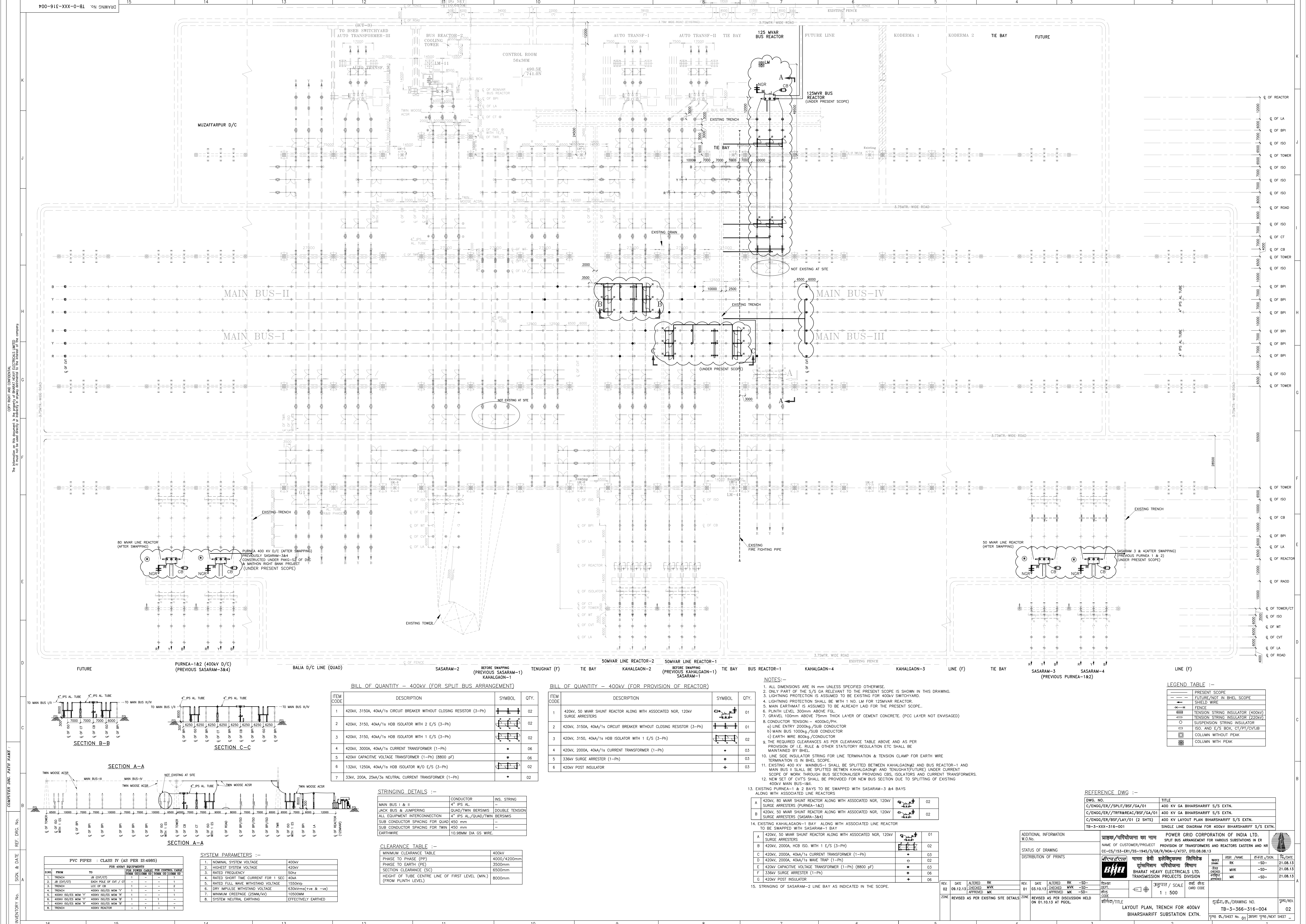




900-916-XXX-0-000
DRAWING NO. TB-3-366-316-004
SHEET NO. 01
DATE: 01.10.13
BY: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]
REVISIONS: [Table]
INVENTORY NO. [Blank]
SOL. & DATE: [Blank]
REF. Dwg. No.: [Blank]
COMPUTER Dwg. DATA NAME: [Blank]

BILL OF QUANTITY - 400KV (FOR SPLIT BUS ARRANGEMENT)			
ITEM CODE	DESCRIPTION	SYMBOL	QTY.
1	420KV, 3150A, 40kA/1s CIRCUIT BREAKER WITHOUT CLOSING RESISTOR (3-Ph)	[Symbol]	02
2	420KV, 3150, 40kA/1s HDB ISOLATOR WITH 2 E/S (3-Ph)	[Symbol]	02
3	420KV, 3150, 40kA/1s HDB ISOLATOR WITH 1 E/S (3-Ph)	[Symbol]	02
4	420KV, 3000A, 40kA/1s CURRENT TRANSFORMER (1-Ph)	[Symbol]	06
5	420KV CAPACITIVE VOLTAGE TRANSFORMER (1-Ph) (8800 pF)	[Symbol]	06
6	132kv, 1250A, 40kA/1s HDB ISOLATOR W/O E/S (3-Ph)	[Symbol]	02
7	33kv, 200A, 25kA/3s NEUTRAL CURRENT TRANSFORMER (1-Ph)	[Symbol]	02

STRINGING DETAILS :-			
MAIN BUS I & II	CONDUCTOR	INS. STRING	
JACK BUS & JUMPING	4" IPS AL AL	4000/4200mm	
ALL EQUIPMENT INTERCONNECTION	4" IPS AL/QUAD/TWIN BERSIMS	3500mm	
SUB CONDUCTOR SPACING FOR QUAD	450 mm	6500mm	
SUB CONDUCTOR SPACING FOR TWIN	450 mm	8000mm	
EARTHWIRE	10.98MM DIA GS WIRE		

CLEARANCE TABLE :-			
1. NOMINAL SYSTEM VOLTAGE	400kv	2. HIGHEST SYSTEM VOLTAGE	420kv
3. RATED FREQUENCY	50hz	4. RATED SHORT TIME CURRENT FOR 1 SEC	40kA
5. RATED FULL WAVE WITHSTAND VOLTAGE	1550kv	6. DRY WAVELENGTH WITHSTAND VOLTAGE	830Vrms(+ve & -ve)
7. MINIMUM CREEPAGE (25MM/KV)	10500MM	8. SYSTEM NEUTRAL EARTHING	EFFECTIVELY EARTHED

BILL OF QUANTITY - 400KV (FOR PROVISION OF REACTOR)			
ITEM CODE	DESCRIPTION	SYMBOL	QTY.
1	420kv, 50 MVAR SHUNT REACTOR ALONG WITH ASSOCIATED NGR, 120KV SURGE ARRESTERS	[Symbol]	01
2	420kv, 3150A, 40kA/1s CIRCUIT BREAKER WITHOUT CLOSING RESISTOR (3-Ph)	[Symbol]	01
3	420kv, 3150, 40kA/1s HDB ISOLATOR WITH 1 E/S (3-Ph)	[Symbol]	02
4	420kv, 2000A, 40kA/1s CURRENT TRANSFORMER (1-Ph)	[Symbol]	03
5	33kv SURGE ARRESTER (1-Ph)	[Symbol]	03
6	420kv POST INSULATOR	[Symbol]	03

NOTES:-

- ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED OTHERWISE.
- ONLY PART OF THE S/S GA RELEVANT TO THE PRESENT SCOPE IS SHOWN IN THIS DRAWING.
- LIGHTNING PROTECTION IS ASSUMED TO BE EXISTING FOR 400KV SWITCHYARD.
- LIGHTNING PROTECTION SHALL BE WITH 1 NO. LM FOR 125MVAR REACTOR.
- MAIN EARTHING IS ASSUMED TO BE ALREADY LAID FOR THE PRESENT SCOPE.
- PUNTH LEVEL 300mm ABOVE FGL.
- GRAVEL 100mm ABOVE 75mm THICK LAYER OF CEMENT CONCRETE. (PCC LAYER NOT ENVISAGED)
- CONDUCTOR TENSION - 4000kg/PH
- LINE ENTRY 2000kg/SUB CONDUCTOR
- MAIN BUS 1000kg/SUB CONDUCTOR
- EARTH WIRE 800kg/CONDUCTOR
- THE REQUIRED CLEARANCES AS PER CLEARANCE TABLE ABOVE AND AS PER PROVISION OF I.E. RULE & OTHER STATUTORY REGULATION ETC SHALL BE MAINTAINED BY BHEL.
- LINE SIDE INSULATOR STRING FOR LINE TERMINATION & TENSION CLAMP FOR EARTH WIRE TERMINATION IS IN BHEL SCOPE.
- EXISTING 400 KV MAINBUS-I SHALL BE SPLITTED BETWEEN KAHALGAON#2 AND BUS REACTOR-1 AND MAIN BUS II SHALL BE SPLITTED BETWEEN KAHALGAON#1 AND TENUGAT(FUTURE) UNDER CURRENT SCOPE OF WORK THROUGH BUS SECTIONALISER PROVIDING CBS, ISOLATORS AND CURRENT TRANSFORMERS.
- NEW SET OF CIVTS SHALL BE PROVIDED FOR NEW BUS SECTION DUE TO SPLITTING OF EXISTING 400KV MAIN BUS-I&II.
- EXISTING PURNEA-1 & 2 BAYS TO BE SWAPPED WITH SASARAM-3 & 4 BAYS ALONG WITH ASSOCIATED LINE REACTORS

A	420kv, 50 MVAR SHUNT REACTOR ALONG WITH ASSOCIATED NGR, 120KV SURGE ARRESTERS (PURNEA-1&2)	[Symbol]	02
B	420kv, 50 MVAR SHUNT REACTOR ALONG WITH ASSOCIATED NGR, 120KV SURGE ARRESTERS (SASARA-3&4)	[Symbol]	02

A	420kv, 50 MVAR SHUNT REACTOR ALONG WITH ASSOCIATED NGR, 120KV SURGE ARRESTERS	[Symbol]	01
B	420kv, 3150A, HDB ISO. WITH 1 E/S (3-Ph)	[Symbol]	02
C	420kv, 2000A, 40kA/1s CURRENT TRANSFORMER (1-Ph)	[Symbol]	03
D	420kv, 2000A, 40kA/1s WAVE TRAP (1-Ph)	[Symbol]	02
E	420kv CAPACITIVE VOLTAGE TRANSFORMER (1-Ph) (8800 pF)	[Symbol]	03
F	33kv SURGE ARRESTER (1-Ph)	[Symbol]	06
G	420kv POST INSULATOR	[Symbol]	06

15. STRINGING OF SASARAM-2 LINE BAY AS INDICATED IN THE SCOPE.

REFERENCE DWG :-			
DWG. NO.	TITLE		
C/ENG/ER/SPLIT/BSF/GA/01	400 KV GA BIHARSHARIF S/S EXTN.		
C/ENG/ER/TRF&REAC/BSF/GA/01	400 KV GA BIHARSHARIF S/S EXTN.		
C/ENG/ER/BSF/LAY/01 (2 SHTS)	400 KV LAYOUT PLAN BIHARSHARIF S/S EXTN.		
TB-3-XXX-316-001	SINGLE LINE DIAGRAM FOR 400KV BIHARSHARIF S/S EXTN.		

ADDITIONAL INFORMATION W.O. NO.	POWER GRID CORPORATION OF INDIA LTD.
NAME OF CUSTOMER/PROJECT	SPLIT BUS ARRANGEMENT FOR VARIOUS SUBSTATIONS IN NR
STATUS OF DRAWING	PROVISION OF TRANSFORMERS AND REACTORS EASTERN AND ER
DISTRIBUTION OF PRINTS	CC-CS/153-ER/SS-1946/3/08/9/NOA-1/AT/37, DTD 08.06.13

REV.	DATE	ALTERED BY	CHKD.	DATE
01	03.10.13	LMK	SKD	21.08.13
02	01.10.13	LMK	SKD	21.08.13

REV.	DATE	ALTERED BY	CHKD.	DATE
01	03.10.13	LMK	SKD	21.08.13
02	01.10.13	LMK	SKD	21.08.13

REVISIONS AS PER EXISTING SITE DETAILS

REVISIONS AS PER DISCUSSION HELD ON 01.10.13 AT PGCL.

LEGEND TABLE :-

[Symbol]	PRESENT SCOPE
[Symbol]	FUTURE/NOT IN BHEL SCOPE
[Symbol]	SHIELD WIRE
[Symbol]	FENCE
[Symbol]	TENSION STRING INSULATOR (400KV)
[Symbol]	TENSION STRING INSULATOR (220KV)
[Symbol]	SUSPENSION STRING INSULATOR
[Symbol]	ISO. AND E/S BOX, CT/PT/CVT/UB
[Symbol]	COLUMN WITHOUT PEAK
[Symbol]	COLUMN WITH PEAK

POWER GRID CORPORATION OF INDIA LTD.

SPLIT BUS ARRANGEMENT FOR VARIOUS SUBSTATIONS IN NR

PROVISION OF TRANSFORMERS AND REACTORS EASTERN AND ER

CC-CS/153-ER/SS-1946/3/08/9/NOA-1/AT/37, DTD 08.06.13

BY: [Signature] DATE: 01.10.13

CHKD: [Signature] DATE: 21.08.13

APPRD: [Signature] DATE: 21.08.13

SCALE: 1 : 500

LAYOUT PLAN, TRENCH FOR 400KV BIHARSHARIF SUBSTATION EXTN.

TB-3-366-316-004

02