



# Grid Solutions

A GE and Alstom joint venture

# **220kV/132kV GIS SUBSTATION GHAZI ROAD , LAHORE**

# 132kV BUS BAR / CIRCUIT BREAKER FAIL PROTECTION PANEL SCHEMATIC DRAWINGS

## DOC / DWG REVIEW CODE

- A Approved, Issue IFC.
- B Approved with comments as noted, Issue IFC after incorporation of these comments.
- C Revise and re-submit for approval.
- D Rejected.

Signed .....

Date .....

Permission to proceed does not constitute acceptance of approval of design details, analysers, test methods or materials/  
selected by the CONTRACTOR and does not relieve the CONTRACTOR from full compliance with AGREEMENT obligations.

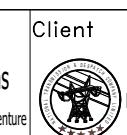
	1	2	3	4	5	6	7	8			
	PAGE NO.	SHEET NAME	SHEET DESCRIPTION			ISSUE / REVISION					
						A	B	C	D	E	F
A B C D E F	01	A	Cover Sheet					X	X		
	02	AA	List Of Contents					X	X		
	03	AB	Symbol and Legends					X	X		
	04	AC1	Component List					X	X		
	05	AD	Panel View					X	X		
	06	AE	Protection Logic					X	X		
	07	D	AC Supply Distribution Circuit					X	X		
	08	E	DC Supply Distribution Circuit					X	X		
	09-21	G1-G11,G13,G14	Relay CT Circuit					X	X		
	22	H	Relay Aux. Supply Circuit					X	X		
	23-48	H1-H26	Opto Input/Relay Output Circuit					X	X		
	49	I1	IN/OUT Circuit Diagram					X	X		
	50-51	I2-I3	Signaling					X	X		
	52	I4	Inter Relay Communication circuit					X	X		
	53-56	Z1-Z4	Component Diagram					X	X		
<i>All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.</i>											
0	AS BUILT	30.10.2018	ASJ	Manufacturer  <b>EPESOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  <b>Grid Solutions</b> A GE and Alstom joint venture	Client  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) LIST OF CONTANTS	Drawing no. P60194-E-EBB-SC-001		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type AA	Sheet no. 02
1	2	3	4	5	6	7	8				

	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
A		CIRCUIT BREAKER		MINIATURE CIRCUIT BREAKER		AUXILIARY CONTACTOR NO+NC	21	DISTANCE
B		SWITCH/ISOLATOR		SELECTOR SWITCH		AMMETER	24	OVEREXCITATION
C		EARTHING		LIMITED SWITCH		VOLTMETER	25	SYCHROCHECK
D		GIS TERMINATION		HUMIDITY & TEMPERATURE CONTROLLER		POWER FACTOR METER	49	THERMAL OVERLOAD
E		SF6 TO AIR BUSHING		PANEL HEATER		DIGITAL PANEL METER	50/51	PHASE OVERCURRENT
F		LINE TRAP		THREE PIN SOCKET		ACTIVE POWER METER	50N/51N	EARTH FAULT
G		SURGE ARRESTOR		INDICATION LIGHT		REACTIVE POWER METER	50BF	CIRCUIT BREAKER FAILURE
H		CURRENT TRANSFORMER		PUSH BUTTON		ENERGY METER	64	RESTRICTED EARTH FAULT
I		COUPLING CAPACITOR VOLTAGE TRANSFORMER		AUXILIARY CONTACTOR COIL			67N	DIRECTIONAL EARTH FAULT
J		POWER TRANSFORMER		POWER SUPPLY AC/DC			68	POWER SWING BLOCKING
K		AUTO TRANSFORMER		TERMINAL			78	OUT OF STEP
L				OPTO CONTACTS			79	AUTO-RECLOSING
M				RELAY CONTACTS			85	COMMUNICATION FAILURE
N				HOOTER			87T	TRAFO DIFFERENTIAL
O				AC BELL			87C	LOW IMPEDANCE DIFFERENTIAL CONNECTION
P							87BB	LOW IMPEDANCE DIFFERENTIAL BUSBAR

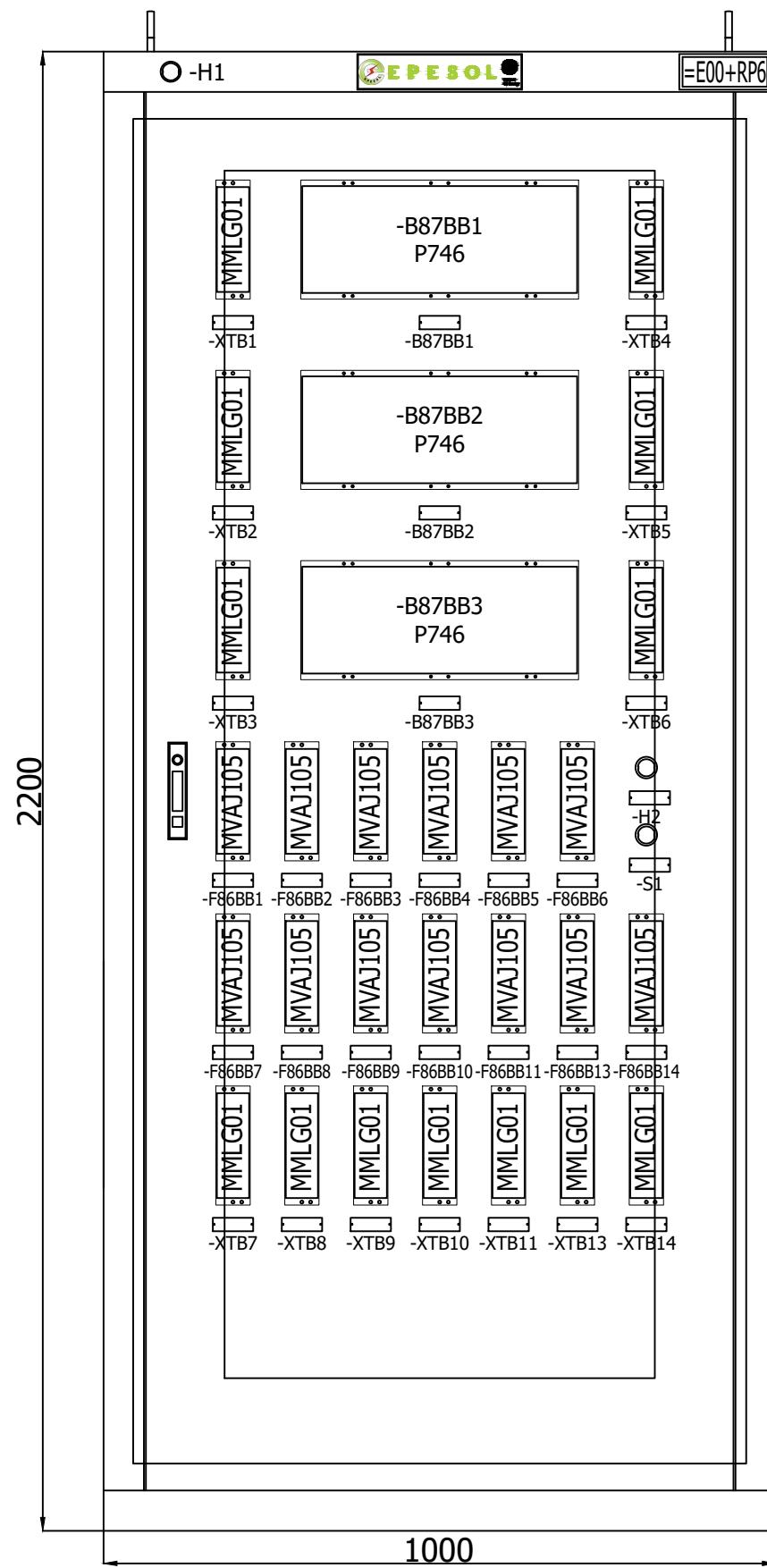
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) SYMBOLA AND LEGENDS	Drawing no. P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type AB Sheet no. 03
1	2	3	4	5	6	7	8		

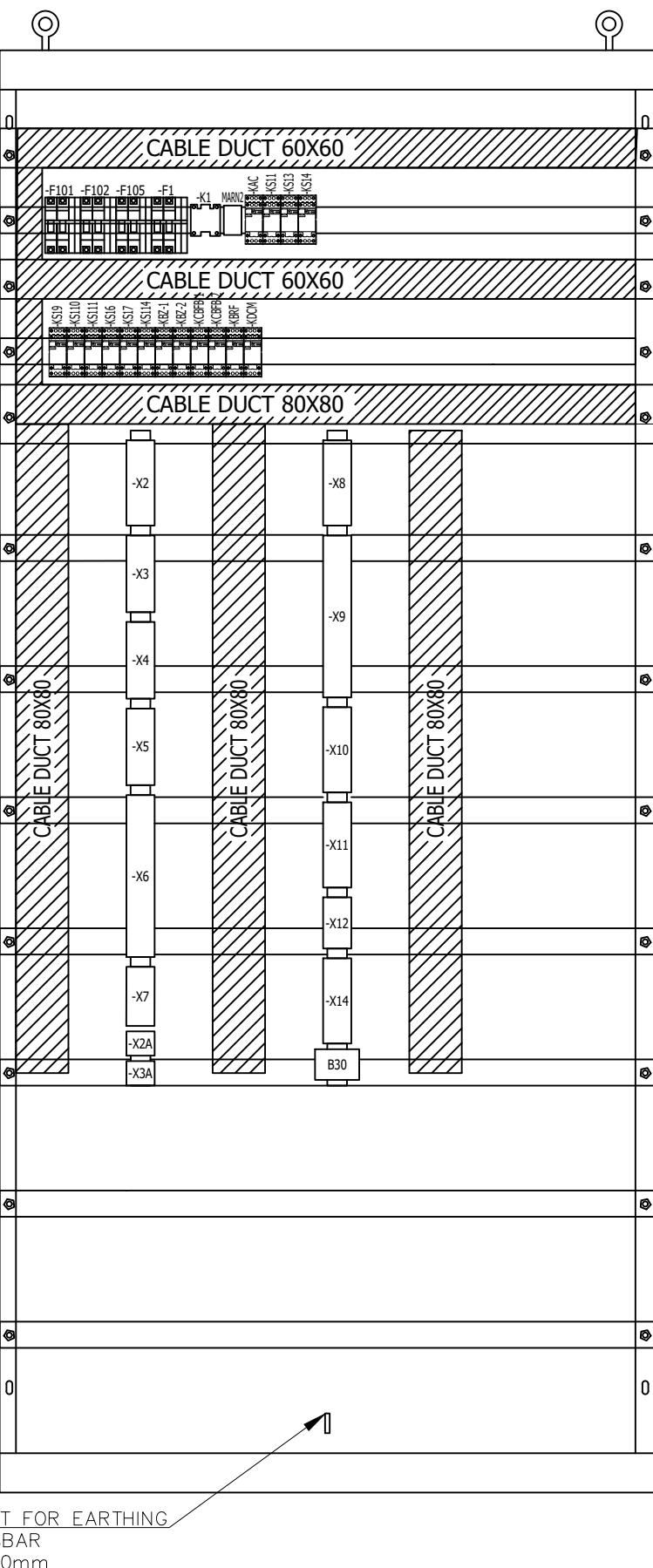
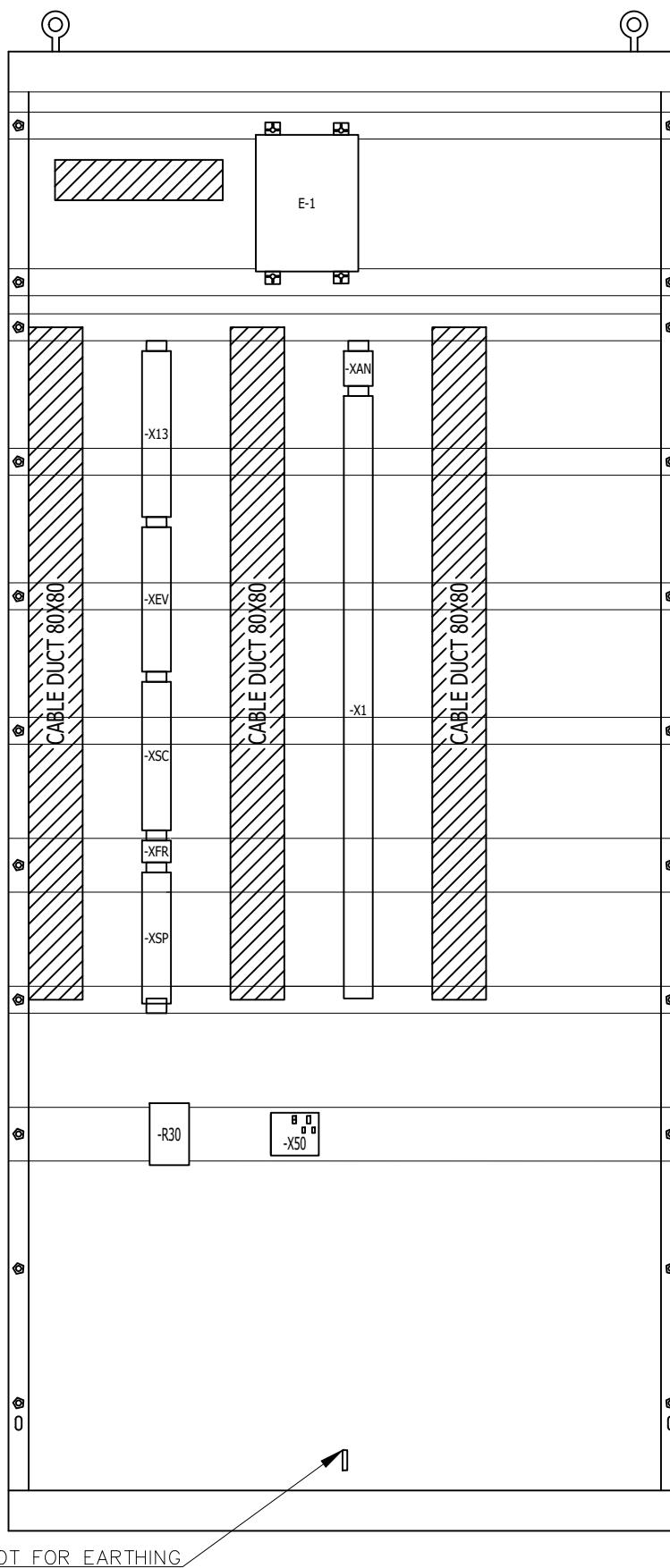
	1	2	3	4	5	6	7	8			
A	QTY.	DEVICE DESCRIPTION		DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION		MANUFACTURER		
	03	BUS BAR DIFFERENTIAL RELAY		TYPE: MiCOM P746, Cortec: P74691BK6M0030K  Supply: 110-250VDC / 100-240VAC, 3VT + 18CT (100-120V:1/5A) Inputs  40 Opto Inputs, 24 Relay Outputs			-F87BB1, -F87BB2, -F87BB3		GE		
B	13	TEST BLOCK		MMLG01, Cortec: MMLG01-R1AA9002D			-XTB1-11, -XTB13-14		GE		
C	13	LOCKOUT RELAY (HAND/ELECTRICAL RESET)		MVAJ105, Cortec: MVAJ105-RA0802A, Supply: 110-125VDC, 8 NO + 2 NC Contacts			-F86BB1 to F86BB11,-F86BB13,-F86BB14		GE		
D	02	CONTROL MCB - PANEL LIGHT & HEATER		2-Pole, Ratings: 2A, 240VAC, 6kA @ 240VAC, 2 C/O Contacts, Ord: G62C02+CAH(2)			-F101, -F102		GE		
E	01	CONTROL ELCB - PANEL SOCKET		2-Pole, Ratings: 16A, 30mA, 240VAC, 10kA @ 240VAC, 2 C/O Contacts, Ord: DM100C16/030+CAH(2)			-F105		GE		
F	01	CONTROL MCB - DC DISTRIBUTION		2-Pole, Ratings: 4A, 110VDC, 10kA @ 110VDC, 2 C/O Contacts, Ord: EP102UCC04+CAH(2)			-F1		GE		
G	15	AUXILIARY CONTACTOR		Coil Voltage: 125VDC, DIODE, 4 C/O Contacts, Ord: PRC4M40DCKL			-KAC, -KS11, -KS13, -KS14, -KS16, -KS17, -KS19, -KS110, -KS111, -KS114, -KBZ1, -KBZ2, -KCBFB1, -KCBFB2, -KBRF, -KDCM		GE		
H	01	AUXILIARY CONTACTOR - SUPPLY CHANGEOVER		Coil Voltage: 110VDC, 3 NO + 3 NC Contacts, Ord: MCRC022ATWJ+MARN211AT			-K1		GE		
I	02	AUXILIARY CONTACTOR		Coil Voltage: 240VAC, 4 C/O Contacts, Ord: PRC4M40ANL			-KDC, -KACM		GE		
J	01	SELECTOR SWITCH - BUSBAR PROTECTION IN/OUT		2-Postion (IN-OUT), 110VDC, Ord: YS-AR-2-2-44-K-B-D			-S1		YONGSUNG		
K	01	INDICATION LIGHT		Type: Integrated LED, Color : RED , Supply : 110VDC, Ord: YS-PL-2-DL-12-R-W			-H2		YONGSUNG		
L	01	INDICATION LIGHT		Type: Integrated LED, Color : RED , Supply : 240VAC @ 50Hz, Ord: YS-PL-2-AL-22-R-W			-H1		YONGSUNG		
M	01	PANEL LIGHT WITH DOOR SWITCH		240VAC @ 50Hz, 5W, with Door Limit Sw. Ord: YSP3315GW-B + YS-T8-30-5W			-H30, -S23		YONGSUNG		
N	01	THREE PIN SOCKET		1N+PE, 16A, 240VAC @ 50Hz			-X50		LEAR		
O	01	PANEL HEATER		240VAC @ 50Hz, 50W			-R30		ELABS		
P	0	AS BUILT		30.10.2018	ASJ	Manufacturer  <b>EPESOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) COMPONENT LIST	Drawing no. P60194-E-EBB-SC-001
Q	REV.	DESCRIPTION		DATE	DRAWER				Project no. P-60194	Sheet type AC	Sheet no. 04

	1	2	3	4	5	6	7	8			
	QTY.	DEVICE DESCRIPTION	DEVICE SPECIFICATIONS DEVICE TYPE ; TECHNICAL DATA / SPECIFICATIONS			DEVICE DESIGNITION	MANUFACTURER				
A	01	ETHERNET SWITCH	Type: ML810-125S-P-C1, 4x10/100 RJ45 ethernet ports, 110VDC			-E1	GE				
	01	HUMIDITY & TEMPERATURE CONTROLLER	40-90%RH, 25-50°C, 230VAC @ 50Hz			-B30	ELABS				
	112	TERMINAL BLOCKS FOR CT's	SCB-6			-X1	CABUR				
	24	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E01	CBD-4			-X2	CABUR				
	22	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E02	CBD-4			-X3	CABUR				
	24	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E03	CBD-4			-X4	CABUR				
B	24	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E04	CBD-4			-X5	CABUR				
	46	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E05	CBD-4			-X6	CABUR				
	24	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E06	CBD-4			-X7	CABUR				
	24	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E07	CBD-4			-X8	CABUR				
	46	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E08	CBD-4			-X9	CABUR				
	24	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E09	CBD-4			-X10	CABUR				
C	24	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E10	CBD-4			-X11	CABUR				
	16	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E11	CBD-4			-X12	CABUR				
	46	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E13	CBD-4			-X13	CABUR				
	24	TERMINAL BLOCKS FOR INPUT/OUTPUT CIRCUIT =E14	CBD-4			-X14	CABUR				
	33	TERMINAL BLOCKS FOR EVENT RECORDER	CBD-4			-XEV	CABUR				
	8	TERMINAL BLOCKS FOR ANNUNCIATOR	CBD-4			-XAN	CABUR				
D	34	TERMINAL BLOCKS FOR SCADA	CBD-4			-XSC	CABUR				
	5	TERMINAL BLOCKS FOR FAULT RECORDER	CBD-4			-XFR	CABUR				
	30	SPARE TERMINAL BLOCKS	CBD-4			-XSP	CABUR				
	0	AS BUILT	30.10.2018	ASJ	Manufacturer  <b>EPESOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  <b>Grid Solutions</b> A GE and Alstom joint venture	Client  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) COMPONENT LIST	Drawing no. P60194-E-EBB-SC-001	
	REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type AC1	Sheet no. 04a
	1	2	3	4	5	6	7	8			

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

FRONT VIEW WITH DOOR

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

LEFT SIDE VIEWRIGHT SIDE VIEW

NOTE:  
REVISED AS PER NTDC COMMENTS (REV-01)

0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) PANEL VIEW	Drawing no. P60194-E-EBB-SC-001		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type AD	Sheet no. 05
1	2	3	4	5	6	7	8				

1

1

1

4

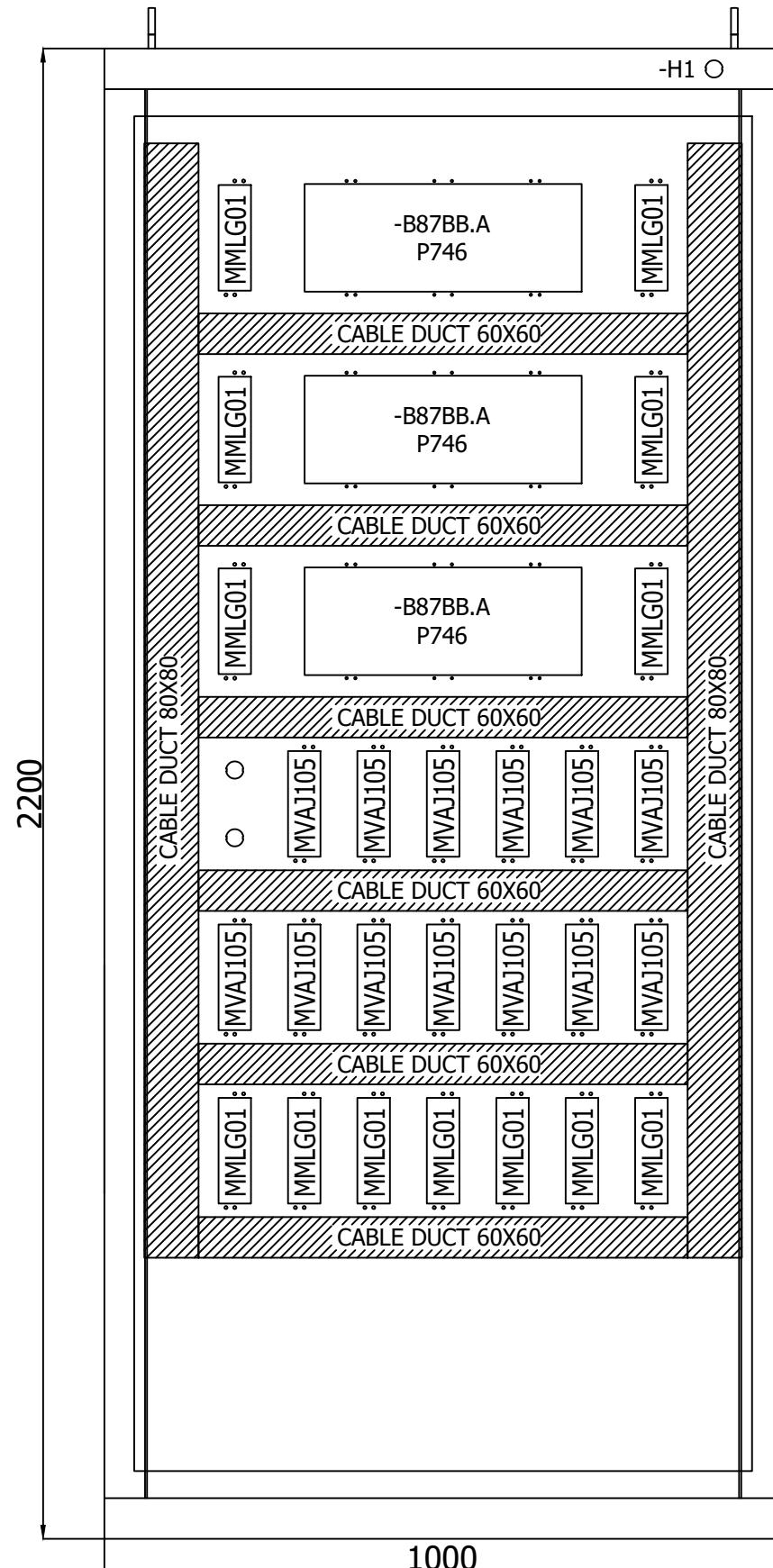
5

6

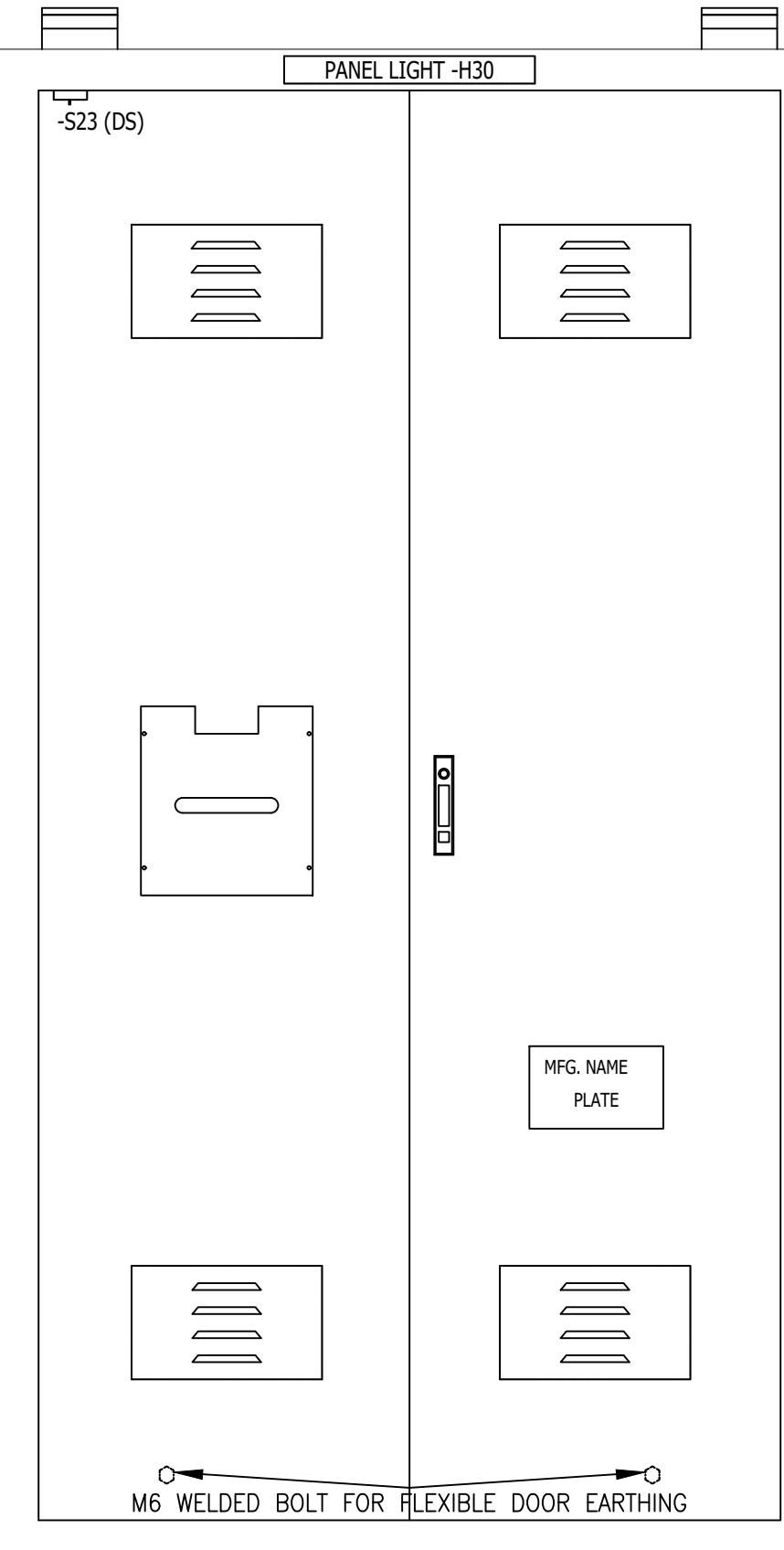
1

8

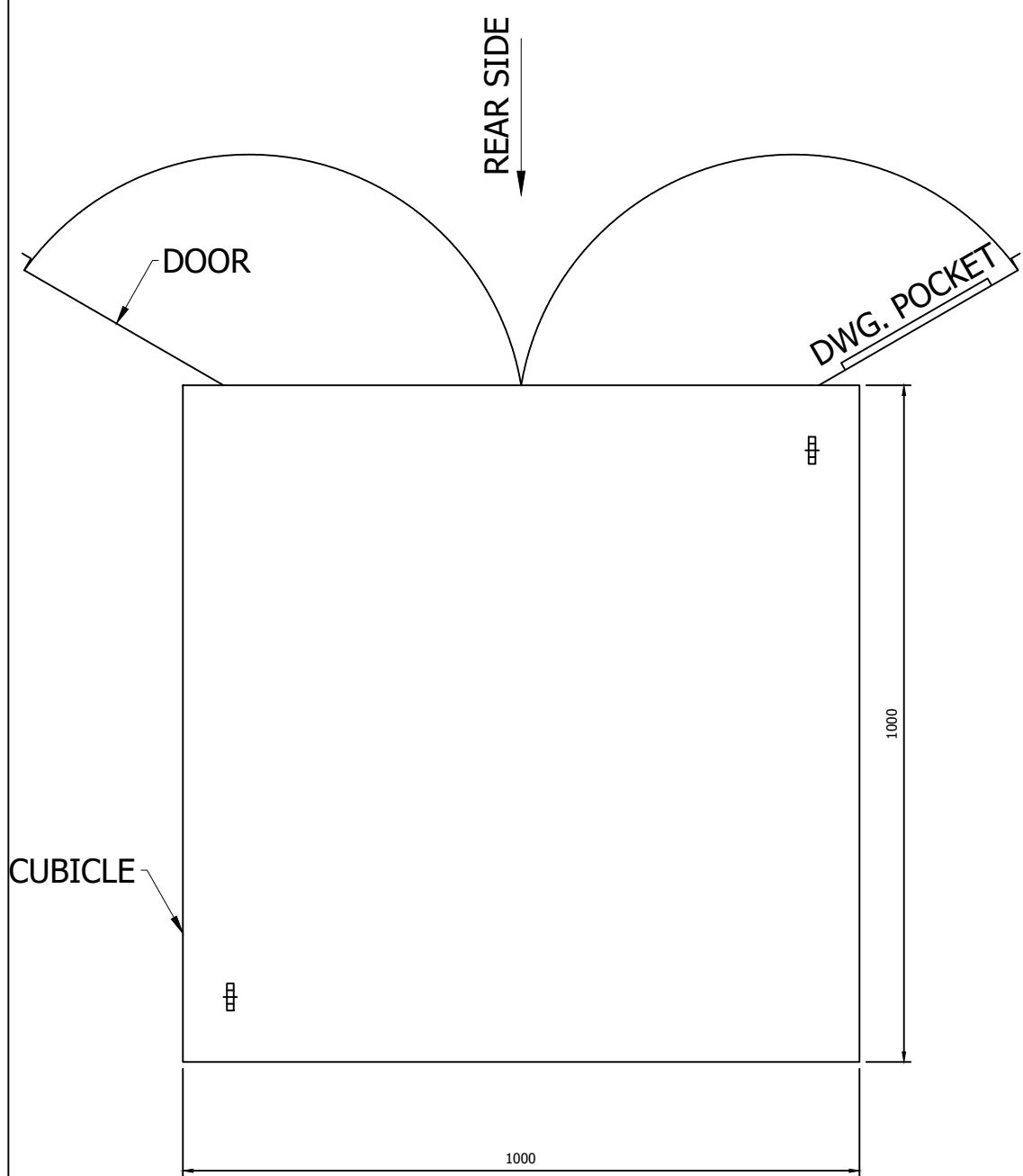
## BACK VIEW WITH DOOR



## BACK VIEW WITH DOOR

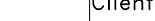


## TOP VIEW



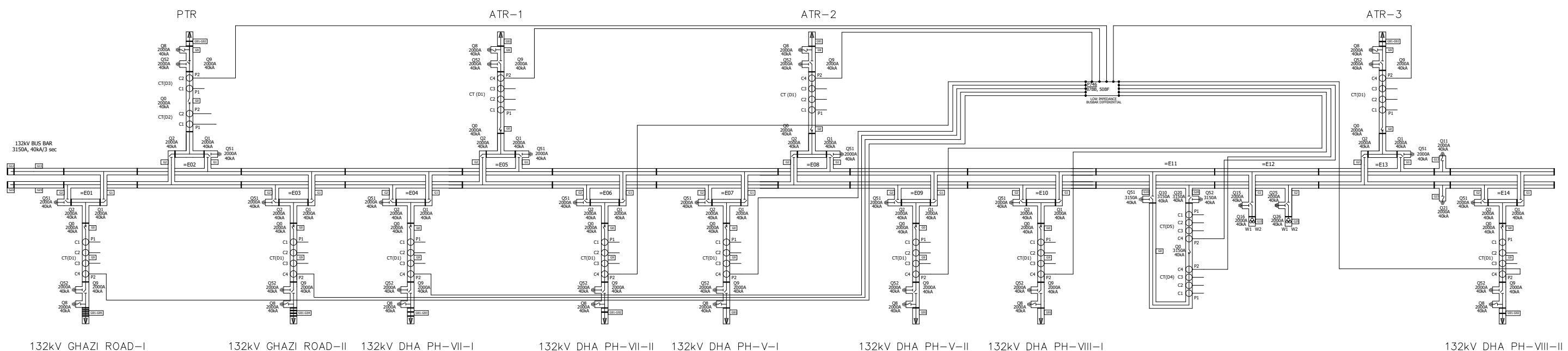
#### **NOTE:-**

- 1 - PANEL DIMENSION: 1000 x 1000 x 2200mm (WxDxH)
  - 2 - COLOR : RAL 7032
  - 3 - SHEET THICKNESS : 2-2.5 mm
  - 4- PROTECTION CLASS : IP-51 (INDOOR TYPE)
  - 5 - ALL DOOR FITTED WITH 16mm EARTH STRAP & INSULATED WITH GREEN-YELLOW COLOUR.

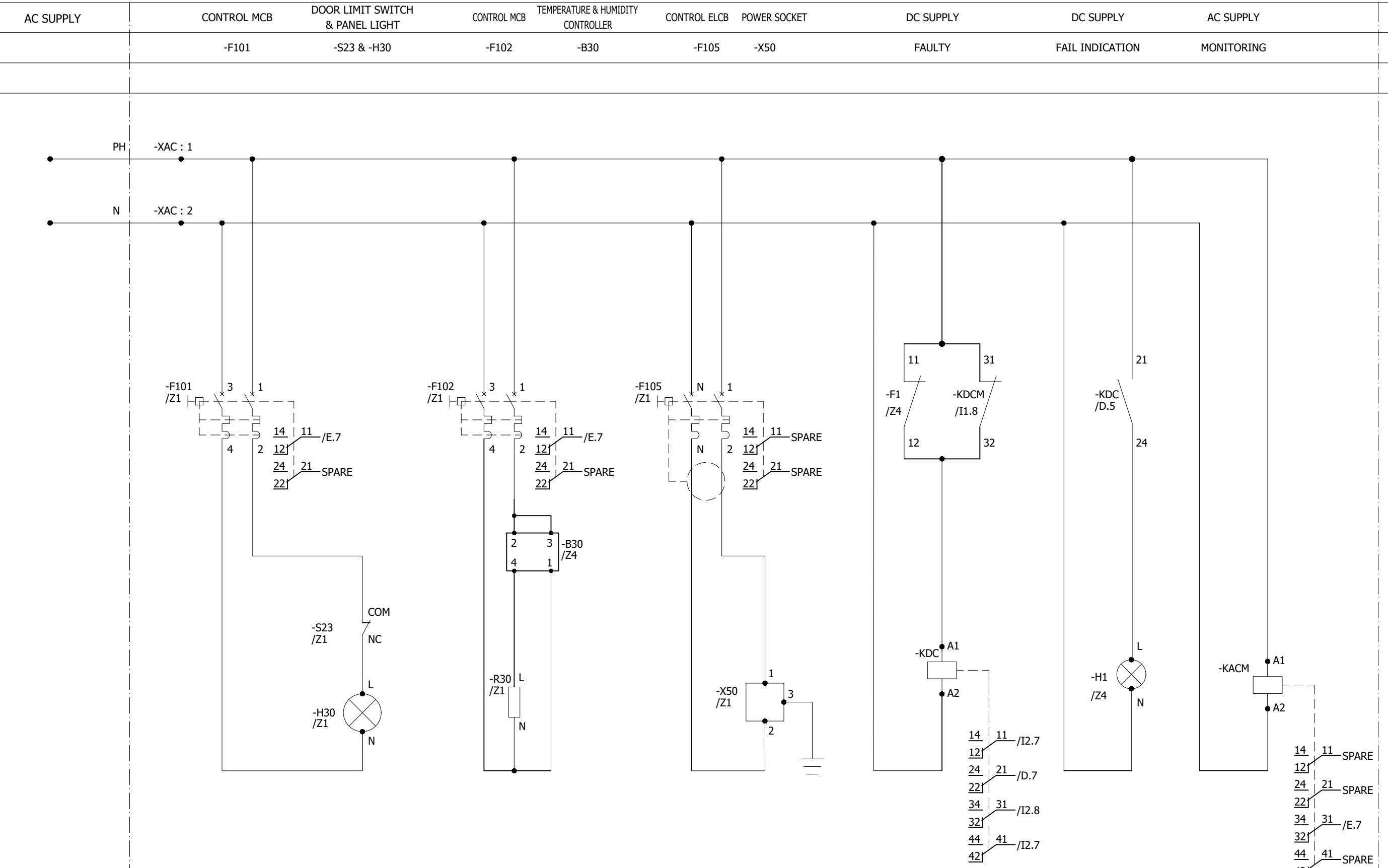
0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) PANEL VIEW	Drawing no. P60194-E-EBB-SC-001		
									Project no.	Sheet type	
									P-60194	AD	
REV.	DESCRIPTION	DATE	DRAWER						Sheet no.	05	

A  
B  
C  
D  
E  
F

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

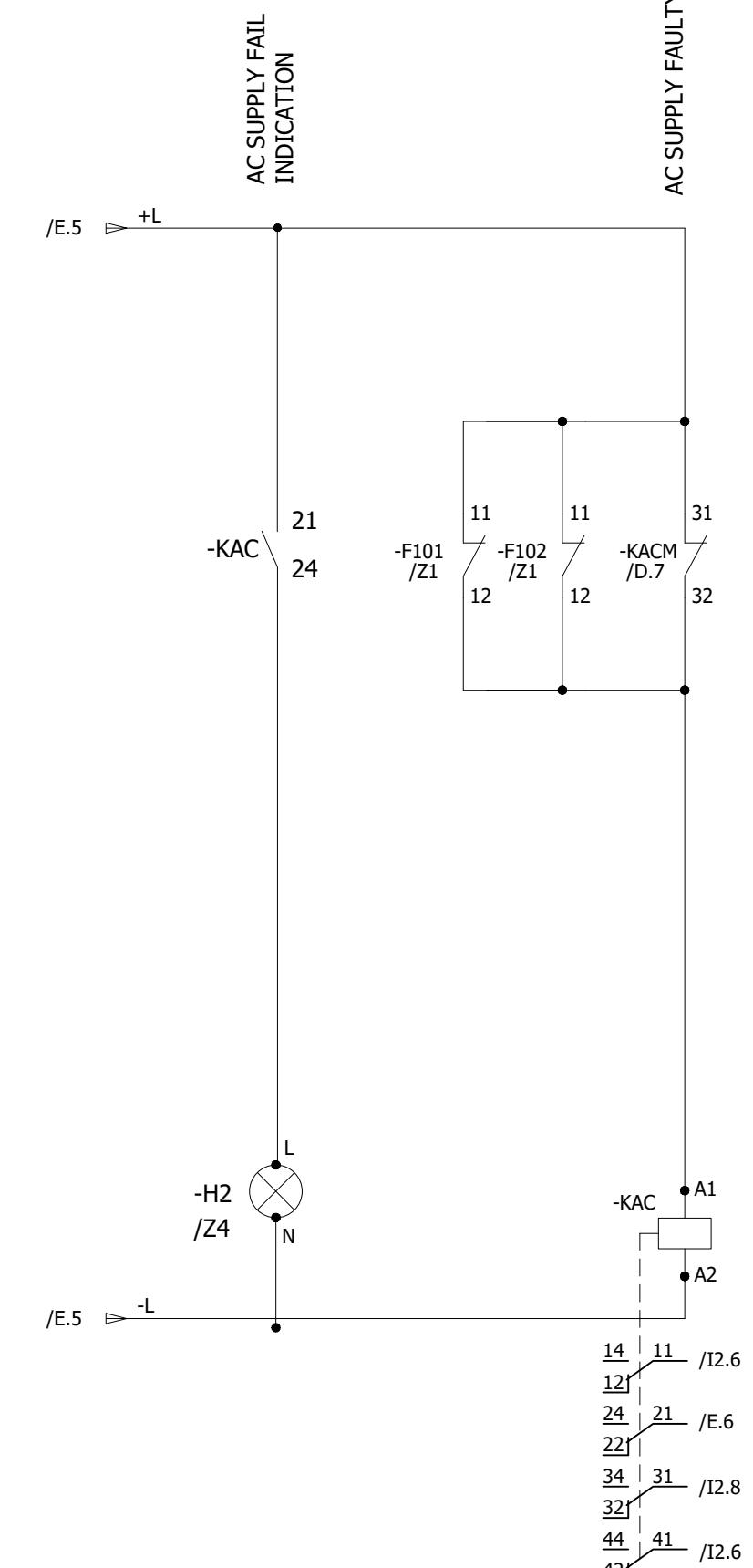
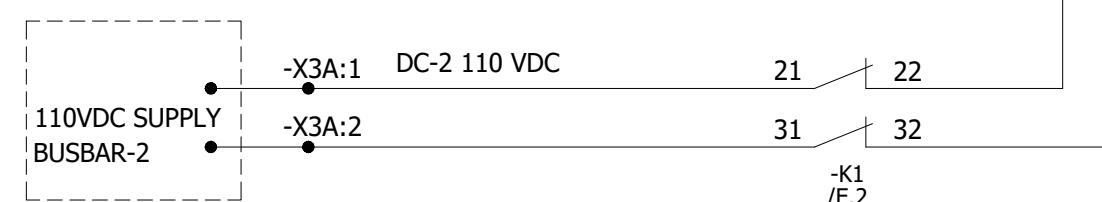
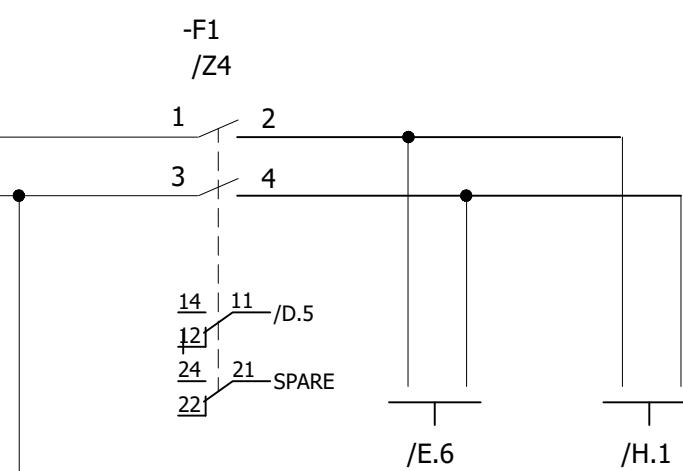
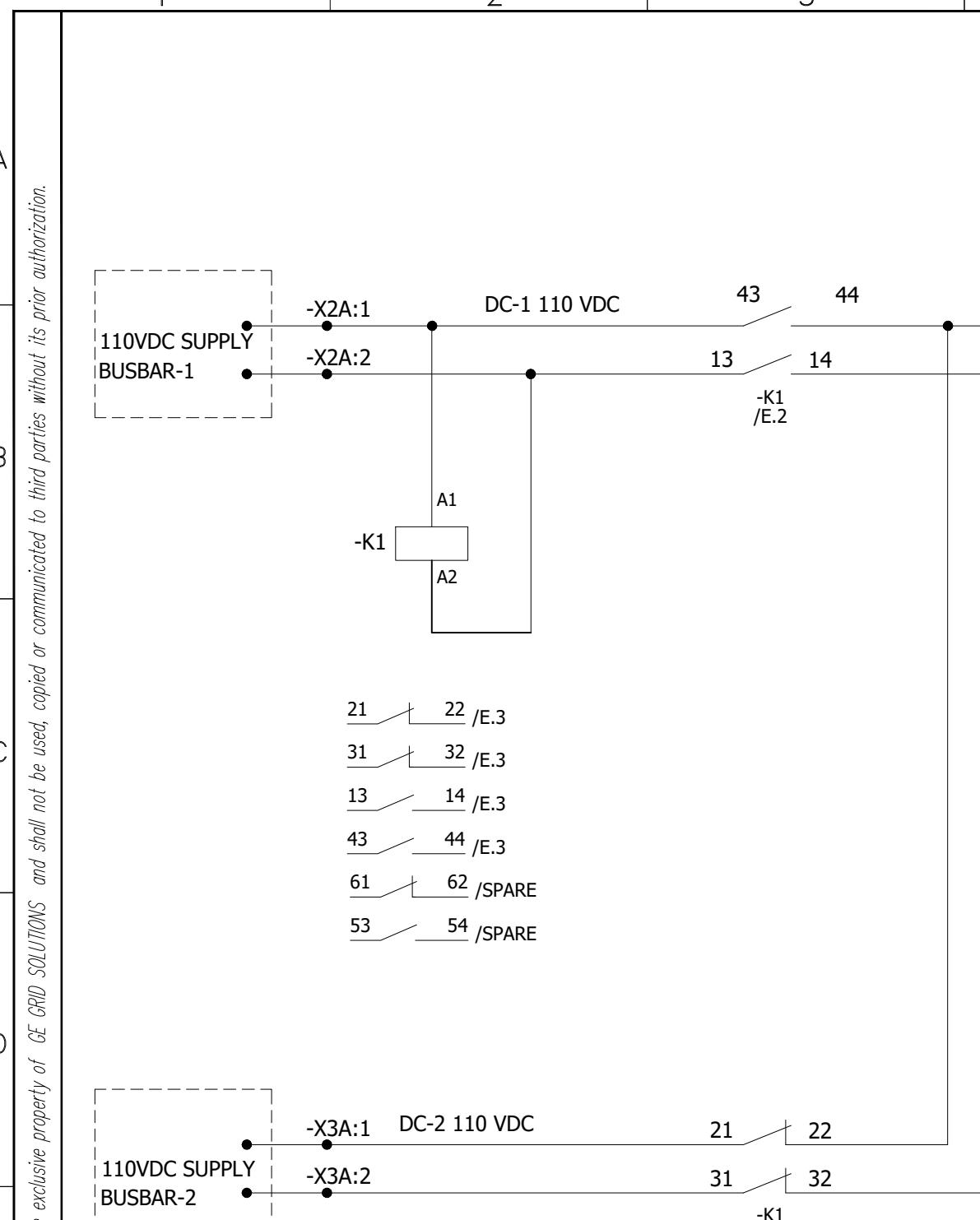


All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer <b>EPESOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor <b>Grid Solutions</b> A GE and Alstom joint venture	Client <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) AC SUPPLY DISTRIBUTION CIRCUIT	Drawing no. P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type D
									Sheet no. 07

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

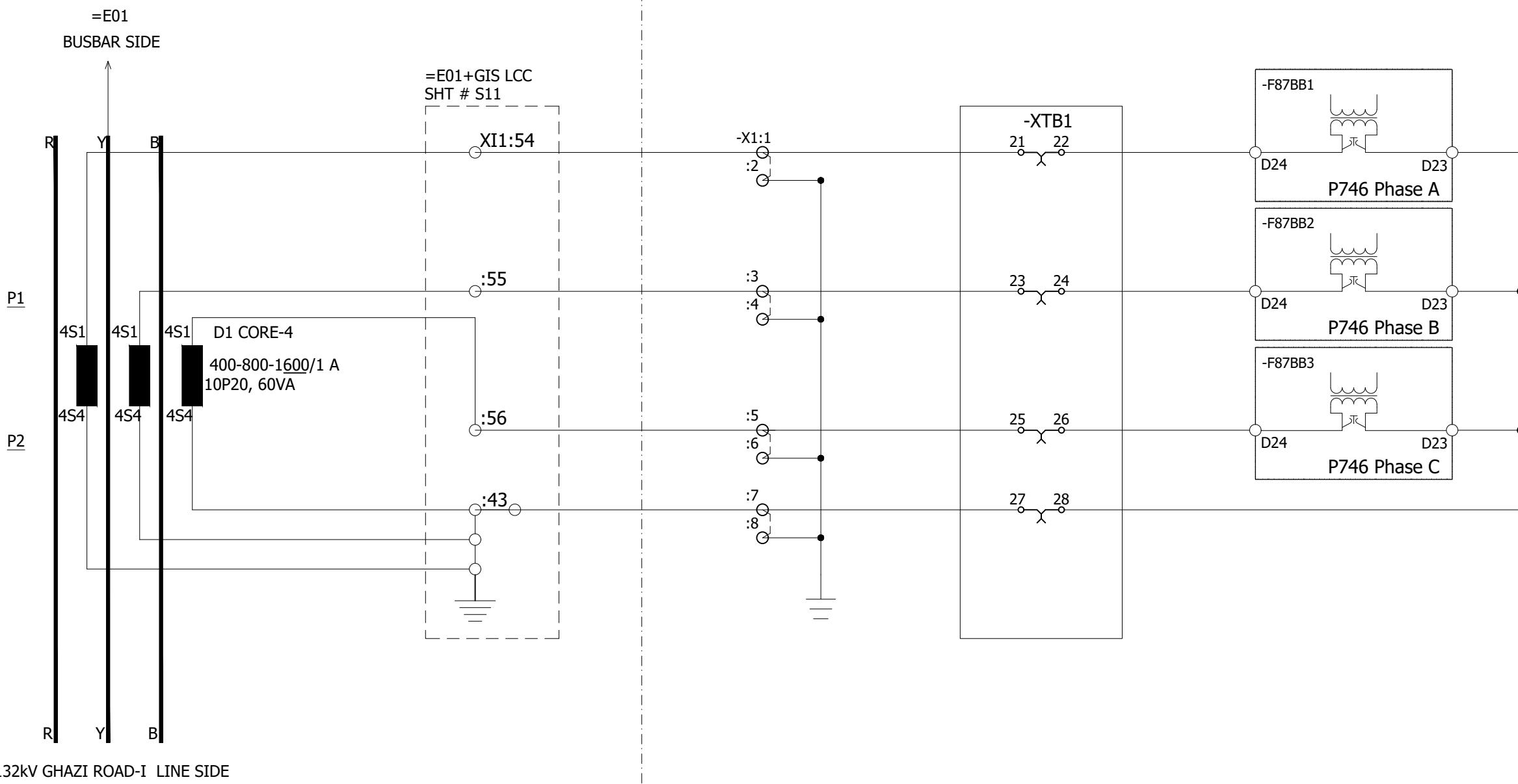


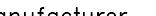
0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
REV.	DESCRIPTION	DATE	DRAWER	EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	132KV BUS BAR RELAY PANEL (=E00+RP6) DC SUPPLY DISTRIBUTION CIRCUIT	P-60194-E-EBB-SC-001
									Project no. P-60194 Sheet type E Sheet no. 08

1                    2                    3                    4                    5                    6                    7                    8

GIS ROO

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

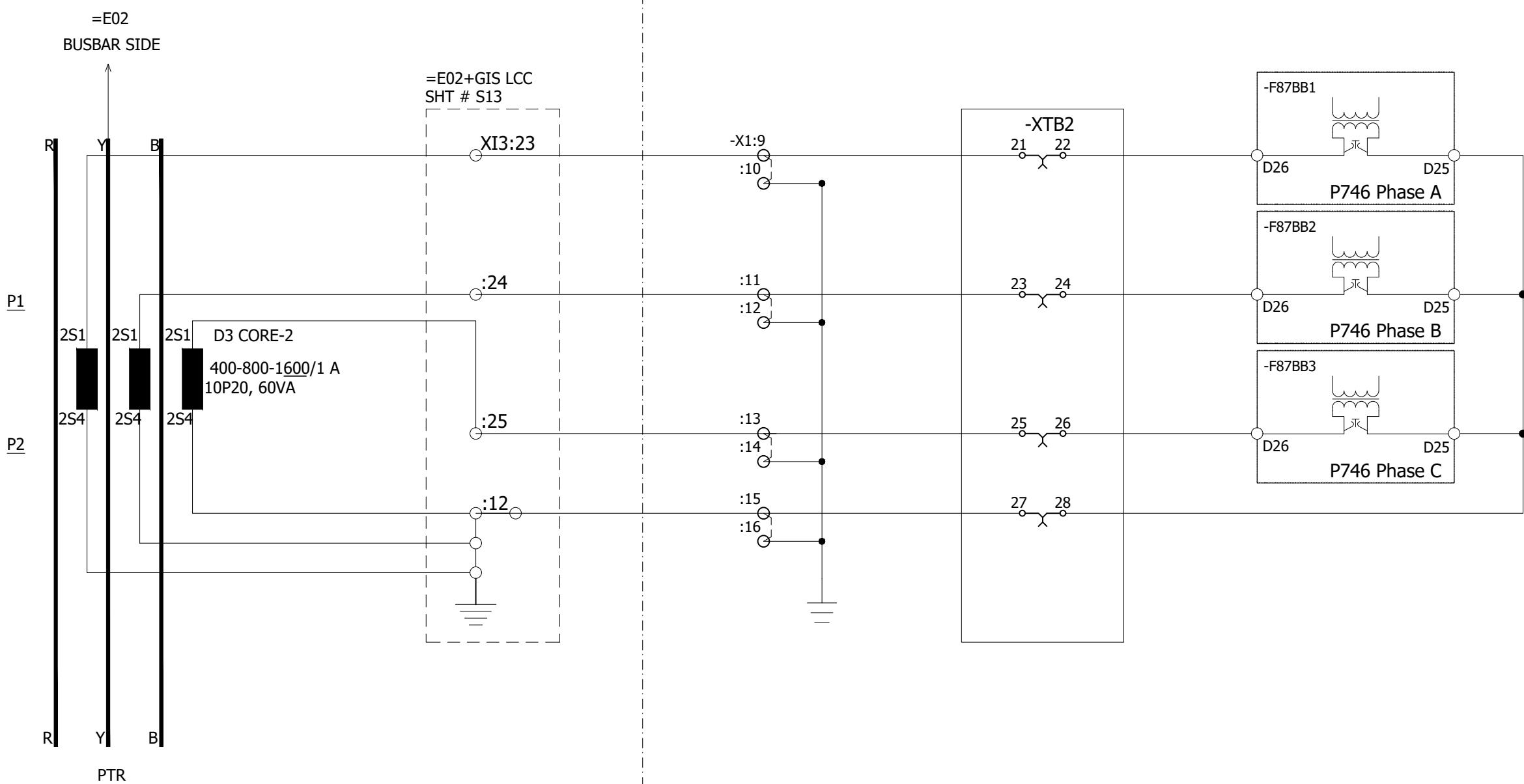


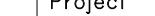
0	AS BUILT	30.10.2018	ASJ	Manufacturer  <b>EPESOL</b> 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  <b>Grid Solutions</b> A GE and Alstom joint venture	Client  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
									Project no. P-60194
									Sheet type G1
REV.	DESCRIPTION	DATE	DRAWER						Sheet no. 09

1                    2                    3                    4                    5                    6                    7                    8

GIS ROO

All information contained in this document is the exclusive property of GE GRAN SOLUCIONES and shall not be used copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer  <b>EPESOL</b> 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  <b>Grid Solutions</b> A GE and Alstom joint venture	Client  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001	
									Project no. P-60194	
REV.	DESCRIPTION	DATE	DRAWER						Sheet type G2	Sheet no. 10

1

2

3

4

5

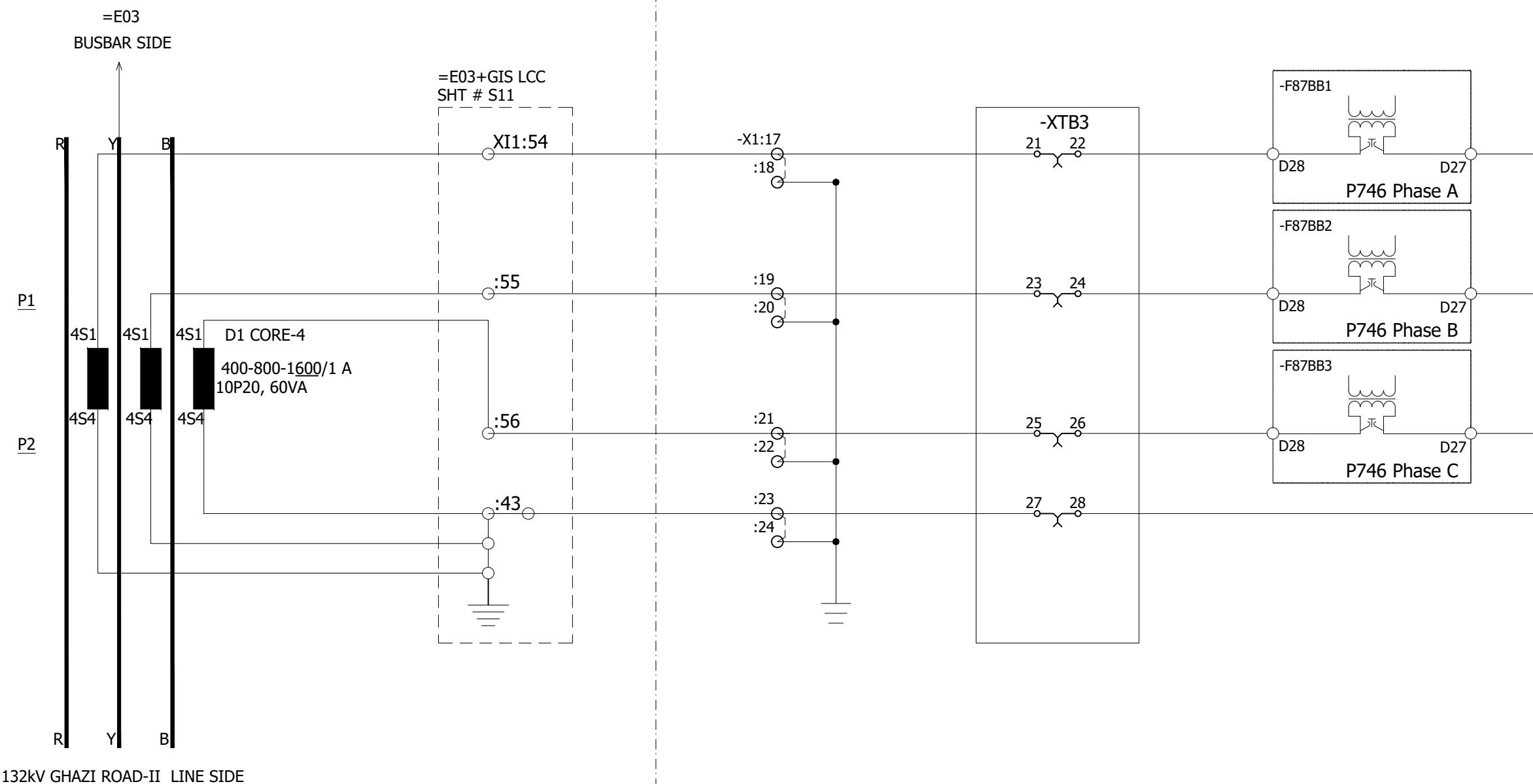
6

7

8

## GIS ROOM

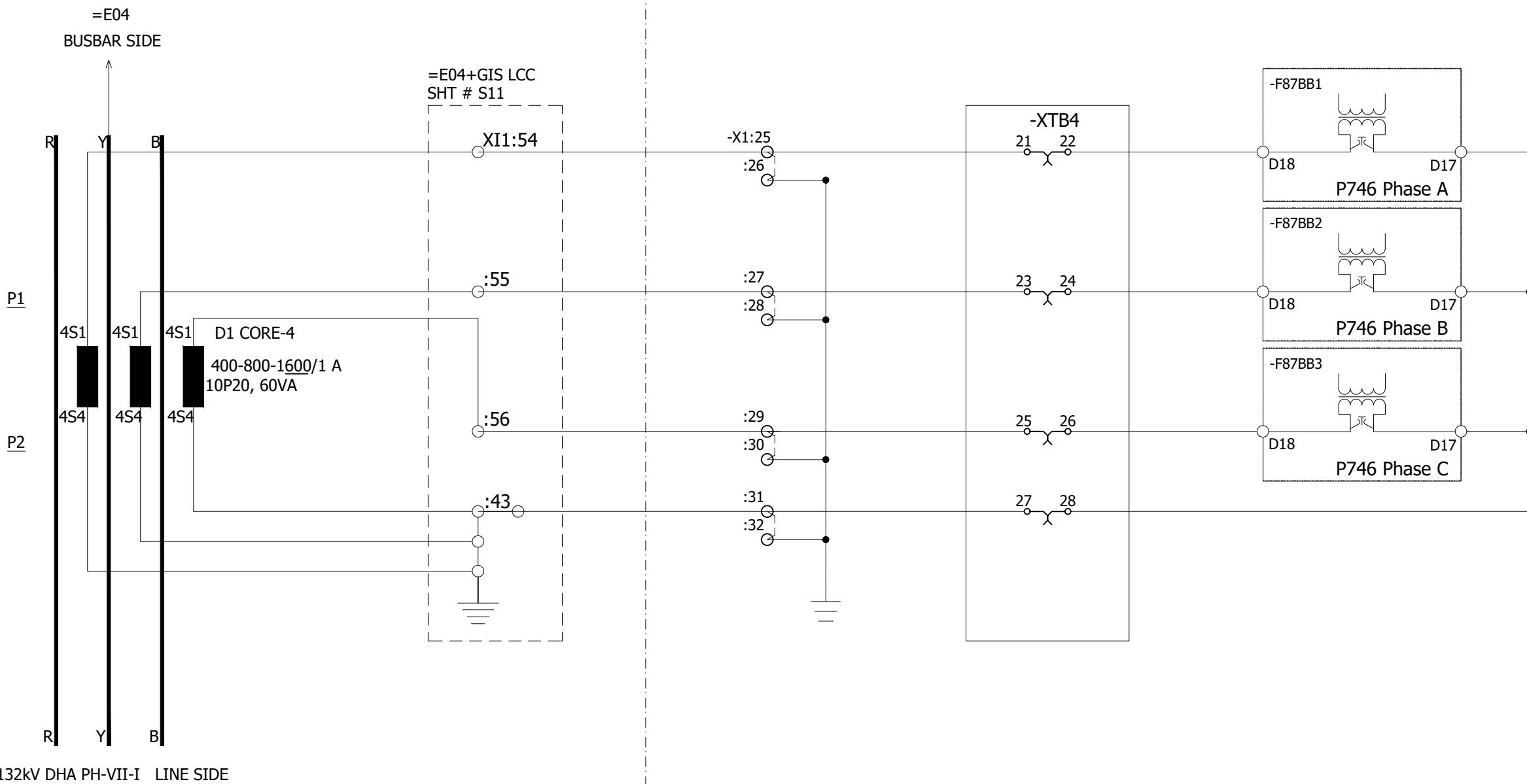
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type G3	Sheet no. 11
1	2	3	4	5	6	7	8				

# GIS ROOM

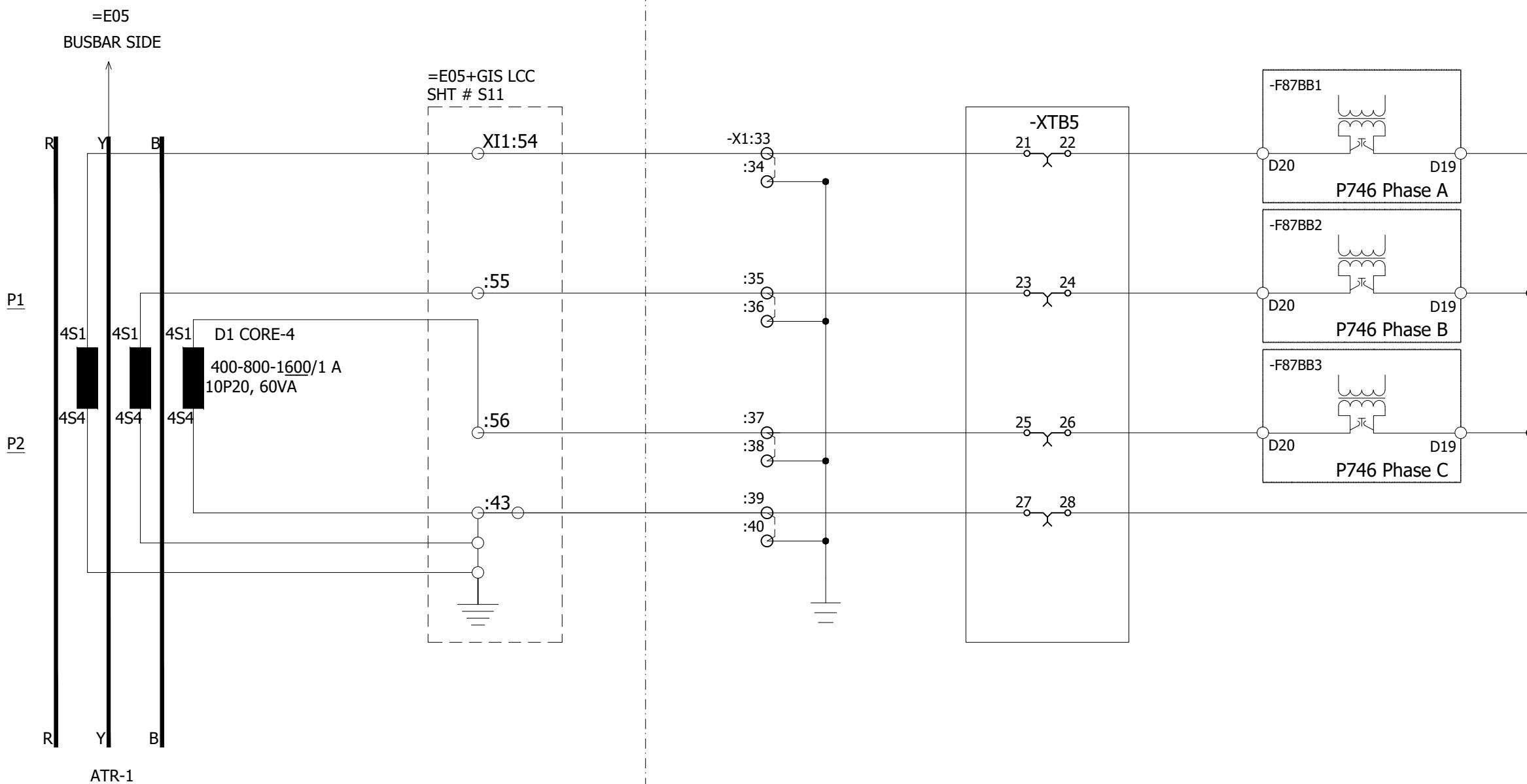
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer <b>EPE SOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor <b>Grid Solutions</b> A GE and Alstom joint venture	Client <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type G4
									Sheet no. 12

**GIS ROOM**

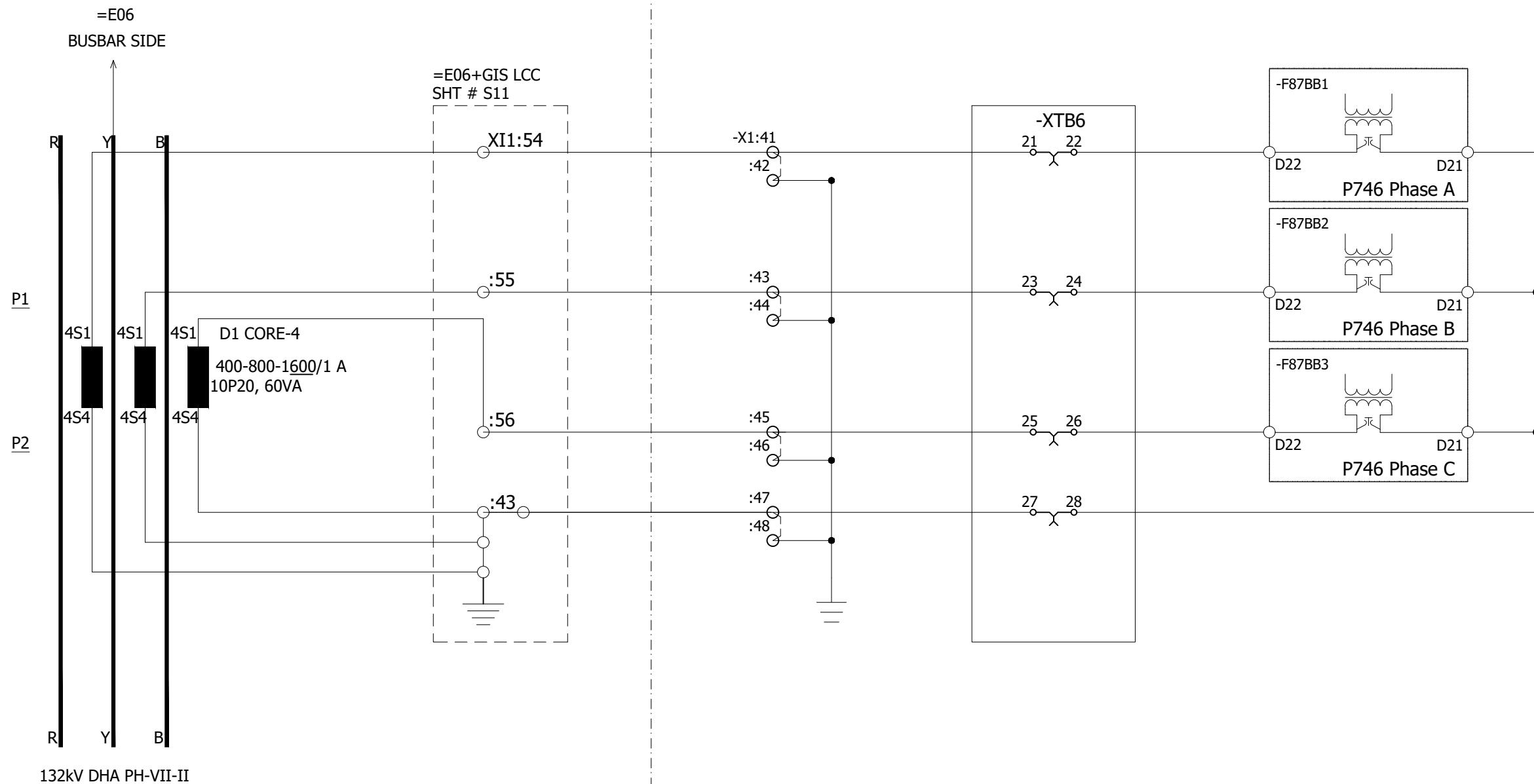
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type G5	Sheet no. 13
1	2	3	4	5	6	7	8				

**GIS ROOM**

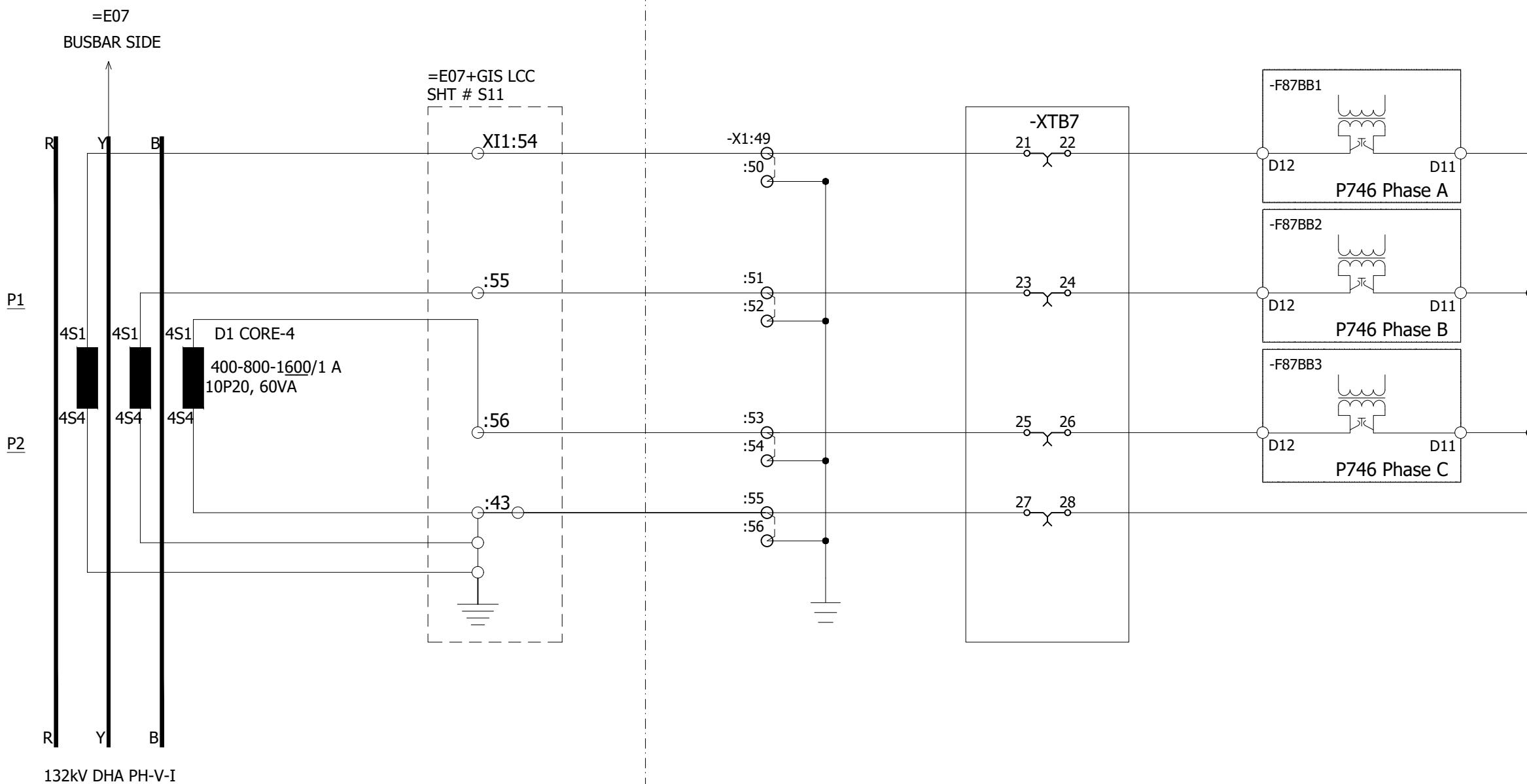
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
C									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type G6

**GIS ROOM**

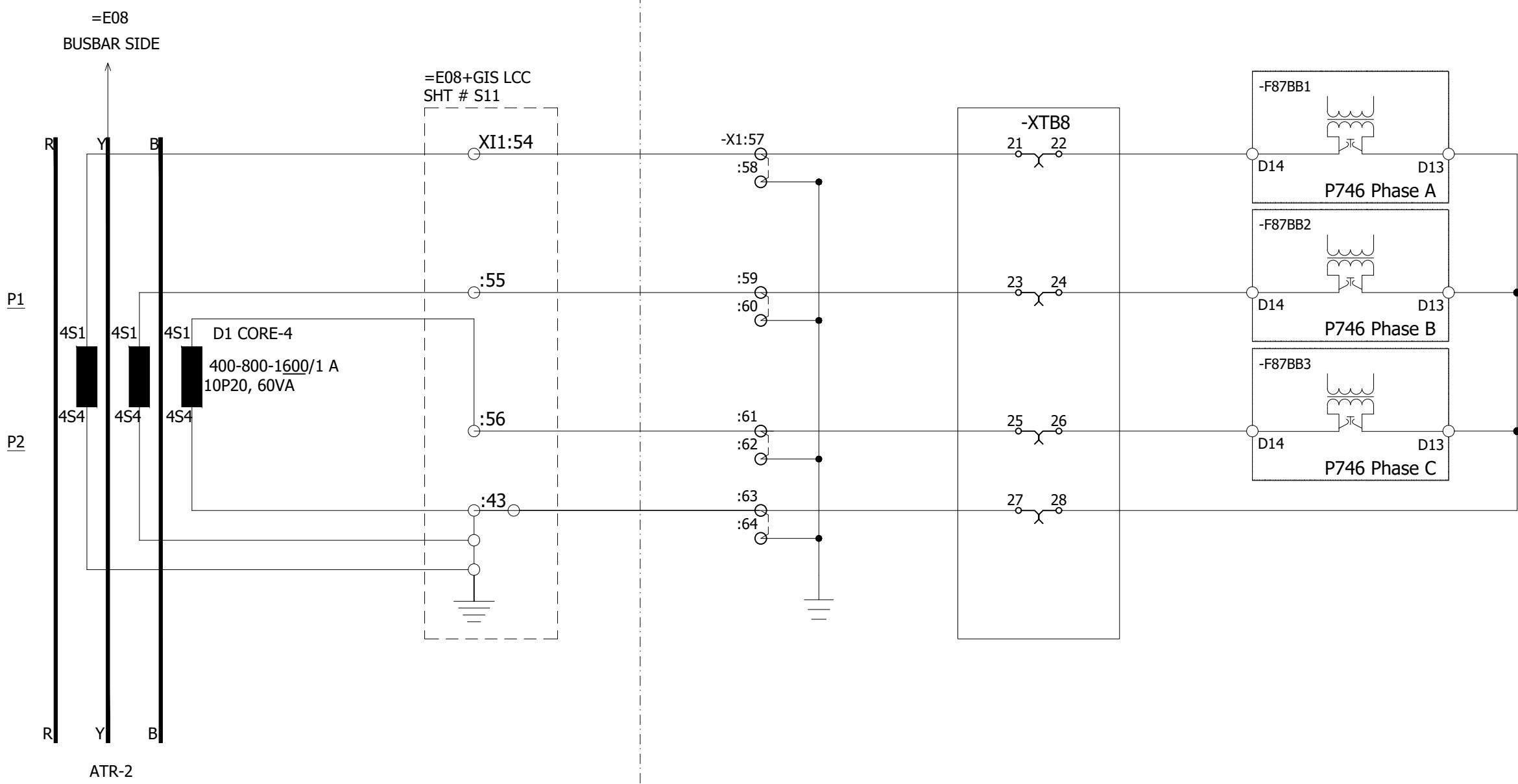
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

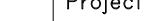


0	AS BUILT	30.10.2018	ASJ	Manufacturer <b>EPE SOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor <b>Grid Solutions</b> A GE and Alstom joint venture	Client <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
									Project no. P-60194
									Sheet type G7
	DESCRIPTION	DATE	DRAWER						Sheet no. 15

GIS ROO

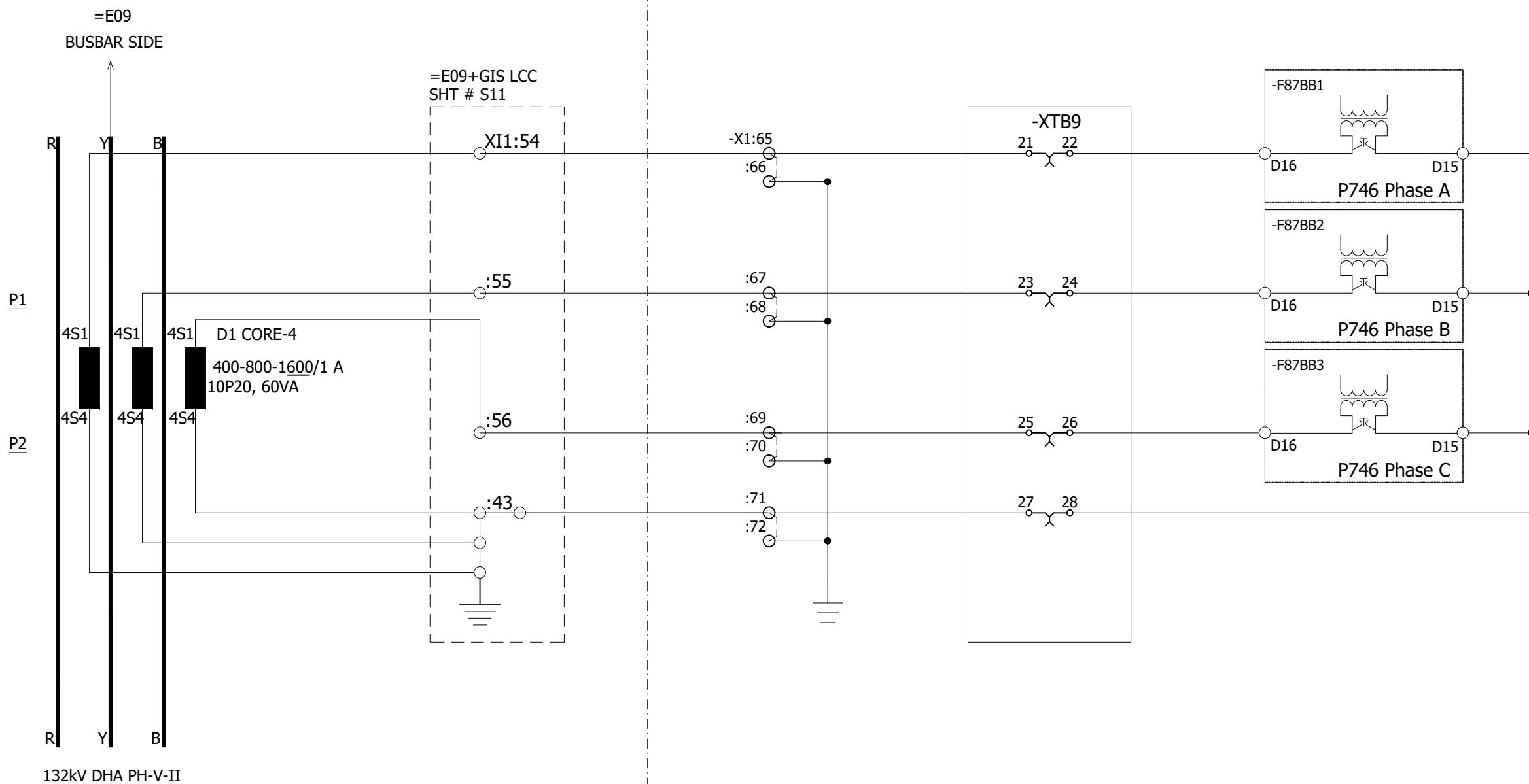
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	<b>Manufacturer</b>  <b>EPESOL</b> 21-B Garden Block, New Garden Town, Lahore, Pakistan	<b>Contractor</b>  <b>Grid Solutions</b> <small>A GE and Alstom joint venture</small>	<b>Client</b>  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED</b> <small>(NTDC-WAPDA)</small>	<b>Project</b> 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	<b>Title</b> 132kV BUS BAR RELAY PANEL <small>(=E00+RP6)</small> RELAY CT CIRCUIT	<b>Drawing no.</b> <b>P60194-E-EBB-SC-001</b>
REV.	DESCRIPTION	DATE	DRAWER						
1	S	7	4	5	6	8	9	10	G

**GIS ROOM**

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

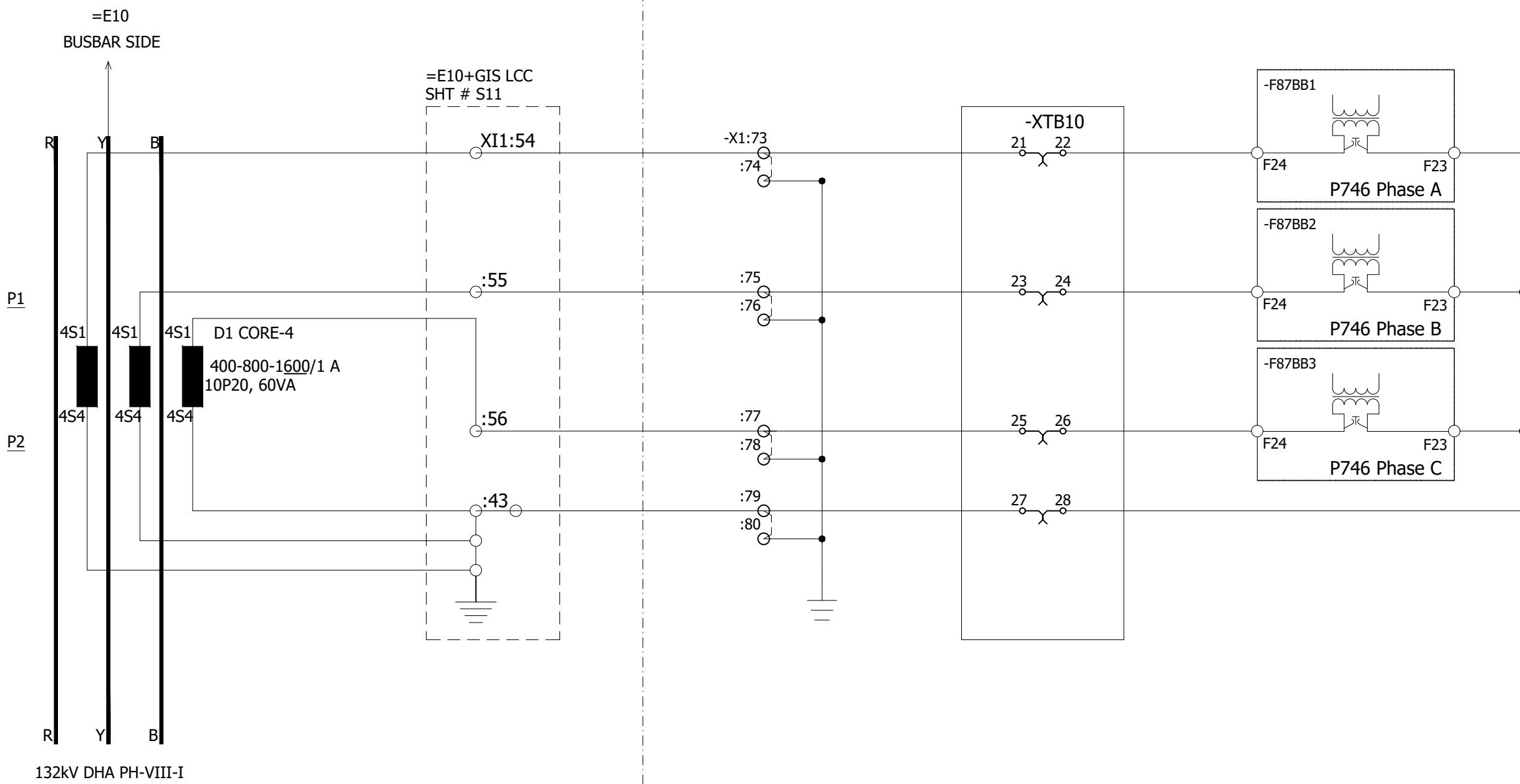


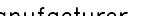
0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type G9 Sheet no. 17

1                    2                    3                    4                    5                    6                    7                    8

GIS ROC

All information contained in this document is the exclusive property of GE CRAN SOLUTIONS and shall not be used copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer  <b>EPESOL</b> 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  <b>Grid Solutions</b> A GE and Alstom joint venture	Client  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
									Project no. P-60194
									Sheet type G10
REV.	DESCRIPTION	DATE	DRAWER						Sheet no. 18

1

2

3

4

5

6

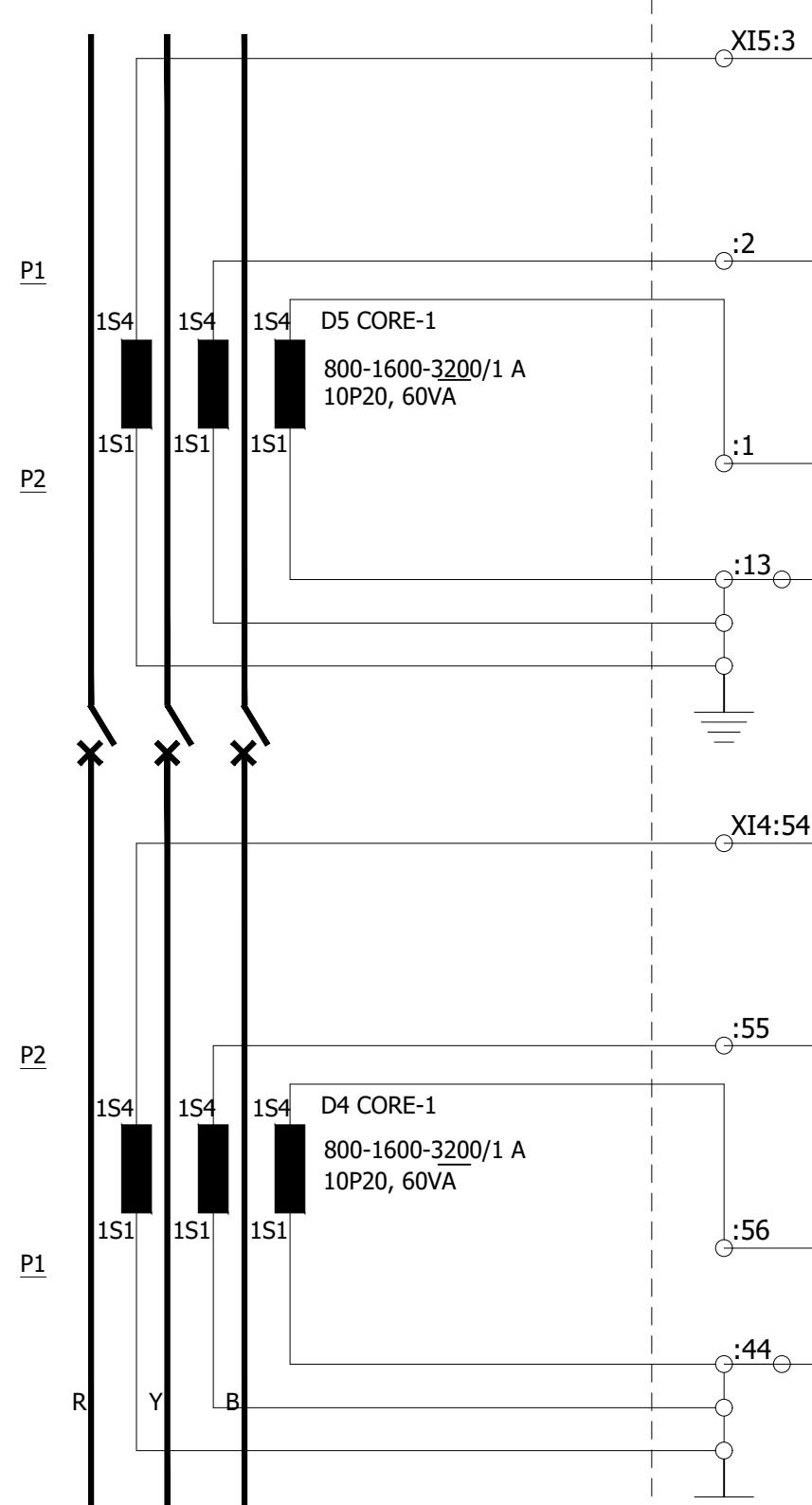
7

8

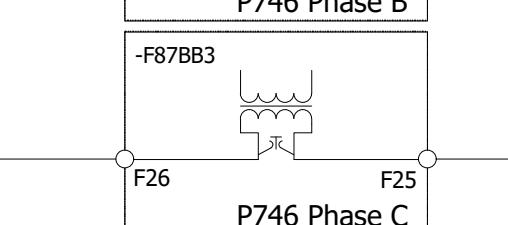
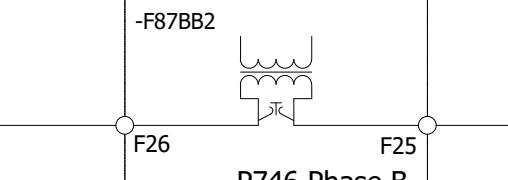
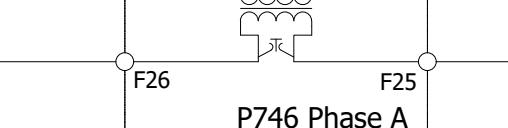
**GIS ROOM**

=E11  
BUSBAR-2 SIDE

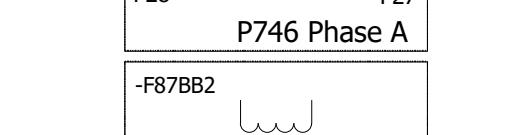
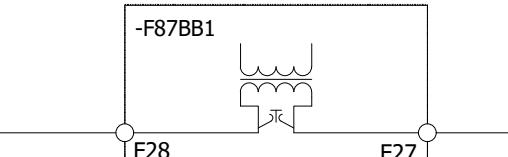
=E11+GIS LCC  
SHT # S11



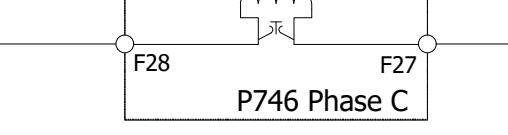
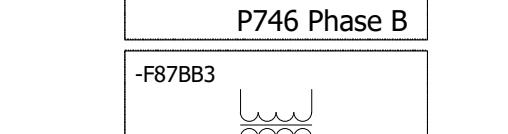
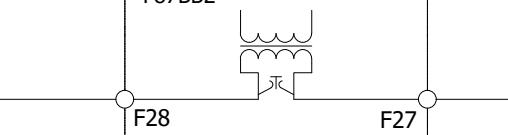
-X1:81  
:82  
:83  
:84



:85  
:86  
:87  
:88



-X1:89  
:90  
:91  
:92



:93  
:94  
:95  
:96

BUSBAR-1 SIDE

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	132KV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type G11 Sheet no. 19

1

2

3

4

5

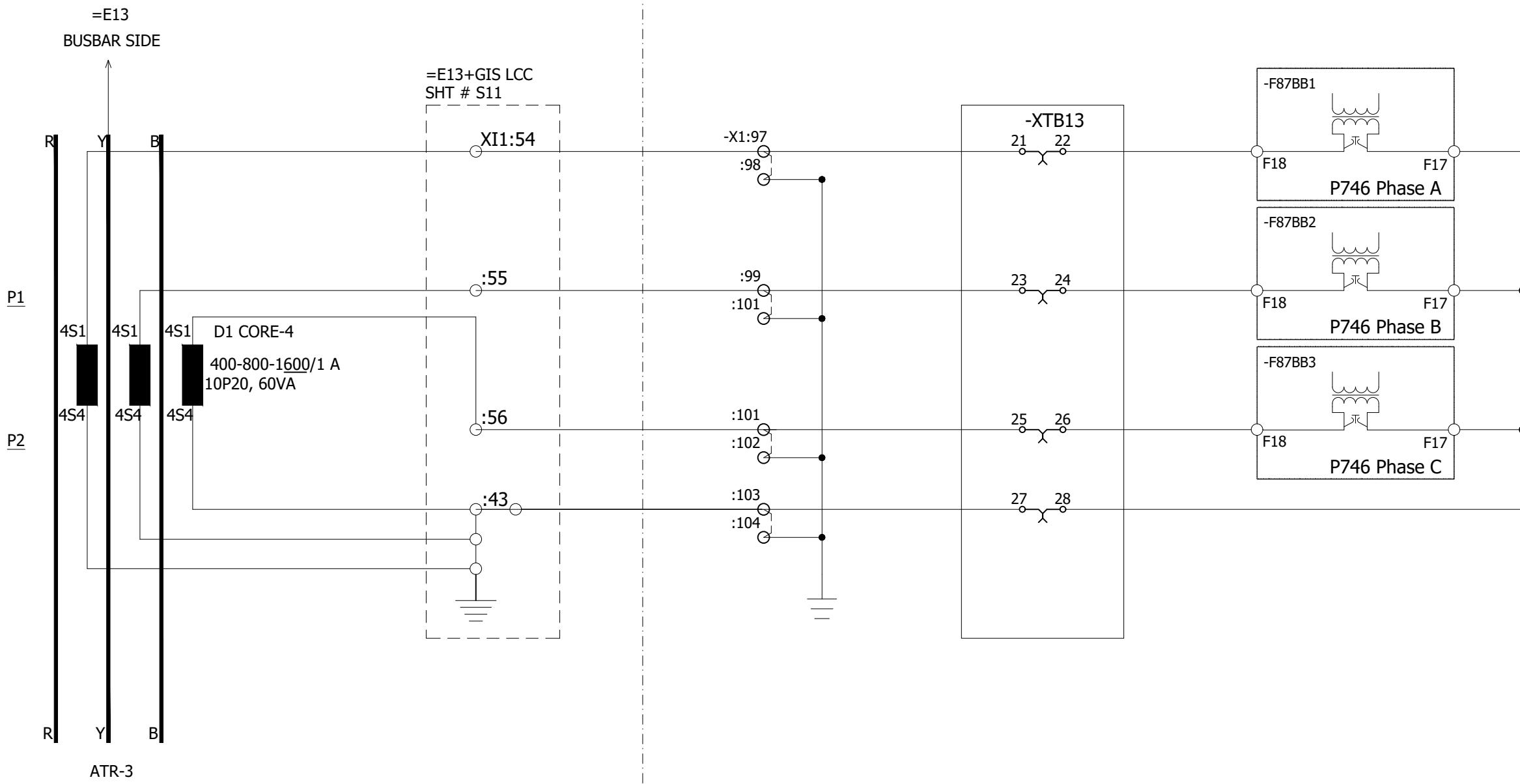
6

7

8

# GIS ROOM

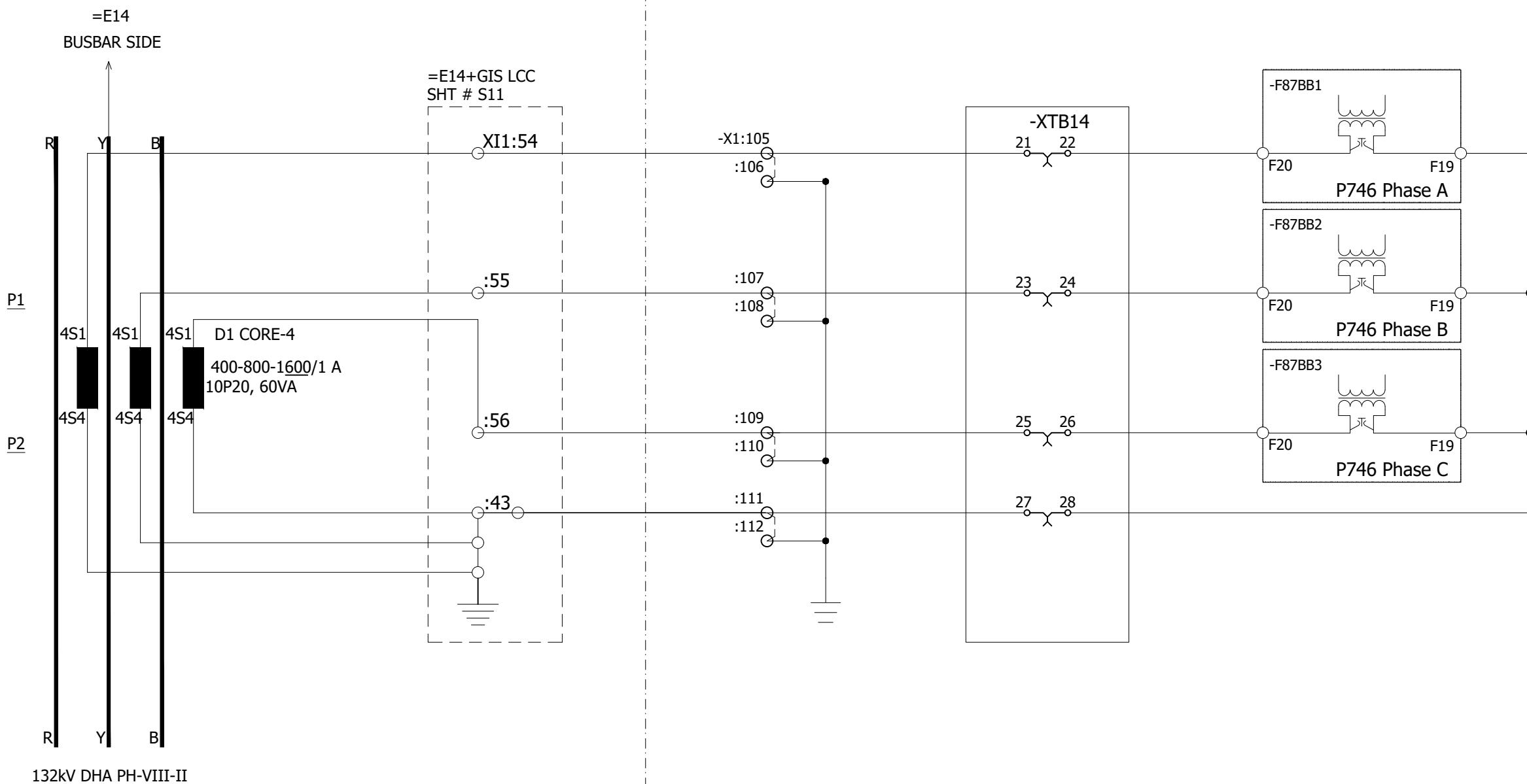
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT		30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001		
REV.	DESCRIPTION		DATE	DRAWER						Project no. P-60194	Sheet type G13	Sheet no. 20
1	2	3	4	5	6	7	8					

**GIS ROOM**

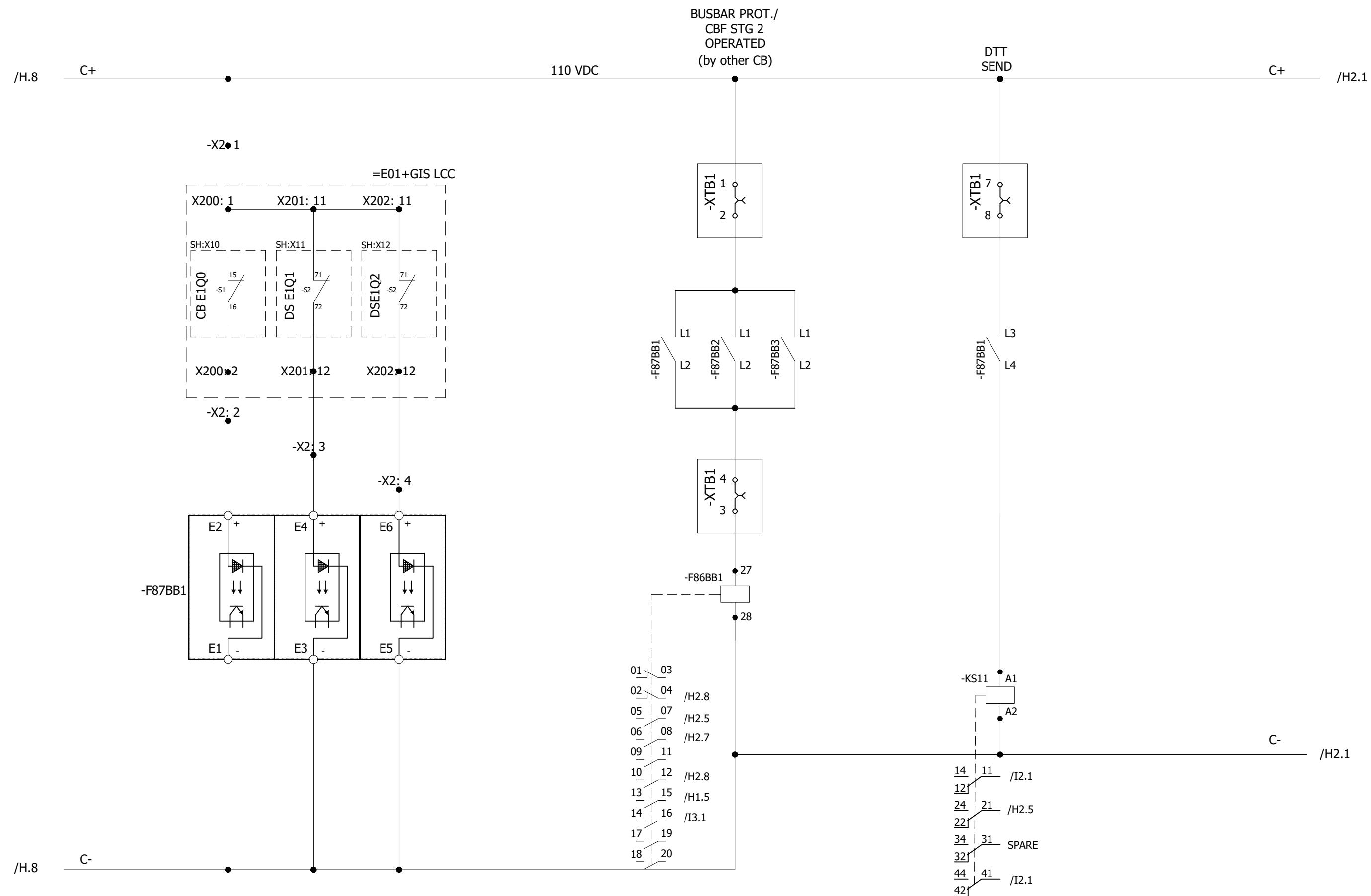
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer <b>EPE SOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor <b>Grid Solutions</b> A GE and Alstom joint venture	Client <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) RELAY CT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
									Project no. P-60194
	DESCRIPTION	DATE	DRAWER						Sheet type G14
REV.									Sheet no. 21

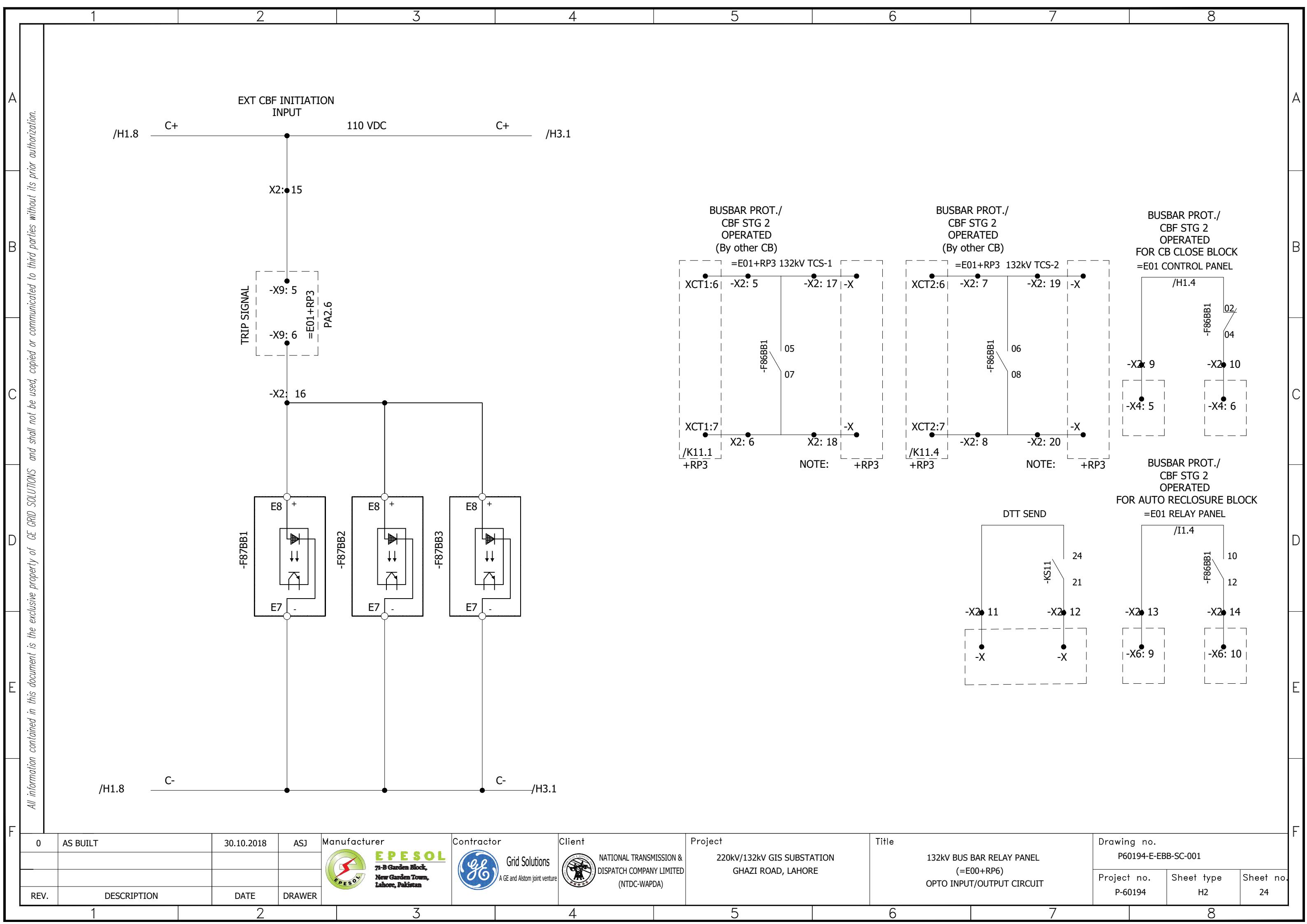


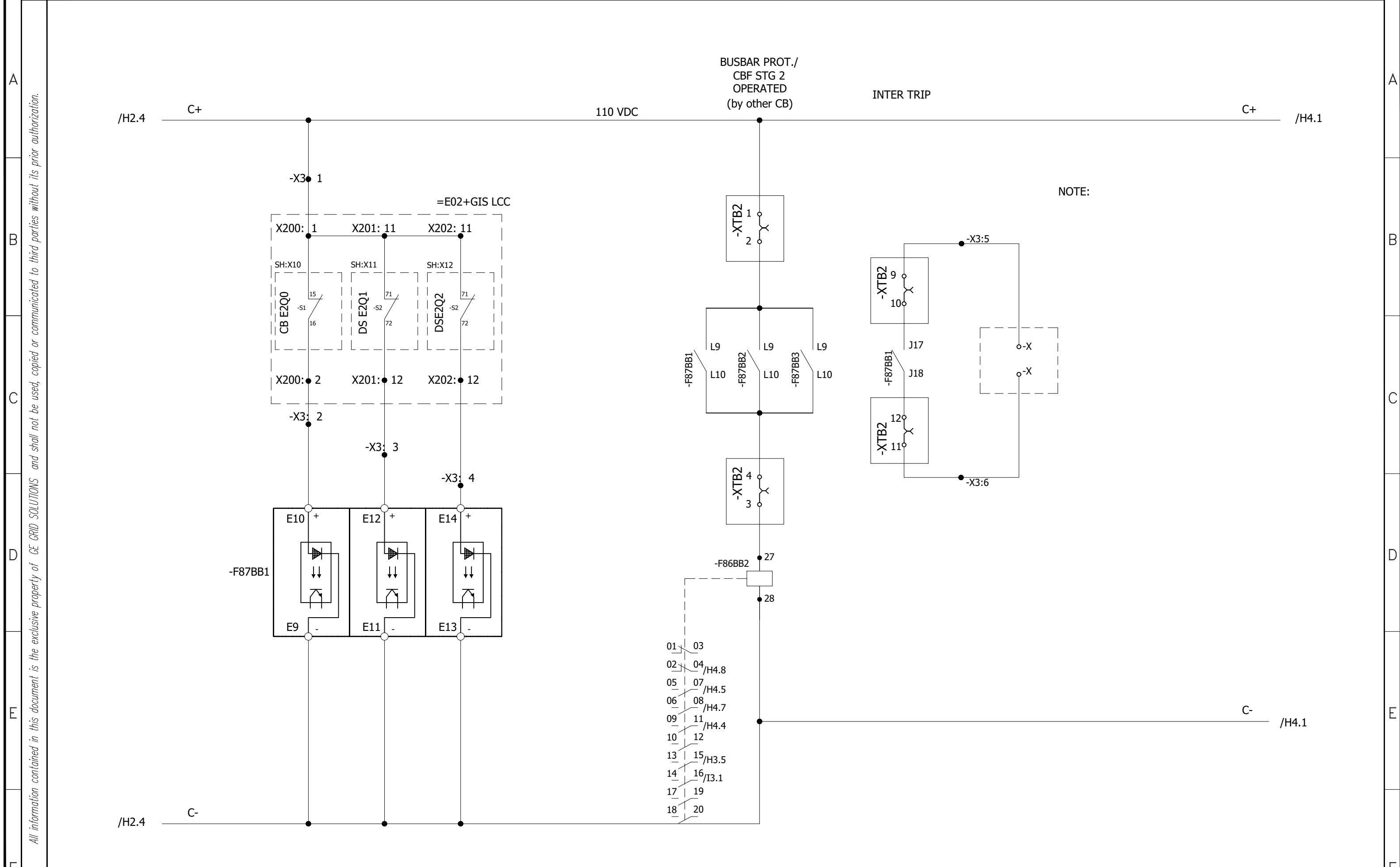
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



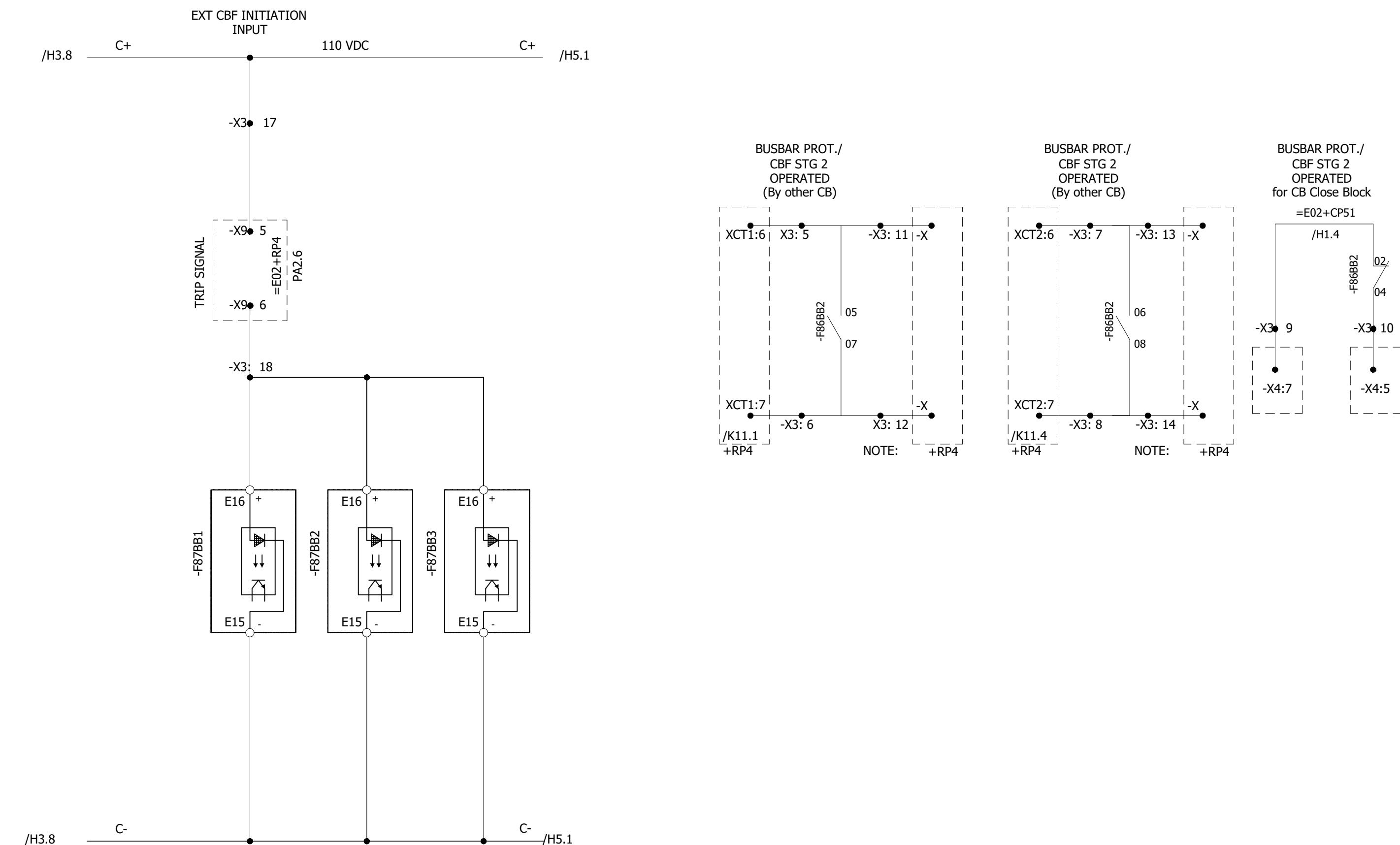
0	AS BUILT	30.10.2018	ASJ	Manufacturer  <b>EPESOL</b> 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  <b>Grid Solutions</b> A GE and Alstom joint venture	Client  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED</b> (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
									Project no. P-60194
									Sheet type H1
REV.	DESCRIPTION	DATE	DRAWER						Sheet no. 23

1 2 3 4 5 6 7 8



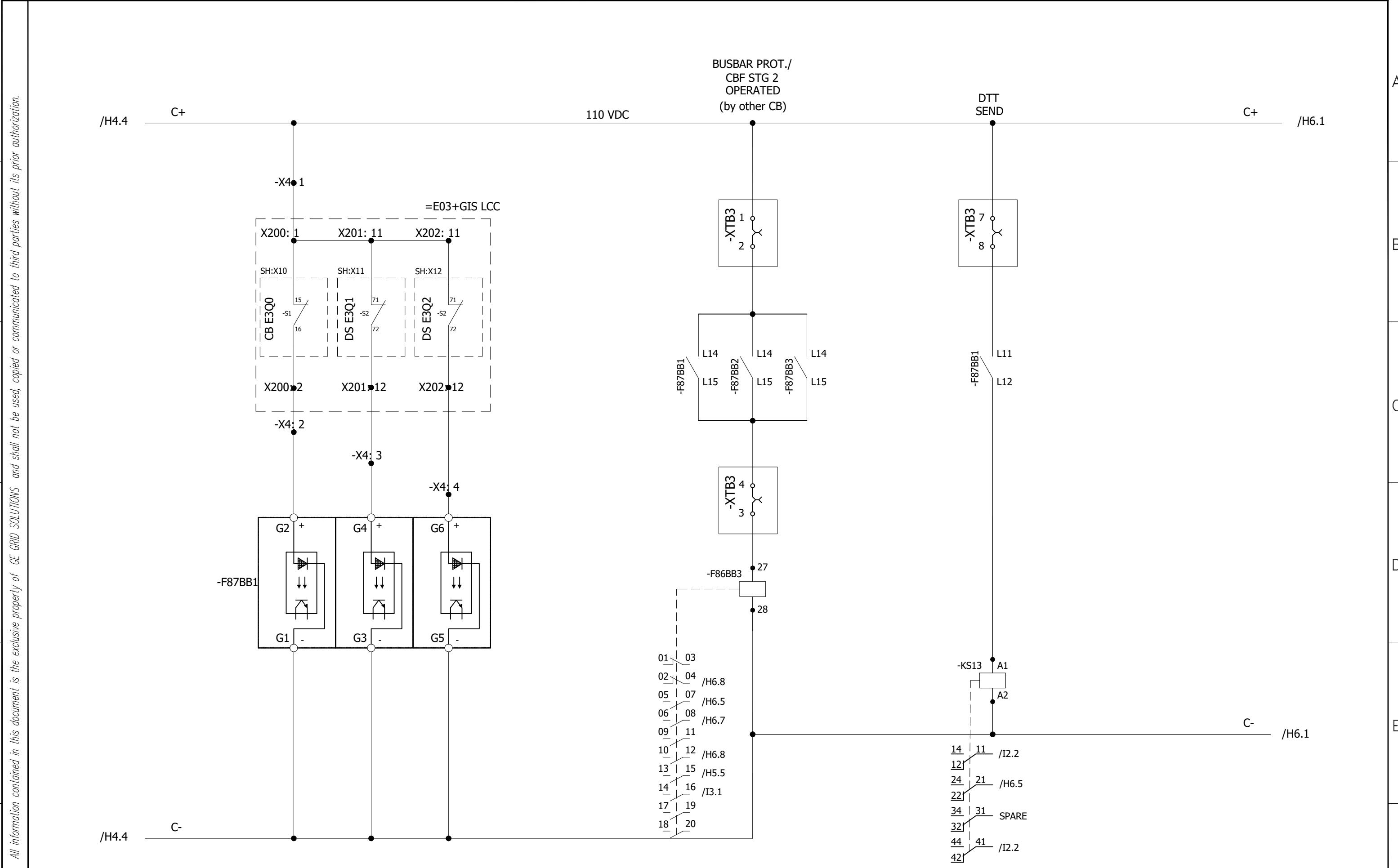


0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
REV.	DESCRIPTION	DATE	DRAWER	EPEPSOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	P-60194-E-EBB-SC-001
									Project no. P-60194 Sheet type H3 Sheet no. 25



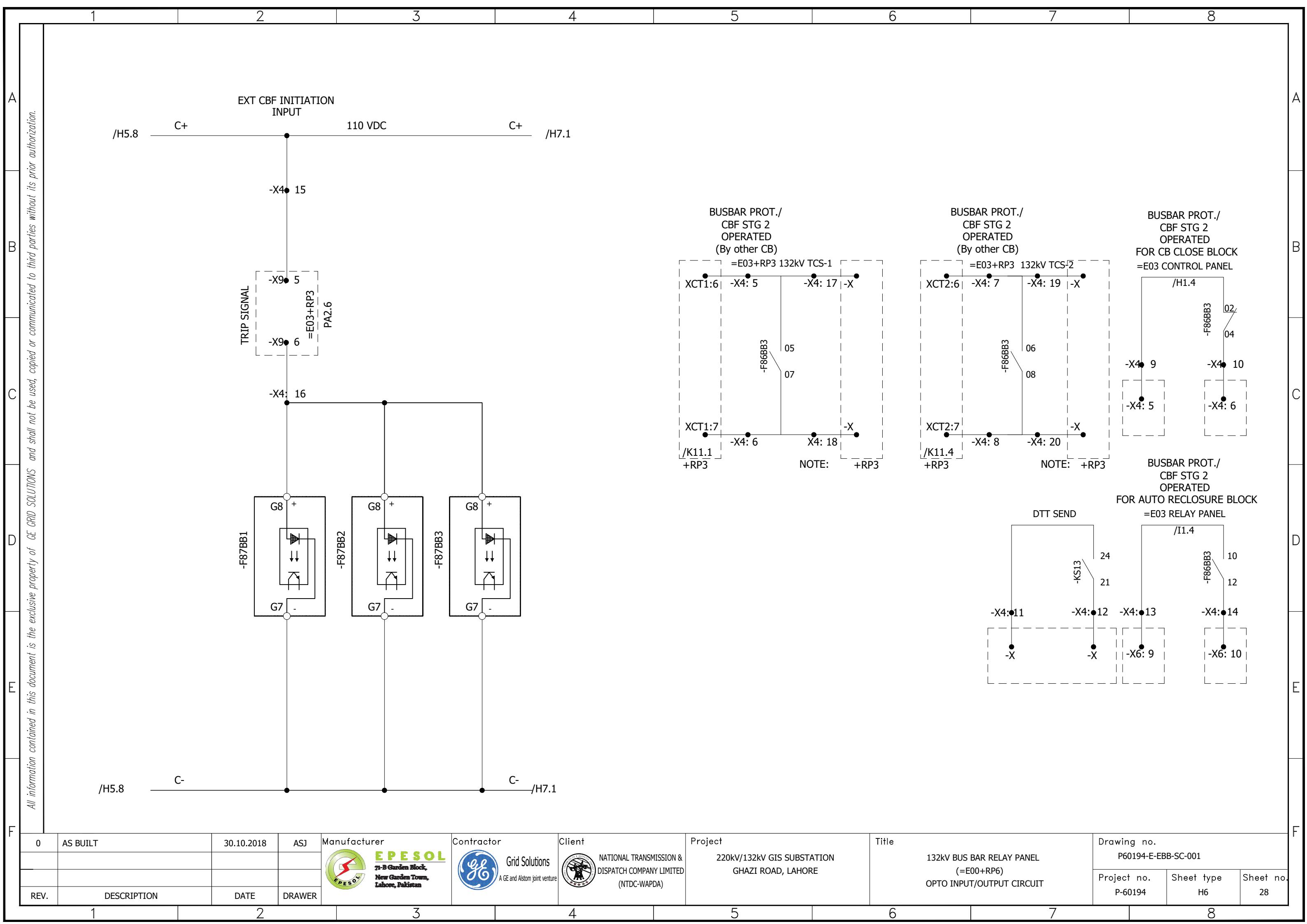
0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type H4 Sheet no. 26

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

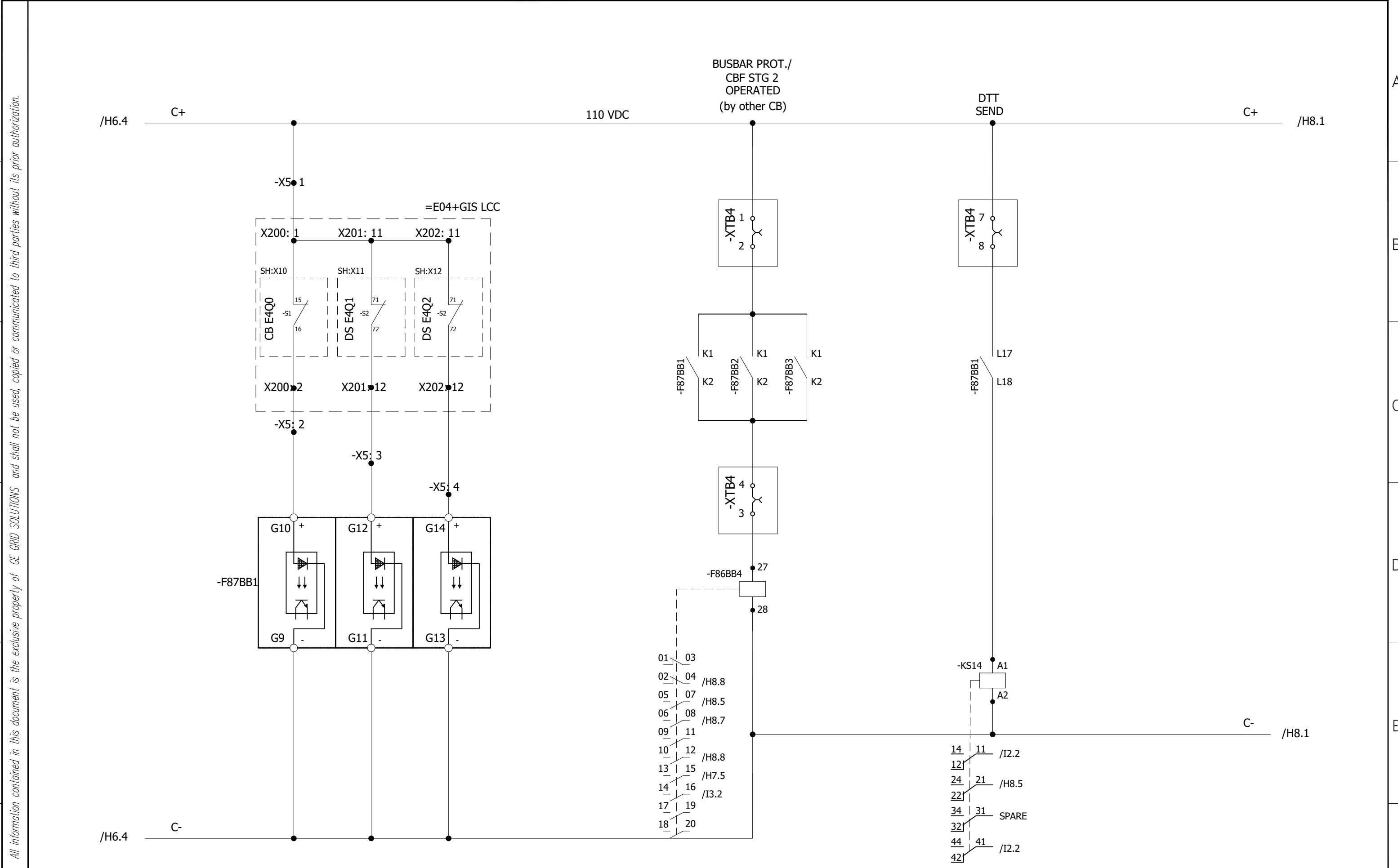


0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.		
				EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	Project no. P-60194	Sheet type H5	Sheet no. 27

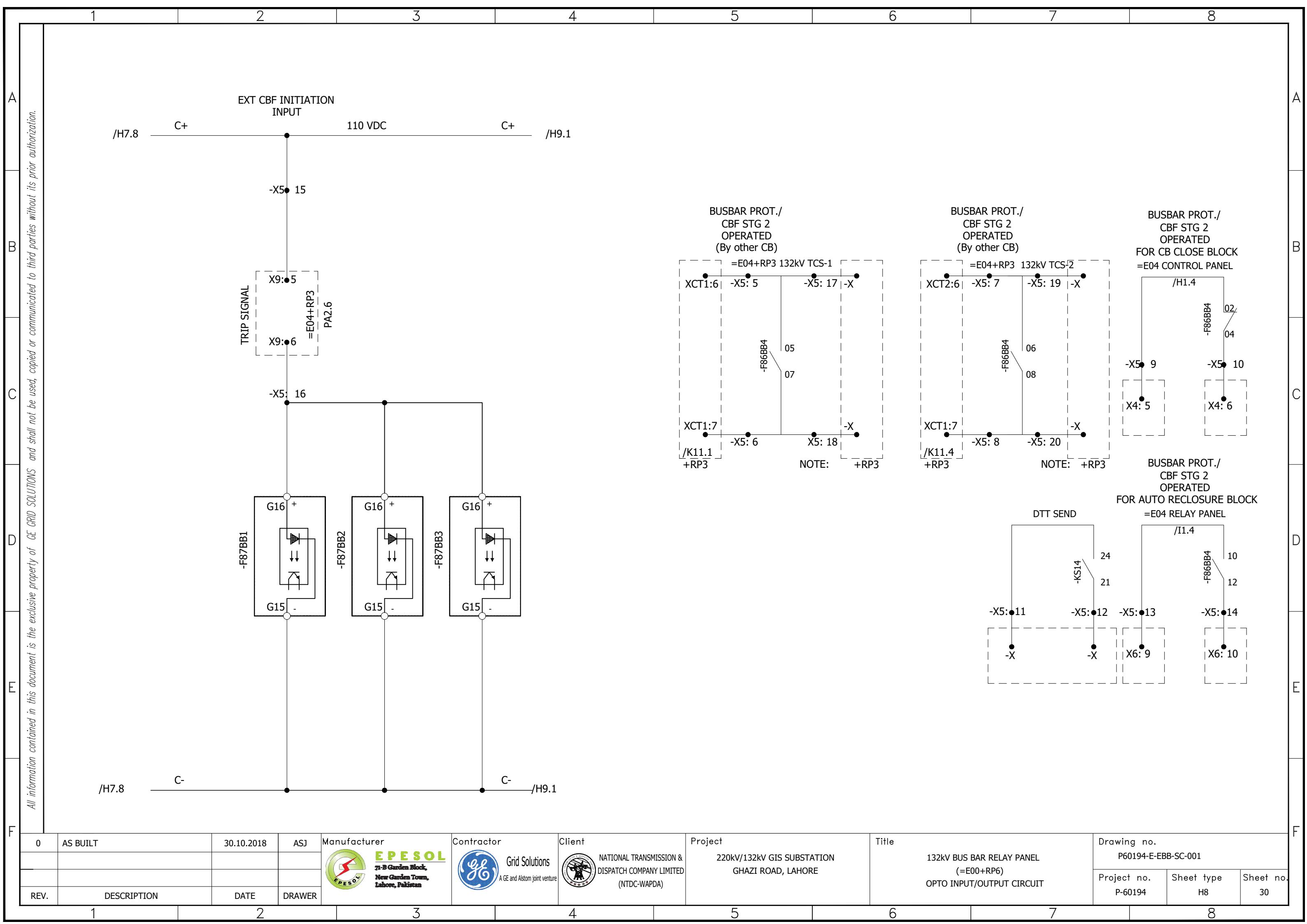
1 2 3 4 5 6 7 8



All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPEPSOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194



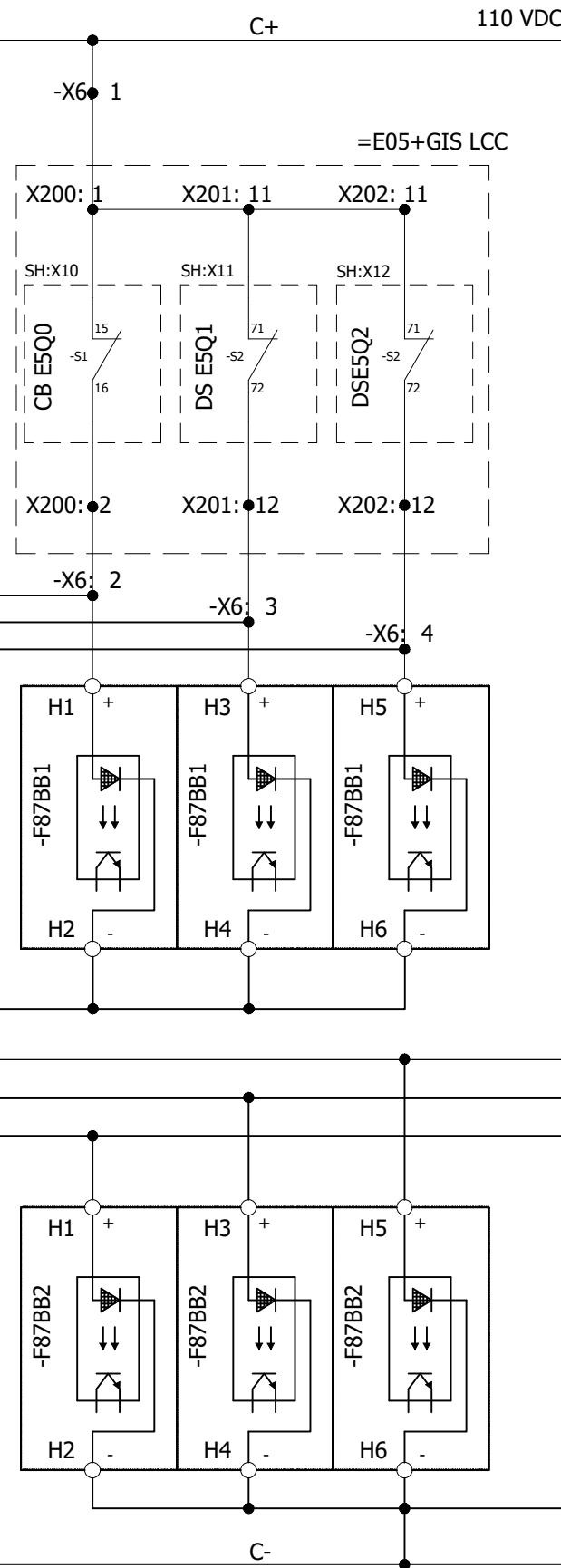
BUSBAR PROT./  
CBF STG 2  
OPERATED  
(by other CB)

INTER TRIP

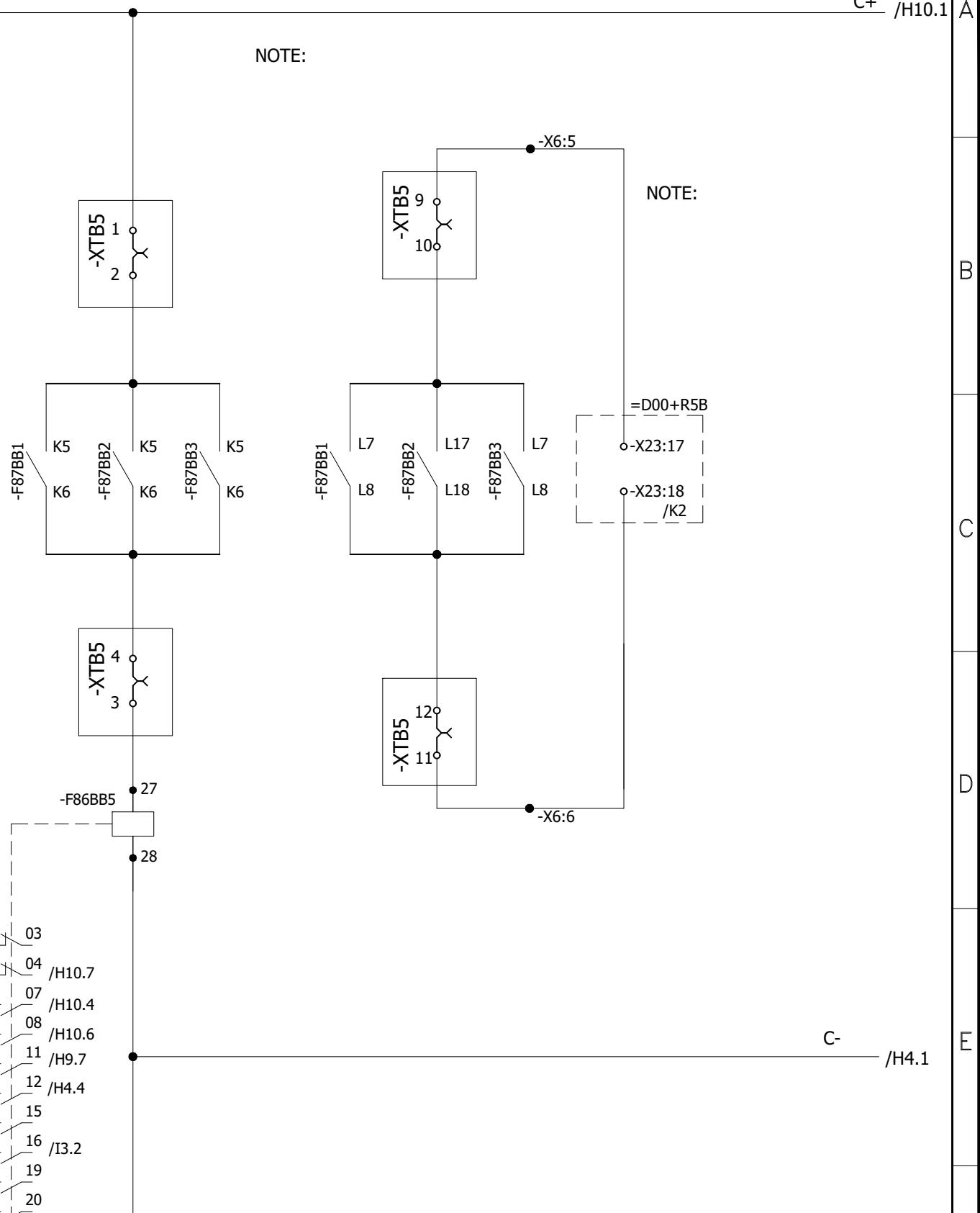
C+ /H10.1 A

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A



NOTE:



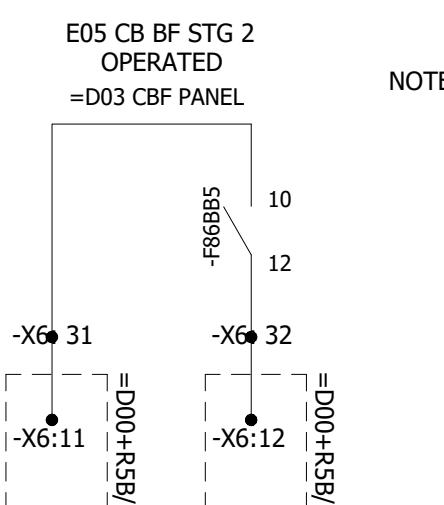
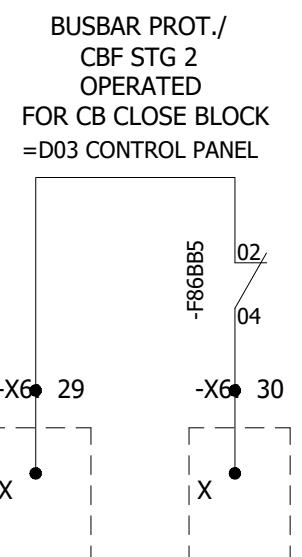
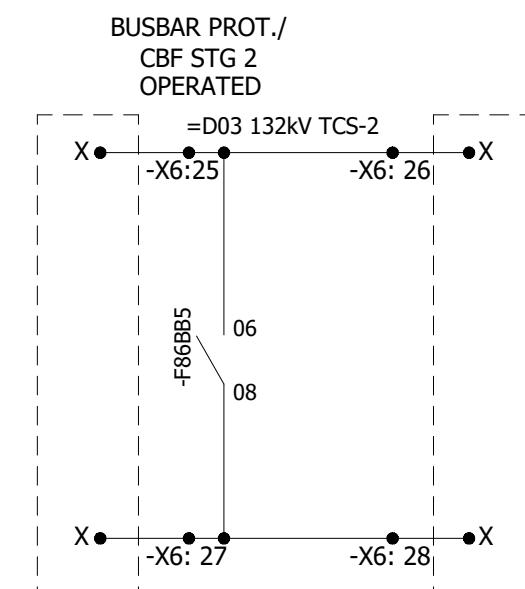
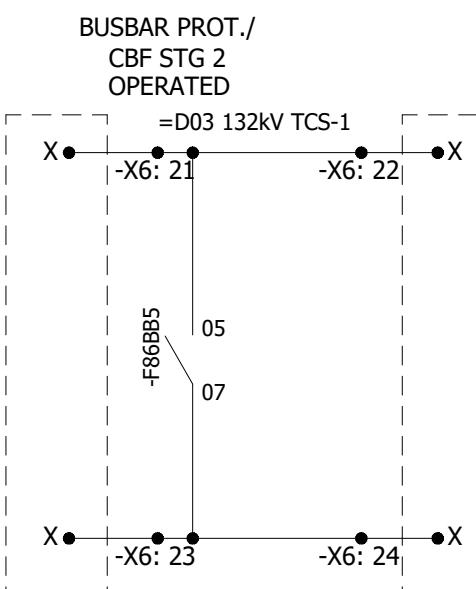
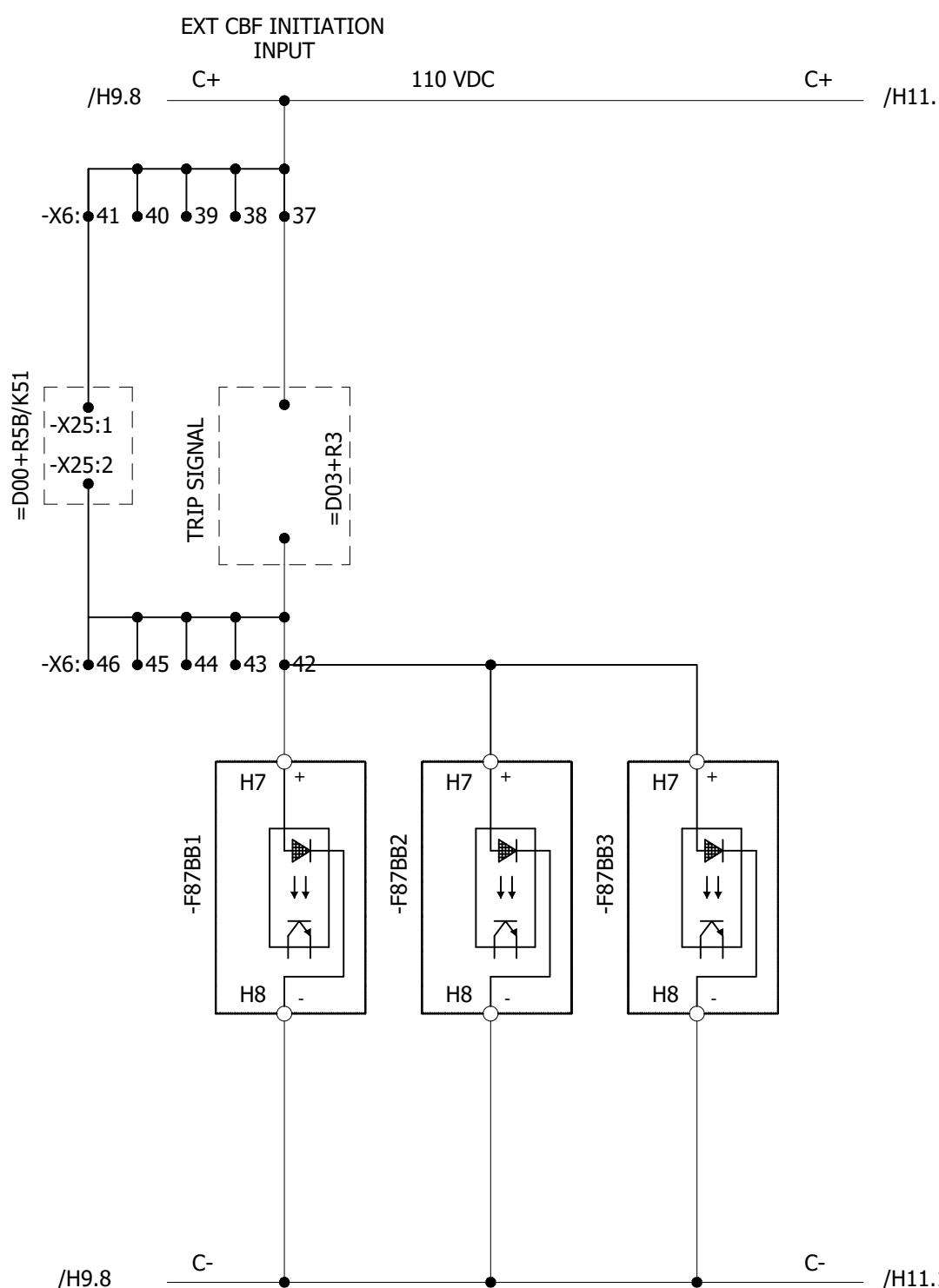
NOTE:

0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
REV.	DESCRIPTION	DATE	DRAWER	EPE SOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	132KV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	P60194-E-EBB-SC-001
									Project no. P-60194 Sheet type H9 Sheet no. 31

1 2 3 4 5 6 7 8

FOR =E05

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



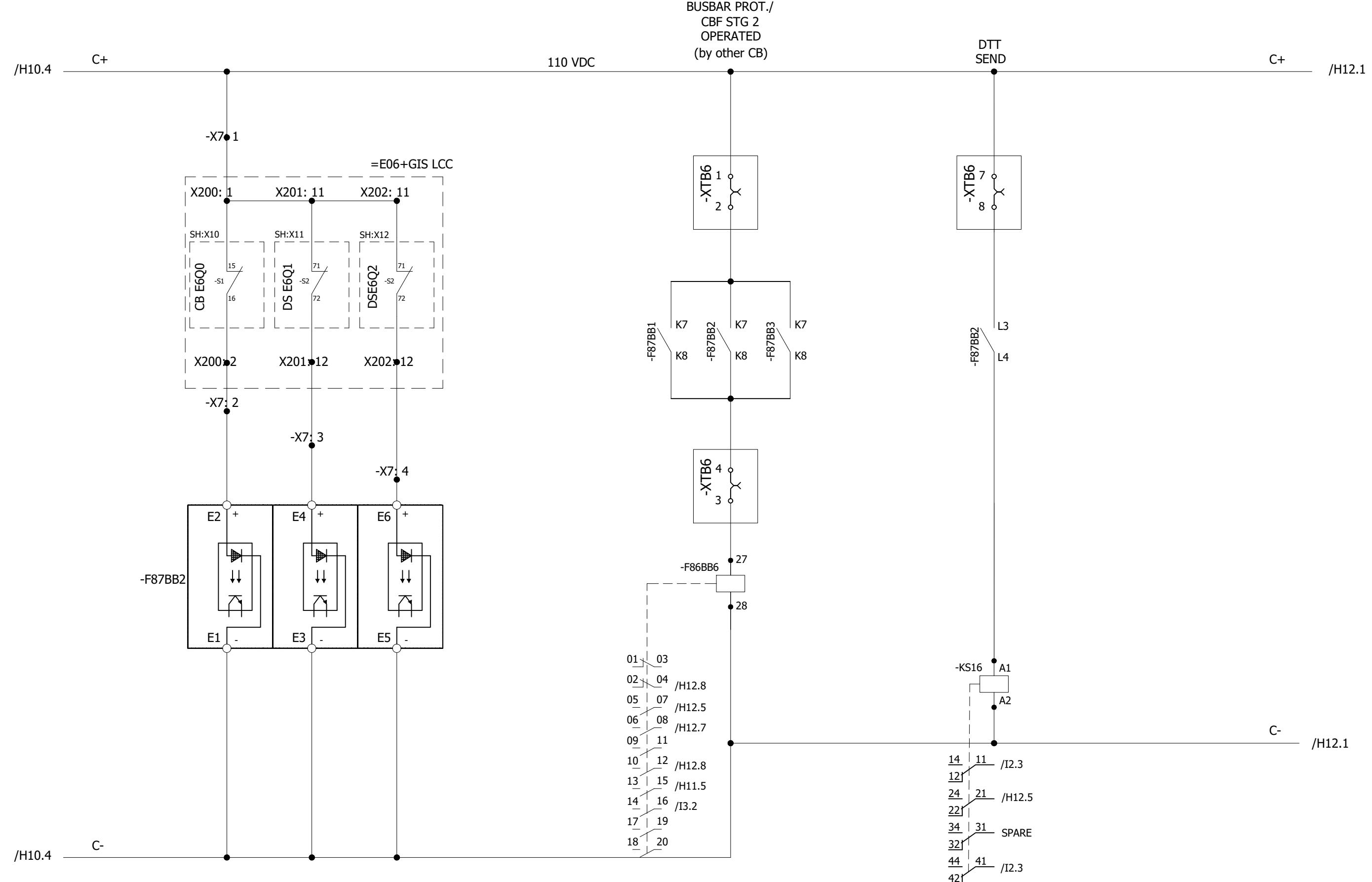
NOTE:

0	AS BUILT	30.10.2018	ASJ	Manufacturer <b>EPESOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor <b>GE</b> Grid Solutions A GE and Alstom joint venture	Client <b>NTDC-WAPDA</b> NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER					Project no. P-60194	Sheet type H10
									Sheet no. 32

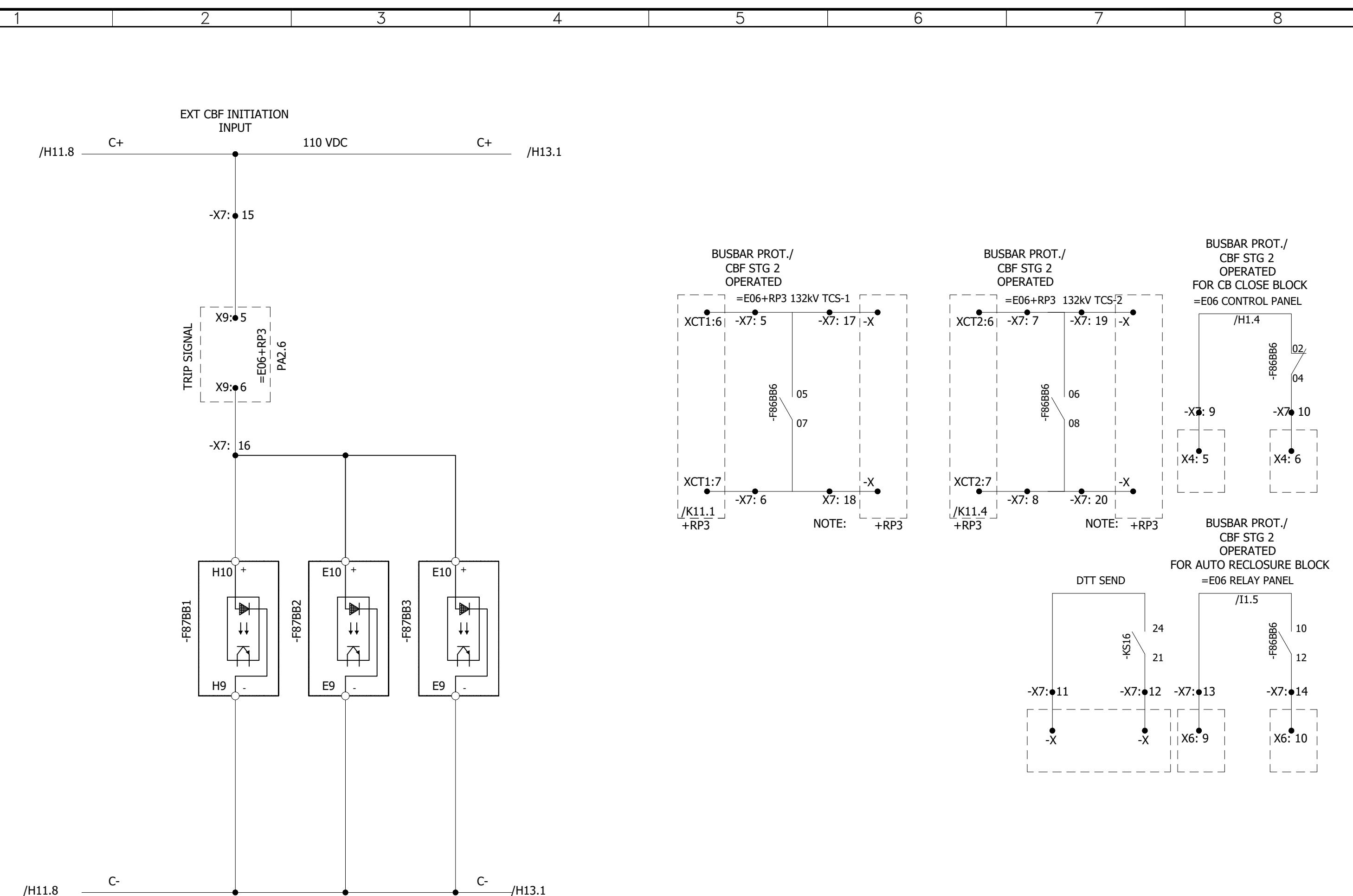
1 2 3 4 5 6 7 8

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

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

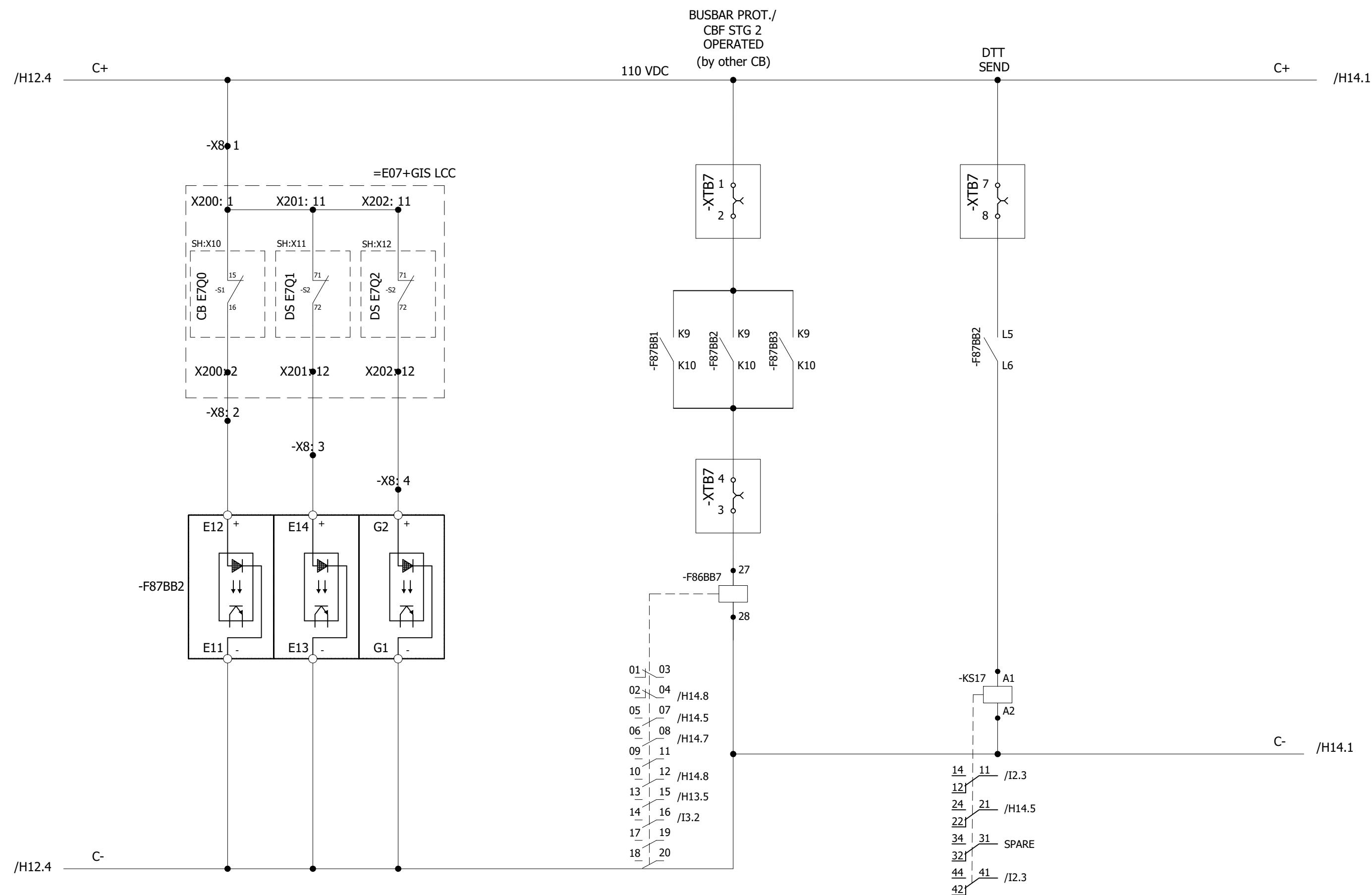


0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPEPSOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type H11 Sheet no. 33

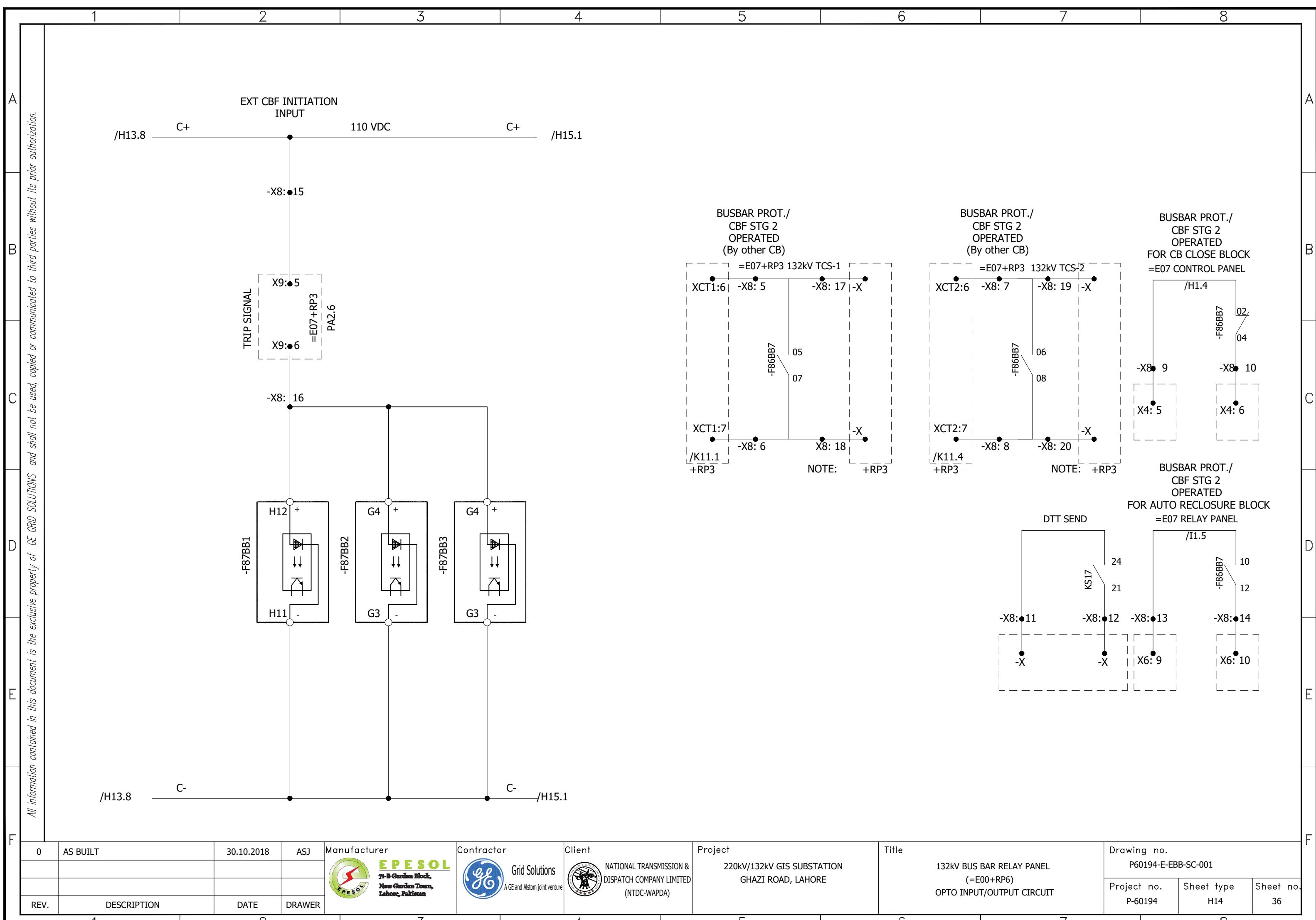


0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.		
				EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	Project no. P-60194	Sheet type H12	Sheet no. 34

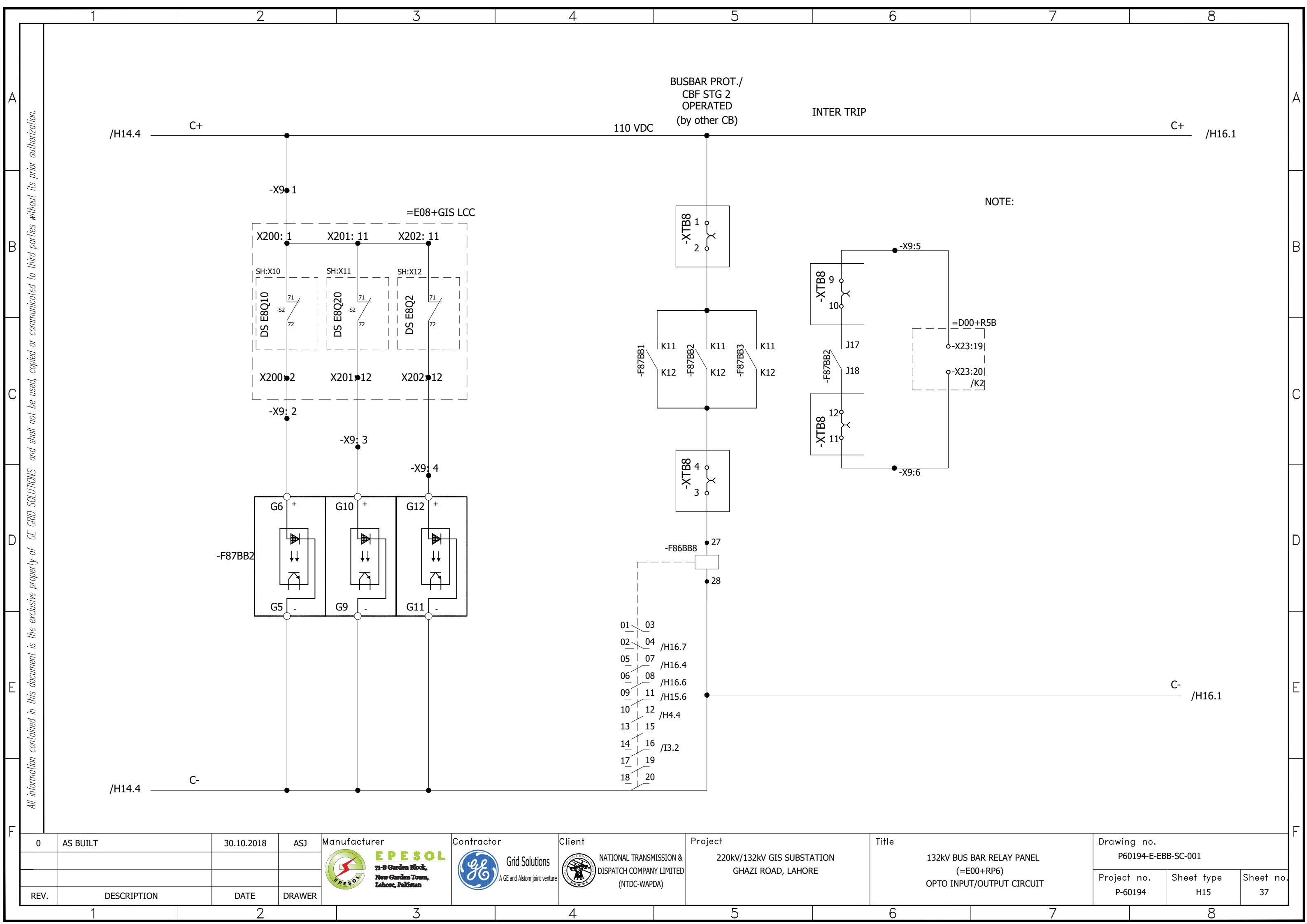
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type H13 Sheet no. 35

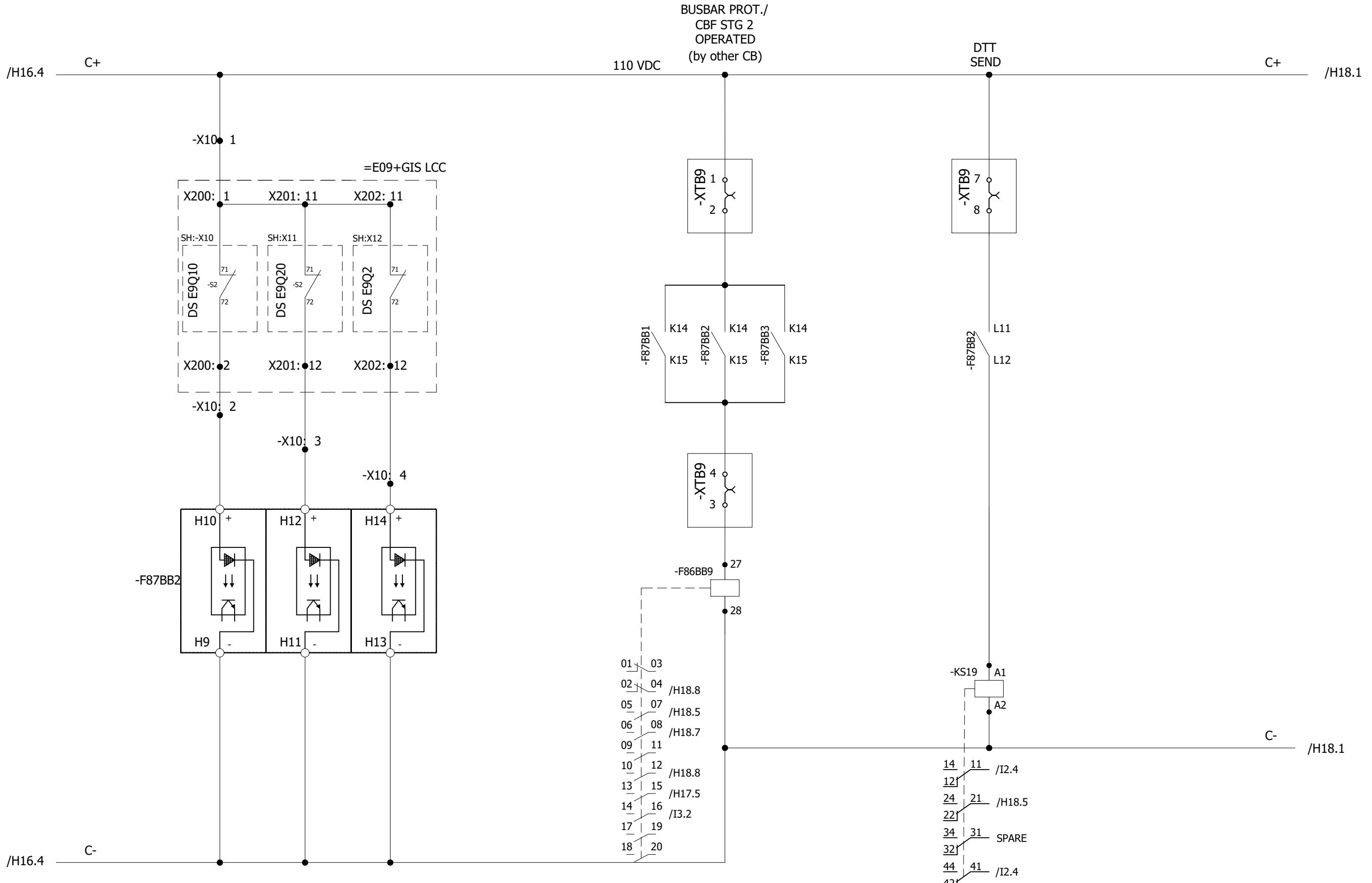


1 2 3 4 5 6 7 8

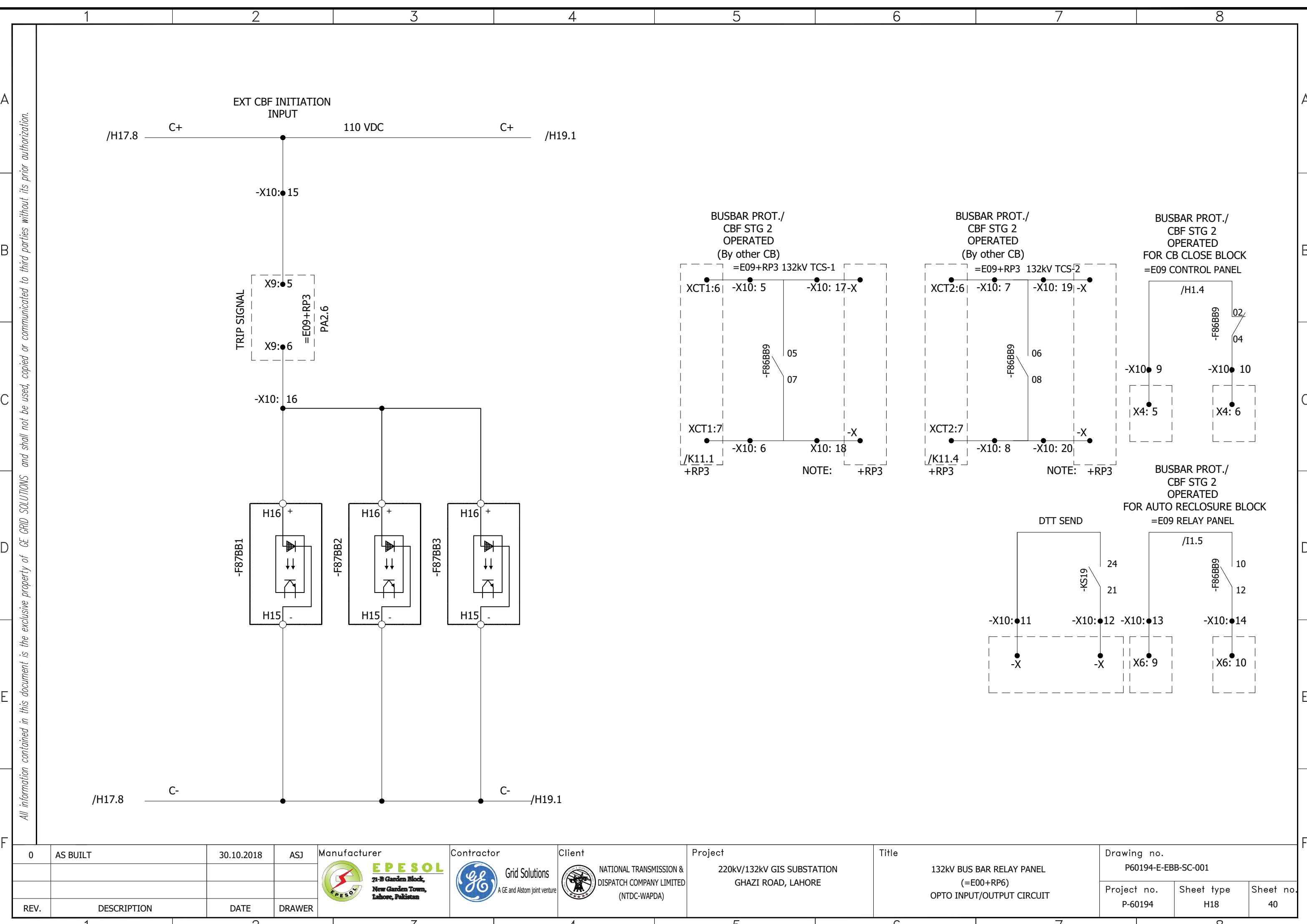




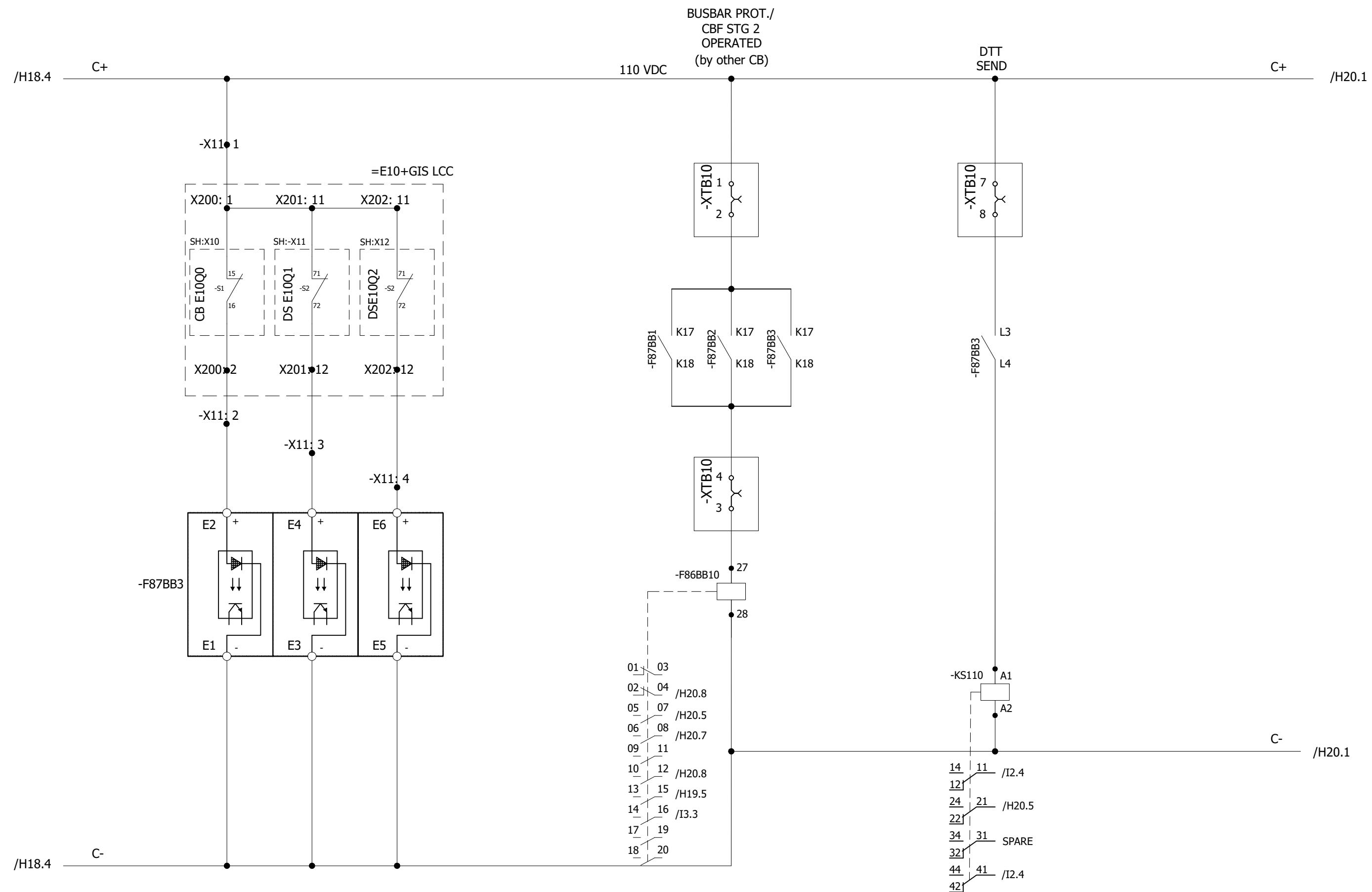
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

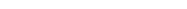


0	AS BUILT	30.10.2018	ASJ	Manufacturer  <b>EPESOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  <b>Grid Solutions</b> A GE and Alstom joint venture	Client  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED</b> (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	Drawing no. P60194-E-EBB-SC-001		
									Project no. P-60194		
									Sheet type H17		
									Sheet no. 39		
REV.	DESCRIPTION	DATE	DRAWER	1	2	3	4	5	6	7	8

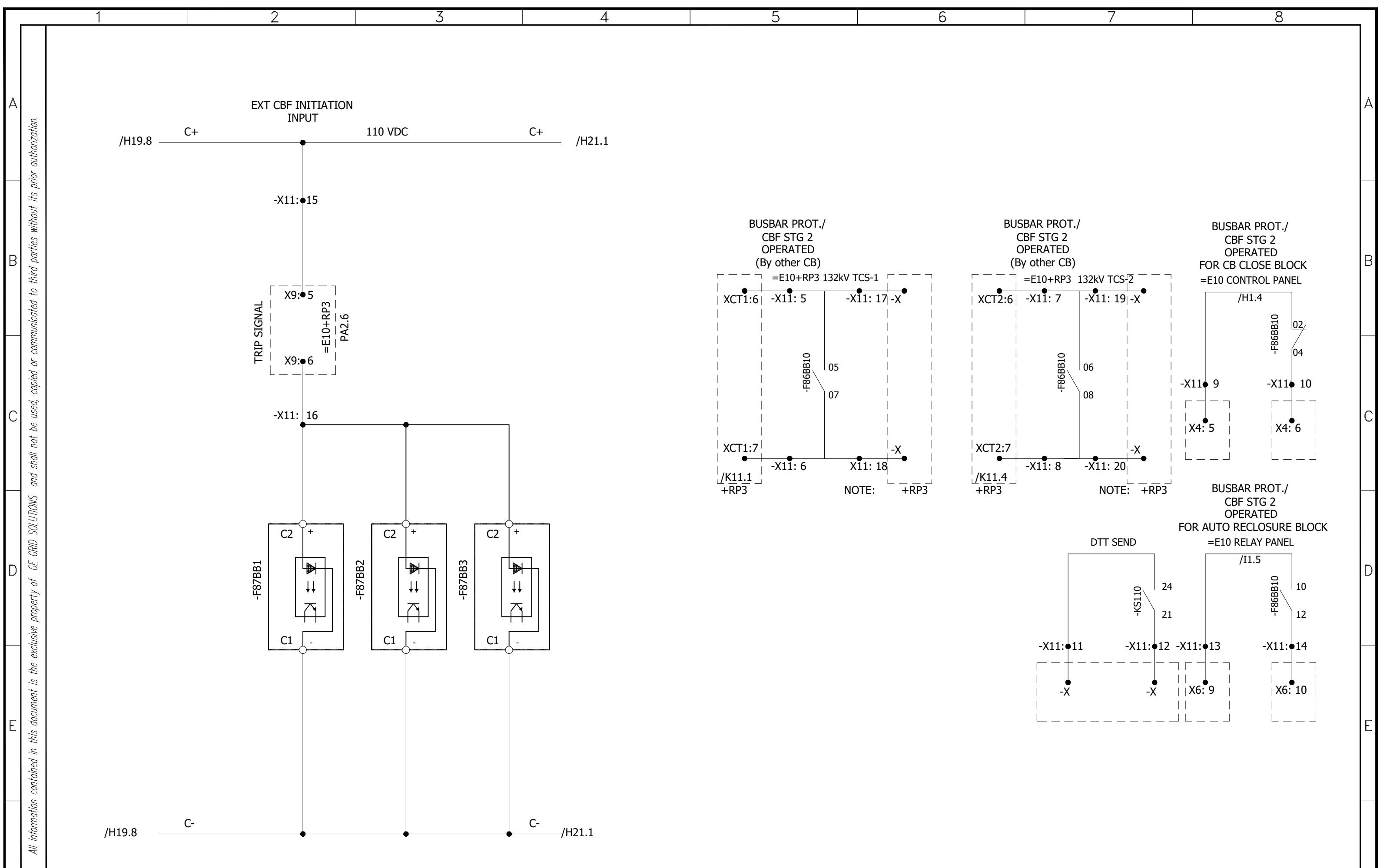


All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



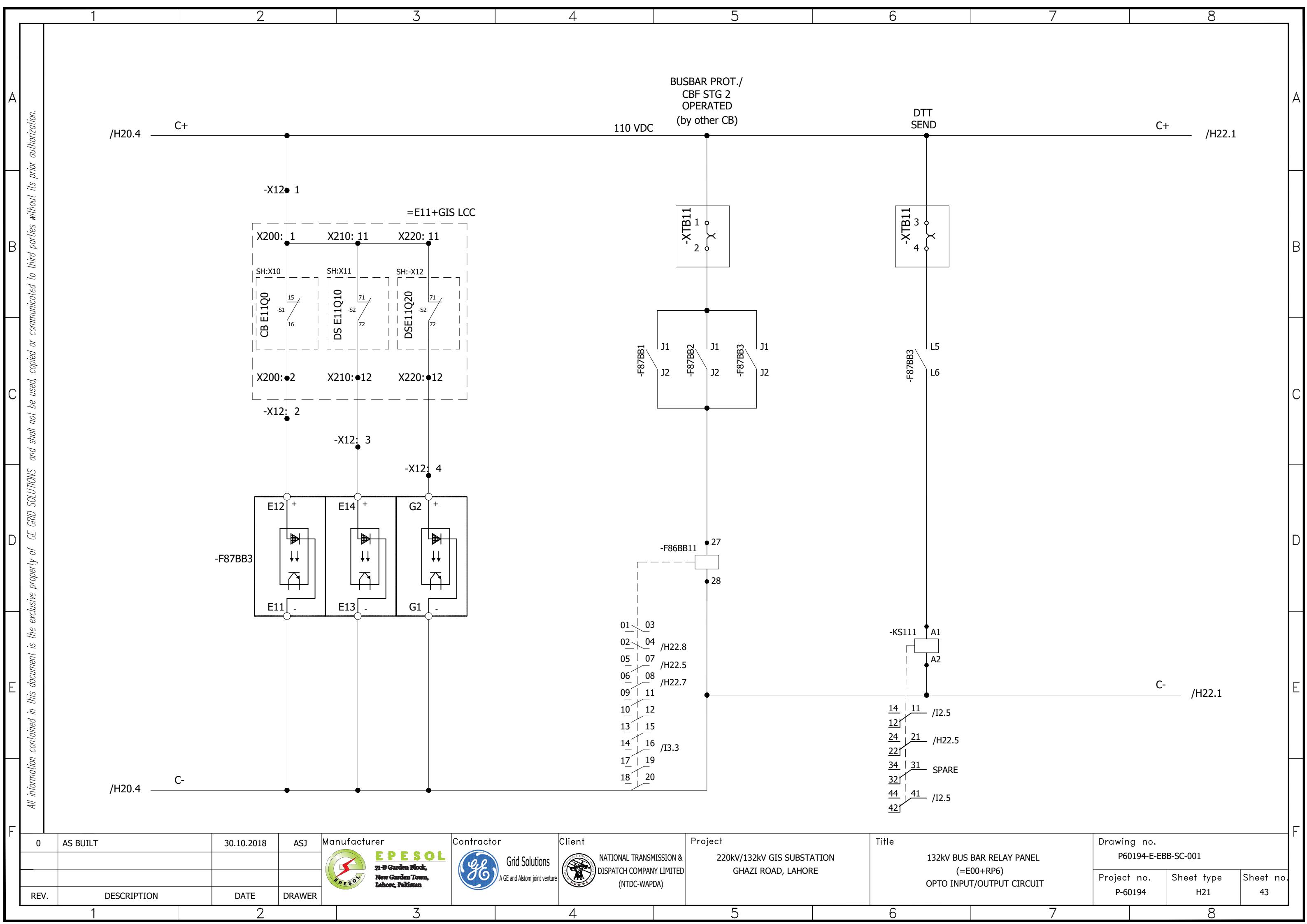
0	AS BUILT	30.10.2018	ASJ	<b>Manufacturer</b>  <b>EPESOL</b> <i>7-B Garden Block, New Garden Town, Lahore, Pakistan</i>	<b>Contractor</b>  <b>Grid Solutions</b> <small>A GE and Alstom joint venture</small>	<b>Client</b>  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED</b> <small>(NTDC-WAPDA)</small>	<b>Project</b> <b>220KV/132KV GIS SUBSTATION</b> <b>GHAZI ROAD, LAHORE</b>	<b>Title</b> <b>132kV BUS BAR RELAY PANEL</b> <small>(=E00+RP6)</small> <b>OPTO INPUT/OUTPUT CIRCUIT</b>	<b>Drawing no.</b>		
								P60194-E-EBB-SC-001			
								<b>Project no.</b> P-60194			
								<b>Sheet type</b> H19			
REV.	DESCRIPTION	DATE	DRAWER							41	

1 2 3 4 5 6 7 8

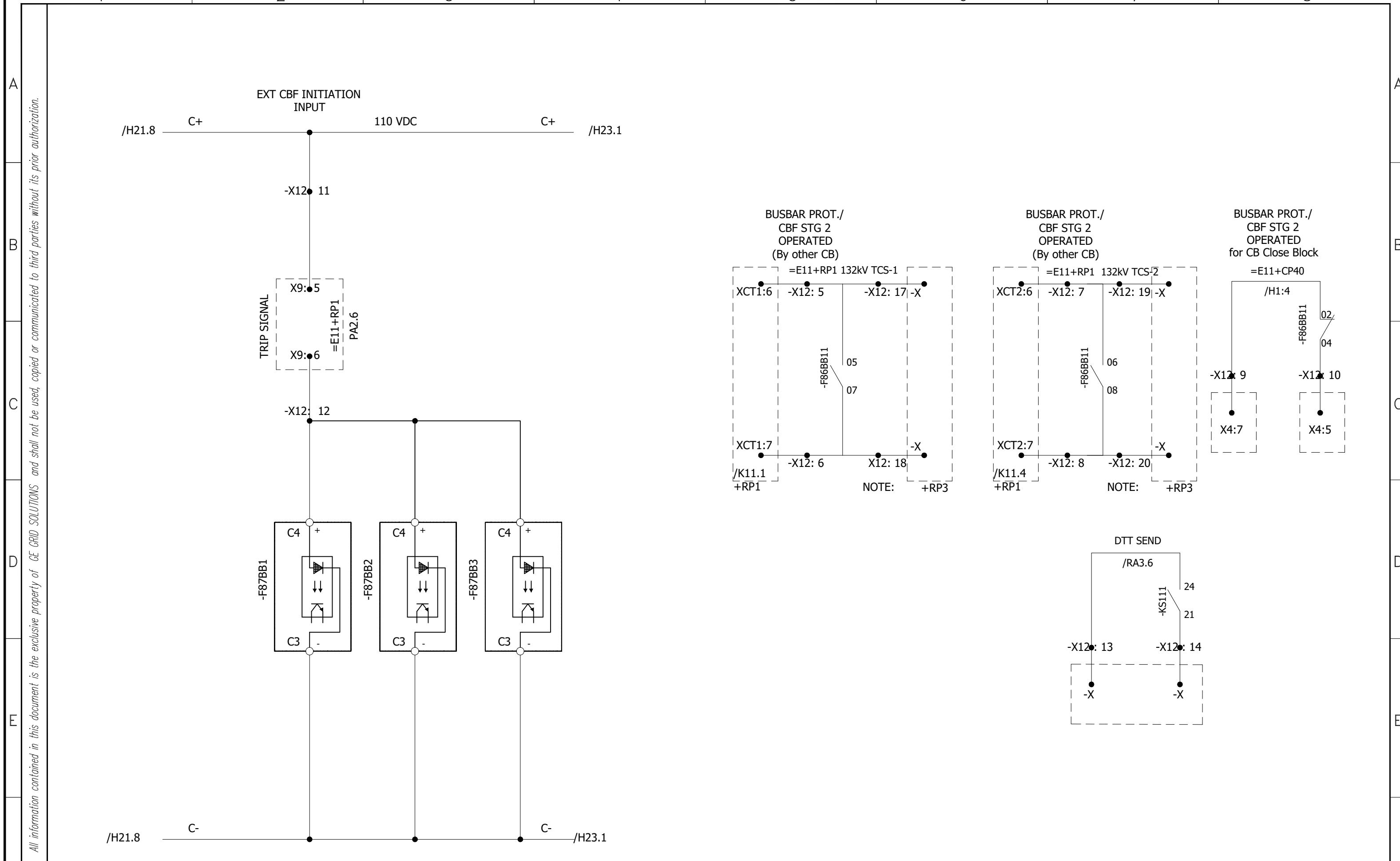


0	AS BUILT	30.10.2018	ASJ	Manufacturer <b>EPESOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor <b>Grid Solutions</b> A GE and Alstom joint venture	Client <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED (NTDC-WAPDA)</b>	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type H20
									Sheet no. 42

1 2 3 4 5 6 7 8



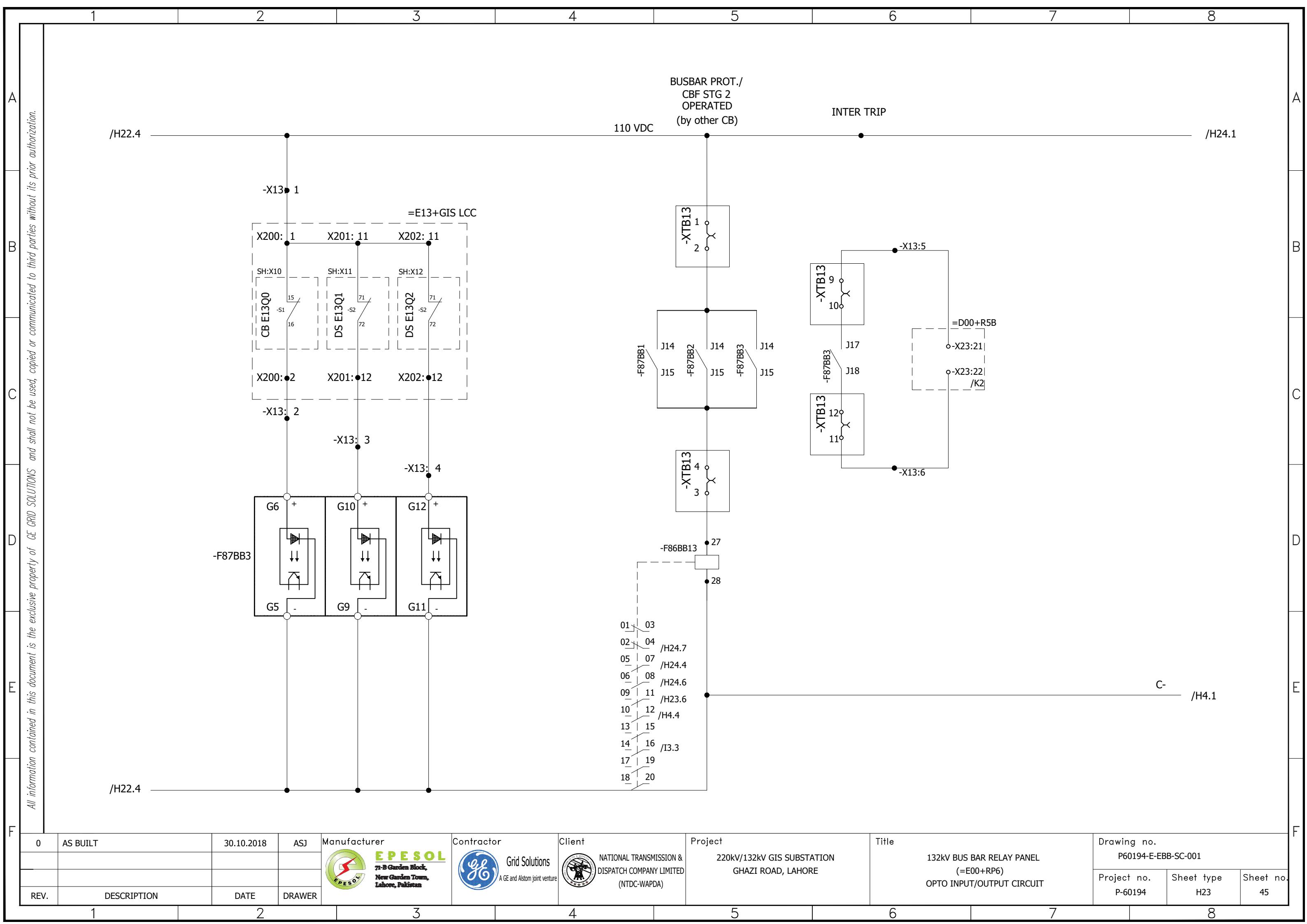
1 2 3 4 5 6 7 8

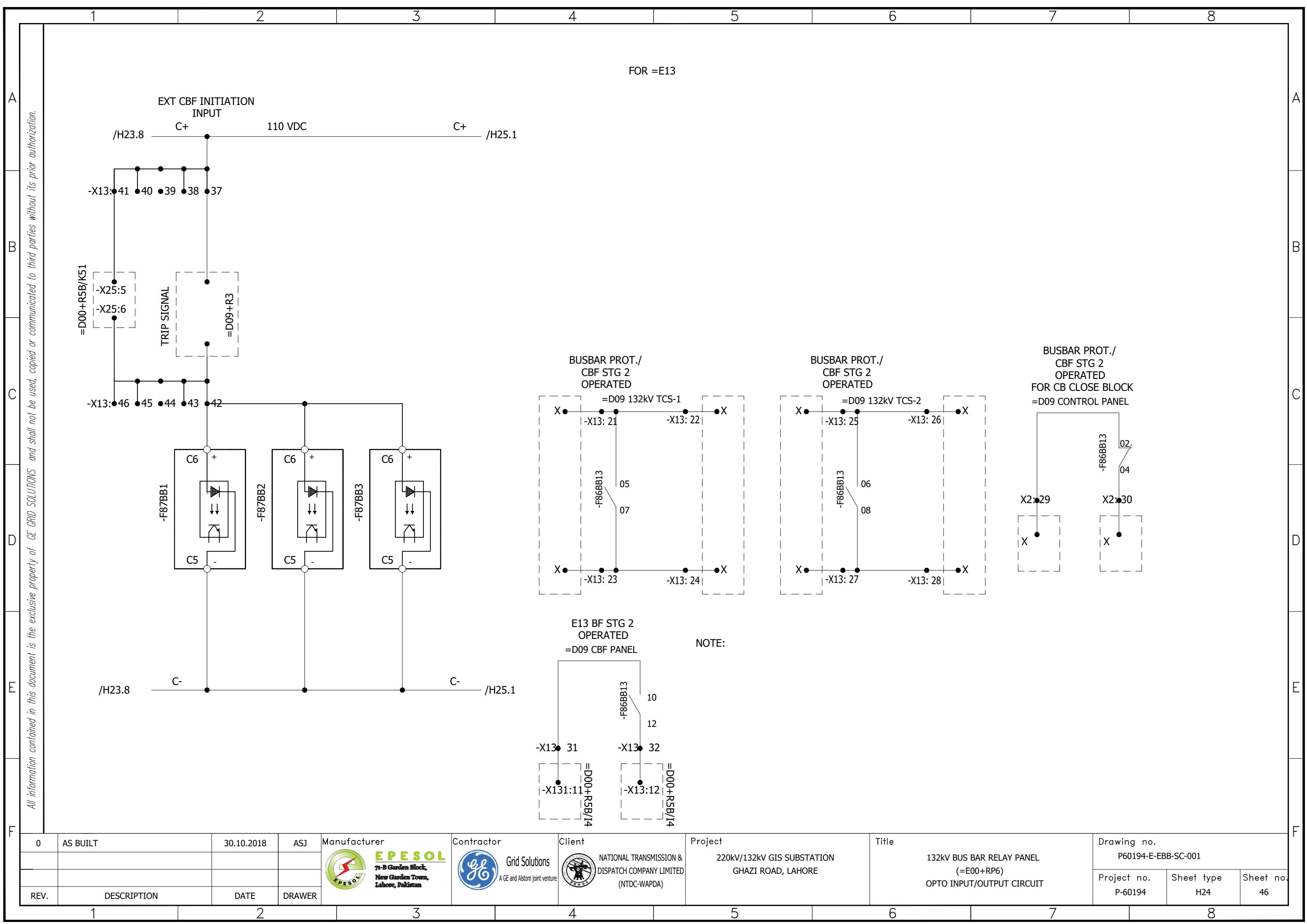


0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type H22
									Sheet no. 44

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8





1

2

3

4

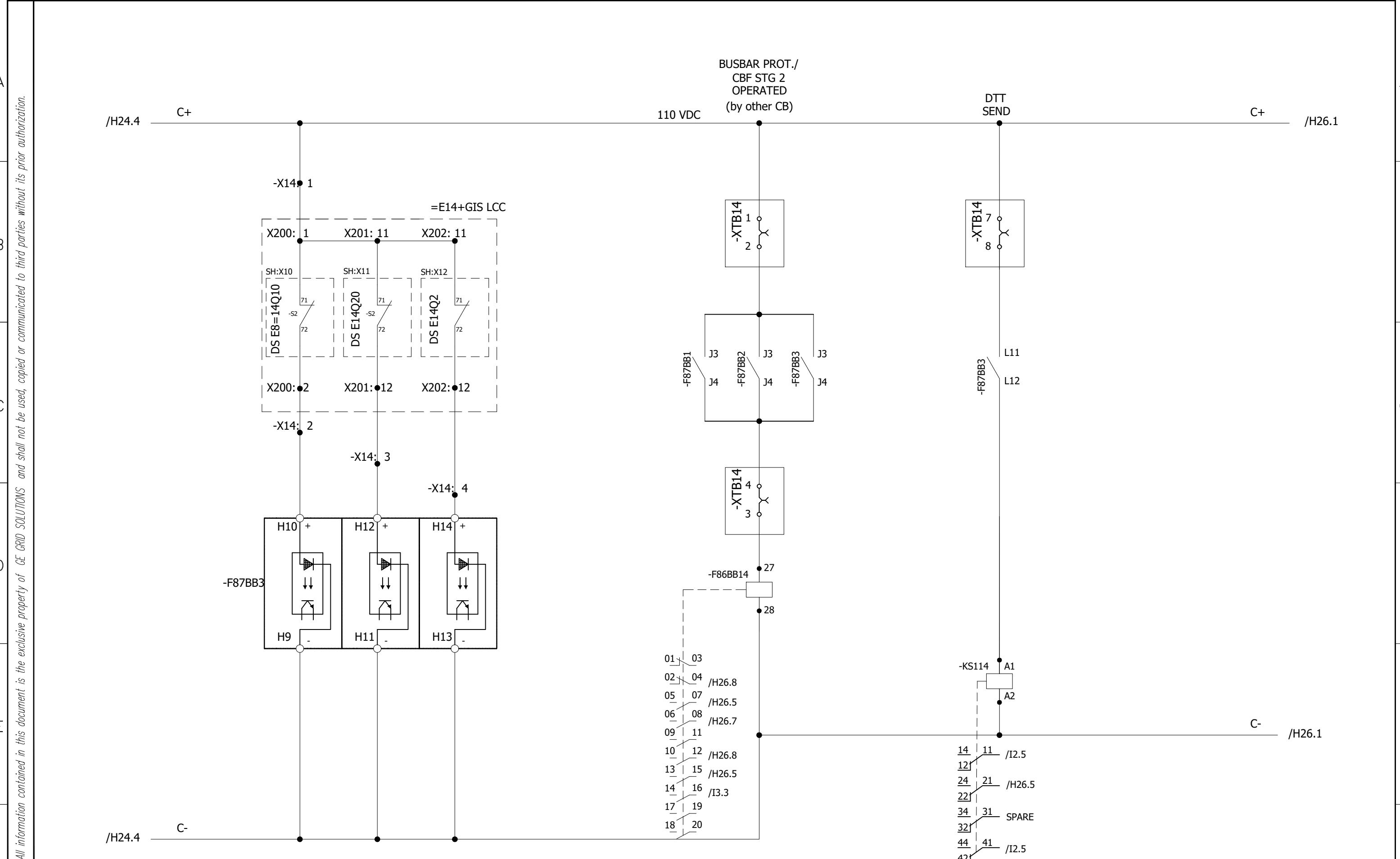
5

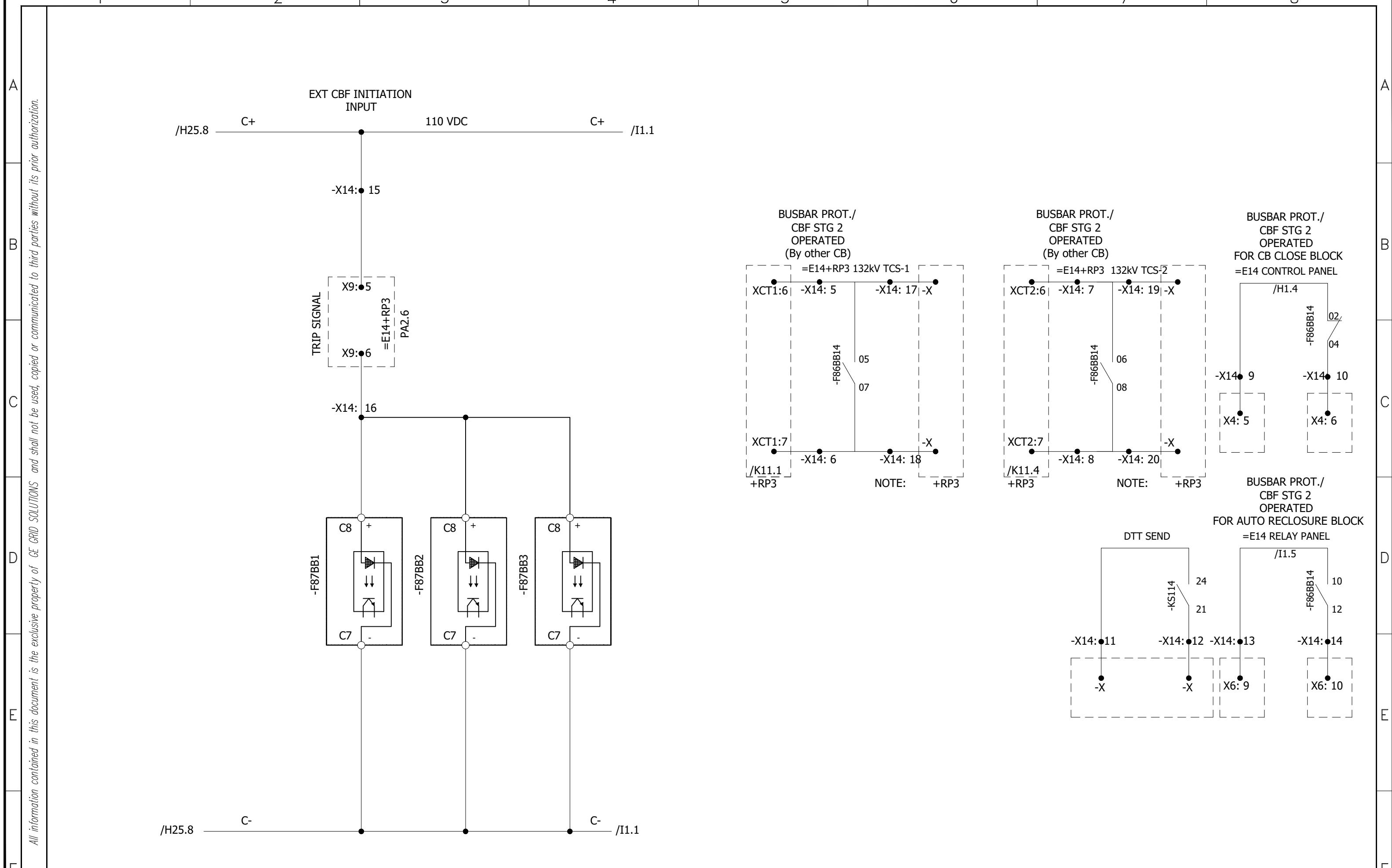
6

7

8

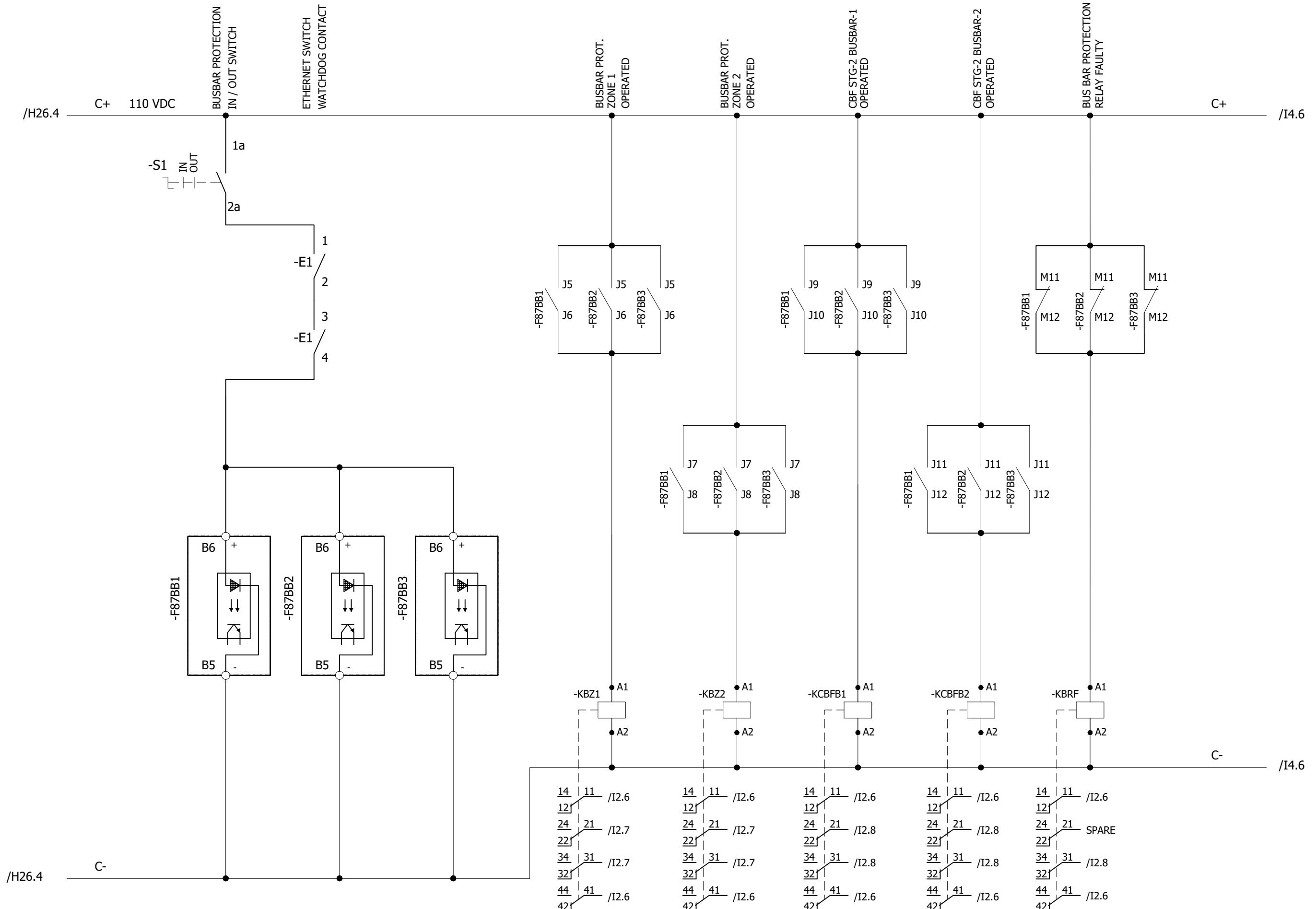
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.





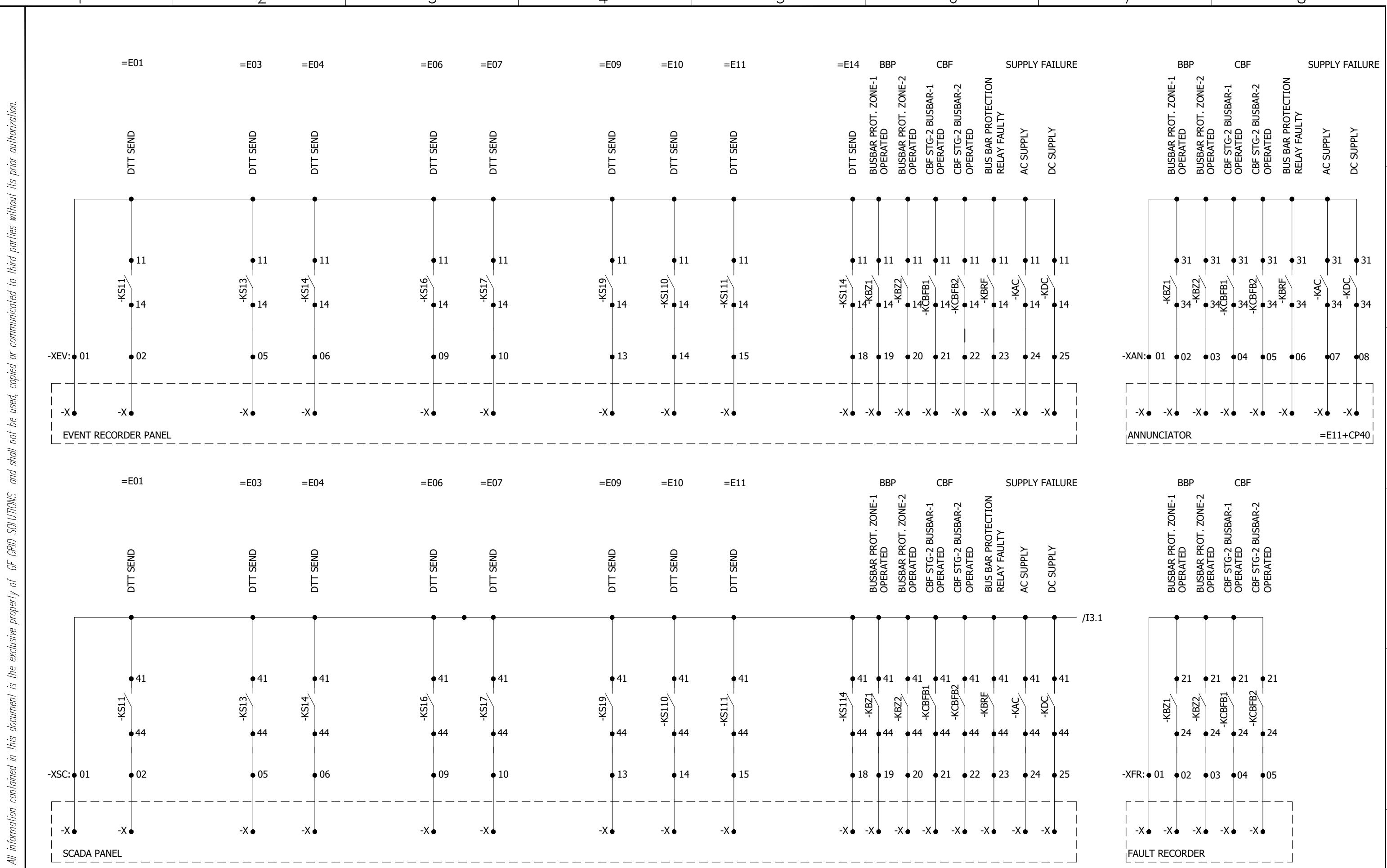
0	AS BUILT	30.10.2018	ASJ	Manufacturer <b>EPE SOL</b> 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor <b>GE</b> Grid Solutions A GE and Alstom joint venture	Client <b>NTDC-WAPDA</b> NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) OPTO INPUT/OUTPUT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type H26
									Sheet no. 48

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 21-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) IN/OUT CIRCUIT	Drawing no. P60194-E-EBB-SC-001
									Project no. P-60194
									Sheet type I1
									Sheet no. 49
REV.	DESCRIPTION	DATE	DRAWER						

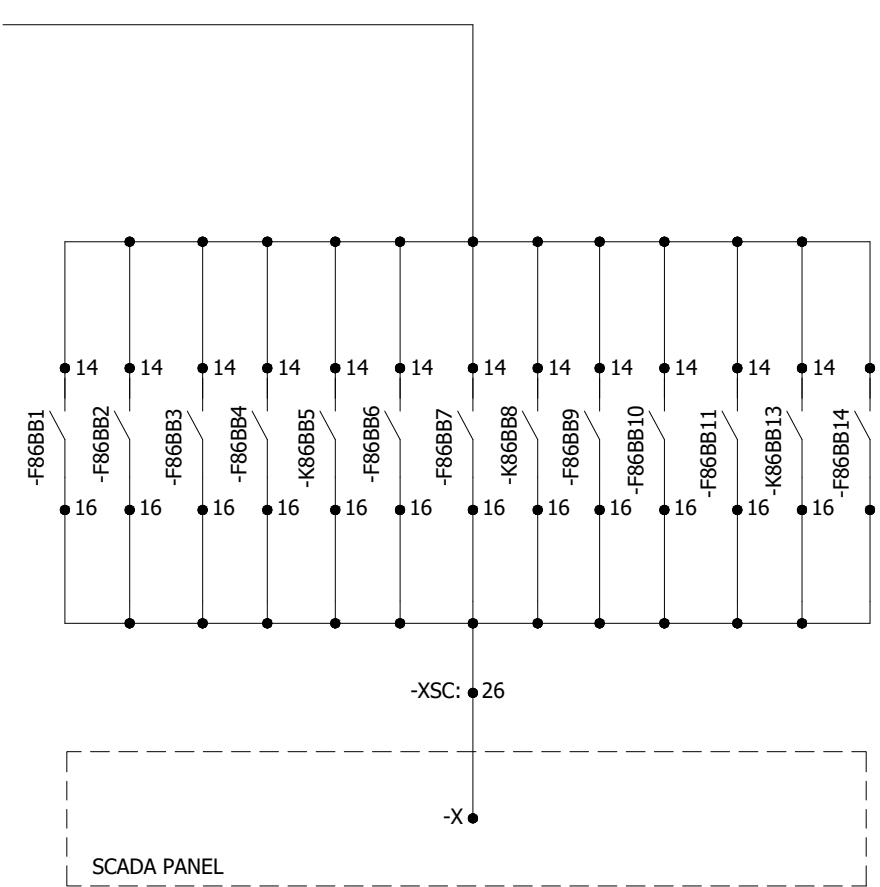
All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.



0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) SIGNALING	Drawing no. P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type I2
									Sheet no. 50

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

BUSBAR LOCKOUT PROTECTION OPERATED



0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) SIGNALING	Drawing no. P60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194
									Sheet type I3
									Sheet no. 51

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

A

B

B

C

C

D

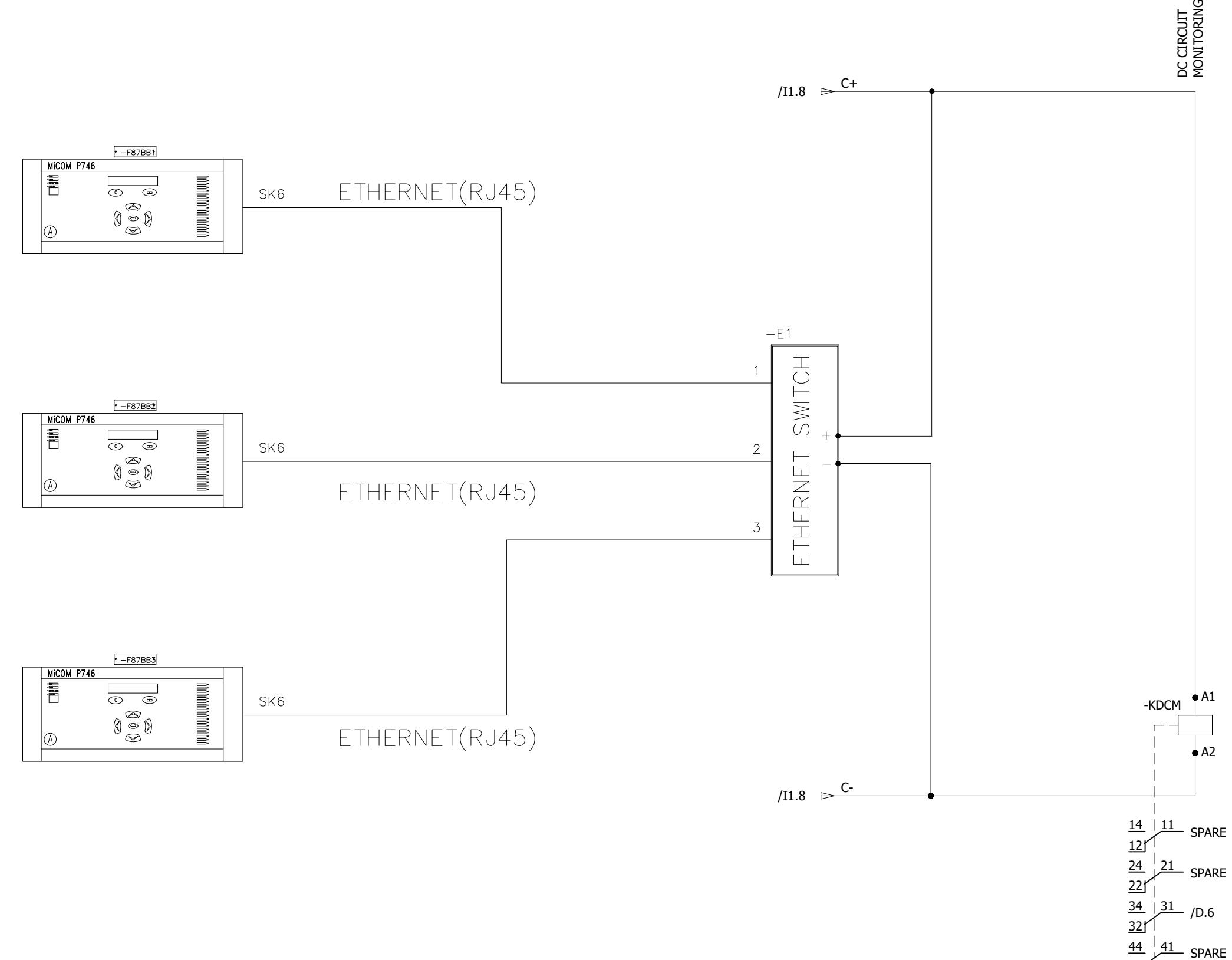
D

E

E

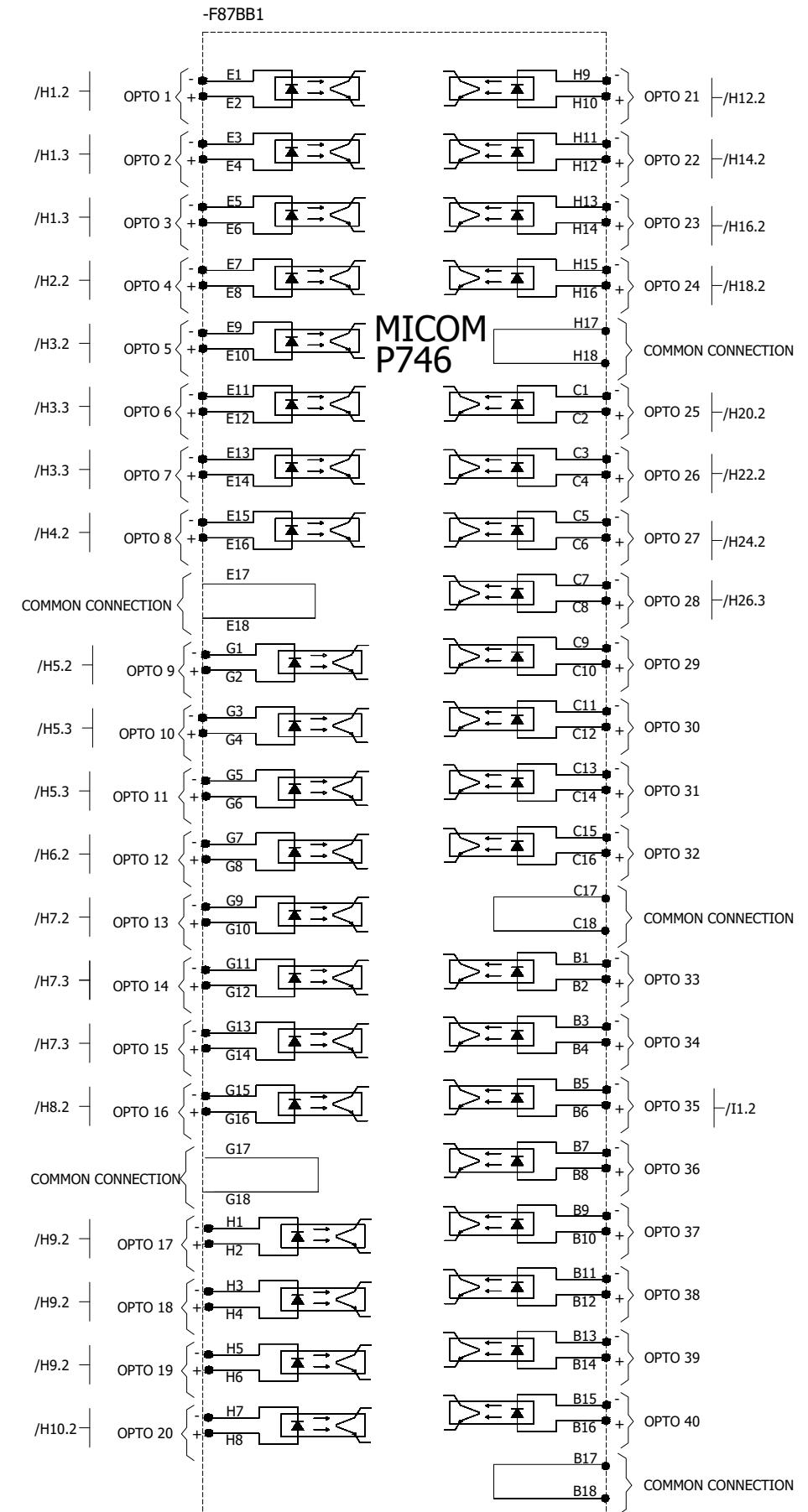
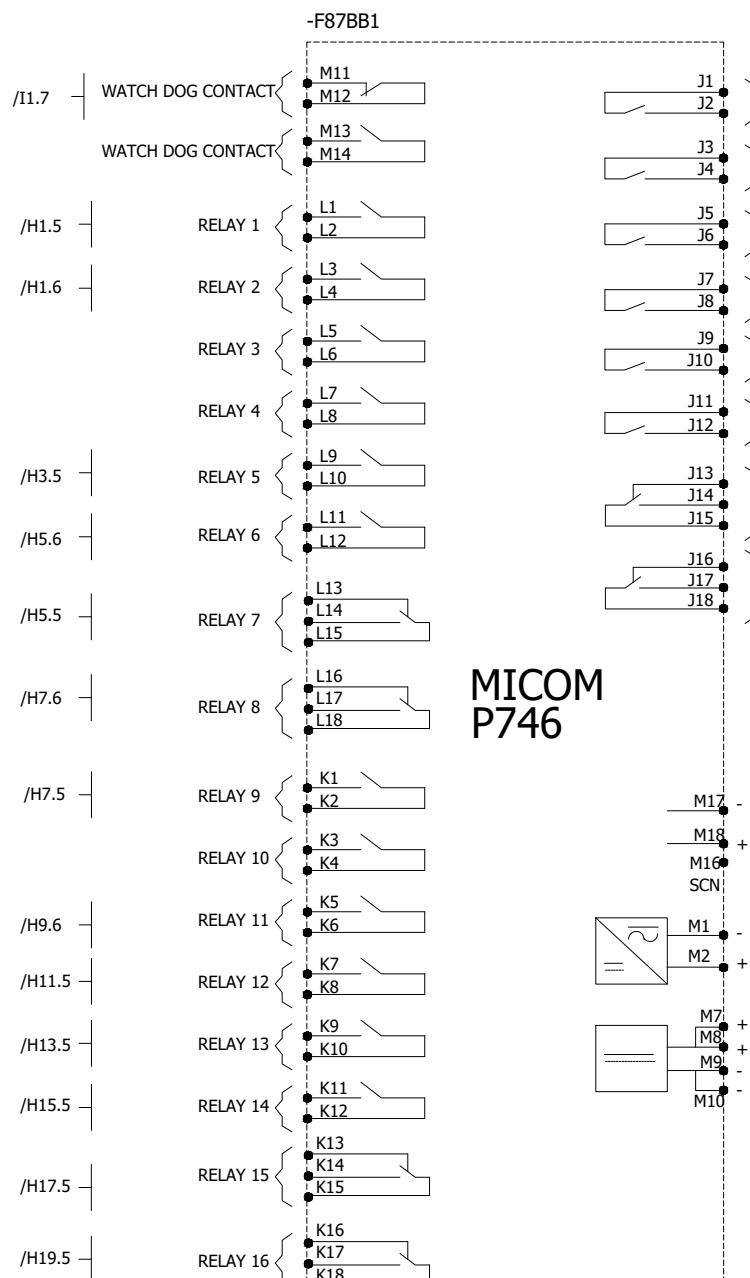
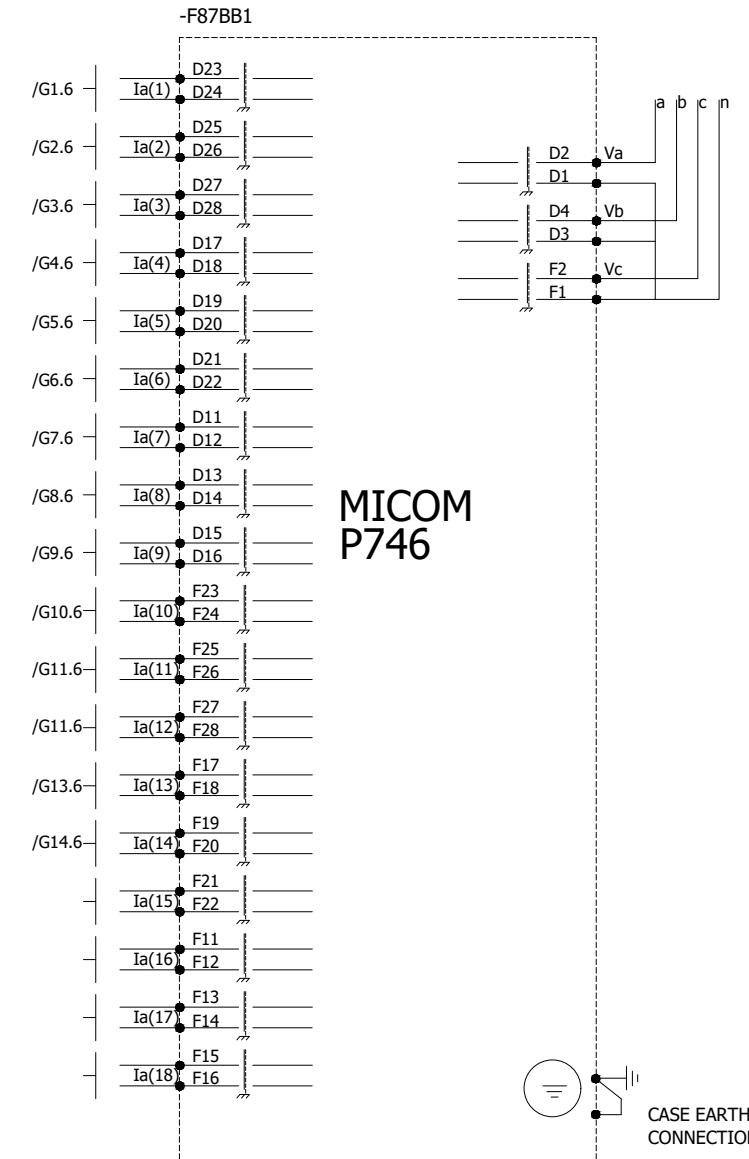
F

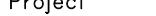
F



0	AS BUILT	30.10.2018	ASJ	Manufacturer	Contractor	Client	Project	Title	Drawing no.
				EPEPSOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Grid Solutions A GE and Alstom joint venture	NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	132KV BUS BAR RELAY PANEL (=E00+RP6) INTER RELAY COMMUNICATION CIRCUIT	P-60194-E-EBB-SC-001
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194 Sheet type I4 Sheet no. 52

*All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.*



0	AS BUILT	30.10.2018	ASJ	Manufacturer  <b>EPESOL</b> 7-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  <b>Grid Solutions</b> A GE and Alstom joint venture	Client  <b>NATIONAL TRANSMISSION &amp; DISPATCH COMPANY LIMITED</b> (NTDC-WAPDA)	Project 220kV/132kV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132kV BUS BAR RELAY PANEL (=E00+RP6) COMPONENT DIAGRAM	Drawing no. P60194-E-EBB-SC-001
									Project no. P-60194
REV.	DESCRIPTION	DATE	DRAWER						Sheet type Z1

All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

0 AS BUILT 30.10.2018 ASJ Manufacturer EPESOL  
71-B Garden Block,  
New Garden Town,  
Lahore, Pakistan

Contractor Grid Solutions  
A GE and Alstom joint venture

Client NATIONAL TRANSMISSION &  
DISPATCH COMPANY LIMITED  
(NTDC-WAPDA)

Project 220KV/132KV GIS SUBSTATION  
GHAZI ROAD, LAHORE

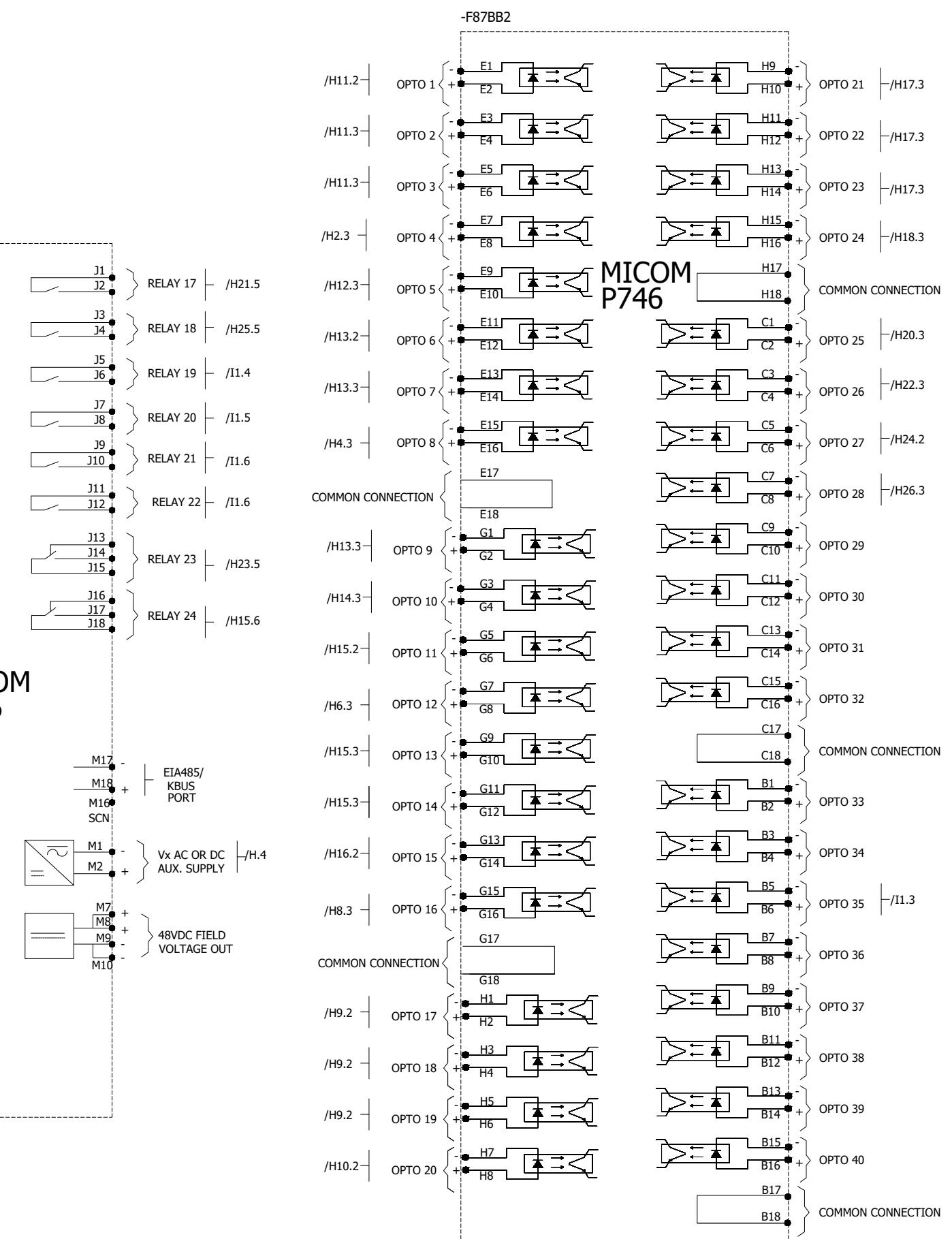
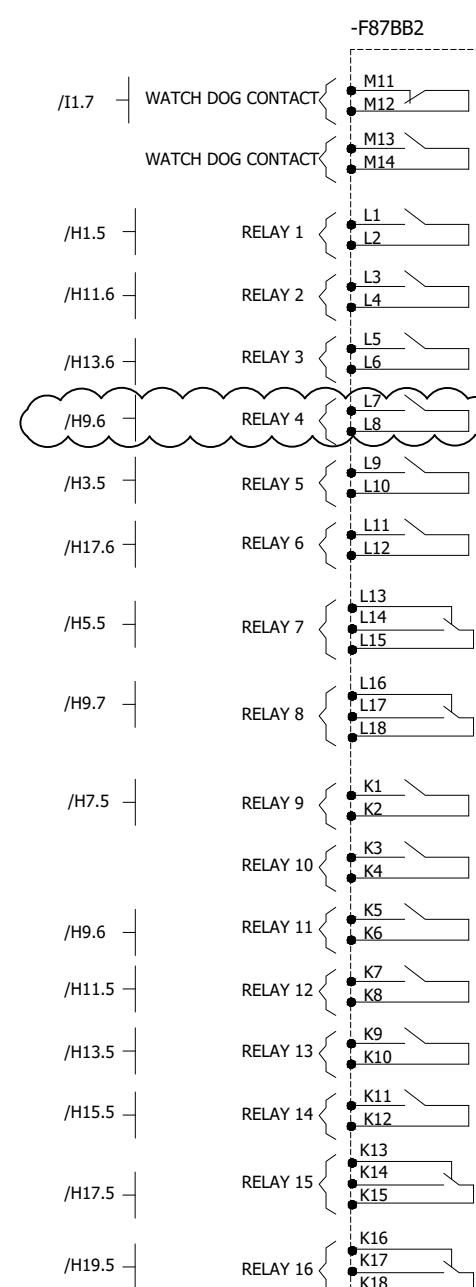
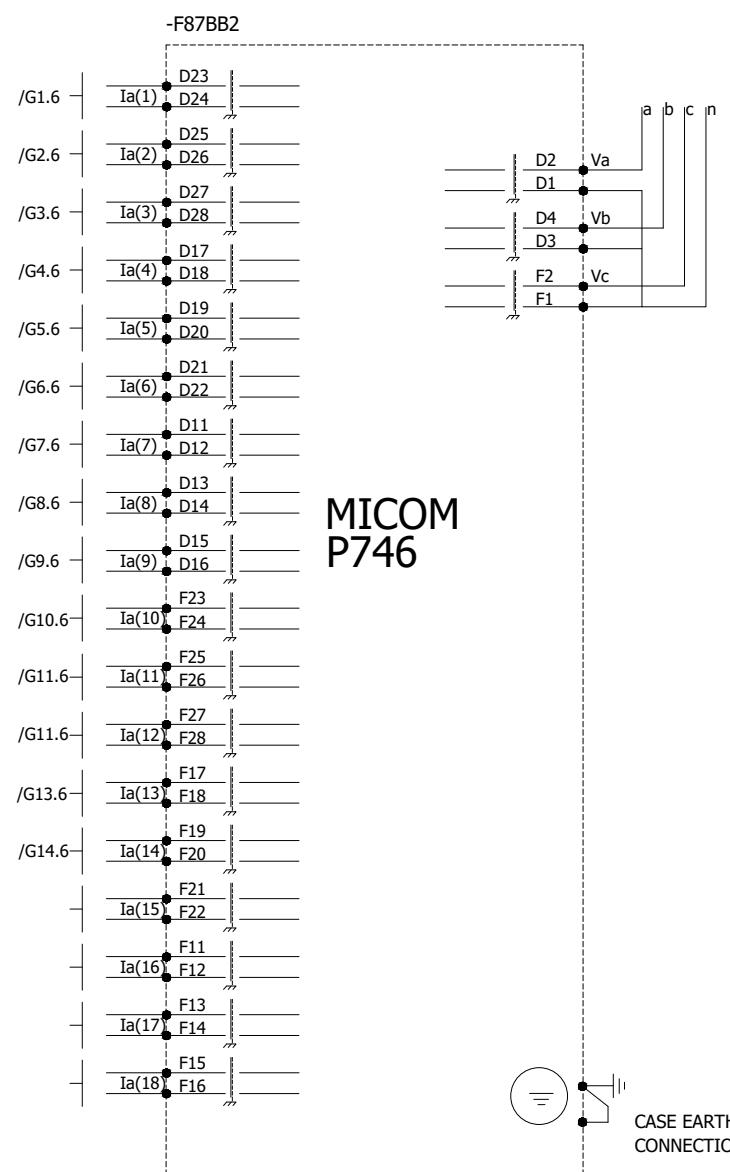
Title 132KV BUS BAR RELAY PANEL  
(=E00+RP6)  
COMPONENT DIAGRAM

Drawing no.  
P60194-E-EBB-SC-001

Project no.  
P-60194

Sheet type  
Z2

Sheet no.  
54



All information contained in this document is the exclusive property of GE GRID SOLUTIONS and shall not be used, copied or communicated to third parties without its prior authorization.

A

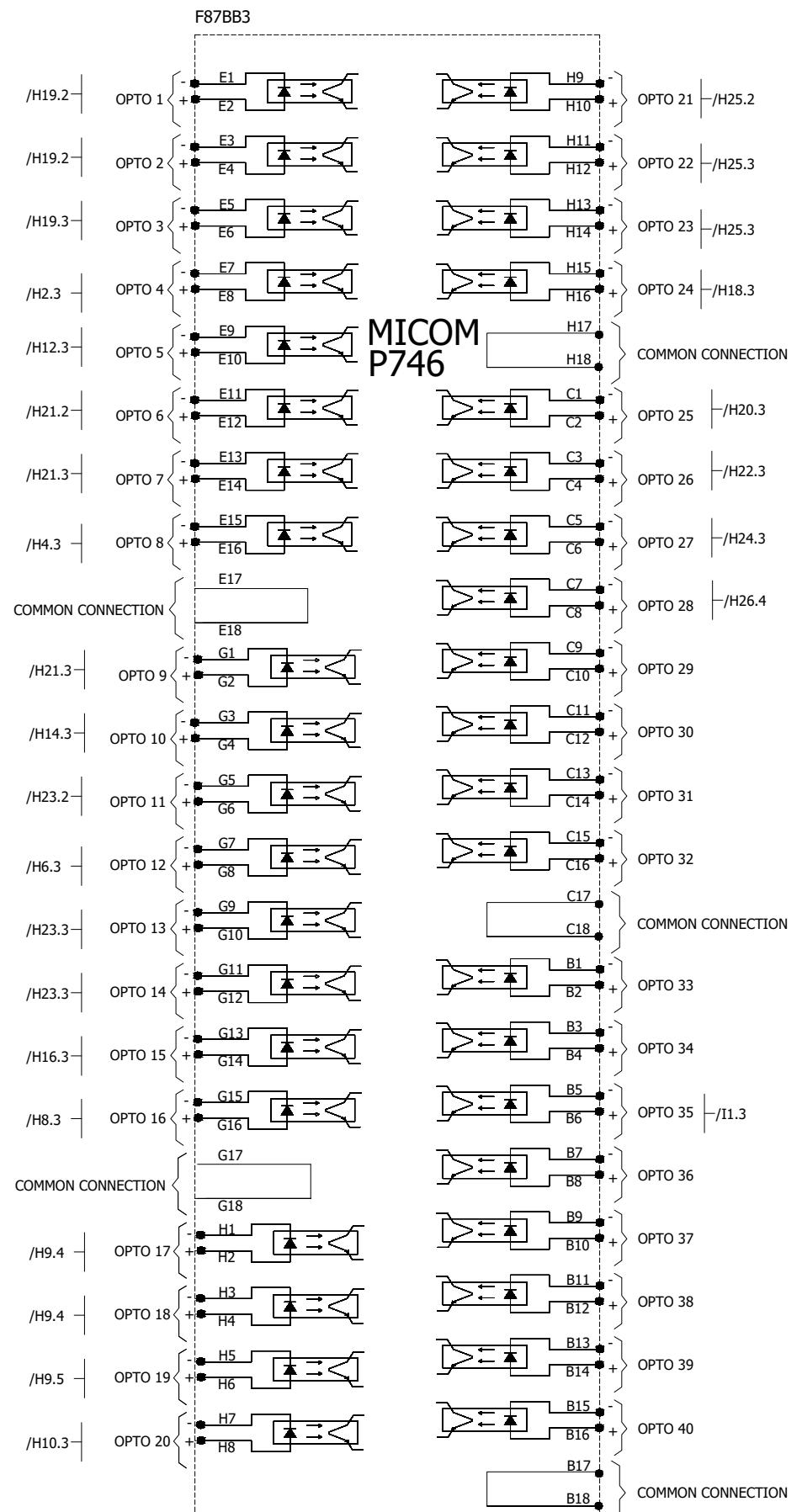
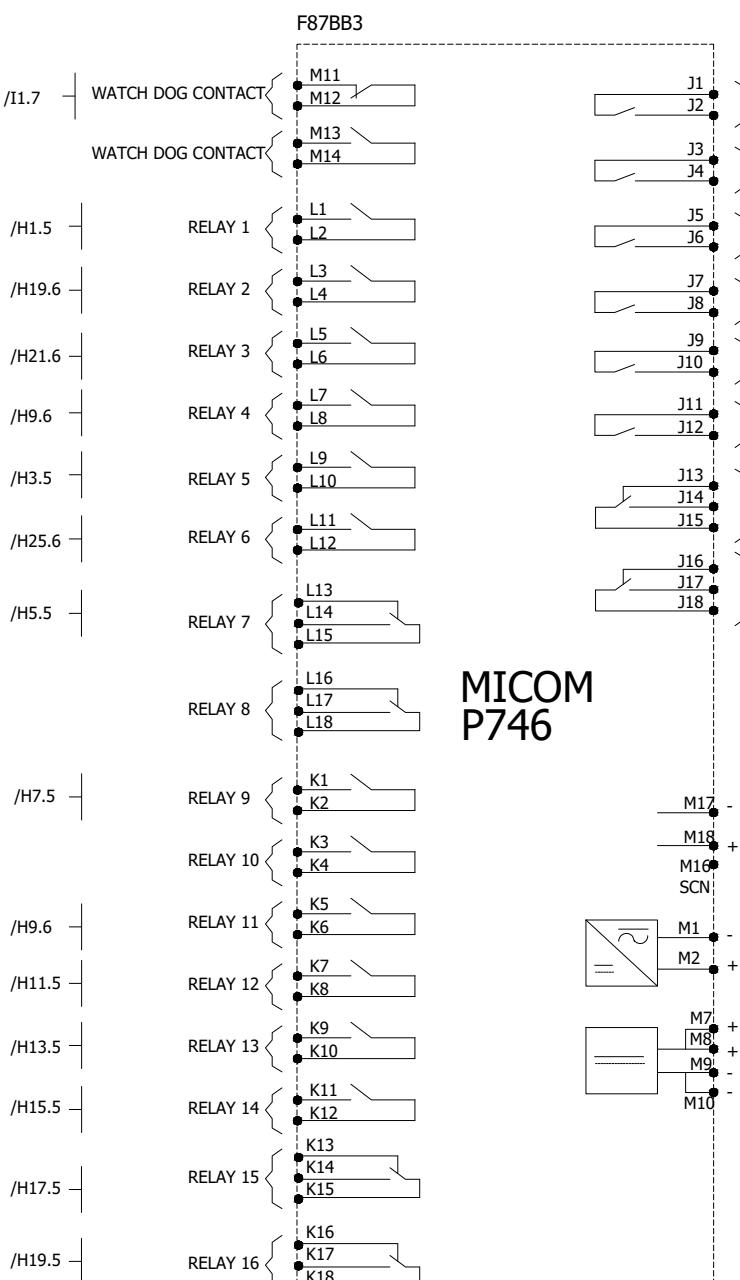
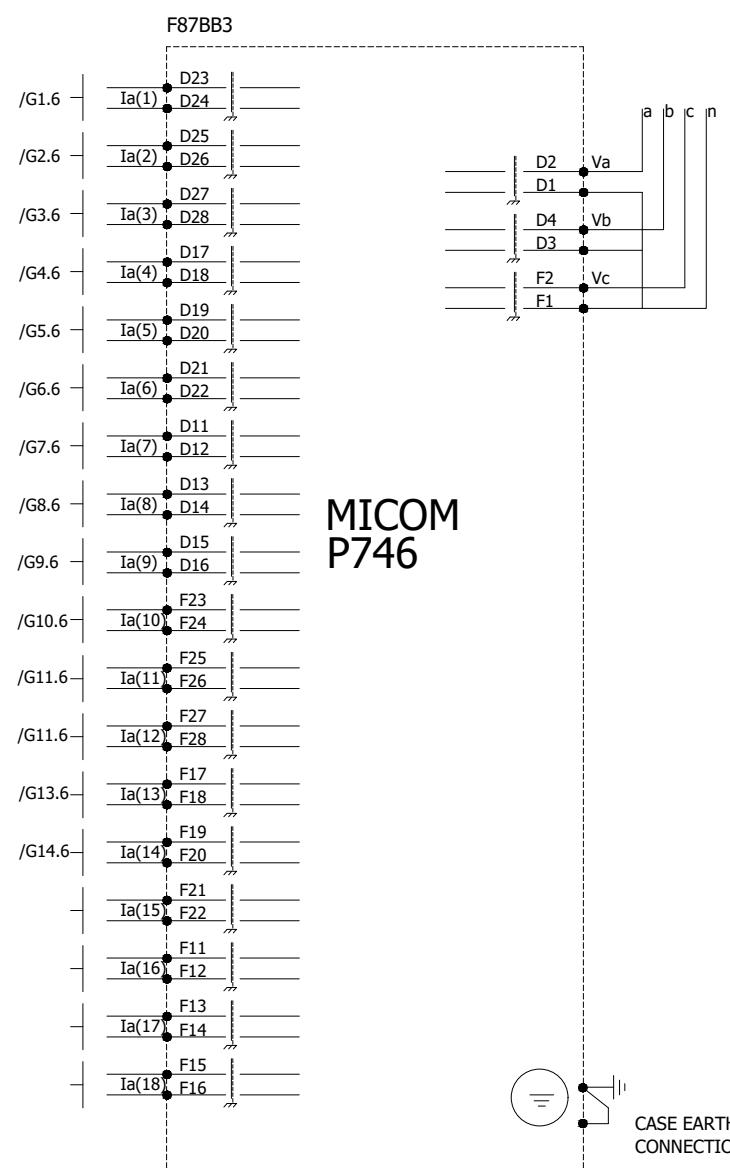
B

C

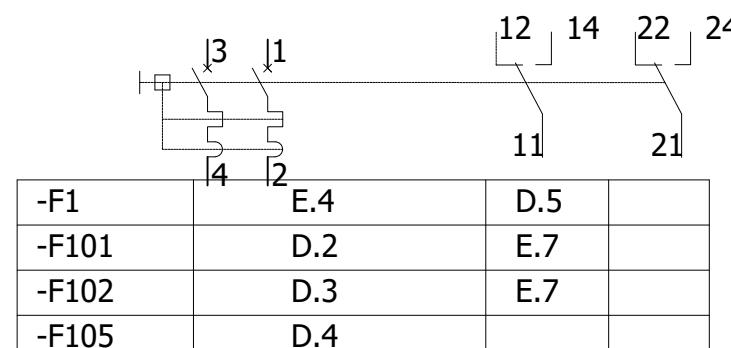
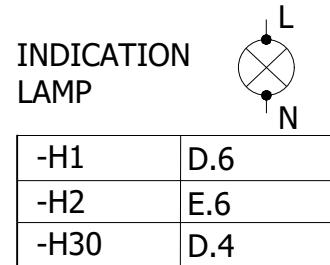
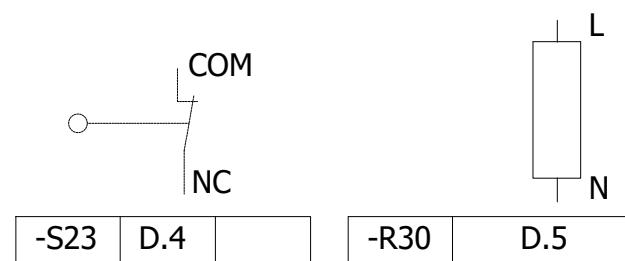
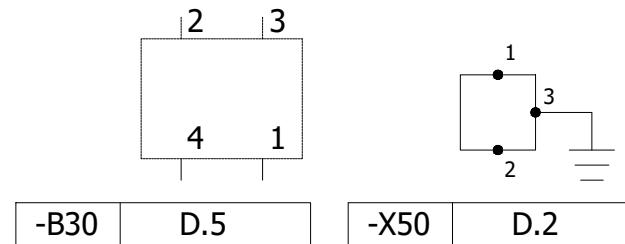
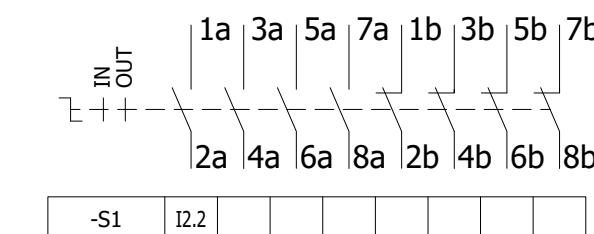
D

E

F



0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) COMPONENT DIAGRAM	Drawing no. P60194-E-EBB-SC-001		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type Z3	Sheet no. 55
1	2	3	4	5	6	7	8				



-KDC  
-KACM  
-KAC  
-KS11

D.6  
D.7  
E.8  
H1.6

-KS13

H5.6

-KS14

H7.6

-KS16

H11.6

-KS17

H13.6

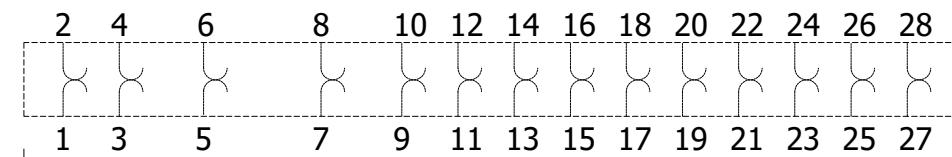
-KACM

I4.8

12 14  
22 24  
32 34  
42 44  
11 21  
31 41

12 14  
22 24  
32 34  
42 44  
11 21  
31 41

-KDC	D.6	D.7					
-KACM							
-KAC	E.8						
-KS11	H1.6						
-KS19							
-KS110							
-KS111							
-KS114							
-KBZ1							
-KBZ2							
-KCBFB1							
-KCBFB2							
-KBRF	I1.7				I1.7	I1.7	



-XTB1	H1.5	H1.6	H.2		G1.5
-XTB2	H3.5	H3.6	H3.6	H.2	G2.5
-XTB3	H5.5	H5.6		H.3	G3.5
-XTB4	H7.5	H7.6		H.3	G4.5
-XTB5	H9.6	H9.7,8	H9.6	H.4	G5.5
-XTB6	H11.5	H11.6		H.4	G6.5
-XTB7	H13.5	H13.6		H.5	G7.5
-XTB8	H15.5	H15.6,7	H15.6	H.5	G8.5
-XTB9	H17.5	H17.6		H.5	G9.5
-XTB10	H19.5	H19.6		H.5	G10.5
-XTB11	H21.5,6	G11.5		H.6	G11.5
-XTB13	H23.5	H23.6,7	H23.6	H.6	G13.5
-XTB14	H25.5	H25.6		H.7	G14.5

A  
B  
C  
D  
E  
F

A  
B  
C  
D  
E  
F

0	AS BUILT	30.10.2018	ASJ	Manufacturer  EPESOL 71-B Garden Block, New Garden Town, Lahore, Pakistan	Contractor  Grid Solutions A GE and Alstom joint venture	Client  NATIONAL TRANSMISSION & DISPATCH COMPANY LIMITED (NTDC-WAPDA)	Project 220KV/132KV GIS SUBSTATION GHAZI ROAD, LAHORE	Title 132KV BUS BAR RELAY PANEL (=E00+RP6) COMPONENT DIAGRAM	Drawing no. P60194-E-EBB-SC-001		
REV.	DESCRIPTION	DATE	DRAWER						Project no. P-60194	Sheet type Z4	Sheet no. 56
1	2	3	4	5	6	7	8				

1 2 3 4 5 6 7 8