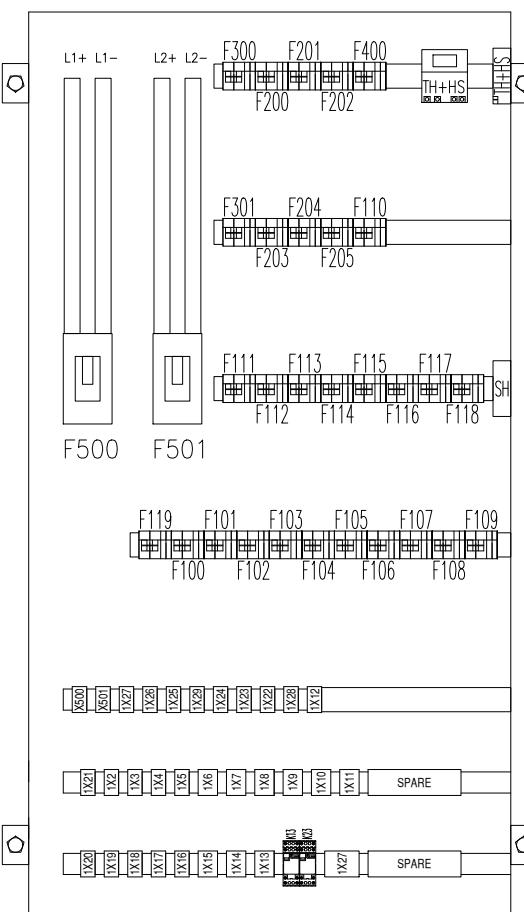
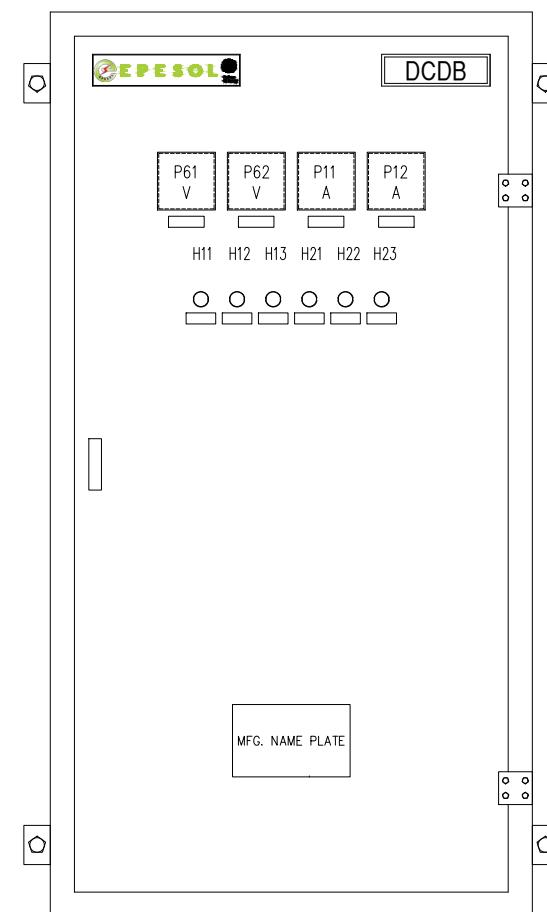


LAYOUT DRAWING OF 220 VDC AUXILIARY SUPPLY PANEL

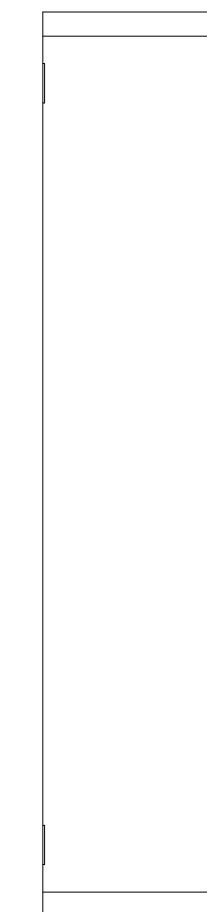
APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	DWG#	SHT: 01 OF 02
NAH 	MSSM 	MUR 	 EDUCATIONAL ORDER NTDC PO# CE/MP&M /M(P)/AM-VI/E0/9417-29 DATED 14.11.2018 FOR THE PROCUREMENT OF 220KV & 500KV RELAY& CONTROL PANELS	COVER SHEET 220 VDC AUXILIARY SUPPLY PANEL	E P E S O L Pvt Ltd.  71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1600 DATE: 07.03.2019 AS BUILT REV: 0



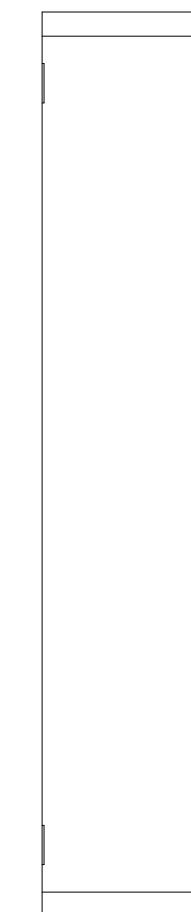
220V DC PANEL WITHOUT DOOR
FRONT VIEW



220V DC PANEL WITH DOOR
FRONT VIEW



LEFT VIEW



RIGHT VIEW



220V DC PANEL TOP VIEW

NOTES

1. DC AUX. PANEL: 800Wx300Dx1500H mm
2. FACE SHEET: 800x1500 mm²
3. COLOR: RAL7032

APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	DWG#	SHT:02 OF 02
NAH [Signature]	MSSM [Signature]	MUR [Signature]	EDUCATIONAL ORDER NTDC PO# CE/MP&M /M(P)/AM-VI/E0/9417-29 DATED 14.11.2018 FOR THE PROCUREMENT OF 220KV & 500KV RELAY& CONTROL PANELS	GENERAL ARRANGEMENT 220 VDC AUXILIARY SUPPLY PANEL	EPE SOL Pvt Ltd 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/P1600 DATE: 07.03.2019 AS BUILT REV: 0

LIST OF APPARATUS OF 220 VDC AUXILIARY SUPPLY PANEL

APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	COVER SHEET	DWG#	SHT:
NAH	MSS	MUR	EDUCATIONAL ORDER NTDC PO# CE/MP&M /M(P)/AM-VI/E0/9417-29 DATED 14.11.2018 FOR THE PROCUREMENT OF 220KV & 500KV RELAY& CONTROL PANELS	220 VDC AUXILIARY SUPPLY PANEL		EPE SOL Pvt Ltd	EPE/ENU-18/B61601
						DATE: 07.03.2019	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	F100 TO F119	DC MCB, DOUBLE POLE, 16A, 220 VDC, WITH 1 C/O CONTACT	20	EP100	GE	HUNGARY/POLAND	EP102UCC16 + CAH(1)	A
	F200 TO F205	DC MCB, DOUBLE POLE, 32A, 220 VDC, WITH 1 C/O CONTACT	6	EP100	GE	HUNGARY/POLAND	EP102UCC32 + CAH(1)	A
	F300, F301	DC MCB, DOUBLE POLE, 63A, 220 VDC, WITH 1 C/O CONTACT	2	EP100	GE	HUNGARY/POLAND	EP102UCC63 + CAH(1)	A
B	F400	ELCB, DOUBLE POLE, 16A, 30mA, 240 VAC, WITH 1 C/O CONTACT	1	DM100	GE	HUNGARY/POLAND	DM100C16/030 + CAH(1)	B
	F500, F501	TRIPLE POLE MCCB RAETED CURRENT 80–100A WITH ONE NORMALLY CLOSED AUXILIARY CONTACT ONE NORMALLY OPRN TRIP CONTACT, AND 1NO+NC AUXILIARY CONTACTS	2	FD160	GE	HUNGARY/POLAND	FDN36TD100GD+FAS01R +FAS10L+FABAT	B
	IL	CUBICLE LIGHTING, 5W, 240VAC	1	YS-Y8	YONGSUNG	SOUTH KOREA	YS-T8-30-5W	B
C	DS	DOOR SWITCH WITH COVER	1	YSP33+YSMS	YONGSUNG	SOUTH KOREA	YSP3315GWB+YSMS-C	C
	TH+HS	THERMOSTAT AND HUMIDSTAT	1	ELH220	ELAB	PAKISTAN	ELH220	C
	SH	SPACE HEATER	1	ELH220	ELAB	PAKISTAN	ELH220	C
D	1X2 TO 1X21	TERMINAL BLOCKS SUITABLE FOR 16mm ² CABLE	48	CBD	CABUR	ITLAY		D
	1X22 TO 1X29	TERMINAL BLOCKS SUITABLE FOR 35mm ² CABLE	20	CBD	CABUR	ITLAY		D
	X17	TERMINAL BLOCKS FOR CONTROL/AC SUPPLY DISTRIBUTION CIRCUIT	20	CBD	CABUR	ITLAY		D
E	P11, P12	DC AMPER METER 0–120A, 96X96 WITH 60mV (120A) SHUNT, CLASS 1.5	2	1F96MA	FRER	ITLAY		E
	P61, P62	DC VOLT METER 0–300V, 96X96 CLASS 1.5	2	1F96MV	FRER	ITLAY		E
	H11, H21	INDICATION BULB FOR BREAKER ON POSITION COLOR RED 220VAC	2	YSAP	YONGSUNG	SOUTH KOREA	YS-PL-2-AL-22-R-W	E
F	H13, H23	INDICATION BULB FOR BREAKER TRIP COLOR YELLOW 220VAC	2	YSAP	YONGSUNG	SOUTH KOREA	YS-PL-2-AL-22-Y-W	F
	H12, H22	INDICATION BULB FOR BREAKER OFF POSITION COLOR GREEN 220VAC	2	YSAP	YONGSUNG	SOUTH KOREA	YS-PL-2-AL-22-G-W	F
	R1, R2	SHUNT, 60mV, 100 A, CLASS 1	2	-	FRER	ITLAY		F
G	K23, K13	AUXILIARY RELAY, 4 C/O CONTACTS, 220 VDC	2	PRC	GE	HUNGARY/POLAND	PRC4M40DCML	G
	F410	DOUBLE POLE DC MCB RATED CURRENT 10 A, Icu = 10 kA.	1	EP-100	GE	HUNGARY/POLAND	EP102UCC10+CAH(1)	G
								G
APPROVED	CHECKED	DRAWN	PROJECT:  EDUCATIONAL ORDER NTDC PO# CE/MP&M /M(P)/AM-VI/E0/9417-29 DATED 14.11.2018 FOR THE PROCUREMENT OF 220KV & 500KV RELAY& CONTROL PANELS	TITLE: LIST OF APPARATUS 220 VDC AUXILIARY SUPPLY PANEL	 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/B61601 DATE: 07.03.2019	SHT: 02 OF 01 AS BUILT REV: 0	

SCHEMATIC DIAGRAMS OF 220 VDC AUXILIARY SUPPLY PANEL

APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	DWG#	SHT:
NAH	MSS	MUR	 NTDC PO# CE/MP&M/M(P)/AM-VI/E0/ 9417-29 DATED 14.11.2018 FOR PROCUREMENT OF 220KV & 500KV PROTECTION & CONTROL PANELS	220 VDC COVER SHEET AUXILIARY SUPPLY PANEL	EPE SOL Pvt Ltd	EPE/ENU-18/B61602
					71-B Garden Block, New Garden Town, Lahore, Pakistan	01 OF 10



EPE SOL Pvt Ltd
 71-B Garden Block, New Garden Town, Lahore, Pakistan

DATE: 07.03.2019 **AS BUILT**

REV: 0

DESCRIPTION	SHEET NO
COVER SHEET	01
LIST OF CONTENTS	02
LIST OF SYMBOLS AND DESIGNATIONS	03
SINGLE LINE DIAGRAM BUS-1	04
SINGLE LINE DIAGRAM BUS-2	05
DETAILED SCHEMATIC DIAGRAM FOR BUS-1 SIDE	06
DETAILED SCHEMATIC DIAGRAM FOR BUS-1 SIDE	07
DETAILED SCHEMATIC DIAGRAM FOR BUS-2 SIDE	08
DETAILED SCHEMATIC DIAGRAM FOR BUS-2 SIDE	09
INDICATION AND METERING CIRCUIT	09a
AC SUPPLY DISTRIBUTION	10
MCB TRIP STATUS CIRCUIT	10a

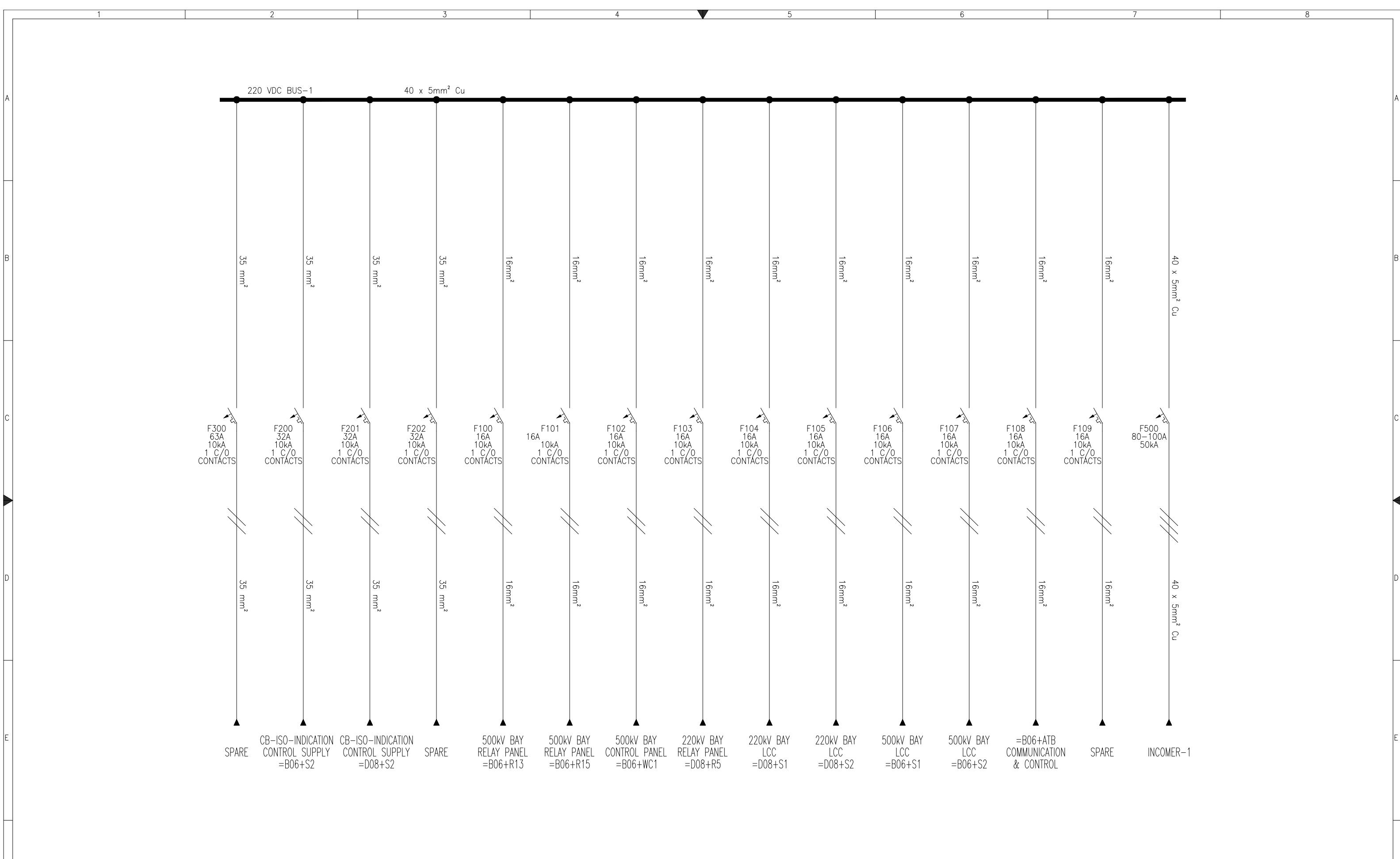
APPROVED	CHECKED	DRAWN	PROJECT:  NTDC PO# CE/MP&M/M(P)/AM-VI/E0/ 9417-29 DATED 14.11.2018 FOR PROCUREMENT OF 220KV & 500KV PROTECTION & CONTROL PANELS	TITLE: LIST OF CONTENTS 220 VDC AUXILIARY SUPPLY PANEL	DWG# EPE/ENU-18/B61602 DATE: 07.03.2019	SHT: 02 OF 10 AS BUILT REV: 0
NAH Q.I.	MSS M.Sohail	MUR Ilyas		 EPE SOL Pvt Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan		

LIST OF SYMBOLS AND DESIGNATIONS	
	RELAY PANEL TERMINAL BLOCK
	CONTROL PANEL TERMINAL BLOCK
	EARTH CONNECTION
	NORMALLY CLOSED CONTACT
	NORMALLY OPEN CONTACT
	CHANGE OVER CONTACT
	MINIATURE CIRCUIT BREAKER
	INDICATING BULB/LED/CUBICLE LIGHT
	220V SOCKET
	SPACE HEATER
	COIL
	EQUIPMENT WITHIN PANEL
	INDEPENDENT PANEL
	INDEPENDENT PANEL
X	TERMINAL BLOCKS
F	MINIATURE CIRCUIT BREAKER

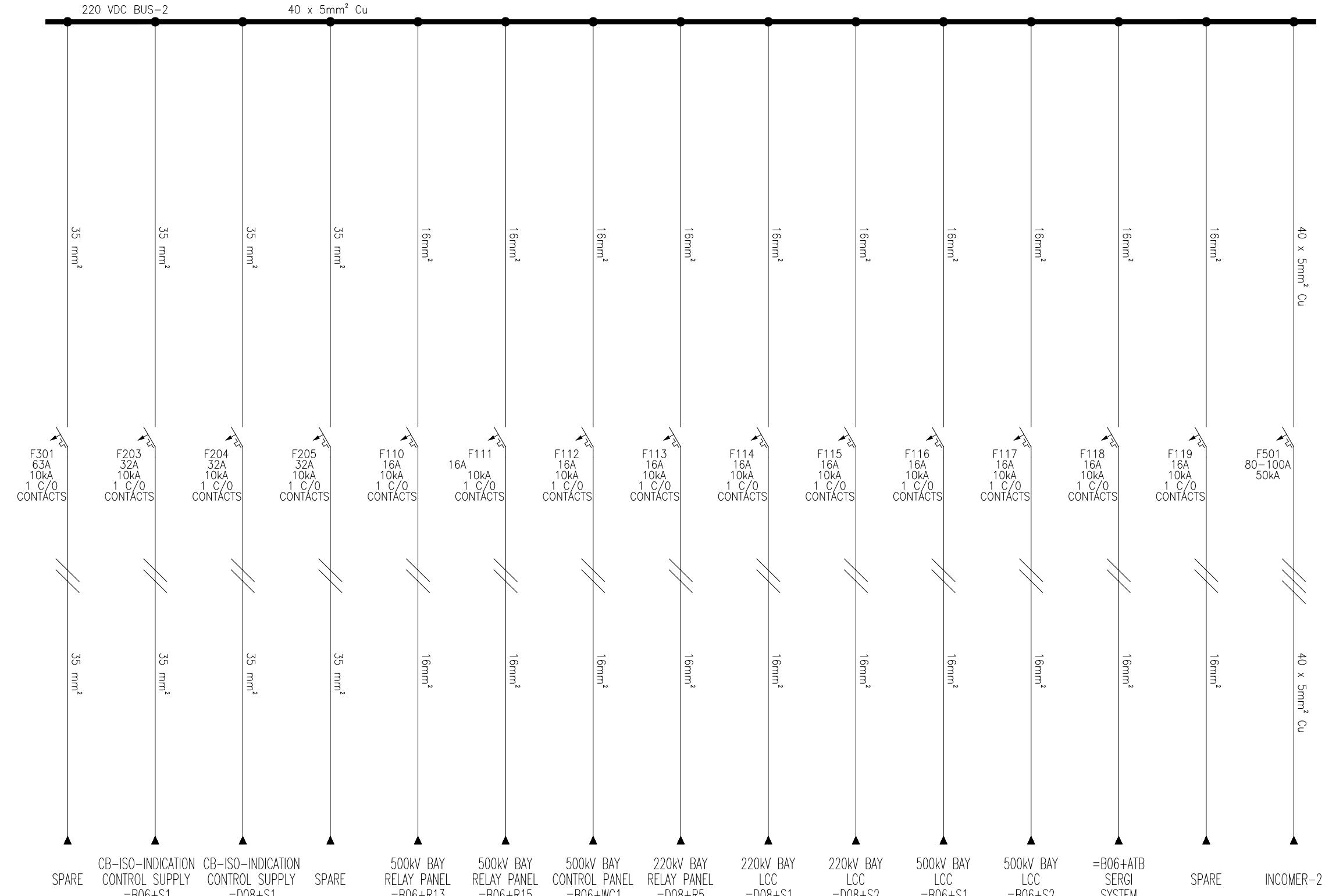
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NAH 	MSS 	MUR 			DATE: 07.03.2019	AS BUILT
					REV: 0	



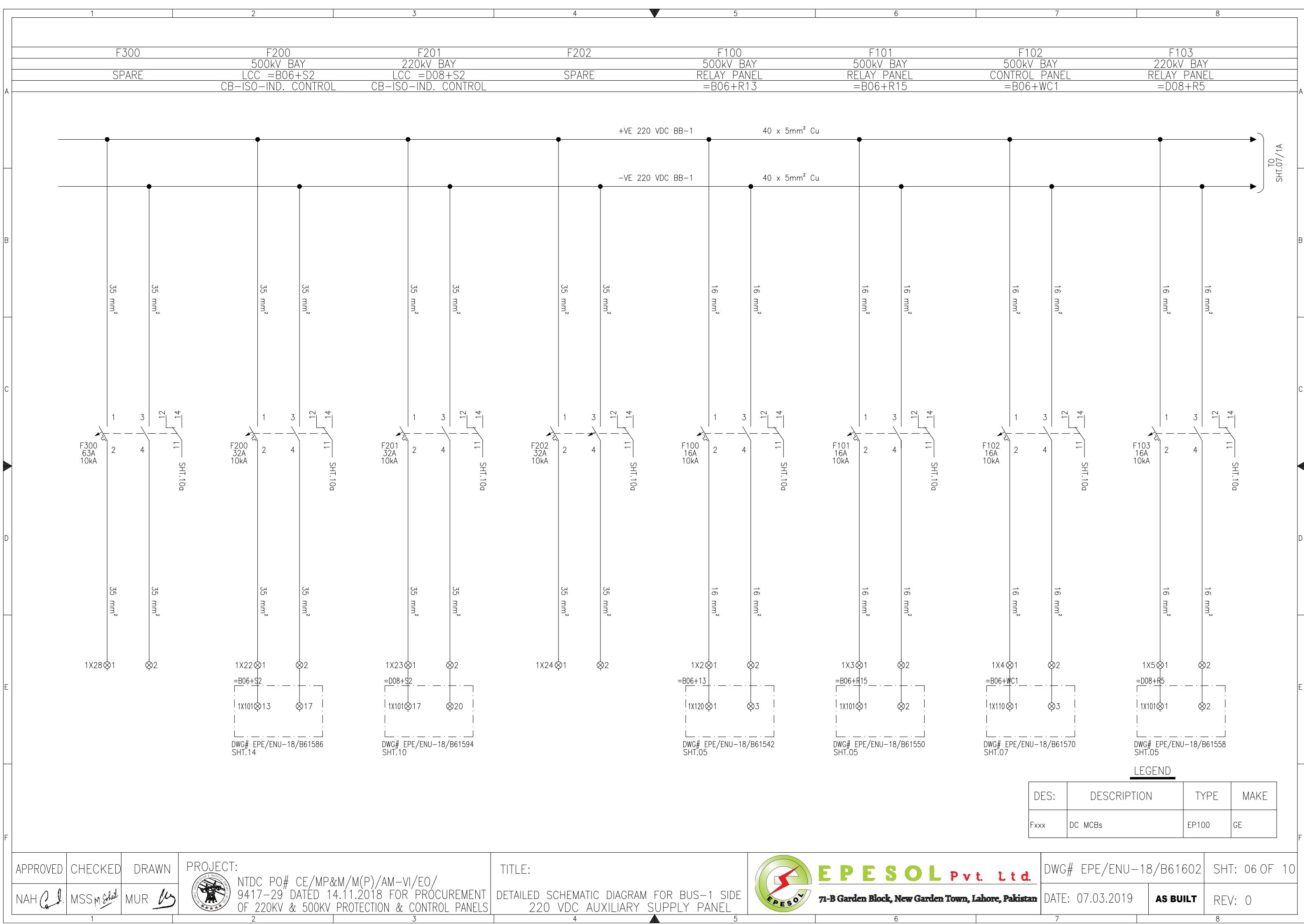
E P E S O L *Pvt. Ltd.*
71-B Garden Block, New Garden Town, Lahore, Pakistan



APPROVED	CHECKED	DRAWN	PROJECT:	TITLE:	EPE SOL Pvt. Ltd.	DWG# EPE/ENU-18/B61602	SHT: 04 OF 10
NAH	MSS	MUR	 NTDC PO# CE/MP&M/M(P)/AM-VI/EO/ 9417-29 DATED 14.11.2018 FOR PROCUREMENT OF 220KV & 500KV PROTECTION & CONTROL PANELS	SINGLE LINE DIAGRAM BUS-1 220 VDC AUXILIARY SUPPLY PANEL	 71-B Garden Block, New Garden Town, Lahore, Pakistan	DATE: 07.03.2019	AS BUILT



APPROVED	CHECKED	DRAWN	PROJECT:  NTDC PO# CE/MP&M/M(P)/AM-VI/EO/ 9417-29 DATED 14.11.2018 FOR PROCUREMENT OF 220KV & 500KV PROTECTION & CONTROL PANELS	TITLE: SINGLE LINE DIAGRAM BUS-2 220 VDC AUXILIARY SUPPLY PANEL	 EPESOL Pvt Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/B61602	SHT: 05 OF 10
NAH	MSSM	MUR				DATE: 07.03.2019	AS BUILT



1 2 3 4 5 6 7 8

F104

220kV BAY

LCC

=D08+S1

F105

220kV BAY

LCC

=D08+S2

F106

500kV BAY

LCC

=B06+S1

F107

500kV BAY

LCC

=B06+S2

F108

=B06+ATB

COMMUNICATION

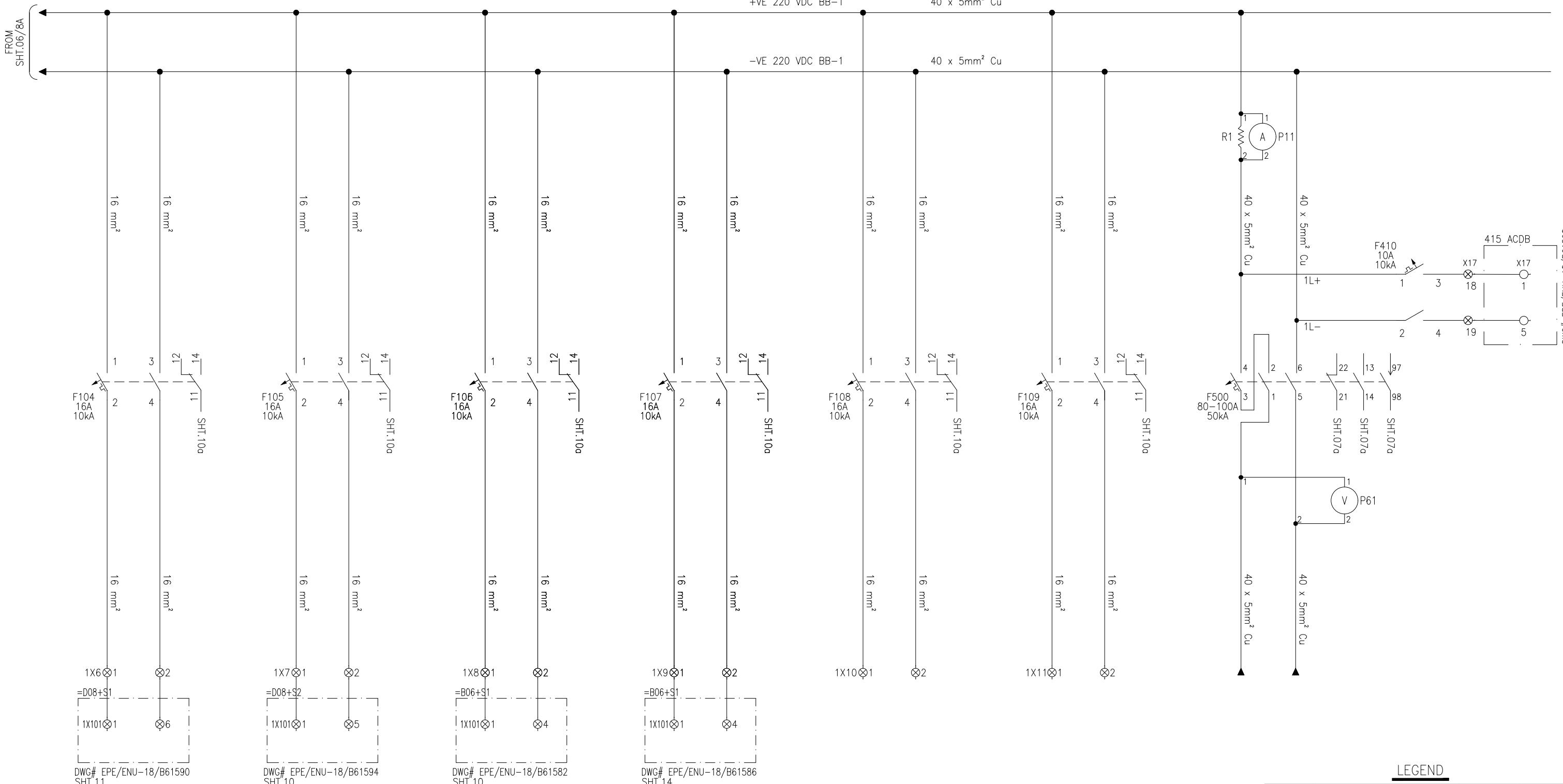
CONTROL

F109

SPARE

F500

INCOMER-1



LEGEND

DES:	DESCRIPTION	TYPE	MAKE
F5xx	DC MCBs	FD160	GE
Fxxx	DC MCBs	EP100	GE

APPROVED	CHECKED	DRAWN
NAH	MSS	MUR

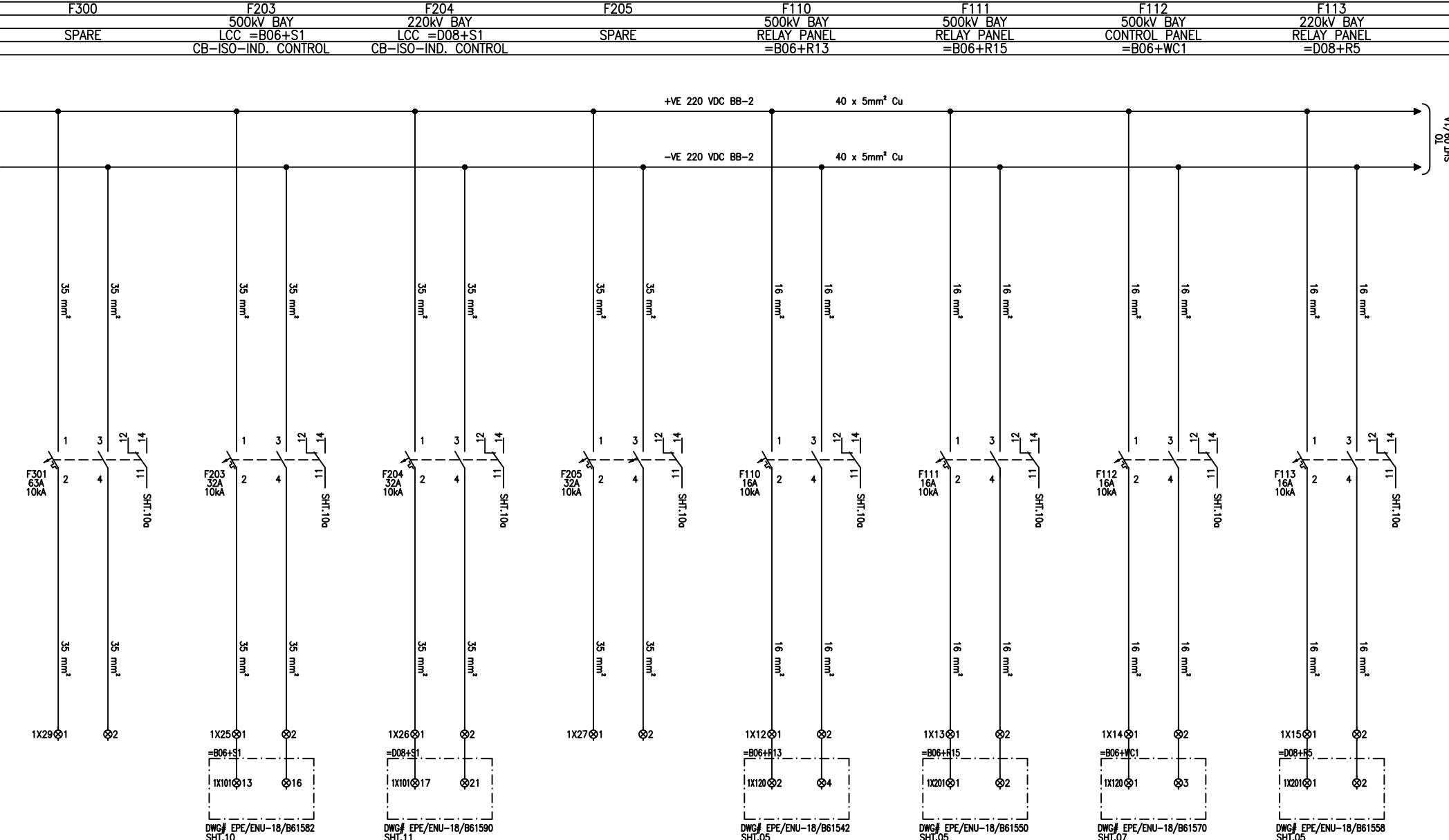


PROJECT:
NTDC PO# CE/MP&M/M(P)/AM-VI/EO/
9417-29 DATED 14.11.2018 FOR PROCUREMENT
OF 220KV & 500KV PROTECTION & CONTROL PANELS

TITLE:
DETAILED SCHEMATIC DIAGRAM FOR BUS-1 SIDE
220 VDC AUXILIARY SUPPLY PANEL



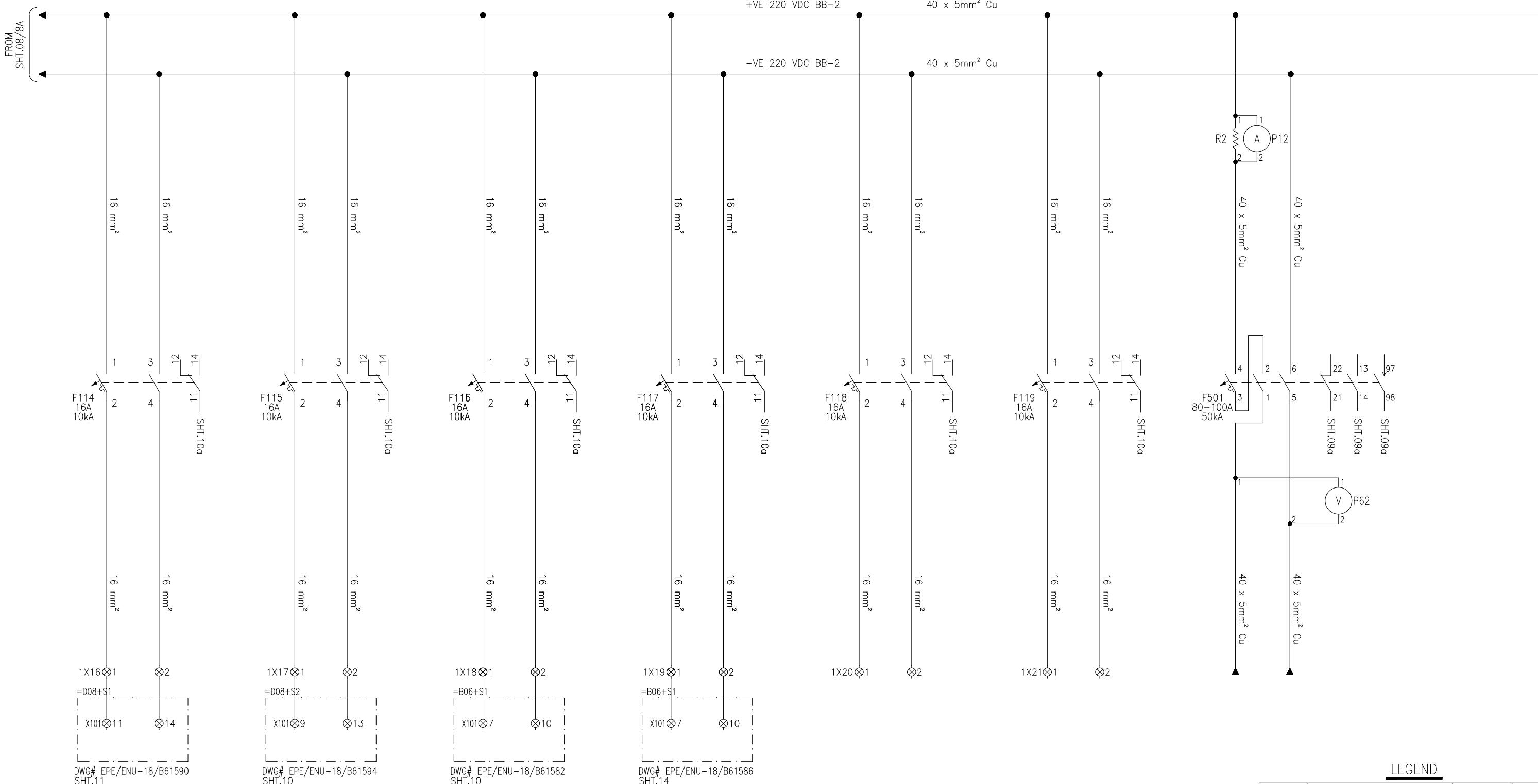
DWG# EPE/ENU-18/B61602 SHT: 07 OF 10
DATE: 07.03.2019 AS BUILT REV: 0



<u>LEGEND</u>			
DES:	DESCRIPTION	TYPE	MAKE
xx	DC MCBs	EP100	GE

APPROVED	CHECKED	DRAWN	PROJECT:  NTDC PO# CE/MP&M/M(P)/AM-VI/EO/ 9417-29 DATED 14.11.2018 FOR PROCUREMENT OF 220KV & 500KV PROTECTION & CONTROL PANELS	TITLE: DETAILED SCHEMATIC DIAGRAM FOR BUS-2 SIDE 220 VDC AUXILIARY SUPPLY PANEL	 E P E S O L P r t . L t d . 71-B Garden Block, New Garden Town, Lahore, Pakistan	DWG# EPE/ENU-18/B61602	SHT: 08 OF 10
NAH	MSS	MUR				DATE: 07.03.2019	AS BUILT

1 2 3 4 5 6 7 8

F114
220kV BAY
LCC
=D08+S1F115
220kV BAY
LCC
=D08+S2F116
500kV BAY
LCC
=B06+S1F117
500kV BAY
LCC
=B06+S2F118
=B06+ATB
SERGI
SYSTEMF119
SPAREF501
INCOMER-2LEGEND

DES:	DESCRIPTION	TYPE	MAKE
F5xx	DC MCCBs	FD160	GE
Fxxx	DC MCBs	EP100	GE

APPROVED	CHECKED	DRAWN
NAH	MSS	MUR



PROJECT:
NTDC PO# CE/MP&M/M(P)/AM-VI/EO/
9417-29 DATED 14.11.2018 FOR PROCUREMENT
OF 220KV & 500KV PROTECTION & CONTROL PANELS

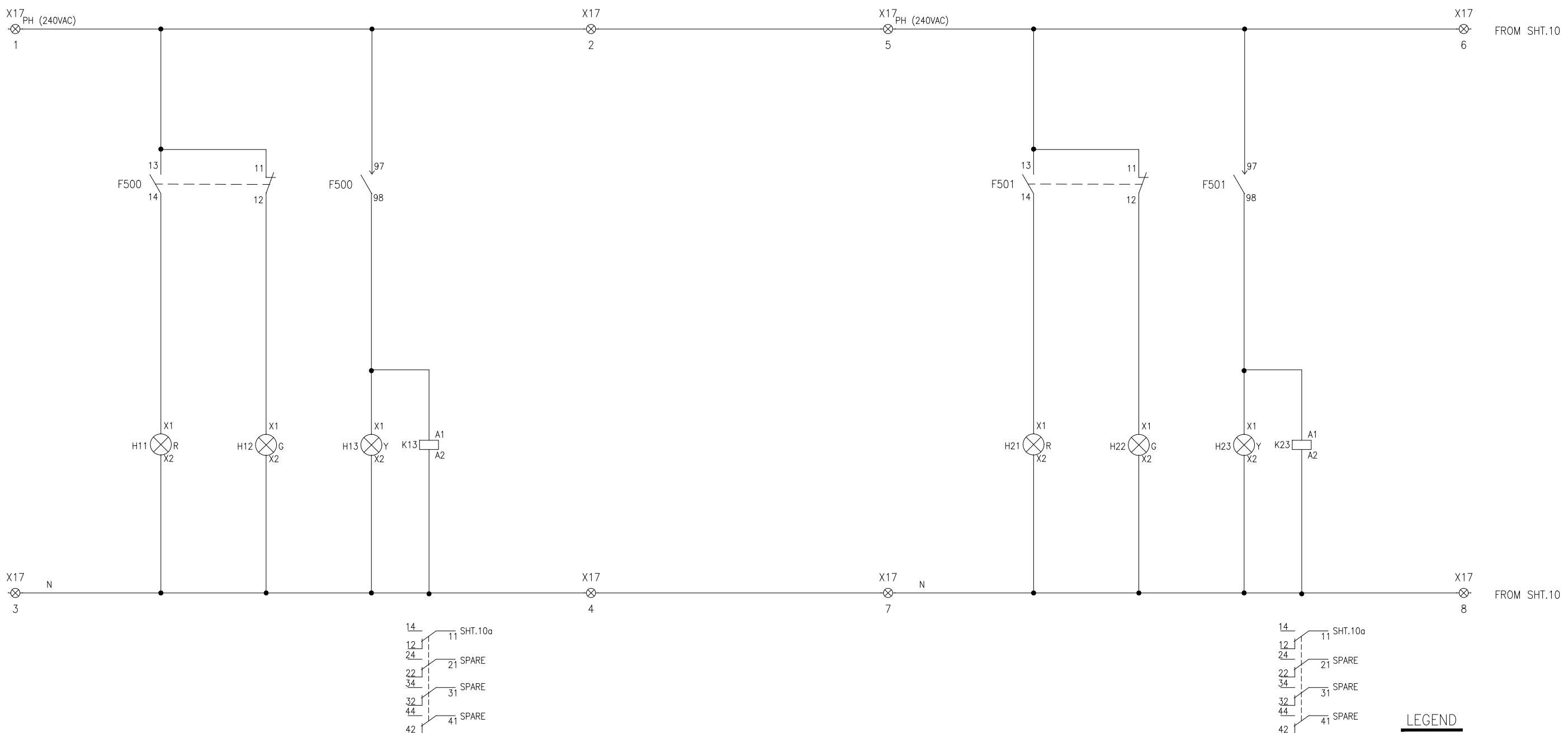
TITLE:
DETAILED SCHEMATIC DIAGRAM FOR BUS-2 SIDE
220 VDC AUXILIARY SUPPLY PANEL

EPE SOL Pvt. Ltd.
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/B61602 SHT: 09 OF 10
DATE: 07.03.2019 AS BUILT REV: 0

INCOMER-1
ON INDICATION OFF INDICATION TRIP INDICATION

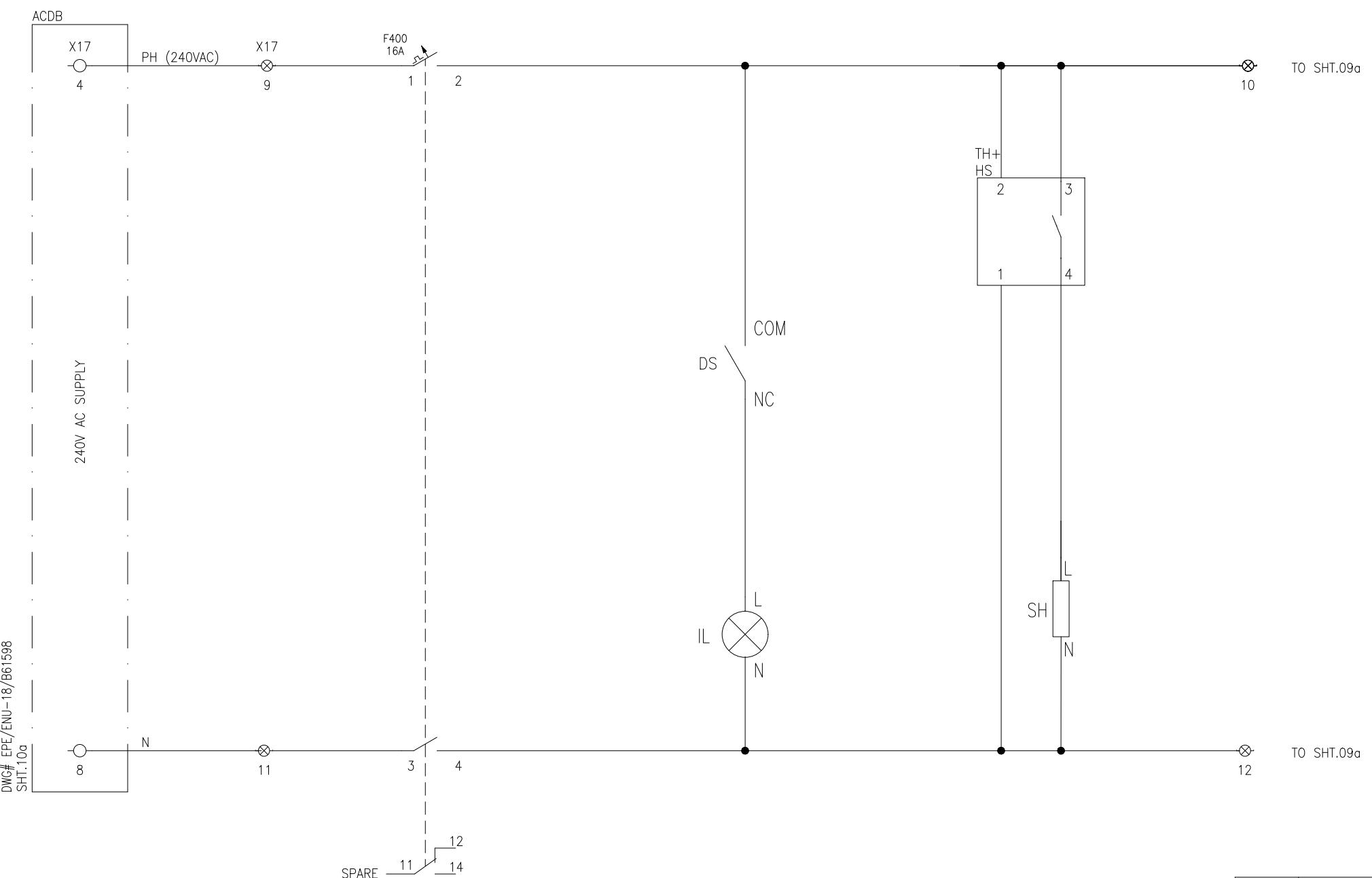
INCOMER-2
ON INDICATION OFF INDICATION TRIP INDICATION



DES:	DESCRIPTION	TYPE	MAKE	DES:	DESCRIPTION	TYPE	MAKE
H11,21	INDICATION LAMP (RED)	YSPL	YONGSUNG	P6x	VOLTMETER	1F96MV	YONGSUNG
H12,H22	INDICATION LAMP (YELLOW)	YSPL	YONGSUNG	P1x	AMMETER	1F96MA	YONGSUNG
H13,H23	INDICATION LAMP (GREEN)	YSPL	YONGSUNG		MINIATURE RELAY	PRC	GE

LEGEND

AC SUPPLY DISTRIBUTION

DOOR SWITCH &
CUBICLE LIGHTTHERMOSTAT
& HEATERLEGEND

DES:	DESCRIPTION	TYPE	MAKE
F4xx	AC ELCB	DM100	GE
IL	CUBICLE LIGHT	YST8	YONGSUNG
SH	SPACE HEATER	ELH220	ELABS
TH+HS	THERMOSTAT AND HUMIDISTAT	ELH220	ELABS
DS	DOOR SWITCH	YSP22+YSMS	YONGSUNG

APPROVED	CHECKED	DRAWN
NAH	MSS	MUR



PROJECT:
NTDC PO# CE/MP&M/M(P)/AM-VI/E0/
9417-29 DATED 14.11.2018 FOR PROCUREMENT
OF 220KV & 500KV PROTECTION & CONTROL PANELS

TITLE:

AC SUPPLY DISTRIBUTION
220 VDC AUXILIARY SUPPLY PANEL

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/B61602 SHT: 10 OF 10
DATE: 07.03.2019 AS BUILT REV: 0

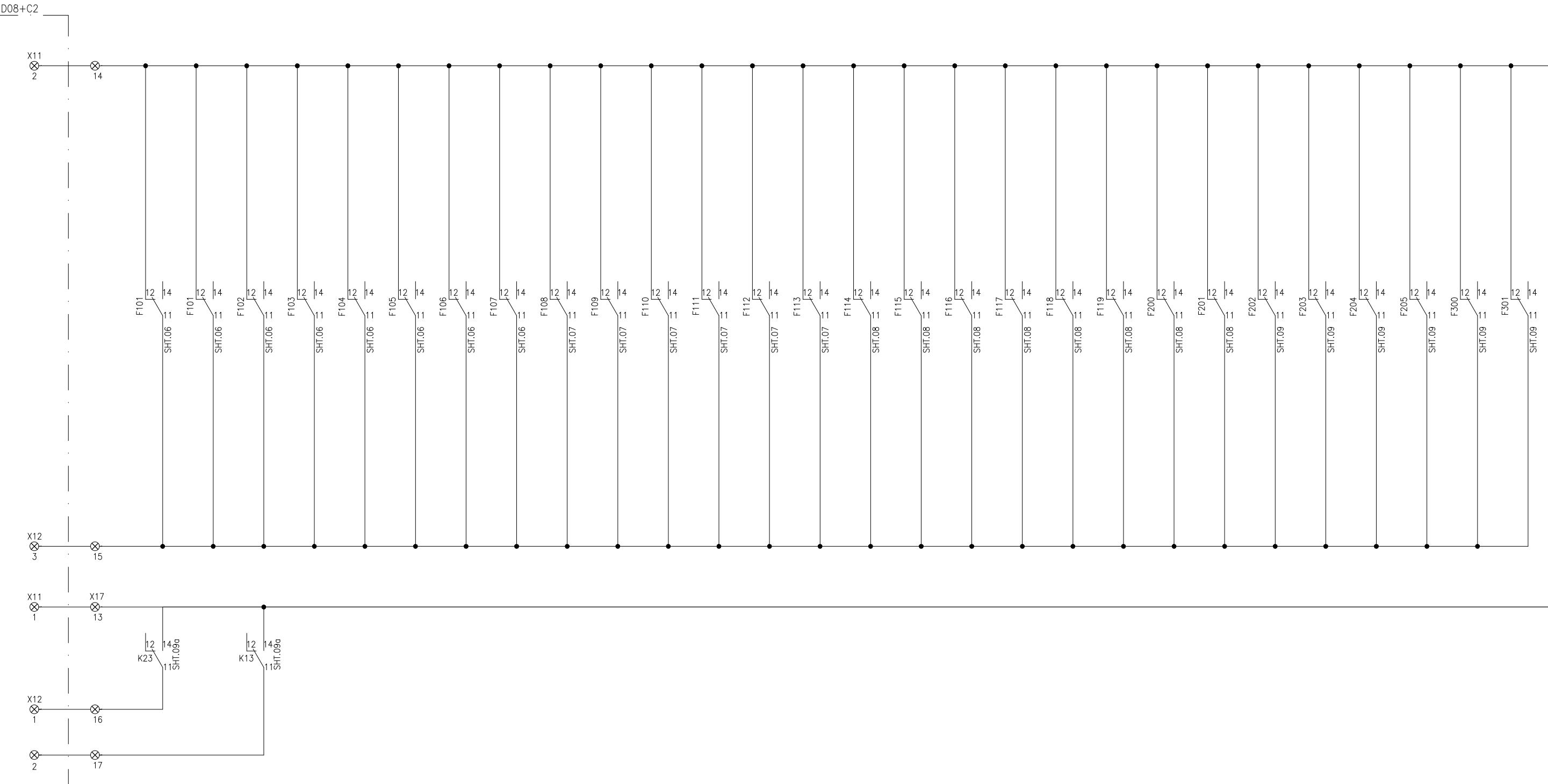
DWG# EPE/ENU-18/B61576
SHT.26

A

INCOMMER-2
STATUS

INCOMMER-1
STATUS

MCB TRIP
STATUS



APPROVED	CHECKED	DRAWN
NAH	MSS	MUR



PROJECT:
NTDC PO# CE/MP&M/M(P)/AM-VI/E0/
9417-29 DATED 14.11.2018 FOR PROCUREMENT
OF 220KV & 500KV PROTECTION & CONTROL PANELS

TITLE:

MCB TRIP STATUS CIRCUIT
220 VDC AUXILIARY SUPPLY PANEL

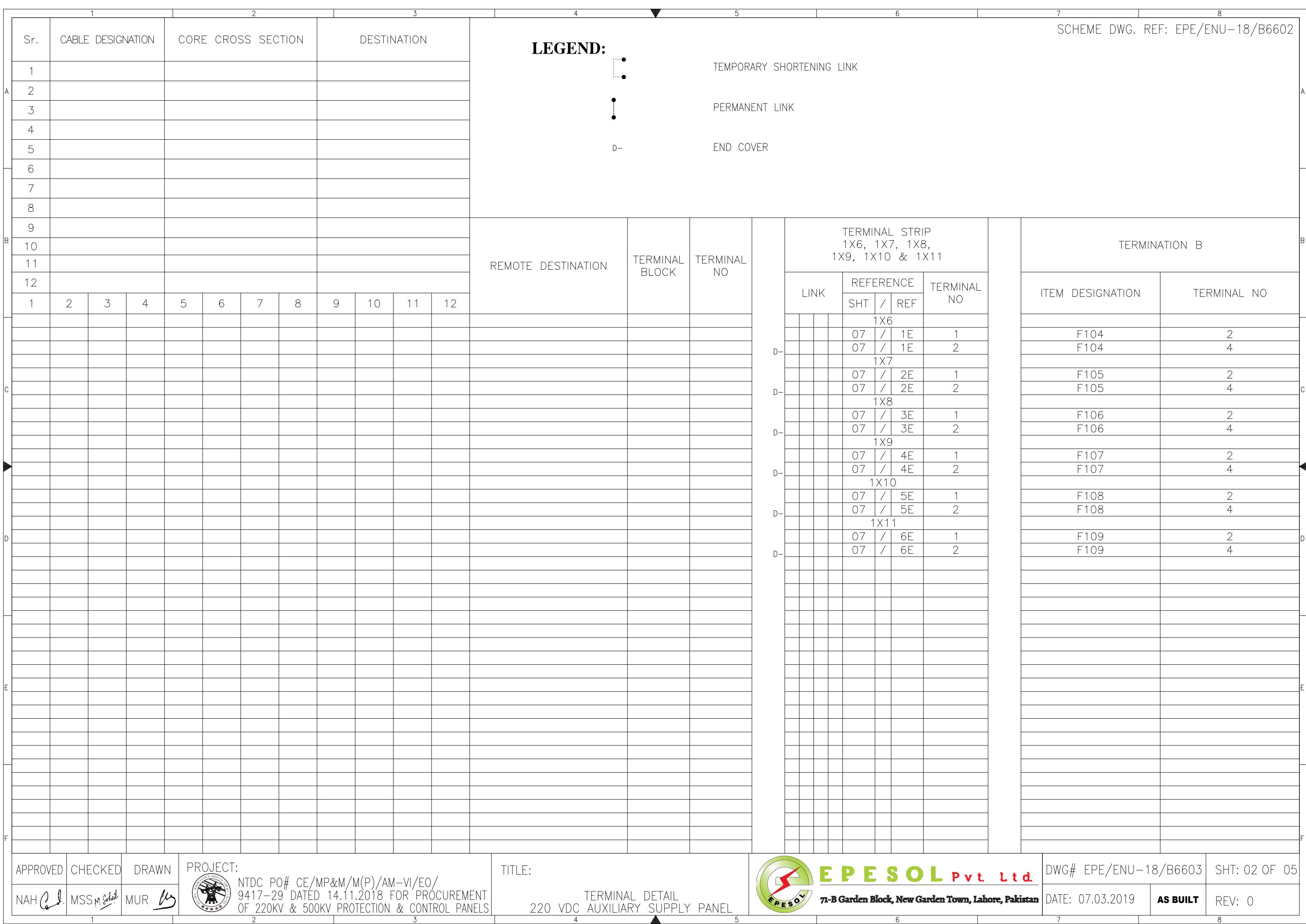


EPESOL Pvt. Ltd.
71-B Garden Block, New Garden Town, Lahore, Pakistan

DWG# EPE/ENU-18/B61602	SHT: 10a OF 10
DATE: 07.03.2019	AS BUILT

REV: 0

Sr.	CABLE DESIGNATION			CORE CROSS SECTION			DESTINATION			LEGEND:												SCHEME DWG. REF: EPE/ENU-18/B6602					
A	1	2	3	4	5	6	7	8	9	10	11	12															
B	9	10	11	12																							
C	1	2	3	4	5	6	7	8	9	10	11	12															
D																											
E																											
F																											
APPROVED				CHECKED			DRAWN			PROJECT: NTDC PO# CE/MP&M/M(P)/AM-VI/E0/ 9417-29 DATED 14.11.2018 FOR PROCUREMENT OF 220KV & 500KV PROTECTION & CONTROL PANELS												TITLE: TERMINAL DETAIL 220 VDC AUXILIARY SUPPLY PANEL			DWG# EPE/ENU-18/B6603	SHT: 01 OF 05	
NAH	MSS	MUR																									
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A				B			C			D												E			F		
1				2			3			4												5			6		
A																											



Sr.	CABLE DESIGNATION			CORE CROSS SECTION			DESTINATION			LEGEND:												SCHEME DWG. REF: EPE/ENU-18/B6602				
A	1	2	3	4	5	6	7	8	9	10	11	12														
B	9	10	11	12																						
C	1	2	3	4	5	6	7	8	9	10	11	12														
D																										
E																										
F																										
APPROVED				CHECKED			DRAWN			PROJECT: NTDC PO# CE/MP&M/M(P)/AM-VI/E0/ 9417-29 DATED 14.11.2018 FOR PROCUREMENT OF 220KV & 500KV PROTECTION & CONTROL PANELS												DWG# EPE/ENU-18/B6603	SHT: 03 OF 05			
NAH	Q	J	L	MSS	N	Sohail	MUR	Uy																		
TITLE: TERMINAL DETAIL 220 VDC AUXILIARY SUPPLY PANEL												E P E S O L P v t . L t d . 71-B Garden Block, New Garden Town, Lahore, Pakistan												DATE: 07.03.2019	AS BUILT	REV: 0
1	2	3	4	5	6	7	8	9	10	11	12															

LEGEND:



TEMPORARY SHORTENING LINK



PERMANENT LINK



END COVER

REMOTE DESTINATION

TERMINAL BLOCK

TERMINAL NO

TERMINAL STRIP
1X29, 1X25, 1X26, 1X27
1X12, 1X13, 1X14 & 1X15

LINK	REFERENCE		TERMINAL NO
	SHT	/	

			1X29
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			08 / 1E 1
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			08 / 1E 2
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			1X25
--	--	--	------

			08 / 2E 1
--	--	--	-----------

			08 / 2E 2
--	--	--	-----------

			1X26
--	--	--	------

			08 / 3E 1
--	--	--	-----------

			08 / 3E 2
--	--	--	-----------

			1X27
--	--	--	------

			08 / 4E 1
--	--	--	-----------

			08 / 4E 2
--	--	--	-----------

			1X12
--	--	--	------

			08 / 5E 1
--	--	--	-----------

			08 / 5E 2
--	--	--	-----------

			1X13
--	--	--	------

			08 / 6E 1
--	--	--	-----------

			08 / 6E 2
--	--	--	-----------

			1X14
--	--	--	------

			08 / 7E 1
--	--	--	-----------

			08 / 7E 2
--	--	--	-----------

			1X15
--	--	--	------

			08 / 8E 1
--	--	--	-----------

			08 / 8E 2
--	--	--	-----------

TERMINATION B

ITEM DESIGNATION	TERMINAL NO
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F301	2
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F301	4
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F203	2
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F203	4
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F204	2
------	---

F204	4
------	---

F205	2
------	---

F205	4
------	---

F110	2
------	---

F110	4
------	---

F111	2
------	---

F111	4
------	---

F12	2
-----	---

F12	4
-----	---

F13	2
-----	---

F13	4
-----	---



Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION	LEGEND:												SCHEME DWG. REF: EPE/ENU-18/B6602														
A	1																													
A	2																													
A	3																													
A	4																													
A	5																													
A	6																													
B	7																													
B	8																													
B	9															TERMINATION B														
B	10																													
B	11																													
B	12																													
c	1	2	3	4	5	6	7	8	9	10	11	12																		
c																														
c																														
D																														
D																														
E																														
F																														
APPROVED	CHECKED	DRAWN	PROJECT: NTDC PO# CE/MP&M/M(P)/AM-VI/E0/9417-29 DATED 14.11.2018 FOR PROCUREMENT OF 220KV & 500KV PROTECTION & CONTROL PANELS												TITLE: TERMINAL DETAIL 220 VDC AUXILIARY SUPPLY PANEL			EPESOL Pvt. Ltd. 71-B Garden Block, New Garden Town, Lahore, Pakistan			DWG# EPE/ENU-18/B6603 SHT: 04 OF 05									
NAH	MSS	MUR																			DATE: 07.03.2019 AS BUILT REV: 0									

Sr.	CABLE DESIGNATION	CORE CROSS SECTION	DESTINATION	
A	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
B	9			
	10			
	11			
	12			
	1	2	3	4
				5
				6
				7
				8
				9
				10
				11
				12
C				
D				
E				
F				

LEGEND:

	TEMPORARY SHORTENING LINK
	PERMANENT LINK
	END COVER

REMOTE DESTINATION	TERMINAL BLOCK	TERMINAL NO	TERMINAL STRIP X17			TERMINATION B	
			LINK	REFERENCE			TERMINAL NO
				SHT	/		
	09a	/	1B	1			
	09a	/	4B	2			
	09a	/	4B	3			
	09a	/	4D	4			
	09a	/	5B	5			
	09a	/	8B	6			
	09a	/	4D	7			
	09a	/	8D	8			
	10	/	3B	9			
	10	/	7B	10			
	10	/	3D	11			
	10	/	7D	12			
	10a	/	1D	13			
	10a	/	1B	14			
	10a	/	1B	15			
	10a	/	1C	16			
	10a	/	1D	17			
				18			
				19			
				20			