

TENDER SPECIFICATION

BHEL: PSSR: SCT: 1456

FOR

Handling at Site Stores / Storage yard, Transportation to Site of Work, Erection, Testing and Commissioning of **Controls and Instrumentation Package** including Supply & Applications of touch-up, preservation and final painting for Unit- 1&2, 2x600 MW, Stage-II

at

North Chennai Thermal Power Station,
Atthipattu,
Chennai – 120, Tamil Nadu.

VOLUME –II

RATE SCHEDULE



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

Power Sector – Southern Region

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

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: 1456

for

Handling at Site Stores / Storage yard, Transportation to Site of Work, Pre assy., Erection, Testing and Commissioning, Supply & Applications of touch-up, preservation and final painting of **Controls & Instrumentation Package** of 2 X 600 MW Stage II Unit- 1&2 at **North Chennai** Thermal Power Station, Atthipattu, Chennai – 120, Tamil Nadu.

One set of Tender documents consisting of
1) RATE SCHEDULE - 2 copies

Book Sl no

Issued to
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Please note this tender document is not transferable

For and on behalf of
BHARAT HEAVY ELECTRICALS LIMITED

ADDL GENERAL MANAGER / CONTRACTS

Place: Chennai -35

Date:

NORTH CHENNAI TPS STAGE II 2x600 MW-Unit 1&2								
RATE SCHEDULE FOR								
ERECTION, TESTING AND COMMISSIONING OF C&I PACKAGE								
Before filling the Rates, the bidder shall go through the detailed specification of all the items given in Bill of Materials (BOM) as well as Scope of Work specified in TCC								
SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT	
					In figures	In words	In figures	In words
ERECTION/COMMISSIONING OF LOCAL/FIELD MOUNTED INSTRUMENTS								
1	A.1.1	PD Type Flow meter	sets*	2				
2	A.1.4,A.2.2,A.2.3, A.3.2, A.3.3, A.4.2, A.4.4, A.4.8.5, B.1.1, C.1.1, D.3.2.1, D.3.2.2, E.2.1.1, E.2.1.2, E.3.1, E.5.1.1, F.2.2, F.2.3, G.1.2.1, G.1.4.2, G.1.5.1, G.2.1.9, G.2.6.3	Pressure Gauges/ DP Gauges	Nos.	632				

* Lump sum rate to be quoted per set

\$ Rate to be quoted for commissioning only

SIGNATURE OF BIDDER

SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT	
					In figures	In words	In figures	In words
3	A.1.6, A.3.5, A.4.3, A.4.8.4, B.1.2, B.2.2, C.1.2, D.3.2.3, E.2.1.6, E.3.3, E.5.1.4, G.1.2.2, G.1.4.5, G.1.5.4, G.2.1.3, G.2.6.2	Temperature Gauges with Thermowell (capillary/ stem type)	Nos.	433				
4	B.1.5	Thermocouple Assembly for APH	sets*	4				
5	A.4.7	Thermocouple Assembly for Smart Soot Blowing System	sets*	48				
6	A.4.8.1, B.1.3, B.2.1, D.3.2.4, D.3.2.5, E.1.1.1, E.2.1.7, E.2.1.8, E.4.1, E.5.1.5, G.1.2.8, G.1.2.10, G.1.4.4, G.1.5.3, G.2.1.1, G.2.1.2	RTDs/ Thermocouples with thermowell	Nos.	818				
7	A.4.9.1, A.4.9.2, A.4.9.3	MTM T/Cs of route length 10 to 18 Mtrs (6 mm OD)	Nos.	28				
8	A.4.9.4, A.4.9.5, A.4.9.6, A.4.9.7, A.4.9.8	MTM T/Cs of route length 20 to 28 Mtrs (6 mm OD)	Nos.	201				

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SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT	
					In figures	In words	In figures	In words
9	A.4.9.9, A.4.9.10, A.4.9.11	MTM T/Cs of route length 30 to 36 Mtrs (6 mm OD)	Nos.	43				
10	A.1.3,A.1.5,A.2.1 ,A.2.4, A.3.1, A.3.4, A.4.1, A.4.5, B.1.4, C.1.3, D.1.2.3, D.1.2.4, D.3.2.6, D.3.2.7, E.2.1.4, E.2.1.5, E.5.1.2, F.1.2, F.1.3, F.2.5, F.2.6, G.1.2.9, G.1.4.1, G.1.4.3, G.1.5.2, G.2.1.7	Pressure/ DP Switches	Nos.	243				
11	A.1.7, A.4.8.2, G.1.2.3, G.2.1.4	Temperature Switches	Nos.	11				
12	A.1.2, C.1.4, D.3.2.12, E.3.2, E.5.1.3, G.2.1.11, G.2.6.1	Level Switches (float type)	Nos.	59				
13	D.3.2.11, G.1.2.7	Level switches (capacitance type)	Nos.	17				

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SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT	
					In figures	In words	In figures	In words
14	D.3.2.13, G.2.1.13	Level Switches (conductivity type) with electrodes, vessels and electronic units etc.	sets*	4				
15	D.3.2.15, D.3.2.18, D.3.2.19, D.3.2.20, E.2.1.3, E.2.1.13, F.1.1, F.2.4, G.1.2.4, G.1.2.5, G.1.2.6, G.2.1.5, G.2.1.6, G.2.1.14	Pressure Transmitters, DP Transmitters for Flow / Level/ Differential Pressure	Nos.	476				
16	D.3.2.14	Guided Wave Radar Type Level Transmitter	Nos.	14				
17	D.3.2.16	Hydrostatic Level Transmitter	Nos.	1				
18	D.3.2.17	Ultrasonic Type Level Transmitter	Nos.	2				
19	E.2.1.10, G.2.1.10	Level Transmitters with probes, electronic units etc.	sets*	13				
20	D.3.2.8	Flow Transmitter (Annubar Type)	set*	1				
21	A.4.6, G.2.1.15	Temperature Transmitters	Nos.	52				
22	G.1.5.5	Moisture Sensor Probes	Nos.	2				
23	G.2.1.12	Position Transmitter for Extraction NRV	Nos.	16				
24	A.3.8	Pneumatic Pressure Controllers with Pneumatic Transmitter	Sets*	2				
25	A.1.8	Speed Regulator/ Air Lock Valves/ Air Sets	sets*	20				

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					In figures	In words	In figures	In words
26	A.1.10, A.2.5, A.3.6, D.1.2.2, D.3.2.22	Air Filter Regulators	Nos.	67				
27	D.1.2.1, D.3.2.21, E.2.1.12	I/P Converters	Nos.	31				
28	A.3.7	Purge Meter cum DP regulator	Nos.	18				
29	A.1.13	Flame Scanner Head Assembly	sets*	32				
30	A.1.11	FSSS Local Oil Gun Maintenance Switch Box	Nos.	20				
31	A.1.12	H.E.A. Excitor box Assembly with accessories	sets*	20				
32	A.2.12	Burner Tilt Shear Pin Failure Indication Box	Nos.	4				
33	A.2.13	Heavy Duty Limit Switch (for Burner Tilt)	Nos.	20				
34	A.3.9	Ultrasonic Coal Flow Monitor, along with accessories	sets*	9				
35	A.1.14	8 Nos. Flame scanner amplifier Racks	set*	1				
36	D.3.2.9	Level Gauge (float and chord type)	set*	1				
37	D.3.2.10, E.2.1.9	Level Gauge (direct mounting type)	Nos.	3				
38	A.4.11	ERV Controller with Pressure Switch	sets*	4				
39	A.4.12	Electronic Water Level Indicator along with Display Units, Ascetor Unit and other accessories.	sets*	2				
40	A.4.13	Sonic tube leak detection system along with Panel and other accessories.	set*	1				

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					In figures	In words	In figures	In words
41	A.4.14.1	Furnace Flame Viewing System along with Local Control Unit, Remote panel and other accessories.	set*	1				
42	B.1.6	Rotor Stoppage System with accessories	sets*	2				
43	B.1.7	ON/OFF Switch Box including light assembly	Nos.*	2				
44	E.2.1.11	Speed measuring loop for BFPDT Governing System	sets*	12				
45	D.2.2.1	Control Cabinet, along with loose supplied items for Turbine Supervisory System for Main Turbine	set*	1				
46	D.3.6.1	Control Cabinets, along with loose supplied items for Vibration Monitoring System for Pumps, Fans & Motors.	set*	5				
47	D.3.6.2	Vibration Monitoring System for Pumps, Fans & Motors, along with 233 Nos. of Vibration Sensors, 98 Nos. JB's for velocity transducers, 37 Nos. sensor drivers and other accessories. Note: Installation of sensors will be carried out by vendor.	set*	1				
48	E.2.2.1	Vibration Monitoring System for BFP Drive Turbine with 16 Nos. probes, Monitor, and other accessories	Sets*	2				
49	E.5.1.8	Reverse Rotation Monitoring System for CWP along with sensors, monitors and other accessories	set*	1				

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SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT	
					In figures	In words	In figures	In words
50	D.2.3.1	HART Panel along with loose supplied items.	set*	1				
51	B.2.4	Opacity Monitoring System	sets*	4				
52	D.3.4.1	Coal Bunker Level Monitoring System along with accessories.	sets*	1				
53	D.3.3.1	Low temperature O2 Analyser	sets*	5				
54	D.3.3.2	High temperature O2 Analyser	sets*	2				
55	D.3.3.3	Opacity Analyser to be installed at 71.5 ML of chimney.	set*	1				
56	D.3.3.4	SOX/NOX/CO analyzer to be installed at 71.5ML of chimney	set*	1				
57	D.3.5.1	Steam and water analysis system, SWAS consisting of: Primary Cooler Rack: 2Nos., Chiller Unit:1 No., Wet Panel: 1 No., Dry panel: 2 Nos., Conductivity Racks: 2 Nos., sensors/ analysers and other accessories	set*	1				
		Master and Slave Clock System						
58	D.3.15.1	Master clock control panel	Nos.	1				
59	D.3.15.2	Slave clock	Nos.	25				
60	D.3.15.3	GPS Antenna along with around 100 Mtrs antenna cable from antenna to GPS Receiver	No.	1				
61	D.3.15.4	Slave Booster	Nos.	5				
62	D.3.15.5	Line Driver / Receiver	Sets	2				
		CCTV System						

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					In figures	In words	In figures	In words
63	D.3.16.1	CCTV System Local Control Panel	Nos.	2				
ERECTION/COMMISSIONING OF UCB/CONTROL ROOM MOUNTED INSTRUMENTS								
64	G.1.6.1	Electronic /Digital Indicators	Nos.	6				
65	D.2.1.7, G.1.6.2	Bar Graph Indicators / 3 Point recorder	Nos.	3				
REMOVAL, CALIBRATION, REFIXING AND COMMISSIONING OF INSTRUMENTS								
66	G.1.3.1, G.1.3.2	Pressure/ DP Gauges	Nos.	15				
67	B.2.3, E.1.1.2, E.4.2, E.5.1.6, G.1.3.3	Temperature Gauges	Nos.	101				
68	G.1.3.6, G.2.1.8	Pressure/ DP Switches	Nos.	19				
69	G.1.3.7	Level Switches	Nos.	7				
70	G.1.3.4, G.1.3.5	Pressure/ DP Transmitters	Nos.	15				
71	G.3.4	Position Transmitter	Nos.	20				
72	G.1.3.9	Conductivity Cells	Nos.	2				
73	G.1.3.10	PW Conductivity Indicator	No.	1				
CALIBRATION (AS REQUIRED), ERECTION, REMOVAL AND NORMALIZATION FOR EDTA CLEANING								
74	H.1.1	MTM thermocouple length 10 mtrs	Nos.	12				
75	H.1.2	Junction boxes - 12 way/ 6 way/ 24 way	Nos.	10				
76	H.1.3	Compensating cables 2 P x 0.5 sq. mm	Mtrs.	200				
77	H.1.4	Compensating cables 6 P x 0.5 sq. mm	Mtrs.	300				
78	H.1.5	Pressure gauges	Nos.	5				
79	H.1.6	Drum MTM thermocouple adaptor fabrication - 1/4 inch NPT(M) x 1/4 inch OD SS	Sets	2				

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80	H.1.7	16 P x 0.5 sqmm cable for Teletel Drum level indication	Mtrs.	500					
81	H.1.8	3c x 2.5 sqmm power cable Teletel Drum level indication	Mtrs.	100					
82	H.1.9	9 port lamp indication at control room and 9 port switching at Drum floor	Set	1					
83	H.1.10	Switchboards with switches	Nos.	3					
ERECTION/COMMISSIONING OF PNEUMATIC POWER CYLINDERS (REGULATING TYPE)									
84	A.2.14.3	ID Fans I/L Damper	Nos.	2					
85	A.2.14.2 , A.2.14.4	PA Fan & FD Fan Blade Pitch control Dampers / Cold Air Regulating Dampers	Nos.	13					
86	A.2.14.5	Hot Air Regulating Dampers	Nos.	9					
87	A.2.14.1	Power Cylinders for SADC	Nos.	80					
88	A.2.14.6	Dynavane Filter Bleed Air Damper	No.	1					
ERECTION/COMMISSIONING OF PNEUMATIC ACTUATORS (ON/OFF TYPE)									
89	A.2.15.1	Scanner Air Emergency Damper	No.	1					
ERECTION/COMMISSIONING OF UPS/ BATTERY/ BATTERY CHARGER WITH DBs									
90	D.3.7.1	2x150 KVA, UPS comprising of Servo controlled voltage stabilizer cubicle, Input isolation transformer cubicle 02 nos., UPS panel 02 nos., BHMS, Battery/Tie Isolation box, etc	set*	1					
91	D.3.7.2	ACDB	Nos.	2					

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					In figures	In words	In figures	In words
92	D.3.7.3	UPS Battery, NiCd, 291 cells, along with wooden rack, and other accessories	sets*	2				
93	D.3.8.1, D.3.8.3	24V DC Float Cum Boost Charger with DCDB for SG/TG & BOP Package.	sets*	4				
94	D.3.8.2 , D.3.8.4	24V DC Battery for SG/TG & BOP Package	sets*	4				
95	D.3.8.5 , D.3.8.7	24V DC Float Cum Boost Charger with in-built DCDB for FOPH & CWPH	set*	3				
96	D.3.8.6 , D.3.8.8	24V DC Battery for FOPH & CWPH	set*	3				
ERECTION/COMMISSIONING OF PANELS								
97	A.3.10	Gravimetric Feeder Panel	Nos.	9				
98	F.2.1	PLC panel for Condenser Tube Cleaning system, along with other accessories.	No.	1				
99	G.1.1.1	Generator Instrumentation Cabinet	No.	1				
100	G.1.1.2	Gas Analyser Cabinet including sensor, analyser etc.	sets *	2				
101	G.1.1.3	Generator End Winding Vibration Monitoring System	No.	1				
102	G.1.1.4	Moisture Measurement System for Generator	set*	1				
103	G.1.1.5	Grounding Brush Monitor	set*	1				
ERECTION/COMMISSIONING OF DCS PACKAGE / PADO SYSTEM								

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					In figures	In words	In figures	In words
104	D.2.1.1, D.2.1.2, D.3.1.1, D.3.1.2, D.4.4	Single Cubicles	Nos.	16				
105	D.1.1.1, D.2.1.3, D.3.1.3, D.3.1.4	Suite of Two Cubicles	Nos.	34				
106	D.1.1.2, D.2.1.4, D.3.1.5	Suite of Three Cubicles	Nos.	13				
107	D.1.1.3, D.2.1.5	Suite of Four cubicles	Nos.	2				
108	D.4.1	CRT Desk	No.	1				
109	D.4.2	6 nos. of 67" Large Video Screen along with CPU and other loose supplied items.	set*	1				
110	D.4.3, D.5.2	Computer Stations : Engineer Workstation, 'maxStorian' Station, Operator Work Stations, maxLINK Stations, Operator Workstations for PADO System, etc.	sets*	48				
111	D.4.5	Network Enclosures (Wall Mounted type), along with loose supplied Ethernet switches.	Nos.	3				
112	D.5.1	PADO Servers along with 24" monitors and other loose supplied items.	set*	1				
113	D.5.3	Power Distribution Boards 15A/ 5A	Nos.	12				
114	D.5.5	Conduit for laying Ethernet cable	Mtrs.	350				
115	D.5.6	Wall mounted Rack / 6U Wall mounted rack	Nos.	2				
ERECTION/TESTING OF LOCAL INSTRUMENT ENCLOSURES/ RACKS (LIE/LIR)/GAUGE BOARDS								

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					In figures	In words	In figures	In words
116	D.3.9.1	LIE of size: 1450 x 800 x 2300 mm; Approximate weight: 900 kg	Nos.	18				
117	D.3.9.2	LIE of size: 1100 x 800 x 2300 mm; Approximate weight: 660 kg	Nos.	14				
118	D.3.9.3	LIE of size: 700 x 600 x 2100 mm; Approximate weight: 370 kg	Nos.	5				
119	D.3.9.4	LIR of size 1600 x 850 x 2150 mm; Approximate weight: 400 kg	Nos.	9				
120	D.3.9.5	LIR of size 1300 x 850 x 2150 mm; Approximate weight: 300 kg	Nos.	39				
121	D.3.9.6	LIR of size 800 x 850 x 1600 mm; Approximate weight: 200 kg	Nos.	20				
122	A.5.6.1	LIR of 1650 x 850 x 2150 mm; Approximate weight: 600 kg	Nos.	13				
123	E.1.5.1, E.1.5.2, E.1.5.3, E.1.5.4	LGB Assembly for BFPs/ CEPs (along with instruments) Approximate size 1400 x 550 x 1900 mm; 200 kg	Nos.	8				
124	E.1.5.5, E.1.5.6, E.1.5.7	LIR assembly for BFPs/ CEPs (along with transmitters) Approximate Size 2000 x 650 x 2200 mm; 300 kg	Nos.	5				
ASSEMBLY AND ERECTION OF JB MOUNTING FRAMES								

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					In figures	In words	In figures	In words	
125	D.2.7.1 TO D.2.7.9	Assembly and installation of Mounting Frames with loose supplied prefabricated materials like slotted angles, channels etc.	Nos.	21					
ASSEMBLY / WELDING / ERECTION OF PRESSURE INSTRUMENT RACKS									
126	G.2.2.1, G.2.2.2	Assembly/welding and installation of Instrument Racks with loose supplied prefabricated materials of suitable size, like angles, stands etc. Total wt. of loose supplied items (for 13 racks): Approx. 3 Tonnes	Nos.	13					
LAYING, TERMINATION & TESTING OF CABLES									
		Laying of LT Power Cables							
127	D.3.7.4	1X 109/120 sq.mm Copper cable	Mtrs.	800					
		Termination of LT Power Cables							
128	D.3.7.5	1X 109/120 sq.mm Copper cable	Nos.	64					
		Laying and Termination of Power / Control / Instrumentation Cables							

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129	A.5.1.1, A.5.1.2, A.5.1.3, A.5.1.4, A.5.1.5, D.2.4.1, D.3.10.6, D.3.10.12, D.3.10.17, D.3.10.18, F.3.5, F.3.9	Flame Scanner / Heat Flux Sensor / 1Pair X 1.5 / 2Pair X 0.5/ 2Pair X 1.5 sq. mm cable	Mtrs.	57650				
130	A.5.1.6, A.5.1.7, A.5.1.13, C.3.1, D.2.4.2, D.3.10.7, D.3.10.11, D.3.10.13, E.1.4.2, F.3.1, F.3.6	4Pair X 0.5 sq. mm / 2 Triad X 0.5 sq.mm cable	Mtrs.	390150				
131	D.2.4.7, D.3.10.8, E.1.4.1	6Pair x 0.5 sq.mm / 4 Triad x 0.5 sq. mm cable	Mtrs.	3550				
132	A.5.1.8, A.5.1.9, D.3.10.9, D.3.10.14, F.3.2, F.3.7	8Pair X 0.5 sq. mm cable	Mtrs.	120000				

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133	A.5.1.10, A.5.1.11, D.3.10.10, D.3.10.15, F.3.3, F.3.8	12 pair x 0.5 sq. mm / 16 P X 0.5 sq. mm cable	Mtrs.	56150				
134	D.3.10.16, F.3.4	20 Pair x 0.5 sq.mm / 24P X 0.5 sq.mm cable	Mtrs.	9550				
135	A.5.1.12, D.2.4.4, D.2.4.5, D.3.10.1, D.3.10.5	2 Pair x 0.5 sq. mm to 1.5 sq.mm compensating cables	Mtrs.	21600				
136	D.3.10.2, D.3.10.3	4 Pair x 0.5/1.5 sq.mm compensating cable	Mtrs.	7200				
137	D.3.10.4	6 Pair x 1.5 sq.mm compensating cable	Mtrs.	10000				
138	D.3.10.19, D.3.15.8	2 C/ 3C x 1.5/2.5 sq. m, cable	Mtrs.	8250				
139	D.2.4.3, D.4.7	4 C/ 5C x 1.5/2.5 sq. mm, control cable	Mtrs.	2500				
140	D.4.6, D.5.4, D.3.15.9	Ethernet Cable	Mtrs.	13100				
141	D.3.15.6	RG 58 Coaxial Cable	Mtrs.	1750				
142	D.3.15.7	RS 232 /485 Data Cable	Mtrs.	500				
143	D.2.4.6	Fibre optical cable along with HDPE conduit (Cable laying, clamping and dressing to be done by contractor. Splicing would be done by BHEL)	Mtrs.	1650				

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					In figures	In words	In figures	In words	
ERECTION OF CABLE TRAYS & DUCTS									
144	A.5.2.1, D.3.11.1, E.1.4.3	50 mm wide Cable Tray	Mtrs.	4720					
145	A.5.2.2, D.3.11.2	100 mm wide Cable Tray	Mtrs.	7200					
146	A.5.2.3, E.1.4.4	150 mm wide Cable Tray	Mtrs.	2545					
147	A.5.2.4	300 mm wide Cable Tray	Mtrs.	100					
	<i>Cable Ducts With Covers</i>								
148	D.2.6.1	60 x 60 x 1000 mm	Nos.	200					
149	D.2.6.2	180 x 100 x 1000 mm	Nos.	200					
150	D.2.6.3	250 x 100 x 1000 mm	Nos.	200					
ERECTION OF JUNCTION BOXES/PB BOXES									
151	A.2.10, A.5.3.1, A.5.3.2, A.5.3.3, C.2.1, C.2.2, D.2.5.2, D.2.5.3, D.3.12.1, D.3.12.2, D.3.12.3, D.3.15.1, E.1.3.1, E.1.3.2, G.2.4.4	Junction Boxes, 12 way to 36 way, including RJCBs	Nos.	273					

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\$ Rate to be quoted for commissioning only

SIGNATURE OF BIDDER

SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT		
					In figures	In words	In figures	In words	
152	A.5.3.4, D.2.5.1, D.3.12.4, D.3.12.5, D.3.12.6, D.3.12.7, G.2.4.2, G.2.4.3	Junction Box, 48 way to 96 way	Nos.	165					
153	G.2.4.1	Junction Box (Pedestal and Proximeter JB)	Nos.	17					
154	A.2.11, A.4.10, D.2.1.6	Push Button Boxes/ Fire Protection Switch Box	Nos.	10					
ERECTION/TESTING OF IMPULSE PIPES									
155	G.1.7.5, G.2.3.7	AS Pipe, 13.5 x 2.6	Mtrs.	70					
156	G.1.7.2, G.2.3.6	AS pipe, 21.3 x 2.3 / 21.3 x 2.77	Mtrs.	735					
157	A.5.5.3	AS Pipe, 21.3 x 4.78	Mtrs.	200					
158	D.3.13.5	A335 P22- ½" NB XXS (AS Pipe)	Mtrs.	650					
159	E.1.2.1, G.1.7.4, G.1.7.7, G.2.3.1	CS pipe, 13.5 x 2.6/ 16 x 2.6 / 17.2 x 1.8	Mtrs.	2574					
160	G.1.7.1, G.2.3.3	CS pipe, 21.3 x 2.3	Mtrs.	710					
161	A.5.5.2, C.5.1, E.2.3.1	CS pipe, 21.3 x 3.73 (½" SCH 80)	Mtrs.	1615					
162	D.3.13.4	A106 Gr C- ½" NB SCH 80 (CS Pipe)	Mtrs.	4200					
163	A.5.5.5, D.3.13.3	A106 Gr C- ½" NB SCH 160 (CS Pipe)	Mtrs.	1500					

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SIGNATURE OF BIDDER

SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT		
					In figures	In words	In figures	In words	
164	A.5.5.4, D.3.13.1	¾" SCH 80 IMPULSE PIPE, MATL ASTM-A106 (CS Pipe)	Mtrs.	3100					
165	D.3.13.2, A.5.5.1	ASTM A106 Gr C 1" NB SCH 80 (CS Pipe)	Mtrs.	2025					
166	E.2.3.2	CS Pipe, 60.3 x 3.91	Mtrs.	310					
167	G.2.3.2	CS Tube, DN-80	Mtrs.	40					
168	E.2.3.4, G.1.7.6, G.2.3.5	SS tube, 12.7 x 2.1 mm/ 13.5 x 2.6 mm	Mtrs.	430					
169	E.2.3.5	SS tube, 6 x 1.5 mm	Mtrs.	60					
170	D.3.13.6	A213 TP 316 - ½" NB SCH160	Mtrs.	650					
171	D.3.13.7	A213 TP316H- ½" NB SCH 80	Mtrs.	750					
172	D.3.13.8, G.1.7.3, G.2.3.4	A312 TP316L GR C ½" NB SCH 40 / 21.3 x 2.3 / 21.3 x 2.6 (SS tube)	Mtrs.	2630					
173	E.2.3.3	Cr-Al Pipe 21.3 x 3.73	Mtrs.	660					
ERECTION OF EARTHING MATERIALS									
174	A.5.4.2	GI Flat, 50 X 6 mm	Mtrs.	300					
ERECTION OF HOSES, TUBES etc.									
175	A.1.9, A.2.6, A.2.7, D.3.14.4	Copper Tube/SS Tube, OD 8 mm / ¼" / ½"	Mtrs.	3295					
176	A.2.8	¼" size Teflon Hose of 2M length	Nos.	80					
177	A.2.9	1" size Teflon Hose of 3M length	Nos.	4					
178	D.3.15.10	GI conduit pipe, 19mm OD.	Mtrs.	500					
ERECTION/TESTING OF GI PIPE (HEAVY DUTY)									
179	C.4.1, D.3.14.2	NB 15 x 3.25 / ½" heavy duty GI pipes	Mtrs.	5900					

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SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT	
					In figures	In words	In figures	In words
180	C.4.2, D.3.14.3	NB 25 x 4.05 / 1" heavy duty GI pipes	Mtrs.	2565				
181	C.4.3	NB 40 x 4.05	Mtrs.	270				
182	C.4.4	NB 50 x 4.05	Mtrs.	550				
183	C.4.5	NB 80 x 4.8	Mtrs.	100				
184	C.4.6	NB 100 x 5.4	Mtrs.	470				
FABRICATION/ERECTION OF STRUCTURAL STEEL								
185	A.5.4.1, D.3.14.1, E.1.6.1, E.2.2.2, G.2.5	Structural Steel for fabrication of supports/ LIRs/ canopy	MT	25.5				

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SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT	
					In figures	In words	In figures	In words
CHECKING & COMMISSIONING OF THE FOLLOWING ERECTED BY OTHER AGENCY								
186	B.1.8.2, B.2.5.2, E.4.3.2	Lub Oil Skids for Pulveriser, FD/ ID/ PA Fans, Air Preheater	sets* ^{\$}	19				
187	C.6.2, F.4.2, F.4.3, F.4.4	HP / LP Dosing Skids	sets* ^{\$}	4				
188	E.1.7.2	Hydraulic Coupling of MDBFP	set ^{\$}	1				
189	G.3.1	Condenser Vacuum Pump, including CVP PLC and related field instruments	sets* ^{\$}	2				
190	A.3.11.1	Gravimetric Feeders	sets* ^{\$}	9				
191	A.4.15.2	Direct Water Level Gauges	Nos. ^{\$}	2				
192	A.2.16.1	Burner Tilt Power Cylinders	Nos. ^{\$}	4				
193	A.2.16.2, A.2.16.3, A.2.16.4, A.2.16.5, A.2.16.6, A.2.16.7, E.4.3.3, E.4.3.4	Pneumatic Actuators of ON/OFF Type	Nos. ^{\$}	85				
194	A.1.15.2	Pneumatic Valves: Trip Valves	Nos. ^{\$}	71				
195	A.1.15.3, A.4.15.3, C.6.1, E.2.4.1, F.4.1	Pneumatic Valves: Control Valves	Nos. ^{\$}	72				
196	G.3.3	NRV Valves, Stop Valves, Control Valves, HP/LP Bypass Valves	Nos. ^{\$}	40				
197	B.1.8.1, G.3.6	Solenoid Valves	Nos. ^{\$}	32				

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SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT	
					In figures	In words	In figures	In words
198	E.2.4.2	Position Transmitters	Nos. \$	8				
199	B.2.5.1, E.1.7.1, E.4.3.1, E.5.1.7, G.1.3.12	Checking the healthiness of Temperature Elements (RTDs)	Nos. \$	596				
200	A.4.8.3, A.4.15.1, G.1.3.8, G.1.3.11,	Flow Indicators/ Flow Meters/ Flow Switches	Nos. \$	24				
201	A.1.15.1, A.3.11.2, E.1.7.3, G.3.5	Checking of Limit Switches	Nos. \$	201				
Instrument Racks <i>Removal, calibration and refixing of rack mounted instruments, checking solenoid valves, drives, including wiring on the rack etc.</i>								
202	E.2.4.3	Governing Console Board for BFPDT	sets* \$	2				
203	G.3.2	Oil Centrifuge Unit	Nos. \$	2				
204	G.3.7	Hydraulic Speed Control Equipment Rack for Main Turbine	set* \$	1				
205	G.3.8	LP Bypass Control Rack	set* \$	1				
206	G.3.9	Supply Unit Racks for HP Valve-1, HP Valve-2, IP Valves	sets* \$	3				
207	G.3.10, G.3.11	Seal Oil Rack/ Stator Water Rack	sets* \$	2				
208	G.3.12, G.3.13	Seal Oil Level / Pr Transmitter Instrument Rack, Stator Water DP Instrument Rack	set* \$	2				

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SL. NO	BOM REF.	DESCRIPTION	UNIT	QTY PER UNIT	UNIT RATE		TOTAL AMOUNT	
					In figures	In words	In figures	In words
209	G.3.14	H2 Dryer Unit	set* ^{\$}	1				
210	G.3.15, G.3.16	Gland Steam And Seal Steam Oil Supply Units/ TD BFP Pump Coupling Engage Oil Supply Unit	sets* ^{\$}	4				
		TOTAL						

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