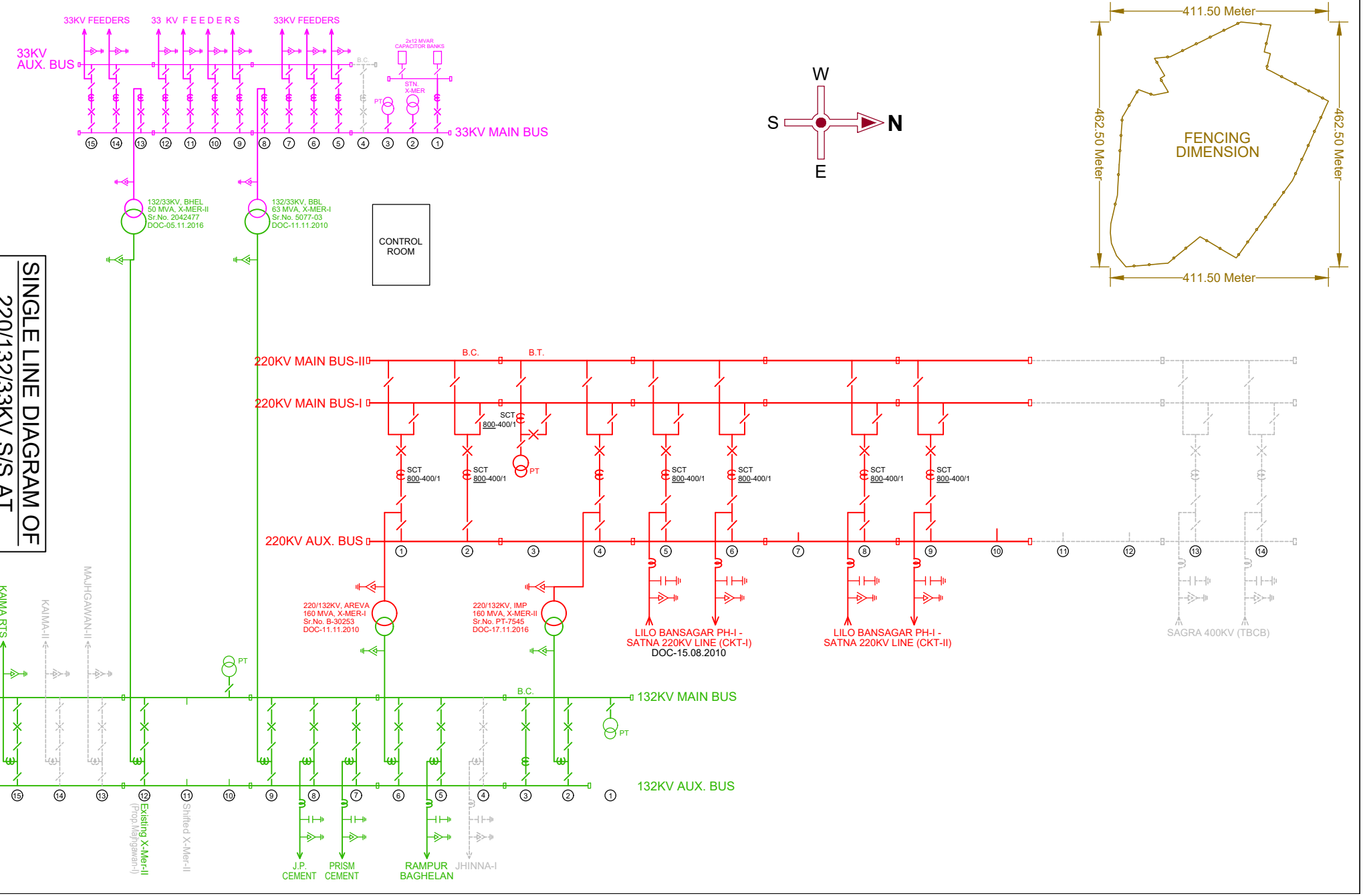
A. 220KV KOTAR SUBSTATION

CAD CELL, MPPTCL, JABALPUR

SINGLE LINE DIAGRAM OF 220/132/33KV S/S AT KOTAR (Satna)



KOTAR220kV S/s

BUS BALANCE	TotalP	TotalQ
220kV	-10.9	0.5
132kV	0.0	0.0
33kV	-0.2	10.4

SIMUL LOAD	Load P	Load Q
220kV	76.2	1.4
132kV	33.3	0.7

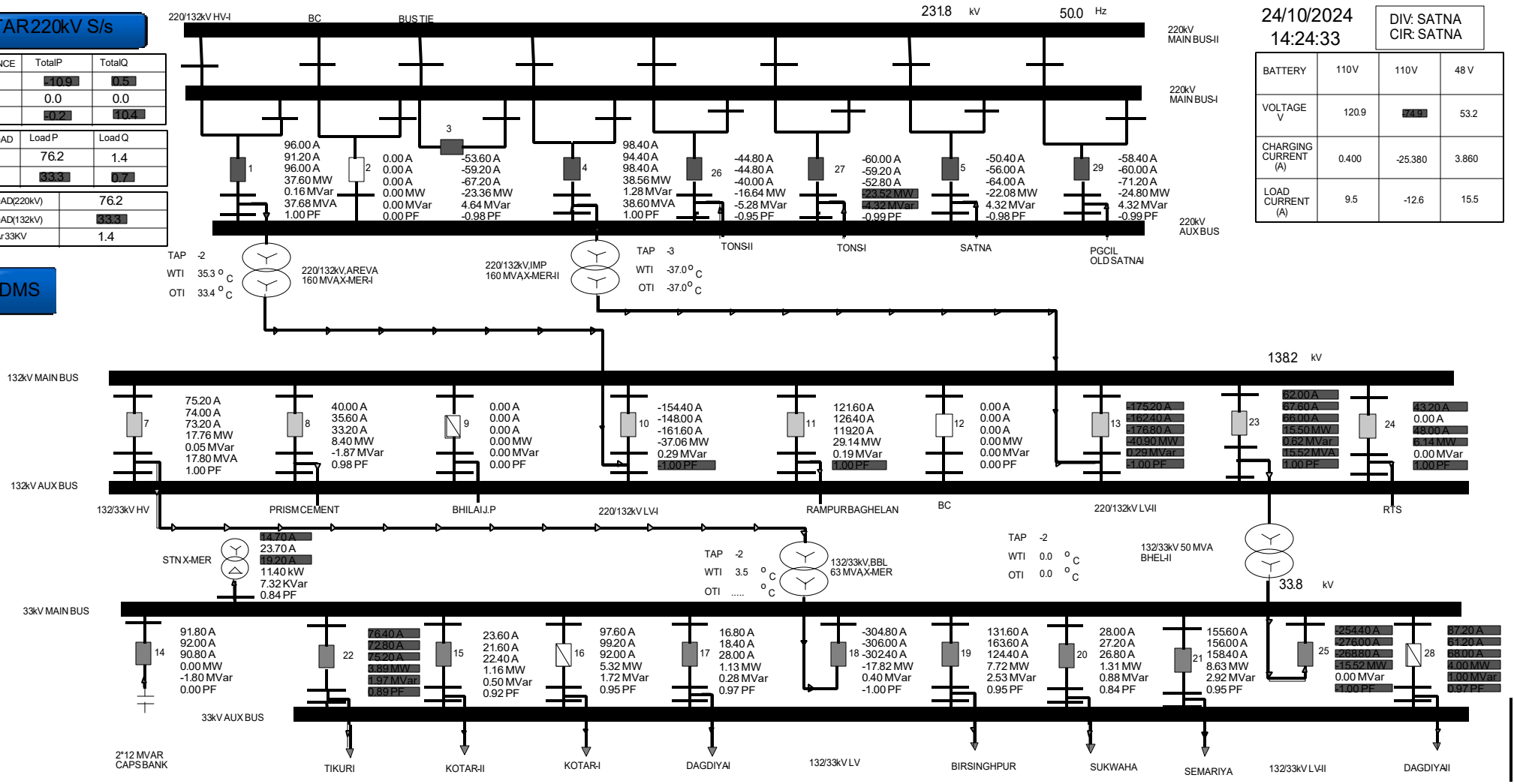
SIMUL LOAD(220kV)	76.2
SIMUL LOAD(132kV)	33.3
TotalMVAr 33KV	1.4

ADMS

24/10/2024
14:24:33

DIV: SATNA
CIR: SATNA

BATTERY	110V	110V	48 V
VOLTAGE V	120.9	74.9	53.2
CHARGING CURRENT (A)	0.400	-25.380	3.860
LOAD CURRENT (A)	9.5	-12.6	15.5



N

ENCROACHMENT

ROAD

ENCROACHMENT

400KV FEEDERS FROM---

FGC-1 FGC-2

1 2 3 4 5 6

B C X-MER FDR. FDR. X-MER B T

℄ 400 KV GANTRY & CT
℄ 400 KV TRANSFER BUS
℄ 400 KV GANTRY
℄ 400 KV ISOLATOR
℄ 400 KV C B
℄ 400 KV GANTRY
℄ 400 KV MAIN BUS - II
℄ 400 KV GANTRY
℄ 400 KV MAIN BUS - I
℄ 400 KV GANTRY
℄ 400 KV ISOLATOR
℄ 400 KV LAs
℄ X-MER
℄ 220 KV LA
℄ 400 KV GANTRY
℄ ROAD
℄ 400 KV GANTRY
℄ 220 KV MAIN BUS-I(ABM)
℄ 220 KV ISOLATOR (ITH)
℄ 220 KV PI(API)
℄ 220 KV GANT. & PI(API)
℄ 220 KV ISOLATOR (ITH)
℄ 220 KV MAIN BUS-I(ABM)
℄ 220 KV LAs
℄ 220 KV ISOLATOR (ITH)
℄ 220 KV GANT. & CT(ACT)
℄ 220 KV ISOLATOR (ITH)
℄ 220 KV AUXI. BUS(ABA)
℄ ROAD
℄ 220 LAs(ALA)
℄ 220/132 KV X-MER
℄ 220 KV GANTRY (AGT) & CVT (APT)
℄ 220KV L A (ALA)
℄ 132 KV MAIN BUS (3B04)
℄ 132 KV ISOLATOR (3D02)
℄ 132 KV C B
℄ 132 KV ISOLATOR (3D02)
℄ 132 KV GANT (3G02)&CT(3C05)
℄ 132 KV ISOLATOR (3D02)
℄ 132 KV AUXI. BUS (3B03)
℄ 132 KV GANTRY(3G02) & CC(3K02)
℄ 132 KV LAs(3L04)

℄ 33KV AUXI.BUS (3B05)
℄ 33KV ISOLATOR (3D06)
℄ 33KV GANTRY (3G03)
℄ 33KV CT (3V02)
℄ 33KV C B
℄ 33KV ISOLATOR (3D03)
℄ 33KV MAIN BUS (3B04)

℄ 132 KV GANT (3G02) & 33KV LA(3V03)
℄ 132/33 KV X-MER
℄ 132 KV LAs(3L04)
℄ 132 KV GANT (3G02)
℄ ROAD
℄ 220 LAs(ALA)
℄ 220/132 KV X-MER
℄ 132 KV LAs (3L04)
℄ 132 KV GANT (3G02) & CC(3K02)

FUTURE 315MVA X-MER-I
FUTURE 315MVA X-MER-II
FUT. 315MVA X-MER (III)
FUT. A/C EXTENSION
FUT. BATT. EXTENSION
FUT. C B EXTENSION
FUTURE BAY FOR X-MER-III
PROP. 315MVA X-MER-II
PROP. JHINNA-I FEEDER
PROP. 132KV MAJHGAWAN-I FEEDER
EXIST. X-MER-II (SHIFTED)
PROP. MAJHGAWAN-I FEEDER
EXIST. X-MER-I
OTC KAIMA-I
UT-ATS KAIMA-II
BANSAGAR-SATNA Ckt-I
BANSAGAR-SATNA CKT.-II (AGAINST ADB-III SAVING WORK)
PROP. TBCB Ckt - I & II
132KV BHLAI- 2 P CEMENT
132KV PRISM CEMENT
RAMPUR BAGHELAN
PROP. JHINNA-I
REFERANCE LINE FOR LAYOUT
REFERANCE LINE FOR LAYOUT
PROP. WORK
TOWER MOD.(45M)
400 LA
220 LA
400 LA
98.28
96.78
95.28
90.17
51.81
55.2
20.08
17.5
25.12
27.5
42.23
164.65
160.89
131.32
60 R
56.87
148.65
52.45
29.7
38.25
30
29.99
28.55
19.64
10.39
12
10
14.48
12.45
21.71
15
7.8
6.5
6.8
13.3
6.4
5.5
5.2
5.7
5.4
4.6
4.5
4.4
4.3
4.2
4.1
4.0
3.9
3.8
3.7
3.6
3.5
3.4
3.3
3.2
3.1
3.0
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1

E-TYPE CABLE TRENCH

D-TYPE CABLE TRENCH

F-TYPE CABLE TRENCH

NOTES:-

1. SIZE OF FLATS FOR EARTH MATS (IN mm)
   220 KV SWITCH YARD : 75X8 mm.
   132 KV SWITCH YARD : 75X8 mm.
   33 KV SWITCH YARD : 75X8 mm.
2. M.S. FLATS WOULD BE BURRIED BELOW THE FINISHED LEVEL OF GROUND AT A DEPTH OF 500 mmAND MAXIMUM WIDTH OF FLAT SHALL BE PARALLEL TO THE GROUND SURFACE.
3. GROUNDING EARTH RODS 25X3000mm SHALL BE DRIVEN VERTICALLY, AT INTERVALS AS SHOWN IN DRG. AND PROPERLY WELDED WITH EARTH MAT.
4. EARTH MAT SHALL BE LAID ABOUT 150 TO 200 mm AWAY FROM THE FOUNDATIONS. DETAILS OF WELDING LAP JOINTING AS GIVEN IN SKETCH DRAWING.
5. CABLE RACKS OR TRAYS SHALL BE CONNECTED TO THE NEAREST EARTH MAT AT EVERY 15 METERS APART.
6. EACH EQUIPMENT STRUCTURE SHALL BE CONNECTED TO EARTH MAT MINIMUM AT TWO POINTS.
7. DUE CARE HAS BEEN EXCERCISED TO ELIMINATE FOULING OF FOUNDATIONS FOR SWITCHYARD EQUIPMENT/APPARATUS WITH THE EARTH MAT. NONETHELESS, EE.EHT. MAY ENSURE TO AVOID SUCH A POSSIBILITY.
8. 1/2" G I PIPE LINE FOR WATER SUPPLY TO EARTHPITs SHALL BE LAID 10 CM BELOW GROUND LEVEL.
9. G.I. PIPE OF 40MM DIA.& 4MM THICK SHOULD BE USED FOR EARTH PIT. & EARTH PITS SHOULD BE FILLEDWITH B.C.SOIL
10. OVERHEAD EARTH WIRE SHOULD BE CONNECTED WITH EARTHMAT THROUGH RISER OF 50x6 mm MS FLATS.

LEGEND:-

EARTHING BUS
GROUNDING ROD
CABLE TRENCH
EARTH PIT
WATER PIPE LINE

R12:-33KV 1No. DISCOM Fdr. SHOWN AT 33KV BAY No.14 AGAINST Estt. No.0032 Dt.09-05-17 Dt.19.05.17

R13:-ADDL. 33KV 12MVAR CAP. BANK SHOWN AT BAY No.1. AGAINST Estt. No.0448, Dt.31.03.21 Dt.28.05.21

R14:-TAKE-OFF OF 132KV RTS KAIMA SHOWN AS PER PROFILE XII-LO3-7476R. EXIST. X-MER-II BAY AT BAY No.12 TO BE SHIFTED IN BAY-11., 132KV MAJHGAWAN I&II BAYS SHOWN IN BAY No.12 &13. Estt. No.0566 Dt.13-09-22. Dt.16-09-22

R15:-TAKE-OFF GANTRY OF 132KV RTS KAIMA-I (BAY No-15) AND PT-II SHOWN AT BAY No.10 (OPPOSITE SIDE). AS PER C.E.(EHT-C) JBP. U.O.No.2045,Dt.13.12.23 Dt.27-12-23

R16:-132KV JHINNA FEEDER SHOWN AT BAY No.4. AGAINST Estt. No.0653, Dt.11.01.24 Dt.05.02.24

R17:-33KV AUXI. BUS EXTN. 33KV B/C BAY SHOWN AT BAY No.4. AGAINST Estt. No.0592, Dt.27.09.24 Dt.07.10.24

R18:-PROJECT :- EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 220KV BUSES EXTN. AND 220KV TBCB-I & II FEEDER SHOWN AT BAY No.11 & 13. AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

EARTHMAT ARRANGEMENT FOR
220/132/33 KV SUB-STATION
KOTAR (SATNA)

O/O CHIEF ENGINEER (P & D)
M.P. POWER TRANSMISSION Co. Ltd.
JABALPUR

	NAME	DATE
DRN.	G.S. DUBEY	10-12-09
CKD.		
APP.		
REVISED ON		14-10-24

DRAWING NO.- XII-N08-1856 REV. R-18

N

ROAD

ENCROACHMENT

400KV FEEDERS FROM---

℄ 400 KV GANTRY & CT
℄ 400 KV TRANSFER BUS
℄ 400 KV GANTRY
℄ 400 KV ISOLATOR
℄ 400 KV C B
℄ 400 KV GANTRY
℄ 400 KV MAIN BUS - II
℄ 400 KV GANTRY
℄ 400 KV MAIN BUS - I
℄ 400 KV GANTRY
℄ 400 KV ISOLATOR
℄ 400 KV LAs
℄ X-MER
℄ 220 KV LA
℄ 400 KV GANTRY
℄ ROAD
℄ 400 KV GANTRY

FGC-1 FGC-2

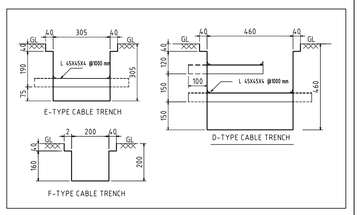
1 2 3 4 5 6
B C X-MER FDR. FDR. X-MER B T

FUTURE 315MVA X-MER-I
FUTURE 315MVA X-MER-II
400 LA
220 LA

℄ 33KV AUXI BUS (3B05)
℄ 33KV ISOLATOR (3D05)
℄ 33KV GANTRY (3G03)
℄ 33KV CT (3V02)
℄ 33KV C B
℄ 33KV ISOLATOR (3D03)
℄ 33KV MAIN BUS (3B04)
℄ 132 KV GANT (3G02) & 33KV LA (3V02)
℄ 132/33 KV X-MER
Add 50MVA X-MER-II
℄ 132 KV LAs (3L04)
℄ 132 KV GANT (3G02)
℄ ROAD
℄ 220 LAs (ALA)
℄ 220/132 KV X-MER
℄ 132 KV LAs (3L04)
℄ 132 KV GANT (3G02) & CT (3K02)

℄ 220 KV MAIN BUS-I (ABM)
℄ 220 KV ISOLATOR (ITH)
℄ 220 KV PI (API)
℄ 220 KV GANT. & PI (API)
℄ 220 KV ISOLATOR (ITH)
℄ 220 KV MAIN BUS-II (ABM)
℄ 220 KV LAs
℄ 220 KV ISOLATOR (ITH)
℄ 220 KV GANT. & CT (ACT)
℄ 220 KV ISOLATOR (ITH)
℄ 220 KV AUXI. BUS (ABA)
℄ ROAD
℄ 220 LAs (ALA)
℄ 220/132 KV X-MER
℄ 220 KV GANTRY (AGT) & CVT (APT)
℄ 220KV L A (ALA)
℄ 132 KV MAIN BUS (3B04)
℄ 132 KV ISOLATOR (3D02)
℄ 132 KV C B
℄ 132 KV ISOLATOR (3D02)
℄ 132 KV GANT (3G02) & CT (3C05)
℄ 132 KV ISOLATOR (3D02)
℄ 132 KV AUXI. BUS (3B03)
℄ 132 KV GANTRY (3G02) & CC (3K02)
℄ 132 KV LAs (3L04)

REFERANCE LINE FOR LAYOUT
PROP. WORK
FUTURE ROAD FOR X-MER-II
FUT. A/C/C EXTENSION
FUT. BATT. EXTENSION
FUT. C B EXTENSION
PROP. 50MVA X-MER-II
PROP. 160MVA X-MER-I
PROP. 315MVA X-MER-I
FUT. 315MVA X-MER-II
BANSAGAR-SATNA CKT.-I
BANSAGAR-SATNA CKT.-II (AGAINST ADB-III SAVING WORK)
PROP. TBCB CKT - I & II
RTS KAIMA-I
FUT. RTS KAIMA-II
PROP. MAJH-GAWAN-II
EXIST. X-MER-II
SHIFTED X-MER-II
PROP. MAJH-GAWAN-I
PROP. JHINNA-I
132KV BHILAI-2 P CEMENT
132KV PRISM CEMENT
RAMPUR BAGHELAN
TOWER (MC60.5M)



NOTES

1. ALL CABLE TRENCHES SHOULD BE CONSTRUCTED IN SUCH A WAY THAT THERE WILL NOT BE WATER LOGGING IN THE TRENCHES. ALSO DEPENDING UP ON THE CONTOUR & GRADIANT OF THE YARD AS PER ACTUAL SITE CONDITIONS.
2. ORIENTATION OF CONTROL ROOM BULDING SHALL BE FINALIZED IN CONSULTATION WITH SE(T&C)&SE EHT (C&M).
3. LOCATION OF CABLE TRENCH (F-TYPE) FOR X-MER SHALL BE FINALISED AS PER APPROVED G.A. DRG. OF X-MER & IN CONSULTATION WITH S.E. (T&C).
4. FOUNDATION WORK OF 132 KV CC SHALL BE TAKEN UP IN CONSULTATION WITH E.E.(COMM.) TO ENSURE CORRECT PHASE - MATCHING WITH OTHER END.

R12:-33KV 1No. DISCOM Fdr. SHOWN AT 33KV BAY No.14 AGAINST Estt. No.0032 Dt.09-05-17 Dt.19.05.17

R13:-ADDL. 33KV 12MVAR CAP. BANK SHOWN AT BAY No.1. AGAINST Estt. No.0448, Dt.31.03.21 Dt.28.05.21

R14:-TAKE-OFF OF 132KV RTS KAIMA SHOWN AS PER PROFILE XII-LO3-7476R. EXIST. X-MER-II BAY AT BAY No.12 TO BE SHIFTED IN BAY-11., 132KV MAJHGAWAN I&II BAYS SHOWN IN BAY No.12 &13. Estt. No.0566 Dt.13-09-22. Dt.16-09-22

R15:-TAKE-OFF GANTRY OF 132KV RTS KAIMA-I (BAY No-15) AND PT-II SHOWN AT BAY No.10 (OPPOSITE SIDE). AS PER C.E.(EHT-C) JBP. U.O.No.2045,Dt.13.12.23 Dt.27-12-23

R16:-132KV JHINNA FEEDER SHOWN AT BAY No.4. AGAINST Estt. No.0653, Dt.11.01.24 Dt.05.02.24

R17:-33KV AUXI. BUS EXTN. 33KV B/C BAY SHOWN AT BAY No.4. AGAINST Estt. No.0592, Dt.27.09.24 Dt.07.10.24

R18:-PROJECT :- EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 220KV BUSES EXTN. AND 220KV TBCB-I & II FEEDER SHOWN AT BAY No.11 & 13. AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

FDN. PLAN & CABLE-TRENCHES OF 220/132/33 KV SUB-STATION

KOTAR (SATNA)

O/O CHIEF ENGINEER (P & D)
M.P. POWER TRANSMISSION Co. Ltd.
JABALPUR

	NAME	DATE
DRN.	G.S. DUBEY	10-12-09
CKD.		
APP.		
REVISED ON		14-10-24

DRAWING NO.- XII-N08-1855

REV. R-18

N

400KV FEEDERS FROM---

ROAD

ENCROACHMENT

ENCROACHMENT

FUT. C R EXTENSION

FUT. BAY EXTENSION

FUT. A/C/C EXTENSION

FUTURE ROAD FOR X-MER-II

REFERANCE LINE FOR LAYOUT

PROP. WORK

FUTURE 315MVA X-MER-I

FUTURE 315MVA X-MER-II

FUT. 315MVA X-MER I/C

FUT. 315MVA X-MER I/C

PROP 160MVA X-MER-II

PROP 160MVA X-MER-I

PROP. TBCB Ckt - I & II

BANSAGAR-SATNA Ckt-I

BANSAGAR-SATNA CKT.-II (AGAINST ADD-III SAVING WORK)

RAMPUR BAGHELAN

PROP JHINNA-I

132KV PRISM CEMENT

RTS KAIMA-I

FUT.RTS KAIMA-II

PROP MAJH-GAWAN-II

EXIST X-MER-II

PROP MAJH-GAWAN-I

SHIFTED X-MER-II

℄	400 KV GANTRY & CT
℄	400 KV TRANSFER BUS
℄	400 KV GANTRY
℄	400 KV ISOLATOR
℄	400 KV C B
℄	400 KV GANTRY
℄	400 KV MAIN BUS - II
℄	400 KV GANTRY
℄	400 KV MAIN BUS - I
℄	400 KV GANTRY
℄	400 KV ISOLATOR
℄	400 KV LAs
℄	X-MER
℄	220 KV LA
℄	400 KV GANTRY
℄	ROAD
℄	220 KV MAIN BUS-II (ABM)
℄	220 KV ISOLATOR (ITH)
℄	220 KV P(AP)
℄	220 KV GANT. & P(AP)
℄	220 KV ISOLATOR (ITH)
℄	220 KV MAIN BUS-I (ABM)
℄	220 KV LAs
℄	220 KV ISOLATOR (ITH)
℄	220 KV GANT. & CT(ACT)
℄	220 KV ISOLATOR (ITH)
℄	220 KV AUXI. BUS(ABA)
℄	ROAD
℄	220 LAs(ALA)
℄	220/132 KV X-MER
℄	220 KV GANTRY (AGT) & CVT (APT)
℄	220KV L A (ALA)
℄	132 KV MAIN BUS (3B04)
℄	132 KV ISOLATOR (3D02)
℄	132 KV C B
℄	132 KV ISOLATOR (3D02)
℄	132 KV GANT (3G02)&CT(3C05)
℄	132 KV ISOLATOR (3D02)
℄	132 KV AUXI. BUS (3B03)
℄	132 KV GANTRY(3G02) & CC(3K02)
℄	132 KV LAs(3L04)

℄	33KV AUXI.BUS (3B05)
℄	33KV ISOLATOR (3D05)
℄	33KV GANTRY (3G03)
℄	33KV CT (3V02)
℄	33KV C B
℄	33KV ISOLATOR (3D03)
℄	33KV MAIN BUS (3B04)
℄	132 KV GANT (3G02) & 33KV (A1VV02)
℄	132/33 KV X-MER
℄	132 KV LAs(3L04)
℄	132 KV GANT (3G02)

℄	ROAD
℄	220 LAs(ALA)
℄	220/132 KV X-MER
℄	132 KV LAs (3L04)
℄	132 KV GANT (3G02) & CC(3K02)

NOTES

1. THE MAIN BUSES OF 220, 132 & 33 KV SHOULD BE STRUNG WITH TWIN ZEBRA ACSR CONDUCTOR (JOINTLESS).
2. AUXI. BUSES OF 220, 132 & 33 KV SHOULD BE STRUNG WITH SINGLE ZEBRA ACSR CONDUCTOR (JOINTLESS) .
3. THE STRINGING OVER HEAD CONDUCTOR BETWEEN GANTRY TO GANTRY , DROP OUT AND ALL JUMPERS FOR INTER-CONNECTING SWITCH YARD EQUIPMENTS SHALL BE SINGLE ZEBRA ACSR CONDUCTOR EXCEPT FOR X-MER BAYS & ALL MAIN BUS ISOLATORS.
4. ALL MAIN BUS ISOLATORS INTERCONNECTION SHALL BE WITH TWIN ZEBRA .
5. THE LV SIDE OF X-MER BAYS, STRINGING/ JUMPERING & INTERCONNECTION OF EQUIPMENTS UP TO MAIN BUS SHALL BE WITH TWIN ZEBRA ACSR. JUMPERING OF MAIN BUS TO ALL ISOLATORS (OF MAIN BUS SIDE) SHALL BE WITH TWIN ZEBRA ACSR CONDUCTOR.
6. 220 KV WAVE TRAP (1250 Amp.) IN R & B PHASES SHALL BE SUSPENDED AT A DISTANCE OF 4.5M FROM CENTRE OF BEAM.

R12:-33KV 1No. DISCOM Fdr. SHOWN AT 33KV BAY No.14 AGAINST Estt. No.0032 Dt.09-05-17 Dt.19.05.17

R13:-ADDL. 33KV 12MVAR CAP. BANK SHOWN AT BAY No.1. AGAINST Estt. No.0448, Dt.31.03.21 Dt.28.05.21

R14:-TAKE-OFF OF 132KV RTS KAIMA SHOWN AS PER PROFILE XII-LO3-7476R. EXIST. X-MER-II BAY AT BAY No.12 TO BE SHIFTED IN BAY-11., 132KV MAJHGAWAN I&II BAYS SHOWN IN BAY No.12 &13. Estt. No.0566 Dt.13-09-22. Dt.16-09-22

R15:-TAKE-OFF GANTRY OF 132KV RTS KAIMA-I (BAY No-15) AND PT-II SHOWN AT BAY No.10 (OPPOSITE SIDE). AS PER C.E.(EHT-C) JBP. U.O.No.2045,Dt.13.12.23 Dt.27-12-23

R16:-132KV JHINNA FEEDER SHOWN AT BAY No.4. AGAINST Estt. No.0653, Dt.11.01.24 Dt.05.02.24

R17:-33KV AUXI. BUS EXTN. 33KV B/C BAY SHOWN AT BAY No.4. AGAINST Estt. No.0592, Dt.27.09.24 Dt.07.10.24

R18:-PROJECT :- EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 220KV BUSES EXTN. AND 220KV TBCB-I & II FEEDER SHOWN AT BAY No.11 & 13. AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

PLAN AND ELEVATION OF 220/132/33 KV SUB-STATION

KOTAR (SATNA)

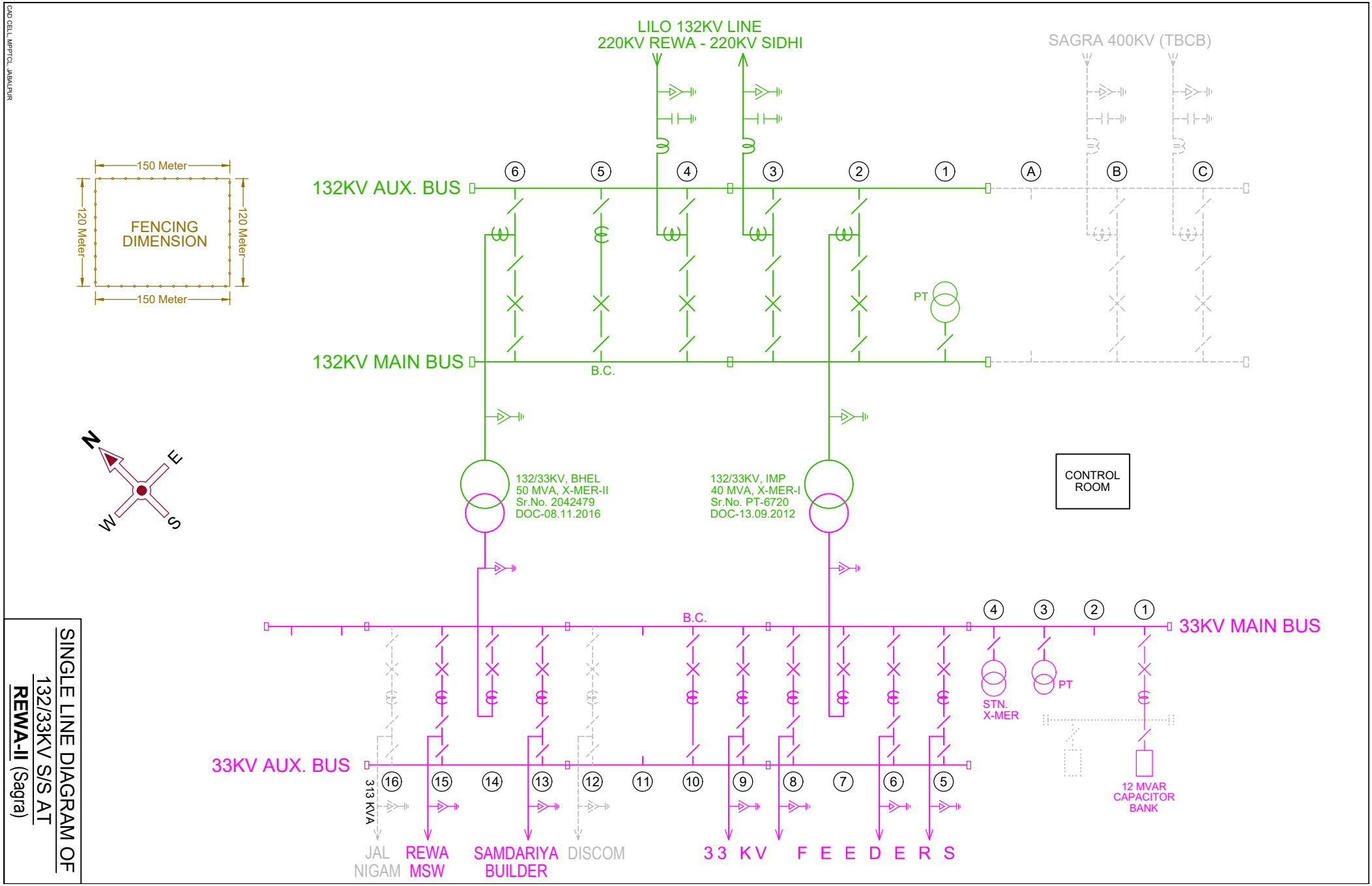
O/O CHIEF ENGINEER (P & D)
M.P. POWER TRANSMISSION Co. Ltd.
JABALPUR

	NAME	DATE
DRN.	G.S. DUBEY	10-12-09
CKD.		
APP.		
REVISED ON		14-10-24

DRAWING NO.- XII-NO8-1854 REV. R-18

B. 132KV REWA (SAGRA) SUBSTATION

CAD CELL MPPTCL JABALPUR



SINGLE LINE DIAGRAM OF 132/33KV S/S AT **REWA-II** (Sagra)

REWA-II 132kV S/s

ADMS

24/10/2024 14:25:29

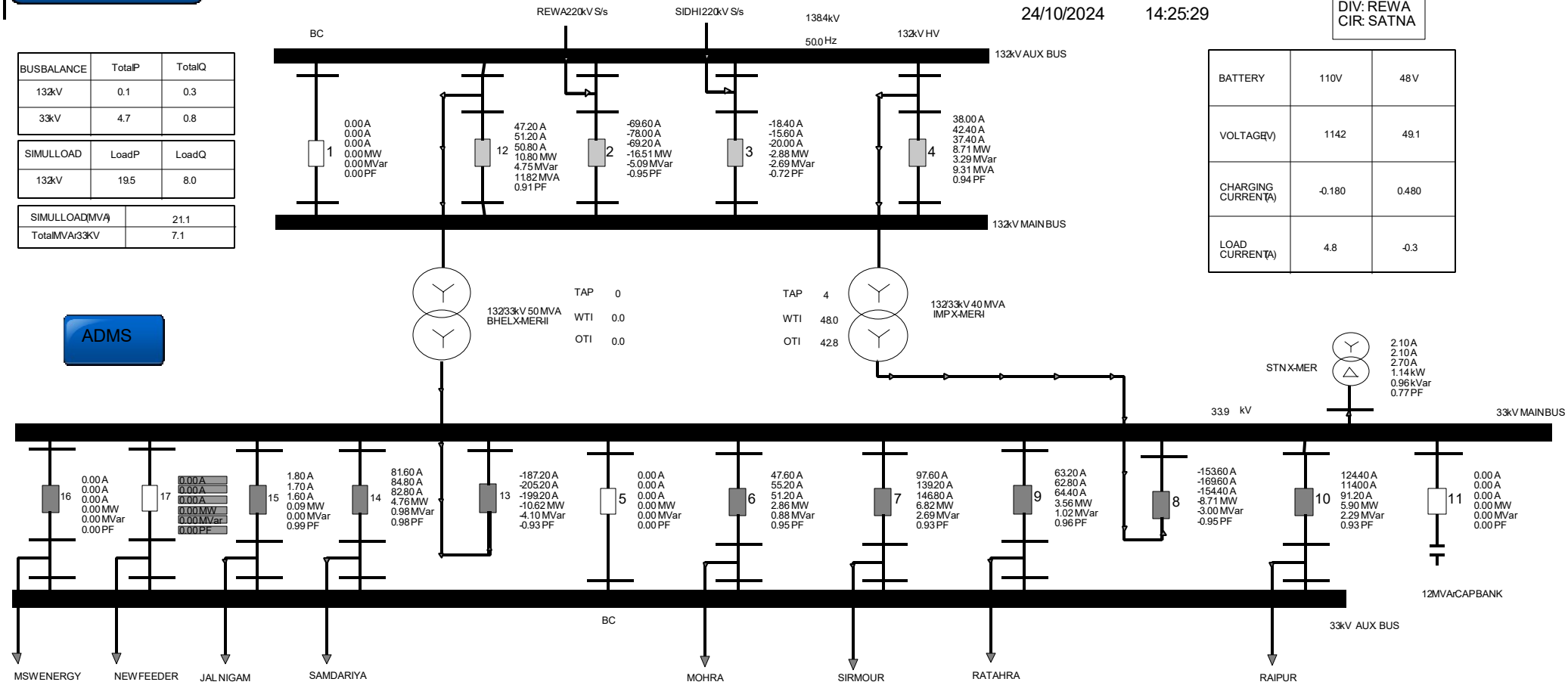
DIV: REWA
CIR: SATNA

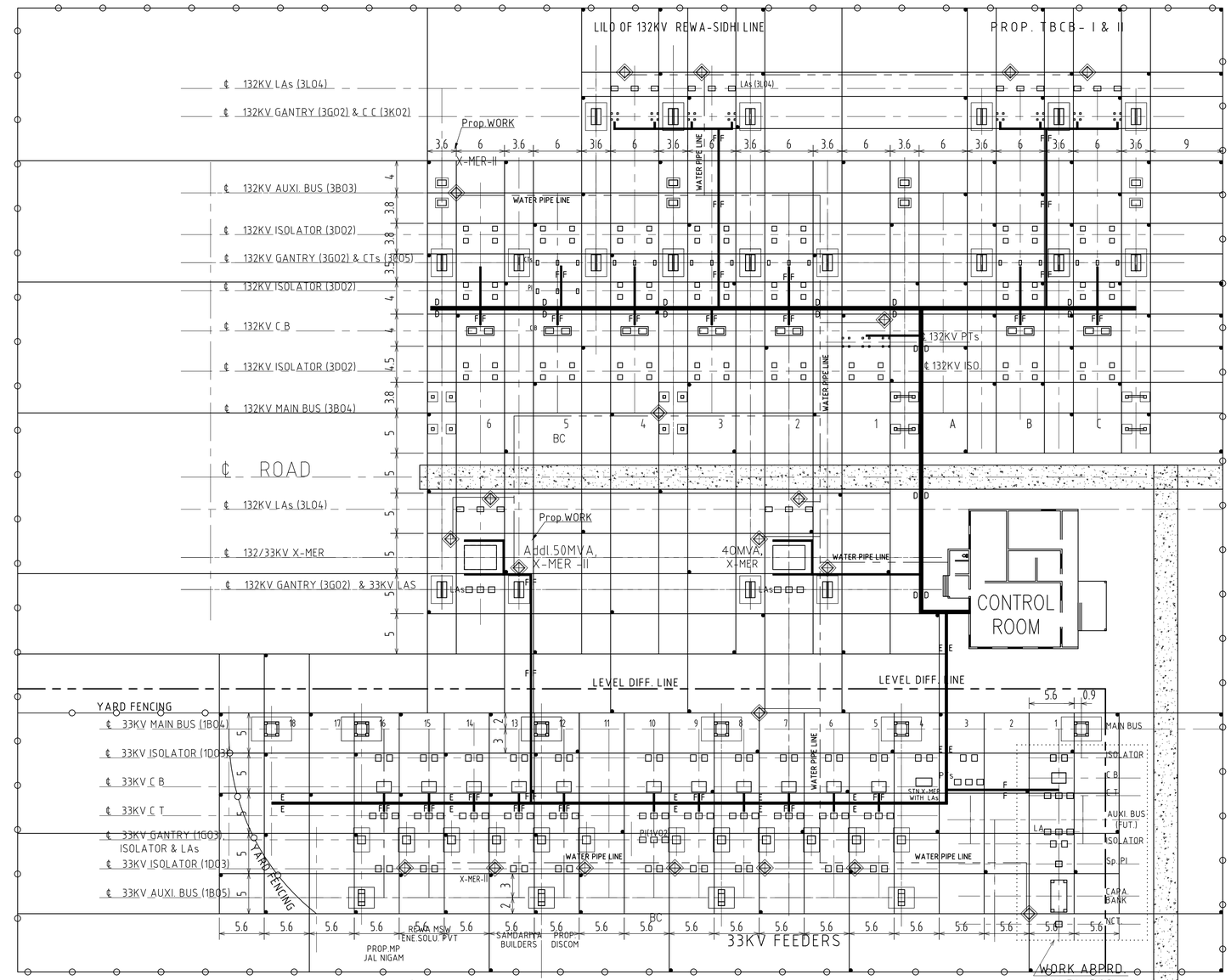
BUSBALANCE	TotalP	TotalQ
132kV	0.1	0.3
33kV	4.7	0.8

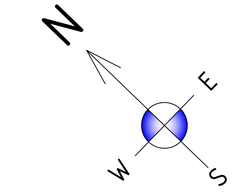
SIMULLOAD	LoadP	LoadQ
132kV	19.5	8.0

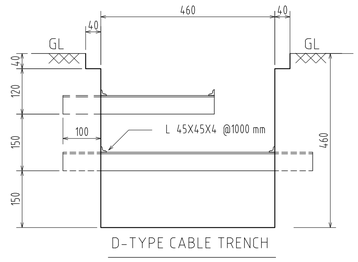
SIMULLOAD(MVA)	21.1
TotalMVAr33KV	7.1

BATTERY	110V	48V
VOLTAGE(V)	114.2	49.1
CHARGING CURRENT(A)	-0.180	0.480
LOAD CURRENT(A)	4.8	-0.3

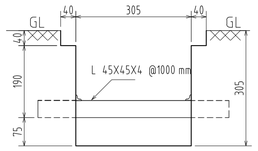




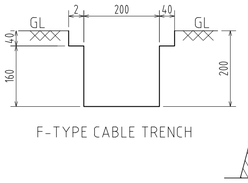




D-TYPE CABLE TRENCH



E-TYPE CABLE TRENCH



F-TYPE CABLE TRENCH

R6-33KV MAIN & AUXI. BUS EXTN. 33KV MP JAL NIGAM FDR. SHOWN AT BAY No.17. AGAINST Estt. No.0256, Dt.22.02.22 Dt.24.02.22

R7-33KV MAIN BUS EXTN. 33KV MP JAL NIGAM FDR. SHOWN AT BAY No.16. AS PER SE(T&C) Lt. No.1240,Dt. 08.03.22 Dt.08.03.22

R8-33KV DISCOM FEEDER. SHOWN AT BAY No.12. AGAINST Estt. No.0683, Dt.12.01.24 Dt.06.02.24

R9:-PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."B & C". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

NOTES:-

1. SIZE OF FLATS FOR EARTH MATS (IN mm)
   SWITCH YARD : 65X8 mm.
   RISERS : 50X6 mm.
2. M.S. FLATS WOULD BE BURRIED BELOW THE FINISHED LEVEL OF GROUND AT A DEPTH OF 500 mmAND MAXIMUM WIDTH OF FLAT SHALL BE PARALLEL TO THE GROUND SURFACE.
3. GROUNDING EARTH RODS 25X3000mm SHALL BE DRIVEN VERTICALLY, AT INTERVALS AS SHOWN IN DRG. AND PROPERLY WELDED WITH EARTH MAT .
4. EARTH MAT SHALL BE LAID ABOUT 150 TO 200 mm AWAY FROM THE FOUNDATIONS. DETAILS OF WELDING LAP JOINTING AS GIVEN IN SKETCH DRAWING .
5. CABLE RACKS OR TRAYS SHALL BE CONNECTED TO THE NEAREST EARTH MAT AT EVERY 15 METERS APART.
6. EACH EQUIPMENT STRUCTURE SHALL BE CONNECTED TO EARTH MAT MINIMUM AT TWO POINTS .
7. DUE CARE HAS BEEN EXCERCISED TO ELIMINATE FOULING OF FOUNDATIONS FOR SWITCHYARD EQUIPMENT/APPARATUS WITH THE EARTH MAT . NONETHELESS, EE.EHT. MAY ENSURE TO AVOID SUCH A POSSIBILITY.
8. 1/2" G I PIPE LINE FOR WATER SUPPLY TO EARTHPITs SHALL BE LAID 10 CM BELOW GROUND LEVEL .
9. G.I. PIPE OF 40MM DIA.& 4MM THICK SHOULD BE USED FOR EARTH PIT..
10. OVERHEAD EARTH WIRE SHOULD BE CONNECTED WITH EARTHMAT THROUGH RISER OF 50x6mm MS FLATS.

LEGEND:-
- EARTHING BUS
- GROUNDING ROD
- CABLE TRENCH
- EARTH PIT
- WATER PIPE LINE

P O N D

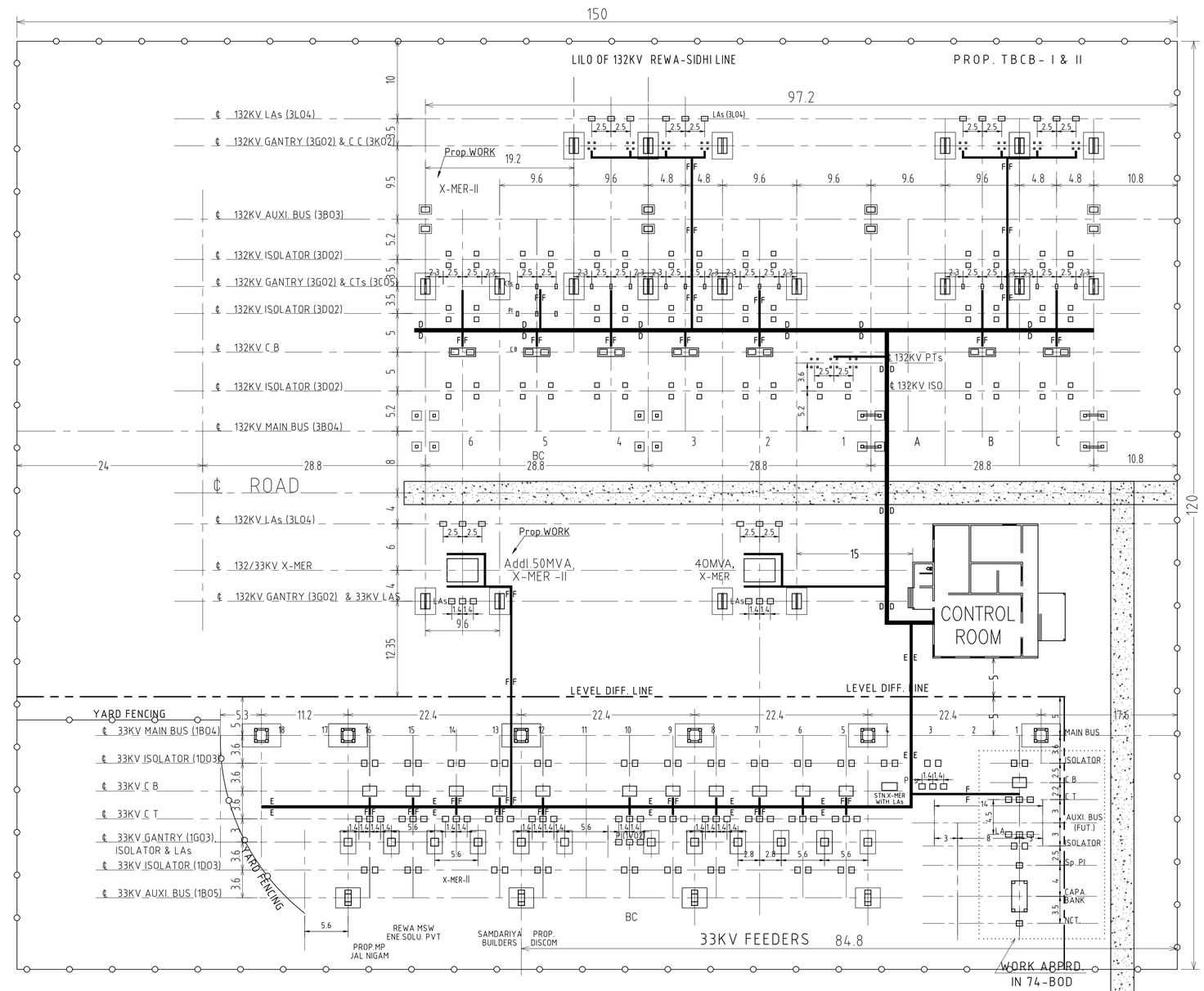
EARTHMAT ARRANGEMENT
FOR 132/33KV SUB STATION
REWA-II (SAGARA)

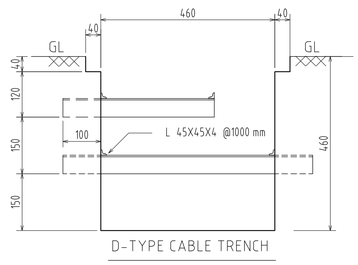
	NAME	DATE
DRN.	G S DUBEY	22-06-11
CKD.		
APP.		
REVISED ON		14-10-24

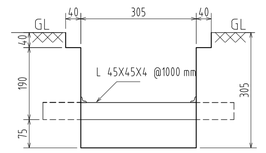
SCALE: NTS

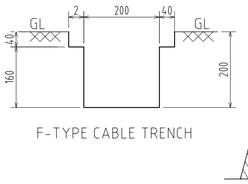
O/O THE EXECUTIVE DIRECTOR (T&P)
M.P. POWER TRANSMISSION Co. Ltd.
JABALPUR

DRAWING NO:- XII-N08-1916 REV. R9









P O N D

NOTES

1. ALL CABLE TRENCHES SHOULD BE CONSTRUCTED IN SUCH A WAY THAT THERE WILL NOT BE WATER LOGGING IN THE TRENCHES. ALSO DEPENDING UP ON THE CONTOUR & GRADIANT OF THE YARD AS PER ACTUAL SITE CONDITIONS.
2. ORIENTATION OF CONTROL ROOM BULDING SHALL BE FINALIZED IN CONSULTATION WITH SE(T&C)&SE EHT (C&M).
3. LOCATION OF CABLE TRENCH (F-TYPE) FOR X-MER SHALL BE FINALISED AS PER APPROVED G.A. DRG. OF X-MER & IN CONSULTATION WITH S.E. (T&C).
4. FOUNDATION WORK OF 132 KV CC SHALL BE TAKEN UP IN CONSULTATION WITH E.E.(COMM.) TO ENSURE CORRECT PHASE - MATCHING WITH OTHER END.

R6-33KV MAIN & AUXI. BUS EXTN. 33KV MP JAL NIGAM FDR. SHOWN AT BAY No.17. AGAINST Estt. No.0256, Dt.22.02.22 Dt.24.02.22

R7-33KV MAIN BUS EXTN. 33KV MP JAL NIGAM FDR. SHOWN AT BAY No.16. AS PER SE(T&C) Lt. No.1240,Dt. 08.03.22 Dt.08.03.22

R8-33KV DISCOM FEEDER. SHOWN AT BAY No.12. AGAINST Estt. No.0683, Dt.12.01.24 Dt.06.02.24

R9:-PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."B & C". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

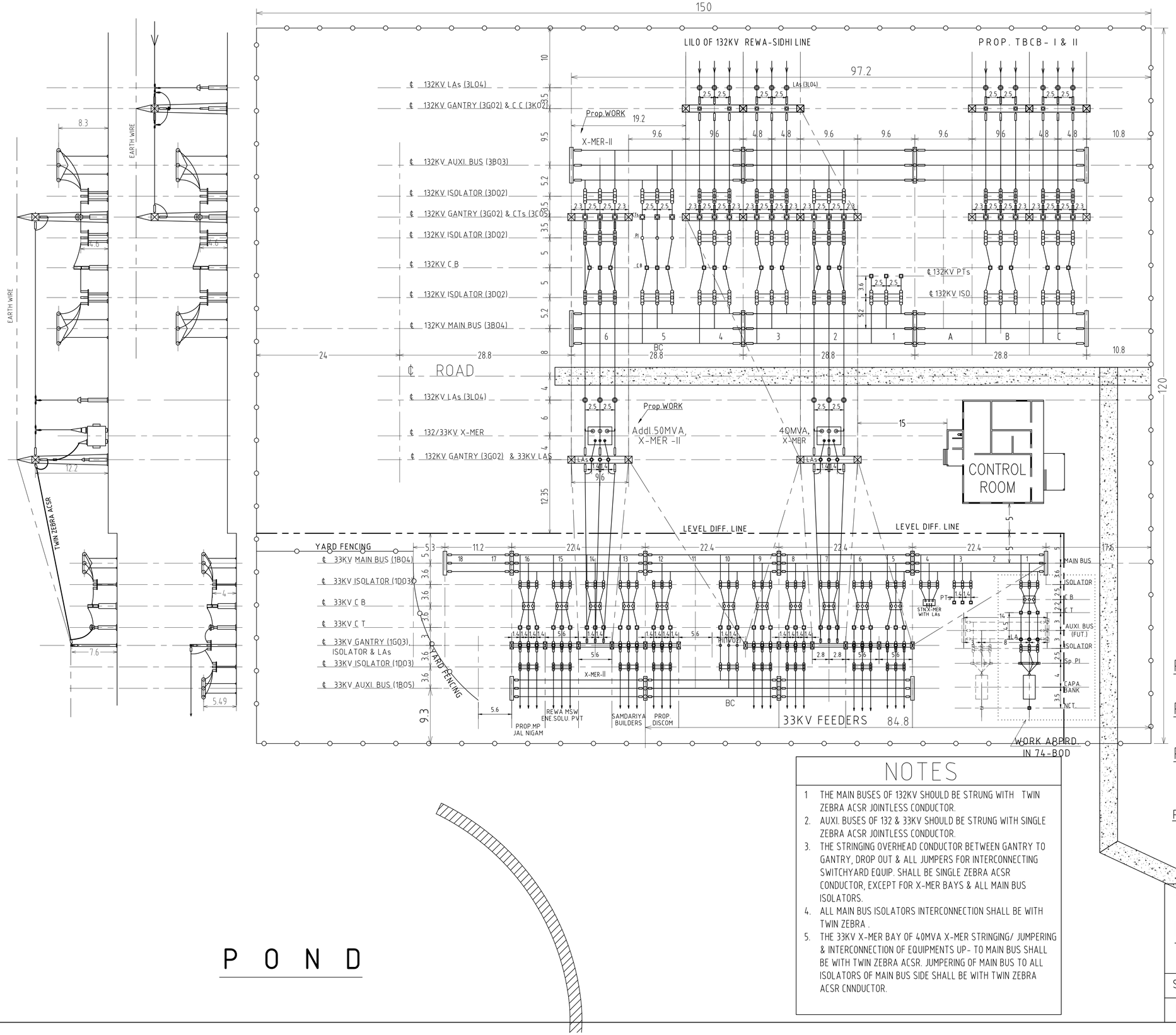
FDN. PLAN & CABLE TRENCHES FOR 132/33KV SUB STATION
REWA-II (SAGARA)

	NAME	DATE
DRN.	G S DUBEY	22-06-11
CKD.		
APP.		
REVISED ON		14-10-24

SCALE NTS

O/O THE EXECUTIVE DIRECTOR (T&P) M.P. POWER TRANSMISSION Co. Ltd. JABALPUR

DRAWING NO:- XII-N08-1915 REV. R9



NOTES

1. THE MAIN BUSES OF 132KV SHOULD BE STRUNG WITH TWIN ZEBRA ACSR JOINTLESS CONDUCTOR.
2. AUXI. BUSES OF 132 & 33KV SHOULD BE STRUNG WITH SINGLE ZEBRA ACSR JOINTLESS CONDUCTOR.
3. THE STRINGING OVERHEAD CONDUCTOR BETWEEN GANTRY TO GANTRY, DROP OUT & ALL JUMPERS FOR INTERCONNECTING SWITCHYARD EQUIP. SHALL BE SINGLE ZEBRA ACSR CONDUCTOR, EXCEPT FOR X-MER BAYS & ALL MAIN BUS ISOLATORS.
4. ALL MAIN BUS ISOLATORS INTERCONNECTION SHALL BE WITH TWIN ZEBRA .
5. THE 33KV X-MER BAY OF 40MVA X-MER STRINGING/ JUMPERING & INTERCONNECTION OF EQUIPMENTS UP- TO MAIN BUS SHALL BE WITH TWIN ZEBRA ACSR. JUMPERING OF MAIN BUS TO ALL ISOLATORS OF MAIN BUS SIDE SHALL BE WITH TWIN ZEBRA ACSR CNNDUCTOR.

R6-33KV MAIN & AUXI. BUS EXTN. 33KV MP JAL NIGAM FDR. SHOWN AT BAY No.17. AGAINST Estt. No.0256, Dt.22.02.22 Dt.24.02.22

R7-33KV MAIN BUS EXTN. 33KV MP JAL NIGAM FDR. SHOWN AT BAY No.16. AS PER SE(T&C) Lt. No.1240,Dt. 08.03.22 Dt.08.03.22

R8-33KV DISCOM FEEDER SHOWN AT BAY No.12. AGAINST Estt. No.0683, Dt.12.01.24 Dt.06.02.24

R9:-PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."B & C". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

132/33KV SUB STATION
REWA-II (SAGARA)
PLAN & ELEVATION

	NAME	DATE
DRN.	G S DUBEY	22-06-11
CKD.		
APP.		
REVISED ON		14-10-24

SCALE: NTS

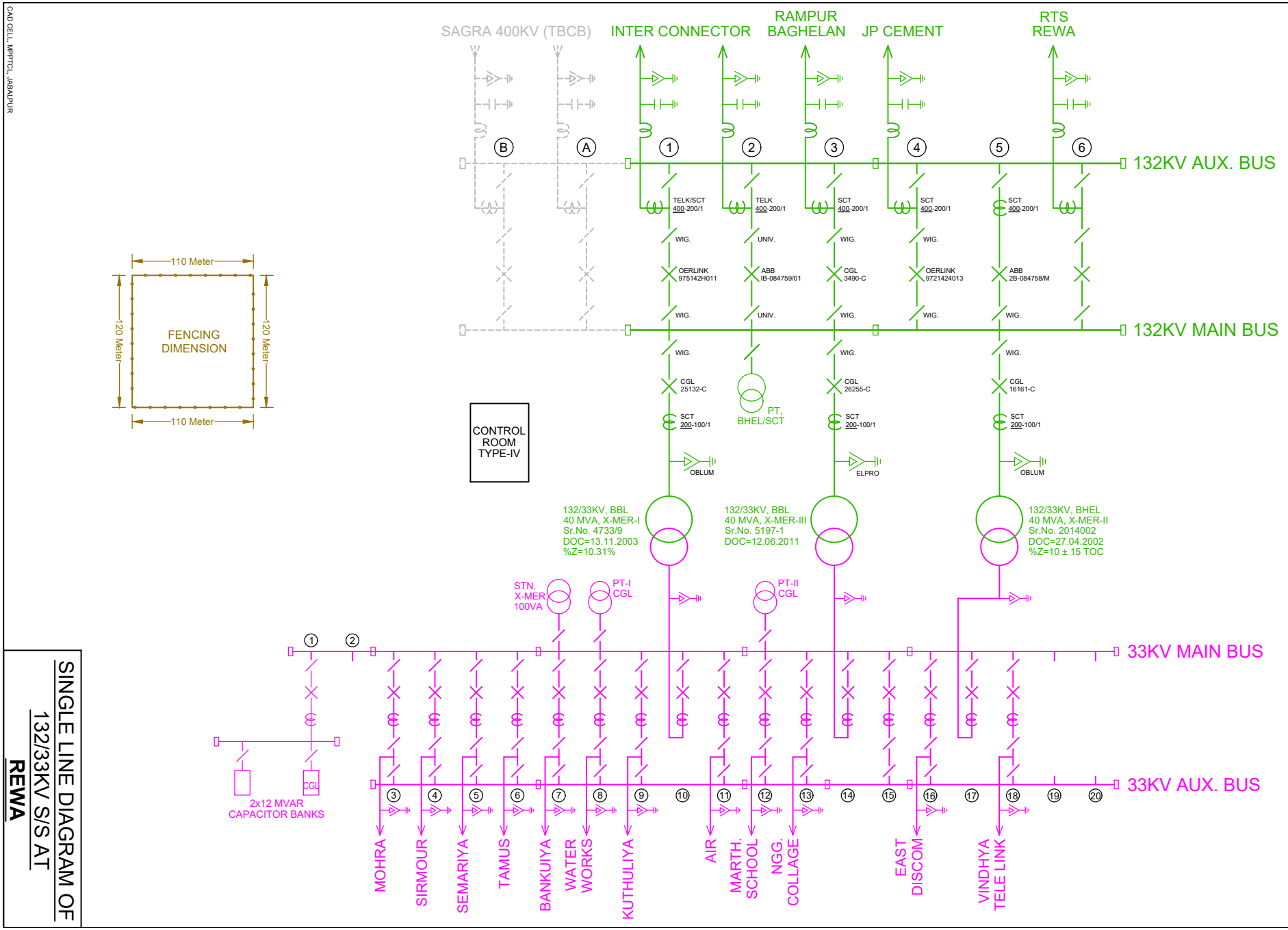
O/O THE EXECUTIVE DIRECTOR (T&P)
M.P. POWER TRANSMISSION Co. Ltd.
JABALPUR

DRAWING NO:- XII-N08-1914 REV. R9

C. 132KV REWA SUBSTATION

CAD CELL, MPPTCL, JABALPUR

SINGLE LINE DIAGRAM OF 132/33KV S/S AT **REWA**



REWA 132kV S/s

24/10/2024 14:25:09

DIV: REWA
CIR: SATNA

BUS BALANCE	TotalP	TotalQ
132kV	0.8	-2.5
33kV	-0.0	-0.1

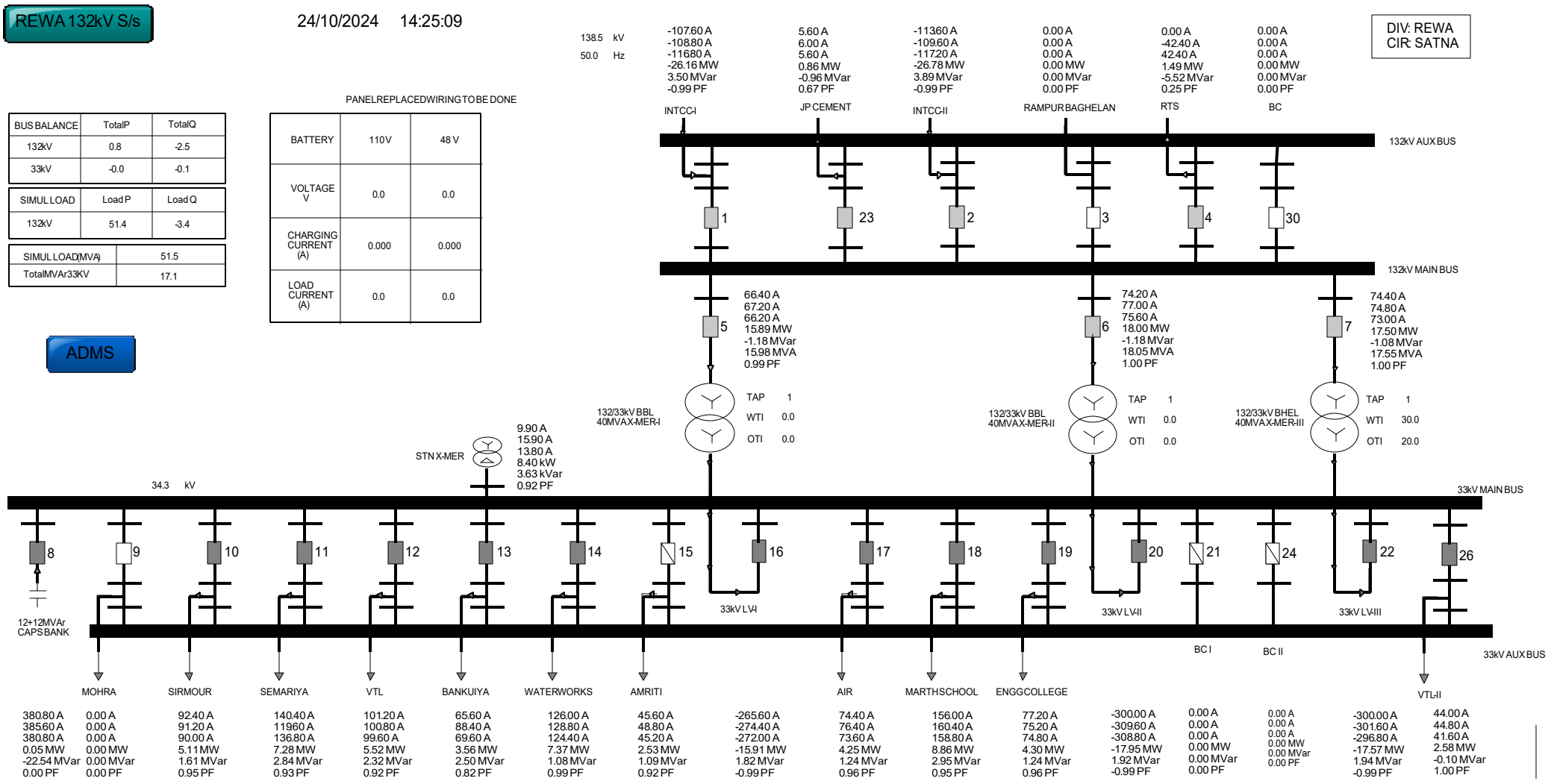
SIMUL LOAD	Load P	Load Q
132kV	51.4	-3.4

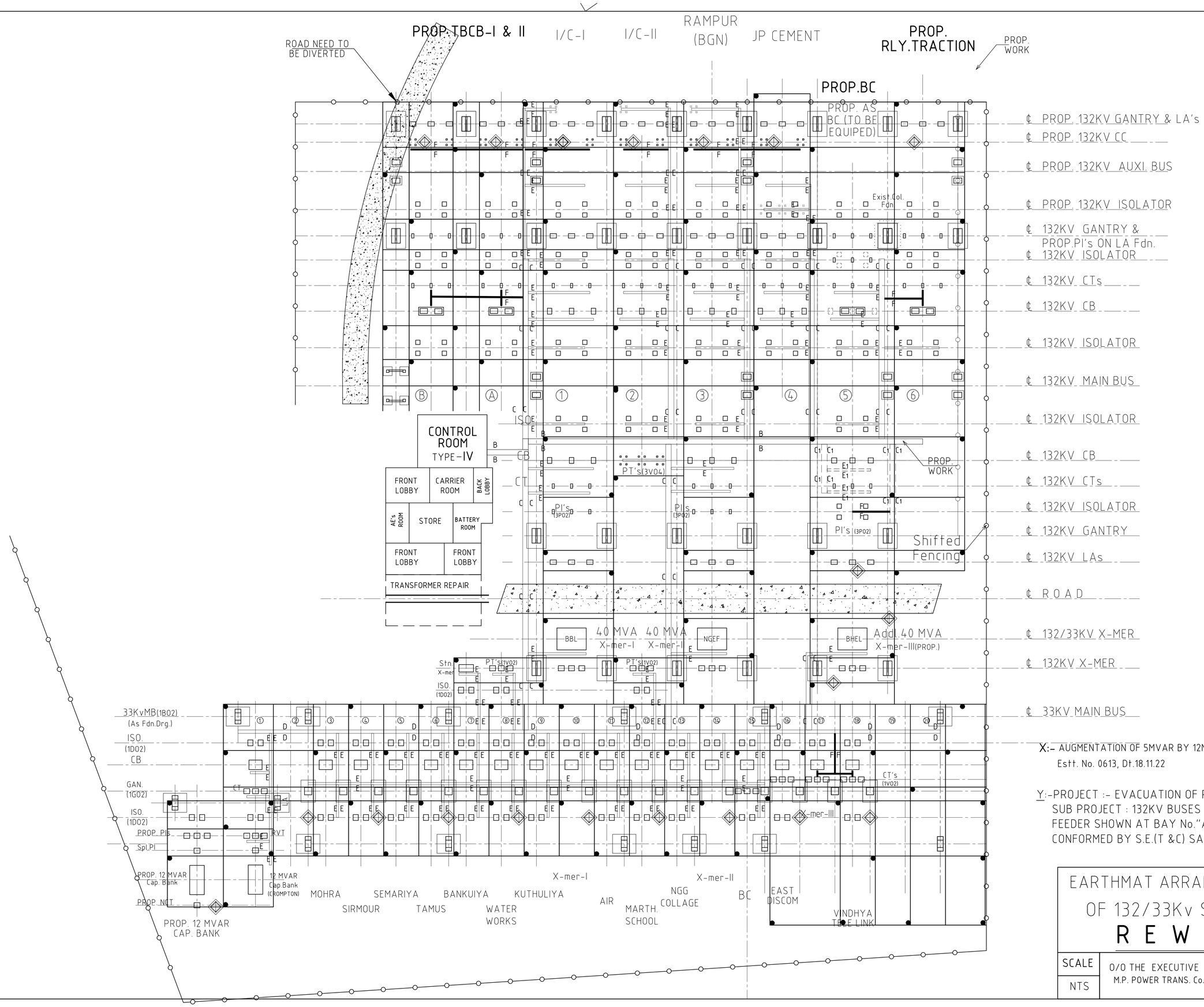
SIMUL LOAD(MVA)	51.5
TotalMVAr33KV	17.1

PANELREPLACEDWIRINGTOBE DONE

BATTERY	110V	48 V
VOLTAGE V	0.0	0.0
CHARGING CURRENT (A)	0.000	0.000
LOAD CURRENT (A)	0.0	0.0

ADMS





X:- AUGMENTATION OF 5MVAR BY 12MVAR CAP. BANK. AT BAY No.1. AGAINST Estt. No. 0613, Dt.18.11.22 Dt.06.12.22

Y:-PROJECT :- EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."A & B". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

EARTHMAT ARRANGEMENT OF 132/33Kv S/Stn. REWA

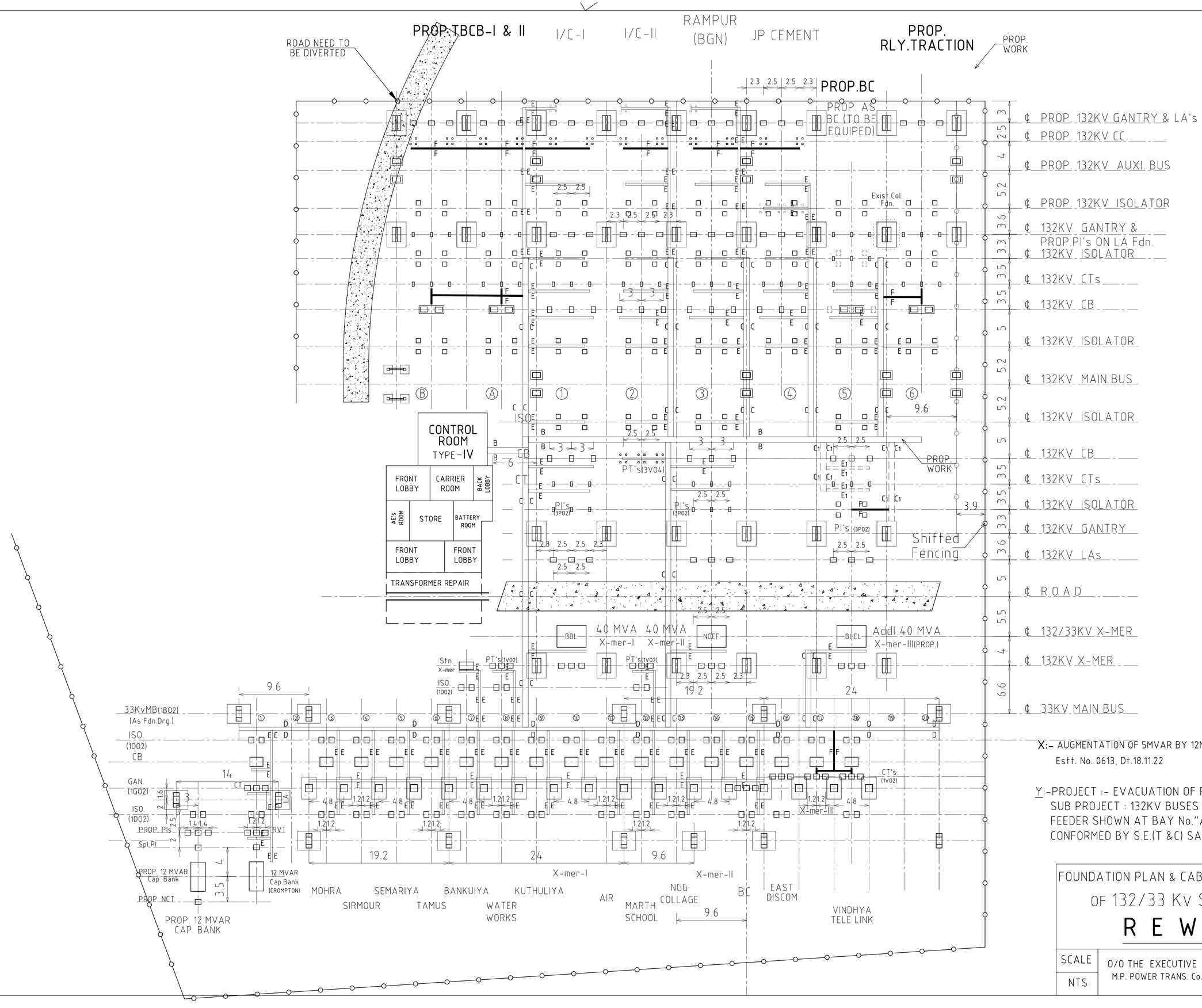
	NAME	DATE
DRN.	SK KHARATE	----
CAD	RK GUPTA	08-04-11
CKD.		
APP.		

SCALE: NTS

O/O THE EXECUTIVE DIRECTOR(T&P) M.P. POWER TRANS. Co. Ltd. JABALPUR

DRAWING NO.- XII-NO8:585(E/M)

REV. 14-10-24 Y



X:- AUGMENTATION OF 5MVAR BY 12MVAR CAP. BANK. AT BAY No.1. AGAINST Estt. No. 0613, Dt.18.11.22 Dt.06.12.22

Y:-PROJECT :- EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."A & B". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

FOUNDATION PLAN & CABLE TRENCHES OF 132/33 Kv S/STN. REWA

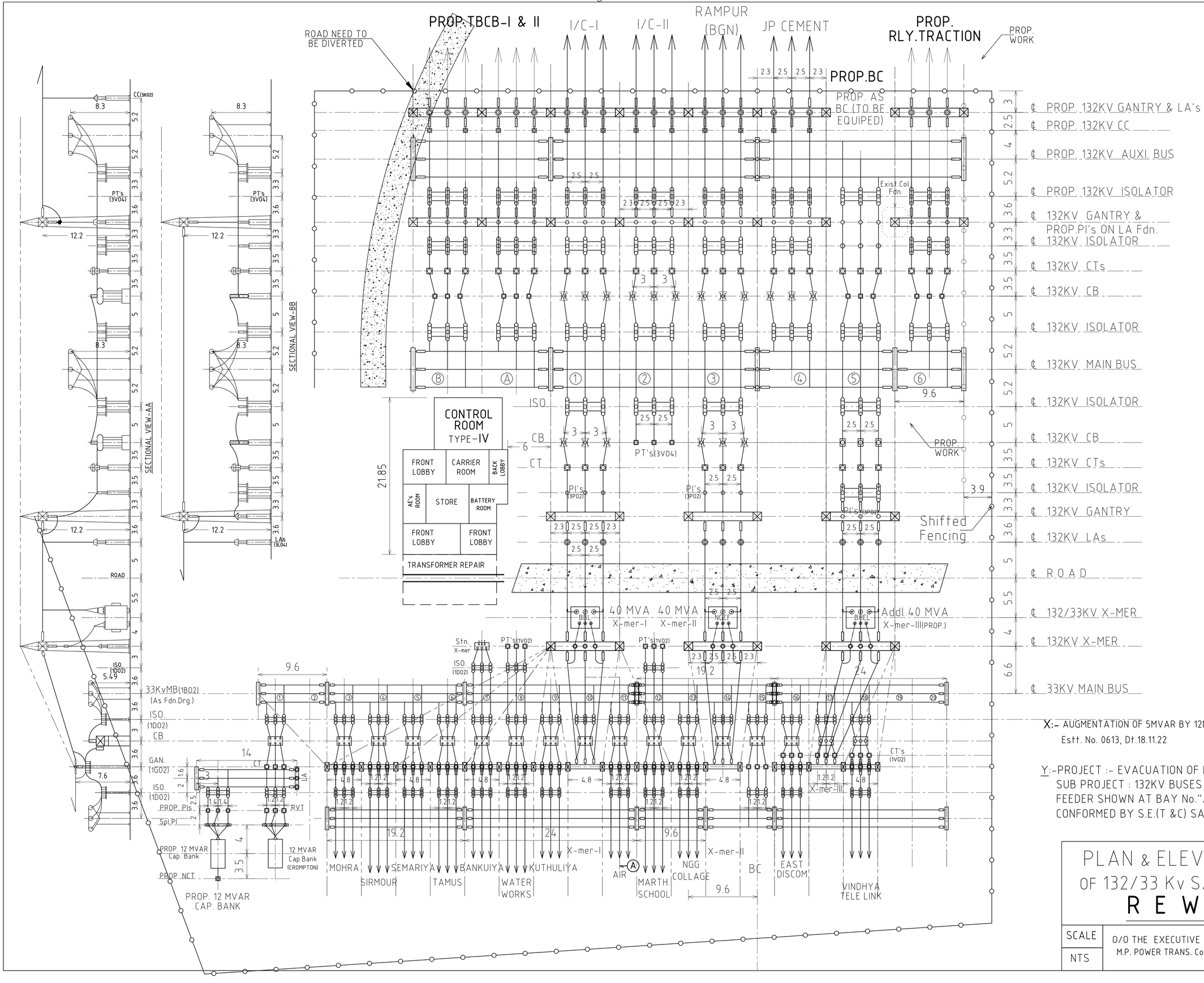
	NAME	DATE
DRN.	SK KHARATE	----
CAD	R K GUPTA	08-04-11
CKD.		
APP.		

SCALE: NTS

O/O THE EXECUTIVE DIRECTOR(T&P)
M.P. POWER TRANS. Co. Ltd. JABALPUR

DRAWING NO.- XII-NO8-585

REV. 14-10-24 Y



X:- AUGMENTATION OF 5MVAR BY 12MVAR CAP. BANK. AT BAY No.1. AGAINST Estt. No. 0613, Dt.18.11.22 Dt.06.12.22

Y:-PROJECT :- EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."A & B". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

PLAN & ELEVATION OF 132/33 Kv S/STN. AT REWA

	NAME	DATE
DRN.	BENJAMIN	----
CAD	R K Gupta	08-04-11
CKD.		
APP.		

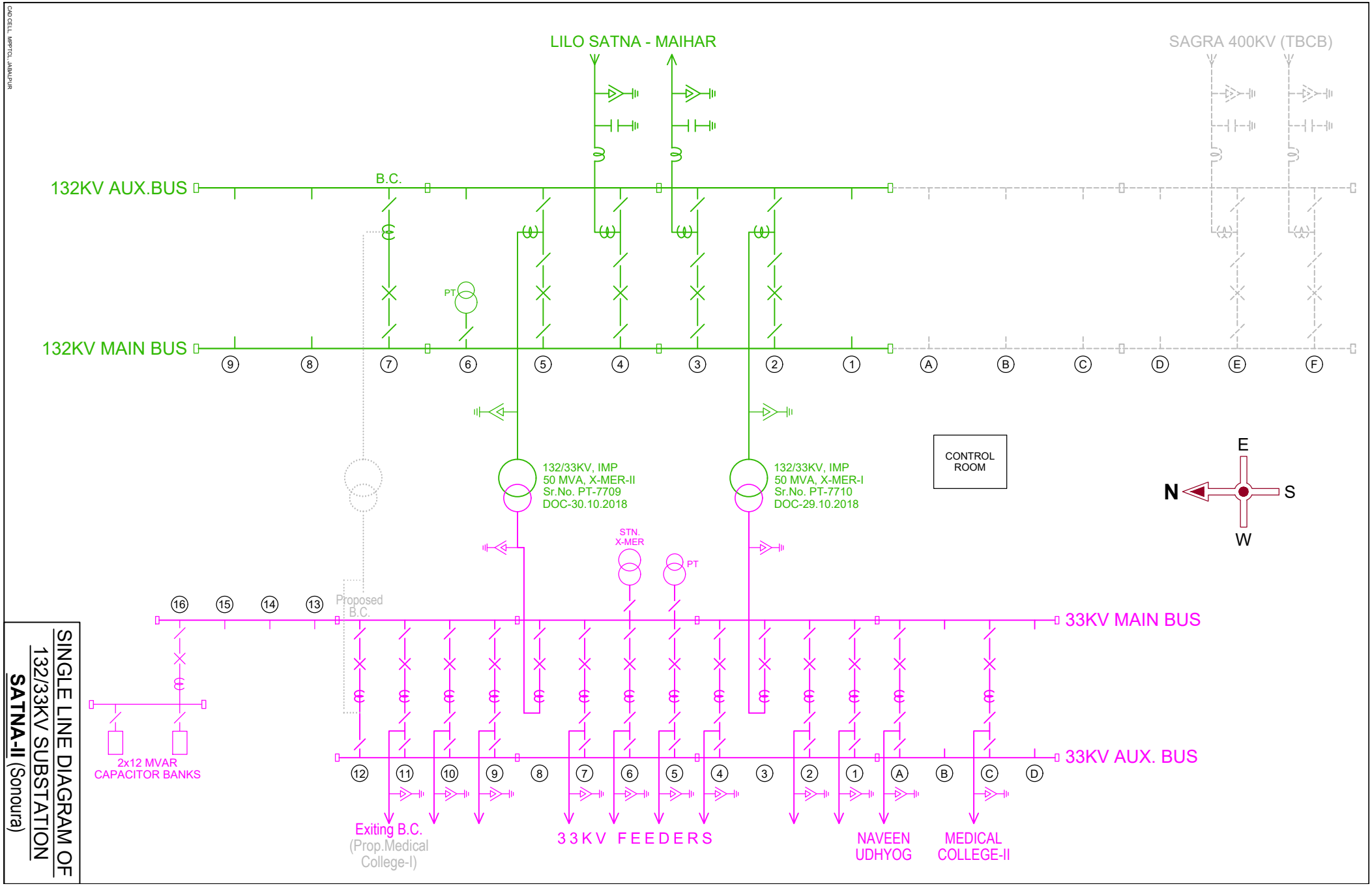
SCALE: NTS

O/O THE EXECUTIVE DIRECTOR(T&P)
M.P. POWER TRANS. Co. Ltd. JABALPUR

DRAWING NO.- XII-NO8:579

REV. 14-10-24 Y

D. 132KV SATNA-II SUBSTATION



SINGLE LINE DIAGRAM OF 132/33KV SUBSTATION **SATNA-II** (Sonoura)

SATNA II 132kV S/s

BUS BALANCE	TotalP	TotalQ
132kV	-0.2	-3.8
33kV	34.6	12.4

SIMUL LOAD	Load P	Load Q
132kV	0.0	0.0

SIMUL LOAD(MVA)	0.0
TotalMVAr33KV	3.9

0.0 kV
0.0 Hz
24/10/2024 15:23:03

DIV: SATNA
CIR: SATNA

BATTERY	110V	48 V
VOLTAGE V	0.0	0.0
CHARGING CURRENT (A)	0.0	0.0
LOAD CURRENT (A)	5.0	-10.0

BC
X-MER-II HV
MAIHAR 220KV
SATNA(132KV SATNA)
X-MER-I HV
132kV MAIN BUS
132kV AUX BUS

1: 0.00 A, 0.00 A, 0.00 A, 0.00 MW, 0.00 MVar, 0.00 PF
2: 0.00 A, 0.00 A, 0.00 A, 0.00 MW, 0.00 MVar, 0.00 MVA, 0.00 PF
3: 18.71 A, 19.87 A, 11.24 A, -0.21 MW, -3.84 MVar, 0.05 PF
4: 0.00 A, 0.00 A, 0.00 A, 0.00 MW, 0.00 MVar, -0.27 PF
5: 0.00 A, 0.00 A, 0.00 A, 0.00 MW, 0.00 MVar, 0.00 MVA, 0.00 PF

132/33kV,50 MVA IMP X-MER-II
TAP 5
WTI 0.0 °C
OTI 56.0 °C

132/33kV, 50MVA IMP X-MER-I
TAP 5
WTI 0.0 °C
OTI 56.0 °C

ADMS

STN X-MER: 0.00 A, 0.00 A, 0.00 A, 0.00 MW, 0.00 MVar, 0.00 PF

0.0 kV
33kV MAIN BUS
33kV AUX BUS

6: 12 MVAR CAPS BANK — 0.01 A, 0.01 A, 0.01 A, 0.00 MW, 0.00 MVar, 1.00 PF

7: BC — 1.14 A, 1.04 A, 1.08 A, 0.06 MW, -0.01 MVar, -0.98 PF

8: TransportNagar — 154.26 A, 158.42 A, 146.44 A, 8.22 MW, 3.27 MVar, 0.92 PF

9: TipuriyaTola — 110.38 A, 113.85 A, 109.71 A, 6.06 MW, 2.17 MVar, 0.94 PF

10: X-MER-II LV — 0.00 A, 0.00 A, 0.00 A, 0.00 MW, 0.00 MVar, 0.00 PF

11: FEEDERIII PROPOSED — 0.00 A, 0.00 A, 0.00 A, 0.00 MW, 0.00 MVar, 0.00 PF

12: FEEDERIV PROPOSED — 0.00 A, 0.00 A, 0.00 A, 0.00 MW, 0.00 MVar, 0.00 PF

13: FEEDERV PROPOSED — 45.54 A, 42.65 A, 43.73 A, 2.36 MW, 0.94 MVar, 0.92 PF

14: FEEDERVI PROPOSED — 4.76 A, 3.87 A, 5.06 A, 0.22 MW, 0.14 MVar, 0.84 PF

15: X-MER-I LV — 188.79 A, 191.25 A, 182.83 A, 10.25 MW, 3.93 MVar, 0.93 PF

16: FEEDERVII PROPOSED — 69.29 A, 71.96 A, 71.10 A, 3.95 MW, 1.06 MVar, 0.96 PF

17: FEEDERVIII PROPOSED — 61.43 A, 61.97 A, 60.23 A, 3.42 MW, 0.89 MVar, 0.96 PF

Gaurd Room

TBM -100m. Top of pleanth level of Guard Room

St. HARSHAN

Convent Hr. Sec. School

N

33kV Line

To Simaura

270,5

35

33kV Line

177,48

NALA

R2

R1

℄ DEAD END TOWERS

℄ DEAD END TOWER

℄ EXT. DEAD END TOWER

℄ EXT. DEAD END TOWER

℄ DEAD END TOWERS

LILO 132KV SATNA - MAIHAR

PROP. 132KV TBCB- I & II

FGL 99.55

℄ 132KV LAs (3L04)

℄ 132KV GANTRY (3G02) & C C (3M02)

℄ 132KV AUXI. BUS (3B03)

℄ 132KV ISOLATOR (3D02)

℄ 132KV GANTRY (3G02) & CTs (3G05)

℄ 132KV ISOLATOR (3D02)

℄ 132KV C B

℄ 132KV ISOLATOR (3D02)

℄ 132KV MAIN BUS (3B04)

℄ ROAD

℄ 132KV LAs (3L04)

℄ 132/33KV X-MER

℄ 132KV GANTRY (3G02)

FUTURE X-MER-III

40/50MVA 132/33KV X-MER-II

40/50MVA 132/33KV X-MER-I

FUTURE X-MER-IV

WATER PIPE LINE

PORCH

VERANDAH

CONTROL ROOM TYPE-V"A" (14.0 x 11.2)

A.C. DUCT

BATTERY ROOM (6.5 x 3.4)

AC/DC & CARRIER ROOM (6.5 x 4.5)

TOILET

STN. TANKER

PT(11V/2)

℄ 33KV MAIN BUS

℄ 33KV ISOLATOR (1D03)

℄ 33KV C.B

℄ 33KV C.T

℄ 33KV AUXI. BUS (1B05)

℄ 33KV ISOLATOR (1D03)

Spl. PJ

℄ CAPACITOR BANK

℄ NCT

℄ 33KV MAIN BUS (1B04)

℄ 33KV ISOLATOR (1D03)

℄ 33KV C.B.

℄ 33KV C.T. (1 V02)

℄ 33KV GANTRY, ISOLATOR & LAs

℄ 33KV ISOLATOR (1D03)

℄ 33KV AUXI. BUS (1B05)

PROP. GOVT. MEDICAL COLLEGE-I

EXIST. BAY

PROP. GOVT. MEDICAL COLLEGE-II

NAVEEN UDHYOGIK KSHETRA

33KV FEEDERS

ST1

ST2

ST3

To Main Road (Maihar Bypass)

Plot

Plot

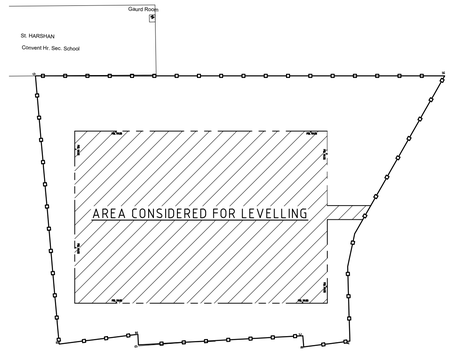
Plot

Plot

Plot

NOTES:-

1. SIZE OF FLATS FOR EARTH MATS (IN mm)
   132 &33KV SWITCH YARD : 65X8 mm.
   RISERS : 50X6 mm.
2. M.S. FLATS WOULD BE BURRIED BELOW THE FINISHED LEVEL OF GROUND AT A DEPTH OF 500 mmAND MAXIMUM WIDTH OF FLAT SHALL BE PARALLEL TO THE GROUND SURFACE.
3. GROUNDING EARTH RODS 25X3000mm SHALL BE DRIVEN VERTICALLY, AT INTERVALS AS SHOWN IN DRG. AND PROPERLY WELDED WITH EARTH MAT.
4. EARTH MAT SHALL BE LAID ABOUT 150 TO 200 mm AWAY FROM THE FOUNDATIONS. DETAILS OF WELDING LAP JOINTING AS GIVEN IN SKETCH DRAWING.
5. CABLE RACKS OR TRAYS SHALL BE CONNECTED TO THE NEAREST EARTH MAT AT EVERY 15 METERS APART.
6. EACH EQUIPMENT STRUCTURE SHALL BE CONNECTED TO EARTH MAT MINIMUM AT TWO POINTS.
7. DUE CARE HAS BEEN EXCERCISED TO ELIMINATE FOULING OF FOUNDATIONS FOR SWITCHYARD EQUIPMENT/APPARATUS WITH THE EARTH MAT. NONETHELESS, EE.EHT. MAY ENSURE TO AVOID SUCH A POSSIBILITY.
8. 1/2" G.I PIPE LINE FOR WATER SUPPLY TO EARTHPITs SHALL BE LAID 10 CM BELOW GROUND LEVEL.
9. G.I. PIPE OF 40MM DIA.& 4MM THICK SHOULD BE USED FOR EARTH PIT..
10. OVERHEAD EARTH WIRE SHOULD BE CONNECTED WITH EARTHMAT THROUGH RISER OF 50x6mm MS FLATS.



AREA CONSIDERED FOR LEVELLING :- FGL 99.55

GPS CO-ORDINATES		
SL.NO.	N	E
A	24°33'05.8"	80°51'49.8"
B	24°33'06.8"	80°51'49.8"
C	24°33'06.8"	80°51'49.4"
D	24°33'10.3"	80°51'49.5"
E	24°33'10.3"	80°51'49.8"
F	24°33'12.0"	80°51'49.7"
G	24°33'11.8"	80°51'55.9"
H	24°33'03.3"	80°51'55.3"
R1	24°33'16.5"	80°51'45.0"
R2	24°33'18.6"	80°51'49.5"

LEGEND:-
- EARTHING BUS
- GROUNDING ROD
- CABLE TRENCH
- EARTH PIT
- WATER PIPE LINE

R2 :-2No. 33KV FEEDER BAYs FOR GOVT. MEDICAL COLLEDGE SHOWN AT BAY No."C & "D" AGAINST Estt. No.0297, Dt.31.03.22 Dt.04.04.22

R3 :-Rev. R2 MODIFIED. 33KV B/C SHIFTED FROM BAY No.11 TO 12.33KV MEDICAL COLLEDGE I & II Fdr. SHOWN AT BAY No.11 & "C". AS PER S.E (T&C) SATNA Lt. No.846 Dt.04.11.22 Dt.04.11.22

R4:-PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."E & F". AS PER FEASIBILITY CONFIRMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

EARTHMAT ARRANGEMENT OF PROP.132/33KV S/S SATNA-II (SANORA)		NAME	DATE
	DRN.	G S DUBEY	31-07-16
	CKD.		
	APP.		
	REVISED ON		14-10-24
SCALE NTS	O/O THE CHIEF ENGINEER (P&D) M.P. POWER TRANSMISSION Co. Ltd. JABALPUR	DRAWING No.- XII-N08-3022	REV. R4

Gaurd Room

TBM -100m. Top of pleanth level of Guard Room

St. HARSHAN

Convent Hr. Sec. School

N

33kV Line

To Sinaura

270,5

35

177,48

33kV Line

NALA

R1

R2

℄ DEAD END TOWERS

℄ DEAD END TOWER

℄ FUT. DEAD END TOWER

℄ FUT. DEAD END TOWER

℄ DEAD END TOWERS

90°

90°

LILO 132KV
SATNA - MAIHAR

PROP. 132KV
TBCB- I & II

FGL 99.55

℄ 132KV LAs (3L04)

℄ 132KV GANTRY (3G02) & CT (3K02)

℄ 132KV AUXI. BUS (3B03)

℄ 132KV ISOLATOR (3D02)

℄ 132KV GANTRY (3G02) & CT (3C05)

℄ 132KV ISOLATOR (3D02)

℄ 132KV C.B

℄ 132KV ISOLATOR (3D02)

℄ 132KV MAIN BUS (3B04)

℄ ROAD

℄ 132KV LAs (3L04)

℄ 132/33KV X-MER

℄ 132KV GANTRY (3G02)

FUTURE X-MER-III

40/50MVA 132/33KV X-MER-II

LAs(3L04)

40/50MVA 132/33KV X-MER-I

FUTURE X-MER-IV

PORCH

VERANDAH

CONTROL ROOM TYPE-V"A" (14.0 x 11.2)

AC/DC & CARRIER ROOM (8.0 x 4.5)

STN X-MER

PT(1V02)

℄ 33KV MAIN BUS

℄ 33KV ISOLATOR (1D03)

℄ 33KV C.B

℄ 33KV C.T

℄ 33KV AUXI. BUS (1B05)

℄ 33KV ISOLATOR (1D03)

℄ Spl. PI

℄ CAPACITOR BANK

℄ NCT

℄ 33KV MAIN BUS (1B04)

℄ 33KV ISOLATOR (1D03)

℄ 33KV C.B

℄ 33KV C.T (1V02)

℄ 33KV GANTRY ISOLATOR & LAs

℄ 33KV ISOLATOR (1D03)

℄ 33KV AUXI. BUS (1B05)

PROP.BC

EXIST. B/C PROP. GOVT. MEDICAL COLLEGE-I

NAVEEN UDHYOGIK KSHETRA

PROP. GOVT. MEDICAL COLLEGE-II

33KV FEEDERS

ST1

ST2

ST3

(Malhar Bypass)

To Main Road

Plot

Plot

Plot

Plot

Plot

NOTES

1. ALL CABLE TRENCHES SHOULD BE CONSTRUCTED IN SUCH A WAY THAT THERE WILL NOT BE WATER LOGGING IN THE TRENCHES. ALSO DEPENDING UP ON THE CONTOUR & GRADIANT OF THE YARD AS PER ACTUAL SITE CONDITIONS.
2. FOR CONSTRUCTION OF CABLE TRENCHES PLEASE REFER STRUCTURAL DETAILS ORG. OF C.E. (CIVIL) Trns. JABALPUR. DRAWING No.TRN/ST/143, DT.08-08-12.
3. ORIENTATION OF CONTROL ROOM BULDING SHALL BE FINALIZED IN CONSULTATION WITH SE(T&C)&SE EHT (C&M).
4. LOCATION OF CABLE TRENCH (F-TYPE) FOR X-MER SHALL BE FINALISED AS PER APPROVED G.A. DRG. OF X-MER & IN CONSULTATION WITH S.E. (T&C).
5. FOUNDATION WORK OF 132 KV CC SHALL BE TAKEN UP IN CONSULTATION WITH E.E.(COMM.) TO ENSURE CORRECT PHASE - MATCHING WITH OTHER END.

Gaurd Room

St. HARSHAN

Convent Hr. Sec. School

AREA CONSIDERED FOR LEVELLING

AREA CONSIDERED FOR LEVELLING :- FGL 99.55

GPS CO-ORDINATES		
SL.NO.	N	E
A	24°33'05.8"	80°51'49.2"
B	24°33'06.8"	80°51'49.2"
C	24°33'06.8"	80°51'49.4"
D	24°33'10.3"	80°51'49.5"
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G	24°33'11.8"	80°51'55.9"
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R1	24°33'16.5"	80°51'45.0"
R2	24°33'18.6"	80°51'49.5"

R2 :-2No. 33KV FEEDER BAYs FOR GOVT. MEDICAL COLLEDGE SHOWN AT BAY No."C & "D" AGAINST Estt. No.0297, Dt. 31.03.22 Dt.04.04.22

R3 :-Rev. R2 MODIFIED. 33KV B/C SHIFTED FROM BAY No.11 TO 12.33KV MEDICAL COLLEDGE I & II Fdr. SHOWN AT BAY No.11 & "C". AS PER S.E (T&C) SATNA Lt. No.846 Dt.04.11.22 Dt.04.11.22

R4:-PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."E & F". AS PER FEASIBILITY CONFIRMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

FDN. PLAN &CABLE TRENCHES OF PROP.132/33KV S/S SATNA-II (SANORA)

	NAME	DATE
DRN.	G S DUBEY	31-07-16
CKD.		
APP.		
REVISED ON		14-10-24

SCALE: NTS

O/O THE CHIEF ENGINEER (P&D)
M.P. POWER TRANSMISSION Co. Ltd.
JABALPUR

DRAWING No.- XII-N08-3021

REV. R4

Gaurd Room

TBM -100m. Top of pleanth level of Guard Room

St. HARSHAN

Convent Hr. Sec. School

N

270,5

35

33kV Line

To Sinaura

33kV Line

177,48

℄ DEAD END TOWERS

℄ DEAD END TOWER

℄ EXT. DEAD END TOWER

℄ EXT. DEAD END TOWER

℄ DEAD END TOWERS

90°

90°

LILO 132KV SATNA - MAIHAR

PROP. 132KV TBCB- I & II

FGL 99.55

℄ 132KV LAs (3L04)

℄ 132KV GANTRY (3G02) & CT (3K02)

℄ 132KV AUXL BUS (3B03)

℄ 132KV ISOLATOR (3D02)

℄ 132KV GANTRY (3G02) & CT (3C05)

℄ 132KV ISOLATOR (3D02)

℄ 132KV C B

℄ 132KV ISOLATOR (3D02)

℄ 132KV MAIN BUS (3B04)

℄ ROAD

℄ 132KV LAs (3L04)

℄ 132/33KV X-MER

℄ 132KV GANTRY (3G02)

℄ 33KV MAIN BUS I

℄ 33KV ISOLATOR (1D03)

℄ 33KV C B

℄ 33KV C T

℄ 33KV AUXI. BUS (1B05)

℄ 33KV ISOLATOR (1D03)

℄ Spl. PI

℄ CAPACITOR BANK

℄ NCT

℄ 33KV MAIN BUS (1B04)

℄ 33KV ISOLATOR (1D03)

℄ 33KV C B

℄ 33KV C T (1V02)

℄ 33KV GANTRY ISOLATOR & LAs

℄ 33KV ISOLATOR (1D03)

℄ 33KV AUXI. BUS (1B05)

FUTURE X-MER-III

40/50MVA 132/33KV X-MER-II

40/50MVA 132/33KV X-MER-I

FUTURE X-MER-IV

ONLY STRINGING TO BE DONE

STN X-MER

PT's

PROP BC

EXIST. B/C PROP. GOVT. MEDICAL COLLEGE-I

NAVEEN UDHYOGIK KSHETRA

PROP. GOVT. MEDICAL COLLEGE-II

33KV FEEDERS

PORCH

VERANDAH

CONTROL ROOM TYPE-V"A" (14.0 x 11.2)

AC/DC & CARRIER ROOM (8.7m x 4.5)

STORE ROOM (8.4m x 3.0)

ACDB AND DCDB

BATTERY ROOM (8.7m x 3.0)

FILTER ROOM (8.7m x 3.0)

Toilet

Toilet

40.85

12.05

11.2

ST3

ST1

ST2

To Main Road (Maihar Bypass)

NALA

R2

R1

EARTH WIRE

TWIN ZEBRA ACSR

8.3

12.7

7.6

5.49

4

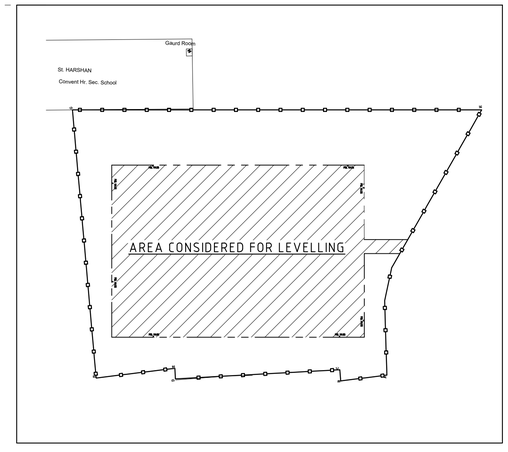
plot

NOTES

1. THE MAIN BUSES OF 132KV SHOULD BE STRUNG WITH TWIN ZEBRA ACSR JOINTLESS CONDUCTOR.
2. AUXL BUSES OF 132 & 33KV SHOULD BE STRUNG WITH SINGLE ZEBRA ACSR JOINTLESS CONDUCTOR.
3. THE STRINGING OVERHEAD CONDUCTOR BETWEEN GANTRY TO GANTRY, DROP OUT & ALL JUMPERS FOR INTERCONNECTING SWITCHYARD EQUIP. SHALL BE SINGLE ZEBRA ACSR CONDUCTOR, EXCEPT FOR LV SIDE OF X-MER BAYS & ALL MAIN BUS ISOLATORS.
4. ALL MAIN BUS ISOLATORS INTERCONNECTION SHALL BE WITH TWIN ZEBRA .
5. THE 33KV X-MER BAY OF 40MVA X-MER STRINGING/ JUMPERING & INTERCONNECTION OF EQUIPMENTS UP- TO MAIN BUS SHALL BE WITH TWIN ZEBRA ACSR, JUMPERING OF MAIN BUS TO ALL ISOLATORS OF MAIN BUS SIDE SHALL BE WITH TWIN ZEBRA ACSR CNNDUCTOR.
6. Earthing of all shielding wires must be ensure.
7. Shielding wire should be strung in such a way that it should protect complete Switch yard from Lightning hazard.
8. An angle piece (on the 33kv Gantry & on the Bus struct. at the end) should be used for strung the Shielding Wire.

Min. size of Angle should be used for Shielding Wire:-

On 33kv Gantry	65x65x6	1.5m.long.
On 33kv Bus	65x65x6	1.5m.long.
On 132kv Bus	75x75x6	2.25m.long.
On 220kv Bus	90x90x8	2.5m.long.



AREA CONSIDERED FOR LEVELLING :- FGL 99.55

GPS CO-ORDINATES		
SL.NO.	N	E
A	24°33'05.8"	80°51'49.2"
B	24°33'06.8"	80°51'49.2"
C	24°33'06.8"	80°51'49.4"
D	24°33'10.3"	80°51'49.5"
E	24°33'10.3"	80°51'49.8"
F	24°33'12.0"	80°51'49.7"
G	24°33'11.8"	80°51'55.9"
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R2	24°33'18.6"	80°51'49.5"

R2 :-2No. 33KV FEEDER BAYs FOR GOVT. MEDICAL COLLEDGE SHOWN AT BAY No."C & "D" AGAINST Estt. No.0297, Dt.31.03.22 Dt.04.04.22

R3 :-Rev. R2 MODIFIED. 33KV B/C SHIFTED FROM BAY No.11 TO 12.33KV MEDICAL COLLEDGE I & II Fdr. SHOWN AT BAY No.11 & "C". AS PER S.E (T&C) SATNA Lt. No.846 Dt.04.11.22 Dt.04.11.22

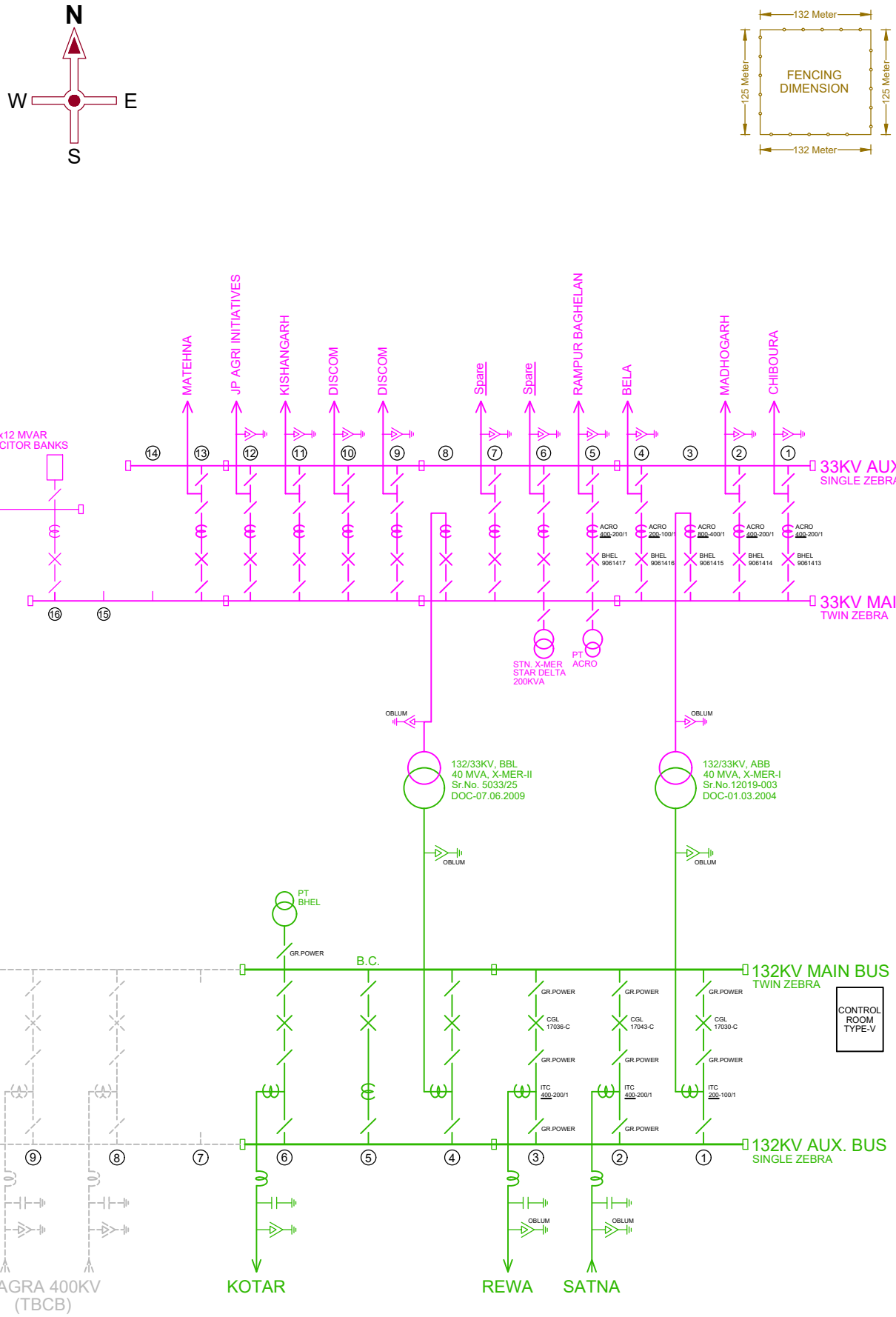
R4:-PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."E & F". AS PER FEASIBILITY CONFIRMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

LAYOUT PLAN OF PROP.132/33KV S/S SATNA-II (SANORA)

	NAME	DATE
DRN.	G S DUBEY	31-07-16
CKD.		
APP.		
REVISED ON		14-10-24

SCALE	O/O THE CHIEF ENGINEER (P&D) M.P. POWER TRANSMISSION Co. Ltd. JABALPUR	DRAWING No.-	REV.
NTS		XII-N08-3020	R4

E. 132KV RAMPUR BAGHELAN SUBSTATION



SINGLE LINE DIAGRAM OF
132/33KV SUBSTATION
RAMPUR BAGHELAN

CAD CELL, MPPTCL, JABALPUR

RAMPUR BAGHELAN 132kV S/s

24/10/202414:26:01

DIV: REWA
CIR: SATNA

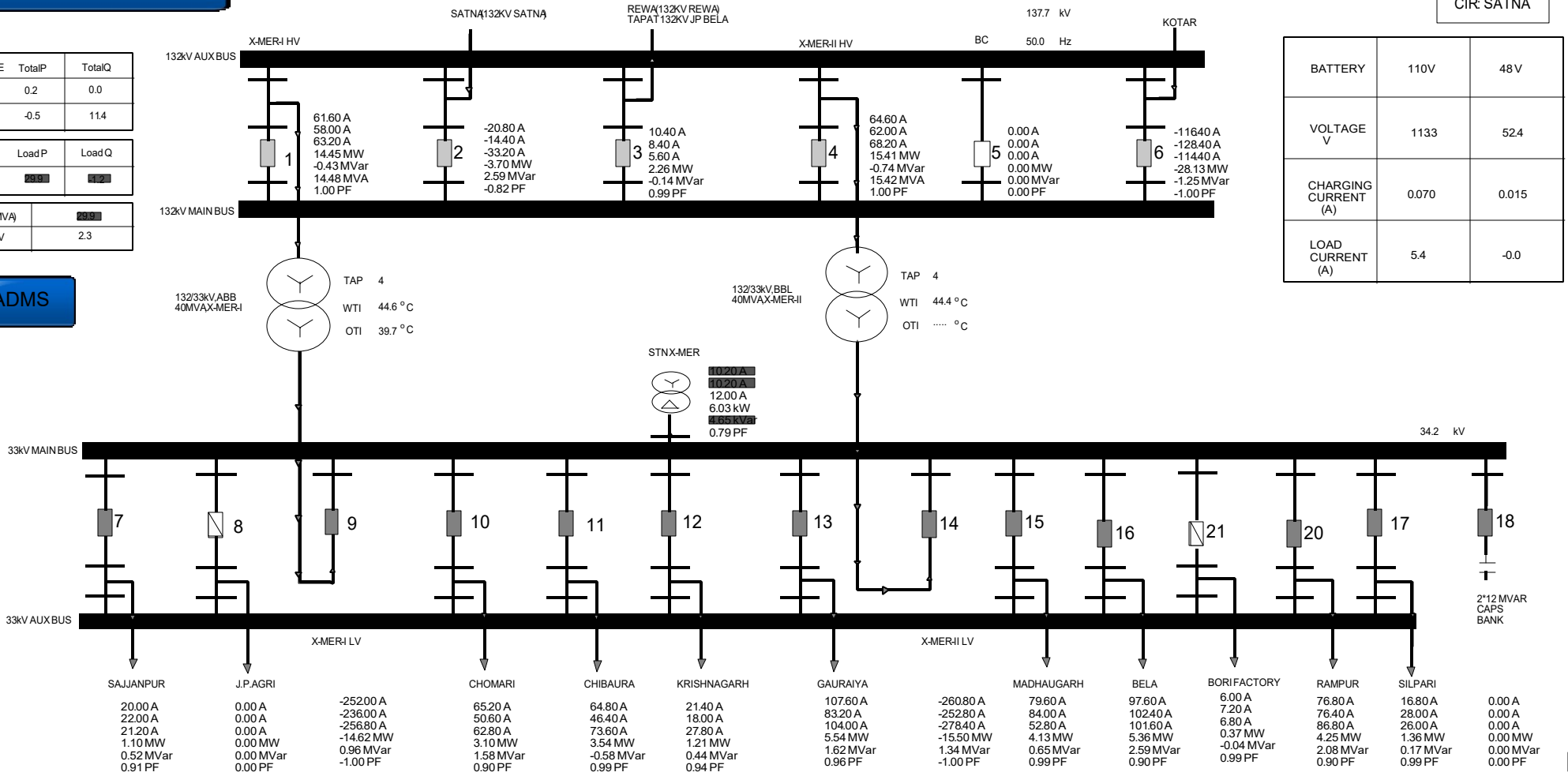
BUS BALANCE	TotalP	TotalQ
132kV	0.2	0.0
33kV	-0.5	11.4

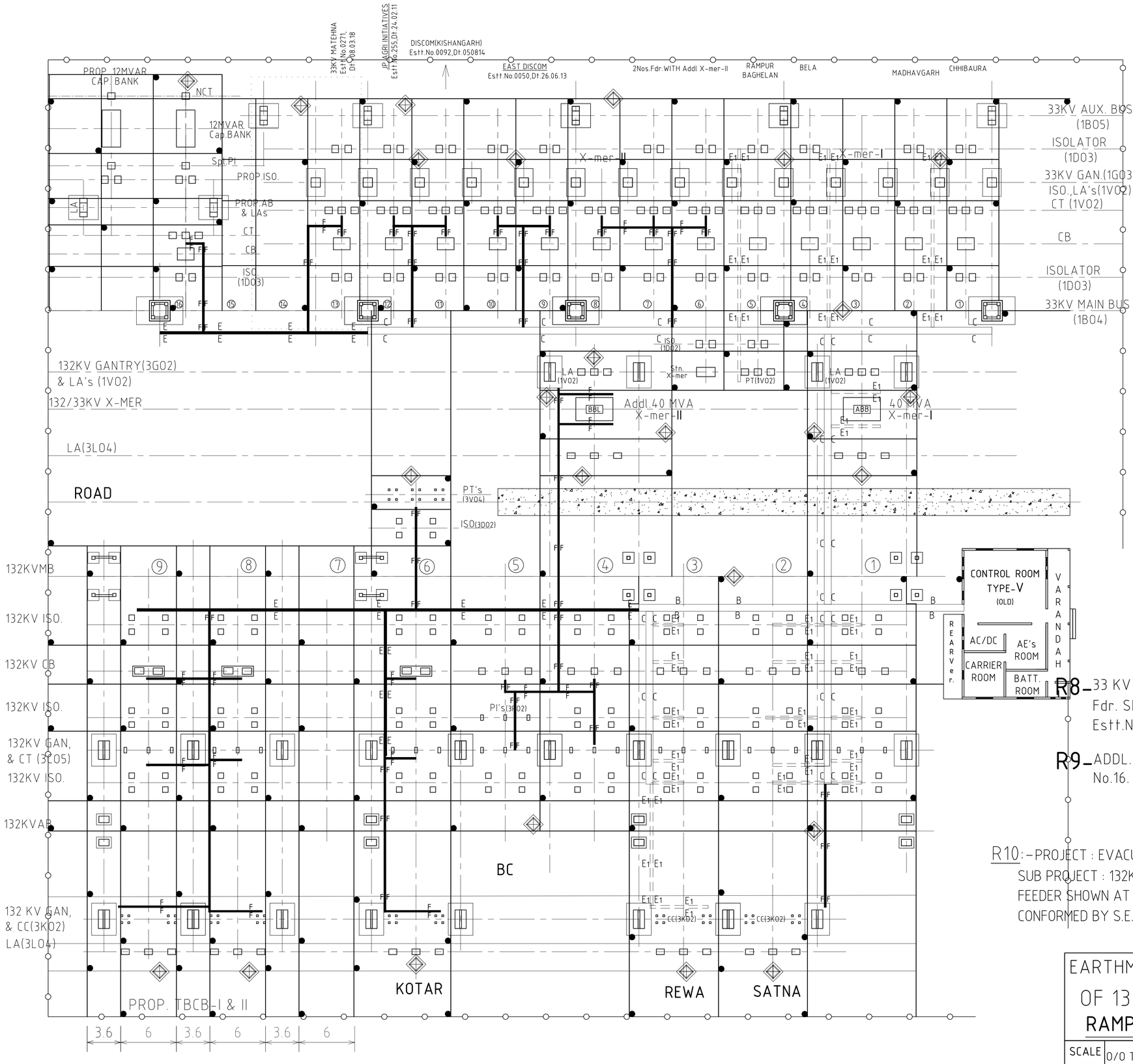
SIMUL LOAD	Load P	Load Q
132kV	29.9	4.2

SIMUL LOAD(MVA)	29.9
TotalMVAr33KV	2.3

ADMS

BATTERY	110V	48 V
VOLTAGE V	1133	52.4
CHARGING CURRENT (A)	0.070	0.015
LOAD CURRENT (A)	5.4	-0.0





R8 – 33 KV AUXI. BUS EXTN. WORK.33KV MATEHNA Fdr. SHOWN AT BAY No.13, AGAINST Estt.No.0271 Dt.08-03-18 Dt. 12-03-18

R9 – ADDL. 33KV 12MVAR CAP. BANK SHOWN AT BAY No.16. AGAINST Estt. No.0450, Dt.31.03.21 Dt.28.05.21

R10 :– PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."8 &9". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

EARTHMAT ARRANGEMENT OF 132/33Kv S/STN. RAMPUR BAGHELAN

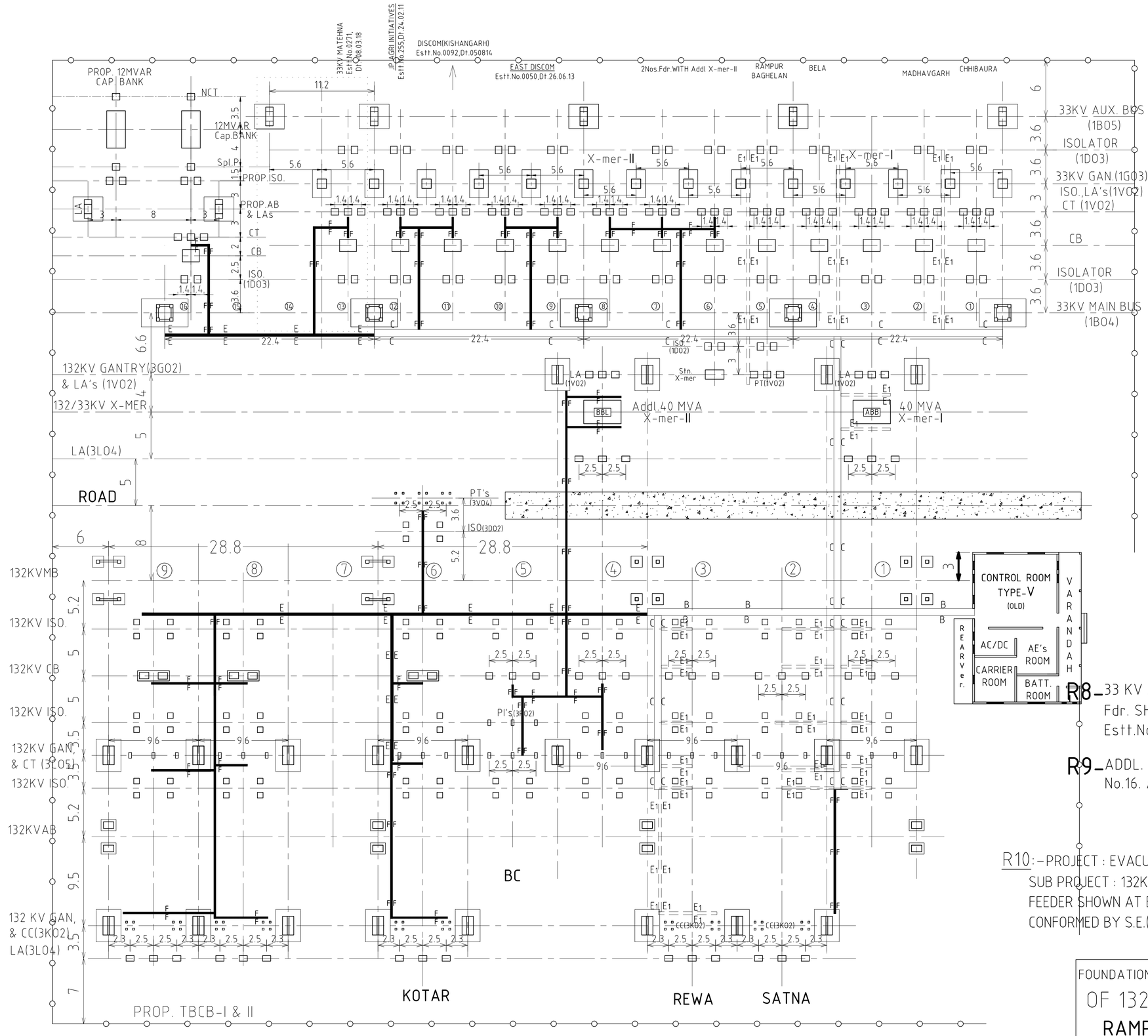
	NAME	DATE
DRN.	GS DUBEY	09-01-03
CAD	RK GUPTA	05-04-12
CKD.		
APP.		

SCALE: NTS

O/O THE EXECUTIVE DIRECTOR (T&P)
M.P. POWER TRANS. Co. Ltd. JABALPUR

DRAWING NO.– XII–NO8:1608 E/M

REV. 14-10-24 R10



R8 – 33 KV AUXI. BUS EXTN. WORK.33KV MATEHNA Fdr. SHOWN AT BAY No.13, AGAINST Estt.No.0271 Dt.08-03-18 Dt. 12-03-18

R9 – ADDL. 33KV 12MVAR CAP. BANK SHOWN AT BAY No.16. AGAINST Estt. No.0450, Dt.31.03.21 Dt.28.05.21

R10:– PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB
SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II
FEEDER SHOWN AT BAY No."8 &9". AS PER FEASIBILITY
CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24
Dt.14.10.24

FOUNDATION PLAN & CABLE TRENCHES
OF 132/33 KV S/STN.
RAMPUR BAGHELAN

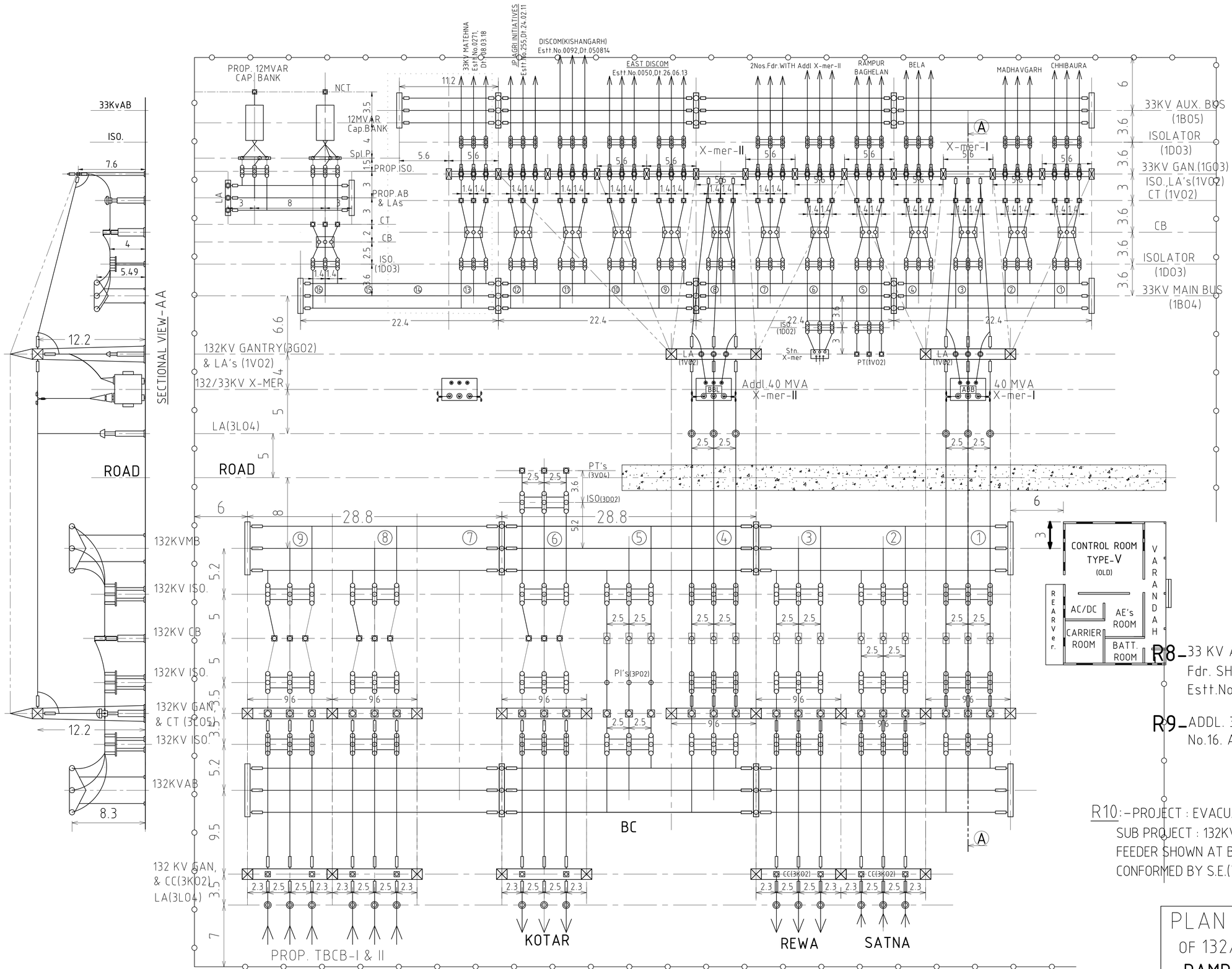
	NAME	DATE
DRN.	GS DUBEY	09-01-03
CAD	RK GUPTA	05-04-12
CKD.		
APP.		

SCALE: NTS

O/O THE EXECUTIVE DIRECTOR (T&P)
M.P. POWER TRANS. Co. Ltd. JABALPUR

DRAWING NO.- XII-NO8:1608

REV. 14-10-24 R10



R8 – 33 KV AUXI. BUS EXTN. WORK.33KV MATEHNA Fdr. SHOWN AT BAY No.13, AGAINST Estt.No.0271 Dt.08-03-18 Dt. 12-03-18

R9 – ADDL. 33KV 12MVAR CAP. BANK SHOWN AT BAY No.16. AGAINST Estt. No.0450, Dt.31.03.21 Dt.28.05.21

R10: – PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."8 &9". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

PLAN & ELEVATION OF 132/33 Kv S/STN. AT RAMPUR BAGHELAN

	NAME	DATE
DRN.	GS DUBEY	04-01-03
CAD	RK GUPTA	05-04-12
CKD.		
APP.		

SCALE: NTS

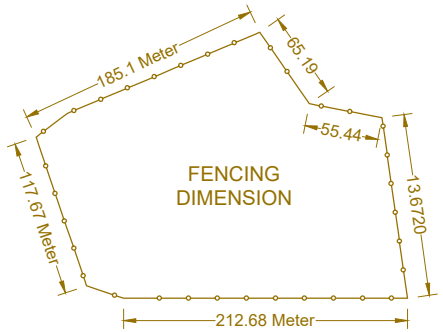
O/O THE EXECUTIVE DIRECTOR (T&P)
M.P. POWER TRANS. Co. Ltd. JABALPUR

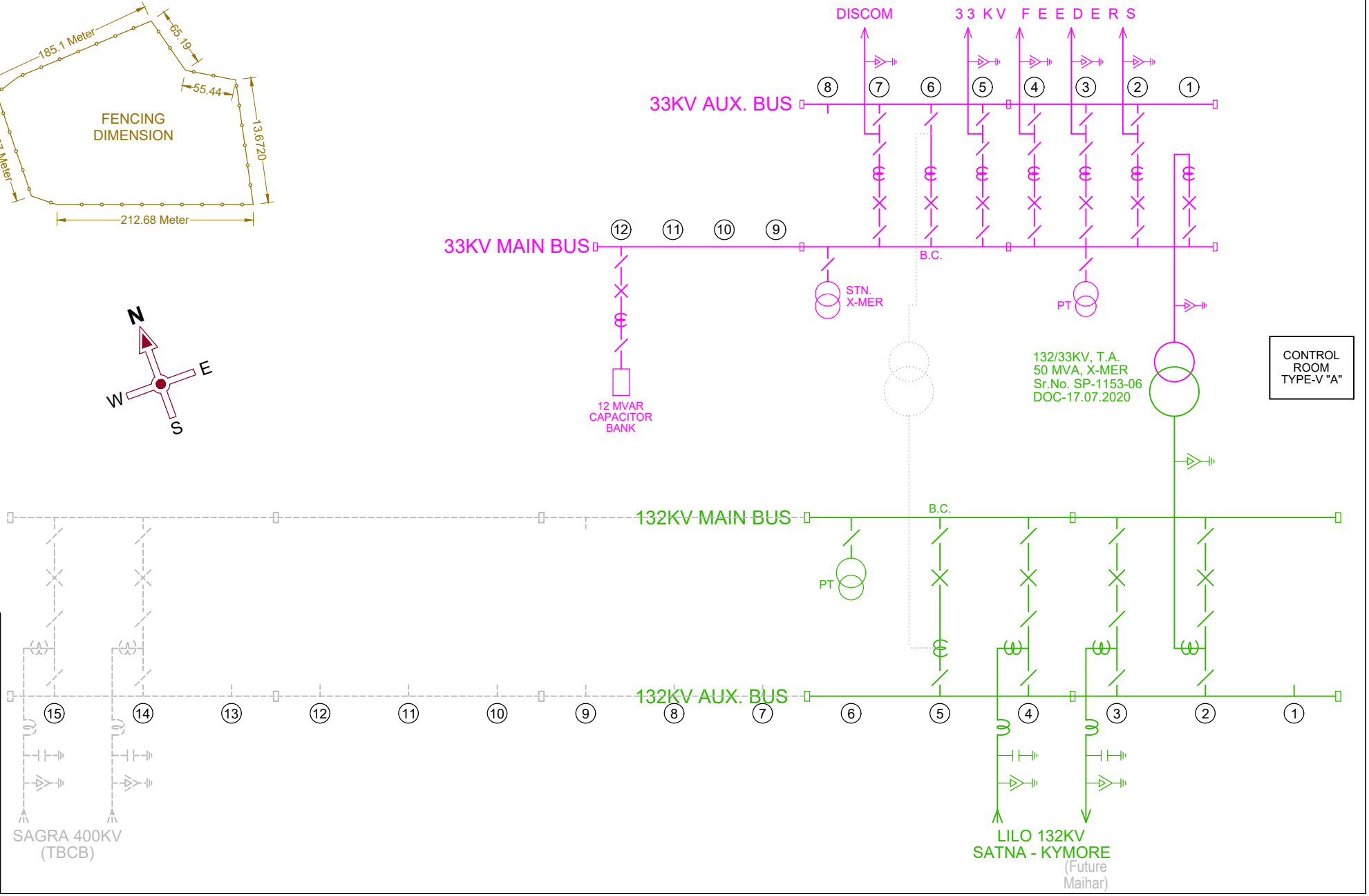
DRAWING NO.- XII-NO8:1607

REV. 14-10-24 R10

F. 132KV UNCHERA SUBSTATION

CAD CELL MPPTCL JABALPUR





SINGLE LINE DIAGRAM OF 132/33KV S/S AT **UNCHEHRA** (Satna)

UNCHHERA 132kV S/s

24/10/2024

14:26:26

DIV: SATNA
CIR: SATNA

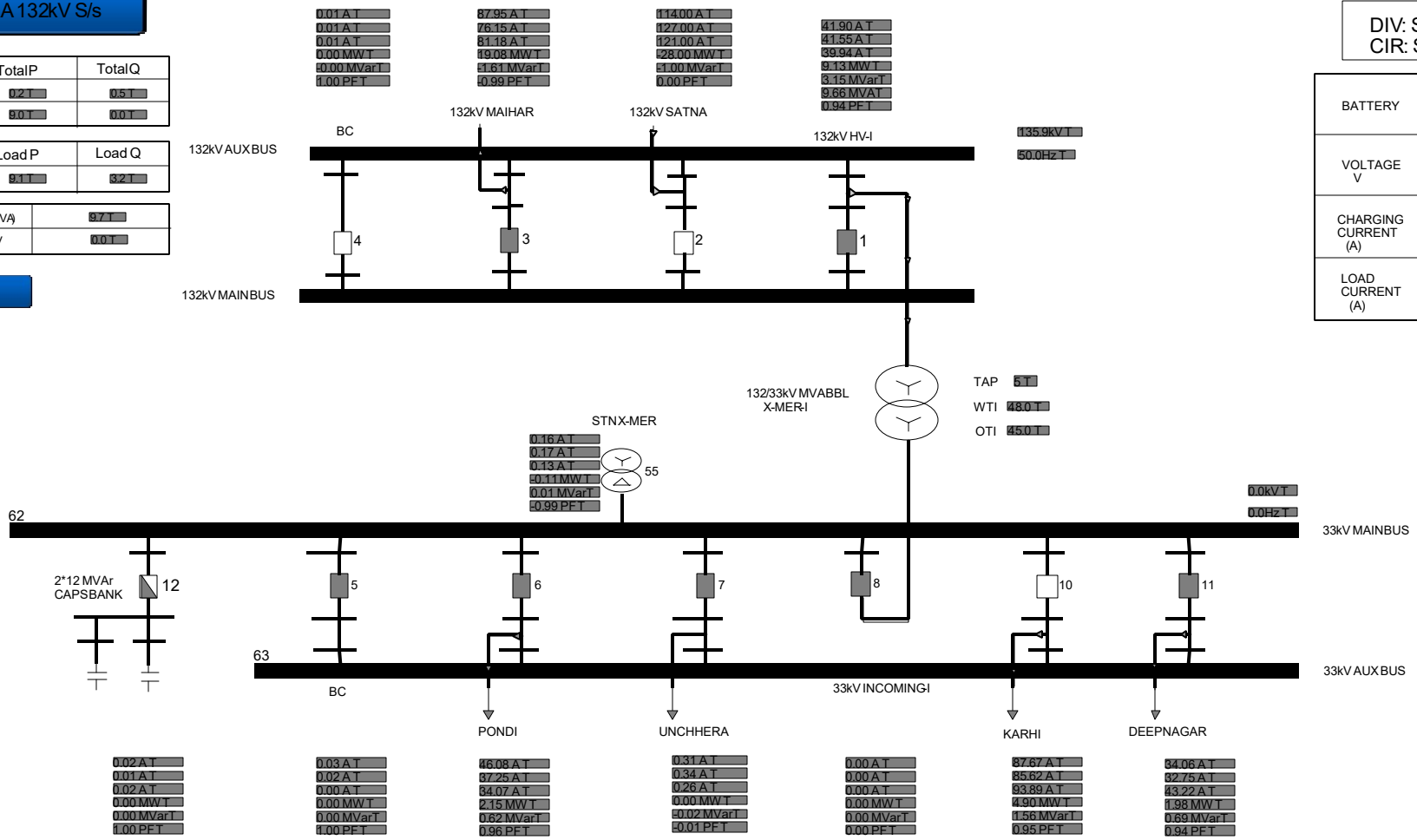
BUSBALANCE	TotalP	TotalQ
132kV	0.2 T	0.5 T
33kV	9.0 T	0.0 T

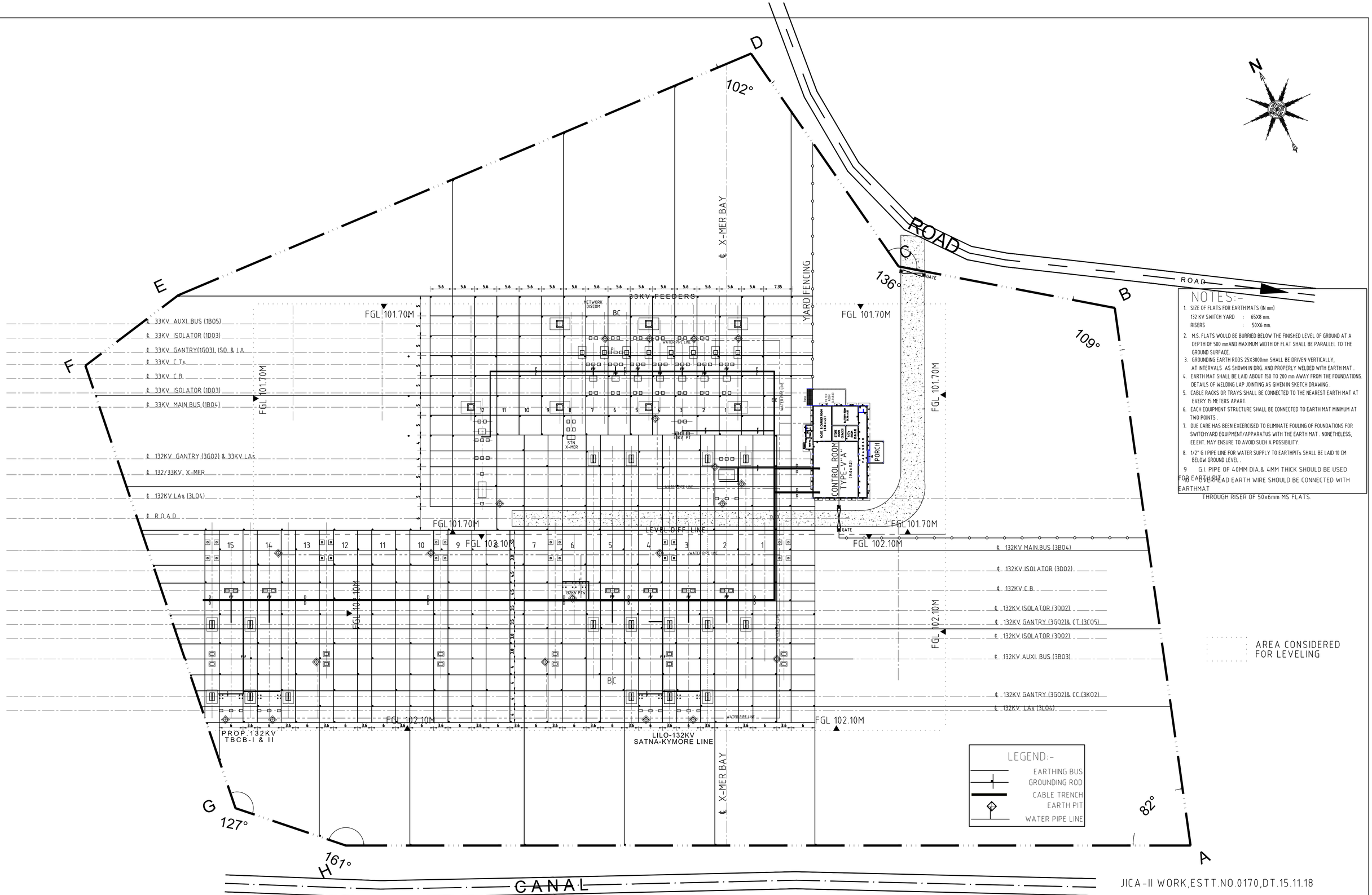
SIMULLOAD	Load P	Load Q
132kV	9.1 T	3.2 T

SIMULLOAD(MVA)	9.7 T
TotalMVAr33KV	0.0 T

ADMS

BATTERY	110V	48 V
VOLTAGE V	+2.0 T	+2.0 T
CHARGING CURRENT (A)	-2.000 T	-2.000 T
LOAD CURRENT (A)	-1.0 T	-1.0 T





NOTES:-

1. SIZE OF FLATS FOR EARTH MATS (IN mm)
   132 KV SWITCH YARD : 65X8 mm.
   RISERS : 50X6 mm.
2. M.S. FLATS WOULD BE BURRIED BELOW THE FINISHED LEVEL OF GROUND AT A DEPTH OF 500 mmAND MAXIMUM WIDTH OF FLAT SHALL BE PARALLEL TO THE GROUND SURFACE.
3. GROUNDING EARTH RODS 25X3000mm SHALL BE DRIVEN VERTICALLY, AT INTERVALS AS SHOWN IN DRG. AND PROPERLY WELDED WITH EARTH MAT.
4. EARTH MAT SHALL BE LAID ABOUT 150 TO 200 mm AWAY FROM THE FOUNDATIONS. DETAILS OF WELDING LAP JOINTING AS GIVEN IN SKETCH DRAWING.
5. CABLE RACKS OR TRAYS SHALL BE CONNECTED TO THE NEAREST EARTH MAT AT EVERY 15 METERS APART.
6. EACH EQUIPMENT STRUCTURE SHALL BE CONNECTED TO EARTH MAT MINIMUM AT TWO POINTS.
7. DUE CARE HAS BEEN EXCERCISED TO ELIMINATE FOULING OF FOUNDATIONS FOR SWITCHYARD EQUIPMENT/APPARATUS WITH THE EARTH MAT. NONETHELESS, EE.EHT. MAY ENSURE TO AVOID SUCH A POSSIBILITY.
8. 1/2" G I PIPE LINE FOR WATER SUPPLY TO EARTHPITs SHALL BE LAID 10 CM BELOW GROUND LEVEL.
9. G.I. PIPE OF 40MM DIA.& 4MM THICK SHOULD BE USED FOR EARTHPIT.
10. OVERHEAD EARTH WIRE SHOULD BE CONNECTED WITH EARTHMAT THROUGH RISER OF 50x6mm MS FLATS.

AREA CONSIDERED FOR LEVELING

LEGEND:-
- EARTHING BUS
- GROUNDING ROD
- CABLE TRENCH
- EARTH PIT
- WATER PIPE LINE

JICA-II WORK,ESTT.NO.0170,DT.15.11.18

R2:-PROJECT : EVACUATION OF POWER FOR M/S MEL THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."14 & 15". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

R1:-33KV NETWORK DISCOM Fdr. SHOWN AT BAY No.7. AGAINST Estt. No.0044, Dt.17.06.21 Dt.18.06.21

EARTHMAT ARRANGEMENT OF 132/33KV SUBSTATION UNCHERA (Satna)

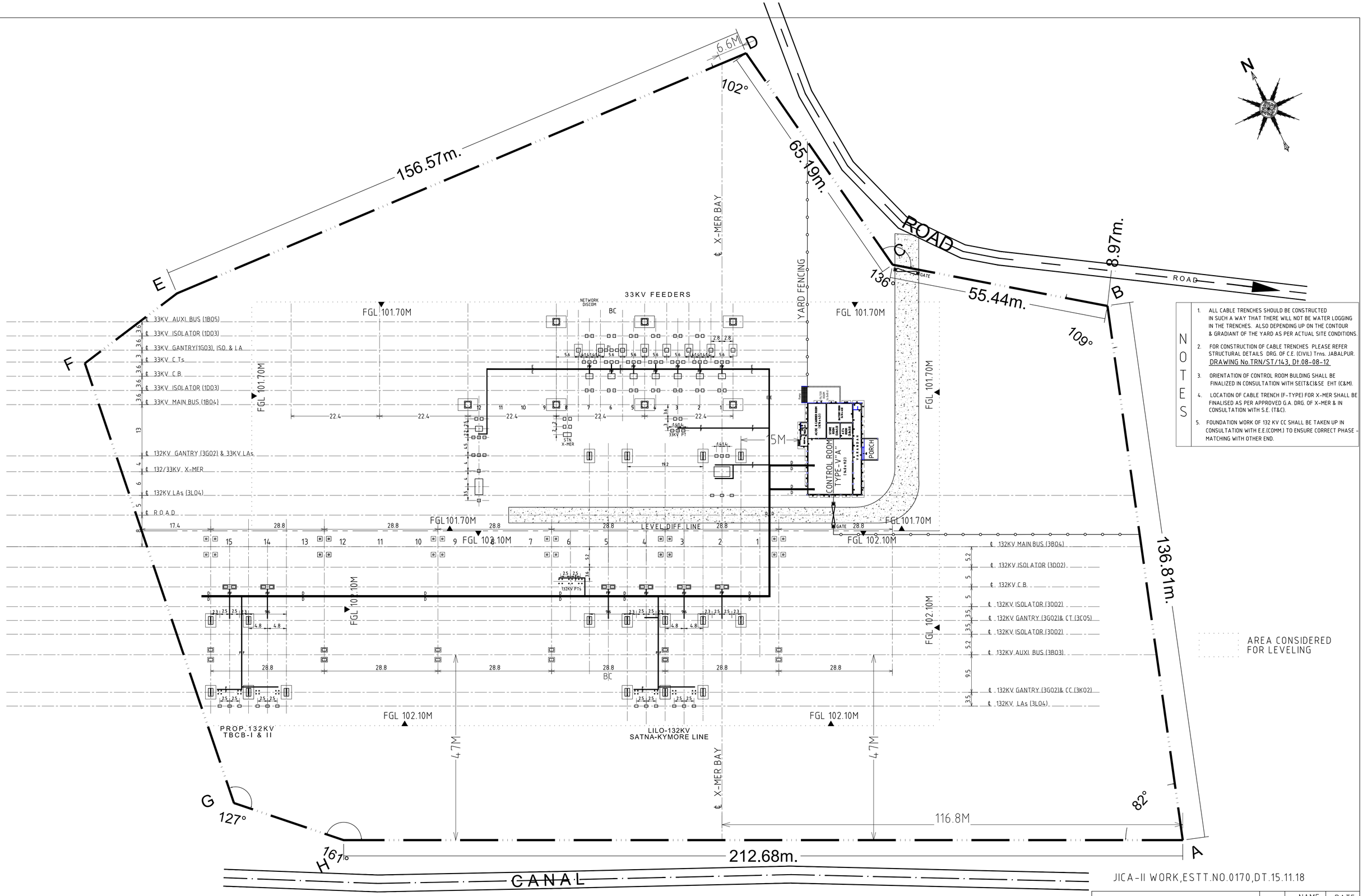
	NAME	DATE
DRN.	GS DUBEY	04-05-18
CKD.		
APP.		
REVISED ON.		14-10-24

SCALE: NTS

O/O THE CHIEF ENGINEER (P&D)
M.P. POWER TRANSMISSION Co. Ltd.
JABALPUR

DRAWING No:- XII-N08-3069

REV. R2



NOTES

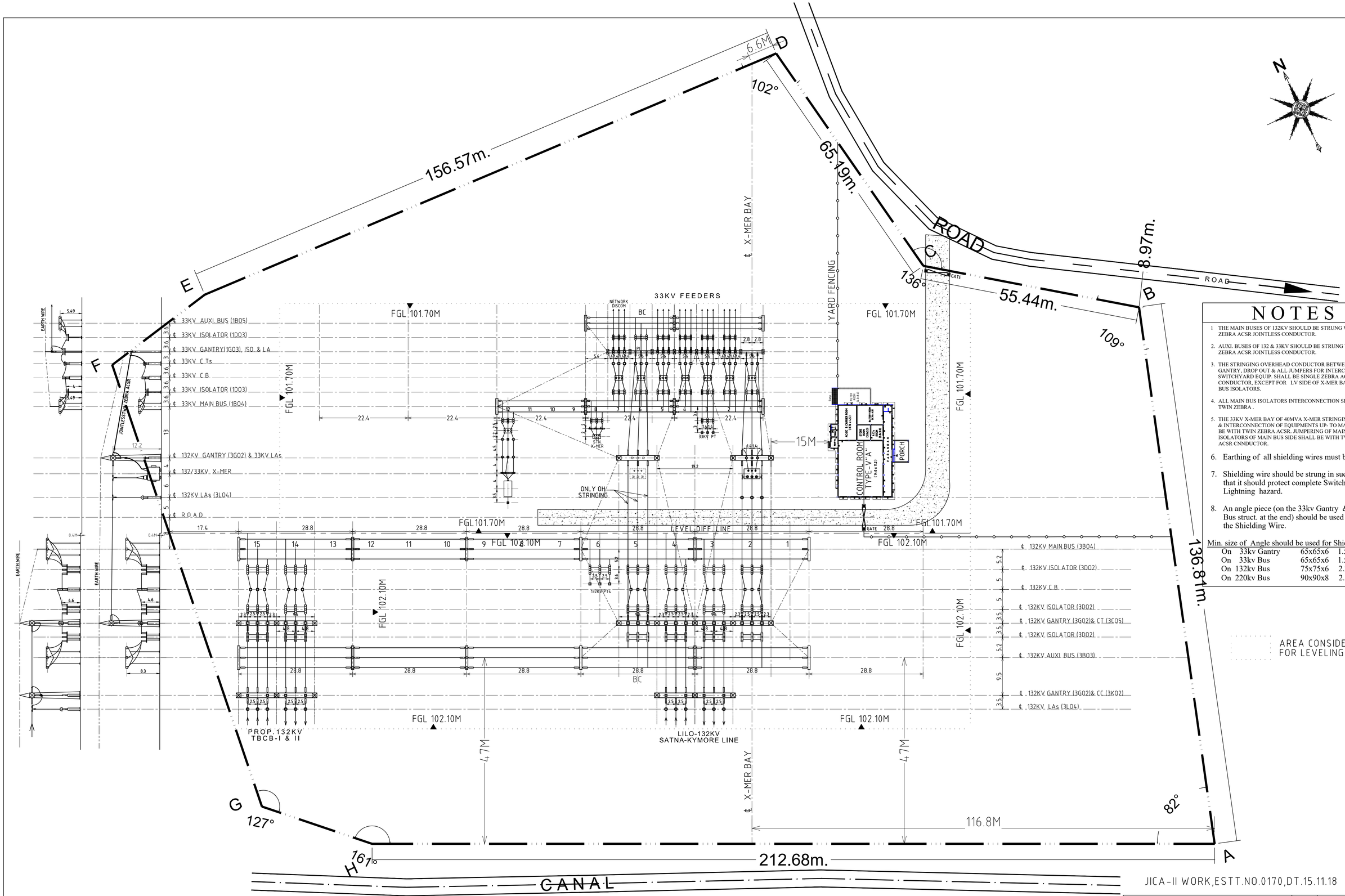
1. ALL CABLE TRENCHES SHOULD BE CONSTRUCTED IN SUCH A WAY THAT THERE WILL NOT BE WATER LOGGING IN THE TRENCHES. ALSO DEPENDING UP ON THE CONTOUR & GRADIANT OF THE YARD AS PER ACTUAL SITE CONDITIONS.
2. FOR CONSTRUCTION OF CABLE TRENCHES PLEASE REFER STRUCTURAL DETAILS DRG. OF C.E. (CIVIL) Trns. JABALPUR. DRAWING No.TRN/ST/143, Dt.08-08-12
3. ORIENTATION OF CONTROL ROOM BULDING SHALL BE FINALIZED IN CONSULTATION WITH SE(T&C)&SE EHT (C&M).
4. LOCATION OF CABLE TRENCH (F-TYPE) FOR X-MER SHALL BE FINALISED AS PER APPROVED G.A. DRG. OF X-MER & IN CONSULTATION WITH S.E. (T&C).
5. FOUNDATION WORK OF 132 KV CC SHALL BE TAKEN UP IN CONSULTATION WITH E.E.(COMM.) TO ENSURE CORRECT PHASE - MATCHING WITH OTHER END.

JICA-II WORK,ESTT.NO.0170,DT.15.11.18

R2:-PROJECT : EVACUATION OF POWER FOR M/S MEL THROUGH TBCB
SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II
FEEDER SHOWN AT BAY No."14 & 15". AS PER FEASIBILITY
CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24
Dt.14.10.24

R1:-33KV NETWORK DISCOM Fdr. SHOWN AT BAY No.7. AGAINST
Estt. No.0044, Dt.17.06.21 Dt.18.06.21

FDN. PLAN & CABLE TRENCHES OF 132/33KV SUBSTATION UNCHERA (Satna)		NAME	DATE
	DRN.	GS DUBEY	04-05-18
	CKD.		
	APP.		
	REVISED ON.		14-10-24
SCALE: NTS	O/O THE CHIEF ENGINEER (P&D) M.P. POWER TRANSMISSION Co. Ltd. JABALPUR	DRAWING No:- XII-N08-3068	REV. R2



NOTES

1. THE MAIN BUSES OF 132KV SHOULD BE STRUNG WITH TWIN ZEBRA ACSR JOINTLESS CONDUCTOR.
2. AUXI. BUSES OF 132 & 33KV SHOULD BE STRUNG WITH SINGLE ZEBRA ACSR JOINTLESS CONDUCTOR.
3. THE STRINGING OVERHEAD CONDUCTOR BETWEEN GANTRY TO GANTRY, DROP OUT & ALL JUMPERS FOR INTERCONNECTING SWITCHYARD EQUIP. SHALL BE SINGLE ZEBRA ACSR CONDUCTOR, EXCEPT FOR LV SIDE OF X-MER BAYS & ALL MAIN BUS ISOLATORS.
4. ALL MAIN BUS ISOLATORS INTERCONNECTION SHALL BE WITH TWIN ZEBRA .
5. THE 33KV X-MER BAY OF 40MVA X-MER STRINGING/ JUMPERING & INTERCONNECTION OF EQUIPMENTS UP- TO MAIN BUS SHALL BE WITH TWIN ZEBRA ACSR. JUMPERING OF MAIN BUS TO ALL ISOLATORS OF MAIN BUS SIDE SHALL BE WITH TWIN ZEBRA ACSR CNNDUCTOR.
6. Earthing of all shielding wires must be ensure.
7. Shielding wire should be strung in such a way that it should protect complete Switch yard from Lightning hazard.
8. An angle piece (on the 33kv Gantry & on the Bus struct. at the end) should be used for strung the Shielding Wire.

Min. size of Angle should be used for Shielding Wire:-

On 33kv Gantry	65x65x6	1.5m.long.
On 33kv Bus	65x65x6	1.5m.long.
On 132kv Bus	75x75x6	2.25m.long.
On 220kv Bus	90x90x8	2.5m.long.

AREA CONSIDERED FOR LEVELING

JICA-II WORK,ESTT.NO.0170,DT.15.11.18

R2:-PROJECT : EVACUATION OF POWER FOR M/S MEL THROUGH TBCB SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."14 & 15". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

R1:-33KV NETWORK DISCOM Fdr. SHOWN AT BAY No.7. AGAINST Estt. No.0044, Dt.17.06.21 Dt.18.06.21

PLAN & ELEVATION OF 132/33KV SUBSTATION UNCHERA (Satna)

	NAME	DATE
DRN.	GS DUBEY	04-05-18
CKD.		
APP.		
REVISED ON.		14-10-24

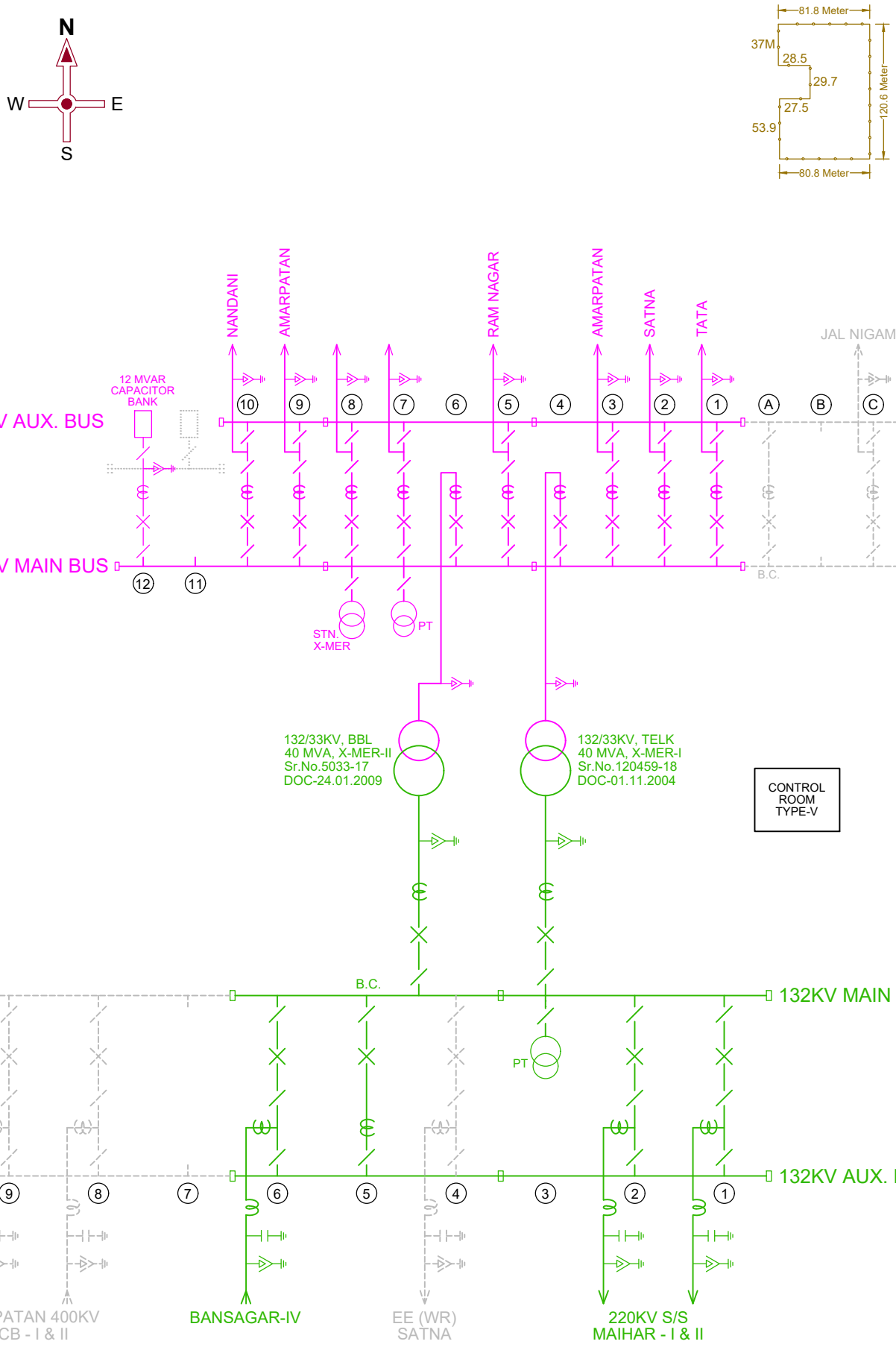
SCALE: NTS

O/O THE CHIEF ENGINEER (P&D)
M.P. POWER TRANSMISSION Co. Ltd.
JABALPUR

DRAWING No:- XII-N08-3067

REV. R2

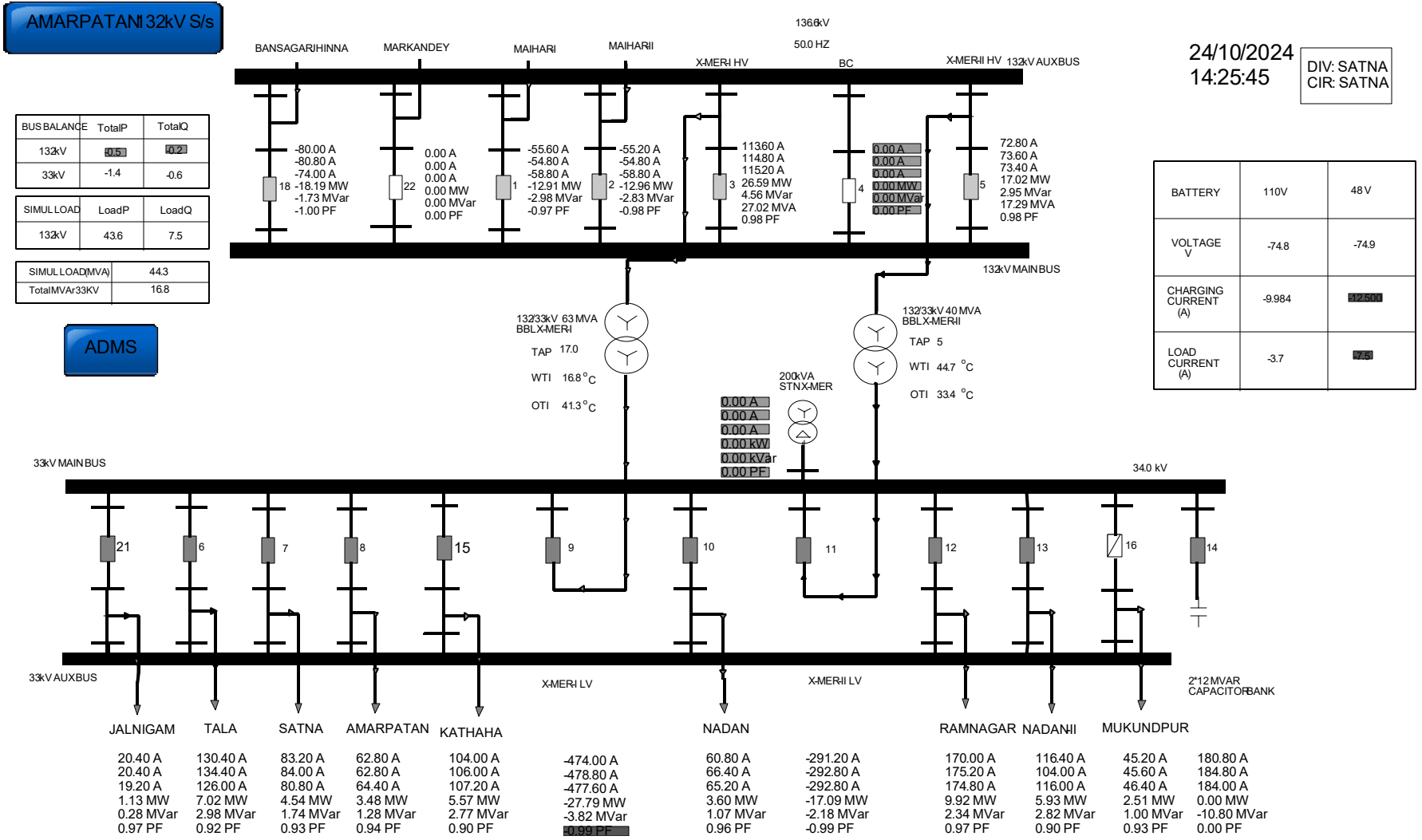
G. 132KV AMARPATAN SUBSTATION



SINGLE LINE DIAGRAM OF 132/33KV S/S AT **AMARPATAN** (Satna)

CAD CELL, MPPTCL, JABALPUR

AMARPATAN 132kV S/s



BUS BALANCE	TotalP	TotalQ
132kV	0.5	0.2
33kV	-1.4	-0.6

SIMUL LOAD	LoadP	LoadQ
132kV	43.6	7.5

SIMUL LOAD(MVA)	44.3
TotalMVAr33KV	16.8

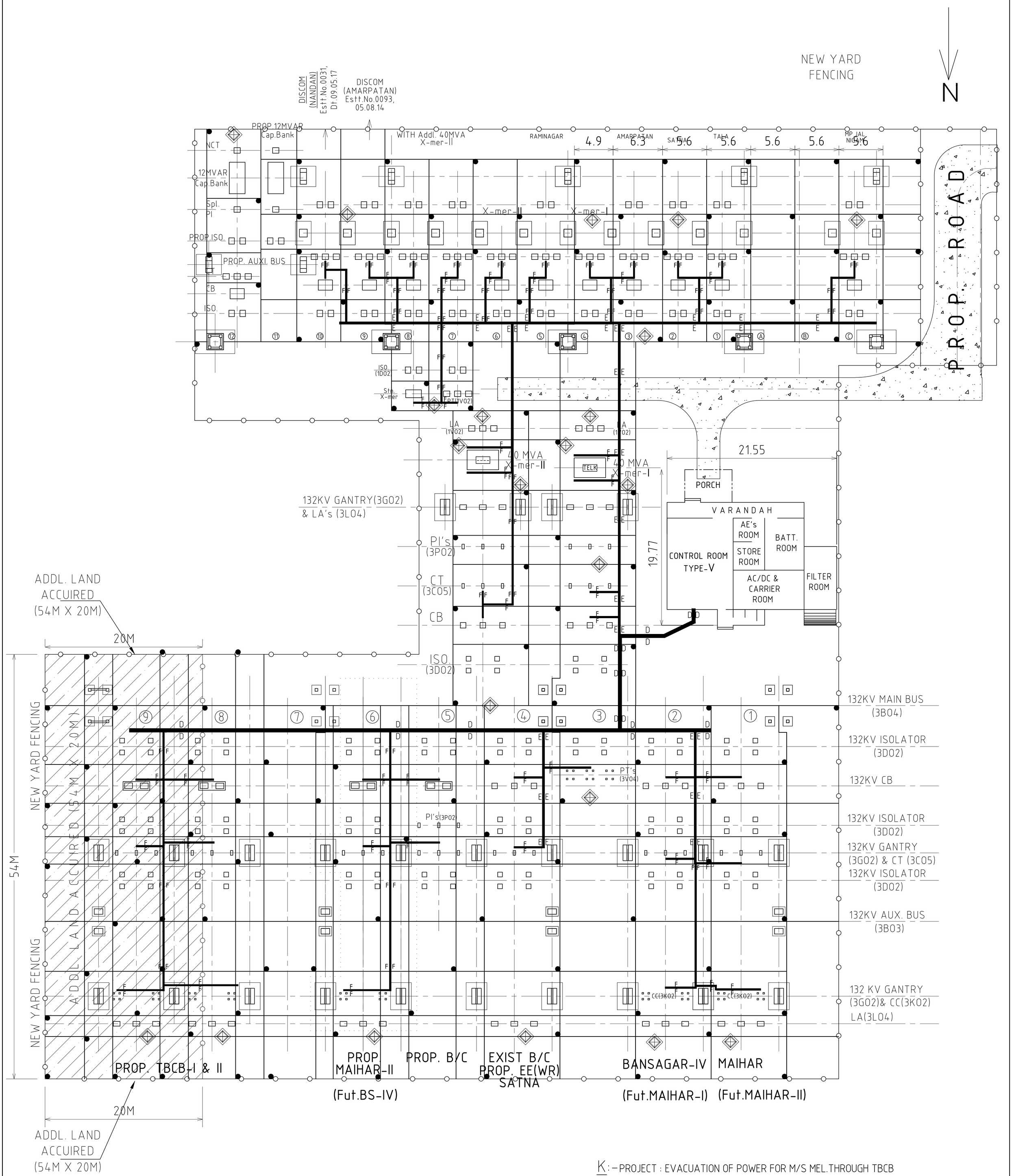
ADMS

24/10/2024
14:25:45

DIV: SATNA
CIR: SATNA

BATTERY	110V	48 V
VOLTAGE V	-74.8	-74.9
CHARGING CURRENT (A)	-9.984	12.500
LOAD CURRENT (A)	-3.7	7.5

JALNIGAM	TALA	SATNA	AMARPATAN	KATHAHA		NADAN		RAMNAGAR	NADANII	MUKUNDPUR	
20.40 A	130.40 A	83.20 A	62.80 A	104.00 A	-474.00 A	60.80 A	-291.20 A	170.00 A	116.40 A	45.20 A	180.80 A
20.40 A	134.40 A	84.00 A	62.80 A	106.00 A	-478.80 A	66.40 A	-292.80 A	175.20 A	104.00 A	45.60 A	184.80 A
19.20 A	126.00 A	80.80 A	64.40 A	107.20 A	-477.60 A	65.20 A	-292.80 A	174.80 A	116.00 A	46.40 A	184.00 A
1.13 MW	7.02 MW	4.54 MW	3.48 MW	5.57 MW	-27.79 MW	3.60 MW	-17.09 MW	9.92 MW	5.93 MW	2.51 MW	0.00 MW
0.28 MVar	2.98 MVar	1.74 MVar	1.28 MVar	2.77 MVar	-3.82 MVar	1.07 MVar	-2.18 MVar	2.34 MVar	2.82 MVar	1.00 MVar	-10.80 MVar
0.97 PF	0.92 PF	0.93 PF	0.94 PF	0.90 PF	-0.99 PF	0.96 PF	-0.99 PF	0.97 PF	0.90 PF	0.93 PF	0.00 PF



K:-PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB
SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."8 &9". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

H:-ADDL. 33KV 12MVAR CAP. BANK SHOWN AT BAY No.12. AGAINST Estt. No.0449, Dt.31.03.21 Dt.10.06.21

I:-33KV MAIN & AUXI. BUS EXTN. 33KV MP JAL NIGAM Fdr. SHOWN AT BAY No."C". AGAINST Estt. No.0107, Dt.03.09.21 Dt.06.09.21

J:-132KV B/C SHIFTED FROM BAY No.4 TO 5. 132KV EE(WR) SATNA Fdr. SHOWN AT BAY No.4 AGAINST Estt. No.0121, Dt.24.09.21 Dt.05.10.21

EARTHMAT ARRANGEMENT OF 132/33Kv S/STN. AMARPATAN

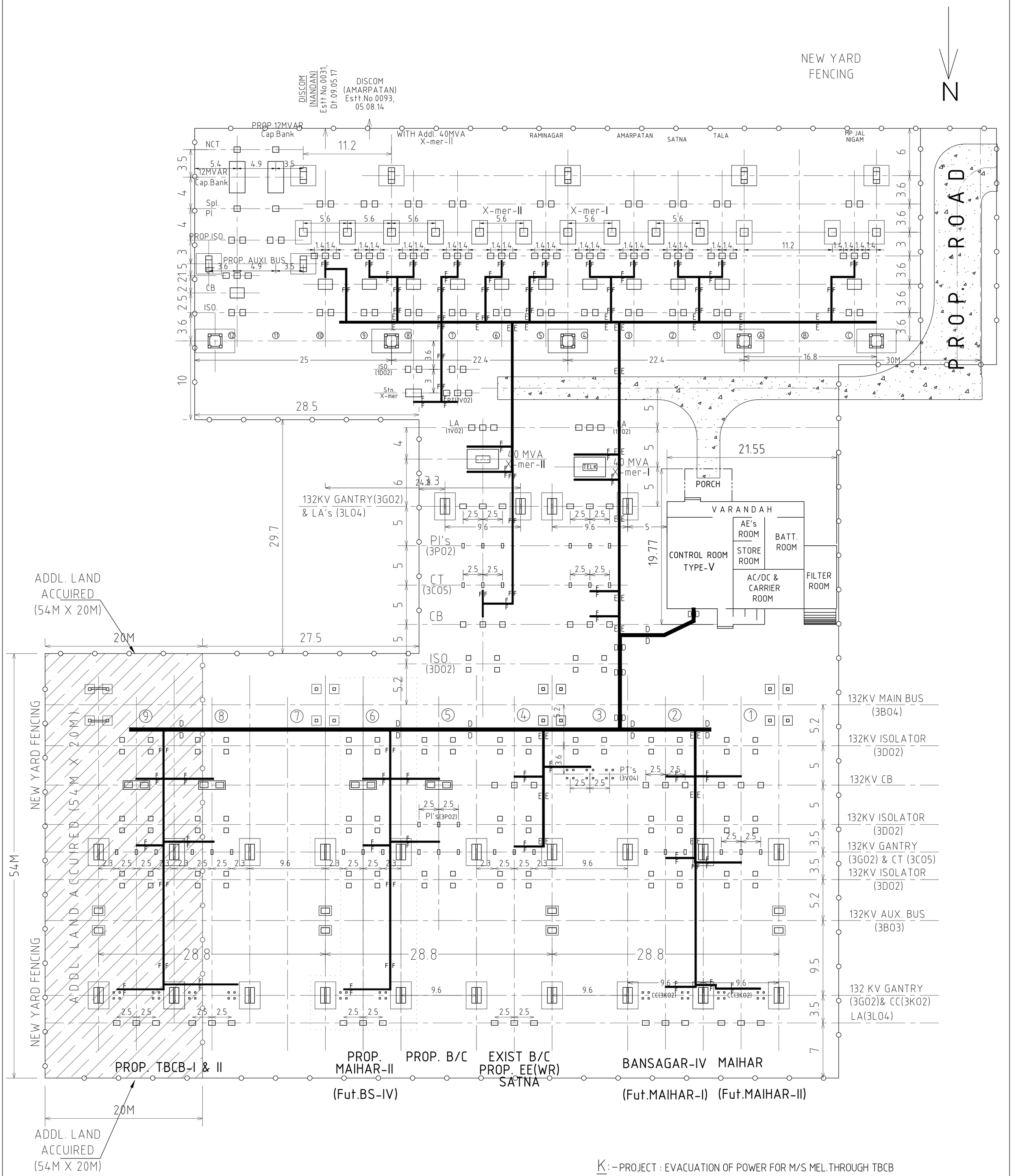
	NAME	DATE
DRN.	RK GUPTA	04-12-03
CAD	RK GUPTA	20-04-12
CKD.		
APP.		

SCALE: NTS

O/O THE EXECUTIVE DIRECTOR (T&P)
M.P. POWER TRANS. Co. Ltd. JABALPUR

DRAWING NO.- XII-NO8: 1649 E/M

REV. 14-10-24 K



H:-ADDL. 33KV 12MVAR CAP. BANK SHOWN AT BAY No.12. AGAINST Estt. No.0449, Dt.31.03.21 Dt.10.06.21

I:-33KV MAIN & AUXI. BUS EXTN. 33KV MP JAL NIGAM Fdr. SHOWN AT BAY No."C". AGAINST Estt. No.0107, Dt.03.09.21 Dt.06.09.21

J:-132KV B/C SHIFTED FROM BAY No.4 TO 5. 132KV EE(WR) SATNA Fdr. SHOWN AT BAY No.4 AGAINST Estt. No.0121, Dt.24.09.21 Dt.05.10.21

K:-PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB
SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER SHOWN AT BAY No."8 &9". AS PER FEASIBILITY CONFORMED BY S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

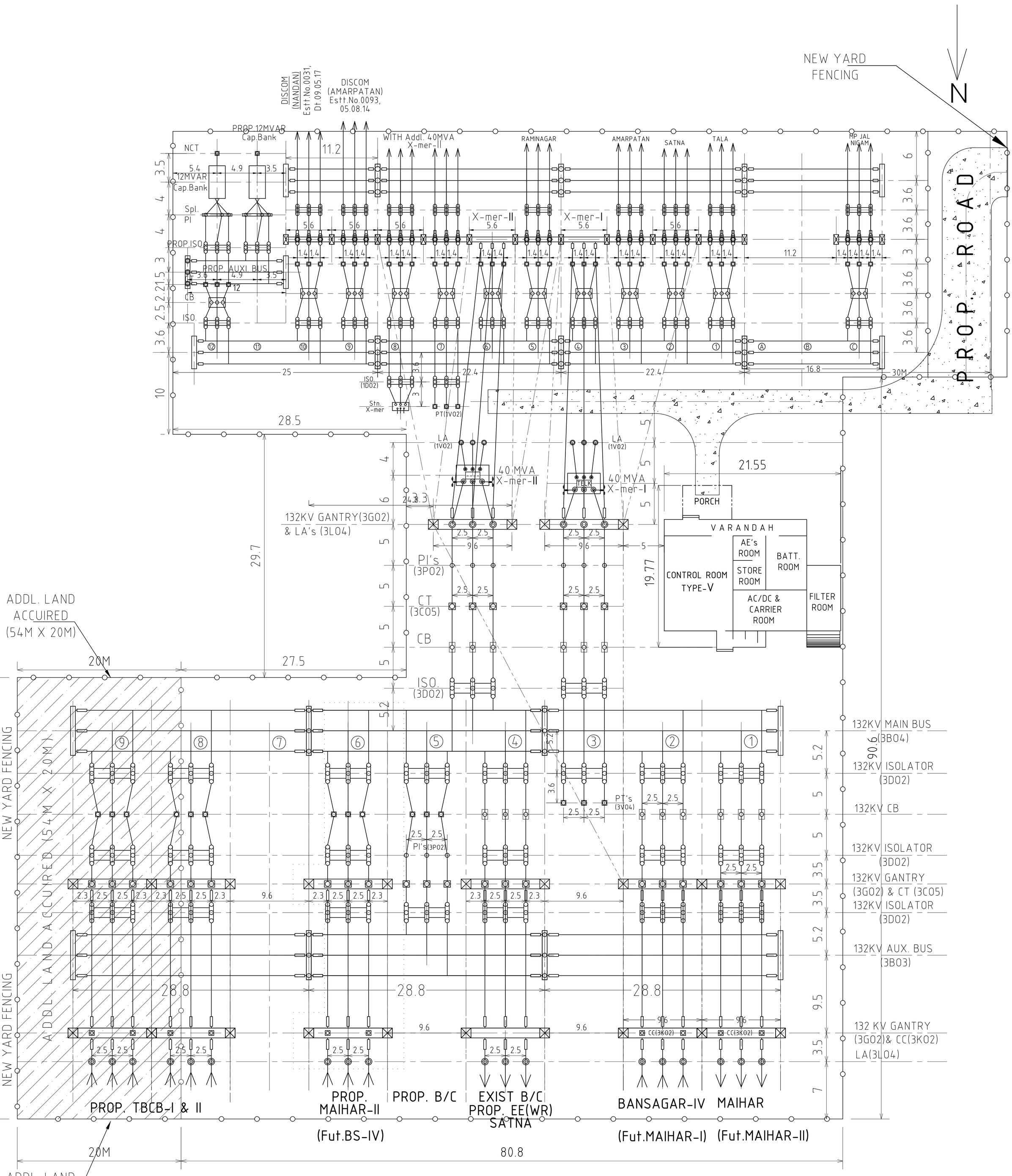
FOUNDATION PLAN & CABLE TRENCHES OF 132/33 KV S/STN. AMARPATAN

	NAME	DATE
DRN.	RKGUPTA	04-12-03
CAD	RK GUPTA	20-04-12
CKD.		
APP.		

O/O THE EXECUTIVE DIRECTOR (T&P)
M.P. POWER TRANS. Co. Ltd. JABALPUR

DRAWING NO.- XII-NO8:1649

REV. 14-10-24 K



K:-PROJECT : EVACUATION OF POWER FOR M/S MEL.THROUGH TBCB
SUB PROJECT : 132KV BUSES EXTN. AND 132KV TBCB-I & II FEEDER
SHOWN AT BAY No."8 &9". AS PER FEASIBILITY CONFORMED BY
S.E.(T &C) SATNA E-mail ON Dt.09.10.24 Dt.14.10.24

H:-ADDL. 33KV 12MVAR CAP. BANK SHOWN AT BAY No.12. AGAINST Estt. No.0449, Dt.31.03.21 Dt.10.06.21

I:-33KV MAIN & AUXI. BUS EXTN. 33KV MP JAL NIGAM Fdr. SHOWN AT BAY No."C". AGAINST Estt. No.0107, Dt.03.09.21 Dt.06.09.21

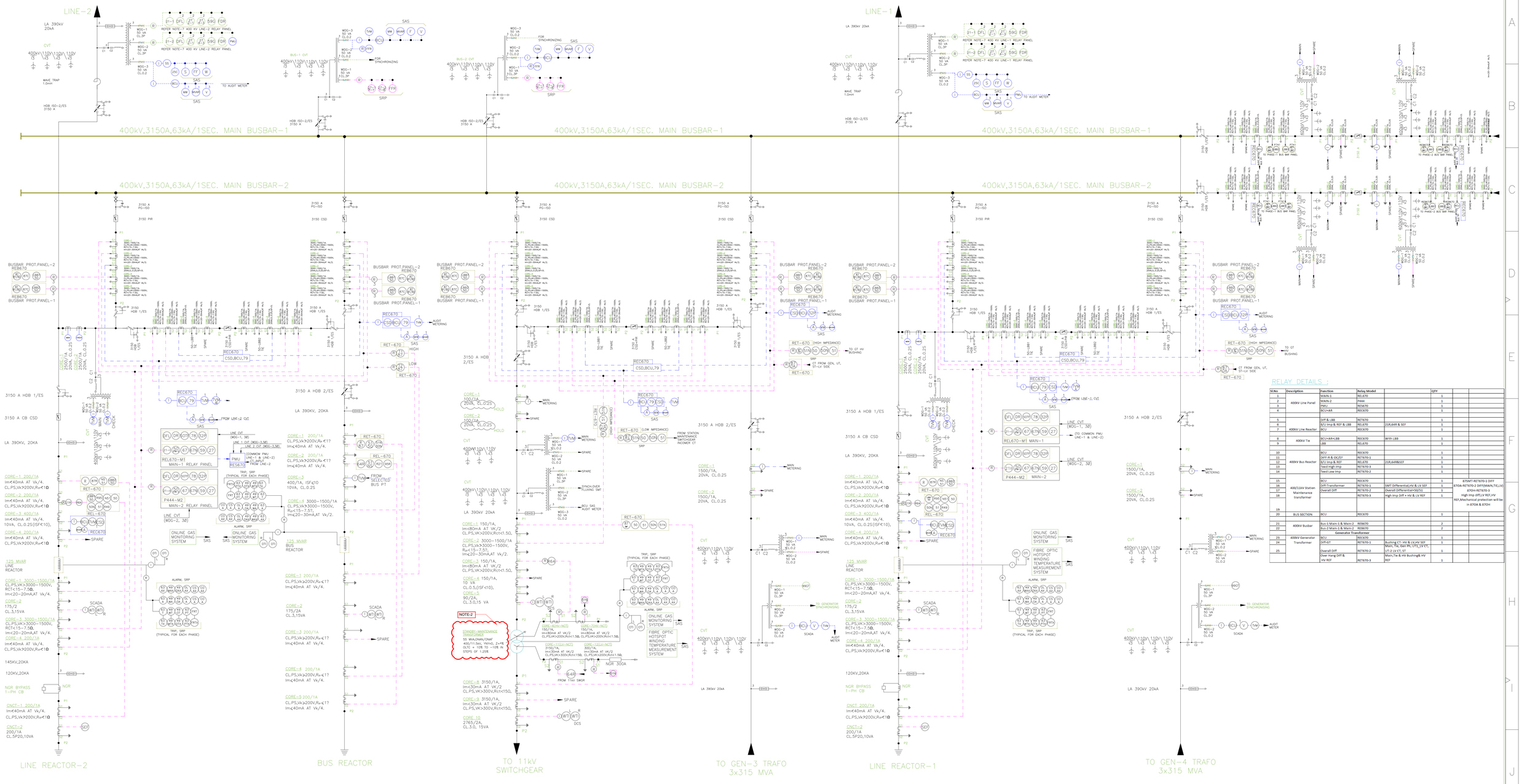
J:-132KV B/C SHIFTED FROM BAY No.4 TO 5. 132KV EE(WR) SATNA Fdr. SHOWN AT BAY No.4 AGAINST Estt. No.0121, Dt.24.09.21 Dt.05.10.21

PLAN & ELEVATION OF 132/33 Kv S/STN. AT AMARPATAN

	NAME	DATE
DRN.	RKGUPTA	02-12-03
CAD	RK GUPTA	19-04-12
CKD.		
APP.		

SCALE	O/O THE EXECUTIVE DIRECTOR (T&P) M.P. POWER TRANS. Co. Ltd. JABALPUR	DRAWING NO.- XII-NO8:1648	REV. 14-10-24 K
NTS			

H. PTEMPL SWITCHYARD



RELAY DETAILS :

Sl.No	Description	Function	Relay Model		QTY		
1	400kV Line Panel	MAIN-1	REL670		1		
2		MAIN-2	P444		1		
3		PMU	RES670		1		
4		BCU+AR	REC670		1		
5	400kV Line Reactor	Diff & LBB	RET670		1		
6		BCU Imp & REF & LBB	REL670	21R,64R & SEF	1		
7		BCU	REC670		1		
8	400kV Tie	BCU+AR+LBB	REC670	With LBB	1		
9		LBB	REL670		1		
10	400kV Bus Reactor	BCU	REC670		1		
11		Diff-R & OC/EF	RET670-1		1		
12		B/U Imp & REF	REL670	21R,64R&SEF	1		
13		Tied High Imp	RET670-3		1		
14		Tied Low Imp	RET670-2		1		
15	400/11kV Station Maintenance transformer	BCU	REC670		1		
16		Diff-Transformer	RET670-1	SMT DifferentialLHV & LV SEF	1		
17		Overall Diff	RET670-2	Overall DifferentialHV50/51	1		
18		Transformer	RET670-3	High-Imp Diff + HV & LV REF	1		
19							
20	BUS SECTION	BCU	REC670		1		
21	400kV Busbar	Bus-1 Main-1 & Main-2	REB670		2		
22		Bus-2 Main-1 & Main-2	REB670		2		
23	400kV Generator Transformer	Generator Transformer					
24		BCU	REC670		1		
25		Diff-GT	RET670-1	Bushing CT- HV & LV,HV SEF Main, Tie, Gen Prt, UT1, UT-LV, UT-2 & UT-LV CT, ST	1		
		Overall Diff	RET670-2		1		
		Over Hang Diff & HV REF	RET670-3	Main,Tie & HV Bushing& HV REF	1		

87MT-RET670-1 DIFF
87OA-RET670-2 DIFF(MAIN,TIE,LV)
87OH-RET670-3
High-Imp diff,LV REF,HV REF,Mechanical protection will be in 87OA & 87OH

RELAYING

NEMA DEVICE No.	FUNCTION
21-1/2	DIST. PROTECTION MAIN-I / MAIN-II
21R	REACTOR BACKUP IMPEDANCE
25C	CHECK SYNCHRONISING RELAY
27	UNDERVOLTAGE PROTECTION
32	REVERSE POWER
49-OA/OT	OIL TEMPERATURE, ALARM/TRIP
49-OAX/OTX	OIL TEMPERATURE, ALARM/TRIP AUX. RELAYS
49-WA/WT	WINDING TEMPERATURE, ALARM/TRIP
49-WAX/WTX	WINDING TEMPERATURE, ALARM/TRIP AUX. RELAYS
50 STB	STUB PROTECTION FOR LINE
50 LBB	LOCAL BREAKER BACKUP PROTECTION
50 N	INSTANTANEOUS E/F RELAY
51	IDMT O/C RELAY
51N	IDMT E/F RELAY
51N/S	STAND/EARTH FAULT
59	OVER VOLTAGE
59 G	DEFINITE TIME DELAY OV PROT (EACH 2-STAGE)
63-A	BUCHHOLZ ALARM
63-AX/TX	BUCHHOLZ RELAY, ALARM/TRIP AUX. RELAYS
63PT	PRESSURE RELIEF DEVICE TRIP
63PTX	PRESSURE RELIEF DEVICE TRIP AUX. RELAY
63T	BUCHHOLZ TRIP
64R	REF PROTECTION FOR SHUNT REACTOR
67/67N	DIRECTIONAL OVERCURRENT/EARTH FAULT
78	OUT OF STEP
79	AUTO RECLOSER
87 B1/B2	BUS DIFFERENTIAL PROTN. BUS-1/BUS-2
87 C	BUS DIFFERENTIAL PROTN. CENTRAL UNIT
87 OA	OVERALL DIFFERENTIAL PROTECTION
87 OH	OVERHEAD LINE DIFFERENTIAL PROTECTION
87 R	REACTOR DIFFERENTIAL PROTECTION
87 SMT	STATION MAINTAINCE TRAFO. DIFFERENTIAL PROTECTION
99	OVER FLUX PROTECTION
BCU	BAY CONTROL UNIT
COA	COOLER TROUBLE ALARM
CSA	COOLER SUPPLY ALARM
COAX	COOLER TROUBLE ALARM AUX RELAY
DR	DISTURBANCE RECORDER
DFL	DISTANCE TO FAULT LOCATER
FDR	FUSE DISTURBANCE RECORDER
FFR	FUSE FAIL RELAY
FRT	FIRE PROTECTION TRIP
FRTX	FIRE PROTECTION TRIP AUX. RELAY
OLA	OIL LEVEL ALARM RELAYS
OLAX	OIL LEVEL ALARM AUX. RELAYS
OTI L/R	OIL TEMPERATURE INDICATOR-LOCAL/REMOTE
WTI L/R	WINDING TEMPERATURE INDICATOR-LOCAL/REMOTE
SPR	SWITCHYARD RELAY PANEL
CSD	CONTROL SWITCHING DEVICE
PIR	PRE INSERTION RESISTORS
SEF	SENSITIVE EARTH FAULT

DETAIL OF EQUIPMENT

Sl NO.	EQUIPMENT DESCRIPTION	LEGEND
1	400kV 3-PHASE SF6 CIRCUIT BREAKER 3150A, STC-63kA FOR 1SEC.	
2	400kV 3-PHASE HDB ISOLATOR WITH 1 E/S,3150A STC-63kA FOR 1SEC,ISOLATOR MOTERISED,ONE EARTH SWITCH MOTOR AND MANUAL OPERATED.	
3	400kV 3-PHASE HDB ISOLATOR WITH 2 E/S,3150A STC-63kA FOR 1SEC,ISOLATOR MOTERISED,TWO EARTH SWITCH MOTOR AND MANUAL OPERATED.	
4	400kV 3-PHASE PANTO-ISOLATOR WITH 1 E/S,3150A STC-63kA FOR 1SEC,ISOLATOR MOTERISED, ONE EARTH SWITCH MOTOR AND MANUAL OPERATED.	
5	400kV 1-PHASE,CURRENT TRANSFORMER WITH REQUIRED NO.OF CORES.	
6	BUSHING CT (INSTALLED IN GENERATOR TRANSFORMER, STATION TRANSFORMER AND BUS REACTOR).	
7	390kV,METAL OXIDE (GAPLESS) LIGHTNING ARRESTOR (1 PHASE) 20KA DISCHARGE CLASS 4.	
8	400kV WAVE TRAP (1-PHASE,PEDESTAL MOUNTED), 3150A,1.0mH,STC-63kA FOR 1SEC.	
9	400kV CAPACITIVE VOLTAGE TRANSFORMER (1-PHASE).	
10	120kV,METAL OXIDE (GAPLESS) LIGHTNING ARRESTOR (1 PHASE) 20KA DISCHARGE	
11	55 MVA, STATION MAINTENANCE TRANSFORMER 400/11.5 kV, YNYn0, Z=*%	
12	125 MVAR, LINE AND BUS REACTOR	

SYSTEM PARAMETER

Sl NO.	DESCRIPTION	400kV SYSTEM
1	SYSTEM OPERATING VOLTAGE	400kV
2	MAXIMUM OPERATING VOLTAGE	420kV
3	RATED FREQUENCY	50HZ +3%/-5%
4	NO. OF PHASE	3
5	RATED SHORT CIRCUIT CURRENT FOR 1SECOND	63kA
6	SYSTEM NEUTRAL EARTHING	SOLIDLY EARTHED
7	FULL WAVE IMPULSE WITHSTAND VOLTAGE(1.2/50μs)	1425kVp
8	SWITCHING IMPULSE WITHSTAND VOLTAGE(250/2500μs)	1050kVp
9	ONE MINUTE POWER FREQUENCY DRY AND WET WITHSTAND VOLTAGE	630kV rms
10	CORONA EXTINCTION VOLTAGE	320kV rms
11	MIN.CREEPAGE DISTANCE	25mm/kV(10500mm)

FUNCTION IN BCU

A – CURRENT/PHASE
V – VOLTAGE/PHASE
F – FREQUENCY
W – ACTIVE POWER
VAR – REACTIVE POWER
PF – POWER FACTOR
79 – AUTO RECLOSURE 1PH & 3PH (ONLY FOR LINE & RELATED TIE BREAKER)
25 – SYNCHRONIZATION CHECK
95 – TRIP CKT. SUPERVISION

NOTES

1. ALL TRANSDUCERS SHALL BE ORGANICALLY ISOLATED DUAL OUTPUT TYPE.
2. (*) PERCENTAGE IMPEDANCE RATING FOR TRANSFORMER WILL BE PROVIDED LATER AFTER FINALIZING BY THE VENDOR.
3. CTs ARE TO BE CONNECTED IN ADDITIVE POLARITY.
4. WHEREVER PT SUPPLY MONITORING IS A BUILT IN FEATURE OF DEVICE SUCH AS NUMERICAL RELAY AND STATIC TRI VECTOR METER, IT SHALL BE USED FOR PT CIRCUIT SUPERVISION. IF THIS FEATURE IS NOT AVAILABLE A SEPARATE PT SUPERVISION SCHEME SHALL BE PROVIDED. IN PT CIRCUIT USED FOR SYNCHRONIZING, THE AUXILIARY CONTACT OF THE MCB SHALL BE USED FOR REMOTE COMMUNICATION.
5. THE BCU SHALL HAVE THE FACILITY TO HANDLE DIGITAL INPUTS SUCH AS STATUS OF BREAKERS, ISOLATORS, AND EARTH SWITCHES; ANALOG SIGNALS SUCH AS CT AND PT INPUTS ,AND THE DIGITAL OUTPUTS SUCH AS OPEN AND CLOSE COMMANDS ETC. ALL NUMERICAL RELAYS SHALL HAVE COMMUNICATION FACILITY TO SCADA INDEPENDENTLY.
6. COMMON PMU TO BE PROVIDED FOR BOTH 400 kV LINE CIRCUIT.
7. SEPARATE DISCRETE RELAY WITH TRIP CIRCUIT SHALL BE CONSIDERED FOR LBB PROTECTION.
8. 21M1 & M2 PROTECTION RELAY SHALL COMPRISE OF OTHER ASSOCIATE FUNCTIONS I.E. BROKEN CONDUCTOR, PSB,SOTF,LOAD ENCROACHMENT, CARRIER AIDED SCHEMES AND OTHER FEARTURES AS PER CEA GUIDELINES.
9. CSD SHALL BE CONSIDERED FOR ALL REACTOR , SMT & GT BAYS.
10. ALL THE MAIN PROTECTIONS BACK –UP AND BUS BAR RELAY, BCU SHALL BE IN LINE WITH IEC 61850 COMMUNICATION PROTOCOL.
11. ALL TVM/ABT METERS SHALL BE SUITABLE FOR SCADA CONNECTIVITY ON RS-485 MODBUS PROTOCOL.
12. BUS DIFFERENTIAL RELAY SHALL BE OF LOW IMPEDANCE & DE-CENTRALIZED TYPE.
13. LINE DISTANCE PROTECTION RELAY SHALL HAVE INBUILT DIRECTIONAL E/F PROTECTION.
14. 400 KV SIDE LBB SHALL BE INBUILT FEATURE OF MI/ C MII PROTECTION RELAY.
15. AUTO RECLOSE & SYNCH CHECK FUNCTION SHALL BE INBUILT OF BCU.
16. CT & CVT SPECIFICATION WILL BE FINALIZED AFTER THE CT & CVT SIZING CALCULATION APPROVAL.
17. IT IS NOTED THAT TVM METERS ARE THE AUDT METER PROVIDED ALONG WITH MAIN METERS.
18. RELAY ID NUMBER WILL BE DECIDED BY CRP VENDOR.
19. ALARM & TRIP SIGNALS OF TRANSFORMERS & REACTORS SHALL BE PROVIDED IN TWO DIFFERENT RELAYS .
20. SPECIFIC IED DETAILS ALONG WITH FUNCTIONALITY WILL BE PROVIDED BY CRP VENDOR
21. DETAILS OF EACH IED ALONG WITH PROTECTIONS CONSIDERED WILL BE PROVIDED BY CRP VENDOR
22. TRIP MATRIX ON THE PROPOSED PROTECTIONS WILL BE PROVIDED BY CRP VENDOR.
23. CT AND PT CORE NUMBERING AND RATINGS SHALL BE AS PER THE FINAL CT SIZING DOCUMENT.
24. TVM METERS ARE THE AUDIT METER PROVIDED ALONG ALONG WITH MAIN METERS.

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
01	13.08.2024	REVISED AS PER COMMENTS ON RO	NDK	AD	ISG
00	26.07.2024	FIRST SUBMISSION	NDK	AD	ISG

CUSTOMER : adani
MAHAN ENERGEN LIMITED, BANDHAURA VILLAGE, SIGRAULI DIST, MADHYA PRADESH

OWNER'S ENGINEER : TATA
TATA CONSULTING ENGINEERS LIMITED MUMBAI

CONTRACTOR : GODREJ & BOYCE MFG. CO. LTD.
PIROJSHANAGAR, VIKHROLI WEST MUMBAI MAHARASTRA (INDIA).

PROJECT : CONSTRUCTION 400 kV SWITCHYARD AT 2X800 MW(Ph-II) MAHAN ULTRA SUPER CRITICAL THERMAL POWER PROJECT AT SINGRAULI ,MP

LOA NO. : 4503035464 DT.06.05.2024

	DATE	NAME
DRAWN	01.07.24	NDK
CHKD	01.07.24	AD
APPROVED	01.07.24	ISG

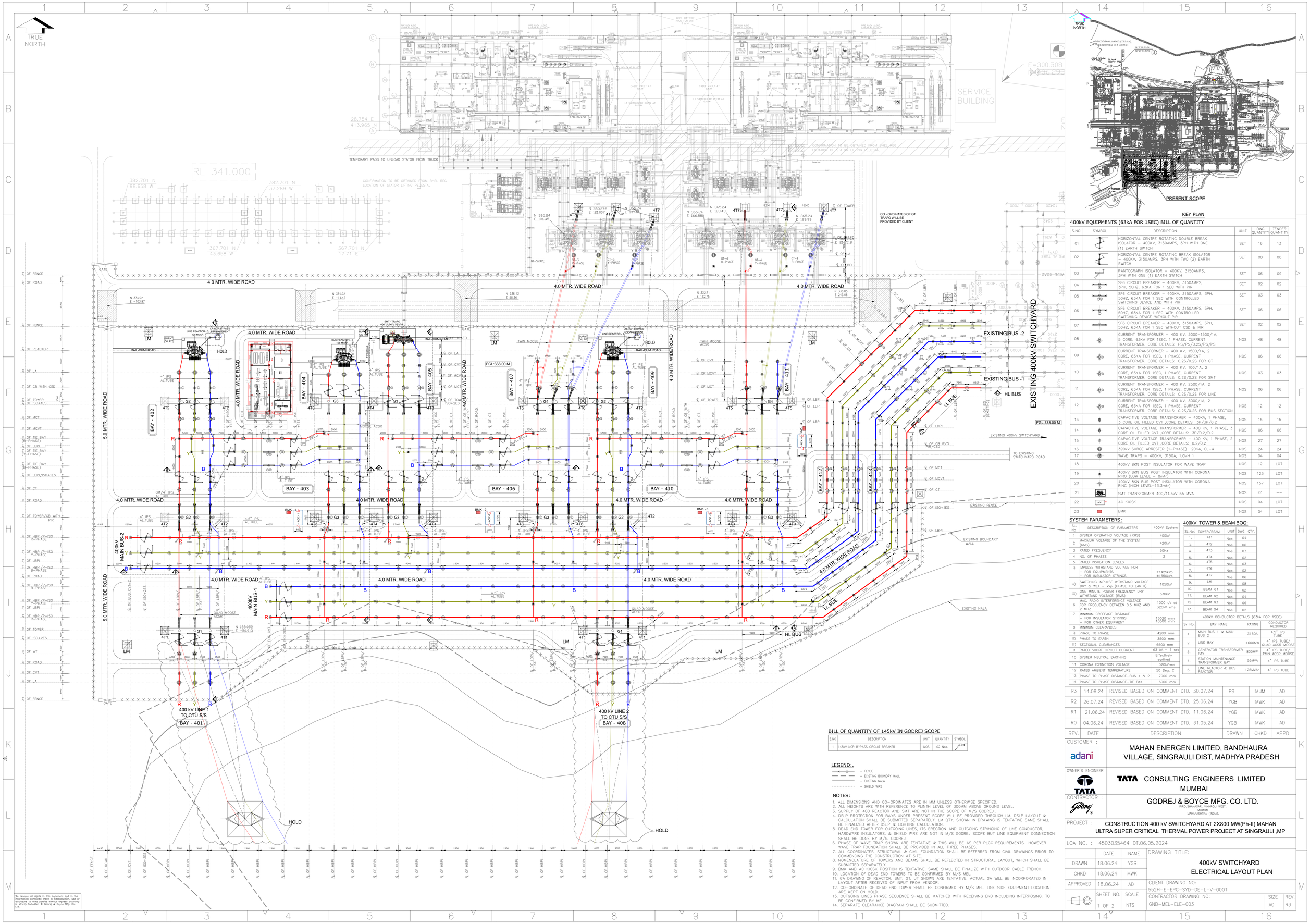
DRAWING TITLE: 400 kV SWITCHYARD PROTECTION & METERING SINGLE LINE DIAGRAM

CLIENT DRAWING NO: 552H-E-EPC-SYD-DE-E-V-0001

SHEET NO. 01 OF 01 | SCALE NTS

CONTRACTOR DRAWING NO: GMB-MEL-ELE-001

SIZE A0 | REV. R1



400kV EQUIPMENTS (63kA FOR 1SEC) BILL OF QUANTITY

S.NO.	SYMBOL	DESCRIPTION	UNIT	DWG QUANTITY	TENDER QUANTITY
01		HORIZONTAL CENTRE ROTATING DOUBLE BREAK ISOLATOR – 400kV, 3150AMPS, 3PH WITH ONE (1) EARTH SWITCH	SET	16	13
02		HORIZONTAL CENTRE ROTATING BREAK ISOLATOR – 400KV, 3150AMPS, 3PH WITH TWO (2) EARTH SWITCH	SET	08	08
03		PANTOGRAPH ISOLATOR – 400KV, 3150AMPS, 3PH WITH ONE (1) EARTH SWITCH	SET	06	09
04		SF6 CIRCUIT BREAKER – 400KV, 3150AMPS, 3PH, 50HZ, 63KA FOR 1 SEC WITH PIR	SET	02	02
05	CB	SF6 CIRCUIT BREAKER – 400KV, 3150AMPS, 3PH, 50HZ, 63KA FOR 1 SEC WITH CONTROLLED SWITCHING DEVICE AND WITH PIR	SET	03	03
06		SF6 CIRCUIT BREAKER – 400KV, 3150AMPS, 3PH, 50HZ, 63KA FOR 1 SEC WITH CONTROLLED SWITCHING DEVICE WITHOUT PIR	SET	06	06
07		SF6 CIRCUIT BREAKER – 400KV, 3150AMPS, 3PH, 50HZ, 63KA FOR 1 SEC WITHOUT CSD & PIR	SET	02	02
08		CURRENT TRANSFORMER – 400 KV, 3000–1500/1A, 5 CORE, 63KA FOR 1SEC, 1 PHASE, CURRENT TRANSFORMER. CORE DETAILS: PS/PS/0.25/PS/PS	NOS	48	48
09		CURRENT TRANSFORMER – 400 KV, 1500/1A, 2 CORE, 63KA FOR 1SEC, 1 PHASE, CURRENT TRANSFORMER. CORE DETAILS: 0.2S/0.2S FOR GT	NOS	06	06
10		CURRENT TRANSFORMER – 400 KV, 100/1A, 2 CORE, 63KA FOR 1SEC, 1 PHASE, CURRENT TRANSFORMER. CORE DETAILS: 0.2S/0.2S FOR SMT	NOS	03	03
11		CURRENT TRANSFORMER – 400 KV, 2500/1A, 2 CORE, 63KA FOR 1SEC, 1 PHASE, CURRENT TRANSFORMER. CORE DETAILS: 0.2S/0.2S FOR LINE	NOS	06	06
12		CURRENT TRANSFORMER – 400 KV, 3000/1A, 2 CORE, 63KA FOR 1SEC, 1 PHASE, CURRENT TRANSFORMER. CORE DETAILS: 0.2S/0.2S FOR BUS SECTION	NOS	12	12
13		CAPACITIVE VOLTAGE TRANSFORMER – 400KV, 1 PHASE, 3 CORE OIL FILLED CVT ,CORE DETAILS: 3P/3P/0.2	NOS	15	15
14		CAPACITIVE VOLTAGE TRANSFORMER – 400 KV, 1 PHASE, 3 CORE OIL FILLED CVT ,CORE DETAILS: 3P/0.2/0.2	NOS	06	06
15		CAPACITIVE VOLTAGE TRANSFORMER – 400 KV, 1 PHASE, 2 CORE OIL FILLED CVT ,CORE DETAILS: 0.2/0.2	NOS	27	27
16		396kV SURGE ARRESTER (1–PHASE) 20KA, CL–4	NOS	24	24
17		WAVE TRAPS – 400KV, 3150A, 1.0MH 1	NOS	04	04
18		400kV 8KN POST INSULATOR FOR WAVE TRAP	NOS	12	LOT
19		400kV 8KN BUS POST INSULATOR WITH CORONA RING (LOW LEVEL – 8mtr)	NOS	123	LOT
20		400kV 8KN BUS POST INSULATOR WITH CORONA RING (HIGH LEVEL–13.3mtr)	NOS	157	LOT
21	SMT	SMT TRANSFORMER 400/11.5kV 55 MVA	NOS	01	--
22	AC	AC KIOSK	NOS	04	LOT
23	BMK	BMK	NOS	04	LOT

SYSTEM PARAMETERS:

SL. No	DESCRIPTION OF PARAMETERS		400kV System
1	SYSTEM OPERATING VOLTAGE (RMS)		400kV
2	MAXIMUM VOLTAGE OF THE SYSTEM (RMS)		420kV
3	RATED FREQUENCY		50Hz
4	NO. OF PHASES		3
5	RATED INSULATION LEVELS		
i)	IMPULSE WITHSTAND VOLTAGE FOR	– FOR EQUIPMENTS – FOR INSULATOR STRINGS	±1425kVp ±1550kVp
ii)	SWITCHING IMPULSE WITHSTAND VOLTAGE DRY & WET – kVp (PHASE TO EARTH)		1050kV
iii)	ONE MINUTE POWER FREQUENCY DRY WITHSTAND VOLTAGE (RMS)		630kV
6	MAX. RADIO INTERFERENCE VOLTAGE FOR FREQUENCY BETWEEN 0.5 MHZ AND 2 MHZ		1000 uV at 320kV rms
7	MINIMUM CREEPAGE DISTANCE	– FOR INSULATOR STRINGS – FOR OTHER EQUIPMENT	13220 mm 10500 mm
8	MINIMUM CLEARANCES		
i)	PHASE TO PHASE		4200 mm
ii)	PHASE TO EARTH		3500 mm
iii)	SECTIONAL CLEARANCES		6500 mm
9	RATED SHORT CIRCUIT CURRENT		63 kA – 1 sec
10	SYSTEM NEUTRAL EARTHING		Effectively earthed
11	CORONA EXTINCTION VOLTAGE		320kVrms
12	RATED AMBIENT TEMPERATURE		50 Deg. C
13	PHASE TO PHASE DISTANCE–BUS 1 & 2		7000 mm
14	PHASE TO PHASE DISTANCE–TIE BAY		6000 mm

400kV TOWER & BEAM BOQ:

SL.No.	TOWER/BEAM	UNIT	DWG. QTY.
1.	4T1	Nos.	04
3.	4T2	Nos.	06
4.	4T3	Nos.	07
5.	4T4	Nos.	02
6.	4T5	Nos.	03
7.	4T6	Nos.	02
8.	4T7	Nos.	06
9.	LM	Nos.	08
10.	BEAM G1	Nos.	02
11.	BEAM G2	Nos.	04
12.	BEAM G3	Nos.	06
13.	BEAM G4	Nos.	02

400kV CONDUCTOR DETAILS (63kA FOR 1SEC)

Sr No.	BAY NAME	RATING	CONDUCTOR REQUIRED
1.	MAIN BUS 1 & MAIN BUS 2	3150A	4.5" IPS TUBE
2.	LINE BAY	1600MW	4" IPS TUBE/ QUAD ACSR MOOSE
3.	GENERATOR TRSNSFORMER BAY	800MW	4" IPS TUBE/ TWIN ACSR MOOSE
4.	STATION MAINTENANCE TRANSFORMER BAY	55MVA	4" IPS TUBE
5.	LINE REACTOR & BUS REACTOR	125MVAr	4" IPS TUBE

BILL OF QUANTITY OF 145kV IN GODREJ SCOPE

S.NO	DESCRIPTION	UNIT	QUANTITY	SYMBOL
1	145kV NGR BYPASS CIRCUIT BREAKER	NOS	02 Nos.	

LEGEND:.
- FENCE
- EXISTING BOUNDRY WALL
- EXISTING NALA
- SHIELD WIRE

NOTES:
1. ALL DIMENSIONS AND CO–ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ALL HEIGHTS ARE WITH REFERENCE TO PLINTH LEVEL OF 300MM ABOVE GROUND LEVEL.
3. SUPPLY OF 400 REACTOR AND SMT ARE NOT IN THE SCOPE OF M/S GODREJ.
4. DSLP PROTECTION FOR BAYS UNDER PRESENT SCOPE WILL BE PROVIDED THROUGH LM. DSLP LAYOUT & CALCULATION SHALL BE SUBMITTED SEPARATELY. LM QTY. SHOWN IN DRAWING IS TENTATIVE SAME SHALL BE FINALIZED AFTER DSLP & LIGHTING CALCULATION.
5. DEAD END TOWER FOR OUTGOING LINES, ITS ERECTION AND OUTGOING STRINGING OF LINE CONDUCTOR, HARDWARE INSULATORS, & SHIELD WIRE ARE NOT IN M/S GODREJ SCOPE BUT LINE EQUIPMENT CONNECTION SHALL BE DONE BY M/S. GODREJ.
6. PHASE OF WAVE TRAP SHOWN ARE TENTATIVE & THIS WILL BE AS PER PLCC REQUIREMENTS HOWEVER WAVE TRAP FOUNDATION SHALL BE PROVIDED IN ALL THREE PHASES.
7. ALL COORDINATES, STRUCTURAL & CIVIL FOUNDATION SHALL BE REFERRED FROM CIVIL DRAWINGS PRIOR TO COMMENCING THE CONSTRUCTION AT SITE.
8. NOMENCLATURE OF TOWERS AND BEAMS SHALL BE REFLECTED IN STRUCTURAL LAYOUT, WHICH SHALL BE SUBMITTED SEPARATELY.
9. BMK AND AC KIOSK POSITION IS TENTATIVE, SAME SHALL BE FINALIZE WITH OUTDOOR CABLE TRENCH.
10. LOCATION OF DEAD END TOWERS TO BE CONFIRMED BY M/S MEL.
11. GA DRAWING OF REACTOR, SMT, GT, UT SHOWN ARE TENTATIVE. ACTUAL GA WILL BE INCORPORATED IN LAYOUT AFTER RECEIVED OF INPUT FROM VENDOR.
12. CO–ORDINATE OF DEAD END TOWER SHALL BE CONFIRMED BY M/S MEL. LINE SIDE EQUIPMENT LOCATION ARE KEPT ON HOLD.
13. OUTGOING LINES PHASE SEQUENCE SHALL BE MATCHED WITH RECEIVING END INCLUDING INTERPOSING. TO BE CONFIRMED BY MEL.
14. SEPARATE CLEARANCE DIAGRAM SHALL BE SUBMITTED.

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
R3	14.08.24	REVISED BASED ON COMMENT DTD. 30.07.24	PS	MUM	AD
R2	26.07.24	REVISED BASED ON COMMENT DTD. 25.06.24	YGB	MWK	AD
R1	21.06.24	REVISED BASED ON COMMENT DTD. 11.06.24	YGB	MWK	AD
R0	04.06.24	REVISED BASED ON COMMENT DTD. 31.05.24	YGB	MWK	AD

CUSTOMER : adani
MAHAN ENERGEN LIMITED, BANDHAURA VILLAGE, SINGRAULI DIST, MADHYA PRADESH

OWNER'S ENGINEER : TATA
TATA CONSULTING ENGINEERS LIMITED MUMBAI

CONTRACTOR : Godrej
GODREJ & BOYCE MFG. CO. LTD.
PIROJSHANAGAR, VIKHROLI WEST, MUMBAI MAHARASHTRA (INDIA).

PROJECT : CONSTRUCTION 400 kV SWITCHYARD AT 2X800 MW(Ph-II) MAHAN ULTRA SUPER CRITICAL THERMAL POWER PROJECT AT SINGRAULI ,MP

LOA NO. : 4503035464 DT.06.05.2024

	DATE	NAME
DRAWN	18.06.24	YGB
CHKD	18.06.24	MWK
APPROVED	18.06.24	AD

DRAWING TITLE: 400kV SWITCHYARD ELECTRICAL LAYOUT PLAN

CLIENT DRAWING NO: 552H–E–EPC–SYD–DE–L–V–0001

SHEET NO.	SCALE
1 OF 2	NTS

CONTRACTOR DRAWING NO: GNB–MEL–ELE–003

SIZE	REV.
A0	R3

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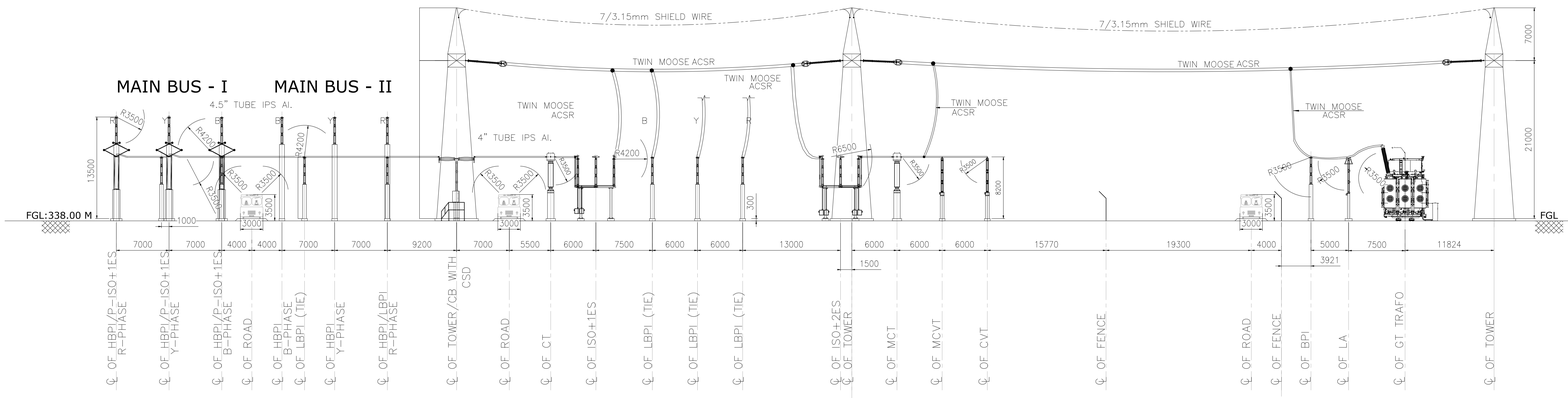
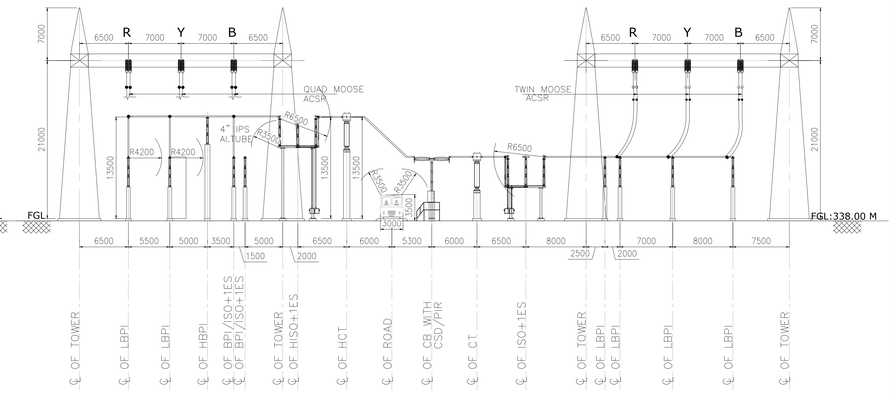
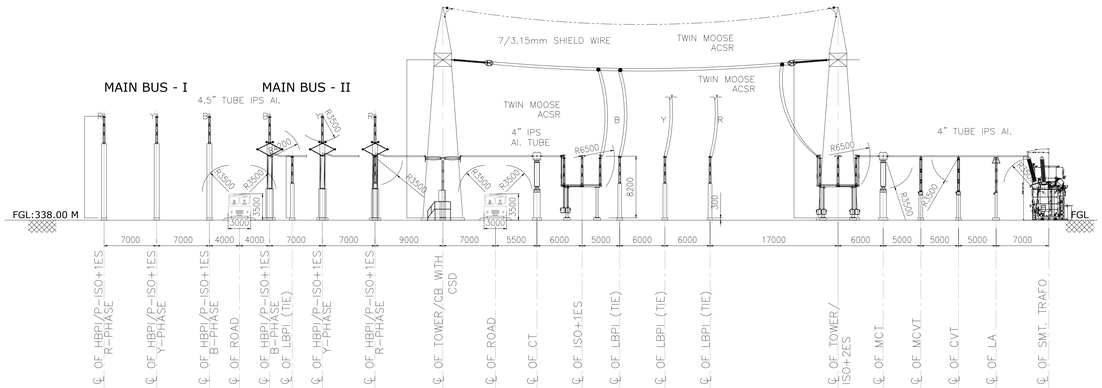


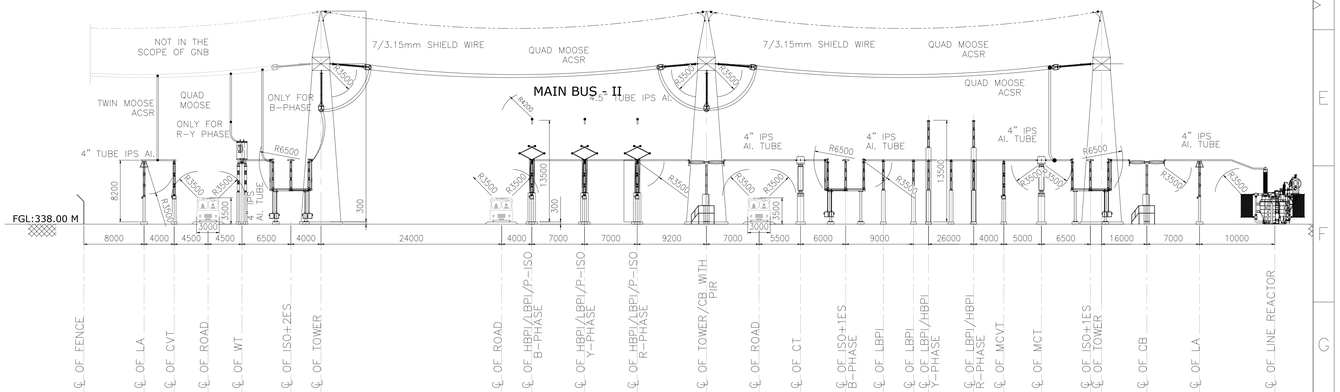
SECTION A-A
GT4-TRANSFORMER BAY



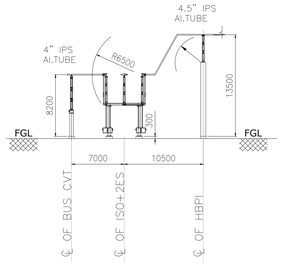
SECTION B-B
TIE BAY



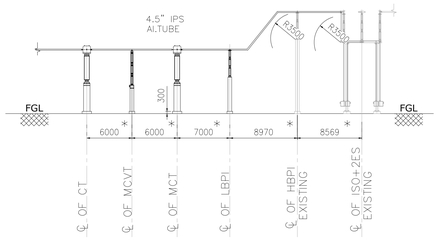
SECTION C-C
SMT TRAFO BAY



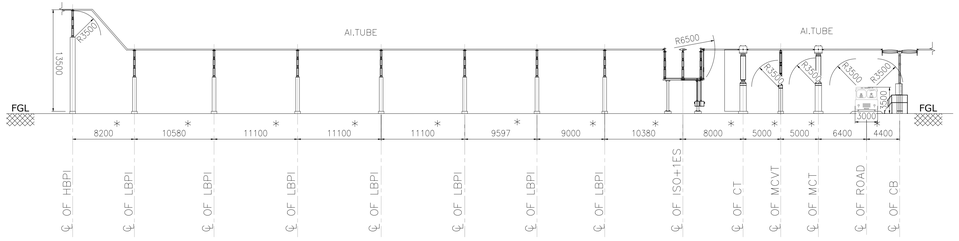
SECTION D-D
400kV LINE BAY-1 + LINE REACTOR BAY



SECTION F-F
BUS CVT CONNECTION

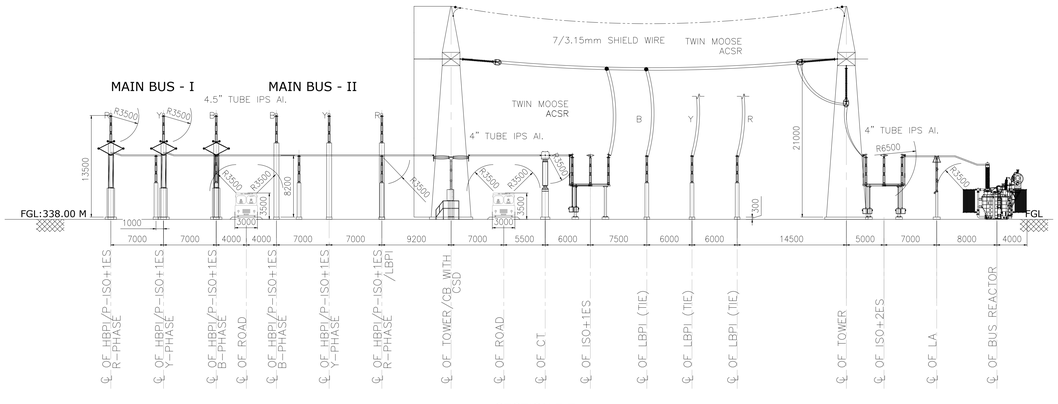


SECTION G-G
BUS SECTIONALISER

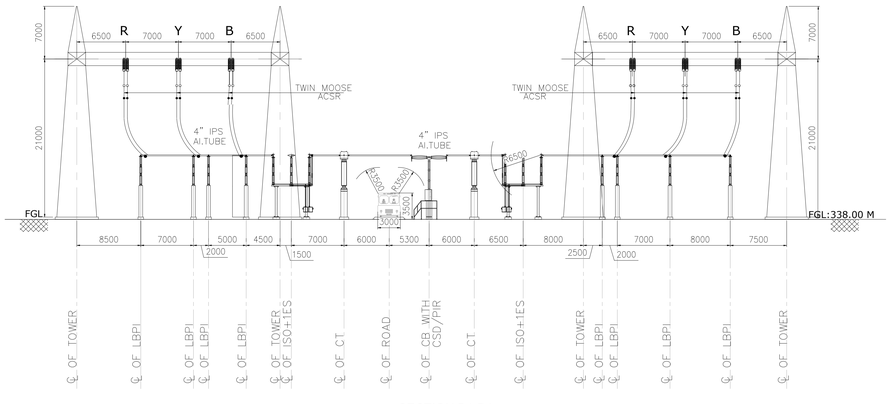


SECTION H-H
BUS SECTIONALISER

NOTE:.
* - SHALL BE DIFFERENT FOR DIFFERENT PHASES
REFER LAYOUT FOR PHASE WISE DIMENSIONS.



SECTION E-E
BUS REACTOR BAY



SECTION B1-B1
TIE BAY

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
R3	14.08.24	REVISED BASED ON COMMENT DATED 30.07.24	PS	MUM	AD
R2	26.07.24	REVISED BASED ON COMMENT DTD. 25.06.24	YGB	MUM	AD
R1	21.06.24	REVISED BASED ON COMMENT DTD. 11.06.24	YGB	MWK	AD
R0	04.06.24	FIRST ISSUE	YGB	MWK	AD

CUSTOMER : adani
MAHAN ENERGEN LIMITED, BANDHAURA VILLAGE, SIGRAULI DIST, MADHYA PRADESH

OWNER'S ENGINEER : TATA
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GODREJ & BOYCE MFG. CO. LTD.
PIROJSHANAGAR, VIKHROLI WEST, MUMBAI MAHARASHTRA (INDIA).

PROJECT : CONSTRUCTION 400 kV SWITCHYARD AT 2X800 MW(Ph-II) MAHAN ULTRA SUPER CRITICAL THERMAL POWER PROJECT AT SINGRAULI ,MP

LOA NO. : 4503035464 DT.06.05.2024

	DATE	NAME
DRAWN	18.06.24	YGB
CHKD	18.06.24	MWK
APPROVED	18.06.24	AD
SHEET NO.	2 OF 2	
SCALE	NTS	

DRAWING TITLE:
400kV SWITCHYARD
ELECTRICAL LAYOUT PLAN

CLIENT DRAWING NO: 552H-E-EPC-SYD-DE-L-V-0001
CONTRACTOR DRAWING NO: GNB-MEL-ELE-003
SIZE A0 | REV. R3

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ZONE-4D
TW=4T7
h=31.8m
hx4=10.30m
rx4=27.687m

ZONE-3B
S3=27.6m
h=28.3m
hx3=10.3m
ho3=21.39m

ZONE-3B
S4=16.5m
h=28.3m
hx3=10.3m
ho3=21.39m

ZONE-1C
bx3=18.51m
h=28.3m
hx3=10.3m

ZONE-5A
TW=4T4,4T7
h=31.8m
hx=8.460m
rx=31m
a=123.576m
d=163.21m
8p(h-hx)=186.52m
Hence d<8p(h-hx)

ZONE-4A,B&C
TW=4T2,4T3,4T4
h=31.8m
hx1=8.735m
hx2=8.5m
hx3=5.575
rx1=30.549m
rx2=30.979m
rx3=36.328m

ZONE-2
S2=40.5m
h=28.3m
hx2=8.5m
ho2=18.17m

ZONE-1
S1=27m
h=28.3m
hx1=21.3m
ho1=21.55m

ZONE-1B
bx2=21.21m
h=28.3m
hx2=8.5m

ZONE-1D
bx4=13.26m
h=28.3m
hx4=13.8m

ZONE-1B
bx2=21.21m
h=28.3m
hx2=8.5m

ZONE-5B
LM&TW=4T1,LM1,4T3,4T2
h=30.3m
hx=13.8m
rx=19.58m
d1=110.9m
8p(h-hx)=132m
Hence d<8p(h-hx)

ZONE-5B
LM&TW=LM1,4T1,4T6,4T3
h=30.3m
hx=13.8m
rx=19.58m
d2=89.086m
8p(h-hx)=132m
Hence d<8p(h-hx)

ZONE-5B'
TW&LM=4T1,LM2,4T3,4T2
h=31.8m
hx=13.8m
rx=21.830m
d3=84.721m
8p(h-hx)=186m
Hence d<8p(h-hx)

ZONE-5D
TW&LM=LM2,LM3,4T3
h=31.8m
hx=8.5m
rx=21.825m
d=98.068m
8p(h-hx)=186m
Hence d<8p(h-hx)

ZONE-4E
TW&LM=LM3,LM12,LM4,4T5
h=31.8m
hx=8.5m
rx=31.763m
d=178.616m
8p(h-hx)=186m
Hence d<8p(h-hx)

ZONE-5C
LM=LM12,LM4
h=31.8m
hx=13.8m
rx=21.200m
a=52.263m
7(h-hx)=126m
Hence a<7(h-hx)

RL 341.000

ZONE-5A

ZONE-4D

ZONE-4C

ZONE-4A,B

ZONE-4B

ZONE-4E

ZONE-5C

ZONE-3A

ZONE-3B

ZONE-1

ZONE-2

ZONE-5B

ZONE-5D

4.0 MTR. WIDE ROAD

5.0 MTR. WIDE ROAD

400kV MAIN BUS-1

400kV MAIN BUS-2

EXISTING BUS-1

SERVICE BUILDING

(+) 336.00(EXISTING GL)

PRESENT SCOPE

KEY PLAN

BILL OF QUANTITY:-

S.No	DESCRIPTION	QTY.	UNIT
1	2m LONG SPIKE ROD	13	NOS.
2	3.5m LONG SPIKE ROD	17	NOS.
3	7/3.15mm GS SHIELD WIRE	3030	MTRS
4	TENSION CLAMP SUITABLE FOR 7/3.66mm GS SHIELD WIRE	44	NOS.
5	PG CLAMP TO SUIT 7/3.66mm GS SHIELD WIRE	74	NOS.
6	CLEAT CLAMP TO SUIT 7/3.66mm DOWN CONDUCTOR	1520	NOS.
7	CLEAT CLAMP TO SUIT 75*12mm GI PAD TYPE	75	NOS.
8	LUG TO SUIT 7/3.66mm GS SHIELD WIRE & DOWN CONDUCTOR	54	NOS.
9	TEST LINK SUITABLE FOR 7/3.66mm DOWN CONDUCTOR AND 75*12mm GI PAD TYPE	42	NOS.
10	3M LONG 40mm DIA GIS EARTH ELECTRODE PIPE	42	NOS.

NOTES:-

1. ALL DIMENSION ARE IN mm IN DRAWING AND mtrs IN SUMMARY TABLE.
2. LIGHTNING PROTECTION DETAILS PREPARED BASED ON RAZEVIG METHOD.
3. THIS DRAWING SHALL BE REFERRED ONLY FOR DIRECT STROKE LIGHTNING PROTECTION.
4. REF.DWG : ADANI MAHAN_ELP_REV2.
5. 400kV INTERCONNECTION OHL – PLAN AND SECTION – 552H-E-EPC-SYD-DE-L-V-0001
6. DSLP CALCULATION – 400kV INTERCONNECTION OHL – 552H-E-EPC-SYD-DE-C-V-0008
7. =2m LONG ROD SPIKE
8. =3.5m LONG ROD SPIKE
9. THE BOQ SHOWN IS TENTATIVE AND THE SAME WILL BE FINALIZED WITH EKD OF LIGHTNING AND EARTHING SCHEME.

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
R1	31.07.24	REVISED AS PER THE COMMENTS IN R0	MUM	AD	ISG
R0	10.07.24	FIRST SUBMISSION	MUM	AD	ISG

CUSTOMER : adani
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DRAWN	18.06.24	MUM
CHKD	18.06.24	AD
APPROVED	18.06.24	ISG

DRAWING TITLE: 400kV SWITCHYARD DSLP LAYOUT

SHEET NO. 1 OF 5 | SCALE NTS

CLIENT DRAWING NO: 552H-E-EPC-SYD-DE-L-V-0008

CONTRACTOR DRAWING NO: GNB-MEL-ELE-014 | SIZE A0 | REV. R0

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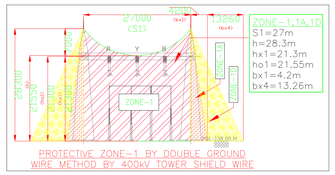
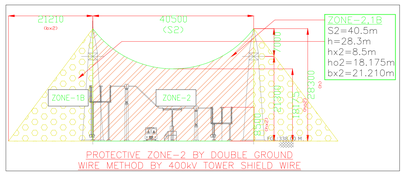
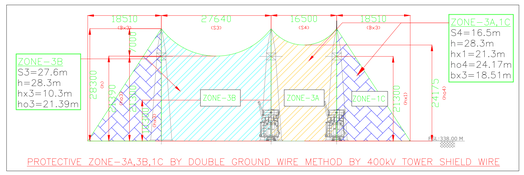


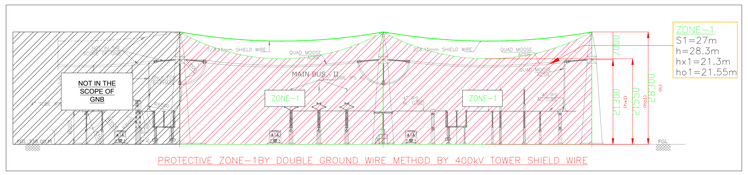
PROTECTIVE ZONE-1 BY DOUBLE GROUND WIRE METHOD BY 400kV TOWER SHIELD WIRE



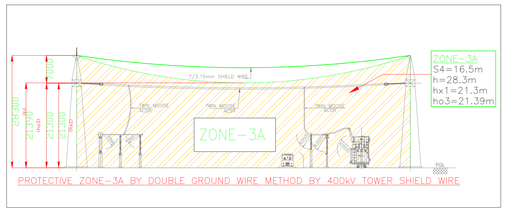
PROTECTIVE ZONE-2 BY DOUBLE GROUND WIRE METHOD BY 400kV TOWER SHIELD WIRE



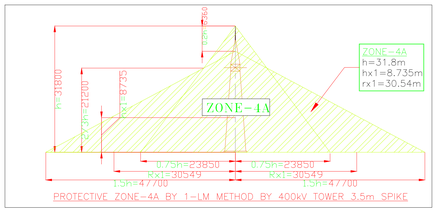
PROTECTIVE ZONE-3A,3B,1C BY DOUBLE GROUND WIRE METHOD BY 400kV TOWER SHIELD WIRE



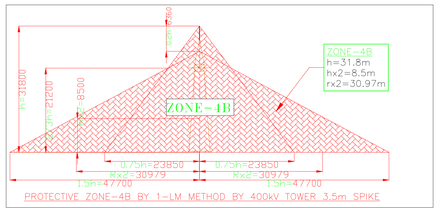
PROTECTIVE ZONE-1BY DOUBLE GROUND WIRE METHOD BY 400kV TOWER SHIELD WIRE



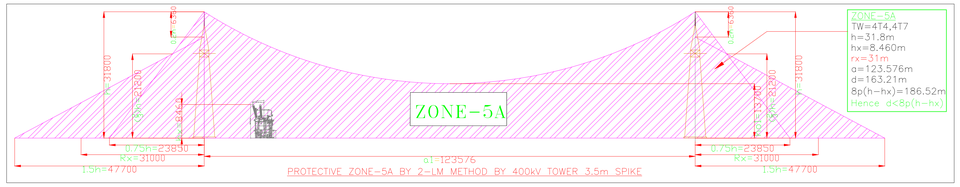
PROTECTIVE ZONE-3A BY DOUBLE GROUND WIRE METHOD BY 400kV TOWER SHIELD WIRE



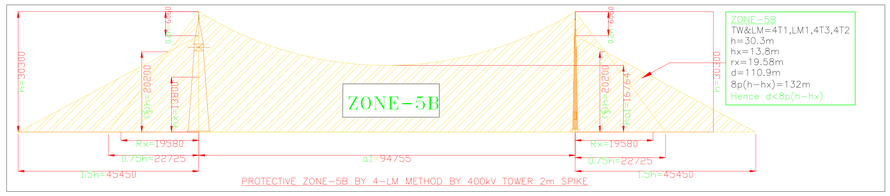
PROTECTIVE ZONE-4A BY 1-LM METHOD BY 400kV TOWER 3.5m SPIKE



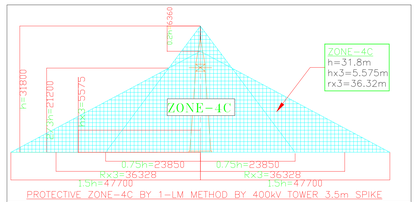
PROTECTIVE ZONE-4B BY 1-LM METHOD BY 400kV TOWER 3.5m SPIKE



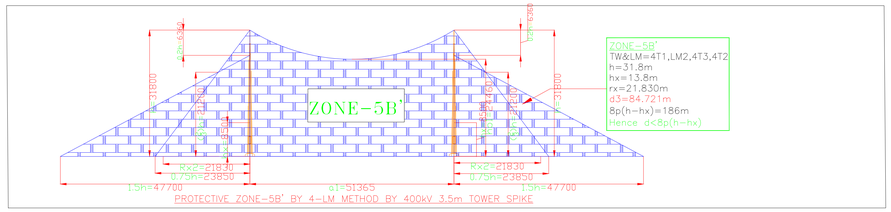
PROTECTIVE ZONE-5A BY 2-LM METHOD BY 400kV TOWER 3.5m SPIKE



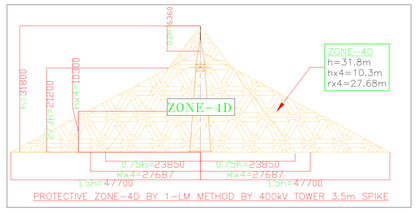
PROTECTIVE ZONE-5B BY 4-LM METHOD BY 400kV TOWER 2m SPIKE



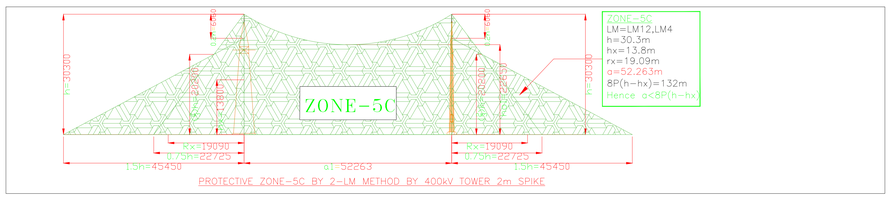
PROTECTIVE ZONE-4C BY 1-LM METHOD BY 400kV TOWER 3.5m SPIKE



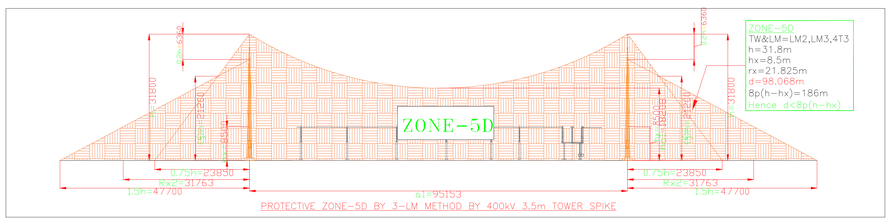
PROTECTIVE ZONE-5B' BY 4-LM METHOD BY 400kV 3.5m TOWER SPIKE



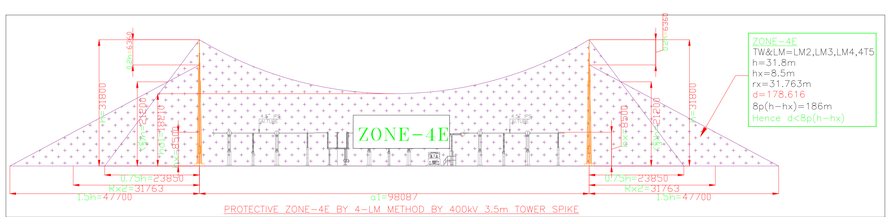
PROTECTIVE ZONE-4D BY 1-LM METHOD BY 400kV TOWER 3.5m SPIKE



PROTECTIVE ZONE-5C BY 2-LM METHOD BY 400kV TOWER 2m SPIKE



PROTECTIVE ZONE-5D BY 3-LM METHOD BY 400kV 3.5m TOWER SPIKE



PROTECTIVE ZONE-4E BY 4-LM METHOD BY 400kV 3.5m TOWER SPIKE

SHIELD WIRE METHOD SUMMARY

S.No	LEGEND	ZONE DESCRIPTION	ZONE TYPE	(h)	(S)	(bx)	(hx)	(ho)
1		JACK BUS LEVEL	ZONE-1	28.3	27	NA	21.3	21.550
2		TIE BAY EQUIPMENT BUS LEVEL	ZONE-2	28.3	40.5	NA	8.5 13.8	18.175
3		GT.TRAFO LINE BAY	ZONE-3A	28.3	16.5	NA	21.3	24.175
4		GT.TRANSFORMER	ZONE-3B	28.3	27.6	NA	10.3	21.390
5		OUTER ZONE PROTECTION	ZONE-1A	28.3	NA	4.2	21.3	21.55
6		LINE-2 INCOMING	ZONE-1B	28.3	NA	21.21	8.5	18.75
7		GT.TRANSFORMER OUTER ZONE	ZONE-1C	28.3	NA	18.51	10.3	21.390
8		BUS CVT OUTER ZONE	ZONE-1D	28.3	NA	13.26	13.8	18.75

ABBREVIATION

S.No	NAME	DESCRIPTION
1	h	HEIGHT OF SHIELD WIRE,TOWER/LCLM WITH SPIKE
2	S	DISTANCE BETWEEN TWO SHIELD WIRE
3	⏚h	⏚HEIGHT OF TOWER/LCLM WITH SPIKE
4	hx	HEIGHT OF THE OBJECT TO BE PROTECTED
5	ha	ACTIVE HEIGHT OF TOWER/LCLM
6	a	DISTANCE BETWEEN TOWER/LCLM
7	a=(7*ha)	MAX.ALLOWABLE DISTANCE BETWEEN TOWER/LCLM
8	d	MAX.ALLOWABLE DIAGONAL DISTANCE BETWEEN TOWER/LCLM
9	p	CO-EFFICIENT P=5.5/SQRT(h)
10	rx	PROTECTIVE RADIUS
11	ho	MAX.HEIGHT OF THE OBJECT TO AT THE MIDWAY BETWEEN TWO TOWERS/SHIELD WIRES
12	⏚ho	⏚OF.MAX.HEIGHT OF THE OBJECT TO AT THE MIDWAY BETWEEN TWO TOWERS
13	bx	EXTERNAL RADIUS OF PROTECTION BETWEEN TWO TOWER/LCLM

LIGHTNING MAST METHOD SUMMARY

s.no	LEGEND	ZONE DESCRIPTION	ZONE TYPE	(h)	(2/3)h	(hx)	(ha)	(a)	(A)=7ha	(d)	P	(rx)	(ho)	(⏚)(ho)	(bX)
1		LINE & BUS REACTOR	ZONE-4A	31.8	21.2	8.735	23.1	NA	NA	NA	0.975	30.54	NA	NA	NA
2		LINE & BUS REACTOR	ZONE-4B			8.5	23.3	NA	NA	NA	0.975	30.97	NA	NA	NA
3		CONTROL BUILDING	ZONE-4C			5.57	26.2	NA	NA	NA	0.975	36.32	NA	NA	NA
4		GT.TRAFO	ZONE-4D			10.3	21.5	NA	NA	NA	0.975	27.68	NA	NA	NA
5		SMT.TRAFO BUSHING	ZONE-5A			8.485	18	123.5	163.21	NA	0.975	31	13.7	9.14	4.68
7		EXCISTING BUSBAR AREA	ZONE-5C	30.3	20.2	13.8	18	52.2	115.5	NA	0.975	19.09	22.64	15.10	8.09
8		MAIN BUSBAR LEVEL	ZONE-5D			13.8	18	95.2 64 56	126	98.06	0.975	21.82	18.20 22.65 23.72	12.14 15.11 15.82	3.305 8.105 9.701
9		EQUIPMENT BUSBAR LEVEL	ZONE-4E	31.8	21.2	8.5	23.3	95.2 105.1 86.1 107.9	163.1	178.6	0.975	31.76	18.21 16.78 19.50 16.38	12.14 11.19 13.0 10.93	11.37 9.23 13.31 8.64
10		MAIN BUSBAR LEVEL	ZONE-5B	30.3	20.2	13.8	16.5	94.8 58.1 94.5 51.2	115.50	110.9	0.98	19.58	16.76 21.99 16.80 22.99	11.18 14.66 11.20 13.32	2.22 7.12 2.25 8.60
11								67.9 51.2 67.5 58.1		89.0	0.98		20.61 22.99 20.66 21.99	13.74 15.32 13.77 14.66	5.11 8.60 5.14 7.12
12			ZONE-5B'	31.8	21.2			51.4 56.6 67.5 51.2	126	84.7	0.98	21.83	24.46 23.72 22.16 24.49	16.31 15.82 14.78 16.33	1082 9.70 7.36 10.85

NOTES:-

1. ALL DIMENSION ARE IN MM IN DRAWING AND MTRS IN SUMMARY TABLE.
2. LIGHTNING PROTECTION DETAILS PREPARED BASED ON RAZEVIC METHOD.
3. THIS DRAWING SHALL BE REFERRED ONLY FOR DIRECT STROKE LIGHTNING PROTECTION.
4. REF.DWG : 400KV SWITCHYARD ELECTRICAL LAYOUT PLAN & SECTION 552H-E-EPC-SYD-DE-L-V-0001 - GNB-MEL-ELE-003-ADANI MAHAN_ELP_R2.
5. DSLP CALCULATION - 400kV INTERCONNECTION OHL - 552H-E-EPC-SYD-DE-C-V-0008.
6. -2M LONG ROD SPIKE.
7. -3.5M LONG ROD SPIKE.
8. THE BOQ SHOWN IS TENTATIVE AND THE SAME WILL BE FINALIZED WITH EKD OF LIGHTNING AND EARTHING SCHEME.

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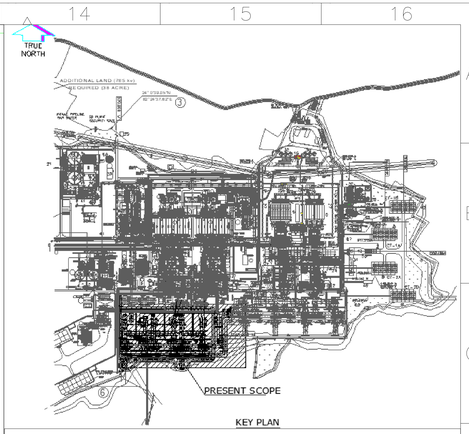
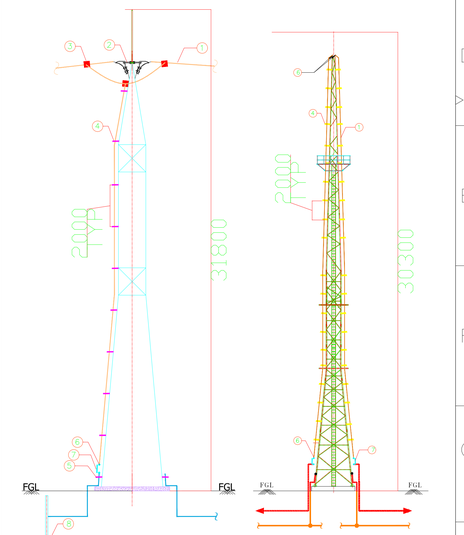


KEY PLAN



TYP. DOWN CONDUCTOR ARRANGEMENT FOR TOWER WITH SPIKE (31.8M) SCALE - NTS

30.3M HEIGHT LCLM ARRANGEMENT WITH SPIKE SCALE : NTS

BILL OF QUANTITY:-

S.No	DESCRIPTION	QTY.	UNIT
1	2m LONG SPIKE ROD	13	NOS.
2	3.5m LONG SPIKE ROD	17	NOS.
3	7/3.15mm GS SHIELD WIRE	3030	MTRS
4	TENSION CLAMP SUITABLE FOR 7/3.66mm GS SHIELD WIRE	44	NOS.
5	PG CLAMP TO SUIT 7/3.66mm GS SHIELD WIRE	74	NOS.
6	CLEAT CLAMP TO SUIT 7/3.66mm DOWN CONDUCTOR	1520	NOS.
7	CLEAT CLAMP TO SUIT 75*12mm GI PAD TYPE	75	NOS.
8	LUG TO SUIT 7/3.66mm GS SHIELD WIRE & DOWN CONDUCTOR	54	NOS.
9	TEST LINK SUITABLE FOR 7/3.66mm DOWN CONDUCTOR AND 75*12mm G.I PAD TYPE	42	NOS.
10	3M LONG 40mm DIA GIS EARTH ELECTRODE PIPE	42	NOS.

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
R1	31.07.24	REVISED AS PER THE COMMENTS IN R0	MUM	AD	ISG
R0	10.07.24	FIRST SUBMISSION	MUM	AD	ISG

CUSTOMER : adani

MAHAN ENERGEN LIMITED, BANDHAURA VILLAGE, SINGRAULI DIST, MADHYA PRADESH

OWNER'S ENGINEER TATA

TATA CONSULTING ENGINEERS LIMITED MUMBAI

CONTRACTOR : GODREJ & BOYCE MFG. CO. LTD. PIROJSHANAGAR, VIKHROLI WEST, MUMBAI MAHARASHTRA (INDIA).

PROJECT : CONSTRUCTION 400 kV SWITCHYARD AT 2X800 MW(Ph-II) MAHAN ULTRA SUPER CRITICAL THERMAL POWER PROJECT AT SINGRAULI ,MP

LOA NO. : 4503035464 DT.06.05.2024

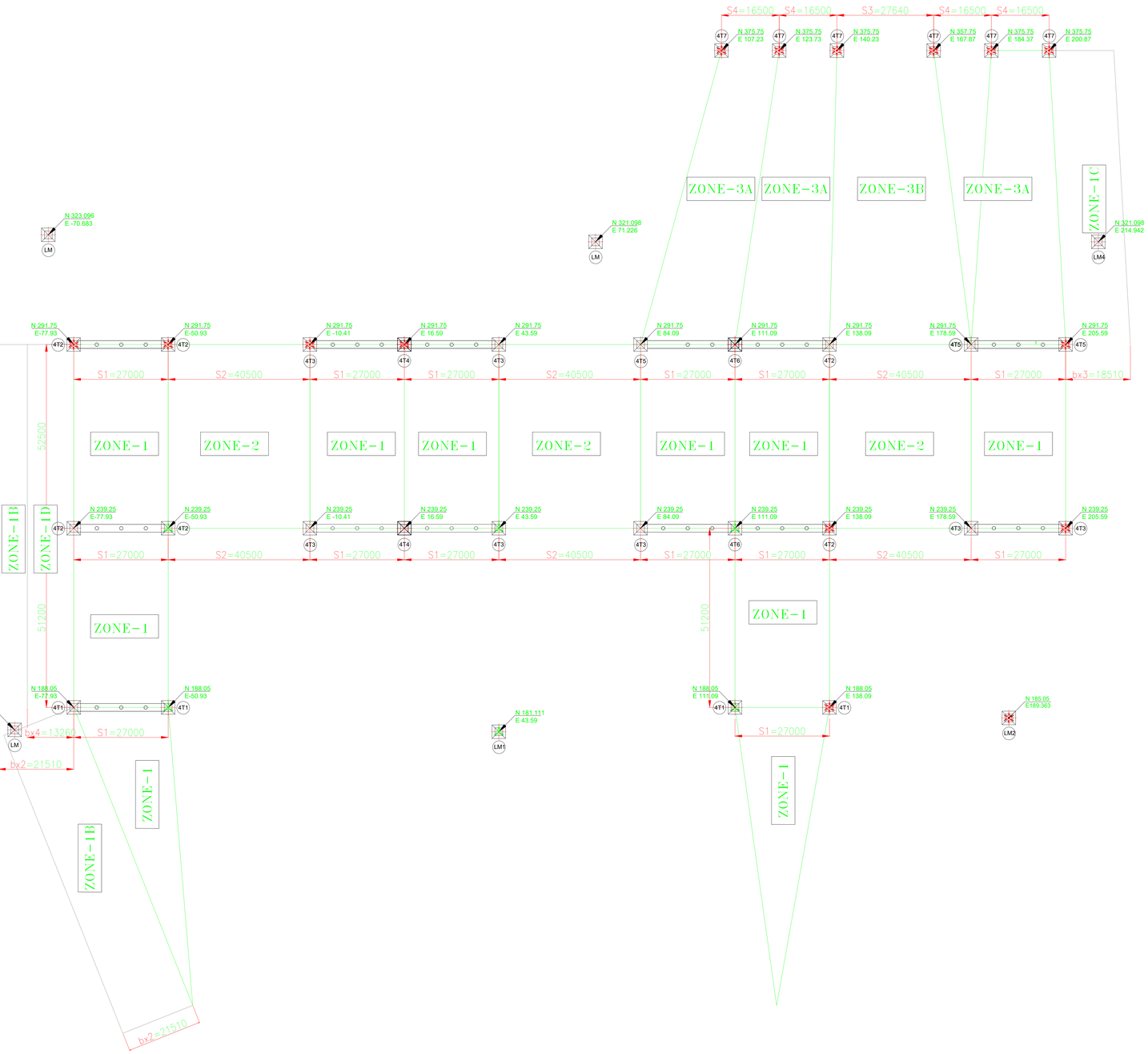
	DATE	NAME
DRAWN	18.06.24	MUM
CHKD	18.06.24	AD
APPROVED	18.06.24	ISG

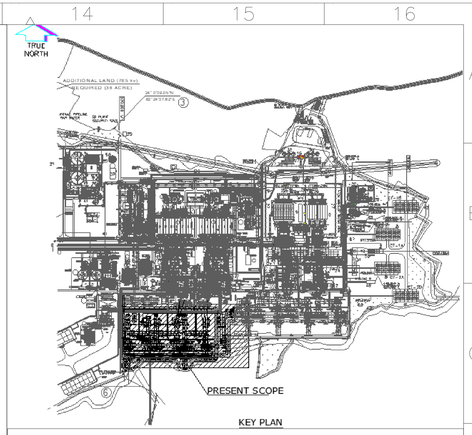
DRAWING TITLE: 400kV SWITCHYARD DSLP LAYOUT

CLIENT DRAWING NO: 552H-E-EPC-SYD-DE-L-V-0008

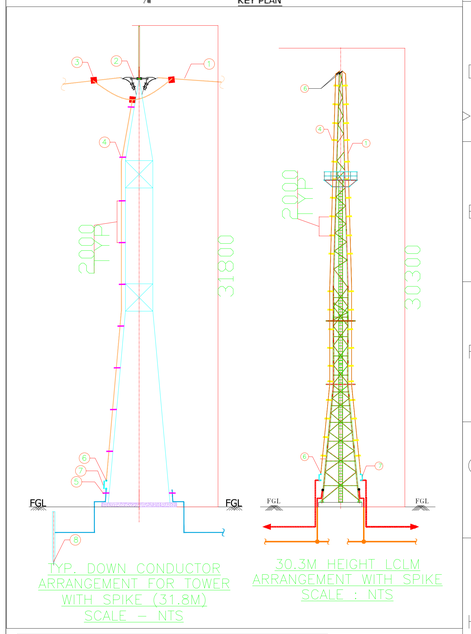
CONTRACTOR DRAWING NO: GNB-MEL-ELE-014

SHEET NO. 2 OF 5 | SCALE NTS | SIZE A0 | REV. R0





KEY PLAN



TYP. DOWN CONDUCTOR ARRANGEMENT FOR TOWER WITH SPIKE (31.8M) SCALE – NTS

30.3M HEIGHT LCLM ARRANGEMENT WITH SPIKE SCALE : NTS

BILL OF QUANTITY:–

S.No	DESCRIPTION	QTY.	UNIT
1	2m LONG SPIKE ROD	13	NOS.
2	3.5m LONG SPIKE ROD	17	NOS.
3	7/3.15mm GS SHIELD WIRE	3030	MTRS
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10	3M LONG 40mm DIA GIS EARTH ELECTRODE PIPE	42	NOS.

NOTES:–

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3. THIS DRAWING SHALL BE REFERRED ONLY FOR DIRECT STROKE LIGHTNING PROTECTION.
4. REF.DWG : 400KV SWITCHYARD ELECTRICAL LAYOUT PLAN & SECTION 552H–E–EPC–SYD–DE–L–V–0001 – GNB–MEL–ELE–003–ADANI MAHAN_ELP_R2.
5. DSLP CALCULATION – 400KV INTERCONNECTION OHL – 552H–E–EPC–SYD–DE–C–V–0008.
6. –2M LONG ROD SPIKE.
7. –3.5M LONG ROD SPIKE.
8. THE BOQ SHOWN IS TENTATIVE AND THE SAME WILL BE FINALIZED WITH EKD OF LIGHTNING AND EARTHING SCHEME.

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CHKD	18.06.24	AD
APPROVED	18.06.24	ISG

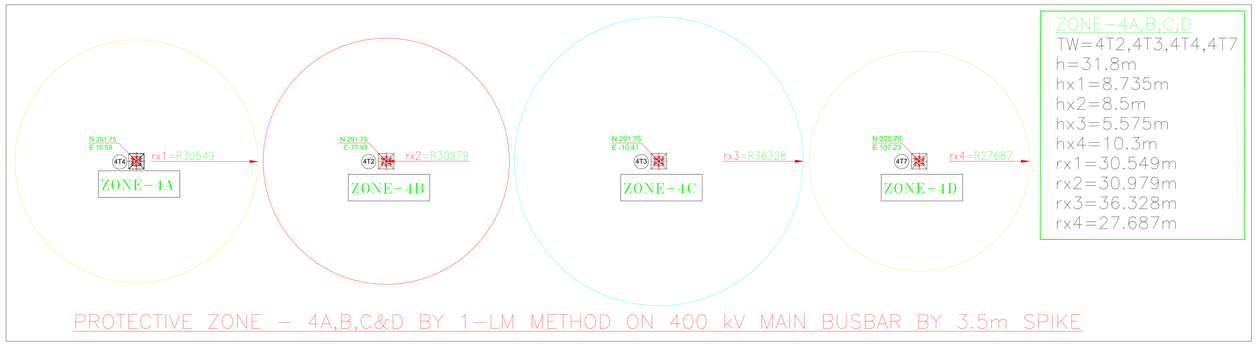
DRAWING TITLE: 400kV SWITCHYARD DSLP LAYOUT

SHEET NO.	SCALE
3 OF 5	NTS

CLIENT DRAWING NO: 552H–E–EPC–SYD–DE–L–V–0008

CONTRACTOR DRAWING NO: GNB–MEL–ELE–014

SIZE A0 | REV. R0

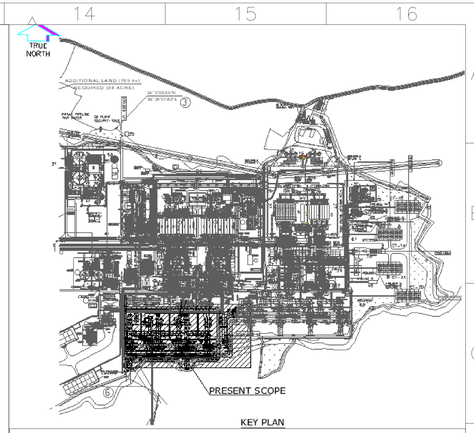


ZONE-4A,B,C,D
TW=4T2,4T3,4T4,4T7
h=31.8m
hx1=8.735m
hx2=8.5m
hx3=5.575m
hx4=10.3m
rx1=30.549m
rx2=30.979m
rx3=36.328m
rx4=27.687m

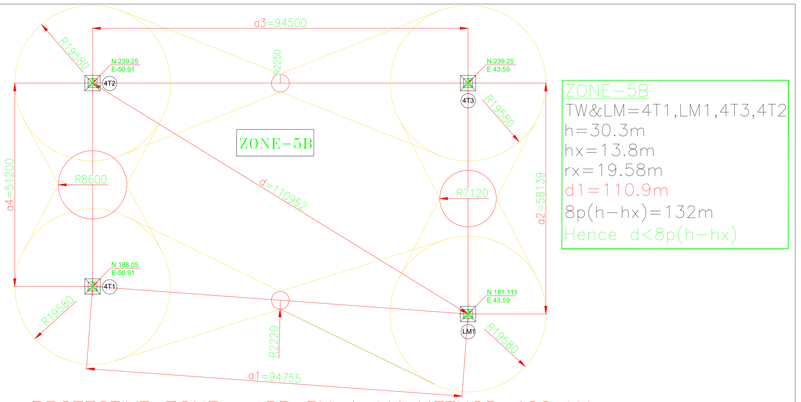
PROTECTIVE ZONE – 4A,B,C&D BY 1–LM METHOD ON 400 kV MAIN BUSBAR BY 3.5m SPIKE

ABBREVIATION

S.No	NAME	DESCRIPTION
1	h	HEIGHT OF SHIELD WIRE,TOWER/LCLM WITH SPIKE
2	S	DISTANCE BETWEEN TWO SHIELD WIRE
3	⍬h	⍬HEIGHT OF TOWER/LCLM WITH SPIKE
4	hx	HEIGHT OF THE OBJECT TO BE PROTECTED
5	ha	ACTIVE HEIGHT OF TOWER/LCLM
6	a	DISTANCE BETWEEN TOWER/LCLM
7	a=(7*ha)	MAX.ALLOWABLE DISTANCE BETWEEN TOWER/LCLM
8	d	MAX.ALLOWABLE DIAGONAL DISTANCE BETWEEN TOWER/LCLM
9	p	CO-EFFICIENT P=5.5/SQRT(h)
10	rx	PROTECTIVE RADIUS
11	ho	MAX.HEIGHT OF THE OBJECT TO AT THE MIDWAY BETWEEN TWO TOWERS/SHIELD WIRES
12	⍬ho	⍬OF.MAX.HEIGHT OF THE OBJECT TO AT THE MIDWAY BETWEEN TWO TOWERS
13	bx	EXTERNAL RADIUS OF PROTECTION BETWEEN TWO TOWER/LCLM



KEY PLAN

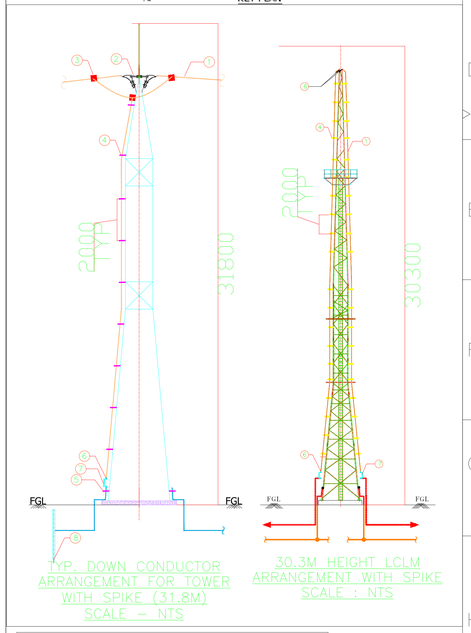


ZONE-5B
TW&LM=4T1,LM1,4T3,4T2
h=30.3m
hx=13.8m
rx=19.58m
d1=110.9m
8p(h-hx)=132m
Hence d<8p(h-hx)

PROTECTIVE ZONE – 5B BY 4–LM METHOD 400 kV MAIN BUSBAR BY 2m SPIKE

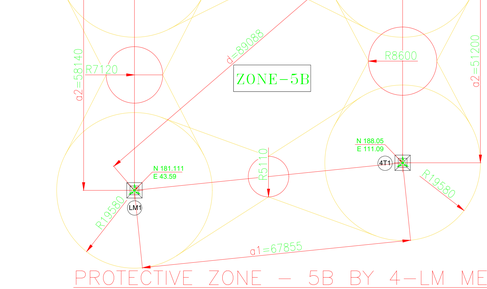
LIGHTNING MAST METHOD SUMMARY

s.no	LEGEND	ZONE DESCRIPTION	ZONE TYPE	(h)	(2/3) h	(hx)	(ha)	(a)	(A)=7ha	(d)	P	(rx)	(ho)	⍬(ho)	(bX)
1		LINE & BUS REACTOR	ZONE-4A	31.8	21.2	8.735	23.1	NA	NA	NA	0.975	30.54	NA	NA	NA
2		LINE & BUS REACTOR	ZONE-4B			8.5	23.3	NA	NA	NA	0.975	30.97	NA	NA	NA
3		CONTROL BUILDING	ZONE-4C			5.57	26.2	NA	NA	NA	0.975	36.32	NA	NA	NA
4		GT.TRAFO	ZONE-4D			10.3	21.5	NA	NA	NA	0.975	27.68	NA	NA	NA
5		SMT.TRAFO BUSHING	ZONE-5A			8.485	18	123.5	163.21	NA	0.975	31	13.7	9.14	4.68
7		EXCISTING BUSBAR AREA	ZONE-5C	30.3	20.2	13.8	18	52.2	115.5	NA	0.975	19.09	22.64	15.10	8.09
8		MAIN BUSBAR LEVEL	ZONE-5D	31.8	21.2	13.8	18	95.2 64 56	126	98.06	0.975	21.82	18.20 22.65 23.72	12.14 15.11 15.82	3.305 8.105 9.701
9		EQUIPMENT BUSBAR LEVEL	ZONE-4E			8.5	23.3	95.2 105.1 86.1 107.9	163.1	178.6	0.975	31.76	18.21 16.78 19.50 16.38	12.14 11.19 13.0 10.93	11.37 9.23 13.31 8.64
10		MAIN BUSBAR LEVEL	ZONE-5B	30.3	20.2	13.8	16.5	94.8 58.1 94.5 51.2	115.50	110.9	0.98	19.58	16.76 21.99 16.80 22.99	11.18 14.66 11.20 13.32	2.22 7.12 2.25 8.60
11		MAIN BUSBAR LEVEL						67.9 51.2 67.5 58.1		89.0	0.98		20.61 22.99 20.66 21.99	13.74 15.32 13.77 14.66	5.11 8.60 5.14 7.12
12			ZONE-5B'	31.8	21.2			51.4 56.6 67.5 51.2	126	84.7	0.98	21.83	24.46 23.72 22.16 24.49	16.31 15.82 14.78 16.33	1082 9.70 7.36 10.85



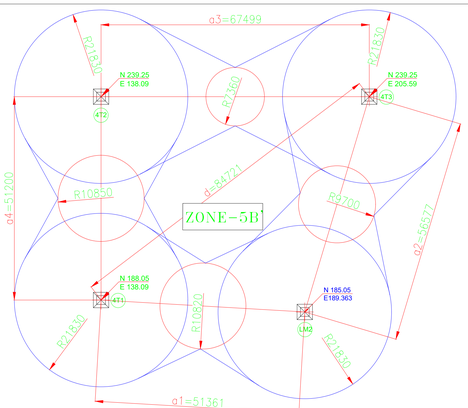
TYP. DOWN CONDUCTOR ARRANGEMENT FOR TOWER WITH SPIKE (31.8M) SCALE – NTS

30.3M HEIGHT LCLM ARRANGEMENT WITH SPIKE SCALE : NTS



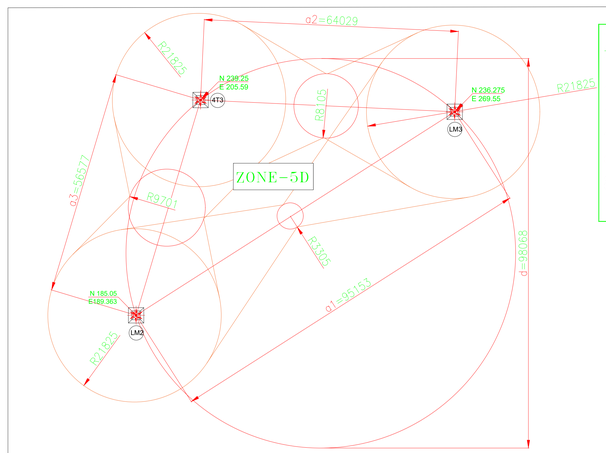
ZONE-5B
TW&LM=LM1,4T1,4T6,4T3
h=30.3m
hx=13.8m
rx=19.58m
d2=89.086m
8p(h-hx)=132m
Hence d<8p(h-hx)

PROTECTIVE ZONE – 5B BY 4–LM METHOD 400 kV MAIN BUSBAR BY 2m SPIKE



ZONE-5B'
TW&LM=4T1,LM2,4T3,4T2
h=31.8m
hx=13.8m
rx=21.830m
d3=84.721m
8p(h-hx)=186m
Hence d<8p(h-hx)

PROTECTIVE ZONE–5B' BY 4–LM METHOD 400 kV MAIN BUSBAR BY 3.5m SPIKE



ZONE-5D
TW&LM=LM2,LM3,4T3
h=31.8m
hx=8.5m
rx=21.825m
d=98.068m
8p(h-hx)=186m
Hence d<8p(h-hx)

PROTECTIVE ZONE–5D BY 3–LM METHOD 400 kV MAIN BUSBAR BY 3.5m SPIKE

BILL OF QUANTITY:–

S.No	DESCRIPTION	QTY.	UNIT
1	2m LONG SPIKE ROD	13	NOS.
2	3.5m LONG SPIKE ROD	17	NOS.
3	7/3.15mm GS SHIELD WIRE	3030	MTRS
4	TENSION CLAMP SUITABLE FOR 7/3.66mm GS SHIELD WIRE	44	NOS.
5	PG CLAMP TO SUIT 7/3.66mm GS SHIELD WIRE	74	NOS.
6	CLEAT CLAMP TO SUIT 7/3.66mm DOWN CONDUCTOR	1520	NOS.
7	CLEAT CLAMP TO SUIT 75*12mm GI PAD TYPE	75	NOS.
8	LUG TO SUIT 7/3.66mm GS SHIELD WIRE & DOWN CONDUCTOR	54	NOS.
9	TEST LINK SUITABLE FOR 7/3.66mm DOWN CONDUCTOR AND 75*12mm G.I PAD TYPE	42	NOS.
10	3M LONG 40mm DIA GIS EARTH ELECTRODE PIPE	42	NOS.

NOTES:–

1. ALL DIMENSION ARE IN MM IN DRAWING AND MTRS IN SUMMARY TABLE.
2. LIGHTNING PROTECTION DETAILS PREPARED BASED ON RAZEVIG METHOD.
3. THIS DRAWING SHALL BE REFERRED ONLY FOR DIRECT STROKE LIGHTNING PROTECTION.
4. REF.DWG : 400KV SWITCHYARD ELECTRICAL LAYOUT PLAN & SECTION 552H-E-EPC-SYD-DE-L-V-0001 – GNB-MEL-ELE-003-ADANI MAHAN_ELP_R2.
5. DSLP CALCULATION – 400KV INTERCONNECTION OHL – 552H-E-EPC-SYD-DE-C-V-0008.
6. –2M LONG ROD SPIKE.
7. –3.5M LONG ROD SPIKE.
8. THE BOQ SHOWN IS TENTATIVE AND THE SAME WILL BE FINALIZED WITH EKD OF LIGHTNING AND EARTHING SCHEME.

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REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
R1	31.07.24	REVISED AS PER THE COMMENTS IN R0	MUM	AD	ISG
R0	10.07.24	FIRST SUBMISSION	MUM	AD	ISG

CUSTOMER : adani
MAHAN ENERGEN LIMITED, BANDHAURA VILLAGE, SINGRAULI DIST, MADHYA PRADESH

OWNER'S ENGINEER : TATA
TATA CONSULTING ENGINEERS LIMITED MUMBAI

CONTRACTOR : Godrej
GODREJ & BOYCE MFG. CO. LTD.
PIROJSHANAGAR, VIKHROLI WEST, MUMBAI, MAHARASHTRA (INDIA).

PROJECT : CONSTRUCTION 400 kV SWITCHYARD AT 2X800 MW(Ph-II) MAHAN ULTRA SUPER CRITICAL THERMAL POWER PROJECT AT SINGRAULI ,MP

LOA NO. : 4503035464 DT.06.05.2024

	DATE	NAME
DRAWN	18.06.24	MUM
CHKD	18.06.24	AD
APPROVED	18.06.24	ISG

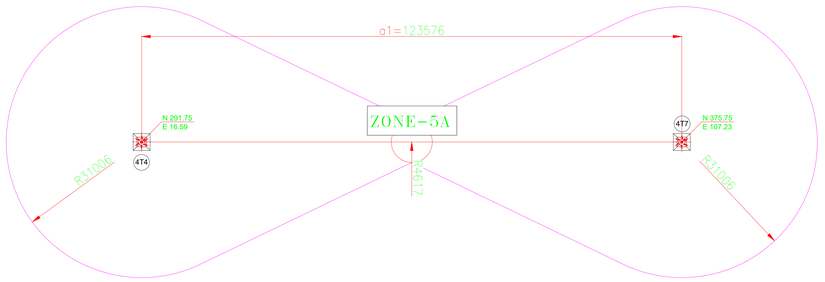
SHEET NO. 4 OF 5 | SCALE NTS

DRAWING TITLE: 400kV SWITCHYARD DSLP LAYOUT

CLIENT DRAWING NO: 552H-E-EPC-SYD-DE-L-V-0008

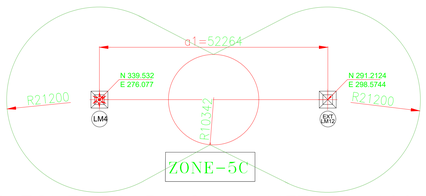
CONTRACTOR DRAWING NO: GNB-MEL-ELE-014

SIZE A0 | REV. R0



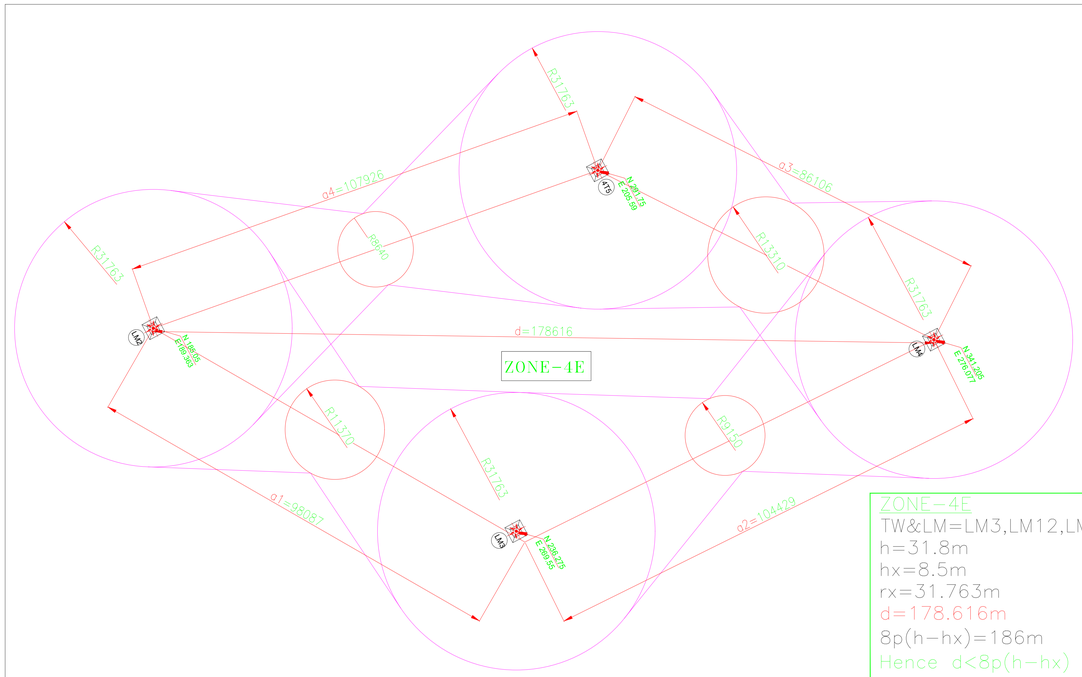
PROTECTIVE ZONE – 5A BY 2-LM METHOD
400 kV MAIN BUSBAR BY 3.5m SPIKE

ZONE-5A
TW=4T4,4T7
h=31.8m
hx=8.460m
rx=31m
a=123.576m
d=163.21m
8p(h-hx)=186.52m
Hence d<8p(h-hx)



PROTECTIVE ZONE-5C BY 2-LM METHOD 400 kV MAIN BUSBAR
BY 3.5m SPIKE

ZONE-5C
LM=LM12,LM4
h=31.8m
hx=13.8m
rx=21.200m
a=52.263m
7(h-hx)=126m
Hence a<7(h-hx)



PROTECTIVE ZONE – 4E BY 4-LM METHOD
400 kV MAIN BUSBAR BY 3.5m SPIKE

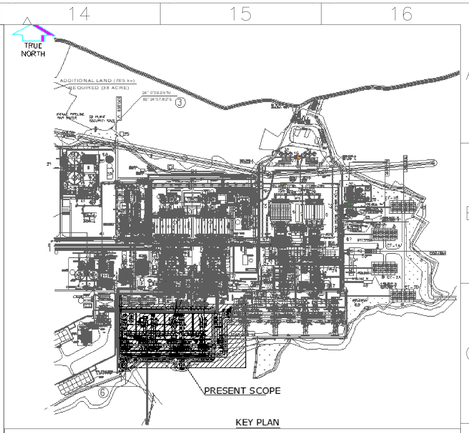
ZONE-4E
TW&LM=LM3,LM12,LM4,4T5
h=31.8m
hx=8.5m
rx=31.763m
d=178.616m
8p(h-hx)=186m
Hence d<8p(h-hx)

ABBREVIATION

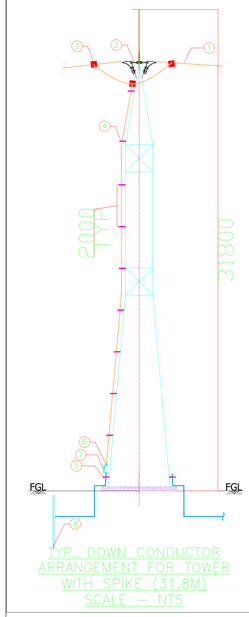
S.No	NAME	DESCRIPTION
1	h	HEIGHT OF SHIELD WIRE,TOWER/LCLM WITH SPIKE
2	S	DISTANCE BETWEEN TWO SHIELD WIRE
3	℄h	℄HEIGHT OF TOWER/LCLM WITH SPIKE
4	hx	HEIGHT OF THE OBJECT TO BE PROTECTED
5	ha	ACTIVE HEIGHT OF TOWER/LCLM
6	a	DISTANCE BETWEEN TOWER/LCLM
7	a=(7*ha)	MAX.ALLOWABLE DISTANCE BETWEEN TOWER/LCLM
8	d	MAX.ALLOWABLE DIAGONAL DISTANCE BETWEEN TOWER/LCLM
9	p	CO-EFFICIENT P=5.5/SQRT(h)
10	rx	PROTECTIVE RADIUS
11	ho	MAX.HEIGHT OF THE OBJECT TO AT THE MIDWAY BETWEEN TWO TOWERS/SHIELD WIRES
12	℄ho	℄OF.MAX.HEIGHT OF THE OBJECT TO AT THE MIDWAY BETWEEN TWO TOWERS
13	bx	EXTERNAL RADIUS OF PROTECTION BETWEEN TWO TOWER/LCLM

LIGHTNING MAST METHOD SUMMARY

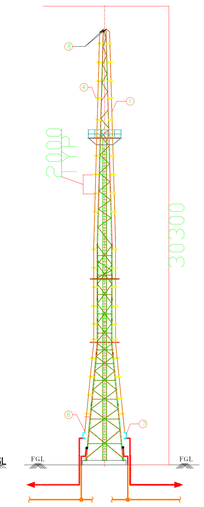
s.no	LEGEND	ZONE DESCRIPTION	ZONE TYPE	(h)	(2/3)h	(hx)	(ha)	(a)	(A)=7ha	(d)	P	(rx)	(ho)	℄(ho)	(bx)
1		LINE & BUS REACTOR	ZONE-4A	31.8	21.2	8.735	23.1	NA	NA	NA	0.975	30.54	NA	NA	NA
2		LINE & BUS REACTOR	ZONE-4B			8.5	23.3	NA	NA	NA	0.975	30.97	NA	NA	NA
3		CONTROL BUILDING	ZONE-4C			5.57	26.2	NA	NA	NA	0.975	36.32	NA	NA	NA
4		GT.TRAFO	ZONE-4D			10.3	21.5	NA	NA	NA	0.975	27.68	NA	NA	NA
5		SMT.TRAFO BUSHING	ZONE-5A			8.485	18	123.5	163.21	NA	0.975	31	13.7	9.14	4.68
7		EXCISTING BUSBAR AREA	ZONE-5C	30.3	20.2	13.8	18	52.2	115.5	NA	0.975	19.09	22.64	15.10	8.09
8		MAIN BUSBAR LEVEL	ZONE-5D	31.8	21.2	13.8	18	95.2	126	98.06	0.975	21.82	18.20	12.14	3.305
								64					22.65	15.11	8.105
								56					23.72	15.82	9.701
9		EQUIPMENT BUSBAR LEVEL	ZONE-4E			8.5	23.3	95.2	163.1	178.6	0.975	31.76	18.21	12.14	11.37
								105.1					16.78	11.19	9.23
								86.1					19.50	13.0	13.31
								107.9					16.38	10.93	8.64
10		MAIN BUSBAR LEVEL	ZONE-5B	30.3	20.2	13.8	16.5	94.8	115.50	110.9	0.98	19.58	16.76	11.18	2.22
								58.1					21.99	14.66	7.12
								94.5					16.80	11.20	2.25
								51.2					22.99	13.32	8.60
11								67.9		89.0	0.98		20.61	13.74	5.11
								51.2					22.99	15.32	8.60
								67.5					20.66	13.77	5.14
								58.1					21.99	14.66	7.12
12			ZONE-5B'	31.8	21.2			51.4	126	84.7	0.98	21.83	24.46	16.31	1082
								56.6					23.72	15.82	9.70
								67.5					22.16	14.78	7.36
								51.2					24.49	16.33	10.85



KEY PLAN



TYP. DOWN CONDUCTOR ARRANGEMENT FOR TOWER WITH SPIKE (31.8M)
SCALE – NTS



30.3M HEIGHT LCLM ARRANGEMENT WITH SPIKE
SCALE : NTS

BILL OF QUANTITY:–

S.No	DESCRIPTION	QTY.	UNIT
1	2m LONG SPIKE ROD	13	NOS.
2	3.5m LONG SPIKE ROD	17	NOS.
3	7/3.15mm GS SHIELD WIRE	3030	MTRS
4	TENSION CLAMP SUITABLE FOR 7/3.66mm GS SHIELD WIRE	44	NOS.
5	PG CLAMP TO SUIT 7/3.66mm GS SHIELD WIRE	74	NOS.
6	CLEAT CLAMP TO SUIT 7/3.66mm DOWN CONDUCTOR	1520	NOS.
7	CLEAT CLAMP TO SUIT 75*12mm GI PAD TYPE	75	NOS.
8	LUG TO SUIT 7/3.66mm GS SHIELD WIRE & DOWN CONDUCTOR	54	NOS.
9	TEST LINK SUITABLE FOR 7/3.66mm DOWN CONDUCTOR AND 75*12mm G.I PAD TYPE	42	NOS.
10	3M LONG 40mm DIA GIS EARTH ELECTRODE PIPE	42	NOS.

NOTES:–

1. ALL DIMENSION ARE IN MM IN DRAWING AND MTRS IN SUMMARY TABLE.
2. LIGHTNING PROTECTION DETAILS PREPARED BASED ON RAZEVIG METHOD.
3. THIS DRAWING SHALL BE REFERRED ONLY FOR DIRECT STROKE LIGHTNING PROTECTION.
4. REF.DWG : 400KV SWITCHYARD ELECTRICAL LAYOUT PLAN & SECTION 552H-E-EPC-SYD-DE-L-V-0001 – GNB-MEL-ELE-003-ADANI MAHAN_ELP_R2.
5. DSLP CALCULATION – 400KV INTERCONNECTION OHL – 552H-E-EPC-SYD-DE-C-V-0008.
6. –2M LONG ROD SPIKE.
7. –3.5M LONG ROD SPIKE.
8. THE BOQ SHOWN IS TENTATIVE AND THE SAME WILL BE FINALIZED WITH EKD OF LIGHTNING AND EARTHING SCHEME.

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REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
R1	31.07.24	REVISED AS PER THE COMMENTS IN R0	MUM	AD	ISG
R0	10.07.24	FIRST SUBMISSION	MUM	AD	ISG

CUSTOMER : adani
MAHAN ENERGEN LIMITED, BANDHAURA VILLAGE, SINGRAULI DIST, MADHYA PRADESH

OWNER'S ENGINEER : TATA
TATA CONSULTING ENGINEERS LIMITED MUMBAI

CONTRACTOR : Godrej
GODREJ & BOYCE MFG. CO. LTD.
PIROJSHANAGAR, VIKHROLI WEST, MUMBAI, MAHARASHTRA (INDIA).

PROJECT : CONSTRUCTION 400 kV SWITCHYARD AT 2X800 MW(Ph-II) MAHAN ULTRA SUPER CRITICAL THERMAL POWER PROJECT AT SINGRAULI ,MP

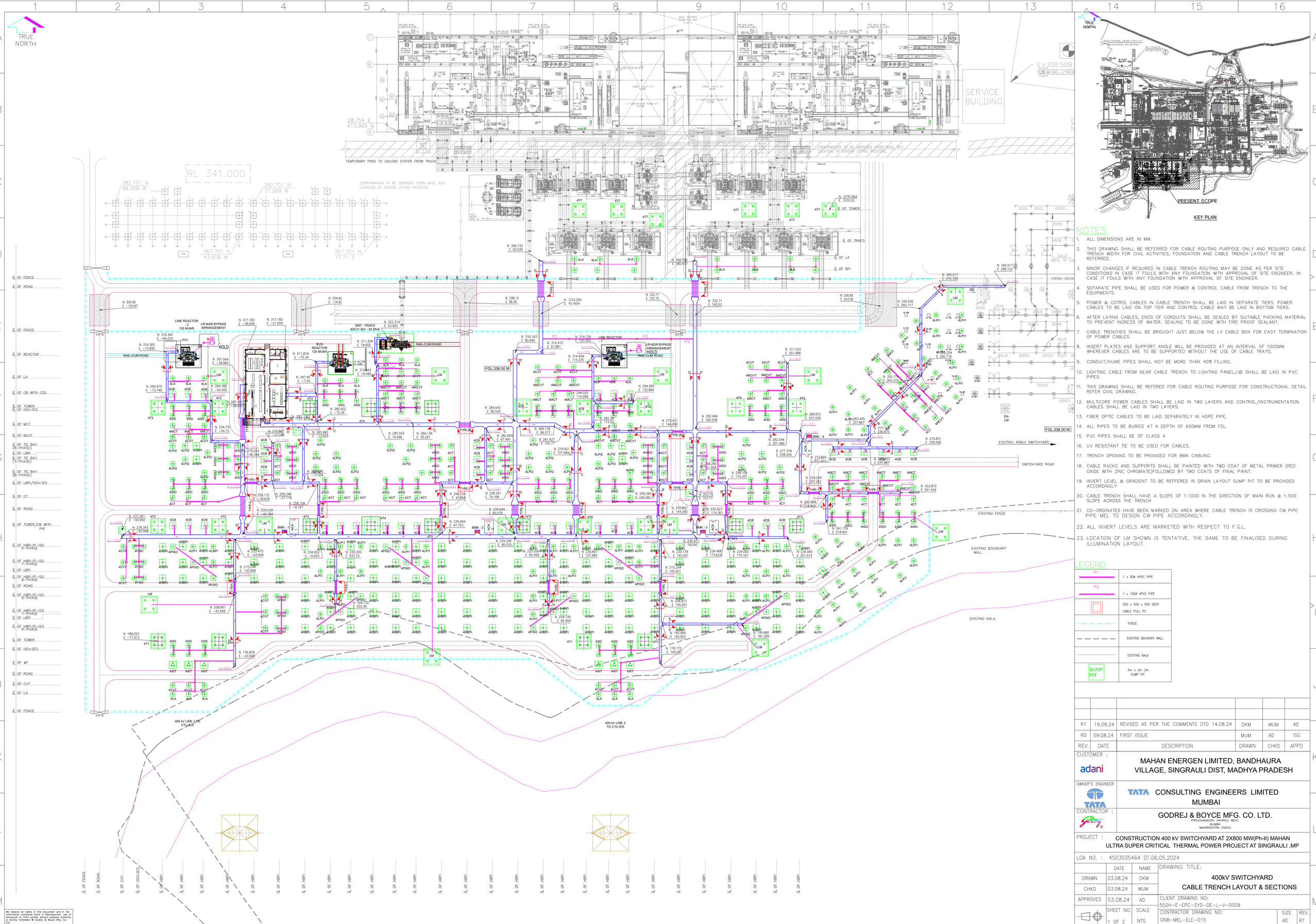
LOA NO. : 4503035464 DT.06.05.2024

	DATE	NAME
DRAWN	18.06.24	MUM
CHKD	18.06.24	AD
APPROVED	18.06.24	ISG

DRAWING TITLE: 400kV SWITCHYARD DSLP LAYOUT

CLIENT DRAWING NO: 552H-E-EPC-SYD-DE-L-V-0008

SHEET NO. 5 OF 5 | SCALE NTS | CONTRACTOR DRAWING NO: GNB-MEL-ELE-014 | SIZE A0 | REV. R0



KEY PLAN

NOTES

1. ALL DIMENSIONS ARE IN MM.
2. THIS DRAWING SHALL BE REFERRED FOR CABLE ROUTING PURPOSE ONLY AND REQUIRED CABLE TRENCH WIDTH FOR CIVIL ACTIVITIES, FOUNDATION AND CABLE TRENCH LAYOUT TO BE REFERRED.
3. MINOR CHANGES IF REQUIRED IN CABLE TRENCH ROUTING MAY BE DONE AS PER SITE CONDITIONS IN CASE IT FOULS WITH ANY FOUNDATION WITH APPROVAL OF SITE ENGINEER. IN CASE IT FOULS WITH ANY FOUNDATION WITH APPROVAL OF SITE ENGINEER.
4. SEPARATE PIPE SHALL BE USED FOR POWER & CONTROL CABLE FROM TRENCH TO THE EQUIPMENTS.
5. POWER & CONTROL CABLES IN CABLE TRENCH SHALL BE LAID IN SEPARATE TIERS. POWER CABLES TO BE LAID ON TOP TIER AND CONTROL CABLE MAY BE LAID IN BOTTOM TIERS.
6. AFTER LAYING CABLES, ENDS OF CONDUITS SHALL BE SEALED BY SUITABLE PACKING MATERIAL TO PREVENT INGRESS OF WATER. SEALING TO BE DONE WITH FIRE PROOF SEALANT.
7. CABLE TRENCHES SHALL BE BROUGHT JUST BELOW THE LV CABLE BOX FOR EASY TERMINATION OF POWER CABLES.
8. INSERT PLATES AND SUPPORT ANGLE WILL BE PROVIDED AT AN INTERVAL OF 1000MM WHEREVER CABLES ARE TO BE SUPPORTED WITHOUT THE USE OF CABLE TRAYS,
9. CONDUIT/HUME PIPES SHALL NOT BE MORE THAN 40% FILLING.
10. LIGHTING CABLE FROM NEAR CABLE TRENCH TO LIGHTING PANEL/JB SHALL BE LAID IN PVC PIPES.
11. THIS DRAWING SHALL BE REFERED FOR CABLE ROUTING PURPOSE FOR CONSTRUCTIONAL DETAIL REFER CIVIL DRAWING.
12. MULTICORE POWER CABLES SHALL BE LAID IN TWO LAYERS AND CONTROL/INSTRUMENTATION CABLES SHALL BE LAID IN TWO LAYERS.
13. FIBER OPTIC CABLES TO BE LAID SEPARATELY IN HDPE PIPE.
14. ALL PIPES TO BE BURIED AT A DEPTH OF 600MM FROM FGL.
15. PVC PIPES SHALL BE OF CLASS 4
16. UV RESISTANT TIE TO BE USED FOR CABLES.
17. TRENCH OPENING TO BE PROVIDED FOR BMK CABLING.
18. CABLE RACKS AND SUPPORTS SHALL BE PAINTED WITH TWO COAT OF METAL PRIMER (RED OXIDE WITH ZINC CHROMATE)FOLLOWED BY TWO COATS OF FINAL PAINT.
19. INVERT LEVEL & GRADIENT TO BE REFFERED IN DRAIN LAYOUT SUMP PIT TO BE PROVIDED ACCORDINGLY
20. CABLE TRENCH SHALL HAVE A SLOPE OF 1:1000 IN THE DIRECTION OF MAIN RUN & 1:500 SLOPE ACROSS THE TRENCH
21. CO-ORDINATES HAVE BEEN MARKED ON AREA WHERE CABLE TRENCH IS CROSSING CW PIPE PIPE MEL TO DESIGN CW PIPE ACCORDINGLY.
22. ALL INVERT LEVELS ARE MARKETED WITH RESPECT TO F.G.L.
23. LOCATION OF LM SHOWN IS TENTATIVE. THE SAME TO BE FINALISED DURING ILLUMINATION LAYOUT.

LEGEND

P1	1 x 500 HPVC PIPE
P2	1 x 100ø HPVC PIPE
	500 x 500 x 500 DEEP CABLE PULL PIT
	FENCE
	EXISTING BOUNDRY WALL
	EXISTING NALA
SUMP PIT	3m x 3m 3m SUMP PIT

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
R1	19.09.24	REVISED AS PER THE COMMENTS DTD 14.08.24	OKM	MUM	AD
R0	09.08.24	FIRST ISSUE	MUM	AD	ISG

CUSTOMER : adani

MAHAN ENERGEN LIMITED, BANDHAURA VILLAGE, SINGRAULI DIST, MADHYA PRADESH

OWNER'S ENGINEER: TATA

TATA CONSULTING ENGINEERS LIMITED MUMBAI

CONTRACTOR : godrej

GODREJ & BOYCE MFG. CO. LTD.
PIROJSHANAGAR, VIKHROLI WEST, MUMBAI
MAHARASHTRA (INDIA).

PROJECT : CONSTRUCTION 400 kV SWITCHYARD AT 2X800 MW(Ph-II) MAHAN ULTRA SUPER CRITICAL THERMAL POWER PROJECT AT SINGRAULI ,MP

LOA NO. : 4503035464 DT.06.05.2024

	DATE	NAME
DRAWN	03.08.24	OKM
CHKD	03.08.24	MUM
APPROVED	03.08.24	AD

DRAWING TITLE:
400kV SWITCHYARD
CABLE TRENCH LAYOUT & SECTIONS

SHEET NO. 1 OF 2 | SCALE NTS

CLIENT DRAWING NO: 552H-E-EPC-SYD-DE-L-V-0009

CONTRACTOR DRAWING NO: GNB-MEL-ELE-015 | SIZE A0 | REV. R1

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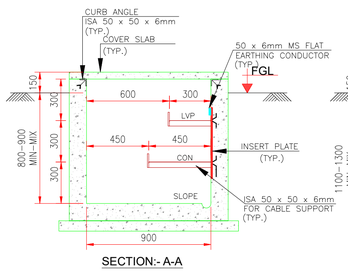
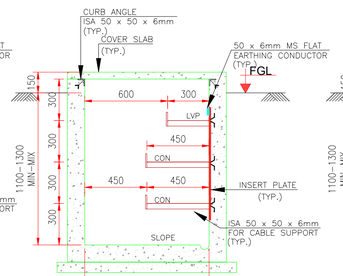


SECTION:- A-A



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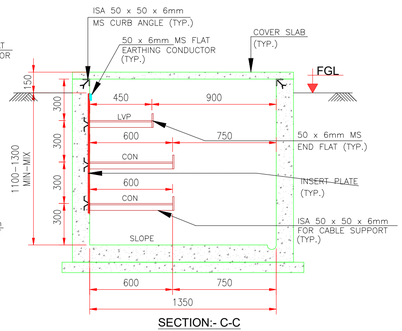
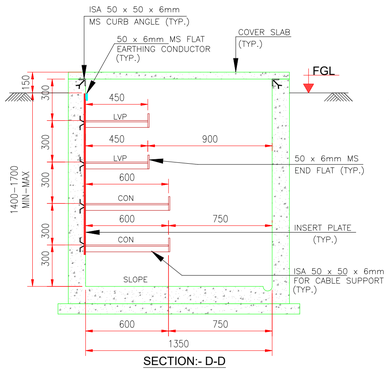
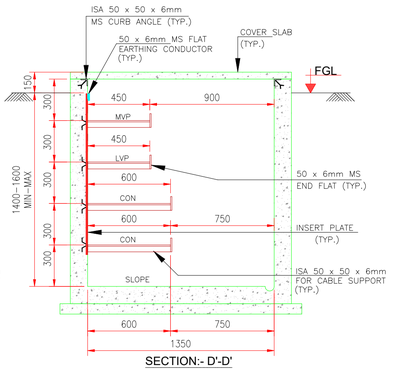


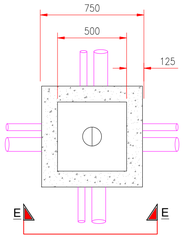
SECTION:- C-C



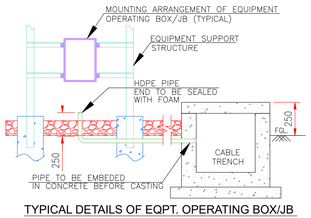
SECTION:- D-D



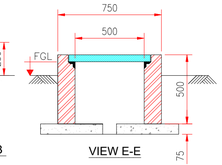
SECTION:- D'-D'



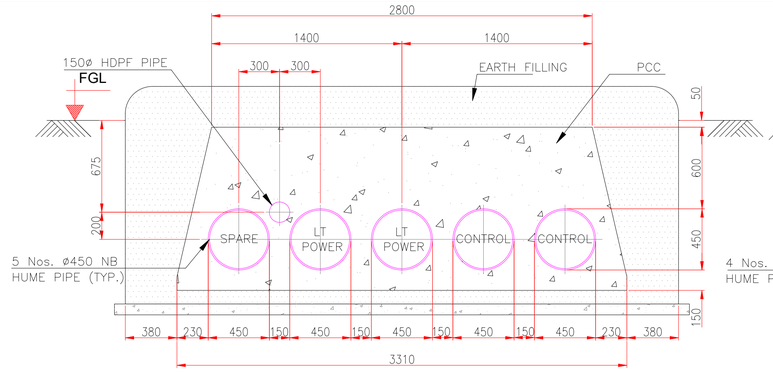
TYPICAL DETAIL OF PULPIT



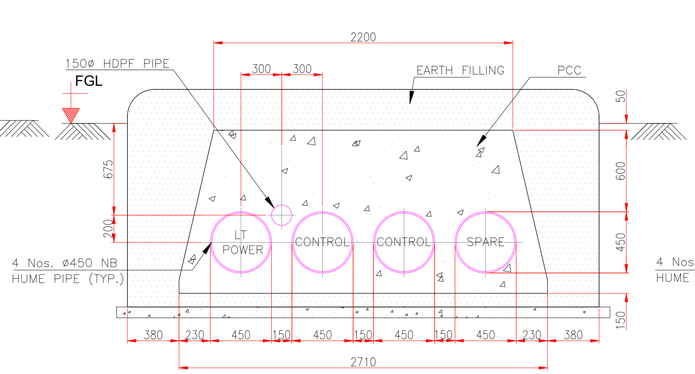
TYPICAL DETAILS OF EQPT. OPERATING BOX/JB AND INTERCONNECTING TRENCH



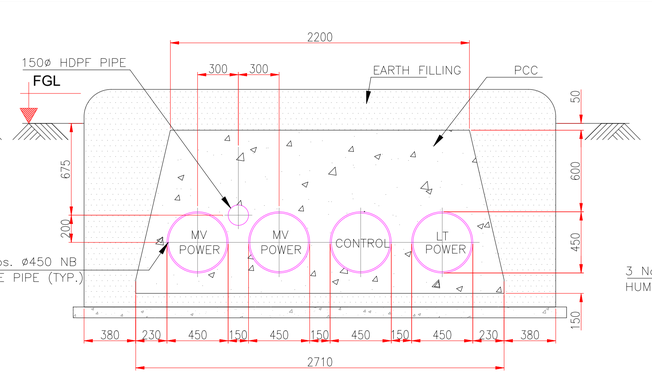
VIEW E-E



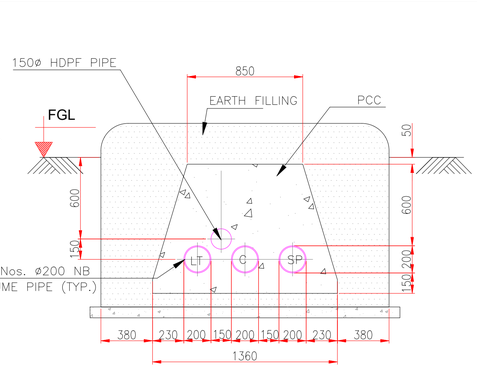
ROAD CROSSING TYPE-3



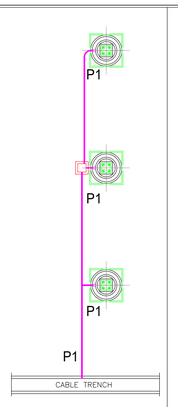
ROAD CROSSING TYPE-2A



ROAD CROSSING TYPE-2B

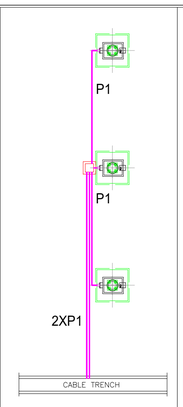


ROAD CROSSING TYPE-1



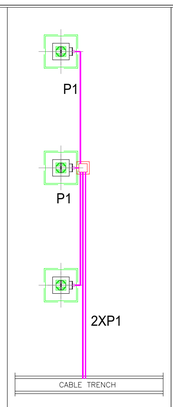
CABLE TRENCH

DETAIL:- 01
(FOR 400kV LA)



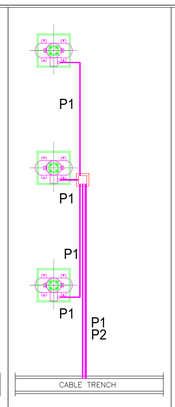
CABLE TRENCH

DETAIL:- 02
(FOR 400kV MCVT)



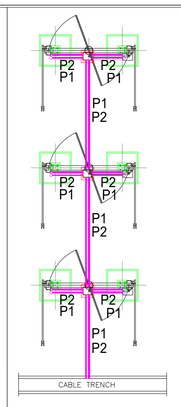
CABLE TRENCH

DETAIL:- 03
(FOR 400kV CVT)



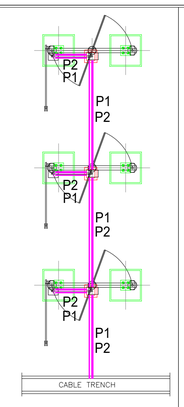
CABLE TRENCH

DETAIL:- 04
(FOR 400kV CT)



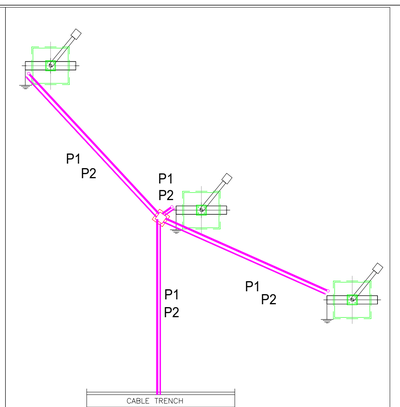
CABLE TRENCH

DETAIL:- 05
(FOR 400kV ISOLATOR WITH 2 E/S)



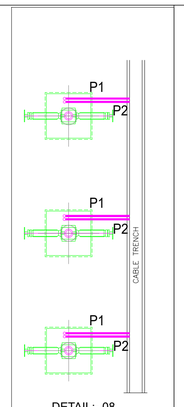
CABLE TRENCH

DETAIL:- 06
(FOR 400kV ISOLATOR WITH 1 E/S)

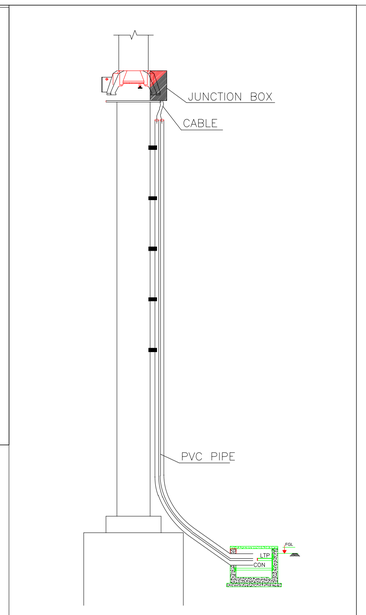


CABLE TRENCH

DETAIL:- 07
(FOR 400kV PANTOGRAPH ISOLATOR)



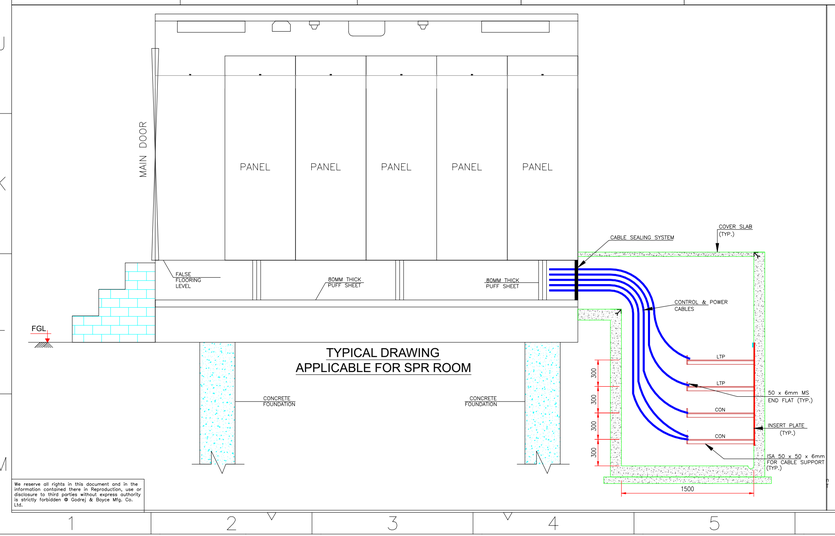
DETAIL:- 08
(FOR 400kV CIRCUIT BREAKER)
[SCALE: NTS]



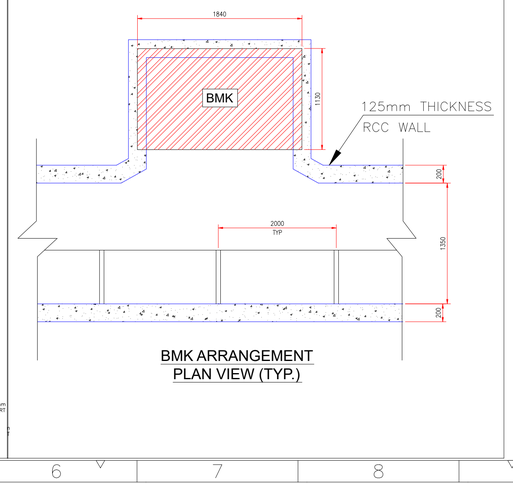
TYP. DETAIL FOR CABLE FROM EQUIPMENT JB
TO CABLE TRENCH
APPLICABLE FOR CT, CVT, LA, CB

LEGEND

P1	1 x 50ø HPVC PIPE
P2	1 x 100ø HPVC PIPE
	500 x 500 x 500 DEEP CABLE PULL PIT
SUMP PIT	3M x 3M x 3M SUMP PIT



TYPICAL DRAWING
APPLICABLE FOR SPR ROOM



BMK ARRANGEMENT
PLAN VIEW (TYP.)

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REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
R1	19.09.24	REVISED BASED ON COMMENTS	OKM	MUM	AD
R0	09.08.24	FIRST ISSUE	MUM	AD	ISG

CUSTOMER : adani

MAHAN ENERGEN LIMITED, BANDHAURA VILLAGE, SIGRAULI DIST, MADHYA PRADESH

OWNER'S ENGINEER : TATA

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

CONTRACTOR : Godrej

GODREJ & BOYCE MFG. CO. LTD.
PIROJSHANAGAR, VIKHROLI WEST,
MUMBAI
MAHARASHTRA (INDIA).

PROJECT : CONSTRUCTION 400 kV SWITCHYARD AT 2X800 MW(Ph-II) MAHAN ULTRA SUPER CRITICAL THERMAL POWER PROJECT AT SINGRAULI ,MP

LOA NO. : 4503035464 DT.06.05.2024

	DATE	NAME
DRAWN	16.08.24	OKM
CHKD	16.08.24	MUM
APPROVED	16.08.24	AD

DRAWING TITLE:
400kV SWITCHYARD
CABLE TRENCH LAYOUT & SECTIONS

CLIENT DRAWING NO:
552H-E-EPC-SYD-DE-L-V-0009

CONTRACTOR DRAWING NO:
GNB-MEL-ELE-015

SHEET NO. 2 OF 2 | SCALE NTS | SIZE A0 | REV. R1

400kV
MAIN BUS-2

400kV
MAIN BUS-1

E 643582.4245
N 265357.1105
24° 0'13.36"N
82°24'41.79"E

E 643578.4814
N 2655408.1583

E 643609.3403
N 265359.1899
24° 0'13.42"N
82°24'42.75"E

E 643605.4012
N 2655410.2377

E 643645.7813
N 2655413.3568

N 287.83
E -35.37

N 287.83
E -18.37

E 643672.7010
N 2655415.4362

E 643699.6207
N 2655417.5156

E 643740.0009
N 2655420.6347

E 643770.8628
N 265537.1.6663
24° 0'13.75"N
82°24'48.45"E

E 643793.8396
N 2655424.7923

E 643797.7827
N 265537.3.7457
24° 0'13.81"N
82°24'49.41"E

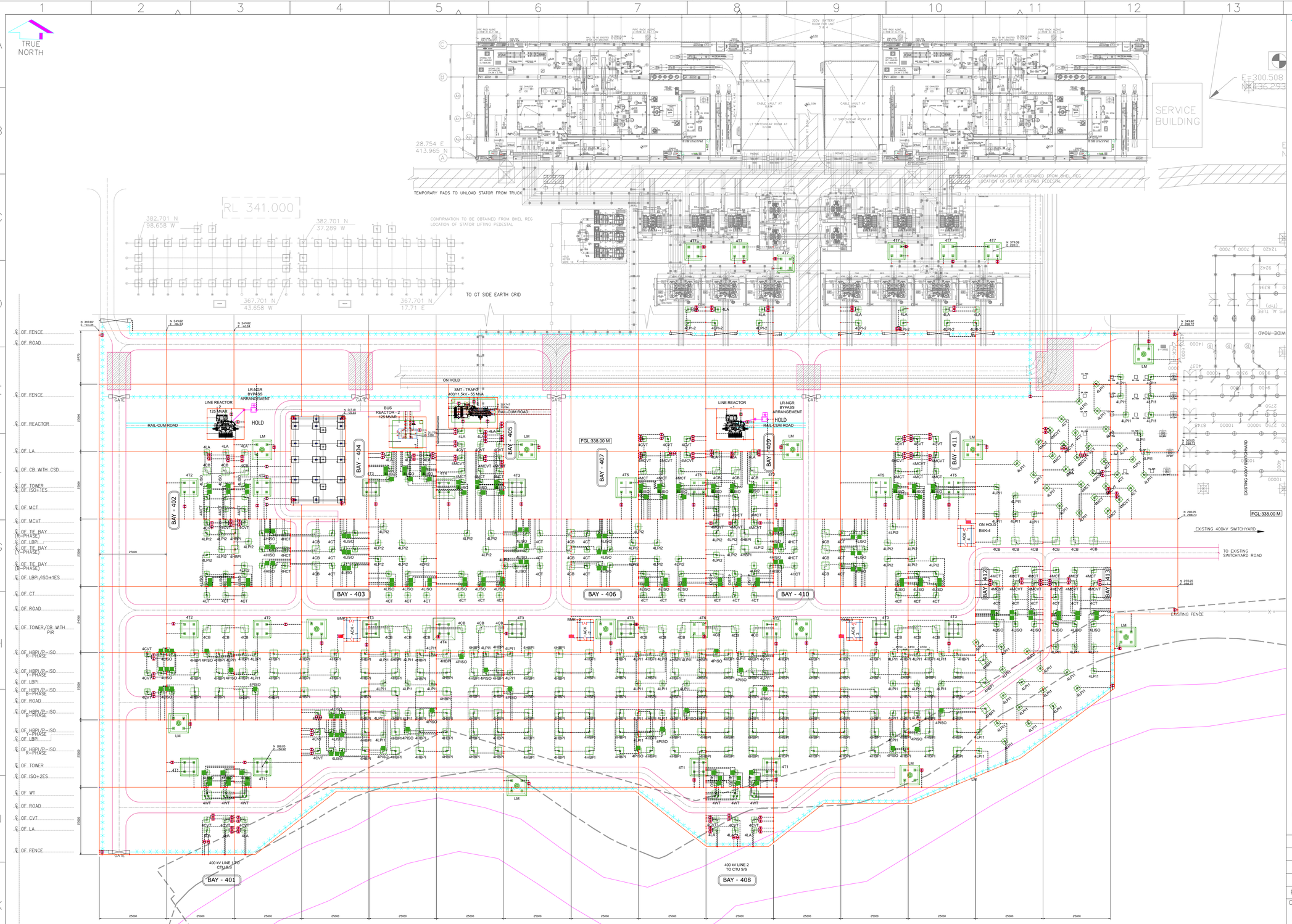
E 643766.9207
N 2655422.7141

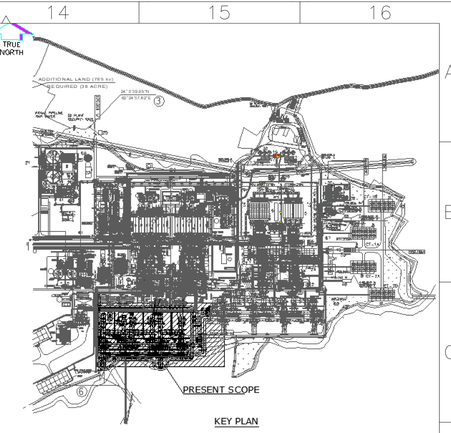
E 643834.2201
N 2655427.9126

E 643861.1399
N 2655429.9920

4000

10000





KEY PLAN

NOTES: –

1. ALL THE DIMENSIONS ARE MEASURED IN MM UNLESS OTHERWISE ITS SPECIFIED.
2. WE HAVE CONSIDERED SPACING ON 25M AND THE CONDUCTOR IS 40MM ø M.S ROD AS MAIN EARTH MAT.
3. SURFACE LAYER RESISTIVE HAS CONSIDERED AS 4000 Ω–M CONSIDERING MATERIAL AS WASHED LIMESTONE OF 100MM THICKNESS.
4. 40MM DIA ROD ELECTRODE WITH TEST LINK CI FRAME AND COVER AS PER APPD. DRG. SHALL BE PROVIDED FOR LA AND TOWER WITH PEAK
5. EARTHING CONDUCTORS IN OUTDOOR AREAS SHALL BE INSTALLED AT A MINIMUM DEPTH OF 600 MM FROM FGL .
6. EARTHING CONDUCTORS SHALL BE PROVIDED UPTO THE OUTSIDE EDGE OF FENCE AT A DISTANCE OF APPROXIMATELY 1000 MM. THIS SHALL BE CONNECTED TO THE SWITCHYARD–EARTHING GRID.
7. EARTHING CONDUCTOR RUNNING BELOW CABLE TRENCH, DRAINS ROADS & RAILS WILL BE LAID 300mm BELOW THE BOTTON OF ABOVE SAID ITEMS
8. THE DRAWING IS ONLY A SYMBOLIC REPRESENTATIONS OF EATHING CONDUCTOR LAYOUT.AT SITE THE MAT SHALL BE LAID IN SUCH A MANNER. SO THAT IT DOES NOT FOUL WITH ANY FOUNDATION, BUILDING ETC.
9. EQUIPMENT EARTHING CONNECTIONS ARE DIAGRAMTIC ONLY.AND IT SHALL BE DONE AS PER ACTUAL SITE CONDITION/IS: 3043 & APPROVED EQUIPMENT EARTHING DETAILS.
10. ALL EARTHING SHALL BE DONE IN ACCORDANCE WITH IS : 3043 UNLESS OTHERWISE ITS STATED IN THE TECHNICAL SPECIFICATION.
11. EARTHING CONDUCTOR RUNNING EXPOSED ON COLUMNS, WALLS, ETC., SHALL BE SUPPORTED BY SUITABLE CLEATING, AT INTERVALS OF 1000 MM.
12. THE EARTHING CONDUCTOR CROSSING THE ROAD / TRACK SHALL BE LAID IN HUME PIPE OR LAID AT A GREATER DEPTH TO AVOID DAMAGE.
13. THE SPACING BETWEEN TWO ELECTRODES SHALL BE AT LEAST EQUIVALENT TO TWICE THE LENGTH OF THE ELECTRODE.
14. CONNECTIONS BETWEEN THE EQUIPMENT EARTH LEAD AND THE GRID CONDUCTOR SHALL BE WELDED. FOR RUST PROTECTION, THE WELDS SHALL BE TREATED WITH ZINC CHROMATE PRIMER AND COATED WITH ZINC RICH PAINT.

BILL OF QUANTITY FOR 400 kV SWITCHYARD

S.NO	SYMBOL	DESCRIPTION	QUANTITY	UNITS
1		40mm DIA MS ROD FOR MAIN EARTHING CONDUCTOR	26630	Mts.
2		40mm DIA MS ROD FOR AUX. EARTH MAT	6138	Mts.
3		75X12MM GI FLAT FOR RISER – EQUIPMENT & STRUCTURE EARTHING, CABLE TRENCH GATE FENCE (ABOVE GROUND)	10200	Mts.
4		40MM DIA GI PIPE ELECTRODE 3mtrs. LONG FOR TREATED EARTH PIT FOR LINE & BUS REACTOR,SMT.TRAFO,DRY–TYPE TRAFO	14	Nos.
5		40 MM DIA MS ROD ELECTRODE 3mtrs. LONG FOR NON TREATED EARTH PIT FOR CVT, LA, LCLM PERIFARAL EARTH GRID/BOUNDRY & TOWER WITH PEAK	194	Nos.

LEGEND:

- –ELECTRODE
- –EARTHMAT
- – VERTICAL RISER
- – HORIZONTAL RISER
- – FENCE
- – EXISTING BOUNDRY WALL
- – EXISTING NALA

Reference:

1) EARTHING DESIGN CALCULATION_552H–E–EPC–SYD–DE–L–V–0010_R1
2) 400kV SWITCHYARD ELECTRICAL LAYOUT PLAN & SECTION 552H–E–EPC–SYD–DE–L–V–0001_R3

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPD
R0	28.09.24	FIRST ISSUE	PS	MUM	AD

CUSTOMER : adani

MAHAN ENERGEN LIMITED, BANDHAURA VILLAGE, SINGRAULI DIST, MADHYA PRADESH

OWNER'S ENGINEER: TATA

TATA CONSULTING ENGINEERS LIMITED MUMBAI

CONTRACTOR : GODREJ & BOYCE

GODREJ & BOYCE MFG. CO. LTD.
PIROJSHANAGAR, VIKHROLI WEST, MUMBAI MAHARASHTRA (INDIA).

PROJECT : CONSTRUCTION 400 kV SWITCHYARD AT 2X800 MW(Ph-II) MAHAN ULTRA SUPER CRITICAL THERMAL POWER PROJECT AT SINGRAULI ,MP

LOA NO. : 4503035464 DT.06.05.2024

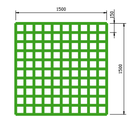
	DATE	NAME
DRAWN	28.09.24	PS
CHKD	28.09.24	MUM
APPROVED	28.09.24	AD

DRAWING TITLE: 400kV SWITCHYARD EARTHMAT LAYOUT & BOM

SHEET NO. 1 OF 1 | SCALE NTS

CLIENT DRAWING NO: 552H–E–EPC–SYD–DE–L–V–0010

CONTRACTOR DRAWING NO: GNB–MEL–ELE–017 | SIZE A0 | REV. R0



TYPICAL ARRANGEMENT OF AUXILIARY EARTH MAT

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