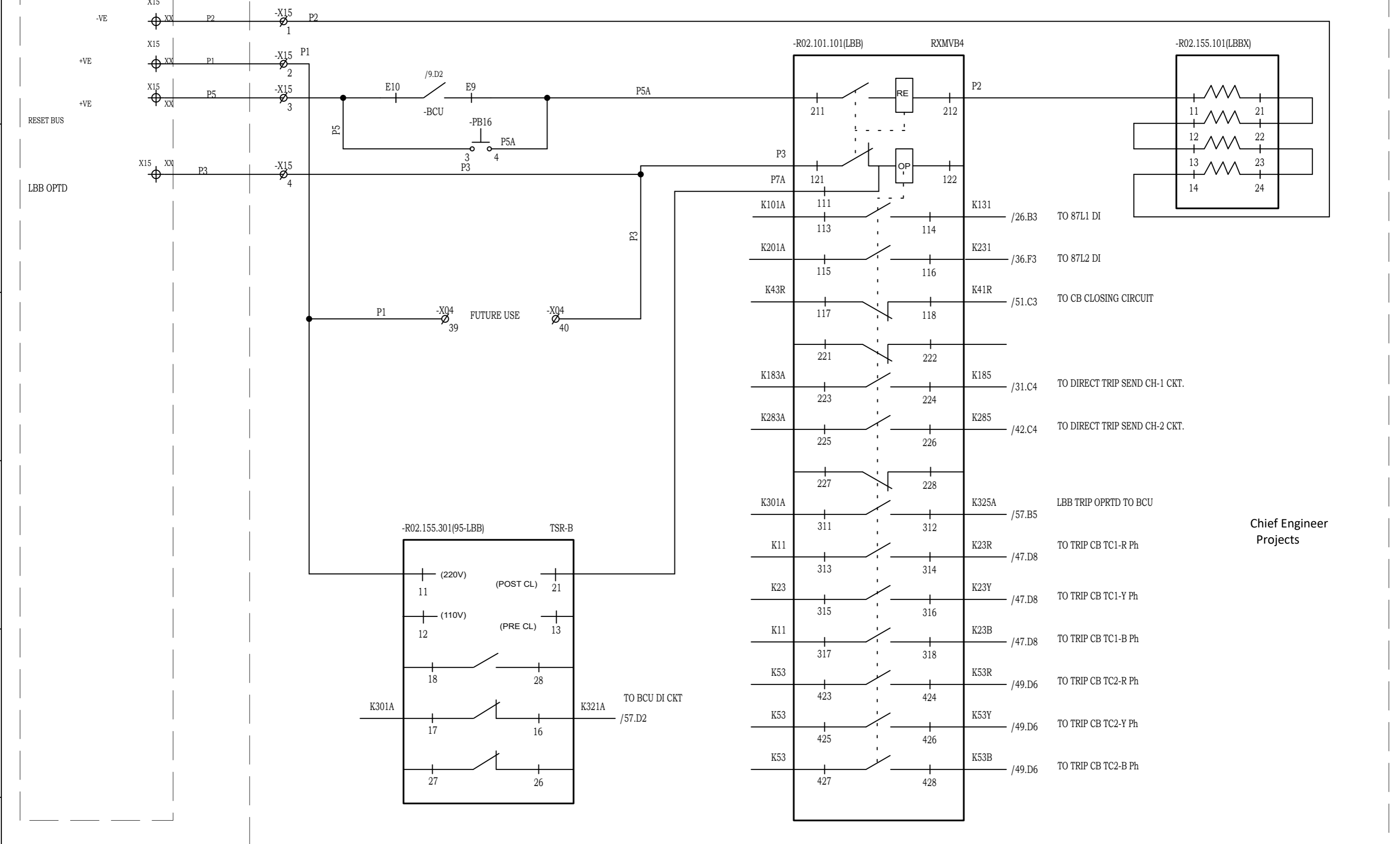
REV	REMARKS	DATE	DRWN	CHKD	APPD
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01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
 CUSTOMER : M/s. APTRANSCO
 CONTRACTOR :



TITLE : GROUP-B TRIP RELAY CIRCUIT
 CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	45
CONT :	46



Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

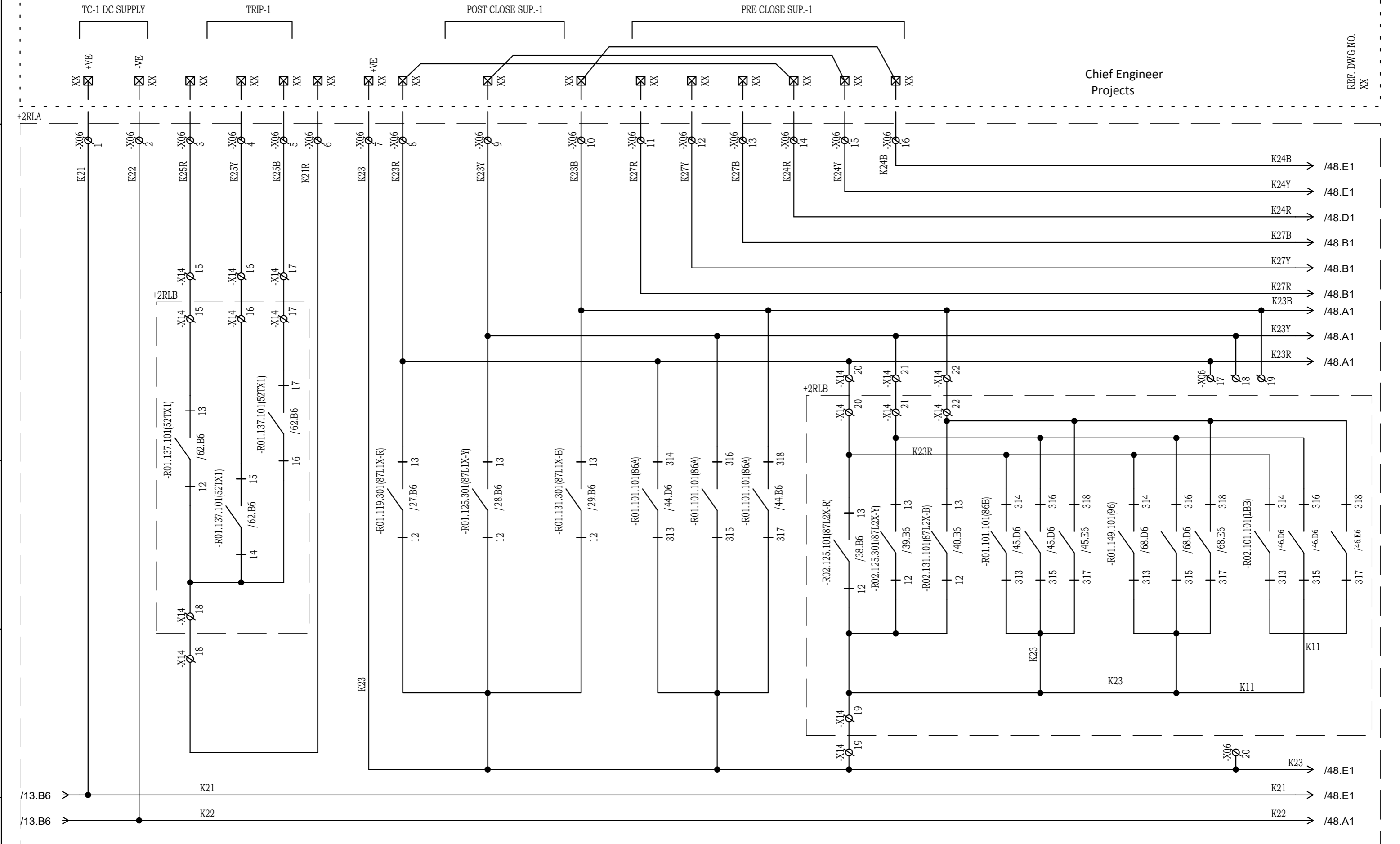
PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	LBB TRIP RELAY CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	46
CONT :	47

MAIN 52CB
8593241/2024/EEMRT-ENE51



Chief Engineer
Projects

REF. DWG. NO.
XX

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

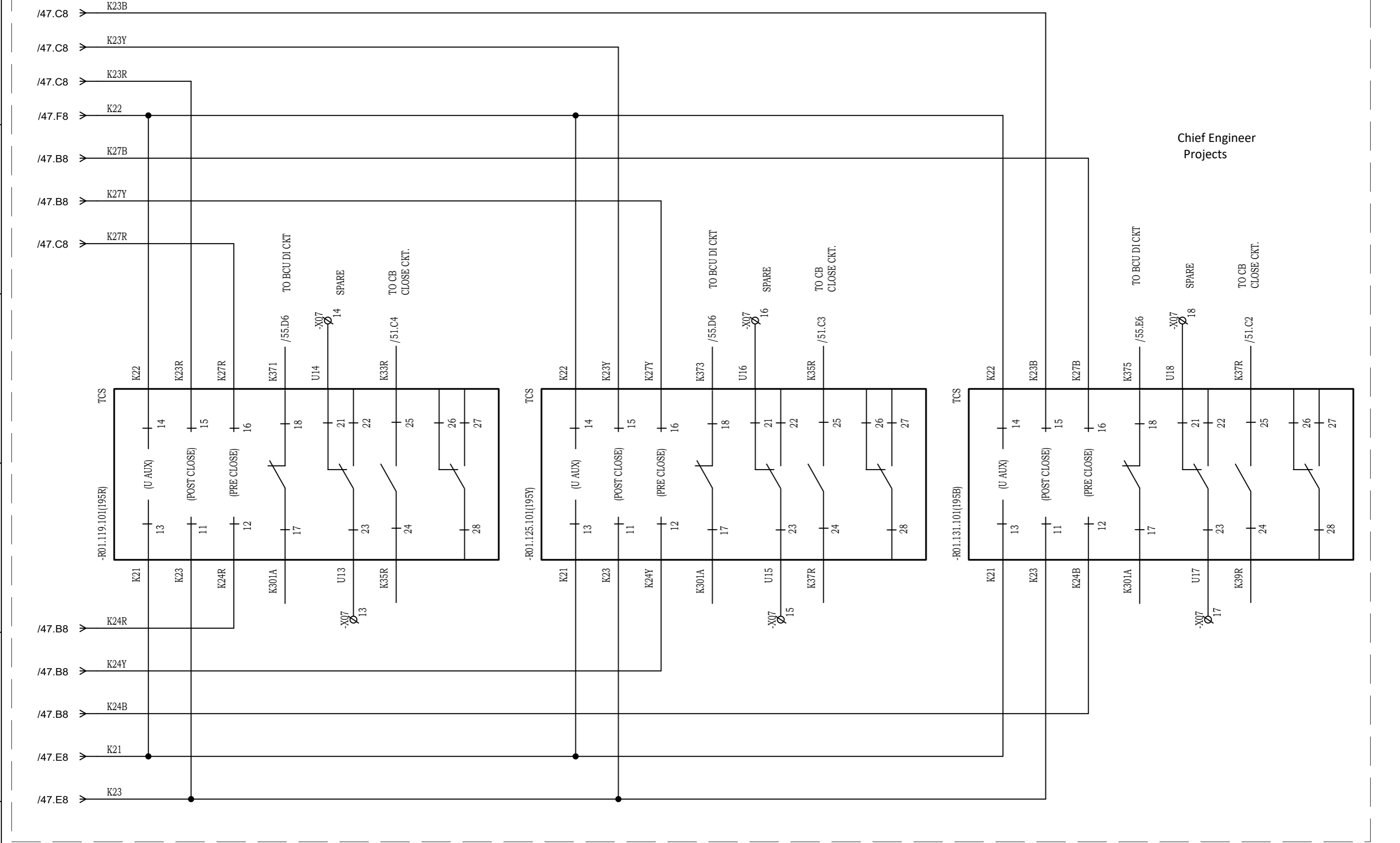
AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG	
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	
REV	REMARKS	DATE	DRWN	CHKD	APPD

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : CB TC-1 TRIPPING CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 47
PANEL REF : 2RLA&2RLB	CONT : 48
DWG No : CZN190523DB-CRS	



Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

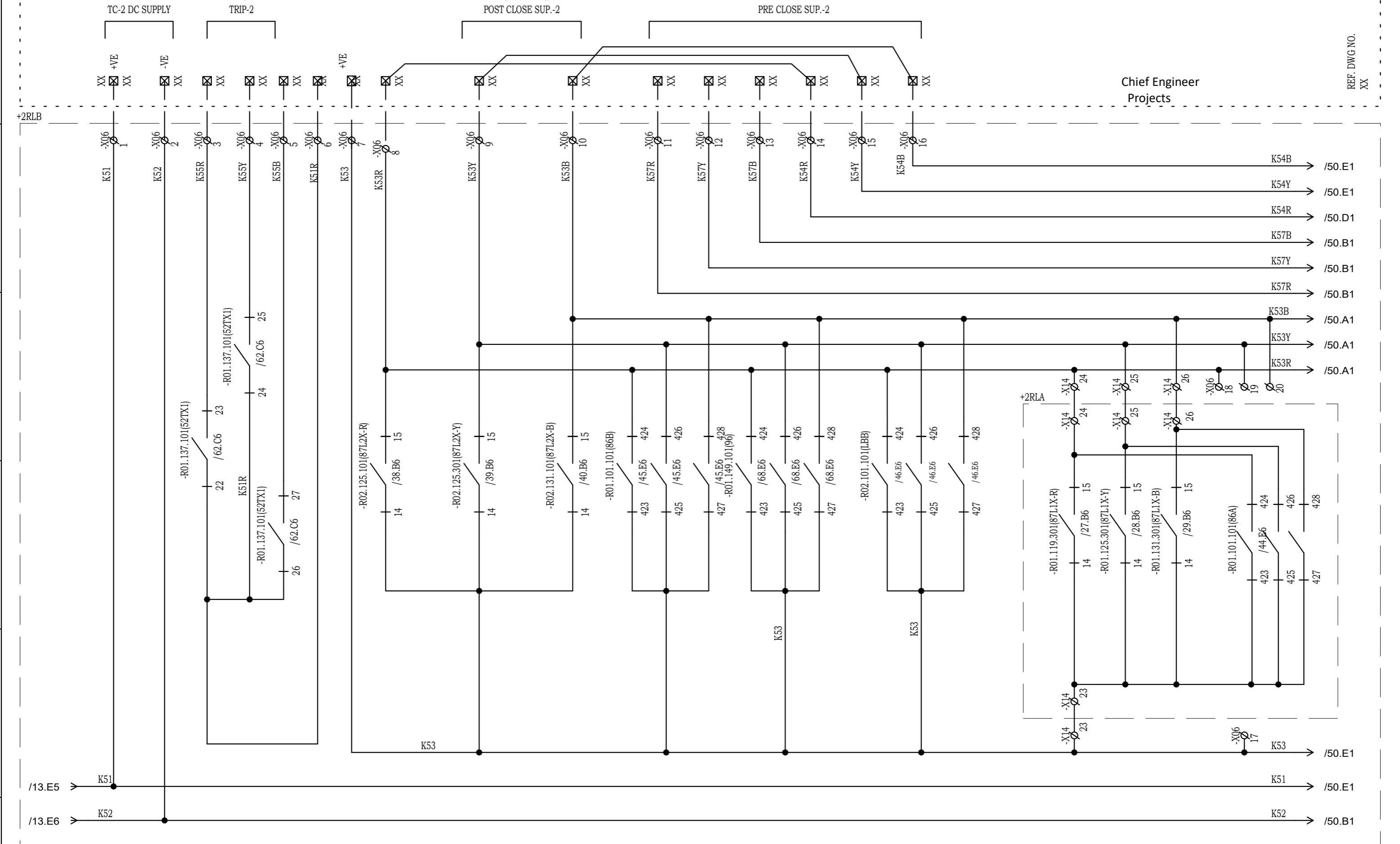
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : CB TC-1 TRIPPING CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 48
PANEL REF : 2RLA&2RLB	CONT : 49
DWG No : CZN190523DB-CRS	



Chief Engineer
Projects

REF. DWG. NO.
XX

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	

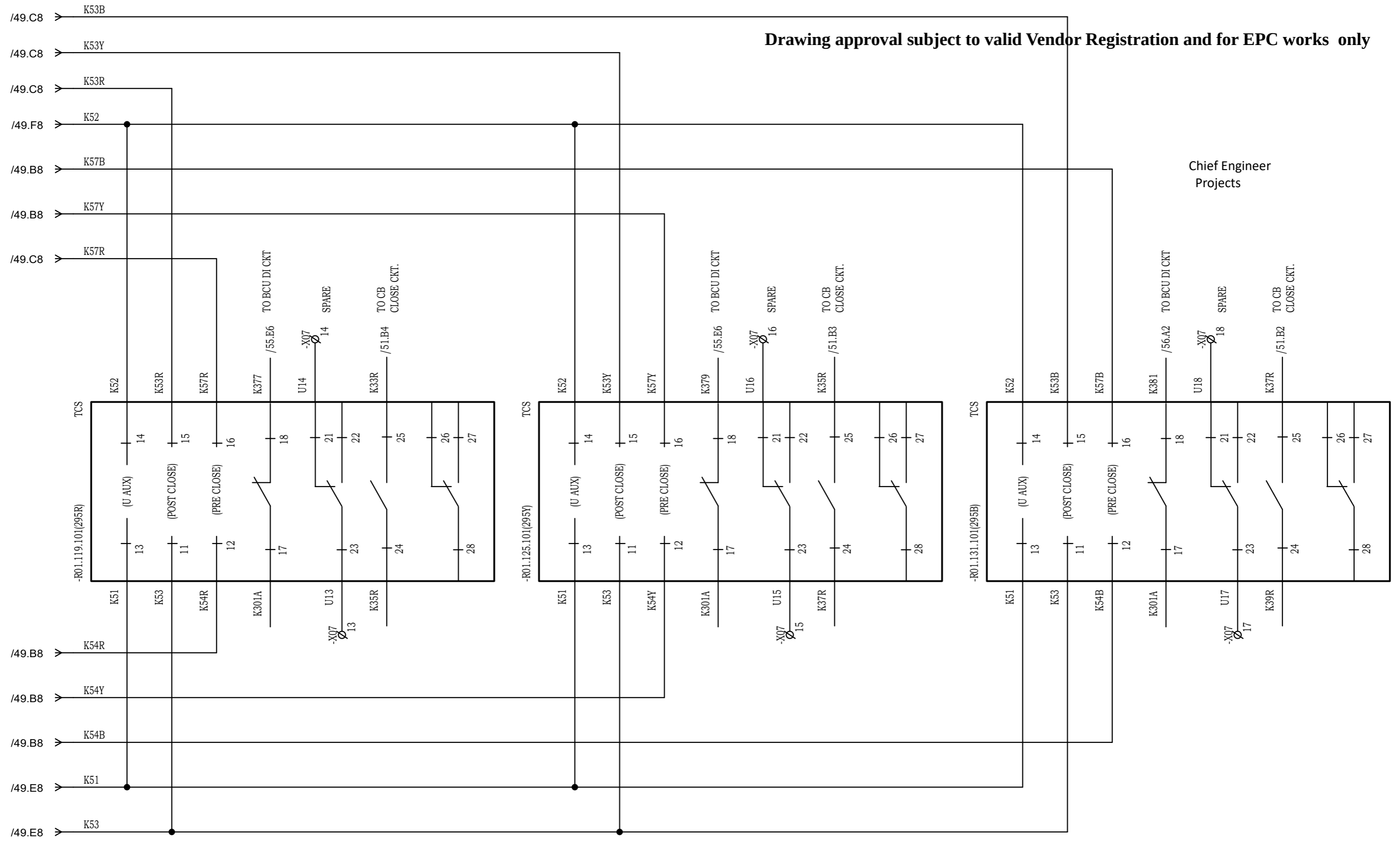


TITLE :	CB TC-2 TRIPPING CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	49
CONT :	50

Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects



NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

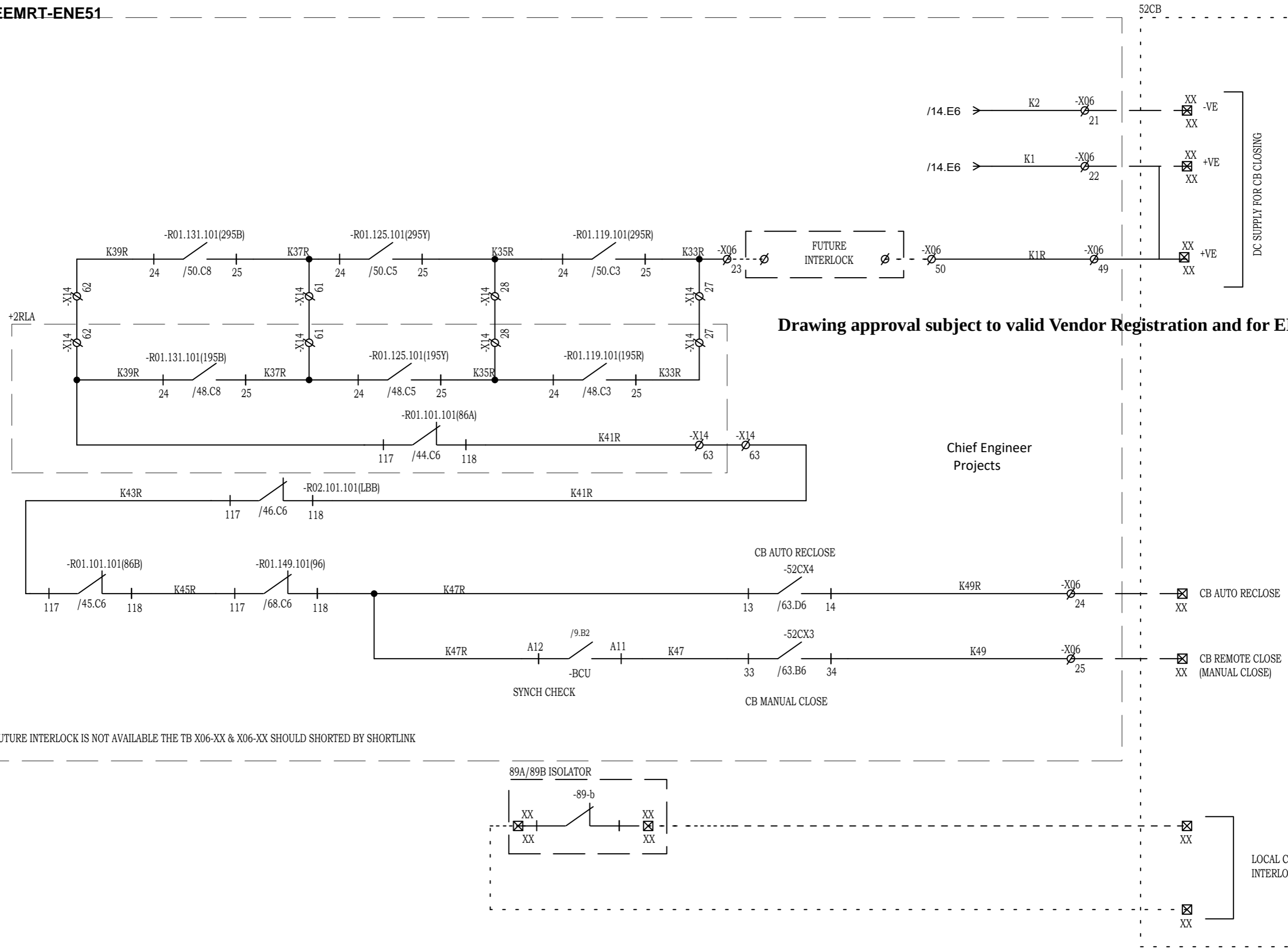
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : CB TC-2 TRIPPING CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 50
PANEL REF : 2RLA&2RLB	CONT : 51
DWG No : CZN190523DB-CRS	



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Projects

DC SUPPLY FOR CB CLOSING

LOCAL CLOSING
INTERLOCK

REF. DWG NO.
XX

NOTE : IF FUTURE INTERLOCK IS NOT AVAILABLE THE TB X06-XX & X06-XX SHOULD SHORTED BY SHORTLINK

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :

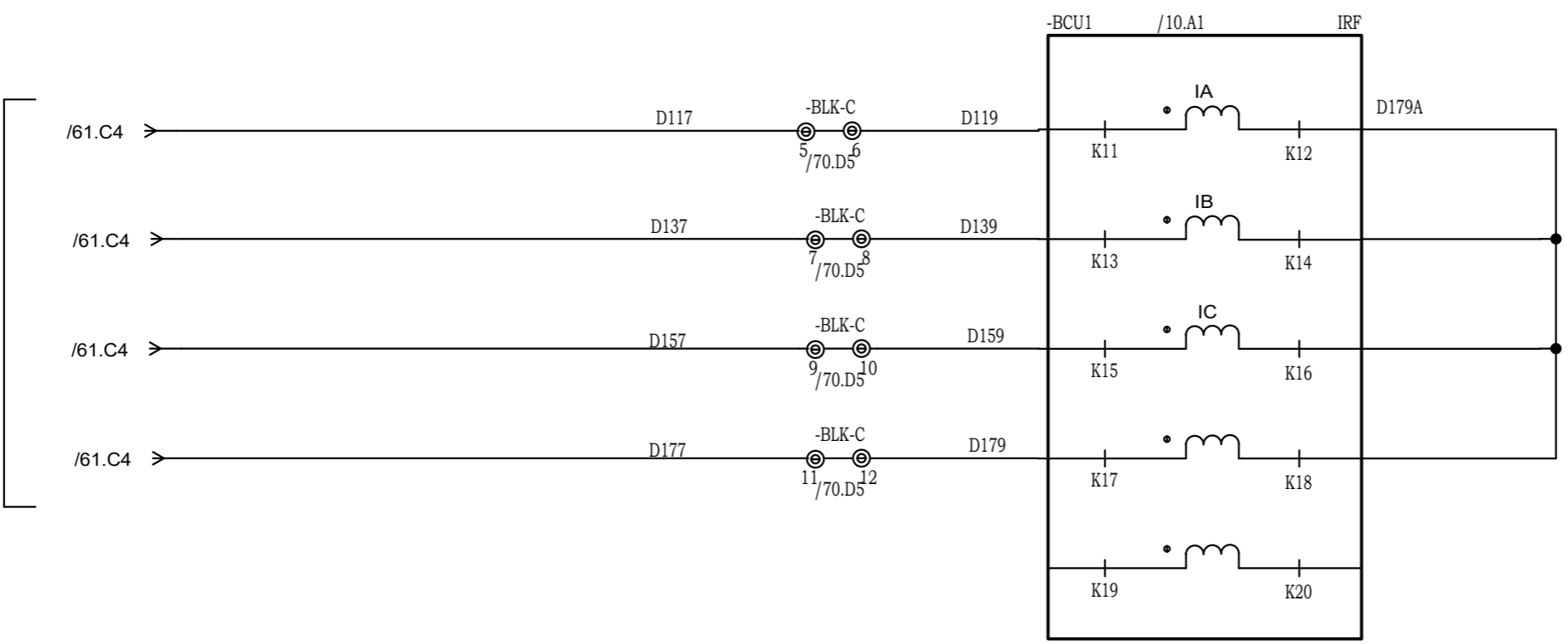


TITLE : CB CLOSING CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	SHT : 51
PANEL REF : 2RLA&2RLB	CONT : 52
DWG No : CZN190523DB-CRS	

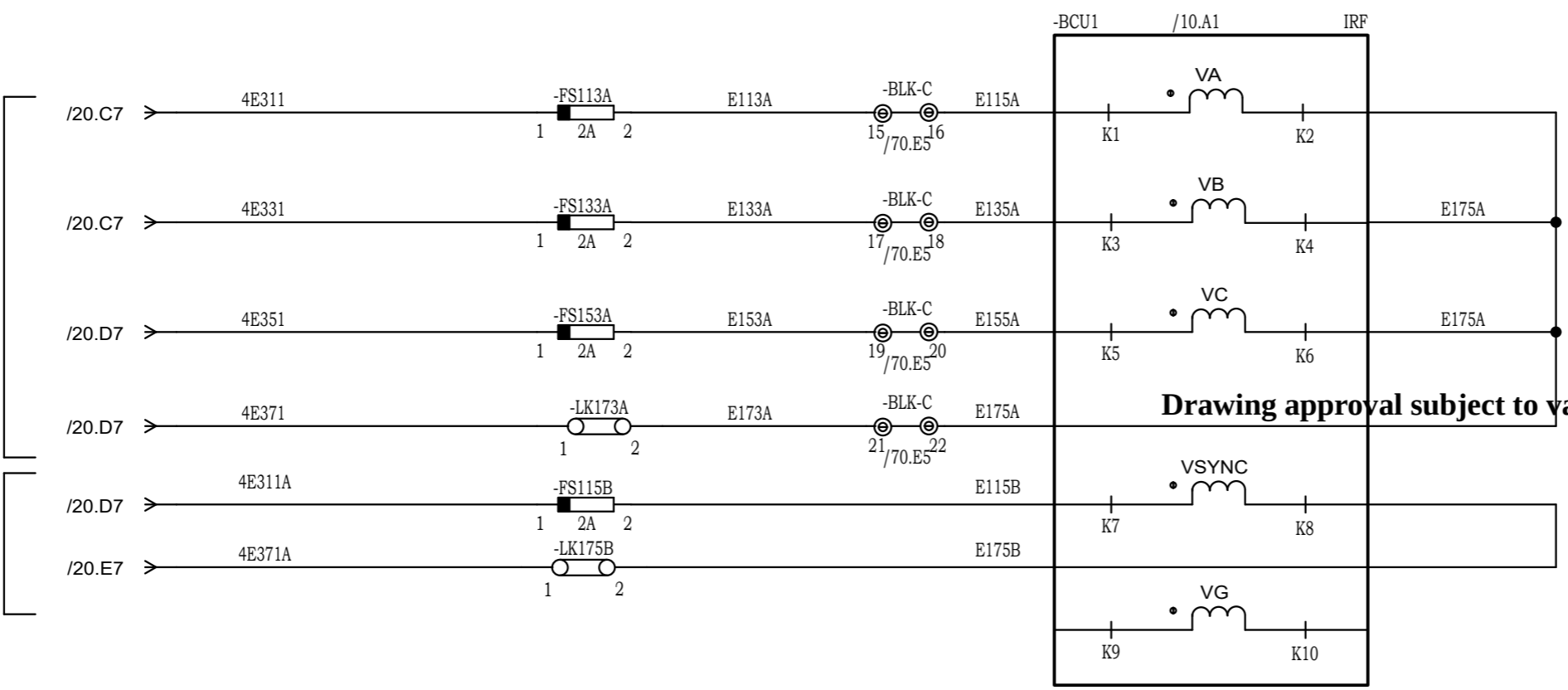
8593241/2024/EEMRT-ENE51

FROM METERING CIRCUIT



FROM SEL. BUS PT/LINE CVT CORE:1

FROM SEL. BUS PT/LINE CVT CORE:1



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Chief Engineer
Projects

S.No:	CONFIGURABLE LED APPLICATION
1	CB CLOSE
2	CB OPEN
3	CB SPRING CHARGED
4	CB SF6 LOW
5	CB SF6 LOCKOUT
6	CB HEALTHY
7	89A OPEN
8	89A CLOSE
9	89B OPEN
10	89B CLOSE
11	89L OPEN
12	89L CLOSE
13	89ES CLOSE
14	89ES OPEN
15	CB IN REMOTE
16	CB IN LOCAL
P1	89A IN REMOTE
P2	89B IN REMOTE
P3	89L IN REMOTE
P4	CHECK SYNC OK
P5	SPARE
P6	SPARE

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :

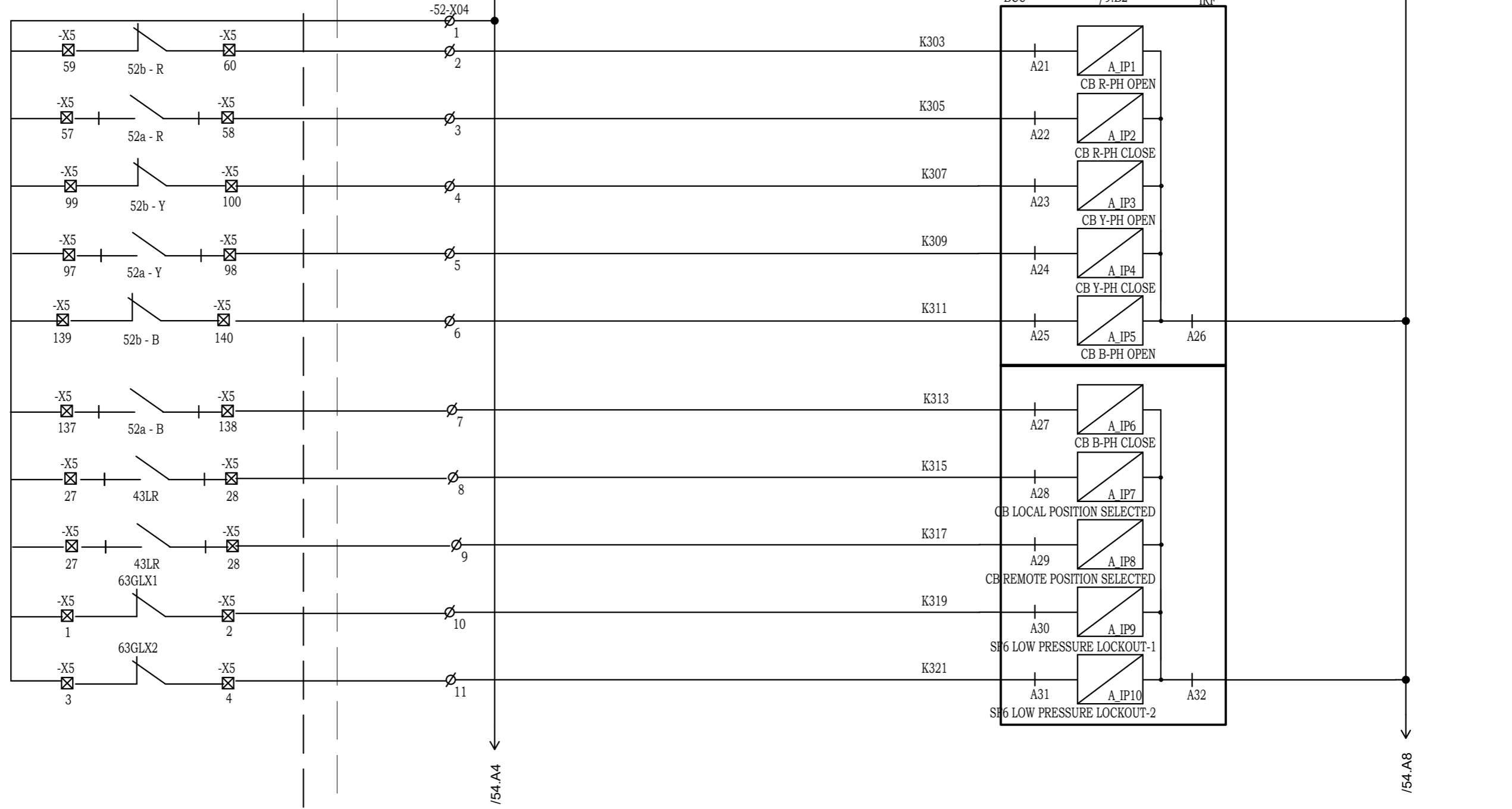


TITLE : BCU CT/PT CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	52
CONT :	53

Chief Engineer
Projects

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DWG. NO. : EH4-6731-02, REV: 0
SHEET NO. : 6 of 6

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

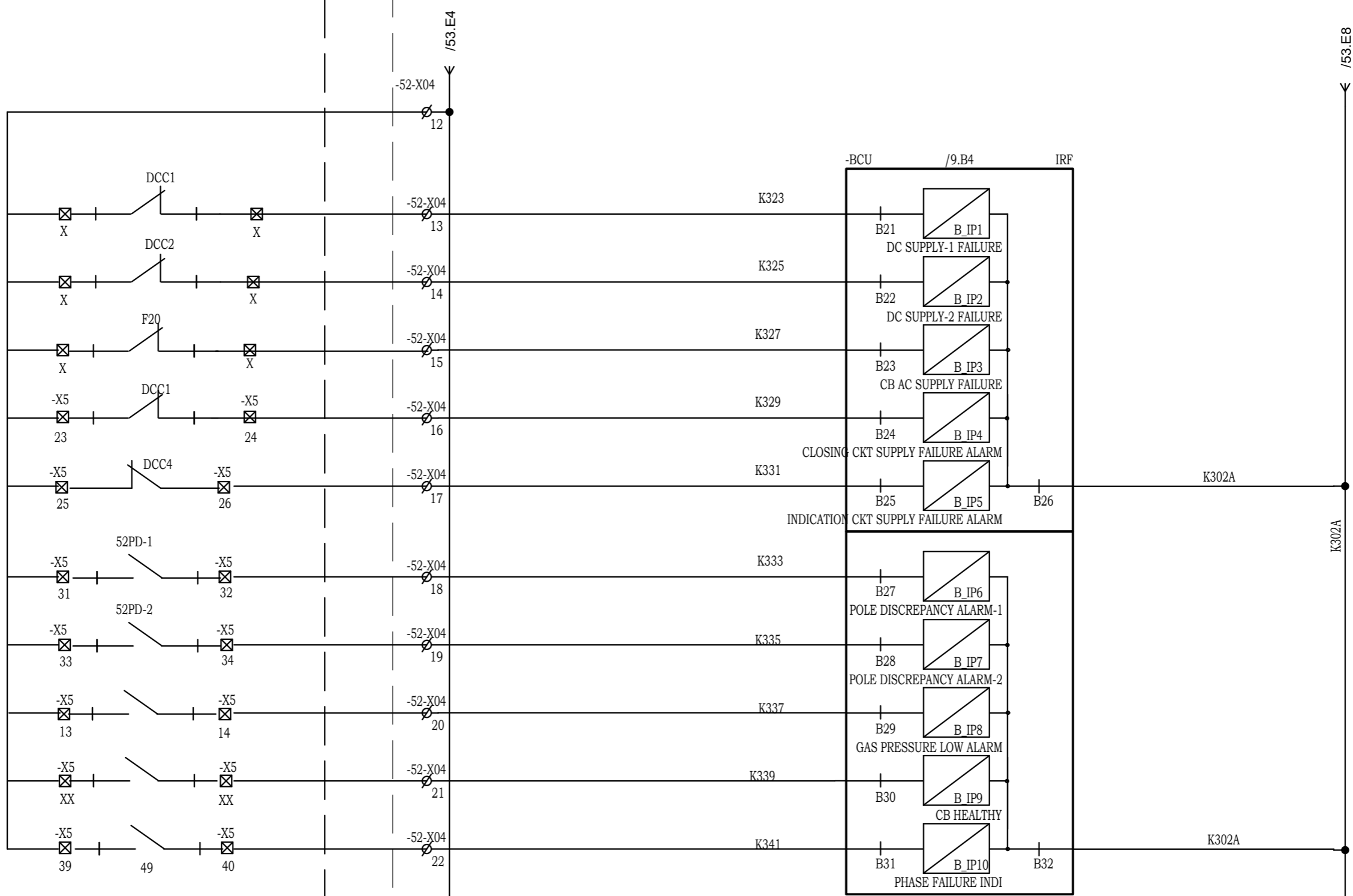
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : BAY CONTROL UNIT
DI CIRCUIT
CKT. NAME:
220KV LINE DIFFERENTIAL BAY
CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	53
CONT :	54



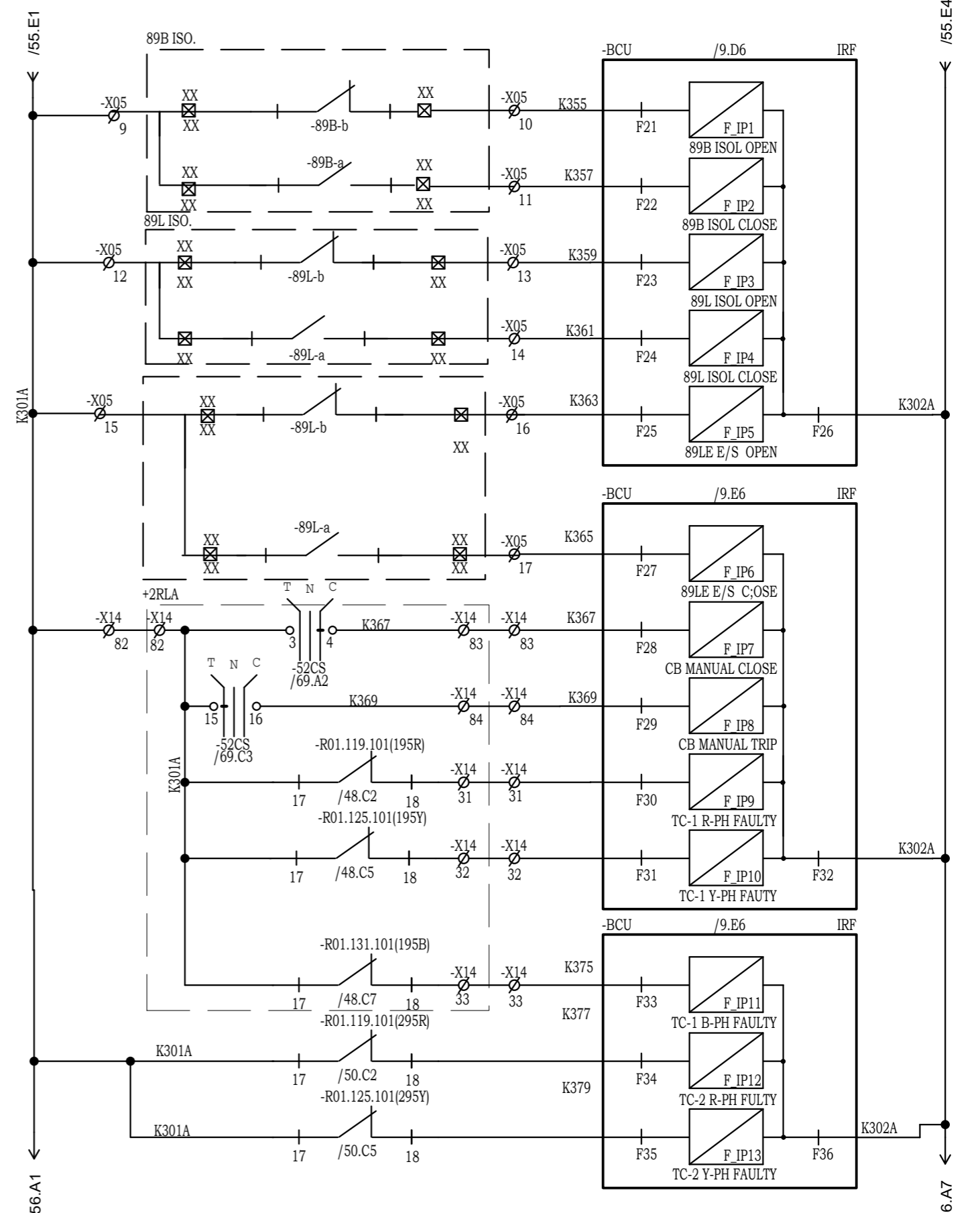
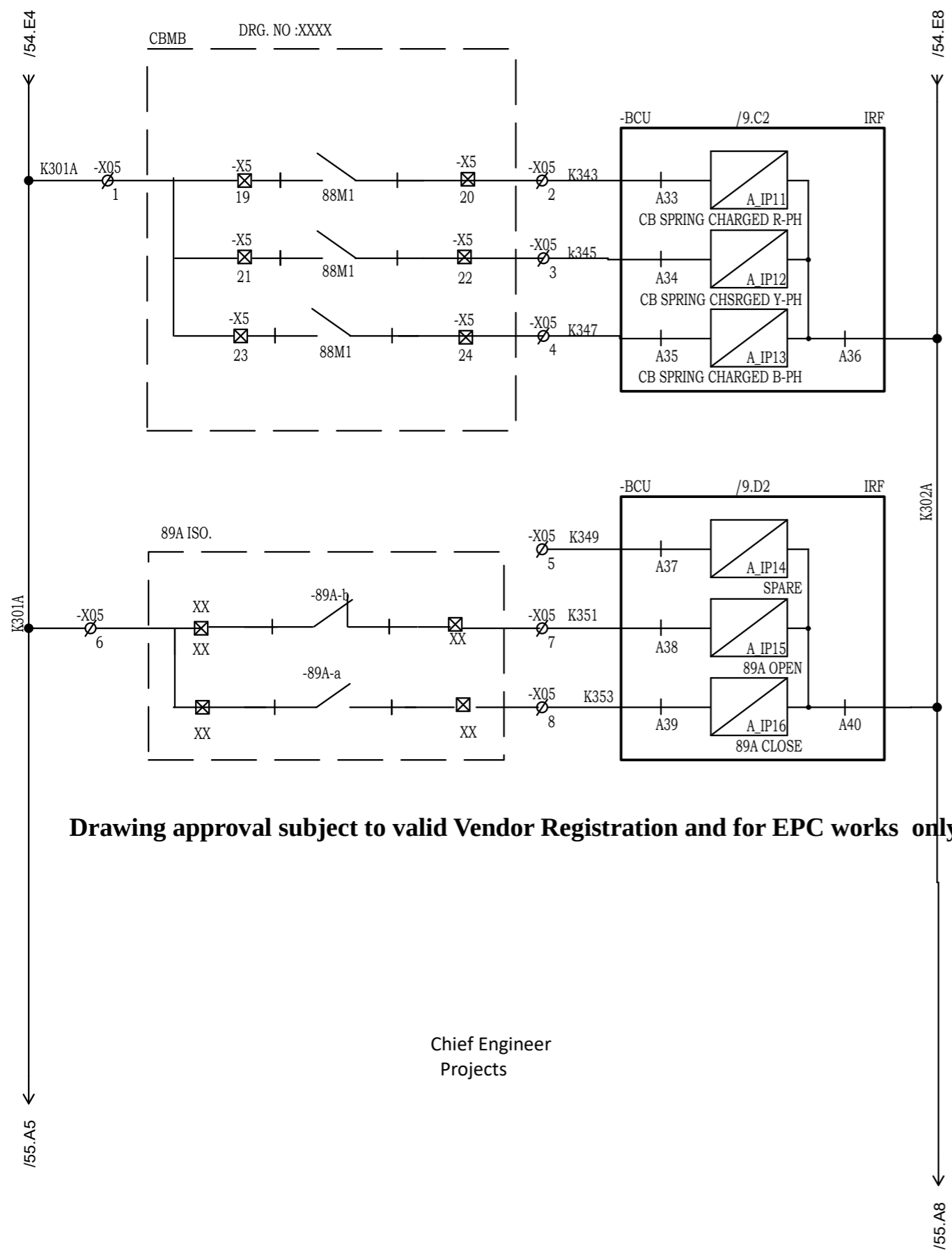
Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

DWG. NO. : EH4-6731-02, REV: 0
SHEET NO. : 6 of 6

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS		02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : BAY CONTROL UNIT DI CIRCUIT	PO No :
AS PER CUSTOMER COMMENTS		29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
AS PER CUSTOMER COMMENTS		01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
SUBMISSION FOR APPROVAL		16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 54
REV	REMARKS	DATE	DRWN	CHKD	APPD				CONT : 55



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Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

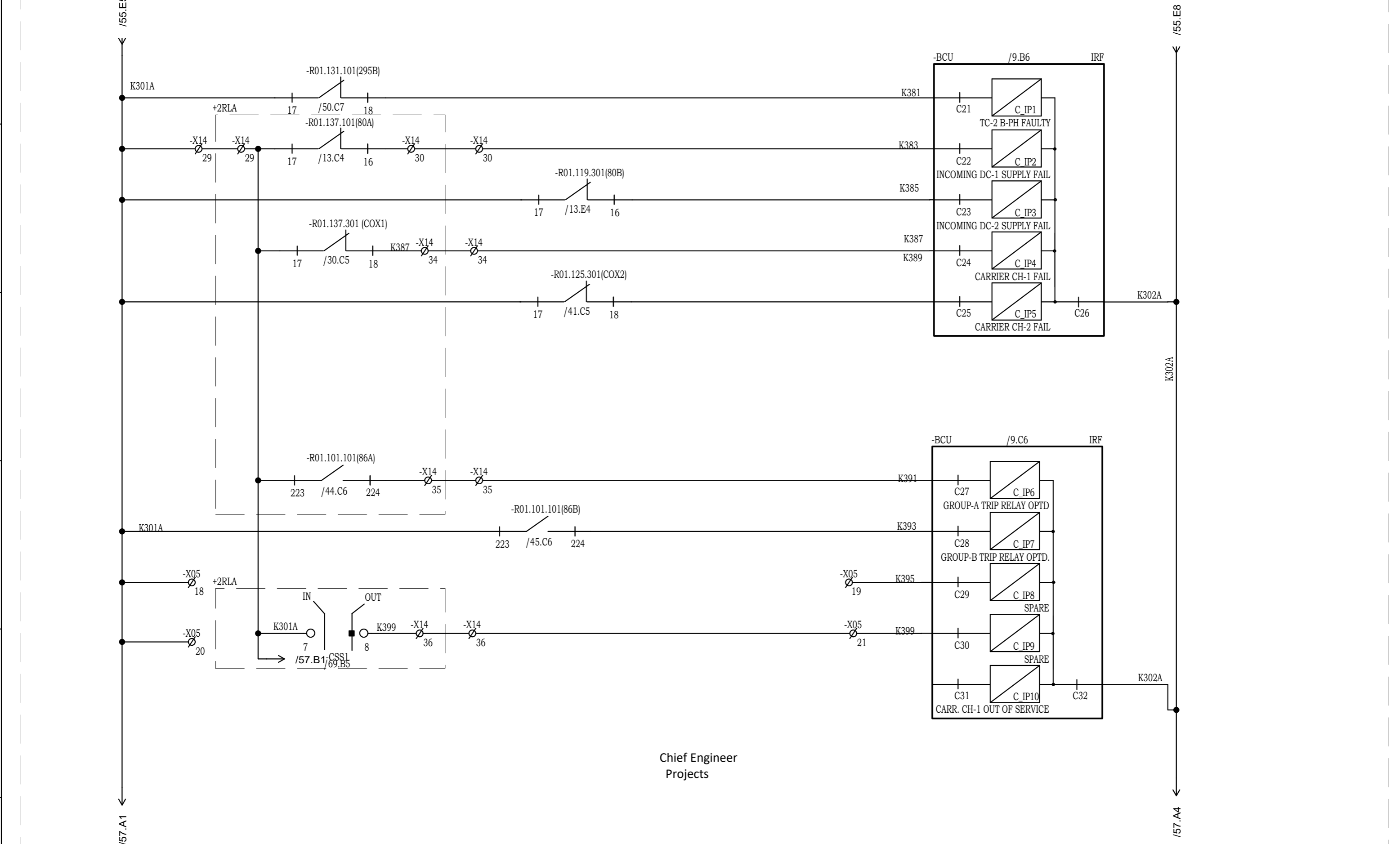
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : BAY CONTROL UNIT
DI CIRCUIT
CKT. NAME:
220KV LINE DIFFERENTIAL BAY
CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	55
CONT :	56



Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

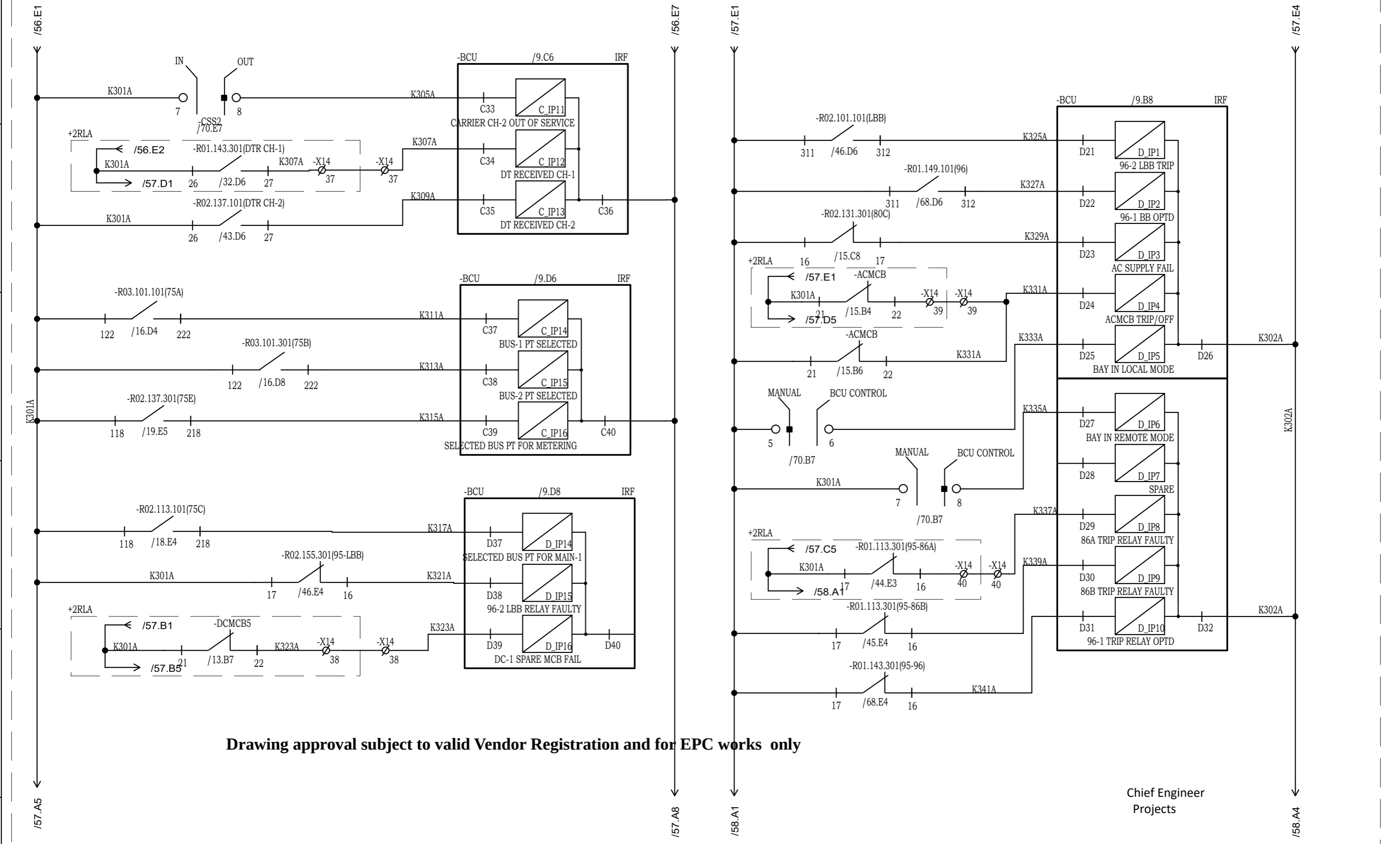
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02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	BAY CONTROL UNIT DI CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	56
CONT :	57



Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

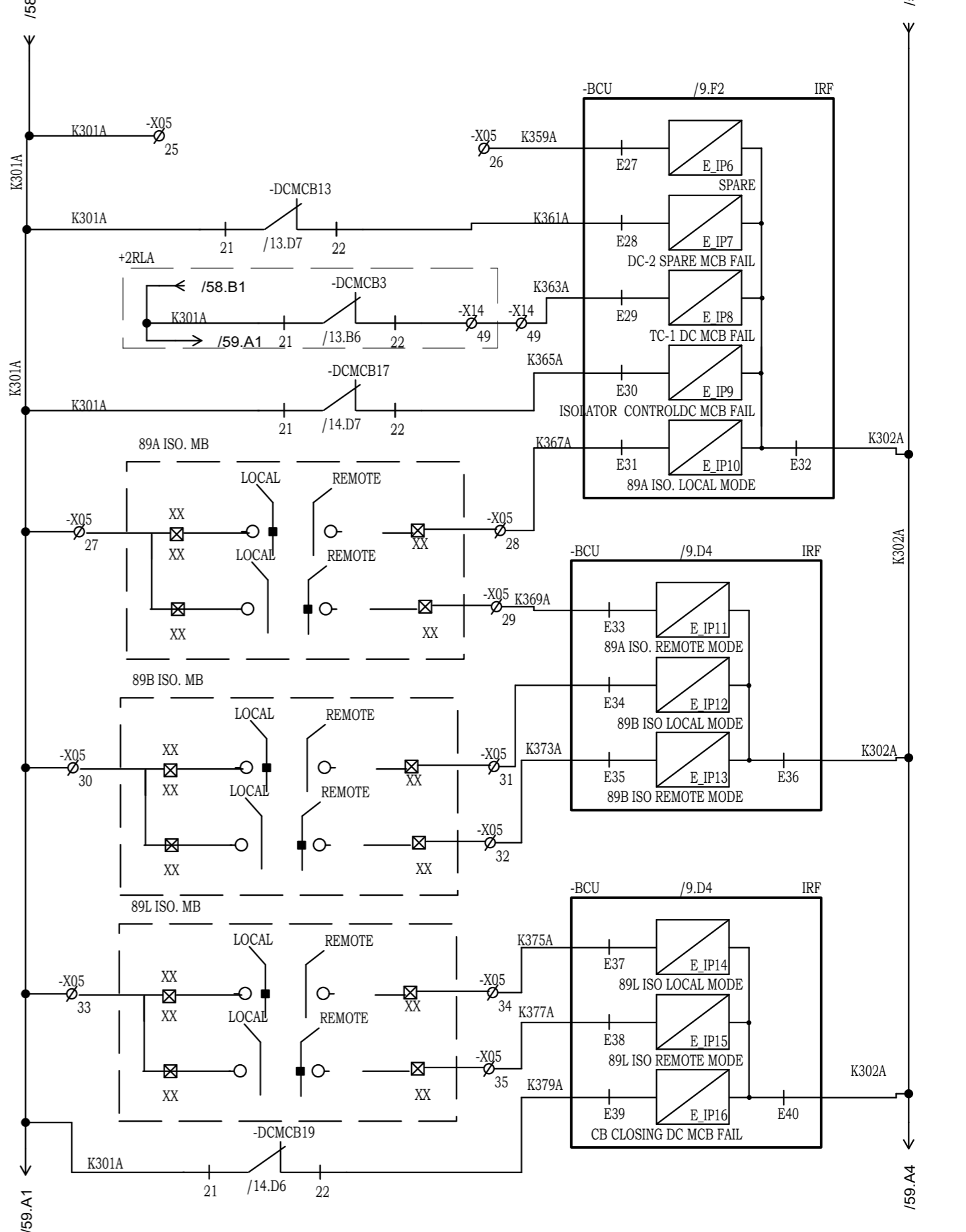
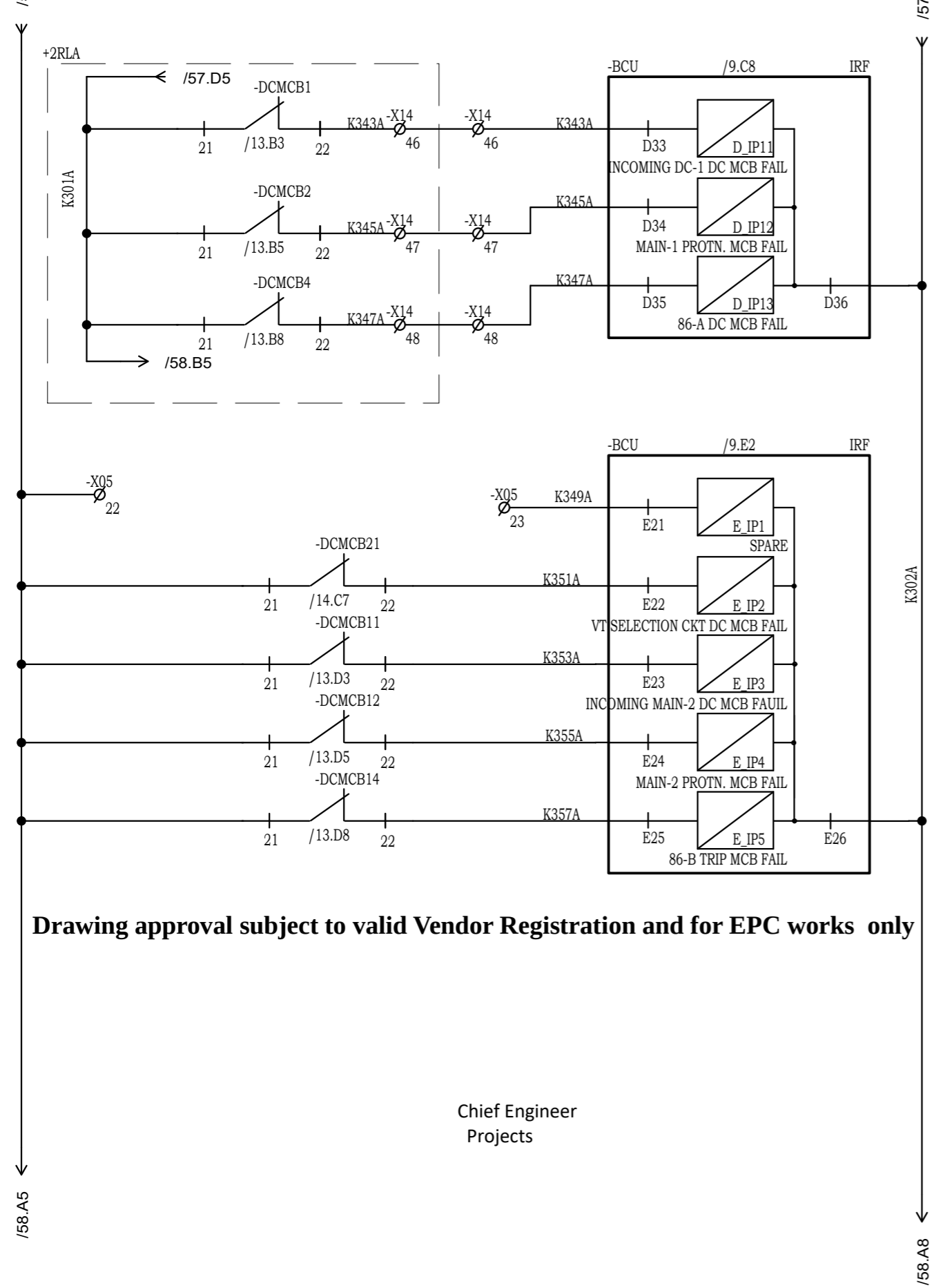
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : BAY CONTROL UNIT
DI CIRCUIT
CKT. NAME:
220KV LINE DIFFERENTIAL BAY
CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	57
CONT :	58



Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

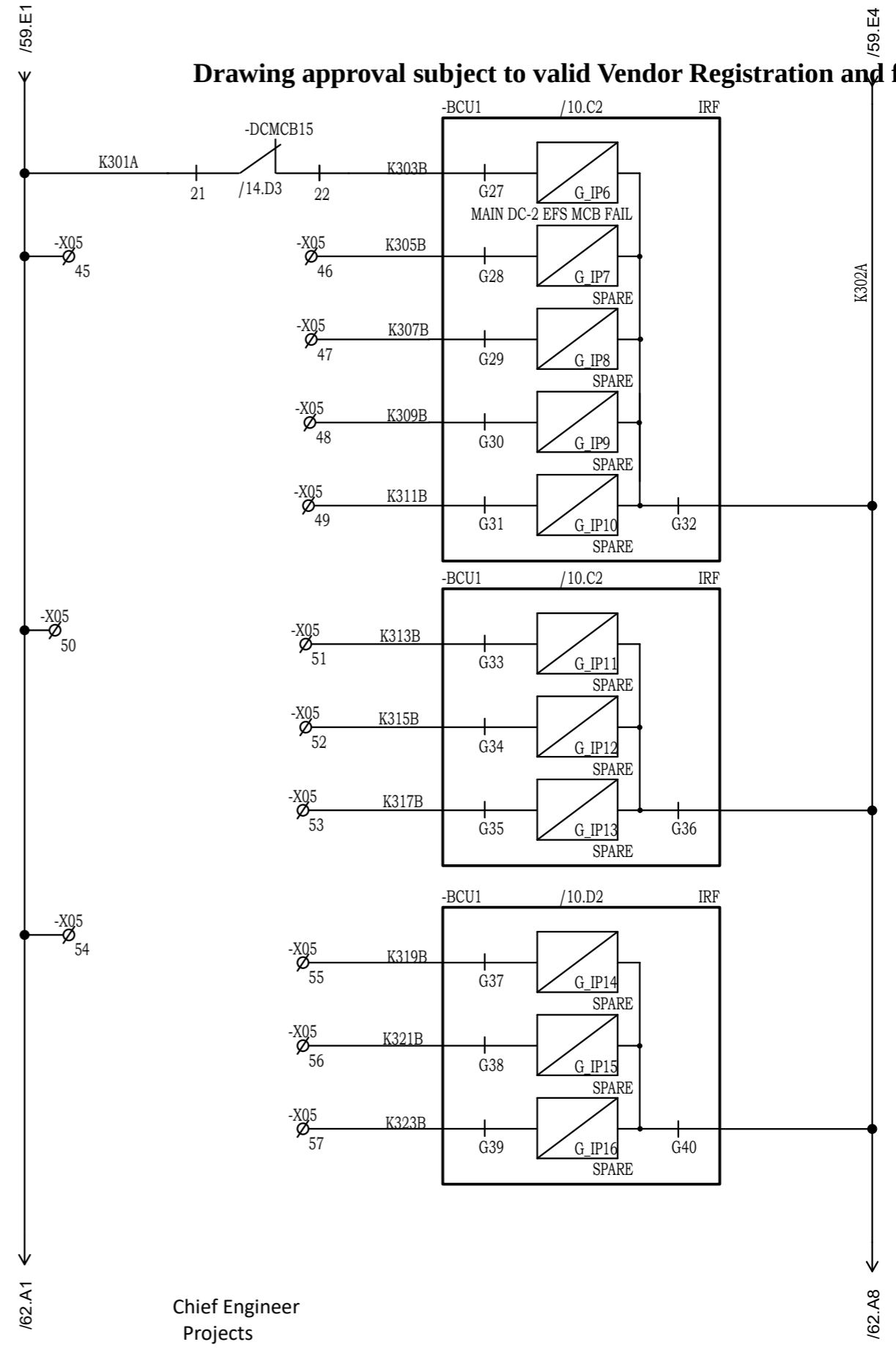
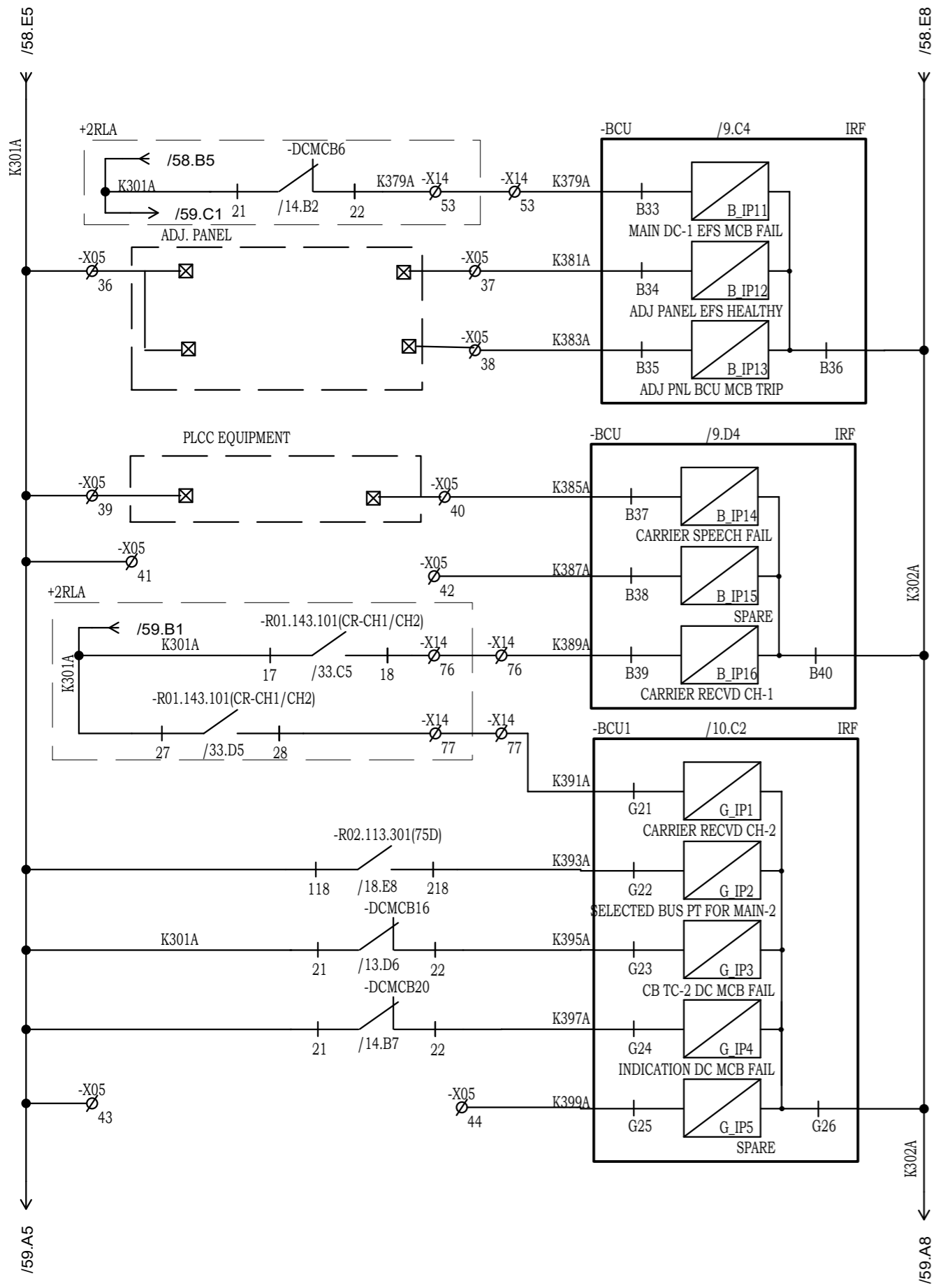
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	BAY CONTROL UNIT DI CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	58
CONT :	59



Drawing approval subject to valid Vendor Registration and for EPC works

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

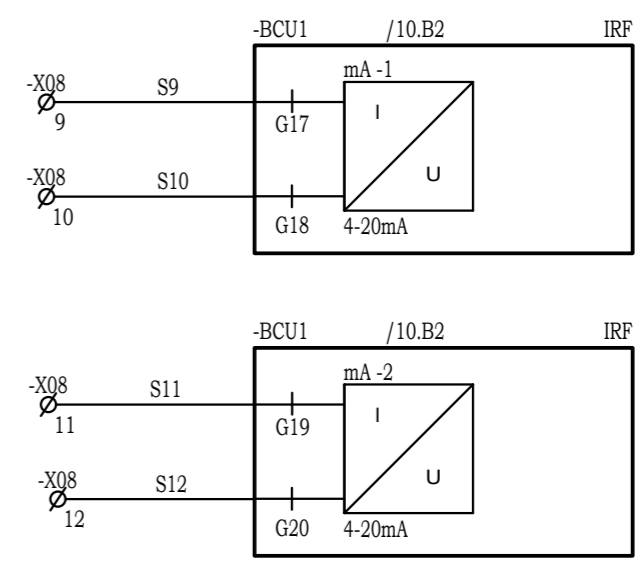
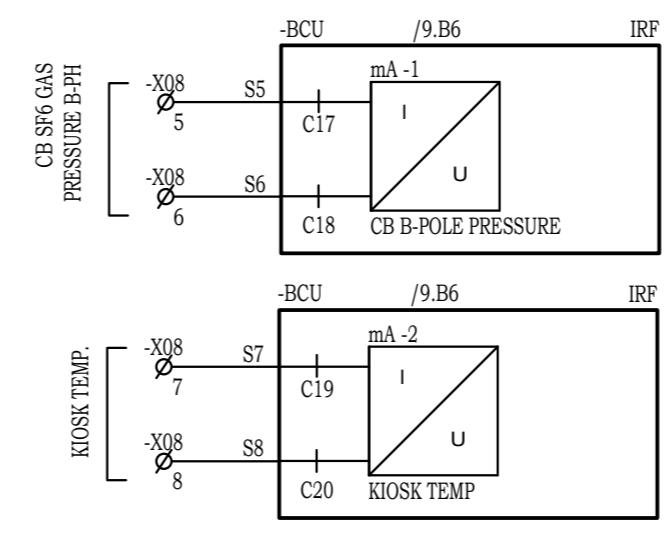
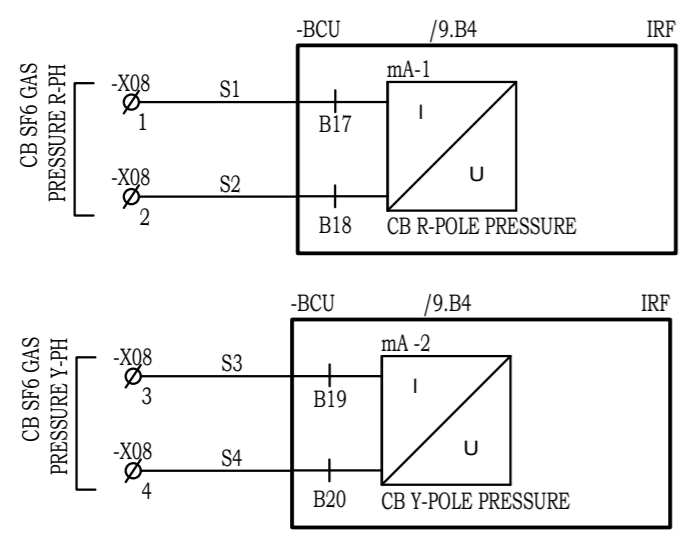
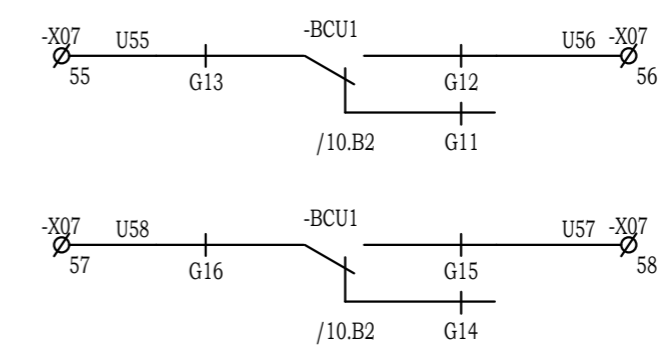
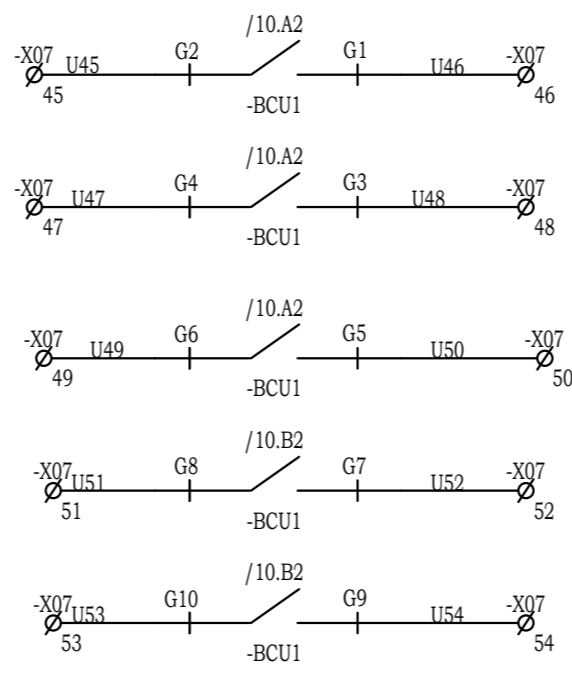
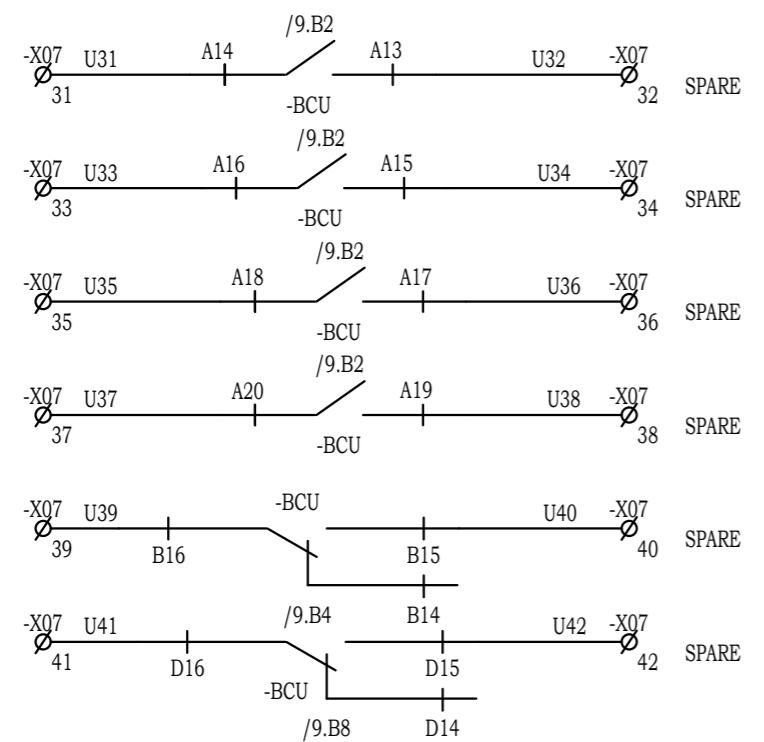
PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	BCU CONTROL UNIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	59
CONT :	60

8593241/2024/EEMRT-ENE51



Chief Engineer
Projects

Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	
AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK	
AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG	
SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	
REV	REMARKS	DATE	DRWN	CHKD	APPD

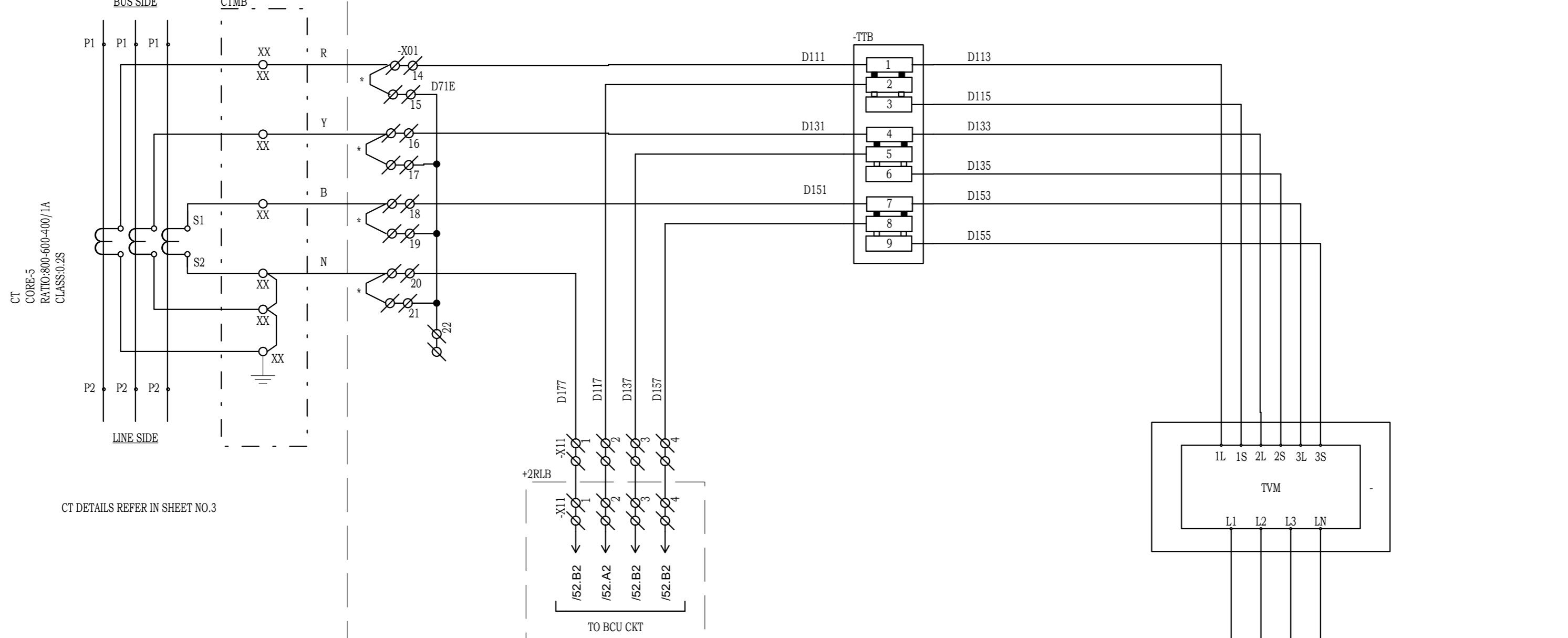
PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : BAY CONTROL UNIT DO CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	60
CONT :	61

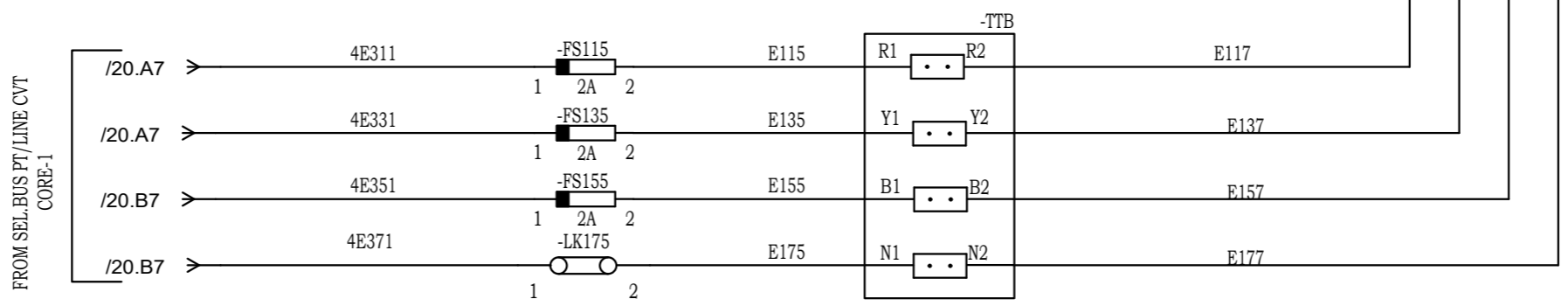
8593241/2024/EEMRT-ENE51



CT DETAILS REFER IN SHEET NO.3

Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects



NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

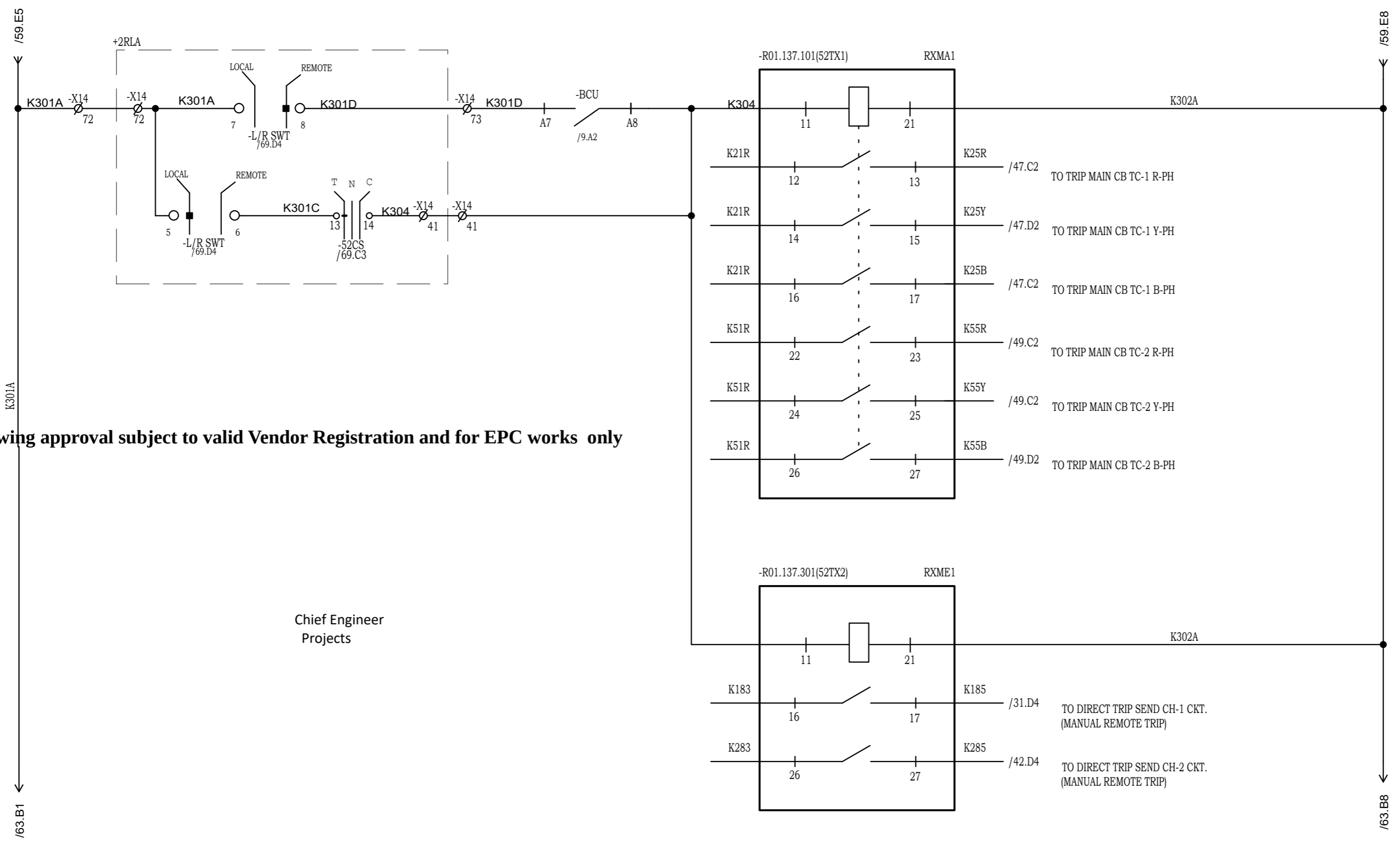
PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : METERING CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	61
CONT :	62

8593241/2024/EEMRT-ENE51



Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

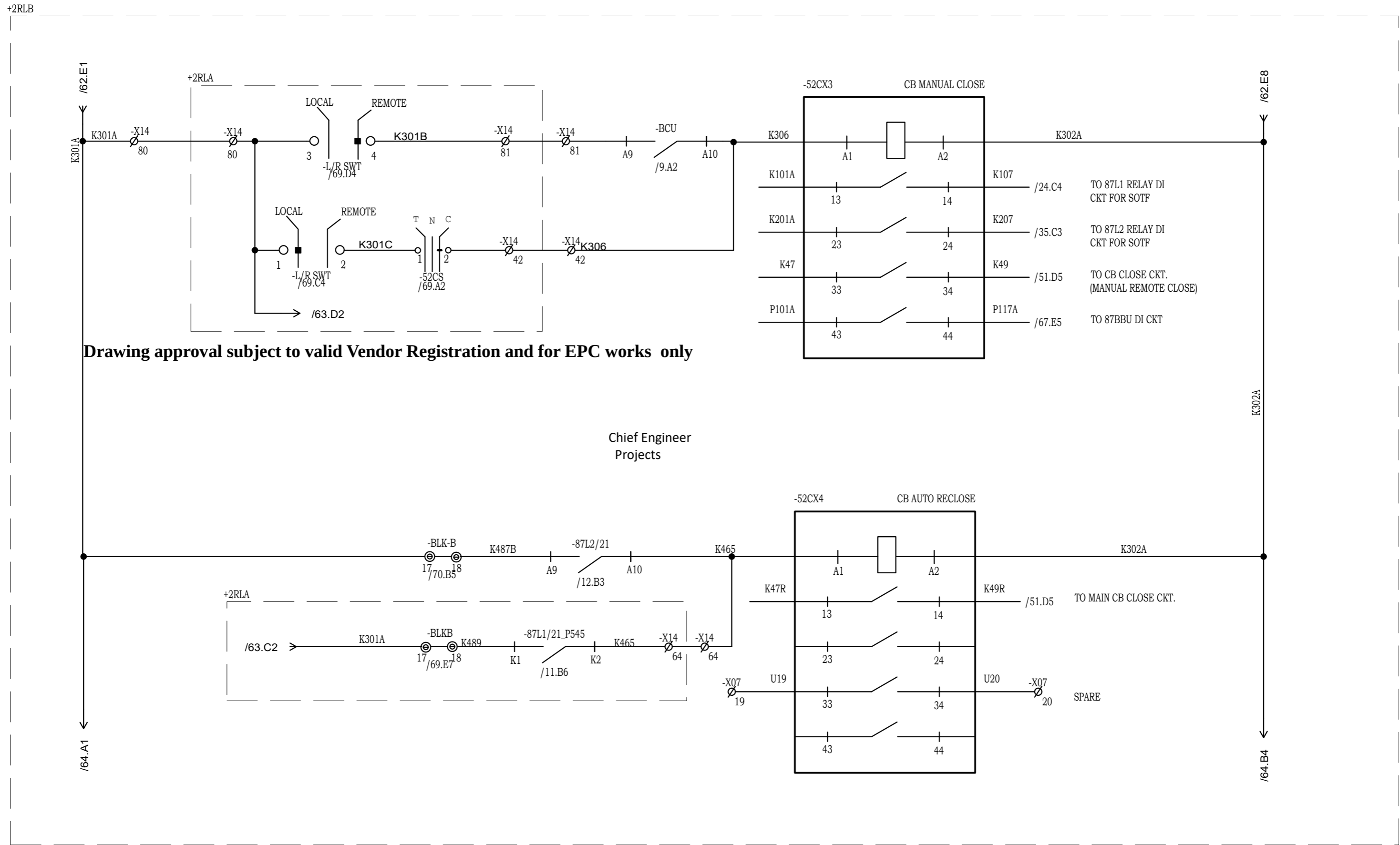
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : CB MANUAL TRIPPING
AUX. RELAY CIRCUIT
CKT. NAME:
220KV LINE DIFFERENTIAL BAY
CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
REV :	03
DWG No :	CZN190523DB-CRS
SHT :	62
CONT :	63



Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

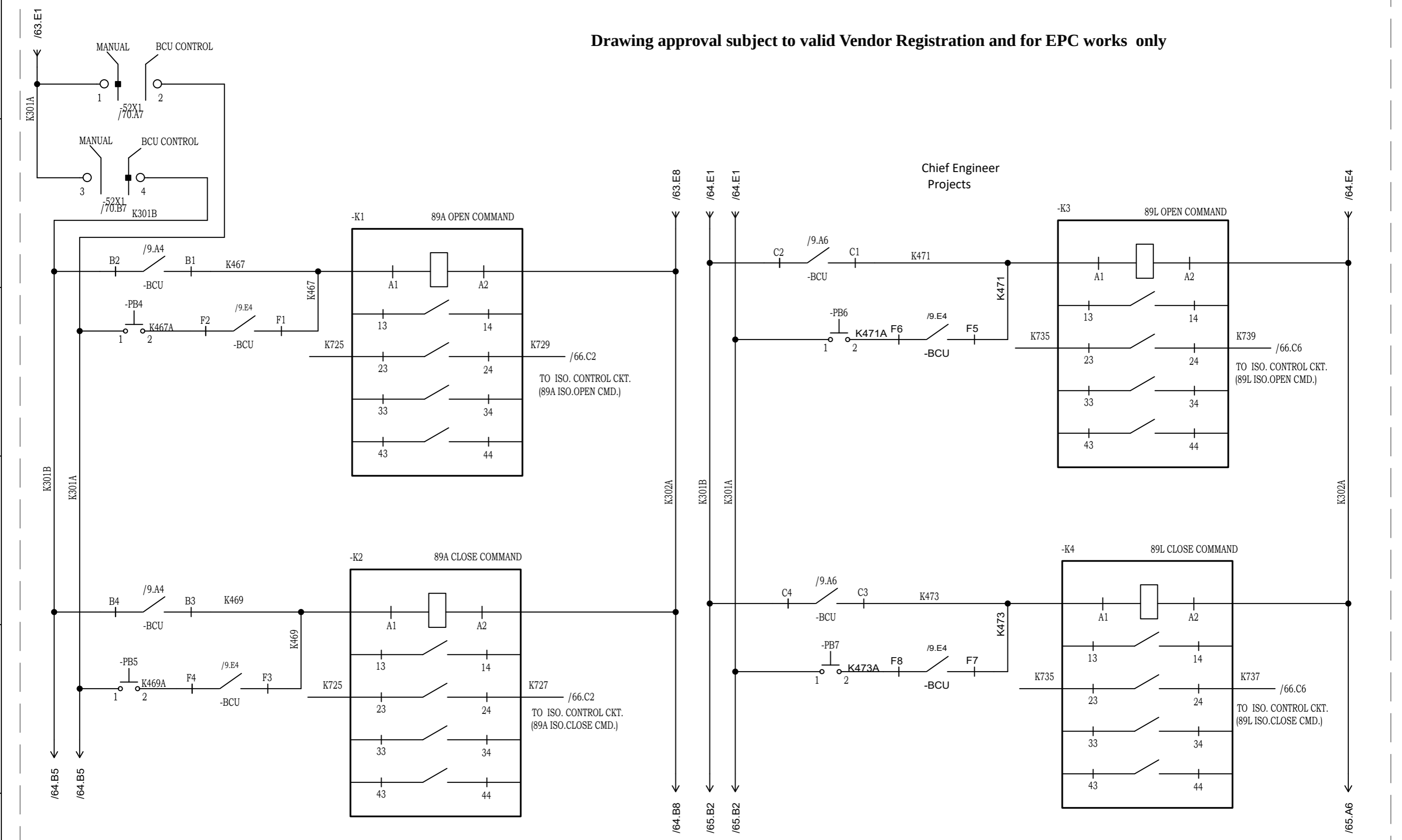
PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	CB MANUAL CLOSING & A/R AUX. RELAY CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	63
CONT :	64

Drawing approval subject to valid Vendor Registration and for EPC works only



NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

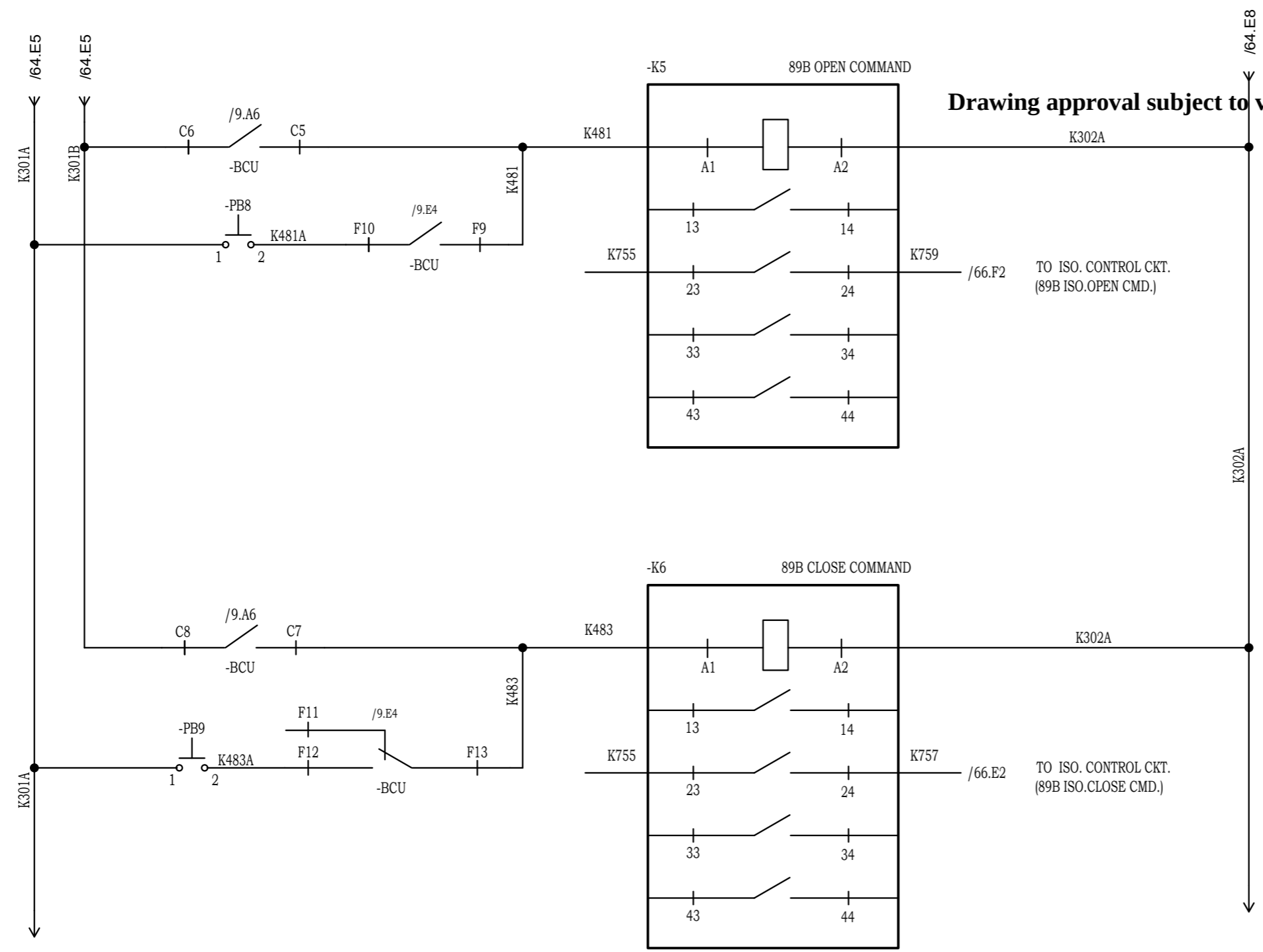
AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT:
AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK	
AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG	
SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	
REMARKS	DATE	DRWN	CHKD	APPD	

CUSTOMER : M/s. APTRANSCO
 CONTRACTOR :



TITLE : 89A & 89L ISOLATOR INTERLOCK CIRCUIT
 CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	REV : 03
DOC TYPE : SCHEMATIC DIAGRAM	
PANEL REF : 2RLA&2RLB	SHT : 64
DWG No : CZN190523DB-CRS	CONT : 65



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Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

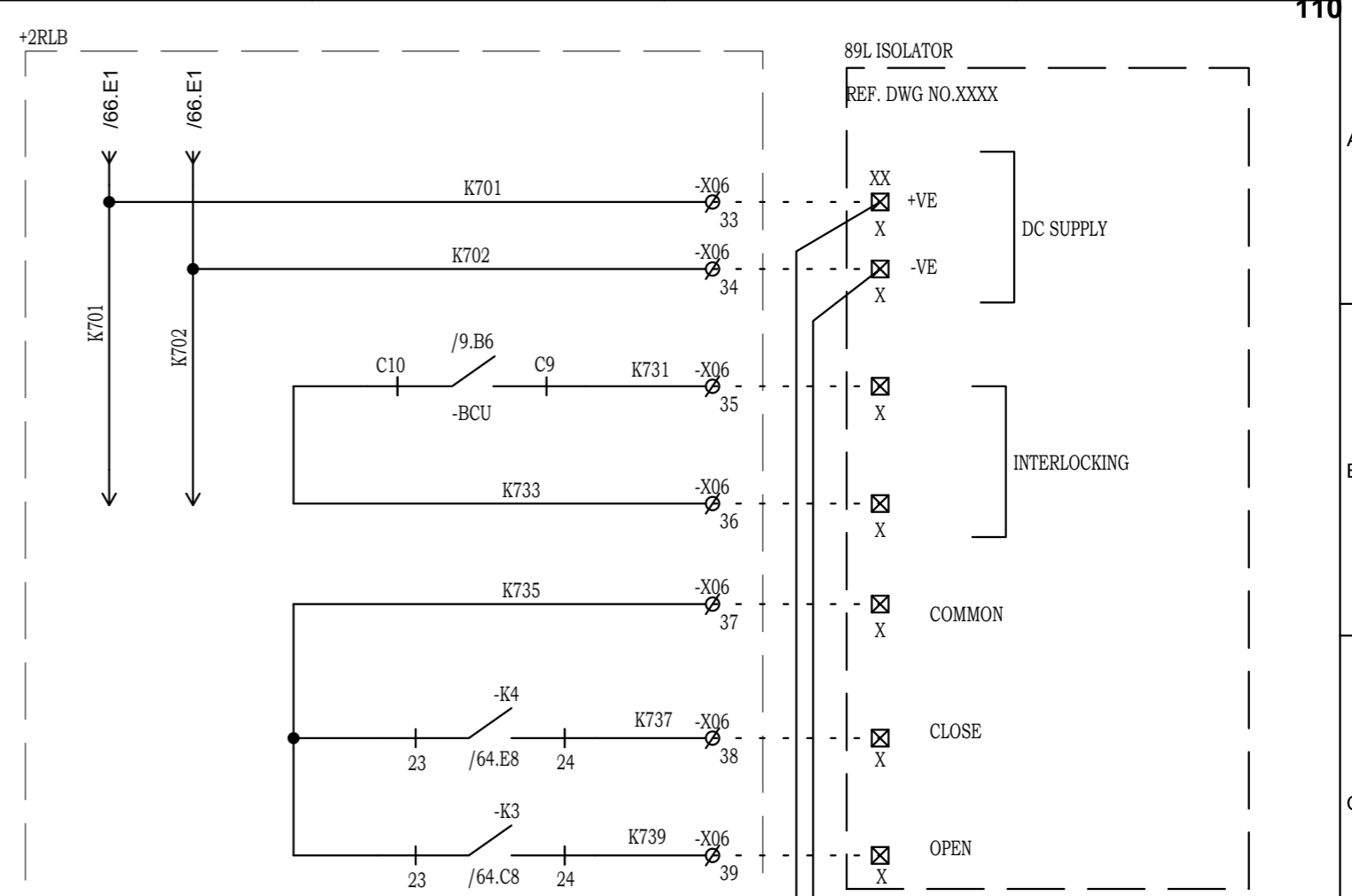
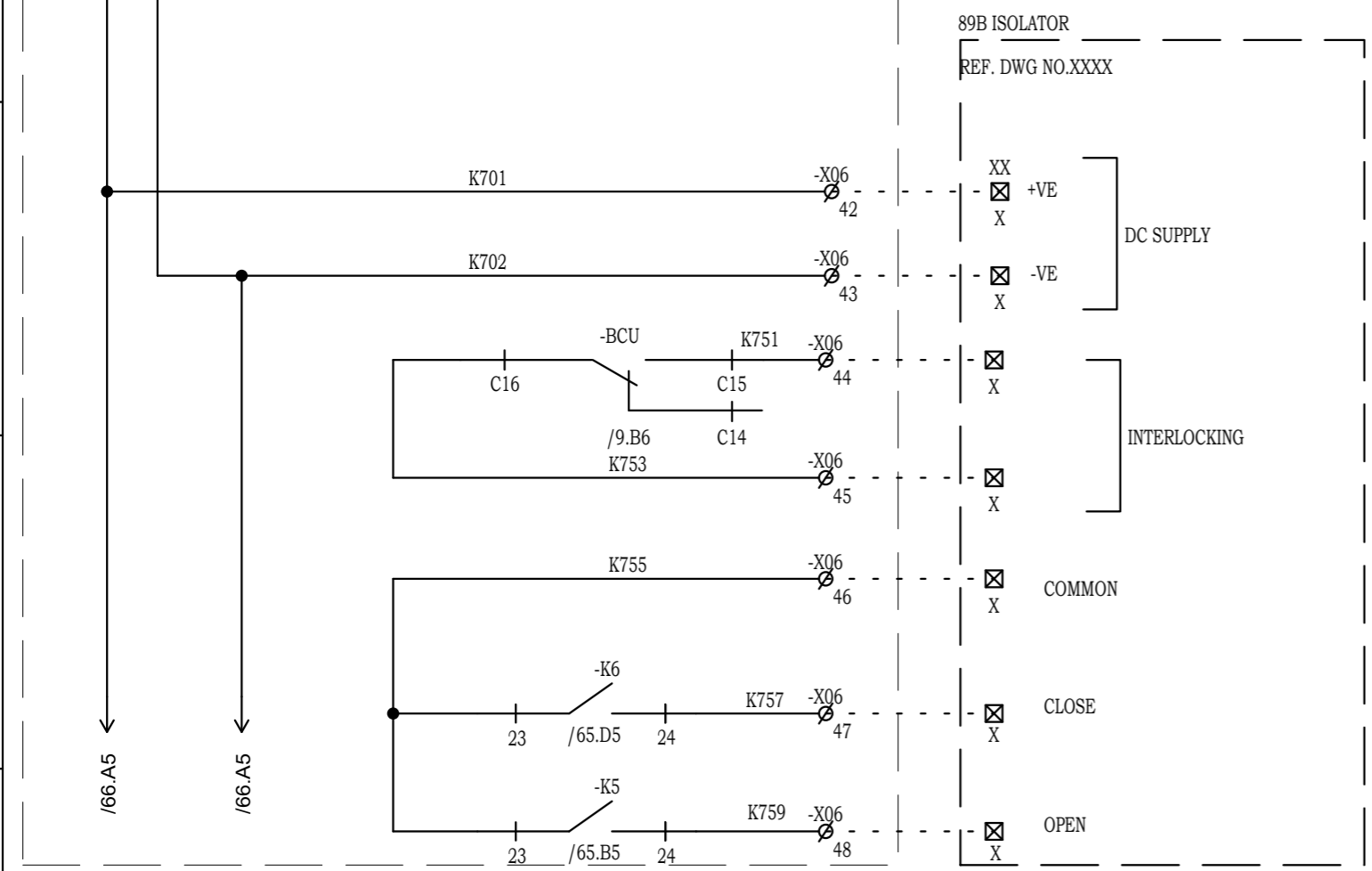
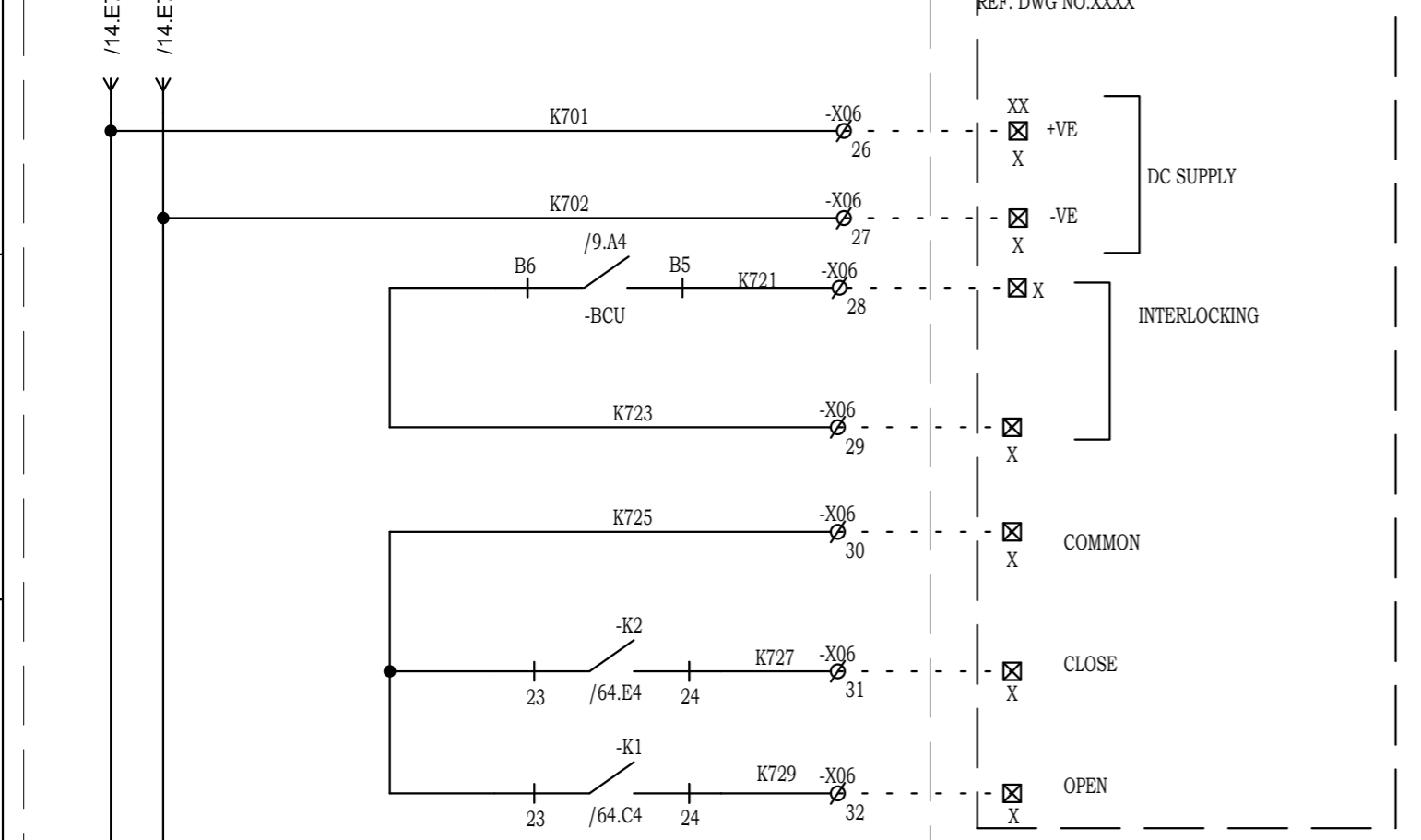
PROJECT: _____
 CUSTOMER : M/s. APTRANSCO
 CONTRACTOR : _____



TITLE : 89B ISOLATOR INTERLOCK CIRCUIT
 CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	65
CONT :	66

+2RLB
8593241/2024/EEMRT-ENE51



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Chief Engineer
Projects

- 89LE INTERLOCK:
1. CVT MCB ON
 2. CVT SHOULD BE SELECTED IN M1 OR M2
 3. VT FUSE FAIL NOT OPERATED IN SELECTED CVT IN M1 OR M2
 4. VOLTAGE ZERO IN ALL THE 3-PH IN M1/M2 WHICH IS SELECTED ON LINE CVT

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

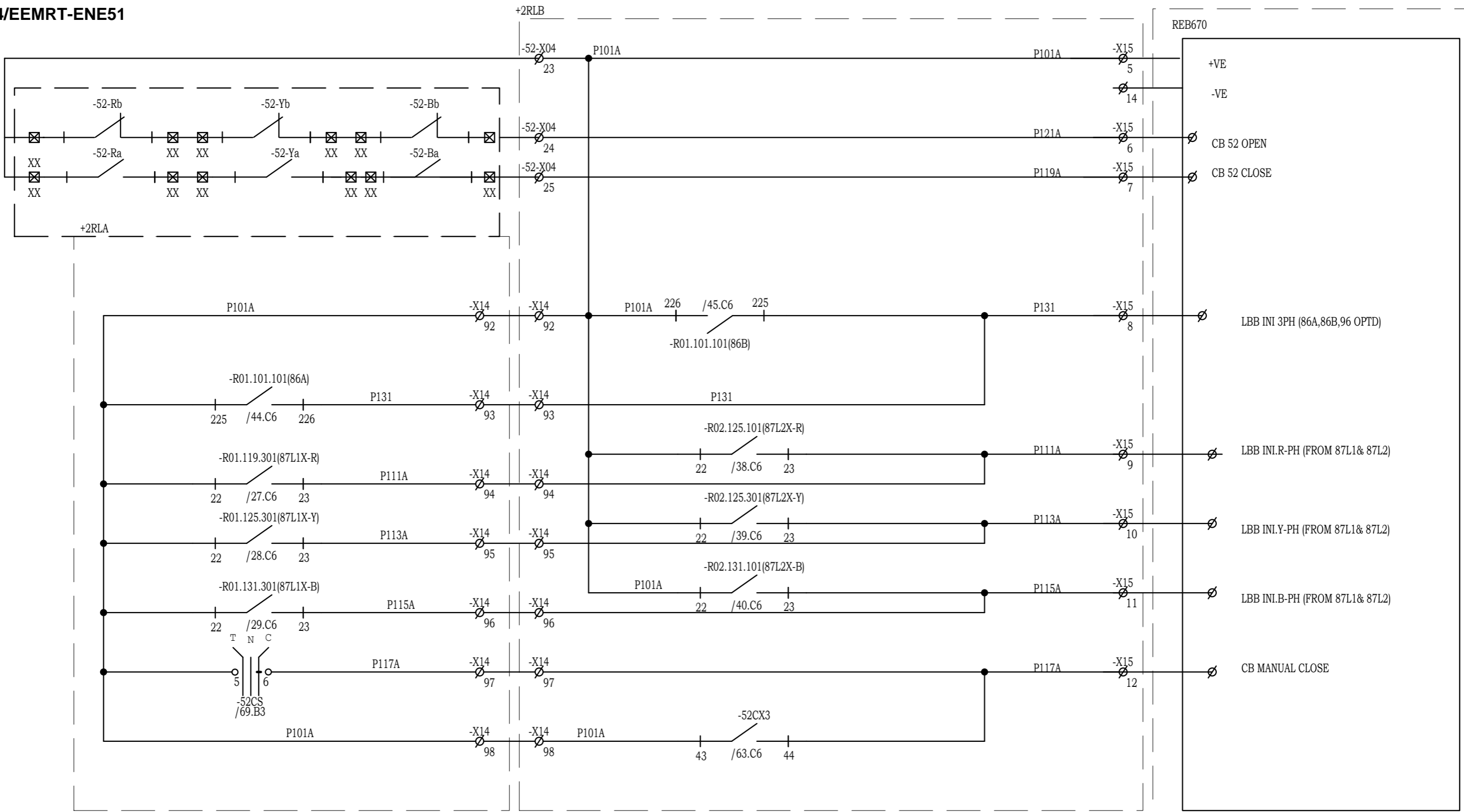
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
00	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	ISOLATOR CONTROL CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	66
CONT :	67



Drawing approval subject to valid Vendor Registration and for EPC works only

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
00	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

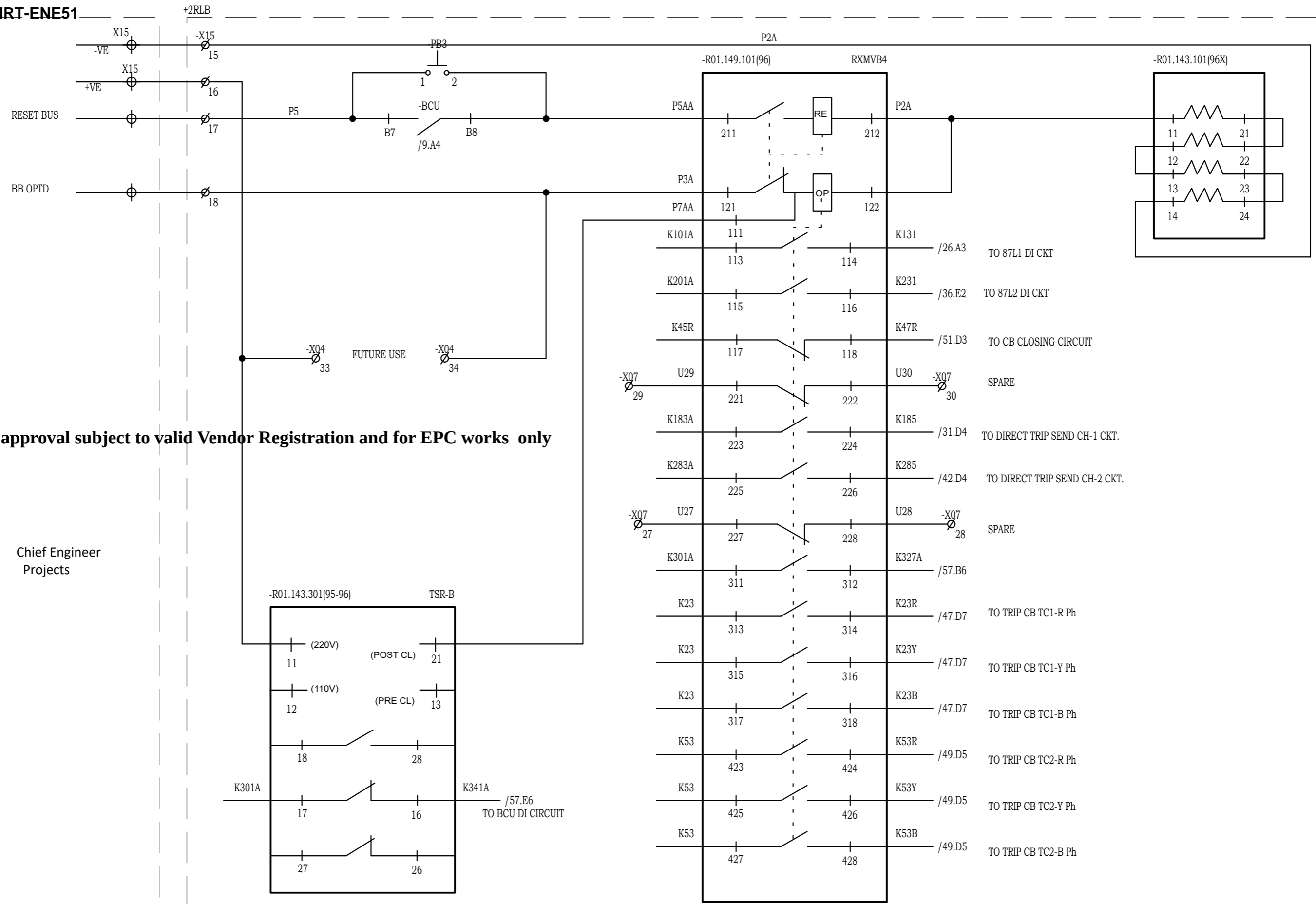
PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	



TITLE :	BUSBAR PROTN. RELAY DI CIRCUIT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	67
CONT :	68

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Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

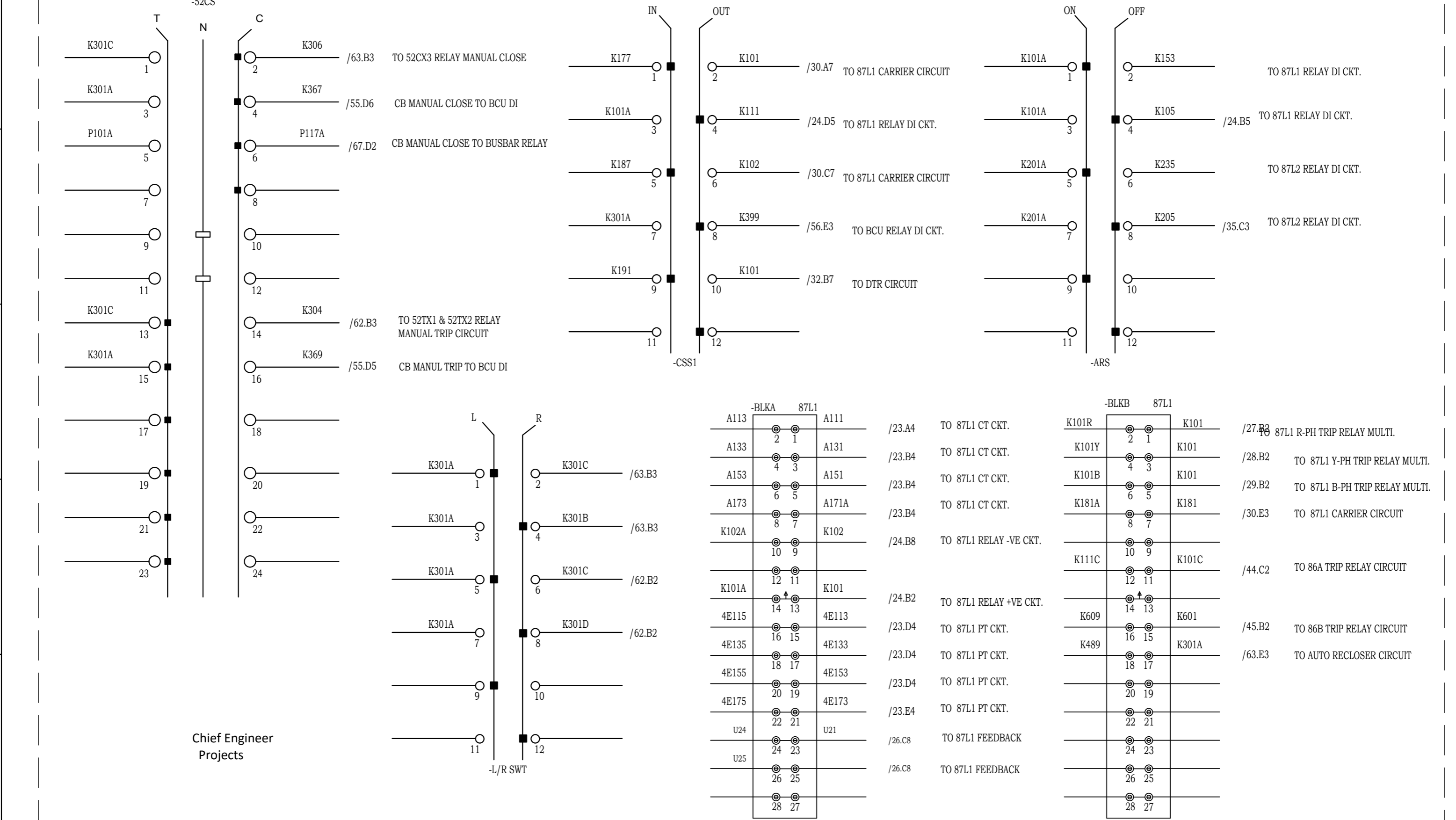
PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : BUBAR TRIP RELAY CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	68
CONT :	69

8593241/2024/EEMRT-ENE51



Chief Engineer
Projects

Drawing approval subject to valid Vendor Registration and for EPC works only

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

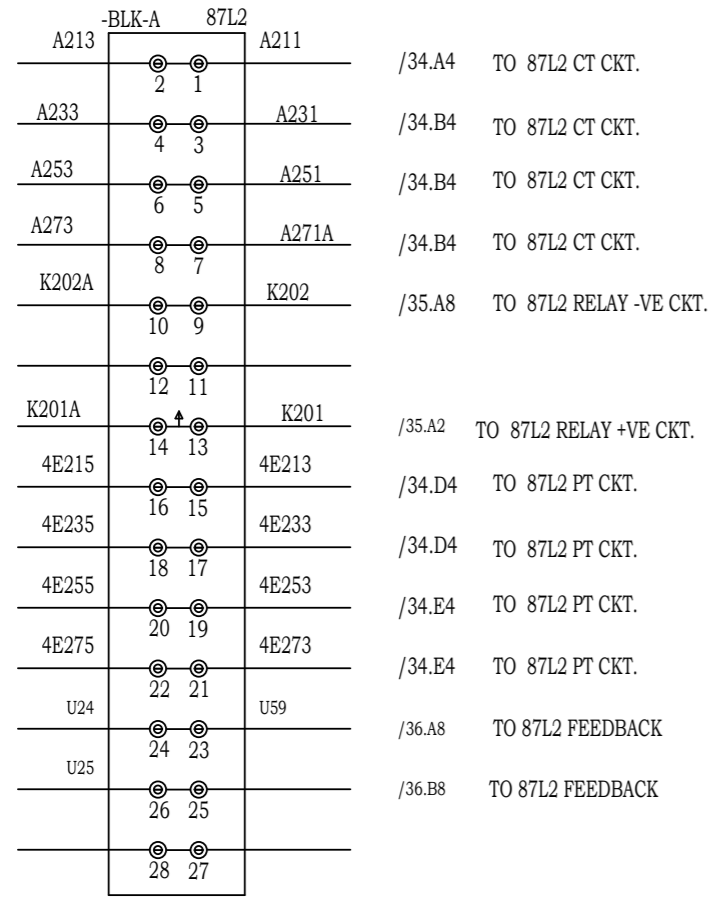
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
00	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:	
CUSTOMER :	M/s. APTRANSCO
CONTRACTOR :	

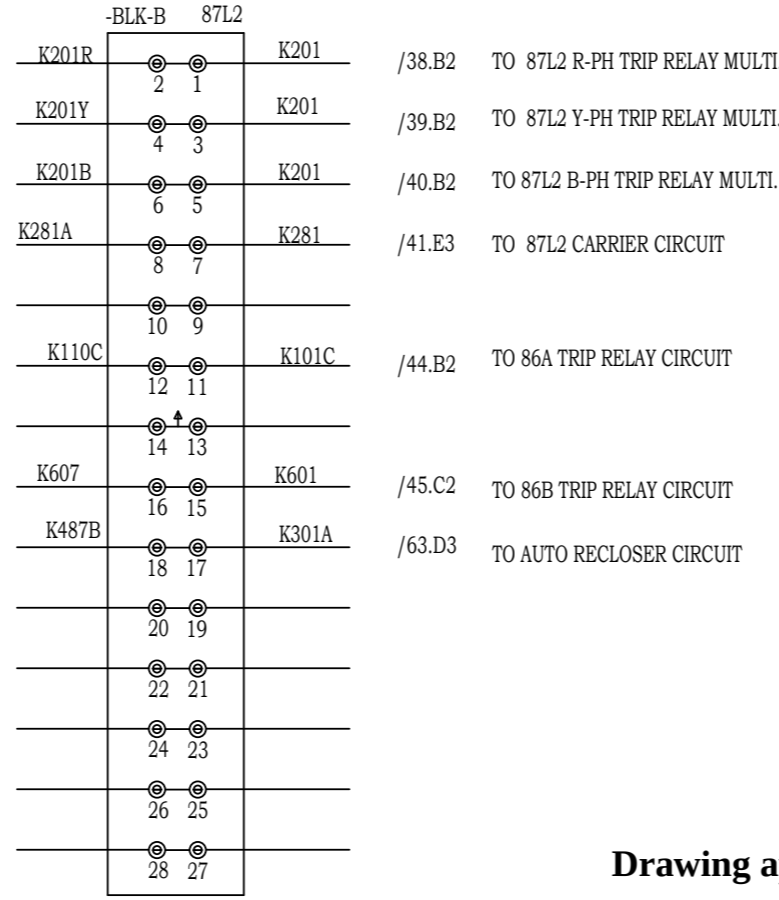


TITLE :	SWITCH AND TEST BLOCK CONTACT DISTRIBUTION CKT
CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

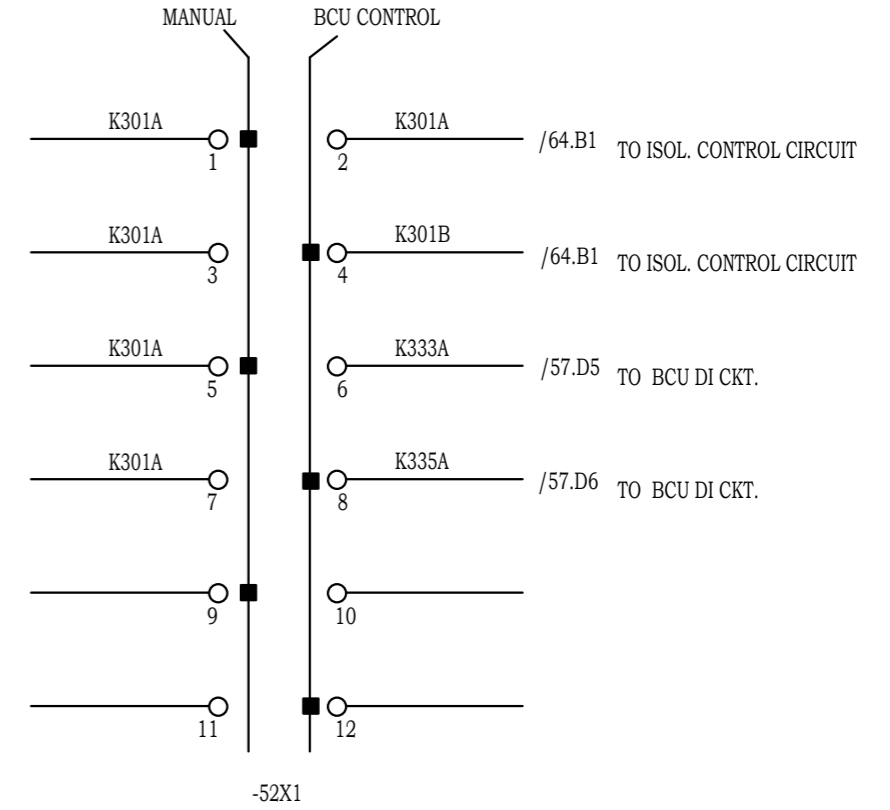
PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
REV :	03
DWG No :	CZN190523DB-CRS
SHT :	69
CONT :	70



- /34.A4 TO 87L2 CT CKT.
- /34.B4 TO 87L2 CT CKT.
- /34.B4 TO 87L2 CT CKT.
- /34.B4 TO 87L2 CT CKT.
- /35.A8 TO 87L2 RELAY -VE CKT.
- /35.A2 TO 87L2 RELAY +VE CKT.
- /34.D4 TO 87L2 PT CKT.
- /34.D4 TO 87L2 PT CKT.
- /34.E4 TO 87L2 PT CKT.
- /34.E4 TO 87L2 PT CKT.
- /36.A8 TO 87L2 FEEDBACK
- /36.B8 TO 87L2 FEEDBACK



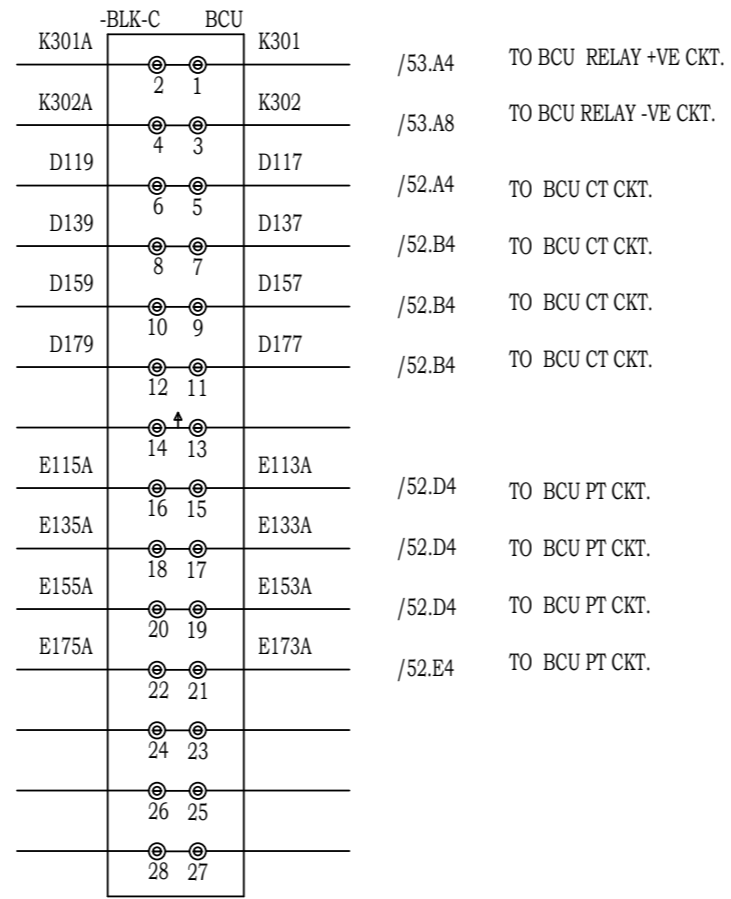
- /38.B2 TO 87L2 R-PH TRIP RELAY MULTI.
- /39.B2 TO 87L2 Y-PH TRIP RELAY MULTI.
- /40.B2 TO 87L2 B-PH TRIP RELAY MULTI.
- /41.E3 TO 87L2 CARRIER CIRCUIT
- /44.B2 TO 86A TRIP RELAY CIRCUIT
- /45.C2 TO 86B TRIP RELAY CIRCUIT
- /63.D3 TO AUTO RECLOSER CIRCUIT



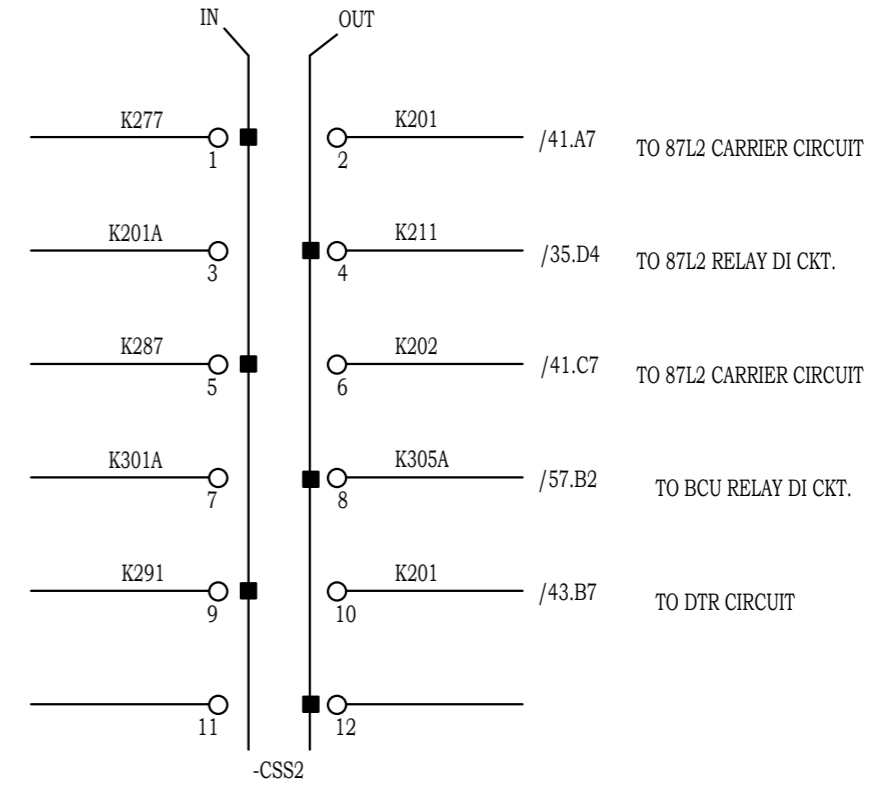
- /64.B1 TO ISOL. CONTROL CIRCUIT
- /64.B1 TO ISOL. CONTROL CIRCUIT
- /57.D5 TO BCU DI CKT.
- /57.D6 TO BCU DI CKT.

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- /53.A4 TO BCU RELAY +VE CKT.
- /53.A8 TO BCU RELAY -VE CKT.
- /52.A4 TO BCU CT CKT.
- /52.B4 TO BCU CT CKT.
- /52.B4 TO BCU CT CKT.
- /52.B4 TO BCU CT CKT.
- /52.D4 TO BCU PT CKT.
- /52.D4 TO BCU PT CKT.
- /52.D4 TO BCU PT CKT.
- /52.E4 TO BCU PT CKT.



- /41.A7 TO 87L2 CARRIER CIRCUIT
- /35.D4 TO 87L2 RELAY DI CKT.
- /41.C7 TO 87L2 CARRIER CIRCUIT
- /57.B2 TO BCU RELAY DI CKT.
- /43.B7 TO DTR CIRCUIT

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT: _____
CUSTOMER: M/s. APTRANSCO
CONTRACTOR: _____

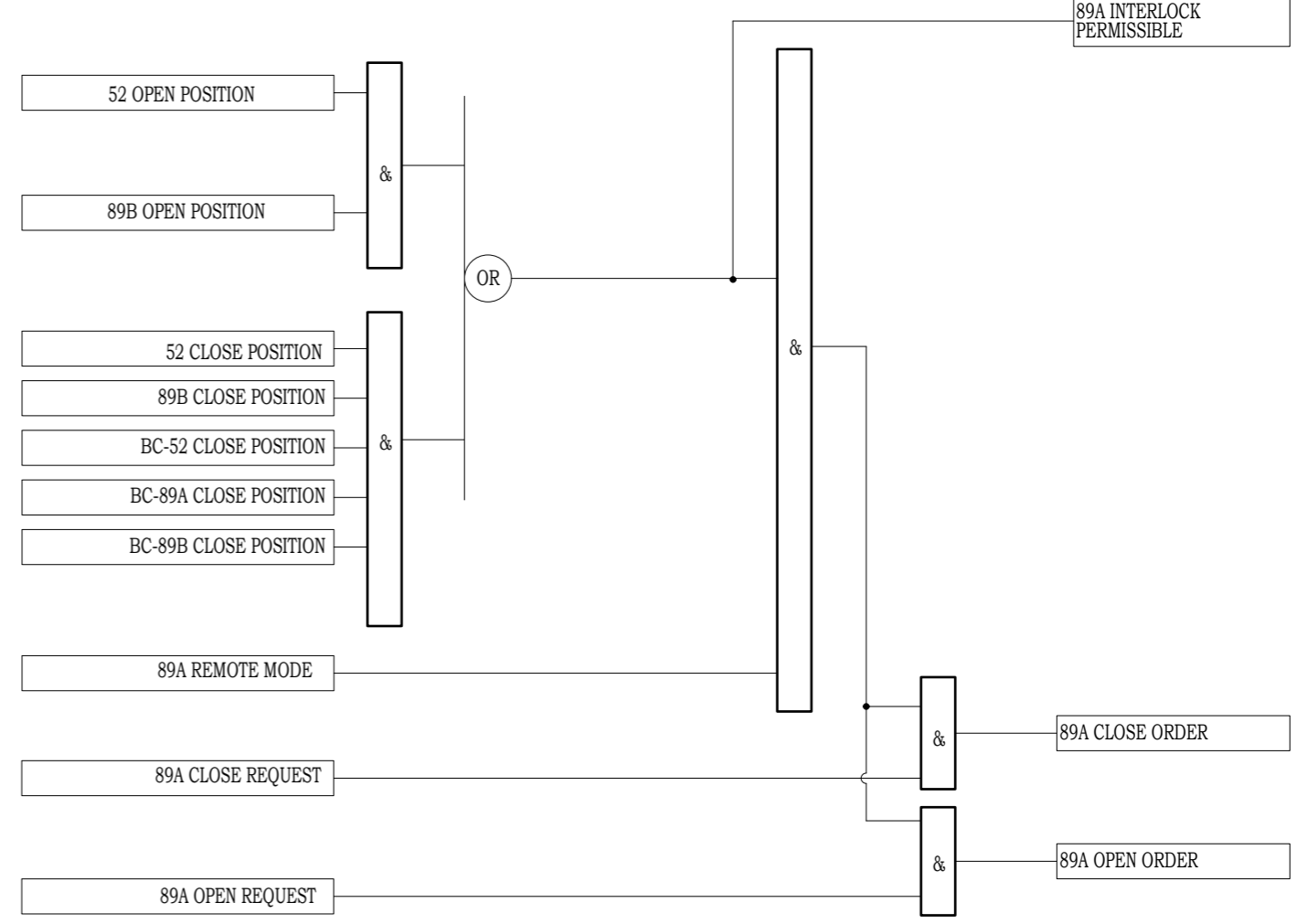
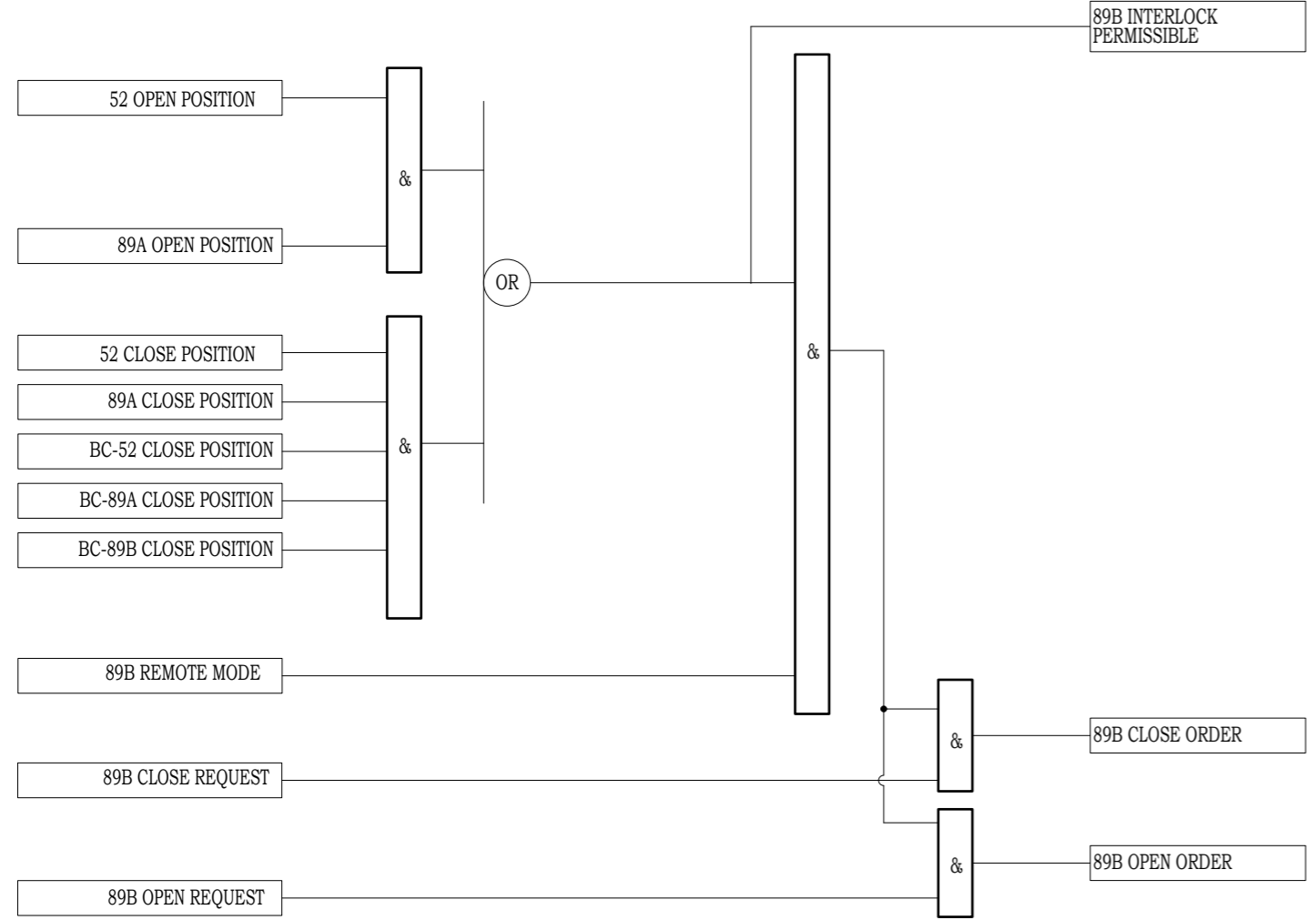


TITLE : TEST BLOCK CONTACT DISTRIBUTION CIRCUIT
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

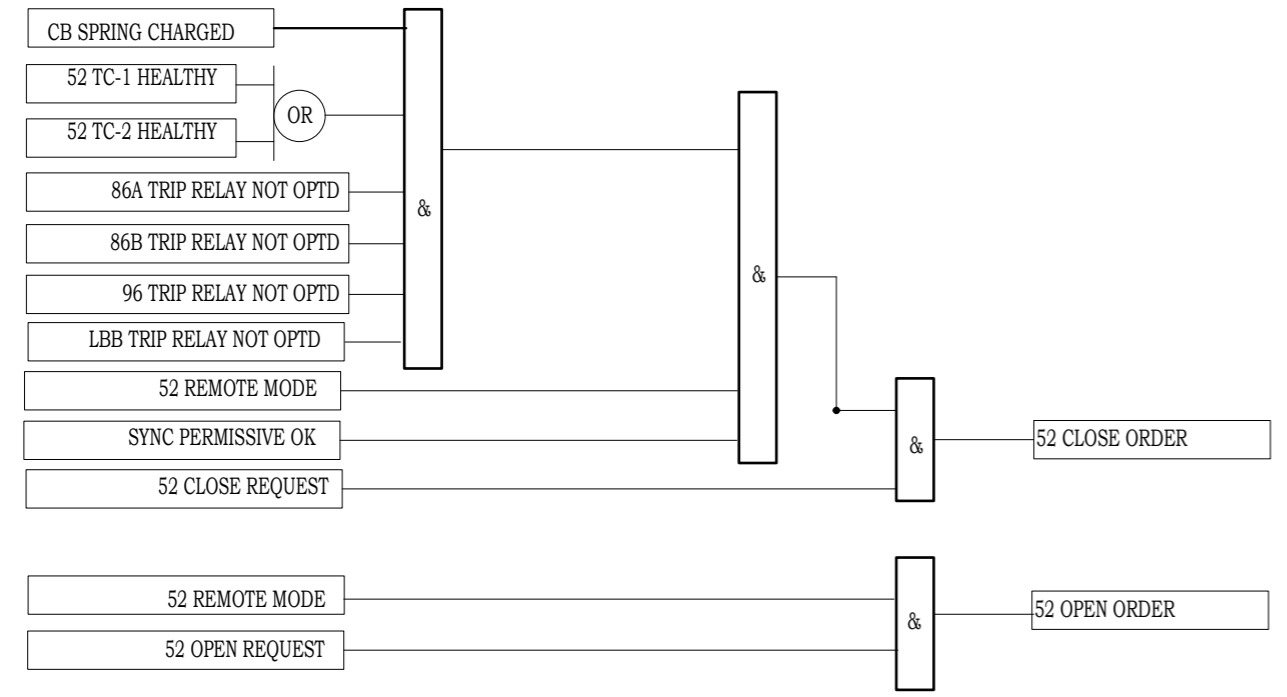
PO No :	_____
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	70
CONT :	71

8593241/2024/EEMRT-ENE51

ISOLATOR 89A



CB 52




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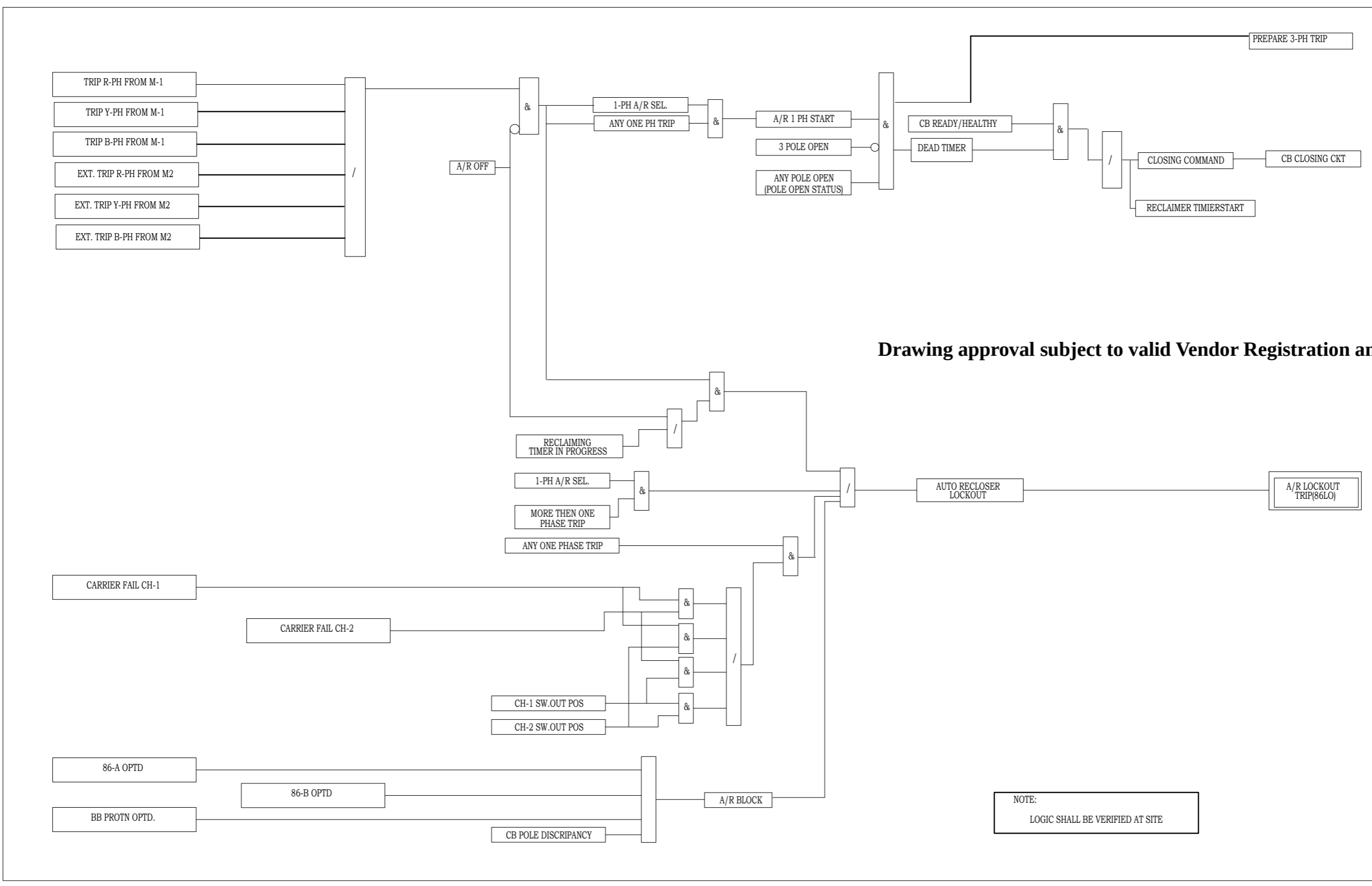
Chief Engineer
Projects

NOTE- Interlock between Isolator , Earth switch , and circuit Breaker will be done as per site requirement.

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR :
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG	
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	

	TITLE :	BCU INTERLOCK LOGIC CIRCUIT	PO No :	
	CKT. NAME:	220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL	PANEL REF :	2RLA&2RLB
			DWG No :	CZN190523DB-CRS
			REV :	03
			SHT :	71
			CONT :	72



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NOTE:
LOGIC SHALL BE VERIFIED AT SITE

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

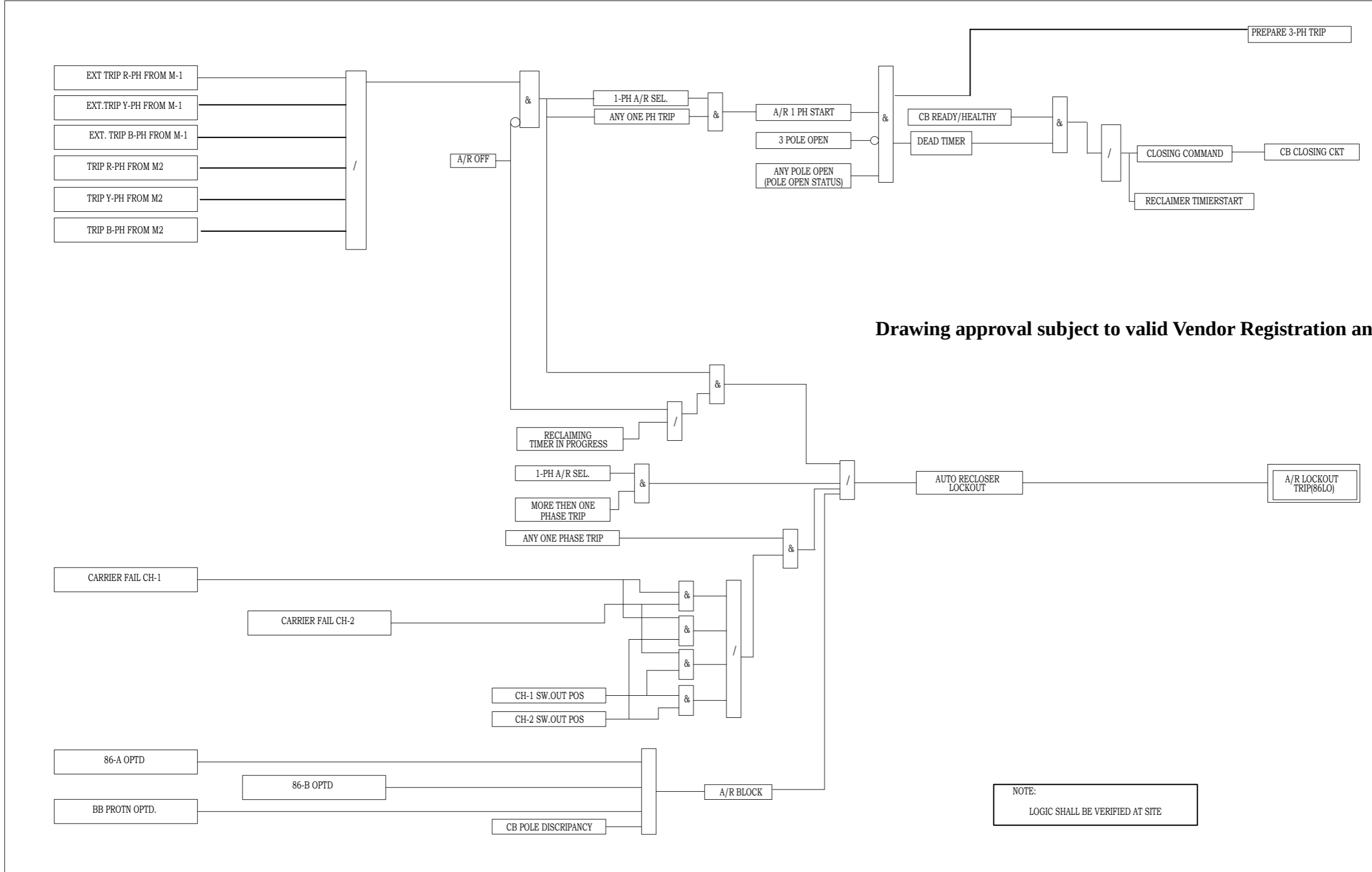
REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :



TITLE : AUTO RECLOSE LOGIC CIRCUIT FOR MAIN-1
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	73
CONT :	74



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NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

REV	REMARKS	DATE	DRWN	CHKD	APPD
02	AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK
01	AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG
00	SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG

PROJECT:
CUSTOMER : M/s. APTRANSCO
CONTRACTOR :

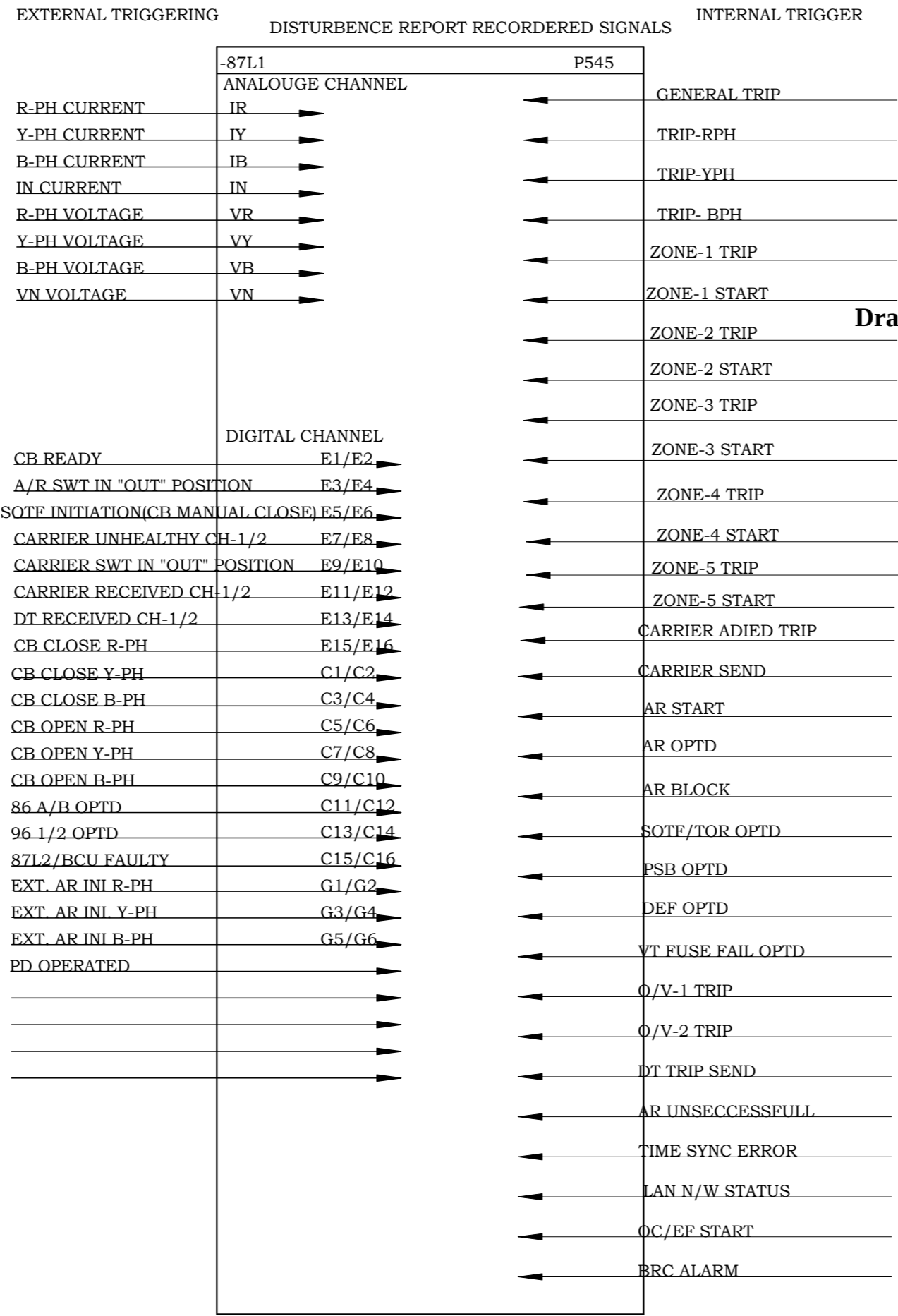


TITLE : AUTO RECLOSE LOGIC CIRCUIT FOR MAIN-2
CKT. NAME: 220KV LINE DIFFERENTIAL BAY CONTROL AND RELAY PANEL

PO No :	
DOC TYPE :	SCHEMATIC DIAGRAM
PANEL REF :	2RLA&2RLB
DWG No :	CZN190523DB-CRS
REV :	03
SHT :	74
CONT :	75

THE COMMON TRIGGERING ANALOUGE AND DIGITAL SIGNALS

8593241/2024/EEMRT-ENE51



Drawing approval subject to valid Vendor Registration and for EPC work

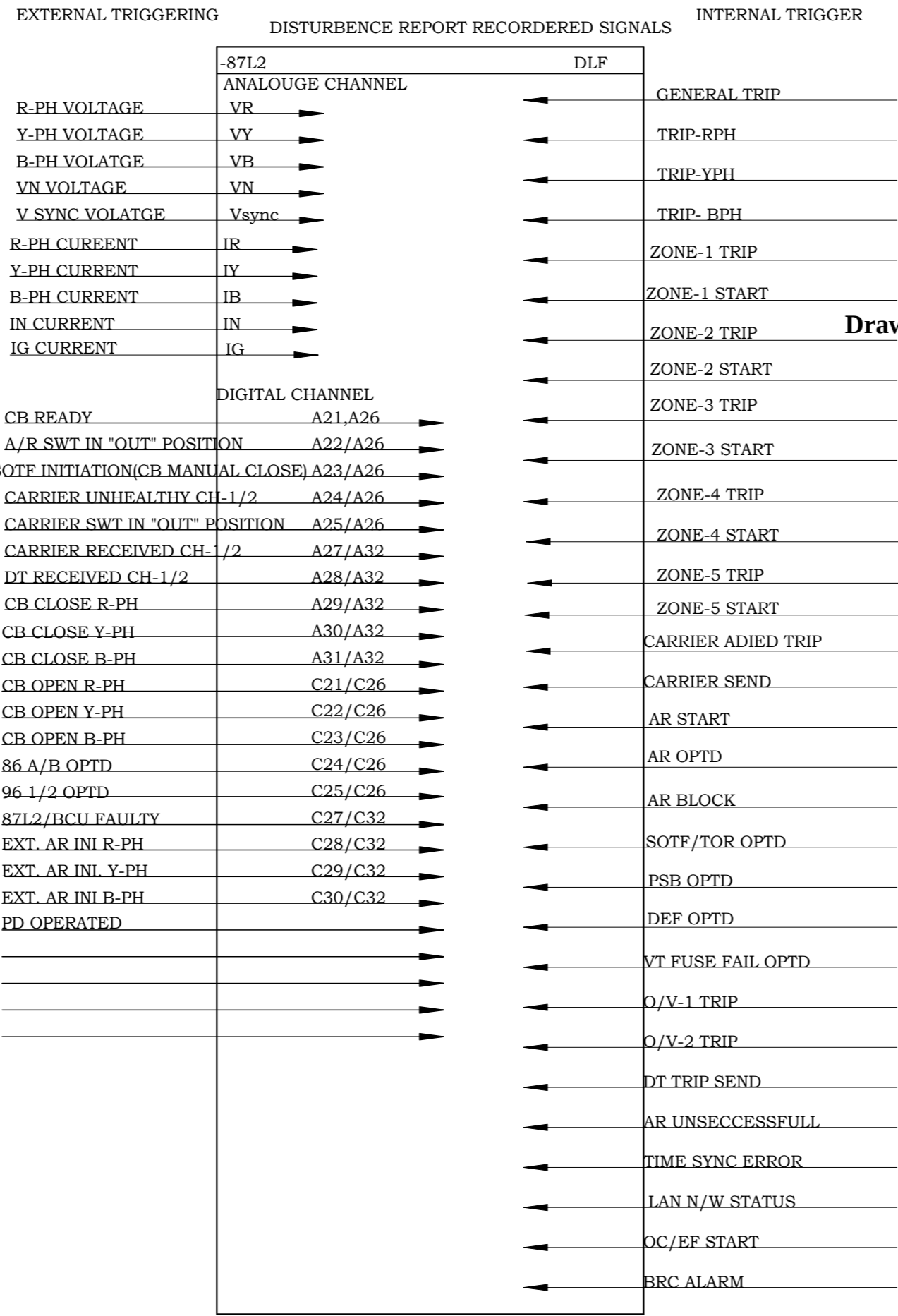
Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT:		TITLE : DISTURBENCE RECORDER MAIN-1/87L1	PO No :
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG	CUSTOMER : M/s. APTRANSCO		DWG No : CZN190523DB-CRS	SHT : 75
REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR :	CONTROL AND RELAY PANEL	CONT : 76

THE COMMON TRIGGERING ANALOUGE AND DIGITAL SIGNALS

8593241/2024/EEMRT-ENE51



Drawing approval subject to valid Vendor Registration and for EPC work

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : DISTURBENCE RECORDER 87L2 MAIN-2	PO No :
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 76
REV	REMARKS	DATE	DRWN	CHKD	APPD		CONTROL AND RELAY PANEL	CONT : 77

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EVENTS LOGGER LIST (SEQUENTIAL OF EVENTS)

	-BCU	IRF
GENERAL TRIP	▶	◀
TRIP R-PH	▶	◀
TRIP Y-PH	▶	◀
TRIP B-PH	▶	◀
ZONE-1 TRIP	▶	◀
ZONE-1 START	▶	◀
ZONE-2 TRIP	▶	◀
ZONE-2 START	▶	◀
ZONE-3 TRIP	▶	◀
ZONE-3 START	▶	◀
ZONE-4 TRIP	▶	◀
ZONE-4 START	▶	◀
ZONE-5 TRIP	▶	◀
ZONE-5 START	▶	◀
ZCOM TRIP	▶	◀
MAIN-1 RELAY CARRIER RECEIVE	▶	◀
MAIN-1 RELAY CARRIER SEND	▶	◀
MAIN-2 RELAY CARRIER RECEIVE	▶	◀
MAIN-2 RELAY CARRIER SEND	▶	◀
CARRIER FAIL	▶	◀
CARRIER SWITCH OUT POS	▶	◀
AR START	▶	◀
AR OPERATED	▶	◀
AR BLOCK	▶	◀
3 PH TRIP GR A/B	▶	◀
PSB OPERATED	▶	◀
DEF OPERATED	▶	◀
1-PH LBB INITIATION	▶	◀
3-PH LBB INITIATION	▶	◀
LBB OPERATED	▶	◀
BUSBAR OPERATED	▶	◀
VT FUSE FAIL	▶	◀
OVER VOLATGE START	▶	◀
OVER VOLATGE-1 TRIP	▶	◀
OVER VOLTAGE-2 TRIP	▶	◀
89L OPEN	▶	◀
89A OPEN	▶	◀
89B OPEN	▶	◀
89L CLOSE	▶	◀
89A CLOSE	▶	◀
89B CLOSE	▶	◀
DT RECEIVCH-1/2	▶	◀
DT SEND CH-1/2	▶	◀
MAIN-1 RELAY OPERATED	▶	◀
MAIN-2 RELAY OPERATED	▶	◀
MAIN CB SF6 GAS LOW	▶	◀

MAIN CB SF6 LOCKOUT

MAIN CB RPH TC-1 UNHEALTHY

MAIN CB YPH TC-1 UNHEALTHY

MAIN CB BPH TC-1 UNHEALTHY

MAIN CB RPH TC-2 UNHEALTHY

MAIN CB YPH TC-2 UNHEALTHY

MAIN CB BPH TC-2 UNHEALTHY

MAIN CB AC SUPPLY FAIL

MAIN CB R-PH CLOSE

MAIN CB Y-PH CLOSE

MAIN CB B-PH CLOSE

MAIN CB R-PH OPEN

MAIN CB Y-PH OPEN

MAIN CB B-PH OPEN

MAIN-1 RELAY DC FAIL

MAIN-2 RELAY DC FAIL

MAIN CB PD OPERATED

CB NOT READY FOR AR

TIME SYNC ERROR

LAN N/W ERROR

VT FUSE FAIL OPTD

O/V-1 TRIP

O/V-2 TRIP

DT TRIP SEND

AR UNSECCCESSFULL

TIME SYNC ERROR

LAN N/W STATUS

AR SWITCH OUT POSITION

Chief Engineer
Projects

NOTE: TB NUMBERS AND WIRE NUMBERS MAY CHANGE DURING MANUFACTURING AND WILL BE CORRECTED IN AS BUILT DRAWING.

AS PER CUSTOMER COMMENTS	02.02.2024	PKS	PK	PK	PROJECT: CUSTOMER : M/s. APTRANSCO CONTRACTOR :		TITLE : EVENTS LOGGER	PO No :
02 AS PER CUSTOMER COMMENTS	29.12.2023	PKS	PK	PK			DOC TYPE : SCHEMATIC DIAGRAM	
01 AS PER CUSTOMER COMMENTS	01.12.2023	RJS	PK	MVG			PANEL REF : 2RLA&2RLB	REV : 03
00 SUBMISSION FOR APPROVAL	16.06.2023	SR	PK	MVG			DWG No : CZN190523DB-CRS	SHT : 77
REV	REMARKS	DATE	DRWN	CHKD	APPD			CONT :