

CORRIGENDUM -3 TO TENDER SPECIFICATION BHEL:PSSR:SCT:1646 - DT: 09.01.2017

Some of the bidders sought clarifications vide letters in regard to TENDER SPECIFICATION BHEL PSSR SCT 1646- Erection, Testing and Commissioning of - 1 set Frame 9FB Gas Turbine, GTG, 133.4MW Steam Turbine, STG, Condenser, LP Piping, 2 sets Gas booster compressors and respective auxiliaries and other Balance of Plant equipment's including supply and application of painting, Handling of materials at Site Store/Storage yard, transportation to site of work at 1x370 MW Yelahanka Combined Cycle Power Plant, Yelahanka, Bengaluru, Karnataka State and BHEL's clarifications are furnished below for information.

<u>Sl. No.</u>	<u>Clause No. / Subject</u>	<u>Existing Provision</u>	<u>Clarification/Query</u>	<u>BHEL REPLY</u>
1	Part C: Bill of quantities Weightages	GT,GTG & Aux 0.26933607 ST,STG & Aux 0.25861116 Balance equipment for CCP 0.16290125 Underground / Buried piping 0.03495920 CS piping 0.15346887 SS piping 0.01363625 GI piping 0.04695822 PVC piping 0.00312943 Insulation complete 0.03740266 Platforms and ladders 0.00832425 O&M for RODM for 12 months 0.01127258	The weightage given for each of the sub division is not appropriate. Kindly review this clause.	Item Weightage in Part-C of Price Bid, Volume-II is revised and Price Bid Rev-01 is uploaded in E-Procurement Portal.
2	BOQ sl NO B.4.1.1 Surface condenser	The weight in BOQ sl no B.4.1.1 shall be read as 24.6 MT.	As per corrigendum-1 the weight of condenser tubes is revised as 24.5 Tons. Which means each tube of 9600 cms length weighs only 1500 gms. Please confirm. Further the weight of items not included in the bill of quantities is given "for reference only". BHEL to confirm that the scope of work of the entire contract involves 4230.53 tons and not 3372.53(3349.53+23) tons. Refer "Also the approximate weight of ref no II in volume II price bid to be read as 623 MT respectively(including revised condenser tube weight)". Does this mean contractor is not responsible for the equipment where weights are given for "reference only"?. As per clauses 1, 2, 2.1 of Note given to volume 1A Part-1 Chapter-2 contractor has to carry out balance works after placement on foundation of the gas turbine, gas turbine generator stator, Steam turbine HP module and Steam turbine generator stator. Kindly Clarify.	The condenser tube weight is revised as 69.6 MT. The contractor has to carry out balance works after placement on foundation of the gas turbine, gas turbine generator stator, Steam turbine HP module and Steam turbine generator stator. Hence the weights of these equipments are added to Bill of Quantity and price bid respectively. Revised BOQ & Price Bid Rev-01 is enclosed.
3	NIT Salient features of NIT clause V	Due date and time of offer submission	Kindly extend the due date submission of bid by 7 days	Refer Corrigendum 2 dated 07.01.2017. Bid Submission date extended till 12.01.2017.
4	TCC volume 1A Chapter-II clause 1.2.5	Scope of work 1.2.5 piping	Please clarify approx no of welding joints involved in following system 1) LP piping 2) Gas turbine piping 3) Steam turbine piping	Details are not available as engineering is in progress.

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<u>Sl. No.</u>	<u>Clause No. / Subject</u>	<u>Existing Provision</u>	<u>Clarification/Query</u>	<u>BHEL REPLY</u>
5	TCC volume 1A chapter coating and wrapping clause 1.20.1	The external surface of the buried pipe shall be thoroughly cleaned by shot blasting method for free of rust etc.,	Kindly confirm whether shot blasting is involved in this work	For GI pipe supplied for fire protection system, shot blasting is not applicable.
6	Clause 1.16.71.2 of TCC volume-1A chapter-XVI	The pipe in general shall be ground level or Supply & application of anti corrosive treatment, required consumable are in scope of contractor.... Etc	Kindly clarify the approx quantum of work involved in buried piping in terms of running meter.	Approximately 2300 metres GI pipe are below ground pipes.
7	Clause 1.3.10.2 of TCC volume-1A part-I chapter-III	Only TIG welding wires for CS, AS & SS welding will be supplied by BHEL free of cost the cost for the additional quantity so consumed shall be recovered from the contractor.	Please clarify whether P91 TIG wire will be supplied by BHEL.	P91 TIG wire will be supplied by BHEL.
8		Drawings	We require GA drawings & equipment layout drawings. If available kindly send us the same.	Plot plan is attached for tendering purpose. Balance drawings will be issued during the course of work.

Note:-

- 1. Bidders to download the Price Bid Revision 01 uploaded separately in E-Procurement Portal & consider the same for quoting. However, copy of the same is enclosed for bidders reference.**
2. All other Terms & Conditions of the Tender Specification remain unchanged.
3. Bidders are requested to consider this corrigendum as part of tender specification and quote accordingly.

Encl:-

1. Pricebid Revision 01 - 11 Pages
2. Revised BOQ - Volume IA Part I Chapter IX - 19 Pages
3. Plot Plan Drawing - 01 Pages (For Tendering Purpose Only)

- sd -
AGM / SCT & PURCHASE

**TENDER SPECIFICATION
BHEL: PSSR: SCT: 1646
FOR**

Handling at Site Store/Storage yard, transportation to site of work, Erection, Alignment, Welding, Testing and Commissioning, including supply and application of painting of - 1 set Frame 9FB Gas Turbine, GTG, Steam Turbine, STG, Condenser, LP Piping, 2 sets Gas booster compressors and respective auxiliaries and other Balance of Plant equipment's for 1x 370 MW CCPP, Yelahanka, KPCL.

VOLUME-II

PRICE BID

(Revision 01)



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

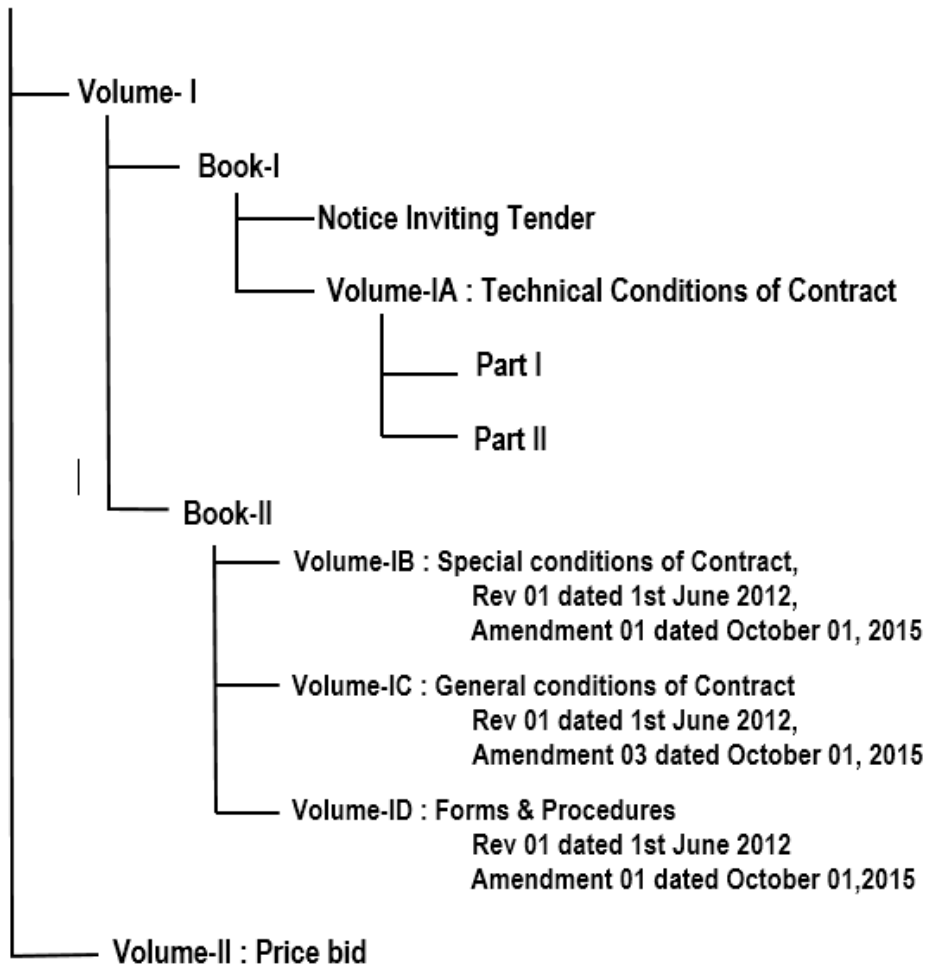
Power Sector – Southern Region

690, Anna Salai, Nandanam, Chennai – 600 035.

PRICE BID (Revision 01)

TENDER SPECIFICATION CONSISTS OF

Tender Specification



PRICE BID (Revision 01)

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
Power Sector, Southern Region
690, Anna Salai, Nandanam, Chennai – 35

TENDER SPECIFICATION No.: BHEL: PSSR: SCT: 1646

For

Handling at Site Store/Storage yard, transportation to site of work, Erection, Alignment, Welding, Testing and Commissioning, including supply and application of painting of - 1 set Frame 9FB Gas Turbine, GTG, Steam Turbine, STG, Condenser, LP Piping, 2 sets Gas booster compressors and respective auxiliaries and other Balance of Plant equipment's for 1x 370 MW CCPP, Yelahanka, KPCL.

One set of Tender documents consisting of

- | | |
|-------------------------|------------|
| 1) TECHNOCOMMERCIAL BID | - 2 copies |
| 2) PRICE BID | - 2 copies |

Book Sl no

Issued to
M/s

Refer NIT for Last date of submission

Please note this tender document is not transferable

For and on behalf of
BHARAT HEAVY ELECTRICALS LIMITED

ADDITIONAL GENERAL MANAGER / SCT & Purchase

Place: Chennai -35
Date:

Tender Specification No.: BHEL PSSR SCT 1646

PRICE BID (Revision 01)

CONTENTS	
Description	No. of pages
Part A: Instructions to the Bidders	1
Part B: Format to quote total amount	1
Part C: Bill of quantities with weightage for amount of each items w.r.t. the total quoted price	5

PRICE BID (Revision 01)

PART-A-INSTRUCTIONS TO BIDDERS:

1. Bidders shall only quote 'Total Amount' in the format given in PART -B of the price bid. Any other entry elsewhere in the price bid shall be treated as Null and Void.
2. The above mentioned 'Total amount' is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid.
3. BHEL has pre-fixed the weightages for the amount of individual items of Bill of Quantity with respect to the 'Total Amount' in Part-C.
4. Based on the pre-fixed weightages, the amount for the individual items of the Bill of Quantity shall be arrived at. This amount shall be rounded off to the nearest rupee.
5. Based on the quantities of individual item and the amount arrived in SI No: 4 above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.
6. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per SI No.5 above.

Part B: Format to quote Total Amount

Tender Specification BHEL:PSSR:SCT:1646 R01 for Gas Turbine Generator set & Aux, LP Piping, null, Steam Turbine Generator set & Aux

at 1 X 370 MW Yelahanka CCPP

Total Amount for the entire Bill of Quantities(BOQ) given in Part C

In Figures

In words

Note :

Bidders to quote Total Amount in this format given above, which shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope defined in specification and in accordance with all terms & conditions of tender.

Date

SIGNATURE OF BIDDER WITH SEAL

Part C : Bill of Quantities

Tender Specification BHEL:PSSR:SCT:1646 R01 for Gas Turbine Generator set & Aux, LP Piping, null, Steam Turbine Generator set & Aux

at 1 X 370 MW Yelahanka CCPP

Ref.No.	Description	Unit	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
I	Gas Turbine, Gas Turbine Generator and Aux Erection, Alignment, Welding, Testing and Commissioning, including supply and application of painting of 1 set Frame 9FB Gas Turbine and its auxiliaries, Gas Turbine Generator with H2 cooling system, seal oil system and its auxiliaries, including integral piping. (except insulation and fabrication/installation of Platforms, ladders etc. unless indicated otherwise in the detailed scope of work) Approximate weight: 1464 MT	set	1	.26933607
II	Steam Turbine, Steam Turbine Generator and Aux Erection, Alignment, Welding, Testing and Commissioning, including supply and application of painting of 1 set Steam Turbine including integral piping, Steam Turbo Generator with air cooling ducts and its auxiliaries, Condenser including RE Joints (except insulation and fabrication/installation of Platforms, ladders etc. unless indicated otherwise in the detailed scope of work) Approximate weight: 987 MT	set	1	.25861116
III	Balance Equipment for CCPP Erection, Testing and commissioning and completion of trial operation of miscellaneous systems / other equipments such as Compressors together with integral piping, Pumps with integral piping, Feed Storage Tank, Deaerator, Underslung cranes, hoists, including load testing of cranes/hoists, Dosing systems, Miscellaneous Skids/ tanks etc. including those for RODM Plant and Fire Fighting System as detailed in the tender specification (except insulation and fabrication/installation of Platforms, ladders etc. unless indicated otherwise in the detailed scope of work) Approximate weight: 775 MT	set	1	.16290125

Part C : Bill of Quantities

Tender Specification BHEL:PSSR:SCT:1646 R01 for Gas Turbine Generator set & Aux, LP Piping, null, Steam Turbine Generator set & Aux

at 1 X 370 MW Yelahanka CCPP

Ref.No.	Description	Unit	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
IV	LP piping system Erection, Testing, Commissioning & completion of trial operation of the complete LP Piping, Stainless Steel, Carbon Steel, GI, PVC and buried piping together with valves, fittings, hangers & supports etc. as per the detailed description in the Tender specification.	--		
IV.1	Underground piping / Buried piping, including valves (including wrapping/ coating , and Civil Works like excavation/backfilling for buried pipes, supply of sand and making sand bed for pipes laid in trenches, construction of valve chambers, air vent chambers for Fire Protection System)	MT	87.89	.0349592
--	Above Ground piping	--		

Part C : Bill of Quantities

Tender Specification BHEL:PSSR:SCT:1646 R01 for Gas Turbine Generator set & Aux, LP Piping, null, Steam Turbine Generator set & Aux

at 1 X 370 MW Yelahanka CCPP

Ref.No.	Description	Unit	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
IV.2	CS piping, including valves and Temporary Piping	MT	471.2	.15346887
IV.3	SS piping, including valves	MT	24.8	.01363625
IV.4	GI piping, including valves	MT	231.14	.04695822

Part C : Bill of Quantities

Tender Specification BHEL:PSSR:SCT:1646 R01 for Gas Turbine Generator set & Aux, LP Piping, null, Steam Turbine Generator set & Aux

at 1 X 370 MW Yelahanka CCPP

Ref.No.	Description	Unit	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
IV.5	PVC piping, including valves	MT	6.5	.00312943
V	Application of insulation, including Fixing components, cladding sheets, Mineral wool, etc. for Equipment and Piping covered under Sl. No. I, II, III, IV above. These rates shall include preparation of mattresses with specified density and proper shape to suit ducts, vessels, pipes, valves and other similar works.	MT	93	.00832425
VI	Fabrication and Installation of Platforms, Ladders, Stools etc.	MT	134	.03740266

Part C : Bill of Quantities

Tender Specification BHEL:PSSR:SCT:1646 R01 for Gas Turbine Generator set & Aux, LP Piping, null, Steam Turbine Generator set & Aux

at 1 X 370 MW Yelahanka CCPP

Ref.No.	Description	Unit	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
VII	O&M of RODM Plant: Providing Supervisors and skilled workment to operate the plant independently after commissioning, till Handing over to customer. Minimum manpower to be deployed round the clock will be 1 Supervisor and 2 workmen.	months	12	.01127258
TOTAL Weightage				1.0

VOLUME-IA PART-I CHAPTER IX

BILL OF QUANTITY REVISION 1 (BOQ)

1.9.1 **SUMMARY OF BOQ (Revision 1)**

SL NO	DESCRIPTION	Approx. Wt	Rate Schedule ID
1.	Gas Turbine, Generator and Auxiliaries	1464 MT	I
2.	Steam Turbine, Generator and Auxiliaries	987 MT	II
3.	Balance Equipment	775 MT	III
4.	LP piping		
4.1	Underground piping / Buried piping	87.89 MT	IV.1
4.2	CS piping, including valves and Temporary Piping	471.2 MT	IV.2
4.3	SS piping, including valves	24.8 MT	IV.3
4.4	GI piping, including valves	231.14 MT	IV.4
4.5	PVC piping, including valves	6.5 MT	IV.5
5.	Insulation	93 MT	V
6.	Stools for placement of Gas Turbine, Access Platforms etc.	134 MT	VI

TECHNICAL CONDITIONS OF CONTRACT (TCC)

SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Remarks	Rate schedule ID
A.0	GAS TURBINE, GENERATOR AND AUX							
A.1.1	Gas turbine	Set	1	10600 x 4620 x 5000	310	310	GT supplied as a unit without on base piping. Field erection and interconnection piping is applicable.	I
A.1.2	Accessory Package	set	1	12000 x 3500 x 3800	40	40	Supplied as package. Field erection and interconn piping to be done at site.	I
A.1.3	Turning gear	Set	1	2000 x 800 x 1600	2	2	Supplied as package. Field erection and interconn piping to be done at site.	I
A.1.4	Water wash skid	Set	1	6000 x 3000 x 3000	25	25	Supplied as package. Field erection and interconn piping to be done at site.	I
A.1.5	CO2 fire fighting system	Set	1	7500 x 2500 x 3000	10	10		I
A.1.6	Air processing unit	set	1	4500 x 3500 x 2000	3	3	Supplied as package. Field erection and interconnecting piping to be done at site.	I
A.1.7	GT air filter	set	1	8 units of (4500 x 2300 x 13500) 1 unit of (15300 x 3200 x 10200) 2 units of (6000x2400 x 2400)	--	150	Supplied loose for field erection.	I
A.1.8	Inlet ducting	Set	1	11200 x 3500 x 3500	180	180	Supplied loose for field erection. (20 boxes)	I
A.1.9	Off base enclosure	Set	1	12000 x 3500 x 3500	135	135	Supplied loose for field erection.(30 boxes)	I

Tender Specification No.: BHEL PSSR SCT 1646

TECHNICAL CONDITIONS OF CONTRACT (TCC)

SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Remarks	Rate schedule ID
A.1.10	Exhaust frame blowers	set	1	4500 x 2500 x 2000	5	5	Supplied as package. Field erection and interconnecting piping to be done at site.	I
A.1.11	Mist eliminator	Set	1	2200 x 1200 x 3200	1.5	1.5	Supplied as package. Field erection and interconnecting piping to be done at site.	I
A.1.12	GT aft diffuser(706)	Set	1	Dia 5000 x 4300 length	16	16	Supplied loose for field erection.	I
A.1.13	Exhaust diffuser duct(AO42)	set	1	2 halves of Dia 6418 x 6000 length	30	30	Supplied loose for field erection.	I
A.1.14	Ventilation ducting	Set	1	3500 x 3000 x 10000	45	45	Supplied loose for field fabrication and erection.	I
A.1.15	Assembly of on base components	Set	1	3500 x 3000 x 6000	25	25	Supplied loose for field fabrication and erection.	I
A.1.16	GT CO2 fire protection rack	Set	1	600 x 400 x 2000	0.5	0.5		I
A.1.17	Inlet plenum	Set	1	4755 x 3000 x 2900	40	40	Supplied loose for field fabrication and erection.	I
A.1.18	Jacking oil skid	set	1	2000 x 2200 x 800	2.5	2.5		I
A.1.19	DLN combustion system	Set	1	2 units of (6000 x 2400 x 2400)	16	16	Supplied loose for field fabrication and erection.	I
A.1.20.0	Vent fans							
A.1.20.1	Vent fans, Acc compt	Set	2	1300 x 1200 x 1500	0.8	1.6		I
A.1.20.2	Vent fan, Load compt	Set	2	2000 x 1000 x 2200	1.5	3.0		I
A.1.20.3	Vent fan, Exhaust duct	Set	2	2500 x 2000 x 1600	3.2	6.4		I
A.1.20.4	Vent fan, Turbine	Set	3	3000 x 2500 x 3000	5.7	17.1		I
A.1.20.5	Vent fan, Gas compt	Set	2	1200 x 1200 x 2000	0.6	1.2		I
A.2.0	Gas Turbine Generator							

Tender Specification No.: BHEL PSSR SCT 1646

TECHNICAL CONDITIONS OF CONTRACT (TCC)

SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Remarks	Rate schedule ID
A.2.1	Stator with H2 coolers	Set	1	10000 x 4900 x 5000	228	228		
A.2.2	H2 cooler	Set	1	1000 x 1000 x 4700	8.6	8.6		
A.2.3	End shield and completing assemblies	Set	1	3200 x 3200x 800	23.3	23.3		
A.2.4	Rotor	Set	1	9500 x 1125 x 1125	43	43		
A.2.5	Terminal box with internals	Set	2		3.3	6.6		
A.2.6	Slip ring shaft assembly	Set	1		8.6	8.6		
A.2.7	Seal oil system complete including seal oil tank	Set	1		12	12		
A.2.8.0	Bought Out Items (Haridwar Supply)	--	--	--	--	10		
A.2.8.1	Empty H2 Cylinder	NO	120					
A.2.8.2	Empty CO2 Cylinder	NO	63					
A.2.8.3	Vapour Exhauster	NO	2					
A.2.8.4	Refrigeration Gas Dryer	NO	2					
A.2.8.5	Generator Liquid Drain Pump	Set	1					
A.3.0	Gas Turbine Piping							
A.3.1	Lube oil interconnecting piping GT and Gen	Set	1	3500 x 3000 x 6000	20	20	Supplied loose for field fabrication and erection.	
A.3.2	LO field flushing piping	Set	1	3500 x 3000 x 6000	6	6	Supplied loose for field fabrication and erection.	
A.3.3	Gas interconnection piping	Set	1	3500 x 3000 x 6000	18	18	Supplied loose for field fabrication and erection.	
A.3.4	Water wash piping	Set	1	3500 x 3000 x 6000	2	2	Supplied loose for field fabrication and erection.	
A.3.5	Field drain piping and headers	Set	1	3500 x 3000 x 6000	12	12	Supplied loose for field fabrication and erection.	

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TECHNICAL CONDITIONS OF CONTRACT (TCC)

SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
B.0	STEAM TURBINE, GENERATOR AND AUX						
B.1.0	STEAM TURBINE & AUX. PACKAGE						
B.1.1	Steam Turbine(Combined HP-IP module)	set	1	8000 x 4300 x 3500	125	125	II
B.1.2	LP injection valve casing assembly	set	2	1800 x 1725 x 800	--	2.5	II
B.1.3	Valve actuators	set	12	1500 x 400 x400	--	1	II
B.1.4	Front bearing pedestal(K- turbine)	set	1	1770 x 2500 x 1435	--	9.5	II
B.1.5	Rear bearing pedestal(K- turbine)	set	1	1710 x 3100 x 610	--	11	II
B.1.6	Rear bearing pedestal(LP- turbine)	set	1	1360 x2320 x 1725	--	6.5	II
B.1.7	Bearing pedestal loose parts	set	1	1000 x 1000 x 1000	--	1.1	II
B.1.8	LP rotor	set	1	6387 x 2850 x 2850	--	50.2	II
B.1.9	Upper LP inner casing-I	set	1	1280 x 3100 x 1390	--	5	II
B.1.10	Upper LP inner casing-II	set	1	2720 x 6260 x 1770	--	16.5	II
B.1.11	Lower LP inner casing-II	set	1	2710 x 6260 x 2120	--	22	II
B.1.12	Diffuser(LP)	set	2	675 x 4150 x 4150	--	1.7	II
B.1.13	LP longitudinal girder	set	2	6190 x 1750 x 1650	--	12	II
B.1.14	LP side wall	set	2	925 x 6200 x 3600	--	8.5	II
B.1.15	LP outer casing(middle piece)	set	1	3110 x 6550 x 2660	--	10	II
B.1.16	LP outer casing(end pieces)	set	2	1235 x 6500 x 2660	--	4.5	II
B.1.17	LP turbine loose parts	set	1	2000 x 2000 x 2000	--	7.3	II
B.1.18	Cross around piping	set	2	4700 x 2500 x 1200	--	1.7	II
B.1.19	Cross around piping	set	2	4400 x 2500 x 1200	--	1.5	II
B.1.20	Cross around piping – loose parts	set	2	1000 x 1000 x 1000	--	0.5	II
B.1.21	IP bypass valve	set	2	850 x 2300 x 4300	--	4.5	II
B.1.22	LP injection bypass valve	set	1	700 x 1800 x 3800	--	3	II
B.1.23	LP injection steam strainer	set	1	1670 x 1010 x 850	--	1.1	II
B.1.24	LP base plates	set	4	570 x 1070 x 170	--	0.8	II
B.1.25	Foundation bolts	set	1	4500 x 3000 x 2000	--	4.6	II
B.1.26	HP oil supply unit	set	1	5000 x 3000 x 3500	--	6.5	II

Tender Specification No.: BHEL PSSR SCT 1646

TECHNICAL CONDITIONS OF CONTRACT (TCC)

SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
B.1.27.1	Main oil pump assembly with AC motor	set	2	1060 x 1000 x 1500	--	1.5	II
B.1.27.2	Emergency oil pump assembly with DC motor	set	1	1060 x 1000 x 1500	--	0.8	II
B.1.27.3	Emergency oil pump assembly with AC motor	set	1	1060 x 1000 x 1250	--	0.55	II
B.1.27.4	Lifting oil pump assembly with AC motor	set	1	1060 x 1000 x 1700	--	0.75	II
B.1.27.5	Lifting oil pump assembly with DC motor	set	1	1200 x 1100 x 1800	--	1	II
B.1.27.6	Turbine oil purification unit	set	1	2200 x 2500 x 1800	--	2.5	II
B.1.27.7	Lube oil filter	set	1	1850 x 900 1675	--	0.5	II
B.1.27.8	Lifting oil filter	set	1	350 x 300 x 400	--	0.3	II
B.1.27.9	Centrifugal exhaust fan assembly	set	2	400x400x650	--	0.2	II
B.1.27.10	Demister	set	1	400 x 400 x 1000	--	0.1	II
B.1.27.11	Lube oil tank	set	1	4500 x 2700 x 2450	--	7.7	II
B.1.27.12	Lube oil accumulator assembly	set	1	1350 x 500 x 2300	--	0.8	II
B.1.27.13	Field mounted control valves	set	8	650 x 400 x 1700	--	19.2	II
B.1.27.14	Gland steam condenser	set			--		II
a.	Complete assembly	set	1	2750 x 1300 x 1400	--	1.4	II
b.	Fan & Motor	set	2	1000 x 600 x 800	--	1	II
B.1.27.15	Steam turbine oil cooler	set			--		II
	Per cooler	set	2	Dia 750 x 4800	--	10.8	II
B.1.27.16	STG air cooler	set			--		II
	Per element	set	6	L3800 x W1000 x H530	--	7.2	II
B.1.27.17	Vacuum pump	No.	2	--	3.1	6.2	II
B.2.0	STEAM TURBINE GENERATOR						
B.2.1	Generator stator	Set	1	9350 x 4150 x 3900	195	195	II
B.2.2	Generator rotor	set	1		--	43	II
B.2.3	Bearings	set	2		--	5	II
B.2.4	Accessories	set	1		--	8	II
B.2.5	Exciter	set	1		--	3	II
B.3.0	INTEGRAL PIPING & INSULATION						

Tender Specification No.: BHEL PSSR SCT 1646

TECHNICAL CONDITIONS OF CONTRACT (TCC)

SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
B.3.1	STG integral piping including supports	set	1		--	50	II
B.3.2	Insulation for STG integral piping	set	1		--	12	II
B.4.0	HEAT EXCHANGERS						
B.4.1.0	SURFACE CONDENSER						
B.4.1.1	Tubes	Nos.	~16400	OD23 x Thk0.5 x 9600 Long	--	67.0	II
B.4.1.2	Front water box assembly	Nos.	2	5000 x 3030 x 1900	--	19	II
B.4.1.3	Rear water box assembly	Nos.	2	4400 x 3030 x 1500	--	15.2	II
B.4.1.4	Front water chamber assembly	Nos.	2	4400 x 3050 x 400	--	11.2	II
B.4.1.5	Rear water chamber assembly	Nos.	2	4400 x 3050 x 440	--	11.2	II
B.4.1.6	Hotwell assembly	Nos.	1	10300 x 2500 x 1100	--	5.7	II
B.4.1.7	Bottom plate assembly	Nos.	2	6000 x 5000 x 250	--	17	II
B.4.1.8	Support plate assembly	Nos.	24	4900 x 2800 x 12	--	27.6	II
B.4.1.9	Side wall assembly	Nos.	4	10100 x 2500 x 12	--	5	II
B.4.1.10	Side wall assembly	Nos.	4	10100 x 2600 x 12	--	5	II
B.4.1.11	Dome wall assembly#1(TS)	Nos.	2	10000 x 2500 x 200	--	6.8	II
B.4.1.12	Dome wall assembly#2(GS)	Nos.	2	10000 x 2500 x 200	--	6.8	II
B.4.1.13	Dome wall assembly#3(FWB side)	Nos.	2	6400 x 3100 x 200	--	9	II
B.4.1.14	Dome wall assembly#3(FWB side)	Nos.	2	5300 x 2000 x 200	--	8	II
B.4.1.15	Dome wall assembly#4(RWB side)	Nos.	2	6400 x 3100 x 200	--	7.6	II
B.4.1.16	Dome wall assembly#4(RWB side)	Nos.	2	5300 x 2000 x 200	--	6.6	II
B.4.1.17	Dome stiffeners	Nos.	30	Dia 168.3 x Thk 21.97 x L6000	--	2.9	II
B.4.1.18	Dome stiffeners plate	Nos.	2	PI 32 x 2500 x 6300	--	4	II
B.4.1.19	Loose items for Condenser	set	1	--		18	II
B.5.0	RE JOINTS / COLTCS						
B.5.1.0	RE Joints (Compensating Type) – 1400 NB						
B.5.1.1	Flange Assembly (Cond. W/Box side)	Nos.	4	2200 X 2200 X 350	1.45	5.8	II

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SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
B.5.1.2	Flange Assembly (Piping side)	Nos.	8	2200 X 2200 X 350	1.45	11.6	II
B.5.1.3	Bare Bellow	Nos.	8	1900 X 1900 X 400	0.3	2.4	II
B.5.2.0	RE Joints (Conventional Type) – 1400 NB						
B.5.2.1	Bare Bellow	Nos.	3	1900 x 1900 x 400	0.3	0.9	II
B.5.2.2	Flange	Nos.	6	1900 x 1900 x 70	0.32	1.92	II
B.5.3	COLTCS	Nos.	2	2700 x 1600	5.6	11.2	II
C.0	BALANCE EQUIPMENT						
C.1.0	GAS BOOSTER COMPRESSOR, WITH COOLING MODULE						
C.1.1	Compressor	Nos.	2	7000 x 3500 x 2800	24.8	49.6	III
C.1.2	HT Motor	Nos.	2	2800 x 24500 x 1600	16	32	III
C.1.3	Lube oil console	Nos.	2	7000 x 4500 x 3000	9	18	III
C.1.4	Bypass cooler	Nos.	2	φ 1000 x 5000	4	8	III
C.1.5	Oil centrifuge	Nos.	2		1.5	3	III
C.1.6	Seal gas skid	Nos.	2	5000 x 2000 x 2500	6	12	III
C.1.7	Process gas skid	Nos.	2		6	12	III
C.1.8	Lube oil overhead tank	Nos.	1	φ 1500 x 2000	0.8	0.8	III
C.1.9.0	Cooling water module						III
C.1.9.1	Tube bundle	Set	4	13000 x 2000 x 600	--	8.4	III
C.1.9.2	Fans	Nos.	4	4000 x 3000 x 1000	--	1.2	III
C.1.9.3	Motors	Nos.	4	800 x 600 x 300	--	1.25	III
C.1.9.4	Structurals	Set	1		--	46	III
C.1.9.5	Miscellaneous	Set	1	4000 x 3000 x 400	--	4	III
C.1.10	PHE (PESD Supply)	Nos.	2	3000 x 1500 x 1500	3.7	7.4	III
C.1.11	NaOH Dosing Skid (PESD Supply)	Set	1	3000 x 2500 x 400	1.5	1.5	III
C.2.0	GAS CONDITIONING SYSTEM (PESD SUPPLY)						
C.2.1	Natural gas scrubber skid	No.	1	6700 x 3800 x 4000	1.1	1.1	III
C.2.2	Filter separator skid	No.	1	6500 x 4300 x 4000	19.5	19.5	III
C.2.3	Coalescer Skid (Absolute filter skid)	No.	1	6200 x 3600 x 4300	10.5	10.5	III

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SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
C.2.4	Performance heater skid	No.	1	--	14	14	III
C.2.5	Final scrubber skid	No.	1	5400 x 2700 x 3800	7.5	7.5	III
C.2.6	2 cu.m Fuel Gas Drain Tank	No.	1	3400 x 900 x 1500	1.4	1.4	III
C.2.7	30 cu.m Drain tank for performance heater	No.	1	6300 x 3000 x 3500	7.8	7.8	III
C.2.8	Flare header	No.	1		16	16	III
C.3.0	NITROGEN SYSTEM (PESD SUPPLY)						
C.3.1	Nitrogen generation system skid	No.	2	4000 x 6000	2.5	5	III
C.3.2	Nitrogen storage tank	No.	1	1800 x 1800	1.2	1.2	III
C.4.0	DOSING SYSTEM (PEM Supply)						
C.4.1	Hydrazine dosing skid	No.	1	2500 x 2500	5.5	5.5	III
C.4.2	Ammonia dosing skid	No.	1	2500 x 2500	5.5	5.5	III
C.4.3	NaOH dosing skid	No.	1	2500 x 2500	2.5	2.5	III
C.4.4	Phosphate dosing skid	No.	1	2500 x 2500	7.5	7.5	III
C.5.0	PUMPS & MISC. EQUIPMENT						
C.5.1.0	BOILER FEED PUMP (BFP +BP)						
C.5.1.1	BFP skid (Pump assy + Base plate + tubine + seal coolers)	No.	2	2250 x 1000 x 1050	5.77	11.54	III
C.5.1.2	BP skid(Pump assly + Base plate + tubing)	No.	2	1650 x 1200 x 950	2.511	5.022	III
C.5.1.3	Hydraulic coupling assly.	No.	2	1800 x 1700 x 1800	3.56	7.12	III
C.5.1.4	Hyd coupling W.O Cooler	No.	2	3700 x 1500 x 500	1.475	2.95	III
C.5.1.5	Hyd coupling L.O cooler	No.	2	3100 x 1300 x 450	0.775	1.55	III
C.5.1.6	Hyd coupling loose items	Set	2		0.71	1.42	III
C.5.1.7	Suction strainer at BP suction	No.	2	900 x 800 x 1400	800	1.6	III
C.5.1.8	BFP recirculation valve	No.	2	1800 x 550 x 1400	0.35	0.7	III
C.5.1.9	HT Motor for BFP	No.	2	3535 x 2930 x 2760	13.36	26.72	III
C.5.1.10	Loose items	Set	2	--	2.449	4.898	III
C.5.2.0	CONDENSATE EXTRACT PUMP(CEP)						
C.5.2.1	CEP assembly	No.	2	5200 x 1200 x 1200	5.75	11.5	III
C.5.2.2	Canister	No.	2	3250 x 850 x 1000	1.3	2.6	III

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C.5.2.3	CEP foundation ring	No.	2	1200 x 1200 x 300	0.5	1	III
C.5.2.4	CEP suction strainer	No.	2	1100 x 1100 x 1600	1.35	2.7	III
C.5.2.5	Loose items	Sets	2		0.21	0.42	III
C.5.2.6	HT Motor for CEP	No.	2	1975 x 1550 x 2340	4.9	9.8	III
C.5.3.0	LP-BFP						
C.5.3.1	LPBFP assembly	No.	2	1000 x 600 x 350	0.75	1.5	III
C.5.3.2	LPBFP drive motor	No.	2	1000 x 600 x 250	0.27	0.54	III
C.5.3.3	LPBFP suction strainer	No.	2	300 x 300 x 400	0.3	0.6	III
C.5.3.4	LPBFP R.C valve	No.	2	800 x 300 x 1000	0.2	0.4	III
C.5.3.5	Common foundation frame	No.	2	2500 x 600 x 200	0.525	1.05	III
C.5.4.0	CPH-RC pump						
C.5.4.1	CPHRCP assembly	No.	3	1000 x 600 x 350	1.5	4.5	III
C.5.4.2	CPHRCP drive motor	No.	3	2350 x 1400 x 1350	3.8	11.4	III
C.5.4.3	CPHRCP suction strainer	No.	3	700 x 500 x 400	0.8	2.4	III
C.5.4.4	CPHRCP R.C valve	No.	3	800 x 300 x 1000	0.3	0.9	III
C.5.4.5	Common foundation frame	No.	3	2500 x 600 x 200	1.2	3.6	III
C.5.5.0	CW pumps						
C.5.5.1	Suction casing	No.	3	1800 x 1800 x 1000	1.025	3.075	III
C.5.5.2	Impeller	No.	3	1400 x 1400 x 700	3.7	1.110	III
C.5.5.3	Pump casing assembly	No.	3	1800 x 1800 x 1200	2.18	6.540	III
C.5.5.4	Element-I	No.	3	1800 x 1800 x 2000	1.145	3.435	III
C.5.5.5	Element-II	No.	3	2000 x 2000 x 1800	1.51	4.53	III
C.5.5.6	Discharge elbow	No.	3	2500 x 2500 x 2500	7	21.0	III
C.5.5.7	Sole plate for pump	No.	12	500 x 500 x 2500	0.37	4.44	III
C.5.5.8	Thrust bearing	No.	3	1000 x 1000 x 800	0.8	2.40	III
C.5.5.9	Shafts	No.	9	4000 x 1000 x 500	2	6.00	III
C.5.5.10	Motor stool	No.	3	2300 x 2300 x 1600	2.5	7.50	III
C.5.5.11	Thrust block assembly	No.	3	500 x 500 x 1400	0.31	9.30	III

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SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
C.5.5.12	Connecting coupling	No.	3	500 x 500 x 1000	0.32	9.60	III
C.5.5.13	Counter flange	No.	3	2000 x 2000 x 1000	0.37	1.11	III
C.5.5.14	Hardware & miscellaneous	No.	3	2000 x 2000 x 2000	1.8	5.40	III
C.5.5.15	HT Motor for CWP	No.	3	3100 x 2000 x 3300	12.3	36.900	III
C.5.6	CW makeup pump	No.	2	2500 x 1000	4.5	9	III
C.5.7	RO plant supply pumps	No.	2	2000 x 1000	1.9	3.8	III
C.5.8	Service water pumps	No.	2	2500 x 1000	2.1	4.2	III
C.5.9	ACW pump	No.	3	3500 x 1500	6	18	III
C.5.10	DMCW pump	No.	3	3500 x 1500	6	18	III
C.5.11	Hotwell makeup pump	No.	3	2000 x 1000	1	3	III
C.5.12	HRSG fill pump	No.	1	3000 x 1500	2.5	2.5	III
C.5.13	DM Water transfer pump	No.	2	2000 x 1000	1	2	III
C.5.14	Plate Heat Exchangers	No.	3	3500 x 1500	10	30	III
C.5.15	Self cleaning strainers	No.	2	2000 x 1500	2	4	III
C.5.16	Lube oil transfer pump	No.	2	--	0.6	1.2	III
C.5.17	Sump Pumps/ Submersible Pumps	No.	3	--		1	III
C.5.18	FST and Deaerator	Set	1		37	37	III
C.5.19	Insulation for FST, Deaerator and MISC eqpt	Set				80	V
	BHOPAL SUPPLY ITEMS (C.5.20 to C.5.24)						
C.5.20	DMCW Overhead tank (10M3)	No.	1	7150 X 2000 X 2500	6	6	III
C.5.21	Unloading vessel(1 M3)	No.	1	2250 X 1200 X 900	0.6	0.6	III
C.5.22	Atmospheric Flash Tank	No.	1	2200 X 2200 X 2600	2.2	2.2	III
C.5.23	Maint. Oil Tank	No.	1	3350 X 2850 X 2650	3.9	3.9	III
C.5.24	Potable Water Tank	No.	1	2800 X 2800 X 2700	3.6	3.6	III
C.6.0	SINGLE GIRDER CRANES (PEM Supply)					20	III
C.6.1	Underslung EOT for Air compressor house, 3T capacity	Nos	1	--			III
C.6.2	Underslung EOT for DG room, 8T capacity	Nos	1	--			III
C.6.3	Underslung EOT for Raw water pump house, 5T capacity	Nos	1	--			III

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SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
C.6.4	Semi gantry for CW pump house screens and gates, 8T capacity	Nos	1	--			III
C.7.0	ELECTRIC HOISTS (PEM Supply)					10	III
C.7.1	BFP building, 3 T	Nos	1	(Lift: 6 m, Travel: 21 m)			III
C.7.2	Vacuum pump handling, 3 T	Nos	2	(Lift: 6 m, Travel: 11 m)			III
C.7.3	DMCW pumps handling, 5 T	Nos	1	(Lift: 6 m, Travel: 17 m)			III
C.7.4	AC PLANT ROOM, 3 T	Nos	1	(Lift: 6.5 m, Travel: 16 m)			III
C.7.5	BFP Building MCC room, 3 T	Nos	1	(Lift: 15 m, Travel: 5.5 m)			III
C.7.6	Elevator m/c room: Service cum control building, 3 T	Nos	1	(Lift: 9 m, Travel: 10 m)			III
C.7.7	GCB for GTG, 8 T	Nos	1	(Lift: 9 m, Travel: 5 m)			III
C.7.8	End shield turbine side, 8 T	Nos	1	(Lift: 12 m, Travel: 13 m)			III
C.7.9	Raw water pump house, 3 T	Nos	1	(Lift: 9 m, Travel: 6 m)			III
C.8.0	MANUAL HOIST (CHAIN PULLEY BLOCK) – PEM Supply					3	III
C.8.1	Lube Oil Unloading area for handling oil barrels, 1 T	Nos	1	(Lift: 6 m)			III
C.8.2	General maint. Purpose (loose type), 2 T	Nos	2	(Lift: 6 m)			III
C.9.0	FIRE FIGHTING SYSTEM						
C.9.1	Vertical type electrical motor driven pump with all accessories	set	1	2000 x 2000 x 2200	2.5	2.5	III
C.9.2	Vertical engine diesel engine driven stand by pump including diesel engine & gear heads	set	1	3400 x 1500 x 4500	3.6	3.6	III
C.9.3	Vertical type electric motor driven horizontal centrifugal jockey pump with motor and accessories	set	2	1500 x 1500 x 1000	0.55	1.1	III
C.9.4	Air compressors (30 M3/Hr, Discharge pressure 12.3 KG/CM2)	set	2	1000 x 600 x 700	0.17	0.34	III
C.9.5	Hydro pneumatic tank, 18M3	set	1	Dia 2m x 4 M ht	8.1	8.1	III
C.9.6.0	Hydrant System						
C.9.6.1.0	MS Black Piping IS: 3589/1239 - Medium grade galvanized Iron pipes						
C.9.6.1.1	250 NB – Above Ground	Metres	50	10"	0.060	3	IV.4
C.9.6.1.2	200 NB– Above ground	Metres	450	8"	0.043	19.35	IV.4
C.9.6.1.3	200 NB– Below ground	Metres	1650	8"	0.043	70.95	IV.1
C.9.6.1.4	150 NB– Above ground	Metres	240	6"	0.028	6.72	IV.4

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C.9.6.1.5	150 NB– Below ground	Metres	560	6”	0.028	15.68	IV.1
C.9.6.1.6	100 NB– Above ground	Metres	250	4”	0.016	4	IV.4
C.9.6.1.7	80 NB– Above ground	Metres	1000	3”	0.012	12	IV.4
C.9.6.1.8	50 NB– Above ground	Metres	100	2”	0.009	0.9	IV.4
C.9.6.2.0	Gate Valve (CI Body, PN16, as per IS 780) (Rising Spindle)						
C.9.6.2.1	250 NB	Nos	2	10”	0.2	0.4	IV.4
C.9.6.2.2	200 NB (Below Ground)	Nos	10	8”	0.126	1.26	IV.1
C.9.6.2.3	150 NB	Nos	20	6”	0.076	1.52	IV.4
C.9.6.2.4	100 NB	Nos	2	4”	0.044	0.088	IV.4
C.9.6.2.5	80 NB	Nos	10	3”	0.027	0.27	IV.4
C.9.6.3.0	Non return Valves (CI Body, PN16, as per IS 5312)						
C.9.6.3.1	250 NB	Nos	2	10”	0.2	0.4	IV.4
C.9.6.3.2	50 NB	Nos	2	3”	0.027	0.054	IV.4
C.9.6.3.3	25 NB	Nos	1	1”	0.02	0.02	IV.4
C.9.6.4.1	Basket Strainer 250 NB (Simplex type)	Nos	2	10”	0.300	0.6	IV.4
C.9.6.4.2	Basket Strainer 80 NB (Simplex type)	Nos	2	3”	0.0405	0.081	IV.4
C.9.6.5.1	SS Hydrant valves (external)	Nos	130	63 NB	0.015	1.95	IV.4
C.9.6.5.2	SS Hydrant valves (internal)	Nos	60	63 NB	0.015	0.9	IV.4
C.9.6.6.1	RRL Hoses Type A (internal) 7.5 m long	Nos	130		0.005	0.65	III
C.9.6.6.2	RRL Hoses Type A (external) 15 m long	Nos	260		0.005	1.3	III
C.9.6.6.3	MS Hose boxes 18 Gauge (internal)	Nos	60	0.75 x 0.6 x 0.25	0.010	0.6	III
C.9.6.6.4	MS Hose boxes 18 Gauge (external)	Nos	130	0.75 x 0.6 x 0.25	0.010	1.3	III
C.9.6.6.5	Water monitor (75 mm size, nozzle hose 38 mm) along with branch pipe and an isolation valve	Nos	6	75 mm	0.050	0.3	III
C.9.6.7	Branch pipe, nozzle & coupling (internal)	Nos	190		0.010	1.9	IV.4
C.9.7.0	Fire Extinguishers						
C.9.7.1	Pressurised water type (9 lit. cap.) (IS:15683 operated by CO2 cartridge type)	Nos	68	9 Ltr capacity	0.020	1.36	III

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C.9.7.2	Foam type (9 lit. cap. IS: 15683)	Nos	6	9 Ltr	0.020	0.12	III
C.9.7.3	CO2 type (4.5 kg. Cap. IS: 15683)	Nos	16	4.5 Kg	0.010	0.16	III
C.9.7.4	Dry Chemical powder (ABC Type, 6 kg. Cap. IS: 15683)	Nos	62	6 Kg	0.015	0.93	III
C.9.8.0	HVW Spray System for Generator Transformers, Aux Transformers and Station Transformers						
C.9.8.1	Automatic Deluge valve assembly with all accessories 150 NB	Nos	4	63 NB	0.055	0.22	IV.4
C.9.8.2	Isolation Valve for Deluge valve (Gate valves) - 150 NB	Nos	12	6"	0.076	0.912	IV.4
C.9.8.3	Y - Type strainer - 150 NB	Nos	4	6"	0.076	0.304	IV.4
C.9.8.4.0	Piping (Over Ground Pipe)						
C.9.8.4.1	150 NB G.I. Pipe	Metres	120	6"	0.028	3.36	IV.4
C.9.8.4.2	100 NB G.I. Pipe	Metres	80	4"	0.016	1.28	IV.4
C.9.8.4.3	80 NB G.I. Pipe	Metres	800	3"	0.012	9.6	IV.4
C.9.8.4.4	65 NB G.I. Pipe	Metres	396	2.5"	0.010	3.96	IV.4
C.9.8.4.5	50 NB G.I. Pipe	Metres	300	2"	0.009	2.7	IV.4
C.9.8.4.6	40 NB G.I. Pipe	Metres	600	1.5"	0.005	3	IV.4
C.9.8.4.7	25 NB G.I. Pipe	Metres	1000	1"	0.0025	2.5	IV.4
C.9.8.5	Spray Nozzles	Nos	900		0.0005	0.45	IV.4
C.9.8.6.0	Pylon Supports						
C.9.8.6.1	80 NB - MS	Metres	350		.012	4.2	IV.4
C.9.8.6.2	50 NB - MS	Metres	400		.009	3.6	IV.4
C.9.9.0	HVW Spray System for Generator seal oil , lube oil , COT & DOT						
C.9.9.1	Automatic Deluge valve assembly with all accessories 100 NB	Nos	4	63 NB	0.055	0.22	IV.4
C.9.9.2	Isolation Valve for Deluge valve (Gate valves) 100 NB	Nos	12	6"	0.044	0.528	IV.4
C.9.9.3	Y - Type strainer 150 NB	Nos	4	6"	0.045	0.18	IV.4
C.9.9.4.0	Piping (Over Ground Pipe)						
C.9.9.4.1	100 NB G.I. Pipe	Metres	288	4"	0.016	4.608	IV.4
C.9.9.4.2	80 NB G.I. Pipe	Metres	288	3"	0.012	3.456	IV.4
C.9.9.4.3	65 NB G.I. Pipe	Metres	400	2.5"	0.010	4	IV.4

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C.9.9.4.4	50 NB G.I. Pipe	Metres	300	2"	0.009	2.7	IV.4
C.9.9.4.5	40 NB G.I. Pipe	Metres	528	1.5"	0.005	2.64	IV.4
C.9.9.4.6	25 NB G.I. Pipe	Metres	960	1"	0.0025	2.4	IV.4
C.9.9.5	Spray Nozzles	Nos	800		0.0005	0.4	IV.4
C.9.9.6.0	Pylon Supports						
C.9.9.6.1	80 NB - MS	Metres	350		0.012	4.2	IV.4
C.9.9.6.2	50 NB - MS	Metres	400		0.009	3.6	IV.4
C.9.10.0	MVW Spray System for Cable galleries of TG Building & BFP Building						
C.9.10.1	Automatic Deluge valve assembly with all accessories - 100 NB	Nos	20		0.055	1.1	IV.4
C.9.10.2	Isolation Valve for Deluge valve (Gate valves) 100 NB	Nos	60		0.044	2.64	IV.4
C.9.10.3	Y - Type strainer - 100 NB	Nos	20		0.044	0.88	IV.4
C.9.10.4.0	Piping (Over Ground Pipe)						
C.9.10.4.1	80 NB G.I. Pipe	Metres	90	3"	.012	1.08	IV.4
C.9.10.4.2	65 NB G.I. Pipe	Metres	749	2.5"	.010	7.49	IV.4
C.9.10.4.3	50 NB G.I. Pipe	Metres	270	2"	.009	2.43	IV.4
C.9.10.4.4	40 NB G.I. Pipe	Metres	117	1.5"	.005	0.585	IV.4
C.9.10.4.5	32 NB G.I. Pipe	Metres	352.8	1.25"	.004	1.4112	IV.4
C.9.10.4.6	25 NB G.I. Pipe	Metres	1377	1"	0.0025	3.4425	IV.4
C.9.10.5	Spray Nozzles	Nos	450		0.00025	0.1125	IV.4
C.10.0	RODM SYSTEM						
C.10.1	Basket strainers & accessories	Nos.	2	Dia.350 x 1500 ht	0.1	0.2	III
C.10.2	UF system pressurized	Set	1	3500 x 2000 x 2350	2.5	2.5	III
C.10.3	UF permeate water storage tank	No.	1	Dia.3000 x 3800 ht	1	1	III
C.10.4	UF CIP cum Back pulse tank	No.	1	Dia.1250 x 2700 ht	0.3	0.3	III
C.10.5	UF Back pulse cum CIP pump with motor & accessories	Set	2	1500 x 670 x 500	0.3	0.6	III
C.10.6	UF blower with motor & accessories	Set	2	1100 x 500 x 700	0.4	0.8	III
C.10.7	NaOCl dosing system for UF CIP	Set	1	1500 x 700 x 1600	0.3	0.3	III

Tender Specification No.: BHEL PSSR SCT 1646

TECHNICAL CONDITIONS OF CONTRACT (TCC)

SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
C.10.8	Citric acid dosing system	Set	1	1500 x 700 x 1600	0.3	0.3	III
C.10.9	RO -1 feed pumps with motor & accessories	Set	2	1100 x 675 x 600	0.3	0.6	III
C.10.10	RO-1 skid consisting of cartridge filters (1nos.), HP pump(2nos.), RO membrane, pressure vessels and accessories	Set	1	7500 x 2100 x 2850	4	4	III
C.10.11	RO-1 membranes	Set	54	Dia.8" x 40" L	0.016	0.9	III
C.10.12	RO-1 cartridge filters elements	Set	13	Dia.2.5"x 40" long	0.005	0.01	III
C.10.13	Dosing system consist of following Chemical Dosing system : a) HCl dosing b) Anti-scalant c) De-Chlorination (SBS)	Set	3	1500 x 700 x 1600	0.5	1.5	III
C.10.14	RO -2 feed pumps with motor & accessories	Set	2	1100 x 670 x 600	0.3	0.6	III
C.10.15	RO-2 skid consisting of cartridge filters (1nos.), HP pump(2nos.), RO membrane, pressure vessels and accessories	Set	1	7500 x 2100 x 2850	3.5	3.5	III
C.10.16	RO-2 membranes (3:1 array) and each vessel 6 nos element	Set	24	Dia.8" x 40" L	0.016	0.384	III
C.10.17	RO-2 cartridge filters elements	Set	10	Dia.2.5"x 40" long	0.005	0.05	III
C.10.18.0	Interconnecting piping						
C.10.18.1	CS piping	MT	0.5	DN15 to DN100	--	0.5	IV.2
C.10.18.2	SS piping	MT	0.5	DN15 to DN100	--	0.5	IV.3
C.10.18.3	GI piping	MT	0.5	DN15 to DN100	--	0.5	IV.4
C.10.18.4	PVC piping	MT	6.5	DN15 to DN100	--	6.5	IV.5
C.10.19	RO CIP tank (common for RO stage-1 & stage-2)	Set	1	Dia.1600 x 3000 ht	0.4	0.4	III
C.10.20	RO CIP pumps with motor & accessories	Set	2	1100 x 675 x 600	0.3	0.6	III
C.10.21	RO Chemical cleaning cartridge filters vessel, elements & accessories	Set	1	Dia.500 x 3000 ht	0.2	0.2	III
C.10.22	RO Chemical cleaning cartridge filters elements	Set	14	Dia.2.5"x 40" long	0.005	0.065	III
C.10.23	Handling arrangement - Monorail hoist Electrical operated mono rail hoist with Geared Trolley : Capacity 1 MT for RODM Plant	Set	1	--	0.25	0.25	III
C.10.24	Steel for fabrication (MS fabricated Supports , Platforms & pipe rack), Hand rail, Floor grill & Toe guard plates for RODM	MT	34		--	34	VI

Tender Specification No.: BHEL PSSR SCT 1646

TECHNICAL CONDITIONS OF CONTRACT (TCC)

SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
D.0	LP PIPING (PIPING CENTRE SUPPLY)						
D.1	BOILER FILLING PIPING PGMA 80-429	MT	2	--	--	2	IV.2
D.2	WELDING ELECTRODES-1 PGMA 80-992	MT	0.9	--	--	0.9	IV.2
D.3	MISC ERECTION MATLS PGMA 80-993	MT	1	--	--	1	IV.2
D.4	CONDENSATE SUCTION PGMA 80-400	MT	2.6	--	--	2.6	IV.2
D.5	CD FROM PUMP TO LPH1/DC INLET TEE AND RE PGMA 80-401	MT	6.5	--	--	6.5	IV.2
D.6	CD FROM LPH1/DC INLET TEE TO TG TP PGMA 80-402	MT	17.8	--	--	17.8	IV.2
D.7	CONDENSATE DUMP FROM HEADER PGMA 80-408	MT	2.1	--	--	2.1	IV.2
D.8	BOILER FEED PUMP SUCTION PGMA 80-420	MT	5.4	--	--	5.4	IV.2
D.9	DEAERATING HEATER OVER FLOW AND DRAIN PGMA 80-446	MT	2.2	--	--	2.2	IV.2
D.10	TG AUX COOLING WATER PGMA 80-463	MT	105	--	--	105	IV.2
D.11	DEMINERALISED WATER SYSTEM PGMA 80-473	MT	9.4	--	--	9.4	IV.3
D.12	SERVICE WATER PIPING (CS) PGMA 80-477	MT	45	--	--	45	IV.2
D.13	SERVICE WATER PIPING(GI) PGMA 80-477	MT	45	--	--	45	IV.4
D.14	HIGH PRESSURE DOSING PIPING PGMA 80-600	MT	0.1	--	--	0.1	IV.2
D.15	LOW PRESSURE DOSING PIPING PGMA 80-601	MT	0.2	--	--	0.2	IV.2
D.16	SERVICE AIR FOR INDIVIDUAL UNITS PGMA 80-612	MT	26.9	--	--	26.9	IV.4
D.17	INSTRUMENT AIR FOR INDIVIDUAL UNIT PGMA 80-616	MT	7.4	--	--	7.4	IV.4
D.18	LUBE OIL PIPING SYSTEM PGMA 80-673	MT	3.9	--	--	3.9	IV.3
D.19	H AND S FOR LP PIPING(CS) PGMA 80-933	MT	27	--	--	27	IV.2
D.20	H AND S FOR LP PIPING(SS) PGMA 80-933	MT	1	--	--	1	IV.3
D.21	H AND S FOR LP PIPING(GI) PGMA 80-933	MT	9	--	--	9	IV.4
D.22	TEST THERMOWELLS PGMA 81-415	MT	0.5	--	--	0.5	IV.2
D.23	VLH AND CLH Critical PPG –HERP PGMA 80-937	MT	8	--	--	8	IV.2
D.24	CONDENSER AIR EVACUATION PIPING PGMA 80-388	MT	1.7	--	--	1.7	IV.2
D.25	GS COOLER LEAK OFF TO ATMOSPHERE PGMA 80-392	MT	0.4	--	--	0.4	IV.2
D.26	UNLISTED SPRAY WATER - SG SCOPE PGMA 80-434	MT	1.6	--	--	1.6	IV.2
D.27	TG CYCLE PIPING DRAINS AND VENTS PGMA 80-449	MT	3.4	--	--	3.4	IV.2

Tender Specification No.: BHEL PSSR SCT 1646

TECHNICAL CONDITIONS OF CONTRACT (TCC)

SNO	Description	UOM	Qty	Dimension (mm x mm x mm)	Unit wt (MT)	Total wt (MT)	Rate schedule ID
D.28	DRAIN FLASH TANK VENT TO COND. PGMA 80-496	MT	2.3	--	--	2.3	IV.2
D.29	VALVES FOR LP PIPING – CS	MT	20	--	--	20	IV.2
D.30	VALVES FOR LP PIPING – SS	MT	10	--	--	10	IV.3
D.31	VALVES FOR LP PIPING – GI	MT	2	--	--	2	IV.4
D.32	Fuel gas Piping including valves, hanger assembly and supports (PESD SUPPLY)	MT	215	--	--	215	IV.2
D.33	Thermal insulation for piping, including Aluminium sheet and fixing components (PESD/ Piping Centre Supply)	MT	13	--	--	13	V
E.1	STOOLS FOR PLACEMENT OF GAS TURBINE, ACCESS/ SUPPORT PLATFORMS- (to be fabricated as per site requirement)	MT	100	--	--	100	VI

Note to BOQ:

1. **Lifting of Gas Turbine, Gas Turbine Generator Stator, Steam Turbine-HP module and Steam Turbine Generator Stator onto foundation is excluded from the scope of this tender. The weights indicated above does not include the weight the above ODC items.**
2. Rate schedule id mentioned in clause 1.9.1 weight schedule summary of this chapter is to be linked with the rate schedule id mentioned in the price bid
3. The list, dimensions and weight given is indicative/tentative and is given to enable the contractor to study the nature of work. The approximate weight and dimensions of the various sub-assemblies of turbine, generator & its auxiliaries and other Bought out Item, Piping & Insulation etc. is indicated above. The weights & Dimensions given are only approximate and for general guidance and they are subject to variation as per design consideration. BHEL reserves the right to add or exclude any components / items / system according to the site requirements / customer requirements to complete various systems in all respects.
4. Details regarding components, sub-assemblies, and auxiliaries etc. to be erected, tested and commissioned under the scope of this tender are given in this tender. The schedule of weights given in the appendices are only approximate and meant for giving a general idea to the tenderer, about the magnitude of the work involved. This should not be taken for billing or any other claims. All weights for such purposes will have to be taken from design documents only (Shipping list). However, payments will be made to the contractor for the actual work executed under the respective category. Quantity Variation will be dealt as below:
 - a. **For Rate Schedule ID I, II, III**
The weightage indicated is for the total works for the respective package including integral piping, except insulation and fabrication/installation of Platforms, ladders etc. unless indicated otherwise in the detailed scope of work. Lump sum Rate for each Package shall be derived from total price quoted

TECHNICAL CONDITIONS OF CONTRACT (TCC)

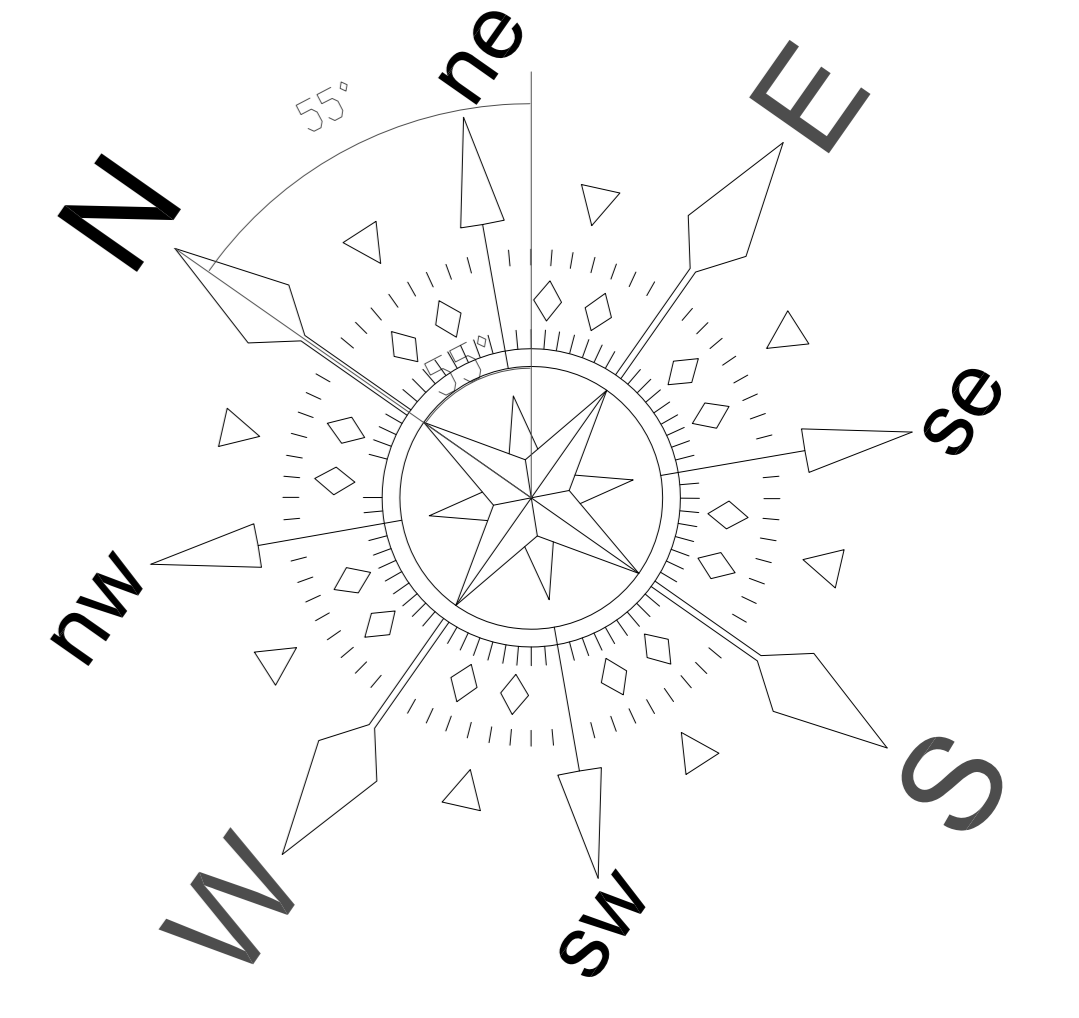
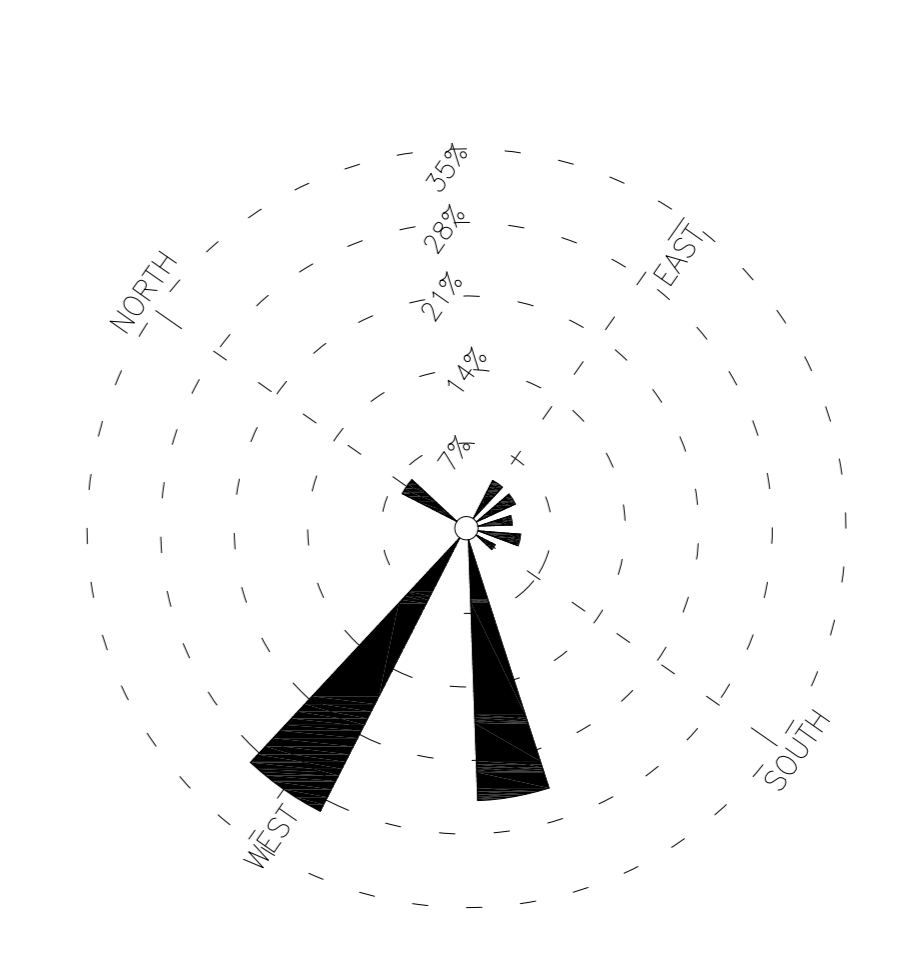
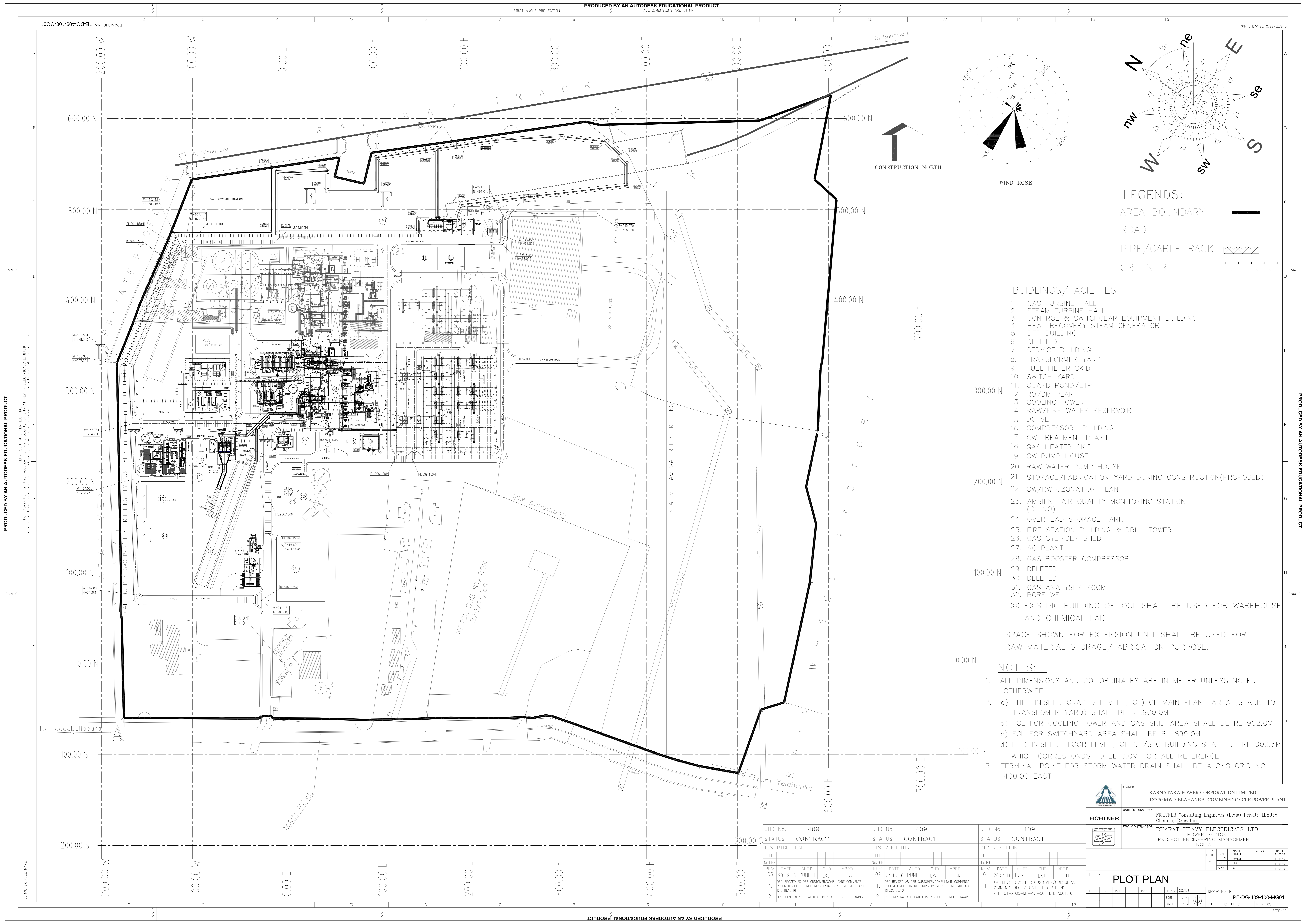
by contractor /accepted by BHEL as well as weightage indicated. The total weight indicated against each item is only approximate and is liable for variation / alteration at the discretion of BHEL. In case of variation in weight beyond +15% of the tendered quantity, the tonnage beyond 115% will be paid at the average tonnage rate arrived at by dividing the Lumpsum value by tendered tonnage.

b. For Rate Schedule ID IV, V, VI, VII:

The weightage indicated is for the Quantity indicated for the respective item. Unit Rate shall be derived from total price quoted by contractor /accepted by BHEL as well as weightage indicated. The quantity indicated in Rate schedule is approximate and is liable for variation and alteration at the discretion of BHEL. The Unit Rate shall be applicable for any additional product groups of manufacturing unit, if included at a later date. The work executed shall be measured and priced at the unit rate. Any Quantity Variation shall be as per clause 2.14 of General Conditions of Contract (Volume I Book II).

5. Special Note on Price Bid Revision 01:

- i. The quantity indicated in the BOQ / Price bid is approximate only and is liable for variation. Payment will be as per actual quantity executed as certified by BHEL Engineer.
- ii. Tenderers are requested to affix their company seal and authorized signature in all pages.
- iii. Bidders shall refer Part –A in Volume II Price Bid for Instructions.
- iv. Bidders shall only quote 'Total Amount' in the format given in PART -B of the price bid. Any other entry elsewhere in the price bid shall be treated as Null and Void. Quoting of rates in any other form/formats will not be entertained.
- v. The above mentioned 'Total amount' is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid.
- vi. BHEL has pre-fixed the weightages for the amount of individual items of Bill of Quantity with respect to the 'Total Amount' in Part-C.
- vii. Based on the pre-fixed weightages, the amount for the individual items of the Bill of Quantity shall be arrived at. This amount shall be rounded off to the nearest rupee.
- viii. Based on the quantities of individual item and the amount arrived in SI No: vii above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.
- ix. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per SI No.viii above.



- LEGENDS:**
- AREA BOUNDARY
 - ROAD
 - PIPE/CABLE RACK
 - GREEN BELT

- BUILDINGS/FACILITIES**
1. GAS TURBINE HALL
 2. STEAM TURBINE HALL
 3. CONTROL & SWITCHGEAR EQUIPMENT BUILDING
 4. HEAT RECOVERY STEAM GENERATOR
 5. BFP BUILDING
 6. DELETED
 7. SERVICE BUILDING
 8. TRANSFORMER YARD
 9. FUEL FILTER SKID
 10. SWITCH YARD
 11. GUARD POND/ETP
 12. RO/DM PLANT
 13. COOLING TOWER
 14. RAW/FIRE WATER RESERVOIR
 15. DG SET
 16. COMPRESSOR BUILDING
 17. CW TREATMENT PLANT
 18. GAS HEATER SKID
 19. CW PUMP HOUSE
 20. RAW WATER PUMP HOUSE
 21. STORAGE/FABRICATION YARD DURING CONSTRUCTION(PROPOSED)
 22. CW/RW OZONATION PLANT
 23. AMBIENT AIR QUALITY MONITORING STATION (01 NO)
 24. OVERHEAD STORAGE TANK
 25. FIRE STATION BUILDING & DRILL TOWER
 26. GAS CYLINDER SHED
 27. AC PLANT
 28. GAS BOOSTER COMPRESSOR
 29. DELETED
 30. DELETED
 31. GAS ANALYSER ROOM
 32. BORE WELL
- * EXISTING BUILDING OF IOCL SHALL BE USED FOR WAREHOUSE AND CHEMICAL LAB

SPACE SHOWN FOR EXTENSION UNIT SHALL BE USED FOR RAW MATERIAL STORAGE/FABRICATION PURPOSE.

- NOTES: -**
1. ALL DIMENSIONS AND CO-ORDINATES ARE IN METER UNLESS NOTED OTHERWISE.
 2. a) THE FINISHED GRADED LEVEL (FGL) OF MAIN PLANT AREA (STACK TO TRANSFORMER YARD) SHALL BE RL.900.0M
 - b) FGL FOR COOLING TOWER AND GAS SKID AREA SHALL BE RL 902.0M
 - c) FGL FOR SWITCHYARD AREA SHALL BE RL 899.0M
 - d) FFL(FINISHED FLOOR LEVEL) OF GT/STG BUILDING SHALL BE RL 900.5M WHICH CORRESPONDS TO EL 0.0M FOR ALL REFERENCE.
 3. TERMINAL POINT FOR STORM WATER DRAIN SHALL BE ALONG GRID NO: 400.00 EAST.

JOB No. 409		JOB No. 409		JOB No. 409	
STATUS CONTRACT		STATUS CONTRACT		STATUS CONTRACT	
DISTRIBUTION		DISTRIBUTION		DISTRIBUTION	
No.Off	TO	No.Off	TO	No.Off	TO
03	28.12.16 PUNEET LKJ JJ	02	04.10.16 PUNEET LKJ JJ	01	26.04.16 PUNEET LKJ JJ
1. DRG REVISED AS PER CUSTOMER/CONSULTANT COMMENTS RECEIVED VIDE LTR REF. NO:3115161-KPCL-ME-VDT-1461 DTD:18.10.16		1. DRG REVISED AS PER CUSTOMER/CONSULTANT COMMENTS RECEIVED VIDE LTR REF. NO:3115161-KPCL-ME-VDT-496 DTD:27.05.16		1. DRG REVISED AS PER CUSTOMER/CONSULTANT COMMENTS RECEIVED VIDE LTR REF. NO: 3115161-2000-ME-VDT-008 DTD:20.01.16	
2. DRG. GENERALLY UPDATED AS PER LATEST INPUT DRAWINGS.		2. DRG. GENERALLY UPDATED AS PER LATEST INPUT DRAWINGS.		2. DRG. GENERALLY UPDATED AS PER LATEST INPUT DRAWINGS.	

	OWNER:	KARNATAKA POWER CORPORATION LIMITED IX370 MW YELAHANKA COMBINED CYCLE POWER PLANT			
	OWNER'S CONSULTANT:	FICHTNER Consulting Engineers (India) Private Limited, Chennai, Bengaluru			
	EPC CONTRACTOR:	BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA			
	TITLE	PLOT PLAN			
DEPT. CODE	DESIGN	NAME	SKJ	SIGN	DATE
M	CHD	SKJ	SKJ		11.01.16
	APPD	JJ	JJ		11.01.16
SCALE		DRAWING NO.		SHEET	
1:1		PE-DG-409-100-MG01		01 OF 01	
DATE		REV.		REV.	
		03		03	

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COMPUTER FILE NAME

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