

# **TENDER SPECIFICATION**

**NO: BHE/PW/PUR/CHT-CNI/815**

**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 2X500 MW, UNIT 8 & 9

**AT**

**MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED**

**CHANDRAPUR SUPER THERMAL POWER STATION EXPANSION  
PROJECT (2X500MW)**

**CHANDRAPUR, DIST- CHANDRAPUR (MAHARASHTRA)**

**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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(2X500MW)**

**CHANDRAPUR, DIST- CHANDRAPUR (MAHARASHTRA)**

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 :

**BHARAT HEAVY ELECTRICALS LIMITED : PSWR : Nagpur**  
**T.S. No. BHE/PW/PUR/CHT-CNI/815**  
**(RATE SCHEDULE) VOLUME-II PRICE BID (Page 3 of 23)**

SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
<b>11.0</b>	<b>CABLE TRAY AND ACCESSORIES</b>					<b>11.0</b>
<b>11.0.1</b>	Perforated cable tray and accessories (with or without cover) 50mm	Meter	1510			
<b>11.0.2</b>	Perforated cable tray and accessories (with or without cover) 100mm	Meter	5050			
<b>11.0.3</b>	Perforated cable tray and accessories (with or without cover) 150mm	Meter	4900			
<b>11.0.4</b>	Perforated cable tray and accessories (with or without cover) 300mm	Meter	175			
<b>12.0</b>	<b>CABLE LAYING INCLUDING EARTHING WIRES</b>					<b>12.0</b>
<b>12.0.1</b>	Screened Copper Cable 2P x 0.5 sqmm armoured / unarmoured	Meter	106560			
<b>12.0.2</b>	Screened Copper Cable 4P x 0.5 sqmm armoured / unarmoured	Meter	487060			
<b>12.0.3</b>	Screened Copper Cable 8P x 0.5 sqmm armoured / unarmoured	Meter	246880			
<b>12.0.4</b>	Screened Copper Cable 10P / 12P x 0.5 sqmm armoured / Unarmoured	Meter	57800			

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<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>UOM</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Total amount</b>	<b>Applicable TOP</b>
<b>I2.0.5</b>	Screened Copper Cable 16P x 0.5 sqmm armoured / unarmoured	Meter	4000			
<b>I2.0.6</b>	Screened Copper Cable 20P x 0.5 sqmm armoured / unarmoured	Meter	22000			
<b>I2.0.7</b>	Screened Copper Cable 2P/4C x 1.5 sqmm armoured / unarmoured	Meter	23000			
<b>I2.0.8</b>	Screened Copper Cable 5C/7C x 1.5 sqmm armoured / unarmoured	Meter	33000			
<b>I2.0.9</b>	Screened Copper Cable 10C/12C x 1.5 sqmm armoured / unarmoured	Meter	32000			
<b>I2.0.10</b>	Screened Copper Cable 19C x 1.5 sqmm armoured / unarmoured	Meter	8800			
<b>I2.0.11</b>	Screened Copper Cable 2C x 2.5 sqmm armoured / unarmoured	Meter	13600			
<b>I2.0.12</b>	Screened Copper Cable 3C x 2.5 sqmm armoured / unarmoured	Meter	109400			
<b>I2.0.13</b>	Screened Copper Cable 5C x 2.5 sqmm armoured / unarmoured	Meter	23200			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
I2.0.14	Screened Copper Cable 10C x 2.5 sqmm armoured / unarmoured	Meter	17000			
I2.0.15	1.1kV Stranded Copper Cable 2C x 6 sqmm armoured / unarmoured	Meter	36000			
I2.0.16	1.1kV Stranded Cable 3C x 6 sqmm armoured / unarmoured	Meter	4400			
I2.0.17	1.1kV PVC FRLS/PVC Aluminium Cable 1C x 35 sqmm armoured / unarmoured	Meter	14000			
I2.0.18	1.1kV PVC FRLS/PVC Aluminium Cable 1C x 120 sqmm armoured / unarmoured	Meter	30000			
I2.0.19	1.1kV PVC FRLS/PVC Aluminium Cable 1C x 630 sqmm armoured / unarmoured	Meter	3000			
I2.0.20	Copper Cable 2 or 3 triad, 0.5/1.5 sqmm armoured/unarmoured	Meter	13000			
I2.0.21	Compensating cable 1P/2P x 0.5 sq mm type Tx/Sx/Kx unarmoured/armoured	Meter	30000			
I2.0.22	Compensating cable 1P/2P x 1.5 sqmm type Tx/Sx/Kx unarmoured/armoured	Meter	12800			

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<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>UOM</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Total amount</b>	<b>Applicable TOP</b>
<b>I2.0.23</b>	Compensating cable 4P x 1.5 sqmm type Tx/Sx/Kx unarmoured/armoured	Meter	12000			
<b>I2.0.24</b>	Compensating cable 6P x 1.5 sqmm type Tx/Sx/Kx unarmoured/armoured	Meter	20000			
<b>I2.0.25</b>	Laying, etc of Optical fibre cables on cable trays, conduits etc (termination supervision by other agency) with minor civil works	Meter	6000			
<b>I2.0.26</b>	Network UTP Cables (special termination using UTP connectors involved)	Meter	10980			
<b>I2.0.27</b>	Cable duct 60 x 60 x 1000	Meter	400			
<b>I2.0.28</b>	Cable duct 100 x 100 x 1000	Meter	100			
<b>I2.0.29</b>	Cable duct 180 x 100 x 1000	Meter	200			
<b>I2.0.30</b>	Cable duct 250 x 100 x 1000	Meter	200			
<b>I2.0.31</b>	Hoses-1/4", 1/2", 1", SS/Teflon, Braided/unbraided, upto 5M length	Meter	152			
<b>I2.0.32</b>	Flexible pipe 1"	Meter	10			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
I2.0.33	Flexible pipe 2"	Meter	10			
I4.0	<b>JUNCTION BOX/PUSH BUTTON STATION</b>					<b>I4.0</b>
I4.0.1	Junction boxes upto 48 way	No	538			
I4.0.2	Junction boxes above 48 way	No	234			
I4.0.3	2PB or 3PB Pushbutton box	No	5			
I4.0.4	Fire protection switch in IP65 box	No	8			
I4.0.5	FSSS Local Oil Gun Maintenance Switch Box	No	40			
I5.0	<b>CONDUITS/IMPULSE PIPE/TUBES</b>					<b>I5.0</b>
I5.0.1	Impulse pipe CS ½" SCH 80 (D21.3 x 3.73 mm)	Meter	9000			
I5.0.2	Impulse pipe CS ¾" SCH 80 (D25 x 4 mm)	Meter	10000			
I5.0.3	Impulse pipe CS ½" SCH 160 (D21.3 x 4.78 mm)	Meter	2800			
I5.0.4	Impulse pipe AS ¾" SCH 80 (D25 x 4 mm)	Meter	1400			
I5.0.5	Impulse pipe ASTM A 335 P22 1/2 " Sch XXS	Meter	1400			

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<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>UOM</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Total amount</b>	<b>Applicable TOP</b>
<b>I5.0.6</b>	Impulse pipe CS 1" SCH 80 (D33.4 x 4.55 mm)	Meter	400			
<b>I5.0.7</b>	Impulse pipe SS 1/2" SCH 160	Meter	1500			
<b>I5.0.8</b>	Impulse pipe for pre instruments CS (D16 x 2.6mm)	Meter	3000			
<b>I5.0.9</b>	Impulse pipe SS 1/2" (D21.3 x 2.6 mm) Sch 40	Meter	1200			
<b>I5.0.10</b>	CS pipe 2" Sch 40	Meter	50			
<b>I5.0.11</b>	SS pipe 2" Ssc 40	Meter	50			
<b>I5.0.12</b>	GI Pipe (1/2", 1") Heavy grade	Meter	5120			
<b>I5.0.13</b>	Seamless CS tube 13.5 x 2.6 mm	Meter	612			
<b>I5.0.14</b>	Seamless CS tube 21.3 x 2.3 mm	Meter	2620			



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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
<b>I5.0.15</b>	Seamless SS tube 13.5 x 2.6 mm	Meter	44			
<b>I5.0.16</b>	Seamless SS tube 21.3 x 2.3 mm	Meter	640			
<b>I5.0.17</b>	Seamless AS tube 13.5 x 2.6 mm	Meter	24			
<b>I5.0.18</b>	Seamless AS tube 21.3 x 2.3 mm	Meter	850			
<b>I5.0.19</b>	CS tube 33.7 x 3.38 mm	Meter	3504			
<b>I5.0.20</b>	CS tube DN 80	Meter	20			
<b>I5.0.21</b>	Copper tube 6mm/8mm / 1/4" (Sheathed / bare)	Meter	5800			
<b>I5.0.22</b>	Copper tube 3/8" (Sheathed / bare)	Meter	200			
<b>I5.0.23</b>	Copper tube 1/2" to 1" (Sheathed / bare)	Meter	50			
<b>I6.0</b>	<b>MISCELLANEOUS STRUCTURAL STEEL INCLUDING FRAMES FOR PANELS/RACKS/INSTRUMENTS, SUPPORTS FOR CABLE TRAY/PIPES/TUBES, CANOPIES ETC</b>					<b>I6.0</b>

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
I6.0.1	Structural steel for fabrication	Tons	26			
I6.0.2	Aluminium strip (300 x 22 x 2 mm)	No	1800			
I6.0.3	Assembly of JB mounting frames (approx. dim. 1700 x 1600 x 750 mm)	No	28			
I6.0.4	Assembly of JB mounting frames (approx. dim. 1500 x 800 x 1800 mm)	No	42			
I6.0.5	Assembly of JB mounting frames (approx. dim. 1700 x 1600 x 850 mm)	No	8			
I6.0.6	Assembly of JB mounting frames (approx. 700 x 1100 x 450 mm)	No	22			
I6.0.7	Assembly of JB mounting frames (approx. 1700 x 2600 x 150 mm)	No	10			
I6.0.8	Assembly of JB mounting frames (approx. 1500 x 2100 x 500 mm)	No	10			
I6.0.9	MS Flat 50 X 6 mm	Meter	500			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
<b>17.0</b>	<b>PANELS/CUBICLES/RACKS/ENCLOSURES/MONITORS/COMPUTER/COMPUTER PERIPHERAL/PLCS/UPS/BATTERIES</b>					<b>17.0</b>
<b>17.0.1</b>	Assembly of local gauge board (1400 x 450 x1900 mm)	No	14			
<b>17.0.2</b>	Control Panel (approx. weight 400kg, 1000(L) X 1000(B) X 2500(H) mm) - one panel	No	28			
<b>17.0.3</b>	Control Panel (approx. weight 800kg, 1500(L) X 1000(B) X 2500(H) mm) - suit of two panels	No	69			
<b>17.0.4</b>	Control Panel (approx. weight 1200kg, 2250(L) X 1000(B) X 2500(H) mm) - suit of three panels	No	16			
<b>17.0.5</b>	Control Panel (approx. weight 1600kg, 3000(L) X 1000(B) X 2500(H) mm) - suit of four panels	No	2			
<b>17.0.6</b>	Gravimetric Feeder Remote Panel (approx. weight 636kg, 1400(L) x 610(B) x 2365(H) mm)	No	16			
<b>17.0.7</b>	Transducer(T&AVT) Panel (approx. weight 400kg, 1000(L) X 1000(B) X 2500(H) mm)	No	2			
<b>17.0.8</b>	Unit Control panel	Set	2			

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<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>UOM</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Total amount</b>	<b>Applicable TOP</b>
<b>17.0.9</b>	Electrical control panel (approx. 3175 x 2355 x 1000 mm)	Set	2			
<b>17.0.10</b>	Elevator control panel	No	2			
<b>17.0.11</b>	Control panels for Centrifuges	No	8			
<b>17.0.12</b>	Steam leak detection (STLD) system panel (approx. 800(L) x 2315(B) x 800(H) mm)	Set	2			
<b>17.0.13</b>	NETWORK PANELS (approx. 800 x 800 x 2100 mm)	No	10			
<b>17.0.14</b>	Vibration monitoring system for main turbine / generator	Set	2			
<b>17.0.15</b>	Vibration monitoring system for BFP/CEP/FANs/Pulveriser	Set	2			
<b>17.0.16</b>	Vibration monitoring system for TDBFP	Set	4			
<b>17.0.17</b>	Vibration monitoring system for CW/ACW pumps	Set	2			

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<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>UOM</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Total amount</b>	<b>Applicable TOP</b>
<b>17.0.18</b>	Vibration monitoring system for Generator end winding	Set	2			
<b>17.0.19</b>	DC motor starter box for scanner fan	No	2			
<b>17.0.20</b>	Burner Tilt Shear Pin Failure Indication Box	No	8			
<b>17.0.21</b>	Air Heater Rotor Stoppage Alarm Box	Set	8			
<b>17.0.22</b>	Electronic Water Level Indicator (EWLI)	Set	4			
<b>17.0.23</b>	LP Dosing sysetm	Set	2			
<b>17.0.24</b>	Condenser vacuum pump system	Set	2			
<b>17.0.25</b>	Generator Instrumentation cabinet including annunciator (approx. weight 600 Kg, 1230 x 1060 x 2550 mm)	No	2			
<b>17.0.26</b>	Positioner cabinets (approx. 380 x 380 x 210 mm) for LPBP CV1, LPBP CV2, Spray water CV	No	4			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
17.0.27	Local Instrument racks (LIR)	No	200			
17.0.28	Local Instrument enclosures (LIE)	No	120			
17.0.29	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	36			
17.0.30	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, etc)	Set	18			
17.0.31	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	6			
17.0.32	Computer furniture for all Servers, PCs, Printers	Set	2			
17.0.33	Plant Control Desk / CRT desk	Set	2			
17.0.34	230/240 V UPS System and ACDB	Set	2			
17.0.35	240V UPS Distribution boards	No	4			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
17.0.36	24 V DC Charger for SG & TG Package with Batteries and DCDBs	Set	2			
17.0.37	24V DC Charger for BOP Package with batteries and DCDBs	Set	2			
17.0.38	24 V DC charger for CWP Package with Batteries and DCDBs	Set	1			
17.0.39	24 V DC Charger for FOPH with batteries and DCDBs	Set	1			
18.0	<b>INSTRUMENTS/DEVICES INCLUDING SENSORS/CELLS/PROBES ETC</b>					<b>18.0</b>
18.0.1	Latching relay 24V, 5A	No	8			
18.0.2	Moisture Sensor probe and dew point monitor	Set	2			
18.0.3	Furnace Temperature probe including local panel/box and all accessories	No	4			
18.0.4	Air filter regulators / Lubricators (1/2", 1", 0-6KG, 0-10 KG)	No	152			
18.0.5	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	No	144			

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<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>UOM</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Total amount</b>	<b>Applicable TOP</b>
<b>18.0.6</b>	Pneumatic Pressure controller with accessories	No	4			
<b>18.0.7</b>	Heavy Duty Limit Switch	No	79			
<b>18.0.8</b>	Limit Switches (checking and adjusting only).	No	200			
<b>18.0.9</b>	Speed switch / Speed detector	No	16			
<b>18.0.10</b>	Pressure Switch / DP Switch / DP indicating switch	No	154			
<b>18.0.11</b>	Temperature Switch / Thermostat	No	15			
<b>18.0.12</b>	Float type Level Switch	No	22			
<b>18.0.13</b>	Electronic Level Switch (with amplifier, etc), Capacitance or conductivity type	No	60			
<b>18.0.14</b>	Vacuum switch	No	4			



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<b>I8.0.15</b>	Flow switch (Mechanical / Electronic)	No	8			
<b>I8.0.16</b>	Ultrasonic Transmitters	No	12			
<b>I8.0.17</b>	Pressure / DP / Flow (DP type) / Level -Transmitter	No	732			
<b>I8.0.18</b>	Level Transmitter (displacer type)	No	22			
<b>I8.0.19</b>	Guided wave radar type level transmitters	No	22			
<b>I8.0.20</b>	Flow Transmitter (Pulse / mass flow / target type) including flanges	No	6			
<b>I8.0.21</b>	Speed transmitter	No	4			
<b>I8.0.22</b>	Position Transmitters	No	20			
<b>I8.0.23</b>	Electronic Level Transmitter (with amplifier, etc), Capacitance or conductivity type	No	24			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
18.0.24	Pressure Gauge / DP gauge/DP Indicator	No	1048			
18.0.25	Temperature Gauge <b>(all types)</b>	No	417			
18.0.26	Level Indicator / Level Gauge	No	16			
18.0.27	Direct Water Level Gauge (DWLG)	Set	4			
18.0.28	Flow indicator / Flow Gauge / Flow meter/Acoustic flow meter (coal)	No	16			
18.0.29	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	No	1578			
18.0.30	MTM Thermocouple upto 17 M length	No	53			
18.0.31	MTM Thermocouple over 17 M upto 22 M length	No	127			
18.0.32	MTM Thermocouple over 22 M upto 28 M length	No	46			

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<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>UOM</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Total amount</b>	<b>Applicable TOP</b>
<b>18.0.33</b>	SADC Cylinders	No	144			
<b>18.0.34</b>	Bypass Rotameters	No	6			
<b>18.0.35</b>	HEA Exciter system	Set	40			
<b>18.0.36</b>	Flame Scanner Head Assembly	No	64			
<b>18.0.37</b>	Vertical indicators (moving coil / bar graph)	No	5			
<b>18.0.38</b>	Flow integrators	No	2			
<b>18.0.39</b>	Digital / bargraph indicators	No	20			
<b>18.0.40</b>	Recorder 24 / 30 Channel	No	2			
<b>18.0.41</b>	Recorder 3 channel	No	10			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
18.0.42	Rotor Earth fault Detector	No	4			
18.0.43	Hydrogen Purity analyser	No	4			
18.0.44	O2 (OXYGEN ) Analyzer (low temperature)	No	12			
18.0.45	Flue Gas Analyzer - In situ Type for measuring SOX/NOX/CO	Set	2			
18.0.46	Dust emission monitor (Installation at around 88 M in chimney)	Set	2			
18.0.47	SWAS Sample handling system with racks & Sample conditioning panel with chiller	Set	2			
18.0.48	SWAS Analyzer Panel including various analyser	No	2			
18.0.49	I/P converters	No	120			
18.0.50	Purge Maters	No	32			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
18.0.51	Laboratory Setup for Customer	Set	1			
19.0	<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>					19.0
19.0.1	Coal Feeder local panel/ instruments commissioning	No	16			
19.0.2	Electrical regulating drives: (Valve, damper, scoop)	No	16			
19.0.3	Pneumatic regulating drives: (Valve, damper) incl Burner tilt	No	358			
19.0.4	Commissioning of Hydraulic actuators	No	60			
19.0.5	Corner valve/ Trip valves commissioning	No	112			
19.0.6	Open/Close type pneumatic gates / dampers / valves	No	50			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applicable TOP
I9.0.7	ERV Controller (approx. weight 10kg, 400 x 350 x 190 mm)	No	8			
I9.0.8	Pulveriser Lube oil skid	Set	16			
I9.0.9	Fan Lube oil skid	Set	12			
I9.0.10	Only healthiness checking of embedded RTD / T/C	No	500			
I9.0.11	Rack mounted instruments commissioning	Set	6			
I9.0.12	HP Dosing System	Set	2			
I10.0	<b>POWER CYLINDERS</b>					<b>I10.0</b>
I10.0.1	Mill Discharge Valve power cylinders (set of four)	Set	16			
I11.0	<b>MISCELLANEOUS ITEMS (ITEMS NOT COVERED UNDER ABOVE HEADS)</b>					<b>I11.0</b>
I11.0.1	Master and Slave Clock system	Set	1			

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SL. NO.	DESCRIPTION	UOM	Quantity	Unit Rate	Total amount	Applica ble TOP
I11.0.2	HART MANAGEMENT SYSTEM including CABINET	Set	2			
<b>TOTAL AMOUNT IN FIGURES (IN RUPEES)</b>						
<b>TOTAL AMOUNT IN WORDS (IN RUPEES)</b>						