

SYSTEM PARAMETERS (TABLE-1)

Sl.No.	DESCRIPTION	400KV SYSTEM
1	SYSTEM OPERATING VOLTAGE	400KV
2	MAX. OPERATING VOLTAGE OF THE SYSTEM (rms)	420KV
3	RATED FREQUENCY	50Hz
4	NO. OF PHASES	3
RATED INSULATION LEVELS		
i)	FULL WAVE LIGHTNING IMPULSE WITHSTAND VOLTAGE (1.2/50microsec.)	1425kVp
ii)	SWITCHING IMPULSE WITHSTAND VOLTAGE (200/2500microsec.) DRY & WET	1050kV
iii)	ONE MINUTE POWER FREQUENCY DRY & WET WITH STAND VOLTAGE (rms)	630kV
6	MIN. CREEPAGE DISTANCE	10500mm
7	CORONA EXTINCTION VOLTAGE	320kV
8	MAX. RADIO INTERFERENCE VOLTAGE LEVEL AT CORONA EXTINCTION VOLTAGE (rms)	1000 micro volts
9	RATED 3-PH. SYMMETRICAL SHORT CIRCUIT CURRENT WITHSTAND CAPACITY	50KA/1sec.
10	SYSTEM NEUTRAL EARTHING	EFFECT. EARTHED

BILL OF QUANTITY OF 400KV EQUIPMENTS (TABLE-2)

Sl.No.	SYMBOL	DESCRIPTION	MAKE	QTY AS PER CONTRACT
1	[Symbol]	CIRCUIT BREAKER, 400KV, 3150A, 50KA for 1 sec, SF6, 3P WITH CONTROLLED SWITCHING	ALSTOM	02
2	[Symbol]	CIRCUIT BREAKER, 400KV, 3150A, 50KA for 1 sec, SF6, 3P, WITHOUT CONTROLLED SWITCHING	ALSTOM	06
3	[Symbol]	400KV, 3150A, 50KA, 1sec, 3-PHASE HDB TYPE ISOLATOR WITH ONE EARTH SWITCH (WITH MASTER SLAVE OPERATION)	ALSTOM	18
4	[Symbol]	400KV, 3150A, 50KA, 1sec, 3-PHASE HDB TYPE ISOLATOR WITH TWO EARTH SWITCH (WITH MASTER SLAVE OPERATION)	ALSTOM	02
5	[Symbol]	ISOLATOR WITH 1 EARTH SWITCH, HDB TYPE, 400KV, 1P, 3150A, 50KA FOR 1 sec, ELECTRICALLY GANGED (ALL MASTER)	ALSTOM	07
6	[Symbol]	ISOLATOR WITHOUT EARTH SWITCH, HDB TYPE, 400KV, 1P, 3150A, 50KA FOR 1 sec, ELECTRICALLY GANGED (ALL MASTER)	ALSTOM	05
7	[Symbol]	CURRENT TRANSFORMER, (1-#) 400KV, 600RE, 3000A 50KA for 1sec 120R EXTENDED CURRENT RATING	ALSTOM	12
8	[Symbol]	CURRENT TRANSFORMER, (1-#) 400KV, 5 CORE, 3000A 50KA for 1sec 120R EXTENDED CURRENT RATING	ALSTOM	12
9	[Symbol]	400KV, 50KA, 1 Sec 1-PH CVT (4400pf) 400R 3P/3P/0.2/0.2	ALSTOM	06
10	[Symbol]	400KV, 50KA, 1 Sec 1-PH CVT (4400pf) 300R 3P/3P/0.2	ALSTOM	06
11	[Symbol]	336kV LIGHTNING ARRESTER (1-#) DISCHARGE CURRENT 20KA	---	16
12	[Symbol]	400KV HIGH BUS POST INSULATOR 13MTR HEIGHT	ADITYA BRLA	13
13	[Symbol]	400KV LOW BUS POST INSULATOR 8MTR HEIGHT	ADITYA BRLA	62

CONDUCTOR DETAIL OF SWITCHYARD (TABLE-3)

VOLTAGE LEVEL-400KV	
MAIN BUS-1 & BUS-II	QUAD MOOSE ACSR CONDUCTOR
JACK BUS/STRINGING CONNECTION	QUAD MOOSE ACSR CONDUCTOR
DROPPERS/JUMPERS	TWIN MOOSE ACSR CONDUCTOR (FOR LA,CVT)
EQUIPMENT INTERCONNECTION	QUAD MOOSE ACSR CONDUCTOR FOR OTHERS
SHIELD WIRE	7/3.66mm GI WIRE (10.98mm DIA)
ICT TERTIARY FORMATION	3" IPS AL. TUBE

MINIMUM AIR CLEARANCE (TABLE-4)

Sl.No.	DESCRIPTION	400KV SYSTEM
1	PHASE TO PHASE CONDUCTOR TO CONDUCTOR ROD TO STRUCTURE	4000
2	PHASE TO GROUND CONDUCTOR TO STRUCTURE ROD TO STRUCTURE	3500
3	SECTIONAL CLEARANCE	6400

ALL DIMENSIONS ARE IN MM

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD

OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.

PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.

CONTRACT: LOI NO. BDCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011

TITLE: 400KV ELECTRICAL LAYOUT PLAN FOR BHOPAL SUBSTATION

SCALE: 1:475 ALSTOM T&D INDIA LTD. DRAWING NO.: 5429PS060-BHO-C-SYD-AAR-0001 SHEET NO. 002/002

REFR. DRG. NO.	DESCRIPTION
1	5429PS060-BHO-C-SYD-AAR-1000
2	5429PS060-BHO-E-SYD-SLD-0401

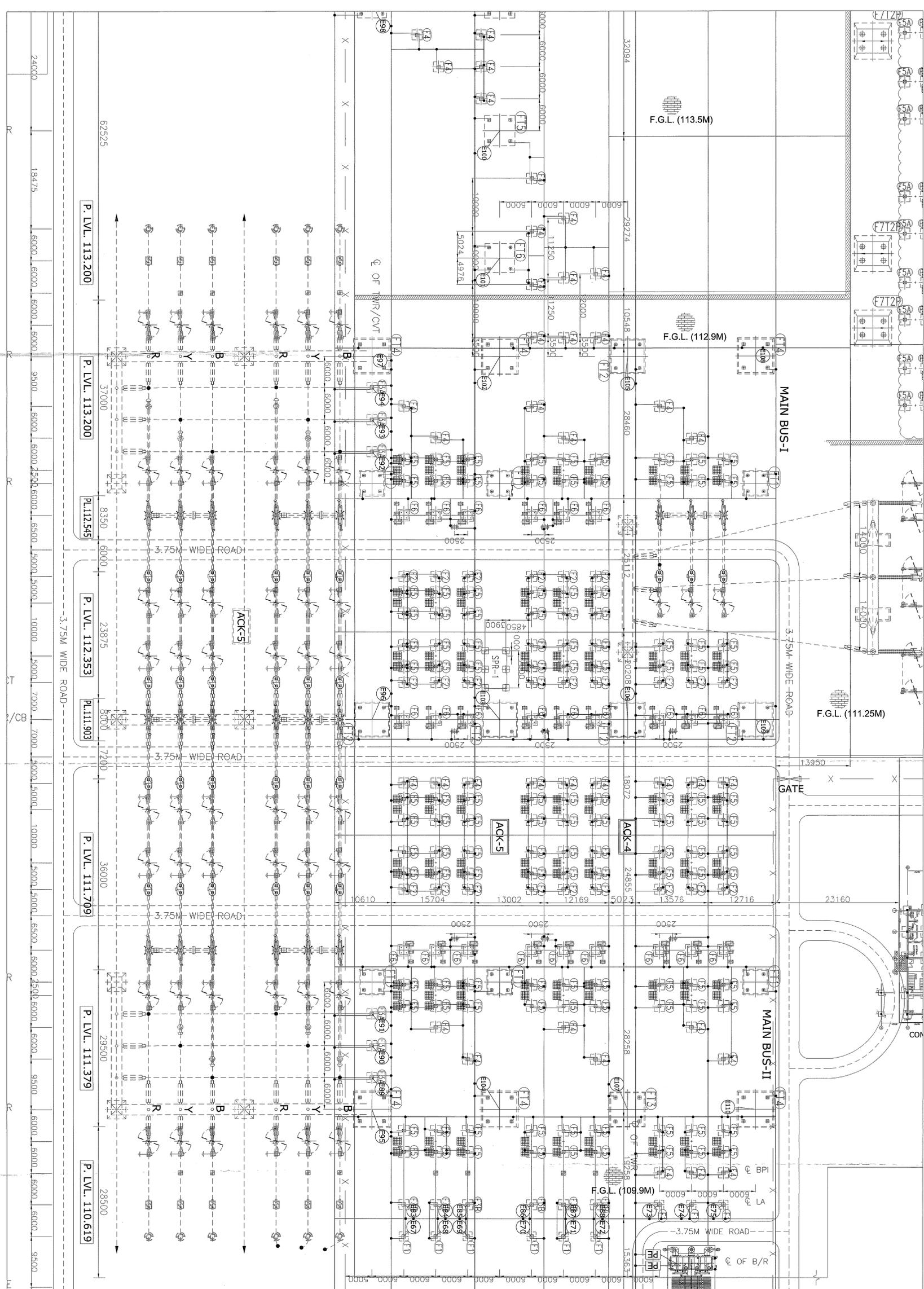
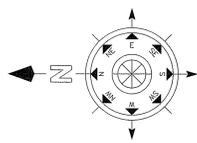
LEGEND:-

- PRESENT SCOPE
- FUTURE
- BOUNDARY LINE
- LEVEL INDICATIONS

NOTES:-

- ALL DIMENSION ARE IN MM
- DEAD END TOWER STRINGING & CONDUCTOR NOT IN ALSTOM SCOPE.

REV.	DESCRIPTION	NAME	DATE	STATUS
R3	INTERNAL UPDATION	KSV	07.05.13	FOR APPROVAL
R2	REVISED AS PER CUSTOMER COMMENTS	DPK	20.03.13	FOR APPROVAL
R1	REVISED AS PER CUSTOMER COMMENTS	DPK	07.02.13	FOR APPROVAL
R0	FIRST ISSUE	DPK	28.01.13	FOR APPROVAL

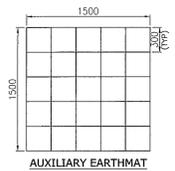


400KV LEGEND & BOQ OF EARTHMAT (TABLE NO-1)

S.NO.	DESCRIPTION	UOM	TOTAL QTY
1.	150MM DIA MS ROD FOR MAIN EARTHMAT	MTRS	2098
2.	300 LOW RESISTANCE ELECTRODE OF 35MM DIA WITH UNTREATED EARTH PIT	NOS.	44
3.	300 LOW RESISTANCE ELECTRODE OF 35MM DIA WITH TREATED EARTH PIT	NOS.	02

ROD ELECTRODE (TABLE NO-2)

S.NO.	DESCRIPTION	UOM	TOTAL QTY
1.	(LA) E97 TO E92	NOS.	16
2.	(CVT) E83 TO E84	NOS.	12
3.	(PEAK TOWER) E95 TO E110	NOS.	16



- NOTES**
- THE EARTHMAT SHALL BE MADE WITH 32MM DIA MS ROD.
 - THE EARTHING CONDUCTOR SHALL BE BURIED 300MM BELOW FTL UNLESS OTHERWISE SPECIFIED.
 - WHERE EARTHING CONDUCTOR CROSS UNDER OTHER STRUCTURE SUCH AS PIPES, TRAYS, RAILWAY TRACKS ETC. IT SHALL BE LAID AT LEAST 300MM BELOW THEM AND SHALL BE PROTECTED IN CASE OF FORCE BY EQUIPMENT STRUCTURE AND ROADERS.
 - EARTHING CONDUCTORS CROSSING THE ROAD SHALL BE LAID AT 1M DEPTH FROM FTL.
 - ALL EARTHING CONDUCTORS SHALL BE MADE BY ELECTRIC ARC WELDING. ALL WELDED JOINTS SHALL BE ALLOWED TO COOL DOWN ORIGINALLY TO AMBIENT TEMPERATURE BEFORE PUTTING ANY LOAD ON IT. MECHANICAL COUPLING SHALL BE ALLOWED.
 - ALL EQUIPMENT & STRUCTURES SHALL BE EARTHED AS PER EQUIPMENT MANUFACTURER'S INSTRUCTION. ALL EARTHING SHALL BE DONE BY 32MM DIA MS ROD.
 - THE LOCATION OF EARTHING CONDUCTOR, EARTHINGS AND GROUND RODS ARE INDICATED AND MAY BE MODIFIED TO SUIT SITE CONDITION.
 - EARTHING CONDUCTOR SHALL BE BURIED 300MM OUTSIDE THE SWITCHYARD FENCE AND ALL THE GATES EVERY ALTERNATE POINT OF FENCE SHALL BE CONNECTED TO MAIN EARTHING GRID.
 - FOR FENCING PIPE LINE AND ANY OTHER PIPING SYSTEM RUNNING THROUGH THE 375MM YARD SHALL BE CONNECTED WITH 32MM DIA MS ROD.
 - EARTHING LAYOUT FOR SWITCHING BUILDING SHALL BE SUBMITTED SEPARATELY.
 - AUXILIARY EARTH MAT SHALL BE 1000X1000 SQUARE OF 30MM.
 - MINIMUM SPACE BETWEEN TWO EARTH ELECTRODES SHALL BE 30MM.
 - IF ANY TOWER, LA OR OTHER EARTHING LAYOUT TO BE SUBMITTED SEPARATELY.
 - THE PIT NUMBER SHALL BE WRITTEN BOLDLY ON THE EARTH PIT.
 - SEE THE SHEET NO. 02 FOR THE OTHER MAT. THIS IS THE LAST MAT.

B.D.T.C.L. CAT-3 APPROVED
 Signed: 14.5.13
 This approval does not absolve the contractor/owner of his contractual responsibility to engineer an efficient design and successful performance of the Project/Equipment.

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<input checked="" type="checkbox"/> APPROVAL	<input checked="" type="checkbox"/> AS BUILT
<input checked="" type="checkbox"/> PROTO	<input checked="" type="checkbox"/> CONSTRUCTION
<input checked="" type="checkbox"/> PLANNING	<input checked="" type="checkbox"/> REFERENCE
<input checked="" type="checkbox"/> MANUFACTURING	<input checked="" type="checkbox"/> MOUNT
<input checked="" type="checkbox"/> RECORD	<input checked="" type="checkbox"/> EXECUTION

ALSTOM
 16/3/13

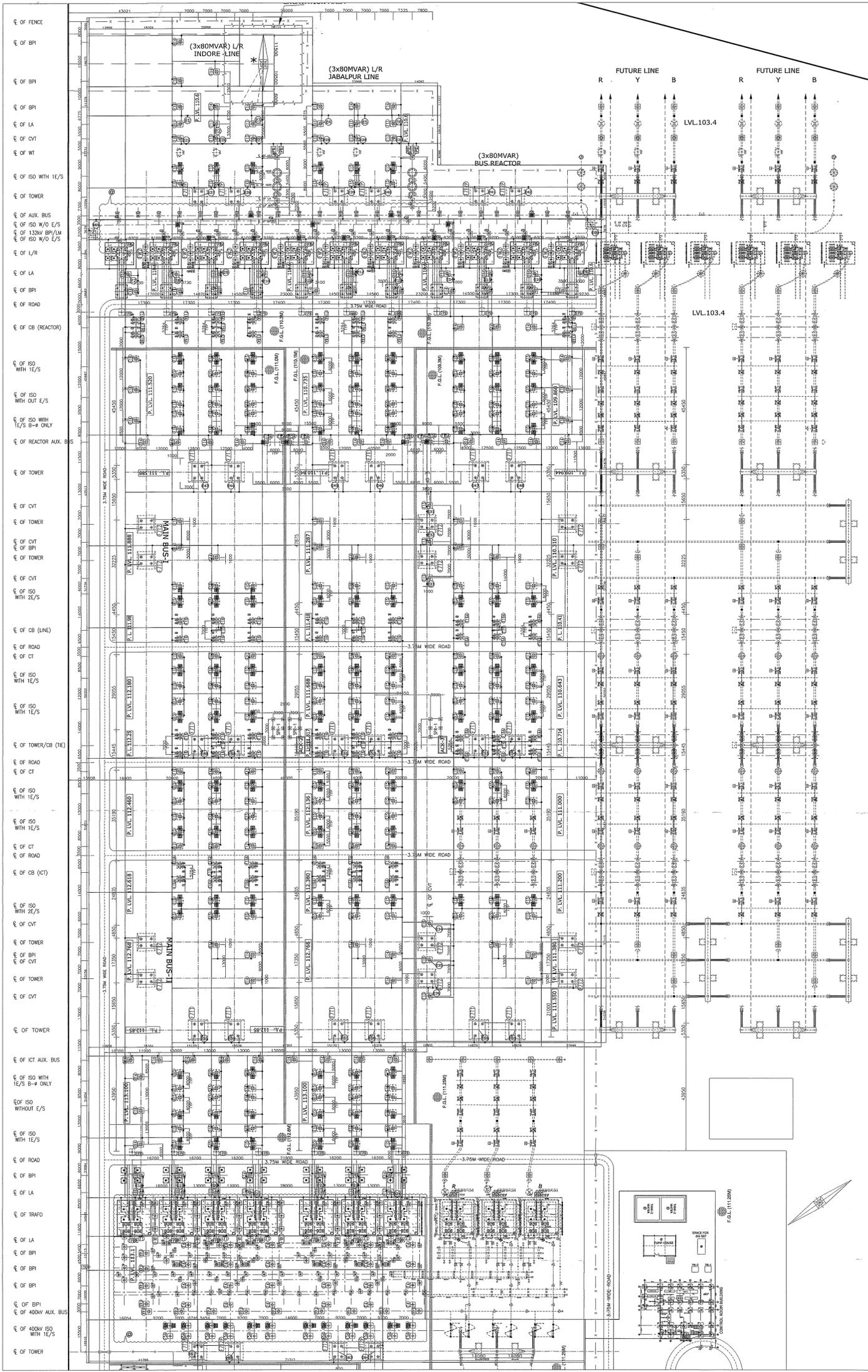
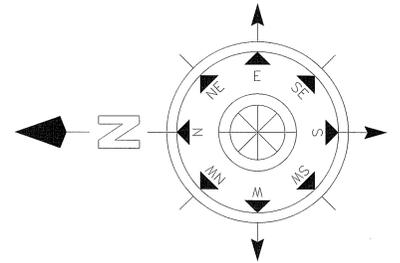
CUSTOMER: BHOHAL DHULE TRANSMISSION COMPANY LTD
 OWNERS ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.
 PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.
 CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
 TITLE: 400KV EARTHMAT LAYOUT OF BHOHAL SUBSTATION

SCALE: 1:275
 DRAWING NO.: 5429PS060-BHO-C-SYD-EAR-0202
 SHEET NO: 002/002

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
R1	REVISED AS PER CUSTOMER COMMENTS	14.05.13	KSJ	DPK	PTK	FOR APPROVAL
R0	FIRST ISSUE	22.02.13	KSJ	DPK	PTK	FOR APPROVAL

REFR. DRG. NO. DESCRIPTION

5429PS060-BHO-C-SYD-ARR-1053	400KV FOUNDATION LAYOUT FOR BHOHAL SUBSTATION
5429PS060-BHO-C-SYD-ARR-1054	COMMON ELECTRICAL LAYOUT PLAN FOR 725/400KV BHOHAL SUBSTATION
5429PS060-BHO-C-SYD-ARR-1055	725/400KV LAYOUT PLAN & SECTION FOR BHOHAL SUBSTATION
5429PS060-BHO-C-SYD-ARR-1056	400KV STRUCTURAL LAYOUT FOR BHOHAL SUBSTATION

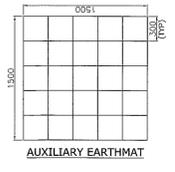


765KV LEGEND & BOQ OF EARTHMAT (TABLE NO-1)

S.NO.	DESCRIPTION	UOM	TOTAL QTY
1.	32MM DIA MS ROD FOR MAIN EARTHMAT	mtrs	11179
2.	5M LONG ROD ELECTRODE OF 32MM DIA WITH UNTREATED EARTH PIT	NOS	68
3.	3M LONG PIPE ELECTRODE OF 32MM DIA WITH TREATED EARTH PIT	NOS	10

ROD ELECTRODE (TABLE NO-2)

S.NO.	DESCRIPTION	UOM	TOTAL QTY
1.	(LA) E1 TO E24	NOS	24
2.	(CVT) E25 TO E36	NOS	12
3.	(PEAK TOWER) E37 TO E64	NOS	28
4.	(LM) E65 TO E66	NOS	02



NOTES

1. THE EARTHMAT SHALL BE MADE WITH 32mm DIA MS ROD.
2. EARTHING CONDUCTORS SHALL BE BURIED 300MM BELOW FGL UNLESS OTHERWISE SPECIFIED.
3. WHEREVER EARTHING CONDUCTOR CROSS CABLE TRENCH UNDER SERVICES DUCTS, PIPES, TUNNELS, RAILWAY TRACKS ETC. IT SHALL BE LAID ATLEAST 300MM BELOW THEM AND SHALL BE PROTECTED IN CASE IT FOLDS WITH EQUIPMENT/STRUCTURE FOUNDATION.
4. EARTHING CONDUCTORS CROSSING THE ROAD SHALL BE LAID AT 1m DEPTH FROM FGL.
5. ALL GROUND CONNECTIONS SHALL BE MADE BY ELECTRIC ARC WELDING. ALL WELDED JOINTS SHALL BE ALLOWED TO COOL DOWN GRADUALLY TO ATMOSPHERIC TEMPERATURE BEFORE PUTTING ANY LOAD ON IT. ARTIFICIAL COOLING SHALL NOT BE ALLOWED.
6. ALL EQUIPMENT & STRUCTURES SHALL BE GROUNDED AS PER EQUIPMENT EARTHING PHILOSOPHY as : 500-ND-5429PS060-BHO-C-SYD-EAR-0202
7. THE LOCATION OF EARTHING CONDUCTOR, EARTHPIES AND GROUND RODS ARE INDICATIVE AND MAY BE MODIFIED TO SUIT SITE CONDITION.
8. EARTHING CONDUCTOR SHALL BE BURIED 200MM OUTSIDE THE SWITCHYARD FENCE AND ALL THE GATES EVERY ALTERNATE POST OF FENCING SHALL BE CONNECTED TO MAIN EARTHING GRID.
9. FIRE FIGHTING PIPE LINE AND ANY OTHER PIPING SYSTEM RUNNING THROUGH THE 765KV YARD SHALL BE GROUNDED WITH 765KV YARD EARTHMAT.
10. EARTHING LAYOUT FOR SWITCHYARD BUILDINGS SHALL BE SUBMITTED SEPARATELY.
11. AUXILIARY EARTH MAT SHALL BE 1500X1500 SPACING OF 300MM.
12. MINIMUM SPACE BETWEEN TWO EARTH ELECTRODES SHALL BE 6MTRS.
13. REACTOR NEUTRAL AND ICT TERTIARY LT YARD DETAILED EARTHING LAYOUT TO BE SUBMITTED SEPARATELY.
14. THE PRT NUMBERS SHALL BE WRITTEN BOLDLY ON THE EARTH PIT AS PER THE LAYOUT AND TABLE NO-2

B.D.T.C.L. APPROVED
 Signed: _____
 Date: 16.03.2013

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 PROTO
 PLANNING
 RECORD
 AS BUILT
 CONSTRUCTION
 REFERENCE
 INVENTORY
 EXECUTION

REFR. DRG. NO.	DESCRIPTION
5429PS060-BHO-C-SYD-ARR-1053	765KV FOUNDATION LAYOUT FOR BHOHAL SUBSTATION
5429PS060-BHO-C-SYD-ARR-1000	COMBINED ELECTRICAL LAYOUT PLAN FOR 765/400KV BHOHAL SUBSTATION
5429PS060-BHO-C-SYD-ARR-0991	765/400KV LAYOUT PLAN & SECTION FOR BHOHAL SUBSTATION
5429PS060-BHO-C-SYD-ARR-1051	400KV STRUCTURAL LAYOUT FOR BHOHAL SUBSTATION

REV.	DESCRIPTION	DATE	BY	CHECKED	DATE	BY	APPROVED	DATE	BY	STATUS
R1	REVISED AS PER CUSTOMER COMMENTS	14.03.13	KSV	DPK	14.03.13	PTK				FOR APPROVAL
R0	FIRST ISSUE	22.02.13	KSV	DPK	22.02.13	PTK				FOR APPROVAL

CUSTOMER: **BHOHAL DHULE TRANSMISSION COMPANY LTD**

OWNER'S ENGINEER: **KNR ENGINEERS (INDIA) PVT. LTD.**

PROJECT: **SYSTEM STRENGTHENING SCHEME OF WR.**

CONTRACT: **LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011**

TITLE: **765KV EARTHMAT LAYOUT OF BHOHAL SUBSTATION**

SCALE: **1:475**

ALSTOM T&D INDIA LTD.
 Formerly ABB T&D INDIA LTD
 A-7, SECTOR-45,
 NOIDA - 201201
 UTTAR PRADESH (INDIA)

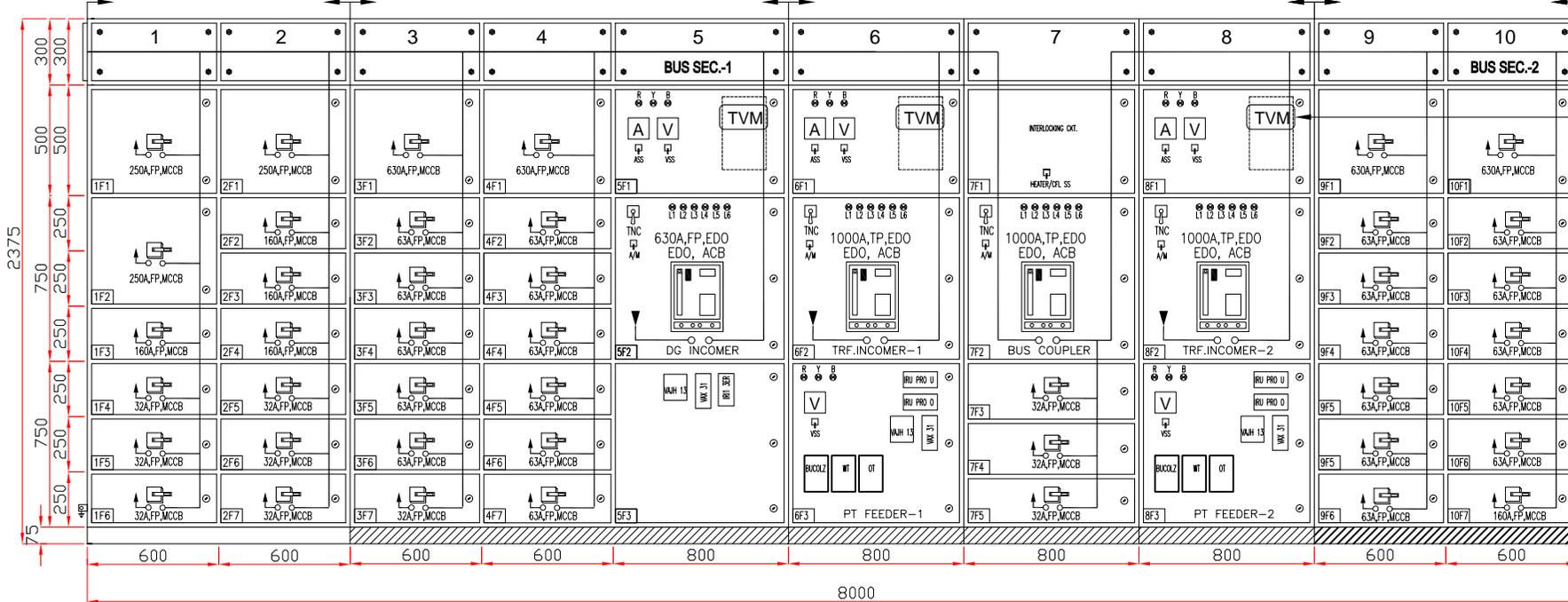
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SHEET NO: **001/001**

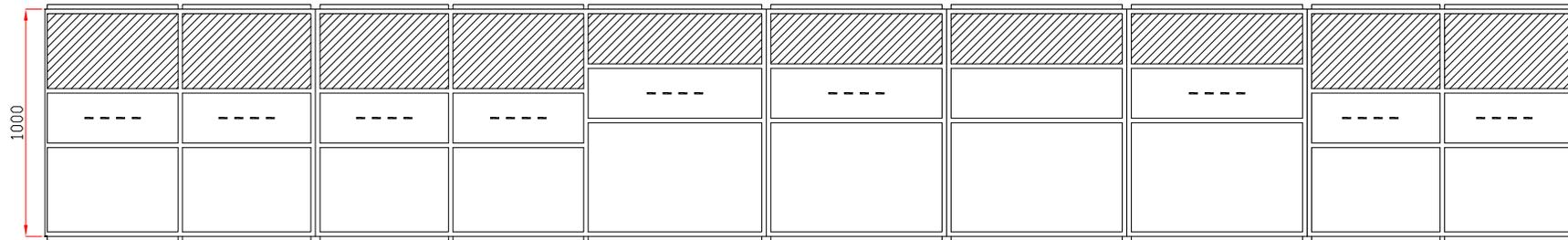
TRANSPORT SECTION-1

TRANSPORT SECTION-2

TRANSPORT SECTION-3



FRONT VIEW



TOP/BOTTOM VIEW

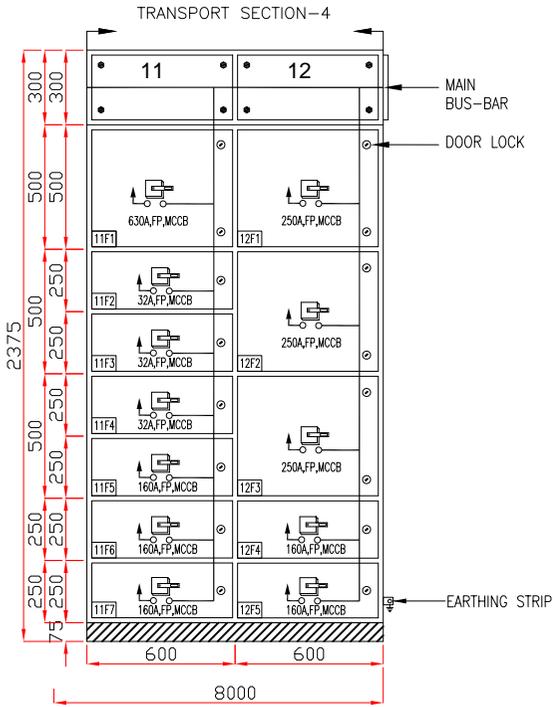
TRANSPARENT SHEET

ALL DIMENSIONS ARE IN MM

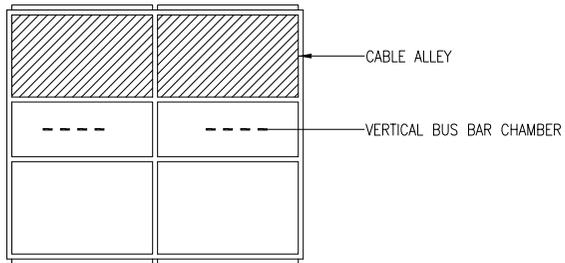
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OWNER'S ENGINEER:		KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:		SYSTEM STRENGTHENING SCHEME OF WR.	
CONTRACT:		LOI NO. BDTC/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011	
TITLE:		GA FOR 415V ACDB	
DRAWING NO.:		TBS-CS1118-1-GA-002-D	
SCALE:		AS SHOWN	
REV.:		STATUS:	

REFR. DRG. NO.	DESCRIPTION	REV.	DESCRIPTION	STATUS
1		REV4		STATUS-4
2		REV3		STATUS-3
3		REV2		STATUS-2
4		REV1		STATUS-1
5		REV0		STATUS-0

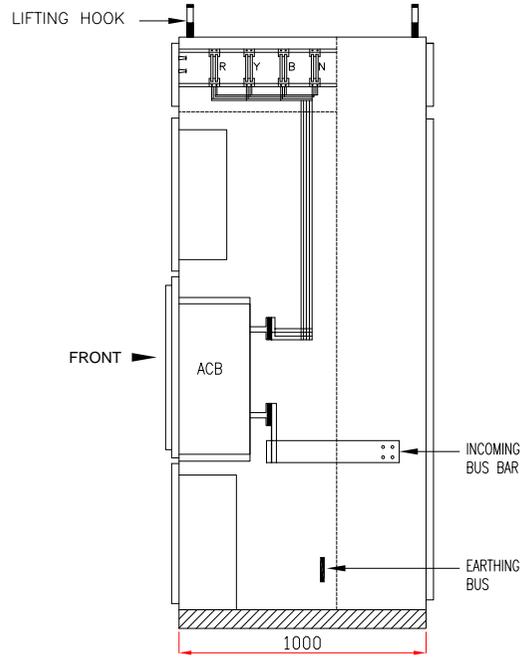
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FRONT VIEW



TOP/BOTTOM VIEW



SIDE VIEW

CABLE ENTRY : BOTTOM ONLY
 MAIN BUS BAR SIZE:-
 PHASE : 2x50x10 AL.
 NEUTRAL : 1x50x10 AL. OR EQUIV.
 EARTH : 1x50x10 AL.

R Y B
 ⊗ ⊗ ⊗
 ⊗ ⊗ ⊗
 L1 L2 L3

R : R-PHASE INDICATING LIGHT
 Y : Y-PHASE INDICATING LIGHT
 B : B-PHASE INDICATING LIGHT
 L1 : OPEN INDICATING LIGHT "AMBER"
 L2 : CLOSE INDICATING LIGHT "AMBER"
 L3 : SERVICE INDICATING LIGHT "AMBER"
 L4 : TEST INDICATING LIGHT "AMBER"
 L5 : SPRING CHARGE INDICATING LIGHT "AMBER"
 TVM : TRIVECTOR METER

ALL DIMENSIONS ARE IN MM

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD

OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.

PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.

CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011

TITLE: GA FOR 415V ACDB

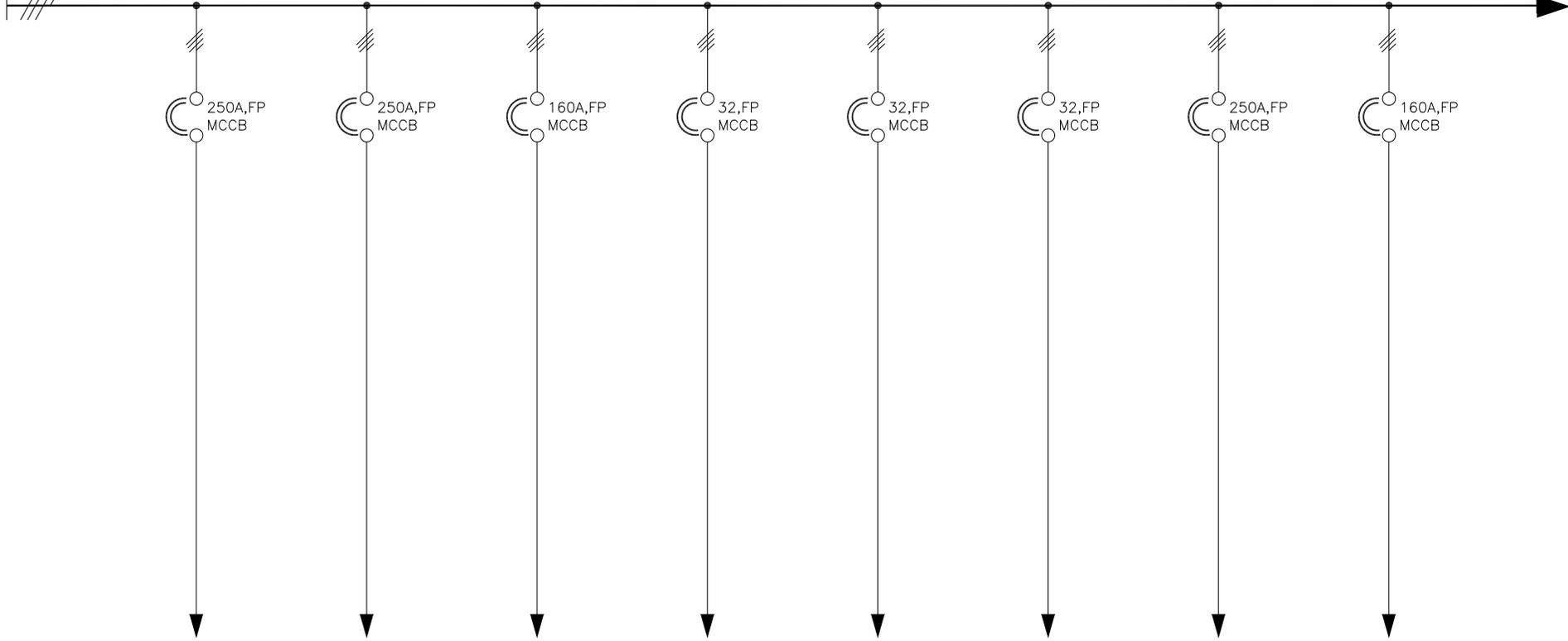
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 ALSTOM (Formerly ABB) INDIA LTD. (Formerly ABB) LTD. (Formerly ABB) LTD. (Formerly ABB) LTD.
 DRAWING NO.: TBS-CS1118-1-GA-002-D
 SHEET NO-4 OF 2
 REV 01

REFR. DRG. NO.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
1						
2						
3						
4						
5						
6						
7						
8						

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0						STATUS-0

3Ø,4W,415V,50Hz,1000A TPN AL. BUS BAR FAULT LEVEL 25kA FOR 1SEC.

(BUS SECTION - 1)



FEEDER No.	1F1	1F2	1F3	1F4	1F5	1F6	2F1	2F2
FEEDER RATING.	250A	250A	160A	32A	32A	32A	250A	160A
FEEDER DESCRIPTION.	500MVA T/F ICT CMB-1	500MVA T/F ICT CMB-2	48V BATTERY CHARGER	FF ANIN PANEL (CR)	PANEL AUX. SUPPLY	STATION LEVEL HMI	SPARE	220V CHARGER-1
CABLE SIZE MM ² (AL.)	2:3.5Cx70Sq.mm	2:3.5Cx70Sq.mm	3.5Cx70Sq.mm	4Cx16Sq.mm	4Cx16Sq.mm	4Cx16Sq.mm	--	2:3.5Cx70Sq.mm
SCH NO.	E2	E2	E3	E5	E5	E5	E2	E3

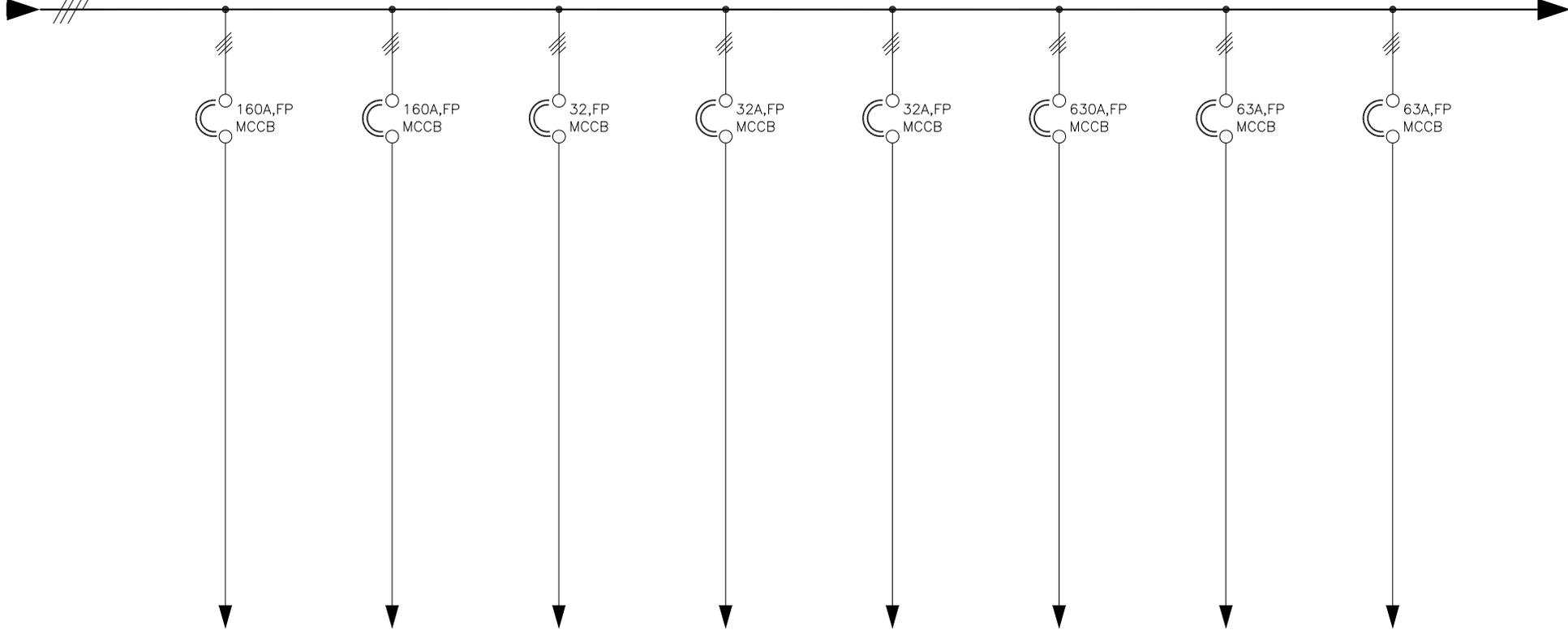
** PLEASE SPECIFY

REFR. DRG. NO.		DESCRIPTION		REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.		
1	2	3	4	5	6	7	8	9	10	11	12	13	
REV4 REV3 REV2 REV1 REV0											PROJECT: SYSTEM STRENGTHENING SCHEME OF WR. CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011 TITLE: SLD FOR 415V ACDB	SCALE: A3 ALSTOM ALSTOM S&D INDIA LTD. (Formerly ABB S&D India LTD.) REGD. OFFICE: 201301 UTTAR PRADESH (INDIA)	DRAWING NO.: TBS-CS1118-1-SLD-009-D SHEET NO-1 OF 9 REV 01

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3Ø,4W,415V,50Hz,1000A TPN AL. BUS BAR FAULT LEVEL 25kA FOR 1SEC.

(BUS SECTION - 1)



FEEDER No.	2F3	2F4	2F5	2F6	2F7	3F1	3F2	3F3
FEEDER RATING.	160A	160A	32A	32A	32A	630A	63A	63A
FEEDER DESCRIPTION.	220V CHARGER-2	SPARE	DG AUXILIARIES	765KV 240MVAR B/R MB	765KV 240MVAR L/R-1&2	415V,MLDB	765KV BMK- 1&4	765KV BMK- 3&6
CABLE SIZE MM ² (AL.)	2:3.5Cx70Sq.mm	--	4Cx16Sq.mm	3.5Cx35Sq.mm	3.5Cx70Sq.mm	3.5Cx300Sq.mm	3.5Cx70Sq.mm	3.5Cx70Sq.mm
SCH NO.	E3	E3	E5	E5	E5	E1	E4	E4

** PLEASE SPECIFY

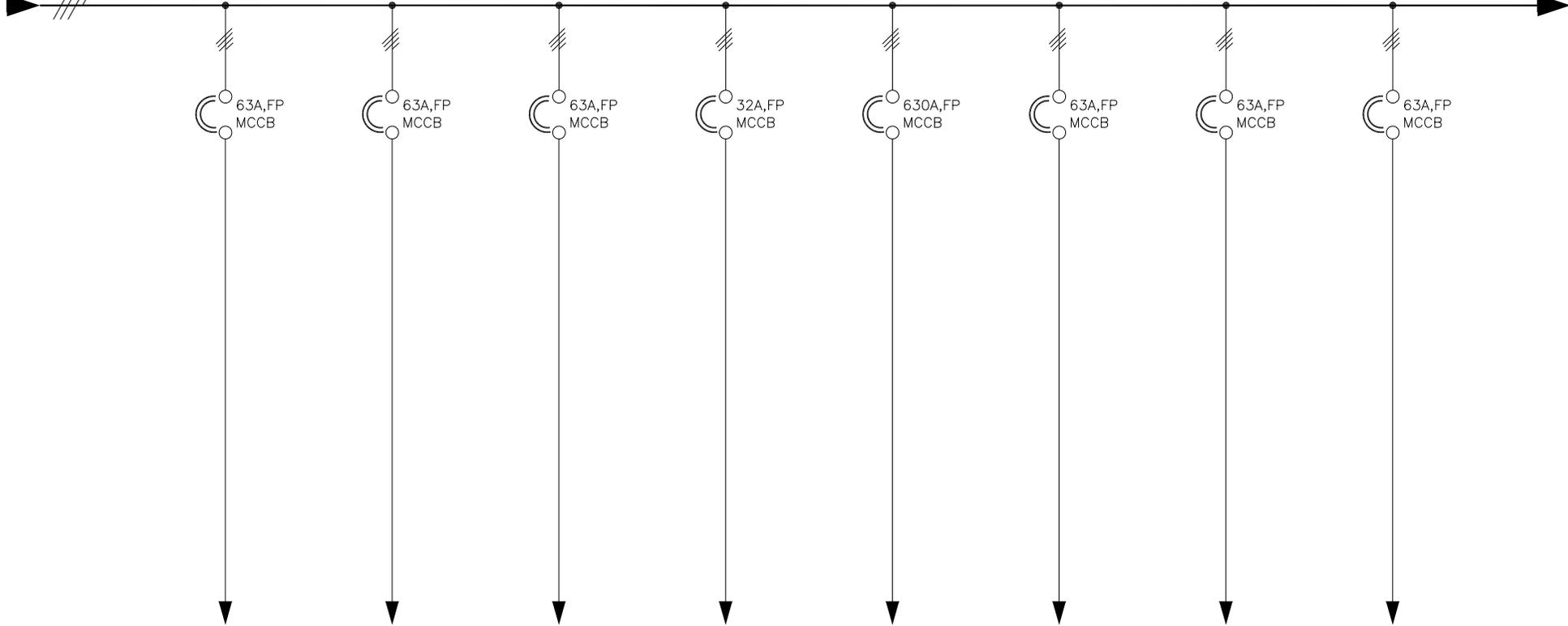
REFR. DRG. NO.		DESCRIPTION		REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	SCALE	DRAWING NO. : TBS-CS1118-1-SLD-009-D		SHEET NO-2 OF 9	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD
 OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.
 PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.
 CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
 TITLE: SLD FOR 415V ACDB
 SCALE: A3
 ALSTOM (Formerly ABB) INDIA LTD. (Formerly ABB) INDIA LTD. (Formerly ABB) INDIA LTD.
 REGD. OFFICE: 201301 UTTAR PRADESH (INDIA)
 DRAWING NO.: TBS-CS1118-1-SLD-009-D
 SHEET NO-2 OF 9
 REV 01

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3Ø,4W,415V,50Hz,1000A TPN AL. BUS BAR FAULT LEVEL 25kA FOR 1SEC.

(BUS SECTION - 1)



FEEDER No.	3F4	3F5	3F6	3F7	4F1	4F2	4F3	4F4
FEEDER RATING.	63A	63A	63A	32A	630A	63A	63A	63A
FEEDER DESCRIPTION.	765KV BMK- 7&9	400KV BMK- 4&6	400KV BMK-7&9	SPARE	SPARE	400KV BMK-10&12	400KV BMK-13&15	A/C CONTROL ROOM
CABLE SIZE MM ² (AL.)	3.5Cx70Sq.mm	4Cx16Sq.mm	4Cx16Sq.mm	--	--	4Cx16Sq.mm	4Cx16Sq.mm	3.5Cx35Sq.mm
SCH NO.	E4	E4	E4	E5	E1	E4	E4	E4

** PLEASE SPECIFY

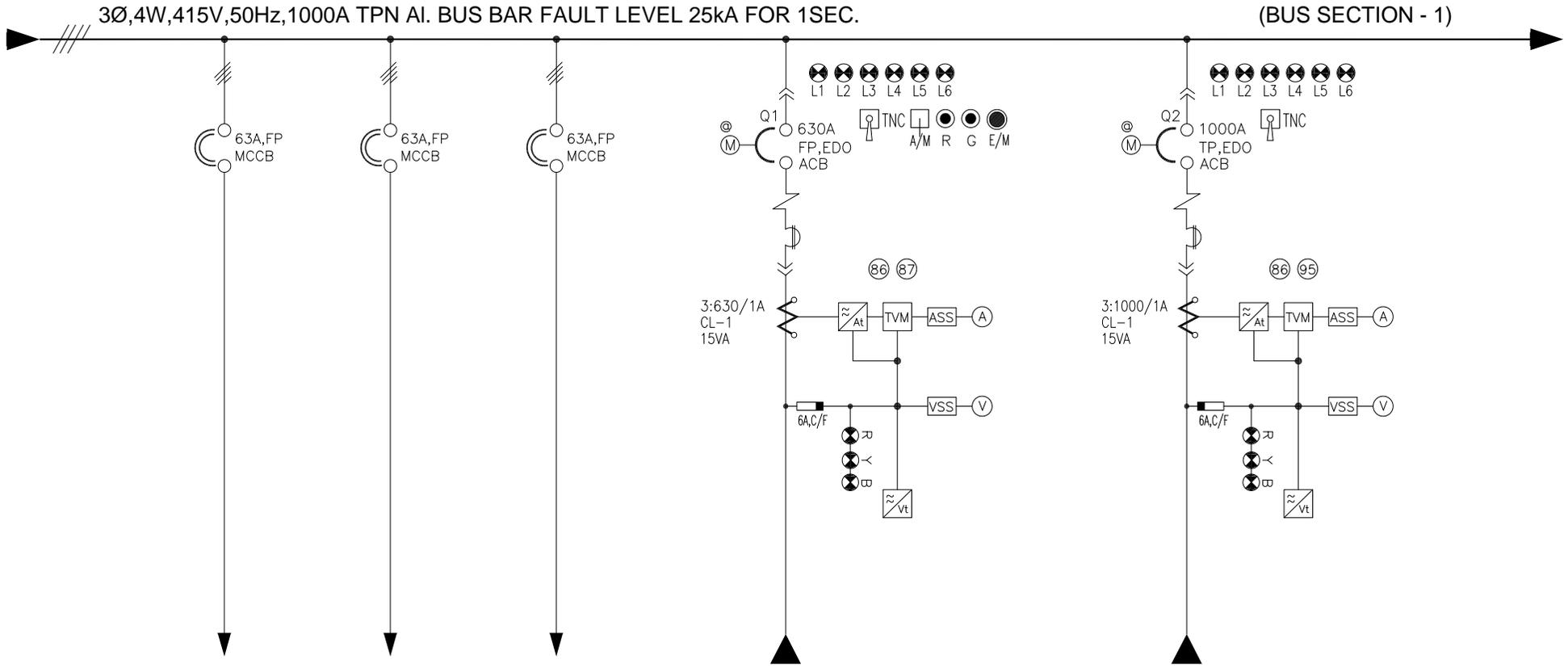
ALL DIMENSIONS ARE IN MM

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SLD FOR 415V ACDB
SCALE:	A3
ALSTOM (Formerly ABB) INDIA LTD. HEAD OFFICE: 201/001 UTTAR PRADESH (INDIA)	
DRAWING NO.:	TBS-CS1118-1-SLD-009-D
SHEET NO-3 OF 9	REV 01

REFR. DRG. NO.	DESCRIPTION
1	2
3	4
5	6

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0		15/10/2012				STATUS-0

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FEEDER No.	4F5	4F6	4F7	5F1,5F2&5F3	6F1,6F2&6F3
FEEDER RATING.	63A	63A	63A	630A	1000A
FEEDER DESCRIPTION.	ENGINE DRIVEN	FF ACDB	SPARE	DG I/C (320KVA DG)	INCOMER-1 (630KVA TRF)
CABLE SIZE MM ² (AL.)	3.5Cx70Sq.mm	4Cx16Sq.mm	**	3:3.5Cx300Sq.mm	4:1Cx630Sq.mm
SCH NO.	E4	E4	E4	AE1	AE2

** PLEASE SPECIFY
 © Q1, Q2, Q3 & Q4 ARE INTERLOCKED

REFR. DRG. NO.		DESCRIPTION		REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD		OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

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PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.

CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011

TITLE: SLD FOR 415V ACDB

SCALE: A3

ALSTOM (Formerly ABB) INDIA LTD. REGD. OFFICE: 201/201/1 UTTAR PRADESH (INDIA)

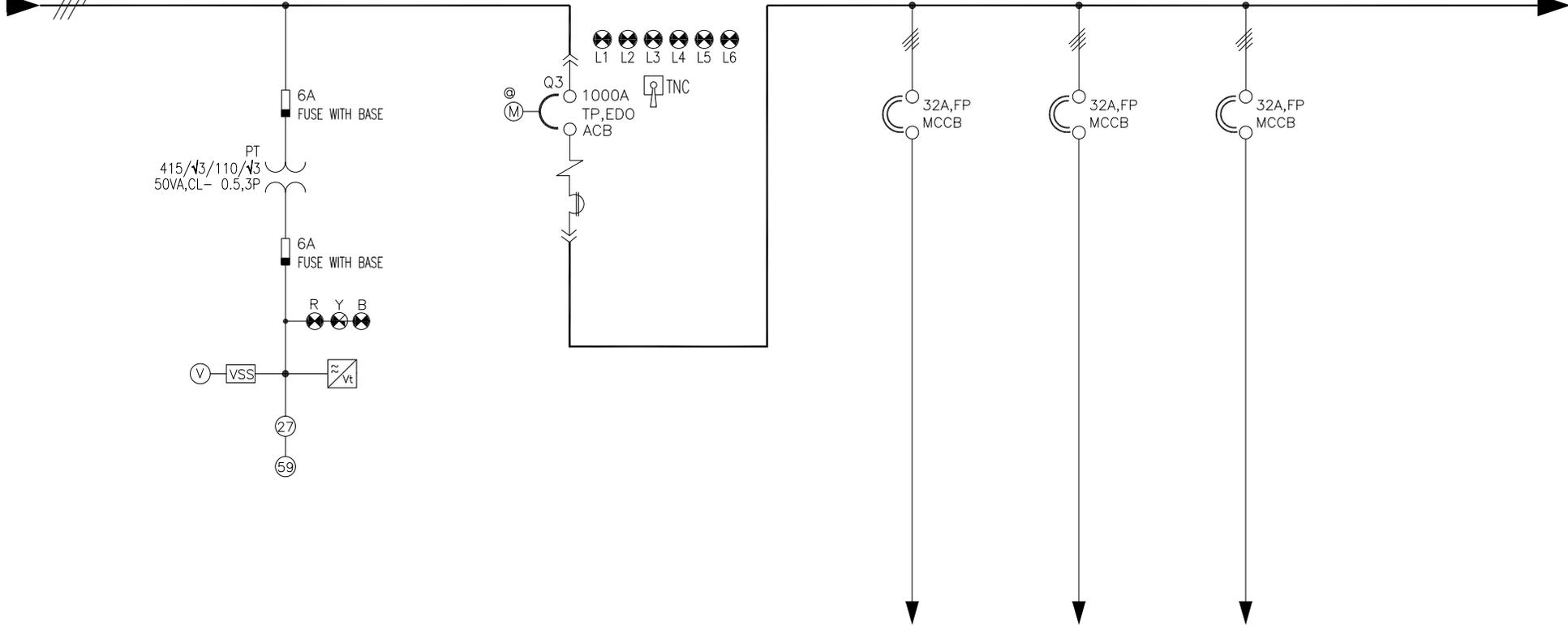
DRAWING NO.: TBS-CS1118-1-SLD-009-D

SHEET NO-4 OF 9

REV 01

3Ø,4W,415V,50Hz,1000A TPN AL. BUS BAR FAULT LEVEL 25kA FOR 1SEC.

(BUS SECTION - 2)



FEEDER No.	6F3	7F1,7F2&7F3	7F3	7F4	7F5
FEEDER RATING.	6A	1000A	32A	32A	32A
FEEDER DESCRIPTION.	PT FEEDER-1	BUS COUPLER	DC AUXILIARIES	PANEL AUX. SUPPLY	STATION LEVEL HMI
CABLE SIZE MM ² (AL.)	**	**	**	**	**
SCH NO.	AE2	BC	E5	E5	E5

** PLEASE SPECIFY

© Q1, Q2, Q3 & Q4 ARE INTERLOCKED

ALL DIMENSIONS ARE IN MM

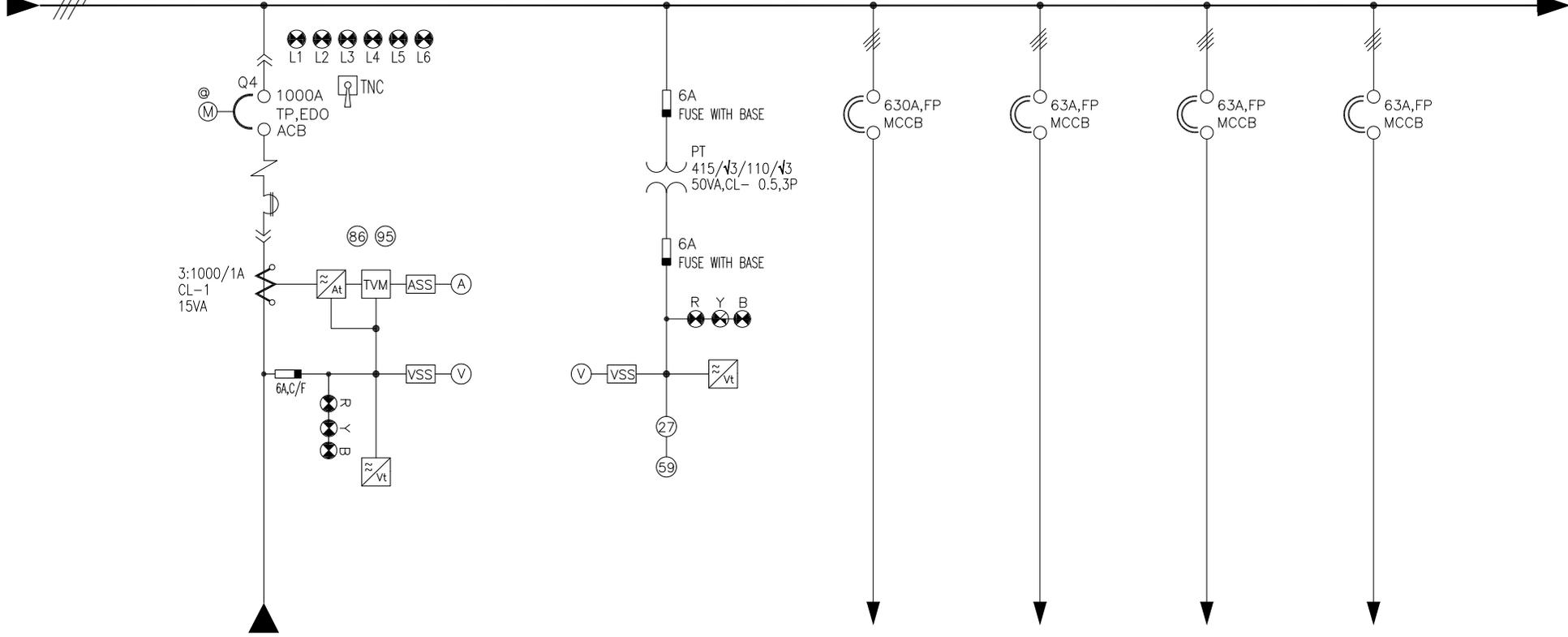
CUSTOMER:		BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER:		KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.		
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011		
TITLE:	SLD FOR 415V ACDB		
SCALE:	A3	ALSTOM <small>ALSTOM S&D INDIA LTD. (Formerly ABB S&D India LTD.) REGD. OFFICE: 201301 UTTAR PRADESH (INDIA)</small>	DRAWING NO.: TBS-CS1118-1-SLD-009-D
SHEET NO-5 OF 9	REV	01	

REFR. DRG. NO.	DESCRIPTION	REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
		REV4						STATUS-4
		REV3						STATUS-3
		REV2						STATUS-2
		REV1						STATUS-1
		REV0						STATUS-0

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3Ø,4W,415V,50Hz,1000A TPN AL. BUS BAR FAULT LEVEL 25KA FOR 1SEC.

(BUS SECTION - 2)



FEEDER No.	8F1,8F2&8F3	8F3	9F1	9F2	9F3	9F4
FEEDER RATING.	1000A	6A	630A	63A	63A	63A
FEEDER DESCRIPTION.	INCOMER-2 (630KVA TRF)	PT FEEDER-1	OIL FILTRATION UNIT FOR TRANSFORMER	FOTE PANEL	JOCKEY PUMP LCP	FF ACDB
CABLE SIZE MM ² (AL.)	4:1Cx630sq.mm	**	3.5Cx300sq.mm	4Cx16sq.mm	3.5Cx70sq.mm	**
SCH NO.	AE3	AE3	E1	E4	E4	E4

** PLEASE SPECIFY

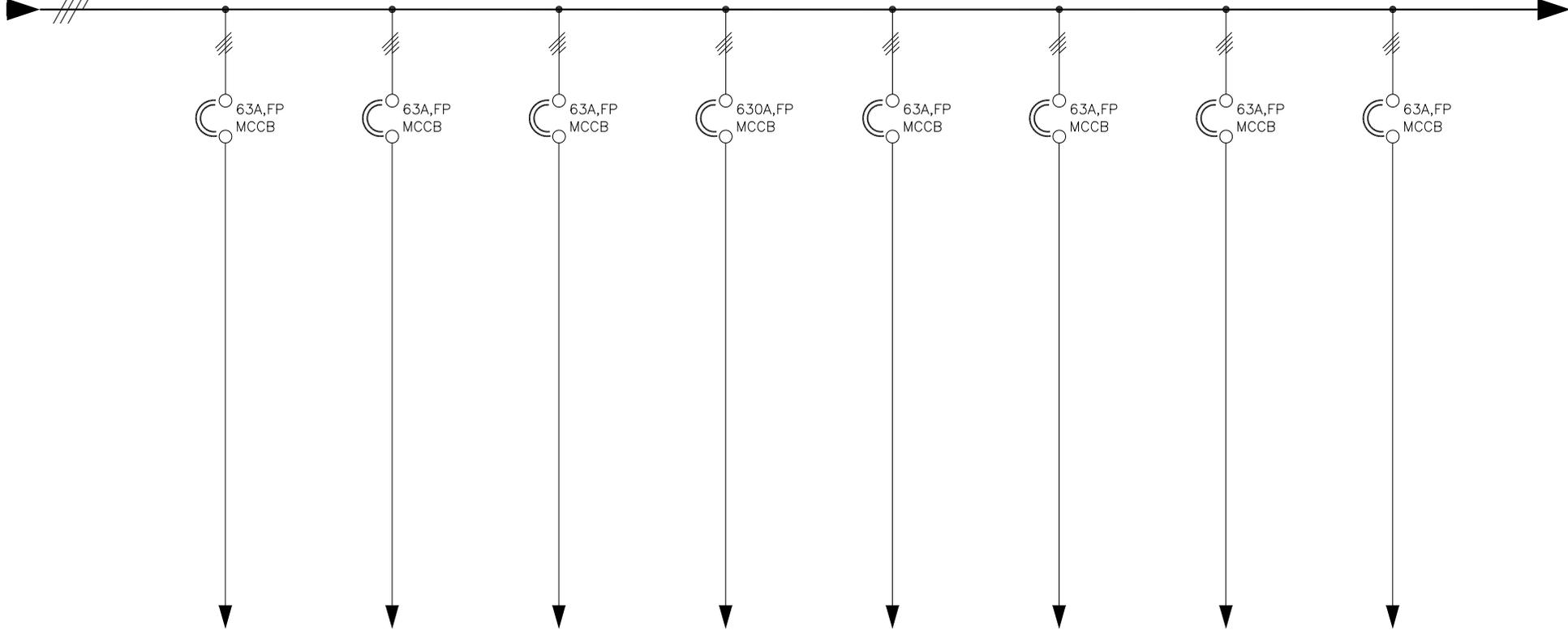
REFR. DRG. NO.		DESCRIPTION		REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	SCALE	DRAWING NO.:		SHEET NO-8 OF 9	
1	2	3	4	5	6	7	8	9	10	11	A3	TBS-CS1118-1-SLD-009-D		REV	01

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD
 OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.
 PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.
 CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
 TITLE: SLD FOR 415V ACDB
 ALSTOM (Formerly ABB) INDIA LTD.
 REGD. OFFICE: 201/201/100
 UTTAR PRADESH (INDIA).
 SCALE: AS SHOWN

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3Ø,4W,415V,50Hz,1000A TPN AL. BUS BAR FAULT LEVEL 25kA FOR 1SEC.

(BUS SECTION - 2)



FEEDER No.	9F5	9F6	9F7	10F1	10F2	10F3	10F4	10F5
FEEDER RATING.	63A	63A	63A	630A	63A	63A	63A	63A
FEEDER DESCRIPTION.	765KV BMK- 1&4	765KV BMK- 3&6	765KV BMK- 7&9	415,MLDB	400KV BMK- 4&6	400KV BMK- 7&9	400KV BMK- 10&12	400KV BMK- 13&15
CABLE SIZE MM ² (AL.)	**	**	**	**	**	**	**	**
SCH NO.	E4	E4	E4	E1	E4	E4	E4	E4

** PLEASE SPECIFY

REFR. DRG. NO.	DESCRIPTION
1	2
3	4
5	6

REV4	Norml Date Sign	STATUS-4
REV3	Norml Date Sign	STATUS-3
REV2	Norml Date Sign	STATUS-2
REV1	Norml Date Sign	STATUS-1
REV0	Norml Date Sign	STATUS-0
REV.	DESCRIPTION	STATUS

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD

OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.

PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.

CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011

TITLE: SLD FOR 415V ACDB

SCALE: A3

DRAWING NO.: TBS-CS1118-1-SLD-009-D

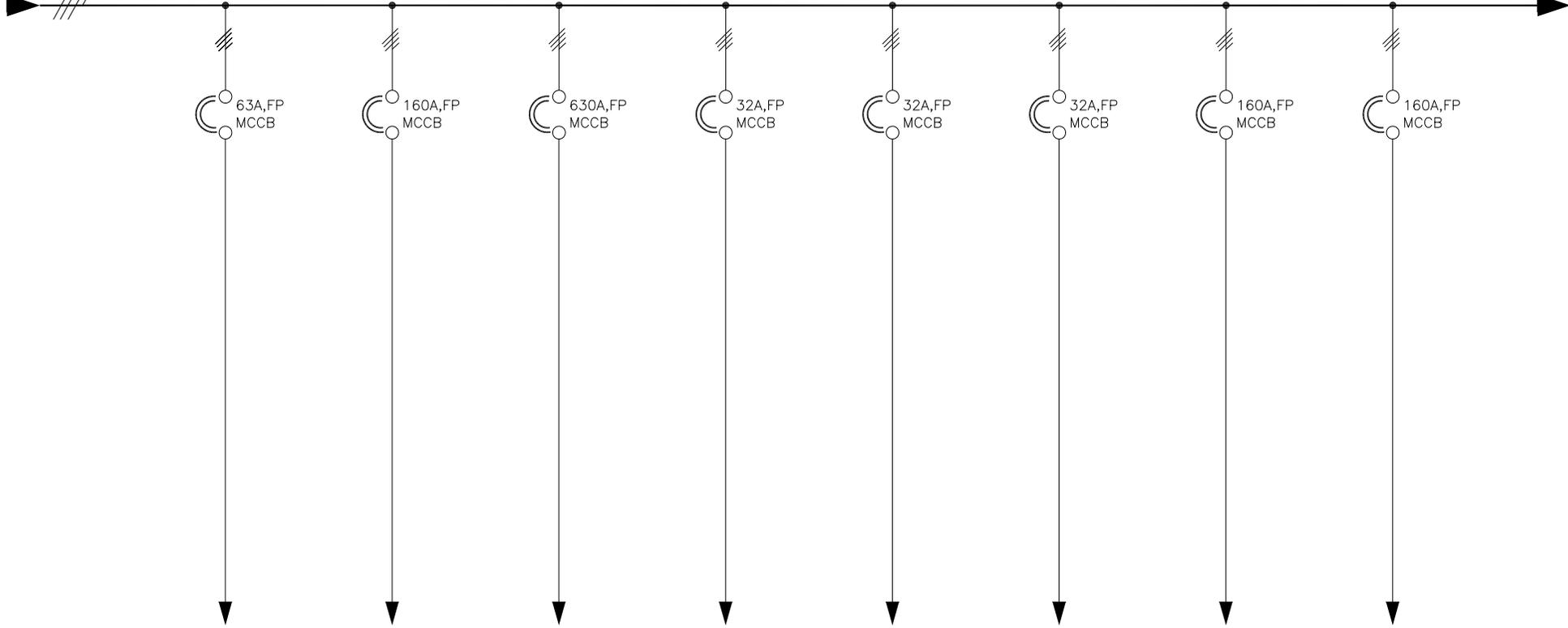
SHEET NO-7 OF 9

REV 01

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3Ø,4W,415V,50Hz,1000A TPN AL. BUS BAR FAULT LEVEL 25kA FOR 1SEC.

(BUS SECTION - 2)



FEEDER No.	10F6	10F7	11F1	11F2	11F3	11F4	11F5	11F6
FEEDER RATING.	63A	160A	630A	32A	32A	32A	160A	160A
FEEDER DESCRIPTION.	SPARE	A/C CONTROL ROOM	SPARE	765KV 240MVAR B/R MB	765KV 240MVAR L/R-1&2	SPARE	MOTOR DRIVEN FW PUMP LCP	220V CHARGER-1
CABLE SIZE MM ² (AL.)	**	**	**	**	**	**	**	**
SCH NO.	E4	E3	E1	E5	E5	E5	E3	E3

** PLEASE SPECIFY

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD
 OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.
 PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.
 CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
 TITLE: SLD FOR 415V ACDB
 DRAWING NO.: TBS-CS1118-1-SLD-009-D
 SHEET NO-8 OF 9
 SCALE: A3

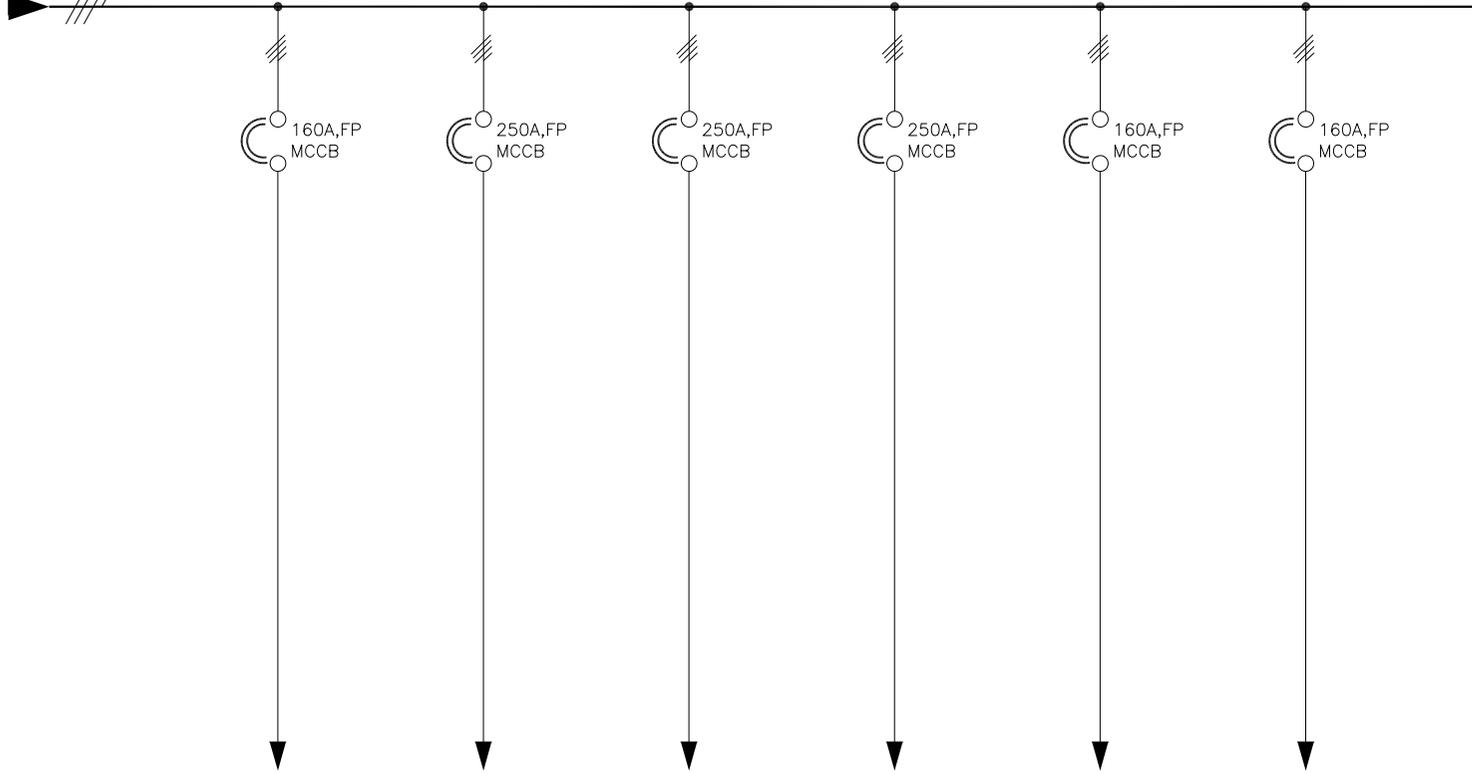
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REV3	Norml	Date	Sign.	STATUS-3
REV2	Norml	Date	Sign.	STATUS-2
REV1	Norml	Date	Sign.	STATUS-1
REV0	Norml	Date	Sign.	STATUS-0
REV.	DRWN	ELECT.	CHKD	APPROVED

1	2	3	4	5	6	7	8
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3Ø,4W,415V,50Hz,1000A TPN AL. BUS BAR FAULT LEVEL 25kA FOR 1SEC.

(BUS SECTION - 2)



FEEDER No.	11F7	12F1	12F2	12F3	12F4	12F5
FEEDER RATING.	160A	250A	250A	250A	160A	160A
FEEDER DESCRIPTION.	220V CHARGER-2	500MVA T/F ICT CMB-1	500MVA T/F ICT CMB-2	SPARE	48V BATTERY CHARGER	SPARE
CABLE SIZE MM ² (AL.)	**	**	**	**	**	**
SCH NO.	E3	E2	E2	E2	E3	E3

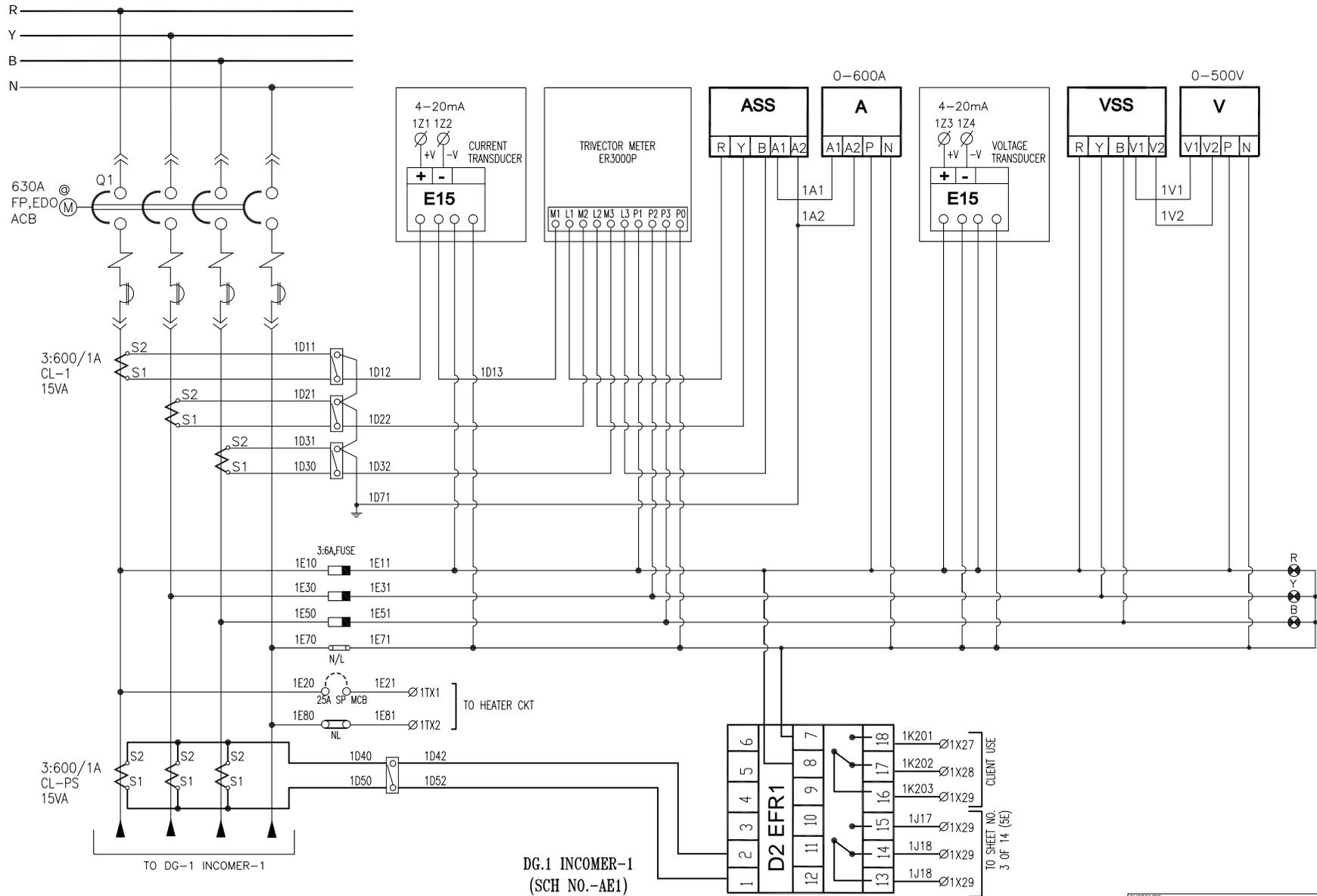
** PLEASE SPECIFY

REFR. DRG. NO.	DESCRIPTION
1	2
3	4
5	6

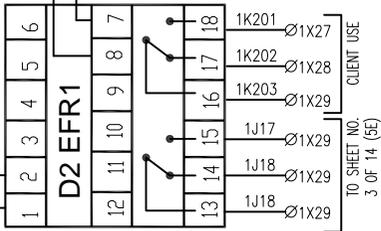
REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0						STATUS-0

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SLD FOR 415V ACDB
SCALE:	A3
ALSTOM <small>ALSTOM S&D INDIA LTD. (Formerly ABB S&D India LTD.) REGD. OFFICE: 201/001 UTTAR PRADESH (INDIA).</small>	
DRAWING NO.:	TBS-CS1118-1-SLD-009-D
SHEET NO-9 OF 9	REV 01

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DG.1 INCOMER-1
(SCH NO.-AE1)

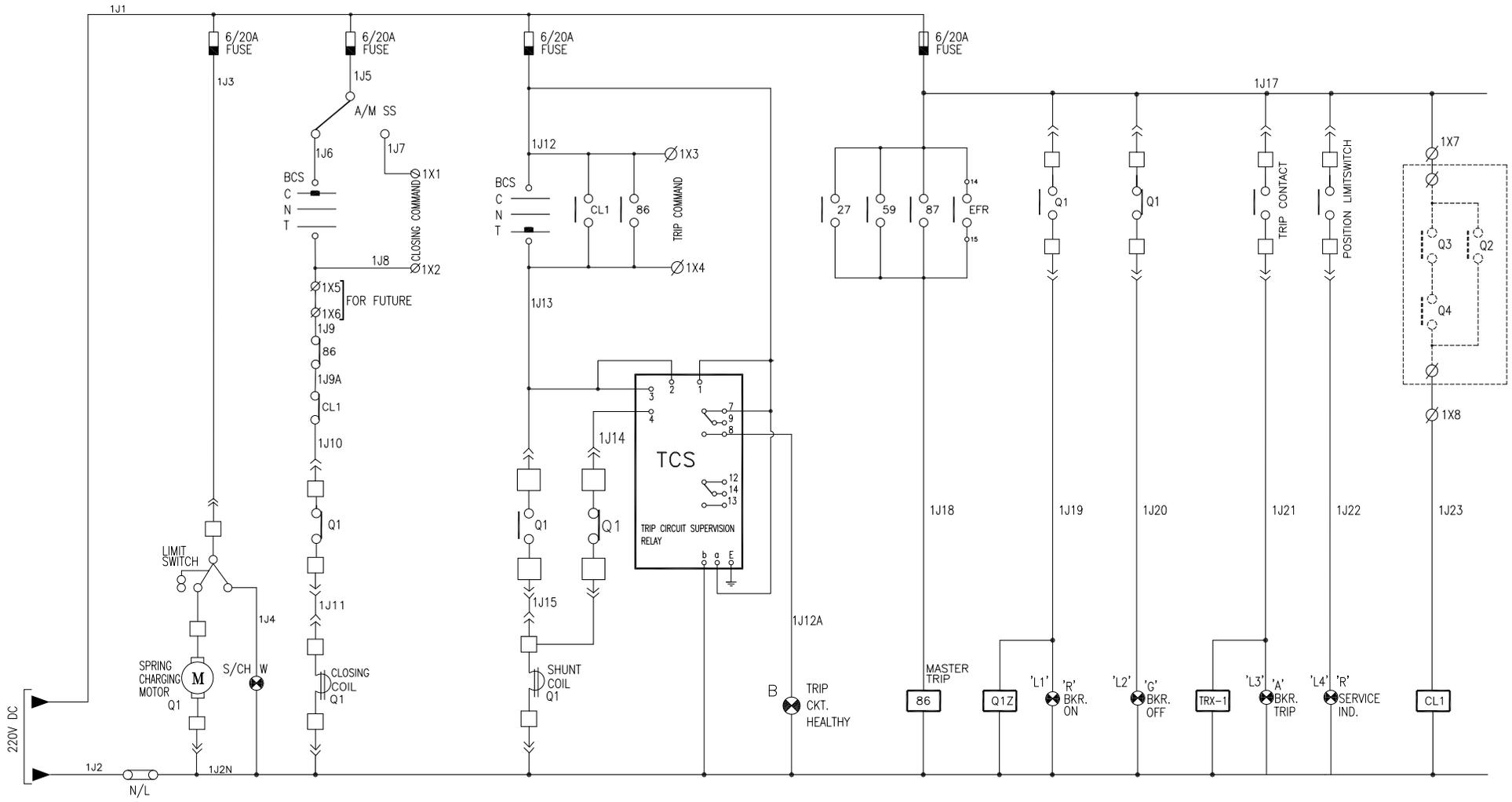


TO SHEET NO. 3 OF 14 (6E)

REFR. DRG. NO.	DESCRIPTION	REV.	DATE	BY	CHECKED	APPROVED	STATUS
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		REV3					STATUS-3
		REV2					STATUS-2
		REV1					STATUS-1
		REV0					STATUS-0

CUSTOMER: BHPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SCHEMATIC FOR 415V ACDB
SCALE:	A3
ALSTOM	ALSTOM S&AD INDIA LTD. (Formerly ABB/ABB INDIA LTD.) REGD. OFFICE: 201301 UTTAR PRADESH (INDIA)
DRAWING NO.:	TBS-CS1118-1-SCHEMATIC-018-D
SHEET NO-1 OF 10	REV 01

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DG.1 INCOMER -1
 CONTROL CIRCUIT DIAGRAM
 (SCH.NO NO.-AE1)

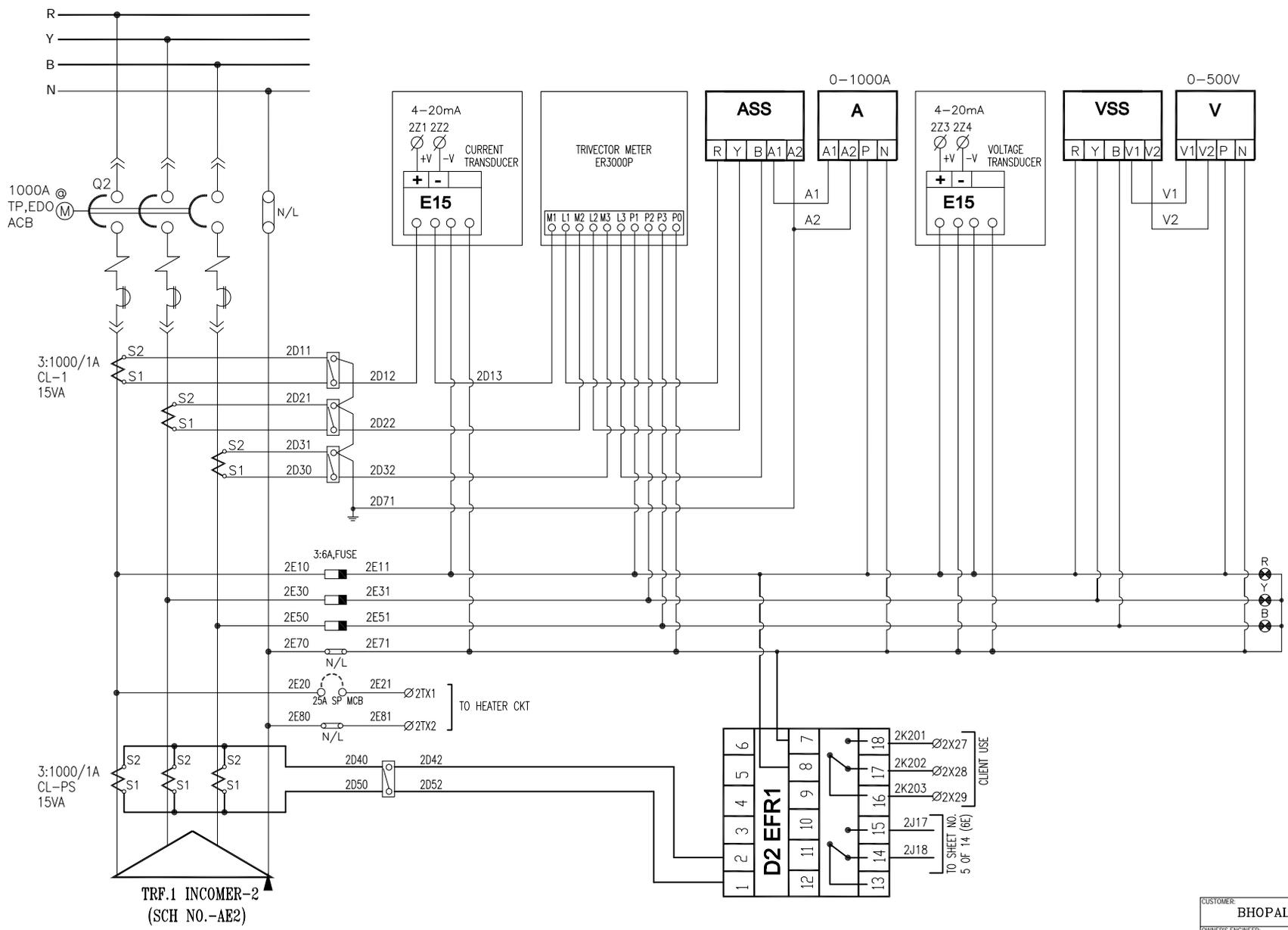
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		REV3						STATUS-3
		REV2						STATUS-2
		REV1						STATUS-1
		REV0						STATUS-0

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD		OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.	
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011	
TITLE:	SCHEMATIC FOR 415V ACDB	
SCALE:	A3	SCALE
ALSTOM <small>ALSTOM S&D INDIA LTD. (Formerly ABB S&D INDIA LTD.) ROAD - 203001 UTTAR PRADESH (INDIA)</small>		DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D
SHEET NO-3 OF 10 REV 01		

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DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D

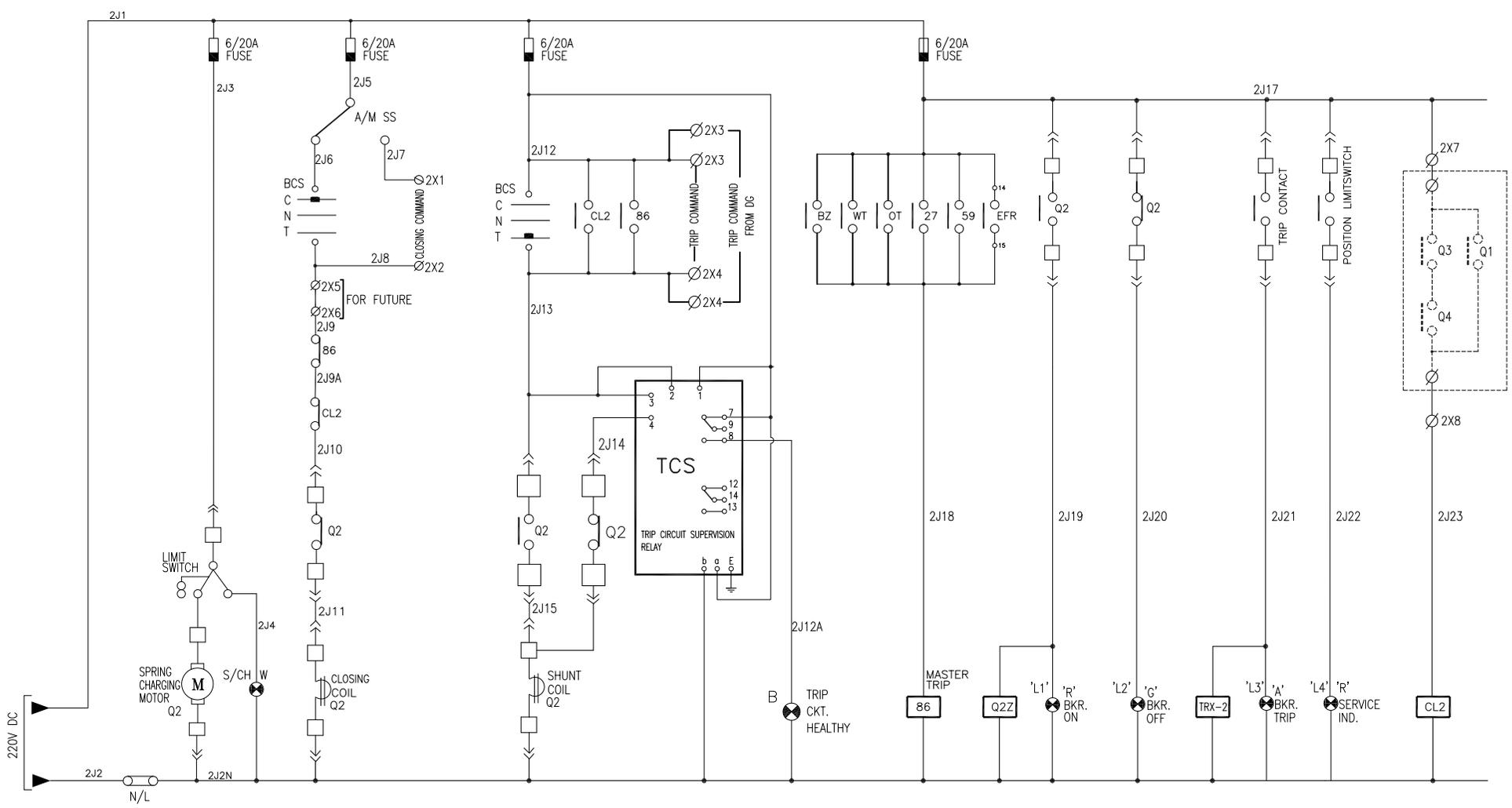
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REFR. DRG. NO.	DESCRIPTION	REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
		REV4						STATUS-4
		REV3						STATUS-3
		REV2						STATUS-2
		REV1						STATUS-1
		REV0						STATUS-0

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SCHEMATIC FOR 415V ACDB
SCALE:	A3
ALSTOM	ALSTOM INDIA LTD. (Formerly ABB INDIA LTD.) REGD. OFFICE: 201301 UTTAR PRADESH (INDIA)
DRAWING NO.:	TBS-CS1118-1-SCHEMATIC-018-D
SHEET NO-4 OF 10	REV 01

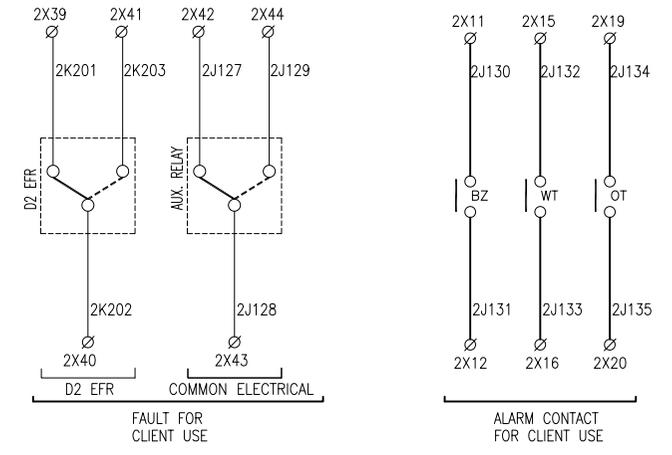
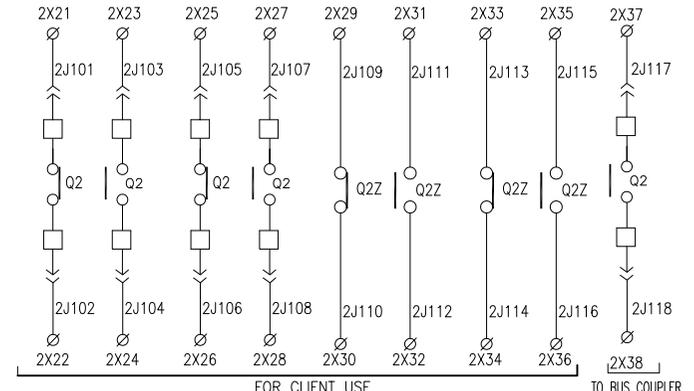
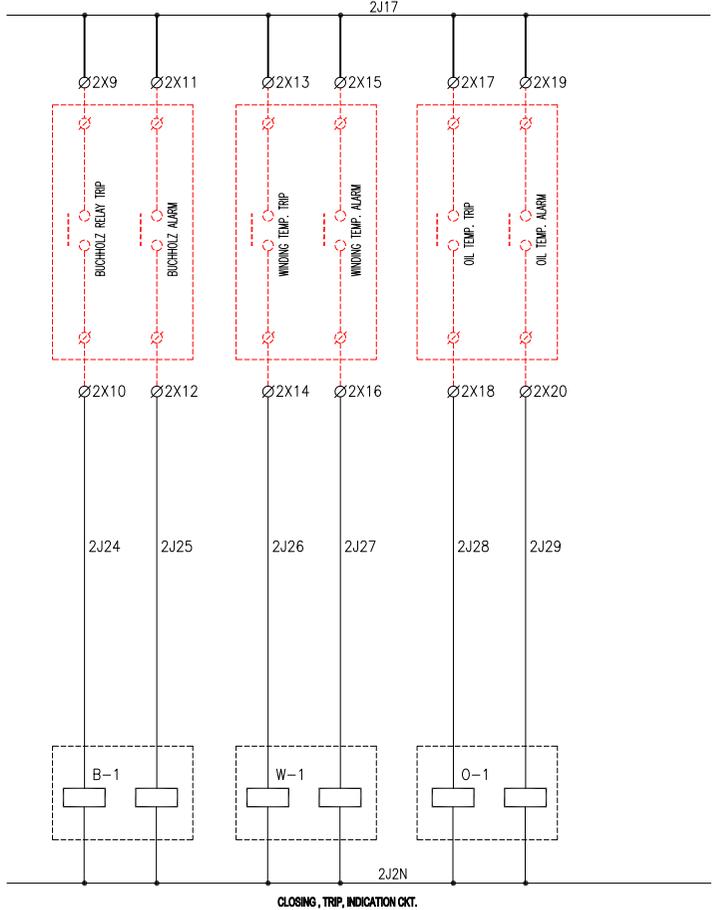
DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D



TRF.1 INCOMER -2
CONTROL CIRCUIT DIAGRAM
(SCH.NO NO.-AE2)

REFR. DRG. NO.		DESCRIPTION		REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	SCALE	DRAWING NO.:		SHEET NO-5 OF 18																																				
1		2		REV4						STATUS-4	A3	TBS-CS1118-1-SCHEMATIC-018-D		REV 01																																				
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REV	DATE	BY	CHECKED	APPROVED	STATUS																																													
REV4					STATUS-4																																													
REV3					STATUS-3																																													
REV2					STATUS-2																																													
REV1					STATUS-1																																													
REV0					STATUS-0																																													
PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.											CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011																																							
TITLE: SCHEMATIC FOR 415V ACDB											SCALE: AS SHOWN																																							
ALSTOM (Formerly ABB) INDIA LTD. (Formerly ABB T&D India Pvt. Ltd.) HEAD OFFICE: 201/201, UTTAM PRADEEP (INDIA)											DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D																																							

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REFR. DRG. NO.	DESCRIPTION
1	2
3	4
5	6

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0						STATUS-0

CUSTOMER: **BHOPAL DHULE TRANSMISSION COMPANY LTD**

OWNER'S ENGINEER: **KNR ENGINEERS (INDIA) PVT. LTD.**

PROJECT: **SYSTEM STRENGTHENING SCHEME OF WR.**

CONTRACT: **LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011**

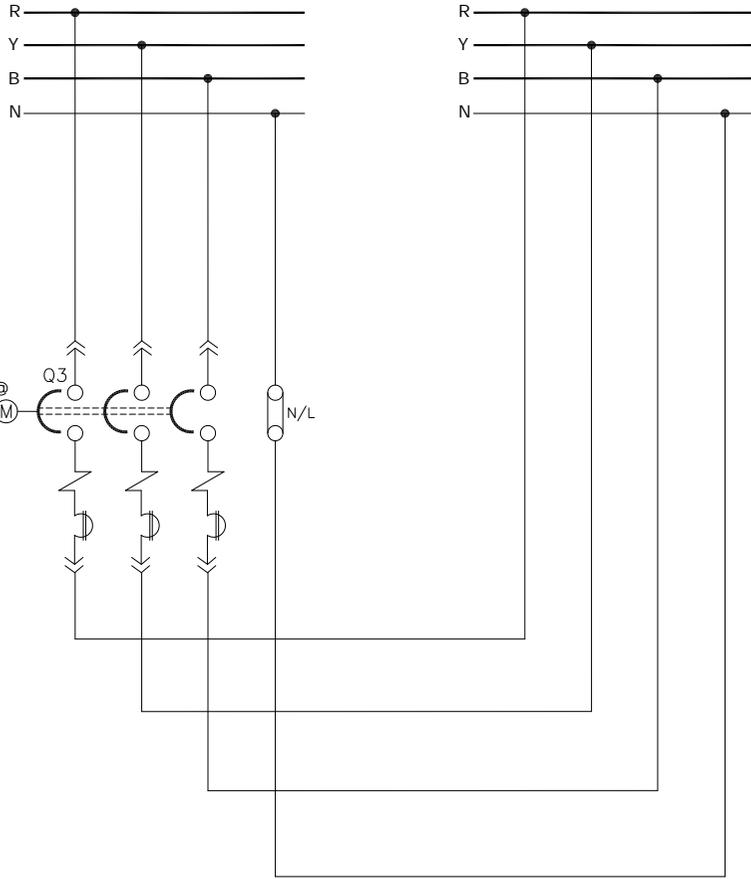
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SCALE: **A3**

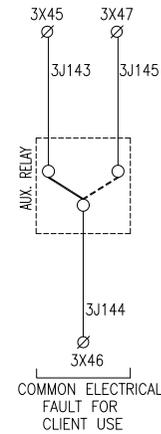
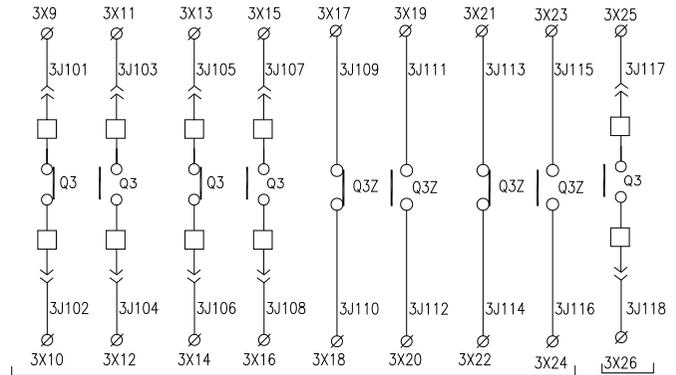
ALSTOM (Formerly ABB) INDIA LTD. REGD. OFFICE: 201/201, UTMAR PROUDH (INDIA).

DRAWING NO.: **TBS-CS1118-1-SCHEMATIC-018-D** SHEET NO-4 OF 18

REV: **01**



BUS COUPLER
(SCH NO.-BC)



REFR. DRG. NO.	DESCRIPTION
1	2
3	4
5	6

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0						STATUS-0

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD

OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.

PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.

CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011

TITLE: SCHEMATIC FOR 415V ACDB

SCALE: A3

ALSTOM (Formerly ABB) INDIA LTD. (Formerly ABB) INDIA LTD. (Formerly ABB) INDIA LTD. (Formerly ABB) INDIA LTD.

DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D

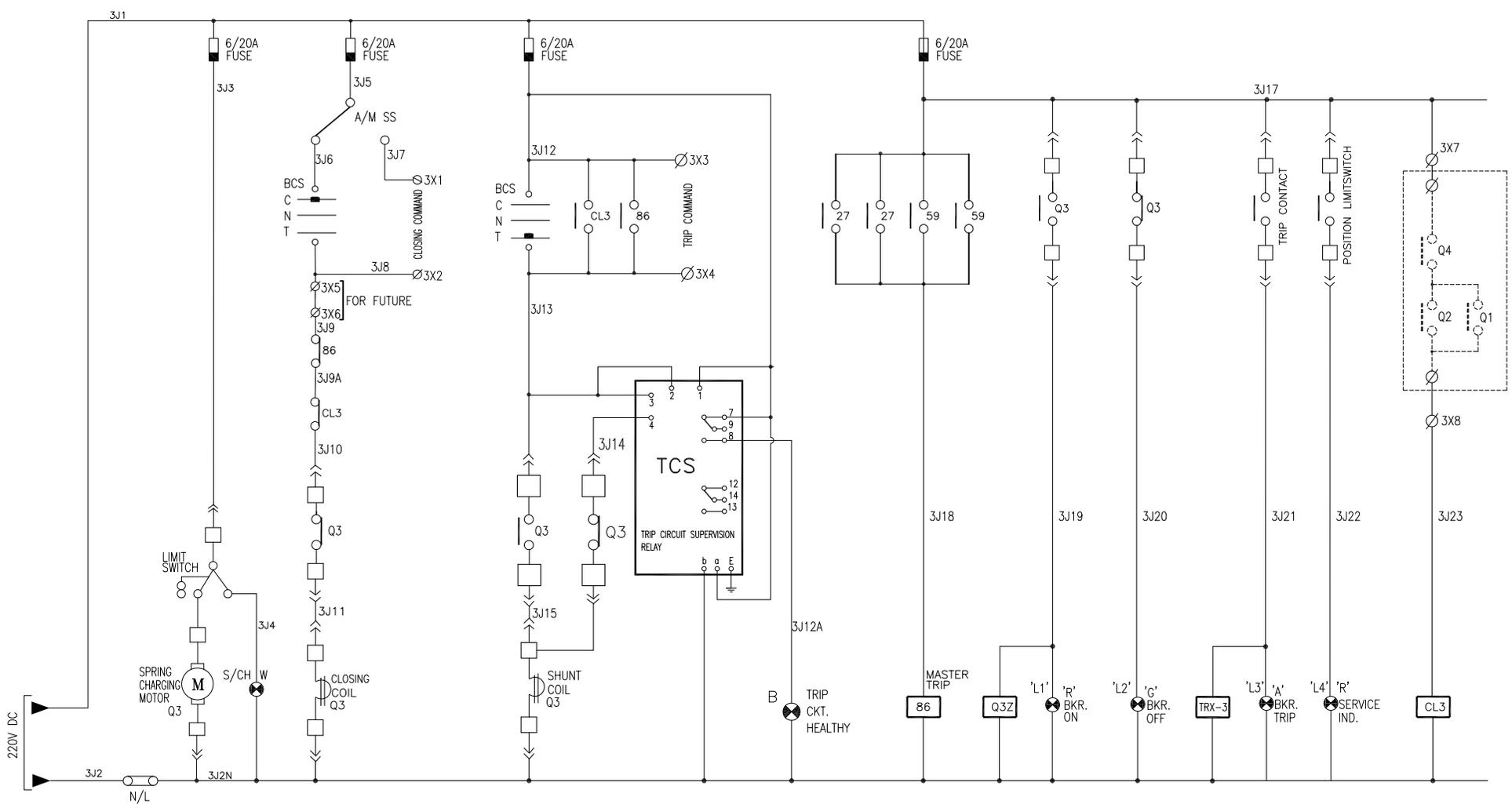
SHEET NO-7 OF 10

REV 01

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DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D

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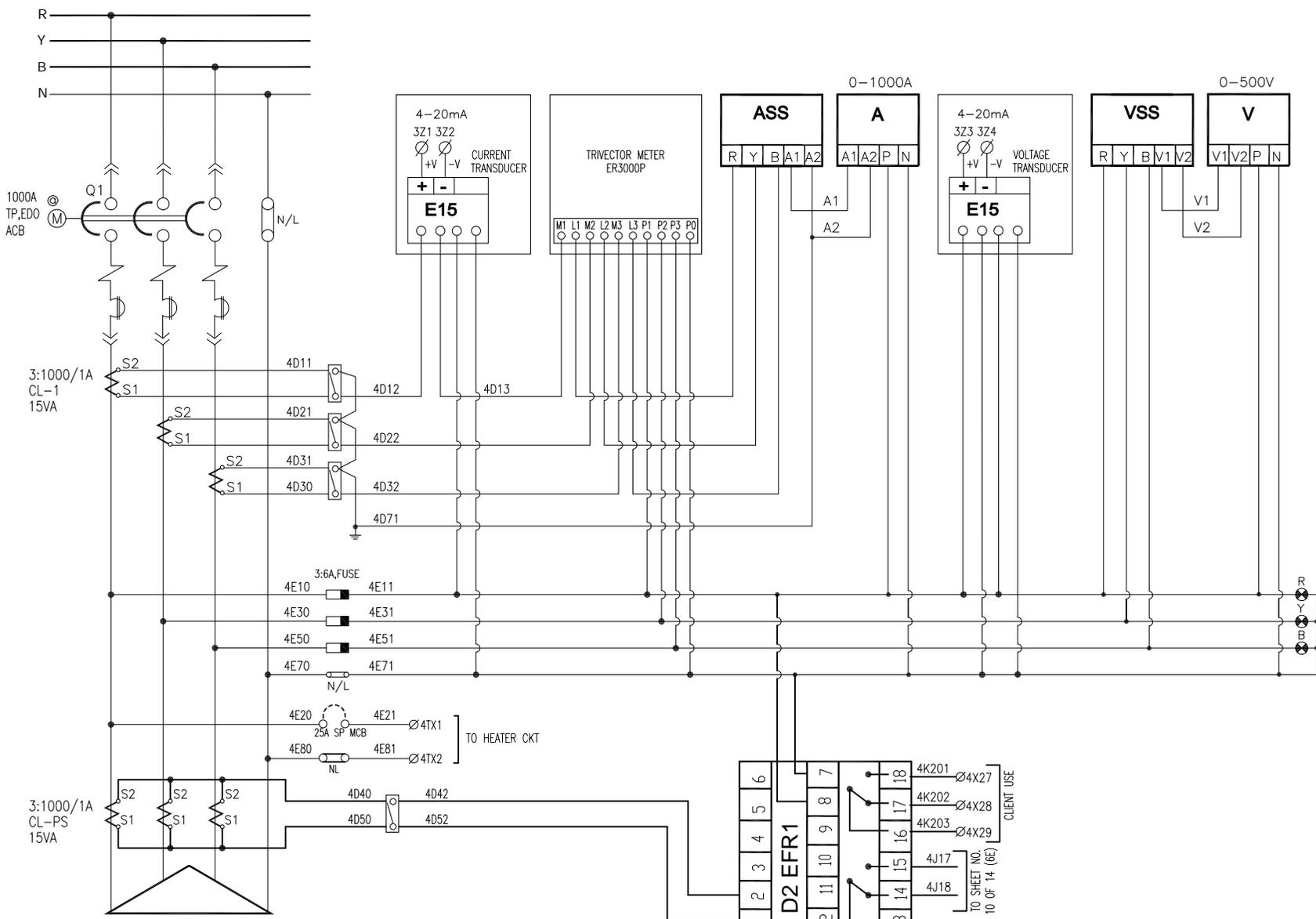


**BUSCOUPLER
CONTROL CIRCUIT DIAGRAM
(SCH.NO NO.-BC)**

REFR. DRG. NO.		DESCRIPTION		REV. 4	Normal Date	STATUS-4	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
				REV. 3	Normal Date	STATUS-3	OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
				REV. 2	Normal Date	STATUS-2	PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
				REV. 1	Normal Date	STATUS-1	CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
				REV. 0	Normal Date	STATUS-0	TITLE:	SCHEMATIC FOR 415V ACDB
				REV.	Normal Date	STATUS-0	SCALE:	A3
					Normal Date	STATUS-0	DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D	
					Normal Date	STATUS-0	SHEET NO-4 OF 10	
					Normal Date	STATUS-0	REV 01	

ALSTOM
ALSTOM S&D INDIA LTD.
(Formerly ABB S&D INDIA LTD.)
HQ: 201301
UTTAR PRADESH (INDIA)

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TRF.2 INCOMER-1
(SCH NO.-AE3)

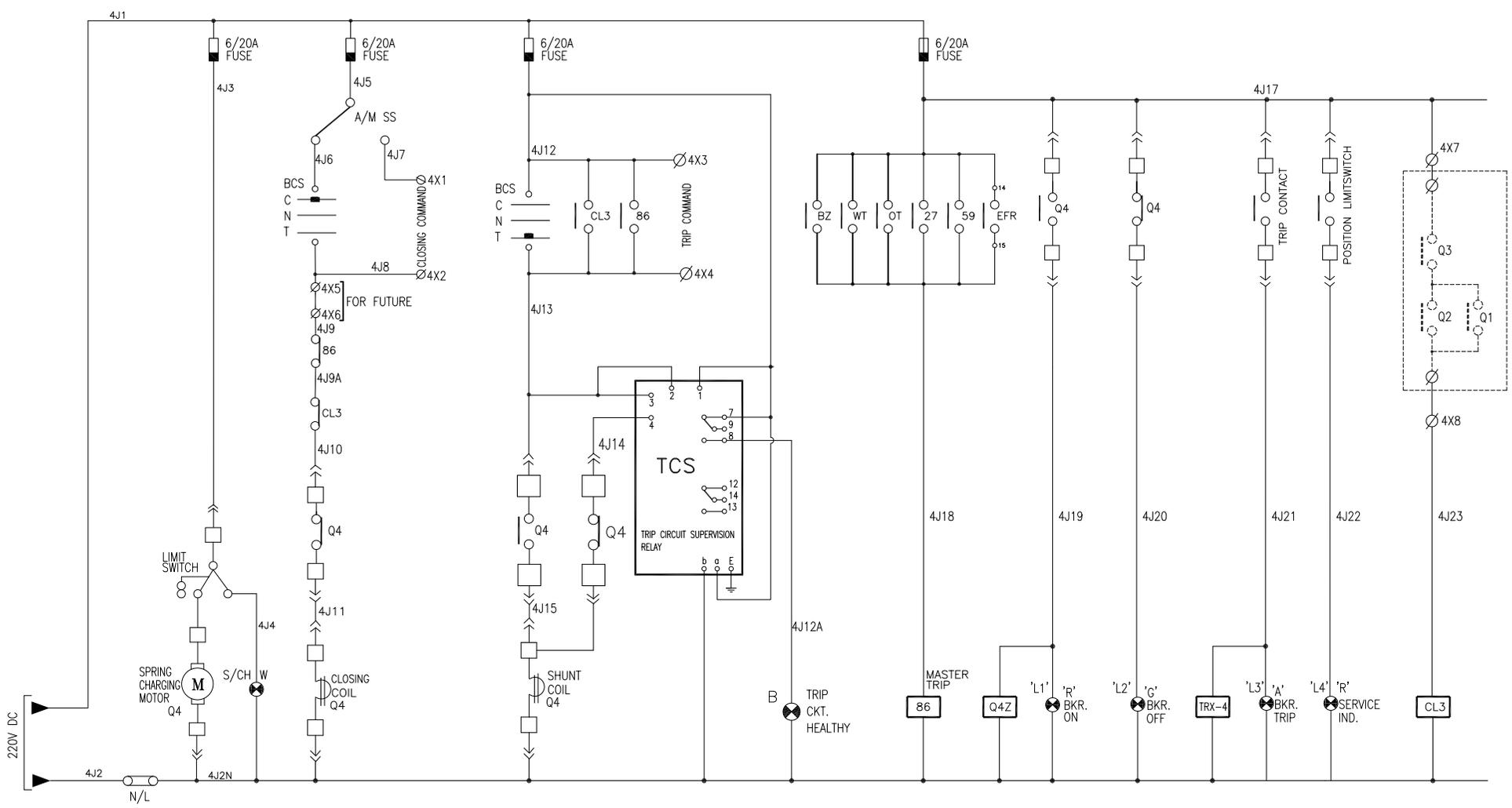
REFR. DRG. NO.	DESCRIPTION
1	2
3	4
5	6
7	8

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SCHEMATIC FOR 415V ACDB
SCALE:	A3
ALSTOM	ALSTOM INDIA LTD. (Formerly ABB India Ltd.) REGD. OFFICE: DELHI UTKAL PRADESH (INDIA)
DRAWING NO.:	TBS-CS1118-1-SCHEMATIC-018-D
SHEET NO-10 OF 18	REV 01

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0						STATUS-0

DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D

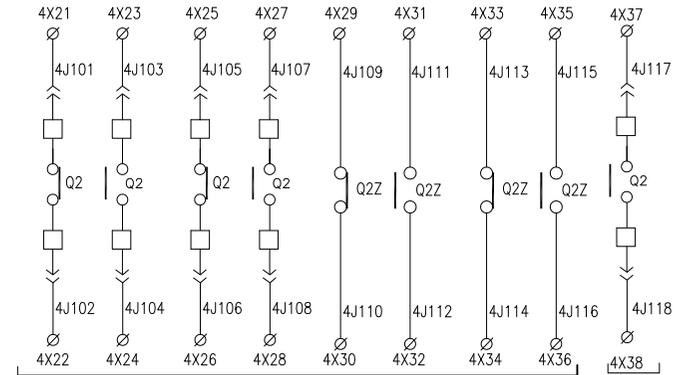
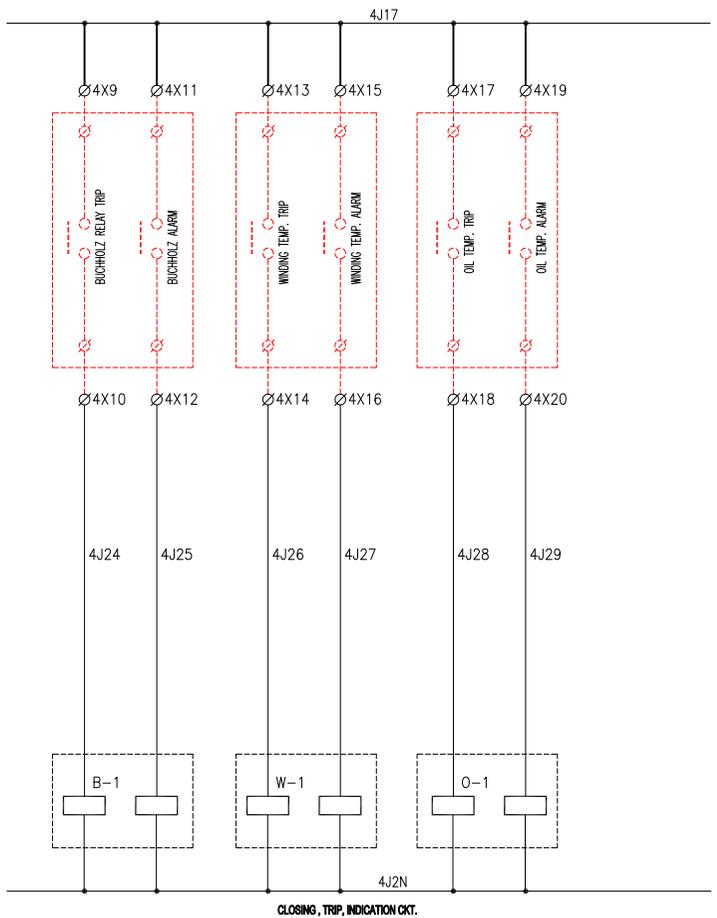
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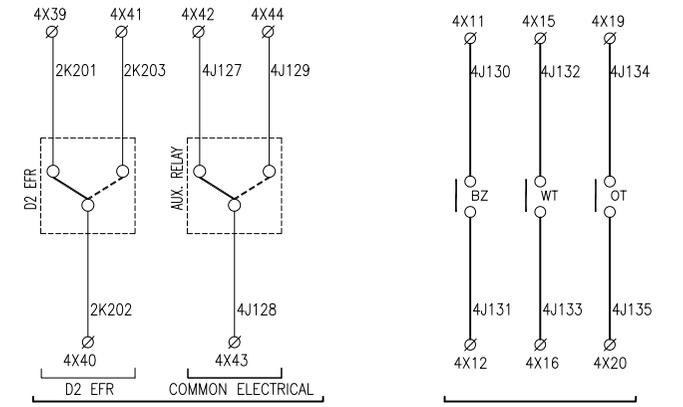
**TRF.2 INCOMER -3
CONTROL CIRCUIT DIAGRAM
(SCH.NO NO.-AE3)**

REFR. DRG. NO.		DESCRIPTION		REV.4	Normal Date	Drawn	Checked	Approved	STATUS-4	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
				REV.3	Normal Date	Drawn	Checked	Approved	STATUS-3	OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
				REV.2	Normal Date	Drawn	Checked	Approved	STATUS-2	PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
				REV.1	Normal Date	Drawn	Checked	Approved	STATUS-1	CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
				REV.0	Normal Date	Drawn	Checked	Approved	STATUS-0	TITLE:	SCHEMATIC FOR 415V ACDB
				REV.	Normal Date	Drawn	Checked	Approved	STATUS	SCALE:	ALSTOM (Formerly ABB) INDIA LTD. (Formerly ABB T&D India Ltd.) REGD. OFFICE: 201301 UTTAR PRADESH (INDIA)
										DRAWING NO.:	TBS-CS1118-1-SCHEMATIC-018-D
										SHEET NO-11 OF 18	REV 01

DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D



FOR CLIENT USE TO BUS COUPLER SECTION FOR I/L



FAULT FOR CLIENT USE COMMON ELECTRICAL ALARM CONTACT FOR CLIENT USE

REFR. DRG. NO.	DESCRIPTION
1	2
3	4
5	6

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0						STATUS-0

CUSTOMER: **BHOPAL DHULE TRANSMISSION COMPANY LTD**

OWNER'S ENGINEER: **KNR ENGINEERS (INDIA) PVT. LTD.**

PROJECT: **SYSTEM STRENGTHENING SCHEME OF WR.**

CONTRACT: **LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011**

TITLE: **SCHEMATIC FOR 415V ACDB**

SCALE: **A3**

ALSTOM (Formerly ABB) INDIA LTD. (Formerly ABB) INDIA LTD. (Formerly ABB) INDIA LTD. (Formerly ABB) INDIA LTD.

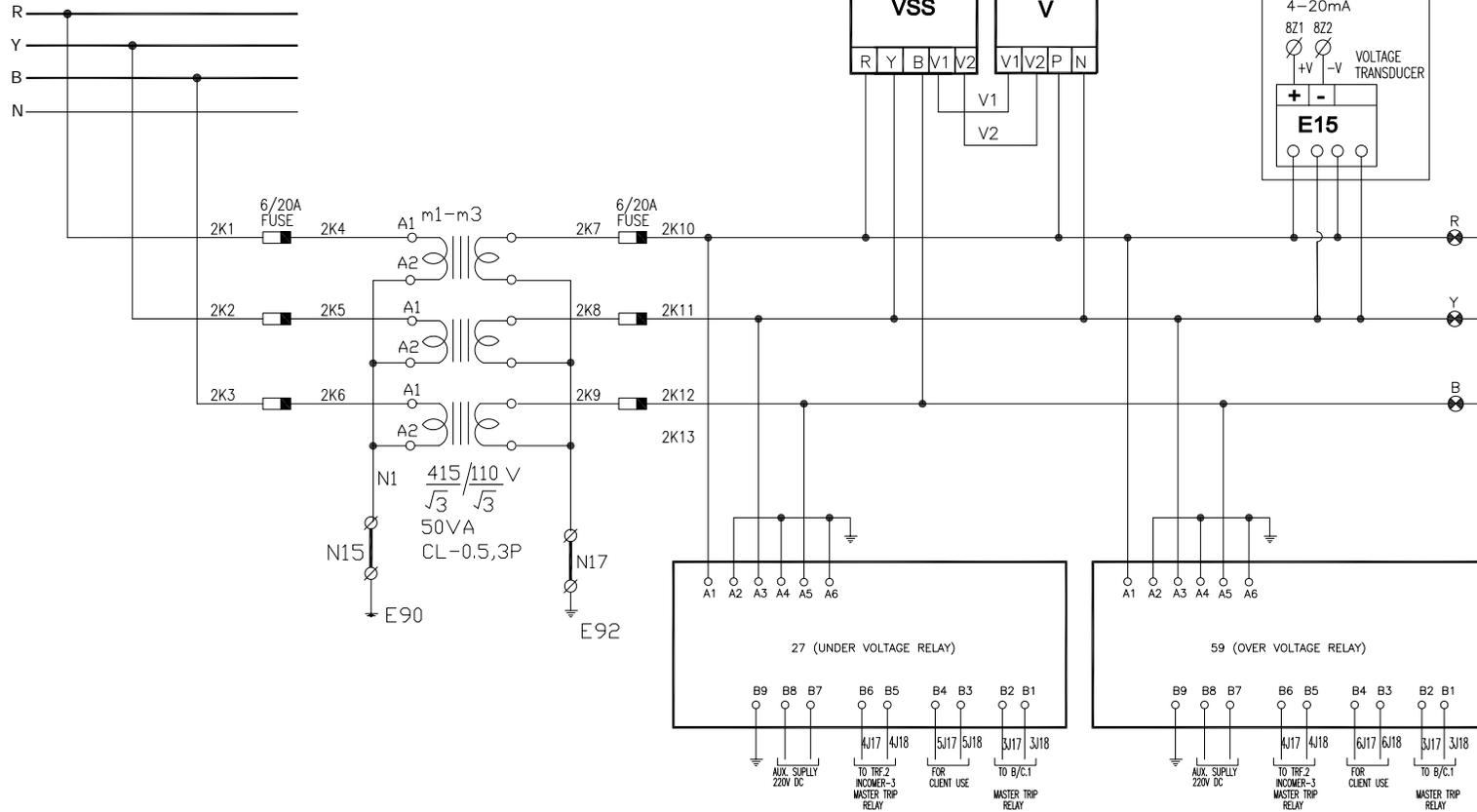
DRAWING NO.: **TBS-CS1118-1-SCHEMATIC-018-D**

SHEET NO-12 OF 18

REV 01

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DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D



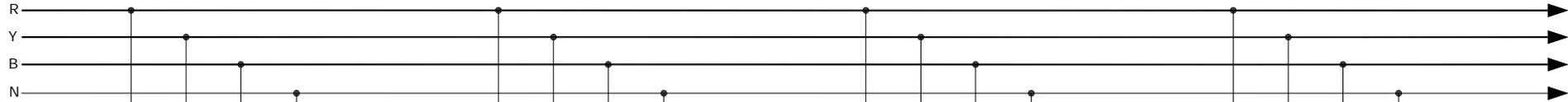
PT FEEDER-2 CIRCUIT

REFR. DRG. NO.		DESCRIPTION		REV.		DRAWN		ELECT.		CHECKED		APPROVED		STATUS		SCALE		TITLE		CONTRACT		PROJECT		OWNER'S ENGINEER		CUSTOMER			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
				REV4										STATUS-4				BHPAL DHULE TRANSMISSION COMPANY LTD		KNR ENGINEERS (INDIA) PVT. LTD.		SYSTEM STRENGTHENING SCHEME OF WR.		LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011		SCHEMATIC FOR 415V ACDB			
				REV3										STATUS-3															
				REV2										STATUS-2															
				REV1										STATUS-1															
				REV0										STATUS-0															
				REV.										STATUS															

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DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D

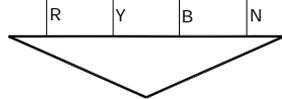


630A,FP
MCCB

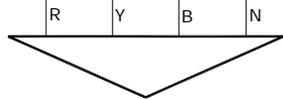
250A,FP
MCCB

160A,FP
MCCB

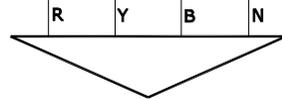
63A,FP
MCCB



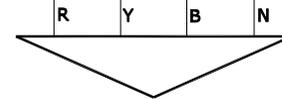
OUTGOING
(SCH NO.-E1)



OUTGOING
(SCH NO.-E2)



OUTGOING
(SCH NO.-E3)



OUTGOING
(SCH NO.-E4)

R

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CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD

OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.

PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.

CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011

TITLE: SCHEMATIC FOR 415V ACDB

SCALE: A3

ALSTOM (Formerly ABB) INDIA LTD. Regd. Office: 201/201 UTMAR PROJEKTS (INDIA)

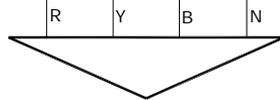
DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D SHEET NO-18 OF 18

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0		15/10/2012				STATUS-0

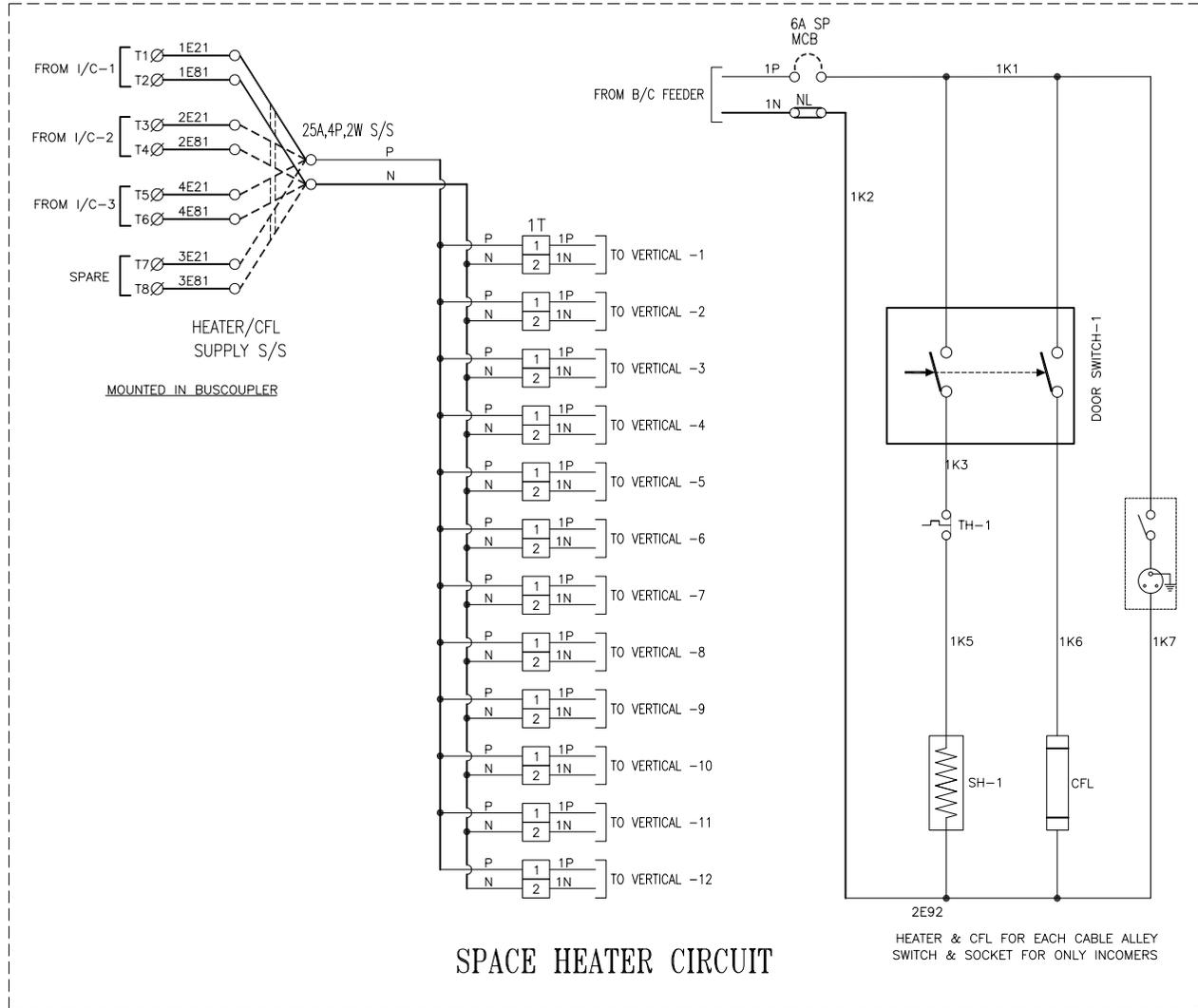
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32A,FP
MCCB



OUTGOING
(SCH NO.-E5)



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REFR. DRG. NO.		DESCRIPTION		REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	SCALE	TITLE	DRAWING NO.:	SHEET NO-16 OF 18
1		2		REV4						STATUS-4	A3	SCHEMATIC FOR 415V ACDB	TBS-CS1118-1-SCHEMATIC-018-D	01
3		4		REV3						STATUS-3				
5		6		REV2						STATUS-2				
7		8		REV1						STATUS-1				
				REV0						STATUS-0				

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD

OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.

PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.

CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011

TITLE: SCHEMATIC FOR 415V ACDB

ALSTOM (Formerly ABB) INDIA LTD. REGD. OFFICE: 201/201/1 UTMAR PRODCEN (INDIA)

SCALE: A3

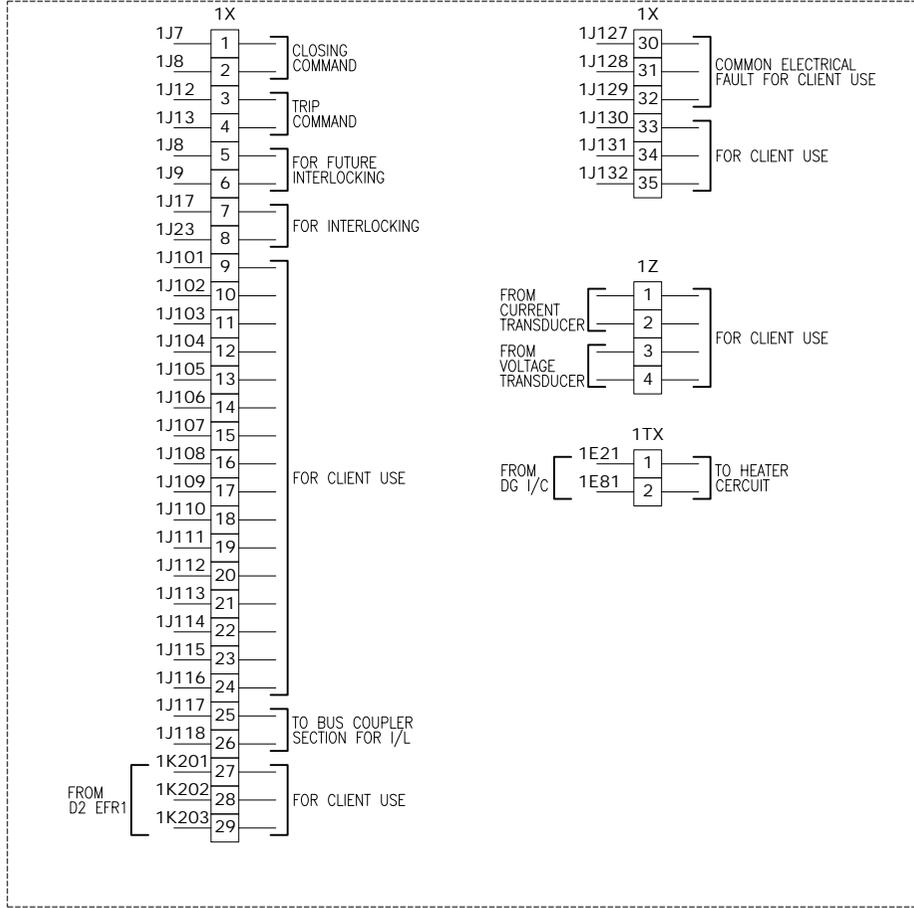
DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D

SHEET NO-16 OF 18

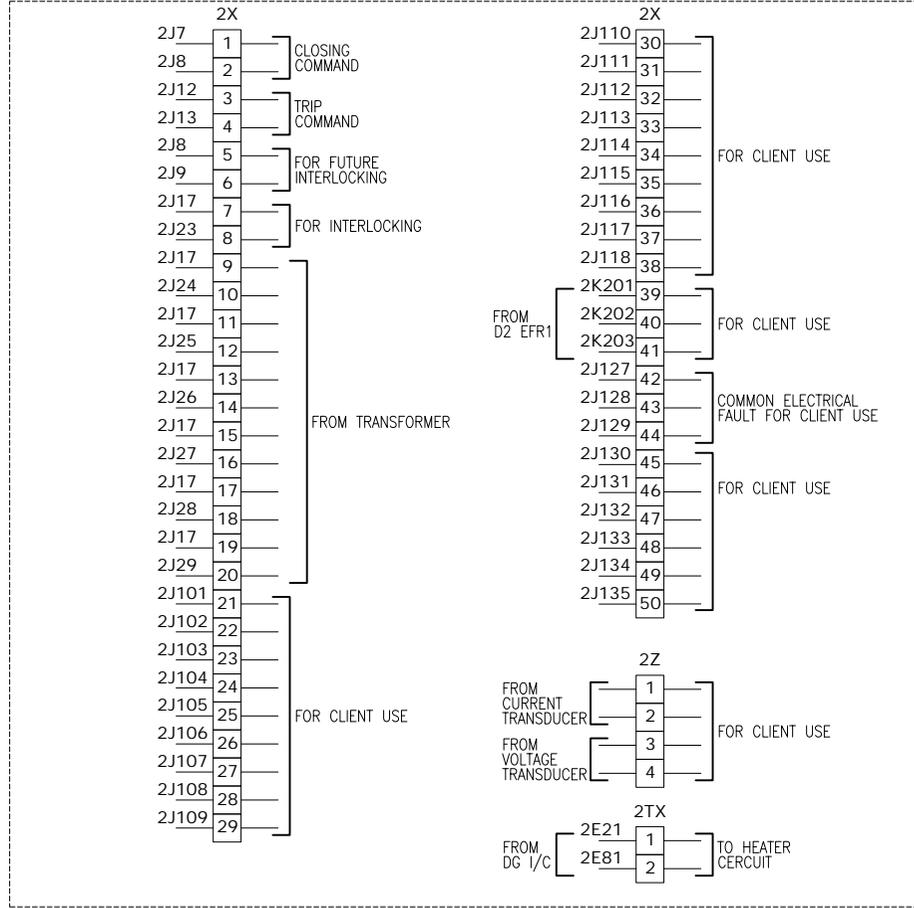
REV 01

DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D

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TERMINALS DETAIL FOR DG INCOMER-1



TERMINALS DETAIL FOR TRF. INCOMER-2

REFR. DRG. NO.		DESCRIPTION		REV.		DRAWN		ELECT.		CHKD.		APPROVED		STATUS		SCALE		TITLE		CONTRACT		PROJECT		OWNER'S ENGINEER		CUSTOMER		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1		2		3		4		5		6		7		8		9		10		11		12		13		14		

CUSTOMER: **BHOPAL DHULE TRANSMISSION COMPANY LTD**

OWNER'S ENGINEER: **KNR ENGINEERS (INDIA) PVT. LTD.**

PROJECT: **SYSTEM STRENGTHENING SCHEME OF WR.**

CONTRACT: **LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011**

TITLE: **SCHEMATIC FOR 415V ACDB**

SCALE: **A3**

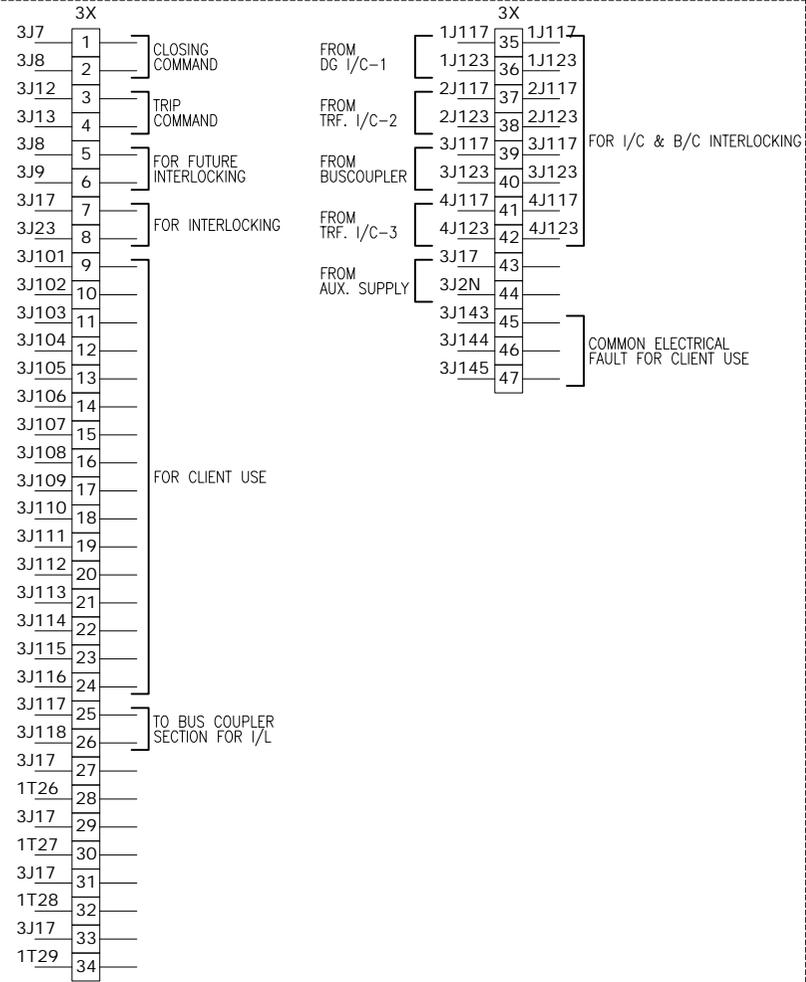
ALSTOM (Formerly ABB India Ltd.)
 HEAD OFFICE: 201/201, UTTAM PRASAD (INDIA)

DRAWING NO.: **TBS-CS1118-1-SCHEMATIC-018-D**

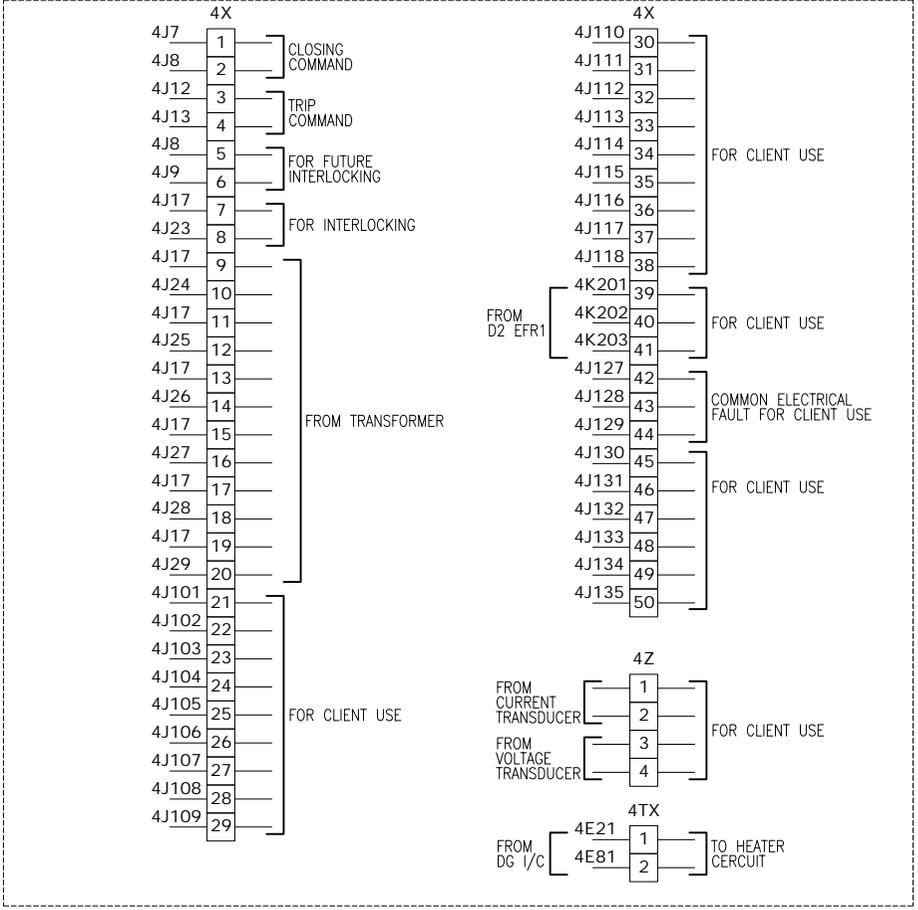
SHEET NO-17 OF 18

REV: **01**

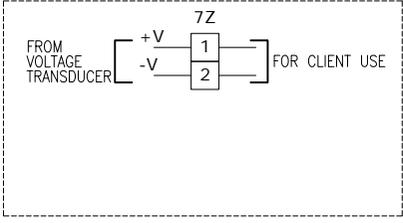
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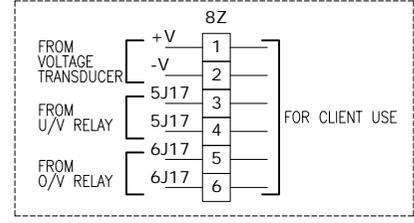
TERMINALS DETAIL FOR BUS COUPLER



TERMINALS DETAIL FOR TRF. INCOMER-3



TERMINALS DETAIL FOR PT FEEDER-1



TERMINALS DETAIL FOR PT FEEDER-2

REFR. DRG. NO.		DESCRIPTION		REV.		DRAWN		ELECT.		CHKD.		APPROVED		STATUS	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

REV4	Normal	Date	Sign.	STATUS-4
REV3	Normal	Date	Sign.	STATUS-3
REV2	Normal	Date	Sign.	STATUS-2
REV1	Normal	Date	Sign.	STATUS-1
REV0	Normal	Date	Sign.	STATUS-0

CUSTOMER:	BHOPAL DHULE TRANSMISSION COMPANY LTD		
OWNER'S ENGINEER:	KNR ENGINEERS (INDIA) PVT. LTD.		
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.		
CONTRACT:	LOI NO. BDTC/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011		
TITLE:	SCHEMATIC FOR 415V ACDB		
SCALE:	A3	SCALE	ALSTOM
ALSTOM		ALSTOM INDIA LTD. (Formerly ABN S&B India Ltd.) REGD. OFFICE: 201/201 UTAR PRDESH (INDIA)	DRAWING NO.: TBS-CS1118-1-SCHEMATIC-018-D
REV	01	SHEET NO-18 OF 18	

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DRAWING NO.: TBS-CS1118-1-BOM-004-D

1 415 ACDB							
S.No	DESCRIPTION	RATING	MAKE	Q	T.Q		
INCOMER - FROM TR- 1 & 2		2Nos.					
1	1000A,TP,ACB,EDO TYPE,FAULT LEVEL 50KA,THERMAL MAGNETIC BASED RELEASE :	1000A	C&S/SIEMENS/ABB/L&T /SCHNEIDER	1	2		
a	MOTOR - 220V DC						
b	CLOSING COIL - 220V DC						
c	SHUNT RELEASE - 220V DC						
d	MIICRO SWITCH						
e	POSITION INDICATION LIMIT SWITCH						
f	5NO + 5NC AUX						
g	SAFETY SHUTTER						
2	EARTH FAULT RELAY (EFR1)	D2 EFR1	MINILEC	1	2		
3	TNC SWITCH	16A	SALZER/KAYCEE	1	2		
4	PHASE INDICATION LAMP (LED TYPE) (R-Y-B)	230V AC	C&S/SIEMENS/ABB	3	6		
5	INDICATION LAMP (LED TYPE) (OPEN,CLOSE,SERVICE,TEST & SPRING CHARGE)	220V DC	C&S/SIEMENS/ABB	6	12		
6	DIGITAL VOLTMETER,AUX- 230V AC	0-500V	AE/RISHABH	1	2		
7	VOLTMETER SELECTOR SWITCH (3 POLE, 2 WAY)	6A	SALZER/KAYCEE	1	2		
8	DIGITAL AMMETER,AUX- 230V AC	0-1000A	AE/RISHABH	1	2		
9	AMMETER SELECTOR SWITCH (3 POLE, 2 WAY)	6A	SALZER/KAYCEE	1	2		
10	CTs 1000/1A, 15VA,CL-1,RESIN CAST	1000/1A	INDOTECH/PRAGATI ELECTRICAL/SKIPPER ELECTRICALS	3	6		
11	CTs 1000/1A, 15VA,CL-PS,RESIN CAST	1000/1A	INDOTECH/PRAGATI ELECTRICAL/SKIPPER ELECTRICALS	3	6		
12	CURRENT TRANSDUCER 1A, 4-20mA OUTPUT,AUX 230V AC	4-20mA	AE/RISHABH/PYROTECH	1	2		
13	VOLTAGE TRANSDUCER ,230V AC,OUTPUT- 4-20mA ,AUX- 230V AC	4-20mA	AE/RISHABH/PYROTECH	1	2		
14	TRIVECTOR METER (BASE MOUNTED TYPE)	ER300P	L&T/ENERCON/SECURE	1	2		
15	A/M SELECTOR SWITCH	6A	SALZER/KAYCEE	1	2		
16	CONTROL FUSE LINK	6A	C&S/SIEMENS/ABB	7	14		
17	CONTROL FUSE BASE	20A	C&S/SIEMENS/ABB	7	14		
18	MASTER TRIP RELAY - 86 AUX SUPPLY - 220V DC	VAJH13	ALSTOM/ABB	1	2		
19	TRIP CIRCUIT SUPERVISION RELAY - 95 (OVER LOAD ALARM RELAY) AUX SUPPLY - 220V DC	VAX31	ALSTOM/ABB	1	2		
20	AUXILIARY CONTACTOR 2NO+2NC 220V DC	6A	C&S/SIEMENS/ABB	2	4		
21	AUX. RELAY 1 C/O CONTACT,220V DC	6A	OMRON/OEN	1	2		
22	AUX. RELAY FOR TRANSFORMER,AUX SUPPLY - 220V DC (FLUSH MOUNTED TYPE)	CV2D2J	ABB	3	6		
23	25A,SP,MCB,10KA	25A	C&S/SIEMENS/ABB	1	2		
24	CT SHORTING LINK		FTC/EQV.	4	8		
25	NEUTRAL LINK	20A	FTC/EQV.	3	6		

REFR. DRG. NO.		DESCRIPTION		REV. 1	DESCRIPTION	STATUS	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9

REV4

REV3

REV2

REV1

REV0

STATUS-4

STATUS-3

STATUS-2

STATUS-1

STATUS-0

PROJCT: SYSTEM STRENGTHENING SCHEME OF WR.

CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011

TITLE: BOM FOR 415V ACDB

SCALE: **ALSTOM**

DRAWING NO.: **TBS-CS1118-1-BOM-004-D**

SHEET NO. OF 4: **REV 01**

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DRAWING NO.: TBS-CS1118-1-BOM-004-D

2.0 PT FEEDER		2Nos.			
1	HRC FUSE LINK	6A	C&S/SIEMENS/ABB	6	12
2	HRC FUSE BASE	6A	C&S/SIEMENS/ABB	6	12
3	PT 415/√3/110/√3,50VA,CL-0.5,3P	50VA	INDOTECH/PRAGATI ELECTRICAL/SKIPPER ELECTRICALS	1	2
4	PHASE INDICATION LAMP (LED TYPE) (R-Y-B)	110V AC	C&S/SIEMENS/ABB	3	6
5	DIGITAL VOLTMETER,AUX- 110V AC PT OPERATED 110V AC	0-500V	AE/RISHABH	1	2
6	VOLTMETER SELECTOR SWITCH (3 POLE, 2 WAY)	6A	SALZER/KAYCEE	1	2
7	VOLTAGE TRANSDUCER 110V AC,OUTPUT- 4-20mA ,AUX- 110V AC	4-20mA	AE/RISHABH/PYROTECH	1	2
8	UNDER VOLTAGE RELAY - 27,110V AC, AUX. SUPPLY - 220V DC	IRU Pro U	C&S/ALSTOM/ABB/L&T	1	2
9	OVER VOLTAGE RELAY - 59, 110V AC, AUX. SUPPLY - 220V DC	IRU Pro O	C&S/ALSTOM/ABB/L&T	1	2
2.0 BUS COUPLER		1No.			
1	1000A,TP,ACB,EDO TYPE,FAULT LEVEL 50KA,THERMAL MAGNETIC BASED RELEASE :	1000A	C&S/SIEMENS/ABB/L&T /SCHNEIDER	1	1
a	MOTOR - 220V DC				
b	CLOSING COIL - 220V DC				
c	SHUNT RELEASE - 220V DC				
d	MIICRO SWITCH				
e	POSITION INDICATION LIMIT SWITCH				
f	5NO + 5NC AUX				
g	SAFETY SHUTTER				
2	TNC SWITCH	16A	SALZER/KAYCEE	1	1
3	INDICATION LAMP (LED TYPE) (OPEN,CLOSE,SERVICE,TEST & SPRING CHARGE)	220V DC	C&S/SIEMENS/ABB	6	6
4	A/M SELECTOR SWITCH	6A	SALZER/KAYCEE	1	1
5	MASTER TRIP RELAY - 86 AUX. SUPPLY - 220V DC	VAJH13	ALSTOM/ABB	1	1
6	TRIP CIRCUIT SUPERVISION RELAY - 95 (OVER LOAD ALARM RELAY) AUX. SUPPLY - 220V DC	VAX31	ALSTOM/ABB	1	1
7	CONTROL FUSE LINK	6A	C&S/SIEMENS/ABB	4	4
8	CONTROL FUSE BASE	20A	C&S/SIEMENS/ABB	4	4
9	AUXILIARY CONTACTOR 2NO+2NC 220V DC	6A	C&S/SIEMENS/ABB	2	2
10	AUXILIARY CONTACTOR 4NO+4NC 220V DC	6A	C&S/SIEMENS/ABB	4	4
11	AUX. RELAY 1 C/O CONTACT,220V DC	6A	OMRON/OEN	1	1
12	25A,4P,2W SELECTOR SWITCH	25A	SALZER/KAYCEE	1	1
13	NEUTRAL LINK	20A	FTC/EQV.	1	1

REFR. DRG. NO.		DESCRIPTION		REV.4	DATE	BY	CHKD	APPV	STATUS-4	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
				REV.3	DATE	BY	CHKD	APPV	STATUS-3	OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
				REV.2	DATE	BY	CHKD	APPV	STATUS-2	PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
				REV.1	DATE	BY	CHKD	APPV	STATUS-1	CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
				REV.0	DATE	BY	CHKD	APPV	STATUS-0	TITLE:	BOM FOR 415V ACDB
				REV.	DATE	BY	CHKD	APPV	STATUS-0	SCALE:	A3
										ALSTOM	DRAWING NO.:
											TBS-CS1118-1-BOM-004-D
											SHEET NO-4 OF 4

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DRAWING NO.: TBS-CS1118-1-BOM-004-D

	INCOMER - FROM DG	1No.			
1	630A,FP,ACB,EDO TYPE,FAULT LEVEL 50KA,THERMAL MAGNETIC BASED RELEASE :	630A	C&S/SIEMENS/ABB/L&T /SCHNEIDER	1	1
a	MOTOR - 220V DC				
b	CLOSING COIL - 220V DC				
c	SHUNT RELEASE - 220V DC				
d	MIICRO SWITCH				
e	POSITION INDICATION LIMIT SWITCH				
f	5NO + 5NC AUX				
g	SAFETY SHUTTER				
2	EARTH FAULT RELAY (EFR1)	D2 EFR1	MINILEC	1	1
3	TNC SWITCH	16A	SALZER/KAYCEE	1	1
4	PHASE INDICATION LAMP (LED TYPE) (R-Y-B)	220V DC	C&S/SIEMENS/ABB	3	3
5	INDICATION LAMP (LED TYPE) (OPEN,CLOSE,SERVICE ,TEST & SPRING CHARGE)	220V DC	C&S/SIEMENS/ABB	6	6
6	DIGITAL VOLTMETER,AUX- 230V AC	0-500V	AE/RISHABH	1	1
7	VOLTMETER SELECTOR SWITCH (3 POLE, 2 WAY)	6A	SALZER/KAYCEE	1	1
8	DIGITAL AMMETER,AUX- 230V AC	0-600A	AE/RISHABH	1	1
9	AMMETER SELECTOR SWITCH (3 POLE, 2 WAY)	6A	SALZER/KAYCEE	1	1
10	CTs 600/1A,15VA,CL-1,RESIN CAST	600/1A	INDOTECH/PRAGATI ELECTRICAL/SKIPPER ELECTRICALS	3	3
11	CTs 600/1A,15VA,CL-PS,RESIN CAST	600/1A	INDOTECH/PRAGATI ELECTRICAL/SKIPPER ELECTRICALS	9	9
12	DIFFERENCIAL RELAY WITH RESISTOR - 87 AUX SUPPLY - 220V DC	IRI1 3ER	C&S/ALSTOM/JVS	1	1
13	MASTER TRIP RELAY - 86 AUX SUPPLY - 220V DC	VAJH13	ALSTOM/ABB	1	1
14	TRIP CIRCUIT SUPERVISION RELAY - 95 (OVER LOAD ALARM RELAY) AUX SUPPLY - 220V DC	VAX31	ALSTOM/ABB	1	1
15	CURRENT TRANSDUCER WITH 4-20mA OUTPUT	4-20mA	AE/RISHABH/PYROTECH	1	1
16	VOLTAGE TRANSDUCER ,230V AC,OUTPUT- 4-20mA ,AUX- 230V AC	4-20mA	AE/RISHABH/PYROTECH	1	1
17	TRIVECTOR METER (BASE MOUNTED TYPE)	ER300P	L&T/ENERCON/SECURE	1	1
18	A/M SELECTOR SWITCH	6A	SALZER/KAYCEE	1	1
19	CONTROL FUSE LINK	6A	C&S/SIEMENS/ABB	7	7
20	CONTROL FUSE BASE	20A	C&S/SIEMENS/ABB	7	7
21	AUXILIARY CONTACTOR 2NO+2NC 220V DC	6A	C&S/SIEMENS/ABB	1	1
22	AUX. RELAY 1 C/O CONTACT,220V DC	6A	OMRON/OEN	1	1
23	25A,SP,MCB,10KA	25A	C&S/SIEMENS/ABB	1	1
24	CT SHORTING LINK		FTC/EQV.	9	9
25	NEUTRAL LINK	20A	FTC/EQV.	3	3

REFR. DRG. NO.		DESCRIPTION		REV.4	STATUS-4	CUSTOMER: BHOHAL DHULE TRANSMISSION COMPANY LTD OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD. PROJECT: SYSTEM STRENGTHENING SCHEME OF WR. CONTRACT: LOI NO. BD/CL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011 TITLE: BOM FOR 415V ACDB DRAWING NO.: TBS-CS1118-1-BOM-004-D SHEET NO. 8 OF 8
				REV.3	STATUS-3	
				REV.2	STATUS-2	
				REV.1	STATUS-1	
				REV.0	STATUS-0	
1	2	3	4	5	6	7

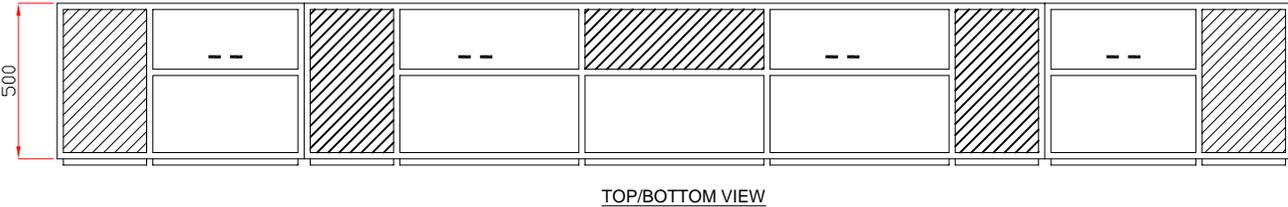
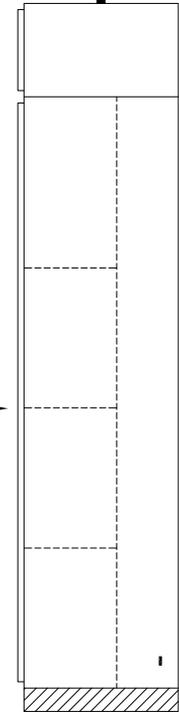
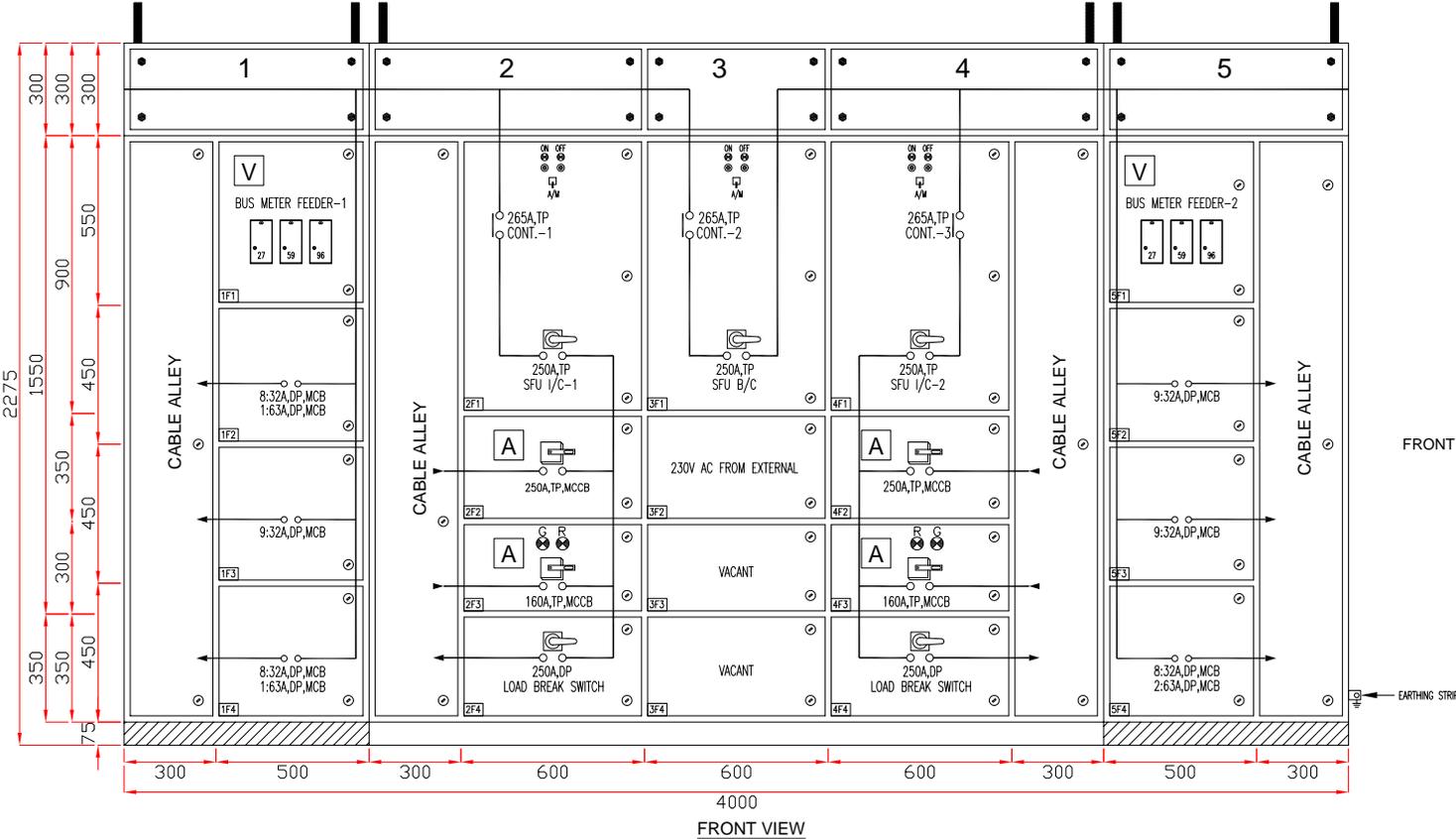
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DRAWING NO.: TBS-CS1118-1-BOM-004-D

SPACE HEATER FEEDER		12Nos.			
1	6A, SP, MCB, 10KA	6A	C&S/SIEMENS/ABB	1	12
2	THERMOSTAT 30°-110°C	30°-110°C	ANCO/EQV.	1	12
3	SPACE HEATER 60W 240V AC	60W, 240V AC	ANCO/EQV.	1	12
4	18W COMPACT FLOURESCENT LAMP, 240V AC	18W	CGL/BAJAJ/PHILIPS	1	12
5	DOOR SWITCH PUSH TO OFF (1NO+1NC)	10A	SIEMENS/EQV.	1	12
6	5/15A 3PIN TYPE POWER SWITCH & SOCKET	5/15A	ANCHOR/EQV.	1	3
7	NEUTRAL LINK	20A	FTC/EQV.	1	12
OUTGOINGS					
SECTION-1					
1.0	630A MCCB	2Nos.			
1	630A, FP, MCCB, THERMAL MAGNETIC RELEASE, 36KA WITH ROH	630A	C&S/SIEMENS/ABB	1	2
2.0	250A MCCB	3Nos.			
1	250A, FP, MCCB, THERMAL MAGNETIC RELEASE, 25KA WITH ROH	250A	C&S/SIEMENS/ABB	1	3
3.0	160A MCCB	4Nos.			
1	160A, FP, MCCB, THERMAL MAGNETIC RELEASE, 25KA WITH ROH	160A	C&S/SIEMENS/ABB	1	4
4.0	63A MCCB	11Nos.			
1	63A, FP, MCCB, THERMAL MAGNETIC RELEASE, 36KA WITH ROH	63A	C&S/SIEMENS/ABB	1	11
5.0	32A MCCB	7Nos.			
1	32A, FP, MCCB, THERMAL MAGNETIC RELEASE, 36KA WITH ROH	32A	C&S/SIEMENS/ABB	1	7
SECTION-2					
1.0	630A MCCB	3Nos.			
1	630A, FP, MCCB, THERMAL MAGNETIC RELEASE, 36KA WITH ROH	630A	C&S/SIEMENS/ABB	1	3
2.0	250A MCCB	3Nos.			
1	250A, FP, MCCB, THERMAL MAGNETIC RELEASE, 25KA WITH ROH	250A	C&S/SIEMENS/ABB	1	3
3.0	160A MCCB	6Nos.			
1	160A, FP, MCCB, THERMAL MAGNETIC RELEASE, 25KA WITH ROH	160A	C&S/SIEMENS/ABB	1	6
4.0	63A MCCB	11Nos.			
1	63A, FP, MCCB, THERMAL MAGNETIC RELEASE, 36KA WITH ROH	63A	C&S/SIEMENS/ABB	1	11
5.0	32A MCCB	6Nos.			
1	32A, FP, MCCB, THERMAL MAGNETIC RELEASE, 36KA WITH ROH	32A	C&S/SIEMENS/ABB	1	6

REFR. DRG. NO.		DESCRIPTION		REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD. PROJECT: SYSTEM STRENGTHENING SCHEME OF WR. CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011 TITLE: BOM FOR 415V ACDB		SCALE: A3 ALSTOM DRAWING NO.: TBS-CS1118-1-BOM-004-D SHEET NO. 4 OF 4 REV 01
1		2									7	8	

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CABLE ENTRY : BOTTOM ONLY
 MAIN BUS BAR SIZE:-
 + : 1x25x10 AL.
 - : 1x25x10 AL.
 EARTH : 1x19x6 AL.

OR EQUIV.

ALL DIMENSIONS ARE IN MM

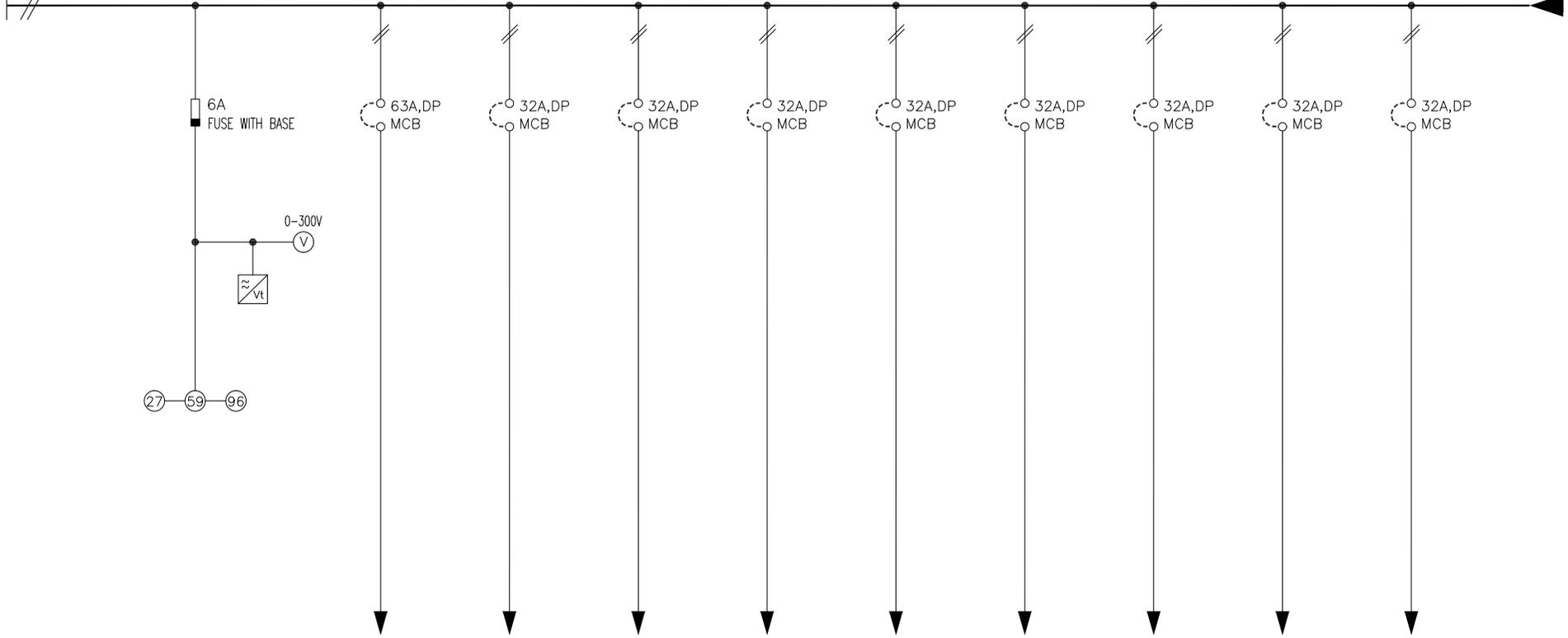
REFR. DRG. NO.	DESCRIPTION						
1	2	3	4	5	6	7	8

QTY. -1 NO.		CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER:		KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:		SYSTEM STRENGTHENING SCHEME OF WR.	
CONTRACT:		LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011	
TITLE:		GA FOR 220V DC DISTRIBUTION BOARD-1	
SCALE:	A3	ALSTOM	DRAWING NO.: TBS-CS1118-4-GA-001-D
SCALE:			REV 01

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2W,220V DC,250A , AI. BUS BAR FAULT LEVEL 5kA FOR 1SEC.

BUS SECTION-A



FEEDER No.	1F1	1F2								
FEEDER RATING.	6A	63A	32A	32A	32A	32A	32A	32A	32A	32A
FEEDER DESCRIPTION.	BUS METER FEEDER-1	N2 DB-1	ACDB FEEDER	SAS & INVERTER	400KV BUS BAR	765KV BUS BAR	765KV AURANGABAD LINE-1	765KV VADODARA LINE-1	765KV BUS REACTOR C&R PANEL	765KV BUS REACTOR-1 C&R PANEL
CABLE SIZE MM ² (AL.)	4Cx6Sq.mm	4Cx16Sq.mm	4Cx16Sq.mm	4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm
SCH NO.	BM	E2	E3	E3	E3	E3	E3	E3	E3	E3

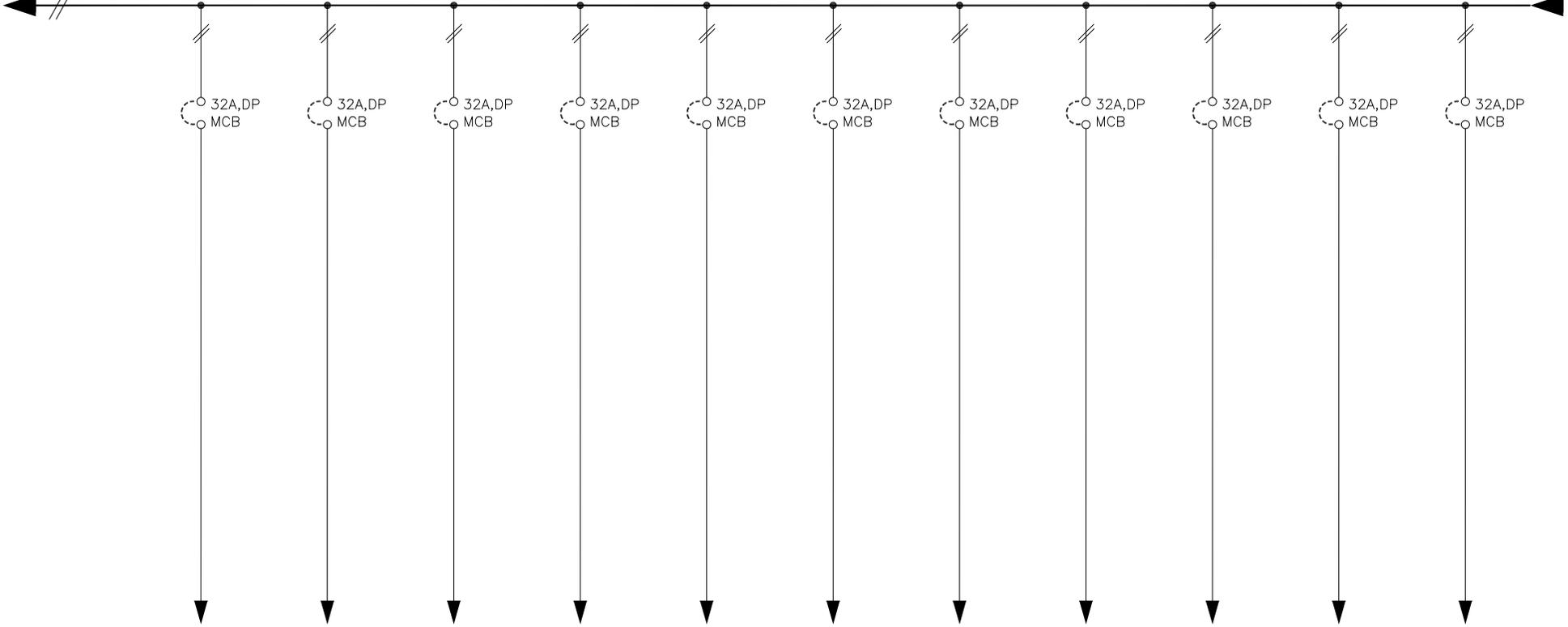
** PLEASE SPECIFY

REFR. DRG. NO.		DESCRIPTION		REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD. PROJECT: SYSTEM STRENGTHENING SCHEME OF WR. CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011 TITLE: SLD FOR 220V DC DISTRIBUTION BOARD-1		SCALE: A3 SCALE: A3	ALSTOM ALSTOM I&D INDIA LTD. (Formerly ABB I&D India Ltd.) HEAD OFFICE: 201/201 UTTAR PRADESH (INDIA)	DRAWING NO.: TBS-CS1118-4-SLD-007-D SHEET NO-1 OF 7 REV: 01
1	2	3	4	5	6	7	8	9	10	11	12	13	14		

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2W,220V DC,250A , AI. BUS BAR FAULT LEVEL 5kA FOR 1SEC.

BUS SECTION-A



FEEDER No.	1F3									1F4	
FEEDER RATING.	32A	32A	32A	32A	32A	32A	32A	32A	32A	32A	32A
FEEDER DESCRIPTION.	765KV BUS REACTOR-2 C&R PANEL	765KV ICT-I C&R PANEL	765KV ICT-II C&R PANEL	400KV DHULE LINE-1 C&R PANEL	400KV DHULE LINE-2 C&R PANEL	400KV PGCIL (HVDC) LINE-1	400KV PGCIL (HVDC) LINE-2	400KV PGCIL (HVDC) LINE-3	400KV PGCIL (HVDC) LINE-4	RTCC PANEL-1	RTCC PANEL-2
CABLE SIZE MM ² (AL.)	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm
SCH NO.	E3	E3	E3	E3	E3	E3	E3	E3	E3	E3	E3

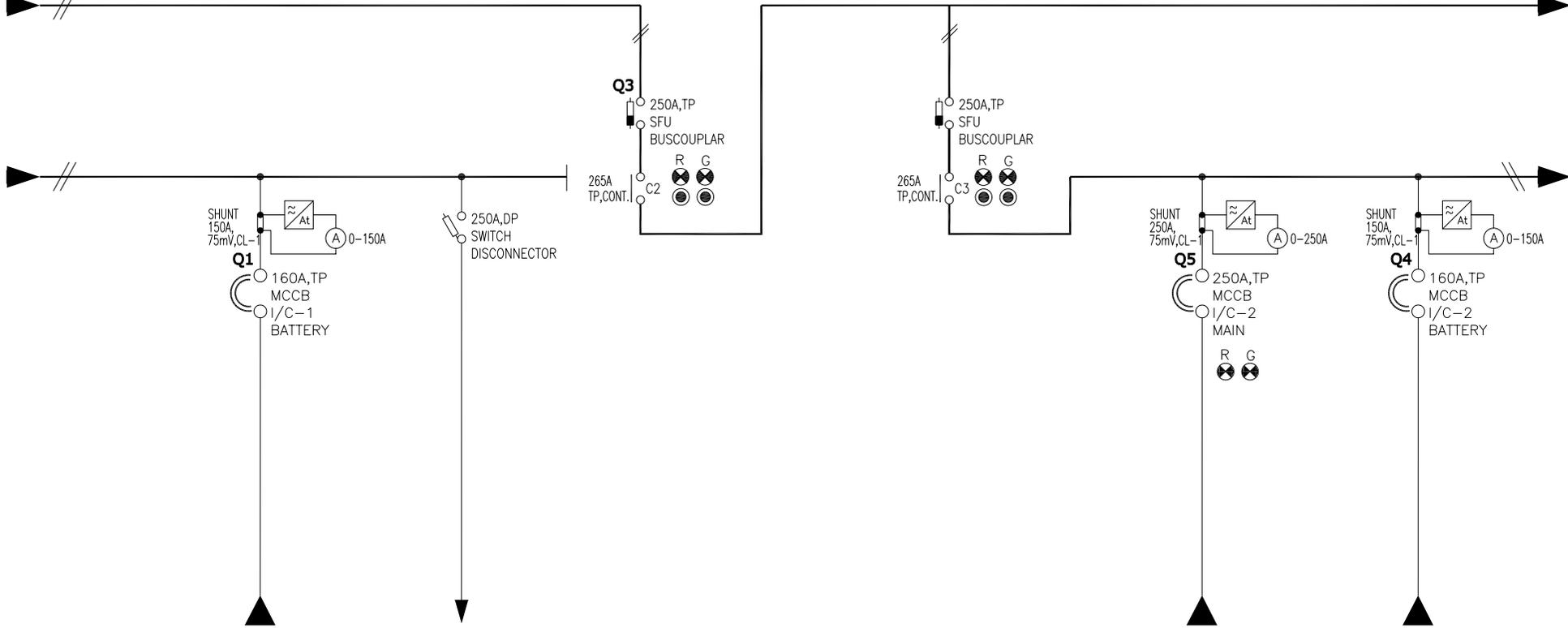
** PLEASE SPECIFY

REFR. DRG. NO.				DESCRIPTION				REV.		<table border="1"> <tr> <th>REV.</th> <th>DATE</th> <th>BY</th> <th>CHKD.</th> <th>APPD.</th> <th>STATUS</th> </tr> <tr> <td>REV4</td> <td></td> <td></td> <td></td> <td></td> <td>STATUS-4</td> </tr> <tr> <td>REV3</td> <td></td> <td></td> <td></td> <td></td> <td>STATUS-3</td> </tr> <tr> <td>REV2</td> <td></td> <td></td> <td></td> <td></td> <td>STATUS-2</td> </tr> <tr> <td>REV1</td> <td></td> <td></td> <td></td> <td></td> <td>STATUS-1</td> </tr> <tr> <td>REV0</td> <td></td> <td></td> <td></td> <td></td> <td>STATUS-0</td> </tr> </table>		REV.	DATE	BY	CHKD.	APPD.	STATUS	REV4					STATUS-4	REV3					STATUS-3	REV2					STATUS-2	REV1					STATUS-1	REV0					STATUS-0	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD		OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
REV.	DATE	BY	CHKD.	APPD.	STATUS																																														
REV4					STATUS-4																																														
REV3					STATUS-3																																														
REV2					STATUS-2																																														
REV1					STATUS-1																																														
REV0					STATUS-0																																														
								PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.																																											
								CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011		TITLE: SLD FOR 220V DC DISTRIBUTION BOARD-1																																									
								SCALE: A3		ALSTOM (Formerly ABB) INDIA LTD. HEAD OFFICE: 201/001 UTTAR PRADESH (INDIA)																																									
								DRAWING NO.: TBS-CS1118-4-SLD-007-D		SHEET NO-2 OF 7 REV 01																																									

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2W,220V DC,250A , AI. BUS BAR FAULT LEVEL 5KA FOR 1SEC.

BUS SECTION-B



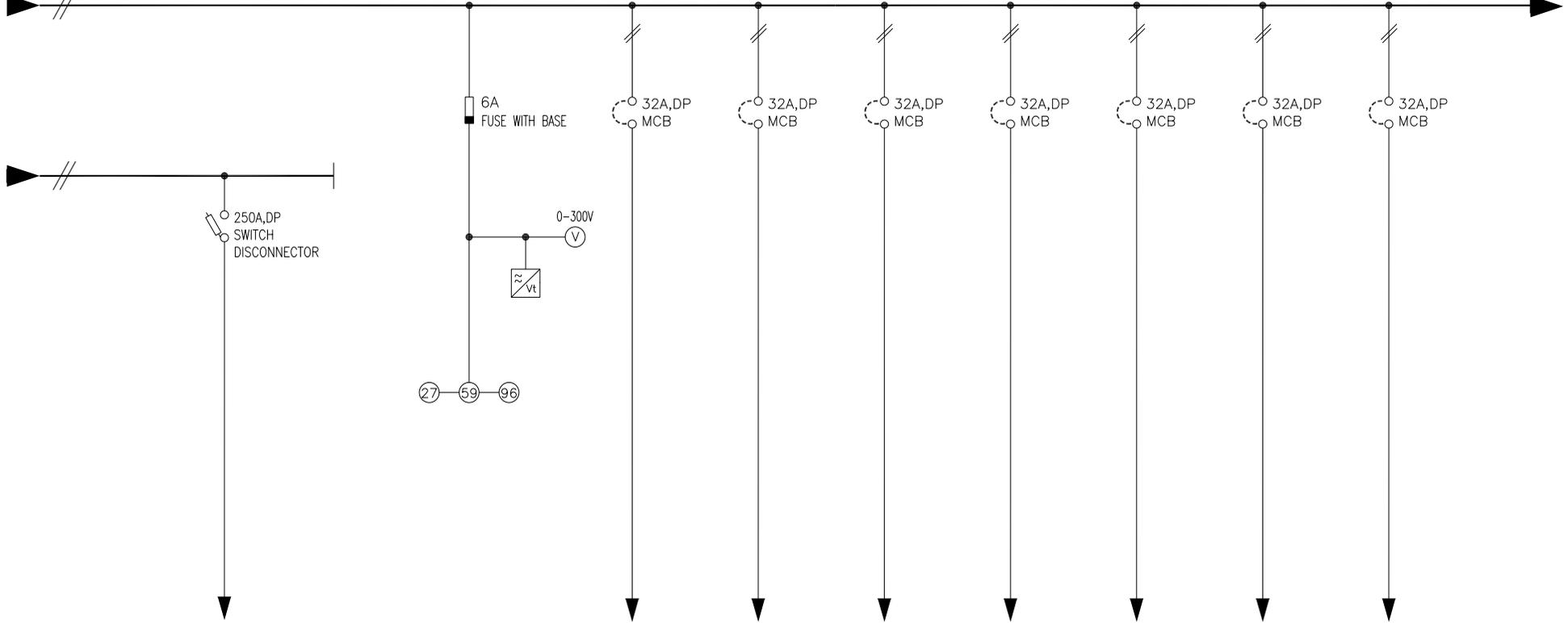
FEEDER No.	2F3	2F4	3F1	4F1	4F2	4F3
FEEDER RATING.	160A	250A	250A	250A	250A	160A
FEEDER DESCRIPTION.	I/C-1 FROM BATTERY CHARGER	CURATIVE DISCHARGE FEEDER	BUS COUPLER	250A, SFU	I/C -2 FROM BATTERY	I/C-2 FROM BATTERY CHARGER
CABLE SIZE MM ² (AL.)	2:1Cx150Sq.mm	2:1Cx150Sq.mm	**	**	2:1Cx150Sq.mm	2:1Cx150Sq.mm
SCH NO.	AE1(A)	E1	BC	E7	AE4	AE3

REFR. DRG. NO.	DESCRIPTION	REV.	DESCRIPTION	DRAWN	ELECT.	CHKD.	APPROVED	STATUS	CUSTOMER:		BHOVAL DHULE TRANSMISSION COMPANY LTD				
									OWNER'S ENGINEER:		KNR ENGINEERS (INDIA) PVT. LTD.				
1	2	3	4	5	6	7	8	9	10	PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.				
										CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011				
TITLE:										SLD FOR 220V DC DISTRIBUTION BOARD-1					
SCALE:										ALSTOM		DRAWING NO.:		SHEET NO-4 OF 7	
SCALE:										ALSTOM		TBS-CS1118-4-SLD-007-D		REV 01	

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2W,220V DC,250A , AI. BUS BAR FAULT LEVEL 5kA FOR 1SEC.

BUS SECTION-B



FEEDER No.	4F4	5F1	5F2						
FEEDER RATING.	250A	6A	32A	32A	32A	32A	32A	32A	32A
FEEDER DESCRIPTION.	CURATIVE DISCHARGE FEEDER	BUS METER FEEDER-2	765KV ICT-II C&R PANEL	400KV DHULE LINE-1 C&R PANEL	400KV DHULE LINE-2 C&R PANEL	400KV PGCIL (HVDC) LINE-1	400KV PGCIL (HVDC) LINE-2	400KV PGCIL (HVDC) LINE-3	400KV PGCIL (HVDC) LINE-4
CABLE SIZE MM ² (AL.)	2:1Cx150Sq.mm	4Cx6Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm
SCH NO.	E2	BM	E3	E3	E3	E3	E3	E3	E3

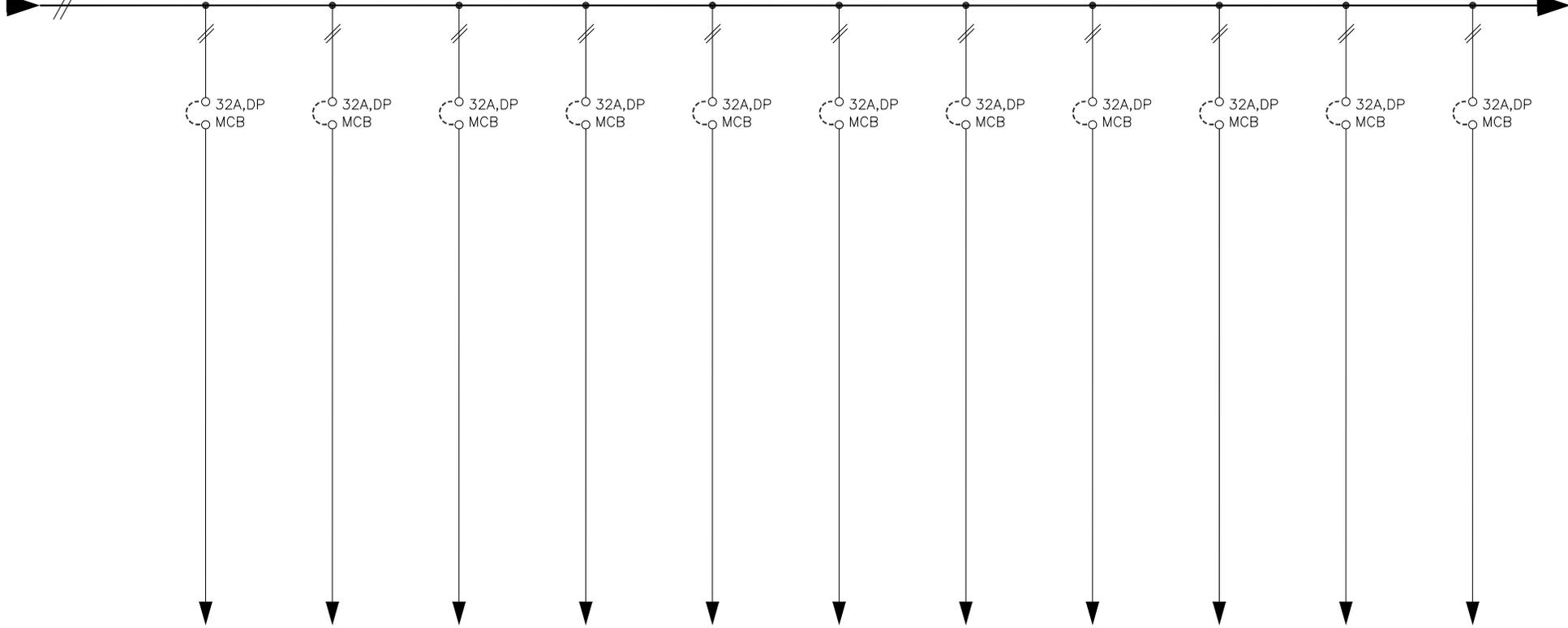
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REFR. DRG. NO.		DESCRIPTION			REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD. PROJECT: SYSTEM STRENGTHENING SCHEME OF WR. CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011 TITLE: SLD FOR 220V DC DISTRIBUTION BOARD-1		SCALE: A3 SCALE: ALSTOM ALSTOM INDIA LTD. (Formerly ABB India Ltd.) REGD. OFFICE: 201301 UTTAR PRADESH (INDIA)	DRAWING NO.: TBS-CS1118-4-SLD-007-D SHEET NO-5 OF 7 REV 01
1	2	3	4	5	6	7	8								

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2W,220V DC,250A , AI. BUS BAR FAULT LEVEL 5kA FOR 1SEC.

BUS SECTION-B



FEEDER No.	5F2		5F3								
FEEDER RATING.	32A	32A	32A	32A	32A	32A	32A	32A	32A	32A	32A
FEEDER DESCRIPTION.	RTCC PANEL-1	RTCC PANEL-2	AUTO T/F CMB-1	AUTO T/F CMB-2	SAS & INVERTER	ACDB FEEDER	SPARE	SPARE	SPARE	SPARE	SPARE
CABLE SIZE MM ² (AL.)	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm
SCH NO.	E3	E3	E2	E2	E3	E3	E3	E3	E3	E3	E3

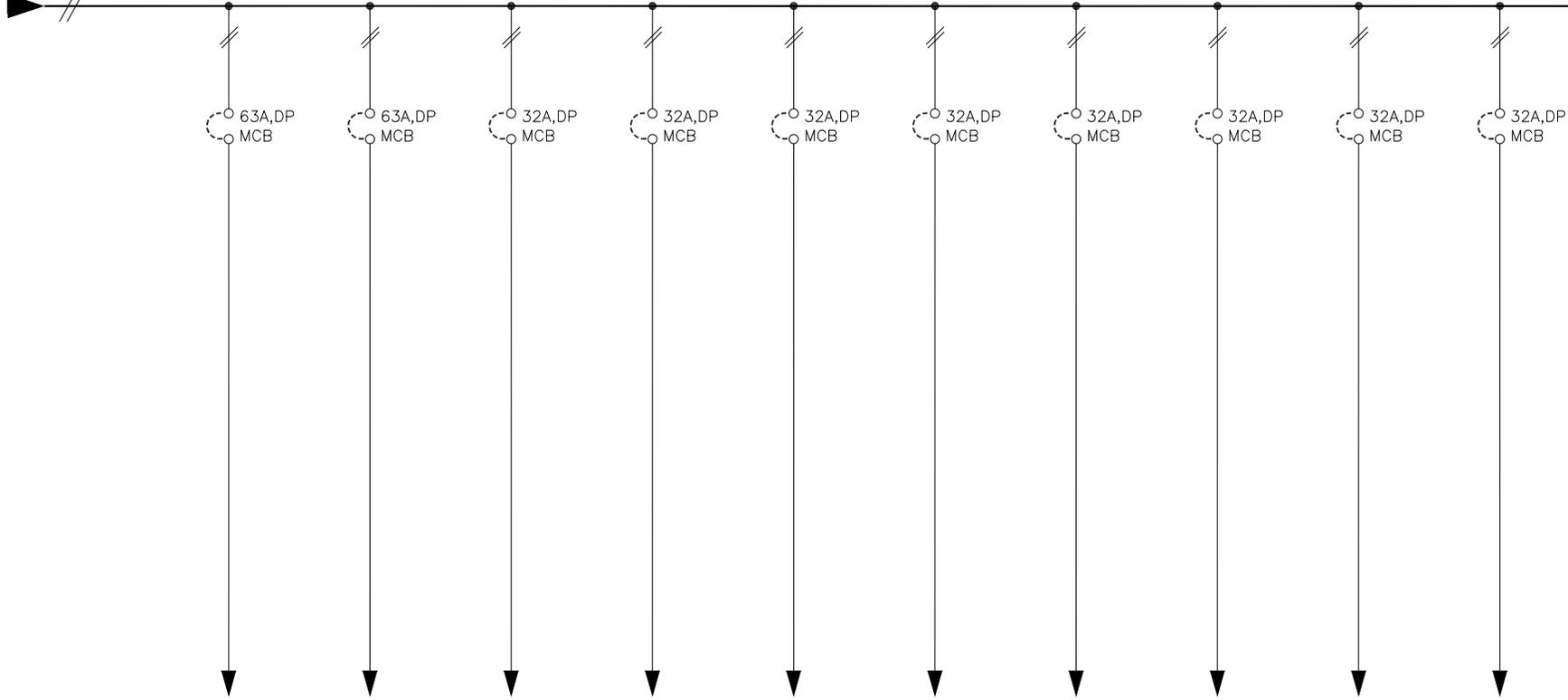
** PLEASE SPECIFY

					REV4 Date: _____ Sign: _____ STATUS-4	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD
					REV3 Date: _____ Sign: _____ STATUS-3	OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.
					REV2 Date: _____ Sign: _____ STATUS-2	PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.
					REV1 Date: _____ Sign: _____ STATUS-1	CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
					REV0 Date: 15/10/2012 Sign: DK STATUS-0	TITLE: SLD FOR 220V DC DISTRIBUTION BOARD-1
REFR. DRG. NO.	DESCRIPTION				DRAWN: _____ ELECT: _____ CHECKED: _____ APPROVED: _____ STATUS:	SCALE: ALSTOM (Formerly ABB) SLD INDIA LTD. HEAD OFFICE: 201301 UTTAR PRADESH (INDIA)
1	2	3	4	5	6	DRAWING NO.: TBS-CS1118-4-SLD-007-D SHEET NO-8 OF 7 REV 01

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2W,220V DC,250A , AI. BUS BAR FAULT LEVEL 5kA FOR 1SEC.

BUS SECTION-B

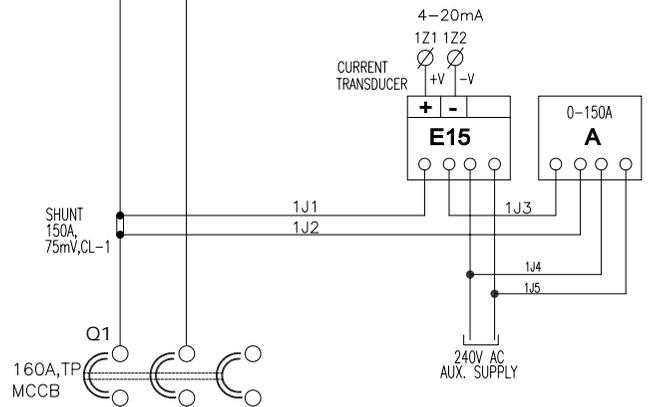


FEEDER No.	5F4									
FEEDER RATING.	63A	63A	32A	32A	32A	32A	32A	32A	32A	32A
FEEDER DESCRIPTION.	N2 DB-2	DCELDDB-1	400KV BUS BAR	765KV BUS BAR	765KV VADODARA LINE-1	765KV AURANGABAD LINE-1	765KV BUS REACTOR C&R PANEL	765KV BUS REACTOR-1 C&R PANEL	765KV BUS REACTOR-2 C&R PANEL	765KV ICT-I C&R PANEL
CABLE SIZE MM ² (AL.)	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm	2:4Cx16Sq.mm
SCH NO.	E2	E2	E3	E3	E3	E3	E3	E3	E3	E3

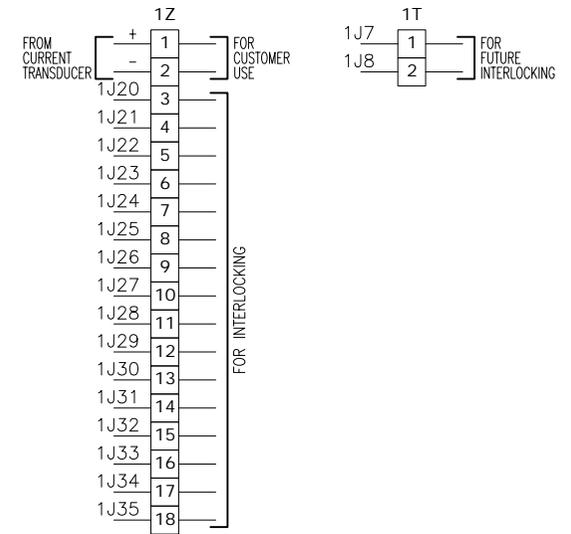
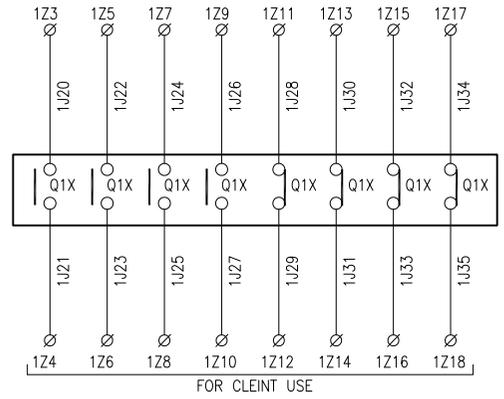
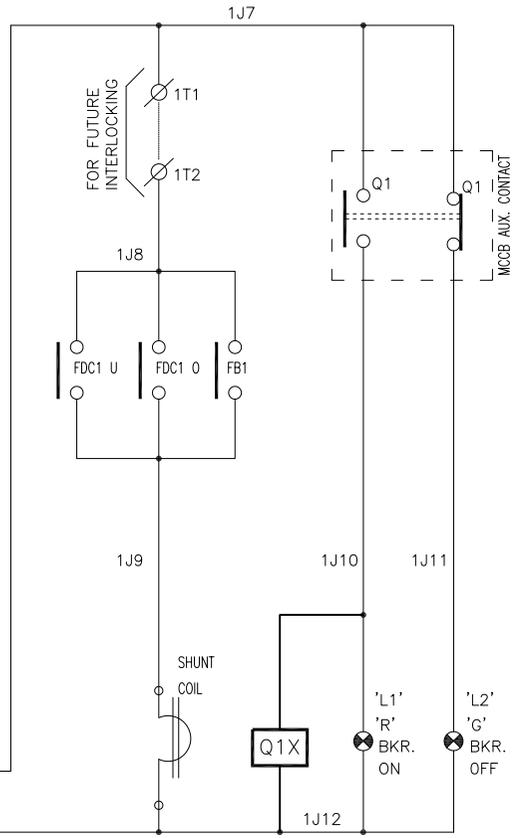
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REFR. DRG. NO.		DESCRIPTION		REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
1	2	3	4	5	6	7	8	9	10	11	12	13
PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.  CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011 TITLE: SLD FOR 220V DC DISTRIBUTION BOARD-1											SCALE: A3 SCALE: ALSTOM (Formerly ABB) INDIA LTD. (Formerly ABB) INDIA LTD. HEAD OFFICE: 201301 UTTAR PRADESH (INDIA)	DRAWING NO.: TBS-CS1118-4-SLD-007-D SHEET NO-7 OF 7 REV: 01

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MAIN INCOMER-1
 (SCH NO.-AE1(A))

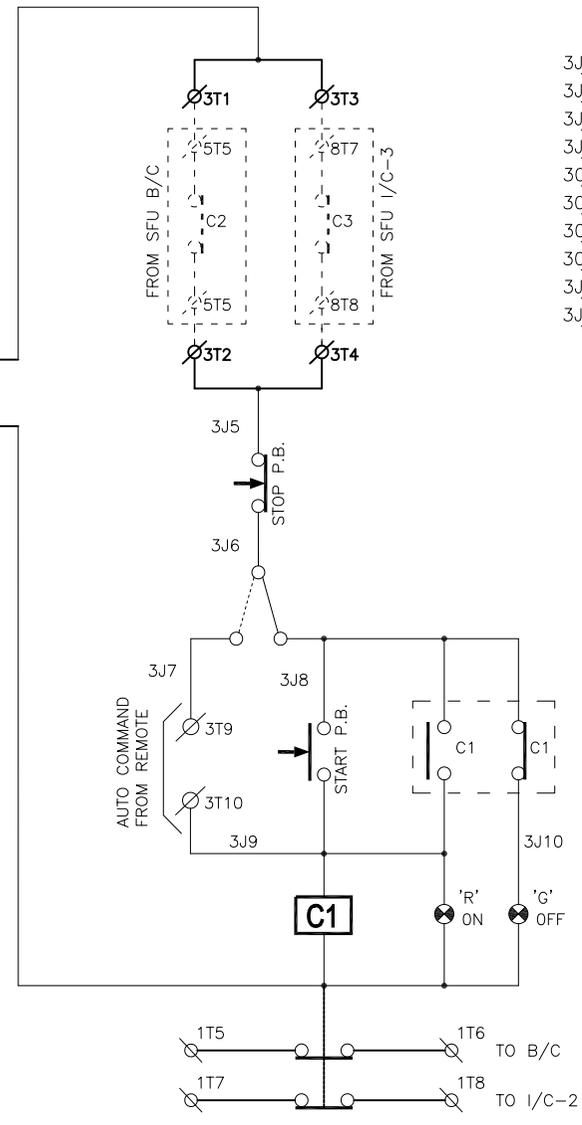
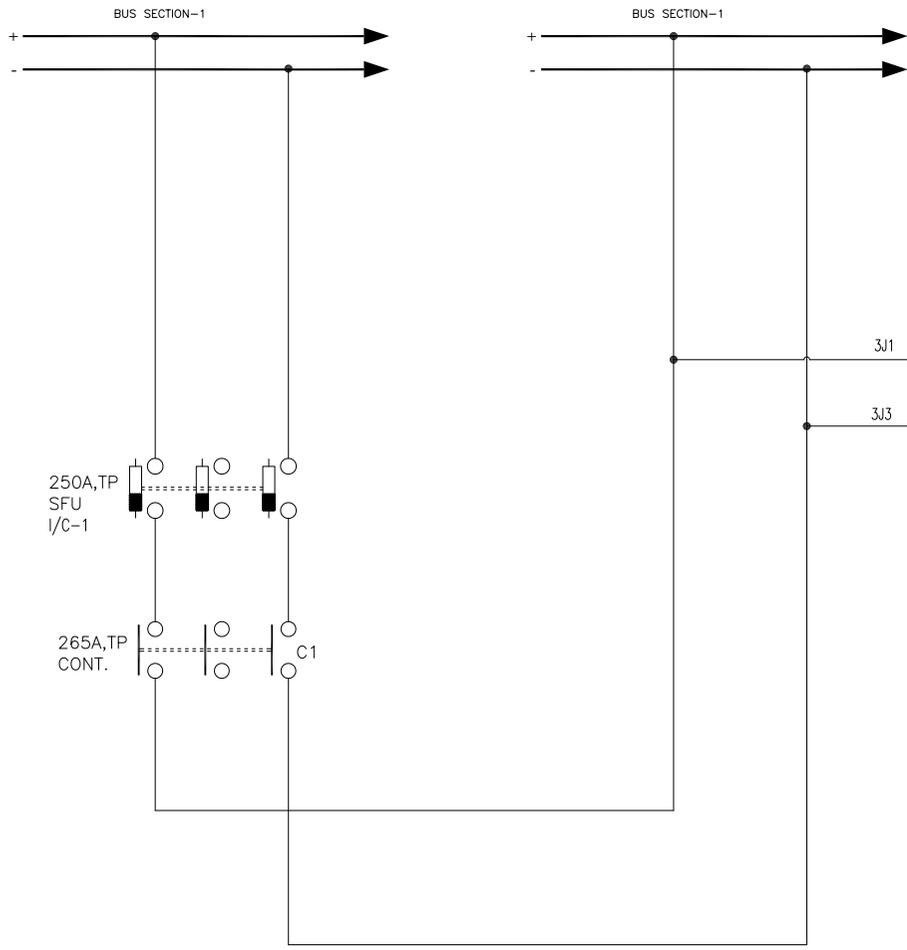


REFR. DRG. NO.	DESCRIPTION
1	2
3	4
5	6
7	8

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0						STATUS-0

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD
 OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.
 PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.
 CONTRACT: LOI NO. BDTC/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
 TITLE: SLD FOR 220V DC DISTRIBUTION BOARD-1
 SCALE: AS
 ALSTOM (Formerly ABB) INDIA LTD. (Formerly ABB T&D India Ltd.)
 DRAWING NO.: TBS-CS1118-4-SCHEMATIC-011-D
 SHEET NO-1 OF 11
 REV 01

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3T			
1	501	INTERLOCKING FROM BUS COUPLER	
2	502	INTERLOCKING FROM INCOMER -2 (C3)	
3	801	INTERLOCKING TO BUS COUPLER	
4	802	INTERLOCKING TO INCOMER -2 (C3)	
5	301	INTERLOCKING TO BUS COUPLER	
6	302	INTERLOCKING TO INCOMER -2 (C3)	
7	303	INTERLOCKING TO INCOMER -2 (C3)	
8	304	INTERLOCKING TO INCOMER -2 (C3)	
9		AUTO COMMAND FROM REMOTE	
10		AUTO COMMAND FROM REMOTE	
11		SPARE	
12		SPARE	

CONTROL CIRCUIT FOR SFU I/C - 1

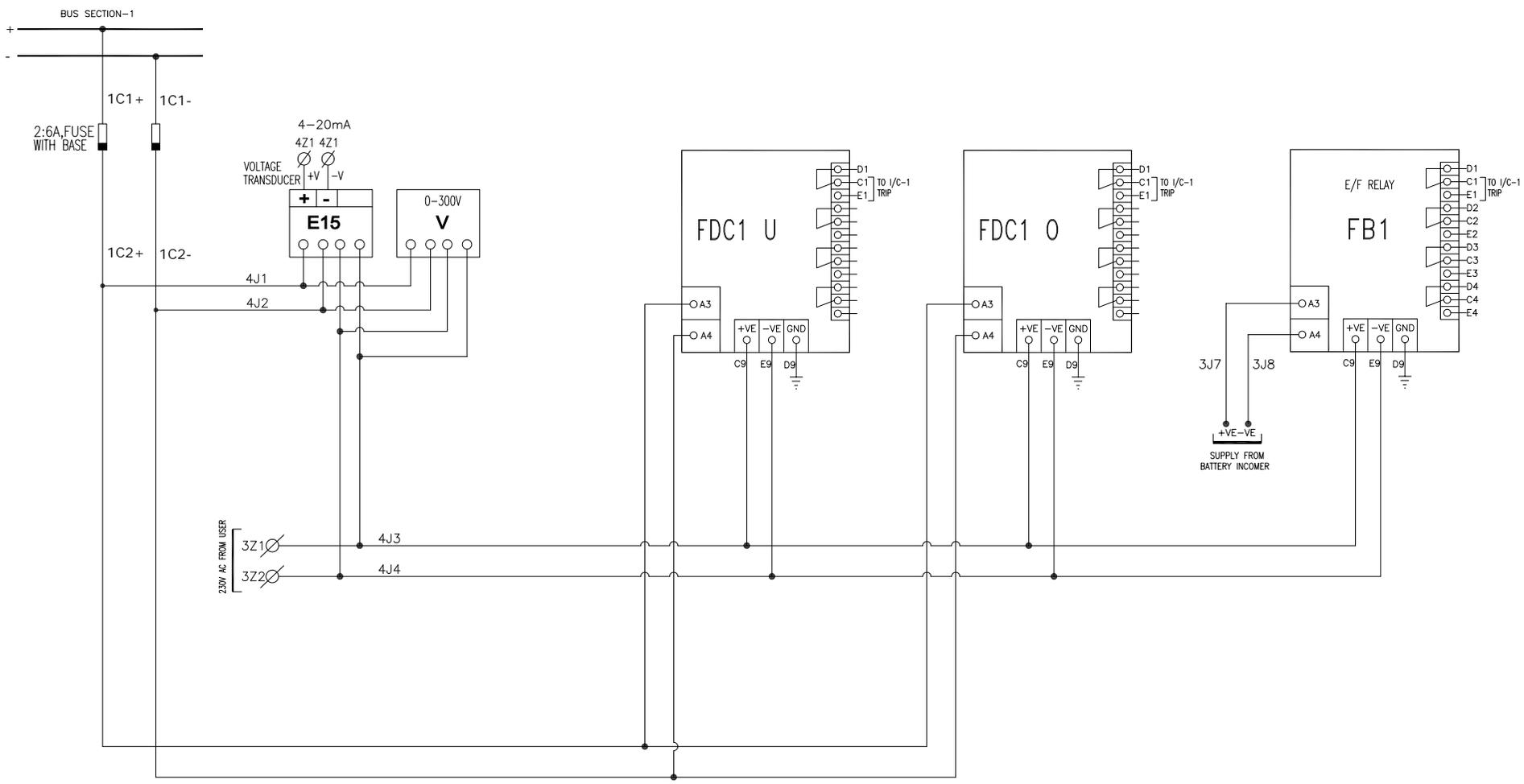
CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SLD FOR 220V DC DISTRIBUTION BOARD-1
SCALE:	A3
ALSTOM	ALSTOM S&D INDIA LTD. (Formerly ABB S&D India Ltd.) HQ: 203001 UTTAR PRADESH (INDIA)
DRAWING NO.:	TBS-CS1118-4-SCHEMATIC-011-D
SHEET NO-3 OF 11	REV 01

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0		15/10/2012				STATUS-0

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DRAWING NO.: TBS-CS1118-4-SCHEMATIC-011-D

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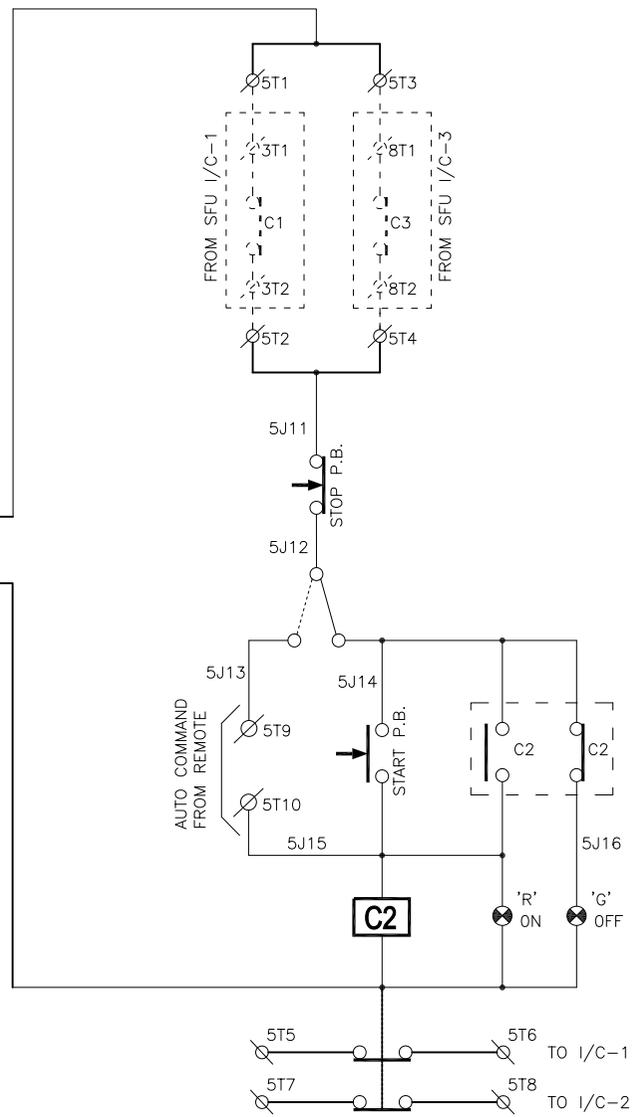
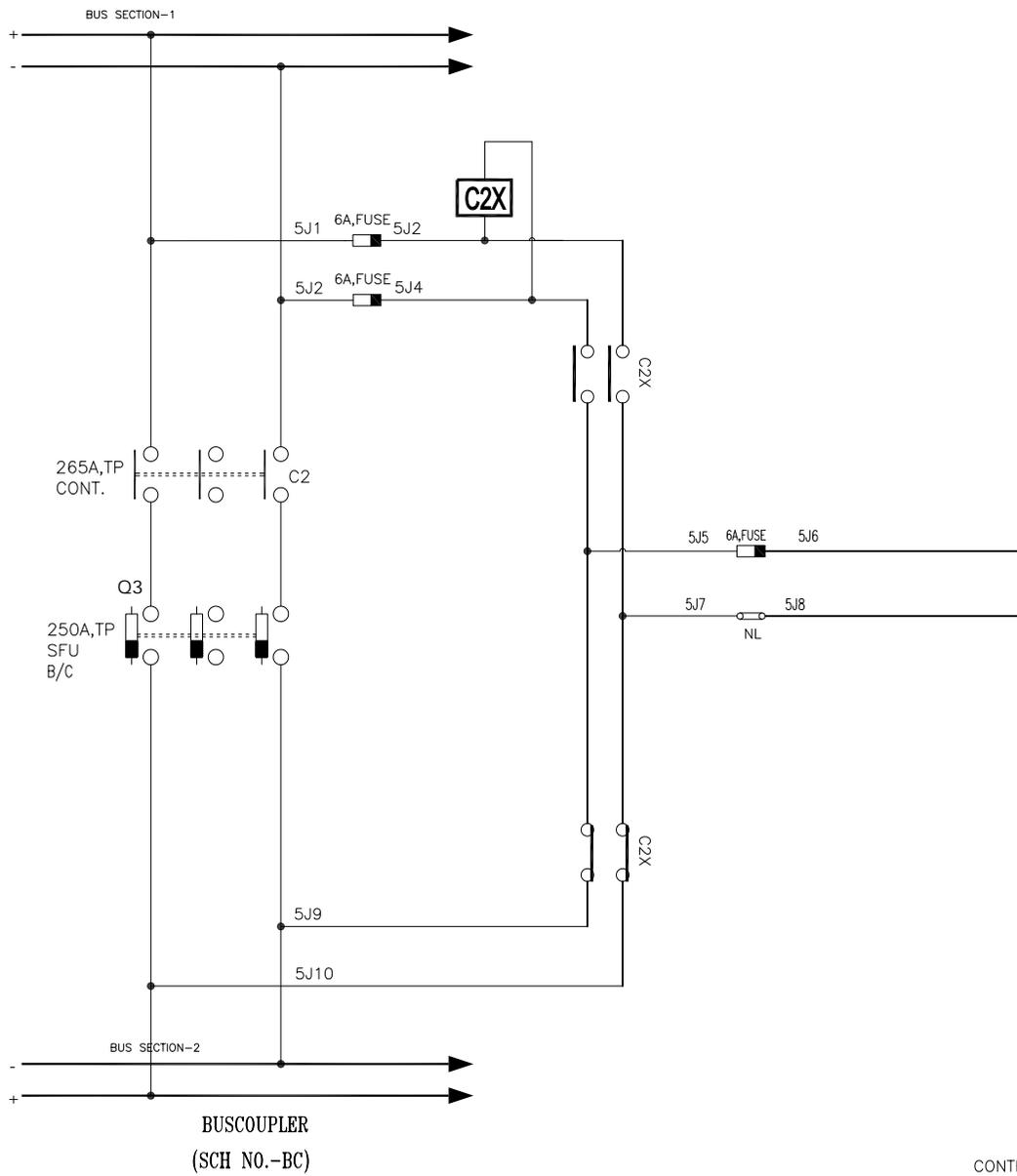
BUS FEEDER-1
(SCH NO.-BM)

REFR. DRG. NO.		DESCRIPTION		REV.		DRAWN		ELECT.		CHECKED		APPROVED		STATUS	
1		2		3		4		5		6		7		8	

REV4	Norml	Date												STATUS-4
REV3	Norml	Date												STATUS-3
REV2	Norml	Date												STATUS-2
REV1	Norml	Date	15/10/2012	KS	15/10/2012	KS								STATUS-1
REV0	Norml	Date	15/10/2012	KS	15/10/2012	KS								STATUS-0

CUSTOMER:		BHOPAL DHULE TRANSMISSION COMPANY LTD			
OWNER'S ENGINEER:		KNR ENGINEERS (INDIA) PVT. LTD.			
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.				
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011				
TITLE:	SLD FOR 220V DC DISTRIBUTION BOARD-1				

SCALE:	A3	ALSTOM	ALSTOM S&D INDIA LTD. (Formerly ABB S&D INDIA LTD.) REGD. OFFICE: BANGALORE UTAR PRDESH (INDIA)	DRAWING NO.:	TBS-CS1118-4-SCHEMATIC-011-D	SHEET NO-4 OF 11
SCALE:				REV	01	



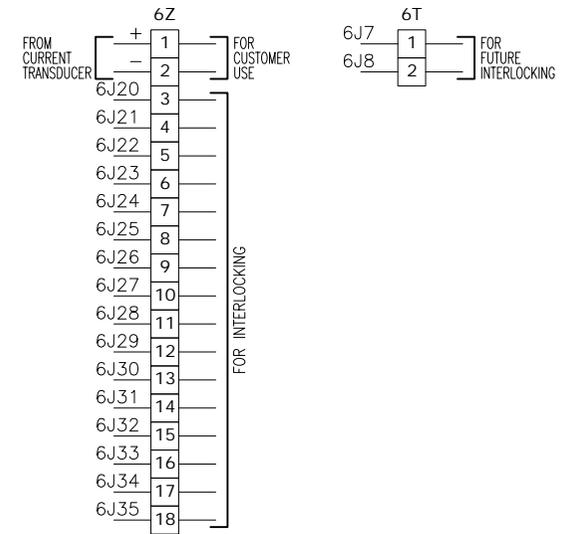
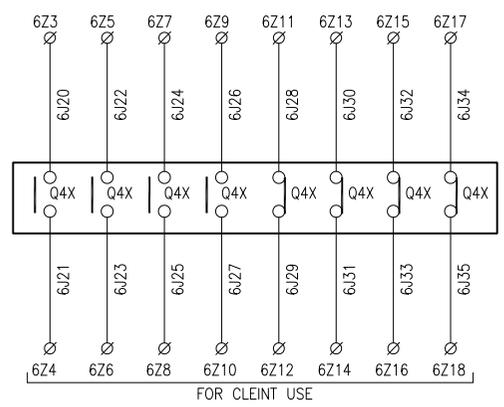
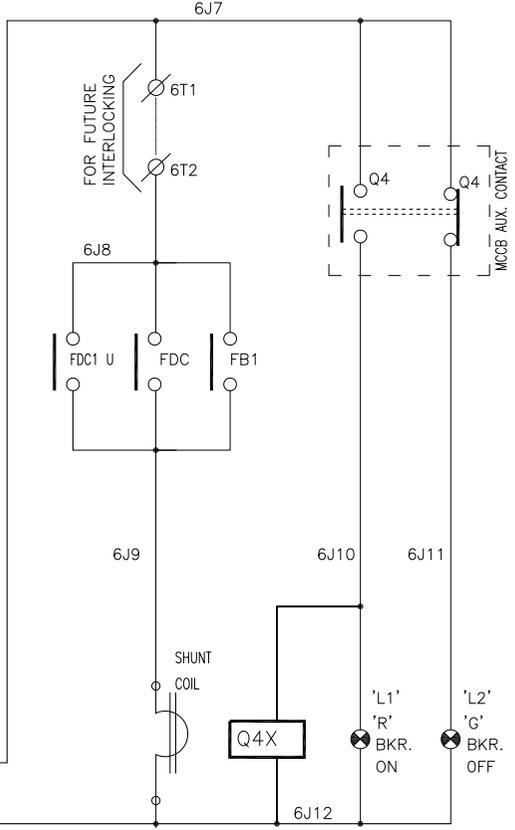
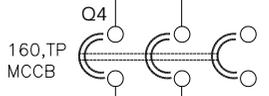
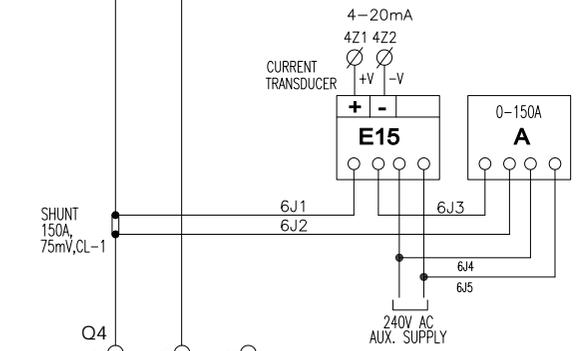
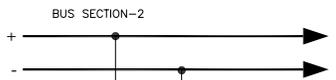
5T	Interlocking
1	301 INTERLOCKING FROM INCOMER -1 (C1)
2	302 INTERLOCKING FROM INCOMER -2 (C3)
3	803 INTERLOCKING TO INCOMER -1 (C1)
4	804 INTERLOCKING TO INCOMER -2 (C3)
5	301 INTERLOCKING FROM INCOMER -1 (C1)
6	302 INTERLOCKING FROM INCOMER -2 (C3)
7	503 INTERLOCKING TO INCOMER -1 (C1)
8	504 INTERLOCKING TO INCOMER -2 (C3)
9	AUTO COMMAND FROM REMOTE
10	AUTO COMMAND FROM REMOTE
11	SPARE
12	SPARE

CONTROL CIRCUIT FOR BUSCOUPLER

REFR. DRG. NO.	DESCRIPTION	REV.	DATE	BY	CHECKED	APPROVED	STATUS
1		REV4					STATUS-4
2		REV3					STATUS-3
3		REV2					STATUS-2
4		REV1					STATUS-1
5		REV0					STATUS-0

CUSTOMER: BHPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SLD FOR 220V DC DISTRIBUTION BOARD-1
SCALE:	A3
ALSTOM	ALSTOM INDIA LTD. (Formerly ABB INDIA LTD.) REGD. OFFICE: 20/30/1 UTTAR PRADESH (INDIA)
DRAWING NO.:	TBS-CS1118-4-SCHEMATIC-011-D
SHEET NO-6 OF 11	REV 01

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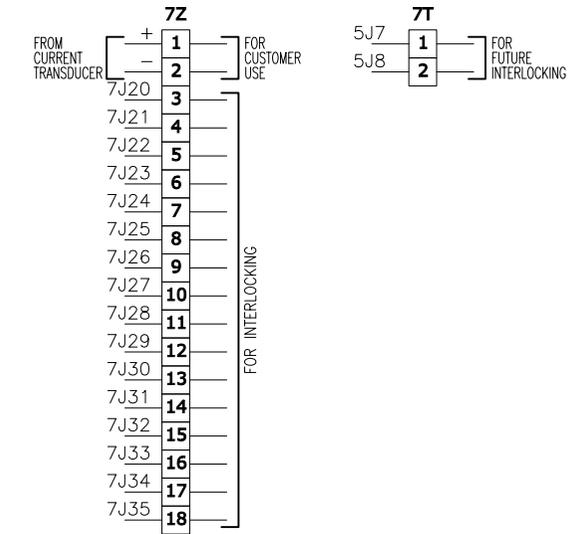
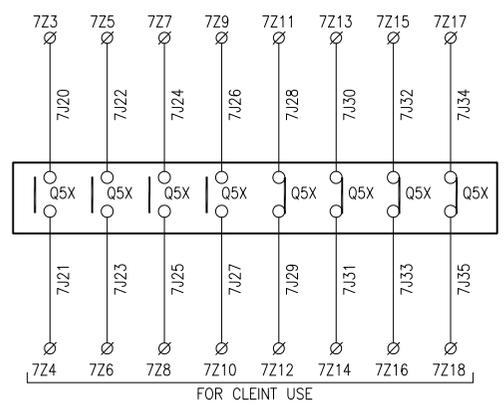
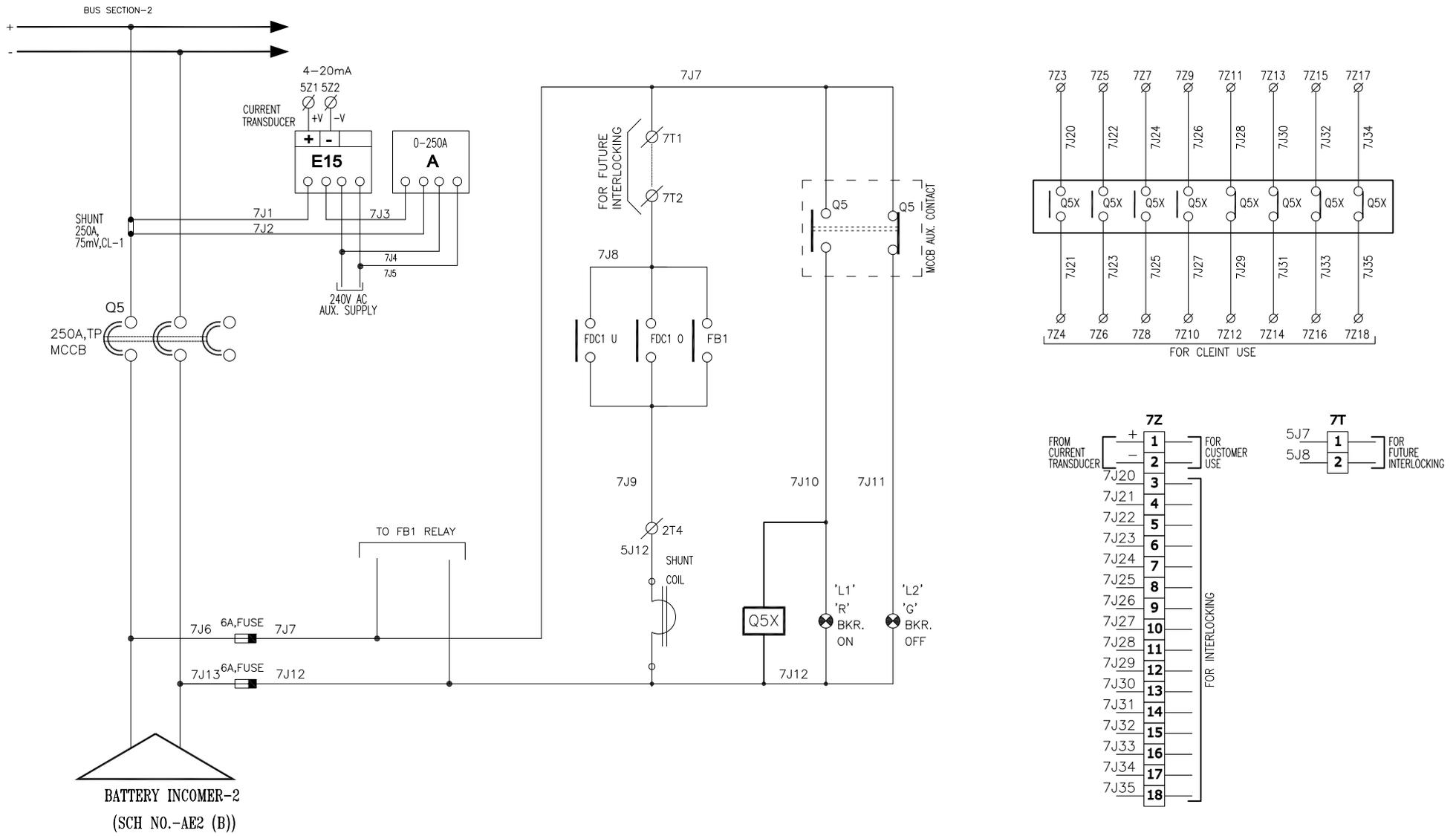
MAIN INCOMER-2
 (SCH NO.-AE1(B))

REFR. DRG. NO.	DESCRIPTION	REV.	DATE	BY	CHKD.	APPRD.	STATUS
		REV4					STATUS-4
		REV3					STATUS-3
		REV2					STATUS-2
		REV1					STATUS-1
		REV0					STATUS-0

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SLD FOR 220V DC DISTRIBUTION BOARD-1
SCALE:	A3
ALSTOM	ALSTOM S&D INDIA LTD. (Formerly ABB S&D India LTD.) PLOT NO. 20/3001 UTKAL PRADEEP (INDIA)
DRAWING NO.:	TBS-CS1118-4-SCHEMATIC-011-D
SHEET NO-6 OF 11	REV 01

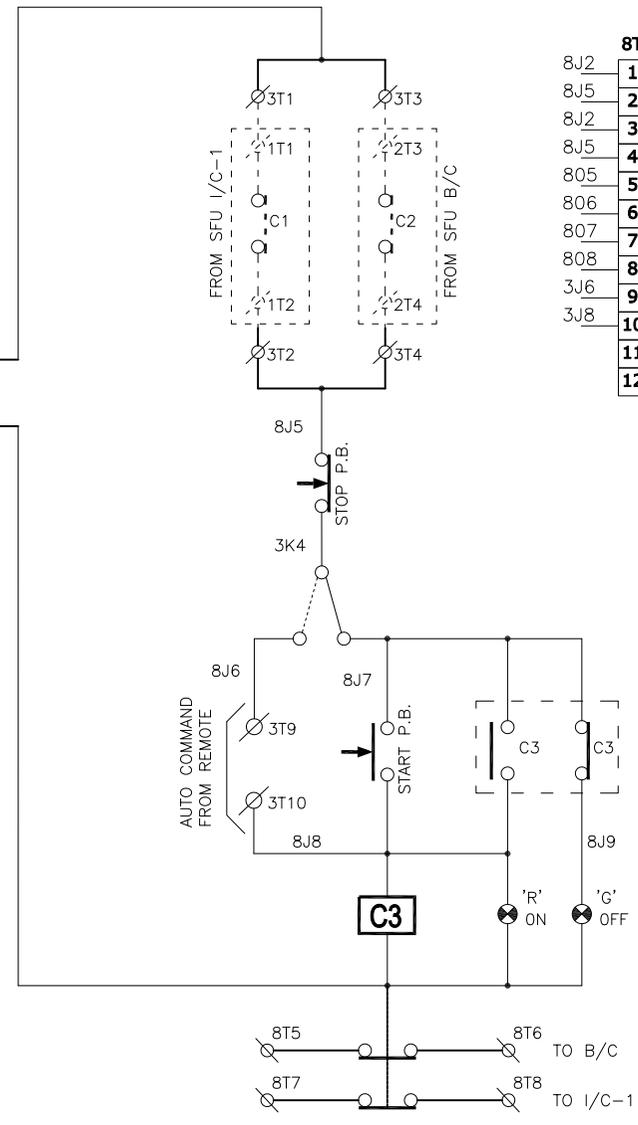
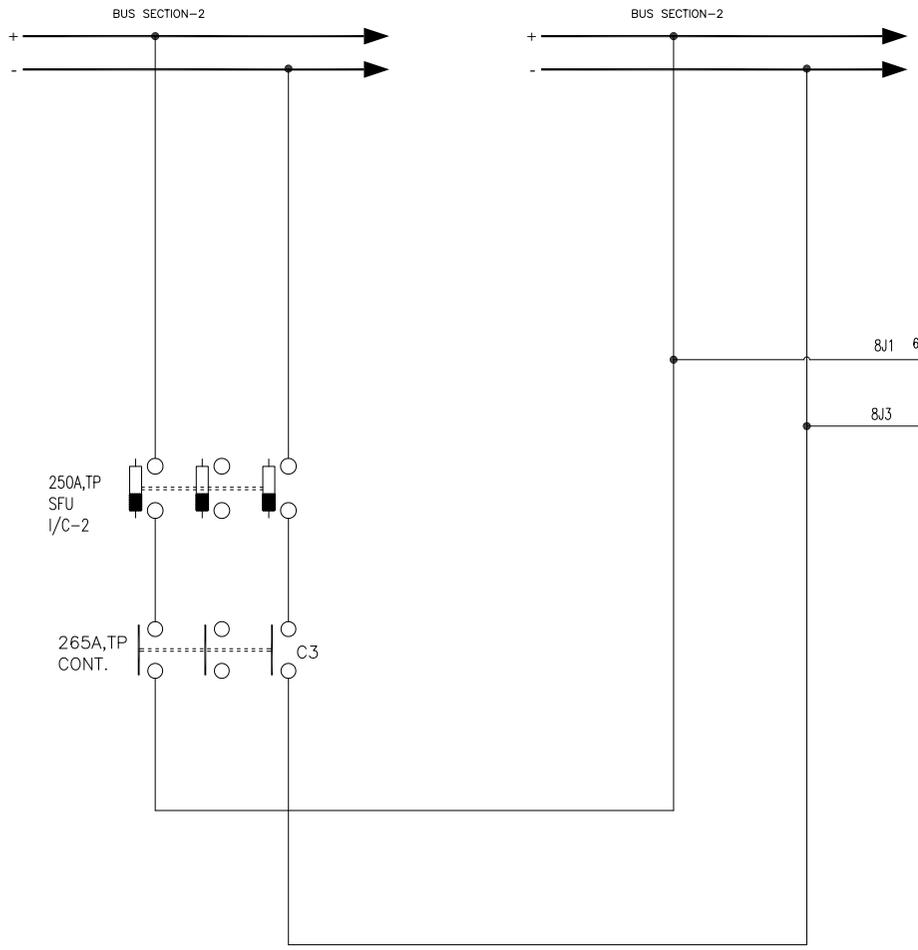
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REFR. DRG. NO.	DESCRIPTION	REV.	DATE	BY	CHECKED	APPROVED	STATUS
		REV4					STATUS-4
		REV3					STATUS-3
		REV2					STATUS-2
		REV1					STATUS-1
		REV0					STATUS-0

CUSTOMER: BHPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SLD FOR 220V DC DISTRIBUTION BOARD-1
SCALE:	A3
ALSTOM	ALSTOM S&D INDIA LTD. (Formerly ABB S&D India LTD.)
DRAWING NO.: TBS-CS1118-4-SCHEMATIC-011-D	
SHEET NO-7 OF 11	
REV	01



8T	Terminal	Description
1	503	INTERLOCKING FROM BUS COUPLER
2	504	INTERLOCKING FROM INCOMER -1 (C1)
3	303	INTERLOCKING FROM INCOMER -1 (C1)
4	304	INTERLOCKING TO INCOMER -1 (C1)
5	801	INTERLOCKING TO INCOMER -1 (C1)
6	802	INTERLOCKING TO INCOMER -1 (C1)
7	803	INTERLOCKING TO BUS COUPLER
8	804	INTERLOCKING TO BUS COUPLER
9		AUTO COMMAND FROM REMOTE
10		AUTO COMMAND FROM REMOTE
11		SPARE
12		SPARE

CONTROL CIRCUIT FOR SFU I/C - 2

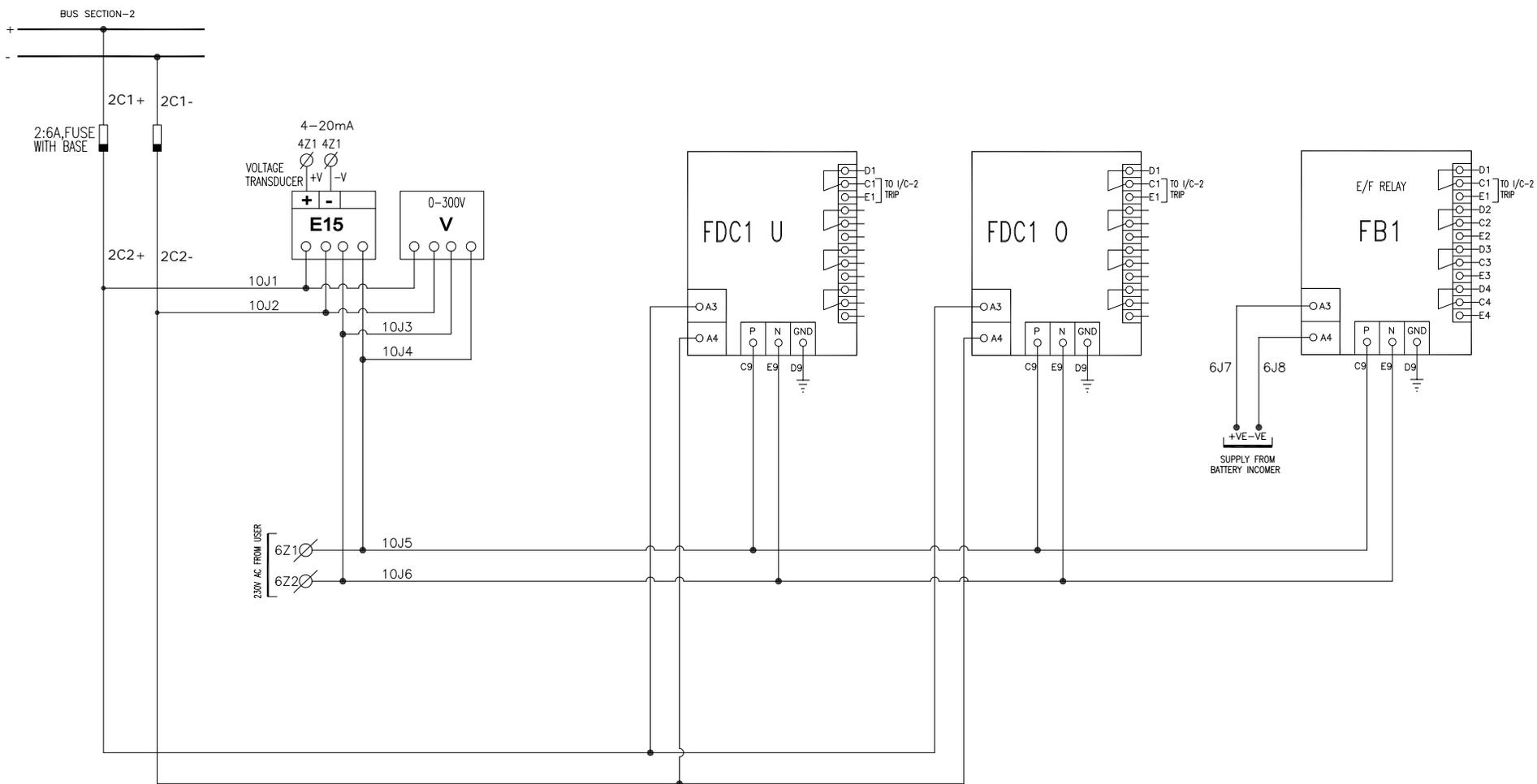
REFR. DRG. NO.	DESCRIPTION	REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
1		REV4						STATUS-4
2		REV3						STATUS-3
3		REV2						STATUS-2
4		REV1						STATUS-1
5		REV0						STATUS-0

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SLD FOR 220V DC DISTRIBUTION BOARD-1
SCALE:	A3
ALSTOM	ALSTOM INDIA LTD. (Formerly ABB India Pvt. Ltd.) Regd. Office: 201/201 UTMAR PROUDH (INDIA)
DRAWING NO.:	TBS-CS1118-4-SCHEMATIC-011-D
SHEET NO-8 OF 11	REV 01

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DRAWING NO.: TBS-CS1118-4-SCHEMATIC-011-D

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BUS FEEDER-2
(SCH NO.-BM)

REFR. DRG. NO.		DESCRIPTION		REV.		DRAWN		ELECT.		CHECKED		APPROVED		STATUS		SCALE		TITLE		CONTRACT		PROJECT		OWNER'S ENGINEER		CUSTOMER	
1		2		3		4		5		6		7		8		A3	SCALE	SLD FOR 220V DC DISTRIBUTION BOARD-1		LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011		SYSTEM STRENGTHENING SCHEME OF WR.		KNR ENGINEERS (INDIA) PVT. LTD.		BHOHAL DHULE TRANSMISSION COMPANY LTD	
				REV. 4		Norml		Date		Sign.		STATUS-4															
				REV. 3		Norml		Date		Sign.		STATUS-3															
				REV. 2		Norml		Date		Sign.		STATUS-2															
				REV. 1		Norml		Date		Sign.		STATUS-1															
				REV. 0		Norml		Date		Sign.		STATUS-0															

CUSTOMER: BHOHAL DHULE TRANSMISSION COMPANY LTD

OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.

PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.

CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011

TITLE: SLD FOR 220V DC DISTRIBUTION BOARD-1

SCALE: A3

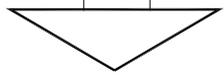
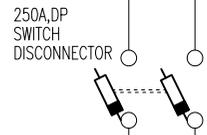
ALSTOM (Formerly ABB SA INDIA LTD.)
INDIA - 201301
UTTAR PRADESH (INDIA)

DRAWING NO.: TBS-CS1118-4-SCHEMATIC-011-D

SHEET NO-9 OF 11

REV 01

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OUTGOING
(SCH NO.-E1)



OUTGOING
(SCH NO.-E2)

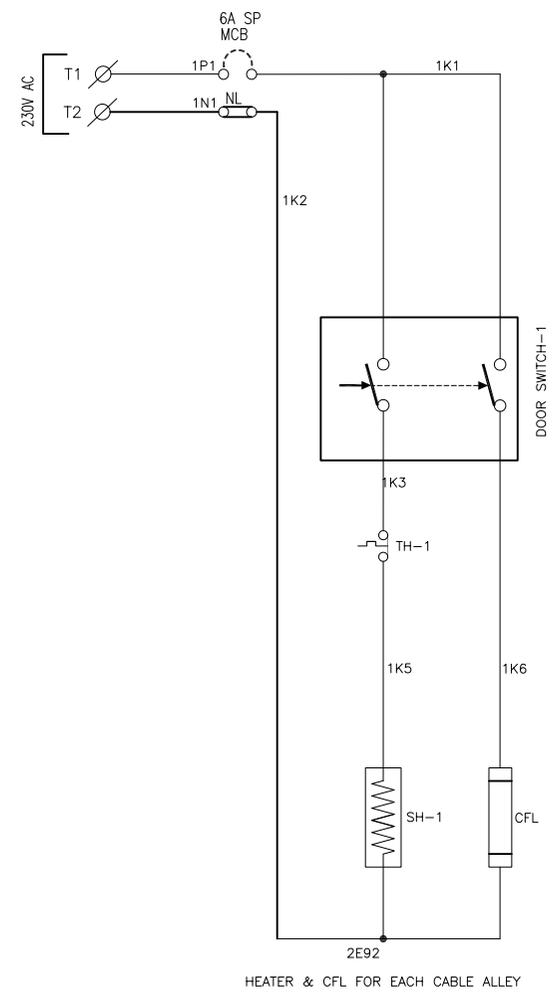
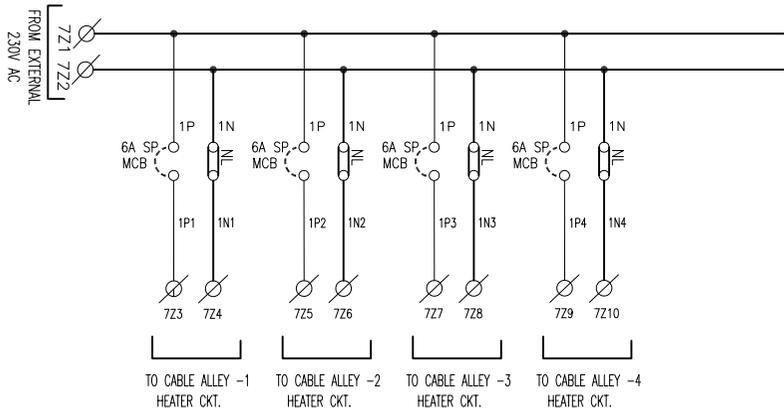


OUTGOING
(SCH NO.-E3)

REFR. DRG. NO.	DESCRIPTION
1	2
3	4

REV.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	STATUS
REV4						STATUS-4
REV3						STATUS-3
REV2						STATUS-2
REV1						STATUS-1
REV0						STATUS-0

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SLD FOR 220V DC DISTRIBUTION BOARD-1
SCALE:	A3
ALSTOM INDIA LTD. (Formerly ABB India Ltd.) REGD. OFFICE: 201301 UTTAR PRADESH (INDIA)	
DRAWING NO.:	TBS-CS1118-4-SCHEMATIC-011-D
SHEET NO-10 OF 11	REV 01



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REFR. DRG. NO.	DESCRIPTION	REV.	DATE	BY	CHECKED	APPROVED	STATUS
		REV4					STATUS-4
		REV3					STATUS-3
		REV2					STATUS-2
		REV1					STATUS-1
		REV0	15/10/2012				STATUS-0

CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
CONTRACT:	LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
TITLE:	SLD FOR 220V DC DISTRIBUTION BOARD-1
SCALE:	A3
ALSTOM	ALSTOM S&D INDIA LTD. (Formerly ABB S&D India LTD.) REGD. OFFICE: 201301 UTTAR PRADESH (INDIA)
DRAWING NO.:	TBS-CS1118-4-SCHEMATIC-011-D
SHEET NO-11 OF 11	REV 01

DRAWING NO.: TBS-CS1118-4-BOM-002-D

4 220V DC DISTRIBUTION BOARD - 1					
S.No.	DESCRIPTION	RATING	MAKE	QTY	T.QTY
INCOMER -1 & 2		2Nos.			
1	250A, TP, MCCB, THERMAL MAGNETIC RELEASE, AUX CONTACT-1C/O, 220V DC SHUNT COIL 36KA WITH ROH	250A	C&S/SIEMENS/ABB	1	2
2	160A, TP, MCCB, THERMAL MAGNETIC RELEASE, AUX CONTACT-1C/O, 220V DC SHUNT COIL 36KA WITH ROH	160A	C&S/SIEMENS/ABB	1	2
3	DP SWITCH DISCONNECTOR (LOAD BREAK SWITCH)	250A	C&S/SIEMENS/ABB	1	2
4	INDICATION LAMP (LED TYPE) (ON,OFF)	220V DC	C&S/SIEMENS/ABB	2	8
5	DIGITAL VOLTMETER, AUX - 230V AC	0-300V	AE/RISHABH	1	2
6	DIGITAL AMMETER, AUX - 230V AC	0-250A	AE/RISHABH	1	2
7	DIGITAL AMMETER, AUX - 230V AC	0-150A	AE/RISHABH	1	2
8	SHUNT - 250A, 75mV, CL-1		AE/RISHABH	1	2
9	SHUNT - 150A, 75mV, CL-1		AE/RISHABH	1	2
10	CURRENT TRANSDUCER, 220V DC, OUTPUT- 4-20mA ,AUX - 230V AC	4-20mA	AE/RISHABH/PYROTECH	2	4
11	VOLTAGE TRANSDUCER, 220V DC, OUTPUT- 4-20mA ,AUX - 230V AC	4-20mA	AE/RISHABH/PYROTECH	1	2
12	UNDER VOLTAGE RELAY - 27, AUX - 230V AC	FDC1 U	C&S/ALSTOM/ABB/L&T	1	2
13	OVER VOLTAGE RELAY - 59, AUX - 230V AC	FDC1 O	C&S/ALSTOM/ABB/L&T	1	2
14	BATTERY E/F RELAY - 96 FOR 220V DC SYSTEM, AUX - 230V AC	FB1	C&S/ALSTOM/ABB	1	2
15	CONTROL FUSE LINK	6A	C&S/SIEMENS/ABB	4	8
16	CONTROL FUSE BASE	20A	C&S/SIEMENS/ABB	2	4
17	AUXILIARY CONTACTOR 4NO+4NC ,220V DC	6A	C&S/SIEMENS/ABB	2	4
BUS COUPLER (250A SFU)		1No.			
1	TP SFU	250A	C&S/SIEMENS/ABB	1	1
2	HRC FUSE	250A	C&S/SIEMENS/ABB	3	3
3	TP POWER CONTACTOR WITH 2NO+2NC CONTACT ,AUX. 220V DC	265A	C&S/SIEMENS/ABB	1	1
4	ON/OFF INDICATION LAMP (LED TYPE) AUX. - 220V DC		C&S/SIEMENS/ABB	2	2
5	PUSH BUTTON - (START/STOP)		C&S/SIEMENS/ABB	2	2
6	AUXILIARY CONTACTOR 2NO+2NC ,220V DC	6A	C&S/SIEMENS/ABB	1	1
7	CONTROL FUSE LINK	6A	C&S/SIEMENS/ABB	3	3
8	CONTROL FUSE BASE	20A	C&S/SIEMENS/ABB	3	3
9	AUTO/MANUAL SELECTOR SWITCH	6A	SALZER/KAYCEE	1	1
10	6A, SP, MCB, 10KA	6A	C&S/SIEMENS/ABB	4	4
11	NEUTRAL LINK	20A	FTC/EQV.	5	5

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REFR. DRG. NO.		DESCRIPTION		REV.4	STATUS-4	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
				REV.3	STATUS-3	OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
				REV.2	STATUS-2	PROJECT: SYSTEM STRENGTHENING SCHEME OF WR.	
				REV.1	STATUS-1	CONTRACT: LOI NO. BDTCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011	
				REV.0	STATUS-0	TITLE: BOM FOR 220V DC DISTRIBUTION BOARD-1	
				REV.	STATUS	SCALE: A3	DRAWING NO.: TBS-CS1118-4-BOM-002-D SHEET NO. 1 OF 2 REV 01

OUTGOINGS					
250A SFU INCOMER-1 FOR SECTION-A					
1	TP SFU	250A	C&S/SIEMENS/ABB	1	1
2	HRC FUSE	250A	C&S/SIEMENS/ABB	3	3
3	TP POWER CONTACTOR WITH 2NO+2NC CONTACT,AUX. 220V DC	265A	C&S/SIEMENS/ABB	1	1
4	ON/OFF INDICATION LAMP (LED TYPE) AUX. - 220V DC		C&S/SIEMENS/ABB	2	2
5	PUSH BUTTON - (START/STOP)		C&S/SIEMENS/ABB	2	2
6	CONTROL FUSE LINK	6A	C&S/SIEMENS/ABB	1	1
7	CONTROL FUSE BASE	20A	C&S/SIEMENS/ABB	1	1
8	AUTO/MANUAL SELECTOR SWITCH	6A	SALZER/KAYCEE	1	1
9	NEUTRAL LINK	20A	FTC/EQV.	1	1
32A MCB		25Nos.			
1	32A,DP,DC MCB,10KA	32A	C&S/SIEMENS/ABB	1	25
63A MCB		2Nos.			
1	63A,DP,DC MCB,10KA	63A	C&S/SIEMENS/ABB	1	2
OUTGOINGS					
250A SFU INCOMER-2 FOR SECTION-B					
1	TP SFU	250A	C&S/SIEMENS/ABB	1	1
2	HRC FUSE	250A	C&S/SIEMENS/ABB	3	3
3	TP POWER CONTACTOR WITH 2NO+2NC CONTACT,AUX. 220V DC	265A	C&S/SIEMENS/ABB	1	1
4	ON/OFF INDICATION LAMP (LED TYPE) AUX. - 220V DC		C&S/SIEMENS/ABB	2	2
5	PUSH BUTTON - (START/STOP)		C&S/SIEMENS/ABB	2	2
6	CONTROL FUSE LINK	6A	C&S/SIEMENS/ABB	1	1
7	CONTROL FUSE BASE	20A	C&S/SIEMENS/ABB	1	1
8	AUTO/MANUAL SELECTOR SWITCH	6A	SALZER/KAYCEE	1	1
9	NEUTRAL LINK	20A	FTC/EQV.	1	1
32A MCB		26Nos.			
1	32A,DP,DC MCB,10KA	32A	C&S/SIEMENS/ABB	1	26
63A MCB		2No.			
1	63A,DP,DC MCB,10KA	63A	C&S/SIEMENS/ABB	1	2
SPACE HEATER FEEDER		4Nos.			
1	6A,SP,MCB,10KA	6A	C&S/SIEMENS/ABB	1	4
2	THERMOSTAT 30°-110°C	30°-110°C	ANCO/EQV.	1	4
3	SPACE HEATER 60W 240V AC	60W,240V AC	ANCO/EQV.	1	4
4	18W COMPACT FLOURESCENT LAMP,240V AC	18W	CGL/BAJAJ/PHILIPS	1	4
5	DOOR SWITCH PUSH TO OFF	10A	SIEMENS/EQV.	1	4
6	NEUTRAL LINK	20A	FTC/EQV.	1	4

REFR. DRG. NO.		DESCRIPTION		REV.1	DESCRIPTION	REV.2	DESCRIPTION	REV.3	DESCRIPTION	REV.4	DESCRIPTION	STATUS-4	CUSTOMER: BHOPAL DHULE TRANSMISSION COMPANY LTD	
				REV.5		REV.6		REV.7		REV.8		STATUS-3	OWNER'S ENGINEER: KNR ENGINEERS (INDIA) PVT. LTD.	
				REV.9		REV.10		REV.11		REV.12		STATUS-2	PROJECT:	SYSTEM STRENGTHENING SCHEME OF WR.
				REV.13		REV.14		REV.15		REV.16		STATUS-2	CONTRACT:	LOI NO. BDCL/2011-12/LOA-SUBSTATIONS/004 DATED 28-07-2011
				REV.17		REV.18		REV.19		REV.20		STATUS-1	TITLE:	BOM FOR 220V DC DISTRIBUTION BOARD-1
				REV.21		REV.22		REV.23		REV.24		STATUS-0	SCALE:	AS SHOWN
				REV.25		REV.26		REV.27		REV.28		STATUS-0	SCALE:	AS SHOWN
				REV.29		REV.30		REV.31		REV.32		STATUS-0	SCALE:	AS SHOWN
				REV.33		REV.34		REV.35		REV.36		STATUS-0	SCALE:	AS SHOWN
				REV.37		REV.38		REV.39		REV.40		STATUS-0	SCALE:	AS SHOWN
				REV.41		REV.42		REV.43		REV.44		STATUS-0	SCALE:	AS SHOWN
				REV.45		REV.46		REV.47		REV.48		STATUS-0	SCALE:	AS SHOWN
				REV.49		REV.50		REV.51		REV.52		STATUS-0	SCALE:	AS SHOWN
				REV.53		REV.54		REV.55		REV.56		STATUS-0	SCALE:	AS SHOWN
				REV.57		REV.58		REV.59		REV.60		STATUS-0	SCALE:	AS SHOWN
				REV.61		REV.62		REV.63		REV.64		STATUS-0	SCALE:	AS SHOWN
				REV.65		REV.66		REV.67		REV.68		STATUS-0	SCALE:	AS SHOWN
				REV.69		REV.70		REV.71		REV.72		STATUS-0	SCALE:	AS SHOWN
				REV.73		REV.74		REV.75		REV.76		STATUS-0	SCALE:	AS SHOWN
				REV.77		REV.78		REV.79		REV.80		STATUS-0	SCALE:	AS SHOWN
				REV.81		REV.82		REV.83		REV.84		STATUS-0	SCALE:	AS SHOWN
				REV.85		REV.86		REV.87		REV.88		STATUS-0	SCALE:	AS SHOWN
				REV.89		REV.90		REV.91		REV.92		STATUS-0	SCALE:	AS SHOWN
				REV.93		REV.94		REV.95		REV.96		STATUS-0	SCALE:	AS SHOWN
				REV.97		REV.98		REV.99		REV.100		STATUS-0	SCALE:	AS SHOWN
				REV.101		REV.102		REV.103		REV.104		STATUS-0	SCALE:	AS SHOWN
				REV.105		REV.106		REV.107		REV.108		STATUS-0	SCALE:	AS SHOWN
				REV.109		REV.110		REV.111		REV.112		STATUS-0	SCALE:	AS SHOWN
				REV.113		REV.114		REV.115		REV.116		STATUS-0	SCALE:	AS SHOWN
				REV.117		REV.118		REV.119		REV.120		STATUS-0	SCALE:	AS SHOWN
				REV.121		REV.122		REV.123		REV.124		STATUS-0	SCALE:	AS SHOWN
				REV.125		REV.126		REV.127		REV.128		STATUS-0	SCALE:	AS SHOWN
				REV.129		REV.130		REV.131		REV.132		STATUS-0	SCALE:	AS SHOWN
				REV.133		REV.134		REV.135		REV.136		STATUS-0	SCALE:	AS SHOWN
				REV.137		REV.138		REV.139		REV.140		STATUS-0	SCALE:	AS SHOWN
				REV.141		REV.142		REV.143		REV.144		STATUS-0	SCALE:	AS SHOWN
				REV.145		REV.146		REV.147		REV.148		STATUS-0	SCALE:	AS SHOWN
				REV.149		REV.150		REV.151		REV.152		STATUS-0	SCALE:	AS SHOWN
				REV.153		REV.154		REV.155		REV.156		STATUS-0	SCALE:	AS SHOWN
				REV.157		REV.158		REV.159		REV.160		STATUS-0	SCALE:	AS SHOWN
				REV.161		REV.162		REV.163		REV.164		STATUS-0	SCALE:	AS SHOWN
				REV.165		REV.166		REV.167		REV.168		STATUS-0	SCALE:	AS SHOWN
				REV.169		REV.170		REV.171		REV.172		STATUS-0	SCALE:	AS SHOWN
				REV.173		REV.174		REV.175		REV.176		STATUS-0	SCALE:	AS SHOWN
				REV.177		REV.178		REV.179		REV.180		STATUS-0	SCALE:	AS SHOWN
				REV.181		REV.182		REV.183		REV.184		STATUS-0	SCALE:	AS SHOWN
				REV.185		REV.186		REV.187		REV.188		STATUS-0	SCALE:	AS SHOWN
				REV.189		REV.190		REV.191		REV.192		STATUS-0	SCALE:	AS SHOWN
				REV.193		REV.194		REV.195		REV.196		STATUS-0	SCALE:	AS SHOWN
				REV.197		REV.198		REV.199		REV.200		STATUS-0	SCALE:	AS SHOWN
				REV.201		REV.202		REV.203		REV.204		STATUS-0	SCALE:	AS SHOWN
				REV.205		REV.206		REV.207		REV.208		STATUS-0	SCALE:	AS SHOWN
				REV.209		REV.210		REV.211		REV.212		STATUS-0	SCALE:	AS SHOWN
				REV.213		REV.214		REV.215		REV.216		STATUS-0	SCALE:	AS SHOWN
				REV.217		REV.218		REV.219		REV.220		STATUS-0	SCALE:	AS SHOWN
				REV.221		REV.222		REV.223		REV.224		STATUS-0	SCALE:	AS SHOWN
				REV.225		REV.226		REV.227		REV.228		STATUS-0	SCALE:	AS SHOWN
				REV.229		REV.230		REV.231		REV.232		STATUS-0	SCALE:	AS SHOWN
				REV.233		REV.234		REV.235		REV.236		STATUS-0	SCALE:	AS SHOWN
				REV.237		REV.238		REV.239		REV.240		STATUS-0	SCALE:	AS SHOWN
				REV.241		REV.242		REV.243		REV.244		STATUS-0	SCALE:	AS SHOWN
				REV.245		REV.246		REV.247		REV.248		STATUS-0	SCALE:	AS SHOWN
				REV.249		REV.250		REV.251		REV.252		STATUS-0	SCALE:	AS SHOWN
				REV.253		REV.254		REV.255		REV.256		STATUS-0	SCALE:	AS SHOWN
				REV.257		REV.258		REV.259		REV.260		STATUS-0	SCALE:	AS SHOWN
				REV.261		REV.262		REV.263		REV.264		STATUS-0	SCALE:	AS SHOWN
				REV.265		REV.266		REV.267		REV.268		STATUS-0	SCALE:	AS SHOWN
				REV.269		REV.270		REV.271		REV.272		STATUS-0	SCALE:	AS SHOWN
				REV.273		REV.274		REV.275		REV.276		STATUS-0	SCALE:	AS SHOWN
				REV.277		REV.278		REV.279		REV.280		STATUS-0	SCALE:	AS SHOWN
				REV.281		REV.282		REV.283		REV.284		STATUS-0	SCALE:	AS SHOWN
				REV.285		REV.286		REV.287		REV.288		STATUS-0	SCALE:	AS SHOWN
				REV.289		REV.290		REV.291		REV.292		STATUS-0	SCALE:	AS SHOWN
				REV.293		REV.294		REV.295		REV.296		STATUS-0	SCALE:	AS SHOWN
				REV.297		REV.298		REV.299		REV.300		STATUS-0	SCALE:	AS SHOWN
				REV.301		REV.302		REV.303		REV.304		STATUS-0	SCALE:	AS SHOWN
				REV.305		REV.306		REV.307		REV.308		STATUS-0	SCALE:	AS SHOWN
				REV.309		REV.310		REV.311		REV.312		STATUS-0	SCALE:	AS SHOWN
				REV.313		REV.314		REV.315		REV.316		STATUS-0	SCALE:	AS SHOWN
				REV.317		REV.318		REV.319		REV.320		STATUS-0	SCALE:	AS SHOWN
				REV.321		REV.322		REV.323		REV.324		STATUS-0	SCALE:	AS SHOWN
				REV.325		REV.326		REV.327		REV.328		STATUS-0	SCALE:	AS SHOWN
				REV.329		REV.330		REV.331		REV.332		STATUS-0	SCALE:	AS SHOWN
				REV.333		REV.334		REV.335		REV.336		STATUS-0	SCALE:	AS SHOWN
				REV.337		REV.338		REV.339		REV.340		STATUS-0	SCALE:	AS SHOWN
				REV.341		REV.342		REV.343		REV.344		STATUS-0	SCALE:	AS SHOWN
				REV.345		REV.346		REV.347		REV.348		STATUS-0	SCALE:	AS SHOWN
				REV.349		REV.350		REV.351		REV.352		STATUS-0	SCALE:	AS SHOWN
				REV.353		REV.354		REV.355		REV.356		STATUS-0	SCALE:	AS SHOWN
				REV.357		REV.358		REV.359		REV.360		STATUS-0	SCALE:	AS SHOWN
				REV.361		REV.								