

# **TENDER SPECIFICATION**

**BHEL:PSSR:SCT: 1308**

**FOR**

**Handling at Site Stores / Storage yard,  
Transportation to site of work, Erection, Testing  
and Commissioning of Electrical Package for Unit  
10 of 120 MW at Nalco CPP**

**For**

**National Aluminium Company Limited**

**CPP Expansion Phase II  
Angul District, Orissa state**

**PART - II PRICE BID**

**BOOK NO :**



**BHARAT HEAVY ELECTRICALS LIMITED**

(A Government of India Undertaking)

Power Sector - Southern Region

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

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**NAME OF WORK**

**Handling at Site Stores / Storage yard, Transportation to site of work, Erection, Testing and Commissioning of Electrical Package for Unit 10 of 120 MW at Nalco CPP For National Aluminium Company Limited CPP Expansion Phase II Angul District, Orissa state**

**(PRICE BID)**

**PART II**

Issued to  
M/s.

For and on behalf of  
BHARAT HEAVY ELECTRICALS LIMITED

Additional General Manager/Contracts

(This tender document is not transferable)

Place: Chennai-600 035.

Date:

**NALCO ANGUL CPP EXPANSION: 1 x 120 MW (UNIT 10)**

**RATE SCHEDULE FOR ELECTRICAL (HT & LT) PACKAGE**

***Before filling the Rates, the bidder shall go through the detailed specification of all the items given in the detailed Bill of Materials(BOM) as well as Scope of Work specified in Section VI***

SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
		<b>TRANSFORMERS</b>			
1.	A.1.1	150 MVA, GENERATOR TRANSFORMER	1 set*		
2.	A.1.2	16 MVA, UNIT AUXILIARY TRANSFORMER	1 set*		
		<b>HT BUSDUCT</b>			
3.	A.2.1	<b>IP BUSDUCT (10.5 KV)</b> Main IP Bus - 110 Meters per set Tap off Bus - 16 Meters per set	1 set*		
		<b>BATTERY &amp; BATTERY CHARGERS</b>			
4.	B.2.1	220 V DC Battery & Battery Charger	2 Sets*		
5.	G.1.1	GENERATOR, GT & UAT PROTECTION PANELS	1 set*		

\* Lumpsum rate to be quoted

Signature of Tenderer

SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
		<b>415V LOW VOLTAGE SWITCHGEAR/ CONTROL PANELS</b>			
6.	B.1.1	415 V TURBINE MCC [10KA]	1 No		
7.	B.1.2	415 V TURBINE VALVE MCC [10KB]	1 No		
8.	B.1.3	415 V MISCELLANEOUS MCC [9SB]	1 No		
9.	B.1.4	415 V WELDING PDB [PDB-10]	1 No		
10.	B.1.5	VENTILATION MCC [10TA]	1 No		
11.	B.1.6	AC MCC [10TB]	1 No		
12.	B.1.7	ESP, AC & VENTILATION MCC [10TC]	1 No		
13.	E.1.1	DC SCANNER AIR FAN MOTOR STARTER BOX	1 No.		
14.	E.1.2	FURNACE TEMPERATURE PROBE STARTER BOX	1 No.		
15.	F.1.1	AVR	1 set*		
16.	F.1.2	UNIT ELECTRICAL CONTROL PANEL (UECP)	1 No		
17.	F.1.3	TRANSDUCER & AVT PANEL (AVT)	1 No		
18.	F.1.4	GENERATOR RELAY PANEL (GRP)	1 No		
19.	C.1.1	ESP LT MAIN SWITCH BOARD	1 No.		

\* Lumpsum rate to be quoted

Signature of Tenderer

SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
20.	C.1.2	AUXILIARY CONTROL PANEL	02 Nos.		
21.	C.1.3	STARTER BOX FOR DC AIR HEATER MOTOR	02 Nos.		
22.	C.1.4	ELECTRONIC CONTROLLER	14 Sets		
23.	C.1.5	RAPPER CONTROL PANEL	1 Set		
24.	C.1.6	IOS-PC, DC logger PC & Printer	1 set		
25.	C.1.7	Ash Level Indicator	28 Sets		
		<b>HT CABLES, UNEARTHED</b>			
26.	I.1.1	1 C x 500 sq. mm (Al)	900 Mtrs.		
27.	I.1.2	3 C x 185 sq. mm (Al)	1900 Mtrs		
		<b>6.6 KV UNEARTHED XLPE CABLE TERMINATIONS KITS</b>			
28.	B.4.1	1 C x 500 sq. mm	38 Nos.		
29.	B.4.2	3 C x 185 sq. mm	26 Nos.		
		<b>LT POWER CABLES, FRLS, PVC, Armoured</b>			
30.	I.2.1	4 C x 16 sq. mm , Al	5000 Mtrs		
31.	I.2.2	4 C x 10 sq. mm, Al	1500 Mtrs		

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SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
32.	I.2.3	4 C x 6 sq. mm , Al	2500 Mtrs		
33.	I.2.4	3.5 C x 240 sq. mm , Al	2000 Mtrs		
34.	I.2.5	3.5 C x 120 sq. mm , Al	2500 Mtrs		
35.	I.2.6	3.5 C x 95 sq. mm , Al	825 Mtrs		
36.	I.2.7	3.5 C x 70 sq. mm , Al	1875 Mtrs		
37.	I.2.8	3.5 C x 50 sq. mm , Al	8500 Mtrs		
38.	I.2.9	3.5 C x 25 sq. mm , Al	4500 Mtrs		
39.	I.2.10	3 C x 70 sq. mm , Al	2385 Mtrs		
40.	I.2.11	3 C x 50 sq. mm , Al	1750 Mtrs		
41.	I.2.12	3 C x 35 sq. mm , Al	235 Mtrs		
42.	I.2.13	3 C x 25 sq. mm , Al	750 Mtrs		
43.	I.2.14	3 C x 16 sq. mm, Al	2750 Mtrs		
44.	I.2.15	3 C x 10 sq. mm , Al	3675 Mtrs		
45.	I.2.16	3 C x 6 sq. mm , Al	6575 Mtrs		
46.	I.2.17	2 C x 240 sq. mm , Al	250 Mtrs		
47.	I.2.18	2 C x 120 sq. mm , Al	3000 Mtrs		
48.	I.2.19	2 C x 50 sq. mm , Al	2250 Mtrs		

\* Lumpsum rate to be quoted

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SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
49.	I.2.20	2 C x 25 sq. mm , Al	2250 Mtrs		
50.	I.2.21	2 C x 16 sq. mm , Al	1710 Mtrs		
51.	I.2.22	2 C x 6 sq. mm , Al	4010 Mtrs		
52.	I.2.23	2 C x 35 sq. mm , Al	660 Mtrs		
53.	I.2.24	3 C x 150 sq. mm , Al	550 Mtrs		
54.	I.2.25	2 C x 70 sq. mm , Al	135 Mtrs		
55.	I.2.26	3.5 C x 4 sq. mm , Al	2000 Mtrs		
56.	I.2.27	1 C x 10 sq. mm , Cu	750 Mtrs		
57.	I.2.28	1 C x 16 sq. mm , Cu	750 Mtrs		
58.	E.2.1	3C x 2.5 sqmm, Cu	21000 Mtrs		
		<b>LT CONTROL CABLES, Armoured</b>			
59.	I.3.1	19 C x 2.5 sq. mm, Cu	1500 Mtrs		
60.	I.3.2	14 C x 2.5 sq. mm, Cu	3250 Mtrs		
61.	I.3.3	10 C x 2.5 sq. mm , Cu	37725 Mtrs		
62.	I.3.4	7 C x 2.5 sq. mm, Cu	5550 Mtrs		

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SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
63.	I.3.5	5 C x 2.5 sq. mm, Cu	56000Mtrs		
64.	I.3.6, E.3.1	4 C x 2.5 sq. mm , Cu	2250 Mtrs		
65.	I.3.7	3 C x 2.5 sq. mm , Cu	29775Mtrs		
66.	I.3.8	10 C x 1.5 sq. mm , Cu	6600 Mtrs		
67.	I.3.9	4 C x 1.5 sq. mm , Cu	3250 Mtrs		
68.	I.3.10	7 C x 1.5 sq. mm , Cu	2500 Mtrs		
69.	I.3.11	2C x 1.5 sq. mm , Cu	375 Mtrs		
70.	I.3.12	24C x 2.5 sq. mm , Cu	500 Mtrs		
71.	I.3.13	2 C x 2.5 sq. mm, Cu	67350 Mtrs		
72.	I.3.14	3 C x 1.5 sq. mm, Cu	100 Mtrs		
		<b>LT POWER CABLE TERMINATIONS</b>			
73.	I.4.1	3.5 C x 240 sq. mm , Al	26 Nos.		
74.	I.4.2	3.5 C x 120 sq. mm , Al	34 Nos		
75.	I.4.3	3.5 C x 95 sq. mm , Al	12 Nos		
76.	I.4.4	3.5 C x 70 sq. mm , Al	26 Nos		

\* Lumpsum rate to be quoted

Signature of Tenderer

SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
77.	I.4.5	3.5 C x 50 sq. mm , Al	114 Nos		
78.	I.4.6	3.5 C x 25 sq. mm , Al	60 Nos		
79.	I.4.7	3 C x 70 sq. mm , Al	32 Nos		
80.	I.4.8	3 C x 50 sq. mm , Al	24 Nos		
81.	I.4.9	3 C x 35 sq. mm , Al	4 Nos		
82.	I.4.10	3 C x 25 sq. mm , Al	10 Nos		
83.	I.4.11	3 C x 16 sq. mm, Al	36 Nos		
84.	I.4.12	3 C x 10 sq. mm , Al	50 Nos		
85.	I.4.13	3 C x 6 sq. mm , Al	88 Nos		
86.	I.4.14	4 C x 16 sq. mm , Al	66 Nos		
87.	I.4.15	4 C x 10 sq. mm, Al	20 Nos		
88.	I.4.16	4 C x 6 sq. mm , Al	33 Nos		
89.	I.4.17	2 C x 240 sq. mm , Al	4 Nos		
90.	I.4.18	2 C x 120 sq. mm , Al	40 Nos		
91.	I.4.19	2 C x 50 sq. mm , Al	30 Nos		
92.	I.4.20	2 C x 25 sq. mm , Al	30 Nos		
93.	I.4.21	2 C x 16 sq. mm , Al	24 Nos		

\* Lumpsum rate to be quoted

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SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
94.	I.4.22	2 C x 6 sq. mm , Al	54 Nos		
95.	I.4.23	2 C x 35 sq. mm , Al	8 Nos		
96.	I.4.24	3 C x 150 sq. mm , Al	8 Nos		
97.	I.4.25	2 C x 70 sq. mm , Al	2 Nos		
98.	I.4.26	3.5 C x 4 sq. mm , Al	26 Nos		
99.	I.4.27	1 C x 10 sq. mm , Cu	10 Nos		
100.	I.4.28	1 C x 16 sq. mm , Cu	10 Nos		
		<b>SCREENED CABLES</b>			
101.	C.5.1	4 C x 1.5 sq. mm FRLS Cu, Screened Armoured Cable	3000 Mtrs		
		<b>LOCAL PUSH BUTTON STATIONS</b>			
102.	B.3.1, B.3.2, B.3.3, C.3.0	LOCAL START STOP PUSH BUTTON STATION	186 Nos.		
		<b>JUNCTION BOXES</b>			
103.	C.4.0; E.5.0	JUNCTION BOXES	190 Nos.		

\* Lumpsum rate to be quoted

Signature of Tenderer

SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
		<b>CABLE TRAYS AND ACCESSORIES</b>			
104.	B.5.1	600 mm wide, Ladder Type Tray	10800 Mtrs		
105.	B.5.2; C.6.1	450 mm wide, Ladder Type Tray	2876 Mtrs		
106.	B.5.3	300 mm wide, Ladder Type Tray	2450 Mtrs		
107.	B.5.4	150 mm wide, Ladder Type Tray	1200 Mtrs		
108.	B.5.5	600 mm wide, Perforated Type Tray	2200 Mtrs		
109.	B.5.6	450 mm wide, Perforated Type Tray	800 Mtrs		
110.	B.5.7	300 mm wide, Perforated Type Tray	800 Mtrs		
111.	B.5.8, E.4.2	150 mm wide, Perforated Type Tray	9500 Mtrs		
112.	E.4.1	100mm wide, Perforated Type	2375 Mtrs		
113.	E.4.3	50mm wide, Perforated Type	500 Mtrs		
		<b>STRUCTURAL STEEL FOR SUPPORT</b>			
114.	B.6.1; C.8.1	Structural Steel for fabrication of supports (ISA - 60X60X6, ISMC – 100, ISMC - 160 etc.)	118 MT		
		<b>ABOVE GROUND EARTHING</b>			

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Signature of Tenderer

SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
115.	B.7.1	65 x 8 mm GS Flat	60 Mtrs		
116.	B.7.2, C.7.1	50 x 6 mm GS Flat	3950 Mtrs		
117.	B.7.3	25 x 6 mm GS Flat	3000 Mtrs		
118.	B.7.4	25 x 3 mm GS Flat	300 Mtrs		
119.	B.7.5	6 sq. mm wire	1200 Mtrs		
120.	C.7.2	30 x 5 mm GI Flat	350 Mtrs		
121.	C.7.3	Dia 3.15 mm GI Wire	2400 Mtrs		
122.	B.7.6	Treated Earth Pit	64 Sets*		
		<b>LIGHTNING PROTECTION</b>			
123.	B.8.1	Vertical Air Termination of size 20 mm dia, 1000 mm long Galvanised Steel Rod with conical end	38 Nos.		
124.	B.8.2	Test Links for lightning protection	38 Nos.		
125.	B.8.3	25 x 6 mm GI Flat Strips for lightning protection	2625 Mtrs		
		<b>TESTING of HEATING ELEMENTS &amp; THERMOSTAT</b>			
126.	C.2.1	HEATING ELEMENTS FOR HOPPER	446 Nos.		

\* Lumpsum rate to be quoted

Signature of Tenderer

SI No:	BOM Ref No:	DESCRIPTION	Qty Unit 10	UNIT RATE	TOTAL
127.	C.2.2	HEATING ELEMENTS FOR SHAFT INSULATOR	14 Nos.		
128.	C.2.3	HEATING ELEMENTS FOR SUPPORT INSULATORS	66 Nos.		
129.	C.2.4	THERMOSTAT FOR SUPPORT INSULATORS	2 Nos.		
130.	C.2.5	THERMOSTAT FOR HOPPER HEATER	14 Nos		
		<b>COMMISSIONING</b>			
131.	H.1.3	Commissioning of GENERATOR	1 No.		
132.	E.6.4	6.6kV, HT Motors	16 Nos		
133.	E.6.1	Hoist	1 No		
134.	C.9.1	HIGH VOLTAGE TR. RECTIFIER	14 Nos.		
135.	D.1.1; E.6.3; H.1.2	BIIDIRECTIONAL MOTORS (L.T.)	131 Nos.		
136.	E.6.2; H.1.1, C.9.2	UNIDIRECTIONAL MOTORS (L.T.)	160 Nos.		

TOTAL CONTRACT VALUE Rs.....

In words Rs.....

\* Lumpsum rate to be quoted

Signature of Tenderer

**Note :**

1. Bill of Materials (BOM) contains detailed specification of various Electrical items, system - wise and BHEI Unit – wise along with relevant clause for scope of works.
2. The Rate Schedule contains the consolidated list of BOM with brief description of items.
3. Rates are to be filled only in the Rate Schedule.
4. Before filling the Rates in the rate schedule, the bidder shall go through the detailed specification of all item of BOM as well as Scope of Work as specified in relevant Clause of this document.

SIGNATURE OF THE TENDERER