

BILL OF QUANTITY - 400 kV			
SL. ITEM	DESCRIPTION	QTY.	SYMBOL
1	CIRCUIT BREAKER WITHOUT CR (3150 A,50 KA,3-PH)	1	
2	CIRCUIT BREAKER WITHOUT CR (4000 A,50 KA,3-PH)	2	
3	CIRCUIT BREAKER WITH CR (3150 A,50 KA,3-PH)	1	
4	ISOLATOR WITH ONE EARTH SWITCH (3-PH) DOUBLE BREAK (50 KA 1SEC,3-PH) 3150A	3	
5	ISOLATOR WITH ONE EARTH SWITCH (3-PH) DOUBLE BREAK (50 KA 1SEC,3-PH) 4000A	4	
6	ISOLATOR WITH TWO EARTH SWITCHES(1-PH) DOUBLE BREAK (3150A,50 KA 1SEC,3-PH)	2	
7	CURRENT TRANSFORMER (3000 A,50 KA,1-PH)	6	
8	CURRENT TRANSFORMER (3000 A,50 KA,1-PH)	6	
9	CAPACITOR VOLTAGE TRANSFORMER (420 KV,50 KA,1SEC,1-PH,4400 PF)	6	
10	SURGE ARRESTER (336 KV)	3	
11	ISOLATOR WITH ONE EARTH SWITCH(1-PH) DOUBLE BREAK (3150 A,50 KA 1SEC,1-PH)	3	
12	ISOLATOR WITHOUT EARTH SWITCH(1-PH) DOUBLE BREAK (3150 A,50 KA 1SEC,1-PH)	3	
13	CONTROLLED SWITCHING DEVICE	2	

NOTE-1. SINGLE PHASE ISOLATOR WITH ONE E/S TO BE USED FOR SPARE TRANSFORMER AUXILIARY BUS

LEGEND:-

PRESENT SCOPE

EXISTING/FUTURE

FOR TENDER PURPOSE ONLY

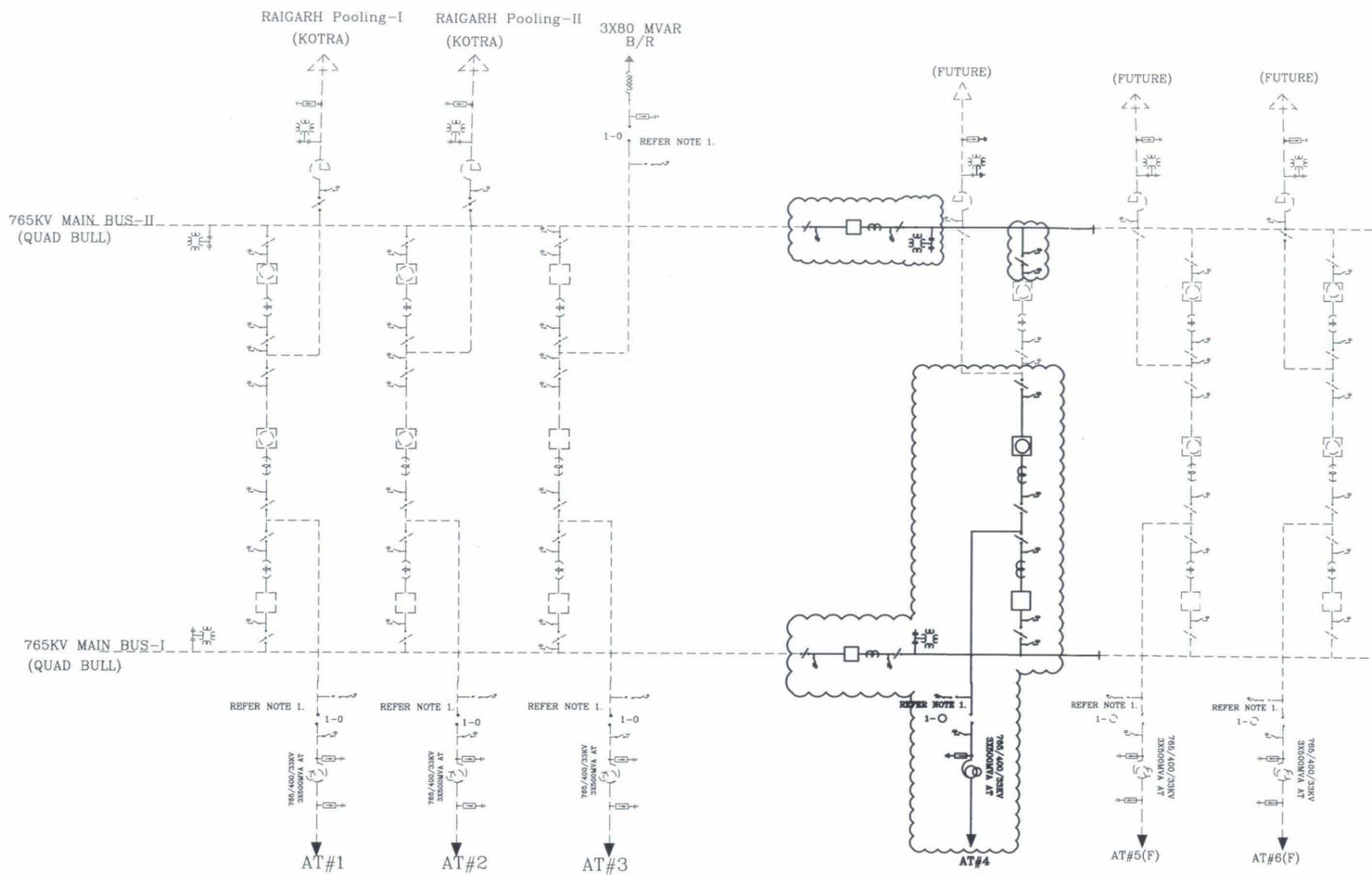
**POWER GRID CORPORATION OF INDIA LIMITED**  
(A Government of India Enterprise)

PROJECT: INSALLATION OF BUS REACTOR AND ICT IN WR(PROJECT ID -415)

TITLE : SINGLE LINE DIAGRAM - EXTENSION OF 400kV RAIGARH POOLING STATION (NEAR TAMNAR)

DGM (ENGG-CTU)	AGM (ENGG-S/S)	GM (ENGG-S/S)	ED (ENGG-S/S&T/L)
CLEARED BY			APPROVED BY

DRAWN	SCALE	DRAWING NO.	REV.
S. K THAKUR	N.T.S.	C/ENGG-SS/WR/400KV RAIGARH POOLING (T)/SLD/01	0



BILL OF QUANTITY - 765 kV			
SL	ITEM DESCRIPTION	QTI	SYMBOL
1	500 MVA, 765/400/33 KV AT (1-PH) $\sqrt{3} \sqrt{3}$	3	
2	CIRCUIT BREAKER WITH CR (3150 A, 50 KA, 3-Ph)	1	
3	CIRCUIT BREAKER W/O CR (3150 A, 50 KA, 3-Ph)	1	
4	CIRCUIT BREAKER W/O CR (4000 A, 50 KA, 3-Ph)	2	
5	ISOLATOR WITH ONE EARTH SWITCH (3-PH) 3150 A, 50 KA	3	
6	ISOLATOR WITH ONE EARTH SWITCH (3-PH) 4000 A, 50 KA	4	
7	ISOLATOR WITH ONE EARTH SWITCH (1-PH) 2000 A, 50 KA	6	
4	ISOLATOR WITHOUT EARTH SWITCH (1-PH) 3150 A, 50 KA	3	
5	ISOLATOR WITH TWO EARTH SWITCHES (3-PH) 3150 A, 50 KA	2	
6	CURRENT TRANSFORMER (1-PH) 3000 A, 50 KA 120 % I TH	6	
7	CURRENT TRANSFORMER (1-PH) 4000 A, 50 KA 120 % I TH	6	
8	765 KV, 1-PH CVT (1-PH)	6	
9	624 KV SURGE ARRESTER (1-PH)	3	
	CONTROLLED SWITCHING DEVICE	2	

LEGEND:-

	PRESENT SCOPE
	EXISTING/FUTURE

NOTE-1. SINGLE PHASE ISOLATOR WITH ONE E/S TO BE USED FOR SPARE TRANSFORMER AND REACTOR AUXILIARY BUS

FOR TENDER PURPOSE ONLY

POWER GRID CORPORATION  
OF INDIA LIMITED  
(A Government of India Enterprise)



PROJECT: INSTALLATION OF BUS REACTOR AND  
ICT IN WR (PROJECT ID -415)

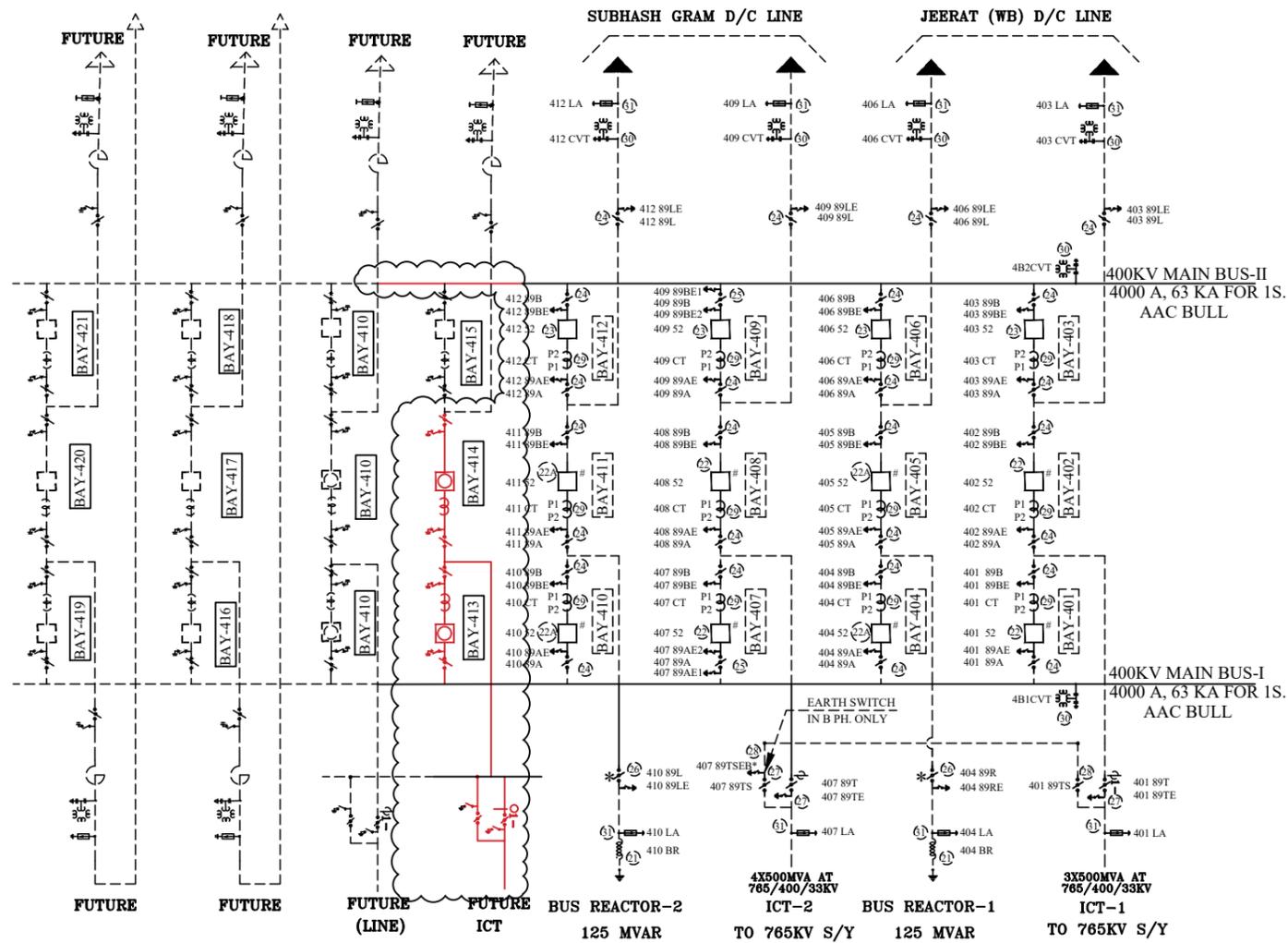
TITLE : SINGLE LINE DIAGRAM-EXTENSION OF 765KV  
RAIGARH POOLING STATION (NEAR TAMNAR)

DGM (ENGG-CTU)	AGM (ENGG-S/S)	GM (ENGG-S/S)	ED (ENGG-S/S&T/L)
CLEARED BY			APPROVED BY

DRAWN	SCALE	DRAWING NO.	REV.
	N.T.S.	C/ENGG-SS/WR/765KV RAIGARH POOLING (T)/SLD/01	0



100-3-395-510-001



400KV SINGLE LINE DIAGRAM

POWER GRID CORPORATION  
OF INDIA LIMITED  
(A Government of India Enterprise)



PROJECT : Space for installation of new 765/400kV, 1500MVA  
ICT (3rd) along with associated ICT bays.

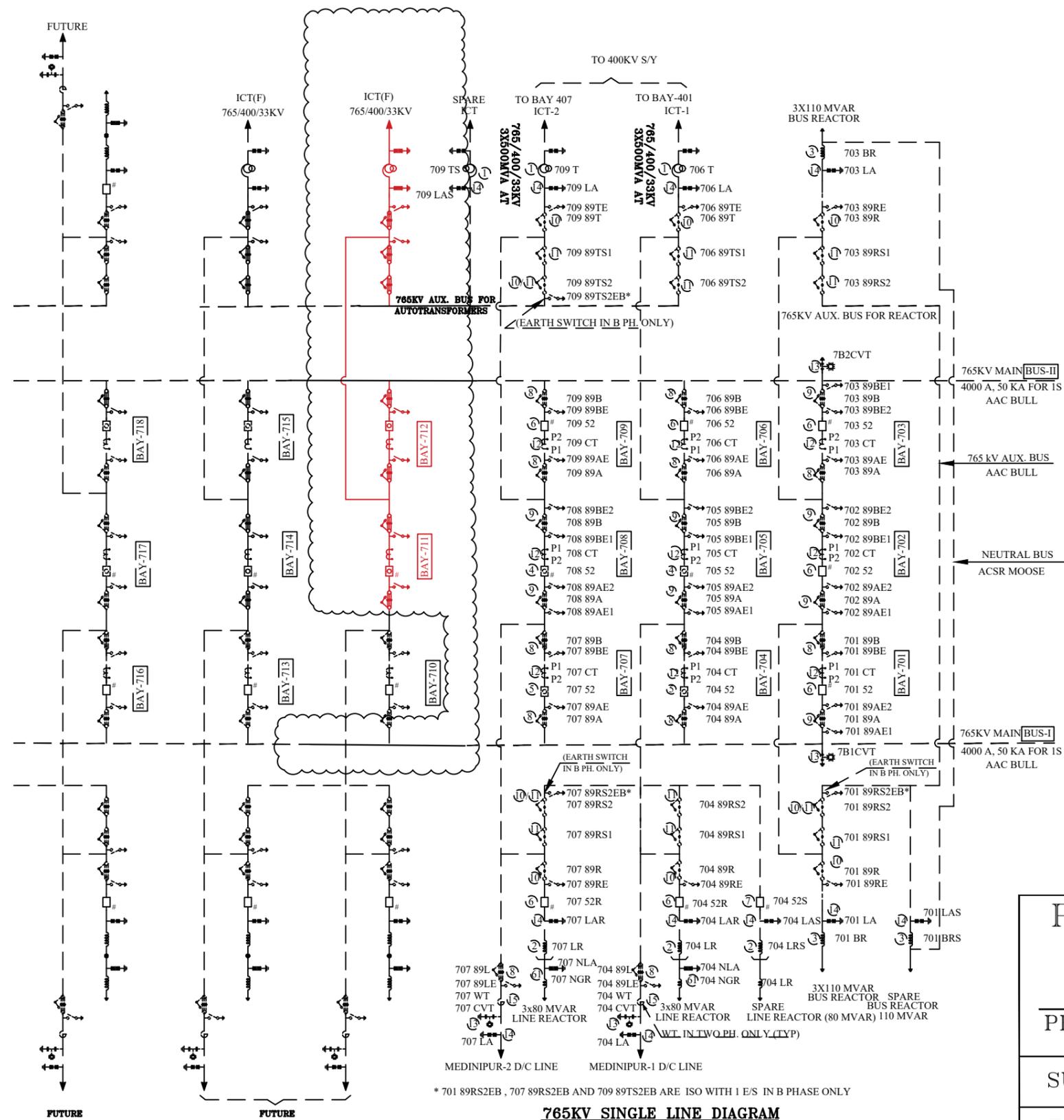
SUBSTATION : 765/400KV JEERAT S/S (EXTN)

TITLE : BAY ALLOCATION AT 765/400kV JEERAT S/S  
DATE FOR 765/400kV, 1500MVA 3rd ICT- 400kV Side  
DRAWING NO.

DRAWN \_\_\_\_\_ REV. \_\_\_\_\_

C/ENGG/TBCB/JEERAT/765KV/EXTN/

0



\* 701 89RS2EB, 707 89RS2EB AND 709 89TS2EB ARE ISO WITH 1 E/S IN B PHASE ONLY

**765KV SINGLE LINE DIAGRAM**

**POWER GRID CORPORATION OF INDIA LIMITED**  
 (A Government of India Enterprise)



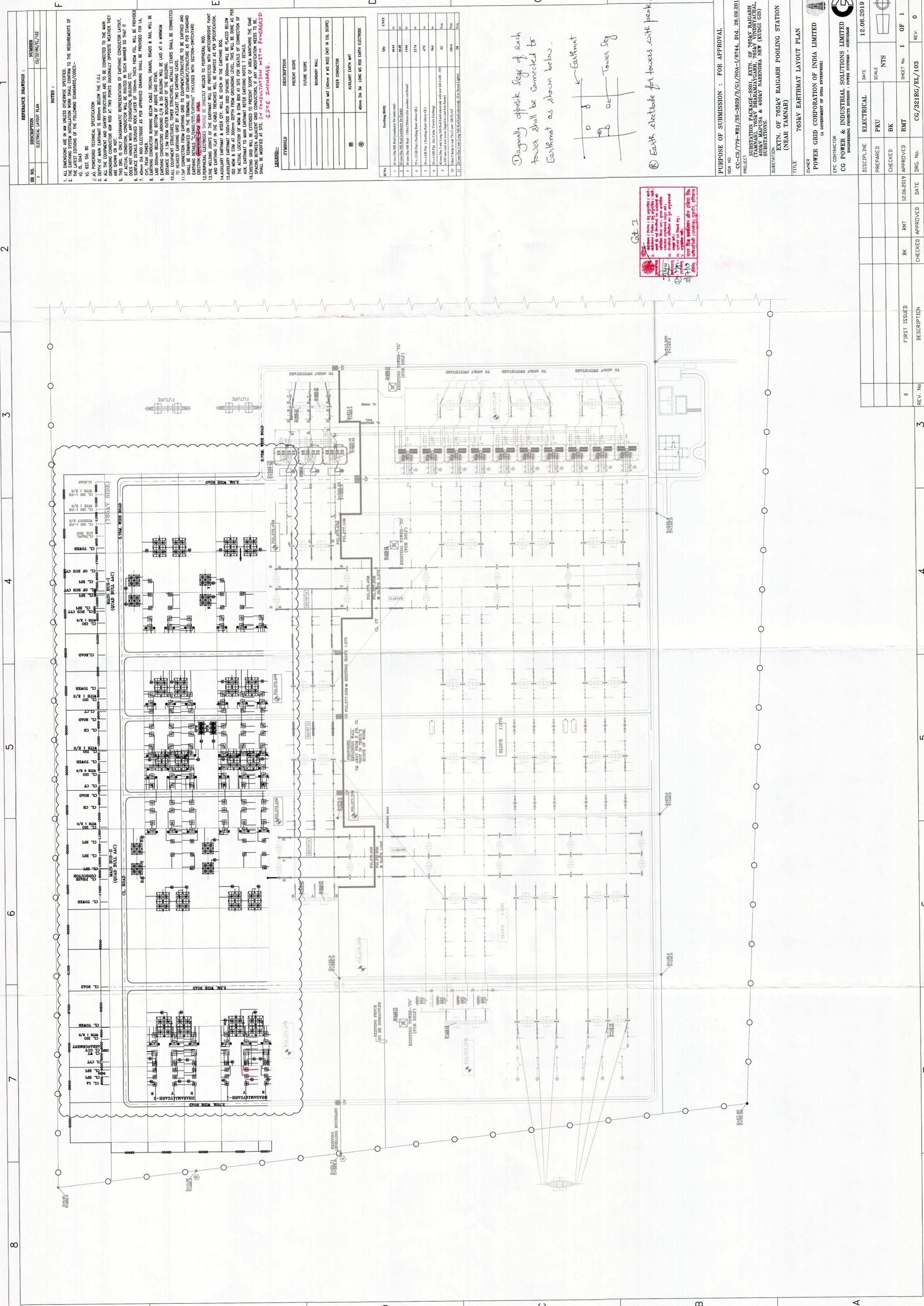
**PROJECT :** Space for installation of new 765/400kV, 1500MVA ICT (3rd) along with associated ICT bays.

**SUBSTATION :** 765/400KV JEERAT S/S (EXTN)

**TITLE :** BAY ALLOCATION AT 765/400kV JEERAT S/S FOR 765/400kV, 1500MVA 3rd ICT

DRAWN	DATE	DRAWING NO.	REV.
		C/ENGG/TBCB/JEERAT/765KV/EXTN/	0





NOTES :

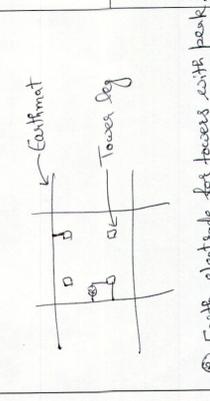
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. THE EARTHING SYSTEM INSTALLATION WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITIONS OF THE FOLLOWING STANDARDS/CODES:-
  - a) IS: 3043
  - b) IS: 3044
  - c) IS: 3045
  - d) IS: 3046
3. DEPTH OF MAIN EARTH MAT IS 600mm BELOW THE F.G.L.
4. ALL THE EQUIPMENT AND GANTRY STRUCTURES ARE TO BE CONNECTED TO THE MAIN GROUNDING CONDUCTOR AND ROD AT TWO POINTS DIAGONALLY OPPOSITE WHETHER THEY ARE AT ACTUAL POSITION OR AT THE POSITION SHOWN IN THE DRAWING.
5. THIS DRG. IS ONLY DIAGNOSTIC REPRESENTATION OF EARTHING CONDUCTOR LAYOUT. AT ACTUAL POSITION, CONDUCTOR WILL BE ROUTED IN SUCH MANNER SO THAT IT WILL BE AT LEAST 100mm CLEARANCE FROM ALL STRUCTURES AND EQUIPMENT.
6. SURFACE DETAILS CONSIDERED ROCK LAYER OF 100mm. THICK FROM F.G.L. WILL BE PROVIDED.
7. 40mm DIA ROD ELECTRODE AS PER APPROVED DRAWING SHALL BE PROVIDED FOR LA.
8. 40mm DIA ROD ELECTRODE AS PER APPROVED DRAWING SHALL BE PROVIDED FOR LA.
9. 40mm DIA ROD ELECTRODE AS PER APPROVED DRAWING SHALL BE PROVIDED FOR LA.
10. 40mm DIA ROD ELECTRODE AS PER APPROVED DRAWING SHALL BE PROVIDED FOR LA.
11. 40mm DIA ROD ELECTRODE AS PER APPROVED DRAWING SHALL BE PROVIDED FOR LA.
12. PERIPHERAL ELECTRODES SHOULD BE DIRECTLY WELDED TO PERIPHERAL ROD.
13. PERIPHERAL ELECTRODES SHOULD BE DIRECTLY WELDED TO PERIPHERAL ROD.
14. PERIPHERAL ELECTRODES SHOULD BE DIRECTLY WELDED TO PERIPHERAL ROD.
15. PERIPHERAL ELECTRODES SHOULD BE DIRECTLY WELDED TO PERIPHERAL ROD.
16. PERIPHERAL ELECTRODES SHOULD BE DIRECTLY WELDED TO PERIPHERAL ROD.
17. PERIPHERAL ELECTRODES SHOULD BE DIRECTLY WELDED TO PERIPHERAL ROD.
18. PERIPHERAL ELECTRODES SHOULD BE DIRECTLY WELDED TO PERIPHERAL ROD.
19. PERIPHERAL ELECTRODES SHOULD BE DIRECTLY WELDED TO PERIPHERAL ROD.
20. PERIPHERAL ELECTRODES SHOULD BE DIRECTLY WELDED TO PERIPHERAL ROD.

SYMBOLS

SYMBOLS	DESCRIPTION
(Symbol)	PRESENT SCOPE
(Symbol)	FUTURE SCOPE
(Symbol)	BOUNDARY WALL
(Symbol)	EARTH MAT (40mm x 40mm) (NOT IN COL. SCOPE)
(Symbol)	RISER CONDUCTOR
(Symbol)	AUXILIARY EARTH MAT
(Symbol)	40mm DIA. 3M LONG MS ROD EARTH ELECTRODE

SN No.	Earthmat Qty	UNIT
1	40mm DIA. MS Rod (conductor for main mat)	4444
2	40mm DIA. MS Rod (conductor for riser)	4444
3	40mm DIA. MS Rod (1000x1000mm for auxiliary earthing)	1444
4	75 x 12.5 IS Flat (Earthing Bar Above G.L.)	1174
5	50 x 6.35 IS Flat (Earthing Bar Above G.L.)	679
6	IS: 3043 (IS: 3043) (765kV Tower)	644
7	IS: 3044 (IS: 3044) (765kV Tower)	644
8	40mm DIA. MS Rod (conductor for main mat)	21
9	40mm DIA. MS Rod (conductor for riser)	21
10	40mm DIA. MS Rod (conductor for main mat)	1914
11	40mm DIA. MS Rod (conductor for riser)	21

Diagonally opposite legs of each tower shall be connected to Earthmat as shown below.



Earth electrode for towers with peak.

PURPOSE OF SUBMISSION : FOR APPROVAL

NO. 100  
CC-CS/779-TR/SS-3829/3/G/NO-1/8744, Dtd. 26.09.2018

PROJECT  
SUBSTATION PACKAGE-SS01, EXTN. OF 765KV RAIGARH (TAMNAR), 765KV DHARAMJANGARH, 765KV VINDHYACHAL, 400KV MAPUSA & 400KV NARENDRA NEW (KUDGI GIS) SUBSTATIONS.

SUBSTATION  
EXTN. OF 765KV RAIGARH POOLING STATION (NEAR TAMNAR)

TITLE  
765KV EARTH MAT LAYOUT PLAN

OWNER  
POWER GRID CORPORATION OF INDIA LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)

EPC CONTRACTOR  
CG POWER & INDUSTRIAL SOLUTIONS LIMITED ENGINEERING PROJECTS DIVISION : POWER SYSTEMS - CHENNAI

DATE  
12.06.2019

SCALE  
NTS

SHEET No. 1 OF 1

REV. No. 0