

# **TENDER SPECIFICATION**

**No. BHE/PW/PUR/DHJOI-CNI/1033**

**FOR**

HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING AND HANDING OVER OF CONTROL & INSTRUMENTATION WORKS FOR UTILITY BOILER AND ITS AUXILIARIES, HRSG AND ITS AUXILIARIES, STEAM TURBINE AND ITS AUXILIARIES, GAS TURBINE AND ITS AUXILIARIES, TURBOGENERATOR AND ITS AUXILIARIES, STATION C&I FOR 2x30MW STG+4xFr6B GTG OPAL DAHEJ PROJECT.

**AT**

**ONGC PETRO ADDITIONS LIMITED (OPAL) Dahej,  
SEZ near Village Ambhetha at Dahej, District-Bharuch**

**VOLUME :II – PRICE BID**

**BOOK NO.**



**BHARAT HEAVY ELECTRICALS LIMITED**

**(A GOVERNMENT OF INDIA UNDERTAKING)**

**POWER SECTOR - WESTERN REGION**

**SHREEMOHINI COMPLEX**

**345, KINGSWAY - NAGPUR 440 001**

**BHARAT HEAVY ELECTRICALS LIMITED**

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345, KINGSWAY - NAGPUR 440 001

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**Name of JOB:** HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING AND HANDING OVER OF CONTROL & INSTRUMENTATION WORKS FOR UTILITY BOILER AND ITS AUXILIARIES, HRSG AND ITS AUXILIARIES, STEAM TURBINE AND ITS AUXILIARIES, GAS TURBINE AND ITS AUXILIARIES, TURBOGENERATOR AND ITS AUXILIARIES, STATION C&I FOR 2x30MW STG+4xFr6B GTG OPAL DAHEJ PROJECT.

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EARNEST MONEY DEPOSIT: Please see Notice Inviting Tender.

LAST DATE FOR: Please see Notice Inviting Tender.

TENDER SUBMISSION:

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING **VOLUME-I** , **VOLUME- II** AND VOLIME-IBCD ARE ISSUED TO:

M/s. ....

PLEASE NOTE:

THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

For Bharat Heavy Electricals Limited

AGM (Purchase)

Place: Nagpur

Date:

BHEL, PS-WR: NAGPUR  
 Vol-II: PRICE BID (SCHEDULE OF RATES QUANTITIES)  
 RATE SCHEDULE  
 TENDER NO:BHE/PW/PUR/DHJOI-CNI/1033

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE (IN RS.) IN FIG	UNIT RATE (IN RS.) IN WORDS	TOTAL (IN RS.)	APPLICABLE for Terms of Payment
<b>11.0</b>	<b>Cable tray and Accessories</b>						<b>I1</b>
<b>11.0.1</b>	Perforated cable tray and accessories (with or without cover) 50mm	Meter	2500				
<b>12.0</b>	<b>Cable laying including earthing wires</b>						<b>I2</b>
<b>12.0.1</b>	Screened Copper Cable 2P x 0.5 sqmm armoured / unarmoured	Meter	36000				
<b>12.0.2</b>	Screened Copper Cable 6P x 0.5 sqmm armoured / unarmoured	Meter	7200				
<b>12.0.3</b>	Screened Copper Cable 6P x 0.5 sqmm(Intrinsic Type) armoured / unarmoured	Meter	31200				
<b>12.0.4</b>	Screened Copper Cable 8P x 0.5 sqmm armoured / unarmoured	Meter	3750				
<b>12.0.5</b>	Screened Copper Cable 10P / 12P x 0.5 sqmm armoured / unarmoured	Meter	11600				
<b>12.0.6</b>	Screened Copper Cable 10P / 12P x 0.5 sqmm(Intrinsic Type) armoured / unarmoured	Meter	64600				
<b>12.0.7</b>	Screened Copper Cable 10P / 12P x 2.5 sqmm armoured / unarmoured	Meter	10000				
<b>12.0.8</b>	Screened Copper Cable 2P x 0.9 sqmm(Non-Intrinsic safe) armoured / unarmoured	Meter	10000				
<b>12.0.9</b>	Screened Copper Cable 10P x 0.9 sqmm(Non-Intrinsic safe) armoured / unarmoured	Meter	8000				
<b>12.0.10</b>	Screened Copper Cable 1P/2C or 3C x 1.5 sqmm armoured / unarmoured	Meter	7200				
<b>12.0.11</b>	Screened Copper Cable 1P/2C or 3C x 1.5 sqmm(Intrinsic safe) armoured / unarmoured	Meter	109000				
<b>12.0.12</b>	Screened Copper Cable 1P/2C or 3C x 1.5 sqmm(Non-Intrinsic safe) armoured / unarmoured	Meter	55000				
<b>12.0.13</b>	Screened Copper Cable 2P/4C x 1.5 sqmm armoured / unarmoured	Meter	10900				
<b>12.0.14</b>	Screened Copper Cable 4P x 1.5(Non-intrinsic type)sqmm armoured / unarmoured	Meter	5000				

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12.0.15	Screened Copper Cable 6P x 1.5sqmm armoured / unarmoured	Meter	6000				
12.0.16	Screened Copper Cable 6P x 1.5( Intrinsic type)sqmm armoured / unarmoured	Meter	30000				
12.0.17	Screened Copper Cable 6P x 1.5( Non-intrinsic type)sqmm armoured / unarmoured	Meter	58000				
12.0.18	Screened Copper Cable 12P x 1.5 sqmm armoured / unarmoured	Meter	5000				
12.0.19	Screened Copper Cable 12P x 1.5(Intrinsic type) sqmm armoured / unarmoured	Meter	81400				
12.0.20	Screened Copper Cable 12P x 1.5(Non-intrinsic type) sqmm armoured / unarmoured	Meter	116800				
12.0.21	Screened Copper Cable 20P x 1.5(Non-intrinsic type) sqmm armoured / unarmoured	Meter	8000				
12.0.22	Copper Cable 1 triad, 0.5/1.5 sqmm armoured/unarmoured	Meter	10600				
12.0.23	Copper Cable 2 or 3 triad, 0.5/1.5 sqmm armoured/unarmoured	Meter	3700				
12.0.24	Copper Cable 6 triad, 0.5/1.5 sqmm armoured/unarmoured	Meter	2750				
12.0.25	Copper Cable 8 triad, 0.5/1.5 sqmm armoured/unarmoured	Meter	41000				
12.0.26	2Px20AWG T/C Extension Cable	Meter	2000				
12.0.27	1Px(0.5Sqmm/16AWG) Cr-Al Extension Cable	Meter	9200				
12.0.28	12Px(16 AWG/20AWG) Cr-Al Extension Cable	Meter	28000				
12.0.29	6Px20 AWG Cr-Al Extension Cable	Meter	2000				
12.0.30	Thermocouple Extension cable 2Px20AWG	Meter	1200				

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12.0.31	Laying, etc of Optical fibre cables on cable trays, conduits etc (termination supervision by other agency) with minor civil works	Meter	51900				
12.0.32	Network UTP Cables (special termination using UTP connectors involved)	Meter	805				
12.0.33	6 core Single mode armoured FRLS F.O. cable	Meter	3500				
12.0.34	3Cx 2.5/1.5 sq.mm Copper conductor armoured FRLS Power cable.	Meter	2200				
12.0.35	RG59B/U coaxial Unarmoured FRLS video cable	Meter	200				
12.0.36	2P twisted x0.75 sq.mm stranded unarmoured copper conductor	Meter	200				
12.0.37	3Px 0.9mm dia unarmoured telephone cable(Non Jelly filled)	Meter	8000				
12.0.38	10Px 0.9mm dia unarmoured telephone cable( Jelly filled)	Meter	1200				
12.0.39	20Px 0.9mm dia unarmoured telephone cable( Jelly filled)	Meter	900				
12.0.40	20Px 0.9mm dia armoured communication cable (Non-Jelly filled)	Meter	6500				
12.0.41	5Px 0.9mm dia armoured communication cable (Non-Jelly filled)	Meter	4000				
12.0.42	3Px 0.9mm dia armoured communication cable (Non-Jelly filled)	Meter	1200				
12.0.43	2" HDPE cable	Meter	3500				
13.0	<b>Junction box/Push Button station</b>						<b>14</b>
13.0.1	Junction boxes upto 48 way	No	602				
13.0.2	2PB or 3PB Pushbutton box	No	76				
13.0.3	Proximitors Housing	No	44				

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13.0.4	Explosion/Weather Proof Junction Boxes,WP65 with Proof Cable Glanda and PVC Sleeves	No	1015				
13.0.5	Instruments and Junction Box Canopies	No	800				
14.0	<b>Conduits/Impulse pipe/tubes</b>						<b>15</b>
14.0.1	Impulse pipe CS ½" SCH 40 (D21.3 x 3.73 mm)	Meter	2000				
14.0.2	Impulse pipe CS ½" SCH 80 (D21.3 x 3.73 mm)	Meter	800				
14.0.3	Impulse pipe CS ½" SCH 80 (D21.3 x 3.73 mm)	Meter	10800				
14.0.4	Impulse pipe AS ½" SCH 80 (D21.3 x 3.73 mm)	Meter	3300				
14.0.5	Impules pipe SS 6 x 1.5 mm	Meter	3940				
14.0.6	Impulse Pipe SS 12.7 x 2.1 mm	Meter	6600				
14.0.7	Impulse Pipe SS 17.1 x 1.8 mm	Meter	4				
14.0.8	Impuse pipe SS 21.3 x 3.7 mm	Meter	4000				
14.0.9	Impuse pipe CS 21.3 x 3.7 mm	Meter	2800				
14.0.10	Impuse pipe AS 21.3 x 3.7 mm	Meter	1200				
14.0.11	Impulse Pipe SS 33.4 x 3.4 mm	Meter	3000				
14.0.12	SS Pipes 1" for Instruments air	Meter	1000				
14.0.13	GI Conduit Pipe 1/2"	Meter	194				
14.0.14	GI Conduit Pipe 1"	Meter	200				
14.0.15	GI Conduit Pipe 1,1/2"	Meter	202				

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14.0.16	GI Pipe (1/2", 1") Heavy grade	Meter	1194				
14.0.17	Seamless SS tube 13.5 x 2.6 mm	Meter	600				
14.0.18	GI pipe CS 2" in meters	Meter	5012				
14.0.19	2" GI Pipe for Transmitter and JB Mounting & support setup	Meter	5000				
14.0.20	Conduit Box	No.	288				
14.0.21	Anaconda Conduit	Meter	100				
14.0.22	GI conduit(50mm)	Meter	50				
14.0.23	MS conduit(50mm)	Meter	50				
15.0	<b>Miscellaneous Structural steel including frames for Panels/Racks/Instruments, supports for cable tray/pipes/tubes, Canopies etc</b>						<b>16</b>
15.0.1	Structural steel for fabrication	Tons	6				
15.0.2	Aluminium strip (300 x 25 x 2 mm)	No	50				
16.0	<b>Panels/Cubicles/Racks/Enclosures/Monitors/Computer/Computer peripheral/PLCs/UPS/Batteries</b>						<b>17</b>
16.0.1	Local Gauge rack(1700x1200)	No	4				
16.0.2	Control Panel (approx. weight 400kg, 1000(L) X 1000(B) X 2500(H) mm) - one panel	No	83				
16.0.3	Control Panel (approx. weight 800kg, 1500(L) X 1000(B) X 2500(H) mm) - suit of two panels	No	37				

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16.0.4	Control Panel (approx. weight 1200kg, 2250(L) X 1000(B) X 2500(H) mm) - suit of three panels	No	12				
16.0.5	Control Panel (approx. weight 1600kg, 3000(L) X 1000(B) X 2500(H) mm) - suit of four panels	No	7				
16.0.6	GT Auxiliary Panel	No	1				
16.0.7	LP Dosing sysetm	Set	1				
16.0.8	NETWORK PANELS (approx. 800 x 800 x 2100 mm)	No	3				
16.0.9	Electronic Water Level Indicator (EWLI)	Set	7				
16.0.10	Condenser vacuum pump system	Set	1				
16.0.11	Generator Instrumentation cabinet including annunciator (approx. weight 450 Kg, 2200 x 1000 x 800 mm)	No	1				
16.0.12	Positioner cabinets (approx. 380 x 380 x 210 mm) for LPBP CV1, LPBP CV2, Spray water CV	No	2				
16.0.13	max Engineering / operator / storian / LAN / WAN / Shift in charge / stn in charge / gateway / interface PC / HART etc., PC/Server Station with ASCII Keyboard, Mouse & 21" Colour Monitor, individual UPS	Set	23				
16.0.14	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, etc)	Set	21				
16.0.15	Computer furniture for all Servers, PCs, Printers	Set	1				
16.0.16	Plant Control Desk / CRT desk	Set	1				
16.0.17	Laboratory set up	Set	1				
16.0.18	125VDC Battery System	Set	4				
16.0.19	24 V Charger, battery with DCDB	Set	2				

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16.0.20	Battery charger Dual FCBC	Set	4				
16.0.21	1-Phase 110V 125KVA UPS System with ACDBs(2 nos.)	Set	3				
16.0.22	SWAS Sample handling system	Set	6				
16.0.23	Vibration monitoring system for Turbine	Set	2				
16.0.24	Vibration monitoring system for Gas Trubine	Set	1				
16.0.25	Vibration monitoring system for compressor	Set	1				
16.0.26	Vibration monitoring system for Pumps	Set	1				
16.0.27	Hazardious and Naphtha monitors	Set	1				
17.0	<b>Instruments/Devices including sensors/Cells/Probes etc</b>						<b>18</b>
17.0.1	Air filter regulators / Lubricators (1/4", 1/2", 1", 0-6KG, 0-10 KG)	No	100				
17.0.2	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	No	242				
17.0.3	Pressure Switch / DP Switch / DP indicating switch	No	156				
17.0.4	Temperature Switch / Thermostat	No	32				
17.0.5	Electronic Level Switch (with amplifier, etc), Capacitance or conductivity type	No	60				
17.0.6	Pressure / DP / Flow (DP type) / Level /Temp -Transmitter	No	1736				
17.0.7	Level Transmitter (displacer type)	No	53				
17.0.8	Ultrasonic Flow Transmitter (Pulse / mass flow / target type) including flanges	No	5				
17.0.9	Speed transmitter	No	24				
17.0.10	Pressure Gauge / DP gauge/DP Indicator	No	1184				

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17.0.11	Temperature Gauge (all types)	No	476				
17.0.12	Level Indicator / Level Gauge	No	76				
17.0.13	Flow indicator / Flow Gauge / Flow meter/Acoustic flow meter (coal)	No	16				
17.0.14	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	No	644				
17.0.15	MTM Thermocouple						
17.0.16	MTM Thermocouple upto 17 M length	No	162				
17.0.17	MTM Thermocouple over 17 M upto 22 M length	No	72				
17.0.18	O2 (OXYGEN ) Analyzer	No	6				
17.0.19	SOx/NOx/CO Analyzer (Insitu type)	No	10				
17.0.20	Smoke Density Analyser	Set	6				
17.0.21	HC Analyser	Set	6				
17.0.22	Analyser Shelter(7Mx5M)	No	2				
17.0.23	Gas Filled Themometer	No	40				
17.0.24	DC Starter Box(800X800X2415mm)	No	6				
17.0.25	Local Burner PB Box(900X450X1675)	No	104				
17.0.26	Proximitors	No	80				
17.0.27	Bemetallic Thermometers	No	50				

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SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE (IN RS.) IN FIG	UNIT RATE (IN RS.) IN WORDS	TOTAL (IN RS.)	APPLICABLE for Terms of Payment
17.0.28	Diaphragm Sealed Level Transmitter	No	8				
17.0.29	Diaphragm Gauge	No	244				
17.0.30	Oil Flow Meter	No	6				
17.0.31	Flame Scanner with Local Indicator	Set	124				
17.0.32	Linear Voltage Differential Transformer	No	12				
17.0.33	GT Ignitors	Set	2				
17.0.34	Gas Cromotograph System	Set	2				
17.0.35	GTG End Winding System	Set	1				
17.0.36	EPABX System	Set	1				
18.0	<b>Commissioning and Testing activities for Equipments erected by other agencies, like control valves, on/off valves, electrical/pneumatic valves, actuators, solenoid valves, valves, limit switches, ERV controllers, power cylinders, Pressure &amp; Temperature Guages/Transmitters,etc</b>						<b>19</b>
18.0.1	Pneumatic regulating drives: (Valve, damper) incl Burner tilt	No	377				
18.0.2	Commissioning of Hydraulic actuators	No	3				
18.0.3	Open/Close type pneumatic gates / dampers / valves	No	47				
18.0.4	Only healthiness checking of embedded RTD / T/C	No	0				
18.0.5	Limit Switches (checking and adjusting only).	No	50				

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<b>I10.0</b>	<b>Miscellaneous items (items not covered under above heads)</b>						<b>I11</b>
<b>I10.0.1</b>	Master and Slave Clock system	Set	2				
<b>I10.0.2</b>	HART Management system	Set	1				
<b>I11.0</b>	<b>Erection and Commissioning(Supervision) of Turnkey Packages</b>						<b>I7</b>
<b>I11.0.1</b>	PLC for fire & gas detection system consisting of:Operator consol,Printer,Marshaling Panel,I/O & System panels-1nos,Networking cables,Inter Panel cable hardwired consol etc.	Set	1				
<b>I11.0.2</b>	PLC for AC & Ventilation system consisting of:Operator consol,Printer,Marshaling Panel,I/O & System panels-1nos,Networking cables,Inter Panel cable hardwired consol etc.	Set	1				
<b>I11.0.3</b>	MCT blocks consist of: Different Sizes of Block,Internal Sub Componnts.	Set	1				
<b>I11.0.4</b>	CCTV System	Set	1				
<b>I11.0.5</b>	Telephone System	Set	1				
<b>I11.0.6</b>	Public Addressing System	Set	1				
<b>I11.0.7</b>	LAN System	Set	1				
<b>Grand Total in figures (In Rs)</b>							
<b>Grand Total in Words Rs.....</b>							