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TENDER SPECIFICATION

TENDER NO. BHEL:NR:SCT:BSR:U 1 & 2:ECNI:503

FOR

ERECTION, TESTING, COMMISSIONING AND TRIAL OPERATION OF ELECTRICAL, CONTROL & INSTRUMENTATION PACKAGES FOR 2X125 MW BARSINGSAR TPS PROJECT (UNIT NO.1&2) OF NEYVELI LIGNITE CORPORATION LTD AT BARSINGSAR, BIKANER, RAJASTHAN.

PART II - PRICE BID



Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301.INDIA



ISO 9001-2000, ISO
14001 and OHSAS
18001 certified
company
SubContract and
Purchase Deptt.

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THIS TENDER SPECIFICATION ISSUED TO:

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RATE SCHEDULE

(ELECTRICAL, CONTROL AND INSTRUMENTATION PACKAGE)
2 X 125 MW BARSINGSAR TPS, BARSINGSAR BIKANER (RAJ.)

SL NO	ITEM NO.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
1	2	3	4	5	6	7
1	GROUP I	ELECTRICAL EQUIPMENTS				
2	IA	LT SERVICE TRANSFORMERS (dry type/ oil cooled type) including all accessories, piping,cablling etc. Transportation from stores/ storage yard to erection site, assembly, testing & commissioning of				
3	IA.1	LT SERVICE TRANSFORMERS (DRY TYPE) 6.6/0.433kv, Dyn11, 1600KVA , 6500KG approx.	No.	14		
4	IA.2	LT SERVICE TRANSFORMERS (DRY TYPE) 6.6/0.433kv, Dyn11, 1000KVA , 5600 KG approx.	No.	2		
5	IA.3	Excitation TRANSFORMERS (DRY TYPE) 6.6/ 0.433kv, Dyn11, 775KVA , 4500 KG approx.	No.	2		
6	IA.4	LTG TRF Dyn1, 415/433V .	No.	4		
7	IA.5	Neutral Grounding Resistor for MV system (UAT & ST system earthing)	set	6		
8	IA.6	VFD ONAN TRANSFORMER for ID FAN - Transformers (2.1 MVA, 6.6 KV / 725 V, 7500 KGS appx.),	No.	4		
9	IA.7	VFD TRANSFORMER for SA COMP. 6.6/0.433 KV, 750 KVA	No.	2		
10	IA.8	Testing & commissioning of Emergency DG control panels along with accessories like battery, battery chargers, associated cables etc.	set	2		
11	IB	ISOLATED PHASE BUS DUCT FOR GENERATOR, UAT AND GENERATOR TRANSFORMER, BUSDUCT MOUNTED GENERATOR CIRCUIT BREAKER / ISOLATOR				
12	IB.1	Transportation from stores / storage yard to erection site, assembly, erection, welding, testing & commissioning of Isolated Phase Bus Duct (10.5 kV, 10 KA) for interconnection of Generator, UATs & Generator Transformer along with all accessories & auxiliaries. Approx. length per unit: - a) 1000 dia duct length, 3x 53 M b) 780 dia duct length, 3 x 18 M.	Set	2		
13	IC	SEGREGATED PHASE BUS DUCT 6.6 kV				
14	IC.1	Transportation from stores / storage yard to erection site, assembly, erection, welding, testing & Commissioning of SEGREGATED PHASE BUS DUCT (6.6 KV, 2000A) for interconnection of UAT TO 6.6 KV UNIT SWITCHGEAR , STATION SWITCHGEAR AND TIE DUCTS BETWEEN SWGR , Approx 95 Enclosures of size (400 (H) X 1200 (B) (Total length 430 Mtrs (Approx), along with all Structures,Misc accessories(Approx 9.0 MT). Approx. size & length for both units :- 4000A (size 600x 1800mm), length 170 M, b) 2000A (size450x 1350mm), length 260 M.				

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1	2	3	4	5	6	7
15	IC.1.1	from station transformer to 6.6 KV board	set	2		
16	IC.1.2	from Unit auxiliary transformer to 6.6 KV board	set	4		
17	IC.1.3	from Unit & station 6.6 KV board #1 to unit-station 6.6 KV board # 2, station board to station board	set	3		
18	ID	6.6 kV INDOOR SWITCHGEAR - EACH BOARD CONSISTING OF VACUUM BREAKER TYPE VM 12, PT PANELS, AUXILIARY TRANSFORMER PANEL, BUS EXTENSION CHAMBERS & ACCESSORIES Etc. EACH BREAKER IS HOUSED WITH CONTROL, METERING & PROTECTION DEVICES.				
19	ID.1	Unit Switchgear Board 1CA/1CB/2CA/2CB : consists of approx. 14 panels or less / more. Approx.Dimension 15580 x 2651 x 2692.	Set	4		
20	ID.2	Unit Switchgear Board 0CA/0CB : consists of approx. 16 panels or less/ more. Approx. dimension 9020 x 2651 x 2692.	Set	2		
21	ID.3	Unit Switchgear Board OCC : consists of approx. 12 panels or less / more. Approx. dimension 13940 x 2651 x 2692.	Set	1		
22	IE	LT SWITCHGEAR - TRANSPORTATION FROM STORES/ STORAGE YARD TO ERECTION SITE, ASSEMBLY, ERECTION, TESTING & COMMISSIONING OF 415 V LT SWITCH GEAR BOARDS / MCC, DOUBLE FRONT / SINGLE FRONT, COMPRISES OF AIR CIRCUIT BREAKERS, PT PANELS, AUX. TRANSFORMER PANEL, TRUNKING CUBICLE Etc.Panel shall be supplied in loose shipping section				
23	IE.1	· 415 V, Unit Swbd, 2500A - 1DA, 2DA	No.	2		
24	IE.2	· 415 V, Boiler MCC, 630A - 1HA, 2HA	No.	2		
25	IE.3	· 415 V, Boiler Valve MCC, 250A - 1HB, 2HB	No.	2		
26	IE.4	· 415 V, Turbine MCC, 630A -1KA. 2KA	No.	2		
27	IE.5	· 415 V, Turbine Valve MCC, 250A -1KB. 2KB	No.	2		
28	IE.6	· 415 V, Unit Service ACDB, 400A - 1QA, 2QA	No.	2		
29	IE.7	· 415 V, Emergency PMCC, 1000A - 1DG, 2DG	No.	2		
30	IE.8	· 415 V, Emergency DG SWBD, 1000A - 0DG	No.	1		
31	IE.9	· 415 V, ESP SWBD, 2500A - 1DB, 2DB	No.	2		
32	IE.10	· 415 V, Lighting SWBD, 1600A - 0DF	No.	1		
33	IE.11	· 415 V, STN Service SWBD, 2500A - 0DA	No.	1		
34	IE.12	· 415 V, Fuel Oil House MCC, 400A - 0QA	No.	1		
35	IE.13	· 415 V, A/C & Ventilation SWBD, 1600A - 0DB	No.	1		
36	IE.14	· 415 V, Ventilation MCC, 100A - 1TA, 2TA	No.	2		
37	IE.15	· 415 V, Lime Stone Milling SWBD, 2500A - 0DC	No.	1		
38	IE.16	· 415 V, Lime Stone Conveyers MCC, 2500A - 0QB	No.	1		
39	IE.17	· 433 V, Emergency Lighting DB – 1, 2	No.	2		
40	IE.18	· 433 V, Main Lighting DB – 1, 2	No.	2		
41	IE.19	· 220 V, Unit DCDB – 1FA, 2FA	No.	2		
42	IE.20	· 220 V, Station DCDB – 0FA	No.	1		

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1	2	3	4	5	6	7
43	IF	NON SEGREGATED LV 415 VOLT BUSDUCTS Transportation of material From Stores/ storage yard to erection site, Erection, Assembly, Testing & Commissioning of NSP BUS DUCTS for interconnection between service transformer and LT MCC.				
44	IF.1	415 Volt LT Interconnecting NON SEGREGATED BUS DUCT between LT dry type Transformer of (2000 KVA / 1600 KVA /1000 KVA, 415V rating .Loose items like silicagel breather pipe, GI channel supports and associated accessories.	set	16		
45	IG	DIGITAL STATIC EXCITATION SYSTEM/ SEE TRANSPORTATION FROM STORES / STORAGE YARD TO ERECTION SITE, ASSEMBLY, ERECTION, TESTING, & COMMISSIONING OF DAVR EXCITATION SYSTEM				
46	IG.1	Transportation from store / storage yard to erection site , Erection, Assembly, Testing & Commissioning of AVR/ SEE Excitation Equipments / System , System consist of a)Regulation cubicle b) Thyristor cubicle c) field suppression panels d) transformer cubicle(1550L X 1250H X2324W MM) e) cable box & Interpanel looping and associated cables upto Main Exciter / PMG cubicle	Set	2		
48	IH	Transportation from stores / storage yards to erection site, erection, assembly, testing & commissioning of VARIABLE FREQUENCY DRIVE SYSTEM FOR ID FANS consist of VFD Panels (2500X600X1800MM, 4nos.), Brake Resistor Panels(1000X800X1300MM, 4nos.), Vacuum Breakers panels(1800X1800X2400MM, 4nos.) and associated accessories, Interpanel cabling/ looping cables supplied alongwith system.	Set	4		
49	II	GENERATOR, GT, ST & UAT PROTECTION & METERING PANELS,; TRANSPORTATION FROM STORES / STORAGE YARD TO ERECTION SITE, ASSEMBLY, ERECTION, TESTING, & COMMISSIONING(integrated electrical testing comprising of relay testing, functional checks of control / protection circuit etc) OF GRP, Bus transfer panels etc				
50	II.1	Generator Relay Panels , Over all dimension of each panels 6000x1000x2295 mm, Four-Five panels / Unit.	sets	2		
51	II.2	Bus Transfer System , Two panels / Unit ,Approx. dimensions 800*800*2345 mm.	sets	2		
52	II.3	DC STARTER PANELS FOR BOILERS	No.	18		
53	IJ	SOOT BLOWER SYSTEM:TRANSPORTATION FROM STORES / STORAGE YARD TO ERECTION SITE, ASSEMBLY, ERECTION, TESTING, & COMMISSIONING OF 415 VOLT ELECTRICAL SYSTEMS OF SOOT BLOWERS COMPRISING OF SOOT BLOWER LOCAL STARTER BOXES, LOCAL POWER DISTRIBUTION BOXES WITH ACCESSORIES ALONG WITH COMMISSIONING OF THE SOOT BLOWERS. (ERECTION OF THE SOOT BLOWERS IS EXCLUDED)				

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1	2	3	4	5	6	7
54	IJ.1	Soot Blower Motor Control Center, double front, overall dimension 6460(W)x243000(H)x900(D), shall be supplied in six to eight loose shipping sections	Set	2		
55	IK	DC BATTERY SYSTEM (220 V DC AND 24 VOLT DC SYSTEM Transportation of material from Stores/ storage yard to erection site, Erection, Assembly, Testing & Commissioning of 220 VOLT BATTERY / BATTERY CHARGER, 24 VOLT BATTERY / BATTERY CHARGER FOR SG , TG&STATION C&I.FOPH.CWPH ETC.				
56	IK.1	220 Volt DC Float Cum Boost Chargers Approx Size 1600 x 1000 x 2000 mm , Approx Weight 3500 IKgs	Nos	4		
57	IK.2	220 Volt, STATION DC Battery System, Each set comprises of Battery system. (110 nos, 2.1 volts.,Battery Shall be mounted on teak wood still age & loose accessories such as inter cell / stack connectors etc shall be supplied loose.	Sets	1		
58	IK.3	220 Volt,UNIT DC Battery System, Each set comprises of Battery system. Battery Shall be mounted on teak wood still age & loose accessories such as inter cell / stack connectors etc shall be supplied loose. Details given in tender elsewhere.	Sets	2		
59	IK.4	24 Volt DC Battery System - Float Cum Boost Chargers, Battery sets	Sets	2		
60	IL	Various types of local push buttons	No	120		
61	GROUP II	STATION CABLES, CABLE TRAYS -(Laying, Dressing, tagging, ferrulling, Clamping, Termination); Cable Tray Erection including Supports fabrication / erection;				
62	IIA	6.6 KV XLPE POWER CABLES (AL CONDUCTOR, ARMoured / UNARMoured)				
63	IIA.1.1	1C X 630 SQ MM	Mtr	13000		
64	IIA.1.2	3C X 185 SQ MM	Mtr	16000		
65	IIB	LT Power cables(armoured / unarmoured) laying, dressing,clamping & termination, Control / Signal cables(armoured) laying, dressing, clamping & termination.				
66	IIB.1	LT POWER CABLES PVC INSULATED, ARMoured (AL / COPPER CONDUCTOR)				
67	IIB.1.1	1 C X630 SQ MM	Mtr	40000		
68	IIB.1.2	1 C X400 SQ MM	Mtr	10000		
69	IIB.1.3	1C X 185 SQ MM	Mtr	4000		
70	IIB.1.4	1C X 70 SQ MM	Mtr	2000		
71	IIB.1.5	1C X 35 SQ MM	Mtr	3500		
72	IIB.1.6	1C X 10 SQ MM	Mtr	2500		
73	IIB.1.7	2C X120 SQ MM	Mtr	300		
74	IIB.1.8	2C X 95 SQ MM	Mtr	8000		
75	IIB.1.9	2C X 50 SQ MM	Mtr	300		
76	IIB.1.10	2C X 25 SQ MM	Mtr	15000		
77	IIB.1.11	2C X 6 SQ MM	Mtr	1500		
78	IIB.1.12	2C X 2.5 SQ MM	Mtr	45000		
79	IIB.1.13	3C X 400 SQ MM	Mtr	300		
80	IIB.1.14	3C X 240 SQ MM	Mtr	2500		
81	IIB.1.15	3C X 120 SQ MM	Mtr	1200		
82	IIB.1.16	3C X 95 SQ MM	Mtr	1200		
83	IIB.1.17	3C X 50 SQ MM	Mtr	2700		
84	IIB.1.18	3C X 35 SQ MM	Mtr	5200		

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1	2	3	4	5	6	7
85	IIB.1.19	3C X 25 SQ MM	Mtr	5200		
86	IIB.1.20	3C X10 SQ MM	Mtr	9000		
87	IIB.1.21	3C X 6 SQ MM	Mtr	300		
88	IIB.1.22	3C X 2.5 SQ MM	Mtr	55000		
89	IIB.1.23	3.5C X 240 SQ MM	Mtr	1800		
90	IIB.1.24	3.5C X 120 SQ MM	Mtr	1000		
91	IIB.1.25	3.5C X 70 SQ MM	Mtr	1800		
92	IIB.1.26	3.5C X 50 SQ MM	Mtr	5000		
93	IIB.1.27	3.5C X 25 SQ MM	Mtr	20000		
94	IIB.1.28	3.5C X 4 SQ MM	Mtr	16000		
95	IIB.2	LT CONTROL CABLE (COPPER CONDUCTOR, ARMoured PVC CONTROL)				
96	IIB.2.1	2C X 1.5 SQ MM	Mtr	22000		
97	IIB.2.2	3C X 1.5 SQ MM	Mtr	30000		
98	IIB.2.3	5C X 1.5 SQ MM	Mtr	36000		
99	IIB.2.4	12C X 1.5 SQ MM	Mtr	70000		
100	IIB.2.5	5C X 2.5 SQ MM	Mtr	40000		
101	IIB.2.6	7C X 1.5 SQ MM	Mtr	25000		
102	IIB.2.7	10C X 2.5 SQ MM	Mtr	100		
103	IIB.2.8	12C X 2.5 SQ MM	Mtr	100		
104	IIB.2.9	19C X 2.5 SQ MM	Mtr	8000		
105	IIB.2.10	5C X 4 SQ MM	Mtr	500		
106	IIB.3	SCREENED CONTROL CABLE, 600V INSTRUMENT OVERALL / INDIVIDUAL SCREENED, ARMoured / UNARMoured CABLE FRLS (TYPE-G) / TYPE- F CABLE / special type of cable				
107	IIB.3.1	2PX 0.5SQ MM	Mtr	90000		
108	IIB.3.2	4PX 0.5 SQ MM	Mtr	150000		
109	IIB.3.3	6PX 0.5 SQ MM	Mtr	55000		
110	IIB.3.4	8PX 0.5 SQ MM	Mtr	120000		
111	IIB.3.5	10P/12P/16P X 0.5 SQ MM	Mtr	50000		
112	IIB.3.6	24PX 0.5 SQ MM	Mtr	20000		
113	IIB.3.7	1P/2C x 1.5 / 2.5 sqmm	Mtr	32000		
114	IIB.3.8	2P/ 3C /4C x 1.5 / 2.5 sqmm	Mtr	65000		
115	IIB.3.9	5C/7C x 1.5 /2.5 sqmm	Mtr	80000		
116	IIB.3.10	10C/12C x 1.5 /2.5 sqmm	Mtr	35000		
117	IIB.3.11	19C x 1.5 /2.5 sqmm	Mtr	15000		
118	IIB.3.12	Copper Cable 2 or 3 triad, 0.5/1.5 sqmm armoured/unarmoured	Mtr	4000		
119	IIB.3.13	Copper Cable 6 triad, 0.5/1.5 sqmm armoured/unarmoured	Mtr	500		
120	IIB.3.14	Network UTP Cables (special termination using UTP connectors involved)	Mtr	25000		
121	IIB.3.15	Compensating cable 2P x .5sqmm	Mtr	1000		
122	IIB.3.16	Compensating cable 2P x 1.31 sqmm type Tx/Sx/Kx unarmoured/armoured	Mtr	6000		
123	IIB.3.17	Compensating cable 4P x 1.31 sqmm type Tx/Sx/Kx unarmoured/armoured	Mtr	18000		
124	IIB.3.18	Compensating cable 6P x 1.3 sqmm type Tx/Sx/Kx unarmoured/armoured	Mtr	500		
125	IIB.3.19	Laying, etc of Single Mode Optical fibre cables on cable trays, conduits etc with minor civil works	Mtr	14000		
126	IIB.3.20	Laying, etc of Multi Mode Optical fibre cables on cable trays, conduits etc with minor civil works	Mtr	6000		
127	IIC	CABLE TRAYS Erection including supports & covers fabrication and its accessories (with or without covers) and cable tray covers, complete with formed channels, pipes, gi flat, bolt with nut-washer				

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1	2	3	4	5	6	7
128	IIC.1	LADDER / PERFORATED TYPE/ BOTTOM				
129	IIC.1.1	600 MM WIDE	Mtr	30000		
130	IIC.1.2	450 MM WIDE	Mtr	4500		
131	IIC.1.3	300 MM WIDE	Mtr	9000		
132	IIC.1.4	150 MM WIDE	Mtr	5000		
133	IIC.1.5	100 MM WIDE	Mtr	8000		
134	IIC.1.6	50 MM WIDE	Mtr	4500		
135	IIC.2	CABLE TRAY ACCESSORIES				
136	IIC.2.1	90 DEG HORIZONTAL BEND LADDER TYPE 600MM RADIUS / 90 DEG VERTICAL BEND LADDER TYPE 600MM RADIUS (INSIDE / OUTSIDE) / TEES LADDER TYPE 600MM RADIUS, CROSSE LADDER TYPE				
137	IIC.2.2	600 MM WIDE	No.	1050		
138	IIC.2.3	450 MM WIDE	No.	70		
139	IIC.2.4	300 MM WIDE	No.	845		
140	IIC.2.5	150 MM WIDE	No.	100		
141	IIC.3	REDUCERS LADDER TYPE (50 LHS / 50 RHS)				
142	IIC.3.1	600MM - 450MM	No.	30		
143	IIC.3.2	600MM - 300MM	No.	20		
144	IIC.3.3	450MM - 300MM	No.	10		
145	IIC.3.4	300-150 MM WIDE	No.	20		
146	IIC.4	CABLE TRAYS SUPPORT (HOT DIP GALVANISED STRUCTURAL STEEL) and TRAY SUPPORT SYSTEM (GS ANGLE / ISMC STEEL) FABRICATION AND INSTALLATION				
147	IIC4.1	ISMC - 150 (3.0 MTR LENGTH)	TON	20		
148	IIC4.2	ISMC - 150 (3.25 MTR LENGTH)	TON	11		
149	IIC4.3	ISMC -100 (3.0 MTR LENGTH)	TON	1		
150	IIC4.4	ISMC -75 (3.25 MTR / 3.0 MTR LENGTH)	TON	4		
151	IIC4.5	ISA 50 X 50 X 6 (3.0 MTR LENGTH)	TON	18		
152	IIC4.6	ISA 50 X 50 X 6 (3.25 MTR LENGTH)	TON	1.2		
153	IIC.5	CABLE TERMINATION				
154	IIC.5.1	6.6KV TERMINATION FOR 6.35/11 KV, XLPE INSULATED ALUMINIUM CABLE				
155	IIC.5.1.1	1CX630 SQ.MM.(ARMoured / UNARMoured)	No.	56		
156	IIC.5.1.2	3CX185 SQ.MM. (ARMoured / UNARMoured)	No.	65		
157	IIC.5.2	HT / LT Power Cable straight through jointing				
158	IIC.5.2.1	1CX630 SQ.MM. (ARMoured / UNARMoured)	No.	18		
159	IIC.5.2.2	3CX185 SQ.MM. (ARMoured/ UNARMoured)	No.	4		
160	IIC.5.2.3	1.1 KV, XLPE cable, 1CX630 Sq.mm	No.	4		
161	IIC.5.2.4	1.1 KV, XLPE cable, 1CX300 Sq.mm	No.	2		
162	IIC.5.2.5	1.1 KV, XLPE cable, 2CX35 Sq.mm	No.	2		
163	IIC.5.2.6	1.1 KV, XLPE cable, 3.5 C X 50 Sq.mm	No.	1		
164	IIC.5.2.7	1.1 KV, XLPE cable, 3.5 C X 35 Sq.mm	No.	2		
165	IIC.6.1	TREFOIL CLAMPS(COMPLETE WITH FIXING HARDWARE)				
166	IIC.6.1.1	6.6KV GRADE,1C - 630 AL, XLPE CABLE of 51mm dia	No.	1300		
167	IIC.6.1.2	1.1KV GRADE,1C - 630 AL, PVC CABLE of 45 mm dia	No.	4000		
168	IIC.6.1.3	1.1KV GRADE,1C - 400 AL, PVC CABLE of 38mm dia	No.	600		
169	IIC.6.1.4	1.1KV GRADE,1C - 185 AL, PVC CABLE of 30mm dia	No.	500		
170	IIC.7	Fabrication and installation of Structural steel	MT	100		
171	IID	FIRE SEALING SYSTEM				
172	IID.1	FIRE STOP MATERIAL FOR OPENINGS BELOW PANELS, AT WALLS AND AT FLOORS	SQM	20		

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1	2	3	4	5	6	7
173	IIE	CONDUITS (GALVANISED MS RIGID / FLEXIBLE GI / PVC)				
174	IIE.1	GALVANISED MS RIGID CONDUITS				
175	IIE.1.1	50 MM DIA	Mtr	100		
176	IIE.1.2	75 MM DIA	Mtr	100		
177	IIE.1.3	200 MM DIA	Mtr	50		
178	IIE.2	FLEXIBLE GI CONDUITS				
179	IIE.2.1	25 MM DIA	Mtr	100		
180	IIE.2.2	150 MM DIA	Mtr	50		
181	IIE.3	PVC CONDUITS				
182	IIE.3.1	150 MM DIA	Mtr	50		
183	IIE.3.2	200 MM DIA	Mtr	50		
184	IIE.4	BELL MOUTH FOR PVC CONDUITS				
185	IIE.4.1	150 MM DIA	No.	5		
186	IIE.4.2	200 MM DIA	No.	5		
187	IIE.5	CABLE DUCTS				
188	IIE.5.1	Cable duct 60 x 60 x 1000	Mtr	400		
189	IIE.5.2	Cable duct 100 x 100 x 1000	Mtr	120		
190	IIE.5.3	Cable duct 180 x 100 x 1000	Mtr	100		
191	IIE.5.4	Cable duct 250 x 60 x 1000	Mtr	60		
192	IIF	ABOVE EQUIPMENT EARTHING GROUND EARTHING & LIGHTNING PROT N WITH FIXTURES				
193	IIF.1.1	GS FLAT 75 X 10 mm	Mtr	250		
194	IIF.1.2	GS / MS FLAT 50 X 6 mm	Mtr	10000		
195	IIF.1.3	GS FLAT 30 X 5 mm	Mtr	100		
196	IIF.1.4	GS FLAT 25 X 6 mm	Mtr	8000		
197	IIF.1.5	GS FLAT 25 X 3 mm	Mtr	5000		
198	IIF.1.6	G S WIRE 3.15 MM / 8 SWG GI STRANDED WIRE / GI earthing wire	Mtr	6500		
199	IIF.1.7	FLEXIBLE BRAIDED CONDUCTOR of 600 mm length/300 sqmm approx. WITH TINNED COPPER CLAMP CONNECTED BY U BOLT FOR EARTHING.	No.	50		
200	IIF.1.8	GI Pipe (1/2", 1") Heavy grade	Mtr	500		
201	IIF.1.9	GI Pipe (1.5 ", 2")	Mtr	50		
202	IIG	LIGHTNING PROTECTION SYSTEM				
203	IIG.1.1	20 DIA, 1 M LONG GS ROD FOR VERTICAL AIR TERMINATION	No.	90		
204	IIG.1.2	TEST LINK WITH 150X150X6 THICK GS PLATE WITH BOX.	No.	90		
205	IIG.1.3	HOT DIP GALVANIZED MS SHEET (64SWG) FOR COVERING OF CABLE SHAFT (SIZE 2000MM* 1000MM MIN.)	SQM	400		
206	IIG.1.4	ELECTRODES IN TEST PITS GI PIPE, 100D, 1.3MM THICK & 3.75M LONG	No.	55		
207	GROUP III	C & I ITEM DESCRIPTION				
208	IIIA	PANELS / CONSOLES / RACKS				
209	IIIA-1	CONTROL CABINETS FOR S.G. (800L X 2415H X 750W)	No.	28		
210	IIIA-2	CONTROL CABINETS FOR T.G. (800L X 2415H X 750W)	No.	42		
211	IIIA-3	E & C FOR Furnace temperature probe INCLUDING STARTER BOX, THERMOCOUPLES, SOLENOIDS ETC.	No.	6		
212	IIIA-4	STATION C&I FUNCTIONAL GROUP CONTROL PANELS	No.	97		
213	IIIA-5	REMOTE I/O PANELS	No.	2		
214	IIIA-6	RELAY PANELS	No.	10		

RATE SCHEDULE

(ELECTRICAL, CONTROL AND INSTRUMENTATION PACKAGE)
2 X 125 MW BARSINGSAR TPS, BARSINGSAR BIKANER (RAJ.)

SL NO	ITEM NO.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
1	2	3	4	5	6	7
215	IIIA-7	Unit Control Panel	No.	2		
216	IIIA-8	ELECTRICAL CONTROL PANEL 1900x1000x2355	No.	2		
217	IIIA-9	Generator Instrumentation cabinet including annunciator (1230 x 1060 x 2550)	No	4		
218	IIIA-10	Vibration monitoring system for Fans and Pulverisers	Set	8		
219	IIIA-11	Vibration monitoring system for main turbine	Set	4		
220	IIIA-12	Vibration monitoring system for BFP/CEP/ACWP/CWP	Set	4		
221	IIIA-13	DC motor starter box for scanner fan	No	4		
222	IIIA-14	Mill inerting system control box 755 X 340 X 1345, local mounted	No.	12		
223	IIIA-15	Control panels for Centrifuges	No.	8		
224	IIIA-16	Gr. Feeder local Control Panel (1000 x 600 x 300), 77 kg.	No.	14		
225	IIIA-17	Control Panel for HP dosing system (1000x800x2000, 3.0 MT)	No	4		
226	IIIA-18	Burner Tilt Shear Pin Failure Indication Box	No.	4		
227	IIIA-19	Air Heater Rotor Stoppage Alarm Box	Sets	4		
228	IIIA-20	Local Instrument racks (LIR)	No.	120		
229	IIIA-21	Local Instrument enclosures (LIE)	No.	70		
230	IIIA-22	NETWORK PANELS (800x800x2100)	No.	7		
231	IIIA-23	WALL MOUNTED NETWORK ENCLOSURES (500x600x600)	Sets	10		
232	IIIA-24	installation of HART MANAGEMENT SYSTEM CABINET / HMI along with accessories PCs -79 nos, line matrix- 4 nos, colour laser- 10 nos, TFT Monitor- 79 nos etc for both units including furnitures (computer tables, printer tables, chairs)	Set	1		
233	IIIA-25	Pulverizer screw conveyer monitoring system	Set	12		
234	IIIA-26	Pulverizer 'Delta P' Panel (1600x550x2000, 1.5MT)	Set	12		
235	IIIA-27	POWER DIST. PANEL CUM LINKS	SET	1		
236	IIIA-28	Gr. Feeder Remote Control Panel (1400 x 2365 x 510), 636 kg	Set	14		
237	IIIA-29	T & AVT PANEL	No.	2		
238	IIIA-30	Electrical heat tracer panel and accessories	Set	3		
239	IIIA-31	SUPERVISORY CONTROL PANELS	No.	6		
240	IIIA-32	AC Control supply panel (ACCSP) consisting of transformers, changeover system, modules, etc. approx weight 3 MT	No	2		
241	IIIA-33	DC Control supply panel (DCCSP) consisting of changeover system, modules, etc. approx weight 0.5 MT	No	2		
242	IIIA-34	DC motor starter panels, etc (DC JOP, DC EOP, Seal oil panel, DC Scanner Air Fan Starter Panel), including resistance boxes. Approx weight 0.5 MT each.	No.	8		
243	IIIB	Local / Field mounted Instruments / Equipment				
244	IIIB-1	Electronic Water Level Indicator (EWLI) / EWLI, BHELVISION / Direct Water Level Gauge	Sets	14		
245	IIIB-2	SWAS Sample handling system with racks & Sample conditioning panel with chiller (Both wet and dry)	Sets	4		
246	IIIB-3	Analyzer Panel	No.	4		
247	IIIB-4	Analyzer (HYDROGEN PURITY / oxygen / chloride /co2 / SO2 /NOX / pH / PHOSPHATE / SILICA / HYDRAZINE ETC.) / Conductivity Analyzer (Both panel mounted and field mounted)	No.	136		
248	IIIB-5	Coal bunker level monitoring system, BUNKER LOAD CELL	Sets	4		
249	IIIB-6	Master Slave Clock System	Sets	1		

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SL NO	ITEM NO.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
1	2	3	4	5	6	7
250	IIIB-7	EPABX System	Sets	1		
251	IIIB-8	CCTV System	Sets	1		
252	IIIB-9	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	No.	250		
253	IIIB-10	HEA Exciter system	Sets	32		
254	IIIB-11	Flame Scanner Head Assembly (Fire ball and Discriminating Type)	No.	64		
255	IIIB-12	Air filter regulators / Lubricators (1/2", 1", 0-6KG, 0-10 KG)	No.	152		
256	IIIB-13	Speed Regulators / Air lock valves in oil gun corner rack	No.	24		
257	IIIB-14	max Engineering/ operator/ storian/ LAN/ WAN/LVS Work Station/ Shift in charge/ stn in charge/ gateway/ interface PC/ HART etc., PC/ Server Station with ASCII Keyboard, Mouse & 21" Colour Monitor, individual UPS in Modular CRT Desk with racks for HMI System	Sets	50		
258	IIIB-15	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, etc) with Printer table and accessories	Sets	32		
259	IIIB-16	Laboratory Setup	Set	1		
260	IIIB-17	Microphone including junction/ control box and accessories for Mill DP level control	Sets	6		
261	IIIB-18	Dust emission monitor (Installation at around 50 M in chimney)	Sets	2		
262	IIIB-19	Flue gas analyser sample handling system	Set	2		
263	IIIB-20	Console inserts (to be mounted on Backup desk)	Sets	2		
264	IIIB-21	Vertical indicators (moving coil / bar graph)	No.	40		
265	IIIB-22	Digital / bargraph indicators	No.	25		
266	IIIB-23	Recorder 24 / 30 Channel	No.	6		
267	IIIB-24	Recorder 3 channel	No.	6		
268	IIIB-25	Speed switch / Speed detector	No.	6		
269	IIIB-26	Moisture Sensor probe and dew point monitor	Set	2		
270	IIIB-27	Rotor Earth fault Detector	No.	2		
271	IIIB-28	Pressure Switch / DP Switch / DP indicating switch / PRESSURE GAUGE, 150 mm DIAL BOURDAN, DIAPHRAGM / DP GAUGE, 150 mm DIAL /DRAFT GAUGE, 150 mm DIAL	No.	463		
272	IIIB-29	Temperature Switch / Thermostat , DIRECT ACTING SWITCHES, TEMPERATURE SENSORS	No.	108		
273	IIIB-30	Electronic Level Switch / Electronic Level Transmitter (with amplifier, etc) of Capacitance or conductivity type	No.	36		
274	IIIB-31	ERV CONTROLLER	No.	40		
275	IIIB-32	Float type Level Switch, FLOW ELEMENTS/ Level Indicator / Level Gauge, Flow indicator / Flow Gauge / Flow meter/Acoustic flow meter (coal)/ Flow switch (Mechanical / Electronic) / Flow Transmitter (Pulse / mass flow / target type) including flanges	No.	598		
276	IIIB-33	Temperature Gauge (all types), THERMOWELLS	No.	333		
277	IIIB-34	Pressure / DP / Flow (DP type) / Level Transmitter displacer type / Limit Switches on/off type with solenoid (checking and adjusting only)	No.	900		
278	IIIB-35	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	No.	720		
279	IIIB-36	MTM Thermocouple upto 17 M length	No.	120		
280	IIIB-37	MTM Thermocouple over 17 M length	No.	140		
281	IIIB-38	Thermocouple assy with 6 / 9 Cr-Al MI T/C along with integral JB	No.	4		
282	IIIB-39	I/P converters	No.	102		
283	IIIB-40	Pneumatic Pressure controller with accessories	No.	2		
284	IIIB-41	Pneumatic Temperature controller with accessories	No.	10		

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SL NO	ITEM NO.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
1	2	3	4	5	6	7
285	IIIB-42	SADC power cylinders	No.	120		
286	IIIB-43	Rotameter	Sets	2		
287	IIIB-44	Fan Lube oil skid	Sets	12		
288	IIIB-45	Rack mounted instruments commissioning	Sets	6		
289	IIIB-46	Coal Feeder local instruments commissioning	No.	12		
290	IIIB-47	Electrical regulating drives: (Valve, damper, scoop)	No.	12		
291	IIIB-48	Pneumatic regulating drives: (Valve, damper) incl SADC, Burner tilt	No.	140		
292	IIIB-49	Commissioning of Hydraulic actuators	No.	30		
293	IIIB-50	Corner valve/ Trip valves commissioning	No.	80		
294	IIIB-51	Open/Close type pneumatic gates / dampers / valves	No.	100		
295	IIIB-52	Only healthiness checking of embedded RTD / T/C	No.	200		
296	IIIB-53	Plant Control Desk / CRT desk	Sets	2		
297	IIIB-54	Computer furniture for all Servers, PCs, Printers	Sets	2		
298	IIIB-55	EWLI CABLES, PTFE CABLE 10 pair x 0.6 sqmm	Mtr	80		
299	IIIB-56	EWLI, SCREENED CABLE 16 pair x 0.5 sqmm	Mtr	600		
300	IIIB-57	LEVEL TRANSMITTER, ULTRASONIC TYPE FOR LIGNITE AND LIMEPOWDER BUNKER/SILOS	set	6		
301	IIIB-58	LEVEL SWITCH for BED MATERIAL	No.	4		
302	IIIB-59	LIQUID LEVEL SWITCH, OIL TANK (integral capacitance type	sets	4		
303	IIIB-60	BUNKER LOAD CELL, LIGNITE/LIME STONE BUNKERS/SILOS	sets	4		
304	IIIB-61	THERMOCOUPLE WITH THERMOWELL, K TYPE DUPLEX T/C	No.	47		
305	IIIB-62	THERMOCOUPLE, K TYPE DUPLEX T/C (15 / 25M) MTM/Combustor APPLICATION	No.	62		
306	IIIB-63	FLOW ORIFICE ASSEMBLY, WELD IN TYPE FOR SH/RH SPRAY WATER, ORIFICE WITH FLANGES FOR SB flow and fed water flow	sets	4		
307	IIIB-64	OIL FLOW METER, START UP BURNER & LANCES OIL FLOW	sets	4		
308	IIIB-65	SEAL POT BLOWERS / CONDENSING POT, SOOT BLOWER STEAM FLOW APPLICATION ALONE IN OUR SCOPE	No.	5		
309	IIIB-66	AIR ASSISTED SAFETY VALVE CONTROLLER, for main steam application	No.	1		
310	IIIB-67	REGULATING POWER CYLINDER, SA control, SA Start up burner DAMPERS / OPEN CLOSE TYPE ELECTRICAL ACTUATOR, GATES & DAMPERS	No.	30		
311	IIIB-68	UCB mounte instrument / indicator / recorder	No.	200		
312	IIIB-69	commissioning of motorised actuators	No.	25		
313	IIIB-70	electronic earthing pit with electrode	No.	8		
314	IIIB-71	sensors / vibration pickups/ axial shift instruments	No.	50		
315	IIIB-72	calibration of SOV operated pneumatic trip valves	No.	40		
316	IIIB-73	calibration / comissioning of regulating control valves with positioners / PFT	No.	30		
317	IIIB-74	UPS system consisting UPS 01 & UPS 02 with invertor, Bypass system, ACDB 01 & 02, UPS Battery	set	4		
318	IIIC	Impulse Pipe / Tubing				
319	IIIC-1	A 106 Gr C - 1" NB schedule 40	Mtr	600		
320	IIIC-2	A 106 Gr C - 1/2" NB schedule 160	Mtr	1300		
321	IIIC-3	A 106 Gr C - 1/2" NB schedule 80	Mtr	5000		
322	IIIC-4	A335 P22 - 1/2" nb XXS	Mtr	900		
323	IIIC-5	A213TP 316 - 1/2" NB schedule 40	Mtr	1800		
324	IIIC-6	A213TP 316 - 1/2" NB schedule 160	Mtr	600		
325	IIIC-7	Misc. types of Impulse Piping / Tubing of different sizes (CS, AS, SS etc.)	Mtr	2000		
326	IIIC-31	Copper tube- 6mm/8mm, 1/4", 1/2" to 1" (Sheathed / bare)	Mtr	1200		
327	IIIC-32	Hoses- 1/2" to 1", SS/Teflon, Braided/unbraided, upto 5M length	No.	70		
328		TUBING AND FITTINGS (CS, SS, AS)	MT	5		
329	IIID	MARSHALLING BOXES				
330	IIID-1	Junction boxes upto 48 way	No.	400		
331	IIID-2	Junction boxes above 48 way	No.	200		

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1	2	3	4	5	6	7
332	IIID-3	CJCB Junction boxes upto 48 way	No.	20		
333	IIID-4	CJCB Junction boxes above 48 way	No.	50		
334	IIID-5	2PB or 3PB Pushbutton box	No.	20		
335	IIID-6	Assembly of JB mounting frames (approx 1100 x 500 x 800)	No.	6		
336	IIID-7	Assembly of JB mounting frames (approx 1500 x 800 x 1800)	No.	2		
337	IIID-8	Assembly of JB mounting frames (approx 2000 x 900 x 1800)	No.	18		
338	IIID-9	Assembly of JB mounting frames (approx 2600 x 500 x 1800)	No.	6		
339	IIID-10	Assembly of local gauge board 1400 x 450 x 1900 mm	No.	6		
340	IIID-11	FSSS Local Oil Gun Maintenance Switch Box	No.	24		
341	IIID-12	WEATHER PROOF GI JUNCTION BOX , 32WAYS(20 nos) & 24WAYS (70 nos)	No.	90		
342	IIID-13	Various Types of Local Push Buttons, Station JB's	No.	200		
343	GROUP IV	Installation of Electrical, C and I LAB items consisting of following tentative quantities and categories of instruments / equipments	set	1	Lumpsum	
		Digital portable multimeter	No.	8		
		Arbitrary function generator	No.	1		
		High resolution timer/counter	No.	1		
		Dual trace digital storage oscilloscope	No.	1		
		Adjustable AC power supply	No.	1		
		Digital tong tester	No.	1		
		Single phase auto transformer	No.	1		
		Decade resistance box	No.	1		
		Portable wheat stone bridge	No.	1		
		DC Battery charger	No.	2		
		Digital portable vibration meter with accessories	No.	2		
		Hand held digital oscilloscope	No.	1		
		Precision Multi-ohm meter	No.	2		
		Digital Tachometer	No.	1		
		Digital Stop Watch	No.	1		
		LCR Meter	No.	2		
		DCS Commun. co-axial and optical cable/signal tester	No.	1		
		Microprocessor based portable multi-function calibrator	No.	4		
		Test equipment for speed and vibration	No.	1		
		Co-axial crimping tools	No.	2		
		Optical-fibre cable-jointer	No.	2		
		Cable crimping tools and wire splicers	Set	5		
		IC-remover of various types	Set	4		
		24V DC mobile -test-kit for solenoid valves	Set	2		
		Test thermocouple	No.	2		
		Test RTDs	No.	2		
		Deadweight tester	No.	1		
		Portable Pressure comparator	No.	1		
		Manometer	Set	1		
		Manometer (inclined)	No.	2		
		Master pressure gauge	set	1		
		Temperature calibration bath -Dry block	No.	1		
		High precision regulators for pressure and vacuum	No.	2		
		Precision thermometers (mercury in glasses)	set	1		
		Digital infrared pyrometer	No.	1		
		Portable T/C calibrator	No.	4		

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1	2	3	4	5	6	7
		Vacuum pumps/compressors	No.	1		
		Barometer	No.	1		
		Sling Psychrometer	No.	1		
		Laboratory furnace	No.	1		
		Pnumatic test bench	No.	1		
		Screw pump	No.	1		
		Standard Tool Box	No.	5		
		Radial Drilling Machine	No.	2		
		Portable Drilling Machine	No.	2		
		Portable Flue gas analyser	No.	1		
		Wet and Dry bulb standard thermometer	No.	1		
		Portable Wet and Dry bulb standard thermometer	No.	4		
		Portable welding Machine	No.	1		
		DP Gauges	No.	4		
		Furniture for laboratory items for Electrical and Mechanical Lab items	Set	1		
		TOTAL				