

6

M/s. U.P. POWER TRANSMISSION CORPORATION LTD.,
132/33kV SUBSTATION AT BICHPURI (AGRA)
CONTRACTOR: M/s. MOMENTUM TECHSYS PVT. LTD.,

A

B

C

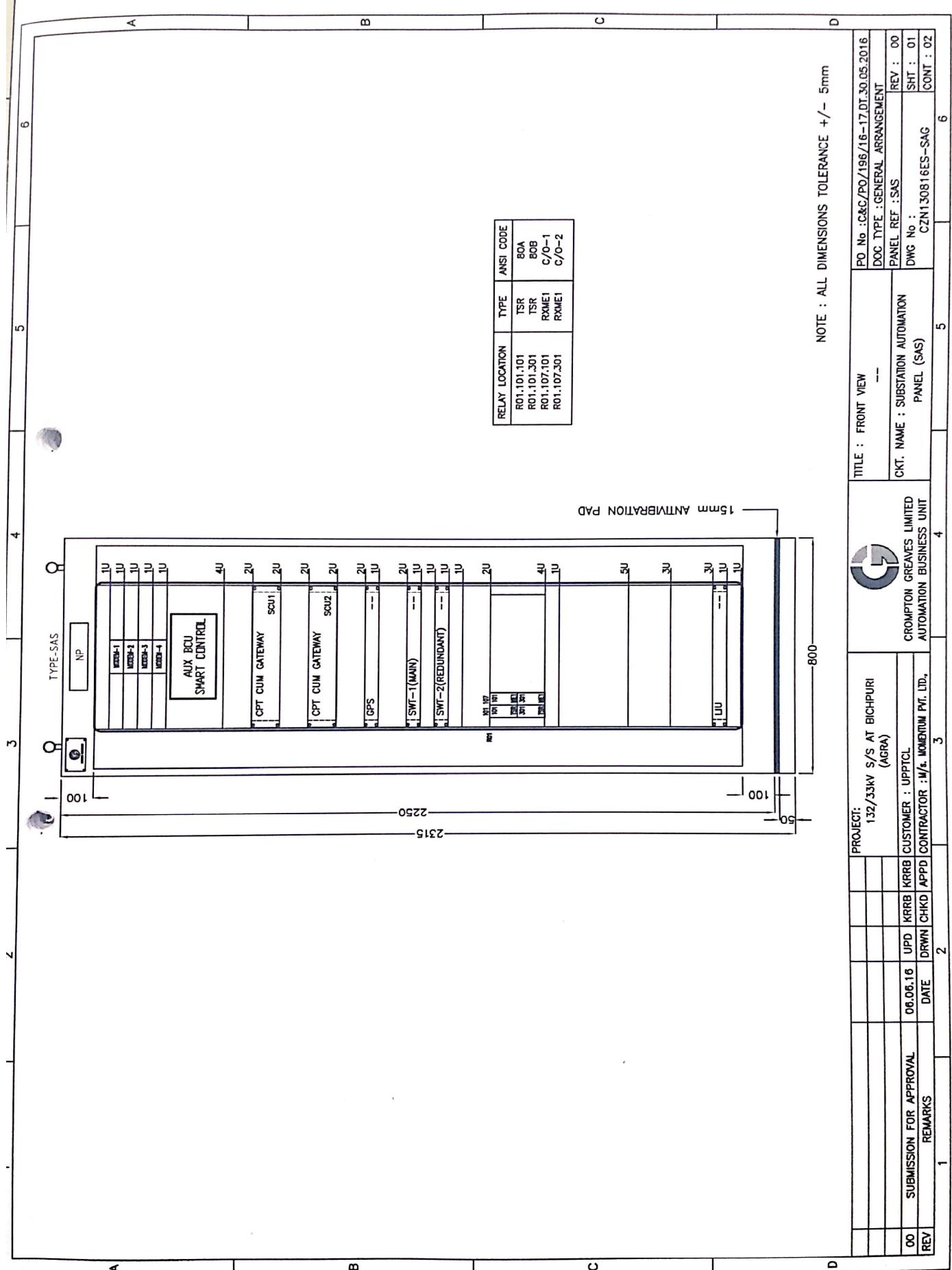
D

GENERAL ARRANGEMENT, BILL OF MATERIAL, SCHEMATIC FOR
 SUBSTATION AUTOMATION SYSTEM PANEL
 PANEL REF : SAS

CIRCUIT	SUBSTATION AUTOMATION SYSTEM PANEL
PANEL	SAS
GA	CZN130816ES-SAG
BOM	CZN130816ES-SAB
SCHEMATIC	CZN130816ES-SAS

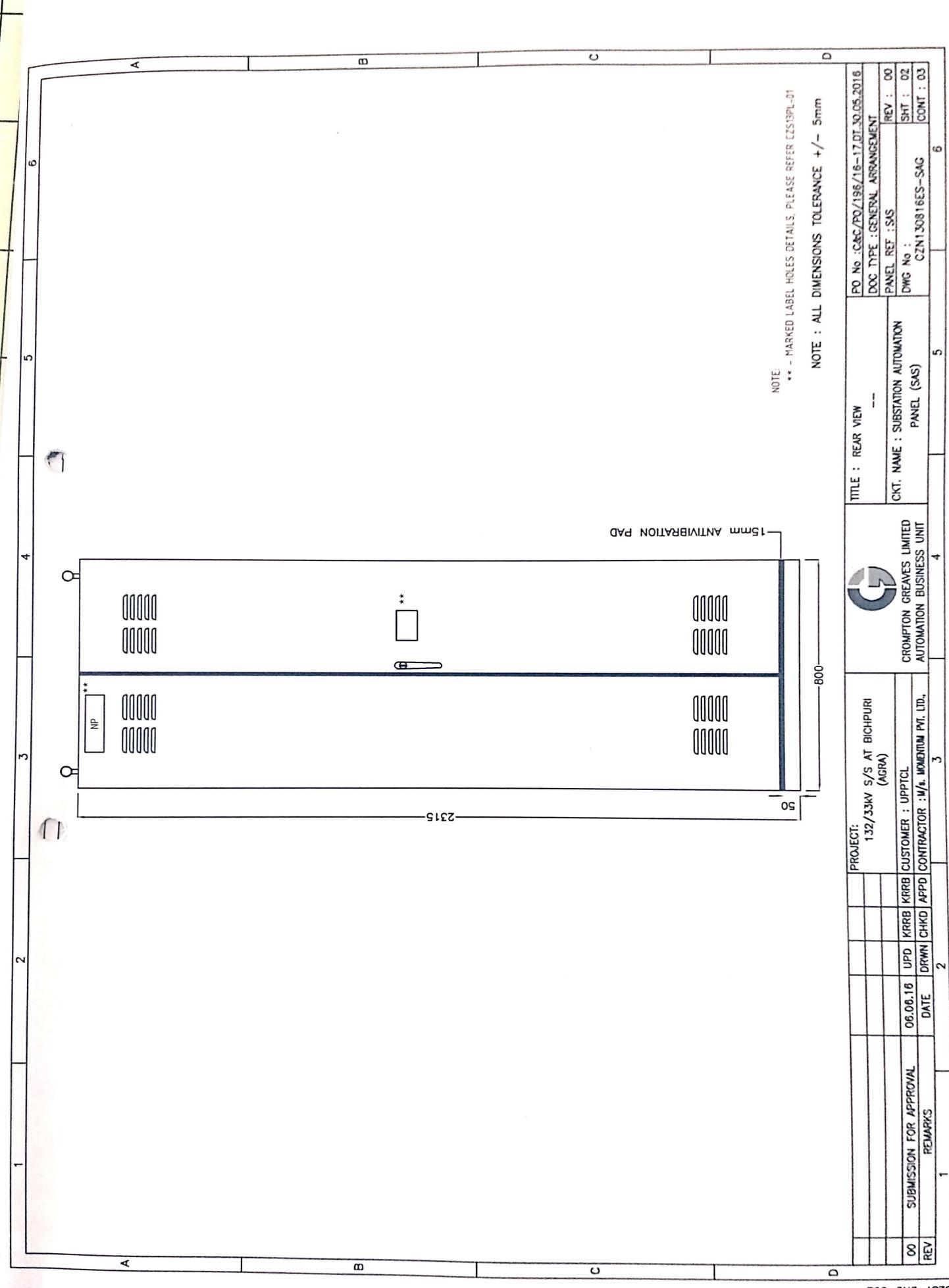
CUSTOMER	U.P. POWER TRANSMISSION CORPORATION LIMITED.
CONTRACTOR	M/s. MOMENTUM TECHSYS PVT. LTD.
PROJECT	132/33kV SUBSTATION AT TILHAR (DIST-SHAHJAHANPUR)
P.O No & Due	
TITLE : TOP SHEET	PO No : C&C/PO/196/16-17 DT:30.05.2016
—	DOC TYPE : GENERAL ARRANGEMENT
CKT. NAME : SUBSTATION AUTOMATION	PANEL REF : SAS
PANEL (SAS)	DWG No : CZN130816ES-SAG
4	5
2	4
1	5
	6

Sl. No:	Description	REV
00	INDEX SHEET	00
01	FRONT VIEW	00
02	REAR VIEW	00
03	SIDE VIEW AND FOUNDATION PLAN	00
04	GENERAL NOTE	00
4A	ICA	00
05	SET OF TABLE FOR SAS EQUIPMENT	00

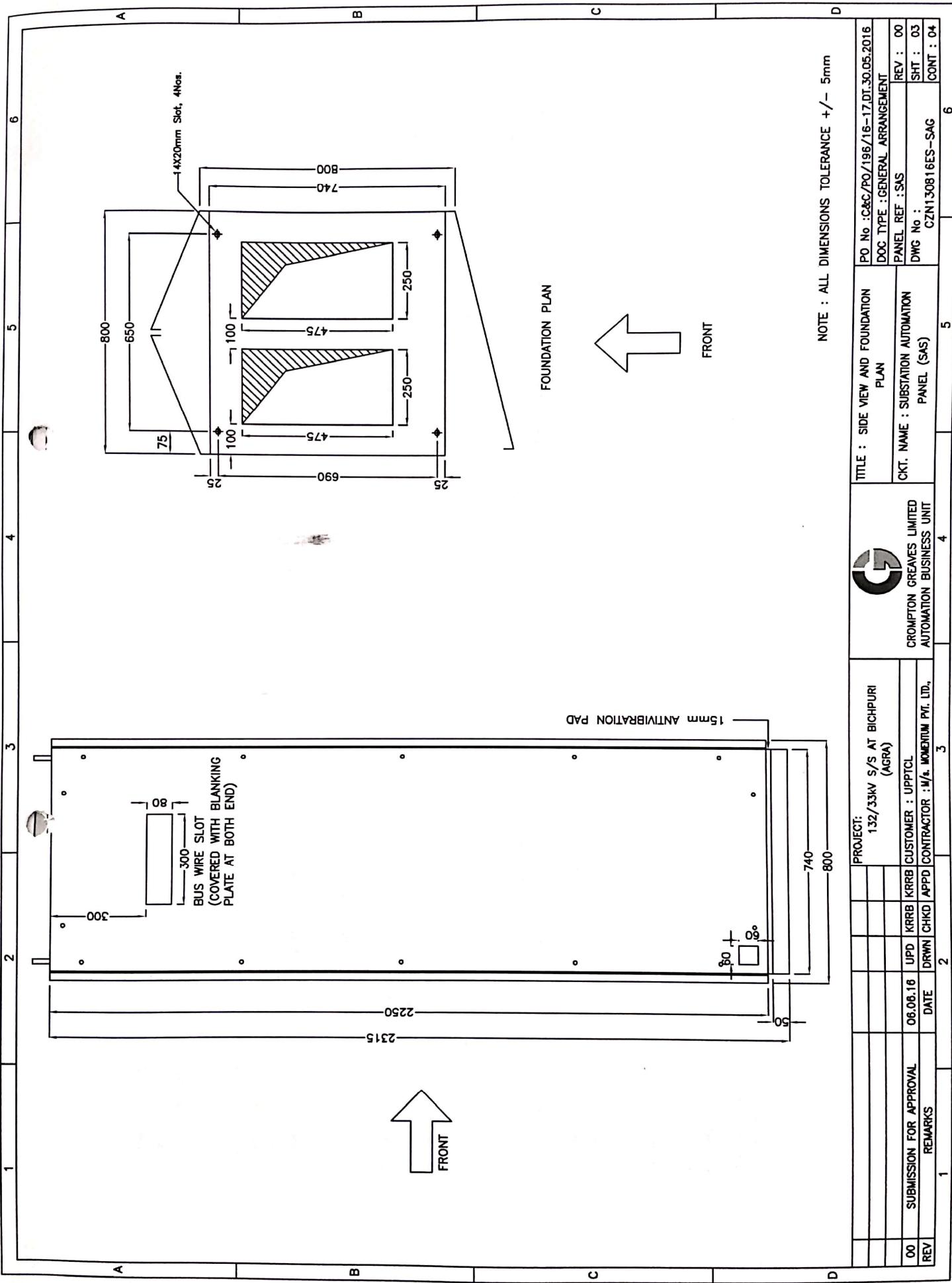


CZST-DRG-002

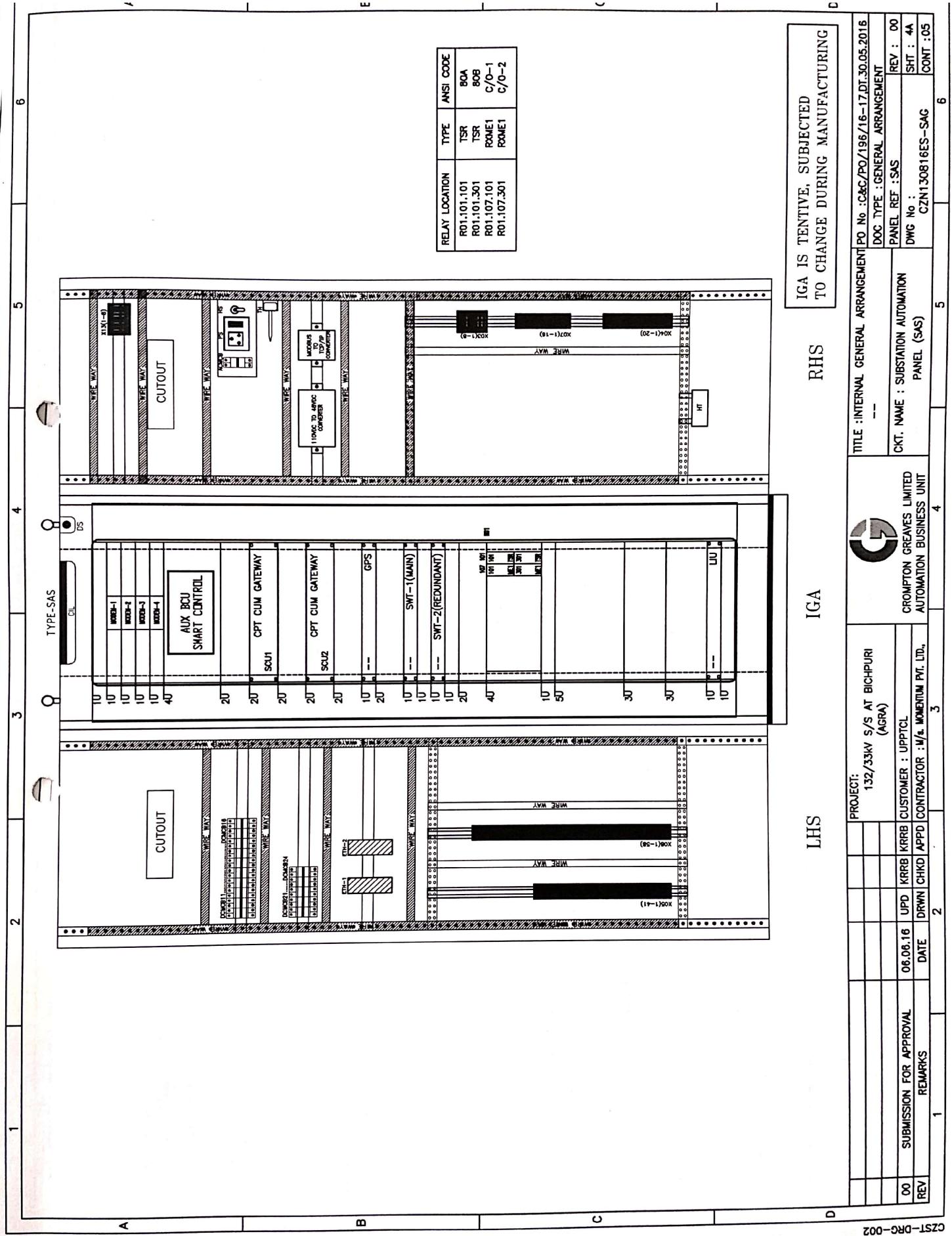
		PROJECT: 132/33kV S/S AT BICHPURI (AGRA)		TITLE : FRONT VIEW ---		PO. No: C&C/PD/198/16-17.DT.30.05.2016	
		DOC. TYPE : GENERAL ARRANGEMENT		---		DOC. TYPE : GENERAL ARRANGEMENT	
00		SUBMISSION FOR APPROVAL		PANEL REF : S/S		PANEL REF : S/S	
REV		REMARKS		DATE		DATE	
1		06.06.16	UPD	KRRB	CUSTOMER : UPTCL	00	REV : 00
		DATE	DRWN	CHKD	CONTRACTOR : M/s. WARDHAN PVT. LTD.	DWG No :	SHFT : 01
		2		APPD		CZN130816ES-SAG	CONT : 02
		3				6	
		4				5	



PROJECT:	132/33kV S/S AT BICHPURI (AGRA)			TITLE : REAR VIEW ---	PO No : CGC/PO/1586/16-17.DT.30.05.2016
DOC TYPE :	GENERAL ARRANGEMENT			PANEL REF : SAS	DOC TYPE : GENERAL ARRANGEMENT
REV : 00				DWG No : CZN130816ES-SAG	SHT : 02
SUBMISSION FOR APPROVAL	06.06.16	UPD	KRRB CUSTOMER : UPTCL	CIRCUIT. NAME : SUBSTATION AUTOMATION	CONT : 03
REMARKS	DRMN CHKD	APPD CONTRACTOR : M/s. MOMENTUM PVT. LTD,	AUTOMATION BUSINESS UNIT	PANEL (SAS)	
REV	Date		3	4	5
1			2		6



CONSTRUCTION Cubicle Type : Simplex Rack mounting With Front Glass Door Cubicle Size : 800(W) x 800(D) (Including Door) x 2250(H)+15mm AV PAD+50mm Base Frame Base Frame : Made out of 3mm CRCA Degree of protection : IP31 Earth Busbar : 50x6mm Tinned Copper Strip (Extension Possible on either sides through opening provided) Material Thickness : The weight bearing members such as the Base Frame, Front sheet, Door frames thickness shall be not less than 3mm and 2mm for Sides, Doors, Top and Bottom portions. Gasket : All doors and removable covers shall be gasket all round with EPDM/PU gaskets	PAINT (POWDER COATING) Paint Thickness : 60 – 80 microns for Glossy/Semi glossy finish : 80 – 100 microns for Texture finish Exterior : LIGHT GRAY TO SHADE No. 631 AS PER IS-5, texture finish Interior : WHITE – Glossy finish Base Frame : BLACK – Glossy finish	LABELS a. Circuit Label : 200 x 60 10 Acrylic/Lamicoid b. Apparatus Label (Inside) : 25 x 15 3 Aluminium anodised c. Apparatus Label (Front) : 50 x 15 3 Aluminium anodised d. Item Designation Stickers (Inside) : 10 x 15 5 Self Adhesive yellow stickers e. Flag Relay Label : 30 x 30 2 Aluminium anodised	DIMENSIONS (mm) LETTER HEIGHT (mm) MATERIAL a. Circuit Label : 200 x 60 10 Acrylic/Lamicoid b. Apparatus Label (Inside) : 25 x 15 3 Aluminium anodised c. Apparatus Label (Front) : 50 x 15 3 Aluminium anodised d. Item Designation Stickers (Inside) : 10 x 15 5 Self Adhesive yellow stickers e. Flag Relay Label : 30 x 30 2 Aluminium anodised	TYPE OF INSCRIPTION Laser marking—white letters on black background Laser marking—white letters on black background
WIRING (1100V Grade FRLS Cable) DC Circuits : 1.5mm sq.mm multi strand flexible Grey colour PT Circuits : 2X2.5mm sq.mm multi strand flexible Red, Yellow, Blue and Black for phase and neutral identification for TVM and 2.5mm sq.mm for all the circuit except for ABB combilex relays where it will be 1.5 sqmm.	CT Circuits Earthing Circuit : 2.5mm sq.mm multi strand flexible Red, Yellow, Blue and Black for phase and neutral identification 1ph. AC Circuit : 2.5mm sq.mm multi strand flexible Green 1.5mm sq.mm multi strand flexible Black	TERMINAL BLOCKS (20% Spare TB's) Disconnecting Type : CT, PT, DC & AC (Incoming) Circuit, Bus-PT Inter panel, AC & DC(Incoring) Inter panel Non Disconnecting Type : Inter Panel, Earthing, Trip & General Circuit Ferrules : White Sleeve with Nos. marked in black letters.	PROJECT: 132/33kV S/S AT BICHPURI (AGRA) CRT. NAME : CROMPTON GREAVES LIMITED AUTOMATION BUSINESS UNIT PANEL NAME : SUBSTATION AUTOMATION PANEL (SAS)	TITLE : GENERAL NOTE --- DOC TYPE : GENERAL ARRANGEMENT PANEL REF : SAS REV : 00 DWG No : G2N130816ES-SAS CONT : 4A REV 1 SUBMISSION FOR APPROVAL 06.06.16 DATE DMRN CHKD APPD CONTRACTOR : W/A. MONETUM PVT. LTD. REMARKS 3 REV 2 1 2 3 4 5 6
A	B	C	D	D



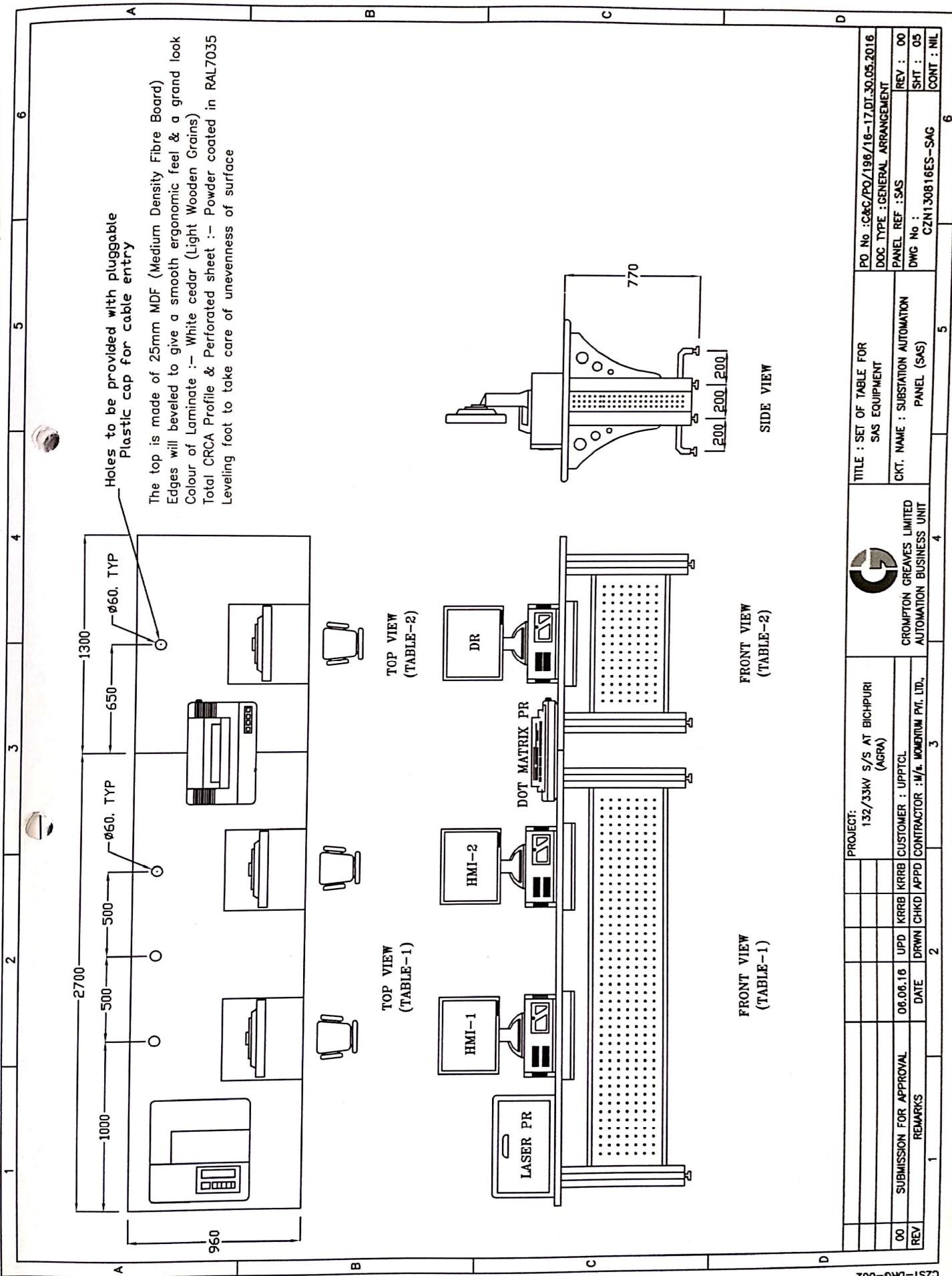
1 3 4

S.No	Fun. Ref	Description	Specification	Make	Part Code	Qty/ Panel
PANEL FRONT MOUNTED EQUIPMENTS						
1	CL	CIRCUIT LABEL	PVC BLACK 200(W)X60(H)			1
2	SAS	SUBSTATION AUTOMATION PANEL	TYPE: SIMPLEX, DIM: 2315(H)X 800(W) X 800 (INCL BOTH DOORS)(D). MOUNTING: 19" RACK MOUNTING WITH FRONT GLASS DOOR EXTERIOR COLOUR : LIGHT GREY TO SHADE No: 631 AS PER IS-5, TEXTURE FINISH INTERIOR COLOUR : GLOSSY WHITE		INFB2100-007	1
3	SCU-1	RTU+SCU MAIN	SIZE: 19" .2U RACK MOUNTING, REAR PORT AUX. VOLTAGE: 110V DC 2 NOS. ETHERNET PORTS (RJ45) 2 NOS. RS 232 PORTS 2NOS. 62.5/125 (850nm) MM FO with ST 8 DIGITAL INPUTS, 8 DIGITAL OUTPUTS		1CPT-C1A-250000FAU	1
4	SCU-2	RTU+SCU REDUNDANT	SIZE: 19" .2U RACK MOUNTING, REAR PORT AUX. VOLTAGE: 110V DC 2 NOS. ETHERNET PORTS (RJ45) 2 NOS. RS 232 PORTS 2NOS. 62.5/125 (850nm) MM FO with ST 8 DIGITAL INPUTS, 8 DIGITAL OUTPUTS		1CPT-C1A-250000FAU	1
5	LAPTOP	LAPTOP FOR DR VIEWER HMI	Intel Core i 3 (Min 1.6 GHz) / Intel Chipset / Integrated 802.11 n WIFI LAN + Bluetooth / 2 GB DDR III Memory / 500 GB SATA HDD / 15.0" LED Display, VGA Port , 3 X USB Ports, RJ 45 Port, Touch Pad / 1 Year warranty Support / Carry or Back Bag / Win 7 / PROFESSIONAL.	Lenovo HP Dell/Sony	INLAP600-207	1
6	GPS	GPS for time synchronization	Input Connector : Roof Top Antenna input Output Connectors : RJ45 Connectors SNTP O/P - 2 Nos, 1 no. IRG-B port. Front Panel : LCD Display, GPS, Master status, Indicators,	SANDS / SERTEL / Equivalent	INGPS6000-004	1
7	AUX BCU	STATION AUXILIARIES BCU	TYPE : SMART BAY NO. OF DI : 32 NO. OF DC AI: 24 (4-20mA) COMMUNICATION PORT: RJ45 COMMUNICATION: IEC61850 AUX. SUPPLY: 48V DC		IMBCU1200-201	1
PROJECT : 132/33KV SUBSTATION AT BICHPUR (AGRA)						
CROMPTON GREAVES LIMITED AUTOMATION BUSINESS UNIT						
F	FOR APPROVAL	06.06.16	UPD	KRRB CUSTOMER : UPPTCL Checked CONTRACTOR : M/s. MOMENTUM TECHSYS PVT. LTD. /Appd	PO REF NO : DOC TYPE: BILL OF MATERIAL PANEL REF: SALS DRG NO: CZN130816ES-SALS	F REV. 00 01 02
Rev	Remarks	Date	Created	1	3	4

S.No	Fun. Ref	Description	Specification	Make	Part Code	Qty/ Panel
PANEL FRONT MOUNTED EQUIPMENTS						
A						
8	LOCAL HMI-I LOCAL HMI-II REMOTE STATION HMI	LOCAL / REMOTE HMI	(3 Processor min 2.0GHz 4GB RAM 25" High resolution LED color Monitor with graphical controller, 500GB SATA HDD, DVD 32-bit PCI, 2 x 10/100 Mbps Intel Ethernet ports, 4USB ports, 2 serial (9 Pin), one parallel, one Keyboard and mouse port, 1XSound card, 2 External Speakers, 107 Keys Standard Keyboard, Ps2 type Microsoft or equivalent mouse with scroll wheel, Windows 7 Professional, open office Accessories: Good quality mouse pad. Antivirus Software with 2 years subscription.	HP/ Advantech/ EI / Eq.	INHM16100-103	**3
B						
9	SWT-1 SWT-2	SYSTEM ETHERNET SWITCH	POWER SUPPLY :Isolated 80-260VAC@47-63Hz / 80-360VDC SIZE :1U x 19" 1 Rack 16 No. RJ45 ports and 2 No. Gigabit ports	ZIV	3SWT-E0011M300AM	2
10	LIU-1	RACK MOUNT LIU	RACKMOUNT LIU/W24 PORT LC DUPLEX PANEL WITH 12 LC MM DPX COUPLER LOADED & WITH 24 LC MM DIGITAL 1.5 MTS	REPUTED	INLIU6000-120	1 (SAS PANEL)
C						
11	ETS-3,4	BAY ETHERNET SWITCH	POWER SUPPLY :Isolated 80-260VAC@47-63Hz / 80-360VDC SIZE :1U x 19" 1 Rack 12 No.FO MTRJ, and 2 No. Gigabit ports	ZIV	3SWT-MR0011M300AM	2 (PART OF CRP)
11A	ETS-5	BAY ETHERNET SWITCH	POWER SUPPLY :Isolated 80-260VAC@47-63Hz / 80-360VDC SIZE :1U x 19" 1 Rack 24 No.FO MTRJ, and 2 No. Gigabit ports	ZIV	3SWT-MMM001M300AM	1 (PART OF CRP)
D						
12	ETH-1, ETH-2	ETHERNET SWITCH FOR PRINTER	Minimum 4 Nos. of RJ45 ports.	ADVANTECH/BELDEN	INETH6008-002	2
13	PRINTER	Multifunction LASER PRINTER (A4 SIZE)	B&W Laser Printer A4 size 1 tray, up to 150 sheet input capacity with network RJ45 port Power Supply: 230V AC, 50Hz Multifunction : Print, Copy, Scan, & Fax	HP / Canon	INPTR6100-008	1
E						
14	PRINTER	DOT-MATRIX PRINTER	Print Width:80 column Power Supply: 230V AC, 50Hz	TVS/EPSON	INPTR6100-006	1
F						
00	FOR APPROVAL	06.06.16	UPD	KRRB CUSTOMER : UPTCL Checked CONTRACTOR : Ms. MOMENTUM TECHSYS PVT. LTD., /Appd	PROJECT : 132/33kV SUBSTATION AT BICHPUR (AGRA) SUBSTATION AUTOMATION PANEL	PO REF NO : DOC TYPE: BILL OF MATERIAL PANEL REF:SAS DRG NO:CZN130816ES-SAB
Rev	Remarks	Date	Created			REV -00 02 03
			1			4

** 2 Nos. HMI's for local End and 1 No. HMI for Remote End.

S.No	Fun. Ref	Description	Specification			Make	Part Code	Qty/ Panel
A								
1	DCMCB11 DCMCB21 DCMCB12;13;14;15;22;23;24	CONTROL MCB FOR DC CIRCUIT	DOUBLE POLE MCB, TYPE: DC SERIES AUX. CONTACTS: 1NO+1NC (TRIP/OFF APPLICATION) RATING: 20A RATING: 4A	INDOASIAN & S SIEMENS/ABB/SCHNEIDER	INMCB2600-120 INMCB2600-104 2 7			
2	ACMCB	CONTROL MCB FOR AC CIRCUIT	DOUBLE POLE MCB, TYPE: AC SERIES RATING: 16A, AUX. CONTACTS: 1NO+1NC (TRIP/OFF APPLICATION)	INDOASIAN & S SIEMENS/ABB/SCHNEIDER	INMCB2601-316 1			
B	DS	DOOR SWITCH	SUPPLY VOLTAGE: 240V AC RATING : 0.25A, TYPE : ON/OFF, SINGLE POLE	ELEMCO / JAINSON	INSWD1400-002 1			
3	CIL	CUBICLE ILLUMINATION LED LAMP	SUPPLY VOLTAGE: 240V AC TYPE: LED, RATING - 5W	GJPHILIPS/HAVELLS /SPECTRUM	INLED1700-001 1			
C	HS	HEATER SWITCH (ROTARY SWITCH)	SUPPLY VOLTAGE: 240V AC RATING : 6A, TYPE : ON/OFF, SINGLE POLE	SWITRON	INSWT1400-006 1			
4	TH	THERMOSTAT	SUPPLY VOLTAGE: 240V AC RATING: 30-90 DEG	TEMPTROL / GIRESH EGO	INTHS1600-002 1			
5	HT	HEATER	SUPPLY VOLTAGE: 240V AC RATING: 60W	SURYA / GIRESH EGO	INHET1500-002 1			
6	PS	POWER SOCKET WITH SWITCH	SUPPLY VOLTAGE: 240V AC RATING: 5/15A WITH SWITCH AND 3PIN PLUG.	ANCHOR	INSCCK1800-001 1			
D	TB	DISCONNECTING TBS NONDISCONNECTING TBS	TYPE: KLTDM4 / CBT7AU, with riding link MATERIAL : POLYAMIDE, NON FERROUS TYPE: KABT M3 / CSB9/N3 MATERIAL : POLYAMIDE, NON FERROUS	ELEMEX/CONNECTWELL	INTBS1900-002 AS PER SCHEME REQUIREMENT INTBS1900-002			
7			110V DC to 48V DC CONVERTER	KB ELECTRONICS/ Equivalent	INCN06600-003 1			
8			MODBUS TO TCP/IP CONVERTER	Modbus to TCP/IP converter, 2Nos. Input serial ports, out put 8pin RJ45, Speed 10/100 Mbps, Auto MDI/MDIX, Magnetic isolation protection up to 1.5kV built in. With mounting kit for 35mm dinrail Aux. Supply: 12 to 48V DC	Moxa/Advantech/Equivalent INCN06600-001 1			
E			DINRAIL MOUNT LIU W/12 PORT LC DUPLEX PANEL WITH 6 LC MM DPX COUPLER LOADED & WITH 12 LC MM PIGTAIL 1.5 MTS	REPUTED	INLU6000-310 6 (PART OF CRP)			
9			SUPPLY VOLTAGE: 240V AC MODEL: 4 SOCKET WITH INDIVIDUAL ON/OFF SWITCH	ANCHOR	IN4WEC11-101 2			
F			PROJECT : 132/33kV SUBSTATION AT BICHPURI (AGRA)			PO REF NO : DOC TYPE: BILL OF MATERIAL PANEL REF:SAS DRG NO:CZN130816ES-SAB	REV : 00 04 NIL	
00	FOR APPROVAL	06.06.16	UPD	KRRB CUSTOMER : UPPCL				
Rev	Remarks	Date	Created	Checked /Apd	CONTRACTOR : Ms.MOMENTUM TECHSYS PVT. LTD., 2			
		1				3	4	



		PROJECT: 132/33kV S/S AT BICHPURI (AGRA)		TITLE : SET OF TABLE FOR SAS EQUIPMENT		PO No :C&C/P0/196/16-17 DT:30.05.2016	
		DOC TYPE : GENERAL ARRANGEMENT		DOC. TYPE : GENERAL ARRANGEMENT		REV : 00	
00	SUBMISSION FOR APPROVAL	06.06.18	UPD	KRRB	CUSTOMER : UPPCL	PANEL REF :SAS	
REMARKS		DATE	DRWN	CHKD	CONTRACTOR : W.L. WONDATION PVT. LTD.	PANEL (SAS)	
1			2	3	3	4	5
REV						5	6

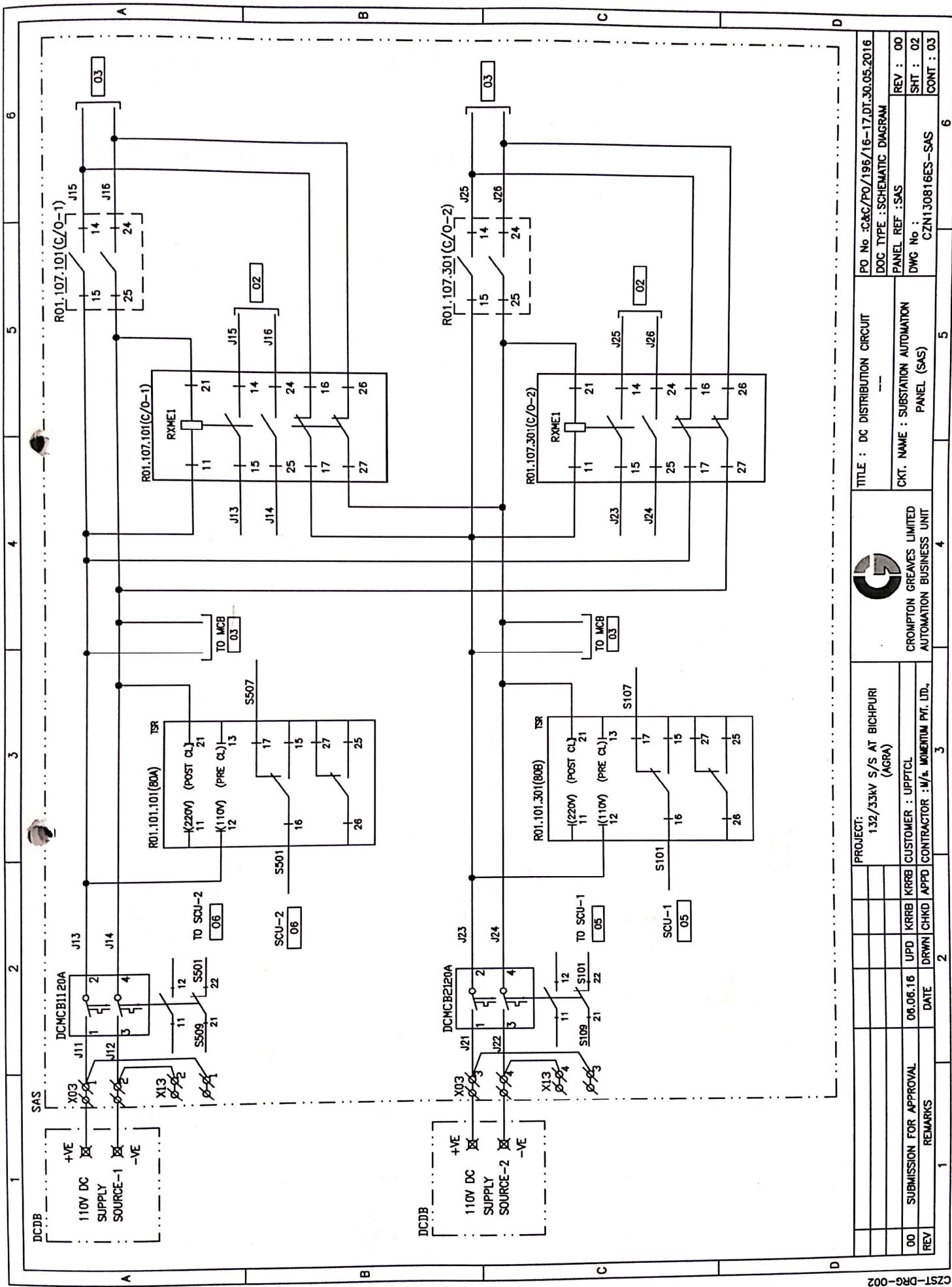
St. No:	Description	Rev
00	LIST OF DRAWINGS	00
01	LEGEND	00
02	DC DISTRIBUTION CIRCUIT	00
03	DC SUPERVISION CIRCUIT	00
04	AC DISTRIBUTION CIRCUIT	00
05	SUBSTATION CENTRAL UNIT (MAN)	00
06	SUBSTATION CENTRAL UNIT (REDUNDANT)	00
07	SWITCHES & GPS, POWER SUPPLY	00
08	AUXILIARY BICU DIGITAL INPUT CIRCUIT	00
09	AUXILIARY BICU DIGITAL INPUT CIRCUIT	00
10	AUXILIARY BICU ANALOG INPUT CIRCUIT	00
11	AUXILIARY BICU ANALOG INPUT CIRCUIT	00

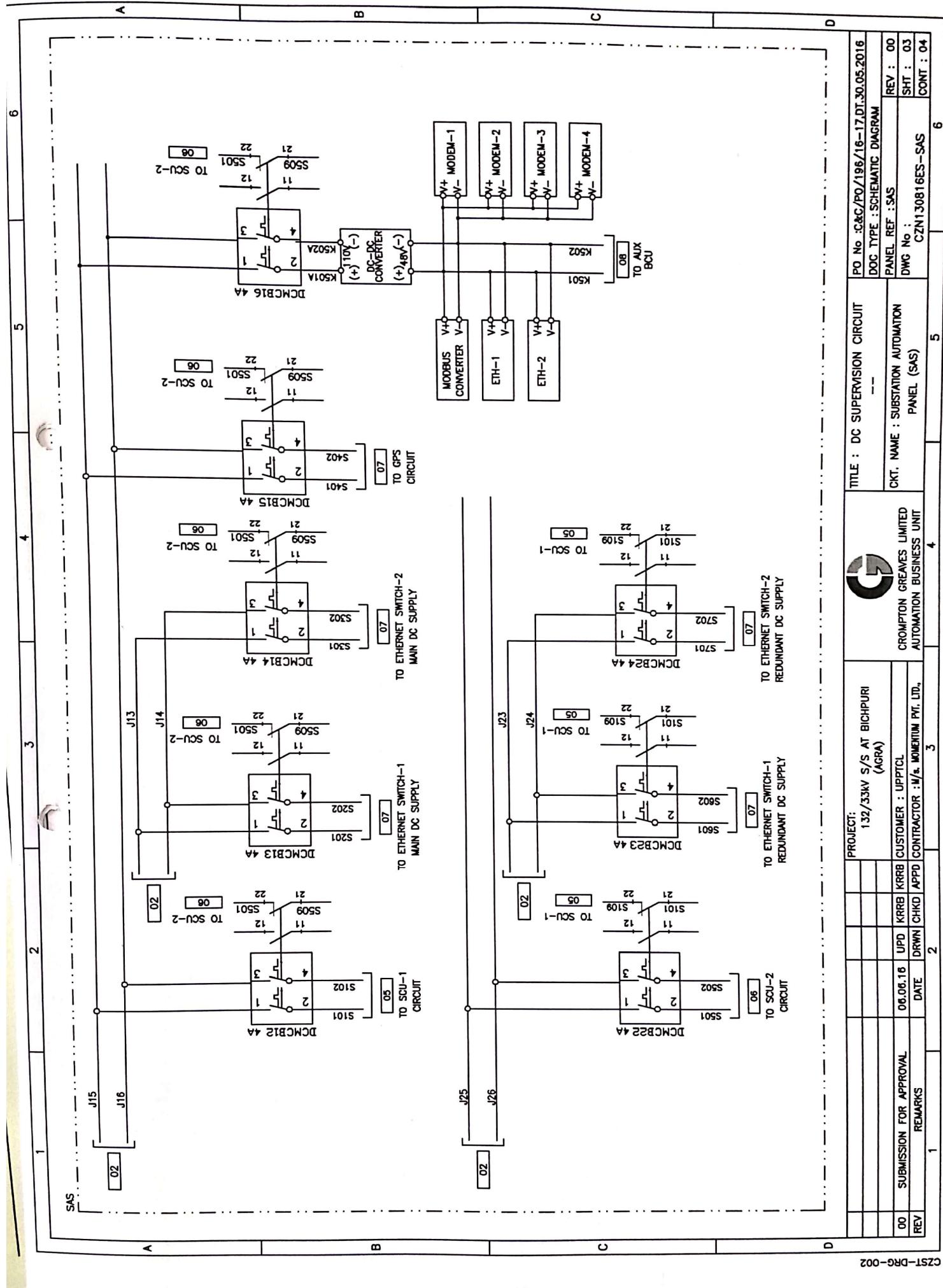
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				CIRCUIT, NAME : SUBSTATION AUTOMATION PANEL (SAS)	
				PANEL REF. : SAS	REV : 00
				DWG No : C2N130816ES-SAS	SHT : 00
REMARKS	REMARKS	DATE	DEMN CHKD APPD	CONTRACTOR : V/T MOMENTUM PVT LTD.	CONT : 01
00	SUBMISSION FOR APPROVAL	06.06.16	KRRB	CUSTOMER : UPTCL	
			KRRB	CIRCUIT : AUTOMATION BUSINESS UNIT	
					6

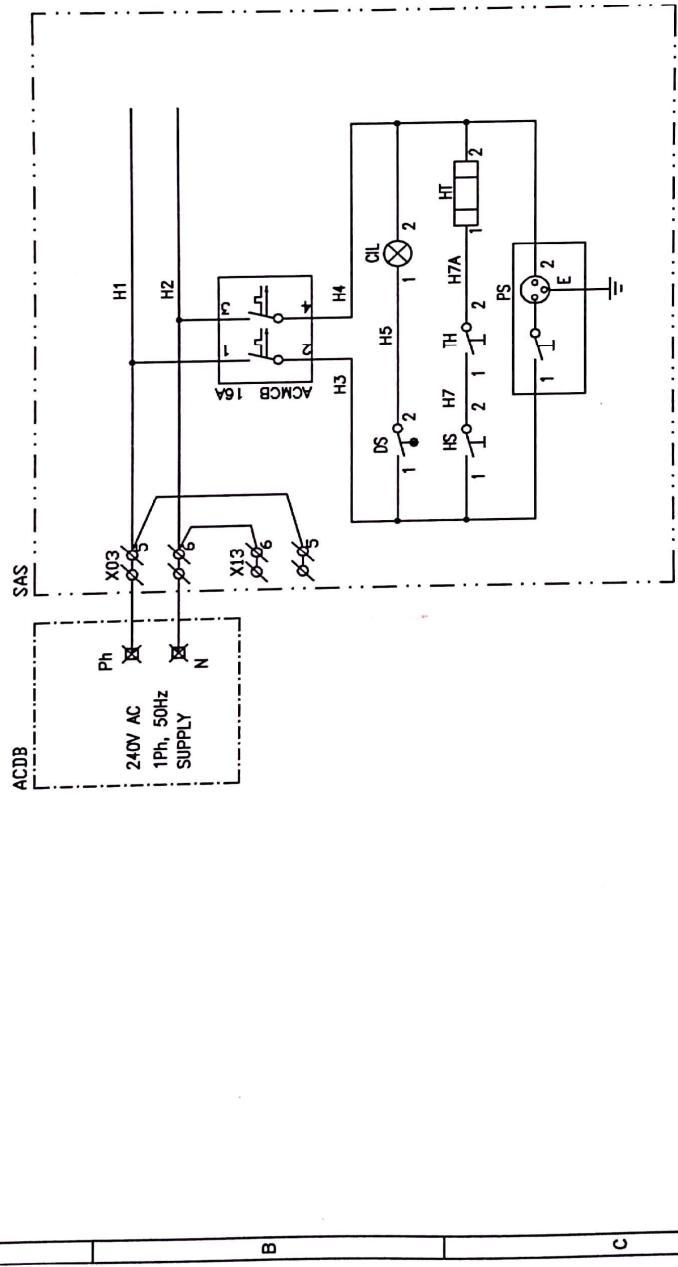
FERRULE NUMBERING STANDARDS					
SYMBOLS	DESCRIPTION				
○	CT TERMINATIONS	FERRULE - "A" : CT CIRCUIT - MAIN PROTECTION			
◎	PT TERMINATIONS	FERRULE - "B" : CT CIRCUIT - BUSBAR PROTECTION			
□	CB TERMINATIONS	FERRULE - "C" : CT CIRCUIT - BACKUP PROTECTION			
⊕	ISOLATOR TERMINATIONS	FERRULE - "D" : CT CIRCUIT - METERING			
⊖	BAY MARSHALLING BOX TERMINATIONS	FERRULE - "E" : VT CIRCUIT - PROTECTION/METERING			
⊖⊖	DISCONNECTING TERMINAL BLOCK	FERRULE - "G" : VT CIRCUIT - SYNCHRONISING			
⊖⊖	C & R PANEL TERMINAL BLOCK	FERRULE - "H" : AUXILIARY AC CIRCUIT			
●	OTHER SUPPLIER'S PANEL TB	FERRULE - "J" : AUXILIARY DC CIRCUIT			
		FERRULE - "K" : CONTROL CIRCUITS			
		FERRULE - "L" : INDICATION & ALARM CIRCUITS			
		FERRULE - "P" : DC CIRCUIT - BUSBAR PROTECTION CIRCUITS			
		FERRULE - "S" : EVENT LOGGER/DAS/SCADA/BCU CIRCUITS			
		FERRULE - "U" : SPARE CONTACTS			

PROJECT: 132/33KV S/S AT BICHPURI (AGRA)		TITLE : LEGEND ---		PO No : 3&C/P0/196/16-17.DT.30.05.2016	
SUBMISSION FOR APPROVAL		CKT. NAME : SUBSTATION AUTOMATION PANEL (SAS)		DOC TYPE : SCHEMATIC DIAGRAM	
REV	DATE	KRRB	KRRB	PANEL REF : SAS	REV : 00
00	06.06.16	UPD	UPTC	DWG No : CZN130816ES-SAS	SHT : 01
REV	REMARKS	DRWN CHKD	CONTRACTOR : M/A. MOMENTUM PVT. LTD.	4	CONT : 02
1		2	3	5	6

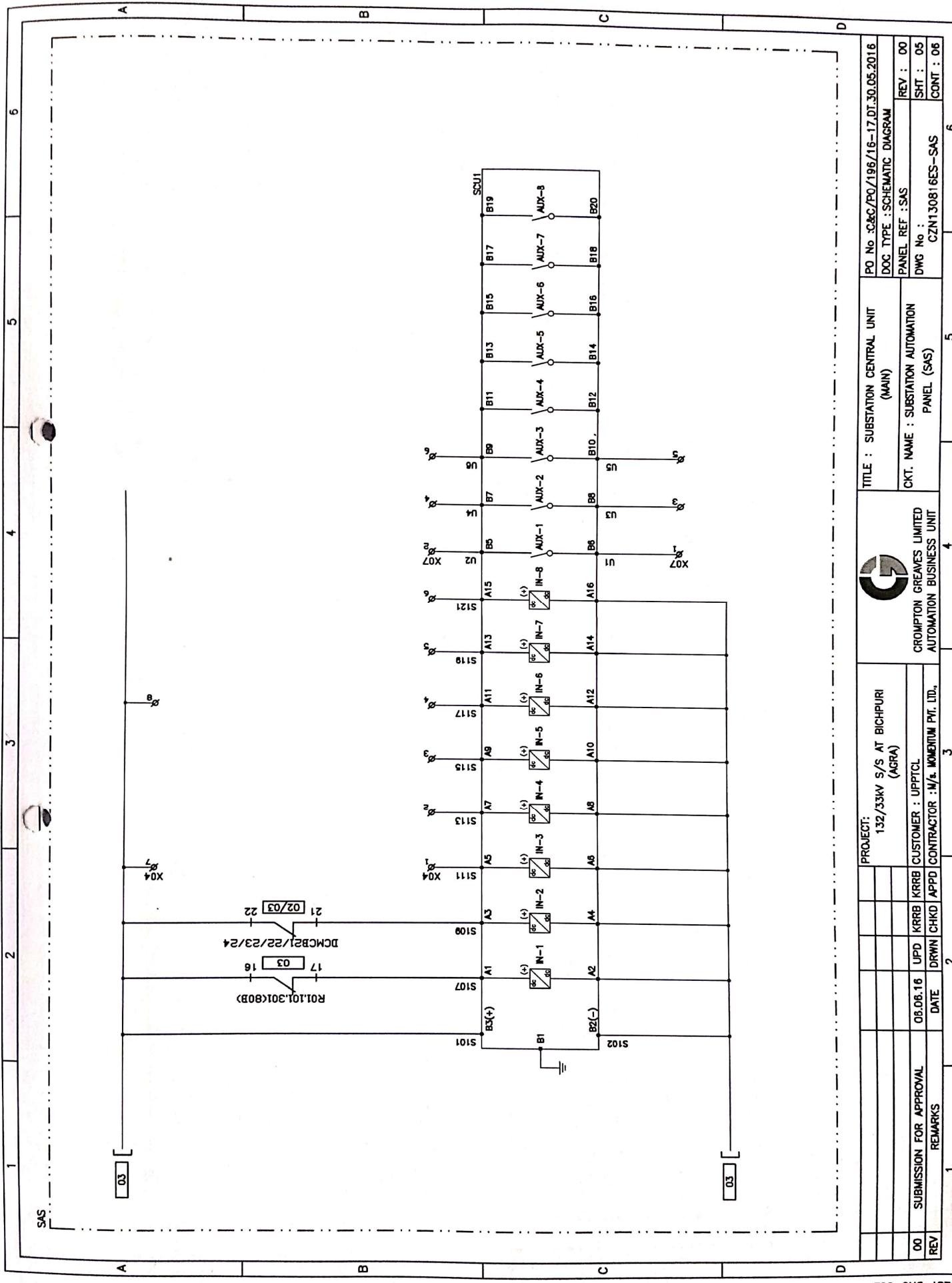




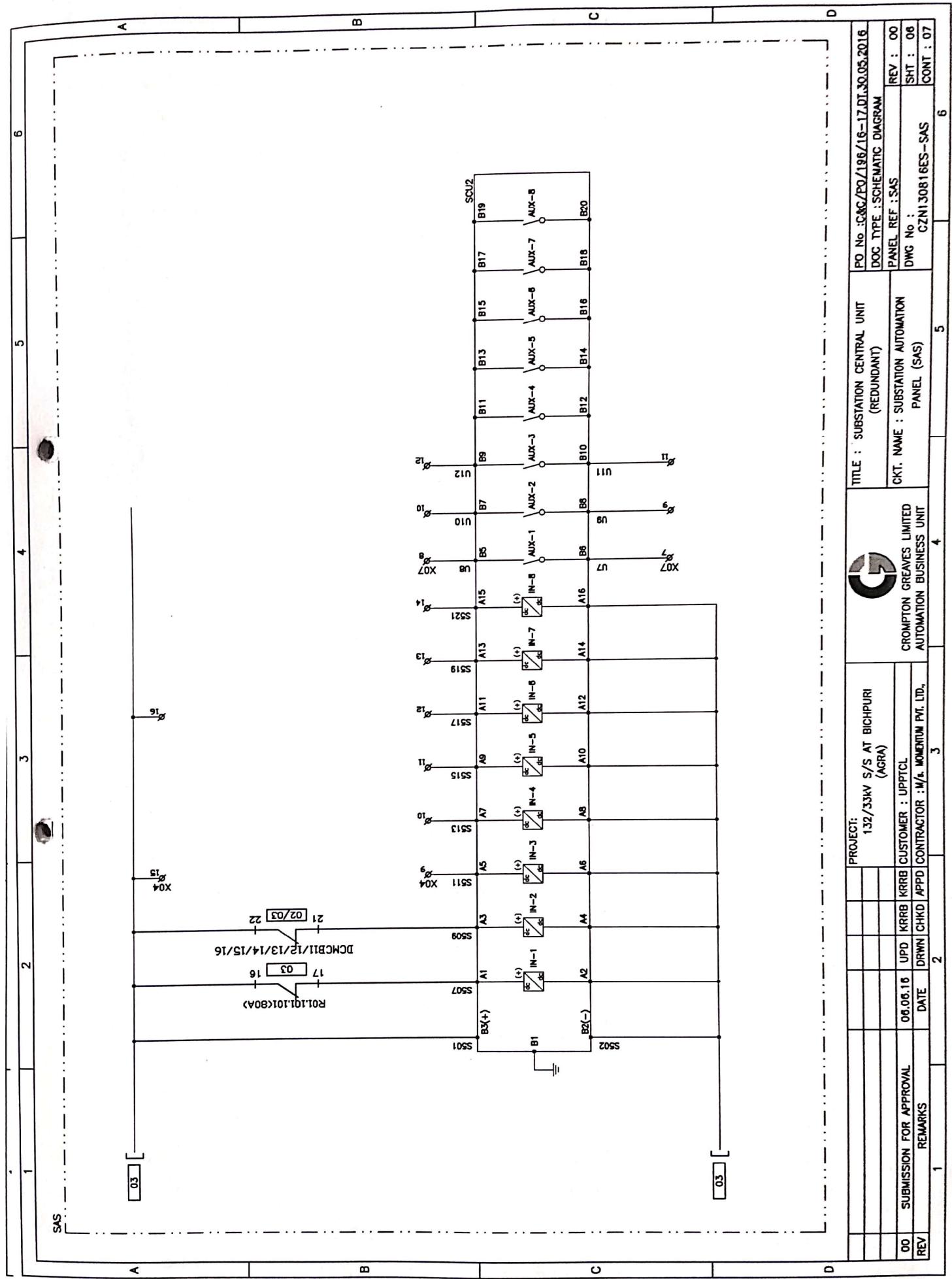
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		--		DOC. TYPE : SCHEMATIC DIAGRAM	
		CRT. NAME : SUBSTATION AUTOMATION		PANEL REF. : SAS	
00	SUBMISSION FOR APPROVAL	06.06.16	UPD KRB CUSTOMER : UPTCL	DWG No :	CZN130816ES-SAS
00	REMARKS	DATE DRWN CHD	APPD CONTRACTOR : M/s. MOMENTUM PVT. LTD.	SHT :	03
REV	1	2	3	4	5
CONT	04				6



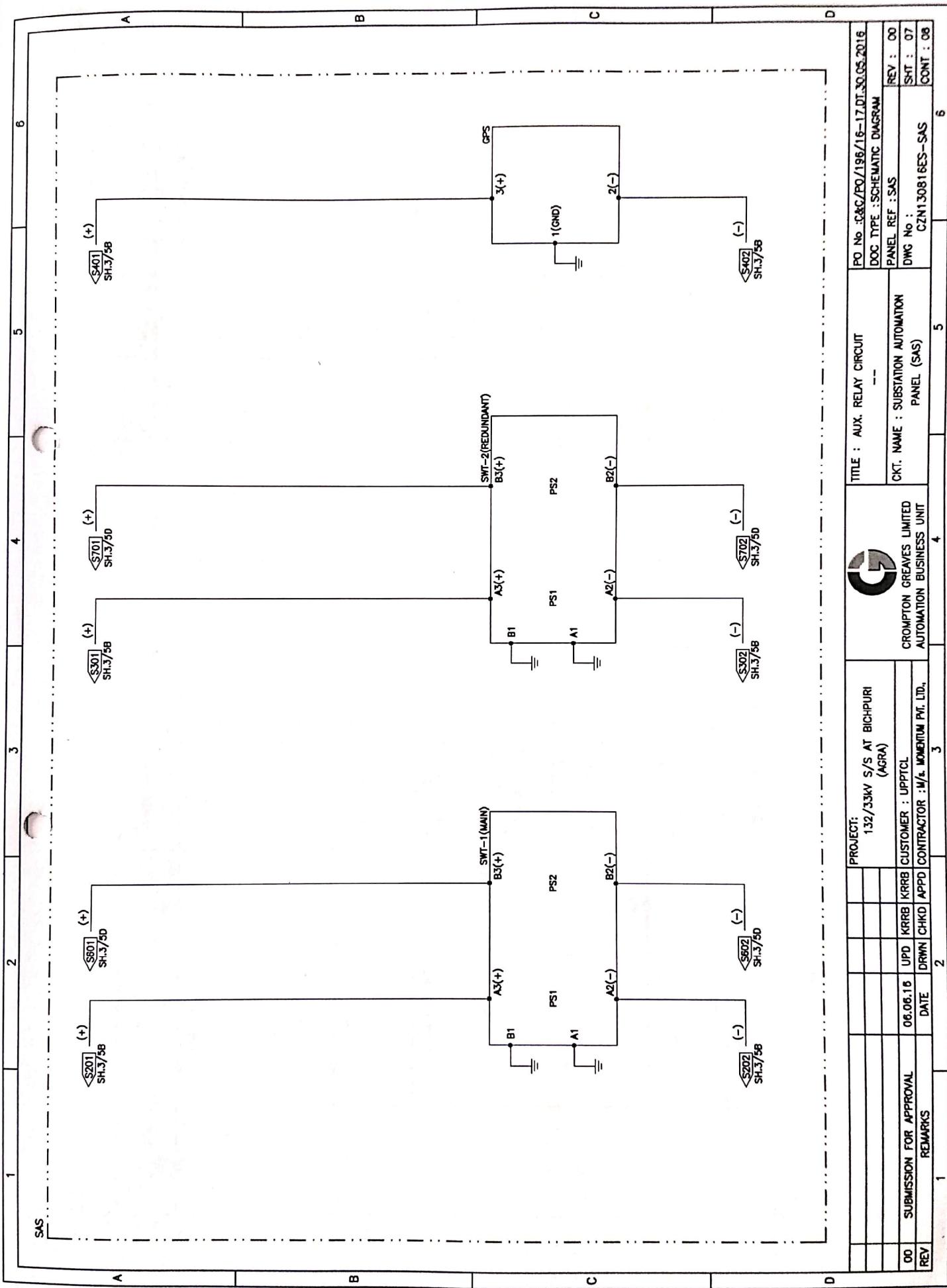
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DOC. TYPE : SCHEMATIC DIAGRAM		---		DOC. TYPE : SCHEMATIC DIAGRAM	
PANEL. REF : SAS		PANEL. REF : SAS		PANEL. REF : SAS	
REV : 00	SUBMISSION FOR APPROVAL	06.06.16	UPD : KRRB	CROMPTON GREAVES LIMITED	REV : 00
REV : 00	REMARKS	DATE	DRWNR : CHKD APPD	CUSTOMER : UPPCL	REV : 04
1		2		3	CONT : 05
				4	5
					6



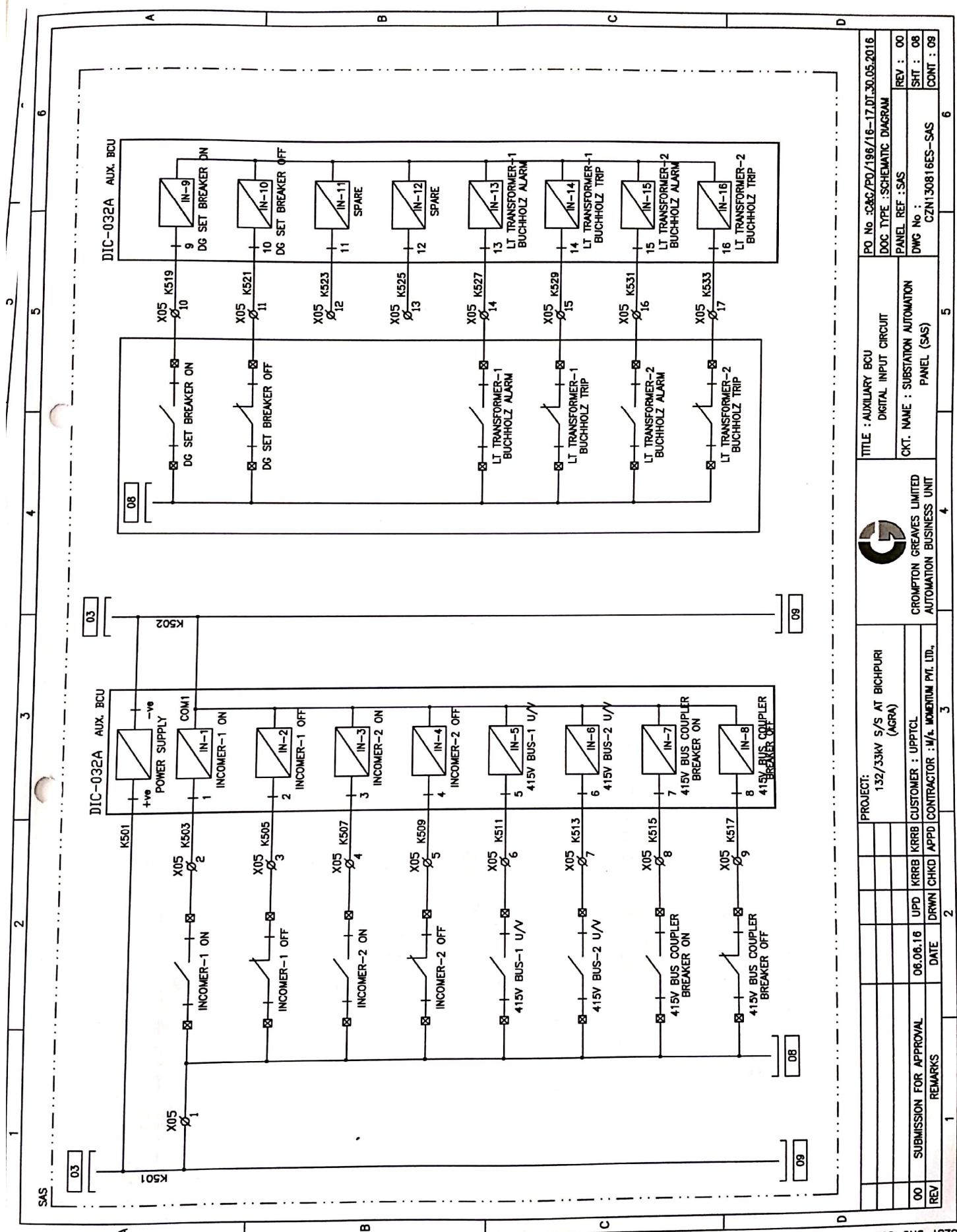
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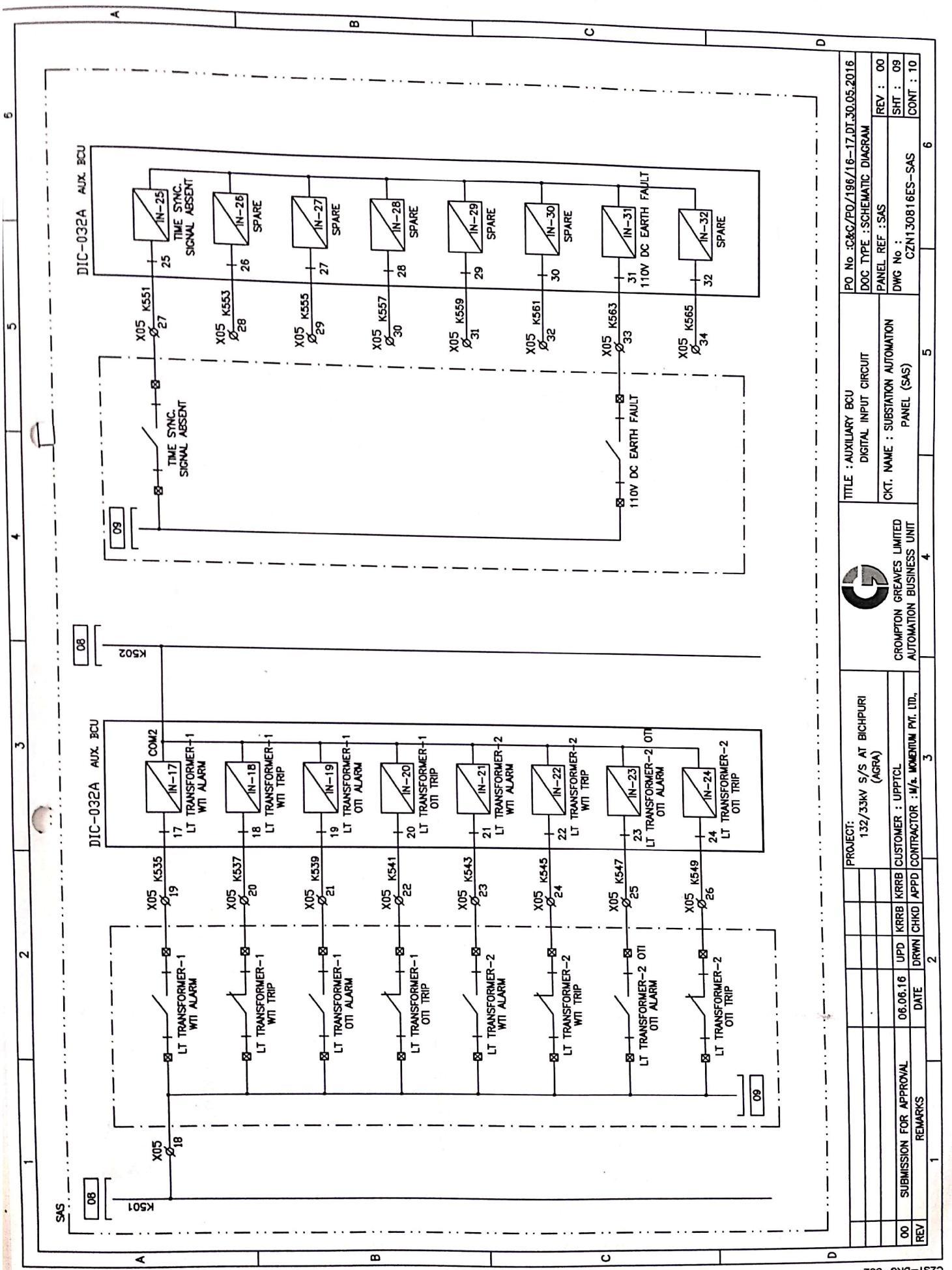
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PROJECT: 132/33kV S/S AT BICHPURI (AGRA)		TITLE : AUX. RELAY CIRCUIT	
DOC. NO.: 13&C/PO/196/16-17.DT.30.05.2016		REV : 00	
DOC. TYPE : SCHEMATIC DIAGRAM		SHT : 07	
PANEL REF : SAS	PANEL NAME : SUBSTATION AUTOMATION	DWG No :	CZN130816ES-SAS
CONT : 08	PANEL (SAS)		



		PROJECT: 132/33kV S/S AT BICHUPURI (AGRA)		TITLE : AUXILIARY BCU DIGITAL INPUT CIRCUIT	
		DOC TYPE : SCHEMATIC DIAGRAM		REV : 00	
		PANEL REF : SAS		DWG NO : CZN130816ES-SAS	
00	SUBMISSION FOR APPROVAL	08-06-16	UPD DRWN CHKD APPD CONTRACTOR : M/s. MOMENTUM PVT. LTD.	CRT. NAME : SUBSTATION AUTOMATION	PANEL (SAS)
REV	REMARKS	DATE	3	4	5
1		2		4	6



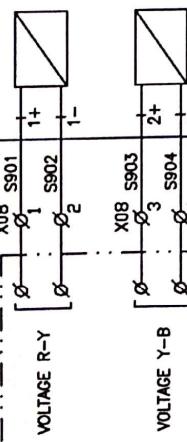
CZST-DRG-002

SAS

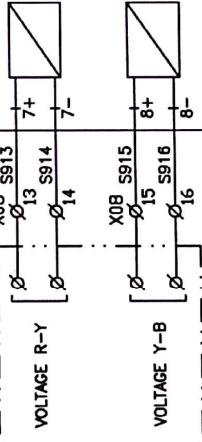
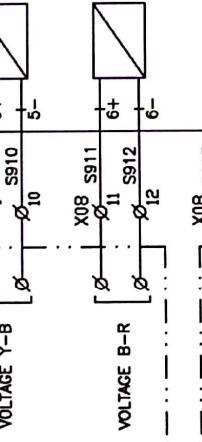
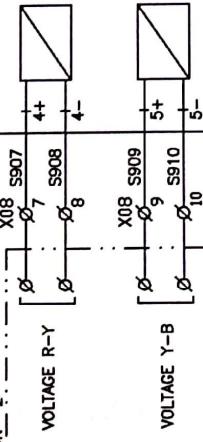
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1

ADC-010A AUX.BCU

MAIN SWITCH BOARD SECTION -1.



MAIN SWITCH BOARD SECTION -2.

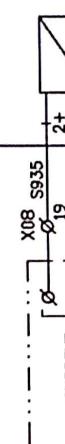


ADC-010B AUX.BCU

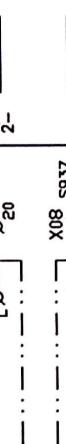
DIESEL GENERATOR



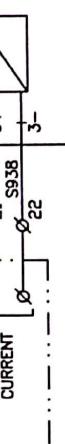
LT TRAFO. -1



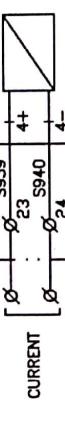
LT TRAFO. -2



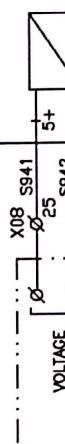
DIESEL GENERATOR



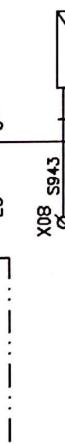
110V DCDB



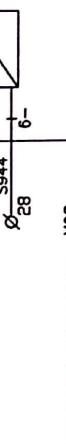
110V BATTERY CHARGER -1



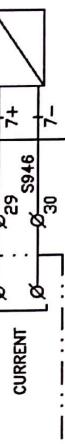
110V BATTERY CHARGER -2



CURRENT



VOLTAGE



SPARE



PROJECT:

132/33KV S/S AT BICHPURI
(AGRA)

DOC TYPE : SCHEMATIC DIAGRAM

PANEL REF : SAS

REV : 00

DWG No :

SHT : 10

CZN130816ES-SAS

CONT : 11

CZST-DRG-002



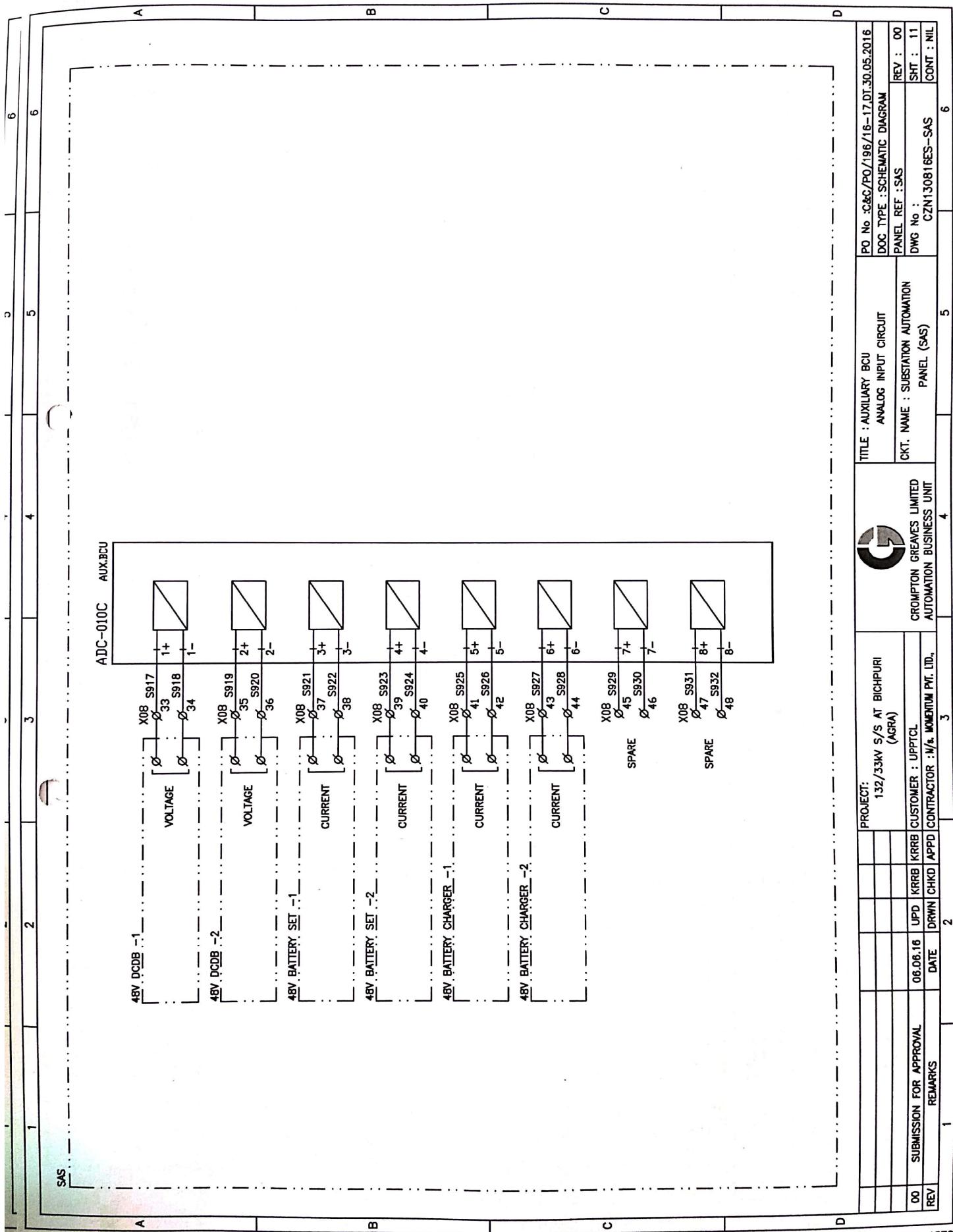
CROMPTON
GREAIVES LIMITED

AUTOMATION BUSINESS UNIT

6

REMARKS	DATE	CHKD	APPD
1	2	3	4

PROJECT:	132/33KV S/S AT BICHPURI (AGRA)	TITLE : AUXILIARY BCU ANALOG INPUT CIRCUIT
		CKT. NAME : SUBSTATION AUTOMATION
		PANEL (SAS)
		CZN130816ES-SAS
		CONT : 11



		PROJECT: 132/33KV S/S AT BICHPURI (AGRA)		TITLE : AUXILIARY RCU ANALOG INPUT CIRCUIT		PO No : C&C/PO/196/16-17.DT.30.05.2016
		DOC TYPE : SCHEMATIC DIAGRAM		CIRCUIT NAME : SUBSTATION AUTOMATION		DOC TYPE : SCHEMATIC DIAGRAM
		PANEL REF : SAS		PANEL : PANEL (SAS)		PANEL REF : SAS
		DWG No : CZN130816ES-SAS				DWG No : CZN130816ES-SAS
REV	REMARKS	DATE	DRWN	CHKD	APPD	CONTRACTOR : W/A. NOVIMENTUM PVT. LTD., AUTOMATION BUSINESS UNIT
1		2	3	4	5	6