

**TENDER SPECIFICATION
BHEL: PSSR: SCT: 2253**

FOR

Erection, Testing and Commissioning and Trial Operation including Supply and Application of Final Painting and Handling of materials at site BHEL stores / Client Stores/ Storage Yard, transporting to site of erection of Electrical, C&I works for Flue Gas Desulphurization (FGD) System at 1 x 800 MW North Chennai Thermal Power Plant Stage-III, Chennai.

VOLUME –II

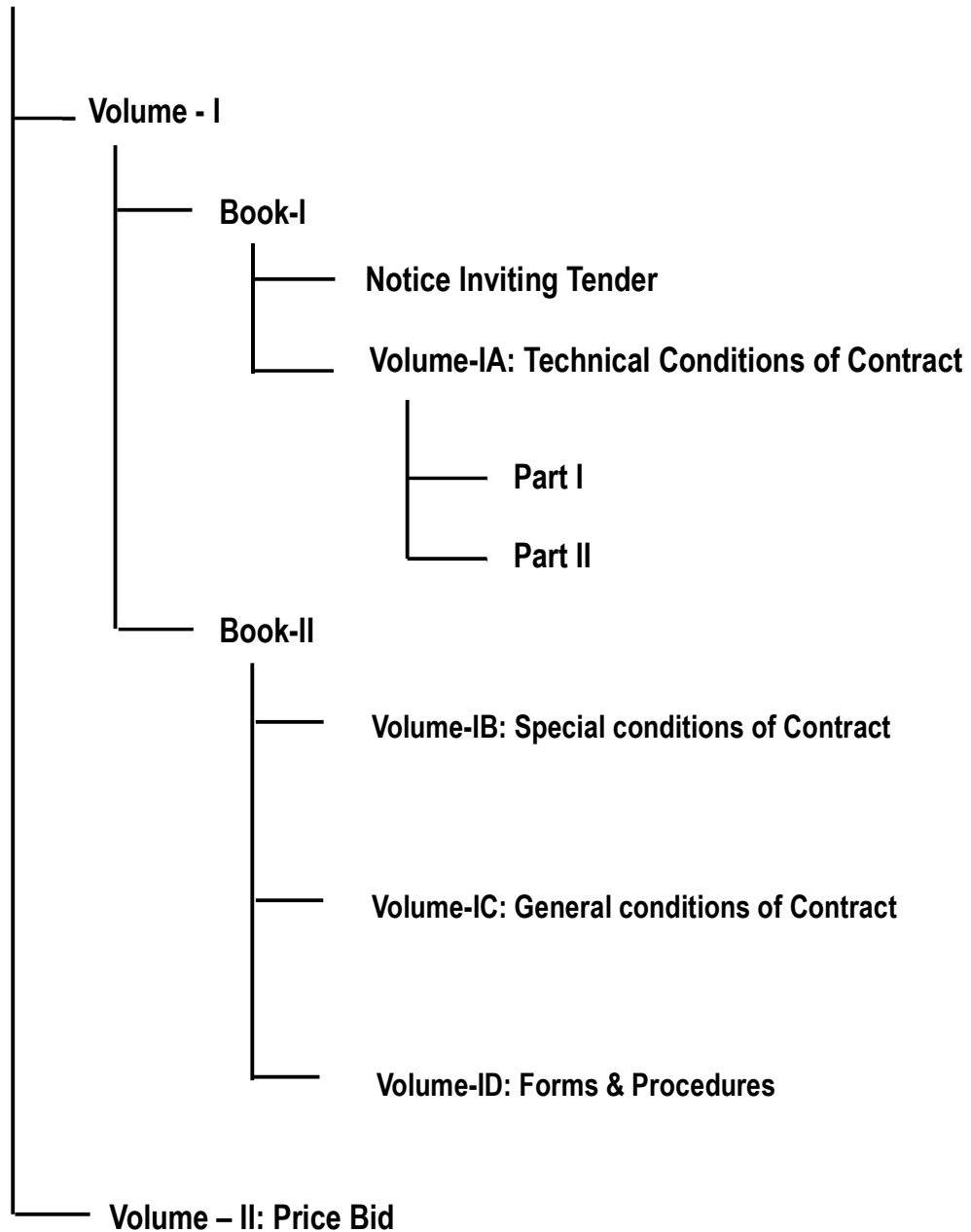
PRICE BID



BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
Power Sector – Southern Region
BHEL Integrated Office Complex, TNEB Road
Pallikaranai, Chennai - 600100

TENDER SPECIFICATION CONSISTS OF

Tender Specification



NOTICE INVITING TENDER

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NOTICE INVITING TENDER

PART A

Instruction to Bidders:

1. The quantity indicated in the BOQ / Price bid (Part C) is approximate only and is liable for variation. Payment will be as per actual quantity executed as certified by BHEL Engineer.
2. Tenderers are requested to affix their company seal and authorized signature in all pages.
3. Bidders shall quote 'Total Amount' in the format enclosed as a separate Excel File in BHEL NIC e-Procurement portal for the subject tender and upload the same under 'Packet details -> Tender covers -> Finance '(Cover Type Description – Price Bid)'' and same shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope of work defined in specification and in accordance with terms & conditions of the tender. Any other entry elsewhere in the price bid shall be treated as Null and Void. Quoting of rates in any other form/ formats will not be entertained.
4. The above mentioned 'Total amount' is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid.
5. BHEL has pre-fixed the weightages for the amount of individual items of Bill of Quantity with respect to the 'Total Amount' in Part-C.
6. Based on the pre-fixed weightages, the amount for the individual items of the Bill of Quantity shall be arrived at. This amount shall be rounded off to the nearest rupee.
7. Based on the quantities of individual item and the amount arrived in SI No: 6 above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.
8. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per SI No.7 above.

Part C : Bill of Quantities

Tender Specification for Erection, Testing and Commissioning and Trial Operation including Supply and Application of Final Painting and Handling of materials at site BHEL stores / Client Stores/ Storage Yard, transporting to site of erection of Electrical, C&I works for Flue Gas Desulphurization (FGD) System at 1 x 800 MW North Chennai Thermal Power Plant Stage-III, Chennai

at 1 X 800 MW North Chennai TPS Stage-III - FGD

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
--	Part 1 - HT ELECTRICAL WORKS	--		
I	ERECTION AND COMMISSIONING OF TRANSFORMERS	--		
C.1	6.3 MVA, 11/6.9KV FGD Auxiliary Transformer 3 phase ONAN cooled, Dyn11, FGD Aux. Transformer, (0CAT01,0CAT02), Outdoor with OFF Load Tap Changers (OCTC) HV/ LV/LVN post insulators, neutral bushings, bushing CTs, Turrets, Conservator tank, Buchholtz relay, breather & connected pipelines, Cooler control cabinet, common control kiosk, Piping, radiator bank, Marshalling box, valves, instruments and all accessories. Approximate Dimensions of each transformer (L x B x H): Overall Dimensions: 6400(L) x 5210(B) x 5200(H). Shipping Dimension of Largest package:3950(L) x 2200(B) x 2900(H) approx weight : 18500 KgWeight of core and winding assembly- 9000 kg approx.;Weight of tank and fittings (including radiators), bushing, marshalling box, pipe work with supports, pump, conservator & coolers : 10000 kg approx.; Total weight of the package-25500 kg approx.;Insulating Oil Qty- 7700 Ltrs.approx. (6500 Kg)Please refer TCC for scope and other details. Lump sum rate to be quoted for Erection, Testing, Commissioning including final painting.	Set	2	.01683
C.2	2500 KVA 11/0.433 KV 3 phase, AN cooled/Dyn11, Cast Resin Dry Type FGD Service Transformer (0DGT01, 0DGT02), (0DFT01, 0DFT02), Indoor with HV/LV/LVN Bushings, Off Circuit Bolted links type of Tap Changers, Marshalling box; Approximate Shipping Dimensions (+/-100 mm tolerance): 3000(L) x 2115(B) x 3100(H) Weight of Shipment: 8000 kg approx. eachCore coil assy-7000 Kg approx.Enclosure-1000 Kg Approx.	Set	4	.027763
C.3	2000 KVA 11/0.433 KV 3 phase, AN cooled/ Dyn11, Cast Resin Dry Type FGD Aux Service Transformer (0DET01,0DET02), Indoor with HV/LV/LVN Bushings, Off Circuit Bolted links type of Tap Changers, Marshalling box; Approximate Shipping Dimensions (+/-100 mm tolerance) : 2800(L) x 2165(B) x 2750(H) Weight of Shipment:7000 kg approx. each.	Set	2	.0120886

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
II	ERECTION AND COMMISSIONING OF HT BUSDUCT	--		
D.1	11 /6.6 KV-1000 A (FGD Auxiliary Trfr.) SPBD BUSDUCT, SIZE - 3.15tk x 400 mm (height) x 1200 mm (width) x 3720 mm (length) for standard size, approx. weight 100 kg/mtrs, Conductor size - Channel (1 x 101.6 x 41.8 x 6.68 tk) mm and includes seal off bushing, Neoprene rubber gaskets , support steel structure, space heaters, grounding. (BD-01 INCOMER FROM FGD AUX. TRFR.-11/6.6 kV FGD AUX. to SWBD-OCA101(PANEL No. - 01) & BD-02 INCOMER FROM FGD AUX. TRFR.-11/ 6.6 kV FGD AUX. SWBD-OCA102 to (PANEL No. - 11) Total weight of support Structure for SPBD: 10 MT(Approx.) including grounding flat	Mtrs	25	.0030459
III	Testing & Commissioning of HT Switchgear Panels Already Erected at site.	--		
A.1.1	11 KV SWITCHGEAR	--		
A.1.1.1	11 KV, 19 Panel Unit Switchboard (OBC), 1250 A, Indoor, SWBD consists of 19 panels of suitable 10 shipping sections. Overall panel sizes 15360 (L) x 2349 (D) x 2846 (H). Approximate weight of shipping sections for one panel shipping section - 1500 Kg. & two panel shipping section - 2500 Kg. (HT panels are already erected at site.Only testing and commissioning of HT panels are in the scope of the bidder)	Set	1	.0065866
A.1.2	6.6 KV SWITCHGEAR	--		
A.1.2.1	6.6 KV, 16 Panel Unit FGD Switchboard (OCA),1000 A, SWBD consists of 16 panels of suitable 9 shipping sections. Overall panel sizes 12900 (L) x 2927 (D) x 2846 (H). Approximate weight of shipping sections for one panel shipping section - 1250 Kg. & two panel shipping section - 2500 Kg. (HT panels are already erected at site.Only testing and commissioning of HT panels are in the scope of the bidder)	Set	1	.0065866
IV	ERECTION AND COMMISSIONING OF INTERMEDIATE SUPPORTING PANELS AND ACCESSORIES / CONTROL PANEL SYSTEM AND ACCESSORIES	--		

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.4.1	Data Concentrator Panel along with loose items : Size 800mm(L) x 800mm(D) x 2300mm(H) approx. weight 200kg. Loose items of data concentrator system - HMI OWS / EWS computer with monitor - 2 nos, DAU (Data Acquisition Unit Assembling of loose supply items: Laptop PC - 2 Nos for Prot. Relay parameterisation - 1 No, computer table, chairs, UPS, Ethernet switches - 4 Nos, connecting cables, Printer, GPS antenna along with cables, GPS clock etc.	Set	1	.0020532
A.2.1	Feeder/ Busbar Earthing Breaker Truck suitable upto 1250A	Set	2	.0004275
A.3.1	Feeder/ Busbar Earthing Breaker Truck suitable upto 1000A	Set	2	.0004268
E.1	11 KV Neutral Ground Resistor (NGR) with NGR Cubicle of size 1.42(L) X 1.11(W) X 2.095(H) of weight approx. 600 kg and with Supporting Structures 250 kg	Set	1	.001471
E.2	6.6 KV Neutral Ground Resistor (NGR) with NGR Cubicle of size 0.83(L) X 1.05(W) X 1.99(H) of weight approx. 450 kg and with Supporting Structures approx. 220 kg	Set	2	.002942
V	LAYING OF HT CABLES 11KV (UE) ARMoured; ALUMINIUM CONDUCTOR, XLPE INSULATED PVC/FRLS OUTER SHEATHED CABLE	--		
E.5.1	11 KV 1C x 630 Sq.mm (AL)	Mtrs	8,000	.0273101
E.5.2	11 KV 1C x 240 Sq.mm (AL)	Mtrs	2,000	.0037669
E.5.3	11 KV 3C x 240 Sq.mm (AL)	Mtrs	500	.0017363
VI	LAYING OF HT CABLES 6.6KV (UE) ARMoured; ALUMINIUM CONDUCTOR, XLPE INSULATED PVC/FRLS OUTER SHEATHED CABLE.	--		
E.6.1	6.6 KV 1CX240 Sq.mm (AL)	Mtrs	3,000	.0072395
E.6.2	6.6 KV 3CX185 Sq.mm (AL)	Mtrs	2,000	.0061212

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
VII	Installation of Cable termination and joint kits for 11/6.6 KV (UE) GRADE, XLPE Insulated aluminium conductor armoured cables for the following sizes.	--		
E.9.1	Jointing Kit (XLPE) 11 KV 1C-630 Sq.mm Al Arm	Nos	10	.0016942
E.7.1	Termination Kit (XLPE) 11 KV 1C-630 Sq.mm Al Arm Al lug	Nos	35	.0059895
E.7.2	Termination Kit (XLPE) 11 KV 1C-240 Sq.mm Al Arm Al lug	Nos	18	.0025511
E.7.3	Termination Kit (XLPE) 11 KV 3C-240 Sq.mm Al Arm Al lug	Nos	15	.0027387
E.8.1	Termination Kit (XLPE) 6.6 KV 3C-185 Sq.mm Al Arm Al lug	Nos	16	.0026764
E.8.2	Termination Kit (XLPE) 6.6 KV 1C-240 Sq.mm Al Arm Al lug	Nos	38	.006097
IX	INSTALLATION OF HOT DIP GALVANIZED IRON / STEEL FLATS , Wires etc.	--		
E.10.1	GS FLAT 25 mm X 6 mm	Mtrs	850	.0023764
E.10.2	GS FLAT 50 mm X 6 mm	Mtrs	2,725	.0088213
F.10.2				
E.10.3	GS FLAT 75 mm X 10 mm	Mtrs	170	.0008005
F.10.1	GS FLAT 65 mm X 8mm	Mtrs	5,100	.0240141
F.10.3	GS FLAT 30 mm X 6mm	Mtrs	2,100	.0063037
F.10.4	GS FLAT 25 mm X 3mm	Mtrs	3,500	.0097851

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
E.10.4	GI WIRE 16 SWG	Mtrs	35,000	.0072101
E.10.5	GS Rod 20 mm dia LONG 1000 mm vertical air termination, Test links (150 x 75 x 10)	Set	40	.0055197
F.10.5	FLEXIBLE COPPER BRAID FOR GATE EARTHING	Nos	3	.0000183
F.10.6	G.S. WIRE 8 SWG	Mtrs	58,253	.010286
E.11	Below Grounding Earthing	--		
E.11.1	40 MM Dia MS rod	MT	40	.0002284
X	FABRICATION & ERECTION OF STRUCTURAL STEEL	--		
J.10.2	FABRICATION & ERECTION OF STRUCTURAL STEEL (Channels plates, angles etc.)	MT	12	.008584
XI	CHECKING & COMMISSIONING OF THE FOLLOWING ERECTED BY MECHANICAL CONTRACTOR	--		
A.5.1	11 KV HT Motors	Nos	6	.0029175
A.5.2, K.3.1	6.6 KV Motors	Nos	8	.0016344
--	Part 2 - LT ELECTRICAL WORKS	--		
XI	ERECTION AND COMMISSIONING OF LT SWITCHGEAR ACDB/DCDB/MCC/PMCC	--		
H.1.1	415V LHP PMCC rating 3200A, (ODE)Approximate Overall Weight (in kg) 15300, Set Approximate Dimension in mm (LxDxH): 1900X1700X2450No. of Panels: 19 & No. of Shipping Sections: 10	Set	1	.0110511

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
H.1.2	415V FGD PMCC rating 4000A, (ODF)Approximate Overall Weight (in kg) 22800, Set Approximate Dimension in mm (LxDxH): 2900X1700X2450No. of Panels: 29 & No. of Shipping Sections: 15	Set	1	.014858
H.1.3	415V FGD Emergency MCC rating 1250A, (ODG)Approximate Overall Weight (in kg) 9700, Approximate Dimension in mm (LxDxH): 11800X1700X2450No. of Panels: 12 & No. of Shipping Sections: 6	Set	1	.0083099
H.1.4	415V FGD Common PMCC rating 4000A, (ODH)Approximate Overall Weight (in kg) 21750 Approximate Dimension in mm (LxDxH): 26700X1700X2450No. of Panels: 27 & No. of Shipping Sections: 14	Set	1	.01503
H.1.5	415V AC /Ventilation MCC rating 630A, (OSA)Approximate Overall Weight (in kg) 14250, Approximate Dimension in mm (LxDxH): 17700X1700X2450No. of Panels: 18 & No. of Shipping Sections: 9	Set	1	.0132151
H.1.6	415V Compressed Air, water system MCC rating 250A, (OSB)Approximate Overall Weight (in kg) 6000, Approximate Dimension in mm (LxDxH): 8000X1700X2450No. of Panels: 8 & No. of Shipping Sections: 4	Set	1	.0058712
H.1.7	220V, Common DCDB, rating 200A (0FA), Approximate Overall Weight (in kg) 2250, Approximate Dimension in mm (LxDxH): 3000X1700X2450, No. of Panels: 3 & No. of Shipping Sections: 2	Set	1	.0028138
H.1.8	Main Light Distribuion Board MLDB	Nos	1	.0040824
H.1.9	Welding Distribution Board	Nos	1	.0010006
H.1.10	AC Distrubution Board (ACDB)	Nos	1	.002827
H.1.11	DC Distrubution Board (DCDB)	Nos	1	.0033586
H.1.14	DC lighting board (DCLDB)	Nos	1	.0004801

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
II	ERECTION AND COMMISSIONING OF CONTROL PANEL SYSTEM	--		
K.2.1, K.2.2, J.7.2	VFD Panel for different Applications	Nos	7	.0037445
III	ERECTION AND COMMISSIONING OF 415V LT NON SEGREGATED PHASE BUSDUCT	--		
H.2.1, H.2.2, H.2.3	NSPBD TYPE BUSDUCT 3200A, 415 V	Mtrs	43	.0047606
IV	LAYING OF LT POWER / CONTROL CABLES 1.1KV, XLPE INSULATED, GALVANISED STEEL ARMoured SINGLE / MULTICORE CABLES FRLS PVC. (AL/CU CABLES)	--		
F.1.1	1C X 35 Sqmm (Cu)	Mtrs	3,500	.001751
F.1.2, J.3.5, J.3.6	1C X 120 Sqmm (Al), 1C 109 Sqmm, 1C 84.2Sq.mm Cable	Mtrs	1,520	.0012972
F.1.3	1C X 400 Sqmm (Al)	Mtrs	1,000	.0013243
F.1.4	1C X 630 Sqmm (Al)	Mtrs	1,500	.0022072
F.1.5	2C X 6 Sqmm (Cu)	Mtrs	6,000	.0030018
F.1.6	2C X 10 Sqmm (Al)	Mtrs	500	.0002501

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.1.7	2C X 16 Sqmm (Al)	Mtrs	3,500	.001751
F.1.8	2C X 25 Sqmm (Al)	Mtrs	1,000	.0005297
F.1.9	2C X 95 Sqmm (Al)	Mtrs	1,500	.0011036
F.1.10	3C X 10 Sqmm (Al)	Mtrs	12,500	.0062537
F.1.11	3C X 25 Sqmm (Al)	Mtrs	21,500	.0139199
F.1.12	3C X 35 Sqmm (Al)	Mtrs	2,000	.0014714
F.1.13	3C X 50 Sqmm (Al)	Mtrs	11,000	.0084167
F.1.14	3C X 95 Sqmm (Al)	Mtrs	9,000	.0084756
F.1.15	3C X 185 Sqmm (Al)	Mtrs	1,500	.002163
F.1.16	3C X 240 Sqmm (Al)	Mtrs	2,500	.0024279
F.1.17	3.5C X 25 Sqmm (Al)	Mtrs	1,000	.0006474
F.1.18	3.5C X 50 Sqmm (Al)	Mtrs	5,500	.0040465
F.1.19	3.5C X 95 Sqmm (Al)	Mtrs	500	.0004709
F.1.20	4C X 10 Sqmm (Al)	Mtrs	1,500	.0007504
F.5.1	5C X 4.0 Sqmm (Cu)	Mtrs	3,000	.0015009

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
IV	LAYING AND TERMINATION OF LT POWER / CONTROL CABLES 1.1KV, -- XLPE INSULATED, GALVANISED STEEL ARMoured SINGLE / MULTICORE CABLES FRLS PVC. (AL/CU CABLES)	--		
L.1.18	2C x 1.5 Sqmm	Mtrs	14,000	.0053561
F.3.1	2C X 2.5 Sqmm (Cu)	Mtrs	49,000	.0187463
F.3.2, F.4.1, L.1.19 , J.3.4.1 2	3C X 2.5 Sqmm (Cu)	Mtrs	122,750	.0469613
F.4.2	5C X 2.5 Sqmm (Cu)	Mtrs	4,000	.0017657
F.4.3	7C X 2.5 Sqmm (Cu)	Mtrs	42,000	.0185403
F.4.4	10C X 2.5 Sqmm (Cu)	Mtrs	5,000	.0025015
F.4.5	12C X 2.5 Sqmm (Cu)	Mtrs	7,000	.0035021
F.4.6	16C X 2.5 Sqmm (Cu)	Mtrs	6,000	.0038846
F.4.7	19C X 2.5 Sqmm (Cu)	Mtrs	7,000	.0047381
V	END TERMINATION OF LT POWER / CONTROL CABLES -1.1KV PVC/FRLS ARMoured AL/CU CONDUCTOR PVC INSULATED, FRLS OUTER SHEATHED.	--		

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F.2.1	1C X 35 Sqmm (Cu)	Nos	24	.000036
F.2.2, J.3.9, J.3.10	1C X 120 Sqmm (Al), 109Sq.mm, 84.2Sq.mm	Nos	14	.0001545
F.2.3	1C X 400 Sqmm (Al)	Nos	8	.0000939
F.2.4	1C X 630 Sqmm (Al)	Nos	10	.0001607
F.2.5	2C X 6 Sqmm (Cu)	Nos	40	.000186
F.2.6	2C X 10 Sqmm (Al)	Nos	4	.0000213
F.2.7	2C X 16 Sqmm (Al)	Nos	24	.0001243
F.2.8	2C X 25 Sqmm (Al)	Nos	8	.0000254
F.2.9	2C X 95 Sqmm (Al)	Nos	10	.0000386
F.2.10	3C X 10 Sqmm (Al)	Nos	84	.0001903
F.2.11	3C X 25 Sqmm (Al)	Nos	144	.0009323
F.2.12	3C X 35 Sqmm (Al)	Nos	14	.0001125
F.2.13	3C X 50 Sqmm (Al)	Nos	74	.0006207
F.2.14	3C X 95 Sqmm (Al)	Nos	60	.000618
F.2.15	3C X 185 Sqmm (Al)	Nos	10	.0002254

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
F.2.16	3C X 240 Sqmm (Al)	Nos	18	.0004667
F.2.17	3.5C X 25 Sqmm (Al)	Nos	8	.0000556
F.2.18	3.5C X 50 Sqmm (Al)	Nos	38	.0003388
F.2.19	3.5C X 95 Sqmm (Al)	Nos	4	.000045
F.2.20	4C X 10 Sqmm (Al)	Nos	10	.0000856
F.6.1	5C X 4.0 Sqmm (Cu)	Nos	20	.0002813
VI	ERECTION OF PRE FABRICATED CABLE TRAYS, with bends, Tee, elbows, cross, -- Stiffener coupler plates, bolting to racks, structure & reducers, etc. (with or without cover)	--		
F.8.1	50 mm wide, 25 mm height, 2 mm thick perforated type trays	Mtrs	125	.0002354
F.8.2	100 mm wide, 25 mm height perforated type trays	Mtrs	313	.0006724
F.8.3	150 mm wide, 2 mm thick ladder type trays	Mtrs	2,750	.00696
F.8.4	150 mm wide, 2 mm thick perforated type trays	Mtrs	2,200	.0053737
F.8.5	300 mm wide, 2 mm thick ladder type trays	Mtrs	1,250	.0053708
F.8.6	300 mm wide, 2 mm thick perforated type trays	Mtrs	650	.0028502
F.8.7	600 mm wide, 2 mm thick ladder type trays	Mtrs	8,300	.0361506
F.8.8	600 mm wide, 2 mm thick perforated type trays	Mtrs	4,550	.0258431

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
VII	ERECTION, TESTING & COMMISSIONING OF 220V DC BATTERY AND BATTERY CHARGER	--		
E.3	220V-200 AH Battery (High Discharge Lead Acid Plante Battery) comprising a bank of Set 108 cells, Dimensions of each cell 0.362(L) X 0.203(W) X 0.426(H) , Overall dimensions 1.677(L) X 0.610(W) X 0.915(H) in Mtrs., weight of each cell with acid - 58.4 Kg	Set	2	.0030444
E.4	Float cum Boost Charger 220V /150A SMPS, of demensions 0.8(L) X 0.80(D) X 2.1(H) in Mtrs for each charger - Weight- 700 Kg / charger along with a. Discharge Resistor Panel 0.60 (L) X 1.50(W) X 1.1(H) in Mtrs - Weight - 100 Kg (1 No)b. Cell Booster Panel of 0.60(L) X 0.60(W) X 0.80(H) in Mtrs - Weight - 70 Kg (1 No)	Nos	3	.0043895
VII	ERECTION AND COMMISSIONING OF DIESEL GENERATOR SET	--		
G.1.1	750 KVA (e) 1500 RPM 415V 0.80 pf (lag) DG Set with Radiator on a common Base frame along with acoustic enclosure. Size of DG approx. 10 mtr x 3.5 mtr x 3 mtr (height); Over all weight of DG Set is 15 tons. Initial filling of lube oil 150 ltrs approx. and coolant oil 300 ltrs approx. DG Set shall be supplied complete with acoustic enclosure and all accessories. (i.e. all items mentioned in BOQ Ref)	Set	1	.0108652
VIII	ERECTION OF JUNCTION BOXES / PUSH BUTTON STATIONS / FUSE DBs (AC / DC)	--		
H.3.1	STOP PUSH BUTTON	Nos	180	.0043543
H.4.1	LOCAL MOTOR STARTERS (0.37KW, 0.55KW, 0.75KW, 1.1KW, 1.5KW, 2.2KW, 5.5KW)	Nos	100	.0024191
H.1.12	DC FUSE DB	Nos	2	.0004303
H.1.13	AC FUSE DB	Nos	1	.0002189

Part C : Bill of Quantities

Tender Specification for Erection, Testing and Commissioning and Trial Operation including Supply and Application of Final Painting and Handling of materials at site BHEL stores / Client Stores/ Storage Yard, transporting to site of erection of Electrical, C&I works for Flue Gas Desulphurization (FGD) System at 1 x 800 MW North Chennai Thermal Power Plant Stage-III, Chennai

at 1 X 800 MW North Chennai TPS Stage-III - FGD

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
IX	COMMISSIONING OF THE FOLLOWING ERRECTED BY MECHANICAL CONTRACTOR	--		
K.3.2	LT Unidirectional & Bidirectional drives (0.2 kW to 110 kW)	Nos	44	.0013583
K.3.5	Blow-Off valve (BOV) electrical actuator	Nos	4	.0013333
K.3.6	Motorised butterfly valve (Isolation Valve)	Nos	2	.0006666
F.11.1	Electical actuator for FGD outlet	Nos	4	.0013333
F.11.2	Blade Pitch Actuator	Nos	2	.0006948
X	BOOSTER FAN items - Actuator/APT	--		
F.12.1	Electrical Actuator - BUF Inlet / Outlet	Nos	8	.0027793
XI	FABRICATION & ERECTION OF STRUCTURAL STEEL	--		
F.9.1	ISA ISMC CHANNELS, ANGLES, Plates etc	MT	30	.021459
--	MISCELLENEOUS ITEMS	--		
K.1.23	Exhaust Fan	Nos	4	.0001515
E.14.2	Treated Earth pit (Electrical) of 40 NB Gal.MS pipe 3000 M with accessories including all civil works excavation, filling of earth pit with alternate layer of chrcoal & salt as per IE specification and making of brick chamber, with both side plastering, supply and fixing of manhole CI cover plate/RCC Slab etc. complete as per IS 3043. If desired resistivity is not achieved then Bentonite mix to be used by the contractor. Supply of Bentonite mix is in the scope of bidder.	Nos.	8	.0027312

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Tender Specification for Erection, Testing and Commissioning and Trial Operation including Supply and Application of Final Painting and Handling of materials at site BHEL stores / Client Stores/ Storage Yard, transporting to site of erection of Electrical, C&I works for Flue Gas Desulphurization (FGD) System at 1 x 800 MW North Chennai Thermal Power Plant Stage-III, Chennai

at 1 X 800 MW North Chennai TPS Stage-III - FGD

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
--	Part 3- C&I	--		
I	ERECTION AND COMMISSIONING OF LOCAL / FIELD INSTRUMENTATION, DEVICES, SWITCHES	--		
K.1.1, K.1.2, J.4.1, E.12.3 , E.12.4	Pressure/ DP Gauges	Nos	114	.0025866
J.4.2, K.1.5, K.1.6, L.1.22	Pressure/ DP Switch	Nos	21	.0006458
J.4.9, K.1.3, K.1.4, K.1.19 , E.12.5	Electronic Transmitters (Pressure, differential pressure, Vibration Transmitter)	Nos	133	.0043094
J.4.6, K.1.12	Temperature Gauges	Nos	31	.0008977
K.1.16	Temp Switch	Nos	4	.0001652
K.1.13	Temp. Transmitter	Nos	16	.0004991

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
J.4.5, K.1.11	RTD, Temperature elements, Thermometer	Nos	155	.0042969
E.12.6				
K.1.14				
J.4.4	Electromagnetic Flowmeters	Nos	7	.0004054
K.1.8	Flow Switch	Nos	4	.0002164
K.1.9, E.12.2	Flow Transmitter (Magnetic / DP / VORTEX)	Nos	19	.00086
J.5.5, J.5.6, J.5.7	Flue Gas SOx/NOx/CO/CO2 Analyzer	Nos	7	.0060384
J.4.3	Level Gauge	Nos	1	.0000647
J.4.7, J.4.8, K.1.10	Level Transmitter - Ultrasonic / Radar	Nos	46	.0052335
E.12.1				
E.12.8	Limit / Proximity Switch	Nos	21	.000495
K.1.18				

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Tender Specification for Erection, Testing and Commissioning and Trial Operation including Supply and Application of Final Painting and Handling of materials at site BHEL stores / Client Stores/ Storage Yard, transporting to site of erection of Electrical, C&I works for Flue Gas Desulphurization (FGD) System at 1 x 800 MW North Chennai Thermal Power Plant Stage-III, Chennai

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
J.5.4	Low Temperature Oxygen Analyzer	Nos	3	.0019289
J.5.1	Mercury Analyser	Nos	1	.00103
J.5.2	Opacity Analyser	Nos	1	.0007204
J.5.3	pH Analyser	Nos	3	.0017257
K.1.17	Position Switch	Nos	6	.0001584
K.1.7	Density meter	Nos	4	.0016845
K.1.15	Speed switch	Nos	2	.0000501
K.1.20	Vibration Switch	Nos	16	.0002434
K.1.21	Weight Transmitter	Nos	2	.0000468
E.12.7	Pull cord Switches	Nos	4	.0000638
II	ERECTION AND COMMISSIONING OF SPECIAL INSTRUMENTS	--		
J.5.9.1	Vibration Monitoring System (VMS)	Set	1	.0038972
J.5.8	SO2 Analyser- system	Set	1	.0013726
III	INSTALLATION AND COMMISSIONING OF HMI SYSTEM WITH COMPLETE ACCESSORIES AND CONNECTIVITY	--		

Part C : Bill of Quantities

Tender Specification for Erection, Testing and Commissioning and Trial Operation including Supply and Application of Final Painting and Handling of materials at site BHEL stores / Client Stores/ Storage Yard, transporting to site of erection of Electrical, C&I works for Flue Gas Desulphurization (FGD) System at 1 x 800 MW North Chennai Thermal Power Plant Stage-III, Chennai

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
J.6.1, J.6.2, L.1.15	OWS / EAS /Server/ Programmar cum documentation station with Monitor, Keyboard & mouse along with UPS, original softwares and Accessories	Nos	7	.0019381
J.6.3, J.6.4, J.6.5, L.1.15	A4 / A3 Printer (B/W & Colour) with furniture	Nos	6	.0004916
J.6.6	Operator Desk (2 Section) Overall dimension 2450mm (W) x 600mm (D) x 750mm (H) including fixing of power Sockets, MCBs, ethernet switches hardware etc (along with chairs)	Set	1	.0003359
L.1.17	Furniture for Operator Workstation (1no. Table + 1no. Chair)	Set	2	.0009973
J.6.7	Printer Table	Nos	1	.0001162
J.7	Installation of Large Video Screen	--		
J.7.1	Large Video Screen (80	Set	1	.0022418
IV	Placement, Alignment, Erection, Electrical Interconnection, Testing and Commissioning of Valmet DNA DDCMIS AND CONTROL BOARDS	--		
J.1.1	Suite of three Cubicles Size: 2250 mm(W) X 800 mm(D) x 2117 mm(H); Approx. Set weight 1200 kg- CBA21-23, CBA24-26, CBA27-29, CBA30-32, CBA41-43, CBA44-46, CBA47-49, CBA51-53, CRA54-56, CBA57-59, CJU01-03	Set	11	.0106562
J.1.2	Suite of four Cubicles Size: 3000 mm(W) X 800 mm(D) x 2117 mm(H); Approx. Set weight 1600 kg- CBA01-04, CBA05-08, CBA09-12	Set	3	.0042781
J.2	Erection, Testing & Commissioning of Supporting Panels	--		

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Tender Specification for Erection, Testing and Commissioning and Trial Operation including Supply and Application of Final Painting and Handling of materials at site BHEL stores / Client Stores/ Storage Yard, transporting to site of erection of Electrical, C&I works for Flue Gas Desulphurization (FGD) System at 1 x 800 MW North Chennai Thermal Power Plant Stage-III, Chennai

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
J.2.1	NETWORK PANEL COMMON (SUITE:CNP21)Size: 750 mm(W) X 800 mm(D) x 2117 mm(H); Approx. weight 400 kg	Nos	1	.0002964
J.2.2	RELAY PANEL- 750 mm(W) X 800 mm(D) x 2117 mm(H) approx. CTE01, CTE02, CTE03, CTE04, CTE05 Approx. weight 400 kg	Nos	5	.0020764
F.13.1	Instrument control panel (1000 mmx300 mmx1300 mm)-(LXBXH)	Nos	1	.0003041
F.13.2	GGH Inverter panel (800 mm X 600 mm X1900 mm)- (LX BXH)	Nos	1	.0003041
V	ERECTION AND COMMISSIONING OF INTERMEDIATE SUPPORTING PANELS AND ACCESSORIES / CONTROL PANEL SYSTEM AND ACCESSORIES	--		
VI	ERECTION AND COMMISSIONING OF UPS / BATTERY CHARGER WITH ACDB	--		
J.3.1	2 X55 KVA UPS	Set	1	.0015518
J.3.2	ACDB :over all approx. size 1300mm(L) x 700 mm(D) x 1950 mm(H) mm;	Nos	4	.0034592
J.3.3	BHMS approx. size 600mm(W) x 400mm(D) x 1500 (H)mm	Nos	1	.0004024
J.3.8	UPS BATTERY: Lead Acid Plante Battery 220V/535AmpHr with all accessories	Set	1	.0023417
L.1.8, L.1.16	UPS with battery	Nos	5	.0005566
VIII	ERECTION OF LIE /LIRS	--		

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
J.8.2, J.8.3, J.8.4	LIE- Type -A, B, C	Nos	12	.0036367
J.8.5	Stand Alone (Site Fabricated Racks) 1600 mm (W) X 650mm (D) X 2200mm (H)	Nos	40	.0701799
J.8.6 J.8.7	LIR- Type -B, C	Nos	5	.0010998
IX	ERECTION & COMMISSIONING IDF PNEUMATIC POWER CYLINDER (ON/OFF & REGULATING TYPE)	--		
X	LAYING AND TERMINATION OF INDIVIDUAL & OVERALL SHEHEDED (TYPE G/F/K), TWISTED PAIR, ARMoured / UNARMoured CABLE, KX TYPE CABLES, OFC, OTHER SPECIAL CABLES	--		
A.4.3, J.6.8, L.1.20 J.3.4.1 0	FO Cable includes fixing of fibre optic components and termination kits LIU, face plates, cabinets, SC coupler, grounding etc.	Mtrs	14,500	.0123749
A.4.2, J.3.7, J.3.4.1 1, J.3.4.8	Modbus Cable (Cat5 / Cat6 Cable), PVC telephone cable	Mtrs	8,100	.0035756
J.3.4.9	Jelly filled cable	Mtrs	3,500	.002884

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
XI	LAYING AND TERMINATION OF INSTRUMENTATION CABLES	--		
F.7.1, F.7.5	2P X 0.5 Sq.mm (G, F-Type)	Mtrs	18,000	.0079458
F.7.2, F.7.6	4P X 0.5 Sq.mm (G, F-Type)	Mtrs	96,000	.0536785
F.7.3, F.7.7	8P X 0.5 Sq.mm (G, F-Type)	Mtrs	79,000	.0511476
F.7.4, F.7.8	12P X 0.5 Sq.mm (G, F-Type)	Mtrs	8,000	.0061212
L.1.6	OLHS Cables with erection hardwares	Mtrs	6,000	.0052972
A.4.4, L.1.21	Splicing of OFC termination along with pigtail, patch card, adaptor, JB etc	Nos	56	.0005554
XII	FABRICATION & ERECTION OF STRUCTURAL STEEL	--		
L.1.24	FABRICATION & ERECTION OF STRUCTURAL STEEL (Channels, plates, angles etc.)	MT	15	.0115369
XIII	ERECTION OF PRE FABRICATED CABLE TRAYS, with bends, Tee, elbows, cross, & reducers, etc. (with or without cover)	--		
XIV	ERECTION AND TESTING OF IMPULSE PIPES CS / AS / SS, INSTRUMENT VALVES AND FITTINGS	--		
J.9.1	Impulse Pipe ASTM A106 Gr.C Size:1/2	Mtrs	1,600	.0108299

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
J.9.2	Impulse Pipe ASTM A106 Gr.C Size:3/4	Mtrs	1,400	.0093525
E.13.1	PIPE, SMLS, XS, PE, ASTM A 106 GR.B-15-25NB	Mtrs	40	.0002637
J.8.1, K.1.22 E.13.2	Valve Manifolds	Nos	23	.0003053
XV	ERECTION AND TESTING OF HOSES, TUBES & GI PIPES	--		
J.10.1	GI Pipe	Mtrs	3,000	.0106827
XVI	ERECTION OF JUNCTION BOXES / PUSH BUTTON STATIONS / FUSE DBs (AC / DC)	--		
E.12.9 J.5.10, F.14.1	Junction boxes upto 64 way / FRP JB	Nos	118	.0044137
XVII	LOOP CHECKING OF INSTRUMENTS	--		
K.3.8	RTD	Nos	104	.0013099
XVIII	COMMISSIONING OF THE FOLLOWING ERECTED BY MECHANICAL CONTRACTOR	--		
K.3.3	Solenoid Valve	Nos	34	.0010226
K.3.4	Control valve	Nos	4	.0001314

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
--	MISCELLANEOUS ITEMS	--		
E.14.1	Treated Earth pit (Electronic) of 40 NB Gal.MS pipe 3000 M long with accessories including all civil works excavation, filling of earth pit with alternate layer of chrcoal & salt as per IE specification and making of brick chamber, with both side plastering, supply and fixing of manhole CI cover plate/RCC Slab etc. complete as per IS 3043. If desired resistivity is not achieved then Bentonite mix to be used by the contractor. Supply of Bentonite mix is in the scope of bidder.	Nos.	2	.001531
XX	ERECTION AND COMMISSIONING OF FDA / FPS /IGES - SENSORS /SWITCHES / DEVICES	--		
L.1.2, L.1.3	Multisensor Detectors, heat detector with detector base and mounting back box (Analogue addressable) along with PVC cable glands	Nos	176	.0004817
L.1.13	Response Indicators	Nos	25	.0004996
L.1.5	Beam Detectors (Addressable) along with PVC cable glands	Nos	3	.0000816
XXI	ERECTION AND COMMISSIONING OF FDA / FPS /IGES - LOCAL CONTROL PANELS	--		
L.1.23	Deluge Valve Control Panel	Nos	2	.0001152
L.1.1, L.1.2	Fire Alarm / Repeater / Gas Release Panels	Nos	2	.0005571
XXII	ERECTION AND COMMISSIONING OF FDA/ FPS/IGES - SPECIAL EQUIPMENTS	--		
L.1.12	Hooter Strobes	Nos	30	.0004247

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
L.1.7, L.1.11	Modules / Controllers	Nos	47	.0026405
XXIII	ERECTION AND COMMISSIONING OF FDA/FPS/IGES - MISCELLANEOUS EQUIPMENTS	--		
L.1.9, L.1.10	Manual Call points	Nos	60	.0034061
L.1.14	230V AC Back-Lit Exit Sign Board with Battery Back Up	Nos	35	.0001957
XXIV	IP BASED EPABX SYSTEM (PLANT TELEPHONE SYSTEM) Erection by PSSR. Commissioning by OEM	--		
J.3.4.1	Network Panel with / without Ethernet Switches, bargraph enclosures	Nos	1	.0001228
J.3.4.2	FCBC with 48v ni-cd battery bank of min 100 ah rating	Nos	1	.0005247
J.3.4.3	MDF with integrated protection module - 150 Extensions	Set	1	.0002209
J.3.4.4	Analog Desktop Telephone Set , SIP IP telephones, Chief/Secretary phone	Nos	54	.0003592
J.3.4.5				
J.3.4.6				
J.3.4.7	PVC conduits and casing, 2 Inch GI conduit	Mtrs	3,500	.003399
J.3.4.1 3				

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
J.3.4.1 4	Flexible tubes 1.5 Inch	Mtrs	200	.0008122
TOTAL Weightage				1.0