

WEIGHTS & DIMENSIONS

PROJECT: 2XFr6B GTG-RUPPL,DAHEJ

BHARAT HEAVY ELECTRICALS LIMITED

Annexure-1

PROJECT :: RUPPL-2xFr-6B GTG	DATE: 16/08/12
BIDDER ::	Rev.00

ANNEXURE -1 PART A-MECHANICAL ITEMS FOR EACH GTG

Sl. No.	Description of Equipment	Quantity	Length (m)	Width (m)	Height (m)	Total WT (Metric Tons)
GT & Auxiliaries						
1	Gas Turbine Package (Flange to Flange)	1	7.38	3.6	4.2	68.00
2	Load Coupling	1	2.1	0.6	0.75	0.30
3	Accessory Base	1	6	3.5	4.8	40.00
4	Load Coupling Guard	1	2.2	1.5	1	0.22
5	Accessory Coupling	1	1.5	0.5	0.5	0.15
6	Accessory Coupling Guard	1	1.5	0.6	0.6	0.05
7	CO2 bottle Racks-1	1	6.5	1.4	2.8	5.00
8	CO2 bottle Racks-2	1	3.2	1.4	2.8	2.00
9	Main Filter House (will be shipped loose)	1	6	3	3.5	65.00
10	Forced Feed Lube Oil System	1	1.5	1	1.8	1.20
11	Turbine Vent Fans (7 Nos)	7	2.5	2.5	2	5.00
12	Air Processing Skid	1	3	1	2.5	1.00
13	Air processing skid panel	1	3	0.5	2	0.20
14	APU cooler	1	3	0.5	2	0.50
15	Field Inter connection piping	1	6	3.5	3	15.00
16	Foundation Bolts and Misc.Hardware	1	-	-	-	5.00
17	GT off-base Enclosures	1	7.5	4.5	4	90.00
	Gas valve module	1	3	2	4.5	8.50
19	Exhaust frame blowers (2 nos)	2	3	3	1.5	3.00
Inlet Ducting						
20	Inlet Duct Transition Pieces	1	4	4	3	25.00
21	Inlet Duct Extension Pieces	1	4	0.5	4	
22	Inlet Duct Elbow No.1	1	4	4	4	
23	Inlet Duct Elbow No.2	1	4	4	4	
24	Silencer	1	4	3	3	
25	Straight Duct No.1	1	4	3	3	
26	Straight Duct No.2	1	4	3	3	
27	Support Structure	1	6	3	3	
Exhaust Ducting						
28	Expansion Joints (Total 4)	4	4.4	4	0.5	5.00
29	Silencer Duct SL1	1	4.7	5.1	3.2	10.17
30	Silencer Duct SL2	1	4.3	4.7	1.6	5.12
31	Diverter Damper	1	4.5	4	6	20.00
32	Guillotine Damper (2 pieces)	2	6	0.5	4	15.00
33	Horizontal Duct E1	1	4.5	4.1	3.85	9.73
34	Horizontal Duct H1	1	4.1	2.5	2.8	4.65
35	Horizontal Duct E5	1	3.9	3.9	0.6	1.83
36	Horizontal Duct E6	1	4.1	4.1	1.1	2.92
37	Transit Duct E2	1	4.7	4.3	2.6	5.14
38	Transit Duct E3	1	4.5	4.3	2.1	4.10
39	Vertical Duct VD8 (4 NOS.)	4	4.3	4.3	3.35	18.64
40	Vertical Duct VD9	1	4.5	4.5	3.4	5.01
41	Inlet air filter panel	1	0.66	0.255	1.015	0.50
42	GD & GFD Seal Air Fan Assy	1	3	2	2	1.00
43	Miscellaneous Item (Ladders ,Platform ,Bolts)	1	-	-	-	4.00
44	Lube Oil Mist Eliminator	1	3	1.5	3	1.00
45	Stack support Structure (columns beams, angles)	1	-	-	-	30.00
46	BNC Monitoring System -1No	1	0.47	0.53	0.17	0.04
47	Haz. Gas Monitoring System -1 No	1	0.161	0.361	0.178	0.01
48	Naphtha Monitoring System-1 No	1	0.247	0.21	0.132	0.01
49	Vibration Monitoring System – 1NO	1				0.20
50	Steam injection valves	1				0.30
51	GTG Air Cooler Element	6				9.00
52	WWHE	1				2.53
Total Weight for one(1) GTG						491.02
Total Weight for two(2) GTG						982 Tons

TENDER NO.: BHEL/PESD-E&C/RUPPL-GTG/001	REV00
PROJECT :: RUPPL-2xFr-6B GTG	DATE : 16/08/12
BIDDER ::	

ANNEXURE -1 PART B-ELECTRICAL,C&I ITEMS FOR EACH GTG

Sl. No.	Description of Equipment	Quantity	Length (m)	Width (m)	Height (m)	Total WT (Metric Tons)
	GENERATOR					
1	Generator package	1	8	3.6	3.3	97.1
2	Generator Aux. Compartment(GAC)	1	3.5	3	4	6
3	Generator Air duct	1	4.8	1.6	2.4	3.5
4	Foundation Items	1		Loose Items		7
5	Generator Outer Enclosure	1	10.5	4.8	4	10
	CONTROL,METERING,RELAY, PROTECTION & SYNCHRONISING PANELS					
6	Control and Metering Panel	2	1	1	2.3	0.75
7	Relay Panel	2	1	1	2.3	1.5
8	Space Heater Control Panel	1	0.6	0.3	0.6	0.005
9	GT Battery Charger Dual FCBC	1	1.7	0.75	2	1.2
10	GT MCC, 415V,3Phase, 50Hz	1	13	1.4	2.43	12
11	GT DCDB, 125 VDC	1	3.26	0.9	2.43	5
12	125V DC Cell Booster	1	1.05	0.6	0.8	0.15
13	Diverter Damper Local JB's	2	2	1	1	0.5
14	Guillotine Damper Local JB's	2	2	1	1	0.5
15	GT Battery 125V DC	1	5	0.9	1.55	5
16	GT Auxiliary Panel	1	1	0.8	2.4	0.25
	GT CO2 Panel	1	0.8	0.4	2	0.15
18	UPS 15kVA	1				0.5
	INSTRUMENTATION					
19	Orifice Plate Assemblies	2				
20	Mass Flow Meter/ HSD/NAPHTHA	4				
21	Mass Flow Meter/ HITECH	2				
22	Differential Pressure Transmitters	5				
23	Pressure Gauges	12				
24	Pressure Transmitters	12				
25	Temperature Gauges	12				
26	Temperature Transmitters	10				
27	Hand Held Calibrator	1				
28	Thermowells	12				
29	Instrumentation items for on skid Package and their other auxiliary packages	Lot				
30	On skid instruments for sub packages like various storage and drain tanks etc	Lot				
31	Junction Boxes	8				
32	FRP Canopies	18				
33	Mark-VIe GT Panel	1	3.6	0.805	2.324	1.9
34	Marshalling Cabinet	1	2.4	0.805	2.3	1.15
35	Network Panel	1	0.785	0.75	2.355	0.5
36	Mark-VIe Historian HMI's & Accessories	1	2.35	1.2	1.1	0.3
37	DAVR	1	1.95	1.25	2.4	2.2
38	Mark-VIe HMI's for GT-1 & Accessories	3	2.35	1.2	1.1	0.75
	POWER CABLES	Meters				
39	3C X 4 SQMMCU COND PVC/FRLS ARMRD CABLE	7500				4
40	3CX6 ,1.1KV PVC/FRLS AL COND ARMD CAB	4600				3
41	3CX16,1.1 KV PVC/FRLS AL COND ARMD CAB	6000				4.5
42	3CX35,1.1 KV PVC/FRLS AL COND ARMD CAB	1000				1.5
43	COND ARMD CAB 3CX70,1.1 KV PVC/FRLS AL	1500				1.5
44	COND ARMD CAB	2500				2
45	1CX120,1.1KV PVC/FRLS AL COND ARMD CAB	1200				2
46	3.5CX 95,1.1KV PVC/FRLS AL COND ARMD CAB	2000				2.5
47	3CX 95,1.1KV PVC/FRLS AL COND ARMD CAB	1000				2.5
48	1CX6,1.1KV PVC CU COND UNARMD CAB	2000				1
49	1CX35,1.1KV PVC CU COND UNARMD CAB	1000				0.6
50	1CX150,1.1KV PVC CU COND UNARMD CAB	1000				1.5

Sl. No.	Description of Equipment	Quantity(Meters)	Length (m)	Width (m)	Height (m)	Total WT (Metric Tons)
CONTROL CABLES						
51	5C X 2.5 Sq .mm	3000				1.2
52	10C X 2.5 Sq .mm	1500				1
53	3CX2.5 PVC/FRLS CU COND ARMD CABLE,1.1	4000				2
54	7CX2.5 PVC/FRLS CU COND ARMD CABLE,1.1	9000				4.5
55	12CX2.5 PVC/FRLS CU COND ARMD CABL 1.1KV	7500				2.5
56	19CX2.5 PVC/FRLS CU COND ARMD CABL 1.1KV	2000				1
57	24CX2.5 PVC/FRLS CU COND ARMD CABL 1.1KV	1500				1
SIGNAL CABLES						
58	10T X 0.5 Sq .mm	800				0.8
59	SIGNAL CABLE SINGLE PAIR 1.5MM2 SHLDG	7200				5
60	SIGNAL CABLE 6 PAIR 0.5 SQ MM ORDINARY	7200				6
61	SIGNAL CABLE 12 PAIR 0.5 SQ MM ORDINARY	3600				3.5
62	SIGNAL CABLE 6PAIR 1.5MM2 SHLDG	6000				5.5
63	SIGNAL CABLE TWELVE PAIR 1.5MM2 SHLDG	5000				4.5
64	6 PAIR,20AWG,CHROMEL-ALUMEL EXN CABLE	2000				1.5
65	12PAIR,20AWG,CHROMEL-ALUMEL EXT CABLE	3000				3
66	8 TRIAD 1.5 SQ MM CABLE	1000				1
67	1 TRIAD 1.5 SQ MM CABLE	600				0.5
68	1PAIR,16AWG,CHROMEL-ALUMEL EXT CABLE	1200				1
69	1T x 1.5 SQ MM NON-INTRINSIC SAFE CABLE	100				0.1
70	2P x 1.5 SQ MM NON-INTRINSIC SAFE CABLE	5400				2
71	4PX1.5 SQ MM NON-INTRINSIC SAFE CABLE	500				0.2
72	10PX1.5 SQ MM NON-INTRINSIC SAFE CABLE	7700				2
IMPULSE TUBING						
73	SS Tube 12.7X2.1 SS304 for Instruments listed above	350				0.5
74	75x10 GI Strips for above ground earthing	500				3
75	50x6 GI Strips for above ground earthing	1000				2.5
Sl. No.	Miscellaneous Equipment	Quantity	Length (m)	Width (m)	Height (m)	
76	Cable Glands	lot	-	-	-	0.1
77	SYSTEM-1Work Station for GT					
78	(i) CPU	1	0.168	0.456	0.45	0.01
79	(ii) 21" Monitor	1	0.455	0.475	0.47	0.02
80	(iii) Printer	1	0.605	0.338	0.145	0.03
Total Weight for 1 GTG						241.465
Total Weight for 2GTGs						482.93

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ANNEXURE -1 PART C- PIPING ITEMS (Common for 2 GTGs)

Table 1: Details of Pipes & Welds

Sl.No:	Material	Item Description & Size mm	IBR	Qty (m)	No of Welds in Pipes & Fittings(Qty)
<i>Pipes</i>					
1	A106GRB	PIPE(SMLS)- 26.7X 5.56 CS SA106 GR B	12	YES	66
2	A106GRB	PIPE(SMLS)- 33.4X 4.55 CS SA106 GR B	654	YES	721
3	A106GRB	PIPE(SMLS)- 48.3X 5.08 CS SA106 GR B	18	YES	70
4	A106GRB	PIPE(SMLS) 60.3X 5.54 CS SA106 GR B	204	N	302
5	A106GRB	PIPE(SMLS) 114.3X 6.02 CS SA106 GR B	6	N	11
6	A106GRB	PIPE(SMLS)168.3X 7.11 CS SA106 GR B	96	N	137
7	A106GRB	PIPE(SMLS) 168.3X10.97 CS SA106 GR B	180	YES	134(*)
8	A106GRB	PIPE(SMLS) 273.1X 9.27 CS SA106 GR B	540	N	342
9	A312TP321	PIPE SS 21.3 X 3.7 A312 TP321	72	N	173
10	A312TP321	PIPE SS 26.7 X 3.9 A312 TP321	54	N	211
11	A312TP321	PIPE SS 48.3 X 3.7 A312 TP321	6	N	31
12	A312TP321	PIPE SS 60.3 X 3.9 A312 TP321	6	N	11
13	A312TP321	PIPE(SMLS) 88.9X5.5 S.S SA312 GRTP 321	240	N	257
14	A312TP321	PIPE(SMLS) 114.3X6.02 S.S SA312 GRTP 321	12	N	8
15	A312TP321	PIPE(SMLS) 168.3X7.1 S.S SA312 GRTP321	180	N	182
16	IS1239	PIPE CS 34.2 X 4 SAW GALV	180	N	46
17	IS1239	PIPE CS 60.8 X 4.5 SAW GALV	6	N	3

(*)Radiography to be done as per standards.

Table 2: Thermal insulation (application) including cladding,fixing arrangements etc.

PIPE SIZE in Inch	INS THK MM	Total Length M
6	75	198
1.5	75	7
1	60	80
0.75	60	14

Table 3: Weights of Piping material

Weight details of the pipes & accessories for the purpose of Material handling		
SL NO:	Items description	Total Weight In Kgs
1	Pipes	55600
2	Fittings	9000
3	Valves	4500
4	Flanges	1500
5	Gaskets	22
6	Stud nuts	550
7	Steam Traps	50
8	Raw Material required for hangers,structures and supports	8000
9	Insulation	2000
Total Gross weight		81222

-81.2Tons

Notes:

- 1.Piping erection shall be carried out by including the erection of all piping hardwares,hydraulic testing and painting.
- 2.Erection of insulation includes cladding,clamping,netting etc.
3. All the quantities indicated above are considering the erection of 2xFr6B GTG. Total weight of Piping items for contract is 81.2 tons.

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PROJECT :: RUPPL-2xFr-6B GTG				DATE :16/08/12		
BIDDER ::						
ANNEXURE -1 PART D - Common Items for 2 GTGs						
Sl. No.	Description of Equipment	Quantity	Length (m)	Width (m)	Height (m)	Total WT (Metric Tons)
1.0	Lubricity Additive Dosing Skids	2	3.1	2.1	2.0	6.00
2.0	2 m ³ HSD/ NAPHTHA DRAIN TANKS	4	6.8	2.7		20.00
3.0	Portable LO Drain Pump	1	1	1	0.8	0.2
4.0	Compressor Water Washing skid	1	6.5	3	3.2	5
5.0	Lube oil Centrifuge	1	3	1.5	1.8	1.5
6.0	Tools & Tackles	1				4
7.0	Cooling water Module					
7.1	Tube Bundle	4				35.2
7.2	Structure(Assembled at site)	1				60.36
7.3	Fan	4				0.28
7.0	Motor	4				1.52
7.4	Pump with motor	2				8.96
7.5	Piping items(assembled at site)	1				10.2
8.0	Instrumentation					
8.1	Mark-VIe simulator & HMI & Accessories	1	1	1	1	0.25
8.2	Master Slave Clock	1	0.8	0.8	2.41	0.25
Total Weight of Common items for both the GTGs						153.72

Weight details for total Contract:

- 1. Weight of Mechanical items :982 Tons**
 - 2. Weight of Electrical, C&I items :482.93Tons**
 - 3. Weight of Piping items :81.2Tons**
 - 4. Weight of Common items :153.72Tons**
- Total weight of the Items : 1699.85 Say 1700 Tons**



BHEL Hyderabad	2xFr 6B GTG- RUPPL Dahej	Doc No.: BHEL/PESD-E&C/ RUPPL-GTG/PC/001
PE&SD	ANNEXURE-2	Rev 00; Page 1 of 1

PORTABLE CABIN SPECIFICATION

Supply of 2 No's of brand new Portable Cabins (Size: 20 ft X 10 ft X 8.0 ft) on hiring basis for 16 months for BHEL's site office use. If Project schedule is extended, BHEL reserves the right to extend the hiring period for another 6 months at the same rates, terms and conditions.

Amenities to be included in each Cabin are given below

Furniture and Fixtures suitable for 6 members

- Executive Table with Side Table - 01 no.
- Executive Revolving Chair - 01 no.
- Visitor Revolving chair - 03 nos.
- Office Table - 05 nos.
- Office Revolving Chair - 05 nos.
- Wall mounted cabinet - 05 nos.
- Window Air Conditioner 1.5 ton - 01 no.
- White board of size 750x1000mm - 01 no.
- Perforated Board of size 750x1000mm - 01 no.

Interior cum Insulation

- Insulated walls with Pre-Laminated Sheet
- Ceiling : Glass Wool Covered with Pre-Laminated Sheet
- Flooring : Cement fiber sheet with PVC vinyl carpet

Other accessories:

- Tube Lights-4, Wall mounted Fans-5, LAN Points-6, TELE Point-1, External Light-1 Aluminum sliding windows, 15 Amp Switch-2, 5 Amp Switch-4, Electrical switch board-1
- Insulated paneling Doors, Safety Grills for all windows, Vertical Blinds For all Windows
- Weather sheds for all door and windows, Partition(laminated sheet both sides) with internal Door facility, Corrosion free and fire proof paints

Maintenance:

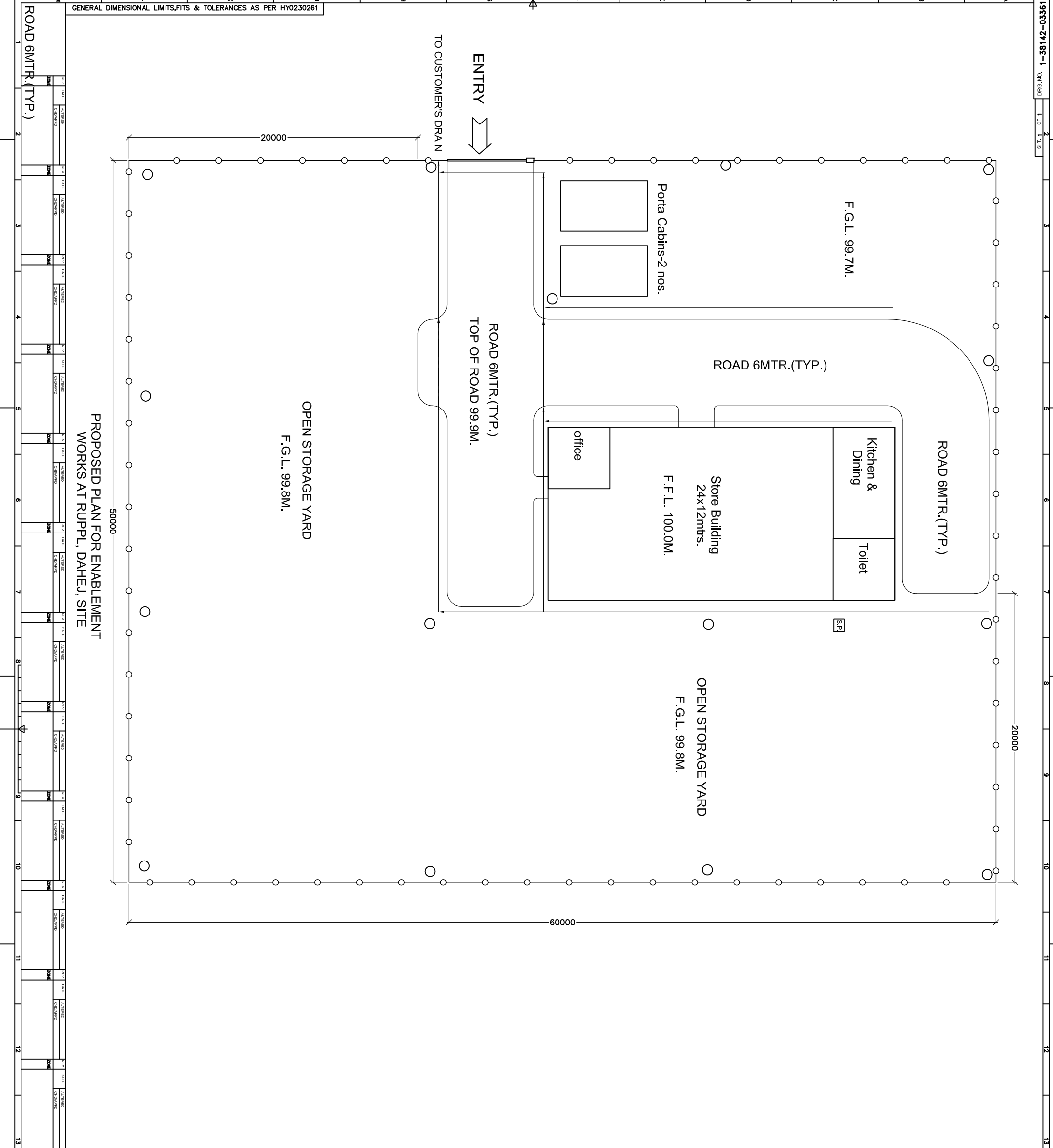
- During hiring period, maintenance of the Porta cabin and accessories shall be in the scope of bidder.

Note:

- Supply, transportation & installation of Porta cabins to the worksite shall be in the scope of bidder.
- Removal of Porta cabins from the work site & transportation after completion of all the activities of E&C related to this project shall be in the scope of bidder. Porta Cabins shall remain the property of the supplier after the completion of the hiring period.
- Power Cable (approx. 50m of length) shall be in the scope of bidder.

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INVENTORY NO. SKD. AND DATE REF. DRG. NO. COMPUTER FILE NAME
47803078-AB.DWG



PROPOSED PLAN FOR ENABLEMENT WORKS AT RUPPL, DAHEJ, SITE

REV.	DATE	ALTERED BY	CHECKED BY	ZONE
1				
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ANNEXURE 3 TO TENDER SPECIFICATION NO.BHEL/PE/SP-E&C/RUPPL-GTG/001

BHEL SITE AREA 50 x 60m

INSTRUCTION TO BIDDER: THIS DRAWING IS PROVIDED TO ENABLE BIDDERS TO ESTIMATE THE WORK INVOLVED IN DISMANTLING OF STORE BUILDING & FENCING AFTER COMPLETION OF E&C CONTRACT.

LEGEND:

	ELECTRICAL LIGHTING POLES
	BARBED WIRE FENCING, 1.8M. HIGH
	STORM WATER DRAIN, SLOPE 1:250
	SOAK PIT

CROSS-SECTIONAL DETAIL OF DRAINS:

A - VARIES FROM 300MM TO 600MM
B - 75MM THICK COMPACTED P.C.C.(1:4:8)

CROSS-SECTIONAL DETAIL OF ROADS:

X - 75MM THICK COMPACTED WBM
Y - 75MM THICK COMPACTED WBM
Z - 230MM THICK COMPACTED BOULDER SOLING

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. THE LAYOUT IS TENTATIVE. ORIENTATION AND SIZING MAY BE CHANGED BASED ON THE EXACT LOCATION OF THE AREA PROVIDED BY RUPPL FOR BHEL SITE OFFICE, STORAGE & FABRICATION YARDS, ETC.
3. FINISH GROUND LEVEL : 99.7 M.

TENTATIVE DETAIL OF STORE BUILDING:

1. THE WALLS OF THE STORE BUILDING WILL BE 230 MM THICK,
2. THE WALLS WILL BE MADE IN BRICK WORK IN 1:6 CEMENT MORTAR
3. THE ROOF WILL BE MADE OF G.I. SHEET RESTING OVER STEEL TRUSSES. BOTTOM OF TRUSS WILL BE 104.5M., WHERE 100.0M. CORRESPONDS TO FINISH FLOOR LEVEL.

TENTATIVE DETAIL OF OTHER INFRASTRUCTURE:

1. G.I. BARBED WIRE FENCING: 300.0M. Ht. - 1.8m.
2. DETAILS OF ROAD: TWO LAYERS OF WBM/TOTAL COMPACTED THICKNESS-150MM) OVER 230MM THICK BOULDER FILLING. TOTAL ROAD LENGTH - 80M. LEVEL 200MM ABOVE FINISH GROUND LEVEL.
3. OPEN STORAGE YARD: 200MM THICK COMPACTED HARD MURUM

TOTAL AREA : 2000.0SQM. LEVEL 100MM ABOVE FINISH GROUND LEVEL

FOR TENDER PURPOSE ONLY

TYPE OF PRODUCT		ON		EXHIBING TORRES FOR 24X12 98 GTG & ITS	
NAME OF CUSTOMER/PROJECT		BHARAT HEAVY ELECTRICALS LTD.		AUXILIARIES AT RUPPL, DAHEJ, BHARUCH, GUJARAT.	
DEPT. / CODE	UNIT/ GR. / CM/FT	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	NO. OF REV.
00	1:125	NA	NA	NA	00
TITLE		DRAWING NO.		REV.	
STORAGE AREA LAYOUT		00		00	
NA	NA	1	1	1	1

