

(ALL DIMENSIONS ARE IN mm)

DRG, NO.

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
B

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## INDEX

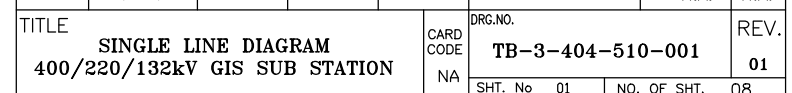
SHEET NO.	DESCRIPTION
1	SINGLE LINE DIAGRAM - 400KV GIS S/S
2	SINGLE LINE DIAGRAM - 220KV GIS S/S
3	SINGLE LINE DIAGRAM - 132 KV GIS S/S
4	BOQ FOR 400KV GIS S/S
5	BOQ FOR 220KV GIS S/S
6	BOQ FOR 132KV GIS S/S
7	CT-VT DETAILS FOR 400, 220 , 132 KV GIS S/S
8	72.5/36KV SLD

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD			CHD/APPD			CHD/APPD			01
ZONE			ZONE			ZONE			ZONE		DRG. REVISED IN LINE WITH DISCUSSION DATED 01.09.18
8		7		6		5		4		3	

REFERENCE DRG.: - TENDER SINGLE LINE DIAGRAM 400/220/132kV GIS S/S									
PROJECT:									
400/220/132kV GIS SUBSTATION AT RASARA, BALLIA (U.P.)									
CUSTOMER:									
UTTAR PRADESH TRANSMISSION CORPORATION LIMITED									
									
BHARAT HEAVY ELECTRICALS LTD.					DRN. PK CHD. AK/RD APPD. DKM	NAME	SIGN.	DATE	NO.OF VAR.
TRANSMISSION BUSINESS GROUP									N.A.
NOIDA									
DEPT. TBG	UNTOL. DIMS. GR.			SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.		ITEM NO.	NO.OF ITEMS
CODE	g/m/f			N.T.S	N.A.	N.A.		N.A.	N.A.
TITLE					CARD CODE	DRG.NO.			REV.
SINGLE LINE DIAGRAM						TB-3-404-510-001			01
400/220/132kV GIS SUB STATION					NA	SHT. No		A	NO. OF SHT.
									08
					2				1
									SIZE-A3

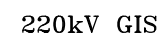


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1     **SIZE-A3**





220kV GIS BUS I  
3000A, 40kA FDR 3s  
220kV GIS BUS II  
3000A, 40kA FDR 3s

A diagram of a 1D lattice represented by three horizontal lines. A diamond-shaped impurity is located on the middle line, and a triangular impurity is located on the bottom line, both centered under each other.

DRG.NO.	TB-3-404-510-001	REV.	01
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1 SIZE-A3



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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

TB-3-404-510-001

DRG. NO.

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ICT#3

ICT#4

(REFER SHEET-2/8)

103-LA

106-LA

132kV XLPE CABLE

132kV XLPE CABLE

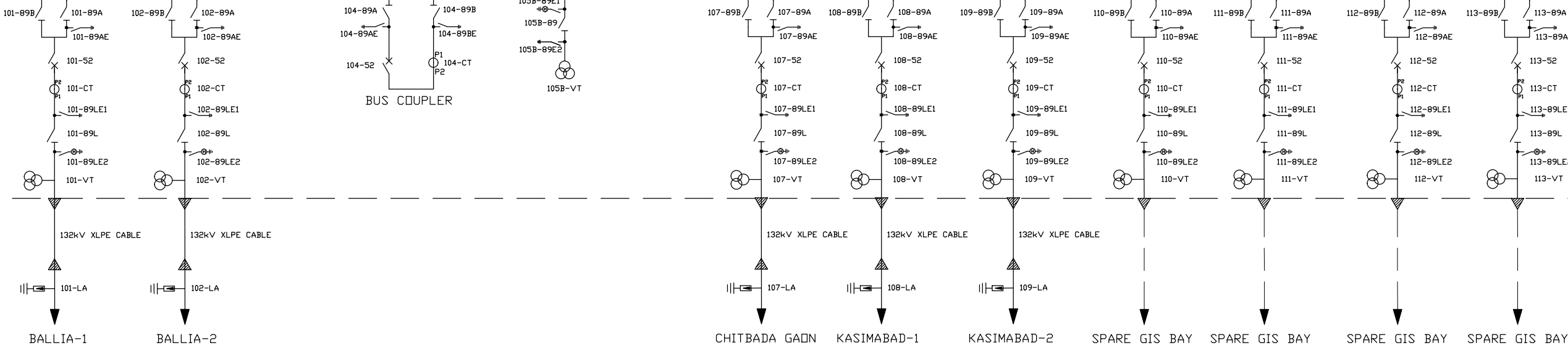
132kV GIS

132kV GIS BUS I

2000A, 40kA FOR 3s

132kV GIS BUS II

2000A, 40kA FOR 3s



NOTES :

1. PRESENT

FUTURE/ SPARE

SF6/XLPE CABLE TERMINATION

2. IN BAY NOS. 109, 110, 111 & 112 ONLY GIS MODULES UPTO SF6/XLPE CABLE TERMINATION SHALL BE IN BHEL SCOPE. OUTDOOR TYPE LA & 132kV CABLE SHALL NOT BE IN BHEL SCOPE.

SINGLE LINE DIAGRAM- 132kV GIS s/s

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD			CHD/APPD			CHD/APPD	01	01.09.18	CHD/APPD
ZONE			ZONE			ZONE			ZONE		DRG. REVISED IN LINE WITH DISCUSSION DATED 01.09.18

REFERENCE DRG.: - TENDER SINGLE LINE DIAGRAM 400/220/132kV GIS S/S

PROJECT:

400/220/132kV GIS SUBSTATION AT RASARA, BALLIA (U.P.)

CUSTOMER:

UTTAR PRADESH TRANSMISSION CORPORATION LIMITED



BHARAT HEAVY ELECTRICALS LTD.  
TRANSMISSION BUSINESS GROUP  
NOIDA

NAME	SIGN.	DATE	NO.OF VAR.
DRN. PK			
CHD. AK/RD			N.A.
APPD. DKM			

DEPT. TBG CODE

UNTO. DIMS. CR. 9/M/f



SCALE N.T.S

WEIGHT (KG) N.A.

REF. TO ASSY. DRG. N.A.

ITEM NO. N.A.

NO.OF ITEMS N.A.

TITLE  
SINGLE LINE DIAGRAM  
400/220/132kV GIS SUB STATION

CARD CODE NA

DRG.NO.  
TB-3-404-510-001

REV.  
01

SHT. No 03 NO. OF SHT. 08

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SIZE-A3



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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

TB-3-404-510-001

DRG. NO.

6

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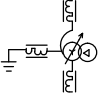




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








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A. 400 kV OUTDOOR EQUIPMENT: –

S.N.	DESCRIPTION	SYMBOLS	LEGEND	BAY NO/LOCATION	UNIT	QTY
1.	500MVA, 400/220/33KV, YNa0d11, DFAF, 3-PH ICT		ICT	402, 405	NDS	02
2.	400kV, 125MVA, 3-PH BUS REACTOR		BR	407	NDS	01
3.	400kV, 1-PH, 8800pF CAPACITIVE VOLTAGE TRANSFORMER		CVT	401, 406	NDS	06
4.	390kV, 20kA, CLASS-IV, 1-PH, LIGHTNING ARRESTER		LA	401, 402, 405, 406, 407	NDS	15
5.	400kV, 3150A, 1.0mH, 1-PH, PEDESTAL TYPE WAVE TRAP *		WT	401, 406	NDS	04

\*' WAVE TRAPS WOULD BE IN TWO PHASES OF LINES ONLY. CUSTOMER SHALL CONFIRM THOSE PHASES.

B. 400 kV INDOOR GIS: –

S.N.	DESCRIPTION	SYMBOLS	LEGEND	BAY NO/LOCATION	UNIT	QTY
1.	400kV, 4000A, 50kA FOR 3 SEC., 3-PH. CIRCUIT BREAKER		52	403	SETS	01
2.	400kV, 3150A, 50kA FOR 3 SEC., 3-PH. CIRCUIT BREAKER		52	401, 406, 409, 410	SETS	04
3.	400kV, 3150A, 50kA FOR 3 SEC., 3-PH. CIRCUIT BREAKER WITH CSD		52	402, 405, 407	SETS	03
4.	400kV, 4000A, 50kA FOR 3 SEC., 3-PH., GROUP OPERATED DISCONNECTING SWITCH		89A 89B	403 403	SETS	02
5.	400kV, 3150A, 50kA FOR 3 SEC., 3-PH., GROUP OPERATED DISCONNECTING SWITCH		89A 89B 89L	401, 406, 408, 409 401, 406, 408, 409 401, 406, 408, 409	SETS	12
6.	400kV, 2000A, 50kA FOR 3 SEC., 3-PH. GROUP OPERATED DISCONNECTING SWITCH		89 89A 89B 89L	404A, 404B 402, 405, 407 402, 405, 407 402, 405, 407	SETS	11
7.	EARTH SWITCH, 3-PH, GROUP OPERATED		89E2 89AE 89BE 89LE1	404A, 404B 401, 402, 403, 405, 406, 407, 408, 409 403 401, 402, 405, 406, 407, 408, 409	SETS	18
8.	HIGH SPEED EARTHING SWITCH, 3-PH, GROUP OPERATED		89E1 89LE2	404A, 404B 401, 402, 405, 406, 407, 408, 409	SETS	09
9.	400kV, 3000A, 50kA FOR 3 SEC, 1-PH., 5-CORE CURRENT TRANSFORMER WITH 120% EXTENDED CURRENT RATING		CT	401, 402, 403, 405, 406, 407, 408, 409.	NDS.	24
10.	400kV, 1-PH. VOLTAGE TRANSFORMER		VT	404A, 404B, 407	NDS.	09

400 kV SYSTEM PARAMETERS: –


S.N.	SYSTEM PARAMETERS	400kV
1.	NOMINAL VOLTAGE	400kV
2.	HIGHEST SYSTEM VOLTAGE	420kV
3.	RATED FREQUENCY	50Hz
4.	RATED SHORT TIME CURRENT	50kA for 3sec.
5.	POWER FREQUENCY WITHSTAND VOLTAGE	650kV (rms)
6.	LIGHTNING IMPULSE WITHSTAND VOLTAGE	±1425 kV peak
7.	SWITCHING IMPULSE WITHSTAND VOLTAGE	±1050 kV peak
8.	CREEPAGE	25mm/kV (10500 mm)
9.	GROUNDING	Effectively earthed

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD			CHD/APPD			CHD/APPD	01	01.09.18	CHD/APPD
ZONE			ZONE			ZONE			ZONE		DRG. REVISED IN LINE WITH DISCUSSION DATED 01.09.18


REFERENCE DRG.: – TENDER SINGLE LINE DIAGRAM 400/220/132kV GIS S/S

PROJECT:  
400/220/132kV GIS SUBSTATION AT RASARA, BALLIA (U.P.)

CUSTOMER:  
UTTAR PRADESH TRANSMISSION CORPORATION LIMITED

BHARAT HEAVY ELECTRICALS LTD.  
TRANSMISSION BUSINESS GROUP  
NOIDA

NAME	SIGN.	DATE	NO.OF VAR.
DRN. PK			N.A.
CHD. AK/RD			
APPD. DKM			

DEPT. TBG CODE	UNTOL. DIMS. CR. 9/M/Y		SCALE N.T.S	WEIGHT (KG) N.A.	REF. TO ASSY. DRG. N.A.	ITEM NO. N.A.	NO.OF ITEMS N.A.
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TITLE SINGLE LINE DIAGRAM 400/220/132kV GIS SUB STATION	DRG.NO. TB-3-404-510-001	REV. 01
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CARD CODE NA	SHT. No 04	NO. OF SHT. 08
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SIZE-A3



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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

TB-3-404-510-001

DRG. NO.

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A. 220 kV OUTDOOR EQUIPMENT: –

S.N.	DESCRIPTION	SYMBOLS	LEGEND	BAY NO/LOCATION	UNIT	QTY
1.	160MVA, 220/132/11KV, YNa0d11, DFAF, 3-PH ICT		ICT	206, 207	NDS	02
2.	220kV, 1-PH, 4400pF CAPACITIVE VOLTAGE TRANSFORMER		CVT	201, 208, 209, 210	NDS	12
3.	216kV, 10kA, CLASS-III, 1-PH, LIGHTNING ARRESTER		LA	201, 208, 209, 210	NDS	12
4.	198kV, 10kA, CLASS-III, 1-PH, LIGHTNING ARRESTER		LA	202, 203, 206, 207	NDS	12
5.	220kV, 1600A, 0.5mH, 1-PH, PEDESTAL TYPE WAVE TRAP *		WT	201, 208, 209, 210	NDS	08

\*' WAVE TRAPS WOULD BE IN TWO PHASES OF LINES ONLY. CUSTOMER SHALL CONFIRM THOSE PHASES.

220 kV SYSTEM PARAMETERS: –

S.N.	SYSTEM PARAMETERS	220kV
1.	NOMINAL VOLTAGE	220kV
2.	HIGHEST SYSTEM VOLTAGE	245kV
3.	RATED FREQUENCY	50Hz
4.	RATED SHORT TIME CURRENT	40kA for 3sec.
5.	POWER FREQUENCY WITHSTAND VOLTAGE	460kV (rms)
6.	LIGHTNING IMPULSE WITHSTAND VOLTAGE	±1050 kV peak
7.	SWITCHING IMPULSE WITHSTAND VOLTAGE	N.A.
8.	CREEPAGE	25mm/kV (6125 mm)
9.	GROUNDING	Effectively earthed



B. 220 kV INDOOR GIS: –

S.N.	DESCRIPTION	SYMBOLS	LEGEND	BAY NO/LOCATION	UNIT	QTY
1.	220kV, 3000A, 40kA FOR 3 SEC., 3-PH. CIRCUIT BREAKER		52	204	SETS	01
2.	220kV, 2500A, 40kA FOR 3 SEC., 3-PH. CIRCUIT BREAKER		52	201, 202, 203, 206, 207, 208, 209, 210, 211, 212, 213, 214	SETS	12
3.	220kV, 3000A, 40kA FOR 3 SEC., 3 PH., GROUP OPERATED DISCONNECTING SWITCH		89A 89B	204 204	SETS	02
4.	220kV, 2000A, 40kA FOR 3 SEC., 3 PH. GROUP OPERATED DISCONNECTING SWITCH		89 89A 89B 89L	205A, 205B 201, 202, 203, 206, 207, 208, 209, 210, 211, 212, 213, 214 201, 202, 203, 206, 207, 208, 209, 210, 211, 212, 213, 214 201, 202, 203, 206, 207, 208, 209, 210, 211, 212, 213, 214	SETS	38
5.	EARTH SWITCH, 3-PH		89E2 89AE 89BE 89LE1	205A, 205B 201, 202, 203, 204, 206, 207, 208, 209, 210, 211, 212, 213, 214 204 201, 202, 203, 206, 207, 208, 209, 210, 211, 212, 213, 214	SETS	28
6.	HIGH SPEED EARTHING SWITCH, 3-PH		89E1 89LE2	205A, 205B 201, 202, 203, 206, 207, 208, 209, 210, 211, 212, 213, 214	SETS	14
7.	220kV, 2000A, 40kA FOR 1 SEC, 1-PH., 5-CORE CURRENT TRANSFORMER WITH 120% EXTENDED CURRENT RATING		CT	201, 202, 203, 204, 206, 207, 208, 209, 210, 211, 212, 213, 214	NDS.	39
8.	220kV, 1-PH. VOLTAGE TRANSFORMER		VT	205A, 205B	NDS.	06

REFERENCE DRG.: – TENDER SINGLE LINE DIAGRAM 400/220/132kV GIS S/S

PROJECT:  
400/220/132kV GIS SUBSTATION AT RASARA, BALLIA (U.P.)

CUSTOMER:  
UTTAR PRADESH TRANSMISSION CORPORATION LIMITED

 BHARAT HEAVY ELECTRICALS LTD. TRANSMISSION BUSINESS GROUP NOIDA		NAME		SIGN.	DATE	NO.OF VAR.	
		DRN. PK				N.A.	
		CHD. AK/RD					
		APPD. DKM					
DEPT. TBG CODE	UNTOL. DIMS. GR. 9/M/f		SCALE N.T.S	WEIGHT (KG) N.A.	REF. TO ASSY. DRG. N.A.	ITEM NO. N.A.	NO.OF ITEMS N.A.
TITLE SINGLE LINE DIAGRAM 400/220/132kV GIS SUB STATION				CARD CODE NA	DRG.NO. TB-3-404-510-001		REV. 01
					SHT. No 05		NO. OF SHT. 08

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD			CHD/APPD			CHD/APPD	01	01.09.18	CHD/APPD
ZONE			ZONE			ZONE			ZONE		DRG. REVISED IN LINE WITH DISCUSSION DATED 01.09.18

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1 SIZE-A3



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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

100-010-510-001

DRG. NO.

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





A. 132 kV OUTDOOR EQUIPMENT: –

S.N.	DESCRIPTION	SYMBOLS	LEGEND	BAY NO/LOCATION	UNIT	QTY
1.	120kV, 10kA, CLASS-III, 1-PH, LIGHTNING ARRESTER		LA	101, 102, 103, 106, 107, 108, 109.	NDS	21

132 kV SYSTEM PARAMETERS: –

S.N.	SYSTEM PARAMETERS	132kV
1.	NOMINAL VOLTAGE	132kV
2.	HIGHEST SYSTEM VOLTAGE	145kV
3.	RATED FREQUENCY	50Hz
4.	RATED SHORT TIME CURRENT	40kA for 3 sec.
5.	POWER FREQUENCY WITHSTAND VOLTAGE	275kV (rms)
6.	LIGHTNING IMPULSE WITHSTAND VOLTAGE	±650 kV peak
7.	SWITCHING IMPULSE WITHSTAND VOLTAGE	N.A.
8.	CREEPAGE	25mm/kV (3625 mm)
9.	GROUNDING	Effectively earthed



B. 132 kV INDOOR GIS: –

S.N.	DESCRIPTION	SYMBOLS	LEGEND	BAY NO/LOCATION	UNIT	QTY
1.	132kV, 2500A, 40kA FOR 1 SEC., 3-PH. CIRCUIT BREAKER		52	104	SETS	01
2.	132kV, 1600A, 40kA FOR 1 SEC., 3-PH. CIRCUIT BREAKER		52	101, 102, 103, 106, 107, 108, 109, 110, 111, 112, 113	SETS	11
3.	132kV, 1600A, 40kA FOR 1 SEC., 3-PH. DISCONNECTING SWITCH		89 89A 89B 89L	105A, 105B 101, 102, 103, 104, 106, 107, 108, 109, 110, 111, 112, 113 101, 102, 103, 104, 106, 107, 108, 109, 110, 111, 112, 113 101, 102, 103, 106, 107, 108, 109, 110, 111, 112, 113	SETS	37
4.	EARTH SWITCH, 3-PH		89E2 89AE 89BE 89LE1	105A, 105B 101, 102, 103, 104, 106, 107, 108, 109, 110, 111, 112, 113 104 101, 102, 103, 106, 107, 108, 109, 110, 111, 112, 113	SETS	26
5.	HIGH SPEED EARTHING SWITCH, 3-PH		89E1 89LE2	105A, 105B 101, 102, 103, 106, 107, 108, 109, 110, 111, 112, 113	SETS	13
6.	132kV, 1600A, 40kA FOR 1 SEC, 1-PH., 5-CORE CURRENT TRANSFORMER WITH 120% EXTENDED CURRENT RATING		CT	101, 102, 103, 104, 106, 107, 108, 109, 110, 111, 112, 113	NDS.	36
7.	132kV, 1-PH. VOLTAGE TRANSFORMER		VT	105A, 105B	NDS.	06

REFERENCE DRG.: – TENDER SINGLE LINE DIAGRAM 400/220/132kV GIS S/S

PROJECT:  
400/220/132kV GIS SUBSTATION AT RASARA, BALLIA (U.P.)

CUSTOMER:  
UTTAR PRADESH TRANSMISSION CORPORATION LIMITED

		BHARAT HEAVY ELECTRICALS LTD.		NAME	SIGN.	DATE	NO.OF VAR.
		TRANSMISSION BUSINESS GROUP		DRN. PK			
		NOIDA		CHD. AK/RD			N.A.
DEPT. TBG CODE	UNTOL. DIMS. CR. 9/M/f		SCALE N.T.S	WEIGHT (KG) N.A.	REF. TO ASSY. DRG. N.A.	ITEM NO. N.A.	NO.OF ITEMS N.A.
TITLE SINGLE LINE DIAGRAM 400/220/132kV GIS SUB STATION				DRG.NO. TB-3-404-510-001	CARD CODE NA	REV. 01	
		SHT. No 06	NO. OF SHT. 08				

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD			CHD/APPD			CHD/APPD			01
ZONE			ZONE			ZONE			ZONE	DRG. REVISED IN LINE WITH DISCUSSION DATED 01.09.18	
8		7		6		5		4		3	



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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

TB-3-404-510-001

DRG. NO.

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400kV GIS CT DETAILS

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	3000-2000-1000/1 A	-	3000-2000-1000	20-30-60	15-10-5	PS	Protection
2	3000-2000-1000/1 A	-	3000-2000-1000	20-30-60	15-10-5	PS	Protection
3	3000-2000-1000-500/1 A	20	-	-	-	0.2s, ISF ≤ 5	Metering
4	3000-2000-1000-500/1 A	-	6000-4000-2000-1000	20-30-60-120	15-10-5-2.5	PS	Protection
5	3000-2000-1000-500/1 A	-	6000-4000-2000-1000	20-30-60-120	15-10-5-2.5	PS	Protection

400kV GIS VT DETAILS

Winding No.	Ratio	Accuracy Class	Rated Burden (VA)	Purpose
1	(400 kV/√3) / (110V/√3)	3P	50	Protection
2	(400 kV/√3) / (110V/√3)	3P	50	Protection
3	(400 kV/√3) / (110V/√3)	0.2	50	Metering

400kV, 8800pF (+10%, -5%) OUTDOOR CVT DETAILS

Winding No.	Ratio	Accuracy Class	Rated Burden (VA)	Purpose
1	(400 kV/√3) / (110V/√3)	3P	50	Protection
2	(400 kV/√3) / (110V/√3)	3P	50	Protection
3	(400 kV/√3) / (110V/√3)	0.2	50	Metering

220kV GIS CT DETAILS

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	2000-1000-500/1 A	-	2000-1000-500	30-60-120	10-5-2.5	PS	Protection
2	2000-1000-500/1 A	-	2000-1000-500	30-60-120	10-5-2.5	PS	Protection
3	2000-1000-500/1 A	20	-	-	-	0.2s, ISF ≤ 5	Metering
4	2000-1000-500/1 A	-	2000-1000-500	30-60-120	10-5-2.5	PS	Protection
5	2000-1000-500/1 A	-	2000-1000-500	30-60-120	10-5-2.5	PS	Protection

220kV GIS VT DETAILS

Winding No.	Ratio	Accuracy Class	Rated Burden (VA)	Purpose
1	(220 kV/√3) / (110V/√3)	3P	50	Protection
2	(220 kV/√3) / (110V/√3)	3P	50	Protection
3	(220 kV/√3) / (110V/√3)	0.2	50	Metering

220kV, 4400pF (+10%, -5%) OUTDOOR CVT DETAILS

Winding No.	Ratio	Accuracy Class	Rated Burden (VA)	Purpose
1	(220 kV/√3) / (110V/√3)	3P	50	Protection
2	(220 kV/√3) / (110V/√3)	3P	50	Protection
3	(220 kV/√3) / (110V/√3)	0.2	50	Metering

500 MVA, 400/220/33kV ICT BUSHING CT DETAILS

400kV SIDE BUSHING CT

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	1600/1 A	-	1600	25	4	PS	REF
2	1000/1 A	30	-	-	-	0.2, ISF ≤ 5	Metering

220kV SIDE BUSHING CT

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	1600/1 A	-	1600	25	4	PS	REF
2	1600/1 A	30	-	-	-	0.2, ISF ≤ 5	Metering

NEUTRAL SIDE BUSHING CT

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	1600/1 A	-	1600	25	4	PS	REF

125MVAR, 400kV SHUNT REACTOR BUSHING CT DETAILS

400kV SHUNT REACTOR (LINE SIDE)

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV/2	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	200/1 A	-	200	100	1	PS	REACTOR DIFF
2	200/1 A	-	200	100	1	PS	REF
3	200/1 A	15	-	-	-	5P20	REACTOR BACK-UP

400kV SHUNT REACTOR (NEUTRAL SIDE)

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV/2	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	200/1 A	-	200	100	1	PS	REACTOR DIFF
2	200/1 A	-	200	100	1	PS	REF
3	500/1 A	10	-	-	-	0.2, ISF ≤ 5	METERING
4	172/2.2-2.0-1.8-1.6 A	10	-	-	-	5	WTI CT (Y-PH ONLY)

160 MVA, 220/132/11 kV ICT BUSHING CT DETAILS

220kV SIDE BUSHING CT

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV/2	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	1000/1 A	-	1000	40	5	PS	REF

132kV SIDE BUSHING CT

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV/2	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	1000/1 A	-	1000	40	5	PS	REF

NEUTRAL SIDE BUSHING CT

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV/2	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	1000/1 A	-	1000	40	5	PS	REF

11kV TERTIARY BUSHING CT

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV/4	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	2500/1 A	-	600	30	5	PS	DIFF
2	2500/1 A	-	300	40	5	PS	SPARE
3	2500/1 A	30	-	-	5	1	METERING

132kV GIS CT DETAILS

Core No.	Current Ratio	Output Burden (VA) at lowest Tap	Minimum KPV (Volts)	Max Ie (mA) at KPV	Maximum Rct (Ohms)	Accuracy Class	Purpose
1	1600-800-400/1 A	-	1600-800-400	25-50-100	8-4-2	PS	Protection
2	1600-800-400/1 A	-	1600-800-400	25-50-100	8-4-2	PS	Protection
3	1600-800-400/1 A	20	-	-	-	0.2s, ISF ≤ 5	Metering
4	1600-800-400/1 A	-	1600-800-400	25-50-100	8-4-2	PS	Protection
5	1600-800-400/1 A	-	1600-800-400	25-50-100	8-4-2	PS	Protection

132kV GIS VT DETAILS

Winding No.	Ratio	Accuracy Class	Rated Burden (VA)	Purpose
1	(132 kV/√3) / (110V/√3)	3P	50	Protection
2	(132 kV/√3) / (110V/√3)	3P	50	Protection
3	(132 kV/√3) / (110V/√3)	0.2	50	Metering

REFERENCE DRG.: - TENDER SINGLE LINE DIAGRAM 400/220/132kV GIS S/S

PROJECT:

400/220/132kV GIS SUBSTATION AT RASARA, BALLIA (U.P.)

CUSTOMER:

UTTAR PRADESH TRANSMISSION CORPORATION LIMITED



BHARAT HEAVY ELECTRICALS LTD.  
TRANSMISSION BUSINESS GROUP  
NOIDA

NAME	SIGN.	DATE	NO.OF VAR.
DRN. PK			
CHD. AK/RD			N.A.
APPD. DKM			

DEPT. TBG CODE

UNTOOL. DIMS. CR. 9/M/Y



SCALE N.T.S

WEIGHT (KG) N.A.

REF. TO ASSY. DRG. N.A.

ITEM NO. N.A. NO.OF ITEMS N.A.

TITLE  
SINGLE LINE DIAGRAM  
400/220/132kV GIS SUB STATION

CARD CODE NA

DRG.NO.  
TB-3-404-510-001

REV.  
01

SHT. No 07 NO. OF SHT. 08

REV.	DATE	ALTERED
		CHD/APPD

REV.	DATE	ALTERED
		CHD/APPD

REV.	DATE	ALTERED
		CHD/APPD

REV.	DATE	ALTERED
01	01.09.18	CHD/APPD

DRG. REVISED IN LINE WITH DISCUSSION DATED 01.09.18

ZONE

ZONE

ZONE

ZONE

8

7

6

5

4

3

2

1

SIZE-A3



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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

TB-3-404-510-001

DRG. NO.

6

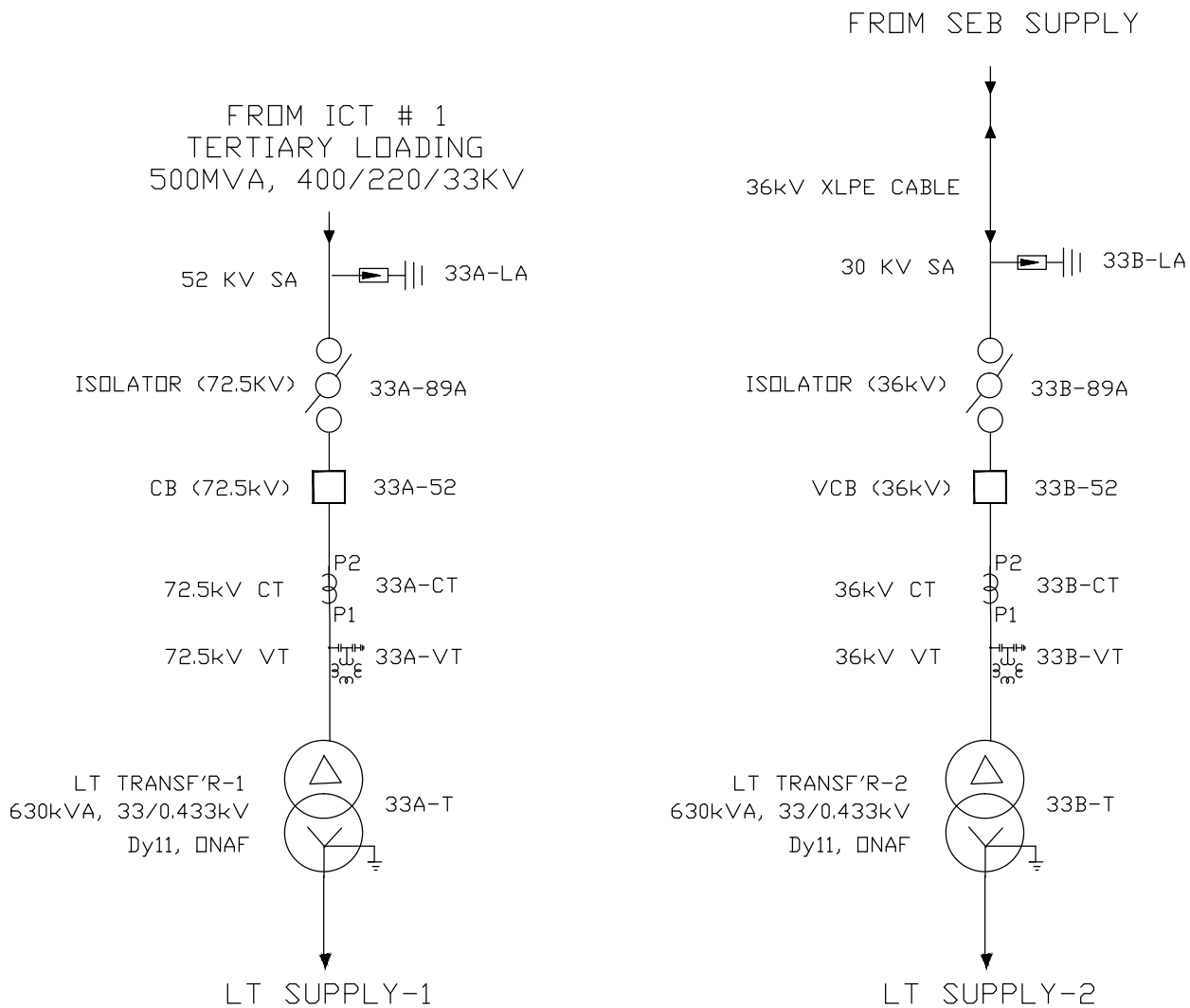
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BILL OF QTY. FOR 72.5 & 36kV EQUIPMENTS:

SL.NO.	DESCRIPTION	SYMBOL	LEGEND	QTY. (NO.)
1	33/0.433kV, 630kVA, 3-PH OIL FILLED LT TRANSFORMER		T	02
2	72.5kV, 1250A, 25kA FOR 1 SEC., 3-PH SF6 CIRCUIT BREAKER		52	01
3	72.5kV, 630A, 25kA FOR 1 SEC., 3-PH ISOLATOR (HDB) WITH ONE E/S (METALICS ONLY)		89	01
4	72.5kV, 2000A, 25kA FOR 1 SEC., 1-PH, CURRENT TRANSFORMER WITH 120% EXTENDED CURRENT RATING		CT	03
5	72.5kV, 25kA FOR 1 SEC., 1-PH VOLTAGE TRANSFORMER		VT	03
6	52kV SURGE ARRESTER		SA	03
7	36kV, 630A, 3-PH, 25kA FOR 1 SEC. VACCUM CIRCUIT BREAKER		52	01
8	36kV, 630A, 25kA FOR 1 SEC., 3-PH ISOLATOR (HDB) WITH ONE E/S		89	01
9	36kV, 100A, 25kA FOR 1 SEC., 1-PH, CURRENT TRANSFORMER		CT	03
10	36kV, 25kA FOR 1 SEC., 1-PH VOLTAGE TRANSFORMER		VT	03
11	30kV SURGE ARRESTER		SA	03

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD			CHD/APPD			CHD/APPD	01	01.09.18	CHD/APPD
ZONE			ZONE			ZONE			ZONE		DRG. REVISED IN LINE WITH DISCUSSION DATED 01.09.18

REFERENCE DRG.: - TENDER SINGLE LINE DIAGRAM 400/220/132kV GIS S/S

PROJECT:  
400/220/132kV GIS SUBSTATION AT RASARA, BALLIA (U.P.)

CUSTOMER:  
UTTAR PRADESH TRANSMISSION CORPORATION LIMITED

BHARAT HEAVY ELECTRICALS LTD.  
TRANSMISSION BUSINESS GROUP  
NOIDA

NAME	SIGN.	DATE	NO.OF VAR.
DRN. PK			
CHD. AK/RD			N.A.
APPD. DKM			

DEPT. TBG CODE	UNTOL. DIMS. CR. 9/M/f		SCALE N.T.S	WEIGHT (KG) N.A.	REF. TO ASSY. DRG. N.A.	ITEM NO. N.A.	NO.OF ITEMS N.A.
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TITLE  
SINGLE LINE DIAGRAM  
400/220/132kV GIS SUB STATION

DRG.NO. TB-3-404-510-001	REV. 01
CARD CODE NA	
SHT. No 08	NO. OF SHT. 08

8

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SIZE-A3