

REVISED EARTHMAT FOR THE PROPOSED 220/110/11 KV STATION @ GHANAGAPURA (NIMBARGA) IN ALAND TALUK, KALABURAGI DISTRICT.

IMPORTANT

* NOT TO SCALE

* THE NO OF CAST IRON PIPE ELECTRODES SHALL BE PROVIDED AS PER GUIDELINES

* BEFORE EXECUTION PLEASE CAREFULLY GO THROUGH THE ENCLOSED GUIDELINES *

* ALL DIMENSIONS ARE IN METER

SALIENT DESIGN FEATURES

AREA COVERED BY EARTHMAT IN SQ MTR

26686 ✓

DEPTH OF BURIAL OF EARTHMAT IN MTR

0.9 ✓

SPACING BETWEEN MAT CONDUCTOR (M.S. FLAT) IN MTR

2.5 ✓

SIZE OF EARTHMAT CONDUCTOR (M.S.FLAT) IN MM

50 X 6 MM

SPREADING OF GRANITE METAL JELLY OF SIZE 20/25 MM TO A HEIGHT OF 100 MM OVER THE ENTIRE EARTHMAT AREA.

75/12 ✓

BILL OF MATERIALS (APPROXIMATE QUANTITY) FOR EARTHMAT FORMATION & FENCING.

REF: 1) Letter no.: CEE(P&C)/SET/EET-2/KCO-105/31055/21-22/9149-56 dated: 17.09.2021 of the CEE, P&C.

2) The Layout Drawing No.: KPTCL/TECH/SS-220/NMBG-4-R1 dated: 15.09.2021 of the CEE, P&C.

1. Excavation, formation, refilling

9730 Cmtr. ✓

2. Material for formation of earthmat as per specification

a) M.S. Flat 75 X 12. MM

21838 Mtr. ✓

b) MS Round rods 25 mm dia, 1.05 Mt. long

282 No. ✓

c) G.I. Flats 75 X 12 MM for earth connection

7300 Mtr. ✓

c) G.I. Flats 50 X 6 MM for earthing cable trench

750 Mtr. ✓

d) Cast iron pipe electrodes of 100 mm Id, 13 mm thick, 2.75 mtr. long

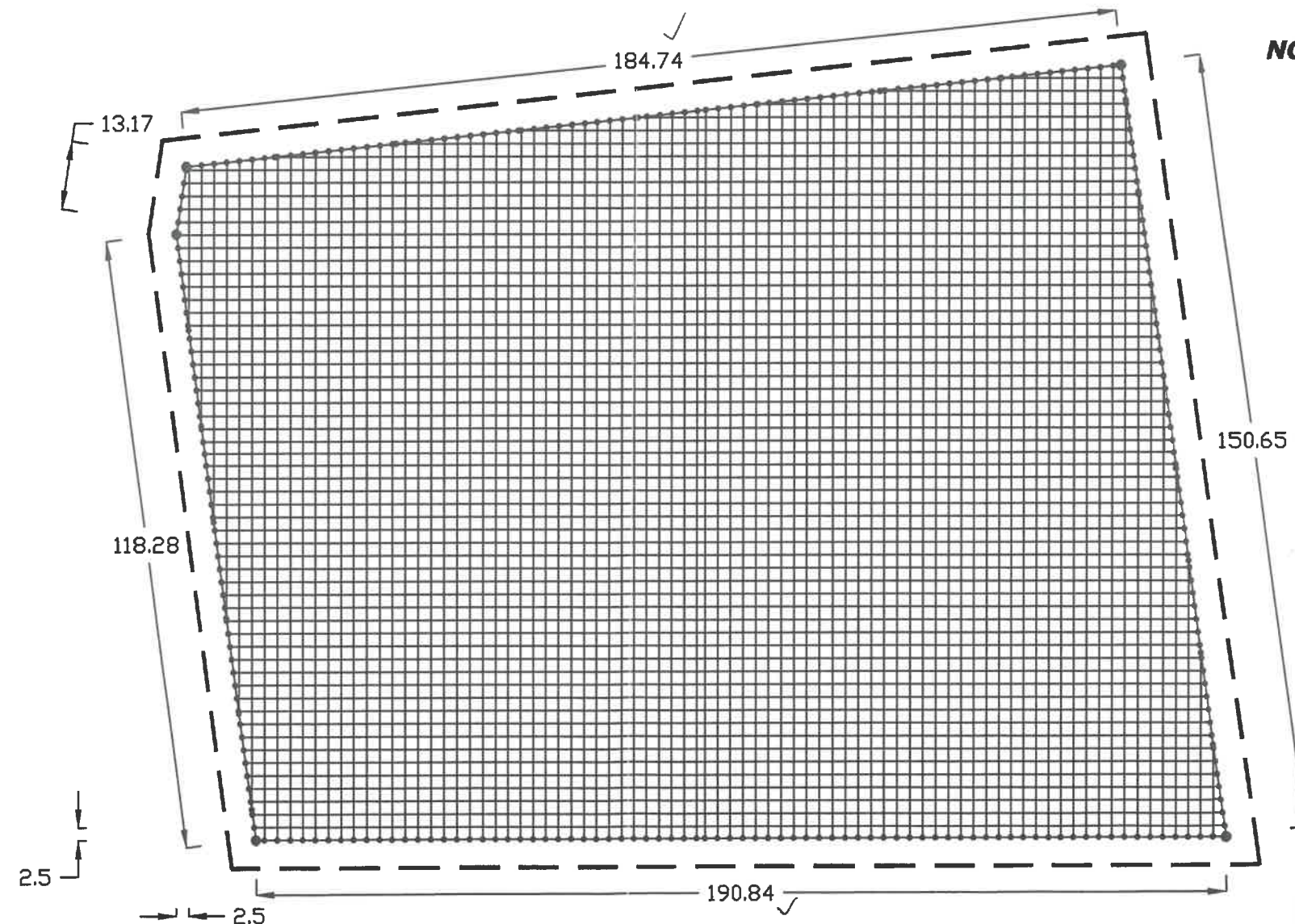
50 No. ✓

e) Spreading of Granite metal jelly of size 20/25 mm size to a height of 100 mm

2669 Cmtr. ✓

f) Deep bore electrode of 40mm dia, 5m long with sodium bentonite treatment

20 No. ✓



NOTE: 1) Designed for fault current of 20kA i.e., 220kV class

Breaker STC (40kA) with 0.5 grid factor.

2) 20nos. of 40mm dia, 5m long Deep bore electrodes

(MS rods) along with bentonite treatment for these

electrodes shall be provided at suitable locations

within the proposed earthmat area by maintaining

minimum distance of 10m between electrodes.

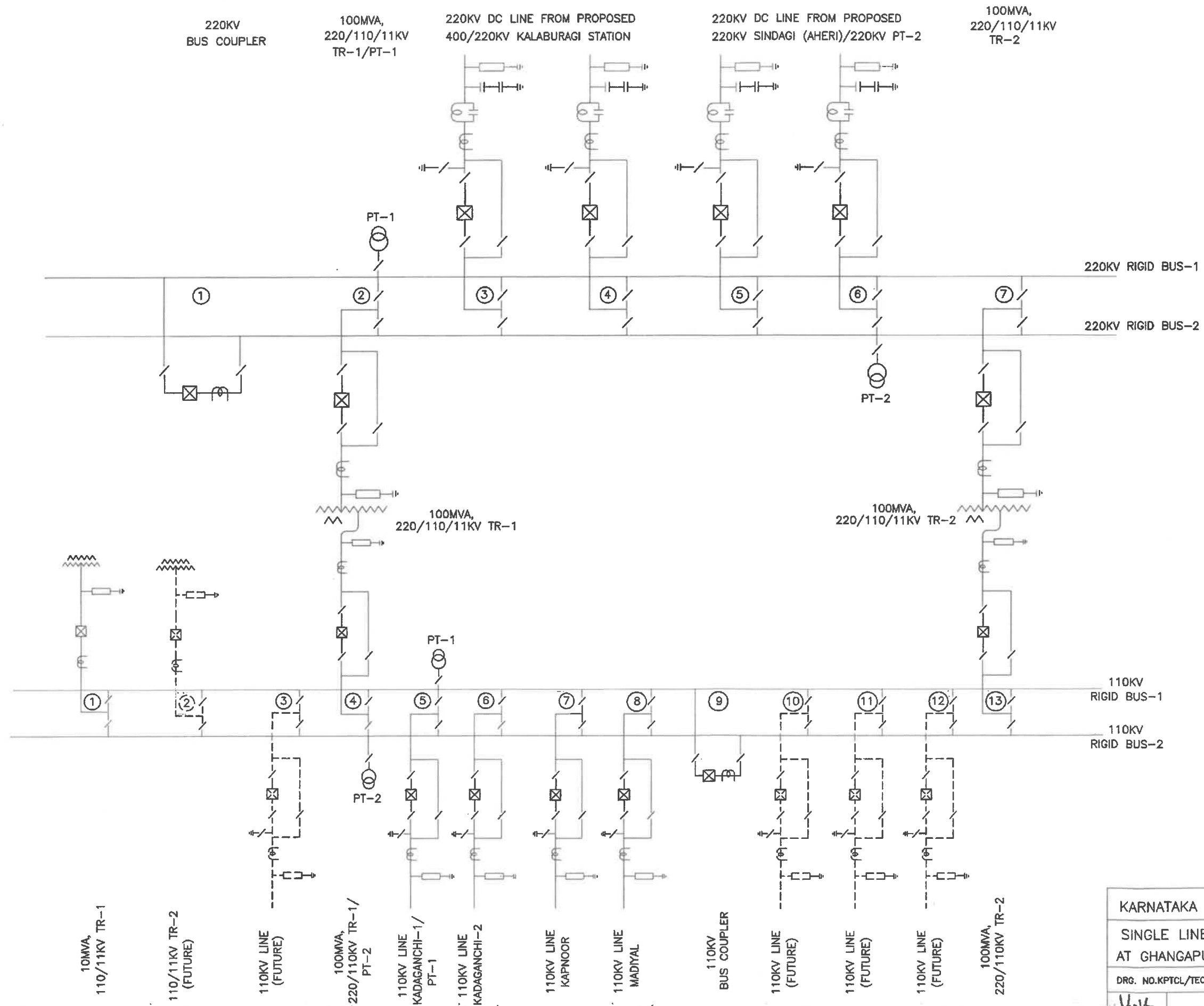
FENCE SHALL BE AT A MINIMUM DISTANCE OF 1.5 METERS AWAY FROM THE PERIPHERY OF THE STATION EARTHMAT

- 25 MM DIA M.S. ROUND RODS OF LENGTH ONE METER TO BE DRIVEN AS SHOWN
- ADDITIONAL C.I. PIPE ELECTRODES PROPOSED (Minimum distance of 5.5m shall be maintained between any two electrodes)

R & D CENTRE, K P T C L

DRG NO. SEE/R&D/EEE/KCO-126/2021-22/F-39(10)-R Dtd.16-10-2021

<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
EEE	for EEE	SEE

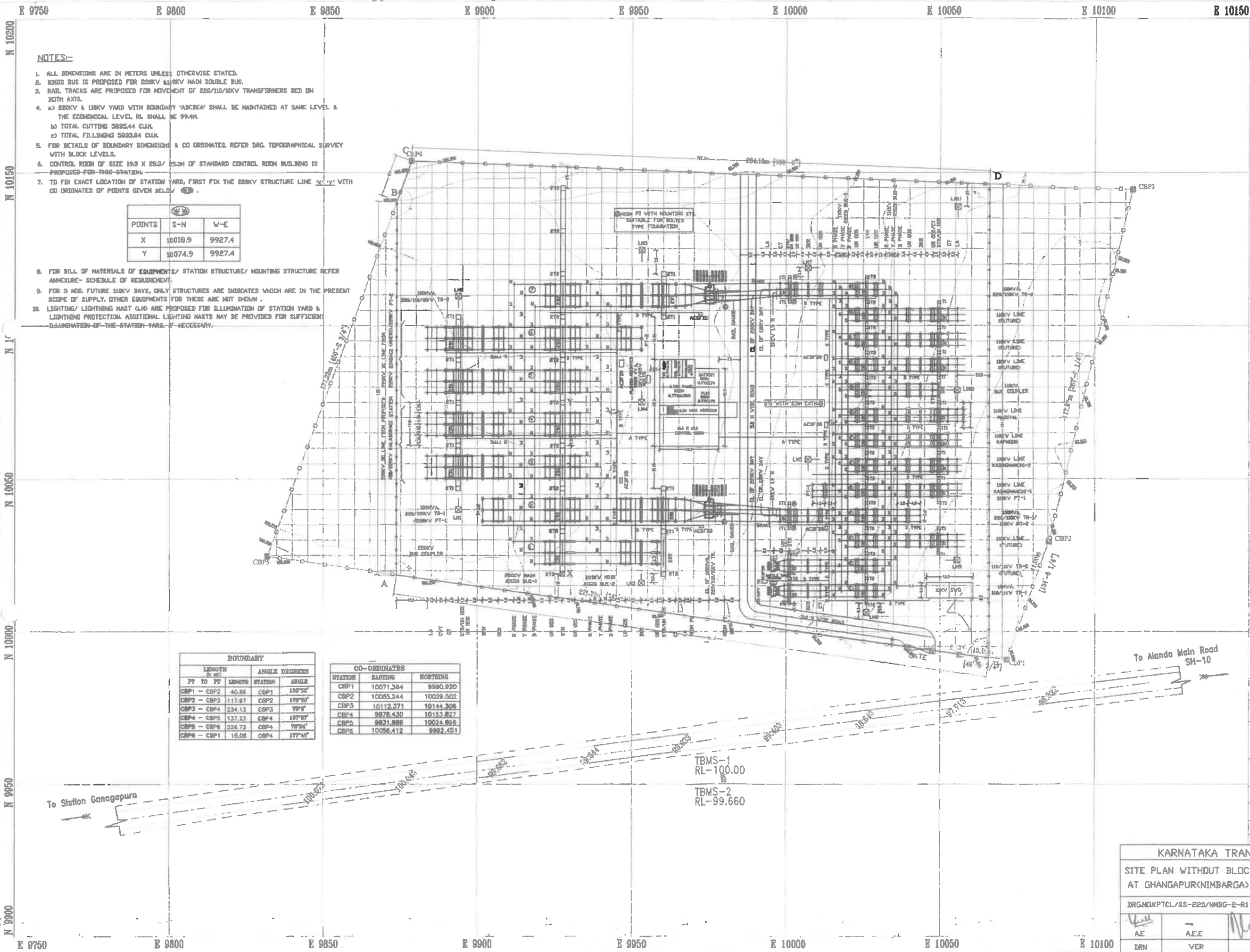


KARNATAKA POWER TRANSMISSION CORPORATION LIMITED

SINGLE LINE DIAGRAM OF 220/110/11KV SUB-STATION
AT GHANGAPUR(NIMBARGA), ALAND TALUK, KALABURAGI DIST.

DRG. NO.KPTCL/TECH/SS-220/NMBG-1-R1 DATED :-15.09.2021 SCALE :- N.T.S

<i>[Signature]</i> A.E DRN	<i>[Signature]</i> A.E.E CHD	<i>[Signature]</i> E.E SUB	<i>[Signature]</i> S.E.E (TECH) REC	<i>[Signature]</i> C.E.E (P&C) APPROVED
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- NOTES:-**
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
 2. RIGID BUS IS PROPOSED FOR 220KV & 110KV MAIN DOUBLE BUS.
 3. RAIL TRACKS ARE PROPOSED FOR MOVEMENT OF 220/110/11KV TRANSFORMERS BED ON BOTH AXIS.
 4. a) 220KV & 110KV YARD WITH BOUNDARY 'ABCD' SHALL BE MAINTAINED AT SAME LEVEL & THE ECONOMIC LEVEL RL SHALL BE 99.4M.
b) TOTAL CUTTING 5825.44 CUM.
c) TOTAL FILLING 5823.84 CUM.
 5. FOR DETAILS OF BOUNDARY DIMENSIONS & CO ORDINATES. REFER DRG. TOPOGRAPHICAL SURVEY WITH BLOCK LEVELS.
 6. CONTROL ROOM OF SIZE 19.3 X 28.3/ 25.3M OF STANDARD CONTROL ROOM BUILDING IS PROPOSED FOR THIS STATION.
 7. TO FIX EXACT LOCATION OF STATION YARD, FIRST FIX THE 220KV STRUCTURE LINE 'X-Y' WITH CO ORDINATES OF POINTS GIVEN BELOW.

POINTS	S-N	W-E
X	10018.9	9927.4
Y	10074.9	9927.4

8. FOR BILL OF MATERIALS OF EQUIPMENTS/ STATION STRUCTURE/ MOUNTING STRUCTURE REFER ANNEXURE- SCHEDULE OF REQUIREMENT.
9. FOR 3 NOS. FUTURE 110KV BAYS, ONLY STRUCTURES ARE INDICATED WHICH ARE IN THE PRESENT SCOPE OF SUPPLY. OTHER EQUIPMENTS FOR THESE ARE NOT SHOWN.
10. LIGHTING/ LIGHTNING MAST (L/M) ARE PROPOSED FOR ILLUMINATION OF STATION YARD & LIGHTNING PROTECTION. ADDITIONAL LIGHTING MASTS MAY BE PROVIDED FOR SUFFICIENT ILLUMINATION OF THE STATION YARD, IF NECESSARY.



Area Statement

AREA WITHIN BOUNDARY POINTS	84-23.170
1) CBP1 to CBP6 =	3.4710 Hectar
	857.82 Cents
	34710.46 Sqm
	373717.14 Sqft

- NOTE:-**
1. ALL DIMENSIONS AND LEVELS ARE IN METERS.
 2. BLOCK LEVELS HAVE BEEN TAKEN AT 5.0 X 5.0 GRID AND CONTOURS HAVE BEEN DRAWN AT 0.50 M INTERVALS.
 3. A BENCHMARK TBM 1 HAS BEEN ESTABLISHED ON ELECTRICAL POLE AND ASSIGNING IT TO A BENCH MARK.
 - 3) A BENCHMARK TBM 1 HAS BEEN ESTABLISHED ON ELECTRICAL POLE AND ASSIGNING IT TO A BENCH MARK.

LEGEND

- 1. Station Boundary with Pillars, Iron Cross
- 2. Main Power Line with Pillars, Steel Box, Sagging/Relaying Box
- 3. Road : Gravelled, Ungravelled, Cut Road, Footpath
- 4. Building : Permanent, Under construction, Temporary
- 5. Gate : Gravelled, Ungravelled, Gatepost, Gravelled
- 6. Well, Dammed, Pumphouse, Temple, Road Pump
- 7. Canal, Irrigation, Quarry, Bridge
- 8. Station, Rectifier, Substation, Station light
- 9. Station and Area with water, Steel tank, Oil, Fuel tank
- 10. Tower : Gravelled, Gravelled, Gravelled, Gravelled, Gravelled
- 11. Temporary Road, Road, Spot Road

BOUNDARY			
PT TO PT	LENGTH	STATION	ANGLE
CBP1 - CBP2	40.86	CBP1	108°56'
CBP2 - CBP3	117.97	CBP2	179°30'
CBP3 - CBP4	234.13	CBP3	79°2'
CBP4 - CBP5	137.23	CBP4	107°27'
CBP5 - CBP6	228.73	CBP5	79°24'
CBP6 - CBP1	15.08	CBP6	177°40'

CO-ORDINATES		
STATION	EASTING	NORTHING
CBP1	10071.384	9990.920
CBP2	10085.244	10029.502
CBP3	10112.371	10144.308
CBP4	9978.430	10153.827
CBP5	9921.988	10024.895
CBP6	10056.412	9992.451

To Alanda Main Road SH-10

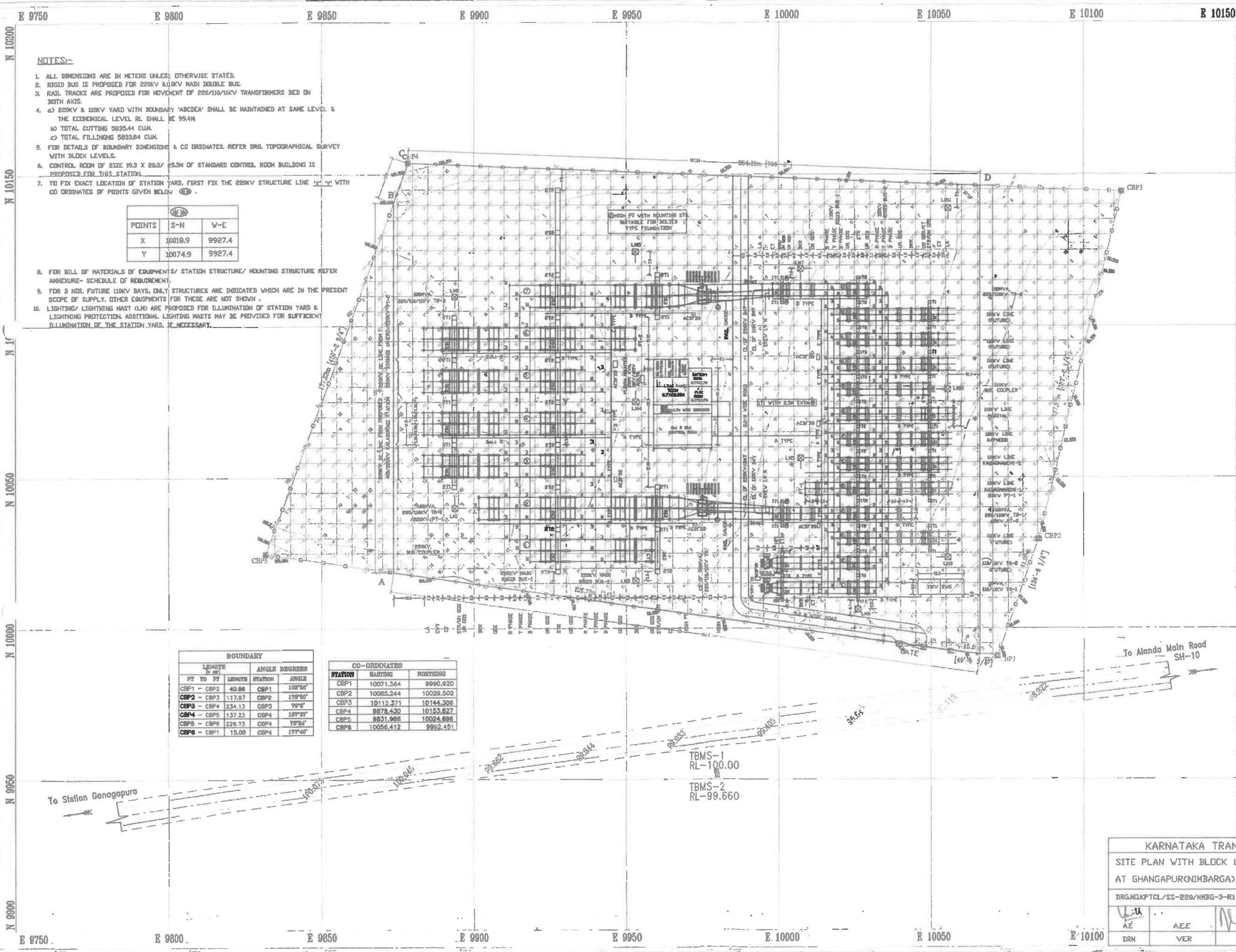
To Station Ganagapura

TBMS-1
RL-100.00
TBMS-2
RL-99.660

KARNATAKA TRANSMISSION CORPORATION LIMITED

SITE PLAN WITHOUT BLOCK LEVEL OF 220/110/11KV SUB-STATION AT GHANGAPUR(NIMBARGA), ALAND TALUK, KALABURAGI DISTRICT.

DRG/NIKPTCL/SS-220/NNBG-2-R1	DATE-15.09.2021	SCALE-1: N.T.S
AE	A.E.E	EL 14/19
DRN	VER	SUB
REC	APPROVED	



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 3. RAIL TRACKS ARE PROPOSED FOR MOVEMENT OF 220/110/11KV TRANSFORMERS BED ON BOTH AXIS.
 4. a) 220KV & 110KV YARD WITH BOUNDARY 'ABCDEA' SHALL BE MAINTAINED AT SAME LEVEL & THE ECONOMIC LEVEL RL SHALL BE 99.4M.
b) TOTAL CUTTING 5835.44 CUM.
c) TOTAL FILLING 5835.84 CUM.
 5. FOR DETAILS OF BOUNDARY DIMENSIONS & CO ORDINATES. REFER DRG. TOPOGRAPHICAL SURVEY WITH BLOCK LEVELS.
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 7. TO FIX EXACT LOCATION OF STATION YARD, FIRST FIX THE 220KV STRUCTURE LINE 'X-Y' WITH CO ORDINATES OF POINTS GIVEN BELOW.

POINTS	S-N	V-E
X	10018.9	9927.4
Y	10074.9	9927.4

8. FOR BILL OF MATERIALS OF EQUIPMENTS/ STATION STRUCTURE/ MOUNTING STRUCTURE REFER ANNEXURE- SCHEDULE OF REQUIREMENT.
9. FOR 3 NOS. FUTURE 110KV BAYS, ONLY STRUCTURES ARE INDICATED WHICH ARE IN THE PRESENT SCOPE OF SUPPLY. OTHER EQUIPMENTS FOR THESE ARE NOT SHOWN.
10. LIGHTING/ LIGHTING MAST (LMD) ARE PROPOSED FOR ILLUMINATION OF STATION YARD & LIGHTNING PROTECTION. ADDITIONAL LIGHTING MASTS MAY BE PROVIDED FOR SUFFICIENT ILLUMINATION OF THE STATION YARD, IF NECESSARY.

BOUNDARY			
PT TO PT	LENGTH	STATION	ANGLE DEGREES
CBP1 - CBP2	40.86	CBP1	108°56'
CBP2 - CBP3	117.97	CBP2	178°50'
CBP3 - CBP4	234.13	CBP3	79°6'
CBP4 - CBP5	137.23	CBP4	107°28'
CBP5 - CBP6	228.73	CBP4	78°24'
CBP6 - CBP1	15.08	CBP4	177°40'

CO-ORDINATES		
STATION	EASTING	NORTHING
CBP1	10071.364	9990.920
CBP2	10085.244	10029.502
CBP3	10112.371	10144.306
CBP4	9878.430	10153.827
CBP5	9831.908	10024.696
CBP6	10056.412	9992.451



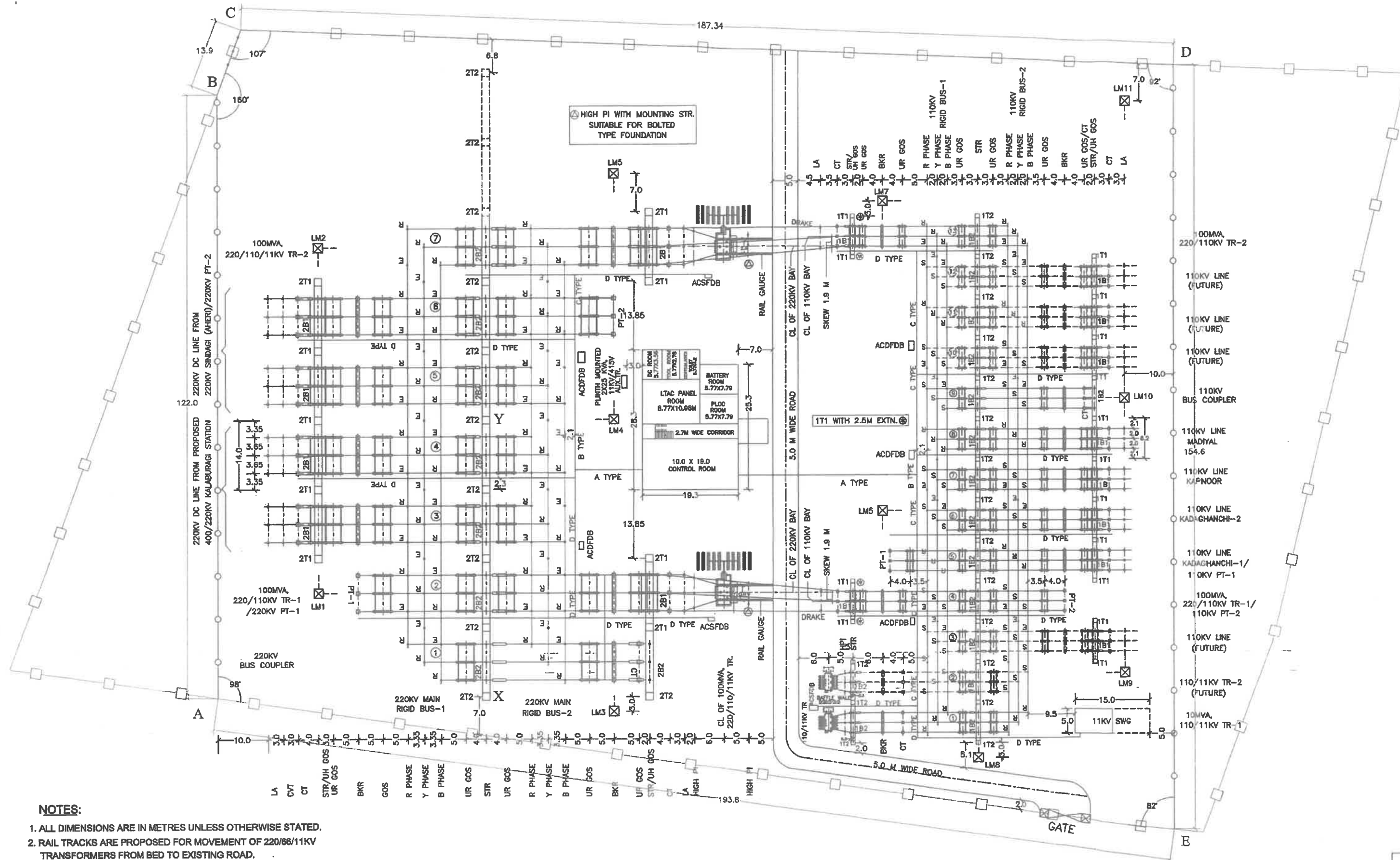
Area Statement

AREA WITHIN BOUNDARY POINTS
1) CBP1 to CBP6 = 34.719 Hectare
34719.45 Sqm
375717.14 Sqm

- NOTE:-**
- 1) ALL DIMENSIONS AND LEVELS ARE IN METERS.
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 - 3) A BENCHMARK TBM 1 HAS BEEN ESTABLISHED ON ELECTRICAL POLE AND ASSIGNING IT TO A VALUE OF +100.00M.
 - 4) A BENCHMARK TBM 1 HAS BEEN ESTABLISHED ON ELECTRICAL POLE AND ASSIGNING IT TO A VALUE OF +100.00M.

LEGEND	
Particular Boundary with Pylon, Wire Pole	—
Main Power line with Pylon, Power line, Telegraph/Telephone line	—
Road : Bituminous, Unbituminous, Cut back, Footpath	—
Building : Permanent, Under construction, Temporary	—
Well : Borewell, Handpump, Borewell, Handpump	—
Well, Borewell, Handpump, Borewell, Handpump	—
Enclosed area, Ditch, Quarry, Ridge	—
Shedding, Shedding, Shedding, Shedding	—
Contour and from the with value, Contour, Contour, Contour	—
Stream : Artificial, Natural, Canal, River, Reservoir, Others	—
Temporary Road, Road, Road	—

CLIENT	KARNATAKA POWER
TITLE	CONTOURING/BLOCK LEVEL SURVEY FOR THE PROPOSED SITE FOR ESTABLISHING 220KV SUBSTATION (IN 61 NO-3055-11) AT NIMBARGA VILLAGE, NIMBARGA HOSE, ALANDA TALUK, GULBARGA DISTRICT.
SURVEY CONSULTANT	NIKETAN CONSULTANTS (SURVEYORS & GEO-TECHNICAL CONSULTANTS) Address: 10/1, 10/2, 10/3, 10/4, 10/5, 10/6, 10/7, 10/8, 10/9, 10/10, 10/11, 10/12, 10/13, 10/14, 10/15, 10/16, 10/17, 10/18, 10/19, 10/20, 10/21, 10/22, 10/23, 10/24, 10/25, 10/26, 10/27, 10/28, 10/29, 10/30, 10/31, 10/32, 10/33, 10/34, 10/35, 10/36, 10/37, 10/38, 10/39, 10/40, 10/41, 10/42, 10/43, 10/44, 10/45, 10/46, 10/47, 10/48, 10/49, 10/50, 10/51, 10/52, 10/53, 10/54, 10/55, 10/56, 10/57, 10/58, 10/59, 10/60, 10/61, 10/62, 10/63, 10/64, 10/65, 10/66, 10/67, 10/68, 10/69, 10/70, 10/71, 10/72, 10/73, 10/74, 10/75, 10/76, 10/77, 10/78, 10/79, 10/80, 10/81, 10/82, 10/83, 10/84, 10/85, 10/86, 10/87, 10/88, 10/89, 10/90, 10/91, 10/92, 10/93, 10/94, 10/95, 10/96, 10/97, 10/98, 10/99, 10/100, 10/101, 10/102, 10/103, 10/104, 10/105, 10/106, 10/107, 10/108, 10/109, 10/110, 10/111, 10/112, 10/113, 10/114, 10/115, 10/116, 10/117, 10/118, 10/119, 10/120, 10/121, 10/122, 10/123, 10/124, 10/125, 10/126, 10/127, 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NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. RAIL TRACKS ARE PROPOSED FOR MOVEMENT OF 220/86/11KV TRANSFORMERS FROM BED TO EXISTING ROAD.
3. FOR BILL OF MATERIALS OF EQUIPMENTS/ STATION STRUCTURES AND MOUNTING STRUCTURES REFER ANNEXURE - SCHEDULE OF REQUIREMENTS.
4. OTHER REFERENCE DRAWINGS - a) SINGLE LINE DIAGRAM, b) SITE PLAN, c) CROSS-SECTION.
5. THE TYPICAL LAYOUT IS DEVELOPED FOR THE GENERAL GUIDANCE OF THE BIDDER REGARDING CONCEPT OF THE PROJECT. THE DETAILED DESIGN HAS TO BE FURNISHED BY THE BIDDER.
6. ALLOCATION OF 220KV & 110KV LINE BAYS ARE INDICATIVE ONLY. SAME SHALL BE FINALISED DURING EXECUTION AS PER ORIENTATION OF LINES

SHEET 1 OF 2

KARNATAKA POWER TRANSMISSION CORPORATION LIMITED				
DETAILED LAYOUT PLAN OF PROPOSED 220/110/11KV SUB-STATION AT GHANGAPUR(NIMBARGA), ALAND TALUK, KALABURAGI DISTRICT				
DRG. NO. KPTCL/TECH/SS-220/NMBG-4-R1	DATED: 15.09.2021	SCALE: N.T.S.		
AE	A.E.E	S.E.E (TECH)	C.E.E (P&C)	
DRN	CHD	SUB	REC	APPROVED

TECHNICAL PARTICULARS

SL.NO.	PARTICULARS	220KV	110KV
1.	BASIC INSULATION LEVEL (KV)	1050	550
2.	MINIMUM CLEARANCES		
	a) BETWEEN PHASES (FOR RIGID BUS)	3.35 M	2.0 M
	b) BETWEEN PHASES (FOR STRUNG BUS)	3.65 M	2.0 M
	c) BETWEEN PHASE TO EARTH (CENTRE LINE OF TOWER)	3.35 M	2.1 M
	d) SECTIONAL CLEARANCE	4.3 M	3.5 M
3.	a) HEIGHT OF CROSS BUS CONDUCTOR	13.5 M	11 M
	b) BAY WIDTH	14.0 M	8.2 M
	c) HEIGHT OF MAIN BUS	5.75 M	4.6 M
4.	HEIGHT OF CENTRE OF TERMINAL PAD PERTAINING TO VARIOUS EQUIPMENTS		
	a) ISOLATORS ADJACENT TO MAIN BUS	8.25 M	6.35 M
	b) OTHER ISOLATORS AND EQUIPMENTS	5.75 M	4.6 M
5.	MATERIALS OF THE BUS		
	a) MAIN ALUMINIUM TUBE BS 1600 SCH.40	75 MM DIA	75 MM DIA
	b) CROSS BUS		
	i) ALUMINIUM TUBE BS.1600 SCH.40	63 MM DIA	63 MM DIA
	ii) ACSR CONDUCTOR	DRAKE	DRAKE
6.	POST INSULATORS USED FOR BUS SUPPORTS AS PER IS 5350 PART II & III		
	a) NO.OF UNITS/STACK	2	1
	b) VOLTAGE CLASS	220KV	110KV
	c) HEIGHT OF INSULATOR STACK (MM)	2300	1220
	d) PITCH DIA HOLES AT TOP (MM)	127	127
	e) NO. OF FIXING BOLTS	4	4
7.	a) 11KV, 120KN DISC INSULATORS		
	i) TENSION STRING	16	8
	B) 11KV, 90KN DISC INSULATORS		
	i) SUSPENSION STRING	14	8

NOTES:—

- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
- RIGID BUS IS PROPOSED FOR 220KV & 110KV MAIN DOUBLE BUS.
- RAIL TRACKS ARE PROPOSED FOR MOVEMENT OF 220/110/11KV TRANSFORMERS BED ON BOTH AXIS.
- a) 220KV & 110KV YARD WITH BOUNDARY 'ABCDEA' SHALL BE MAINTAINED AT SAME LEVEL & THE ECONOMICAL LEVEL RL SHALL BE 99.4M.
b) TOTAL CUTTING 5835.44 CU.M.
c) TOTAL FILLINGNG 5833.84 CU.M.
- FOR DETAILS OF BOUNDARY DIMENSIONS & CO ORDINATES. REFER DRG. TOPOGRAPHICAL SURVEY WITH BLOCK LEVELS.
- CONTROL ROOM OF SIZE 19.3 X 28.3/ 25.3M OF STANDARD CONTROL ROOM BUILDING IS PROPOSED FOR THIS STATION.
- TO FIX EXACT LOCATION OF STATION YARD, FIRST FIX THE 220KV STRUCTURE LINE 'X' 'Y' WITH CO ORDINATES OF POINTS GIVEN BELOW (**).

(**)		
POINTS	S-N	W-E
X	10018.9	9927.4
Y	10074.9	9927.4

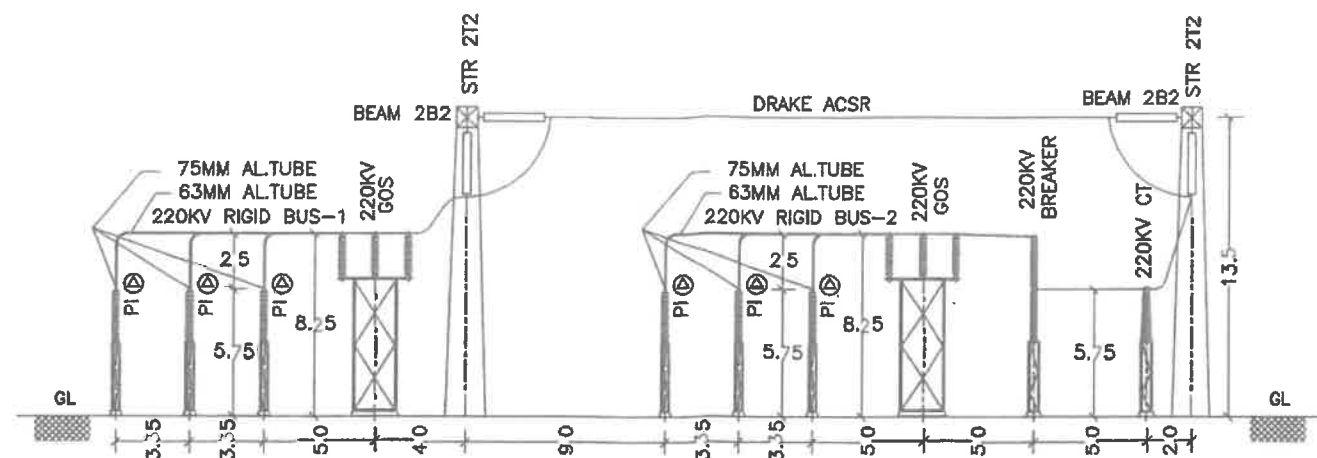
- FOR BILL OF MATERIALS OF EQUIPMENTS/ STATION STRUCTURE/ MOUNTING STRUCTURE REFER ANNEXURE- SCHEDULE OF REQUIREMENT.
- FOR 3 NOS. FUTURE 110KV BAYS, ONLY STRUCTURES ARE INDICATED WHICH ARE IN THE PRESENT SCOPE OF SUPPLY. OTHER EQUIPMENTS FOR THESE ARE NOT SHOWN .
- LIGHTING/ LIGHTNING MAST (LM) ARE PROPOSED FOR ILLUMINATION OF STATION YARD & LIGHTNING PROTECTION. ADDITIONAL LIGHTING MASTS MAY BE PROVIDED FOR SUFFICIENT ILLUMINATION OF THE STATION YARD, IF NECESSARY.
- ROUTE OF PROPOSED CABLE DUCT FOR A,B,C&D TYPES ARE INDICATED IN THE LAYOUT PLAN. FROM MAIN DUCTS ie. A/B/C/D TYPE TO THE RESPECTIVE EQUIPMENTS 'E' TYPE HUME PIPE SHALL BE PROVIDED FOR THE COMBINATION OF CONTROL & POWER CABLE AND 'F' TYPE SHALL BE PROVIDED FOR ONLY CONTROL/ POWER CABLE. REFER TYPES OF CABLE DUCTS DRAWING FOR OTHER DETAILS.
- SPACE-IS EARMARKED ON ONE SIDE OF 220KV & 110KVBAYS FOR FUTURE PROVISION. DEPENDING UPON THE ORIENTATION OF 220KV LINES-& 110KV LINES, THE BAYS CAN BE EXTENDED ON ANY SIDE.
- OTHER REFERENCE DRAWINGS — a) LAYOUT PLAN
b) SITE PLAN WITH BLOCK LEVELS.
c) CROSS SECTION THROUGH VARIOUS BAYS.
d) TYPES OF CABLE DUCT.

SHEET 2 OF 2

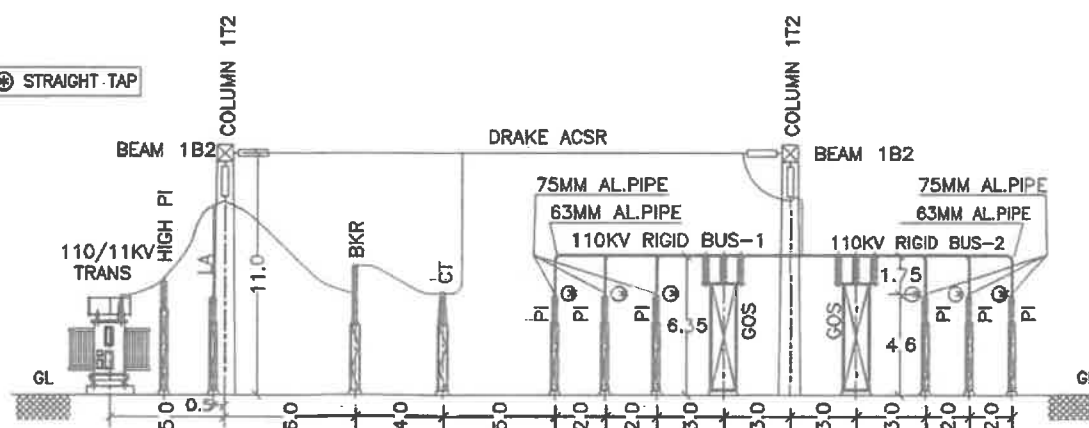
KARNATAKA POWER TRANSMISSION CORPORATION LIMITED

TECHNICAL PARTICULARS FOR PROPOSED 220/110/11KV SUB-STATION
AT GHANGAPUR(NIMBARGA), ALAND TALUK, KALABURAGI DISTRICT.

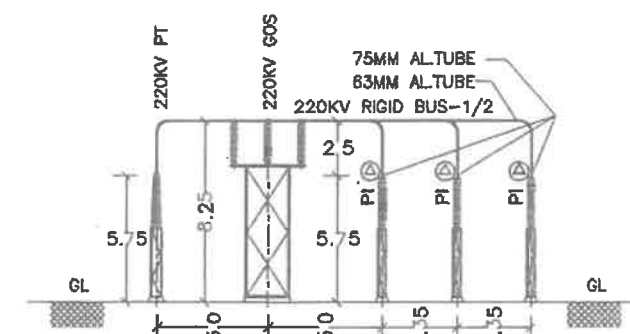
DRG. NO. KPTCL/ TECH/ SS-220/ NMBG-4-R1	DATE:- 15.09.2021	SCALE:- N.T.S
A.E.	S.E. (TECH)	C.E.E. (P&C)
DRN	CHD	SUB
	REC	APPROVED



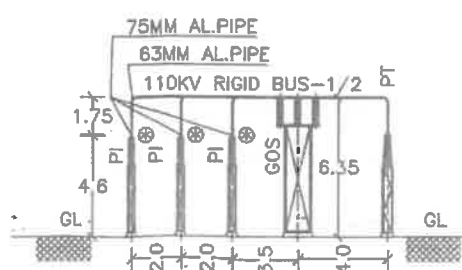
CROSS SECTION THROUGH 220KV BUS COUPLER BAY



CROSS SECTION THROUGH 110/11KV TRANSFORMER BAY



CROSS SECTION THROUGH 220KV PT BAY



CROSS SECTION THROUGH 110KV PT BAY

APPROVED