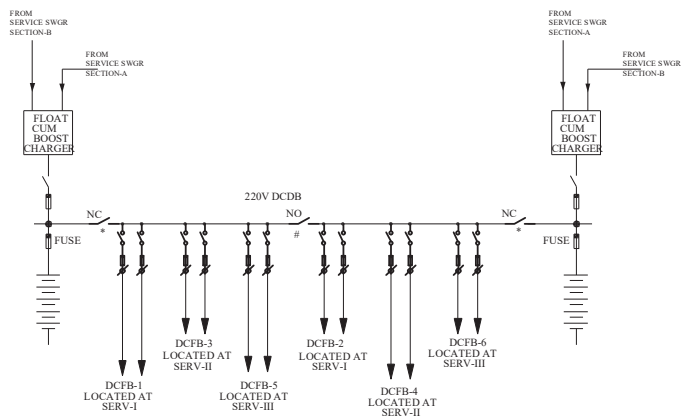
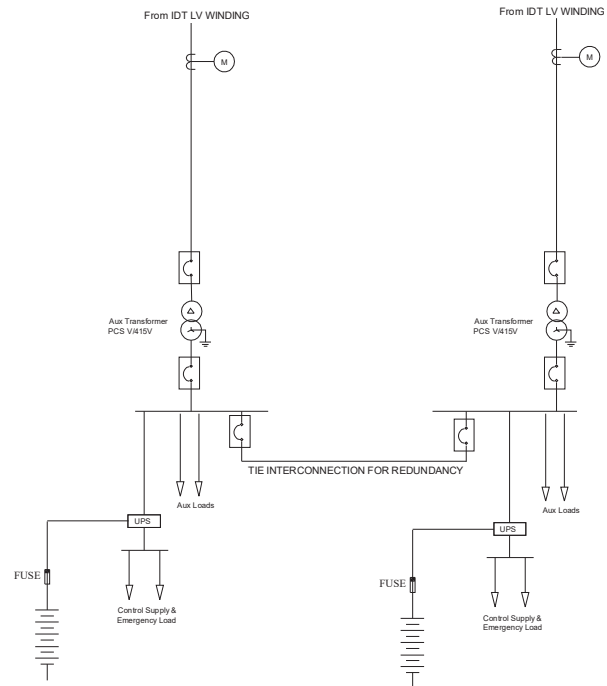
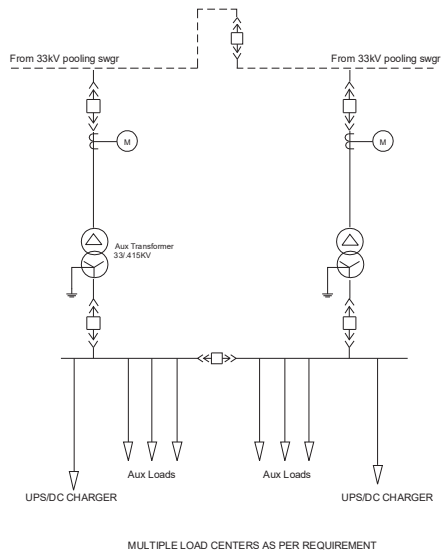


	<div>TENDER DRAWINGS</div>		

**ELECTRICAL
SINGLE LINE DIAGRAM**



OUTGOING DC FEEDERS AS PER REQUIREMENT

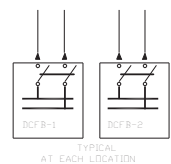
NOTES:-

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH TECHNICAL SPECIFICATION.
- NUMBER OF FEEDERS SHOWN ARE INDICATIVE. SAME SHALL BE PROVIDED AS PER PROJECT REQUIREMENT.
- THE SELECTION OF LT OUTGOING FEEDERS SHALL BE AS FOLLOWS:
(i) UPTO 400 A - MCCB
(ii) ABOVE 400 A - BREAKER
- BIDDER SHALL PROVIDE DC SYSTEM/UPS SYSTEM OF ADEQUATE CAPACITY FOR MEETING ALL DC/EMERGENCY AC LOADS.
- SPARES IN SWITCHGEAR SHALL BE PROVIDED AS PER TECHNICAL SPEC.
- WHEREVER NO RATING HAS BEEN INDICATED, SIZING SHALL BE CARRIED OUT AS PER SYSTEM REQUIREMENT
FINAL FEEDING ARRANGEMENT TO BE DECIDED DURING DETAILED ENGINEERING.

7. The Bidder may provide any one of the above Auxiliary power supply arrangements

LEGEND:

- LIGHTNING ARESTOR
- VT
- EARTH SWITCH
- CT
- CIRCUIT BREAKER
- DISCONNECTOR
- BUSHING CT
- DOUBLE BREAK LINE ISOLATORS
- CIRCUIT BREAKER DRAWOUT TYPE
- TRANSFORMER



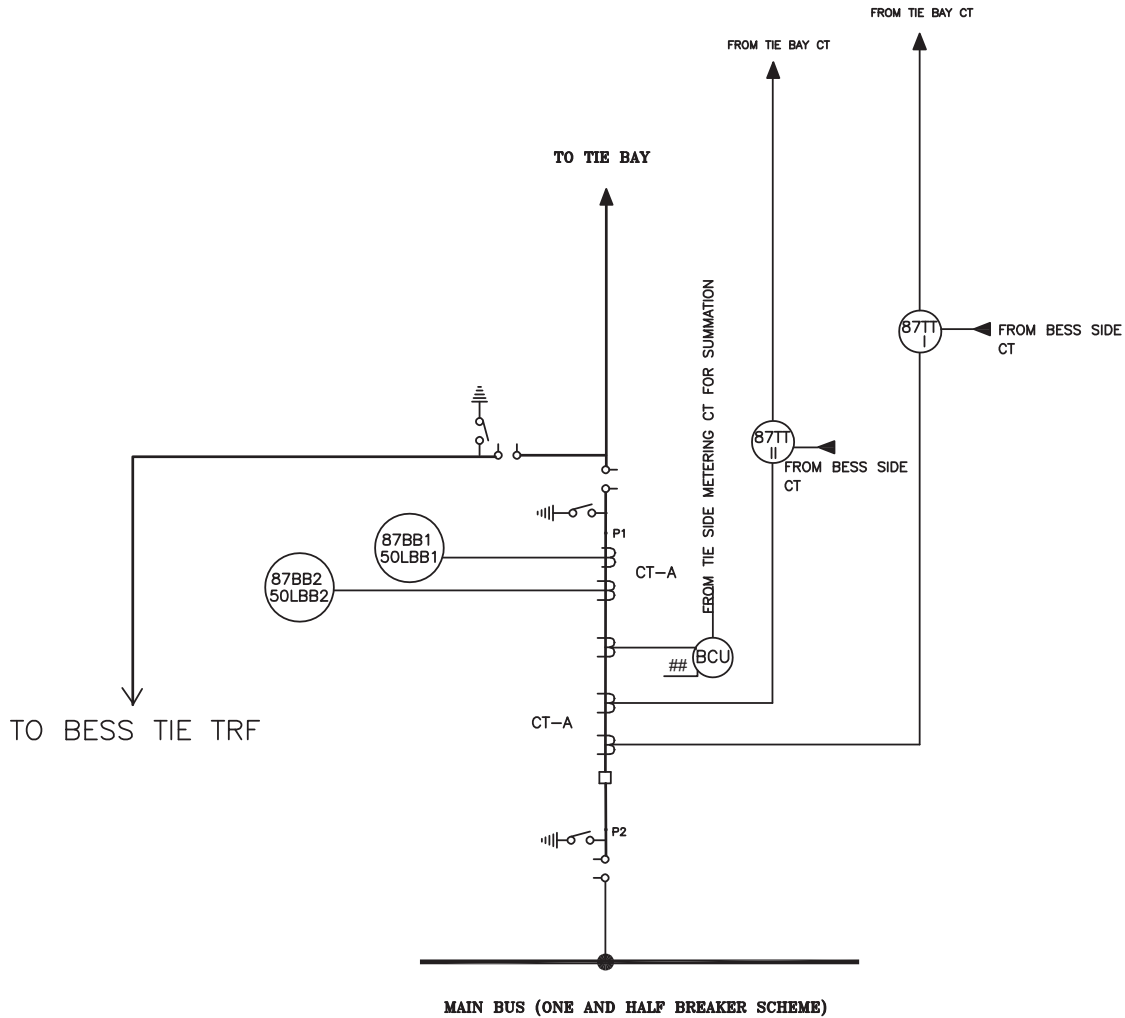
TYPICAL
AT EACH LOCATION

												NTPC Limited <small>(A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION</small>	
										PROJECT BATTERY ENERGY STORAGE SYSTEM (BESS) AUX POWER SUPPLY ARRANGEMENT			
										TITLE SINGLE LINE DIAGRAM			
										SIZE A1	SCALE NTS	DRG. NO. 9999-000-POE-A-001-3A	REV. NO. A
										9999-000-POE-A-001-3A			
										A			

CLAUSE NO.



**BESS PROTECTION
SINGLE LINE DIAGRAM**



LEGEND:-

50/51 - BACKUP OVERCURRENT PROTECTION
 50N/51N - BACKUP EARTH FAULT PROTECTION
 50LBB - BREAKER FAILURE PROTECTION
 50LBBT - BREAKER FAILURE PROTECTION FOR TIE BAY CB
 87TT-I } - "TEE" DIFFERENTIAL PROTECTION
 87TT-II }
 BCU - BAY CONTROL UNIT
 EM - ABT COMPLIANT ENERGY METER
 87ST - ST DIFFERENTIAL PROTECTION
 64RHV - ST HV REF PROTECTION
 64RLV - ST LV REF PROTECTION

NOTE:

- Voltage from selected CVT
 * - To be provided by owner
 ** - Breaker with CSD

FOR TENDER PURPOSE ONLY

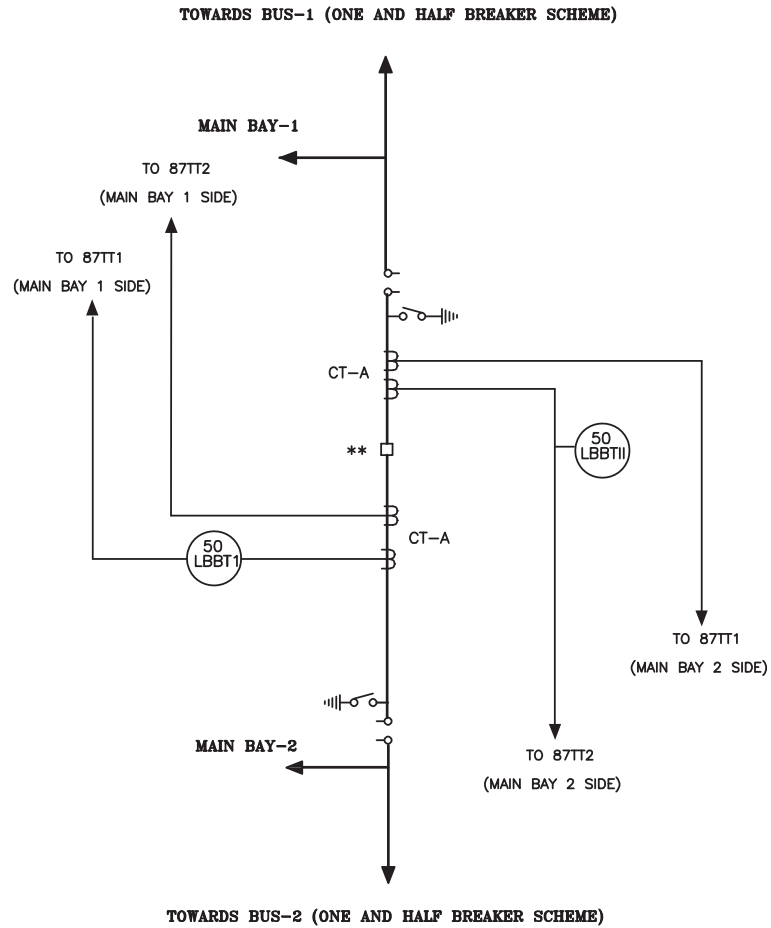
एन टी सी
 NTPC

NTPC Ltd.
 (A GOVERNMENT OF INDIA ENTERPRISE)
 ENGINEERING DIVISION

TITLE
PROTECTION S.L.D. FOR ONE & HALF BAY

REV.NO.	DESCRIPTION	DESIGN	CHKD.	APPD.	DATE	SIZE	SCALE	DRG. NO.	REV. NO.
						A4	N.T.S.	BESS-999-POE-J-008B	0

BUS BAR arrangement shown is indicative only. For actual arrangement please refer key tender SLD.



LEGEND:-

50/51 - BACKUP OVERCURRENT PROTECTION
50N/51N - BACKUP EARTH FAULT PROTECTION
50LBB - BREAKER FAILURE PROTECTION
50LBBT - BREAKER FAILURE PROTECTION FOR TIE BAY CB
87TT-I }
87TT-II } - "TEE" DIFFERENTIAL PROTECTION
BCU - BAY CONTROL UNIT
EM - ABT COMPLIANT ENERGY METER

NOTE:

- Voltage from selected CVT
* - To be provided by owner
** - Breaker with CSD (in case of ST/Reactor Bay)

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(A GOVERNMENT OF INDIA ENTERPRISE)
ENGINEERING DIVISION

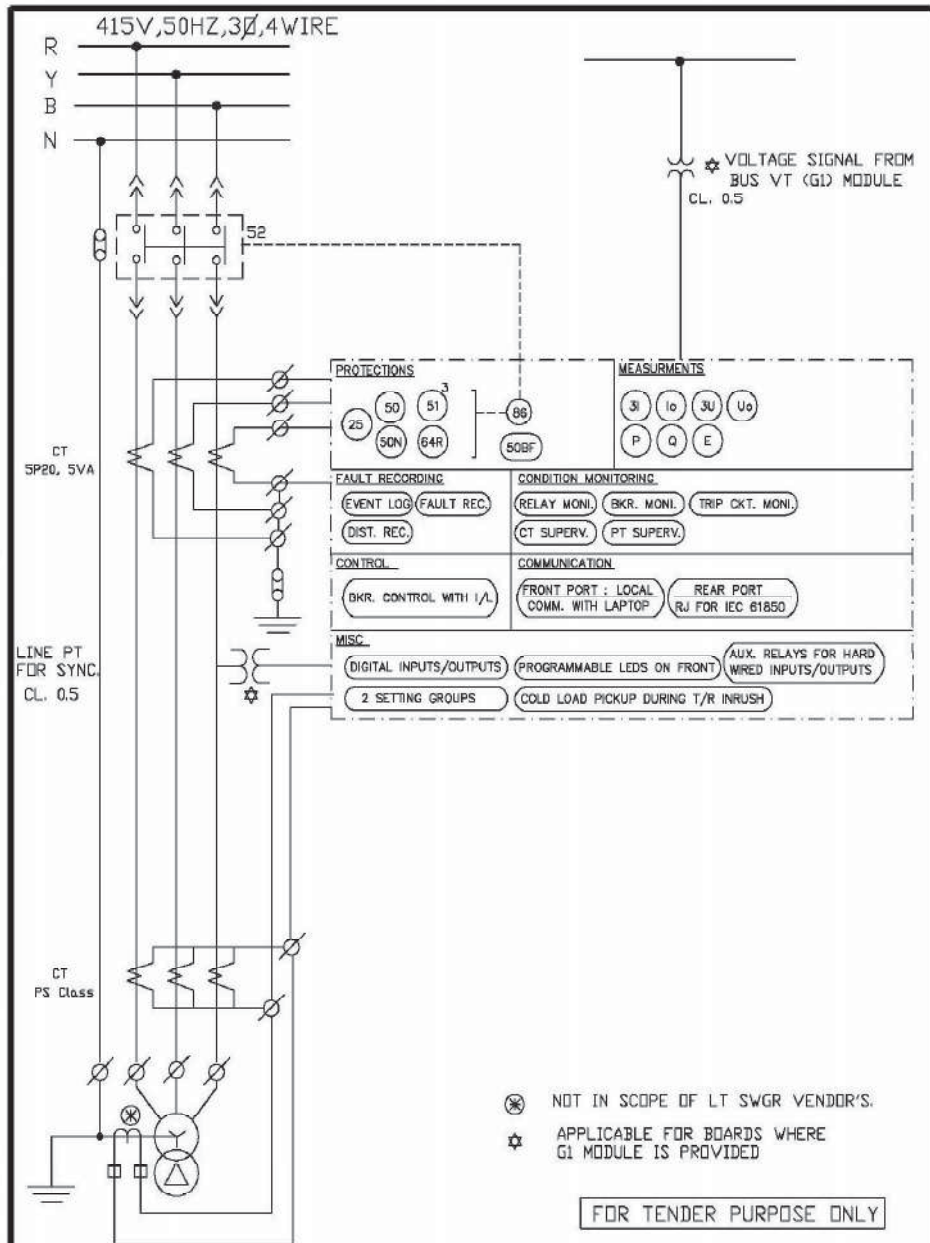
TITLE

PROTECTION S.L.D. FOR TIE BAY

REV.NO.	DESCRIPTION	DESIGN	CHKD.	APPD.	DATE	SIZE	SCALE	DRG. NO.	REV. NO.
						A4	N.T.S.	BESS-999-POE-J-008C	0

	<div>SWITCH GEAR</div>		

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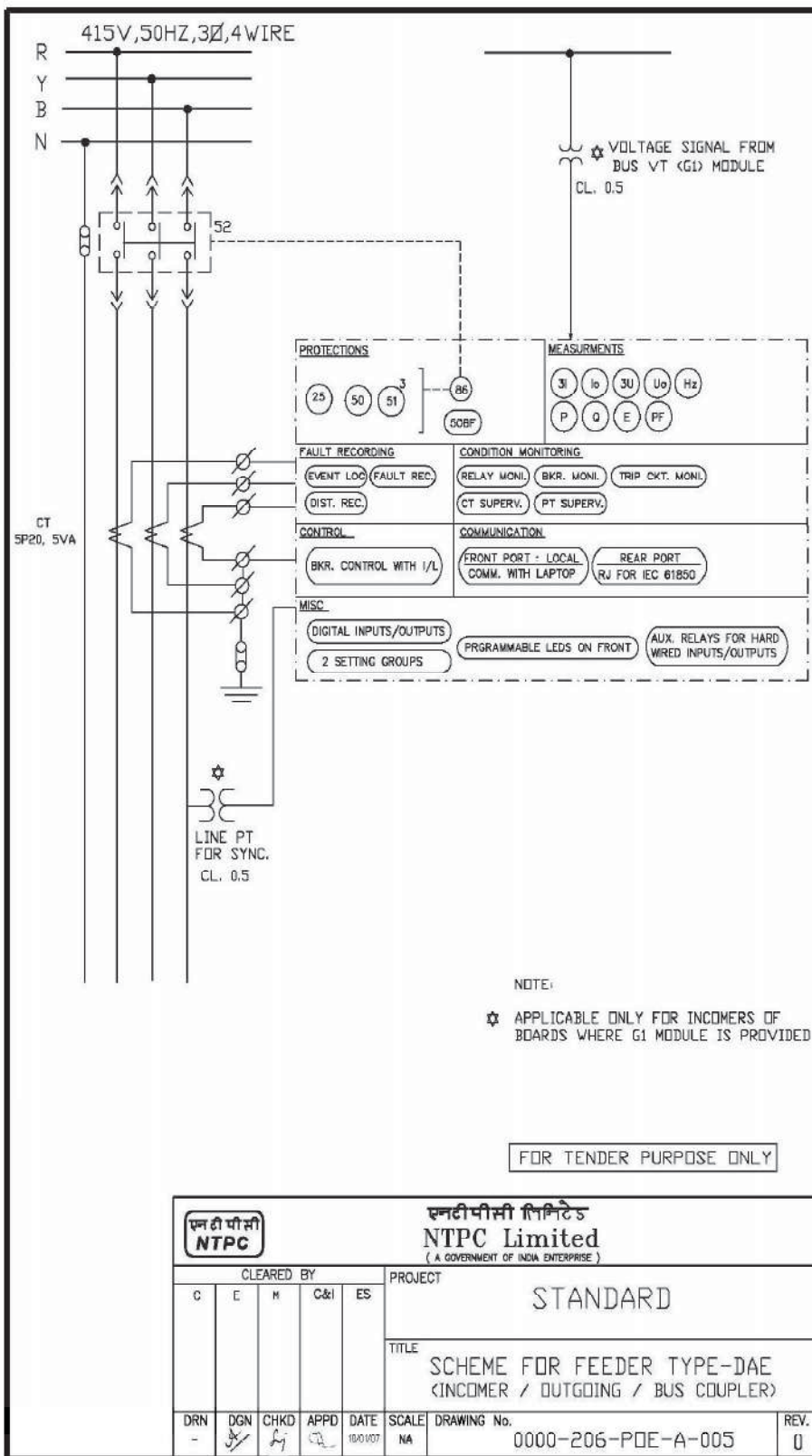


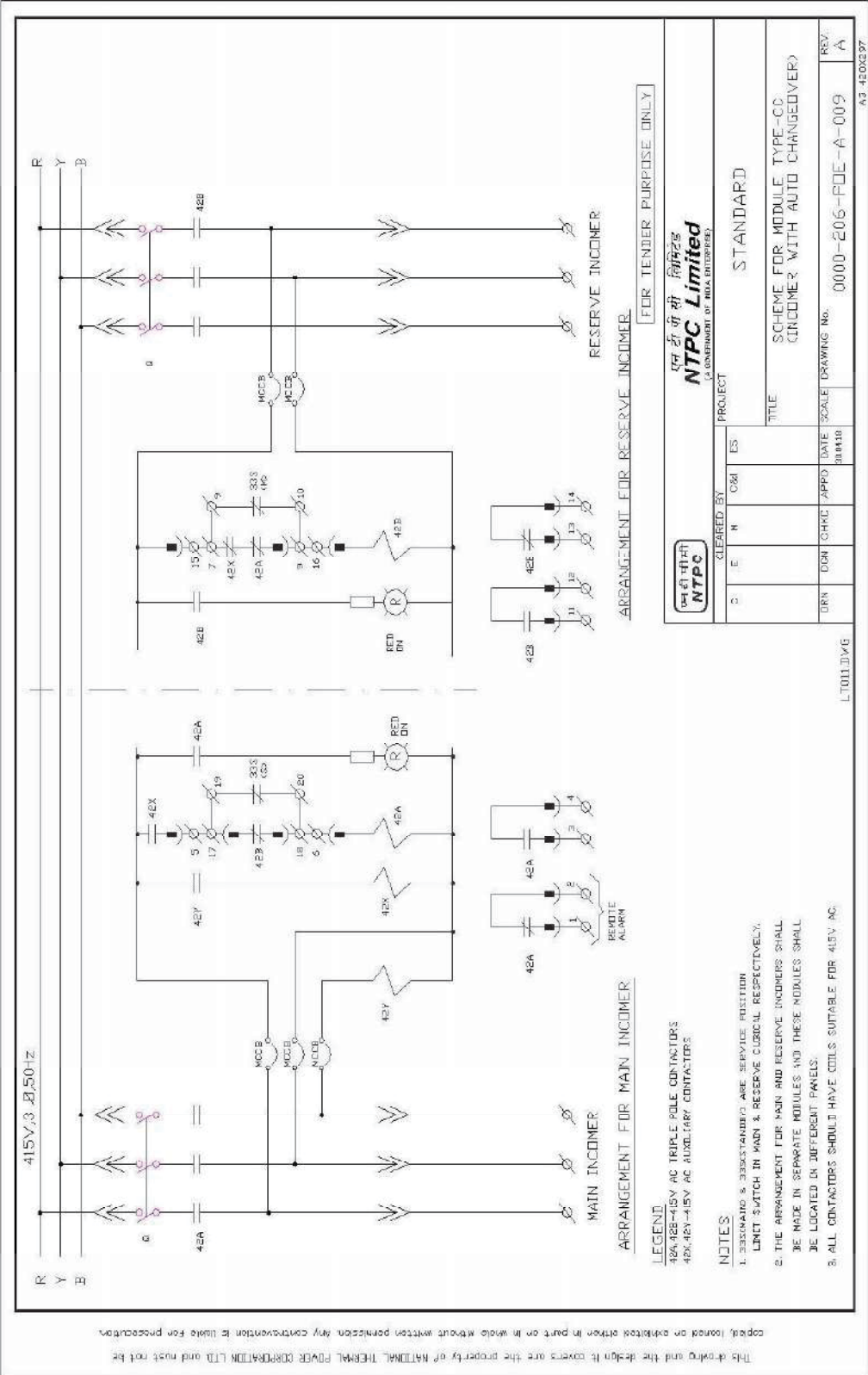
एन टी पी सी
NTPC

एन टी पी सी लिमिटेड
NTPC Limited
(A GOVERNMENT OF INDIA ENTERPRISE)

CLEARED BY					PROJECT	
C	E	M	C&I	ES	STANDARD	
					TITLE	
					SCHEME FOR FEEDER TYPE-DAET (INCOMER FROM TRANSFORMER)	
DRN	DGN	CHKD	APPD	DATE	SCALE	DRAWING No.
-				10.01.1977	NA	0000-206-PDE-A-004
						REV.
						0

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BUS SECTION-A

R
Y
B
N

MCCB MCCB
415/110V

EKM EKM

AC MONITORING RELAY-A2

SELECTOR SWITCH FOR THE OTHER HALF OF SECTION-A FEEDERS

CONTROL SUPPLY FOR THE OTHER HALF OF SECTION-A FEEDERS

AC MONITORING RELAY-BE

SELECTOR SWITCH FOR THE OTHER HALF OF SECTION-B FEEDERS

CONTROL SUPPLY FOR THE OTHER HALF OF SECTION-B FEEDERS

AC MONITORING RELAY-BE

FOR TENDER PURPOSE ONLY

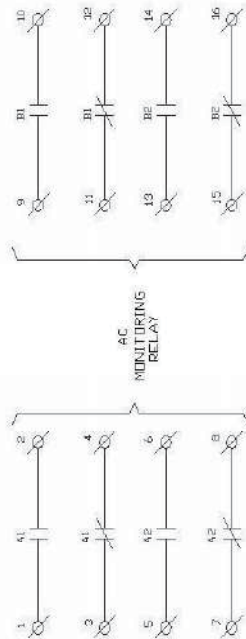
NTPC Limited <small>A GOVERNMENT OF INDIA ENTERPRISE</small>		PROJECT	
CLEARED BY	DATE	APPROVED BY	DATE
G E M CSM ES	30/4/10	DGN CHND APPD	30/4/10
DRN	DGN	CHND	APPD
TITLE		SCALE DRAWING NO.	
STANDARD		0003-206-FDE-A-010	
SCHEME FOR MODULE TYPE-CS (CONTROL SUPPLY MODULE)		REV A	


LT012P2WVG

AC MONITORING RELAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

41 42 43 44 45 46 47 48



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PROJECT		STANDARD	
TITLE		SCHEME FOR MODULE TYPE-CS (CONTROL SUPPLY MODULE)	
ORN	DGN	CHRD	APPD
DATE		SCALE	
DRAWING No.		0000-206-FDE-A-010	
REV		A	

LT012DWG

A3 420x257

R 415V, 3PH, 50HZ. R Y B
Y B

R Y B
Y B

R Y B
Y B

1 2 3

12 20 13

14 25 26 27 28

4-20mA C/P

4-20MA

T60 VT

MCB

D-13 D-14

240V AC (SP. HTR. BUS)

* (L NO +I NC FOR EACH MCB)

SSO

10+ 23 24 25

0-530V

12

1 2 3 4 5 6 7 8

X1 A2 12

LT016.DWG

FOR TENDER PURPOSE ONLY

NTPC Limited
एन टी सी लिमिटेड
(A COMPANY OF NEE GROUP)

PROJECT STANDARD

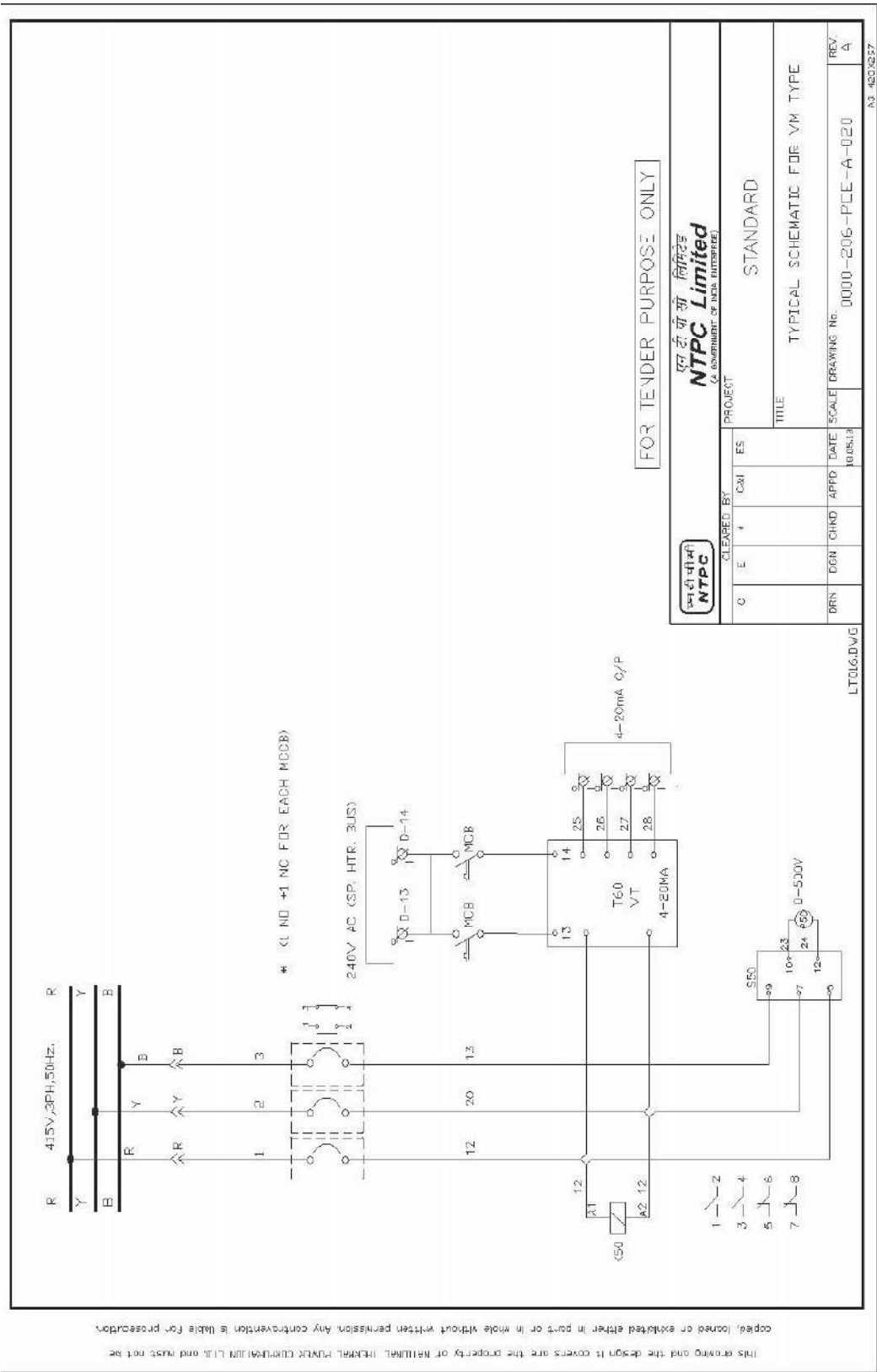
TITLE TYPICAL SCHEMATIC FOR VM TYPE

REV. A

DATE SCALE DRAWING No. 0000-206-PCE-A-020

DESIGN CHD APPD DATE 10/05/18

DRN

[illegible]

R 415V, 3PH, 50HZ. R Y B
Y B

R Y B
Y B

R Y B
Y B

1 2 3

12 20 13

14 25 26 27 28

4-20mA C/P

4-20MA

T60 VT

MCB

D-13 D-14

240V AC (SP. HTR. BUS)

* (L NO +I NC FOR EACH MCB)

SSO

10+ 23 24 25

0-530V

12

1 2 3 4 5 6 7 8

X1 A2 12

LT016.DWG

FOR TENDER PURPOSE ONLY

NTPC Limited
(A COMPANY OF NEE GROUPS)

PROJECT STANDARD

TITLE TYPICAL SCHEMATIC FOR VM TYPE

REV. A

DATE 10/05/18

SCALE 0000-206-PCE-A-020

DRAWING No.

DESIGNER

CHECKED BY

E I CM ES

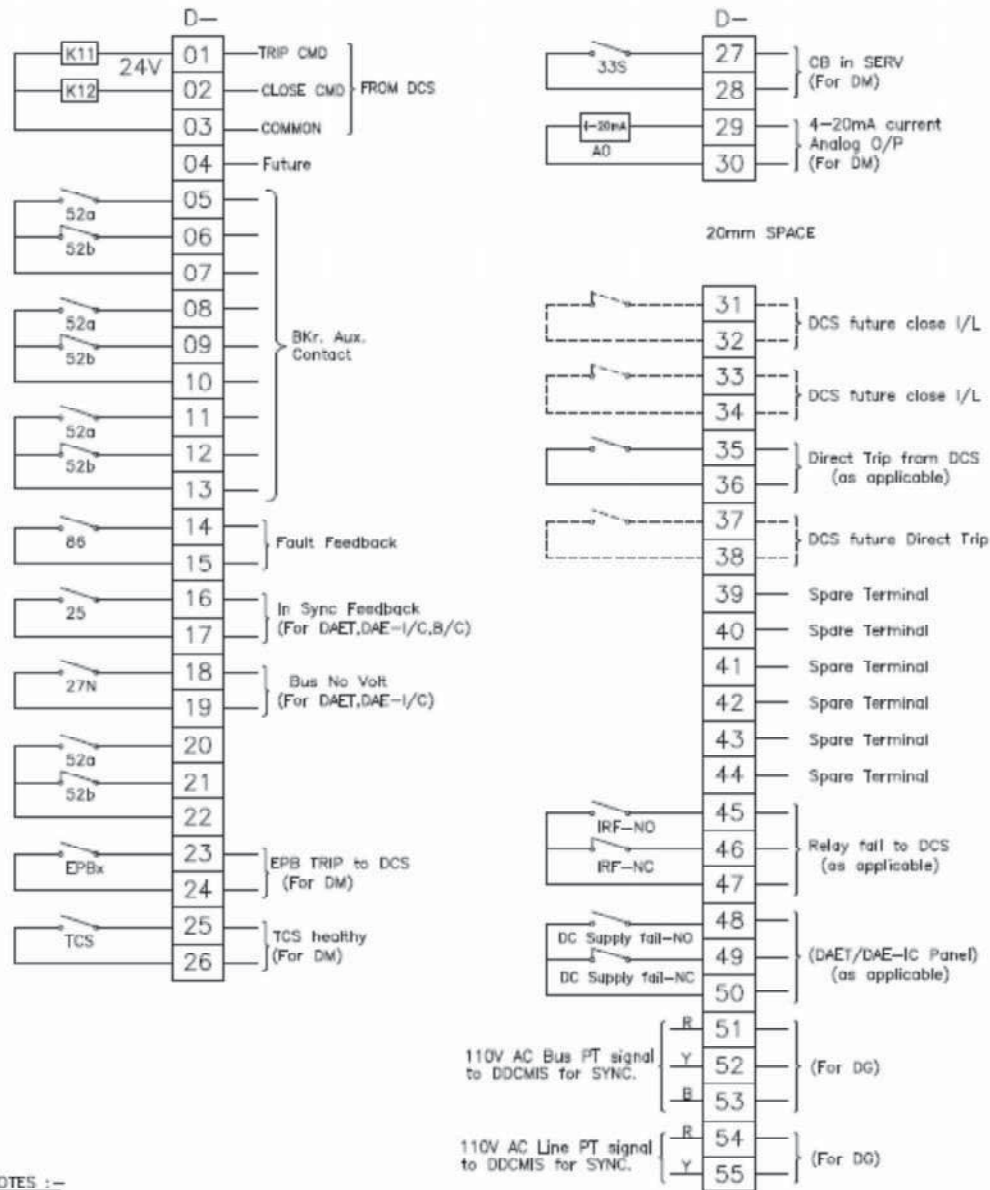
Q

DRN

A3_453/257

[illegible]

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NOTES :-

1. 52a & 52b shown above are breaker aux. contacts when breaker is in Service position.
2. If any signal (except 52a & 52b signals, future & Spare terminals marked) is not applicable for a module type, associated terminals/terminal nos. may be absent in the panel.
3. If any new signal not covered in this list is required to be wired to DCS during detail engg, new terminal nos as per above philosophy shall be assigned.

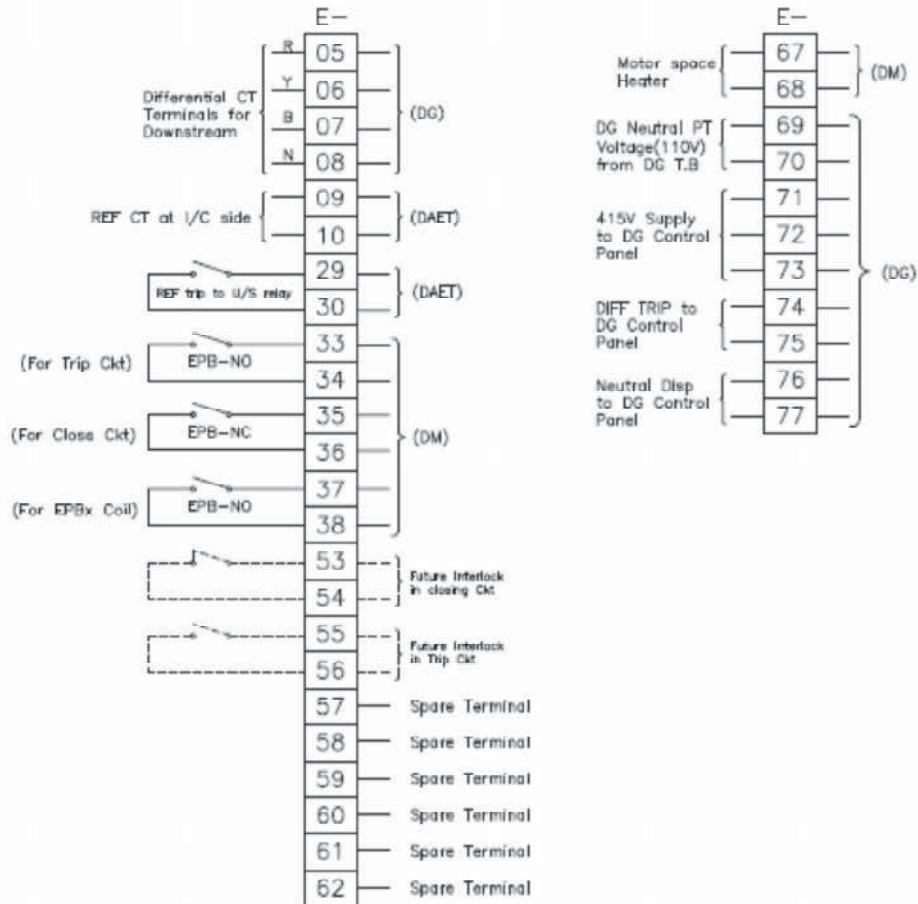
FOR TENDER PURPOSE ONLY

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NTPC Limited
(A GOVERNMENT OF INDIA ENTERPRISE)

CLEARED BY					PROJECT	
C	E	M	CM	ES	STANDARD	
					TITLE STANDARD "D" TERMINALS (FOR CABLING BETWEEN SWGR & DCS) FOR LT SWGR	
DRN	DGN	CHKD	APPD	DATE	SCALE	DRAWING No.
-				20.06.18	NA	0000-206-POE-A-022
						REV. A

A4 310X297

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NOTES :-

1. 52a & 52b shown above are breaker aux. contacts when breaker is in Service position.
2. If any signal (except 52a & 52b signals, future & Spare terminals marked) is not applicable for a module type, associated terminals/terminal nos. may be absent in the panel.
3. If any new signal not covered in this list is required to be wired to any other external equipment during detail engg, new terminal nos as per above philosophy shall be assigned.

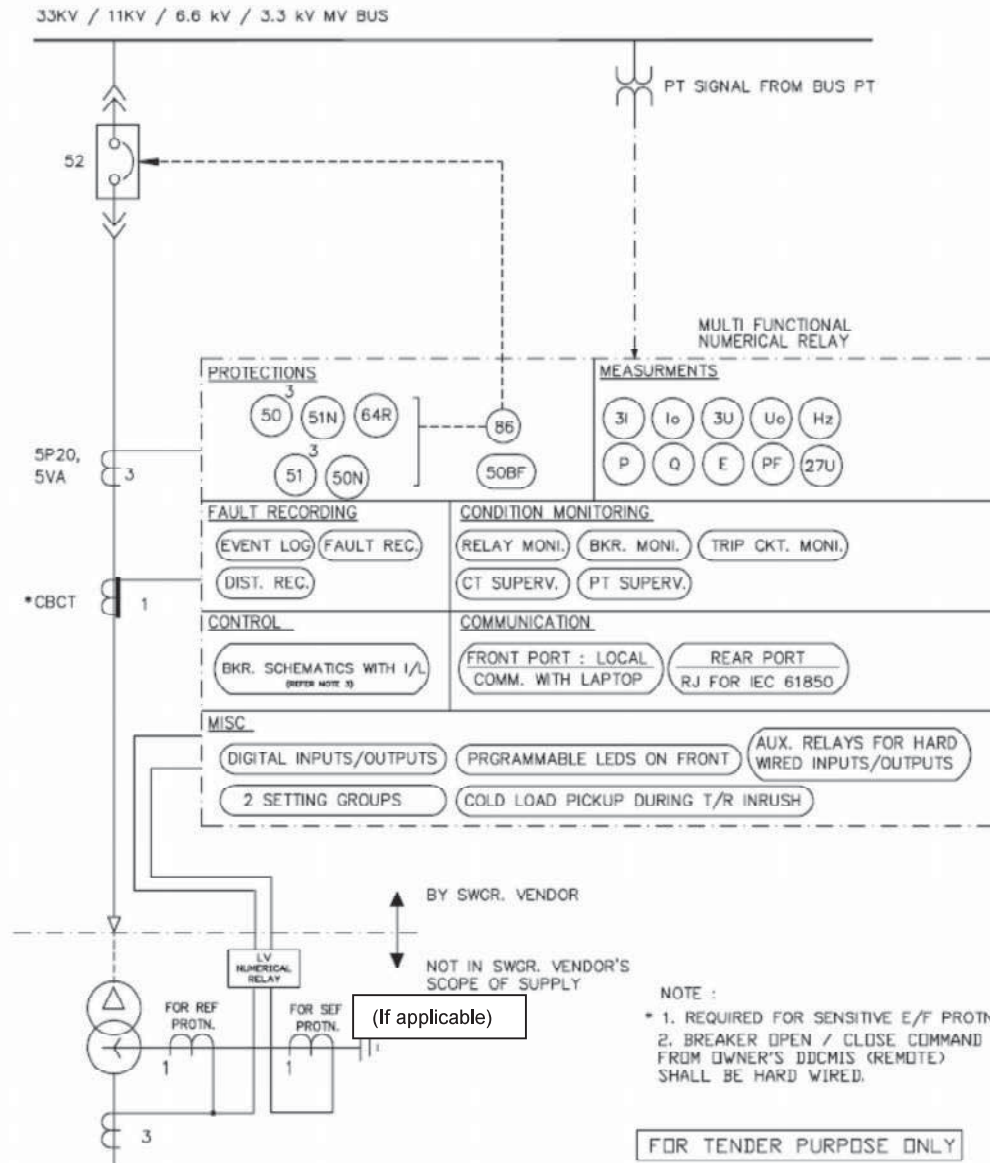
FOR TENDER PURPOSE ONLY



NTPC Limited
(A GOVERNMENT OF INDIA ENTERPRISE)

CLEARED BY					PROJECT	
C	E	M	CM	ES	STANDARD	
					TITLE STANDARD 'E' TERMINALS (FOR CABLING BETWEEN SWGR TO MOTOR, SWGR TO TRF & INTERBOARD CABLING) FOR LT SWGR	
DRN	DGN	CHKD	APPD	DATE	SCALE	DRAWING No.
-				20.06.19	NA	0000-206-POE-A-023
						REV. A

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<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;"> एन टी सी लिमिटेड NTPC </div> <div> एन टी सी लिमिटेड NTPC Limited <small>(A GOVERNMENT OF INDIA ENTERPRISE)</small> </div> </div>							
Cleared By					PROJECT		
C	E	M	C&I	ES	STANDARD		
TITLE					SCHEME FOR MV SWGR FEEDER TYPE-DB (TRANSFORMER)		
DRN	DGN	CHKD	APPD	DATE	SCALE	DRAWING No.	REV.
-				10/01/07	NA	0000-205-PDE-A-006	0

DB.DWG

A4 210X297

33KV / 11KV / 6.6 kV / 3.3 kV MV BUS

52

PT SIGNAL FROM BUS PT

MULTI FUNCTIONAL NUMERICAL RELAY

PROTECTIONS

50 51N 64R 51 50N 87T 86 50BF

MEASUREMENTS

3I Io 3U Uo Hz P Q E PF 27U

PS 3

FAULT RECORDING

EVENT LOG FAULT REC. DIST. REC.

CONDITION MONITORING

RELAY MONI. BKR. MONI. TRIP CKT. MONI. CT SUPERV. PT SUPERV.

CONTROL

BKR. SCHEMATICS WITH I/L (REFER NOTE 2)

COMMUNICATION

FRONT PORT: LOCAL REAR PORT: RJ FOR IEC 61850

MISC

DIGITAL INPUTS/OUTPUTS PROGRAMMABLE LEDS ON FRONT AUX. RELAYS FOR HARD WIRED INPUTS/OUTPUTS 2 SETTING GROUPS COLD LOAD PICKUP DURING T/R INRUSH

*CBCT 1

LV NUMERICAL RELAY

FOR REF PROTIN. FOR S/B EF PROTIN.

BY SWGR. VENDOR

NOT IN SWGR. VENDOR'S SCOPE OF SUPPLY

NOTE :

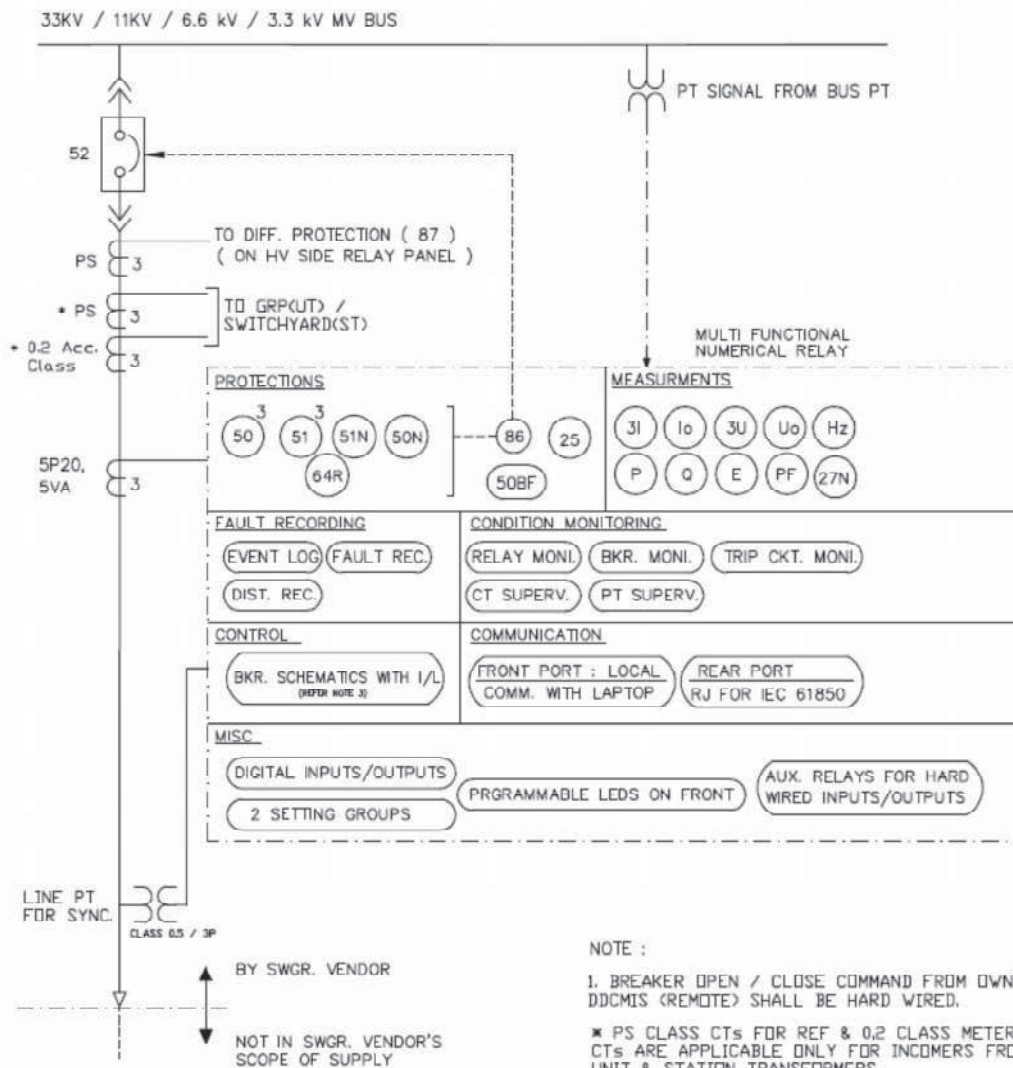
* 1. REQUIRED FOR SENSITIVE E/F PROTIN.

2. BREAKER OPEN / CLOSE COMMAND FROM OWNER'S DDCMIS (REMOTE) SHALL BE HARD WIRED.





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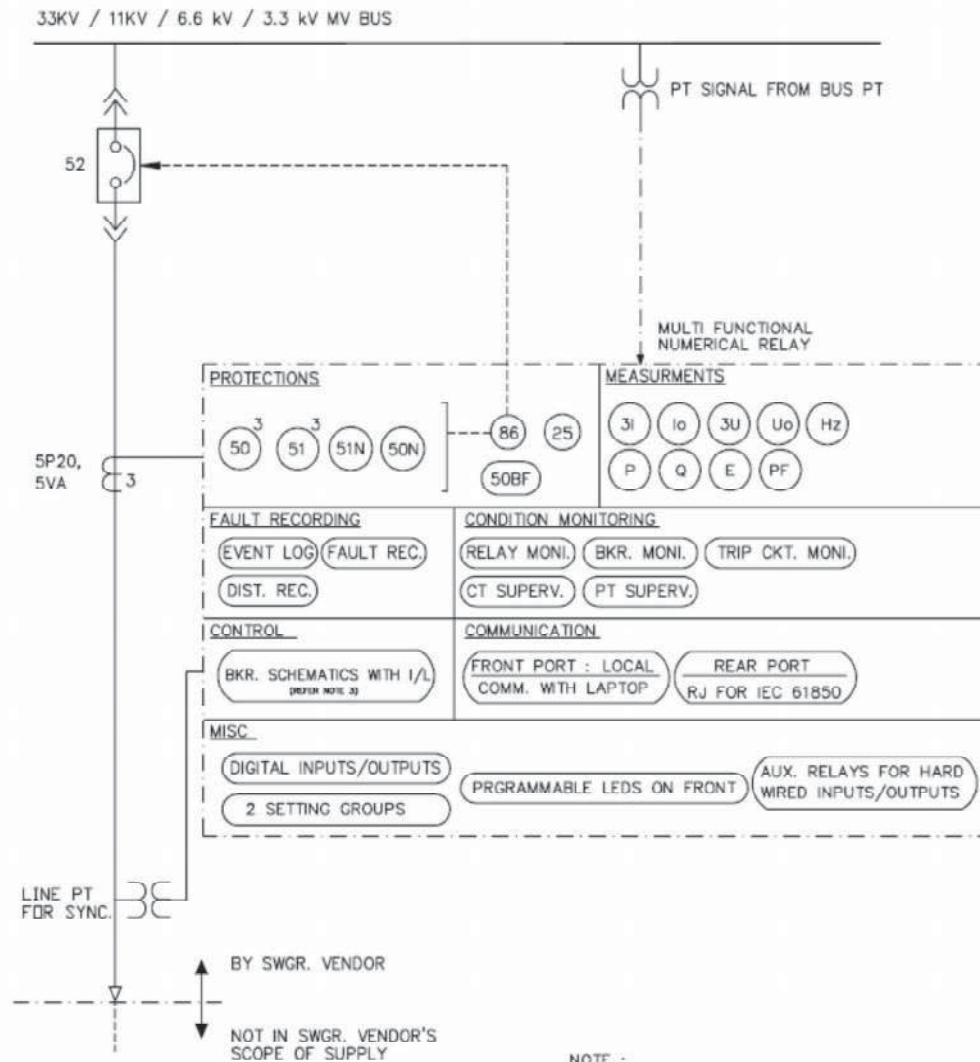
FOR TENDER PURPOSE ONLY

					एनटीपीसी लिमिटेड NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)				
CLEARED BY C E M C&I ES					PROJECT STANDARD				
DRN -					TITLE SCHEME FOR MV SWGR FEEDER TYPE-DC (INCOMER)				
DGN 					DATE 10/01/07				
CHKD 					SCALE NA				
APPD 					DRAWING No. 0000-205-PDE-A-008				
REV. 0									

DC.DWG

A4 210X297

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NOTE :
1. BREAKER OPEN / CLOSE COMMAND FROM OWNER'S DDCMIS (REMOTE) SHALL BE HARD WIRED.

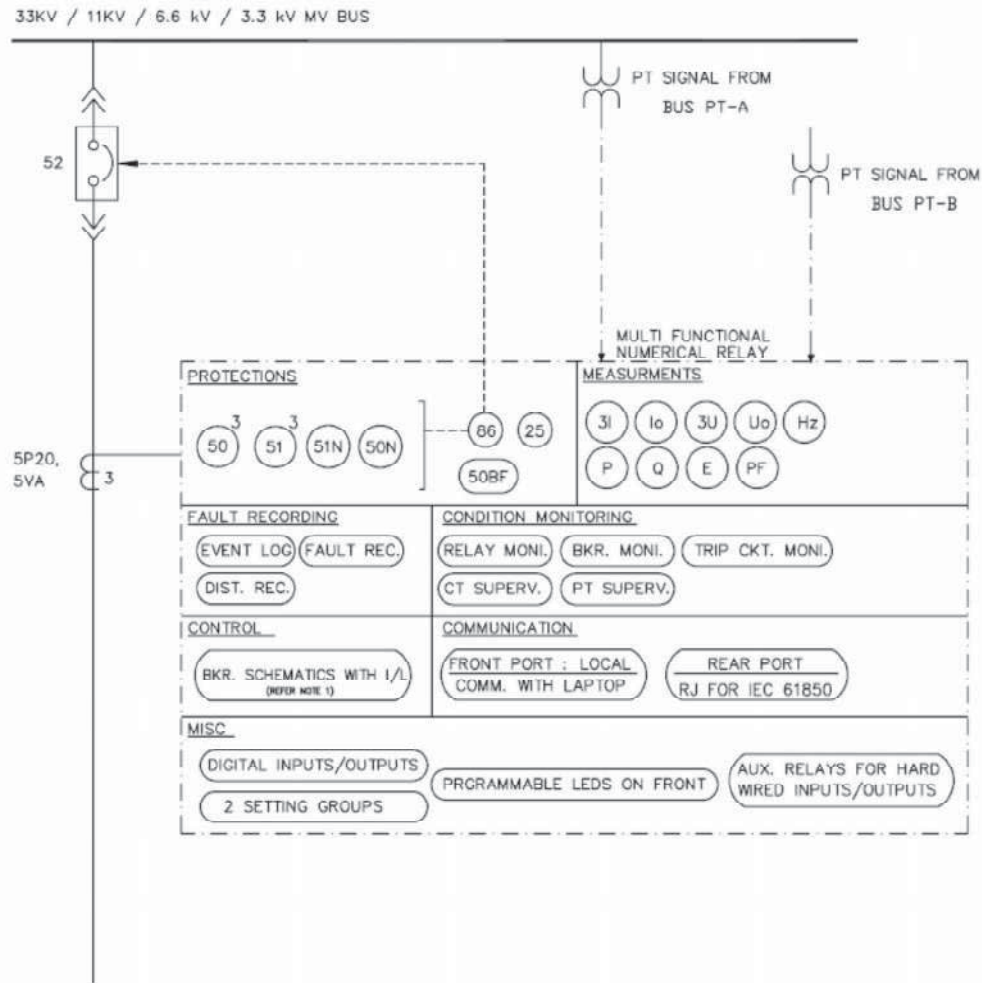
FOR TENDER PURPOSE ONLY

					एनटीपीसी लिमिटेड NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)				
CLEARED BY C E M C&I ES					PROJECT STANDARD				
ORN DGN CHKD APPD DATE - 10/01/07					TITLE SCHEME FOR MV SWGR FEEDER TYPE-DE (TIE FEEDER)				
SCALE NA					DRAWING No. 0000-205-PDE-A-009				
REV. 0									

DE.DWG


A4 210X297

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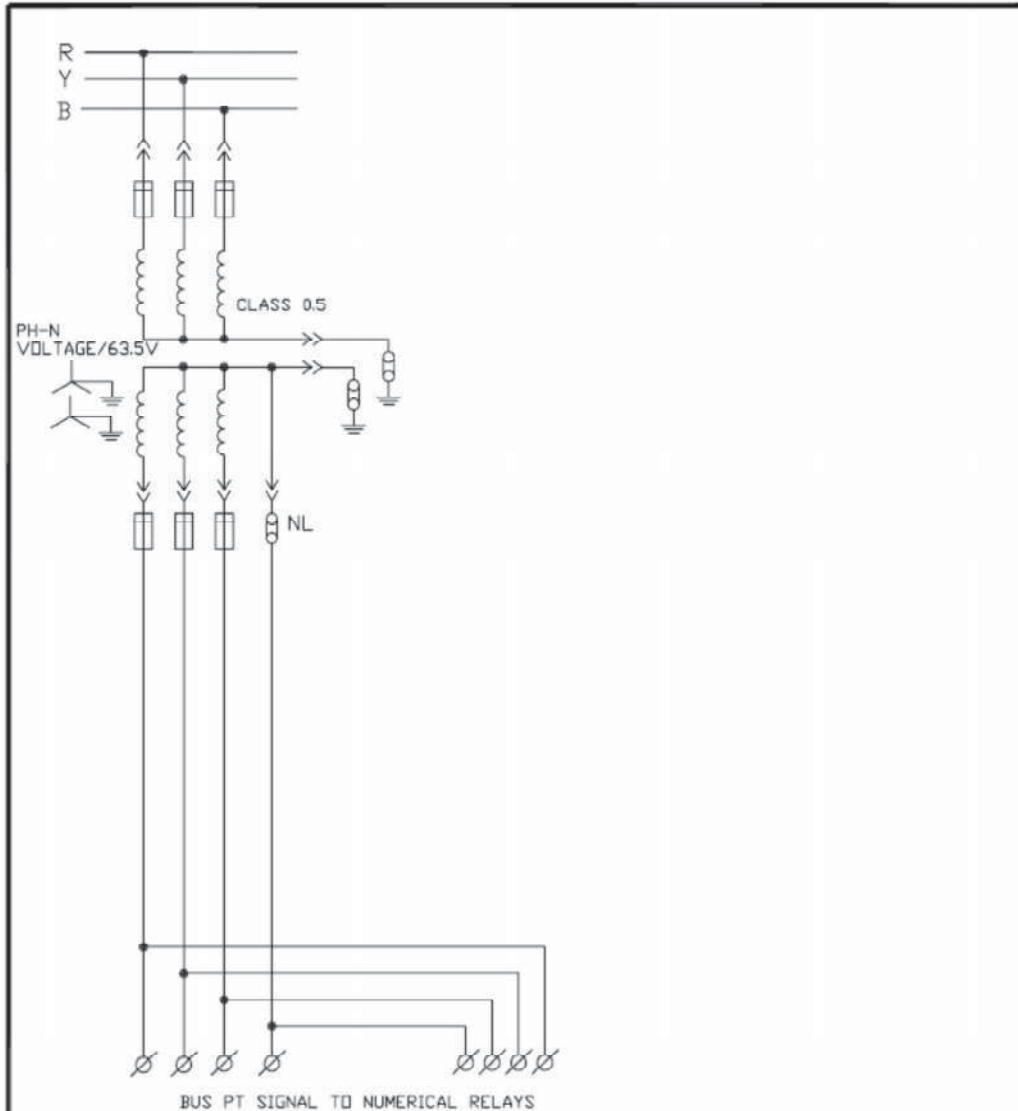
NOTE :
1. BREAKER OPEN / CLOSE COMMAND FROM OWNER'S DDCMIS (REMOTE) SHALL BE HARD WIRED.

FOR TENDER PURPOSE ONLY

					एनटीपीसी लिमिटेड NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)				
CLEARED BY C E M C&I ES					PROJECT STANDARD				
DRN -					TITLE SCHEME FOR MV SWGR FEEDER TYPE-DD (BUS COUPLER)				
DCN Jy					DATE 10/11/07				
CHKD Ji					SCALE NA				
APPD CL					DRAWING No. 0000-205-PDE-A-010				
REV. 0					DD.DWG				

A4 210X297

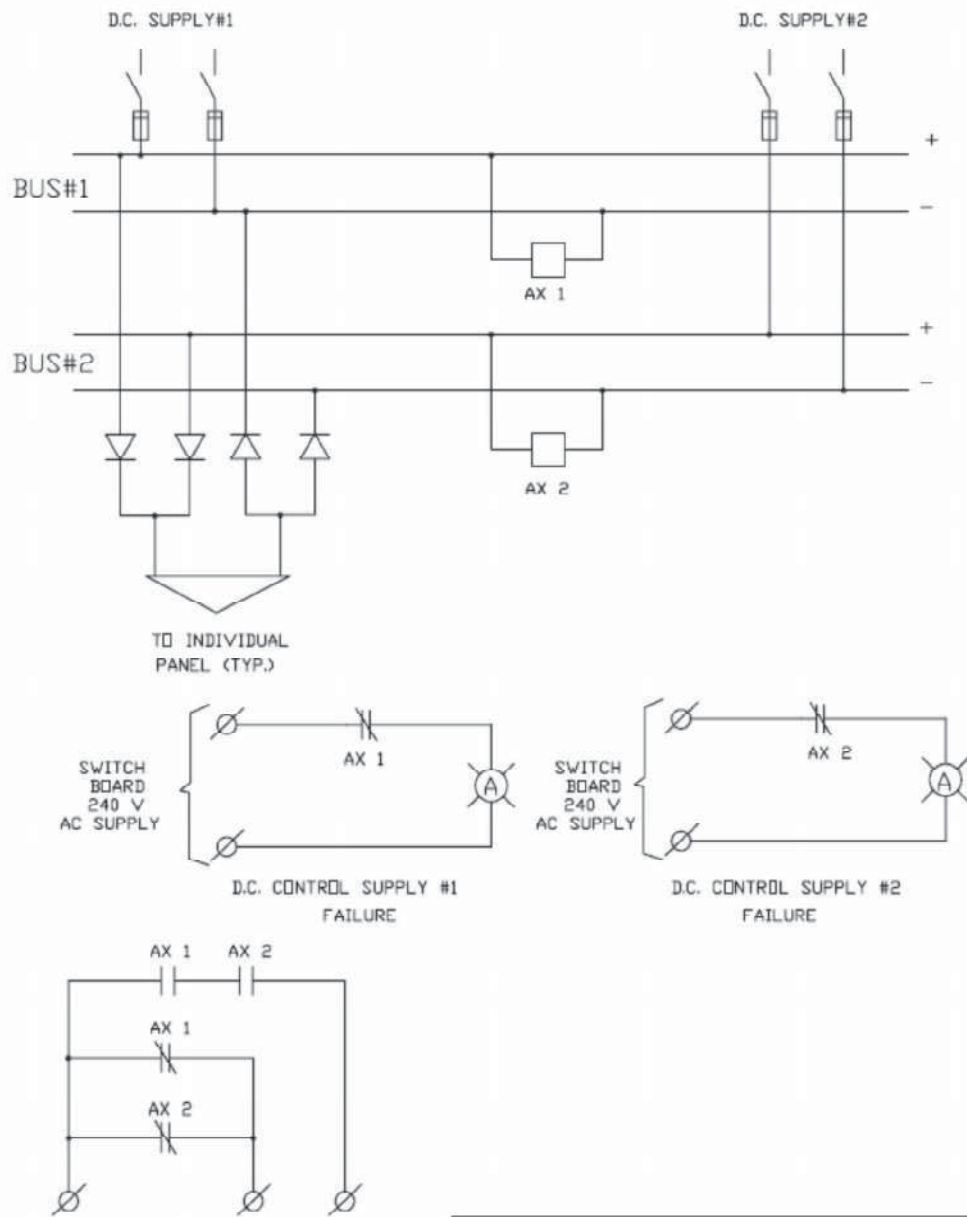
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FOR TENDER PURPOSE ONLY

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;"> एन टी सी NTPC </div> <div> एन टी सी लिमिटेड NTPC Limited <small>(A GOVERNMENT OF INDIA ENTERPRISE)</small> </div> </div>																									
<div style="display: flex; justify-content: space-between;"> <div> <table border="1" style="width: 100%;"> <thead> <tr> <th colspan="5">CLEARED BY</th> </tr> <tr> <th>C</th> <th>E</th> <th>N</th> <th>C&I</th> <th>ES</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> </div> <div> <table border="1" style="width: 100%;"> <tr> <td colspan="2">PROJECT</td> <td>STANDARD</td> </tr> <tr> <td colspan="2">TITLE</td> <td>SCHEME FOR MV SWITCHGEAR MODULE TYPE - G (BUS PT)</td> </tr> </table> </div> </div>					CLEARED BY					C	E	N	C&I	ES						PROJECT		STANDARD	TITLE		SCHEME FOR MV SWITCHGEAR MODULE TYPE - G (BUS PT)
CLEARED BY																									
C	E	N	C&I	ES																					
PROJECT		STANDARD																							
TITLE		SCHEME FOR MV SWITCHGEAR MODULE TYPE - G (BUS PT)																							
DRN	DGN	CHKD	APPD	DATE	SCALE	DRAWING No.	REV.																		
-	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	15/01/07	NA	0000-205-PDE-A-012	0																		

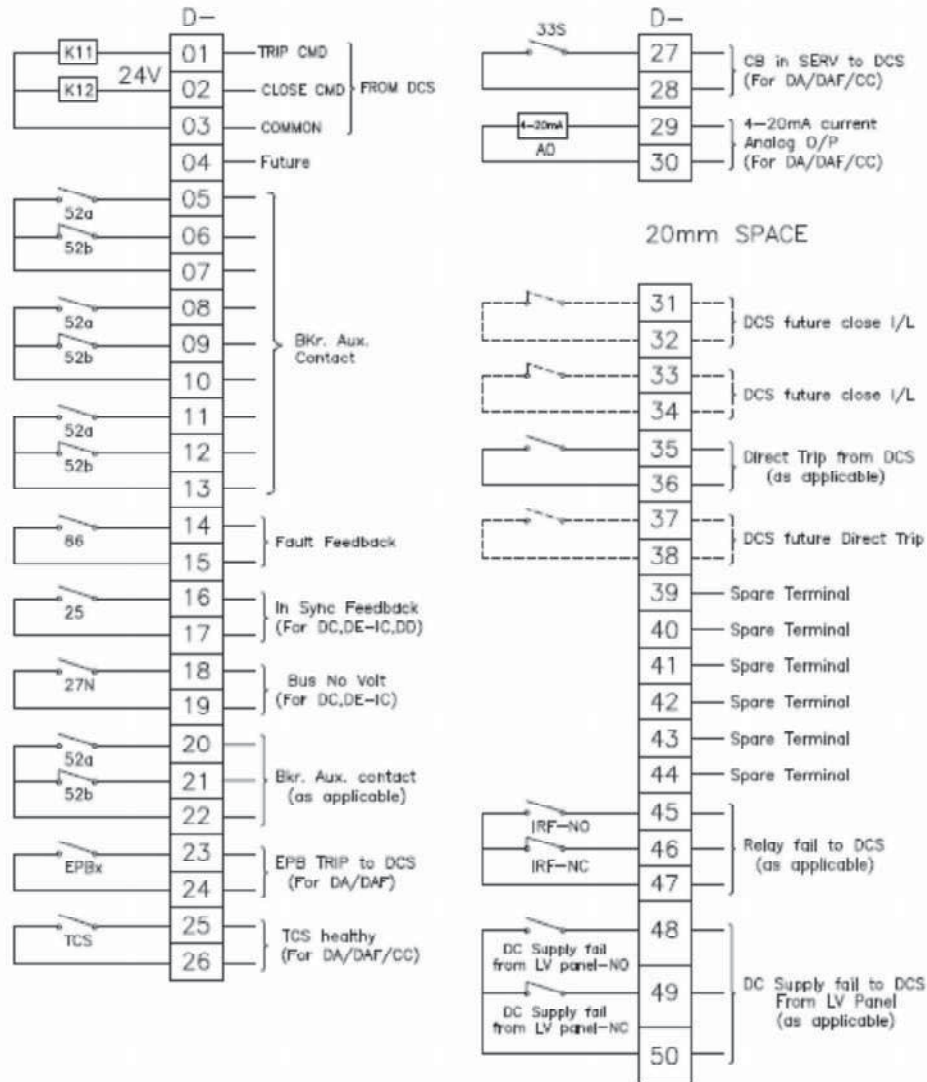
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FOR TENDER PURPOSE ONLY

एन टी पी सी NTPC					नेशनल थर्मल पावर कॉर्पोरेशन लिमिटेड National Thermal Power Corporation Ltd. (A GOVERNMENT OF INDIA ENTERPRISE)				
C					PROJECT				
E					STANDARD				
M					TITLE				
C&I					TYPICAL CONTROL SUPPLY SCHEME FOR MV SWITCHGEAR PANELS				
ES					DRAWING No.				
DRN					0000-205-PDE-A-013				
DGN					REV.				
CHKD					0				
APPD									
DATE									
10/01/07									
SCALE					NA				

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NOTES :-

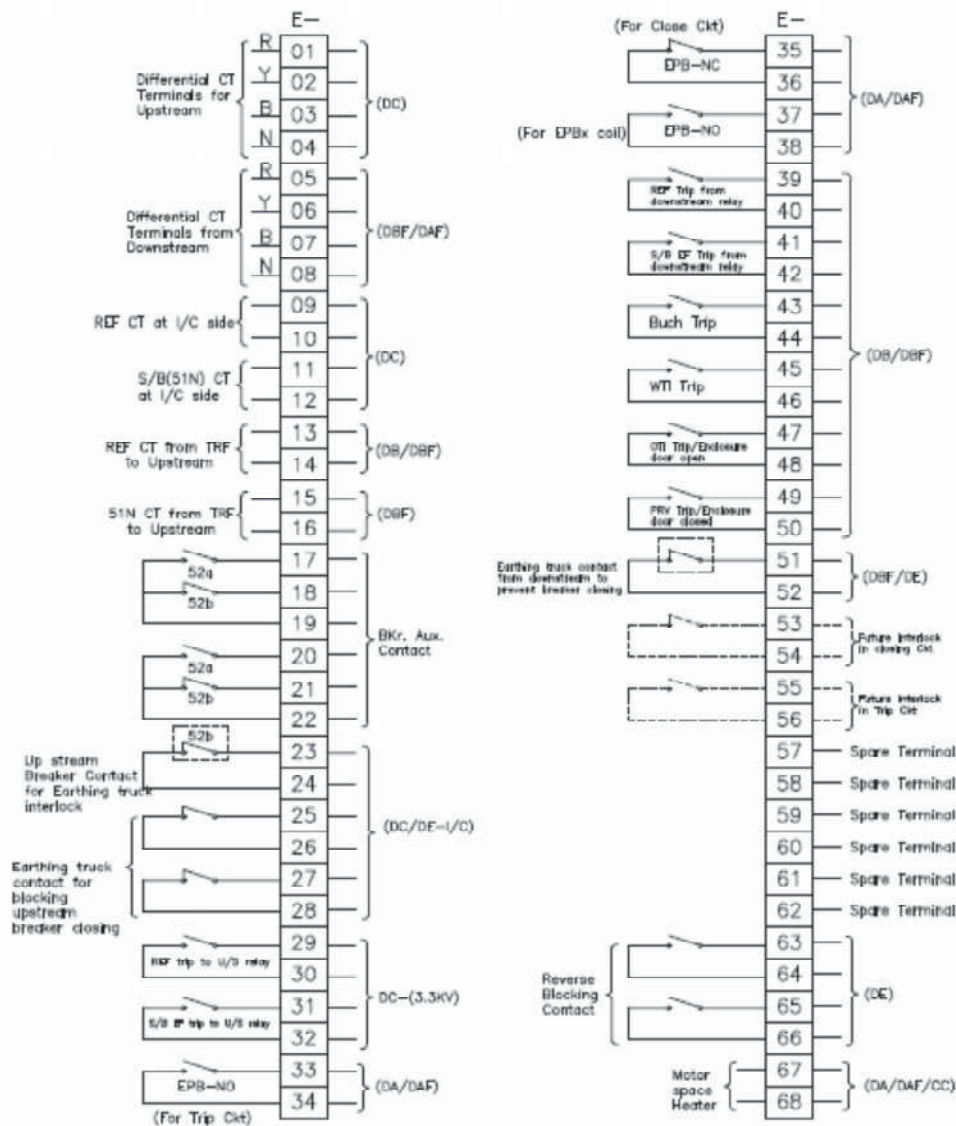
- 52a & 52b shown above are breaker aux. contacts when breaker is in Service position.
- If any signal (except 52a & 52b signals @ D terminal block, future & Spare terminals marked) is not applicable for a module type, associated terminals/terminal nos. may be absent in the panel.
- If any new signal not covered in this list is required to be wired to DCS during detail engg, new terminal nos as per above philosophy shall be assigned.

FOR TENDER PURPOSE ONLY

<div style="display: flex; justify-content: space-between;"> <div> <p>एन टी पी सी</p> <p>NTPC</p> </div> <div> <p>एन टी पी सी लिमिटेड</p> <p>NTPC Limited</p> <p>(A GOVERNMENT OF INDIA ENTERPRISE)</p> </div> </div>														
<div style="display: flex; justify-content: space-between;"> <div> <p>CLEARED BY</p> <table border="1"> <tr> <td>C</td> <td>E</td> <td>M</td> <td>CM</td> <td>ES</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> </div> <div> <p>PROJECT</p> <p>STANDARD</p> </div> </div>					C	E	M	CM	ES					
C	E	M	CM	ES										
<p>TITLE STANDARD "D" TERMINALS (FOR CABLING BETWEEN SWGR & DCS) FOR MV SWGR</p>														
DRN	DGN	GRD	APPD	DATE										
-				28.06.18										
SCALE	HA	DRAWING No.	0000-205-POE-A-017											
		REV.	0											

AA 210X297

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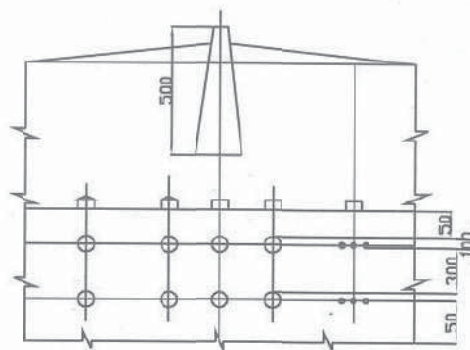
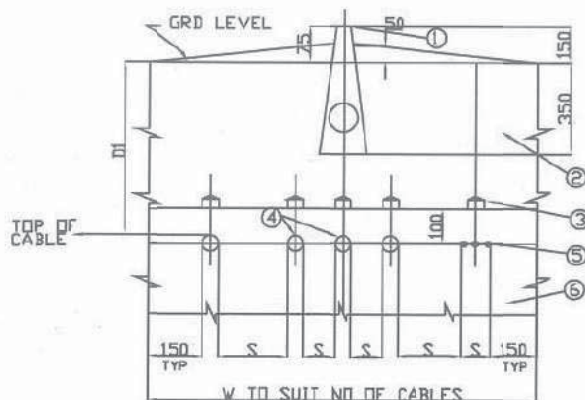


NOTES :-

1. 52a & 52b shown above are breaker aux. contacts when breaker is in Service position.
2. If any signal (except 52a & 52b signals @ D terminal block/future & Spare terminals marked) is not applicable for a module type, associated terminals/terminal nos. may be absent in the panel.
3. If any new signal not covered in this list is required to be wired to any other external equipment during detail engineering terminal nos as per above nomenclature shall be assigned.

FOR TENDER PURPOSE ONLY									
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">NTPC</div> <div style="text-align: center;"> एन टी सी लिमिटेड NTPC Limited <small>(A MEMBER OF NDA GROUP)</small> </div> </div>					<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">PROJECT</div> <div style="text-align: center;"> STANDARD </div> </div>				
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">TITLE</div> <div style="text-align: center;"> STANDARD 6" TERMINALS (FOR CABLES BETWEEN SWITCH TO MOTOR, SWITCH TO TRF & INTERLOCKED CABLES) FOR MV SWGR </div> </div>									
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">DRAWN</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">CHKD</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">APPD</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">DATE</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">SCALE</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">DRAWING No.</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">REV.</div> </div>		<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0000-205-POE-A-018</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> </div>							

	<div>BURIED CABLE</div>		



DIRECTLY BURIED CABLES IN SINGLE LAYER

DIRECTLY BURIED CABLES IN TWO LAYER

LEGEND

- ① — CABLE ROUTE MARKER
- ② — EARTH BACK FILLED & RAMMED
- ③ — PROTECTIVE COVERS
 - a) BRICKS FOR LOW VOLTAGE CABLES
 - b) RCC FOR HIGH VOLTAGE CABLES WITH HOLE AT EACH END TO TIE EACH OTHER WITH G.S. WIRE
- ④ — ARMoured POWER CABLE
- ⑤ — ARMoured CONTROL CABLE
- ⑥ — FINE SAND/RIDDLLED SOIL COMPACTED

DIMENSION MIN.	1100V GRADE CABLES	FOR 3.3 KV TO 11KV	ABOVE 11KV & UPTO 33KV
D1	750	900	1050
S	= d BETWEEN CABLES OF SAME CLASS = 300MM BETWEEN CABLES OF DEFT CLASS = 400MM BETWEEN 1/C POWER CABLE AND COMMUNICATION CABLE. = 300MM BETWEEN MULTICORE POWER CABLE & COMMUNICATION CABLE.		

d - OVERALL DIAMETER OF THE BIGGER OF THE TWO CABLES.
D1 - MINIMUM DEPTH OF LAYING FROM GROUND SURFACE TO TOP OF CABLES.

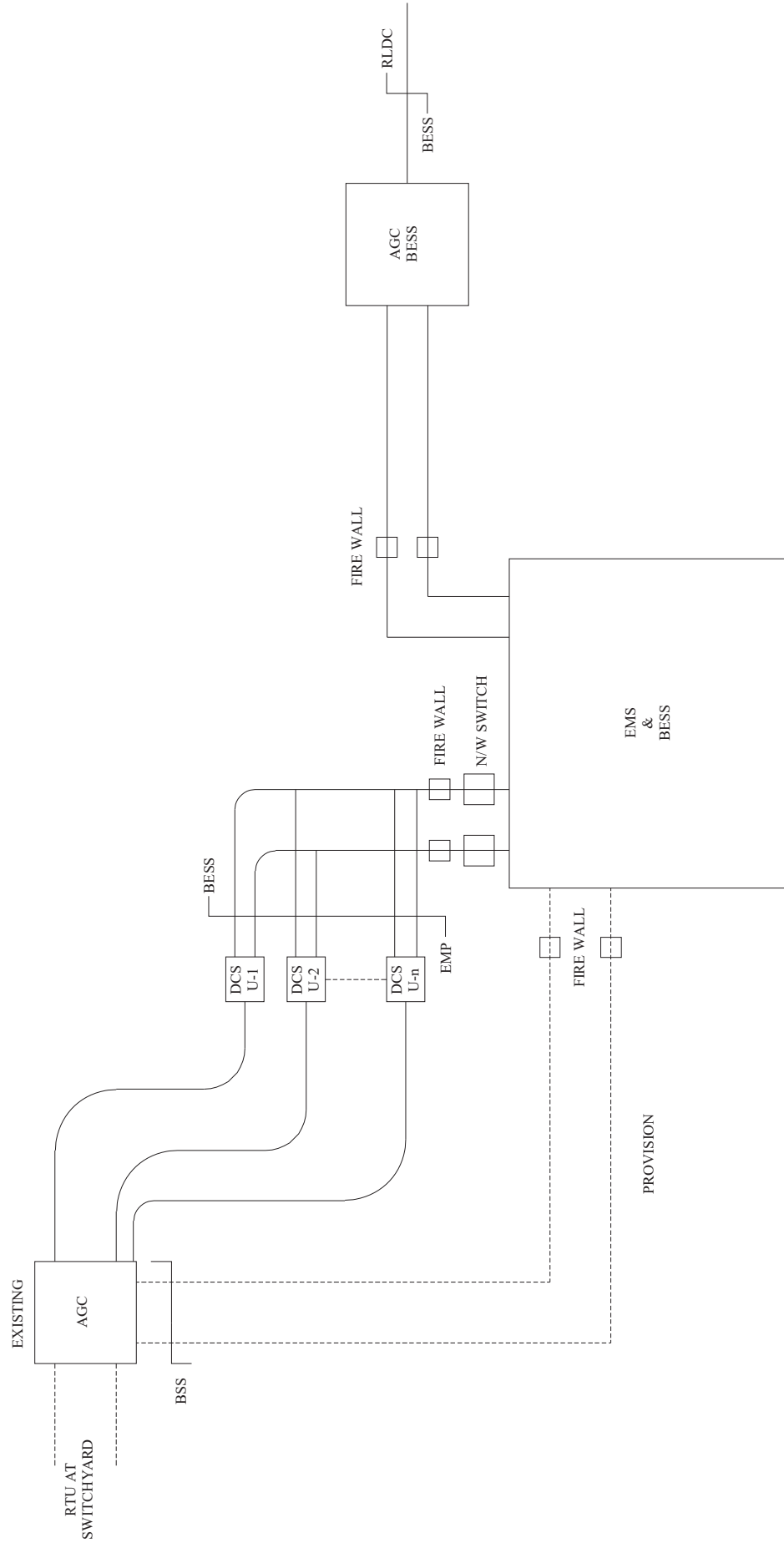
NOTE

1. SINGLE CORE CABLES SHALL BE RUN IN TREFOIL FORMATION AND SHALL BE BOUND BY SELFLOCKING CABLE TIES AT EVERY 750 MM.
2. CABLE IDENTIFICATION TAG SHALL BE TIED AT BOTH ENDS OF THE CABLE.
3. IF THE MINIMUM CLEARANCE AS INDICATED THE ABOVE TABLE FOR CABLES OF DIFFERENT CLASSES ARE NOT FEASIBLE BRICK BARRIERS SHALL BE USED BETWEEN ADJACENT CABLES
4. G.I./HUME/HDPE. PIPES SHALL BE PROVIDED FOR ROAD CROSSING AT A MINIMUM DEPTH OF 600 FROM THE GRADE LEVEL AS DECIDED BY NTPC.
5. ALL DIMENSIONS ARE IN mm

RC	FOR TENDER PURPOSE	1/3	1/3	RKG	-	W	-	-	-	AS	05.07.10
RB	FOR TENDER PURPOSE	RKG	RKG	SG	-	SS	-	-	-	AS	05.11.2006
RA	FOR TENDER PURPOSE	-	-	-	-	-	-	-	-	-	17.01.2000
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD	M	E	C	C&I	ARCH	APPD	DATE
CLEARED BY											
<div style="display: flex; justify-content: space-between;"> <div> <p>NTPC LTD. (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION</p> </div> <div> <p>PROJECT</p> <p>STANDARD</p> </div> </div>											
<p>TITLE</p> <p>BURIED CABLES TRENCH FOR HT & LT CABLES</p>											
SIZE	SCALE	DRG. NO.								REV. NO.	
A4	NTS	0000-211-POE-A-050								RC	

	<div>TYPICAL INTERFACE OF BESS WITH EXISTING SYSTEM</div>		

TYPICAL INTERFACE OF BESS WITH EXISTING SYSTEM



NOTES:-

1. TERMINAL POINT FOR DCS CONNECTIVITY SHALL BE EMPLOYER'S DCS/EXISTING AGC SWITCH/CONTROL PANEL.
2. ONE OWS OF EMS SYSTEM SHALL BE PLACED AT UNIT CCR EXACT DETAILS SHALL BE FINALIZED DURING DETAILS EGG.

TYPICAL INTER CONNECTION OF BESS WITH EXISTING SYSTEM

	<div>TYPICAL LAYOUT FOR BESS PLANT</div>		

The diagram is a detailed site plan for a solar power plant. It features a rectangular layout with a 'FENCING' line on the left and bottom. The plan is divided into several sections by 'CABLE CORRIDOR' lines. Each section contains 'TRANSFORMERS' (labeled 1, 2, 3), 'SHED FOR INVERTER' (labeled 2, 3), and 'SHED FOR TT' (labeled 2, 3). A 'SERVICE BUILDING' (labeled 4) and a '33 KV POOLING SWGR ROOM' (labeled 5) are located in the top right. A '132KV/22KV BURIED CABLE TROUGH' is shown on the right. Dimensions are provided for various areas and corridors.

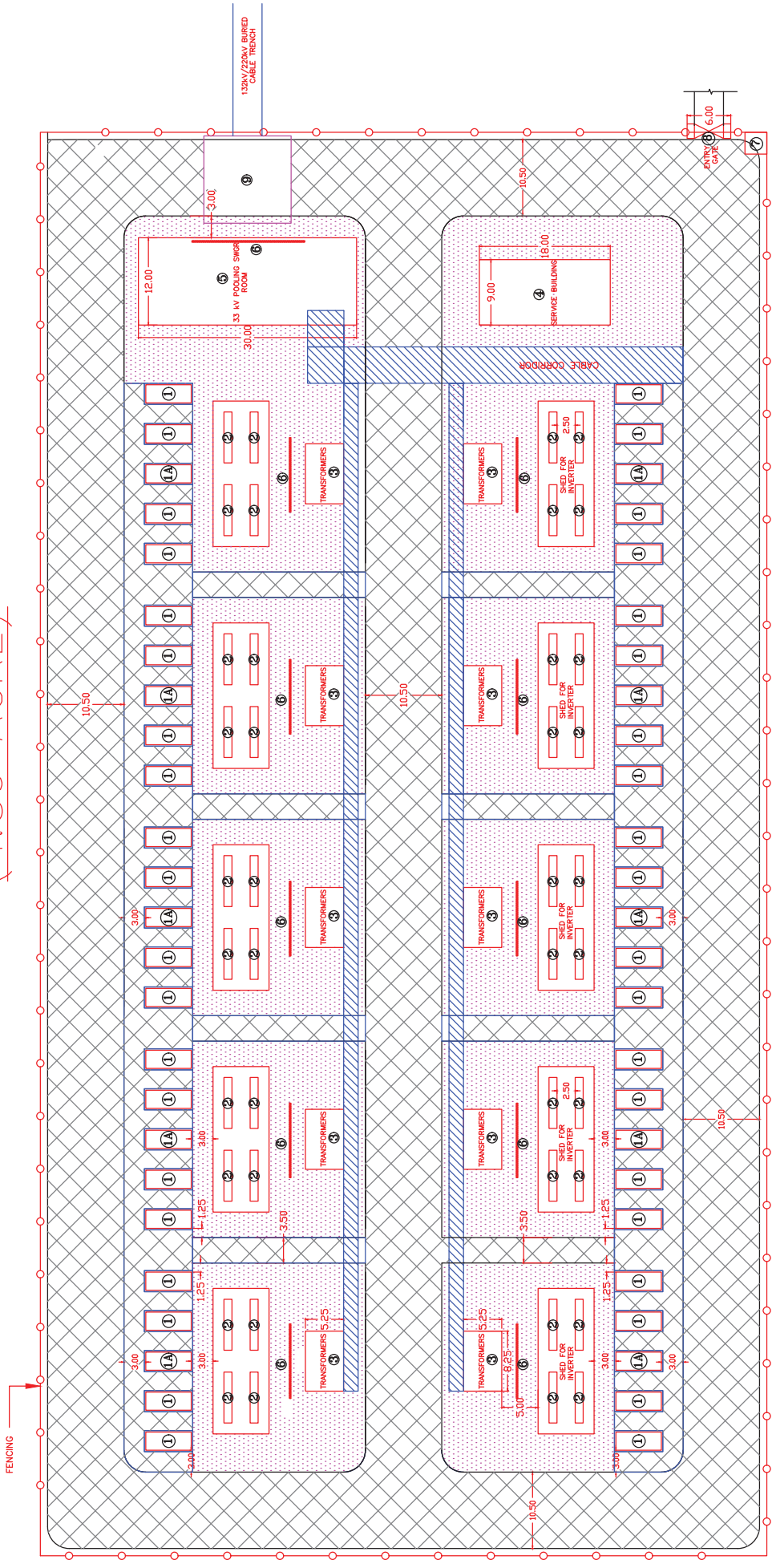
NOTES:-

1. APPROACH TO AREA IDENTIFIED FOR BESS TO BE PROVIDED FROM NEAREST EXISTING ROAD. THE CABLE ROUTE SHOWN IS INDICATIVE AND TO BE FINALIZED AS PER SITE CONDITION.
2. NIPFS IS CONSIDERED FOR FIRE PROTECTION OF INVERTER TRF & BESS TIE TRF.
3. FIRE WALL TYPICAL IS SHOWN, DETAILS WILL BE SITE SPECIFIC.
4. ONE (1) 33 kV POOLING SWGR ROOM PER BLOCK UPTO 240 MW/480 MWh.
5. FINISHED FLOOR LEVELS / TOP OF FOUNDATION / TOP OF RAIL WILL BE 500MM (MINIMUM) ABOVE THE FINISHED GROUND LEVEL.

	HEAVY DUTY PAVING FOR VEHICULAR MOVEMENT	6133 SQM
1.	LIGHT DUTY PAVING	2806 SQM
3.	CABLE CORRIDOR	

FOR TENDER PROPOSE

TYPICAL LAYOUT FOR BESS PLANT (100 MW, 200 MWh)
(4.80 ACRE)



- NOTES:-**
- 1. APPROACH TO AREA IDENTIFIED FOR BESS TO BE PROVIDED FROM NEAREST EXISTING ROAD.
 - 2. THE CABLE ROUTE SHOWN IS INDICATIVE AND TO BE FINALIZED AS PER SITE CONDITION.
 - 3. NIPPS IS CONSIDERED FOR FIRE PROTECTION OF INVERTER TRF & BESS TIE TRF.
 - 4. FIRE WALL TYPICAL IS SHOWN, DETAILS WILL BE SITE SPECIFIC.
 - 5. ONE (1) 33 kV POOLING SWGR ROOM PER BLOCK UPTO 240 MW/480 MWh.
 - 6. FINISHED FLOOR LEVELS / TOP OF FOUNDATION / TOP OF RAIL WILL BE 500MM (MINIMUM) ABOVE THE FINISHED GROUND LEVEL.

- LEGEND:**
- 1. HEAVY DUTY PAVING FOR VEHICULAR MOVEMENT - 8165 SQM
 - 2. LIGHT DUTY PAVING - 5641 SQM
 - 3. CABLE CORRIDOR

BATTERY	
1	CONTAINER(20X8 FEET) (2.5MW/5MWh)
1A	ADDITIONAL CONTAINER
3	INVERTER (PCS)
3	TRANSFORMERS
4	SERVICE BUILDING
5	33 kV POOLING SWGR ROOM
6	FIRE WALL
7	SECURITY CABIN
8	ENTRY GATE
9	BESS TIE TRANSFORMER

	<div>TECHNICAL DATA SHEET</div>		

TECHNICAL DATA SHEET		
A. BATTERY ENERGY STORAGE SYSTEM (BESS)		
SN	Parameters	
1	Battery Technology	
2	BESS Footprint (Sq.m)	
3	Useful energy capacity (available at Point of Interconnection) at rated DoD as per battery design over entire design life of 12 years (Year wise useful capacity shall be provided in the datasheet)	
4	Rated AC power at Point of Interconnection	
5	Gross BESS capacity	
6	Depth of Discharge	
7	Design Life/Cycle Life	
8	Battery Round Trip ac-dc-ac efficiency at metering point	
9	Response time	
10	Charging/ discharge Rate	
11	Minimum Battery Protection Features of Module and BMS	
12	Minimum metering and monitoring of module/tray BMS	
13	Minimum metering and monitoring functions of BMS	
14	Data Communication	
15	Ventilation System inside the Container	
16	Power Factor range at POI/metering point (minimum)	
B. INVERTER		
SN	Parameters	
1	Maximum Input Voltage DC	
2	Nominal output voltage frequency	
3	Continuous operating frequency range	
4	AC Voltage Range	
5	Euro efficiency	
6	Number of MPPT	
7	Operating power factor range	
8	Current harmonics	
9	Current THD value	
10	Operating ambient temperature	
11	Humidity	
12	PCU designed DC fault current level	
13	PCU designed AC fault current level	
14	Whether following functions/protections provided in PCU: (YES/NO)	
	Shut Down on Over Voltage both at input & output Automatic,	
	Automatic protection against over Frequency,	
	Automatic protection against Surge voltage induced at output due to external source,	
	Short Circuit Protection by Circuit Breaker and Electronics protection against sustained fault.	
	Automatic Protection against the lightening fault.	
	protection against DC reverse polarity in the inverter.	
	Anti-islanding protection	
	Synchronization feature	
C. INVERTER DUTY TRANSFORMER		
SN	Parameters	
1	Rating (MVA)	
2	Vector Group	