ASSAM ELECTRICITY GRID CORPORATION LIMITED
Regd. Off.: BIJULEE BHAWAN (FIRST FLOOR) PALTANBAZAR; GUWAHATI - 781001
CIN: U40101AS2003SGC007238 GSTIN: 18AAFCA4973J9Z3
PHONE: 0361-2739520 Web: www.aegcl.co.in

आज़ादी का अमृत महोत्सव

Corrigendum-I

BID IDENTIFICATION NO: AEGCL/MD/Tech-309/O&M(LAR)/NDCP/33KV Feeder Sishugram)/ Bid(R)

With reference to the above bid document for the work namely "Turnkey construction of 33kV Feeder Bay along with associated works at 132kV Sishugram GSS for power supply to National Data Centre" against Bid Identification No. mentioned above, standard drawings have been uploaded.

All other terms and conditions of the bidding document remain same.

Chief General Manager (O&M), LAR
Assam Electricity Grid Corporation Ltd
Bijulee Bhawan, Guwahati – 1

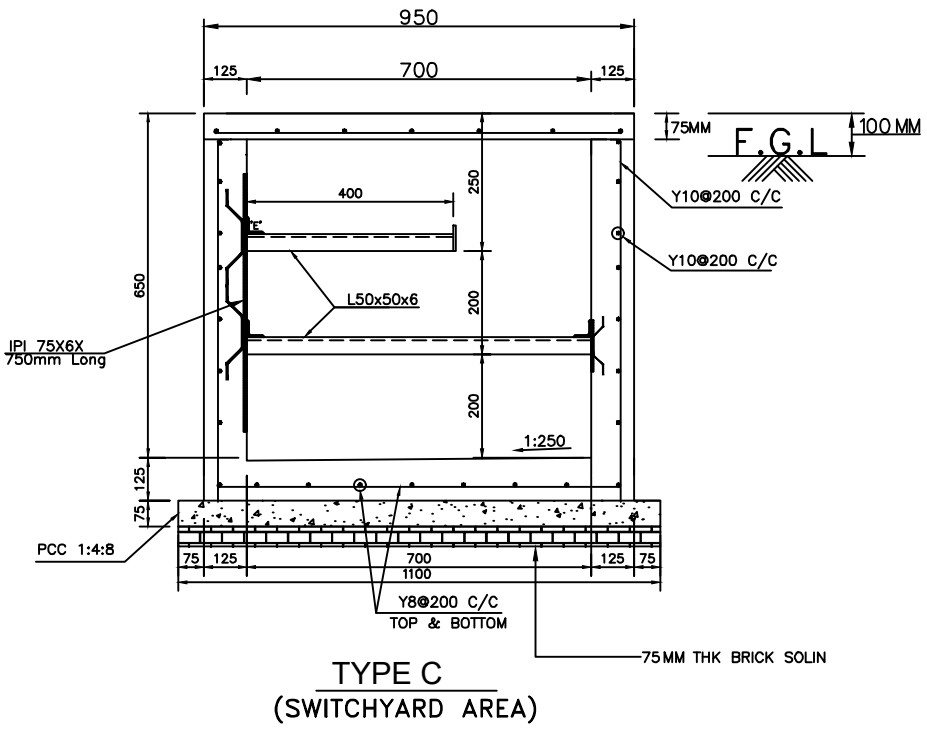
Memo No. – AEGCL/MD/Tech-309/O&M(LAR)/NDCP/33KV Feeder Sishugram)/ Part-I/19
Dtd: 19 .03.2024

Copy to:

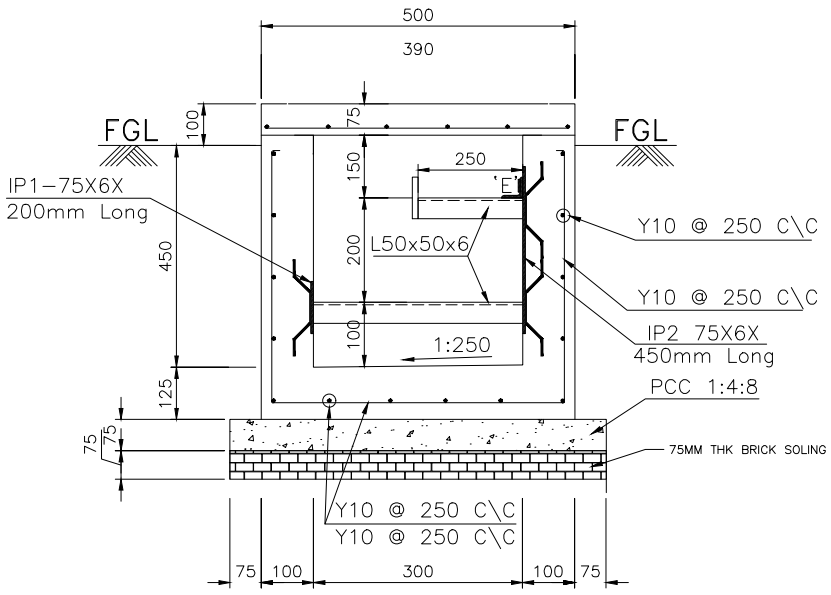
1. The DGM-IT, O/o the MD, AEGCL, for publication of the corrigendum notice in AEGCL website. (Soft copy enclosed)
2. Ref. file.

Chief General Manager (O&M), LAR
Assam Electricity Grid Corporation Ltd
Bijulee Bhawan, Guwahati – 1

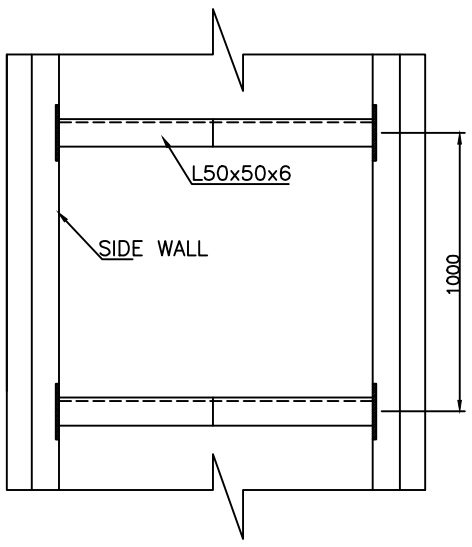
CABLE TRENCH



TYPE C
(SWITCHYARD AREA)

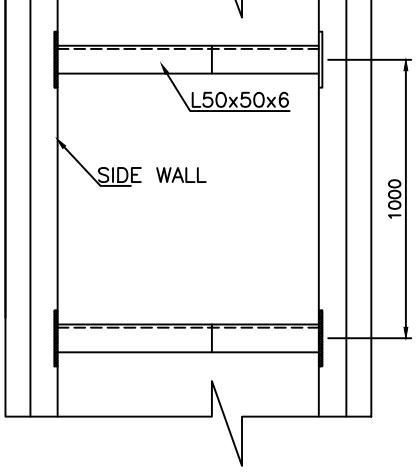


TYPE D
(SWITCHYARD AREA)

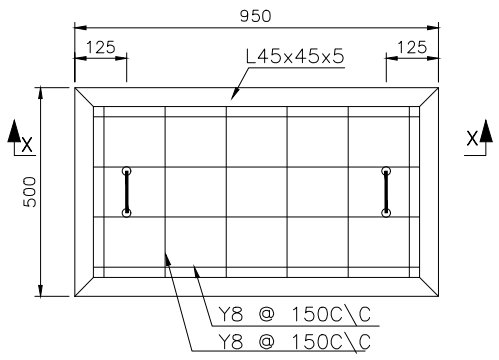


PLAN

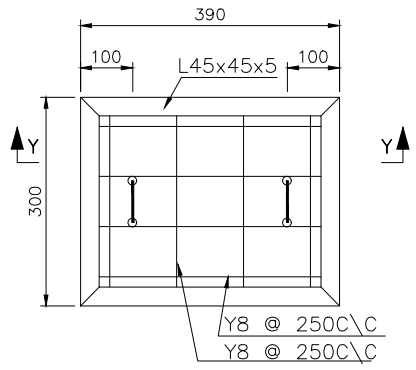
For Tender Reference Purpose only



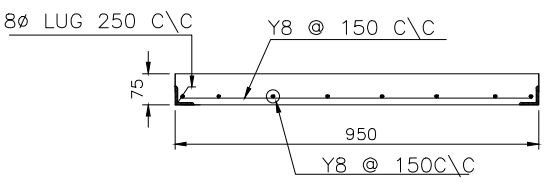
PLAN



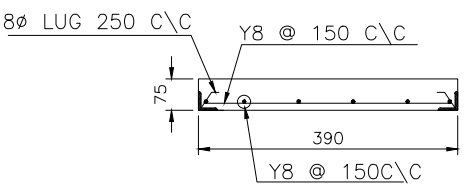
DETIAILS OF COVER SLAB



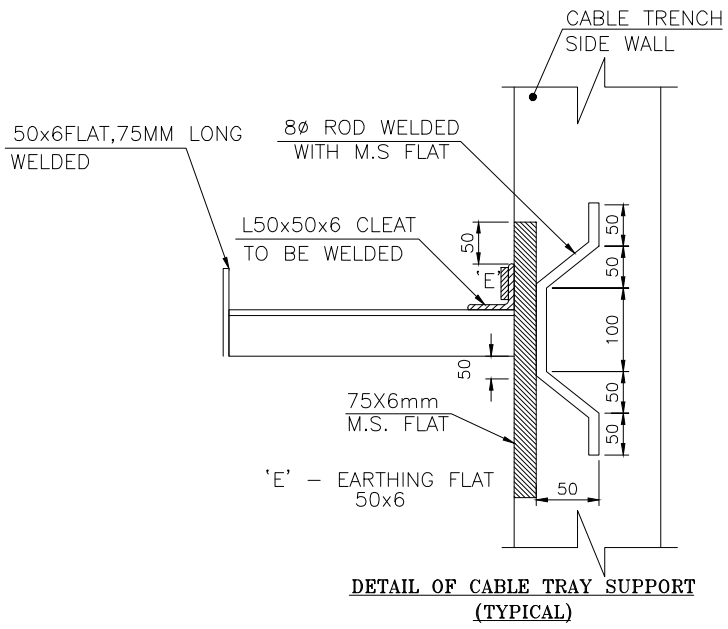
DETIAILS OF COVER SLAB



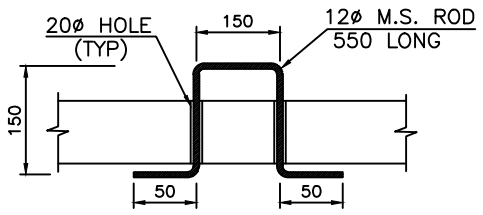
SECTION X–X



SECTION Y–Y



DETAIL OF CABLE TRAY SUPPORT
(TYPICAL)



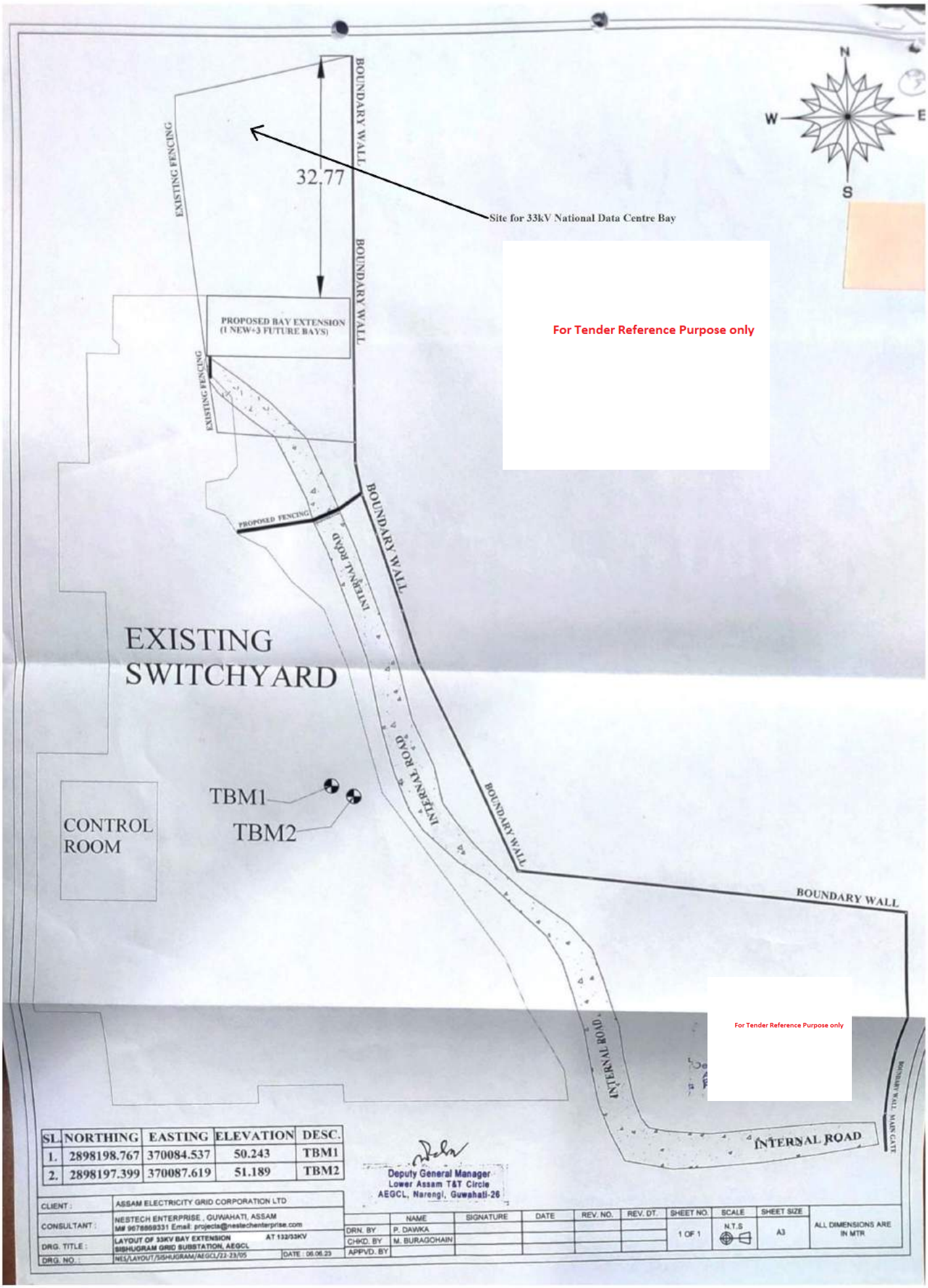
TYPICAL DETAIL OF LIFTING LUG

NOTES:–

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ALL REINFORCEMENT SHALL BE OF GRADE Fe500 CONFORMING TO IS1786.
3. CONCRETE MIX SHALL BE M20
4. CLEAR COVER FOR REINFORCEMENT
   SIDE WALL = 50mm
   BOTTOM SLAB ON EARTH FACE = 50mm
5. LAP/DEVELOPMENT LENGTH SHALL BE 40 TIMES THE DIA. OF MAIN REINFORCEMENT.

	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE	
DRN. BY	N. BORO			01		1 OF 1	N.T.S	A3	ALL DIMENSIONS ARE IN MM.
CHKD. BY	M. BURAGOHAIN								
APPVD. BY									

LOCATION: SISHUGRAM	
CLIENT :	ASSAM ELECTRICITY GRID CORPORATION LTD
WO NO :	AEGCL/DGM/LAC/TT/TLS-4(GTD)/2023/269 dated 03/03/2023
CONSULTANT :	NESTECH ENTERPRISE , GUWAHATI, ASSAM PH 9678869331
DRG. TITLE :	CABLE TRENCH
DRG. NO. :	NES/AEGCL/SISHUGRAM/CBT/01 — DATE : 01.10.23

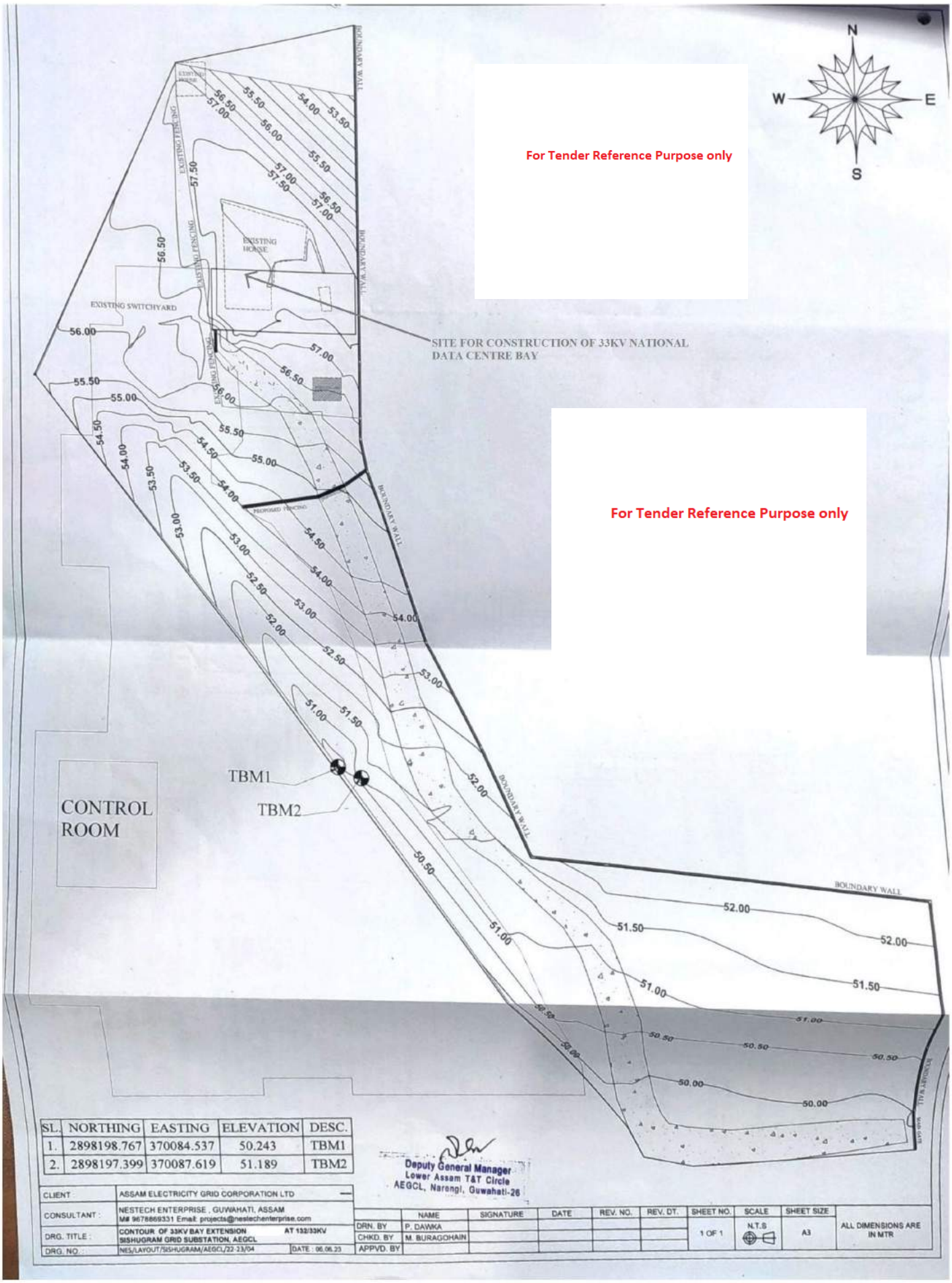


SL.	NORTHING	EASTING	ELEVATION	DESC.
1.	2898198.767	370084.537	50.243	TBM1
2.	2898197.399	370087.619	51.189	TBM2

Deputy General Manager
Lower Assam T&T Circle
AEGCL, Narengi, Guwahati-26

	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE	
DRN. BY	P. DAWKA					1 OF 1	N.T.S	A3	ALL DIMENSIONS ARE IN MTR
CHKD. BY	M. BURAGOHAIN								
APPVD. BY									

CLIENT :	ASSAM ELECTRICITY GRID CORPORATION LTD
CONSULTANT :	NESTECH ENTERPRISE , GUWAHATI, ASSAM M# 9678869331 Email: projects@nestechenterprise.com
DRG. TITLE :	LAYOUT OF 33KV BAY EXTENSION AT 132/33KV SISHUGRAM GRID SUBSTATION, AEGCL
DRG. NO. :	NES/LAYOUT/SISHUGRAM/AEGCL/22-23/05 DATE : 06.06.23



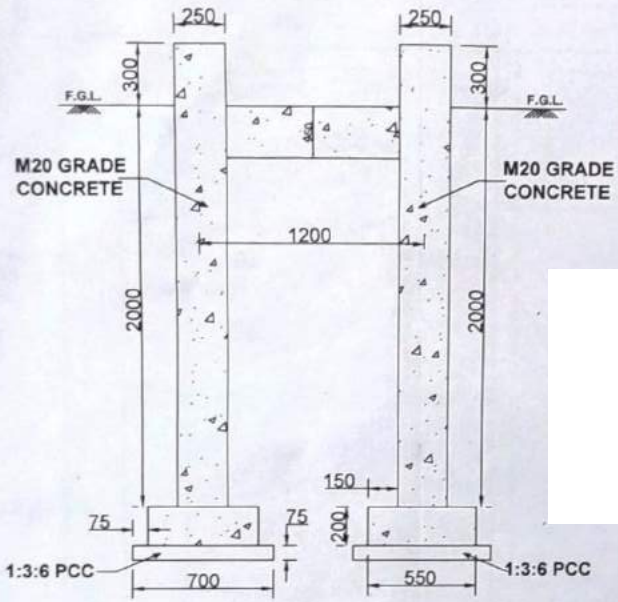
SL.	NORTHING	EASTING	ELEVATION	DESC.
1.	2898198.767	370084.537	50.243	TBM1
2.	2898197.399	370087.619	51.189	TBM2

Deputy General Manager
Lower Assam T&T Circle
AEGCL, Narengi, Guwahati-26

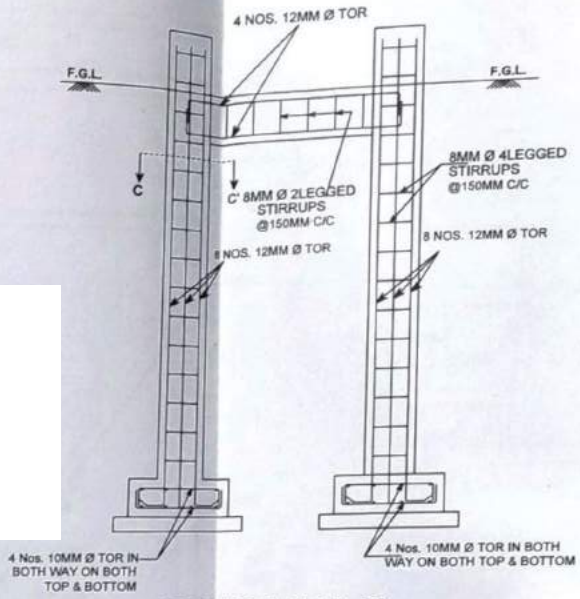
CLIENT	ASSAM ELECTRICITY GRID CORPORATION LTD
CONSULTANT :	NESTECH ENTERPRISE , GUWAHATI, ASSAM M# 9678669331 Email: projects@nestechenterprise.com
DRG. TITLE :	CONTOUR OF 33KV BAY EXTENSION AT 132/33KV SISHUGRAM GRID SUBSTATION, AEGCL
DRG. NO. :	NES/LAYOUT/SISHUGRAM/AEGCL/22-23/04 DATE : 06.06.23

	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE	
DRN. BY	P. DAWKA					1 OF 1	N.T.S	A3	ALL DIMENSIONS ARE IN MTR
CHKD. BY	M. BURAGOHAIN								
APPVD. BY									

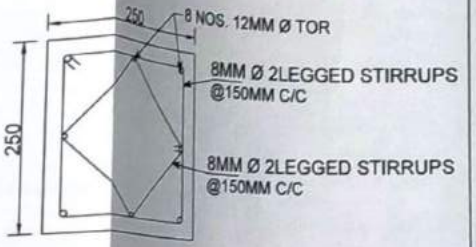
FOUNDATION DETAILS FOR 33KV - CT



SECTION AT A-A'

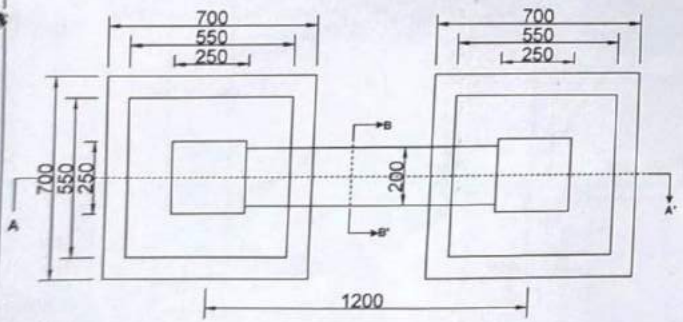


SECTION AT A-A'
(TYPICAL)

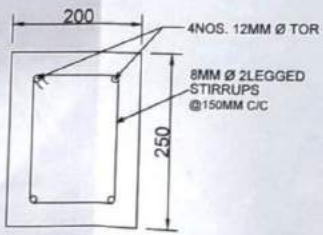


SECTION AT C-C'
(ENLARGED)

Deputy General Manager
Lower Assam T&T Circle
AEGCL, Narengi, Guwahati-26



PLAN



SECTION AT B-B'
(ENLARGED)

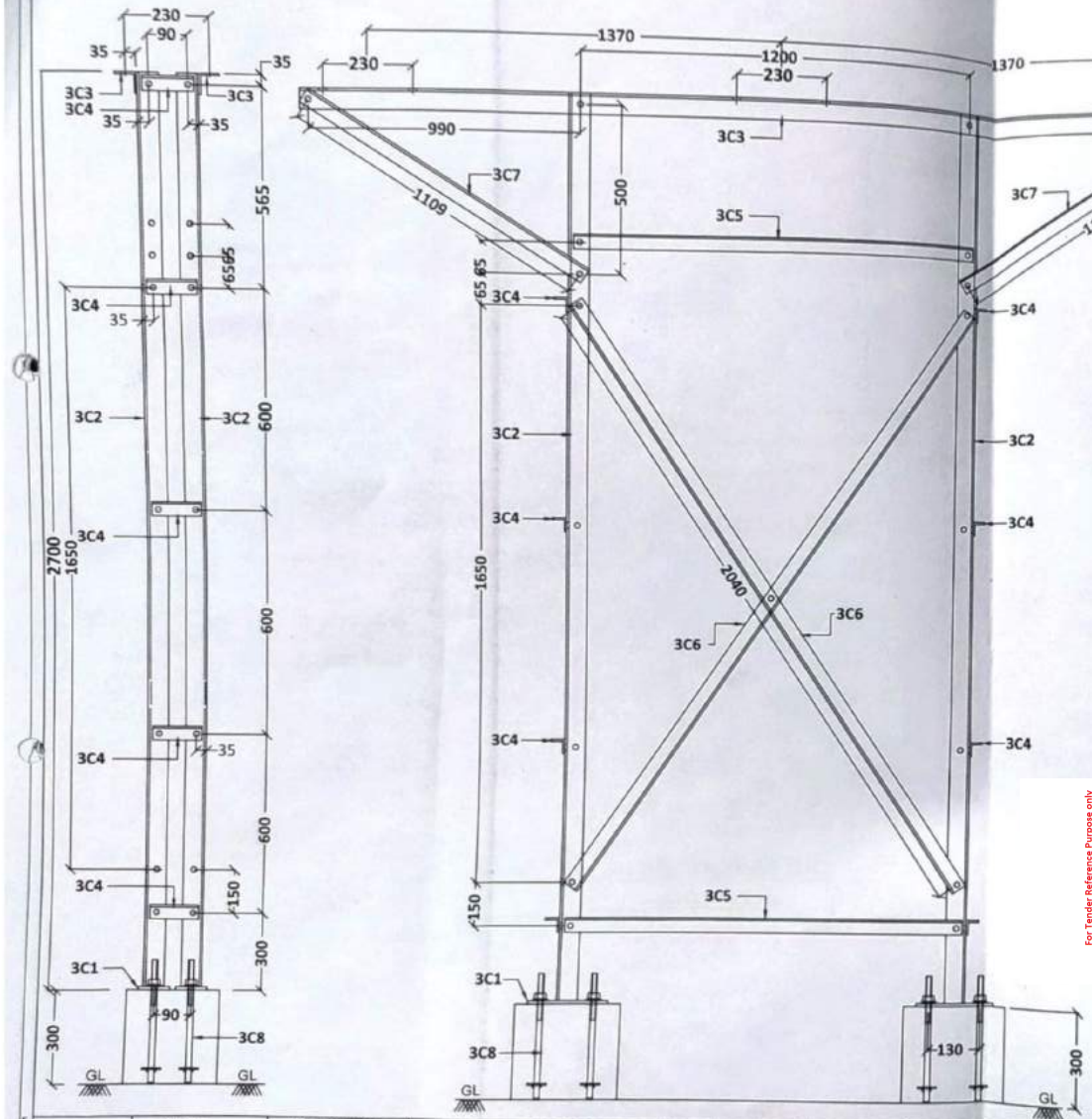
NOTES:

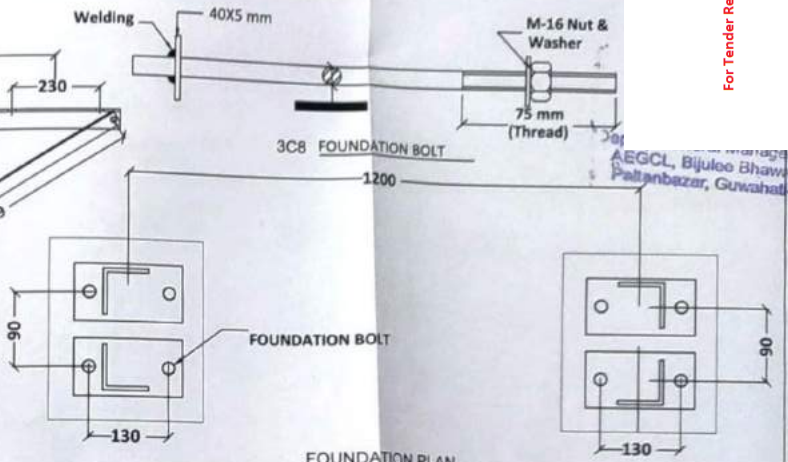
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. TOR STEEL CONFORMS TO I.S. - 1786 (Fe - 415).
3. F.G.L. DENOTES FINISHED GROUND LEVEL.
4. LAP LENGTH SHALL BE 40 TIMES DIA. OF BAR.
5. PROVIDE CLEAR COVER AS UNDER -
   - 50mm FOR BOTTOM & TOP REINFORCEMENT OF RAFT,
   - 50mm FOR SIDE REINFORCEMENT OF RAFT,
   - 40mm FOR COLUMN REINFOREMENT.
6. DO NOT SCALE THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
7. ANCHOR BOLTS AND OTHER EMBEDDED FIXTURES SHALL BE EMBEDDED DIRECTLY INTO CONCRETE WITH NECESSARY TEMPLATE.
8. UNLESS OTHERWISE NOTED ALL CONCRETE SHALL BE OF GRADE M:20.
9. SAFE BEARING CAPACITY OF SOIL IS - 200 KN/SQ.M.

	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE	PREPARED BY :
DRN. BY	KRISHNA DEVI			00		1 OF 1	N.T.S	A3	NESTECH ENTERPRISE Mobile: 9678869331 projects@nestechenterprise.com
CHKD. BY	M. BURAGOHAIN								
APPVD. BY									

CLIENT :	ASAAM ELECTRICITY GRID CORPORATION LIMITED
CONSULTANT :	NESTECH ENTERPRISE projects@nestechenterprise.com
PROJECT :	33KV Bay Extension works at Sishugram GSS, AEGCL.
WO NO & DATE :	AEGCL/DGM/LAC/TT/LS-4(GTD)/2023/269 DTD.03.03.23
DRG. TITLE :	FOUNDATION DETAILS FOR 33KV - CT
DRG. NO. :	AEGCL/ SISHUGRAM- JICA/ FDN 33 KV-CT /22-23/03 DATE : 06.06.2023

MOUNTING STRUCTURE FOR 33 KV CT





FOUNDATION PLAN

BILL OF MATERIALS

S.N	MARK	DESCRIPTION	ITEM	(QNToY.).
1.	3C1	Base Plate	80X180 X 8	4
2.	3C2	Pillar Angle	L65X65X6 X 2700	4
3.	3C3	Top Angle	L65X65X6 X 3240	2
4.	3C4	Side Angle	L45X45X5 X 140	10
5.	3C5	Front Angle	L45X45X5 X 1250	4
6.	3C6	Cross-Angle	L45X45X5 X 2090	4
7.	3C7	Support-Angle	L45X45X5 X 1159	4
8.	3C8	Foundation Bolt with Nut & Washer		8
9.		Hex. Bolt	1/2"X1-1/2"	50
10.		Washer	1/2"	50
11.		Hex. Nut	1/2"	50

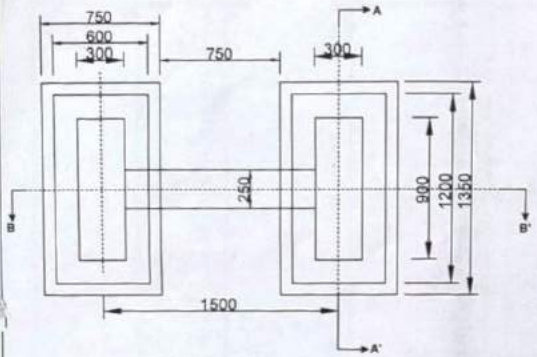
NOTE :

1. All Dimensions are in mm unless specified.
2. All Hole should be of 16 mm unless mentioned.
3. All members are of Mild Steel as per IS: 2062.
4. All members should be Hot dip Galvanized.
5. Fastners used for assly. of Structure should be 1/2".
6. 33 KV CT Mounting Centre : 230X230 mm.

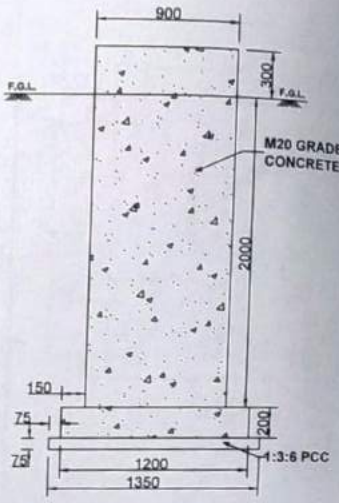
	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE	PREPARED BY :
DRN. BY	KRISHNA DEVI			00		1 OF 1	N.T.S	A3	NESTECH ENTERPRISE Mobile: 9678869331 projects@nestechenterprise.com
CHKD. BY	M. BURAGOHAIN								
APPVD. BY									

CLIENT :	ASAAM ELECTRICITY GRID CORPORATION LIMITED
CONSULTANT :	NESTECH ENTERPRISE projects@nestechenterprise.com
PROJECT :	33KV Bay Extension works at 132/33 kV Sishugram GSS, AEGCL
WO NO & DATE :	AEGCL/DGM/LAC/TT/LS-4(GTD)/2023/269 DTD.03.03.23
DRG. TITLE :	MOUNTING STRUCTURE FOR 33 KV CT (HEIGHT: 2700 MM FROM PLINTH)
DRG. NO. :	AEGCL/ SISHUGRAM- JICA/ STR 30 KV - CT/22-23/07 — DATE : 06.06.2023

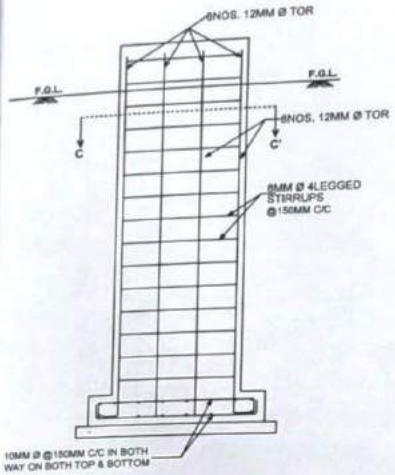
FOUNDATION DETAILS FOR 33KV -ISOLATOR



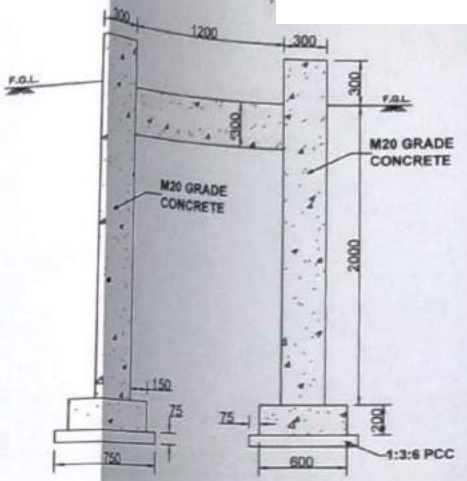
PLAN



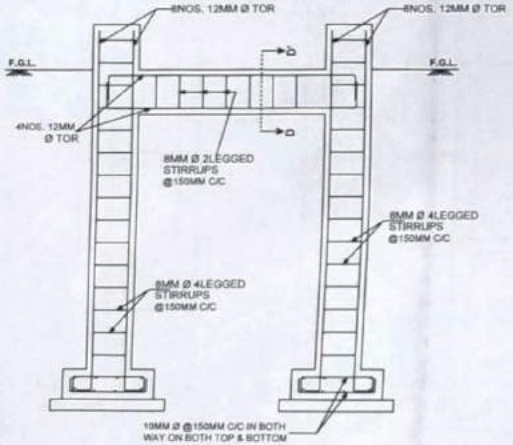
SECTION AT A-A'



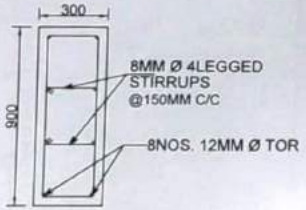
SECTION AT A-A'
(TYPICAL)



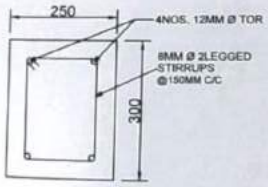
SECTION AT B-B'



SECTION AT B-B'
(TYPICAL)



SECTION AT C-C'
(ENLARGED)



SECTION AT D-D'
(ENLARGED)

Deputy General Manager
Lower Assam T&T Circle
AEGCL, Narengi, Guwahati-26

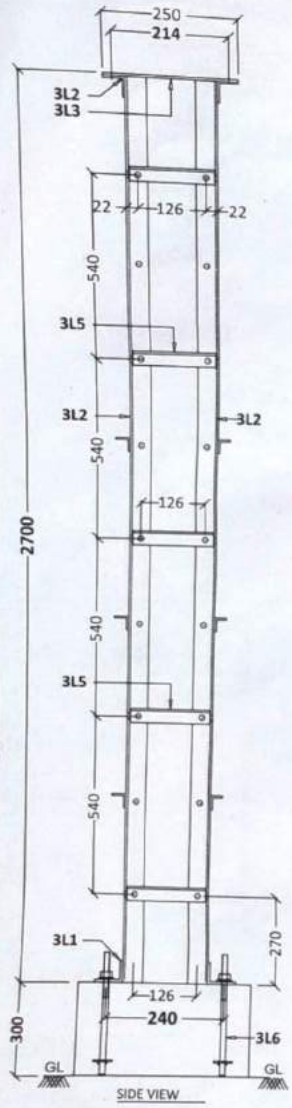
NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. TOR STEEL CONFORMS TO I.S. - 1786 (Fe - 415).
3. F.G.L. DENOTES FINISHED GROUND LEVEL.
4. LAP LENGTH SHALL BE 40 TIMES DIA. OF BAR.
5. PROVIDE CLEAR COVER AS UNDER -
   - 50mm FOR BOTTOM & TOP REINFORCEMENT OF RAFT.
   - 50mm FOR SIDE REINFORCEMENT OF RAFT.
   - 40mm FOR COLUMN REINFOREMENT.
6. DO NOT SCALE THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
7. ANCHOR BOLTS AND OTHER EMBEDDED FIXTURES SHALL BE EMBEDDED DIRECTLY INTO CONCRETE WITH NECESSARY TEMPLATE.
8. UNLESS OTHERWISE NOTED ALL CONCRETE SHALL BE OF GRADE M:20.
9. SAFE BEARING CAPACITY OF SOIL IS - 200 KN/SQ.M.

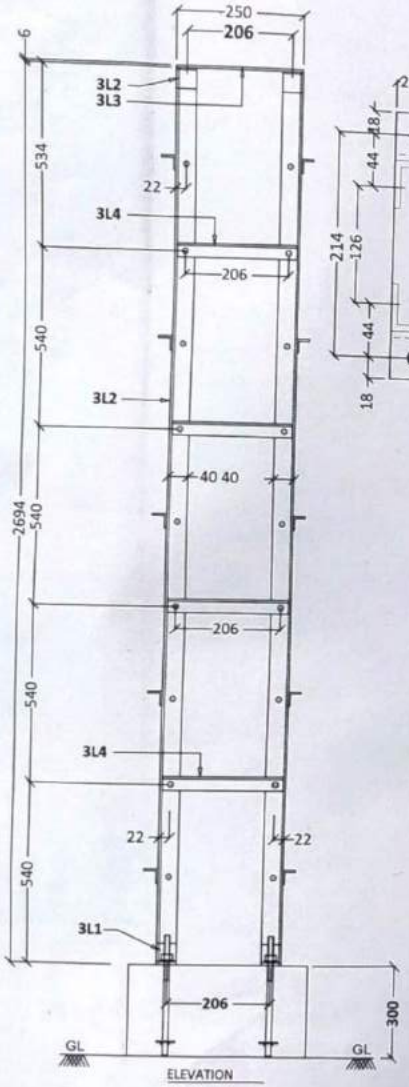
	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE	PREPARED BY :
DRN. BY	KRISHNA DEVI			00		1 OF 1	N.T.S	A3	NESTECH ENTERPRISE Mobile: 9678869331 projects@nestechenterprise.com
CHKD. BY	M. BURAGOHAIN								
APPVD. BY									

CLIENT :	ASAAM ELECTRICITY GRID CORPORATION LIMITED
CONSULTANT :	NESTECH ENTERPRISE projects@nestechenterprise.com
PROJECT :	33KV Bay Extension works at 132/33 kV Sishugram GSS, AEGCL
WO NO & DATE :	AEGCL/DGM/LAC/TT/LS-4(GTD)/2023/269 DTD.03.03.23
DRG. TITLE :	FOUNDATION DETAILS FOR 33KV - ISOLATOR
DRG. NO. :	AEGCL/ SISHUGRAM- JICA/ FDN 33 KV-ISOL /22-23/02 DATE :06.06.2023

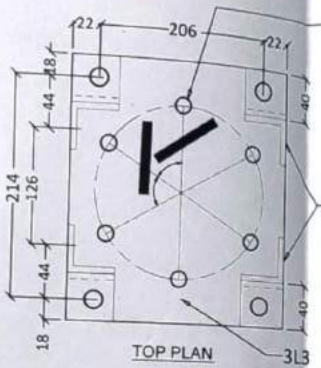
MOUNTING STRUCTURE FOR 30 KV-10 KA L.A (Station Type)
(1 SET = 3 Nos. Mounting Structure)



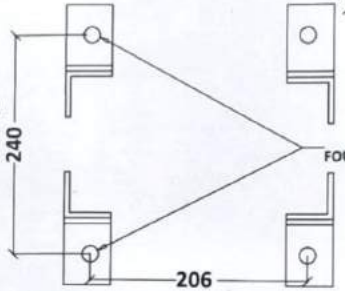
SIDE VIEW



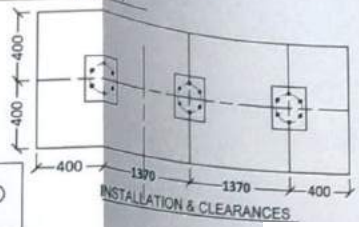
ELEVATION



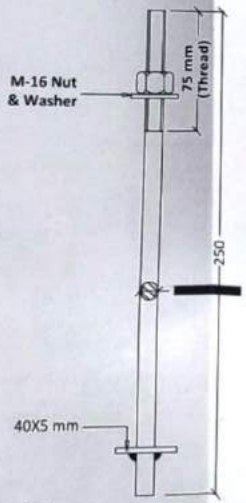
TOP PLAN



FOUNDATION PLAN
(STR. MOUNTING : 240X206 MM)



INSTALLATION & CLEARANCES



3L6 FOUNDATION BOLT

BILL OF MATERIALS

S.N	MARK	ITEM	SECTION & LENGTH	QTY./1-Ph LA (No.)	QTY./3-Ph LA (No.)
1.	3L1	Foundation Base Angle	L65X65X6 X 45	4	12
2.	3L2	Pillar Angle	L40X40X5 X 2694	4	12
			L40X40X5 X 40	4	12
3.	3L3	Top Plate	250X250X6	1	3
4.	3L4	Front-Angle	L40X40X5 X 246	8	24
5.	3L5	Side-Angle	L40X40X5 X 166	10	30
6.	3L6	Foundation Bolt with Nut & Washer		4	12
7.		Hex. Bolt	1/2"X1-1/2"	40	120
8.		Washer	1/2"	40	120
9.		Hex. Nut	1/2"	40	120

NOTE :

1. All Dimensions are in mm unless specified.
2. All Holes should be of 16 mm unless mentioned.
3. All members are of Mild Steel as per IS: 2062 & HDG.
4. Fastners used for assly. of Structure should be M12.
6. 1 Set consists of Three (3) Nos. Mounting Structure.

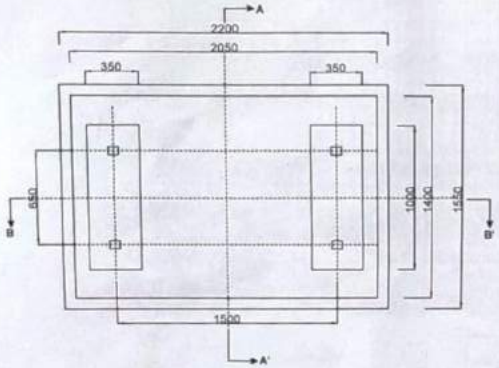
Deputy General Manager
Lower Assam T&T Circle
AEGCL, Narengi, Guwahati-2

	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE
DRN. BY	KRISHNA DEVI			00		1 OF 1	N.T.S	A3
CHKD. BY	M. BURAGOHAIN							
APPVD. BY								

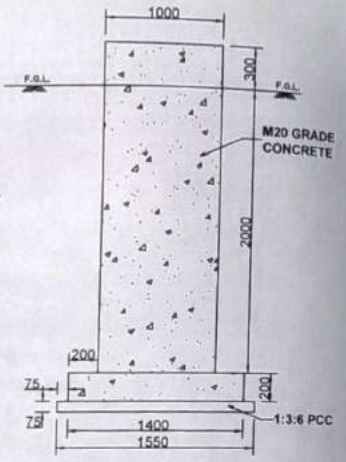
PREPARED BY :
NESTECH ENTERPRISE
Mobile: 9678869331
projects@nestechenterprise.com

CLIENT :	ASAAM ELECTRICITY GRID CORPORATION LIMITED
CONSULTANT :	NESTECH ENTERPRISE projects@nestechenterprise.com
PROJECT :	33KV Bay Extension works at 132/33 kV Sishugram GSS, AEGCL
WO NO & DATE :	AEGCL/DGM/LAC/TT/LS-4(GTD)/2023/269 DTD.03.03.23
DRG. TITLE :	STRUCTURE FOR 30KV-10kA LA (STATION CLASS TYPE) 1 SET = 3 NOS. (STRUCTURE HEIGHT: 2700 MM FROM PLINTH)
DRG. NO. :	AEGCL/ SISHUGRAM- JICA/ STR 30 KV - LA/22-23/06 DATE :06.06.2023

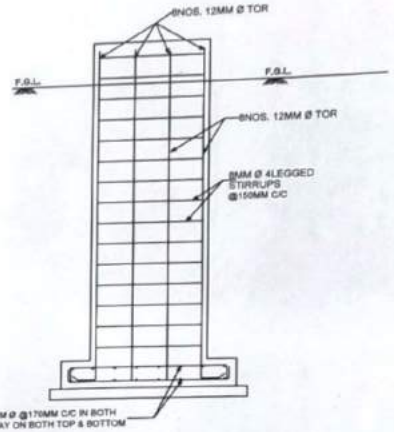
FOUNDATION DETAILS FOR 33KV -VCB



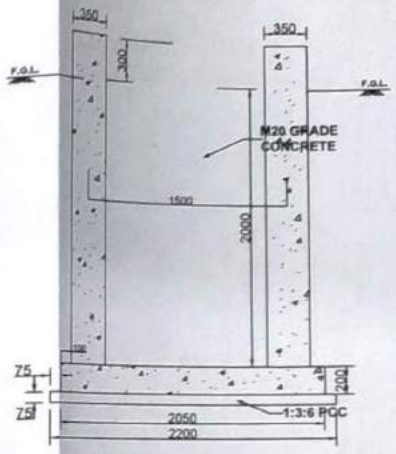
PLAN



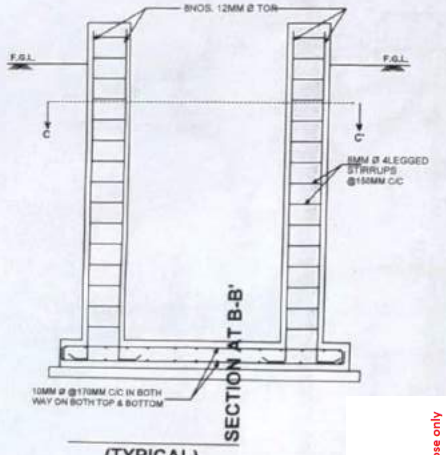
SECTION AT A-A'



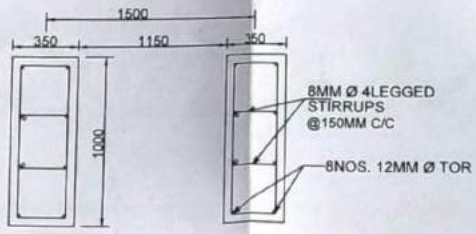
SECTION AT A-A'
(TYPICAL)



SECTION AT B-B'



SECTION AT B-B'
(TYPICAL)



SECTION AT C-C'
(ENLARGED)

NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. TOR STEEL CONFORMS TO I.S. - 1786 (Fe - 415).
3. F.G.L. DENOTES FINISHED GROUND LEVEL.
4. LAP LENGTH SHALL BE 40 TIMES DIA. OF BAR.
5. PROVIDE CLEAR COVER AS UNDER -
   - 50mm FOR BOTTOM & TOP REINFORCEMENT OF RAFT,
   - 50mm FOR SIDE REINFORCEMENT OF RAFT,
   - 40mm FOR COLUMN REINFOREMENT.
6. DO NOT SCALE THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
7. ANCHOR BOLTS AND OTHER EMBEDDED FIXTURES SHALL BE EMBEDDED DIRECTLY INTO CONCRETE WITH NECESSARY TEMPLATE.
8. UNLESS OTHERWISE NOTED ALL CONCRETE SHALL BE OF GRADE M:20.
9. SAFE BEARING CAPACITY OF SOIL IS - 200 KN/SQ.M.

	NAME	SIGNATURE	DATE
DRN. BY	KRISHNA DEVI		
CHKD. BY	M. BURAGOHAIN		
APPVD. BY			

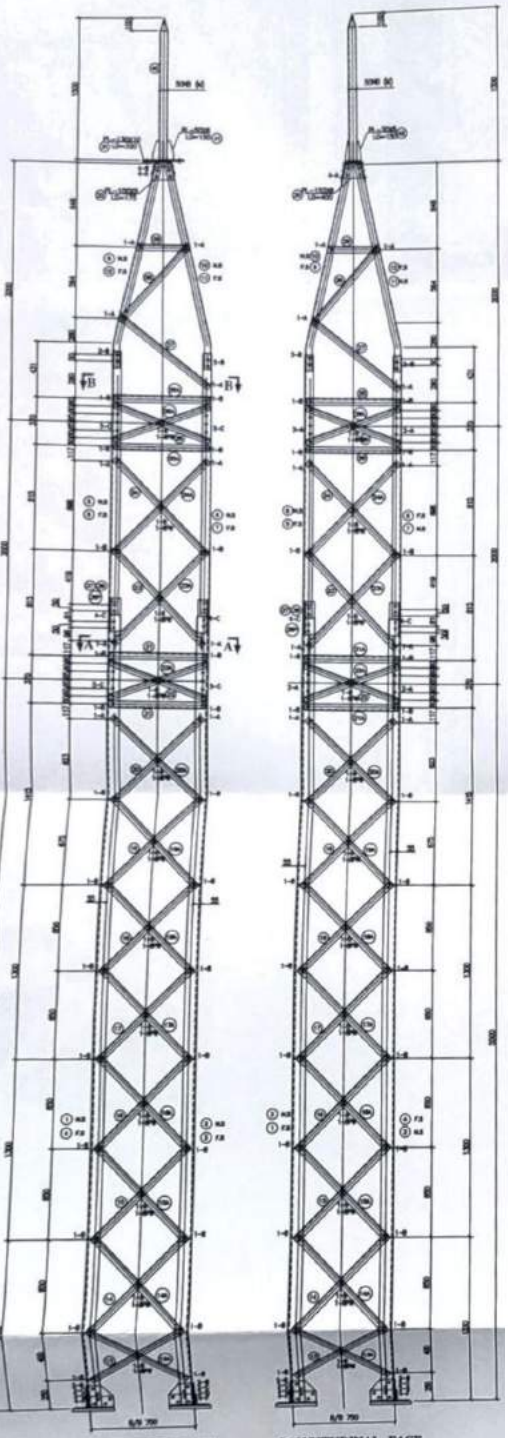
SHEET NO.	SCALE	SHEET SIZE	PREPARED BY :
OF 1	N.T.S	A3	NESTECH ENTERPRISE Mobile: 9678869331 projects@nestechenterprise.com

CLIENT :	ASAAM ELECTRICITY GRID CORPORATION LIMITED
CONSULTANT :	NESTECH ENTERPRISE projects@nestechenterprise.com
PROJECT :	33KV Bay Extension works at 132/33 kV Sishugram GSS, AEGCL
WO NO & DATE :	AEGCL/DGM/LAC/TT/LS-I(GTD)/2023/269 DTD.03.03.23
DRG. TITLE :	FOUNDATION DETAILS FOR 33KV - VCB
DRG. NO. :	AEGCL/ SISHUGRAM- JICA/ FDN 33 KV - VCB /22-23/01 DATE :06.06.2023

Deputy General Manager
Lower Assam T&T Circle
AEGCL, Narengi, Guwahati-2

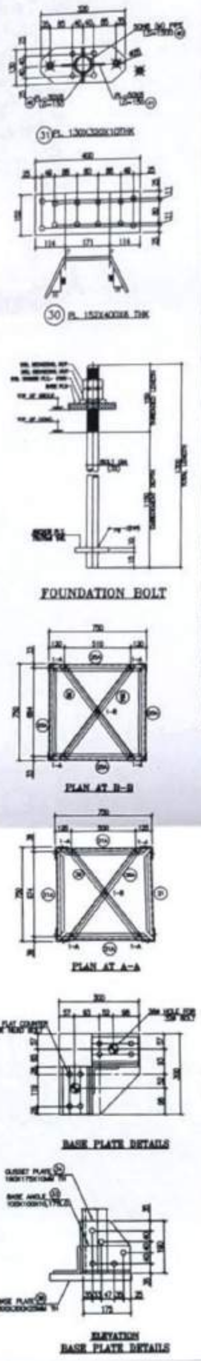
AEGCL, Paltanbazar, Guwahati-1

33KV COLUMN C7 WITH PEAK

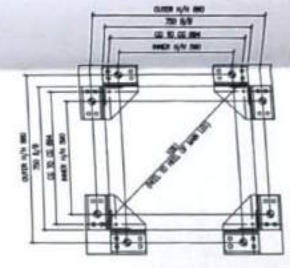


TRANSVERSE FACE

LONGITUDINAL FACE



BILL OF MATERIAL								
SL. NO.	MARK NO.	SECTION (MM)	LENGTH (MM)	WIDTH (MM)	UNIT WT. (KG/MTR)	WT. PER PC. (KGS.)	QTY./SET (NOS.)	WT. PER SET (KGS.)
1	C7-1	MS L90X90X8	6000		10.80	64.800	1	64.800
2	C7-2	MS L90X90X8	6000		10.80	64.800	1	64.800
3	C7-3	MS L90X90X8	6000		10.80	64.800	1	64.800
4	C7-4	MS L90X90X8	6000		10.80	64.800	1	64.800
5	C7-5	MS L65X65X5	2044		4.90	10.016	1	10.016
6	C7-6	MS L65X65X5	2044		4.90	10.016	1	10.016
7	C7-7	MS L65X65X5	2044		4.90	10.016	1	10.016
8	C7-8	MS L65X65X5	2044		4.90	10.016	1	10.016
9	C7-9	MS L50X50X5	1622		3.80	6.164	1	6.164
10	C7-10	MS L50X50X5	1622		3.80	6.164	1	6.164
11	C7-11	MS L50X50X5	1622		3.80	6.164	1	6.164
12	C7-12	MS L50X50X5	1622		3.80	6.164	1	6.164
13	C7-13	MS L45X45X5	804		3.40	2.734	4	10.936
14	C7-13A	MS L45X45X5	804		3.40	2.734	4	10.936
15	C7-14	MS L45X45X5	962		3.40	3.271	4	13.084
16	C7-14A	MS L45X45X5	962		3.40	3.271	4	13.084
17	C7-15	MS L45X45X5	962		3.40	3.271	4	13.084
18	C7-15A	MS L45X45X5	962		3.40	3.271	4	13.084
19	C7-16	MS L45X45X5	962		3.40	3.271	4	13.084
20	C7-16A	MS L45X45X5	962		3.40	3.271	4	13.084
21	C7-17	MS L45X45X5	962		3.40	3.271	4	13.084
22	C7-17A	MS L45X45X5	962		3.40	3.271	4	13.084
23	C7-18	MS L45X45X5	962		3.40	3.271	4	13.084
24	C7-18A	MS L45X45X5	962		3.40	3.271	4	13.084
25	C7-19	MS L45X45X5	980		3.40	3.332	4	13.328
26	C7-19A	MS L45X45X5	980		3.40	3.332	4	13.328
27	C7-20	MS L45X45X5	944		3.40	3.210	4	12.840
28	C7-20A	MS L45X45X5	944		3.40	3.210	4	12.840
29	C7-21	MS L50X50X5	720		3.80	2.736	4	10.944
30	C7-21A	MS L50X50X5	720		3.80	2.736	4	10.944
31	C7-22	MS L45X45X5	765		3.40	2.601	4	10.404
32	C7-22A	MS L45X45X5	765		3.40	2.601	4	10.404
33	C7-23	MS L45X45X5	1012		3.40	3.441	4	13.764
34	C7-23A	MS L45X45X5	1012		3.40	3.441	4	13.764
35	C7-24	MS L45X45X5	1018		3.40	3.461	4	13.844
36	C7-24A	MS L45X45X5	1018		3.40	3.461	4	13.844
37	C7-25	MS L50X50X5	720		3.80	2.736	4	10.944
38	C7-25A	MS L50X50X5	720		3.80	2.736	4	10.944
39	C7-26	MS L45X45X5	765		3.40	2.601	4	10.404
40	C7-26A	MS L45X45X5	765		3.40	2.601	4	10.404
41	C7-27	MS L45X45X5	860		3.40	2.924	4	11.696
42	C7-28	MS L45X45X5	788		3.40	2.679	4	10.716
43	C7-29	MS L45X45X5	401		3.40	1.363	4	5.452
44	C7-30	6mm Plate	404	152	47.10	2.892	1	2.892
45	C7-31	10mm Plate	320	130	78.50	3.266	1	3.266
46	C7-32	6mm Plate	175	100	47.10	0.824	2	1.648
47	C7-33	MS L100X100X10	175	15	14.90	2.608	4	10.432
48	C7-33A	MS L100X100X10	175	15	14.90	2.608	4	10.432
49	C7-34	10mm Plate	190	175	78.50	2.610	8	20.880
50	C7-35	25mm Plate	300	300	196.25	17.663	4	70.652
51	C7-36	6mm Plate	256	50	47.10	0.603	8	4.824
52	C7-36P	3mm Plate	125	50	23.55	0.147	8	1.176
53	C7-37	MS L75X75X6	256		6.80	1.741	4	6.964
54	C7-38	MS L45X45X5	904		3.40	3.074	2	6.148
55	C7-38A	MS L45X45X5	904		3.40	3.074	2	6.148
56	C7-39	MS L45X45X5	890		3.40	3.026	2	6.052
57	C7-39A	MS L45X45X5	890		3.40	3.026	2	6.052
58	C7-40	50NB (M) Pipe	1500		5.18	7.770	1	7.770
59	C7-41	6mm Plate	150	50	47.10	0.353	2	0.706
60	C7-42	6mm Plate	150	30	47.10	0.212	2	0.424
Total Weight Of Structure In Kgs.								863.906



FOUNDATION DETAILS

NOTES:

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. BOLT SYMBOLS 12# ◆ = 13.5# HOLES
   16# ○ = 17.5# HOLES
   16# STEP BOLT O = 17.5# HOLES DIAGONALLY OPPOSITE LEGS
   22# ▣ = 20# HOLES
3. ALL ERECTION MARKS ARE TO BE PREFIXED WITH "C7–"
4. STRUCTURAL STEEL SHALL BE AS FOLLOWS
   (I) MILD STEEL – IS:2062 WITH YEILD STRESS Fy=2550KG/SQ.CM
   (II) HIGH TENSILE STEEL–IS:8500 Fe 490B
5. BOLTS & NUTS AS PER IS:12427–1988, CONFIRMING TO GRADE–5.6.
6. GALVANISING SHALL CONFORM TO IS:2629–1985 & IS:4759–1996
7. SPRING WASHER SHALL BE CONFIRM TO IS 3063–1994

For Tender Reference Purpose only

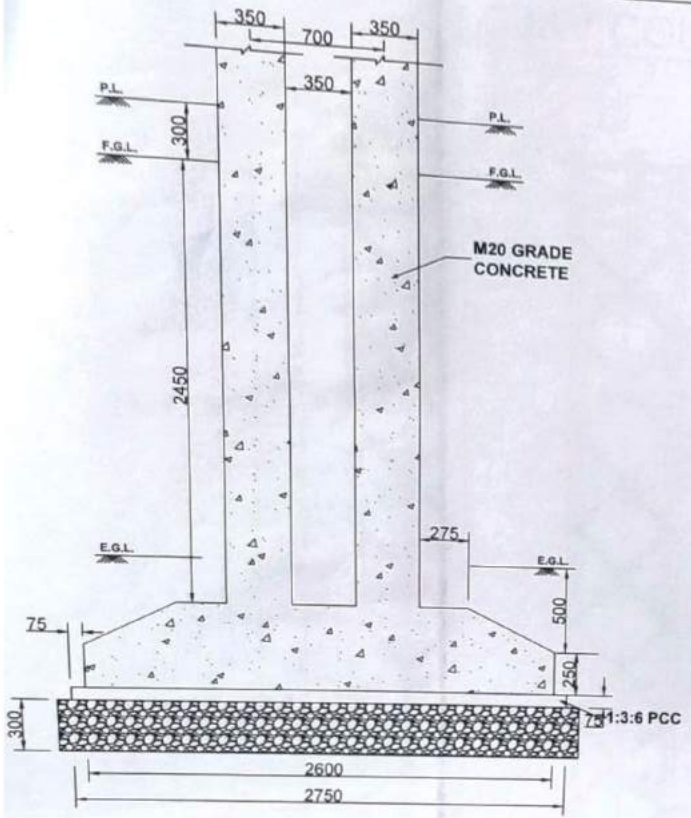
BOLTS AND NUTS STATEMENT		
TYPE	SIZE	QTY.
A	[illegible]	[illegible]
B	[illegible]	[illegible]
C	[illegible]	[illegible]
D	[illegible]	16
E	[illegible]	–
F	[illegible]	[illegible]
G	[illegible]	–
H	[illegible]	–
J	[illegible]	–
K	[illegible]	–
SPRING WASHER [illegible]		420
6mm THICK PLAIN WASHER		[illegible]
8mm THICK PLAIN WASHER		40
10mm THICK PLAIN WASHER		–
12mm THICK PLAIN WASHER		–
STEP BOLTS M16 X175 LG		–

For Tender Reference Purpose only

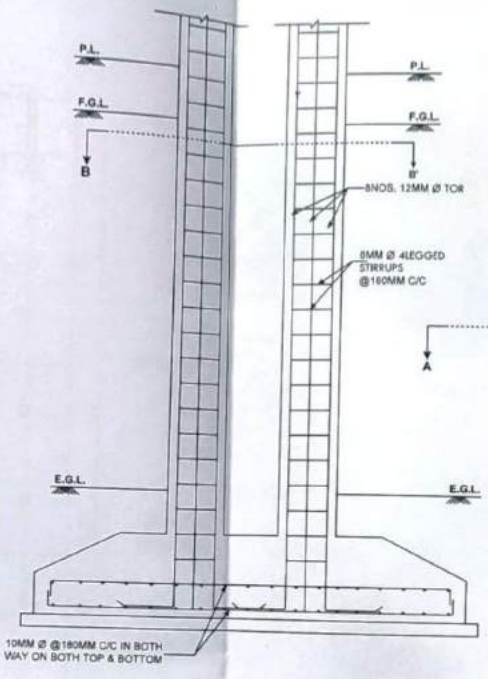
	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE	
DRN. BY	H. NONGRANG			01		1 OF 1	N.T.S	A3	ALL DIMENSIONS ARE IN MM.
CHKD. BY	M. BURAGOHAIN								
APPVD. BY									

LOCATION: SISHUGRAM

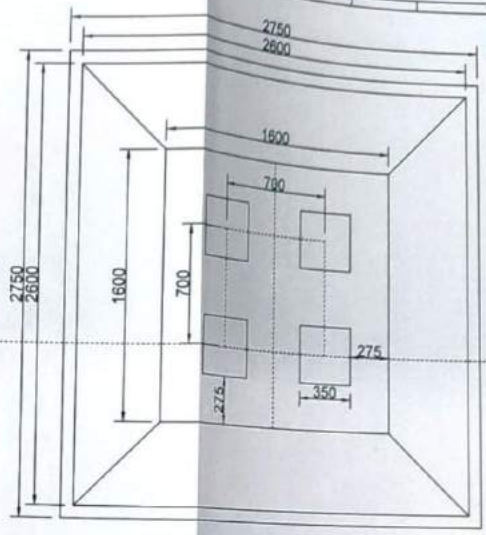
CLIENT :	ASSAM ELECTRICITY GRID CORPORATION LTD
WO NO :	AEGCL/DGM/LAC/TT/TLS-4(GTD)/2023/269 dated 03/03/20232
CONSULTANT :	NESTECH ENTERPRISE , GUWAHATI, ASSAM PH 9678869331
DRG. TITLE :	33KV TOWER COLUMN WITH PEAK
DRG. NO. :	NES/AEGCL/SISHUGRAM/C7/01 — DATE : 01.05.23



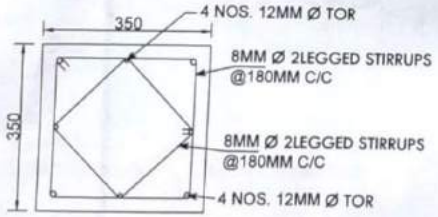
SECTION AT A-A'



SECTION AT A-A'
(TYPICAL)



SECTION AT A-A'



SECTION AT B-B'
(ENLARGED)

NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. TOR STEEL CONFORMS TO I.S. - 1786 (Fe - 415).
3. F.G.L. DENOTES FINISHED GROUND LEVEL.
4. LAP LENGTH SHALL BE 40 TIMES DIA. OF BAR.
5. PROVIDE CLEAR COVER AS UNDER -
   - 50mm FOR BOTTOM & TOP REINFORCEMENT OF RAFT,
   - 50mm FOR SIDE REINFORCEMENT OF RAFT,
   - 40mm FOR COLUMN REINFOREMENT.
6. DO NOT SCALE THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
7. ANCHOR BOLTS AND OTHER EMBEDDED FIXTURES SHALL BE EMBEDDED DIRECTLY INTO CONCRETE WITH NECESSARY TEMPLATE.
8. UNLESS OTHERWISE NOTED ALL CONCRETE SHALL BE OF GRADE M:20.
9. SAFE BEARING CAPACITY OF SOIL IS - 200 KN/SQ.M.

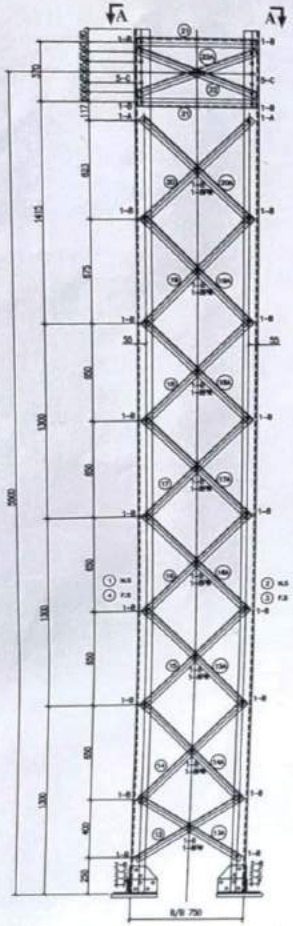
Deputy General Manager
Lower Assam T&T Circle
AEGCL, Narangi, Guwahati-26

WO NO & DATE :	AEGCL/DGM/LAC/TT/LS-4(GTD)/2023/269 DTD.03.03.23
TITLE	FOUNDATION DETAILS FOR 33KV TOWER TYPE-"C7" WITH PEAK
CLIENT	ASSAM ELECTRICITY GRID CORPORATION LIMITED
CONSULTANT	NESTECH ENTERPRISE, Email-@nestechenterprise.com Mob # 9678869331 # 6026801607
DRAWN BY	REHANA PARVEEN
SCALE :	NOT TO SCALE
DATE :	

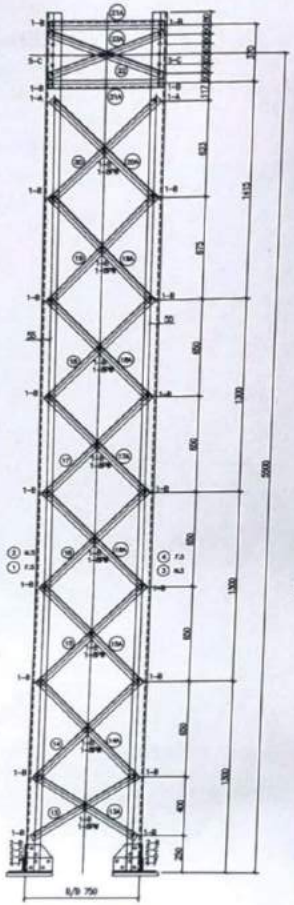
APPROVED BY :

CHECKED BY : | DESIGNED BY : | DRAWN BY :

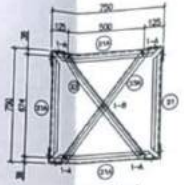
33KV COLUMN C5 WITHOUT PEAK



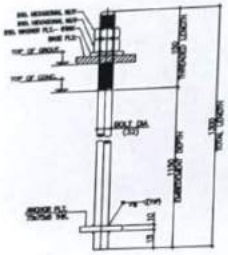
TRANSVERSE FACE



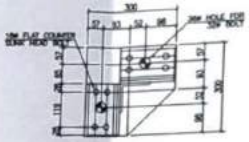
LONGITUDINAL FACE



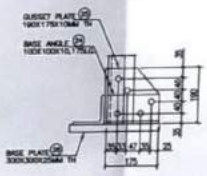
PLAN AT A-A



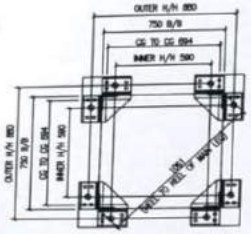
FOUNDATION BOLT



BASE PLATE DETAILS



ELEVATION
BASE PLATE DETAILS



FOUNDATION DETAILS

BILL OF MATERIAL

SL. NO.	MARK NO.	SECTION (mm)	LENGTH (MM)	WIDTH (MM)	UNIT WT. (KG/MTR)	WT. PER SET (KGS.)	QTY./SET (NOS.)	WT. PER SET (KGS.)
1	C5-1	MS L200X200	8000	10.80	10.80	64.800	1	64.800
2	C5-1	MS L200X200	8000	10.80	10.80	64.800	1	64.800
3	C5-1	MS L200X200	8000	10.80	10.80	64.800	1	64.800
4	C5-1	MS L200X200	8000	10.80	10.80	64.800	1	64.800
5	C5-1	MS L200X200	8000	10.80	10.80	64.800	1	64.800
6	C5-2	MS L65X65X5	2044	4.90	4.90	10.018	1	10.018
7	C5-7	MS L65X65X5	2044	4.90	4.90	10.018	1	10.018
8	C5-8	MS L65X65X5	2044	4.90	4.90	10.018	1	10.018
9	C5-9	MS L50X50X5	1422	3.80	3.80	5.184	1	5.184
10	C5-10	MS L50X50X5	1422	3.80	3.80	5.184	1	5.184
11	C5-11	MS L50X50X5	1422	3.80	3.80	5.184	1	5.184
12	C5-12	MS L50X50X5	1422	3.80	3.80	5.184	1	5.184
13	C5-13	MS L45X45X5	854	3.40	3.40	2.734	4	10.936
14	C5-13A	MS L45X45X5	854	3.40	3.40	2.734	4	10.936
15	C5-14	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
16	C5-14A	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
17	C5-15	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
18	C5-15A	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
19	C5-16	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
20	C5-16A	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
21	C5-17	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
22	C5-17A	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
23	C5-18	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
24	C5-18A	MS L45X45X5	962	3.40	3.40	3.271	4	13.084
25	C5-19	MS L45X45X5	980	3.40	3.40	3.332	4	13.328
26	C5-19A	MS L45X45X5	980	3.40	3.40	3.332	4	13.328
27	C5-20	MS L45X45X5	944	3.40	3.40	3.210	4	12.840
28	C5-20A	MS L45X45X5	944	3.40	3.40	3.210	4	12.840
29	C5-21	MS L50X50X5	720	3.80	3.80	2.736	4	10.944
30	C5-21A	MS L50X50X5	720	3.80	3.80	2.736	4	10.944
31	C5-22	MS L45X45X5	785	3.40	3.40	2.801	4	10.404
32	C5-22A	MS L45X45X5	785	3.40	3.40	2.801	4	10.404
33	C5-23	MS L45X45X5	990	3.40	3.40	3.028	2	6.056
34	C5-23A	MS L45X45X5	990	3.40	3.40	3.028	2	6.056
35	C5-24	MS L100X100X10	175	14.90	14.90	2.608	4	10.432
36	C5-24A	MS L100X100X10	175	14.90	14.90	2.608	4	10.432
37	C5-25	10mm Plate	180	175	78.50	2.610	8	20.880
38	C5-26	25mm Plate	300	300	196.25	17.663	4	70.652
		Total Weight Of Structure In Kgs.						696.164

NOTES:

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. BOLT SYMBOLS 12ø ● = 13.5ø HOLES
   16ø ○ = 17.5ø HOLES
   16ø STEP BOLT ○ = 17.5ø HOLES DIAGONALLY OPPOSITE LEGS
   22ø ⊠ = 20ø HOLES
3. ALL ERECTION MARKS ARE TO BE PREFIXED WITH "C5-"
4. STRUCTURAL STEEL SHALL BE AS FOLLOWS
   (i) MILD STEEL – IS:2062 WITH YEILD STRESS Fy=2550KG/SQ.CM
   (ii) HIGH TENSILE STEEL-IS:8500 Fe 490B
5. BOLTS & NUTS AS PER IS:12427-1988, CONFIRMING TO GRADE-5.6.
6. GALVANISING SHALL CONFORM TO IS:2629-1985 & IS:4759-1996
7. SPRING WASHER SHALL BE CONFIRM TO IS 3063-1994

Deputy General Manager
Lower Assam T&T Circle
AEGCL, Narengi, Guwahati-26

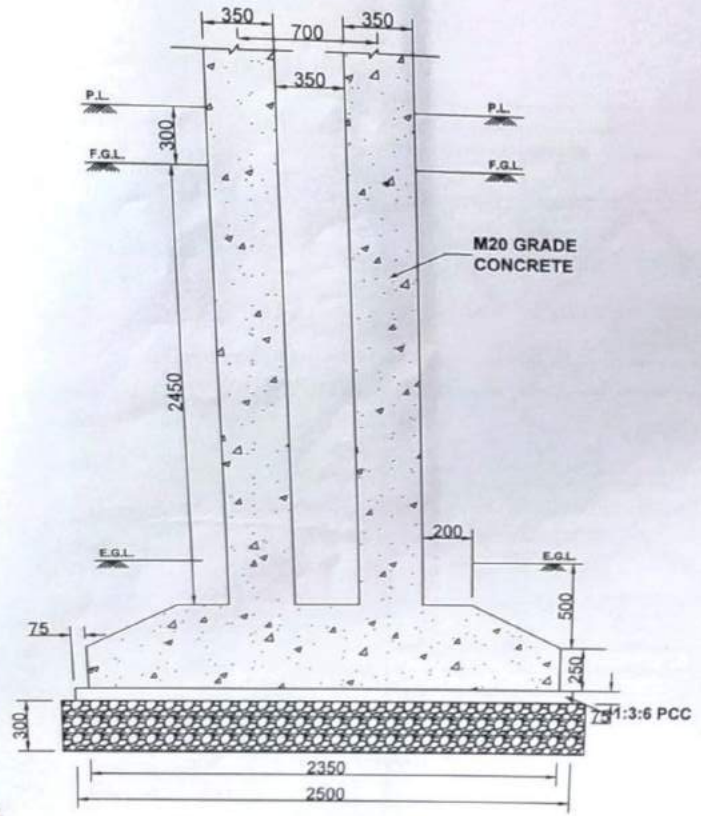
BOLTS AND NUTS STATEMENT

TYPE	SIZE	QTY.
A	ø 16 X 35 mm	16
B	ø 16 X 40 mm	130
C	ø 16 X 45 mm	56
D	ø 16 X 50 mm	16
E	ø 16 X 55 mm	–
F	ø 16 X 60 mm	32
G	ø 16 X 65 mm	–
H	ø 16 X 70 mm	–
I	ø 16 X 75 mm	–
K	ø 16 X 85 mm	–
SPRING WASHER 3.5 Thk. –M16ø		250
6mm THICK PLAIN WASHER		–
8mm THICK PLAIN WASHER		32
10mm THICK PLAIN WASHER		–
12mm THICK PLAIN WASHER		–
STEP BOLTS M16 X175 LG		–

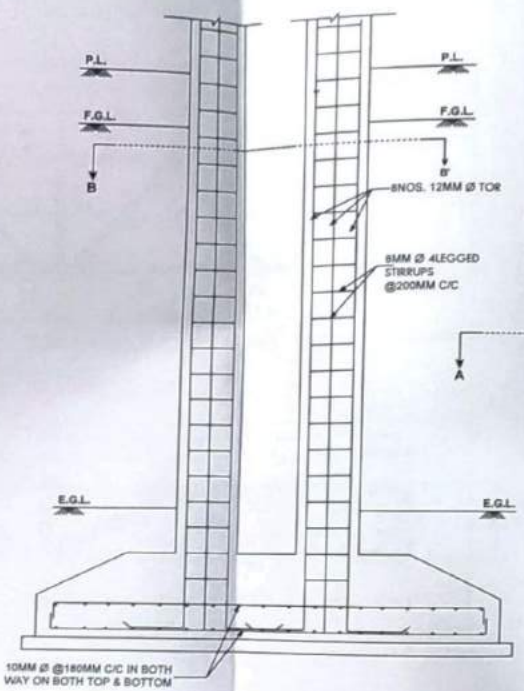
	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE
DRN. BY	N.BORO			01		1 OF 1	N.T.S	A3
CHKD. BY	M. BURAGOHAIN							
APPVD. BY								

ALL DIMENSIONS ARE IN MM.

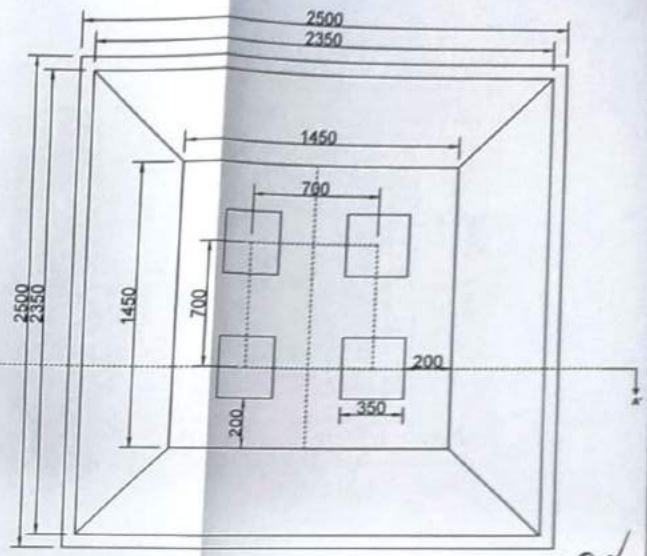
CLIENT :	ASSAM ELECTRICITY GRID CORPORATION LTD
CONSULTANT :	NESTECH ENTERPRISE , GUWAHATI, ASSAM PH 9678869331
DRG. TITLE :	33KV COLUMN C5 WITHOUT PEAK
DRG. NO. :	NES/AEGCL/C5/23-24/01 DATE : 26.05.23



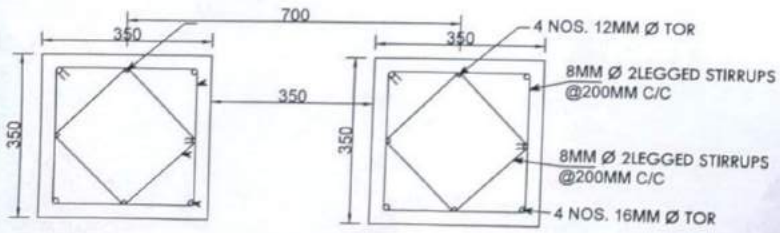
SECTION AT A-A'



SECTION AT A-A'
(TYPICAL)



SECTION AT A-A'



SECTION AT B-B'
(ENLARGED)

NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. TOR STEEL CONFORMS TO I.S. - 1786 (Fe - 415).
3. F.G.L. DENOTES FINISHED GROUND LEVEL.
4. LAP LENGTH SHALL BE 40 TIMES DIA. OF BAR.
5. PROVIDE CLEAR COVER AS UNDER -
   - 50mm FOR BOTTOM & TOP REINFORCEMENT OF RAFT,
   - 50mm FOR SIDE REINFORCEMENT OF RAFT,
   - 40mm FOR COLUMN REINFOREMENT.
6. DO NOT SCALE THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
7. ANCHOR BOLTS AND OTHER EMBEDDED FIXTURES SHALL BE EMBEDDED DIRECTLY INTO CONCRETE WITH NECESSARY TEMPLATE.
8. UNLESS OTHERWISE NOTED ALL CONCRETE SHALL BE OF GRADE M:20.
9. SAFE BEARING CAPACITY OF SOIL IS - 200 KN/SQ.M.

Deputy General Manager
Lower Assam T&T Circle
AEGCL, Narengi, Guwahati-26

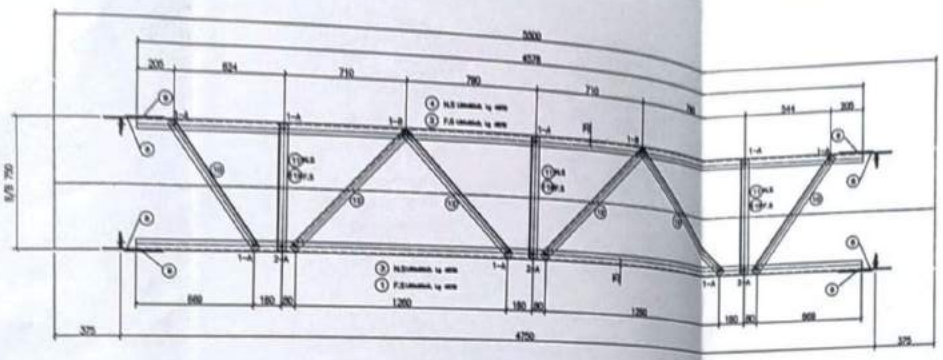
WO NO & DATE :	AEGCL/DGM/LAC/TT/LS-4(GTD)/2023/269 DTD.03.03.23
TITLE	FOUNDATION DETAILS FOR 33KV TOWER TYPE-"C5"
CLIENT	ASSAM ELECTRICITY GRID CORPORATION LIMITED
CONSULTANT	NESTECH ENTERPRISE, Email-@nestechenterprise.com Mob # 9678869331 # 6026801607
DRAWN BY	REHANA PARVEEN
SCALE :	NOT TO SCALE
DATE :	
APPROVED BY :	

CHECKED BY :

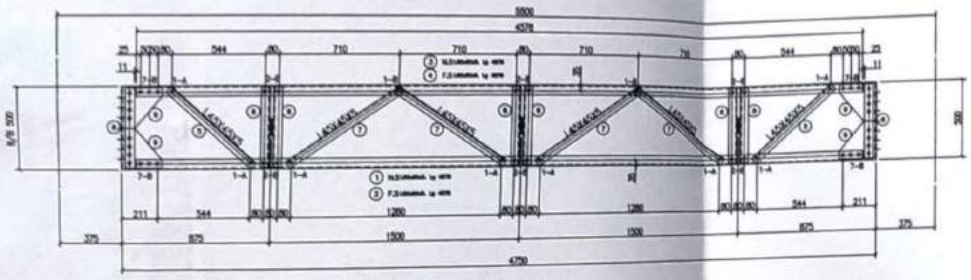
DESIGNED BY :

DRAWN BY :

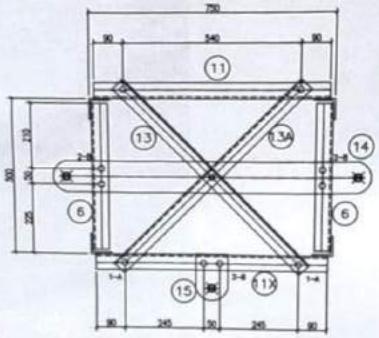
33KV BEAM B5



TOP & BOTTOM PLAN

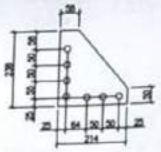


ELEVATION
(NRAR & FAR)



SECTION A–A

(14) PL 100X978X8THK



(9) PL 214X238X8THK

(15) PL 151X100X8THK

BILL OF MATERIAL

SL. NO.	MARK NO.	SECTION (MM)	LENGTH (MM)	WIDTH (MM)	UNIT WT. (KG/MTR)	WT. PER PC. (KGS.)	QTY./SET (NOS.)	WT. PER SET (KGS.)
1	B5-1	MS L60X60X5	4578	4.50	4.50	20.601	1	20.601
2	B5-2	MS L60X60X5	4578	4.50	4.50	20.601	1	20.601
3	B5-3	MS L60X60X5	4578	4.50	4.50	20.601	1	20.601
4	B5-4	MS L60X60X5	4578	4.50	4.50	20.601	1	20.601
5	B5-5	MS L45X45X5	683	3.40	3.40	2.322	4	9.288
6	B5-6	MS L50X50X6	480	4.50	4.50	2.160	12	25.920
7	B5-7	MS L45X45X5	813	3.40	3.40	2.764	4	11.056
8	B5-7X	MS L45X45X5	813	3.40	3.40	2.764	4	11.056
9	B5-8	MS L75X75X6	500	6.80	6.80	3.400	4	13.600
10	B5-9	8mm Plate	236	214	62.80	3.199	8	25.592
11	B5-10	MS L45X45X5	873	3.40	3.40	2.968	4	11.872
12	B5-11	MS L50X50X6	730	4.50	4.50	3.285	3	9.855
13	B5-11X	MS L50X50X6	730	4.50	4.50	3.285	3	9.855
14	B5-12	MS L45X45X5	977	3.40	3.40	3.322	4	13.288
15	B5-12X	MS L45X45X5	977	3.40	3.40	3.322	4	13.288
16	B5-13	MS L45X45X5	826	3.40	3.40	2.808	3	8.424
17	B5-13A	MS L45X45X5	826	3.40	3.40	2.808	3	8.424
18	B5-14	8mm Plate	978	100	62.80	6.142	3	18.426
19	B5-14P	8mm Plate	100	50	62.80	0.314	15	4.710
20	B5-15	8mm Plate	151	100	62.80	0.948	3	2.844
	Total Weight Of Structure In Kgs.							279.902

NOTES:

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. BOLT SYMBOLS 12# ● = 13.5ø HOLES
   16# ○ = 17.5ø HOLES
   16# STEP BOLT ○ = 17.5ø HOLES DIAGONALLY OPPOSITE LEGS
   23# ◉ = 20ø HOLES
3. ALL ERECTION MARKS ARE TO BE PREFIXED WITH "B5–"
4. STRUCTURAL STEEL SHALL BE AS FOLLOWS
   (i) MILD STEEL – IS:2062 WITH YEILD STRESS Fy=2550KG/SQ.CM
   (ii) HIGH TENSILE STEEL–IS:8500 Fe 490B
5. BOLTS & NUTS AS PER IS:12427–1988, CONFIRMING TO GRADE–5.6.
6. GALVANISING SHALL CONFORM TO IS:2629–1985 & IS:4759–1996
7. SPRING WASHER SHALL BE CONFIRM TO IS 3063–1994

BOLTS AND NUTS STATEMENT

TYPE	SIZE	QTY.
A	ø 16 X 35 mm	16
B	ø 16 X 40 mm	130
C	ø 16 X 45 mm	56
D	ø 16 X 50 mm	16
E	ø 16 X 55 mm	–
F	ø 16 X 60 mm	32
G	ø 16 X 65 mm	–
H	ø 16 X 70 mm	–
J	ø 16 X 75 mm	–
K	ø 16 X 85 mm	–
SPRING WASHER 3.5 Thk.–M16ø		250
6mm THICK PLAIN WASHER		–
8mm THICK PLAIN WASHER		32
10mm THICK PLAIN WASHER		–
12mm THICK PLAIN WASHER		–
STEP BOLTS M16 X175 LG		–

	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE
DRN. BY	N.BORO			01		1 OF 1	N.T.S	A3
CHKD. BY	M. BURAGOHAIN							
APPVD. BY								

ALL DIMENSIONS ARE IN MM.

CLIENT :	ASSAM ELECTRICITY GRID CORPORATION LTD
CONSULTANT :	NESTECH ENTERPRISE , GUWAHATI, ASSAM PH 9678869331
DRG. TITLE :	33KV BEAM B5
DRG. NO. :	NES/AEGCL/BEAM/23-24/01
DATE : 26.05.23	

Nestech Enterprise

House No 116,Opposite Reliance
Smart,Jayanagar, Guwahati

GSTIN: 18EBJPK1159Q1ZY
Email: purchase@nestechenterprise.com
accounts@nestechenterprise.com
Phone: 6026801607/ 9678869331
Whatsapp: 6026801607

EARTHING MAT DESIGN FOR 33 KV BAY EXTENSION AT 132/33 KV SISHUGRAM SS

As per ANSI/IEEE Std 80-1986 code

IEEE Std 80 Equation 52 gives the simplified method as modified by Sverak to include the effect of earthing grid depth:

$$R_g = \rho\left[\frac{1}{L_T} + \frac{1}{\sqrt{20A}}\left(1 + \frac{1}{1 + h\sqrt{20/A}}\right)\right]$$

Where R_g is the earthing grid resistance with respect to remote earth (Ω)
ρ is the soil resistivity (Ω.m)
L_T is the total length of buried conductors (m)
A is the total area occupied by the earthing grid (m^2)
h is the depth of the earthing grid (m)

										1st	2nd	
rho	ohm-m				20		Grid Parameters					
L_T	Total Length buried grid (m)				245.00		L		25.0	0.0		
A	Area (sq.m.)				500		W		20.0	0.0		
h	Depth of grid (m)				0.6		spacing		5	0.0		
							Length		245.00	-		
First Term			0.0041				Area		500	0		
Second term			0.0100									
3rd term denominator			1.1200				L/R Ratio		1.25			
							No of Parallel grid Conductors in Columns =					6.00
Rg -- Prilim	ohm		0.4602				No of Parallel grid Conductors in rows =					5.00

Schwarz Equations

$$R_g = \frac{R_1 R_2 - R_m^2}{R_1 + R_2 - 2R_m}$$

Where R_g is the earthing grid resistance with respect to remote earth (Ω)
R_1 is the earth resistance of the grid conductors (Ω)
R_2 is the earth resistance of the earthing electrodes (Ω)
R_m is the mutual earth resistance between the grid conductors and earthing electrodes (Ω)

Where

$$R_1 = \frac{\rho}{\pi L_c}\left[\ln\left(\frac{2L_c}{a'}\right) + \frac{k_1 L_c}{\sqrt{A}} - k_2\right]$$

$$R_2 = \frac{\rho}{2\pi n_r L_r}\left[\ln\left(\frac{4L_r}{b}\right) - 1 + \frac{2k_1 L_r}{\sqrt{A}}\left(\sqrt{n_r} - 1\right)^2\right]$$

$$R_m = \frac{\rho}{\pi L_c}\left[\ln\left(\frac{2L_c}{L_r}\right) + \frac{k_1 L_c}{\sqrt{A}} - k_2 + 1\right]$$

rho	soil Resistivity (Ohm -meter)			20		GI Flat	L (mm)	65			
Lc	Length of buried earthing electrode			245.00			B (mm)	12			
a'	is sqrt(r 2h) for conductors of radius r buried at depth h --- r for conductors on surface			0.138		Grid conductor size (mm2)				780	
h	Conductors Buried at depth (m)			0.6		Effective Radius (mm)				15.8	
r	Cross Sectional radius of earth conductor (m)			0.016		Effective radius (m)				0.016	
A	Total Area Covered By Earth Conductor (Sq mts)			500							
Lr	Length of each earthing Electrode (Mts)			3		Required Grid Conductor Size(Sq mm)				204.0047	
nr	Number of Earthing Electrodes in Area			9							
b	Cross Sectional radius of earthing Electrode (m)			0.02							
K1	Constant Cofficienct Depending on Grid			1.1375		sqrt(A)/10	2.24				
	For h = 0	k1 = -0.04L/R + 1.41		1.36		sqrt(A)/6	3.73				
	For h = sqrt(A)/10	k1 = -0.05L/R + 1.2		1.1375							
	For h = sqrt(A)/6	k1 = -0.05L/R + 1.13		1.0675							
k2	Constant Cofficienct Depending on Grid			4.805							
	For h = 0	k2 = 5.5 + 0.15L/R		5.6875							
	For h = sqrt(A)/10	k2 = 4.68 + .10 L/R		4.805							
	For h = sqrt(A)/6	k2 = 4.4 + 0.05L/R		4.4625							

R1 is earth grid resistance (ohm)
R2 is earth rod resistanace (ohm)
Rm is mutual earth resistance (ohm)

							Ω				
	1st Term	2nd Term	3rd Term	4th Term	5th Term						
R1	0.026	8.178	12.463	- 4.805			0.412				
R2	0.118	6.397	- 1.000	0.305	4.000		0.780				
Rm	0.026	2.590	12.463	- 3.805			0.292				
			Nr	Dr							
		Rg	0.236	0.607		0.388					

$$C_s = 1 - \frac{0.09\left(1 - \frac{\rho}{\rho_s}\right)}{2h_s + 0.09}$$

rho is soil resistivity (ohm-m)						20					
rho-s is resitivity of surface layer material (ohm-m)						3000					
hs is thickness of surface layer (m)						0.18					
Cs is surface layer derating factor						0.801					
Numerator	Denominator										
0.0894	0.45										

- 50kg person: $E_{touch,50} = (1000 + 1.5C_s\rho_s)\frac{0.116}{\sqrt{t_s}}$
- 70kg person: $E_{touch,70} = (1000 + 1.5C_s\rho_s)\frac{0.157}{\sqrt{t_s}}$

Fault Clearing time		Ts				0.15					
		First Term	2nd Term								
Etouch,50		4,606	0.299510712			1,379.5					
Etouch,70		4,606	0.405372257			1,867.1					
Maximum Fault Current (Amps)						25000					
Current Division Factor (Sf)						0.52					

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	Decrement Factor for 30 Cycles i.e. 0.5 Sec As per IEEE Stad 80 Clause 15.10					1.00		As per IEEE Std 80				
	symmetrical grid current (Amps)	If x Sf x Df				13082						
								As per IEEE Std 80 (1 transmission line , 1 feeders)				
	GPR					5077.1		Sf	0.91+j0.485	As per Table C.1		
	If GPR > Etouch then detailed verification is required							Nr	1.0311765			
								Dr	1.9706154			
	Mesh Voltage Calculation :											
								Sf	0.523			
	The mesh voltage is the maximum touch voltage within a mesh of an earthing grid and is derived from IEEE Std 80 Equation 80:											
	$E_m = \frac{\rho_s K_m K_i I_G}{L_M}$	Em (v)		715.29								
	rho-s	soil Resistivity (Ohm -meter)		20								
	I_G	is the maximum grid current found earlier in Step 4 (A)		13081.9								
	Km	geometric spacing factor		0.508								
	K_i	Irregularity Factor		1.561								
	L_M	effective buried length of the grid		289.937								
	Geometric Spacing Factor											
							1st term	2nd term				
	D	spacing between parallel grid conductors (m)		5			5.000	5.000				
	h	depth of buried grid conductors (m)		0.600								
	d	cross-sectional diameter of a grid conductor (m)		0.032								
	Kh	weighting factor for depth of burial		1.265								
	Kii	weighting factor for earth electrodes /rods on the corner mesh		1.000								
		Kii=1for grids with earth electrodes along the grid perimeter or corners										
	$K_{ii} = \frac{1}{2n^{n/2}}$	for grids with no earth electrodes on the corners or on the perimeter										
	The geometric spacing factor K_m is calculated from IEEE Std 80 Equation 81:											
	$K_m = \frac{1}{2\pi}\left(\ln\left[\frac{D^2}{16h \times d} + \frac{(D+2h)^2}{8D \times d} - \frac{h}{4d}\right] + \frac{K_{ii}}{K_h}\ln\left[\frac{8}{\pi(2n-1)}\right]\right)$						1st term	2st term	3st term	4st term	5st term	
							82.63545	1.602	-4.76	0.79	-1.497606455	
							4.375472		-1.1839619			
	Km	0.5079										
	Geometric Factor (n)											
	$n = n_a \times n_b \times n_c \times n_d$		6.193									
	Na	2Lc/Lp	7.00									
	Nb	1 for Sqaure, Sqrt(Lp/4*Sqrt(A))	0.88									
	Nc	1 for Sqaure and Rectangular Grid	1.0									
	Nd	1 for Sqaure and Rectangular Grid	1									
	total length of horizontal grid conductors (m)			Lc	245							
	length of grid conductors on the perimeter (m)			Lp	70							
	maximum length of the grids in the x direction (m)			Lx	25							
	maximum length of the grids in the y direction (m)			Ly	20							
	Maximum Distance b/w any two points			Dm	7.071							
	Irregularity Factor											
	The irregularity factor is calculated from IEEE Std 80 Equation 89:											
	K_i	0.644+0.148n	1.560508039									
	Effective Buried Length (Lm)											
	For grids with few or no earthing electrodes (and none on corners or along the perimeter):											
	LM	Lc+LR	272									
	Where											
	LC	total length of horizontal grid conductors (m)			245							
	LR	the total length of earthing electrodes / rods (m)			27							
	For grids with earthing electrodes on the corners and along the perimeter:											
	$L_M = L_c + \left[1.55 + 1.22\left(\frac{L_r}{\sqrt{L_x^2 + L_y^2}}\right)\right] L_R$											
	LM	289.9			1st term	2nd term						
					1.22	0.09						
	Step Voltage Calculation											
	The maximum allowable step voltage is calculated from IEEE Std 80 Equation 92:											
	$E_s = \frac{\rho_s K_s K_i I_G}{L_S}$	Es	755.106									
	I_G	is the maximum grid current found earlier in Step 4 (A)										
	Ks	geometric spacing factor										
	Geometric Spacing Factor											
	The geometric spacing factor based on IEEE Std 80 Equation 81 is applicable for burial depths between 0.25m and 2.5m:											
	$K_s = \frac{1}{\pi}\left[\frac{1}{2h} + \frac{1}{D+h} + \frac{1}{D}(1 - 0.5^{n-2})\right]$											
	K_s	0.3823		1st term	2nd term	3rd term	4rd term					
				0.318309886	0.833333333	0.17857143	0.18906					

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Effective Buried Length

The effective buried length Ls for all cases can be calculated by IEEE Std 80 Equation 93:

Ls	0.75 LC + 0.85 LR	206.7

- 50kg person: $E_{step,50} = (1000 + 6C_s\rho_s)\frac{0.116}{\sqrt{t_s}}$
- 70kg person: $E_{step,70} = (1000 + 6C_s\rho_s)\frac{0.157}{\sqrt{t_s}}$

		1st term	2nd term
Estep,50	4619.65	0.299510712	0.40537226
Estep,70	6252.46		

Results

Allowable Touch Voltage Limit (Etouch,50) - V	1379.55	
Allowable Touch Voltage Limit (Etouch,70) - V	1867.14	
Allowbale Step Voltage Limit (EStep,50) - V	4619.65	
Allowable Step Voltage Limit (EStep,70) - V	6252.46	
Tolerable Touch Voltage (Em)	715.287	A
Tolerable Step Voltage (Es)	755.106	C
	A < B	
	C < D	
Allowable Step Voltage (Estep), 50 kg	1379.55	B
Allowable Touch Voltage (Etouch), 50 kg	4619.65	D

- $E_m < E_{touch}$, and
- $E_s < E_{step}$

then the earthing grid design is safe.

For Step

For Touch

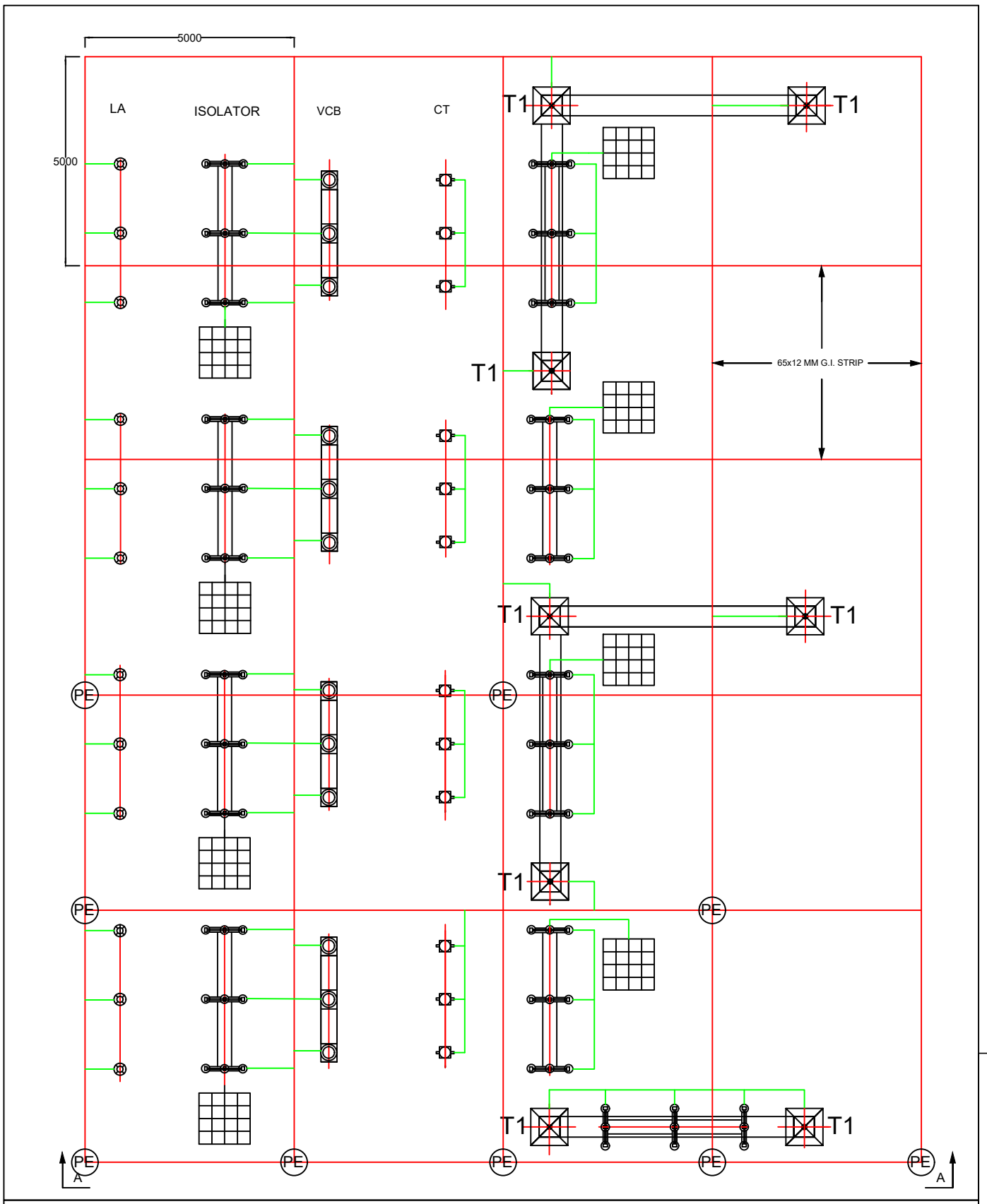
Hence Earthing Design is Safe

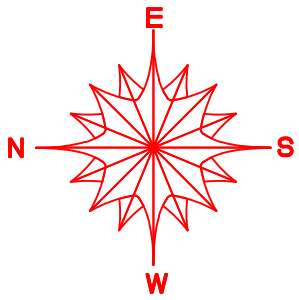
For Tender Reference Purpose only

Prepared and Submitted by:

Mrityunjoy Buragohain
NESTECH ENTERPRISE

EARTHING LAYOUT OF 132/33 KV SISHUGRAM SS

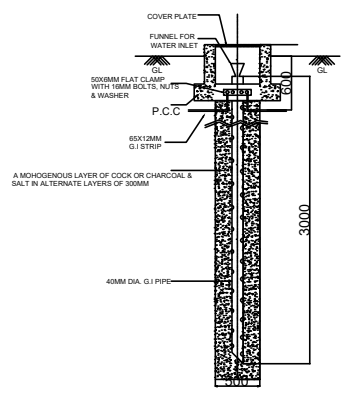




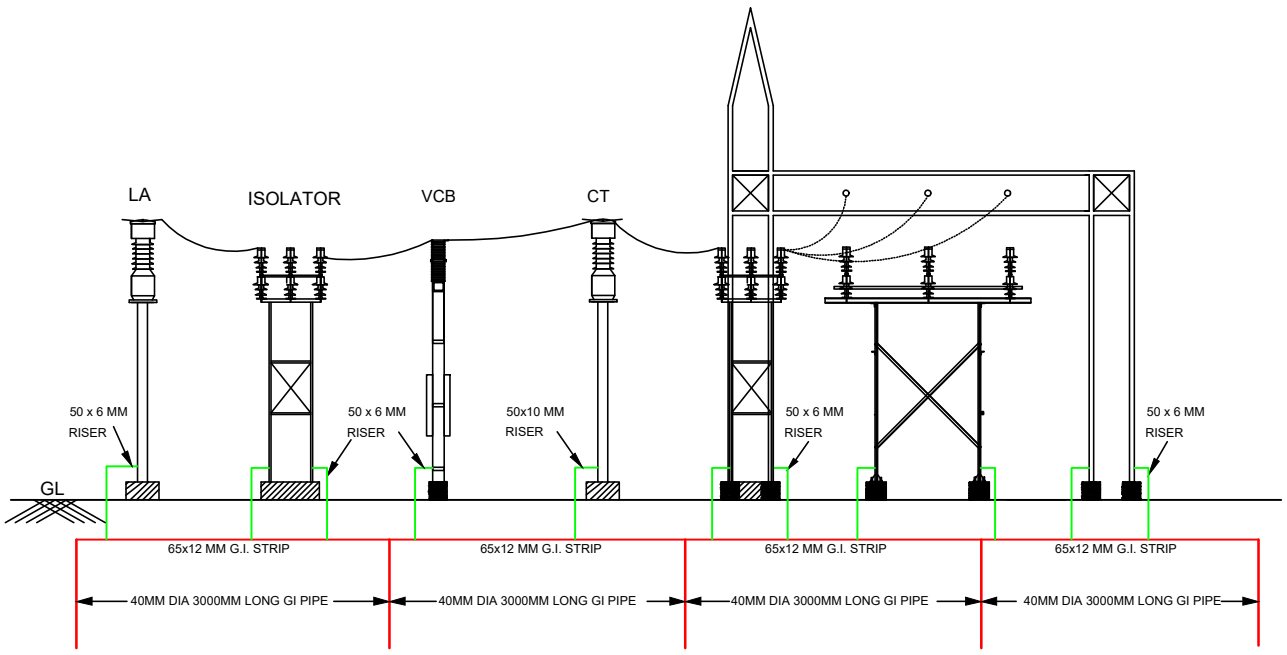
For Tender Reference Purpose only

GENERAL NOTE:

1.33KV LA will have separate earth pit.
2.All ground connection shall be made by electric arc welding.All welded joints shall be made cool down gradually to atmospheric temperature before putting any load on it.
3. The earth mat design shall be as per IS 3045 and IEEE-Std 80 Latest versions
4.Grid resistance value shall be marked with date of testing on earth pit cover.
5.Test value of grid resistance and pit resistance shall be marked on top of the earth pit covers.
6. Metering panel and 2 pole structure shall be made separately earthed.
7. Aux. mat shall be connected to the main mat from at least two side.
8. Armour of HT cable shall be earthed.
9. All the equipments and structures shall be connected to the main mat by two redundant points.



(PE) EARTH ELECTRODE IN TREATED EARTH PIT(3M LONG, 50 mm DIA GI PIPE)



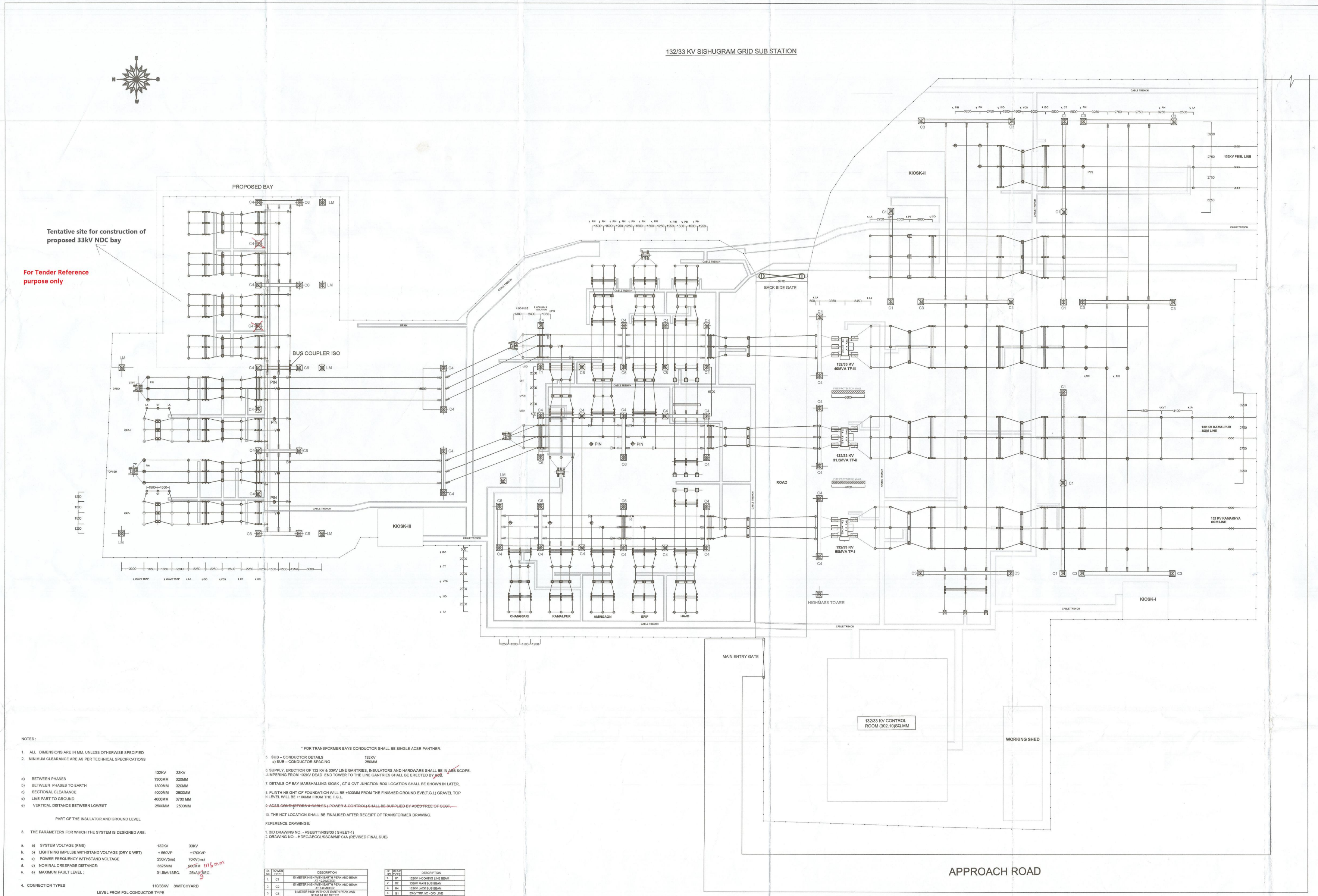
SEECTION A-A

SL. NO.	CODE	DESCRIPTION	QTY
1	—	65X12 MM G.I. STRIP	250 Meter
2	—	50 x 6 MM GI RISER	80 Meter
3	(PE)	EARTH ELECTRODE 50 MM DIA, 3000 MM LONG GI PIPE	9 Nos
4	▦	1500MM X 1500 MM SATELITE EARTH MAT FOR ISO(GI FLAT 65MM X 12MM)	4 Nos

	NAME	SIGNATURE	DATE	SHEET NO.	SCALE	SHEET SIZE	
DRN. BY				1 OF 1	N.T.S	A3	ALL DIMENSIONS ARE IN MM.
CHKD. BY	M. BURAGOHAIN						
APPVD. BY							

CLIENT :	ASSAM ELECTRICAL GRID CORPORATION LTD
CONSULTANT :	NESTECH ENTERPRISE , GUWAHATI, ASSAM PH 9678869331
DRG. TITLE :	EARTHING LAYOUT OF 132/33KV SISHUGRAM GSS (Extended Portion)
DRG. NO. :	NES/EARTHING/AEGCL/22-23/02 — DATE : 01.05.23

132/33 KV SISHUGRAM GRID SUB STATION



PROPOSED BAY
Tentative site for construction of proposed 33kV NDC bay
For Tender Reference purpose only
BUS COUPLER ISO
KIOSK-I
KIOSK-II
KIOSK-III
BACK SIDE GATE
ROAD
132/33 KV 40MVA TF-III
132/33 KV 31.5MVA TF-II
132/33 KV 50MVA TF-I
132KV PBSL LINE
132 KV KAMALPUR 50M LINE
132 KV KAMAKHYA 50M LINE
HIGHMASS TOWER
CABLE TRENCH
CHANDRAPUR
KAMALPUR
AMINGAON
EPIP
HAJO
MAIN ENTRY GATE
132/33 KV CONTROL ROOM (302.10)SQ.MM
WORKING SHED
APPROACH ROAD
LEGENDS
LIGHTNING ARRESTER
ISOLATOR WITH E/S
CURRENT TRANSFORMER
CIRCUIT BREAKER
ISOLATOR WITHOUT EARTH
LIGHTNING MAST
TOWER

NOTES :

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED
2. MINIMUM CLEARANCE ARE AS PER TECHNICAL SPECIFICATIONS

		132KV	33KV
a)	BETWEEN PHASES	1300MM	320MM
b)	BETWEEN PHASES TO EARTH	1300MM	320MM
c)	SECTIONAL CLEARANCE	4000MM	2800MM
d)	LIVE PART TO GROUND	4600MM	3700 MM
e)	VERTICAL DISTANCE BETWEEN LOWEST PART OF THE INSULATOR AND GROUND LEVEL	2500MM	2500MM

3. THE PARAMETERS FOR WHICH THE SYSTEM IS DESIGNED ARE:

		132KV	33KV
a. a)	SYSTEM VOLTAGE (RMS)	132KV	33KV
b. b)	LIGHTNING IMPULSE WITHSTAND VOLTAGE (DRY & WET)	+ 550VP	+170KVP
c. c)	POWER FREQUENCY WITHSTAND VOLTAGE	230kV(ms)	70KV(ms)
d. d)	NOMINAL CREEPAGE DISTANCE:	3625MM	~~900MM~~ 1116mm
e. e)	MAXIMUM FAULT LEVEL :	31.5kA/1SEC.	25kA/~~1~~ 3 SEC.

4. CONNECTION TYPES — 110/33KV SWITCHYARD

LEVEL FROM FGL CONDUCTOR TYPE ~~(FREE SUPPLY BY ASEB)~~

	132KV SWYD	33KV SWYD	132KV SWYD	33KV SWYD
a) MAIN BUS	+8000MM	+5500MM	TWIN ACSR PANTHER	TWIN ACSR PANTHER
b)JACK BUS	+12000MM	+7500MM	SINGLE ACSR PANTHER	SINGLE ACSR WOLF*
c)EQPT. TO EQPT.	+5000MM	+ 4000MM	SINGLE ACSR PANTHER	SINGLE ACSR WOLF*
d) DROPPERS	– –	– —	SINGLE ACSR PANTHE	SINGLE ACSR WOLF*
e) EARTH WIRE	+15000MM	+4000MM	7/366 MM GI WIRE	7/3.66 MM GI WIRE

* FOR TRANSFORMER BAYS CONDUCTOR SHALL BE SINGLE ACSR PANTHER.

5. SUB – CONDUCTOR DETAILS 132KV
   a) SUB – CONDUCTOR SPACING 250MM

6. SUPPLY, ERECTION OF 132 KV & 33KV LINE GANTRIES, INSULATORS AND HARDWARE SHALL BE IN ~~ABB~~ SCOPE. JUMPERING FROM 132KV DEAD END TOWER TO THE LINE GANTRIES SHALL BE ERECTED BY ~~ABB~~.

7. DETAILS OF BAY MARSHALLING KIOSK , CT & CVT JUNCTION BOX LOCATION SHALL BE SHOWN IN LATER.

8. PLINTH HEIGHT OF FOUNDATION WILL BE +300MM FROM THE FINISHED GROUND EVE(F.G.L) GRAVEL TOP N LEVEL WILL BE +100MM FROM THE F.G.L.

~~9. ACSR CONDUCTORS & CABLES (POWER & CONTROL) SHALL BE SUPPLIED BY ASEB FREE OF COST.~~

10. THE NCT LOCATION SHALL BE FINALISED AFTER RECEIPT OF TRANSFORMER DRAWING.

REFERENCE DRAWINGS:

1. BID DRAWING NO. - ASEB/TT/NSS/03 (SHEET-1)
2. DRAWING NO. - HDEC/AEGCL/SSGM/MP 04A (REVISED FINAL SUB)

Sr. NO.	TOWER TYPE	DESCRIPTION
1.	C1	15 METER HIGH WITH EARTH PEAK AND BEAM AT 12.0 METER
2.	C2	15 METER HIGH WITH EARTH PEAK AND BEAM AT 8.0 METER
3.	C3	8 METER HIGH WITHOUT EARTH PEAK AND BEAM AT 8.0 METER
4.	C4	9.5 METER HIGH WITH EARTH PEAK AND BEAM AT 7.5 METER
5.	C5	9.5 METER HIGH WITH EARTH PEAK AND BEAM AT 5.5 METER
6.	C6	5.5 METER HIGH WITHOUT EARTH PEAK AND BEAM AT 5.5 METER

Sr. NO.	BEAM TYPE	DESCRIPTION
1.	B1	132KV INCOMING LINE BEAM
2.	B2	132KV MAIN BUS BEAM
3.	B4	132KV JACK BUS BEAM
4.	G1	33KV TRF. I/C - O/G LINE
5.	G2	33KV MAIN BUS BEAM

* The columns and beams to be used in this project shall be as per site condition and as per the MOM dated 18/05/2023.

* The entire 33KV Bus section shall be re conductored with ACSR twin Zebra conductor under this project as per the MOM dated 18/05/2023.

For Tender Reference Purpose only

LOCATION: 132/33KV SISHUGRAM GSS	CLIENT :	ASSAM ELECTRICAL GRID CORPORATION LIMITED.
LOA NO:	CONTRACTOR :	
	CONSULTANT :	NESTECH ENTERPRISE , GUWAHATI, ASSAM PH 9678869331
	DRG. TITLE :	TYPICAL PLAN LAYOUT GSS
	DRG. NO. :	DATE : 01.05.23

	NAME	SIGNATURE	DATE	REV. NO.	REV. DT.	SHEET NO.	SCALE	SHEET SIZE	
DRN. BY						1 OF 1	N.T.S	A3	ALL DIMENSIONS ARE IN MM.
CHKD. BY	M. BURAGOHAIN								
APPVD. BY									

Checked DGM, O/o the G.M.(P&D)

Checked AGM O/o the GM (P&D)

NESTECH ENTERPRISE

Deputy General Manager Lower Assam T & T Circle AEGCL, Narengi, Guwahati-26

Asstt. General Manager Guwahati Transmission Division AEGCL, Narengi, Guwahati-26

Checked by Asstt. Manager O/o the GM (P&D)

Checked by Deputy Manager O/o the GM (P&D)