

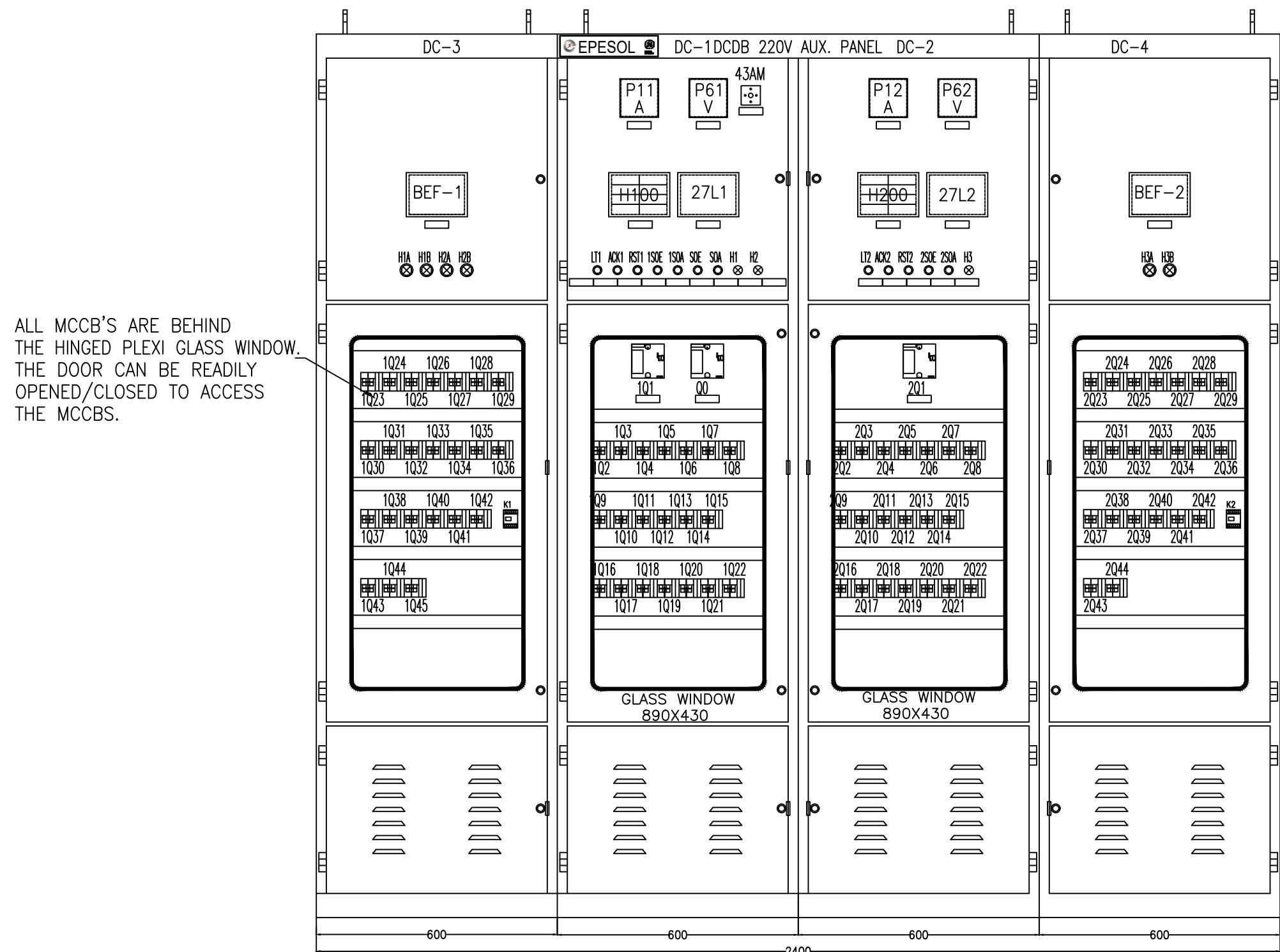
LAYOUT DRAWING OF 220V DC AUXILIARY SUPPLY DISTRIBUTION BOARD

APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: COVER SHEET 220VDC DISTRIBUTION BOARD FOR 220KV EQUIPMENT	DWG# EPE/ENU-18/P1459	SHT: 01 OF 06
NAH	ABA	MSC			DATE:21.12.2018	AS BUILT



E P E S O L **P v t . L t d .**
71-B Garden Block, New Garden Town, Lahore, Pakistan

A
B
C
D
E
F
A
B
C
D
E
F

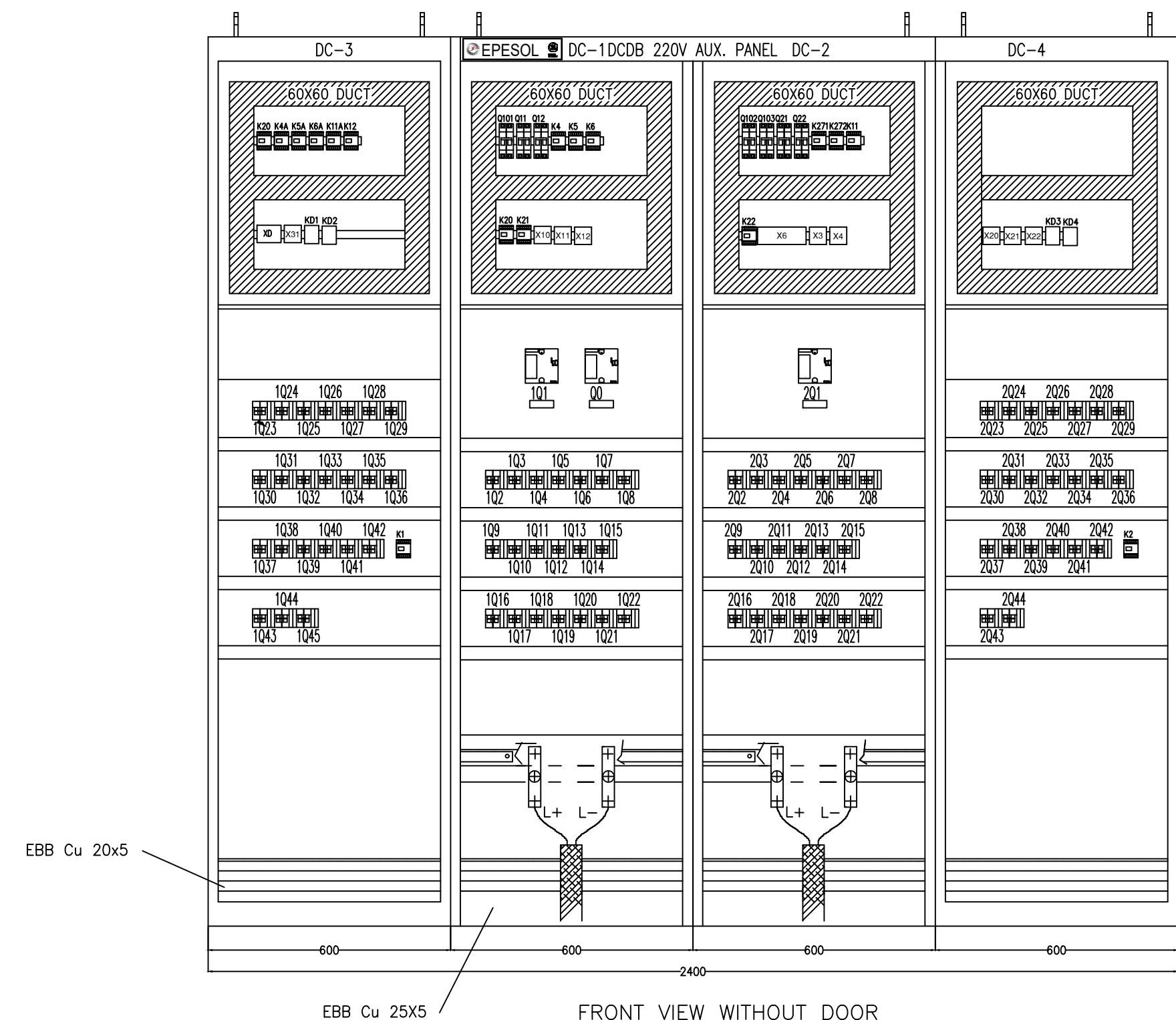


FRONT VIEW WITH DOOR

NOTES

- COLOR: RAL7032
- CLASS OF PROTECTION: IP51
- CONTROL PANEL: (4x600)x600x2200 mm (WIDTHxDEPTHxHEIGHT)
- FACE SHEET: 600x2200 mm (WIDTHxHEIGHT)
- EARTHING BUSBAR 25x5 mm²
- FLEXIBLE EARTHING STRIP 16mm²

APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: GENERAL ARRANGEMENT 220VDC DISTRIBUTION BOARD FOR 220KV EQUIPMENT	DWG# EPE/ENU-18/P1459	SHT: 02 OF 06
NAH	ABA	MSC			EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 21.12.2018 AS BUILT REV: 0

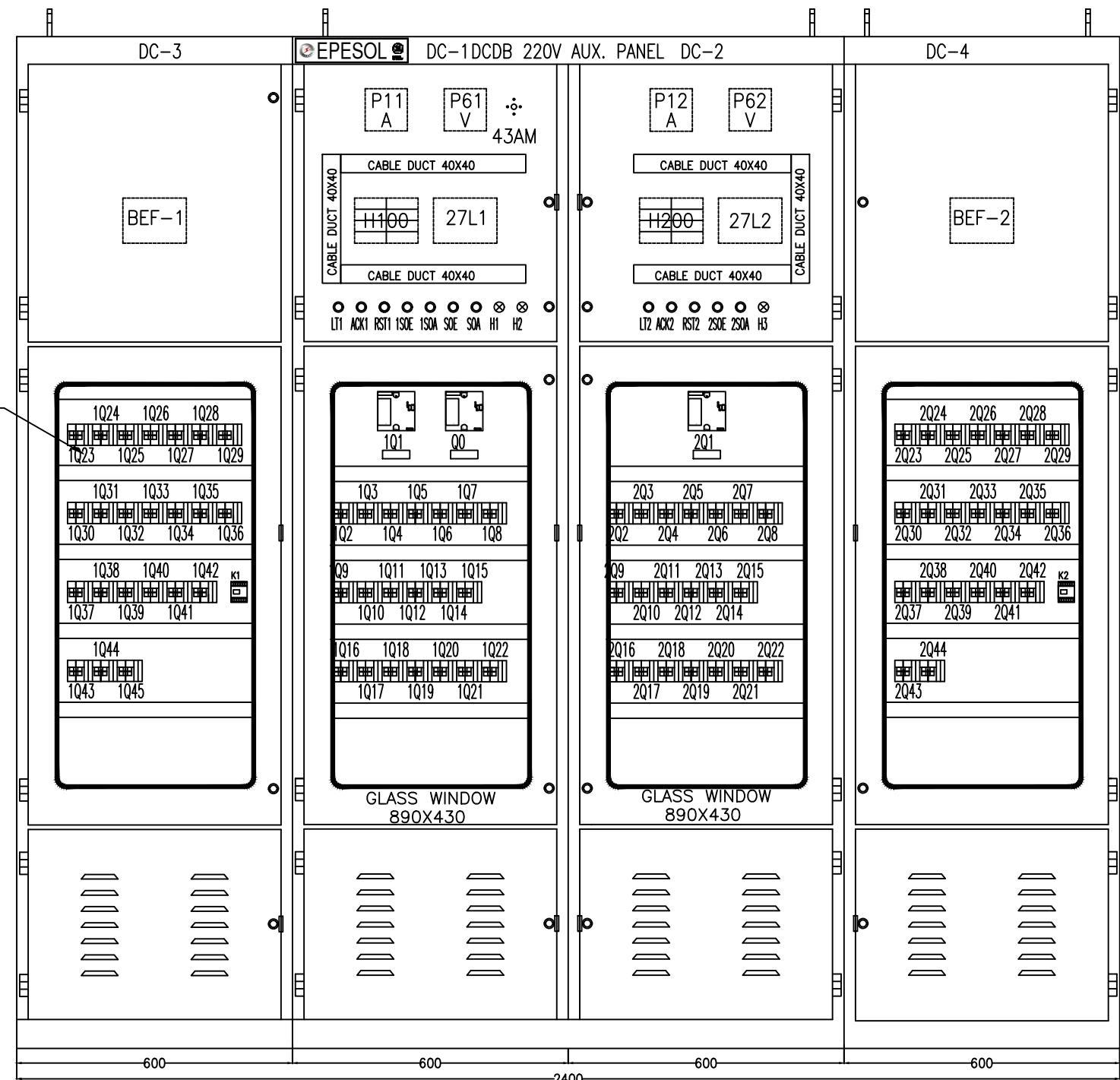
**NOTES**

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- CONTROL PANEL: (4x600)x600x2200 mm
- FACE SHEET: 600x2200 mm
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- FLEXIBLE EARTHING STRIP 16mm²

APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	DWG# EPE/ENU-18/P1459	SHT: 03 OF 06
NAH	ABA	MSC	PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	GENERAL ARRANGEMENT 220VDC DISTRIBUTION BOARD FOR 220KV EQUIPMENT	EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:21.12.2018 AS BUILT REV: 0

A
B
C
D
E
F

ALL MCCB'S ARE BEHIND THE HINGED PLEXI GLASS WINDOW. THE DOOR CAN BE READILY OPENED/CLOSED TO ACCESS THE MCCBS.

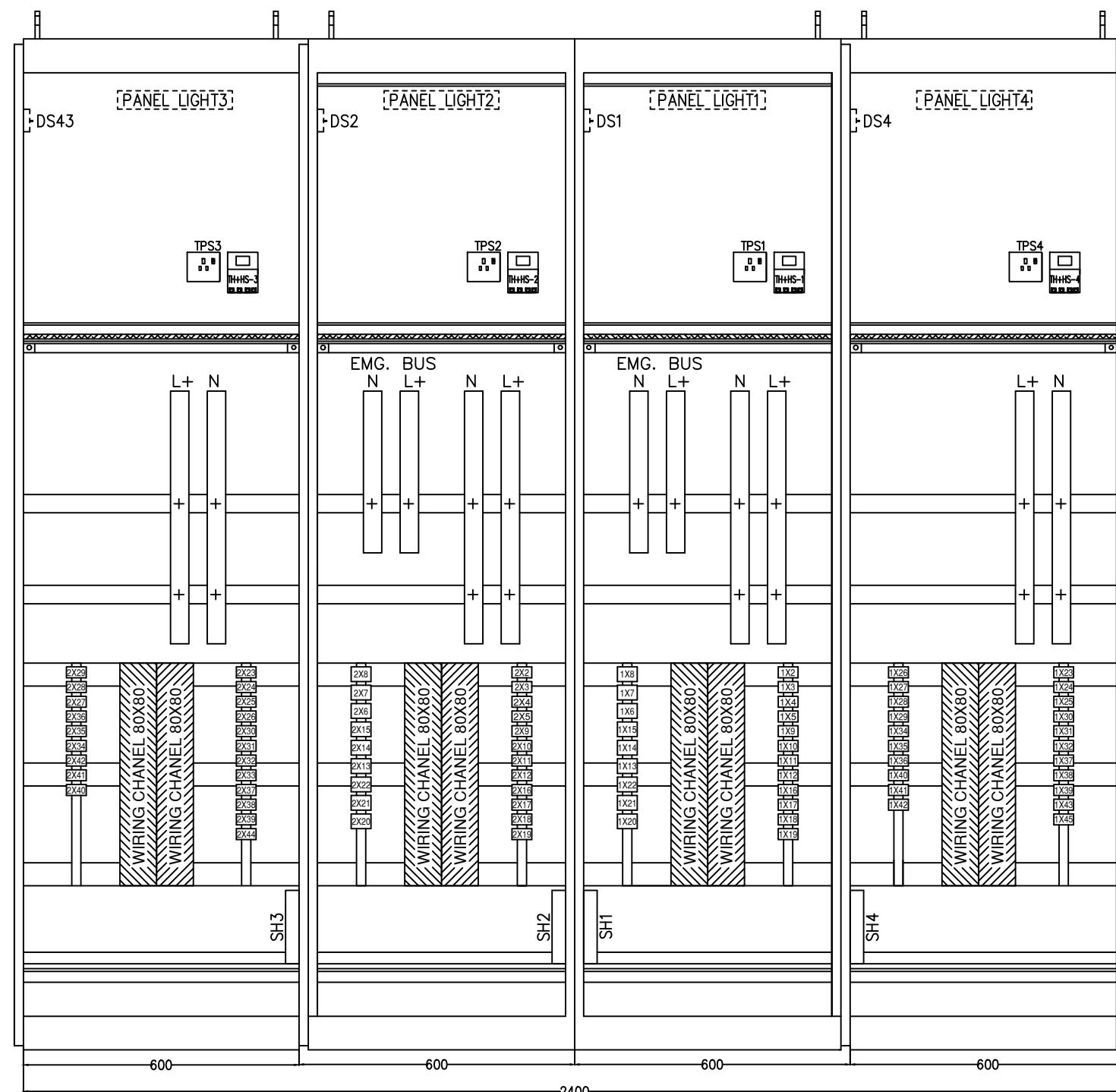


FRONT VIEW WITH DOOR

NOTES

1. COLOR: RAL7032
2. CLASS OF PROTECTION: IP51
3. CONTROL PANEL: (4x600)x600x2200 mm
4. FACE SHEET: 600x2200 mm
5. EARTHING BUSBAR 25x5 mm²
6. FLEXIBLE EARTHING STRIP 16mm²

APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	DWG#	SHT: 04 OF 06
NAH	ABA	MSC	PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	GENERAL ARRANGEMENT 220VDC DISTRIBUTION BOARD FOR 220KV EQUIPMENT	EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1459 DATE: 21.12.2018 AS BUILT REV: 0

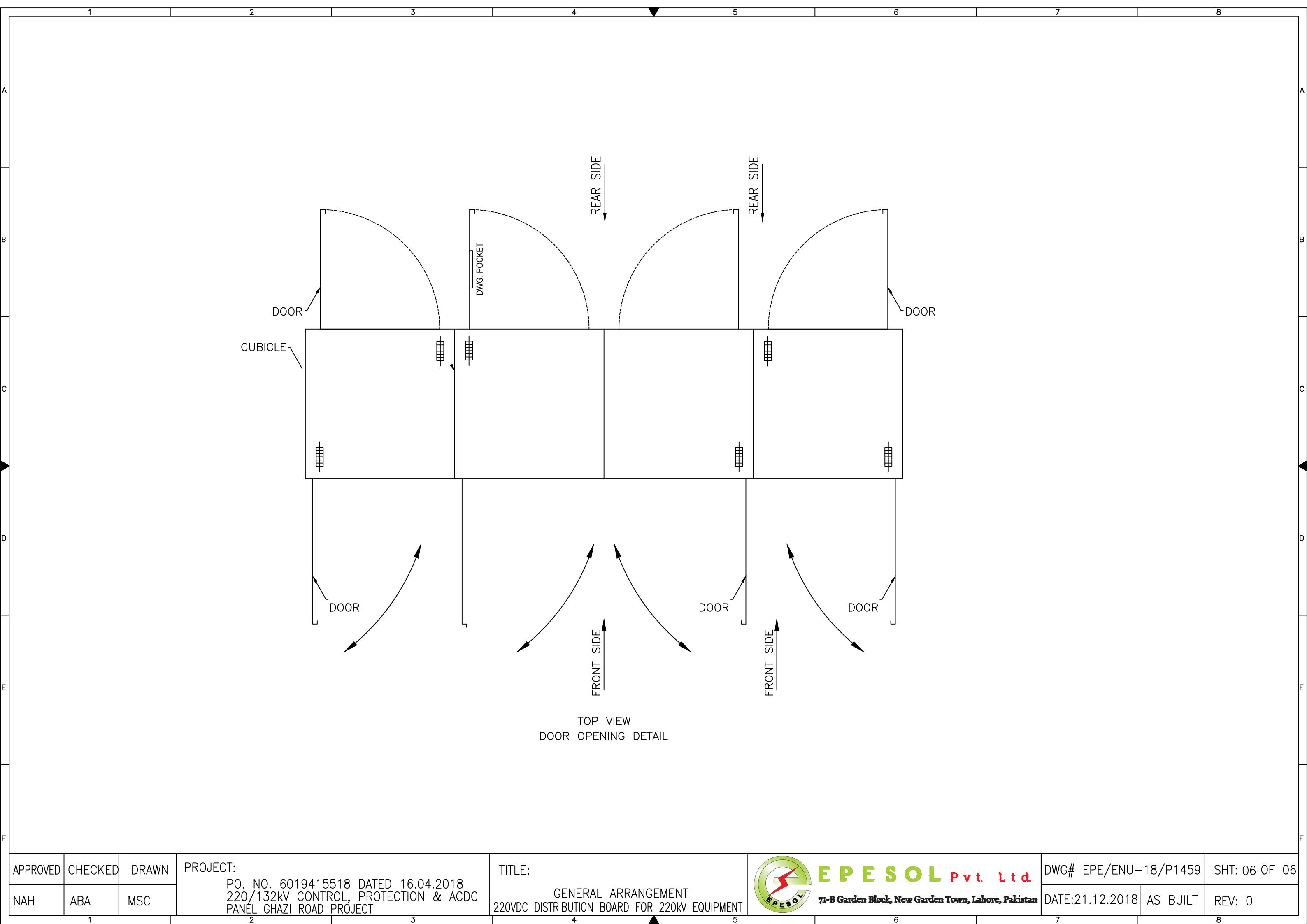


REAR VIEW WITHOUT DOOR

NOTES

1. COLOR: RAL7032
2. CLASS OF PROTECTION: IP51
3. CONTROL PANEL: (4x600)x600x2200 mm
4. FACE SHEET: 600x2200 mm
5. EARTHING BUSBAR 25x5 mm²
6. FLEXIBLE EARTHING STRIP 16mm²

APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	DWG#	SHT: 05 OF 06
NAH	ABA	MSC	PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	GENERAL ARRANGEMENT 220VDC DISTRIBUTION BOARD FOR 220KV EQUIPMENT	EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1459 DATE: 21.12.2018 AS BUILT REV: 0



LIST OF APPARATUS

220V DC AUXILIARY SUPPLY

DISTRIBUTION BOARD

APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	DWG# EPE/ENU-18/P1460		SHT: 01 OF 04
NAH	ABA	MSC	PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	COVER SHEET 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:21.12.2018	AS BUILT

	1	2	3	4	5	6	7	8		
SR. #	ITEM DESIGNATION		DESCRIPTION		QTY	TYPE	MAKE	COUNTRY OF ORIGIN	ORDERING INFORMATION	SHEET NO
A	1	Q0, 1Q1, 2Q1		TRIPLE POLE MCCB RATED CURRENT 80–100 Amp, Icu = 50 KAmp WITH 2NO+3NC AUXILIARY	3	FD160	GE	HUNGARY	FDN36TD100GD(1)+FABAT10(1)+FAS10R(2)+FAS01R(3)	A
		CONTACTS, ONE NORMALLY CLOSED TRIP CONTACT AND ELECTRICAL OPERATOR UNIT							+FDEMFN(1)	
	2	(1Q2~1Q44), (2Q2~2Q32)		DOUBLE POLE DC MCB RATED CURRENT 16 Amp, Icu = 10 KAmp WITH TWO C/O CONTACTS	76	EP-100	GE	HUNGARY	EP102UCC16+CAH(2)	
		(1Q48~1Q51), (2Q47~2Q50)		DOUBLE POLE DC MCB RATED CURRENT 16 Amp, Icu = 10 KAmp WITH TWO C/O CONTACTS	8	EP-100	GE	HUNGARY	EP102UCC16+CAH(2)	
B	3	1Q43		DOUBLE POLE DC MCB, RATED CURRENT 20 Amp, Icu = 10 KAmp WITH 2 C/O CONTACTS	1	EP-100	GE	HUNGARY	EP102UCC20+CAH(2)	B
	4	2Q33~2Q41		DOUBLE POLE DC MCB, RATED CURRENT 32 Amp, Icu = 10 KAmp WITH 2 C/O CONTACTS	9	EP-100	GE	HUNGARY	EP102UCC32+CAH(2)	
		1Q52, 2Q51		DOUBLE POLE DC MCB, RATED CURRENT 32 Amp, Icu = 10 KAmp WITH 2 C/O CONTACTS	2	EP-100	GE	HUNGARY	EP102UCC32+CAH(2)	B
	5	2Q42		DOUBLE POLE DC MCB, RATED CURRENT 40 Amp, Icu = 10 KAmp AT 220 VOLT DC WITH 2 C/O CONTACTS	1	EP-100	GE	HUNGARY	EP102UCC40+CAH(2)	
C	6	Q11, Q12, Q21, Q22		DC MCB's DOUBLE POLE RATED 06Amp, WITH TWO CHANGE OVER CONTACT, 10KA	4	EP-100	GE	HUNGARY	EP102UCC06+CAH(2)	C
	7	Q101, Q102		ELCB, 2-POLE, RATINGS: 16A, 30mA, 230VAC, WITH 1 C/O	2	DM100	GE	HUNGARY	DM100C16/030+CAH(1)	
	8	P11, P12		DC AMPERE METER 0–120Amp 96X96 FOR 60 mV SHUNT ACCURACY CLASS 1.5	2	1F96MA	FRER	ITALY		C
	9	P61, P62		DC VOLT METER SCALE 0–300 VOLT DC ACCURACY CLASS 1.5	2	1F96MV	FRER	ITALY		
D	10	H100, H200		ANNUNCIATOR WITH EIGHT WINDOWS RATED VOLTAGE 220 VOLT AC	2	AM-101	ELABS	PAKISTAN		D
	11	27L1, 27L2		DC UNDER VOLTAGE RELAY 220 VOLTAGE	2	ELUV220	ELABS	PAKISTAN		
	12	BEF-1, BEF-2		DC BATTERY EARTH FAULT RELAY 220 VOLTAGE	2	ELEF-220	ELABS	PAKISTAN		D
	13	K1, K2		DC CONTACTOR RATED VOLTAGE 220 VOLT DC RATED CURRENT 32Amp WITH 1NO+1NC CONTACTS	2	CL04D400MN	GE	HUNGARY	CL04D400MJ+BCL11(1)	
	14	K271, K272		DC CONTACTOR, RATED VOLTAGE 220 VOLT DC, WITH 3NO+1NC CONTACTS	2	MCRC031ATN	GE	HUNGARY		
	15	KD1, KD2, KD3, KD4, KD5, KD6		TIMERS RATED VOLTAGE 220 VOLT DC TIME SETTING 0–10 SECONDS 2 CHANGE OVER CONTACTS	6	AT8N-AB	AUTONICS	KOREA		
	16	K4, K5, K6, K11		DC CONTACTOR RATED VOLTAGE 220 VOLT DC WITH 2NO+2NC CONTACTS	4	MCRC022ATN	GE	HUNGARY		E
	17	K20, K20A		CONTACTOR RATED 230 VOLT AC WITH 2NO+2NC CONTACTS	2	MCR	GE	HUNGARY	MCRA022ATN	
		K21, K22		CONTACTOR RATED 230 VOLT AC WITH 3NO+2NC CONTACTS	2	MCR	GE	SPAIN	MCRA022ATN	
	18	LT1, ACK1, RST1,		PUSH BUTTON COLOR RED, YELLOW & GREEN FOR ACKNOWLEDGE, LAMP TEST AND RESET FUNCTION	6	YSAP1	YOUNGSUNG	SOUTH KOREA	YS-AP1-2-40-B-DW	
		LT2, ACK2, RST2		RESPECTIVELY 4 NO CONTACT EACH						
	19	ISOE, ISOA, SOE, SOA, 2SOE		PUSH BUTTON FOR INCOMER AND BUS COUPLER BREAKER ON-OFF WITH TWO CONTACTS EACH	6	YSAP1	YOUNGSUNG	SOUTH KOREA	YS-AP1-2-40-B-DW	
		2SOA								
F	20	H1, H2, H3		INDICATING LAMPS COLOR RED FOR CB ON POSITION INDICATION RATING 2WATTS AT 220 VOLT DC	3	YSPL	YOUNGSUNG	SOUTH KOREA	YSPL-2-DL12RW	F
	APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: LIST OF APPARATUS 220VDC DISTRIBUTION BOARD FOR 220KV EQUIPMENT	 EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan			DWG# EPE/ENU-18/P1460	SHT: 02 OF 04
	NAH	ABA	MSC						DATE:21.12.2018	AS BUILT

	1	2	3	4	5	6	7	8			
SR. #	ITEM DESIGNATION		DESCRIPTION		QTY	TYPE	MAKE	COUNTRY OF ORIGIN	ORDERING INFORMATION	SHEET NO	
A	21	43AM		THREE POSITION AUTO-OFF-MANUAL SELECTOR SWITCH WITH 3C/O CONTACTS		1	YSAK	YOUNGSUNG	SOUTH KOREA	YSAK2344D	A
	22	DS1, DS2, DS3, DS4		DOOR SWITCH		4	YSP-YSMS	YOUNGSUNG	SOUTH KOREA	YSP3315GW-B+YSMS-C	
	23	IL1, IL2, IL3, IL4		CUBICLE LIGHTING, 5W, 230 VOLT AC		4	YST8	YOUNGSUNG	SOUTH KOREA	YST8-30-5W	
B	24	TPS1, TPS2, TPS3, TPS4		THREE PIN SOCKET 240 VAC, 16Amp		4		LEAR	CHINA		B
	25	B1, B2		AC BELL RATED VOLTAGE 230 VOLT AC FOR DC FAIL FUNCTION		2	YSMB	YOUNGSUNG	SOUTH KOREA	YSMB-722A	
	26	TH+HS-1, TH+HS-2		THERMOSTAT AND HUMIDSTAT		4	ELH-220	E-LABS	PAKISTAN		
		TH+HS-3, TH+HS-4									
	27	SH1, SH2, SH3, SH4		SPACE HEATER (60W)		4	ELH-220	E-LABS	PAKISTAN		
C	28	R1, R2		SHUNT, 60mV, 100Amp		2		FRER	ITALY		C
	29	1X2 TO 1X42, 2X2 TO 2X32		TERMINAL BLOCKS SUITABLE FOR 16mm ² CABLE		144	CBD-16	CABUR	ITALY		
	30	1X43		TERMINAL BLOCKS SUITABLE FOR 25mm ² CABLE		2	CBD-25	CABUR	ITALY		
D	31	2X33 TO 2X43		TERMINAL BLOCKS SUITABLE FOR 35mm ² CABLE		20	CBD-35	CABUR	ITALY		D
	32	1X1,2X1		TERMINATION PADS (70mm Cu) FOR INCOMING CABLES		4					
	33	X3		TERMINAL BLOCKS FOR AC CIRCUIT		4	CBD-4	CABUR	ITALY		
	34	X4		TERMINAL BLOCKS FOR CONTROL CIRCUIT		6	CBD-4	CABUR	ITALY		
	35	X6		TERMINAL BLOCKS FOR ANNUNCIATION		20	CBD-4	CABUR	ITALY		
E	36	X10		TERMINAL BLOCKS FOR CONTROL CIRCUIT		8	CBD-4	CABUR	ITALY		E
	37	X11		TERMINAL BLOCKS FOR CONTROL CIRCUIT		8	CBD-4	CABUR	ITALY		
	38	X12		TERMINAL BLOCKS FOR CONTROL CIRCUIT		8	CBD-4	CABUR	ITALY		
F	39	X10		TERMINAL BLOCKS FOR CONTROL CIRCUIT		8	CBD-4	CABUR	ITALY		F
	40	X11		TERMINAL BLOCKS FOR CONTROL CIRCUIT		8	CBD-4	CABUR	ITALY		
	41	X12		TERMINAL BLOCKS FOR CONTROL CIRCUIT		8	CBD-4	CABUR	ITALY		
	42	X31, X32		TERMINAL BLOCKS FOR CONTROL CIRCUIT		4	CBD-4	CABUR	ITALY		
APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT		TITLE: LIST OF APPARATUS 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT		 EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan		DWG# EPE/ENU-18/P1460	SHT: 03 OF 04	
NAH	ABA	MSC					DATE: 21.12.2018	AS BUILT	REV: 0		

	1	2	3	4	5	6	7	8		
SR. #	ITEM DESIGNATION		DESCRIPTION		QTY	TYPE	MAKE	COUNTRY OF ORIGIN	ORDERING INFORMATION	SHEET NO
A	43	K4A,K5A,K6A,K11A,K12		AUX. CONTACTOR 110VDC 4C/0		5	PRC	GE		PRC4M40DCML
										A
	44	H1A, H2A, H3A		INDICATION LAMPS, COLOURED GREEN		3	YSPL	YONGSUNG	SOUTH KOREA	YS-PL-2-DL22GW
	45	H1B, H2B, H3B		INDICATION LAMPS, COLOURED YELLOW		3	YSPL	YONGSUNG	SOUTH KOREA	YS-PL-2-DL22YW
B	46	XD		TERMINAL BLOCKS WITH DIODE TYPE IN-D4007, RATED MAXIMUM VOLTAGE 350VDC, RATED BREAK DOWN VOLTAGE 430VDC		9	DAS.4/6	CABUR	ITALY	
										B
C										C
D										D
E										E
F										F
APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: LIST OF APPARATUS 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan				DWG# EPE/ENU-18/P1460	SHT: 04 OF 04
NAH	ABA	MSC							DATE:21.12.2018	AS BUILT

SCHEMATIC DIAGRAMS

220V DC AUXILIARY SUPPLY

DISTRIBUTION BOARD

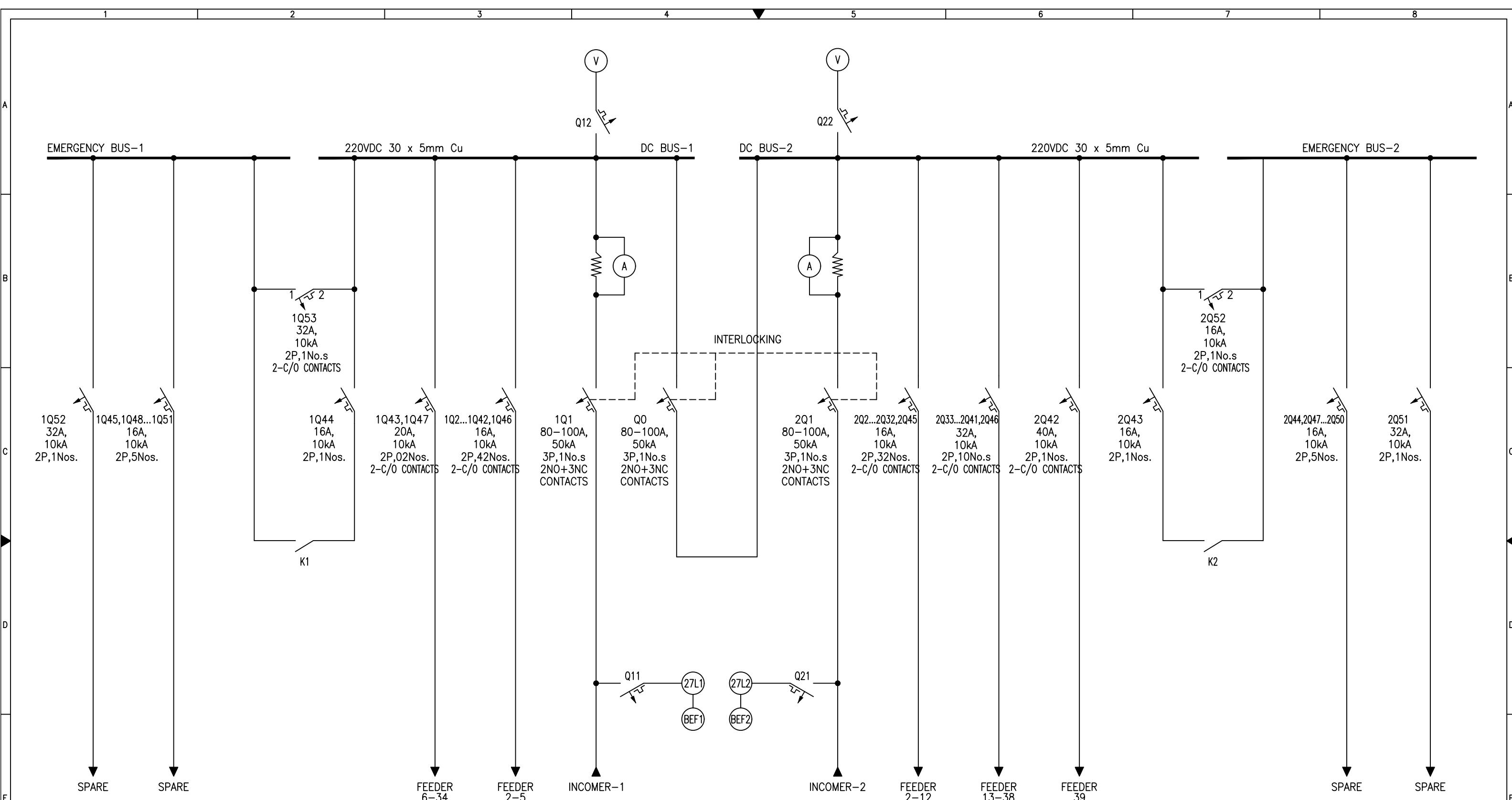
APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: COVER SHEET 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	EPE SOL PVT. LTD. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT: 01 OF 29
NAH	ABA	MSC				DATE:21.12.2018	AS BUILT

DESCRIPTION	SHEET NO
COVER SHEET	01
LIST OF CONTENTS	02
LIST OF SYMBOLS	03
OVER ALL SINGLE LINE DIAGRAM	04
DETAILED SINGLE LINE DIAGRAM	04a
DETAILED SINGLE LINE DIAGRAM	04a1
DETAILED SINGLE LINE DIAGRAM	04b
SINGLE LINE DIAGRAM	04c
SINGLE LINE DIAGRAM	04d
SINGLE LINE DIAGRAM	04e
SINGLE LINE DIAGRAM	04f
DC SUPPLY DISTRIBUTION	05
DC SUPPLY DISTRIBUTION	05a
DC SUPPLY DISTRIBUTION	06
DC SUPPLY DISTRIBUTION	07
DC SUPPLY DISTRIBUTION	08
DC SUPPLY DISTRIBUTION	09
DC SUPPLY DISTRIBUTION	10
DC SUPPLY DISTRIBUTION	11
DC SUPPLY DISTRIBUTION	12

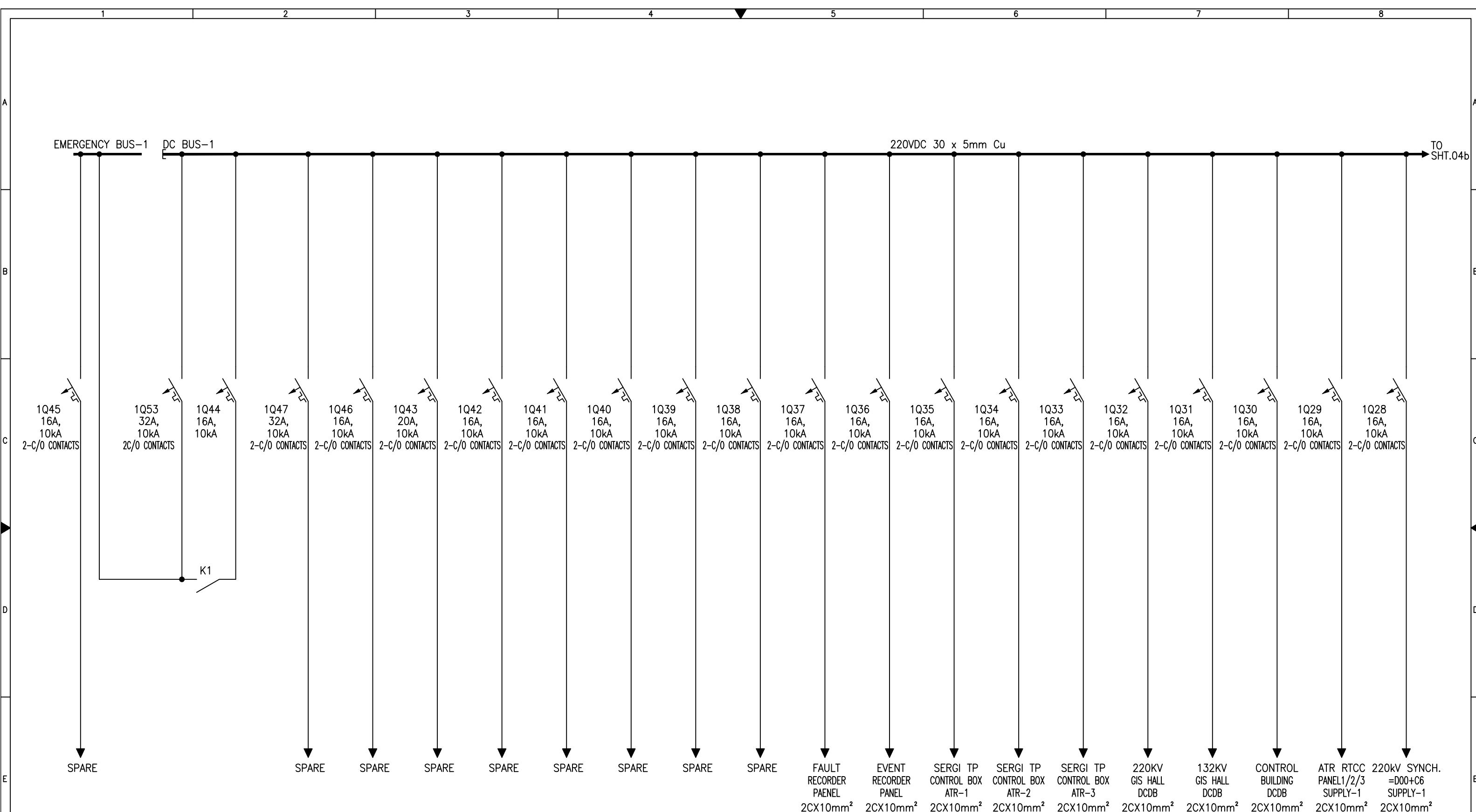
DESCRIPTION	SHEET NO
DC SUPPLY DISTRIBUTION	13
DC SUPPLY DISTRIBUTION	14
DC SUPPLY DISTRIBUTION	15
DC SUPPLY DISTRIBUTION	16
DC SUPPLY DISTRIBUTION	17
DC SUPPLY DISTRIBUTION	18
VOLTAGE MONITORING AND METERING CIRCUIT	19
SUPPLY CHANGE OVER AND INDICATION CIRCUIT	20
CONTROL & INTERLOCKING SCHEME	21
ANNUNCIATOR CIRCUIT	22
ANNUNCIATOR CIRCUIT	23
BUS-1 & BUS-2 DC MCB TRIP	24
HEATING, LIGHTING CIRCUIT	25
HEATING, LIGHTING CIRCUIT	26
INCOMER-1 CLOSING & OPENING LOGIC DIAGRAM	27
INCOMER-2 CLOSING & OPENING LOGIC DIAGRAM	28
BUS SECTION & OPENING LOGIC DIAGRAM	29

LIST OF SYMBOLS	
	RELAY PANEL TERMINAL BLOCK
	CONTROL PANEL TERMINAL BLOCK
	EARTH CONNECTION
	NORMALLY CLOSED CONTACT
	NORMALLY OPEN CONTACT
	CONTACT FOR TRIPPING
	TIME DELAY PICKUP
	CHANGE OVER CONTACT
	MCB/MCCB
	INDICATION BULB/LED
	THREE PIN SOCKET
	SPACE HEATER
	COIL
	EQUIPMENT WITHIN PANEL
	INDEPENDENT PANEL
	INDEPENDENT PANEL
	RESISTOR
	FUSE

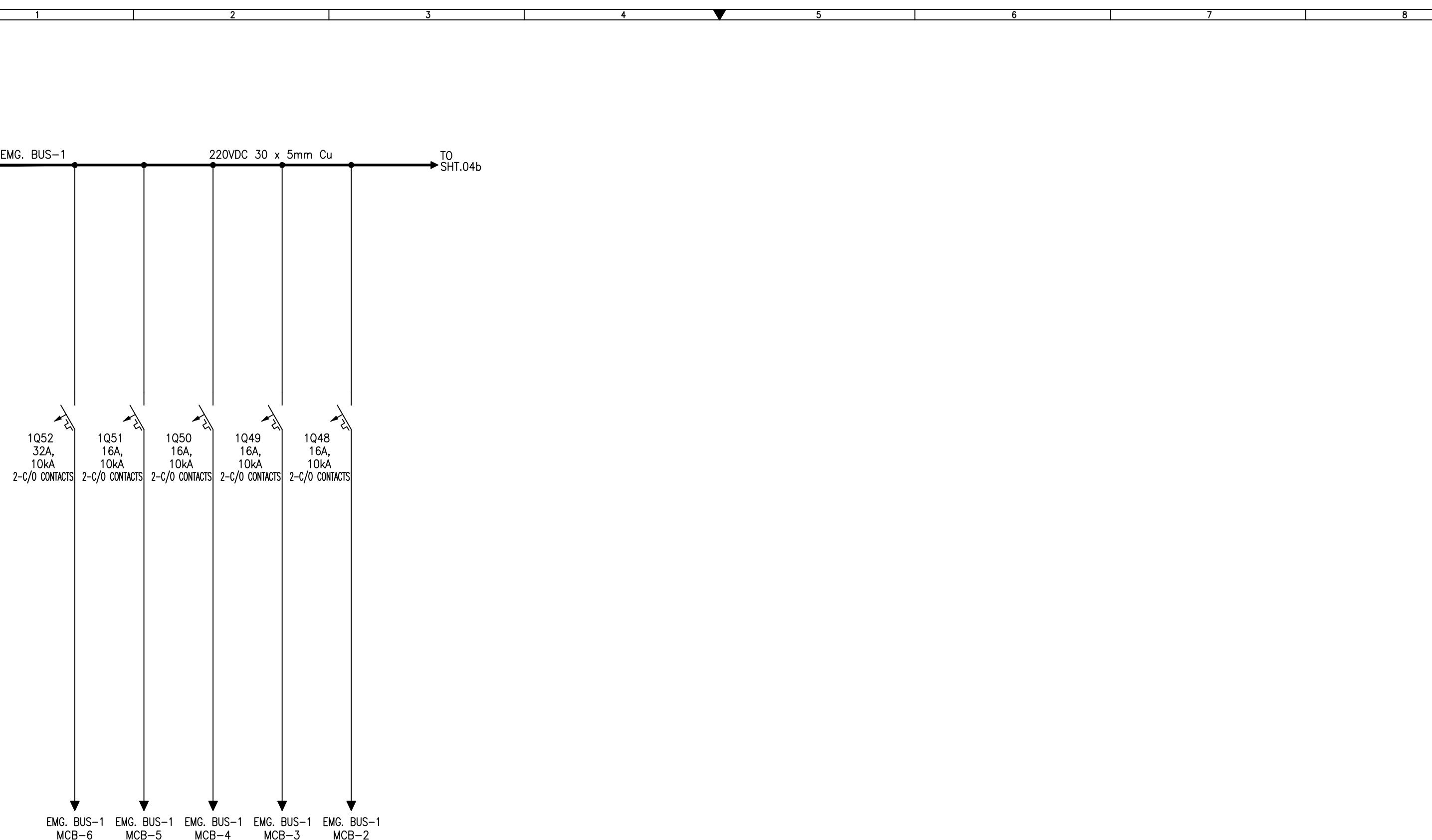
LIST OF SYMBOLS	
	TIME DELAYED CONTACTOR/TIMER
	PUSH BUTTON
	TWO POSITION SWITCH
	AC BELL



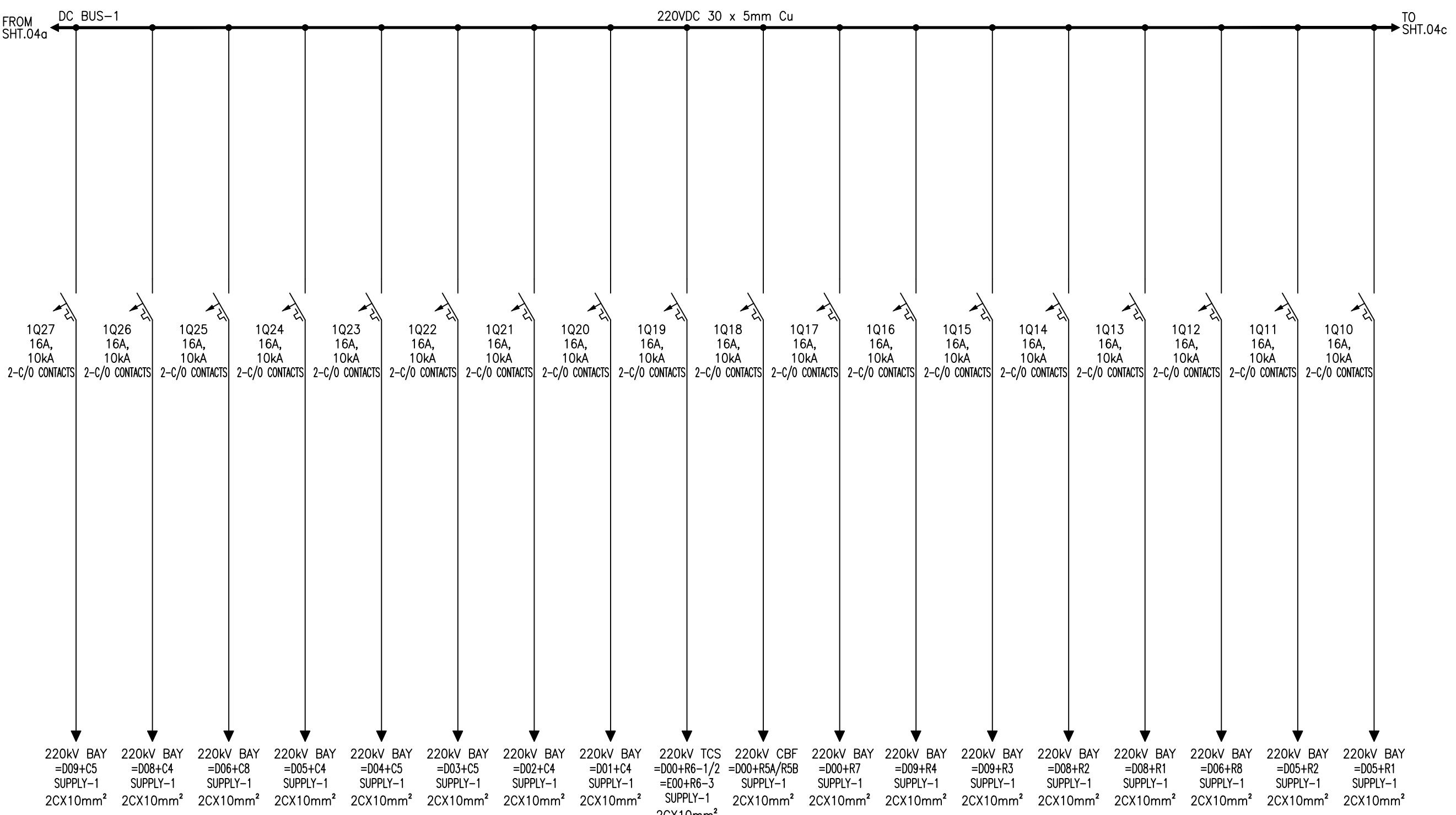
APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: OVER ALL SINGLE LINE DIAGRAM 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT: 04 OF 29
NAH	ABA	MSC				DATE: 21.12.2018	AS BUILT



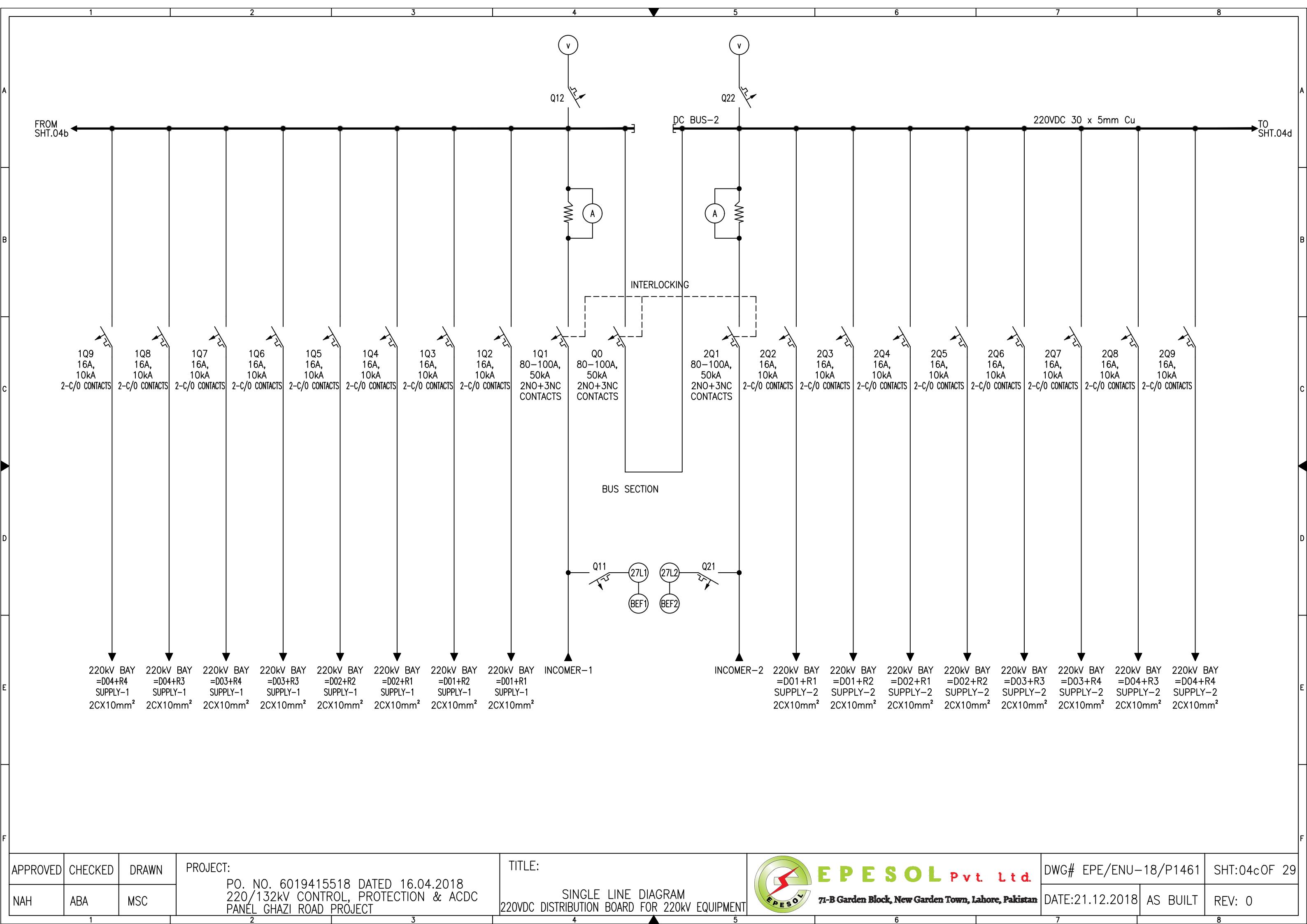
APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: DETAILED SINGLE LINE DIAGRAM 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT:04aOF 29
NAH	ABA	MSC				DATE:21.12.2018	AS BUILT

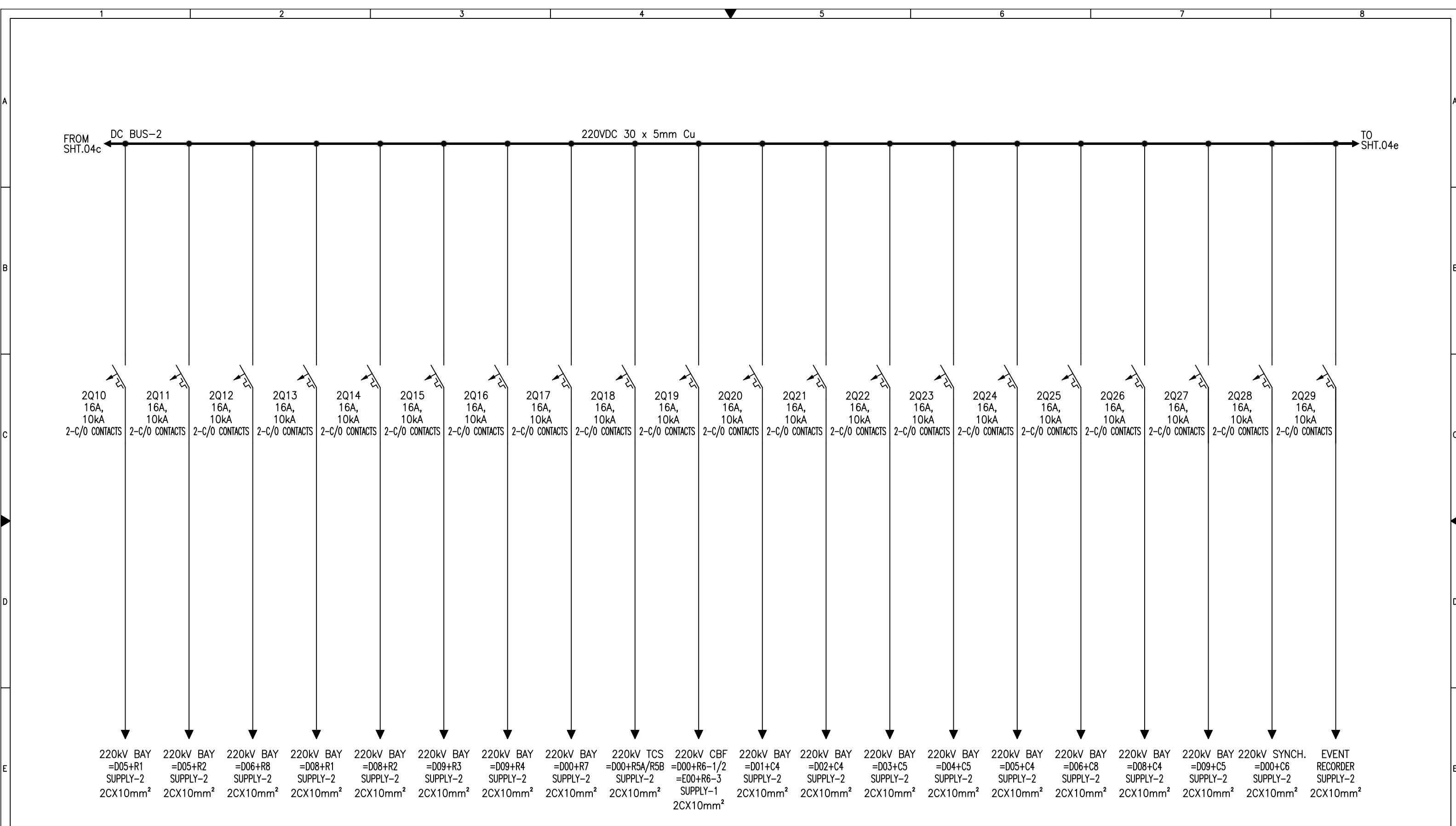


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NAH	ABA	MSC			EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:21.12.2018

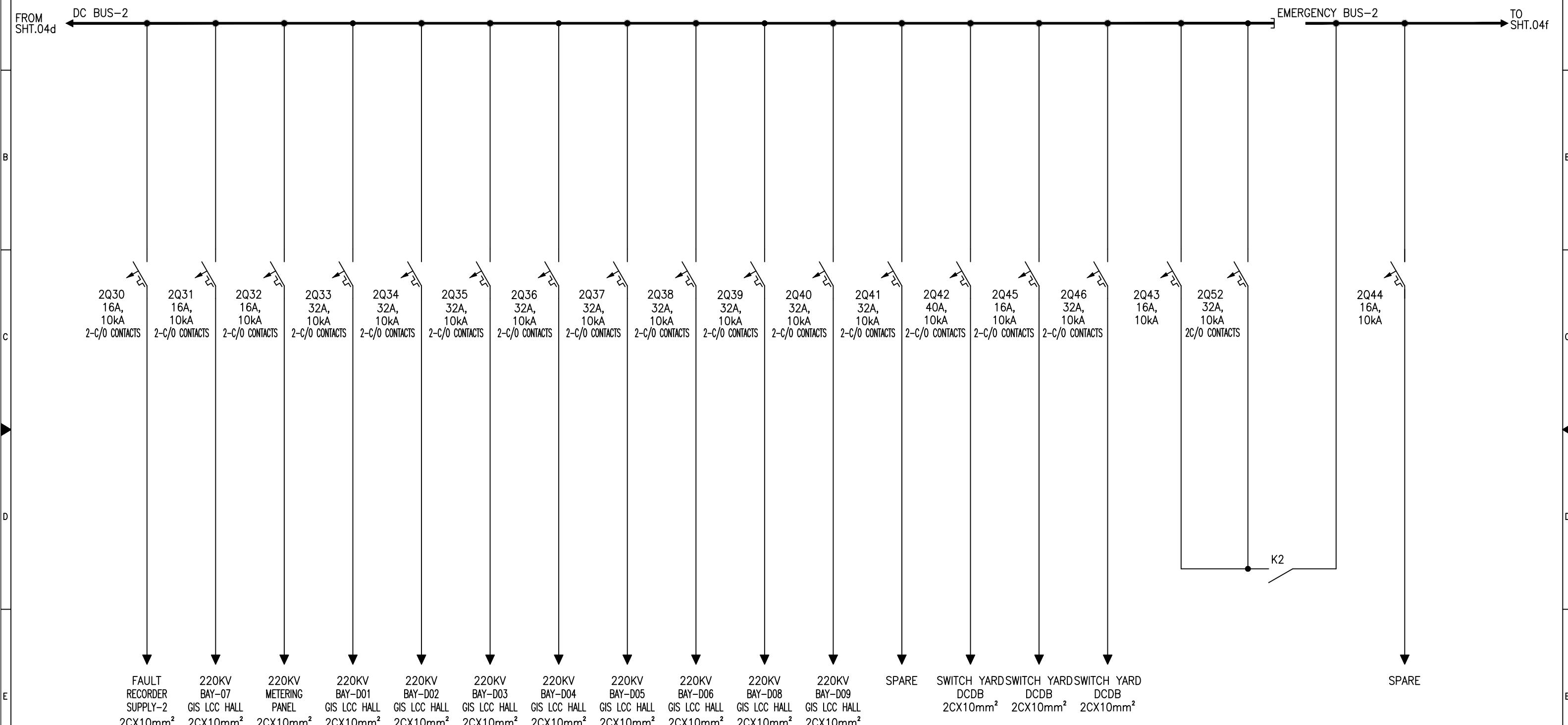


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NAH	ABA	MSC			EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 21.12.2018 AS BUILT REV: 0

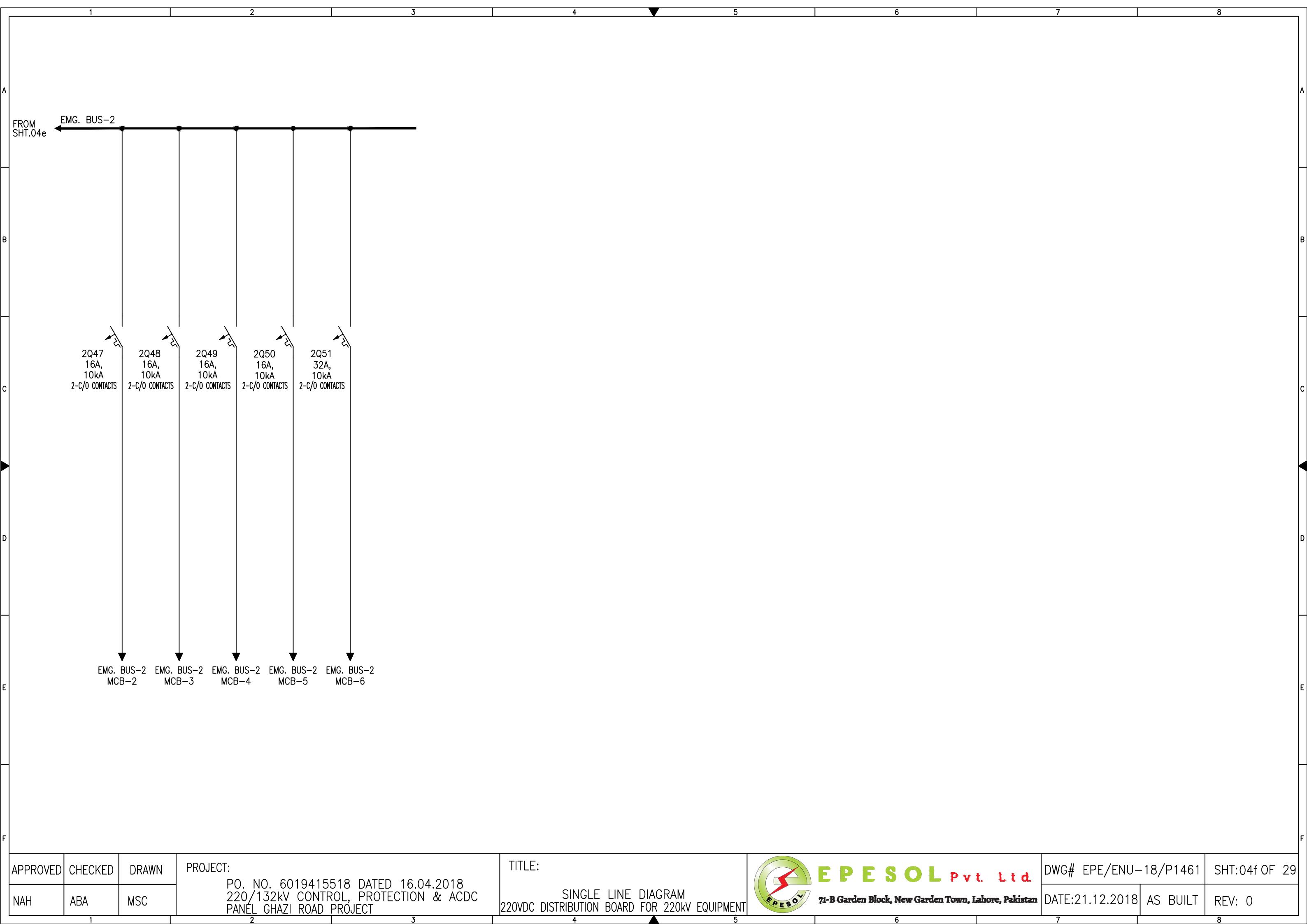




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NAH	ABA	MSC			EPE SOL Pvt Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 21.12.2018 AS BUILT REV: 0

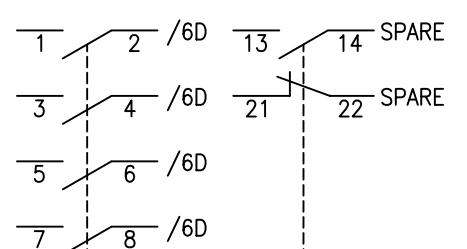
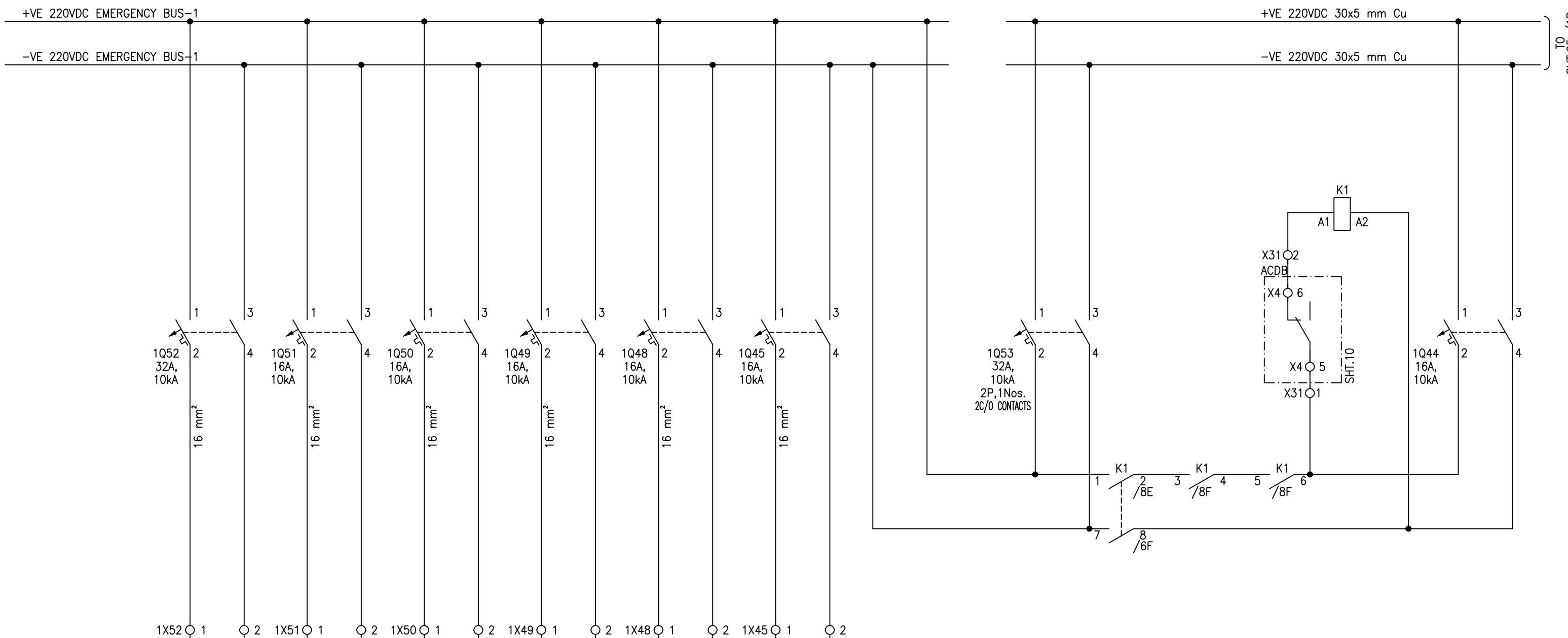


APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	EPE SOL Pvt. Ltd.	DWG# EPE/ENU-18/P1461	SHT:04eOF 29
NAH	ABA	MSC	PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	SINGLE LINE DIAGRAM 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:21.12.2018	AS BUILT

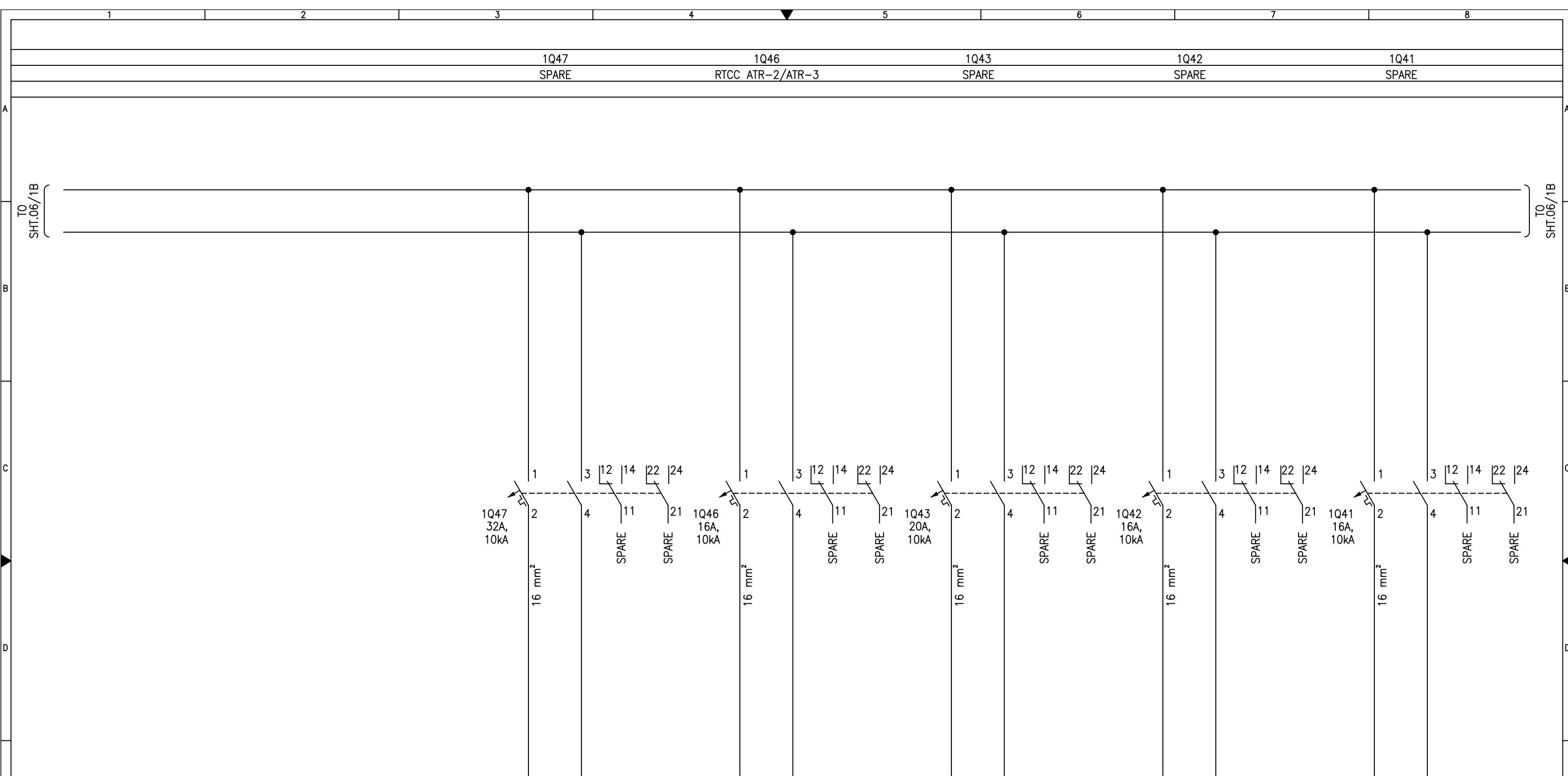


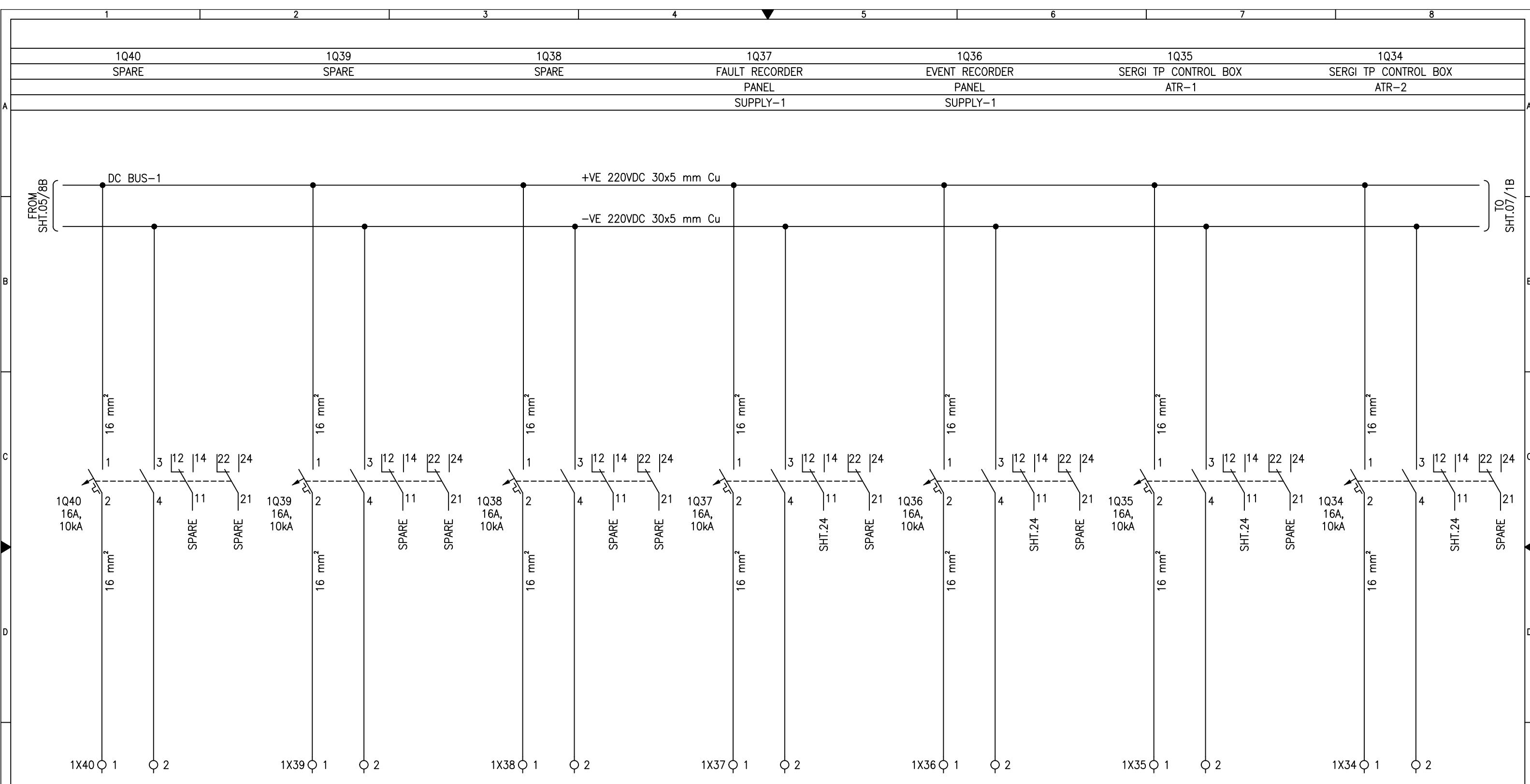
APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	DWG#	EPE/ENU-18/P1461	SHT:04f OF 29
NAH	ABA	MSC	PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	SINGLE LINE DIAGRAM 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE:21.12.2018	AS BUILT

1Q45	1Q45	1Q45	1Q45	1Q45	1Q45	53	UNDER VOLTAGE	1Q44
SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	FOR	ON AC BUS-1	FOR EMG. BUS
EMG. BUS-1 MANUAL OPP.								



APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132KV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: DC SUPPLY DISTRIBUTION 220VDC DISTRIBUTION BOARD FOR 220KV EQUIPMENT	 EPE SOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT: 05 OF 29
NAH	ABA	MSC				DATE:21.12.2018	AS BUILT

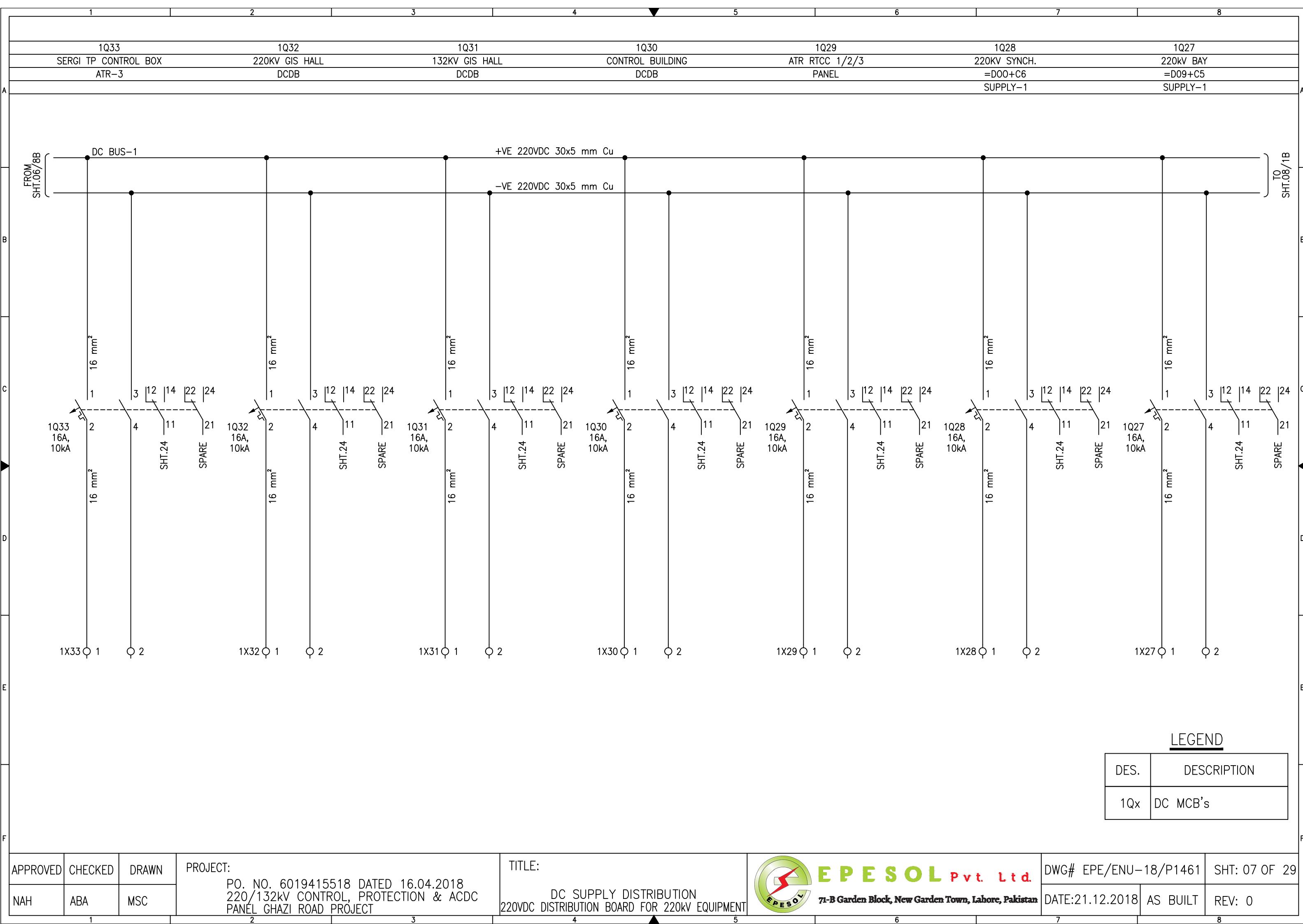




LEGEND

DES.	DESCRIPTION
1Qx	DC MCB's

APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: DC SUPPLY DISTRIBUTION 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT: 06 OF 29
NAH	ABA	MSC				DATE:21.12.2018	AS BUILT



LEGEND

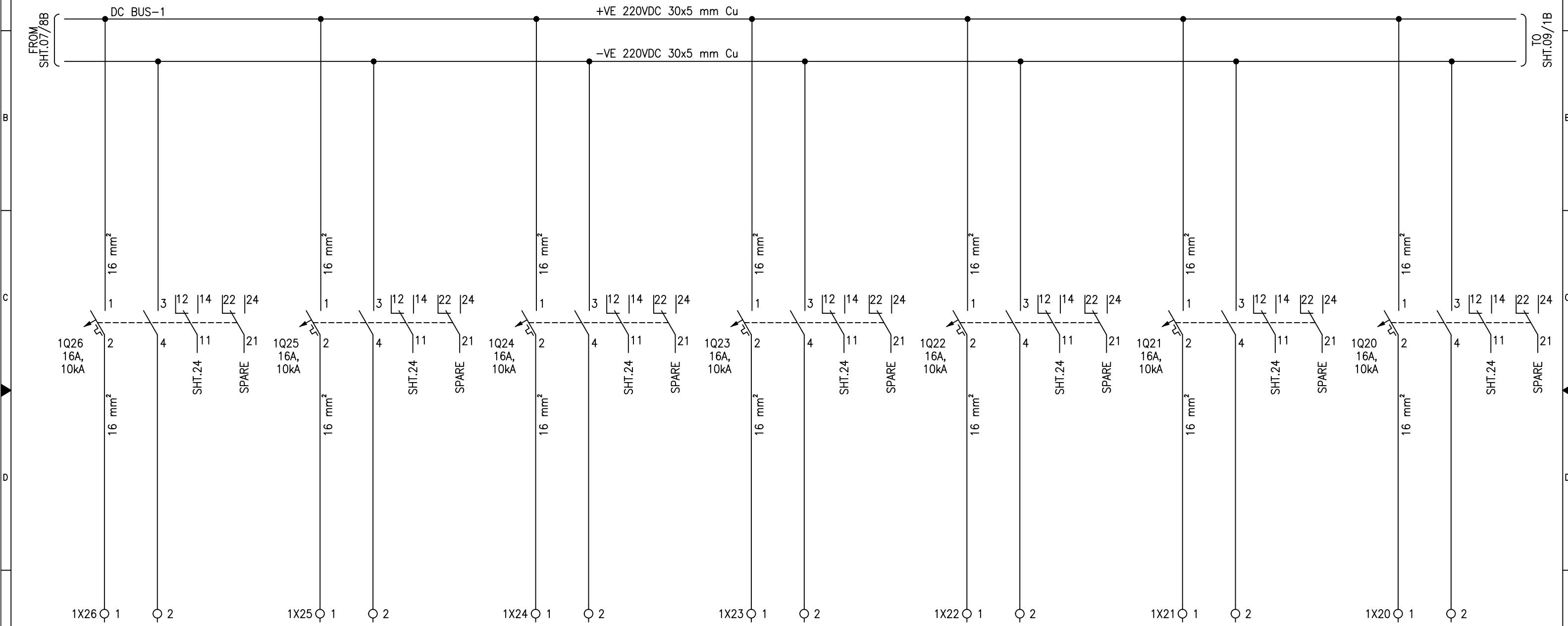
DES.	DESCRIPTION
1Qx	DC MCB's

APPROVED **CHECKED** **DRAWN** **PROJECT:**
PO. NO. 6019415518 DATED 16.04.2018
220/132kV CONTROL, PROTECTION & ACDC
PANEL GHAZI ROAD PROJECT

TITLE:
DC SUPPLY DISTRIBUTION
220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT

E P E S O L P v t . L t d .
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1461 SHT: 08 OF 29
DATE: 21.12.2018 AS BUILT REV: 0



LEGEND

DES.	DESCRIPTION
1Qx	DC MCB's

APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: DC SUPPLY DISTRIBUTION 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT: 08 OF 29
NAH	ABA	MSC				DATE:21.12.2018	AS BUILT

LEGEND

DES.	DESCRIPTION
1Qx	DC MCB's

PROJECT:
PO. NO. 6019415518 DATED 16.04.2018
220/132kV CONTROL, PROTECTION & ACDC
PANEL GHAZI ROAD PROJECT

TITLE:
DC SUPPLY DISTRIBUTION
220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT

APPROVED **CHECKED** **DRAWN**

NAH **ABA** **MSC**

E P E S O L P v t . L t d .
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1461 SHT: 09 OF 29
DATE: 21.12.2018 AS BUILT REV: 0

LEGEND

DES.	DESCRIPTION
1Qx	DC MCB's

PROJECT:
PO. NO. 6019415518 DATED 16.04.2018
220/132kV CONTROL, PROTECTION & ACDC
PANEL GHAZI ROAD PROJECT

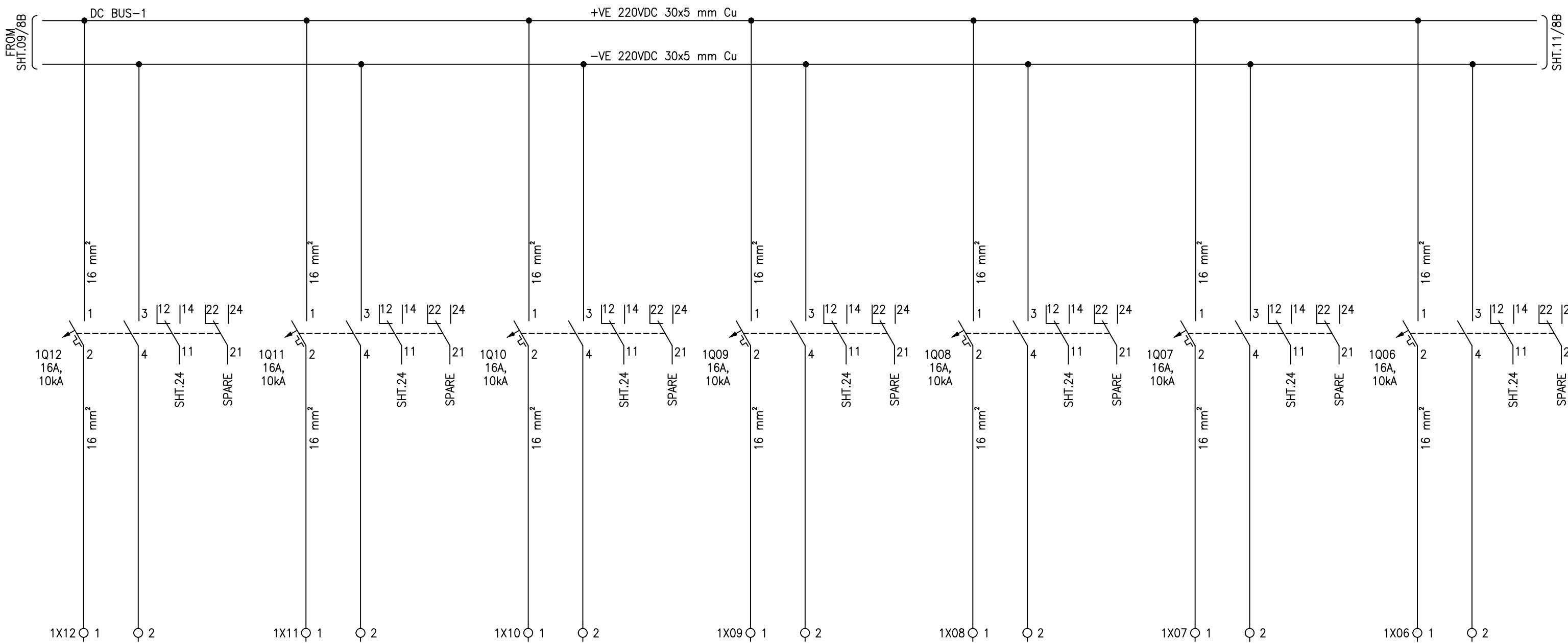
TITLE:
DC SUPPLY DISTRIBUTION
220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT

APPROVED **CHECKED** **DRAWN**

NAH **ABA** **MSC**

E P E S O L P v t . L t d .
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1461 SHT: 10 OF 29
DATE: 21.12.2018 AS BUILT REV: 0



LEGEND

DES.	DESCRIPTION
1Qx	DC MCB's

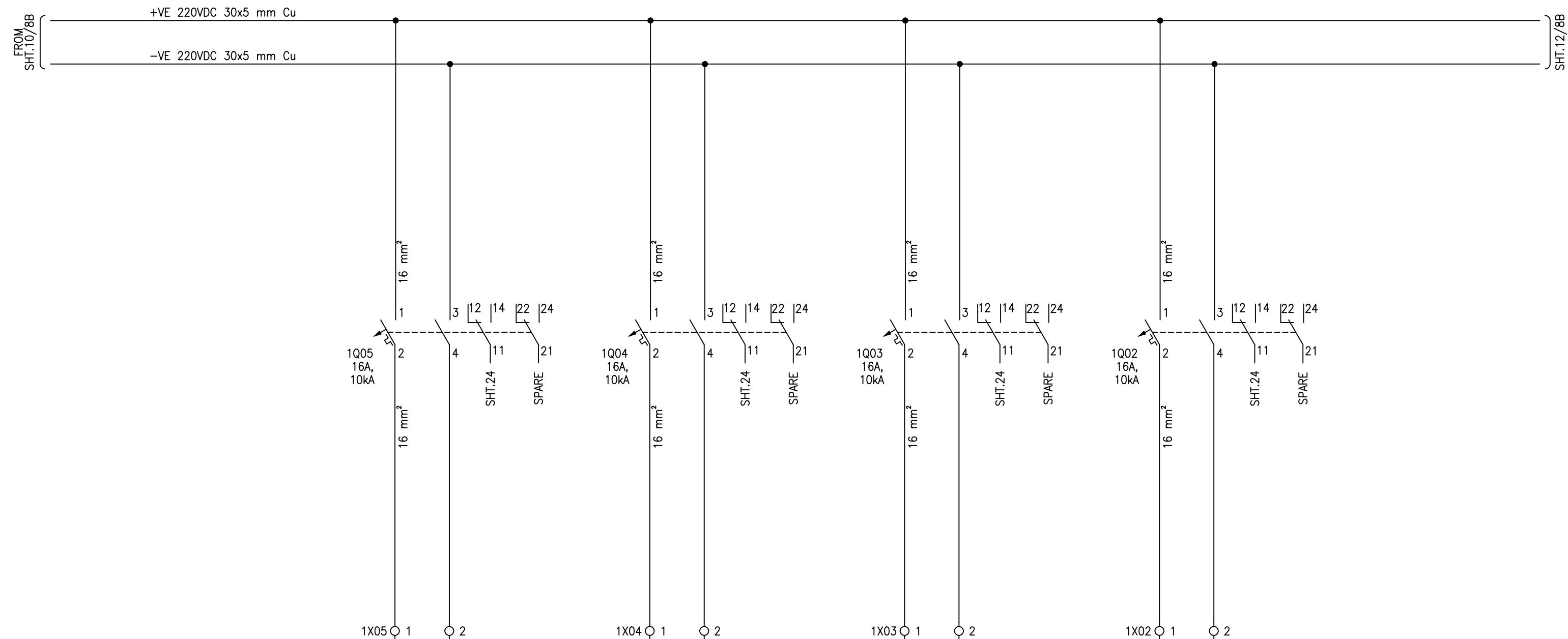
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NAH	ABA	MSC				DATE:21.12.2018	AS BUILT

1Q05
220kV BAY
=D02+R2
SUPPLY-1

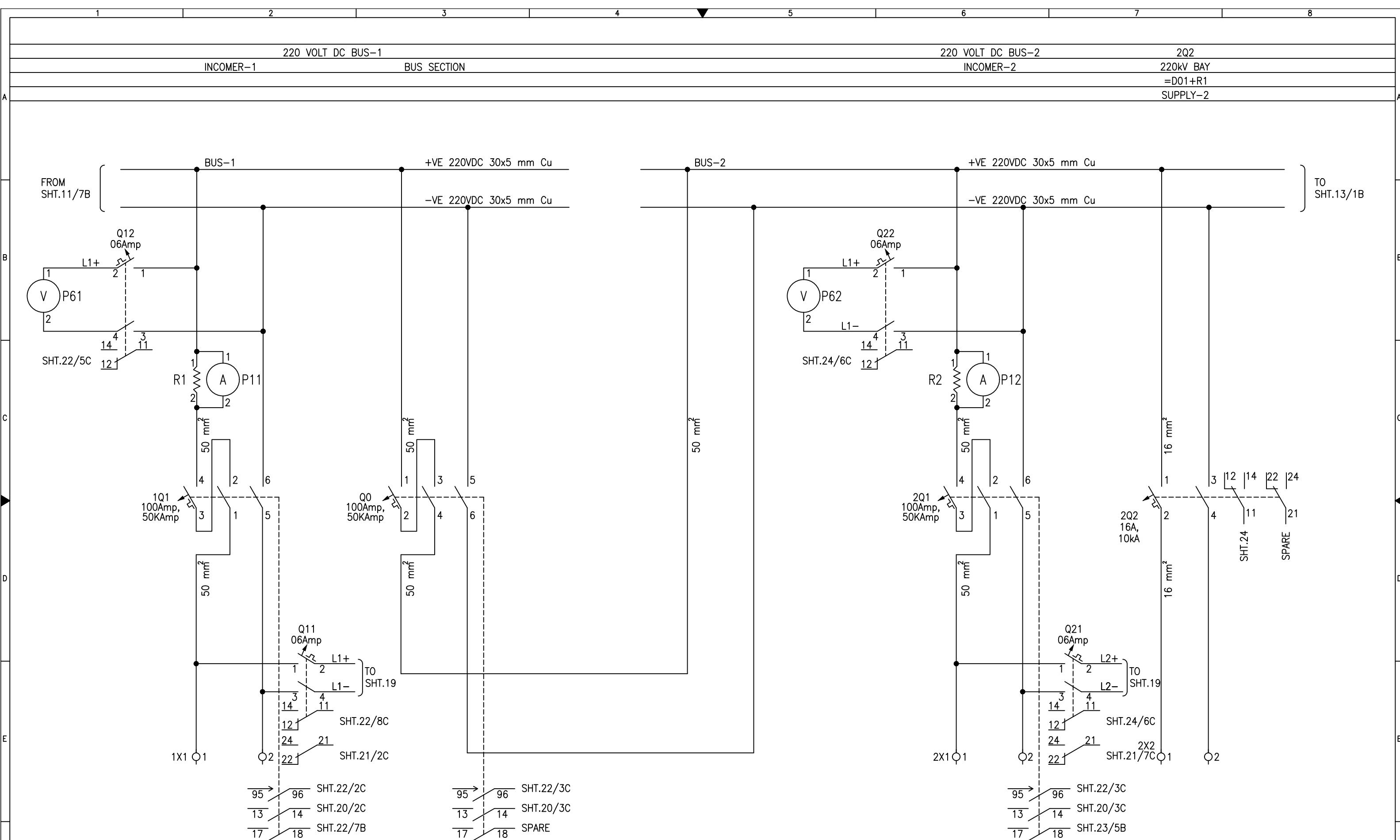
1Q04
220kV BAY
=D02+R1
SUPPLY-1

1Q03
220kV BAY
=D01+R2
SUPPLY-1

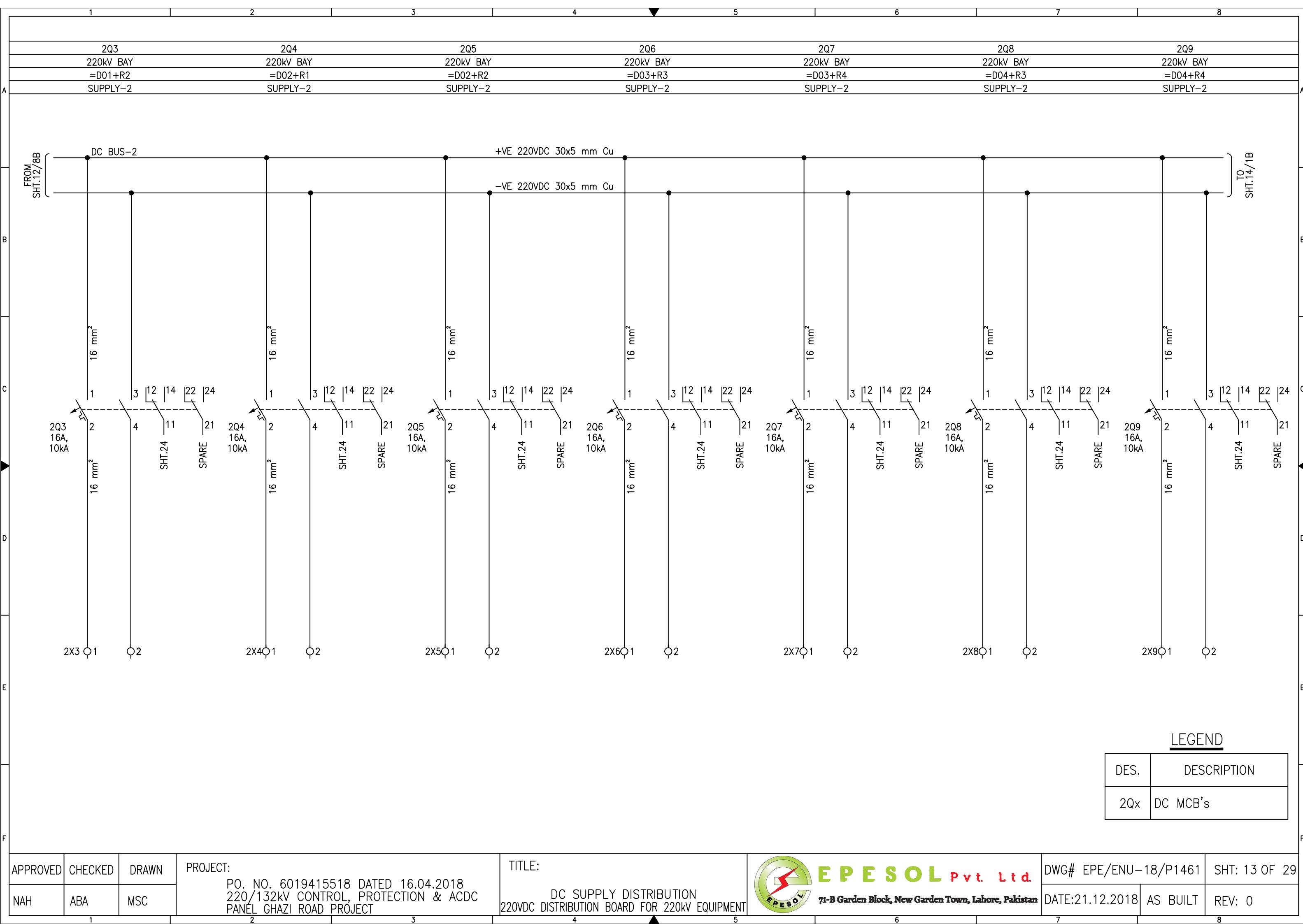
1Q02
220kV BAY
=D01+R1
SUPPLY-1

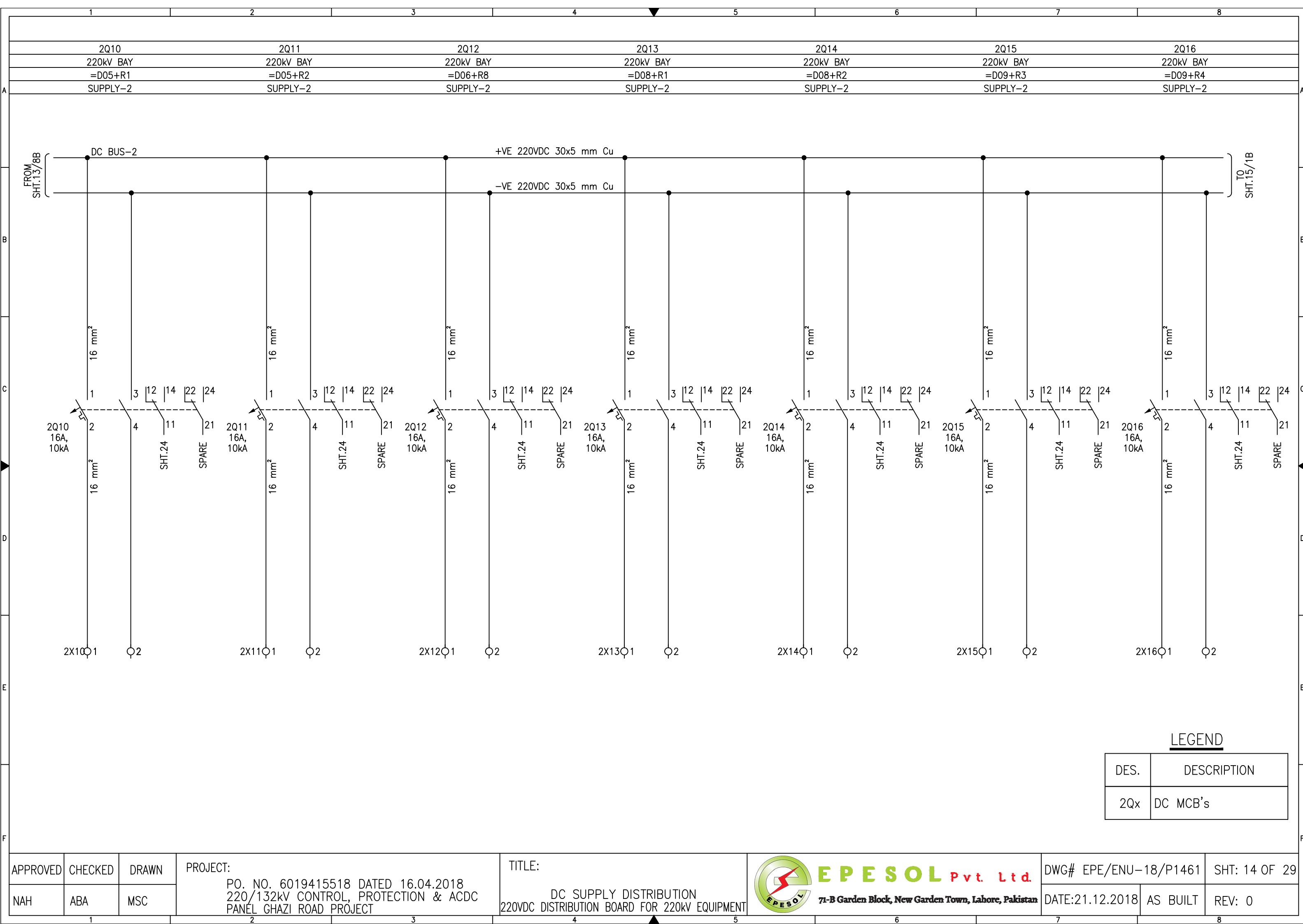
LEGEND

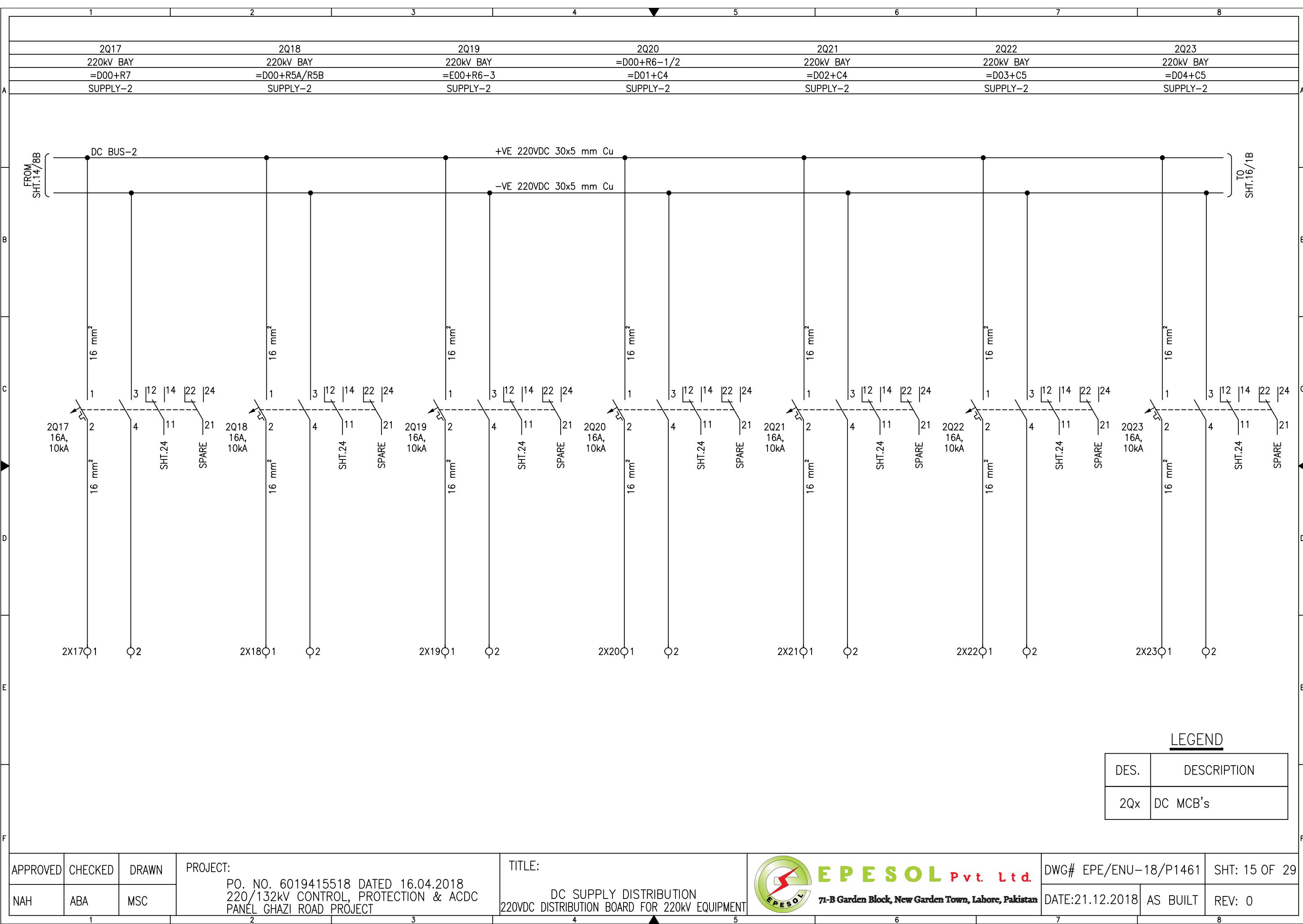
DES.	DESCRIPTION
1Qx	DC MCB's

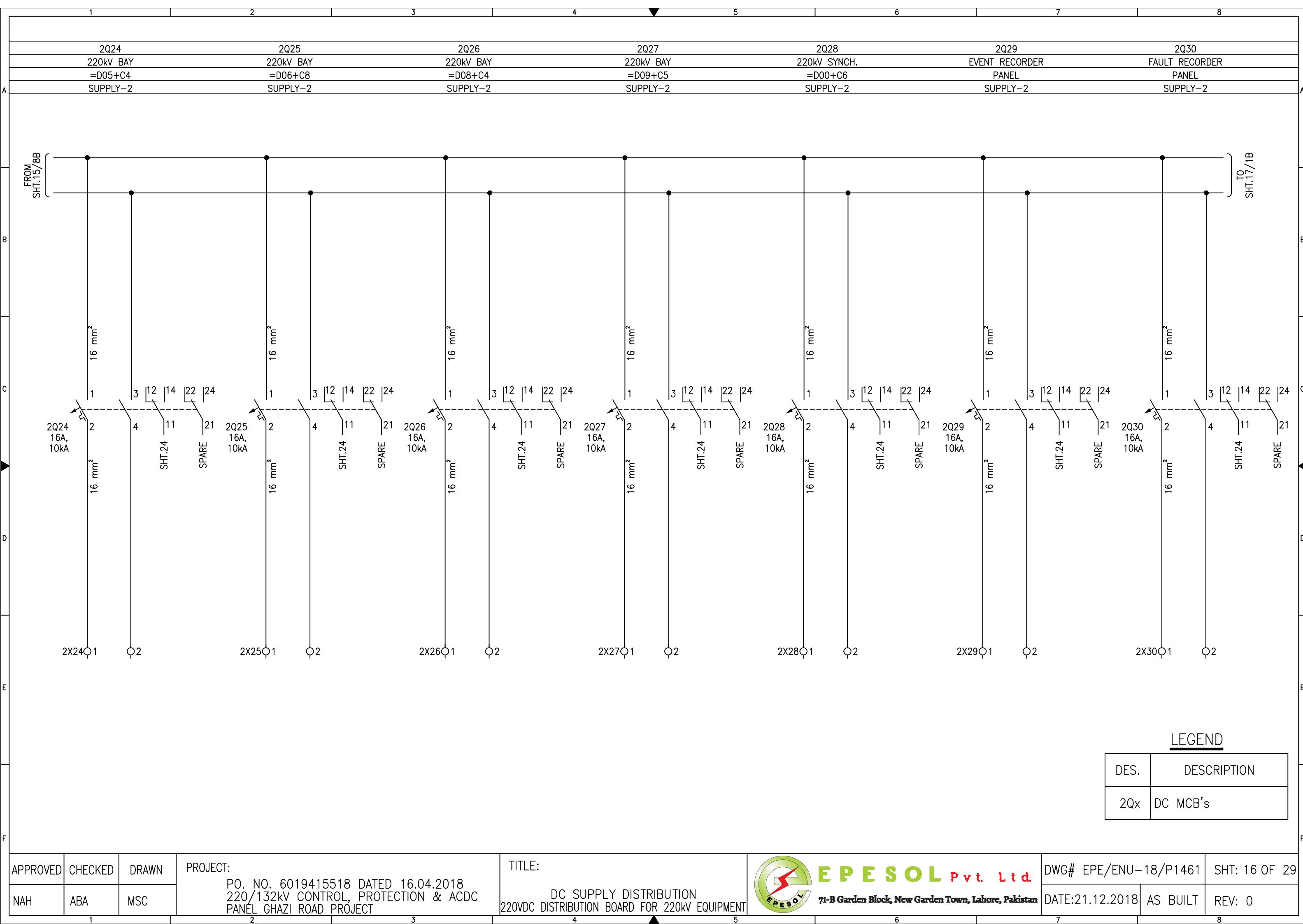


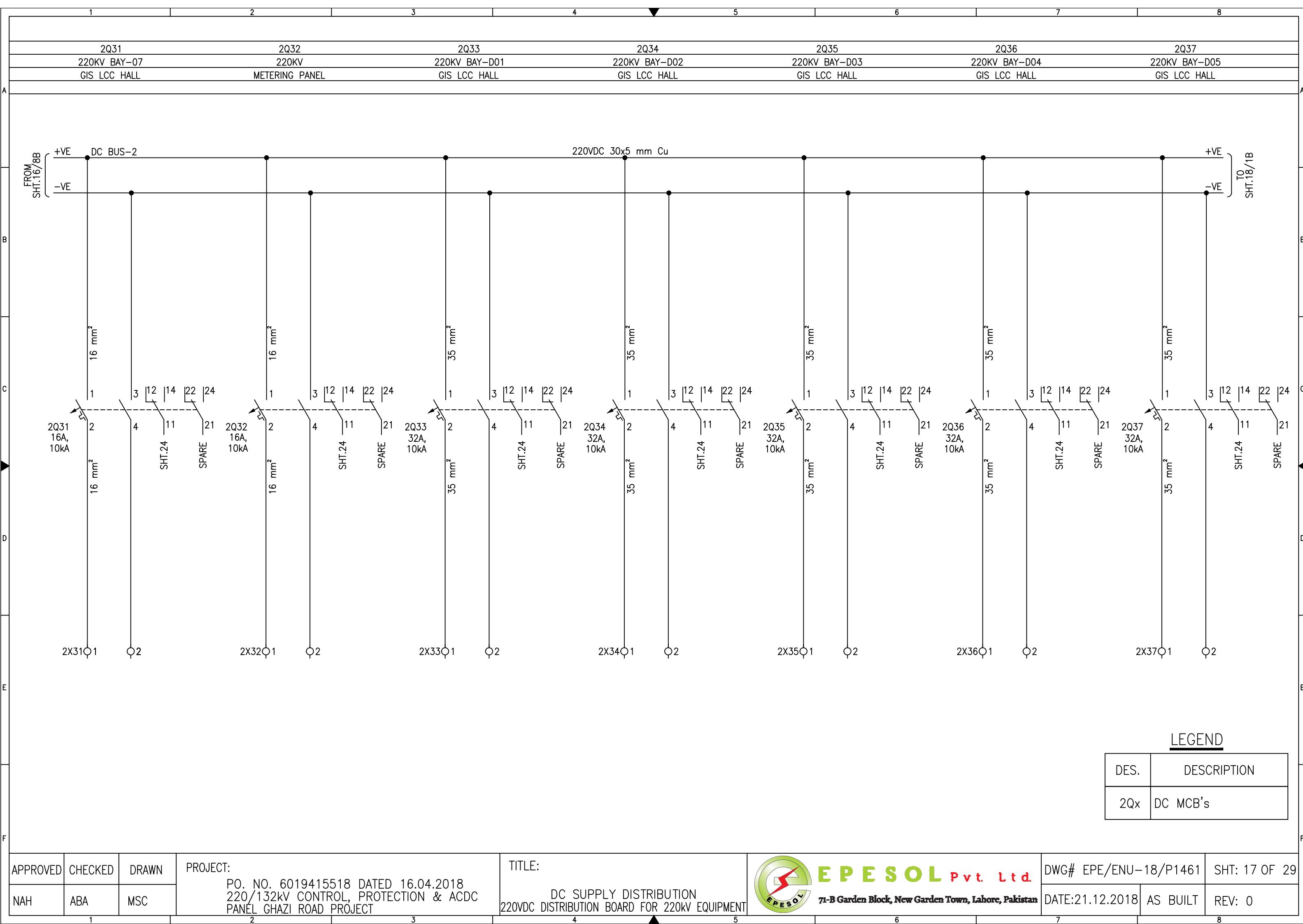
APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	EPE SOL Pvt. Ltd.	DWG# EPE/ENU-18/P1461	SHT: 12 OF 29
NAH	ABA	MSC	PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	DC SUPPLY DISTRIBUTION 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 21.12.2018	AS BUILT

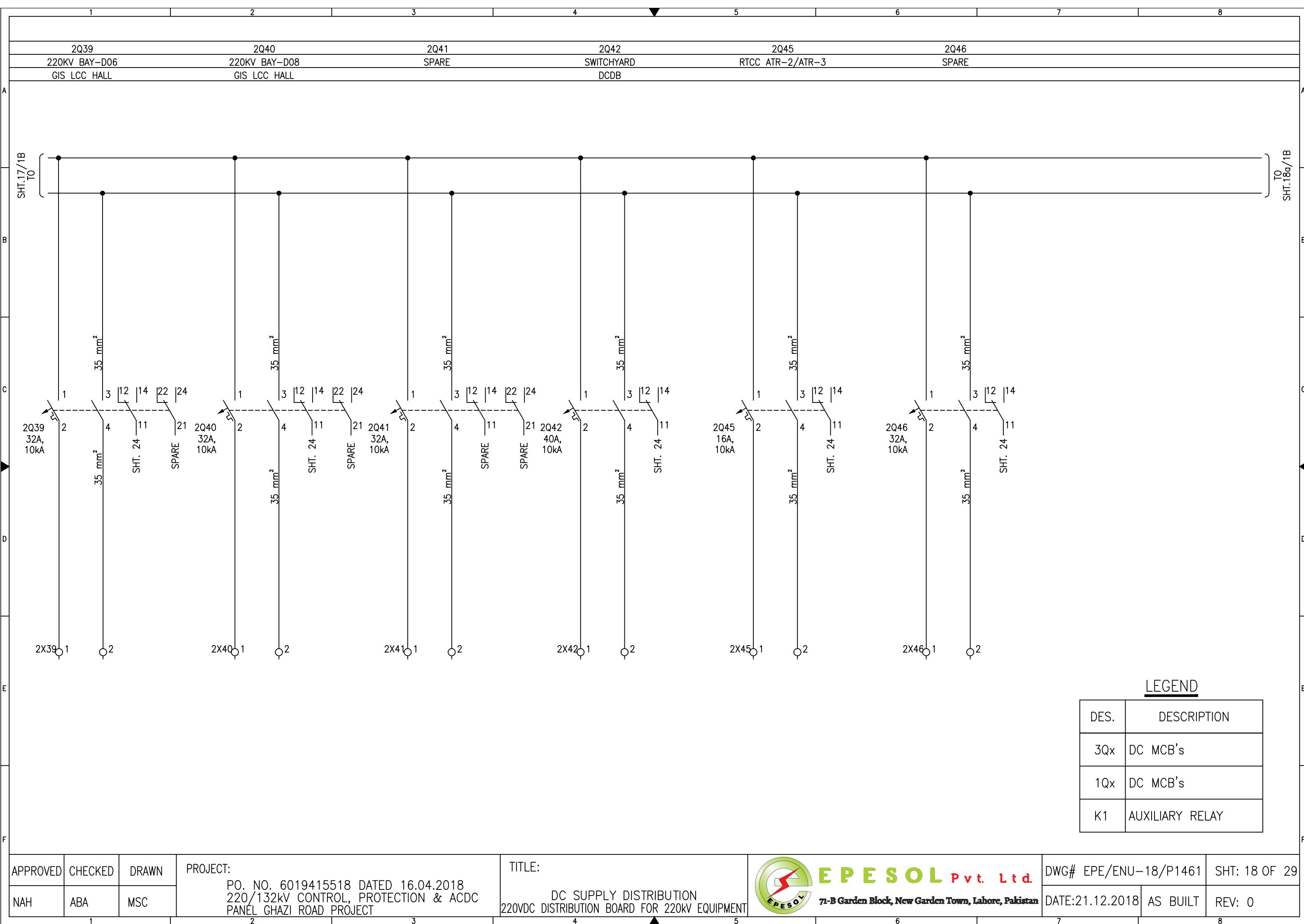












2Q43
FOR
EMG. BUS-2UNDER VOLTAGE
ON AC BUS-2
FOR
EMG. BUS-2 MANUAL OPP.

52

2Q44

1Q45

1Q45

1Q45

1Q45
SPARE

SPARE

SPARE

SPARE

SPARE

A

A

SHT.18/1B
T0

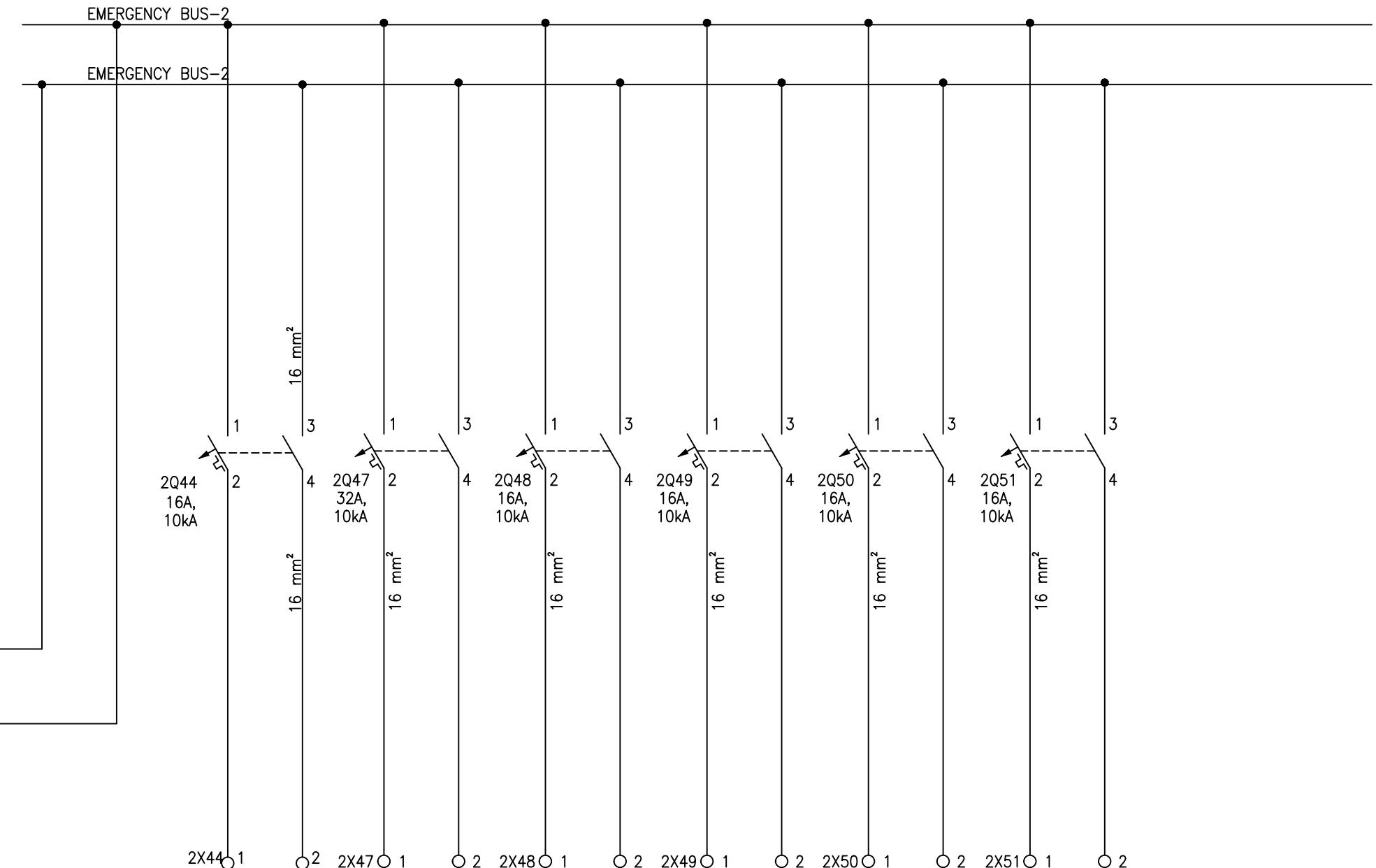
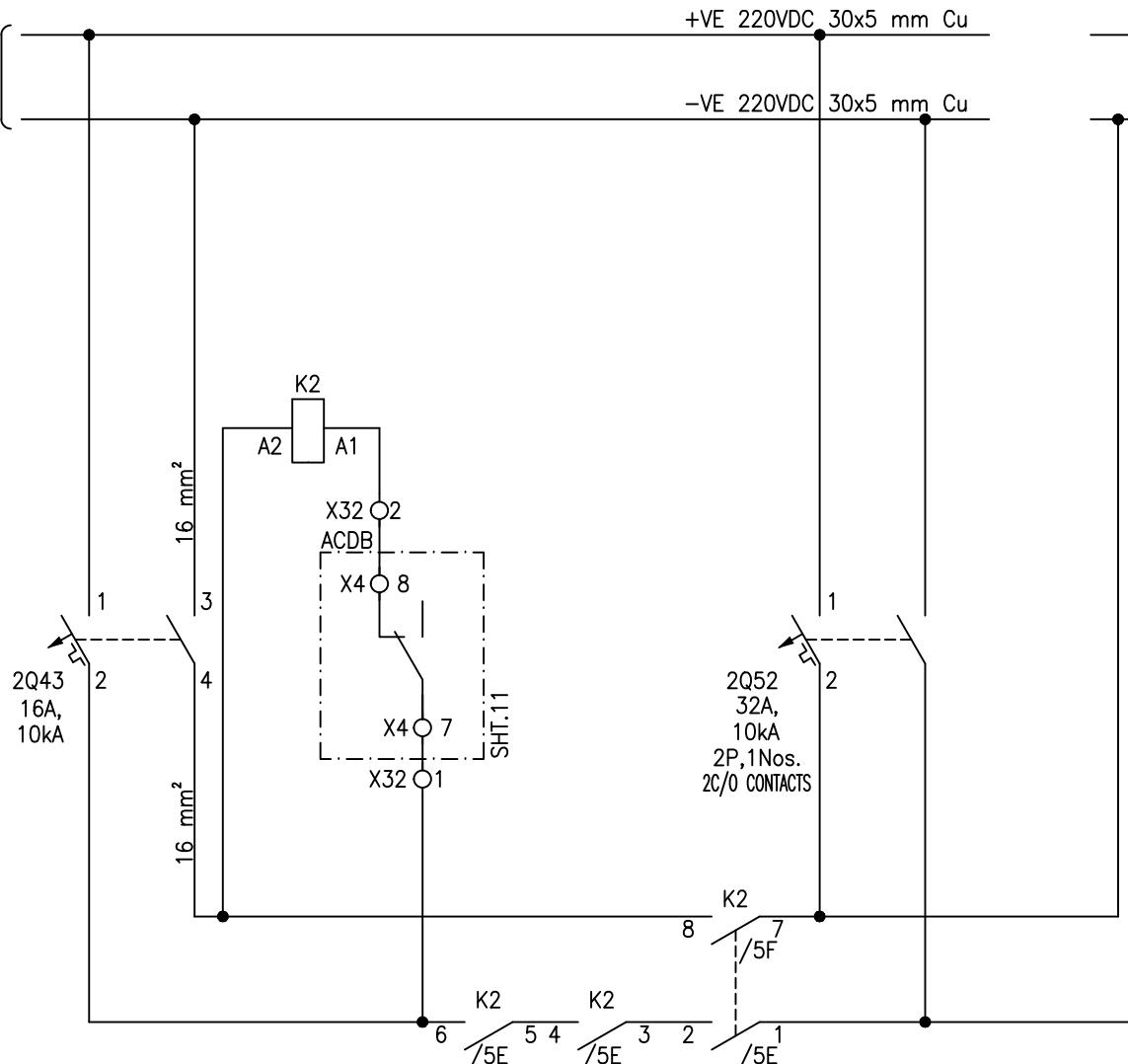
B

C

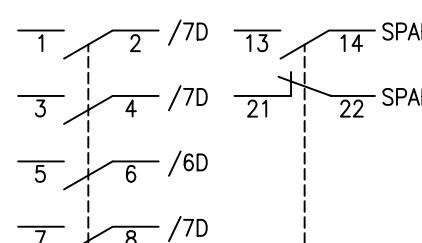
D

E

F

LEGEND

DES.	DESCRIPTION
3Qx	DC MCB's
1Qx	DC MCB's
K1	AUXILIARY RELAY



E P E S O L *Pvt. Ltd.*
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/P1461 SHT: 18aOF 29

DATE: 21.12.2018 AS BUILT REV: 0

APPROVED

CHECKED

DRAWN

PROJECT:
PO. NO. 6019415518 DATED 16.04.2018
220/132kV CONTROL, PROTECTION & ACDC
PANEL GHAZI ROAD PROJECT

TITLE:
DC SUPPLY DISTRIBUTION
220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT

1

2

3

4

5

6

7

8

INCOMER-1

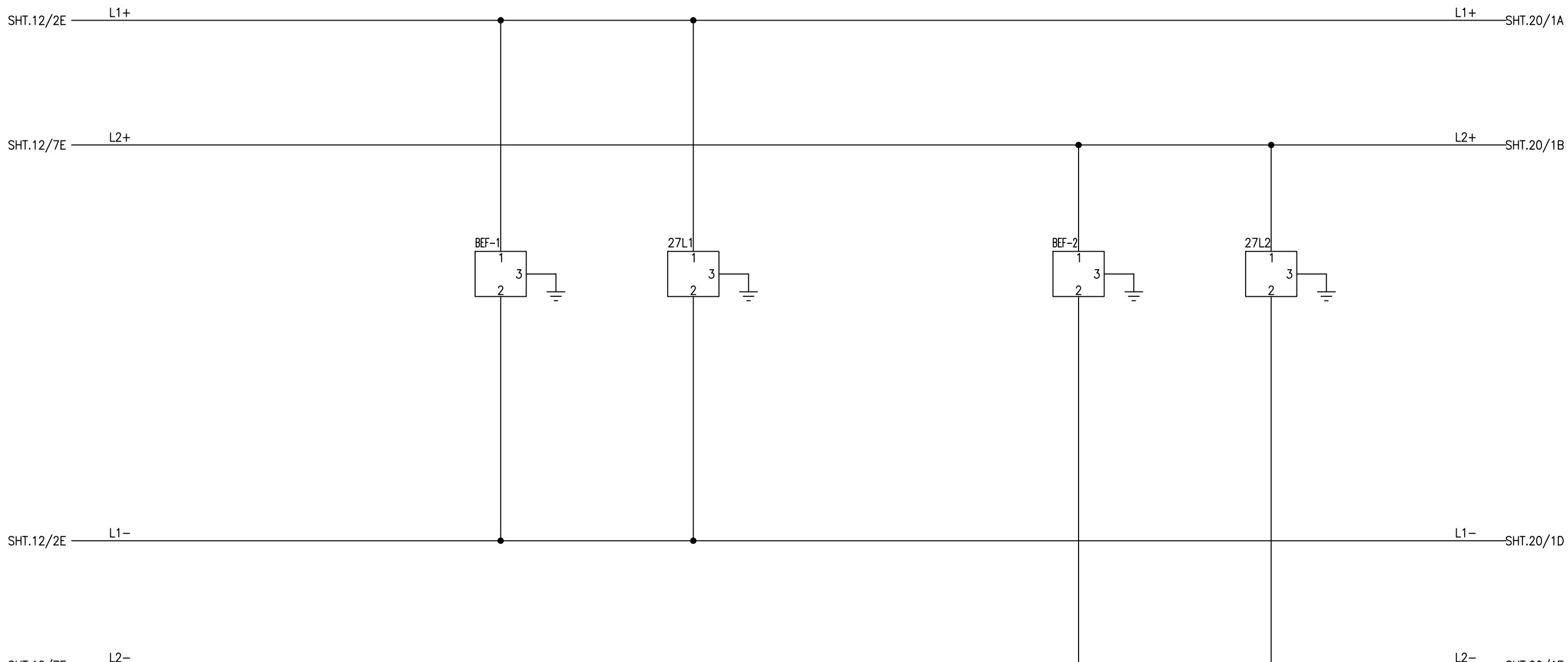
INCOMER-2

BATTERY EARTH
FAULT RELAY-1

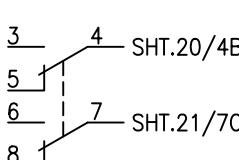
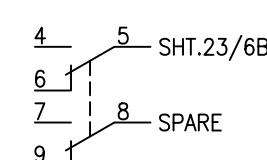
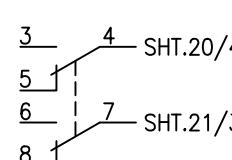
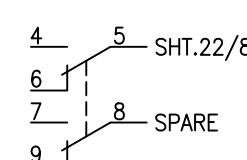
BATTERY EARTH
FAULT RELAY-2

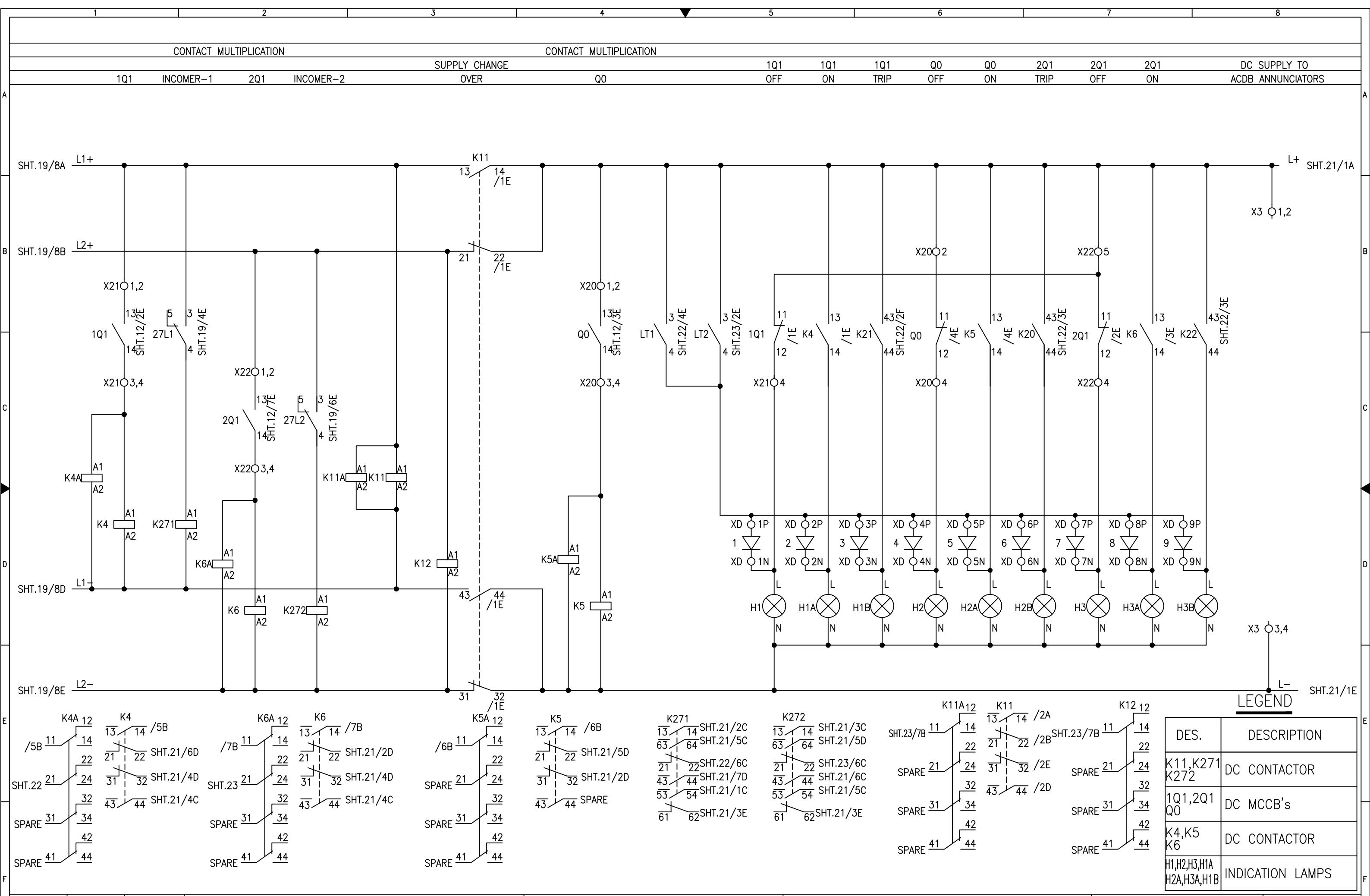
UNDER VOLTAGE
RELAY-1

UNDER VOLTAGE
RELAY-2

LEGEND

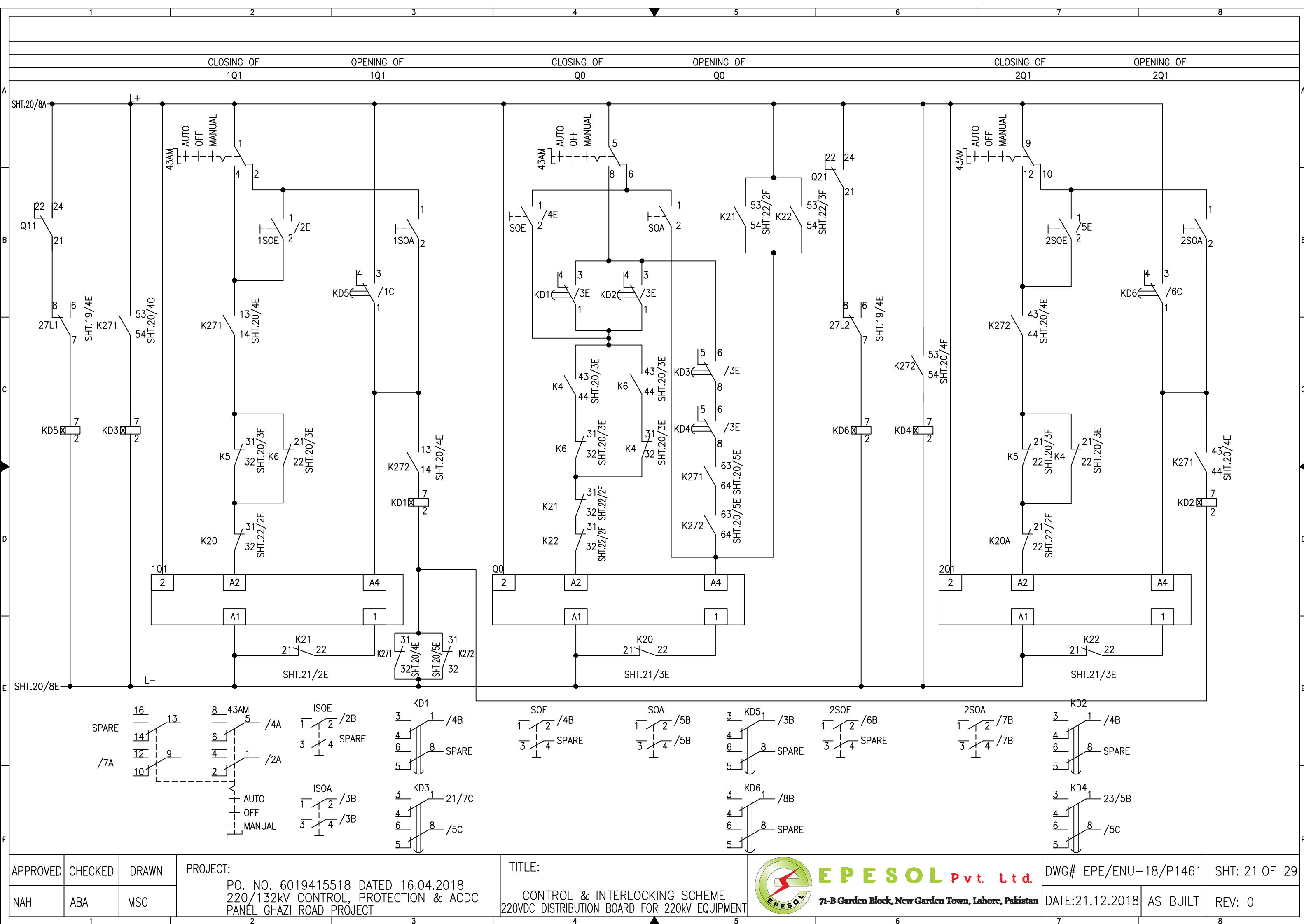
DES.	DESCRIPTION
27L1 27L2	UNDER VOLTAGE RELAY
BEF-1 BEF-2	BATTERY EARTH FAULT RELAY



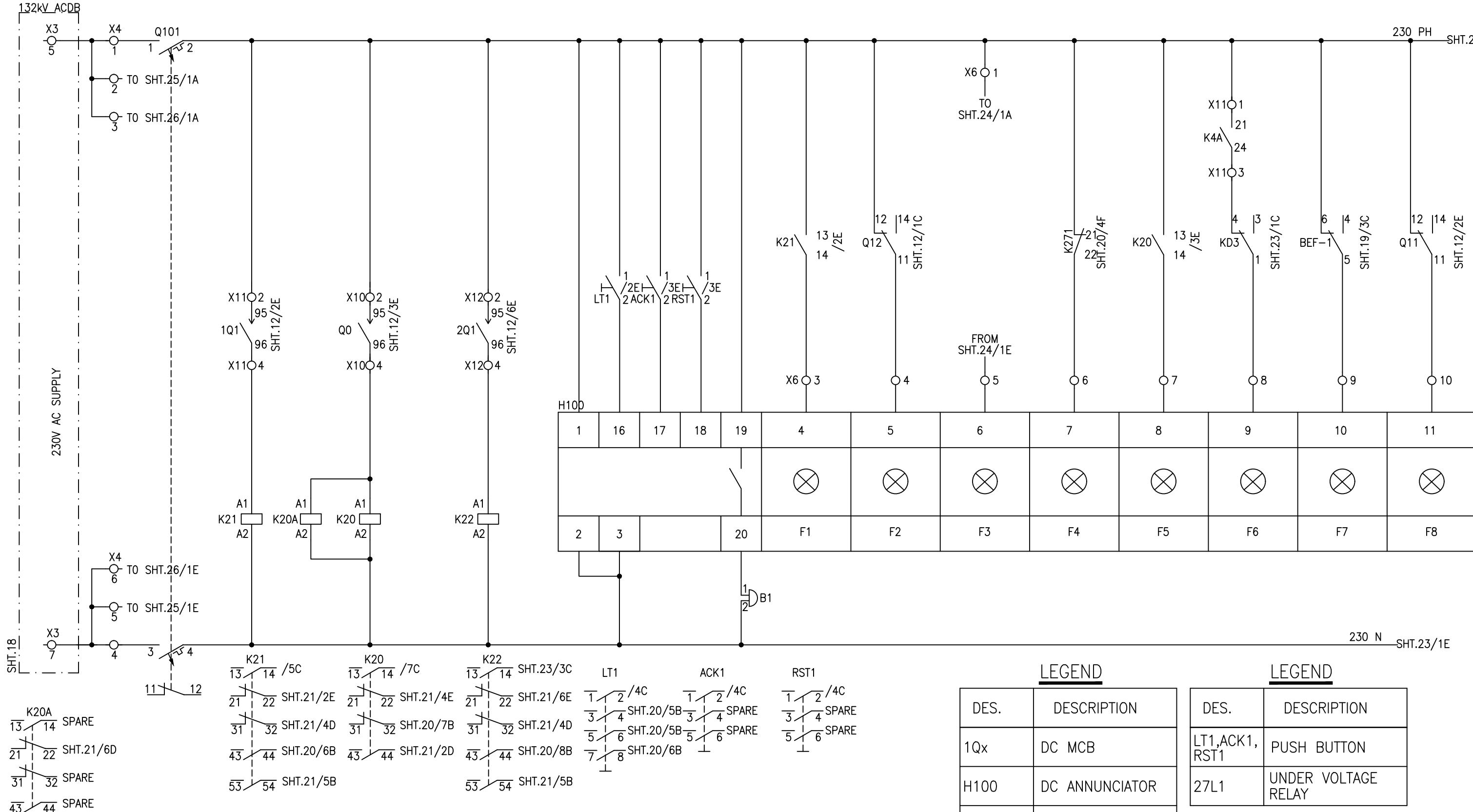


ELECTRICAL SCHEMATIC	
DES.	DESCRIPTION
K11,K271 K272	DC CONTACTOR
Q1,2Q1 Q0	DC MCCB's
K4,K5 K6	DC CONTACTOR
H1,H2,H3,H1A H2A,H3A,H1B	INDICATION LAMPS

APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: SUPPLY CHANGE OVER & INDICATION CIRCUIT 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT: 20 OF 29
NAH	ABA	MSC				DATE:21.12.2018	AS BUILT



1	2	3	4	5	6	7	8
TRIP CONTACT MULTIPLICATION	ANNUNCIATOR-1	DC INC-1	BUS-1	DC BUS-1	DC NO	BUS SECTION	INCOMER-1
1Q1	Q0	2Q1	POWER SUPPLY	LT ACK RST BELL MCCB INITIATION	VOLT METER TRIPPED	MCB TRIP MCB TRIPPED	BATTERY-1
					RELAY-1 OFF	TRIPPED	BUS-1 PROTECTION DC MCB TRIPPED

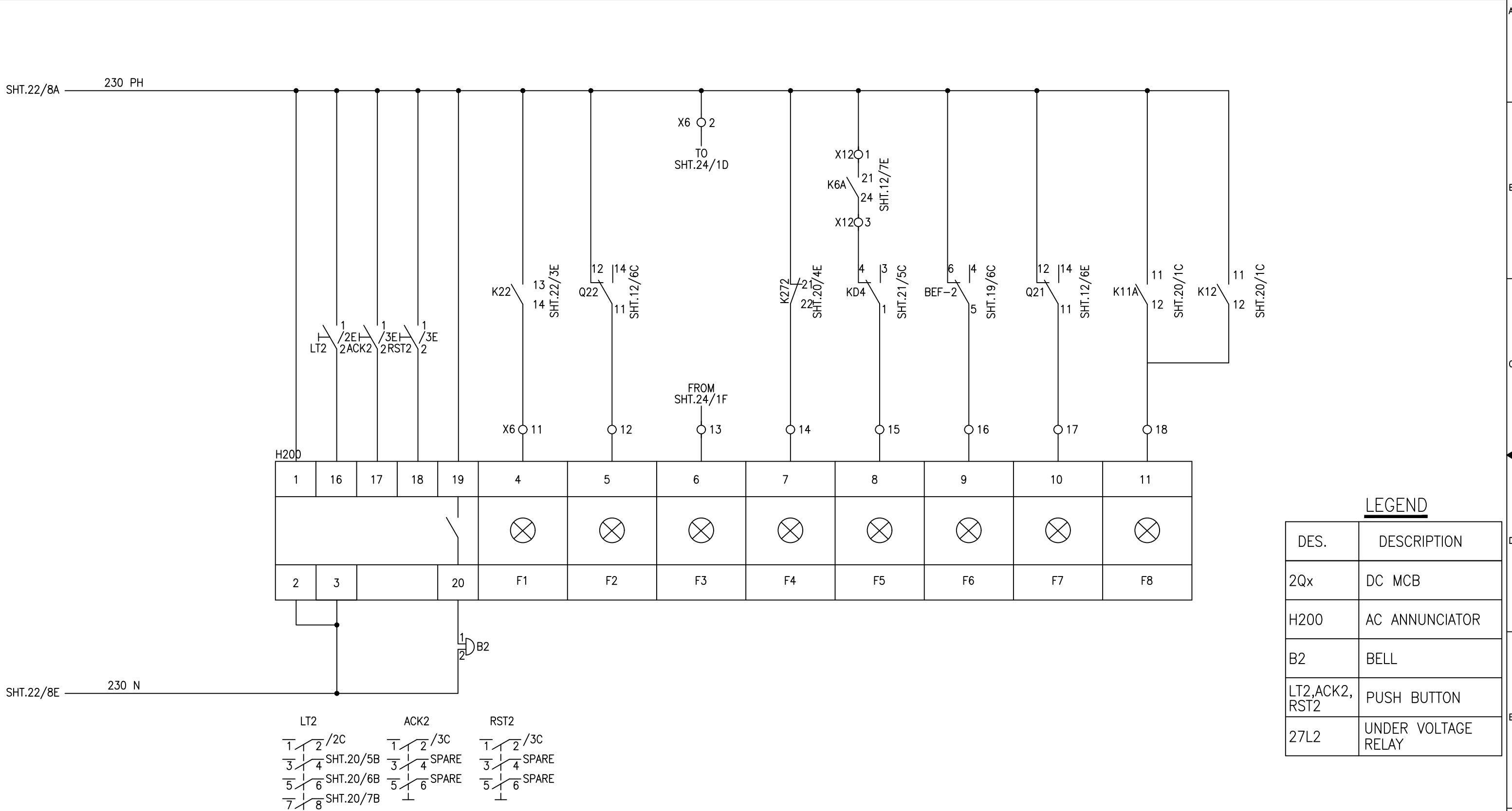


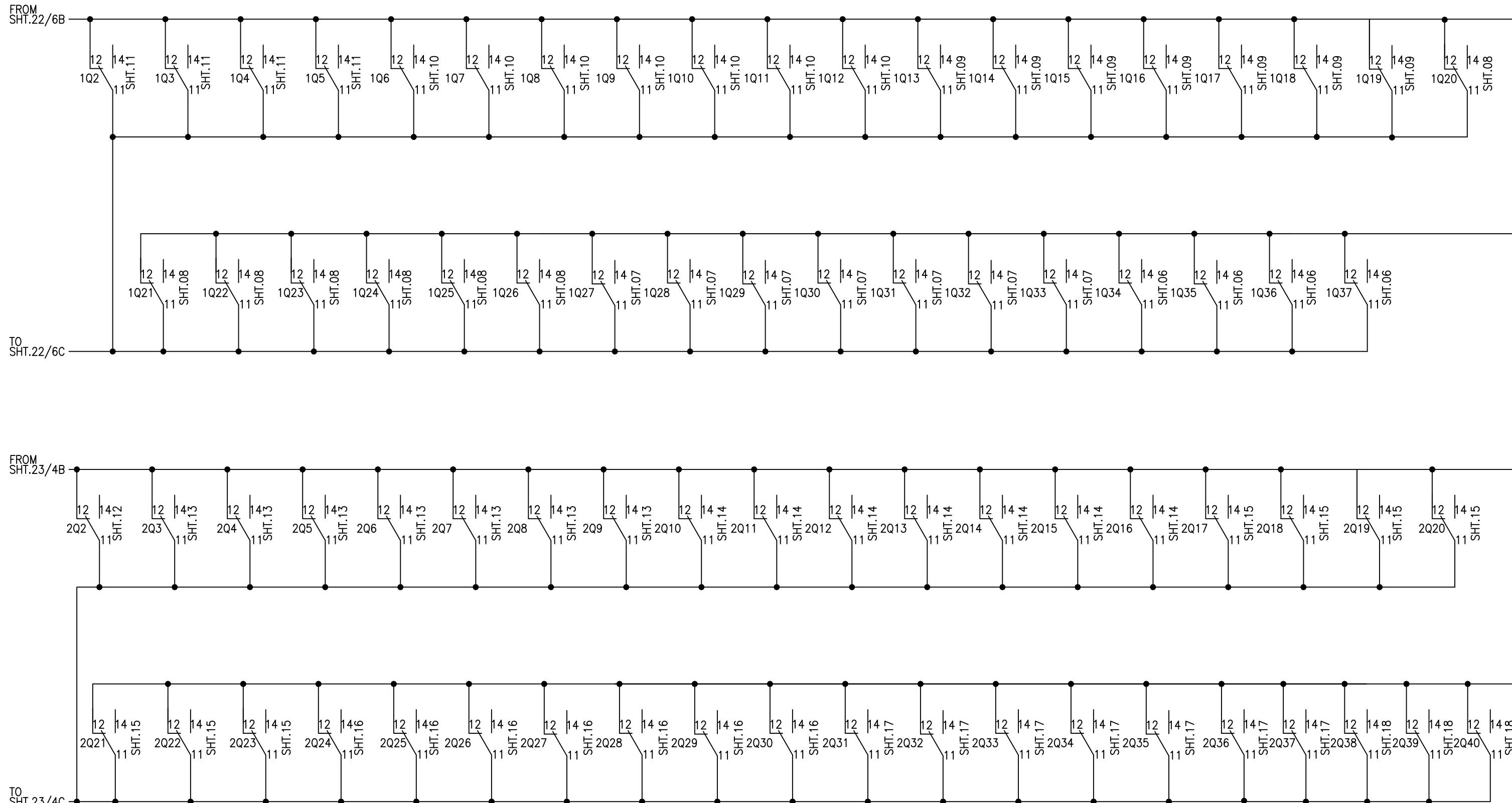
DES.	DESCRIPTION
1Qx	DC MCB
H100	DC ANNUNCIATOR
B1	BELL

DES.	DESCRIPTION
T1,ACK1, RST1	PUSH BUTTON
7L1	UNDER VOLTAGE RELAY

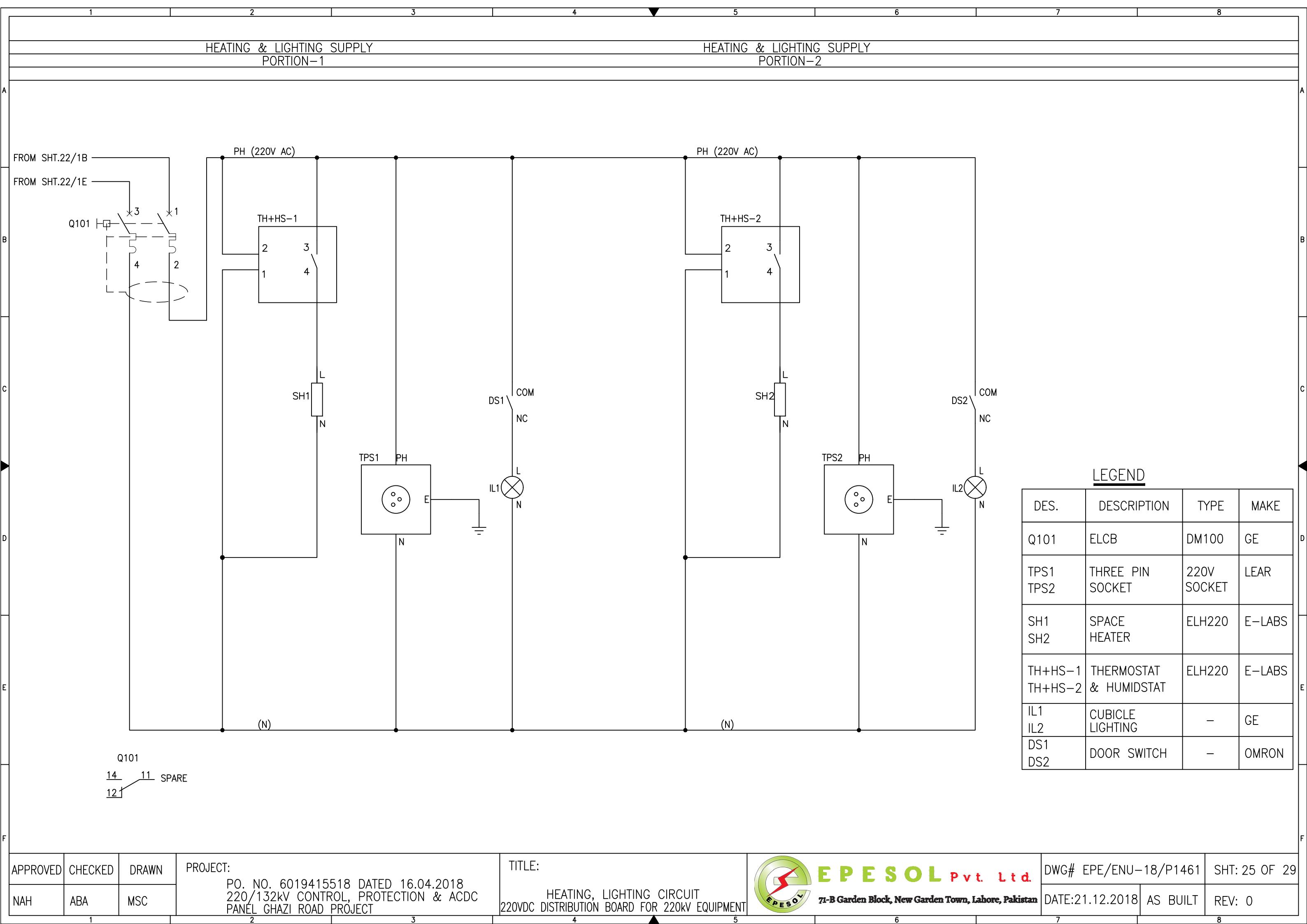
APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: ANNUNCIATOR CIRCUIT 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT: 22 OF 29
NAH	ABA	MSC				DATE:21.12.2018	AS BUILT

ANNUNCIATOR-1	DC INC-2	BUS-2	DC BUS-2	DC NO	INCOMER-2	BATTERY-2	BATTERY EARTH	INCOMMER-1/2
POWER SUPPLY	LT INITIATION	MCCB TRIPPED	VOLT METER MCB TRIPPED	MCB TRIP	VOLTAGE RESTORED	EARTH FAULT	FAULT RELAY	RELAY SUPPLY
				RELAY-2 OFF		DC2 MCB TRIPPED		FAILED



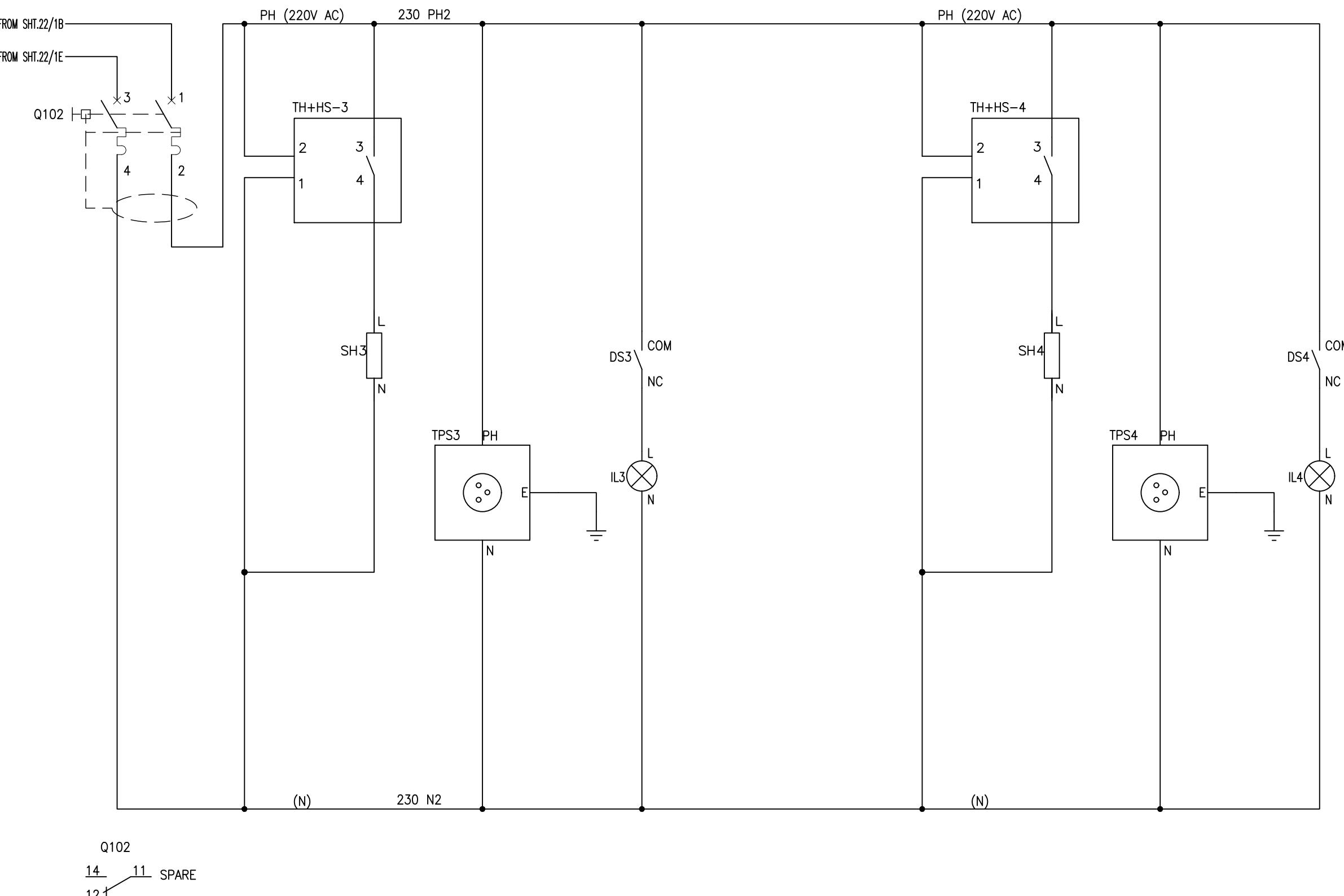


APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: BUS-1 & BUS-2 DC MCB TRIP 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT: 24 OF 29
NAH	ABA	MSC				DATE:21.12.2018	AS BUILT



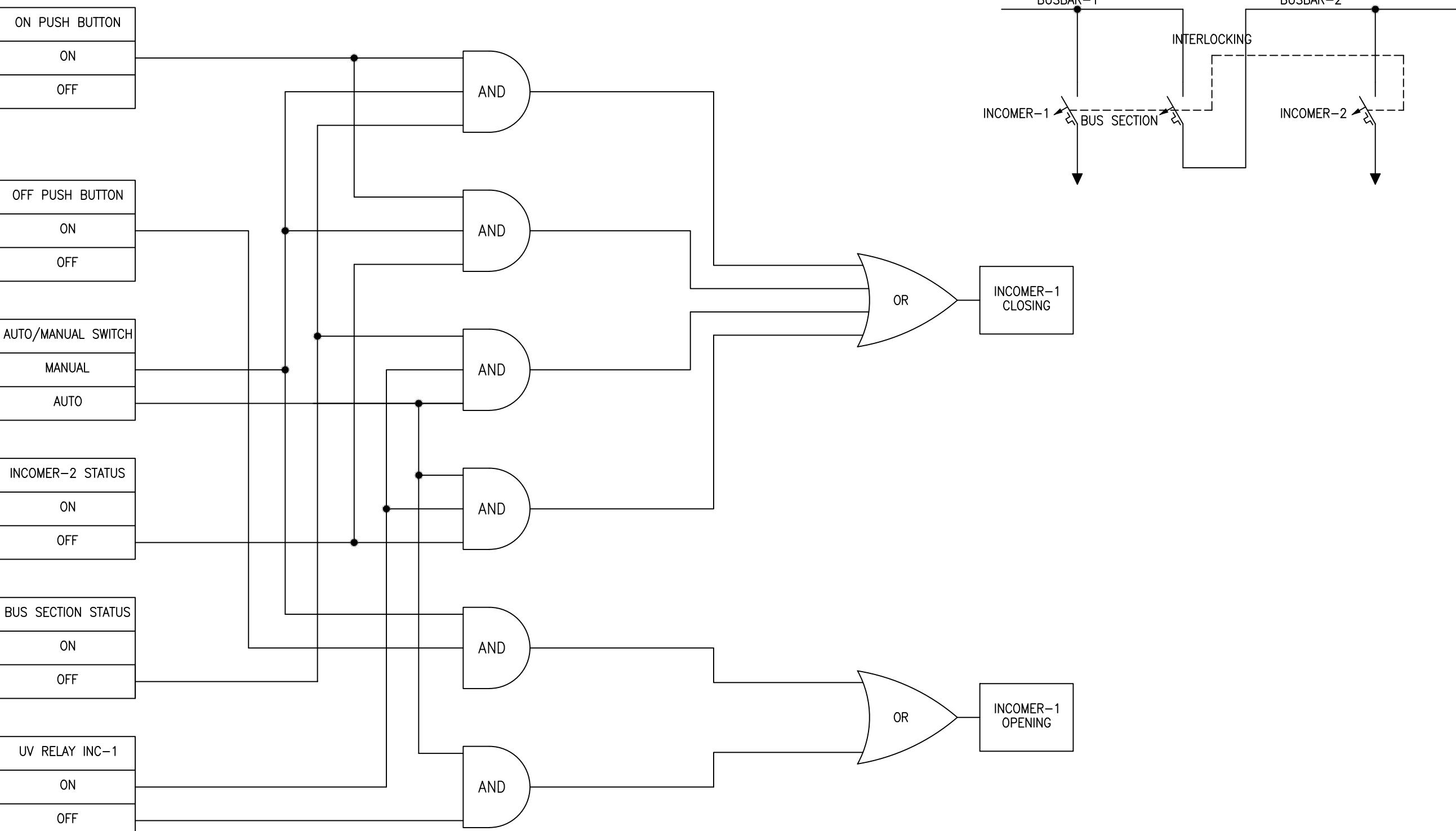
HEATING & LIGHTING SUPPLY
PORTION-3

HEATING & LIGHTING SUPPLY
PORTION-4



LEGEND

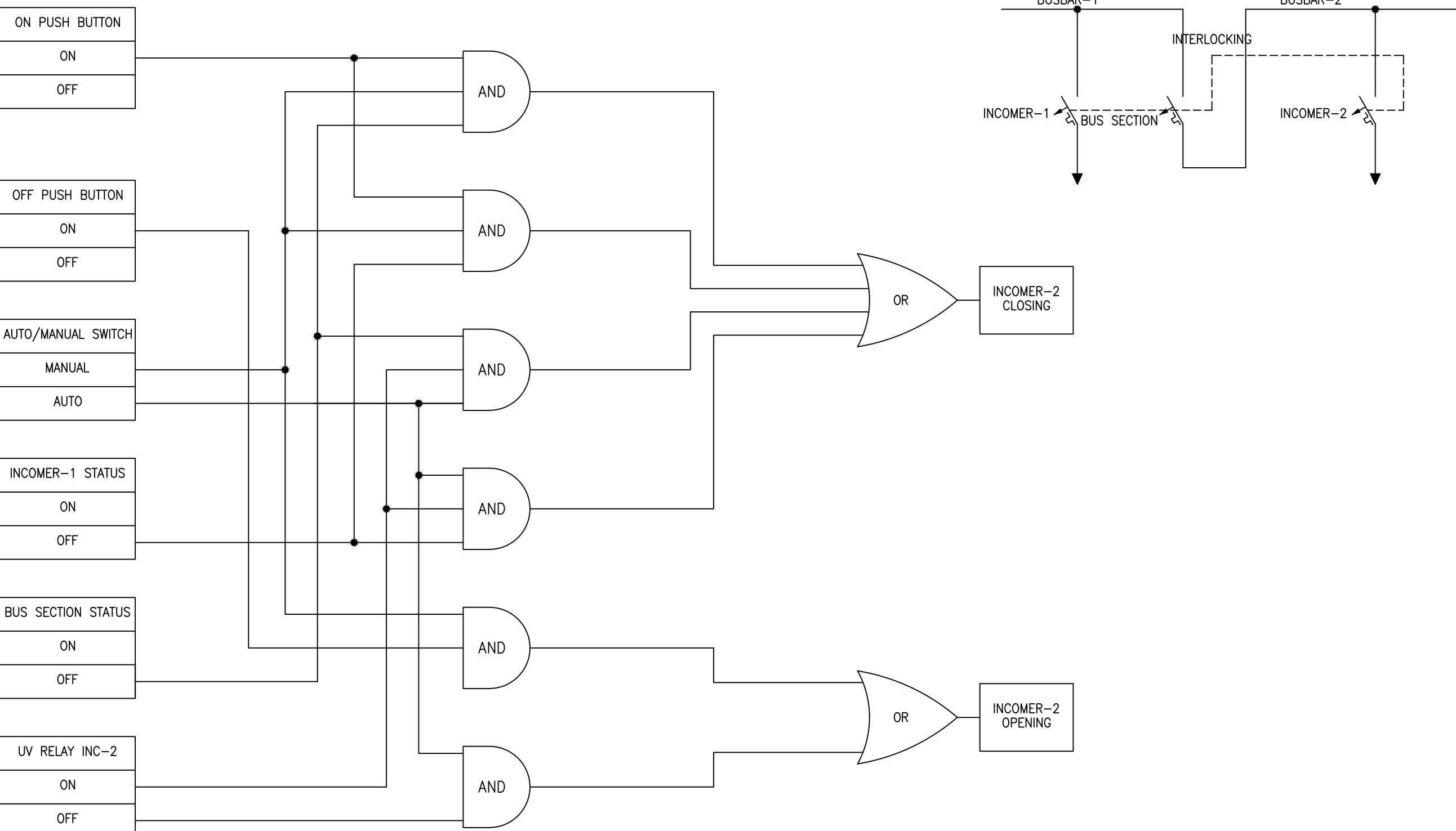
DES.	DESCRIPTION	TYPE	MAKE
TPS3 TPS4	THREE PIN SOCKET	220V SOCKET	LEAR
SH3 SH4	SPACE HEATER	ELH220	E-LABS
TH+HS-3 TH+HS-4	THERMOSTAT & HUMIDSTAT	ELH220	E-LABS
IL3 IL4	CUBICLE LIGHTING	-	GE
DS3 DS4	DOOR SWITCH	-	OMRON
Q102	ELCB	DM100	GE



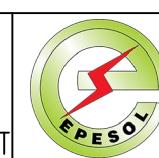
APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: INCOMER-1 CLOSING & OPENING LOGIC DIAGRAM 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	DWG# EPE/ENU-18/P1461	SHT: 27 OF 29
NAH	ABA	MSC			DATE: 21.12.2018	AS BUILT



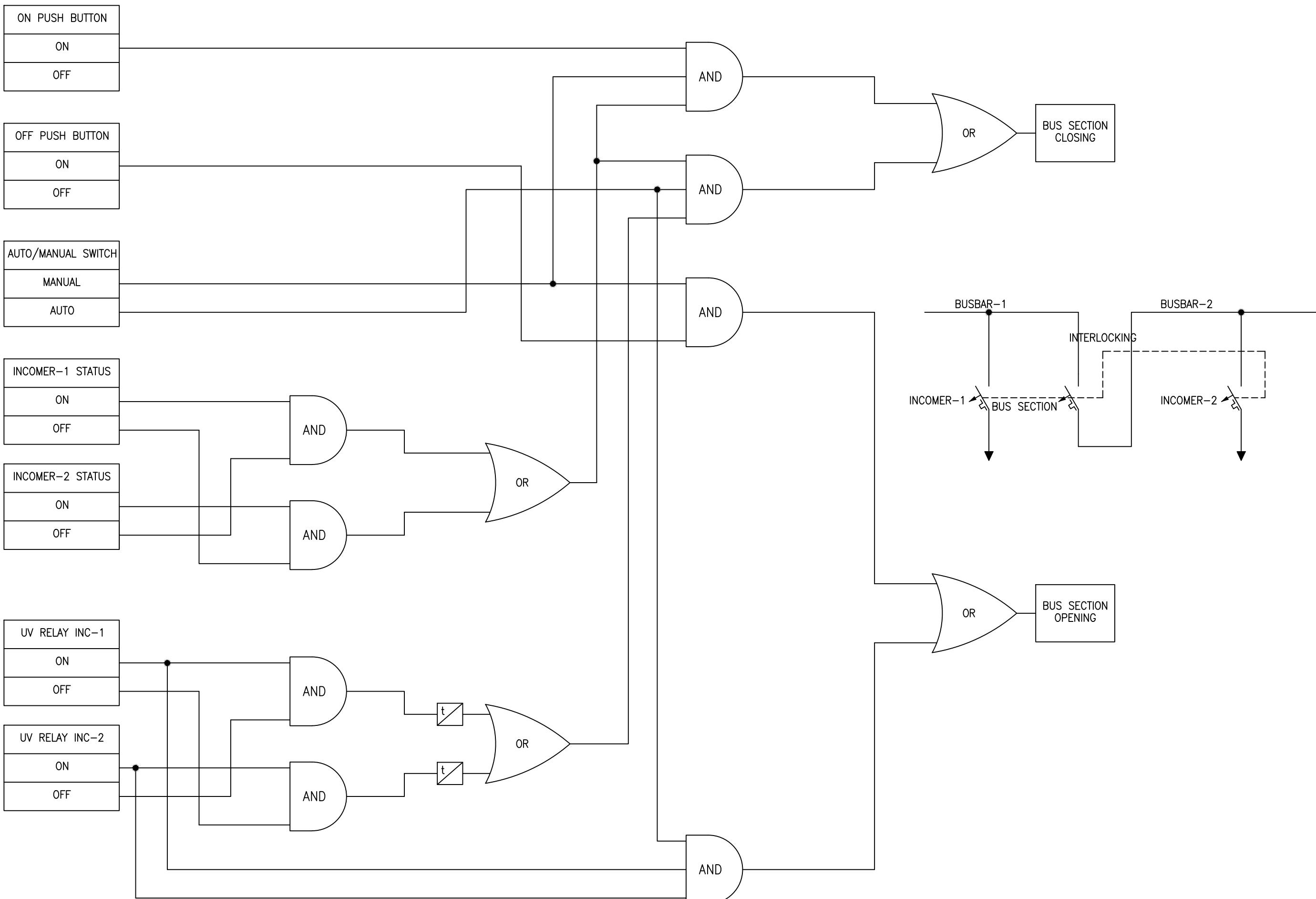
E P E S O L *Pvt. Ltd.*
71-B Garden Block, New Garden Town, Lahore, Pakistan



APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: INCOMER-2 CLOSING & OPENING LOGIC DIAGRAM 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	DWG# EPE/ENU-18/P1461	SHT: 28 OF 29
NAH	ABA	MSC			DATE:21.12.2018	AS BUILT



E P E S O L *Pvt. Ltd.*
71-B Garden Block, New Garden Town, Lahore, Pakistan



APPROVED	CHECKED	DRAWN	PROJECT: PO. NO. 6019415518 DATED 16.04.2018 220/132kV CONTROL, PROTECTION & ACDC PANEL GHAZI ROAD PROJECT	TITLE: BUS SECTION CLOSING & OPENING 220VDC DISTRIBUTION BOARD FOR 220kV EQUIPMENT	 EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1461	SHT: 29 OF 29
NAH	ABA	MSC				DATE:21.12.2018	AS BUILT