

765kV Khetri (AIS) S/S

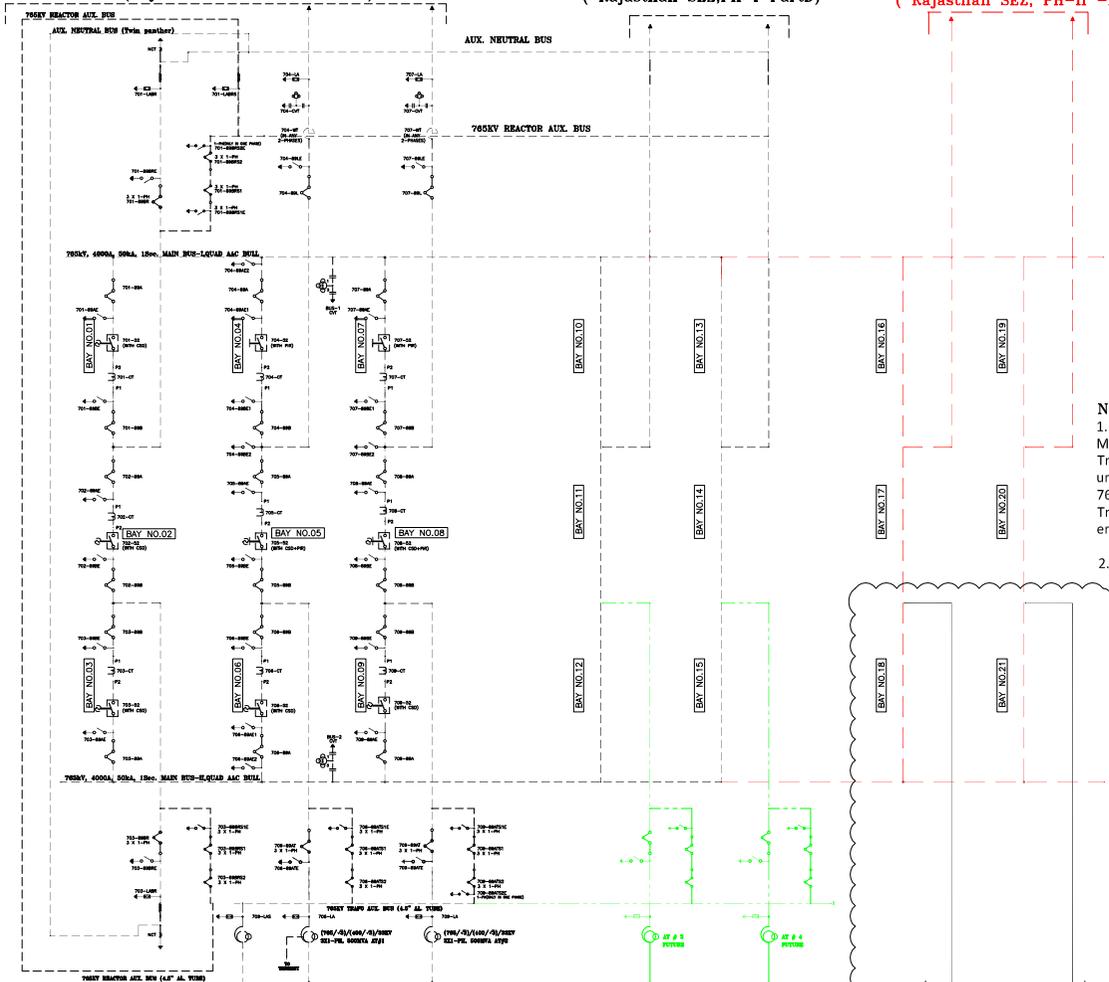
3x1-PH  
80 MVAR  
BUS REACTOR  
(Rajasthan SEZ, PH-I PART C)

1-PH  
SPARE  
REACTOR  
JHATIKARA D/C

765kV

765kV BIKANER D/C  
( Rajasthan SEZ,PH-I-PartD)

765kV NARELA D/C  
( Rajasthan SEZ, PH-II -PartG)



3x1-PH AT AT#1 AT#2  
80 MVAR (SPARE)  
BUS REACTOR

FUTURE FUTURE

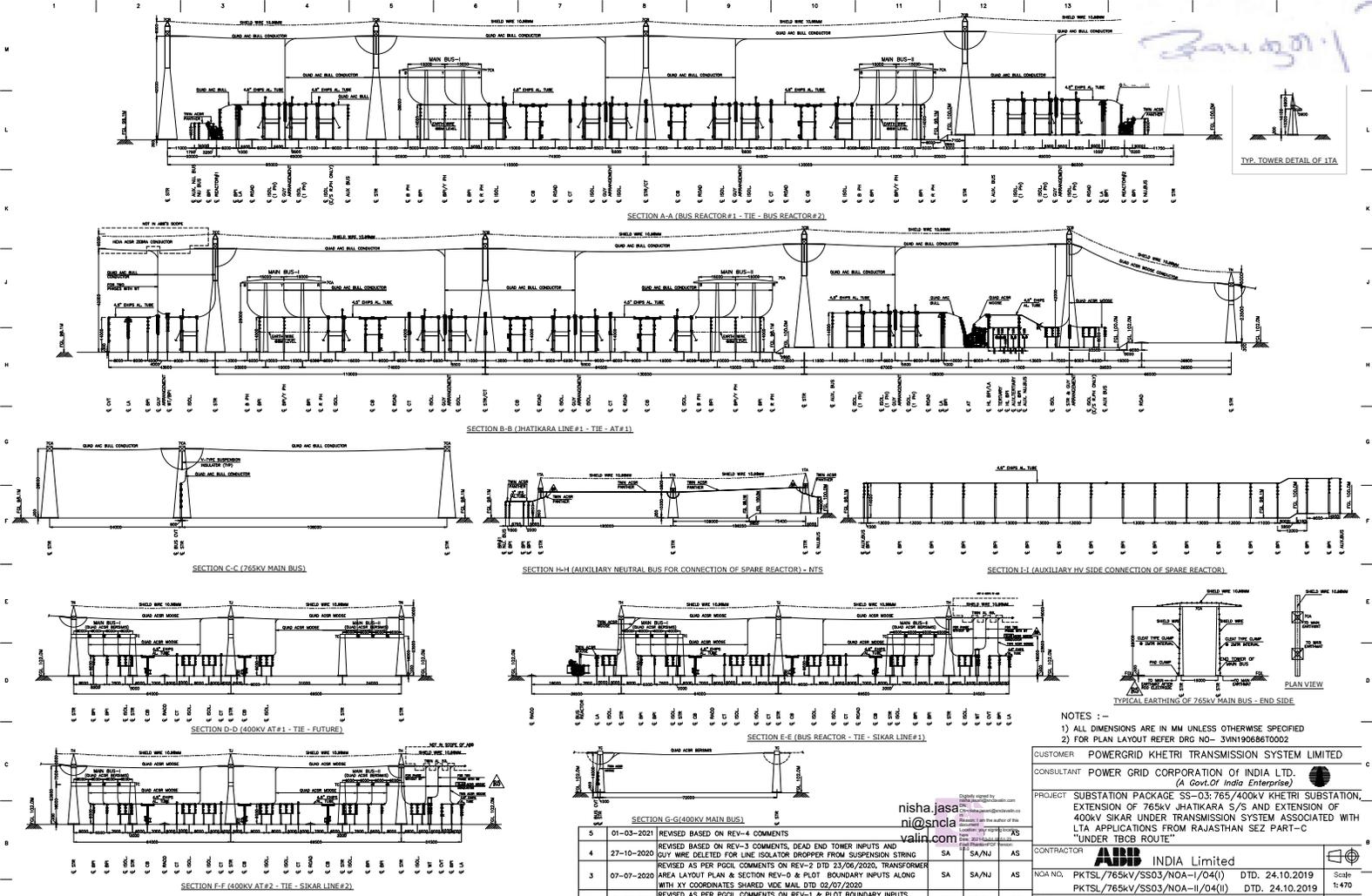
765kV SIKAR\_II D/C  
(Rajasthan REZ,PH-III -PartD)

**NOTE:**  
1. Construction of 765kV diameters comprising of bay nos. 16, 17, 19 & 20 alongwith Main-I & Main-II bus extension work have already been allocated under Rajasthan SEZ Ph II Part-G Transmission System. Construction of 765kV bays with bay nos. 18 & 21 are being allocated under present scope of Rajasthan REZ Ph III Part-D Transmission System. This implies that 765kV bays for termination of Khetri - Sikar II 765kV D/C line (under Rajasthan REZ Ph III Part-D Transmission System) can be constructed only after construction/commissioning of 765kV bays envisaged under Rajasthan SEZ Ph II Part-G Transmission System.  
2. Drawing Reference for SLD under Rajasthan SEZ Ph II Part-G : C/ENGG/TBCB/EXTN./KHETRI/765kV/SLD/01,R0

- Legend**
- Existing
  - Future
  - - - - - Scope of works under Rajasthan SEZ-PH-II Part G
  - ~~~~~ Scope of works under Rajasthan REZ-PH-III Part D

<b>POWER GRID CORPORATION OF INDIA LIMITED</b> (A Government of India Enterprise)			
<b>PROJECT :</b> Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part D			
<b>SUBSTATION :</b> 765/400kV KHETRI S/S (EXTN)			
<b>TITLE :</b> BAY ALLOCATION AT 765/400kV KHETRI S/S FOR 765 kV SIKAR_II-KHETRI D/C LINE			
<b>DRAWN</b>	<b>DATE</b>	<b>DRAWING NO.</b>	<b>REV.</b>
		C/ENGG/TBCB/KHETRI/765KV/EXTN/PH-III/01	0

DGM (ENGG-S/S)	Sr.GM (ENGG-S/S)	CGM (ENGG-S/S)	ED (ENGG-S/S,T/L&CIVIL)
CLEARED BY		APPROVED BY	

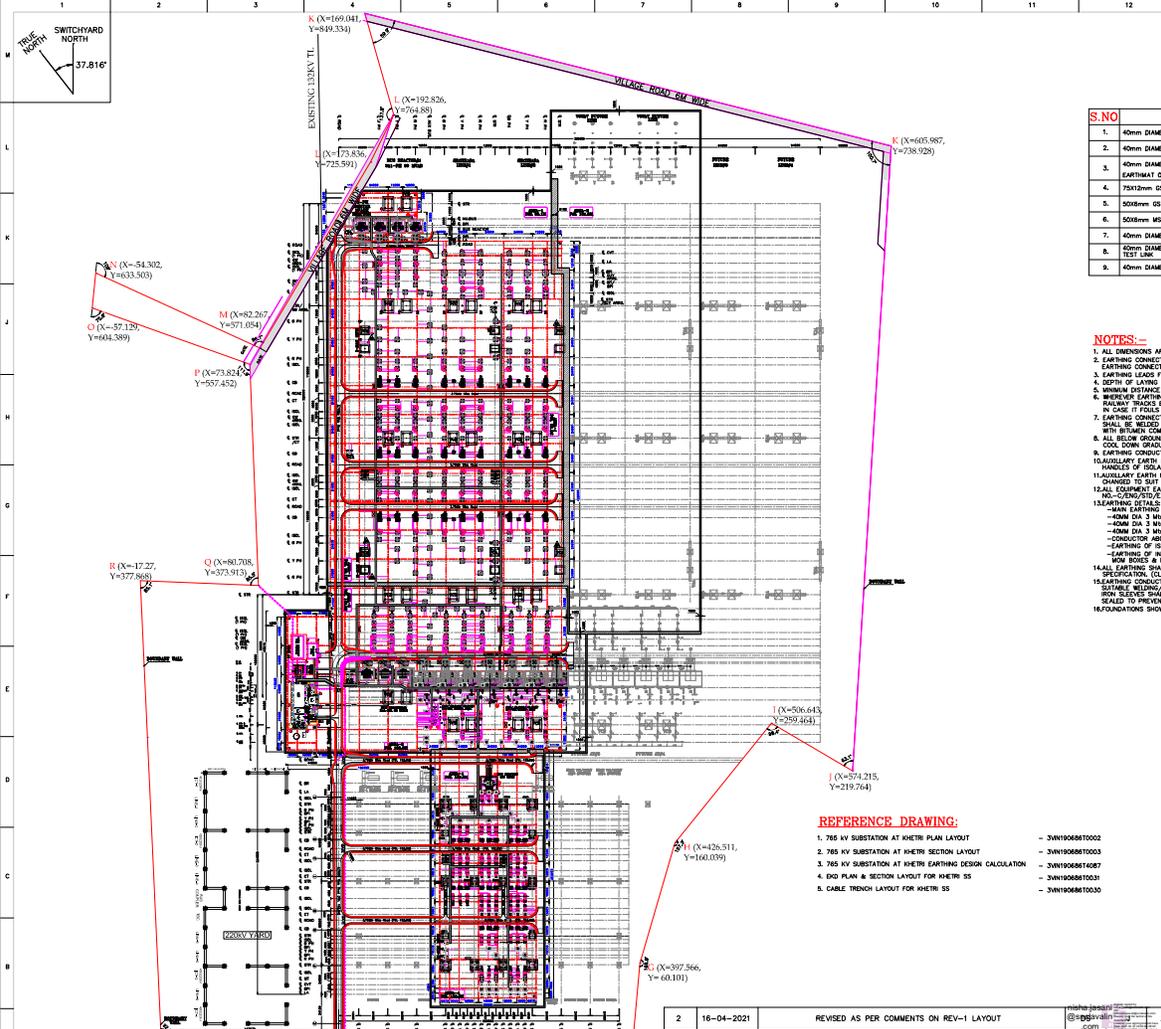


NOTES :-  
 1) ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED  
 2) FOR PLAN LAYOUT REFER DRG NO- 3VN190686T0002

CUSTOMER	POWERGRID KHETRI TRANSMISSION SYSTEM LIMITED
CONSULTANT	POWER GRID CORPORATION OF INDIA LTD. (A Govt. Of India Enterprise)
PROJECT	SUBSTATION PACKAGE SS-03:765/400KV KHETRI SUBSTATION, EXTENSION OF 765KV JHATKARA S/S AND EXTENSION OF 400KV SIKAR UNDER TRANSMISSION SYSTEM ASSOCIATED WITH LTA APPLICATIONS FROM RAJASTHAN SEZ PART-C "UNDER TBCB ROUTE"
CONTRACTOR	<b>ABB</b> INDIA Limited
NOA NO.	PKTSL/765kv/SS03/NOA-I/04(i) DTD. 24.10.2019
	PKTSL/765kv/SS03/NOA-II/04(ii) DTD. 24.10.2019
TITLE	765/400 kV SUBSTATION AT KHETRI SECTION LAYOUT
CONTRACTOR DRG. NO.	3VN190686T0003

REV.	DATE	DESCRIPTION	DRN.BY	CHK.BY	APPD.BY
0	19-11-2019	FIRST SUBMISSION	DS	NJ	AS
1	01-03-2021	REVISED BASED ON REV-4 COMMENTS	SA	SA/NJ	AS
2	27-10-2020	REVISED BASED ON REV-3 COMMENTS. DEAD END TOWER INPUTS AND GUY WIRE DELETED FOR LINE ISOLATOR DROPPER FROM SUSPENSION STRING	SA	SA/NJ	AS
3	07-07-2020	REVISED AS PER PCCIL COMMENTS ON REV-2 DTD 23/06/2020, TRANSFORMER AREA LAYOUT PLAN & SECTION REV-D & PLOT BOUNDARY INPUTS ALONG WITH XY COORDINATES SHARED WIDE MAIL DTD 09/07/2020	SA	SA/NJ	AS
4	09-06-2020	REVISED AS PER PCCIL COMMENTS ON REV-1 & PLOT BOUNDARY INPUTS ALONG WITH COORDINATES SHARED BY DTD 01/07/2020 & 28/01/2020	SA	SA/NJ	AS
5	23-01-2020	REVISED AS PER COMMENTS DATED 19.12.2019	SA	SA/NJ	AS

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S.NO	DESCRIPTION	UNIT	QUANTITY
1.	40mm DIAMETER MS ROD FOR MAIN MAT	MTR	11949
2.	40mm DIAMETER MS ROD FOR BELOW GROUND RISERS	MTR	21900
3.	40mm DIAMETER MS ROD FOR AUXILIARY EARTH MAT OF ISOLATORS	MTR	6050
4.	75x12mm GS FLAT FOR ABOVE GROUND RISERS	MTR	10800
5.	50x8mm GS FLAT FOR AB/ PANEL/ PANEL EARTHING	MTR	2200
6.	50x8mm MS FLAT FOR CABLE TRENCH EARTHING	MTR	1600
7.	40mm DIAMETER 3MTR LONG ROD ELECTRODE WITH TEST LINK	NOS	124
8.	40mm DIAMETER 3MTR LONG ROD ELECTRODE WITHOUT TEST LINK	NOS	12
9.	40mm DIAMETER 3MTR LONG GI PIPE ELECTRODE	NOS	14

**NOTES:-**

- ALL DIMENSIONS ARE IN MM, UNLESS OTHERWISE SPECIFIED.
- EARTHING CONNECTIONS OF EQUIPMENTS SHOWN ARE DIAGRAMATIC ONLY. EXACT LOCATIONS OF EQUIPMENTS EARTHING CONDUCTOR LEADS, EARTH ELECTRODES MAY BE CHANGED TO SUIT SITE CONDITIONS.
- EARTHING LEADS FROM EQUIPMENTS/STRUCTURES SHALL BE CONNECTED TO DIFFERENT CONDUCTORS OF MAIN EARTHING GRID.
- DEPTH OF LAYING OF MAIN EARTHING CONDUCTOR SHALL BE 600mm BELOW THE FINISHED GROUND LEVEL.
- MINIMUM DISTANCE OF 300MM SHALL BE MAINTAINED BETWEEN TWO TREATED (PVC) ELECTRODES.
- SUBMERSE EARTHING CONDUCTOR SHOULD BE LAYED WITHIN UNDERGROUND SERVICE DUCTS/TUNNELS.
- IN CASE IT FALLS WITH EQUIPMENT/STRUCTURE FOUNDATIONS.
- EARTHING CONDUCTORS WITH EQUIPMENT EARTHING PADS SHALL BE BOLTED TIGHT AND BELOW GROUND LEVEL CONNECTIONS SHALL BE WELDED TYPE. FOR RUST PROTECTION WELDS SHOULD BE TREATED WITH RED LEAD & AFTERWARDS COATED TO CORROSION RESISTANT TO PREVENT CORROSION AS PER INDICATED DIRECTION.
- ALL BELOW GROUND LEVEL CONNECTIONS SHALL BE ELECTRIC ARC WELDED. ALL WELDED JOINTS SHALL BE ALLOWED TO COOL DOWN GRADUALLY TO AMBIENT TEMPERATURE BEFORE PUTTING ANY LOAD ON IT.
- EARTHING CONDUCTOR OR OTHERS BE RIGID SHALL BE END FINISH BELOW ROAD.
- AUXILIARY EARTH MAT SIZE 1.5MTR X 1.5MTR SHALL BE LAYED BELOW THE MAIN SWITCH & EARTH SWITCH OPERATING PANELS OF ISOLATOR AT A DISTANCE OF 100MM FROM THE ISOLATOR OPERATING MEDIUM ROOM ARE INDICATIVE ONLY EXACT LOCATION SHALL BE CHANGED TO SUIT SITE CONDITIONS AS PER APPROVED ISOLATOR DRAWINGS EARTH CONDUCTOR IS LAD.
- ALL EQUIPMENT EARTHING INCLUDING REACTOR SHOULD BE DONE AS PER POOL STANDARD EARTHING DRAWING INDICATED EARTHING (SHEET NO. 1 TO 20)

**LEGEND:-**

- PRESENT SCOPE OF WORK
- FUTURE/EXISTING (NOT IN AMB'S SCOPE)
- FENCE
- BOUNDARY WALL
- PRESENT CABLE TRENCH
- EARTH MAT (40mm # MS ROD)
- RISER CONDUCTOR
- AUXILIARY EARTH MAT
- 40mm DA 3M LONG MS ROD EARTH ELECTRODE WITH TEST LINK FOR CTV, LA & TOWER WITH PEAK
- 40mm DA 3M LONG GI PIPE EARTH ELECTRODE FOR REACTOR / TRANSFORMER BANK NEUTRAL
- 40mm DA 3M LONG MS ROD EARTH ELECTRODE WITHOUT TEST LINK FOR EARTH MAT CORNER

**REFERENCE DRAWING:**

- 765 KV SUBSTATION AT KHETRI PLAN LAYOUT - 3VN190686T0002
- 765 KV SUBSTATION AT KHETRI SECTION LAYOUT - 3VN190686T0003
- 765 KV SUBSTATION AT KHETRI EARTHING DESIGN CALCULATION - 3VN190686T0007
- END PLAN & SECTION LAYOUT FOR KHETRI SS - 3VN190686T0031
- CABLE TRENCH LAYOUT FOR KHETRI SS - 3VN190686T0030

CUSTOMER	POWERGRID KHETRI TRANSMISSION SYSTEM LIMITED
CONSULTANT	POWER GRID CORPORATION OF INDIA LTD. (A Govt. of India Enterprise)
PROJECT	SUBSTATION PACKAGE SS-03: 765/400KV KHETRI SUBSTATION, EXTENSION OF 765KV JHATKARA S/S AND EXTENSION OF 400KV SIKAR UNDER TRANSMISSION SYSTEM ASSOCIATED WITH LTA APPLICATIONS FROM RAJASTHAN SEZ PART-C "UNDER TBGB ROUTE"
CONTRACTOR	ABB INDIA Limited
NO. AND NO.	PKTSL/765KV/SS03/NOA-I/04(I) DTD. 24.10.2019
	PKTSL/765KV/SS03/NOA-II/04(II) DTD. 24.10.2019

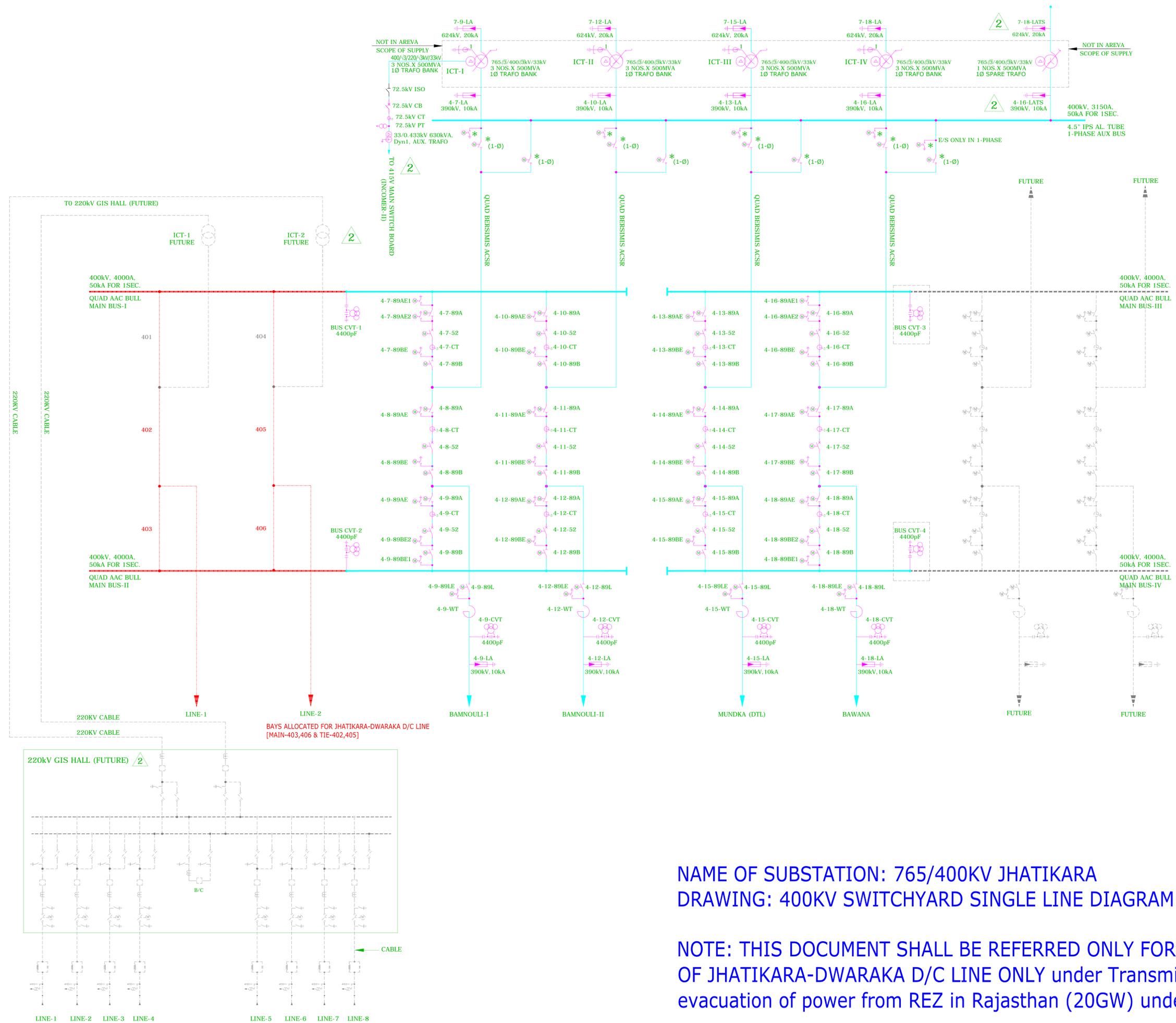
REV.	DATE	DESCRIPTION	DRN/RY	CHK./DY	APPROV.
2	16-04-2021	REVISED AS PER COMMENTS ON REV-1 LAYOUT	AS		
1	27-07-2020	REVISED AS PER COMMENTS DT 17.07.2020	SA	SA/N	AS
0	29-06-2020	FIRST SUBMISSION	SA	SA/N	AS

TITLE	765/400 kV SUBSTATION AT KHETRI EARTHING LAYOUT	Total Sh. NO. NOS.	1 OF 1
CONTRACTOR DRG. NO.	3VN190686T0033	Sheet	1 OF 1
		Size	AO

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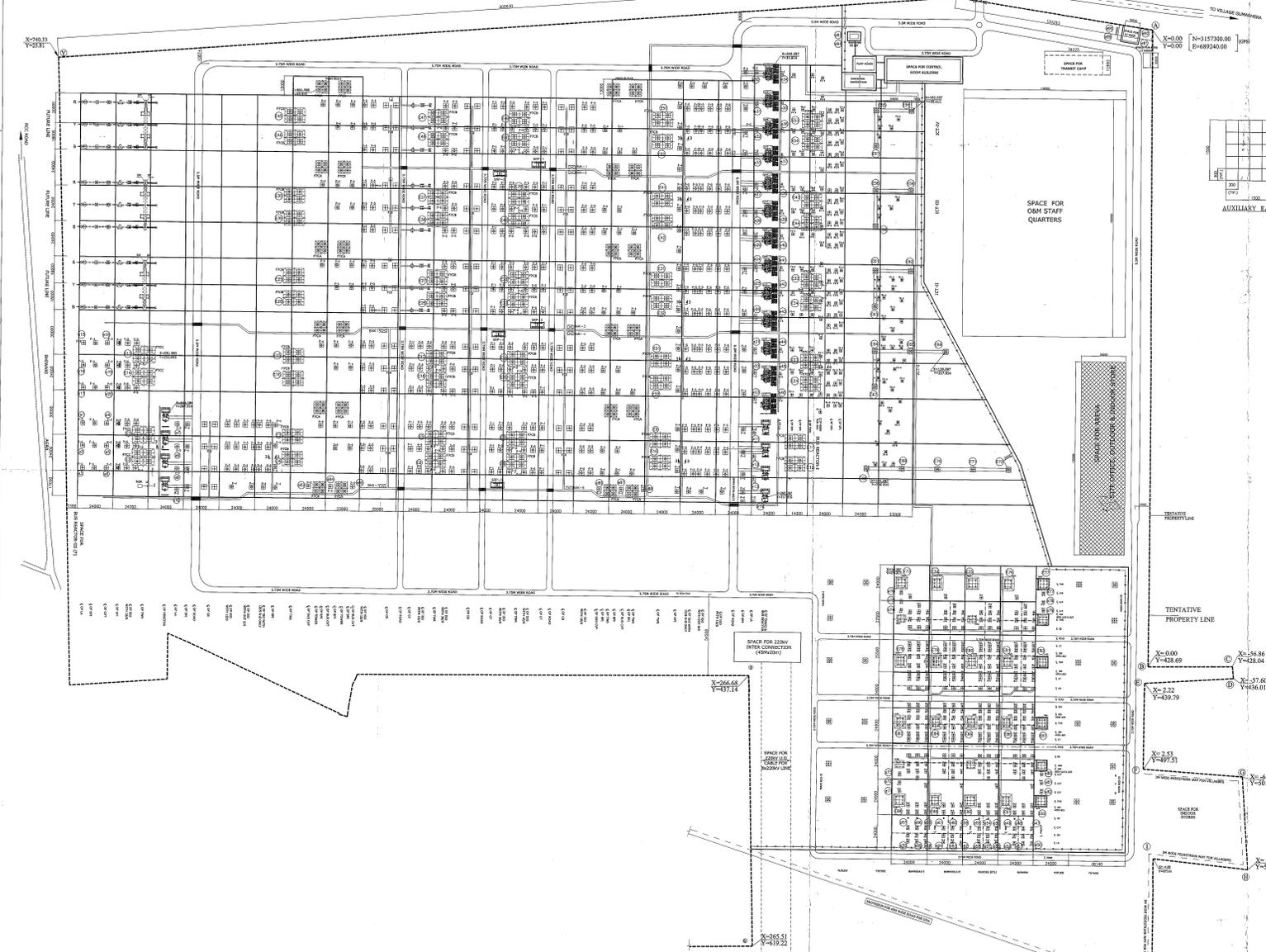
**765/400kV Jhatikara (AIS) S/S**





NAME OF SUBSTATION: 765/400KV JHATIKARA  
 DRAWING: 400KV SWITCHYARD SINGLE LINE DIAGRAM

NOTE: THIS DOCUMENT SHALL BE REFERRED ONLY FOR BAY ALLOCATION OF JHATIKARA-DWARAKA D/C LINE ONLY under Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part D



- NOTES:**
1. THE CATHING ROD SHALL BE MADE WITH STEEL ON AN IRON ROD. THE SPACING BETWEEN CATHING RODS SHALL BE AS PER THE CATHING CALCULATION.
  2. CATHING ANODES IN OUTDOOR AREA SHALL BE BURIED DOWN BELOW THE GRADE OTHERWISE SPECIFIED.
  3. ANODES CATHING ANODES SHALL BE BURIED DOWN BELOW THE GRADE OTHERWISE SPECIFIED. IRON RODS, GALVANIZED IRON RODS ETC. IT SHALL BE USED ALONG WITH IRON RODS AND SHALL BE BURIED IN CASE IT FALLS WITH CORROSION / STRUCTURE DEGRADATION.
  4. CATHING ANODES CROSSING THE ROAD SHALL BE Laid AT 300MM BELOW THE ROAD OR AT GREATER DEPTH TO THE SIDE OF ROAD.
  5. CATHING ANODES CONNECTED IN THE CONCRETE SHALL BE APPROXIMATELY 30MM CONCRETE DEPTH.
  6. ALL STEEL CONNECTION SHALL BE MADE BY GALVANIZING AND WELDING. ALL WELDING SHALL BE ALLOWED TO COOL DOWN NATURALLY TO AMBIENT TEMPERATURE BEFORE PUTTING ANY LOAD ON IT. REPAIR COATING SHALL NOT BE REQUIRED.
  7. RANGES OF CATHING ROD SHALL BE DONE PROBABLY BY GALVANEERING.
  8. ALL WELDS SHALL BE MADE WITH LOW HYDROGEN CONTENT ELECTRODES.
  9. ALL EQUIPMENT & STRUCTURES SHALL BE PROVIDED AS PER STANDARD DRAWING DETAILS OR AS PER CATHING CALCULATION.
  10. FOR MORE DETAILS OF CATHING, WELDING AND JOINT DETAILS SHALL BE DONE AS PER STANDARD DRAWING DETAILS OR AS PER CATHING CALCULATION.
  11. THE LOCATION OF CATHING ANODES, EQUIPMENT AND PROTECTIVE RODS AND ANODES AND CAN BE MARKED TO THE SITE OFFICER.
  12. WHERE CATHING ANODES ARE PROVIDED THROUGH THE WALLS OF CONCRETE SHALL BE DONE AS PER THE SITE CONDITION.
  13. ANODES CONNECTED WITH CATHING RODS SHALL BE PROVIDED AT A SPACING OF 30M AND ALSO AT BOTH ENDS.
  14. CATHING ANODES SHALL BE BURIED DOWN BELOW THE GRADE OTHERWISE SPECIFIED AND ALL THE ANODES SHALL BE PROVIDED WITH GALVANIZED IRON RODS OR GALVANIZED IRON RODS.
  15. THE CATHING ROD SHALL BE PROVIDED WITH GALVANIZED IRON RODS OR GALVANIZED IRON RODS.
  16. ANODES SHALL BE PROVIDED WITH GALVANIZED IRON RODS OR GALVANIZED IRON RODS.
  17. ANODES SHALL BE PROVIDED WITH GALVANIZED IRON RODS OR GALVANIZED IRON RODS.
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  21. ANODES SHALL BE PROVIDED WITH GALVANIZED IRON RODS OR GALVANIZED IRON RODS.
  22. ANODES SHALL BE PROVIDED WITH GALVANIZED IRON RODS OR GALVANIZED IRON RODS.
  23. ANODES SHALL BE PROVIDED WITH GALVANIZED IRON RODS OR GALVANIZED IRON RODS.

**ASSIGN FEATURES :**

SL. NO.	DESCRIPTION	PLANTING	SL. NO.	DESCRIPTION
1	11KV BUS BAR	11KV BUS BAR	14	11KV BUS BAR
2	11KV BUS BAR	11KV BUS BAR	15	11KV BUS BAR
3	11KV BUS BAR	11KV BUS BAR	16	11KV BUS BAR
4	11KV BUS BAR	11KV BUS BAR	17	11KV BUS BAR
5	11KV BUS BAR	11KV BUS BAR	18	11KV BUS BAR
6	11KV BUS BAR	11KV BUS BAR	19	11KV BUS BAR
7	11KV BUS BAR	11KV BUS BAR	20	11KV BUS BAR
8	11KV BUS BAR	11KV BUS BAR	21	11KV BUS BAR
9	11KV BUS BAR	11KV BUS BAR	22	11KV BUS BAR
10	11KV BUS BAR	11KV BUS BAR	23	11KV BUS BAR
11	11KV BUS BAR	11KV BUS BAR	24	11KV BUS BAR
12	11KV BUS BAR	11KV BUS BAR	25	11KV BUS BAR
13	11KV BUS BAR	11KV BUS BAR	26	11KV BUS BAR
14	11KV BUS BAR	11KV BUS BAR	27	11KV BUS BAR
15	11KV BUS BAR	11KV BUS BAR	28	11KV BUS BAR
16	11KV BUS BAR	11KV BUS BAR	29	11KV BUS BAR
17	11KV BUS BAR	11KV BUS BAR	30	11KV BUS BAR
18	11KV BUS BAR	11KV BUS BAR	31	11KV BUS BAR
19	11KV BUS BAR	11KV BUS BAR	32	11KV BUS BAR
20	11KV BUS BAR	11KV BUS BAR	33	11KV BUS BAR
21	11KV BUS BAR	11KV BUS BAR	34	11KV BUS BAR
22	11KV BUS BAR	11KV BUS BAR	35	11KV BUS BAR
23	11KV BUS BAR	11KV BUS BAR	36	11KV BUS BAR
24	11KV BUS BAR	11KV BUS BAR	37	11KV BUS BAR
25	11KV BUS BAR	11KV BUS BAR	38	11KV BUS BAR
26	11KV BUS BAR	11KV BUS BAR	39	11KV BUS BAR
27	11KV BUS BAR	11KV BUS BAR	40	11KV BUS BAR
28	11KV BUS BAR	11KV BUS BAR	41	11KV BUS BAR
29	11KV BUS BAR	11KV BUS BAR	42	11KV BUS BAR
30	11KV BUS BAR	11KV BUS BAR	43	11KV BUS BAR
31	11KV BUS BAR	11KV BUS BAR	44	11KV BUS BAR
32	11KV BUS BAR	11KV BUS BAR	45	11KV BUS BAR
33	11KV BUS BAR	11KV BUS BAR	46	11KV BUS BAR
34	11KV BUS BAR	11KV BUS BAR	47	11KV BUS BAR
35	11KV BUS BAR	11KV BUS BAR	48	11KV BUS BAR
36	11KV BUS BAR	11KV BUS BAR	49	11KV BUS BAR
37	11KV BUS BAR	11KV BUS BAR	50	11KV BUS BAR
38	11KV BUS BAR	11KV BUS BAR	51	11KV BUS BAR
39	11KV BUS BAR	11KV BUS BAR	52	11KV BUS BAR
40	11KV BUS BAR	11KV BUS BAR	53	11KV BUS BAR
41	11KV BUS BAR	11KV BUS BAR	54	11KV BUS BAR
42	11KV BUS BAR	11KV BUS BAR	55	11KV BUS BAR
43	11KV BUS BAR	11KV BUS BAR	56	11KV BUS BAR
44	11KV BUS BAR	11KV BUS BAR	57	11KV BUS BAR
45	11KV BUS BAR	11KV BUS BAR	58	11KV BUS BAR
46	11KV BUS BAR	11KV BUS BAR	59	11KV BUS BAR
47	11KV BUS BAR	11KV BUS BAR	60	11KV BUS BAR
48	11KV BUS BAR	11KV BUS BAR	61	11KV BUS BAR
49	11KV BUS BAR	11KV BUS BAR	62	11KV BUS BAR
50	11KV BUS BAR	11KV BUS BAR	63	11KV BUS BAR
51	11KV BUS BAR	11KV BUS BAR	64	11KV BUS BAR
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53	11KV BUS BAR	11KV BUS BAR	66	11KV BUS BAR
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57	11KV BUS BAR	11KV BUS BAR	70	11KV BUS BAR
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63	11KV BUS BAR	11KV BUS BAR	76	11KV BUS BAR
64	11KV BUS BAR	11KV BUS BAR	77	11KV BUS BAR
65	11KV BUS BAR	11KV BUS BAR	78	11KV BUS BAR
66	11KV BUS BAR	11KV BUS BAR	79	11KV BUS BAR
67	11KV BUS BAR	11KV BUS BAR	80	11KV BUS BAR
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69	11KV BUS BAR	11KV BUS BAR	82	11KV BUS BAR
70	11KV BUS BAR	11KV BUS BAR	83	11KV BUS BAR
71	11KV BUS BAR	11KV BUS BAR	84	11KV BUS BAR
72	11KV BUS BAR	11KV BUS BAR	85	11KV BUS BAR
73	11KV BUS BAR	11KV BUS BAR	86	11KV BUS BAR
74	11KV BUS BAR	11KV BUS BAR	87	11KV BUS BAR
75	11KV BUS BAR	11KV BUS BAR	88	11KV BUS BAR
76	11KV BUS BAR	11KV BUS BAR	89	11KV BUS BAR
77	11KV BUS BAR	11KV BUS BAR	90	11KV BUS BAR
78	11KV BUS BAR	11KV BUS BAR	91	11KV BUS BAR
79	11KV BUS BAR	11KV BUS BAR	92	11KV BUS BAR
80	11KV BUS BAR	11KV BUS BAR	93	11KV BUS BAR
81	11KV BUS BAR	11KV BUS BAR	94	11KV BUS BAR
82	11KV BUS BAR	11KV BUS BAR	95	11KV BUS BAR
83	11KV BUS BAR	11KV BUS BAR	96	11KV BUS BAR
84	11KV BUS BAR	11KV BUS BAR	97	11KV BUS BAR
85	11KV BUS BAR	11KV BUS BAR	98	11KV BUS BAR
86	11KV BUS BAR	11KV BUS BAR	99	11KV BUS BAR
87	11KV BUS BAR	11KV BUS BAR	100	11KV BUS BAR

**SCALE OF MATERIALS**

SL. NO.	DESCRIPTION	SCALE
1	11KV BUS BAR	1:1
2	11KV BUS BAR	1:1
3	11KV BUS BAR	1:1
4	11KV BUS BAR	1:1
5	11KV BUS BAR	1:1
6	11KV BUS BAR	1:1
7	11KV BUS BAR	1:1
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96	11KV BUS BAR	1:1
97	11KV BUS BAR	1:1
98	11KV BUS BAR	1:1
99	11KV BUS BAR	1:1
100	11KV BUS BAR	1:1



**CLIENT :** AREVA T&D INDIA LTD. POWER GRID CORPORATION OF INDIA LIMITED.

**PROJECT :** 765/400KV JHATIKRA SUBSTATION (PACKAGE-S1) UNDER 765KV SYSTEM FOR CENTRAL PART OF NORTHERN GRID PART-2 (PAG-S1) SPEC NO : C-14908-5019A-3

**LOA NO. :** C-14908-5019A-3P-203/G1/NOA-1/3118 & NOA-II/3118 & NOA-III/3118 (DATED:17.09.2009)

**TITLE :** EARTH MAT LAYOUT FOR 765/400KV JHATIKRA SUBSTATION

**SAUDAMINI, PLOT NO.-2 GURGAON-122 001 (HARYANA).**

**REVISED AS PER PGCL COMMENTS**

REV.	DESCRIPTION	DATE	BY	FOR APPROVAL
0	FIRST ISSUE	26.04.10	AS	FOR APPROVAL
1	REVISED AS PER PGCL COMMENTS	10.07.10	AS	FOR APPROVAL

**AREVA T&D INDIA LTD.** DRAWING NO. 5257PN092-JHA-E-SYD-EAR-0201

**SCALE :** 1:25

**TOTAL SHEETS :** 01

**DATE :** 20.01.2011

**SCALE :** 1:25

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*A-6 actual*

*AREVA T&D*

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*AREVA T&D*

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*AREVA T&D*

400kV Dwarka (GIS) S/S

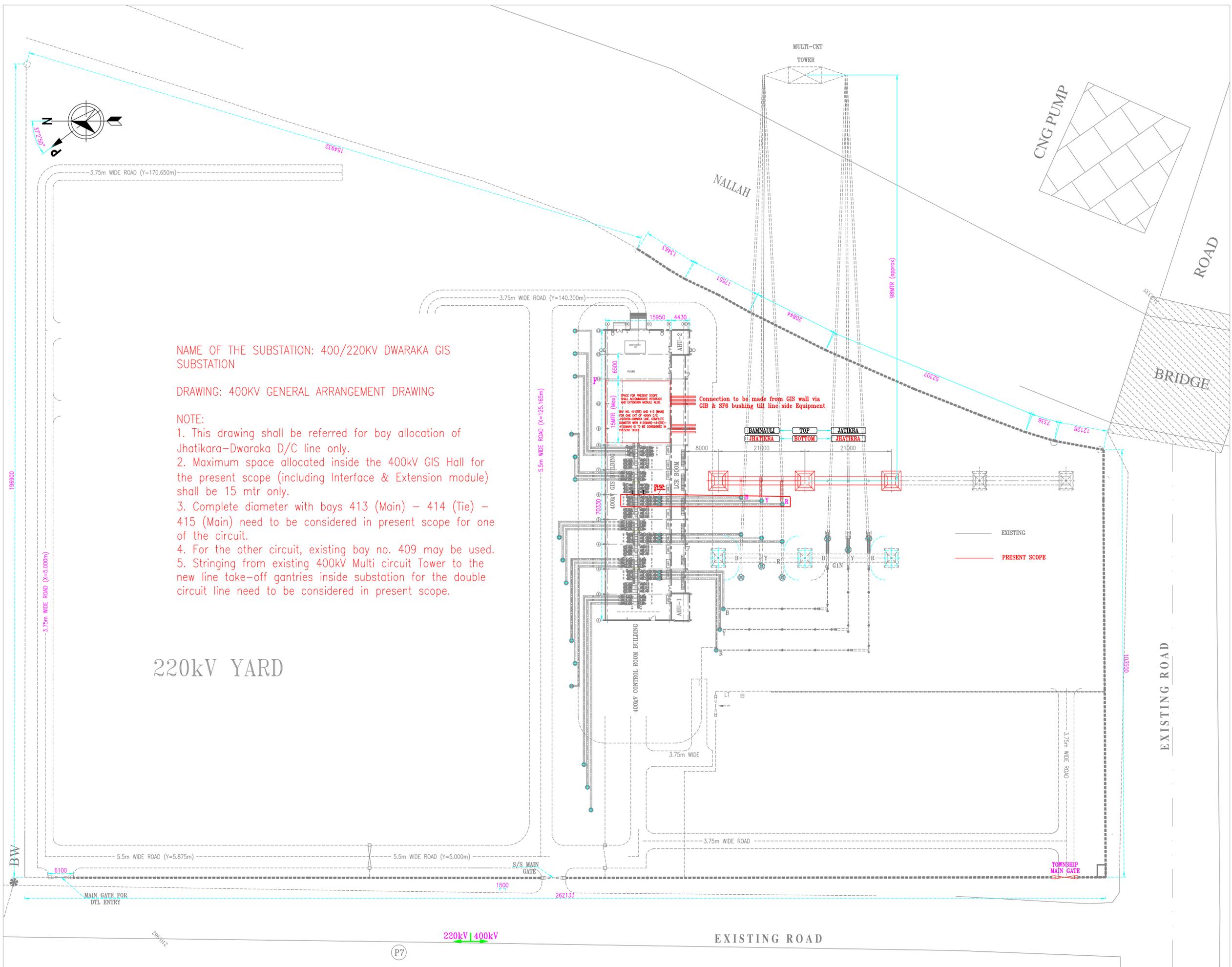
NAME OF THE SUBSTATION: 400/220KV DWARAKA GIS SUBSTATION

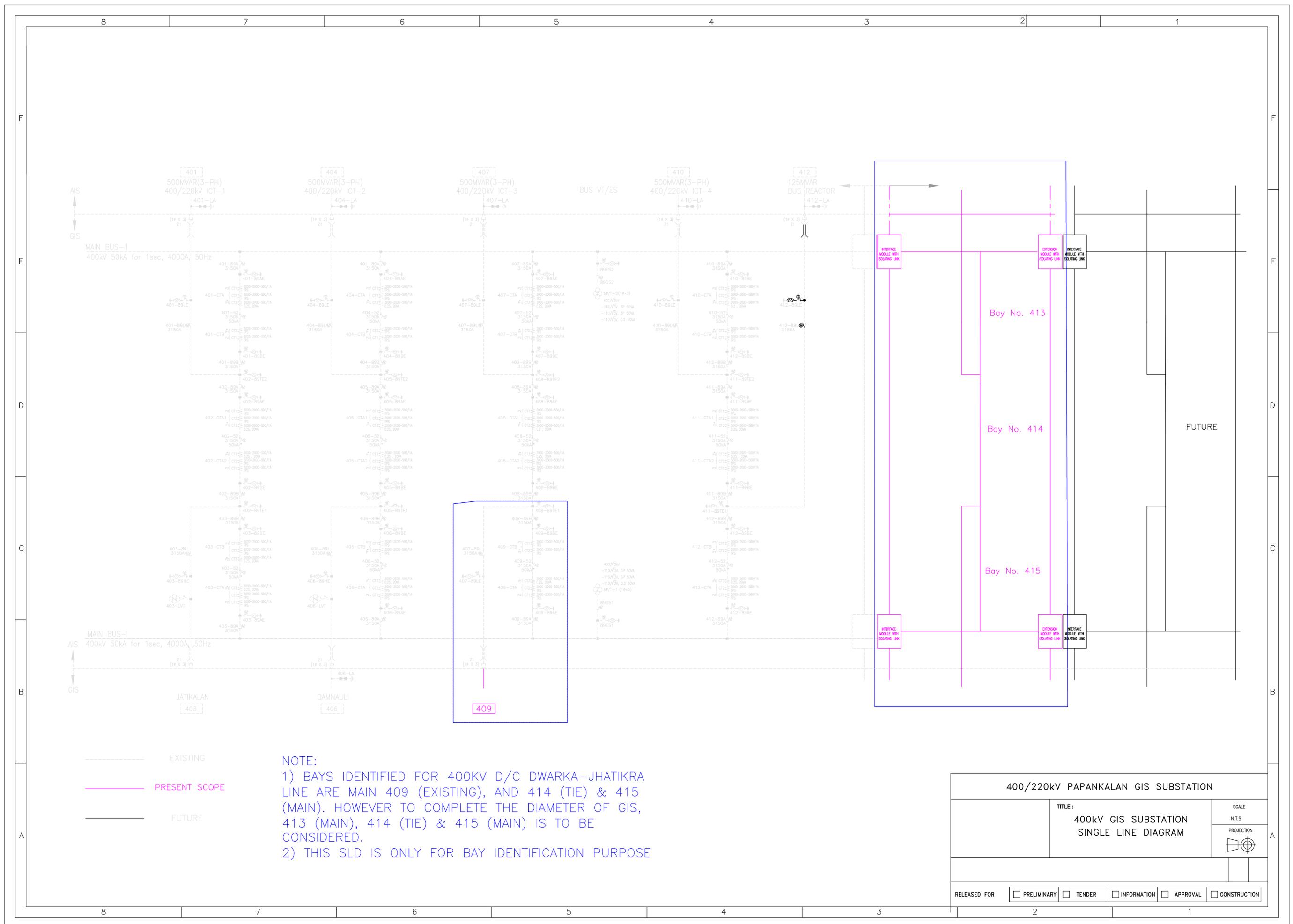
DRAWING: 400KV GENERAL ARRANGEMENT DRAWING

NOTE:

1. This drawing shall be referred for bay allocation of Jhatikara-Dwaraka D/C line only.
2. Maximum space allocated inside the 400kV GIS Hall for the present scope (including Interface & Extension module) shall be 15 mtr only.
3. Complete diameter with bays 413 (Main) – 414 (Tie) – 415 (Main) need to be considered in present scope for one of the circuit.
4. For the other circuit, existing bay no. 409 may be used.
5. Stringing from existing 400kV Multi circuit Tower to the new line take-off gantries inside substation for the double circuit line need to be considered in present scope.

220kV YARD

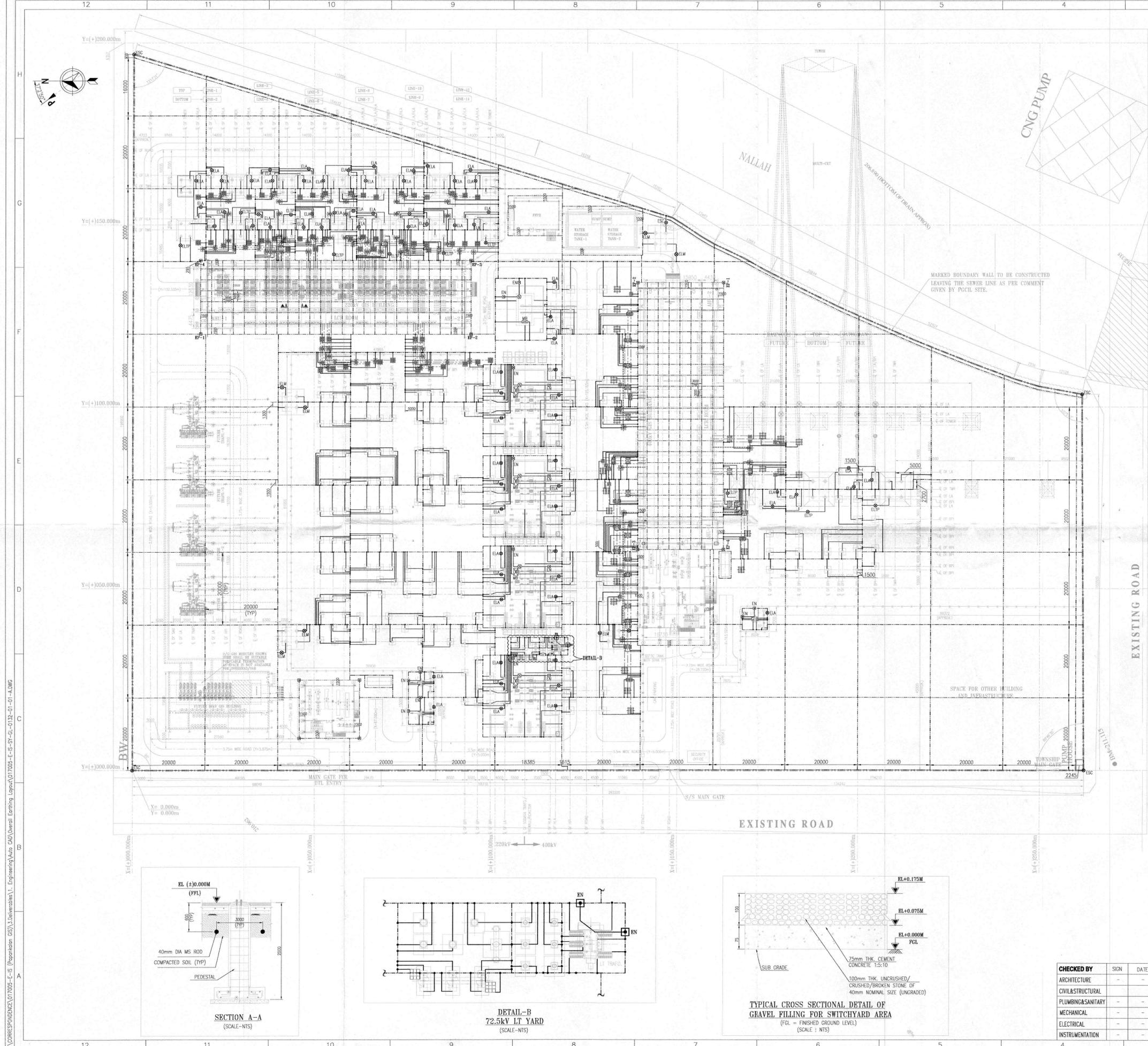




- - - - - EXISTING  
 ——— PRESENT SCOPE  
 ——— FUTURE

**NOTE:**  
 1) BAYS IDENTIFIED FOR 400KV D/C DWARKA-JHATIKRA LINE ARE MAIN 409 (EXISTING), AND 414 (TIE) & 415 (MAIN). HOWEVER TO COMPLETE THE DIAMETER OF GIS, 413 (MAIN), 414 (TIE) & 415 (MAIN) IS TO BE CONSIDERED.  
 2) THIS SLD IS ONLY FOR BAY IDENTIFICATION PURPOSE

400/220kV PAPANKALAN GIS SUBSTATION		
	TITLE: <b>400kV GIS SUBSTATION          SINGLE LINE DIAGRAM</b>	SCALE N.T.S. PROJECTION 
RELEASED FOR <input type="checkbox"/> PRELIMINARY <input type="checkbox"/> TENDER <input type="checkbox"/> INFORMATION <input type="checkbox"/> APPROVAL <input type="checkbox"/> CONSTRUCTION		



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- LEGEND:-**
- 40mm # MS ROD FOR MAIN EARTH MAT
  - 40mm # MS ROD (BELOW GROUND RISER)
  - 40mm # 3M LONG GS PIPE EARTH ELECTRODE WITH UNTREATED EARTH PIT
  - 40mm # 3M LONG M.S ROD ELECTRODE
  - 20mm # 3M LONG M.S ROD ELECTRODE FOR STREET LIGHT POLE

- PGCIL REFERENCE DRAWINGS:-**
1. GENERAL ARRANGEMENT - 400/220KV PAPANAKAN-I GIS SUBSTATION, DWG No. C/ENG/NR/PAPANAKAN GIS/GA/01 REV.0
  2. STANDARD EARTHING DETAILS, DRAWING No: C/ENG/STD/EARTHING/09

- L&T REFERENCE DRAWINGS:-**
1. 400/220KV PAPANAKAN GIS SUBSTATION - OVERALL EQUIPMENT LAYOUT, DWG No. 017005-E-S-SY-EL-0101.
  2. 400/220KV PAPANAKAN GIS SUBSTATION - 400KV GIS BUILDING EARTHING & LIGHTNING PROTECTION LAYOUT, DWG No. 017005-E-S-SY-GB-GL-0106
  3. 400/220KV PAPANAKAN GIS SUBSTATION - 220KV GIS BUILDING EARTHING & LIGHTNING PROTECTION LAYOUT, DWG No. 017005-E-S-SY-GB-GL-0118

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM AND LEVELS & CO-ORDINATES ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
  2. EARTH MAT AND EARTH PIT LOCATION SHOWN ARE INDICATIVE ONLY. MINOR MODIFICATION IF ANY MAY BE CARRIED OUT AT SITE WITHOUT EXCEEDING THE MAXIMUM SPAN INDICATED IN THE DRAWING (20m).
  3. AS PER M/S HYOSUNG RECOMMENDATION: FOR 400KV GIS BUILDING & 220KV GIS BUILDING MAIN EARTH MAT SPACING TO BE ADOPTED SHALL BE 3mX3m (MAXIMUM).
  4. MAIN GRID CONDUCTOR SHALL BE LAID AT 800mm BELOW INDICATED FGL.
  5. EARTHING CONNECTIONS TO EQUIPMENT TERMINALS SHALL BE OF BOLTED TYPE.
  6. CONNECTION OF EQUIPMENT ARE INDICATIVE ONLY. EXACT LOCATION OF CONNECTIONS SHALL BE DECIDED SUITABLY AT SITE AS PER EQUIPMENT MANUFACTURER'S EARTHING ARRANGEMENT.
  7. TAP CONNECTION FROM EARTHGRID TO THE EQUIPMENT/STRUCTURE SHALL BE TERMINATED ON THE EARTHING TERMINALS OF THE EQUIPMENT/STRUCTURE AS PER THE PGCIL STANDARD EARTHING DETAILS OF SECTION-SWITCHYARD ERECTION REV. 09 OF TECHNICAL SPECIFICATION.
  8. WHEREVER EARTHING GRID INFRINGES WITH FOUNDATION, GRID CONDUCTOR SHALL BE DIVERTED SUITABLY AT SITE.
  9. ALL UNDERGROUND CONNECTIONS SHALL BE MADE BY ELECTRIC ARC WELDING. THE WELDING JOINT SHALL BE ALLOWED TO COOL NATURALLY.
  10. ALL THE WELD JOINTS SHALL BE TREATED WITH RED LEAD AND AFTERWARDS COATED WITH TWO COATS OF BITUMEN COMPOUND.
  11. CABLE SUPPORTS IN TRENCHES SHALL BE EARTHED BY 50x6mm MS FLAT.
  12. WHEREVER EARTHING CONDUCTOR INFRINGES CABLE TRENCH, THE SAME SHALL BE LAID AT 300mm BELOW CABLE TRENCH.
  13. THE EARTH FLAT ALONG THE CABLE TRENCH SHALL BE EARTHED AT THE ENDS OF THE TRENCH END AND AT EVERY 30M (MAX) INTERVAL. THE FLAT SHALL BE FINALLY PAINTED WITH TWO COATS OF RED OXIDE PRIMER AND TWO COATS OF POST OFFICE RED ENAMEL PAINT.
  14. EARTHING CONDUCTOR CROSSING ROAD SHALL BE LAID AT 300MM BELOW ROAD.
  15. EVERY ALTERNATE POST OF FENCE SHALL BE CONNECTED TO THE MAIN EARTH MAT.
  16. ALL THE EQUIPMENTS STRUCTURE, TOWER STRUCTURE, METALLIC STAIRS SHALL BE CONNECTED TO THE NEAREST EARTHING GRID BY TWO EARTHING LEADS.
  17. GRAVEL SPREADING AND PCC MAT SHALL BE PROVIDED IN CIVIL LAYOUT DRAWING NO: 017005-C-S-SY-MS-1006.
  18. LOCATION OF LMS & QUANTITY OF ELECTRODES SHOWN FOR LIGHTNING PROTECTION ARE TENTATIVE ONLY SAME SHALL BE FINALIZED AFTER FINALIZATION OF O&S/P LAYOUT.
  19. QUANTITIES FOR OUTDOOR GIS BUS/SUBST SUPPORT STRUCTURE EARTHING HAS BEEN CONSIDERED IN THIS LAYOUT.

**BILL OF QUANTITY FOR EARTHING:-**

SYMBOL	DESCRIPTION	UNIT	QUANTITY	BPS	QTY
● ELA	ROD EARTH ELECTRODE FOR LIGHTNING ARRESTOR 40mm #, 3M LONG M.S ROD ELECTRODE (AS PER PGCIL STANDARD DWG SHEET:14 & 06)	No.	72	LS	
● ELM	ROD EARTH ELECTRODE FOR LM 40mm #, 3M LONG M.S ROD ELECTRODE (AS PER PGCIL STANDARD DWG SHEET: 18 & 06)	No.	08	LS	
● ELTP	ROD EARTH ELECTRODE FOR TOWER WITH PEAK 40mm #, 3M LONG M.S ROD ELECTRODE (AS PER PGCIL STANDARD DWG SHEET: 06)	No.	10	LS	
● EN	40mm #, 3M LONG GS PIPE EARTH ELECTRODE WITH TREATED EARTH PIT FOR ICT/BUS REACTOR/LT TRAFD. (AS PER PGCIL STANDARD DWG SHEET:25,7,8 & 05)	No.	18	LS	
● ESC	ROD EARTH ELECTRODE FOR SWITCHYARD CORNERS 40mm #, 3M LONG MS ROD ELECTRODE (AS PER PGCIL STANDARD DWG SHEET: 06)	No.	05	LS	
●	20mm #, 3M LONG M.S ROD ELECTRODE FOR STREET LIGHT POLE	No.	25	LS	
---	40mm # MS ROD FOR MAIN EARTH MAT SWITCHYARD AREA	M	4900	7000	
---	40mm # MS ROD FOR GIS BUILDING AUXILIARY MAT	M	2450	LS	
---	40mm # MS ROD (BELOW GROUND RISER)	M	4550+800	LS	
---	75x12mm GS FLAT (ABOVE GROUND RISER)	M	1650	LS	
---	50x6mm GS FLAT FOR JB / MB	M	350	LS	
---	50x6mm MS FLAT (FOR OUTDOOR CABLE TRENCH)	M	●	LS	
---	CLEAT TYPE CLAMP TO SUIT 75x12mm GS FLAT AT EVERY 2M INTERVAL	No.	1150	LS	

\* AS PART OF OUTDOOR CABLE TRENCH LAYOUT, DWG No. 017005-E-S-SY-CL-0135.

*Counts*

① 40mm rod conductor under the all the GIS Halls shall not be treated as part of Main Station Earthing.

② Cal'n for this earthmat spacing to be submit

**L&T Construction**  
Power Transmission & Distribution  
Channel - 600 099.

The documents Submitted are Checked with respect to requirements of technical Specification, Deviations If any, are highlighted with proper justification.

Checked: \_\_\_\_\_ Verified by: \_\_\_\_\_

A	ISSUED FOR APPROVAL	AD 19.09.17	MS 20.09.17	RA 21.09.17	SKW 22.09.17
REV. NO.	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED
REVISIONS					
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)		CONSULTANT: L&T Construction			
PROJECT: GIS SUBSTATION PACKAGE- DEL-DIS-2 FOR ESTABLISHMENT OF 400/220KV GIS S/S AT PAPANAKAN-I ASSOCIATED WITH ESTABLISHMENT OF 400/220KV SUBSTATIONS IN NCT OF DELHI.					
Ref: i) CC-CS/616-NR1/GIS-3471/3/06/NDA-II/7124 DATED: 26/12/2016					
ii) CC-CS/616-NR1/GIS-3472/3/06/NDA-II/7123 DATED: 26/12/2016					
SUPPLIER / CONTRACTOR: 017005-E-IS		TITLE: 400/220KV PAPANAKAN GIS SUBSTATION OVERALL EARTHING LAYOUT		SCALE: 1:500	
DRG. No.	017005-E-IS-SY-GL-0132	SIZE	A1	REV.	A
SHEET 01 OF 01					
RELEASED FOR: <input type="checkbox"/> PRELIMINARY <input type="checkbox"/> TENDER <input type="checkbox"/> INFORMATION <input checked="" type="checkbox"/> APPROVAL <input type="checkbox"/> CONSTRUCTION					

Z:\CORRESPONDENCE\017005-E-S (Papanakan GIS)\Deliverables\1. Engineering\Auto CAD\Overall Earthing Layout\017005-E-S-SY-GB-GL-0132-01-01-A.DWG