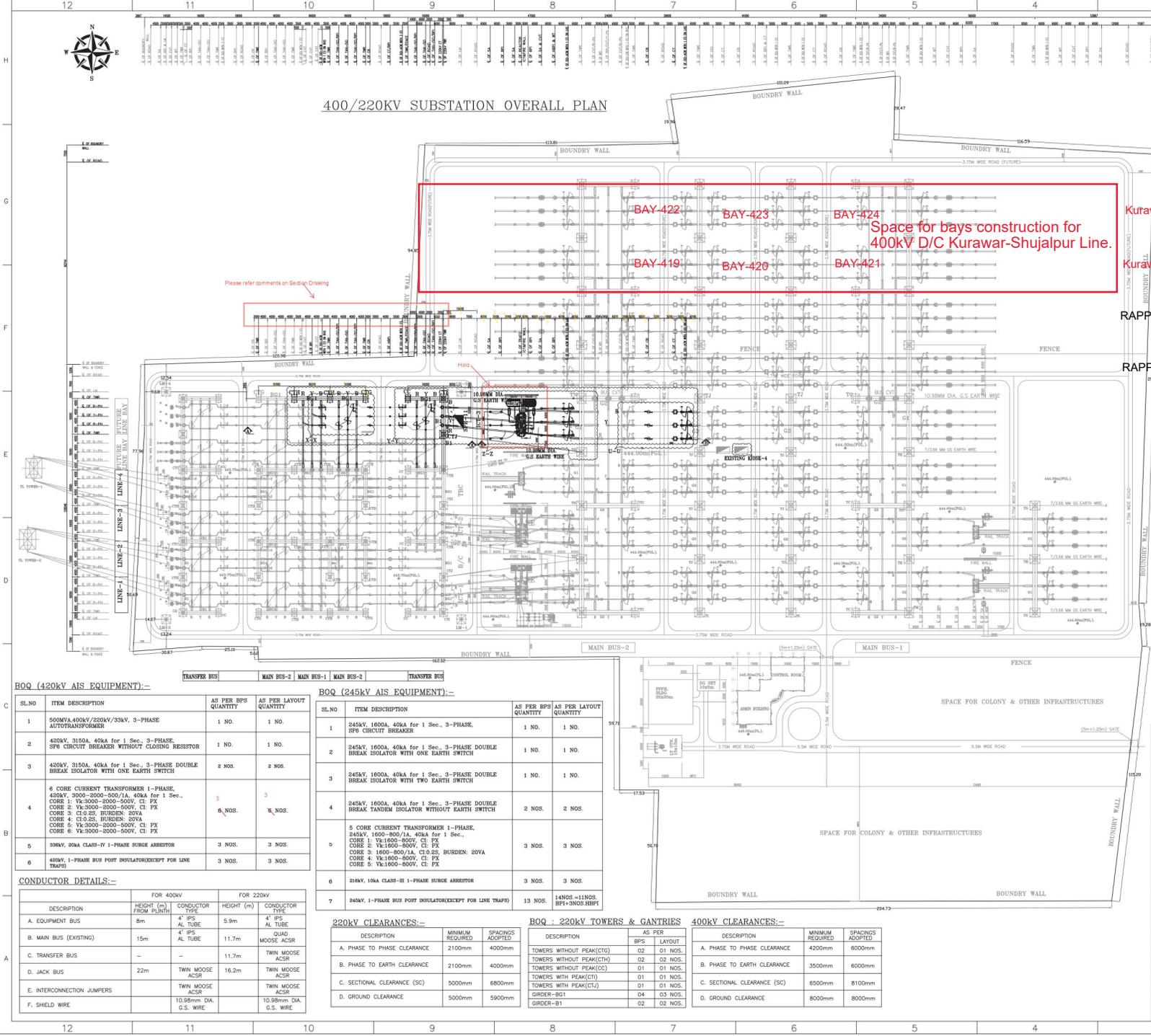


M. Shaha

400/220KV SUBSTATION OVERALL PLAN



Space for bays construction for 400kV D/C Kurawar-Shujalpur Line.

Kurawar-1 (upcoming line)

Kurawar-1 (upcoming line)

RAPP Line-2

RAPP Line-1

- NOTES:**
1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.
 2. ALL THE BUS HEIGHTS ARE KEPTED FROM TOP OF PLUMB LEVEL.
 3. PLUMB OF FOUNDATION WILL BE +300MM FROM THE FINISHED GROUND LEVEL (F.G.L) (DRAVEL TOP LEVEL WILL BE +100MM FROM THE F.G.L).
 4. SWITCHBOARD PANEL ROOM CONSISTS OF FOLLOWING PANELS
 - (i) EXISTING 400V SWITCHBOARD PANEL ROOM (EPS)-AC KODK-4)
 - (ii) 400V CB RELAY PANEL
 - (iii) 400V TRANSFORMER PROTECTION PANEL
 - (iv) 400V CB RELAY PANEL ROOM-SPP-11 (220KV)
 - (v) 220KV CB RELAY PANEL
 5. (M-3 & M-4) ARE EXISTING.
 - (a) NOMINAL VOLTAGE - 550V 320V
 - (b) HIGHEST SYSTEM VOLTAGE - 400V 220V
 - (c) ONE MIN. POWER FREQUENCY - 420V 240V
 - (d) ENDURANCE VOLTAGE (RMS) - 630V 400V
 - (e) SHORT CIRCUIT LEVEL (MVA) - 1550V 1050V
 - (f) SHORT CIRCUIT LEVEL (KA) - 40KA/1s 40KA/1s
- PGCIL REFERENCE DRAWINGS:**
1. SUBSTATION OVERALL PLAN (400/220KV SHUJALPUR N/S) ESI-EE-0309-001
 2. GENERAL ARRANGEMENT PLAN OF 400V SHUJALPUR S/S. C/ENG-35/MV/CT-16/SHUJALPUR/SA/01
 3. GENERAL ARRANGEMENT PLAN OF 400V SHUJALPUR S/S. C/ENG-35/MV/CT-16/SHUJALPUR/P/01/01
 4. STANDARD SWITCHBOARD PANEL ROOM GENERAL ARRANGEMENT DETAIL OF PANEL ROOM. C/ENG/35/PP/2017
- TOSHIBA REFERENCE DRAWINGS:**
1. SHUJALPUR SUBSTATION-SINGLE LINE DIAGRAM TR202112-1001509-SS1612-SLD

BOQ (420kV AIS EQUIPMENT)-

SL.NO	ITEM DESCRIPTION	AS PER BPS QUANTITY	AS PER LAYOUT QUANTITY
1	500MVA/400KV/220KV/33KV, 3-PHASE AUTOTRANSFORMER	1 NO.	1 NO.
2	420KV, 3150A, 40KA for 1 Sec., 3-PHASE, SFS CIRCUIT BREAKER WITHOUT CLOSING RESISTOR	1 NO.	1 NO.
3	420KV, 3150A, 40KA for 1 Sec., 3-PHASE DOUBLE BREAK ISOLATOR WITH ONE EARTH SWITCH	2 NOS.	2 NOS.
4	6 CORE CURRENT TRANSFORMER 1-PHASE, 420KV, 3000-2000-500/1A, 40KA for 1 Sec., CORE 1: Vx3000-2000-500V, CT PX CORE 2: Vx3000-2000-500V, CT PX CORE 3: Vx3000-2000-500V, CT PX CORE 4: Vx3000-2000-500V, CT PX CORE 5: Vx3000-2000-500V, CT PX CORE 6: Vx3000-2000-500V, CT PX	6 NOS.	6 NOS.
5	33kV, 20KA CLASS-IV 1-PHASE SURGE ARRESTOR	3 NOS.	3 NOS.
6	420KV, 1-PHASE BUS POST INSULATOR(ACCEPT FOR LINE TRAP)	3 NOS.	3 NOS.

BOQ (245kV AIS EQUIPMENT)-

SL.NO	ITEM DESCRIPTION	AS PER BPS QUANTITY	AS PER LAYOUT QUANTITY
1	245KV, 1600A, 40KA for 1 Sec., 3-PHASE, SFS CIRCUIT BREAKER	1 NO.	1 NO.
2	245KV, 1600A, 40KA for 1 Sec., 3-PHASE DOUBLE BREAK ISOLATOR WITH ONE EARTH SWITCH	1 NO.	1 NO.
3	245KV, 1600A, 40KA for 1 Sec., 3-PHASE DOUBLE BREAK ISOLATOR WITH TWO EARTH SWITCH	1 NO.	1 NO.
4	245KV, 1600A, 40KA for 1 Sec., 3-PHASE DOUBLE BREAK TANDEM ISOLATOR WITHOUT EARTH SWITCH	2 NOS.	2 NOS.
5	5 CORE CURRENT TRANSFORMER 1-PHASE, 245KV, 1600-800/1A, 40KA for 1 Sec., CORE 1: Vx1600-800V, CT PX CORE 2: Vx1600-800V, CT PX CORE 3: Vx1600-800V, CT PX CORE 4: Vx1600-800V, CT PX CORE 5: Vx1600-800V, CT PX	5 NOS.	5 NOS.
6	245KV, 10KA CLASS-III 1-PHASE SURGE ARRESTOR	3 NOS.	3 NOS.
7	245KV, 1-PHASE BUS POST INSULATOR(ACCEPT FOR LINE TRAP)	13 NOS.	14NOS=11NOS: RPT+3NOS:RPT

CONDUCTOR DETAILS:-

DESCRIPTION	FOR 420KV		FOR 220KV	
	HEIGHT (m) FROM PLUMB	CONDUCTOR TYPE	HEIGHT (m)	CONDUCTOR TYPE
A. EQUIPMENT BUS	8m	4" IPS AL TUBE	5.9m	4" IPS AL TUBE
B. MAIN BUS (EXISTING)	15m	4" IPS AL TUBE	11.7m	QUAD MOOSE ACSR
C. TRANSFER BUS	-	-	11.7m	TWIN MOOSE ACSR
D. JACK BUS	22m	TWIN MOOSE ACSR	16.2m	TWIN MOOSE ACSR
E. INTERCONNECTION JUMPERS	-	TWIN MOOSE ACSR	-	TWIN MOOSE ACSR
F. SHIELD WIRE	-	10.98mm DIA. G.S. WIRE	-	10.98mm DIA. G.S. WIRE

220KV CLEARANCES:-

DESCRIPTION	MINIMUM REQUIRED	SPACINGS ADOPTED
A. PHASE TO PHASE CLEARANCE	2100mm	4000mm
B. PHASE TO EARTH CLEARANCE	2100mm	4000mm
C. SECTIONAL CLEARANCE (SC)	5000mm	6800mm
D. GROUND CLEARANCE	5000mm	5900mm

BOQ : 220KV TOWERS & GANTRIES

DESCRIPTION	AS PER BPS	LAYOUT
TOWERS WITHOUT PEAK(CTG)	02	01 NOS.
TOWERS WITHOUT PEAK(CC)	01	01 NOS.
TOWERS WITH PEAK(CIT)	01	01 NOS.
TOWERS WITH PEAK(CTG)	01	01 NOS.
GRIDER-BG1	04	03 NOS.
GRIDER-BG1	02	02 NOS.

400KV CLEARANCES:-

DESCRIPTION	MINIMUM REQUIRED	SPACINGS ADOPTED
A. PHASE TO PHASE CLEARANCE	4200mm	6000mm
B. PHASE TO EARTH CLEARANCE	3500mm	6000mm
C. SECTIONAL CLEARANCE (SC)	6500mm	8100mm
D. GROUND CLEARANCE	8000mm	8000mm

Rev. No	FOR APPROVAL	BS	AA / MVS	RK
	Description	PRPD. BY:	CHK. BY:	APRD. BY:
Revisions				
CLIENT :	Power Grid Corporation of India Limited (A Government of India Enterprises)			
PROJECT :	Transformer Package TR 24 for: a) Supply of 1X 500MVA, 420/220/33KV Auto transformer at Shujalpur S/S including associated bays, b) Supply of 1X 500MVA, 420/220/33KV Auto transformer at Bhatnagar S/S including associated bays, c) Extension of 220KV Shujalpur S/S, d) Implementation of 1X 80 MVAR, 785KV Spare Reactor at Bhatnagar S/S, e) Supply of 1X 500MVA, 420/220/33KV Auto transformer at Kohchi S/S, f) Supply of 1X 500MVA, 420/220/33KV Auto transformer at Hirjir S/S.			
LOA NO:	NDA Ref: 500201872/TRANSFORMER/DOM/403-CC-CS-4/NOA-I/IN-150114 Dated:28/01/2022 for Supply Contract NDA Ref: 500201872/TRANSFORMER/DOM/403-CC-CS-4/NOA-I/IN-150114 Dated:28/01/2022 for Services Contract			
SUBSTATION:	420/220KV SHUJALPUR SUBSTATION			
CONTRACTOR:	Toshiba Transmission & Distribution Systems (India) Pvt.Ltd			
Drawing No:	TR202112-1001509-SS1612-ELECT-LAY			
DATE:	PRPD. BY:	CHK. BY:	APRD. BY:	Sheet 1 of 2
10.03.2022	BS	AA / MVS	RK	
TITLE:	SHUJALPUR SUBSTATION - ELECTRICAL LAYOUT PLAN & SECTION			Rev No: A

AT [841-554]

POWER GRID CORPORATION OF INDIA LIMITED

WESTERN REGION TRANSMISSION SYSTEM-II

400/220KV SHUJALPUR SUBSTATION SINGLE LINE DIAGRAM

