



TENDER SPECIFICATION

No. BHE/PW/PUR/BRLT-CNI/996

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 BOILER AND ITS AUXILIARIES, TURBOGENERATOR AND ITS AUXILIARIES, STATION C&I FOR UNIT-1 OF

2X600 MW JHABUA POWER LIMITED

AT

DIST – SEONI, (M P)

VOLUME II - PRICE BID

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

POWER SECTOR - WESTERN REGION

345, KINGS WAY- NAGPUR 440 001

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THESE TENDER DOCUMENTS CONTAINING VOLUME-II PRICE BID IS ISSUED TO:

M/s.....

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(THESE TENDER DOCUMENTS ARE NOT TRANSFERABLE)

FOR BHARAT HEAVY ELECTRICALS LIMITED

ADDL. GENERAL MANAGER (PURCHASE)

PLACE: NAGPUR

DATE :

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
I1.0	Cable tray and Accessories					
I1.0.1	Perforated cable tray and accessories (with or without cover) 50mm	Meter	3962.5			
I1.0.2	Perforated cable tray and accessories (with or without cover) 100mm	Meter	5325			
I1.0.3	Perforated cable tray and accessories (with or without cover) 150mm	Meter	2970			
I1.0.4	Perforated cable tray and accessories (with or without cover) 300mm	Meter	7095			
I1.0.5	Perforated cable tray and accessories (with or without cover) 450mm	Meter	500			
I1.0.6	Perforated cable tray and accessories (with or without cover) 600mm	Meter	11000			
I2.0	Cable laying including earthing wires					
I2.0.1	Screened Copper Cable 1C x 0.5 sqmmarmoured / unarmoured	Meter	1000			
I2.0.2	Screened Copper Cable 2P x 0.5 sqmmarmoured / unarmoured	Meter	61500			
I2.0.3	Screened Copper Cable 4P x 0.5 sqmmarmoured / unarmoured	Meter	296420			
I2.0.4	Screened Copper Cable 8P x 0.5 sqmmarmoured / unarmoured	Meter	105700			
I2.0.5	Screened Copper Cable 10P / 12P x 0.5 sqmmarmoured / unarmoured	Meter	55000			
I2.0.6	Screened Copper Cable 24P x 0.5 sqmmarmoured / unarmoured	Meter	8000			
I2.0.7	Screened Copper Cable 2P x 1.3 sqmmarmoured / unarmoured	Meter	14000			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
I2.0.8	Screened Copper Cable 1P/2C or 3C x 1.5 sqmmarmoured / unarmoured	Meter	4000			
I2.0.9	Screened Copper Cable 2P/4C x 1.5 sqmmarmoured / unarmoured	Meter	14300			
I2.0.10	Screened Copper Cable 5C/7C x 1.5 sqmmarmoured / unarmoured	Meter	10000			
I2.0.11	Screened Copper Cable 10C/12C x 1.5 sqmmarmoured / unarmoured	Meter	1000			
I2.0.12	Screened Copper Cable 19C x 1.5 sqmmarmoured / unarmoured	Meter	20700			
I2.0.13	Screened Copper Cable 2C x 2.5 sqmmarmoured / unarmoured	Meter	10200			
I2.0.14	Screened Copper Cable 3C x 2.5 sqmmarmoured / unarmoured	Meter	3600			
I2.0.15	Screened Copper Cable 5C x 2.5 sqmmarmoured / unarmoured	Meter	8500			
I2.0.16	Screened Copper Cable 3C x 6 sqmmarmoured / unarmoured	Meter	3600			
I2.0.17	Copper Cable 2 or 3 triad, 0.5/1.5 sqmmarmoured/unarmoured	Meter	6015			
I2.0.18	Compensating cable 1P/2P x 0.5 sq mm type Tx/Sx/Kxunarmoured/armoured	Meter	15000			
I2.0.19	Compensating cable 1P/2P x 1.3 sqmm type Tx/Sx/Kxunarmoured/armoured	Meter	7000			
I2.0.20	Compensating cable 4P x 1.3 sqmm type Tx/Sx/Kxunarmoured/armoured	Meter	6000			
I2.0.21	Compensating cable 6P x 1.3 sqmm type Tx/Sx/Kxunarmoured/armoured	Meter	10000			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
I2.0.22	Laying, etc of Optical fibre cables on cable trays, conduits etc (termination supervision by other agency) with minor civil works	Meter	2000			
I2.0.23	Network UTP Cables (special termination using UTP connectors involved)	Meter	12200			
I2.0.24	GI earthing wire	Meter	1500			
I2.0.25	Cable duct 60 x 60 x 1000	Meter	200			
I2.0.26	Cable duct 180 x 100 x 1000	Meter	200			
I2.0.27	Cable duct 250 x 100 x 1000	Meter	200			
I2.0.28	Hoses-1/4", 1/2" , 1", SS/Teflon, Braided/unbraided, upto 5M length	Meter	90			
I2.0.29	Flexible pipe 1"	Meter	50			
I2.0.30	Flexible pipe 2"	Meter	10			
I4.0	Junction box/Push Button station					
I4.0.1	Junction boxes upto 48 way	No	318			
I4.0.2	Junction boxes above 48 way	No	109			
I4.0.3	CJCB Junction boxes upto 48 way	No	10			
I4.0.4	CJCB Junction boxes above 48 way	No	5			
I4.0.5	2PB or 3PB Pushbutton box	No	5			

14.0.6	Fire protection switch in IP65 box	No	4			
14.0.7	FSSS Local Oil Gun Maintenance Switch Box	No	20			
15.0	Conduits/Impulse pipe/tubes					
15.0.1	Impulse pipe CS 3/4" SCH 80 (D25 x 4 mm)	Meter	500			
SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
15.0.2	Impulse pipe CS GR C 1/2" NB SCH 80	Meter	3750			
15.0.3	Impulse pipe CS GR C 1/2" NB SCH 160	Meter	1250			
15.0.4	Impulse pipe CS GR C 3/4" NB SCH 80	Meter	3750			
15.0.5	Impulse pipe ASTM CS GR C 1" NB SCH 80	Meter	160			
15.0.6	CS pipe 2" SCH 40	Meter	85			
15.0.7	Impulse pipe AS 1/4" (D13.5 x 2.6 mm)	Meter	12			
15.0.8	Impulse pipe AS 1/2" SCH 40 (D21.3 x 2.76 mm)	Meter	425			
15.0.9	Impulse pipe AS 3/4" SCH 80 (D25 x4 mm)	Meter	250			
15.0.10	Impulse pipe AS P22 1/2" NB SCH XXS	Meter	750			
15.0.11	Impulse pipe AS P22 3/4" NB SCH80 (D25 x 4 mm)	Meter	750			
15.0.12	Impulse pipe SS 1/4" (D12.7/13.5 x 2.1/2.6 mm)	Meter	30			
15.0.13	Impulse pipe SS 1/2" SCH 40 (D21.3 x 2.6 mm)	Meter	320			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
15.0.14	Impulse pipe SS 1/2" SCH 80	Meter	750			
15.0.15	Impulse pipe SS 1/2" SCH 160	Meter	600			
15.0.16	Impulse pipe for pre instruments CS (D16 x 2.6mm)	Meter	1900			
15.0.17	Impulse pipe SS 16 mm OD (for primary water system)	Meter	700			
15.0.18	GI Pipe (1/2", 1") Heavy grade	Meter	3450			
15.0.19	Seamless CS tube 13.5 x 2.6 mm	Meter	554			
15.0.20	Seamless CS tube 21.3 x 2.3 mm	Meter	510			
15.0.21	CS tube 33.7 x 3.38 mm	Meter	2			
15.0.22	CS tube DN 80 / 88.9 X 4 mm	Meter	40			
15.0.23	Seamless AS tube 13.5 x 2.6 mm	Meter	12			
15.0.24	Seamless AS tube 21.3 x 2.77 mm	Meter	425			
15.0.25	Seamless SS tube 13.5 x 2.6 mm	Meter	30			
15.0.26	Seamless SS tube 21.3 x 2.3/2.6 mm	Meter	322			
15.0.27	Copper tube 6mm/8mm / 1/4" (Sheathed / bare)	Meter	2950			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
15.0.28	Copper tube 3/8" (Sheathed / bare)	Meter	50			
16.0	Miscellaneous Structural steel including frames for Panels/Racks/Instruments, supports for cable tray/pipes/tubes, Canopies etc					
16.0.1	Structural steel for fabrication	Tons	25			
16.0.2	Aluminium strip (300 x 22 x 2 mm)	No	900			
16.0.3	Assembly of JB mounting frames (approx. dim. 1600 x 718/858 x 1700 mm)	No	4			
16.0.4	Assembly of JB mounting frames (approx. 1100 x 300 x 700 mm)	No	2			
16.0.5	Assembly of JB mounting frames (approx. 2600 x 470 x 1700 mm)	No	2			
16.0.6	Assembly of JB mounting frames (approx. 2100 x 470 x 1700 mm)	No	3			
16.0.7	Assembly of JB mounting frames (approx. dim.1100 x 718 x 1700 mm)	No	3			
16.0.8	Assembly of JB mounting frames (approx. 2100 x 718 x 1700 mm)	No	2			
16.0.9	Assembly of JB mounting frames (approx. 3100 x 718 x 1700 mm)	No	2			
16.0.10	Assembly of JB mounting frames (approx. 1100 x 424 x 700 mm)	No	3			
17.0	Panels/Cubicles/Racks/Enclosures/Monitors/Computer/Computer peripheral/PLCs/UPS/Batteries					
17.0.1	Assembly of local gauge board (1400 x 450 x 1900 mm)	No	8			
17.0.2	Control Panel (approx. weight 400kg, 1000(L) X 1000(B) X 2500(H) mm) - one panel	No	11			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
17.0.3	Control Panel (approx. weight 800kg, 1500(L) X 1000(B) X 2500(H) mm) - suit of two panels	No	28			
17.0.4	Control Panel (approx. weight 1200kg, 2250(L) X 1000(B) X 2500(H) mm) - suit of three panels	No	17			
17.0.5	Control Panel (approx. weight 1600kg, 3000(L) X 1000(B) X 2500(H) mm) - suit of four panels	No	1			
17.0.6	Control Panel (approx. weight 2000kg, 3500(L) X 1000(B) X 2500(H) mm) - suit of five panels	No	1			
17.0.7	Gravimetric Coal feeder control panel(Approx Dim. 1200 x 600 x 2315)	No	9			
17.0.8	Control panels for Centrifuges	No	2			
17.0.9	Unit Control panel (approx. 2312(L) x 1000(B) x 2355(H) mm)	Set	1			
17.0.10	Electrical control panel (approx. 1900(L) x 1000(B) x 2355(H) mm)	Set	1			
17.0.11	Elevator control panel	No	1			
17.0.12	Transducer and AVT panel	No	1			
17.0.13	HP dosing system (approx. weight 3000Kg, 1000(L) x 800(B) x 2000(H) mm)	No	1			
17.0.14	LP Dosing sysetm	Set	2			
17.0.15	NETWORK PANELS (approx. 800 x 800 x 2100 mm)	No	3			
17.0.16	Vibration monitoring system for Fans and Pulverisers	Set	1			
17.0.17	Vibration monitoring system for main turbine / generator	Set	1			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
17.0.18	Vibration monitoring system for BFP/CEP/ACWP	Set	1			
17.0.19	Vibration monitoring system for TDBFP	Set	1			
17.0.20	Vibration monitoring system for ECW pumps	Set	1			
17.0.21	Vibration monitoring system for CW pumps	Set	1			
17.0.22	Vibration monitoring system for Generator End Winding	Set	1			
17.0.23	DC motor starter box for scanner fan	No	1			
17.0.24	Burner Tilt Shear Pin Failure Indication Box	No	4			
17.0.25	Air Heater Rotor Stoppage Alarm Box	Set	2			
17.0.26	Steam leak detection (STLD) system panel (approx. 800(L) x 2315(B) x 800(H) mm)	Set	1			
17.0.27	Electronic Water Level Indicator (EWLI)	Set	2			
17.0.28	Condenser vacuum pump system	Set	1			
17.0.29	Generator Instrumentation cabinet including annunciator (approx. weight 600 Kg, 1230 x 1060 x 2550 mm)	No	1			
17.0.30	Positioner cabinets (approx. 380 x 380 x 210 mm) for LPBP CV1, LPBP CV2, Spray water CV	No	3			
17.0.31	Local Instrument racks (LIR)	No	47			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
17.0.32	Local Instrument enclosures (LIE)	No	48			
17.0.33	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	24			
17.0.34	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, etc)	Set	5			
17.0.35	LVS (Large Video Screen) made up of 5X1 matrix. Each LVS of DLP/LCD type, Rear projection type, 67 inches diagonal size, with 1024x768 resolution non interlaced	Set	1			
17.0.36	Computer furniture for all Servers, PCs, Printers	Set	1			
17.0.37	Plant Control Desk / CRT desk	Set	2			
17.0.38	Laboratory set up	Set	1			
17.0.39	230/240 V UPS System with batteries and ACDB	Set	1			
18.0	Instruments/Devices including sensors/Cells/Probes etc					
18.0.1	Latching relay 24V, 5A	No	4			
18.0.2	Moisture Sensor probe and dew point monitor	Set	1			
18.0.3	Conductivity Sensor and Transmitter	No	6			
18.0.4	Conductivity cells and switch	No	2			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
18.0.5	Furnace Temperature probe including local panel/box and all accessories	No	2			
18.0.6	Air filter regulators / Lubricators (1/2", 1", 0-6KG, 0-10 KG)	No	67			
18.0.7	Speed Regulators / Air lock valves in oil gun corner rack	No	20			
18.0.8	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	No	105			
18.0.9	Pneumatic Pressure controller with accessories	No	1			
18.0.10	Heavy Duty Limit Switch	No	50			
18.0.11	Speed switch / Speed detector	No	4			
18.0.12	Pressure Switch / DP Switch / DP indicating switch	No	127			
18.0.13	Float type Level Switch	No	23			
18.0.14	Electronic Level Switch (with amplifier, etc), Capacitance or conductivity type	No	2			
18.0.15	Vacuum switch	No	3			
18.0.16	Flow switch (Mechanical / Electronic)	No	11			
18.0.17	Pressure / DP / Flow (DP type) / Level -Transmitter	No	429			
18.0.18	Level Transmitter (displacer type)	No	10			
18.0.19	Flow Transmitter (Pulse / mass flow / target type) including flanges	No	3			
18.0.20	Speed transmitter	No	6			

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18.0.21	Position Transmitters	No	31			
18.0.22	Electronic Level Transmitter (with amplifier, etc), Capacitance or conductivity type / Guided Wave Radar(GWR) transmitter	No	6			
18.0.23	Pressure Gauge / DP gauge/DP Indicator	No	531			
18.0.24	Temperature Gauge (all types)	No	294			
18.0.25	Level Indicator / Level Gauge	No	17			
18.0.26	Direct Water Level Gauge (DWLG)	Set	2			
18.0.27	Flow indicator / Flow Gauge / Flow meter/Acoustic flow meter (coal)	No	10			
18.0.28	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	No	596			
18.0.29	MTM Thermocouple upto 17 M length	No	17			
18.0.30	MTM Thermocouple over 17 M upto 22 M length	No	70			
18.0.31	MTM Thermocouple over 22 M upto 28 M length	No	97			
18.0.32	MTM Thermocouple over 28 M upto 35 M length	No	34			
18.0.33	SADC Cylinders	No	80			
18.0.34	HEA Exciter system	Set	20			
18.0.35	Flame Scanner Head Assembly	No	32			
18.0.36	Vertical indicators (moving coil / bar graph)	No	5			

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18.0.37	Flow integrators	No	2			
18.0.38	Digital / bargraph indicators	No	20			
18.0.39	Recorder 24 / 30 Channel	No	7			
18.0.40	Recorder 3 channel	No	4			
18.0.41	Rotor Earth fault Detector	No	2			
18.0.42	Hydrogen Purity analyser	No	1			
18.0.43	O2 (OXYGEN) Analyzer	No	2			
18.0.44	SOx/NOx/CO Analyzer (in situ type)	No	1			
18.0.45	Dust emission monitor (Installation at around 88 M in chimney)	Set	1			
18.0.46	SWAS Sample handling system with racks & Sample conditioning panel with chiller	Set	1			
18.0.47	SWAS Analyzer Panel including various analyzers	No	1			
18.0.48	I/P converters	No	50			
18.0.49	Rotameters	No	6			
18.0.50	Reverse Rotation indication switch	No	3			
18.0.51	Purge meter for mill	No	18			
18.0.52	Condenser online tube cleaning system	Set	1			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
19.0	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 & Temperature Guages/Transmitters,etc					
19.0.1	Coal Feeder local panel/ instruments commissioning	No	9			
19.0.2	Electrical regulating drives: (Valve, damper, scoop)	No	9			
19.0.3	Pneumatic regulating drives: (Valve, damper) incl Burner tilt	No	147			
19.0.4	Commissioning of Hydraulic actuators	No	32			
19.0.5	Corner valve/ Trip valves commissioning	No	68			
19.0.6	Open/Close type pneumatic gates / dampers / valves	No	91			
19.0.7	ERV Controller (approx. weight 10kg, 400 x 350 x 190 mm)	No	4			
19.0.8	Pulveriser Lube oil skid	Set	9			
19.0.9	Fan Lube oil skid	Set	6			
19.0.10	Primary water skid	Set	1			
19.0.11	Only healthiness checking of embedded RTD / T/C	No	500			
19.0.12	Limit Switches (checking and adjusting only).	No	78			

SL. NO.	DESCRIPTION	UOM	QTY	UNIT RATE(in Rs)-IN FIGURES	UNIT RATE(in Rs)-IN WORDS	TOTAL AMOUNT
I10.0	Power Cylinders					
I10.0.1	Mill Discharge Valve power cylinders (set of four)	Set	9			
I11.0	Miscellaneous items (items not covered under above heads)					
I11.0.1	Master and Slave Clock system	Set	1			
I11.0.2	HART MANAGEMENT SYSTEM including CABINET	Set	1			
Total Amount (in Rs) in Figures						
Total Amount (in Rs) in words						