

TENDER SPECIFICATION

BHEL/PSSR/USTPP/SCT&P/SCT/105

for

Balance works of Package 1: Erection, Testing & Commissioning including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting of HT Electrical works for Unit-1 (Main plant) and identified BOP areas of 2 x 660MW Udangudi Super Critical Thermal Power Project at Tuticorin Dt., Tamil Nadu

VOLUME –II

PRICE BID



BHARAT HEAVY ELECTRICALS LIMITED

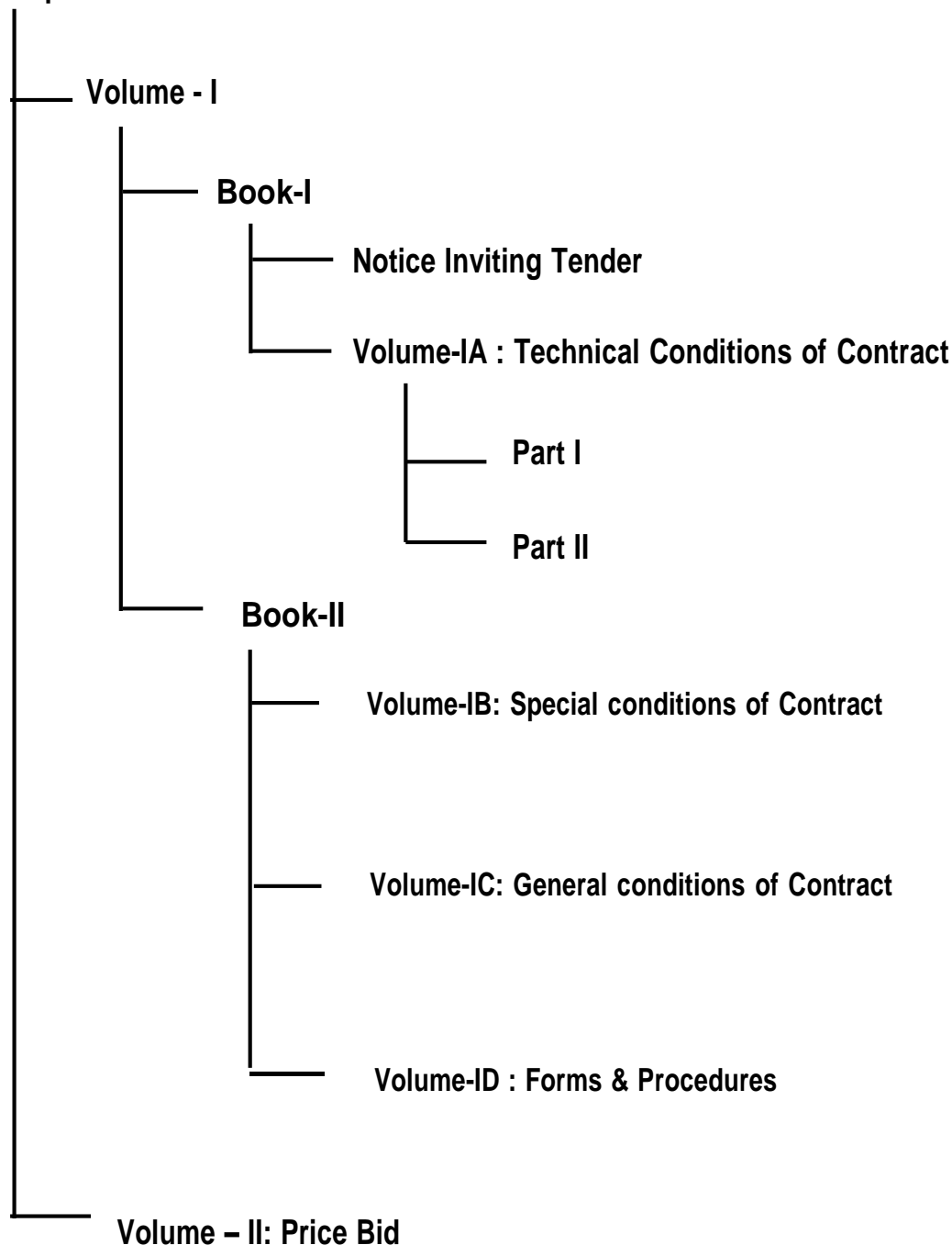
(A Government of India Undertaking)

Power Sector – Southern Region

BHEL site office, 2X660 MW Udangudi STPP,
Kallamozhi, Tiruchendur-628206

TENDER SPECIFICATION CONSISTS OF

Tender Specification



PRICE BID

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PART A

Instruction to Bidders:

1. The quantity indicated in the BOQ in Part C of Price Bid is approximate only and is liable for variation. Payment will be as per actual quantity executed and 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 and password protect it. The 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. Password for the file shall be furnished by the bidder through email to BHEL on price bid opening date.
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 of Price Bid.
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 Sl. 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 as certified by BHEL Engineer.

Part C : Bill of Quantities

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2 x 660MW Udangudi Super Critical Thermal Power Project at Tuticorin Dt., Tamil Nadu**

Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
Sl.No.	DESCRIPTION	UOM	QTY	WEIGHT SCHEDULE	REMARKS
I	ERECTION AND COMMISSIONING OF TRANSFORMERS				
A.1.1	275/220/165 MVA,(420/√3)/21 kV, 1 phase, OFAF/ONAF/ONAN cooled,YNd11 (after 3 phase bank), Generator Transformer (GT#1), Outdoor with Off Circuit tap changers (OCTC),HV/HVN/LV bushings,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, fan motors, oil pump motors, instruments and all accessories. Approximate Dimensions of each transformer (l x b x h): Overall Dimensions: 11765(L) x7535(B) x9790(H). Shipping Dimension of Largest package:6200(L) x4700(B) x4710(H). Weight of heaviest package - 203000kg approx. Weight of core and winding assembly-175000kg approx;Weight of tank cover, tank, Radiators, A frame and fittings-50600 kg approx;Total weight of the package including oil-296100 kg approx;Insulating Oil Qty - 54000 kg.approx.* Please refer TCC for scope and other details. All the GTs are unloaded in the rail and are to be dragged into their foundation. Lump sum rate to be quoted for transportation of other parts of transformers, Erection, Testing, Commissioning of the complete system including final painting.	SET	3.5	0.1527994	Placement of 2 no's GT completed. Payment on completion of placement of T/F is 25% of Unit rate as per payment terms.

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
B.1.2, B.1.3	56/70 MVA, 21 KV/11.5KV, 3 Phase, ONAN/ONAF cooled, Dyn1, Station Transformer(ST) Outdoor with On Load Tap Changers (OLTC) 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, fan motors, oil pump motors, instruments and all accessories, 11 KV NGR with supporting structure, etc. Approximate Dimensions of transformer (LxBxH) : Overall Dimensions: 9794(L) x7200(B) x6950(H) approx. Shipping Dimension of Largest package :3950(L) x2200(B) x5384(H) approx. Weight of heaviest package - 50000kg approx. Weight of core and winding assembly- 37000kg, weight of tank and fittings, bushing, marshalling box, pipe work with supports, pump, conservator & coolers –28000kg approx.; Total weight of the package-86500kg approx.; Insulating Oil Qty - 28000 kg.approx.* Please refer TCC for scope and other details. Lump sum rate to be quoted for Erection, Testing, Commissioning including final painting.	SET	3	0.0374151	
B.2.1	28/35 MVA, 11/6.9 kV, 3 phase, ONAN/ONAF/Dyn1, SEA WATER AUXILIARYTRANSFORMER (0CDT01 & 0CDT02), Outdoor with HV/LV/LVN Marshalling Box (1350(L)x465(B)x1450(H) Conservator (air cell type), OLTC, A-frame supports for radiator, Silica gel breather with oil seal, rollers, Radiators 2x50%, cooling fans 6W+2S, OLTC on HV side, Buchholz relay, PRV, Shut off valve between Buchholz relay and conservator, Piping , HV, LV bushings, Approximate Dimensions: a. Overall Dimensions: 8200(L) x7000(B) x6500(H) b. Shipping Dimension of Largest package:5600(L) x3300(B) x4400(H) Weight of heaviest package - 38500kg approx.Total Weight - 65800kg approx;Insulating Oil Qty - 17800kg approx.* Lump sum rate to be quoted including final painting.	SET	2	0.0331742	

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
B.2.2	20/25 MVA, 11/36 kV, 3 phase, ONAN/ONAF/Ynd11, EXTERNAL CHP TRANSFORMER (0AAT01 & 0AAT02), Outdoor with HV/LV/LVN Marshalling Box (1350(L)x465(B)x1450(H) Conservator (air cell type), OLTC, A-frame supports for radiator, Silica gel breather with oil seal, rollers, Radiators 2x50%, cooling fans 6W+2S, OLTC on HV side, Buchholz relay, PRV, Shut off valve between Buchholz relay and conservator, Piping , HV, LV bushings, Approximate Dimensions: a. Overall Dimensions: 7800(L) x6800(B) x6300(H) b. Shipping Dimension of Largest package:4800(L) x3000(B) x3200(H) Weight of heaviest package - 36500kg approx.Total Weight - 62000kg approx;Insulating Oil Qty - 15800kg approx.* Lump sum rate to be quoted including final painting.	SET	2	0.0312582	
B.2.3	16 MVA, 11/6.9 kV, 3 phase, ONAN/Dyn1, AHP AUXILIARY TRANSFORMER (AAT), Outdoor with HV/LV/LVN Marshalling Box (1150(L)x465(B)x1415(H)) Conservator (air cell type), OLTC, A-frame supports for radiator, Silica gel breather with oil seal, rollers, Radiators 2x50%, cooling fans 6W+2S, OLTC on HV side, Buchholz relay, PRV, Shut off valve between Buchholz relay and conservator, Piping , 11 KV NGR with supporting stand, HV, LV bushings, a. Overall Dimensions: 7100(L) x5100(B) x5300(H) b. Shipping Dimension of Largest package:4400(L) x2400(B) x3000(H) Weight of heaviest package - 31700kg approx.Total Weight - 40000kg approx;Insulating Oil Qty - 11000kg approx.* Lump sum rate to be quoted including final painting.	SET	2	0.0261974	

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
B.2.4	12.5 MVA, 11/6.9 kV, 3 phase, ONAN/Dyn1, UNIT AUXILIARY TRANSFORMER (UAT) (1CAT01 & 1CAT02), Outdoor with HV/LV/LVN Marshalling Box (1150(L)x465(B)x1415(H)) Conservator (air cell type), OLTC, A-frame supports for radiator, Silica gel breather with oil seal, rollers, Radiators 2x50%, cooling fans 6W+2S, OLTC on HV side, Buchholz relay, PRV, Shut off valve between Buchholz relay and conservator, Piping , 11 KV NGR with supporting stand, HV, LV bushings, a. Overall Dimensions: 7000(L) x5000(B) x6000(H) b. Shipping Dimension of Largest package:4400(L) x2500(B) x2900(H) Weight of heaviest package - 27000kg approx.Total Weight - 45000kg approx;Insulating Oil Qty - 11100kg approx.* Lump sum rate to be quoted including final painting.	SET	2	0.0261974	
D.10.1	6.3 MVA, 11/6.9 kV, 3 phase, ONAN/DyN1, RO-DM AUXILIARY TRANSFORMER (0CET01 & 0CET02), Outdoor with HV/LV/LVN Marshalling Box 800(L)x200(B)x800(H) Conservator (air cell type), OLTC, A-frame supports for radiator, Silica gel breather with oil seal, rollers, Radiators 2x50%, cooling fans, OLTC on HV side, Buchholz relay, PRV, Shut off valve between Buchholz relay and conservator, Piping , HV, LV bushings, Overall Dimension: 4200(L)x2600(B)x3250(H); Shipping Dimension of Largest package:3800(L) x2150(B) x1950(H) Weight of heaviest package - 8700kg approx.Total Weight - 10600 kg approx;Insulating Oil Qty - 1900kg approx.* Lump sum rate to be quoted including final painting.	SET	1	0.0120578	

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
D.10.2	5 MVA, 11/6.9 kV, 3 phase, ONAN/Dyn11, STATION AUXILIARY TRANSFORMER (OCAT01 & OCAT02), Outdoor with HV/LV/LVN Marshalling Box 800(L)x200(B)x800(H) Conservator (air cell type), OLTC, A-frame supports for radiator, Silica gel breather with oil seal, rollers, Radiators 2x50%, cooling fans, OLTC on HV side, Buchholz relay, PRV, Shut off valve between Buchholz relay and conservator, Piping , HV, LV bushings, Overall Dimension: 4200(L)x2600(B)x3250(H); Shipping Dimension of Largest package:3800(L) x2150(B) x1950(H) Weight of heaviest package - 8700 kg approx.Total Weight - 10600 kg approx;Insulating Oil Qty - 1900 kg approx.* Lump sum rate to be quoted including final painting.	SET	1	0.0120578	
B.2.5, B.2.6, B.2.7, B.2.8	2.5 MVA, 11/0.433 kV, 3 phase, AN cooled/Dyn11, Cast Resin Dry Type SERVICE TRANSFORMER, Indoor with HV/LV/LVN Bushings, Off Circuit Tap Changers, Marshalling box; Approximate Shipping Dimensions:3000(L) x2115(B) x3100(H) Weight of Shipment:8000kg approx each.	SET	7	0.0330534	
B.2.9	2 MVA, 11/0.433 kV, 3 phase, AN cooled/Dyn11, Cast Resin Dry Type SERVICE TRANSFORMER , Indoor with HV/LV/LVN Bushings, Off Circuit Tap Changers, Marshalling box; Approximate Shipping Dimensions:2800(L) x1965(B) x2950(H) Weight of Shipment:7000kg approx each.	SET	1	0.0041317	
B.2.10, B.2.11, B.2.12, B.2.13	1.6 MVA, 11/0.433 kV, 3 phase, AN cooled/Dyn11, Cast Resin Dry Type SERVICE TRANSFORMER , Indoor with HV/LV/LVN Bushings, Off Circuit Tap Changers, Marshalling box; Approximate Shipping Dimensions:2800(L) x1965(B) x2950(H) Weight of Shipment:6600kg approx each.	SET	11	0.0428514	

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
B.2.14	0.63 MVA, 11/0.433 kV, 3 phase, AN cooled/Dyn11, Cast Resin Dry Type SERVICE TRANSFORMER, Indoor with HV/LV/LVN Bushings, Off Circuit Tap	SET	1	0.0021249	
II	ERECTION AND COMMISSIONING OF HT BUSDUCT				
II-A	IPBD				
C.1.1	24 KV IP Busduct along with support structures, SPVT, PT cubicle, NG cubicle and other loose supplied items such as Seal off bushings, Rubber bellows, Earthing, Flexible connections, CTs, Lightning arrestor, Hot Air Blowing (HAB) equipment, flexible hoses from HAB system to bus duct, control cabinet for HAB, Air Pressurization Equipment (APE), APE Piping, Conduiting and wiring for space heaters, illumination, Aluminium welding etc., CT/PT wiring and conduiting, erection of JB's etc. comprising of the following: a) 25000 A IP Bus duct from 660 MW Generator to 3 x 275 MVA Single phase generator transformers. b) 25000 A common tap off Bus duct. c) 14500 A Delta Run Bus duct. d) 4100 A Common Tap off bus ducts. e) 2250 A Tap off bus ducts to Unit Transformer and Station Transformer; Dimensions and Weights: a) BD Main run - 222 mtr weight aprox 500 kg/mtr; b) BD Delta run - 129 mtr weight aprox 350 kg/ mtr; c) Tapoff run - 123 mtr weight aprox 250 kg/ mtr; Conductor : Main run size - 930 mm OD/ 15mm thick , Delta run 500 mm O/D 15 mm thick, Tap off - 2 x 203.2 x 65 x 11.84 mm (Channel Box). Bus duct : Main run size - 1600 mm OD/ 8 mm thick (500 kg/mtr) , Delta run 1200 mm O/D 6.35 mm thick (350 kg/mtr), Tap off - 780 mm O/D 4.78 thick (250 kg/mtr); Bus Duct CT : AS PER ATTACHED SLD Drg. No. 21791720004; Hot Air Blowing Equipment with piping and pipe support :- 1 set of dimension 1600mm (W) x2600mm(D)x3100mm(H); Wt. 2000 kg (app) having 10 HP Motor and heater capacity 36 kW; Air pressuring equipment :- 1 set of 200 m3/hr with	SET	1	0.1064794	

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
	compressor and receiver, drier, pressurizing panel & Electrical control panel (240 V, 50 Hz); NG Cubicle with NGT & NGR with marshalling box, space heaters and accessories :- 1 set of dimension 2200 (W) x 1650 (D)x1700mm(H) and wt.1600 kg (approx.); SPPT cubicle with Surge Capacitor, Voltage Transformer with marshalling box, space heaters and accessories :- SPPT cubicle with Surge Capacitor, Voltage Transformer with marshalling box, space heaters and accessories :- 1 set 800(W) x 2550(D) x 2000 mm (H) of wt. 1200 kg/set (total for 3 set: 3600 kg); LAPT cubicle with Lightning Arrestor, Surge Monitor, Voltage Transformer with marshalling box, space heaters and accessories :- LAVT cubicle with Lightning Arrestor, Surge Monitor, Voltage Transformer with marshalling box, space heaters and accessories :- 1 set 800(W) x 1500(D) x 1700 mm (H) of wt. 1000 kg/set; Weight of support Structure for IPBD: 60 MT(Approx.)				
II-B	SPBD				
II-B-(i)	11 kV-4000/3150 A SPBD BUSDUCT, includes seal off bushing, rubber bellows, support steel structure, space heaters, grounding.				
A.5.13, A.5.14, B.1.2, B.1.3, B.2.1, B.2.3	11 kV-4000/3150 Amp	Mtrs	346	0.0323969	

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
II-B-(ii)	6.6 kV-3150/1600/1250/630 A SPBD BUSDUCT includes Seal-off Bushing, Rubber Bellows, Aluminium Splice Plate & Flexibles, Copper Flexibles, Support Steel Structure, Space Heater arrangemnt, Grounding.				
C.2.3.1, C.2.3.2, C.2.4, C.2.5, C.2.6, C.2.7	6.6 kV-3150/1600/1250/630 Amp	Mtrs	206	0.0182497	
III	ERECTION AND COMMISSIONING OF HT SWITCHGEAR				
III-A	33 kV Switchgear				
A.2.1	ECHS Switchboard 0AA - 33KV, 630 A, 11 panels, 6 shipping sections. Over all panel sizes- 14300 (L) x 3248 (D) x2600(H) Weight of shipping for 1 panel - 1800 Kg(1300mm wide) aprox. for shipping two panel - 3600 Kg aprox.(1300mm + 1300mm wide)	SET	1	0.0070866	
III-C	6.6 kV Switchgear	--			
A.4.1	Unit Auxiliary Switchboard 1CA - 6.6 KV, 1250 A, 27 panels, 15 shipping sections . Over all panel sizes- 21920 (L) x 2873 (D) x2805(H) Weight of shipping for 1 panel - 1250 Kg(820mm wide) aprox.for shipping two panel - 2500 Kg aprox.(820 + 820mm wide)	SET	0.6	0.0054568	Panel Placment & Alignment completed. payment on completion of placement & Alignment is 40% of unit rate as per payment terms

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
A.4.2	Station Auxiliary Switchboard OCA - 6.6 KV, 630 A, 20 panels, 11 shipping sections . Over all panel sizes- 16180 (L) x 2873 (D) x2805(H) Weight of shipping for 1 panel - 1300 Kg(820mm wide) aprox.for shipping two panel - 2600 Kg aprox.(820 + 820mm wide)	SET	0.6	0.0040265	Panel Placment & Alignment completed. payment on completion of placement & Alignment is 40% of unit rate as per payment terms
A.4.3, A.4.8	CHP Auxiliary Switchboard OCB/ Sea Water intake Switchboard OCG, - 6.6 KV, 1600 A/630 A, 28 panels of suitable 15 shipping sections . Over all panel sizes- 22960 (L) x 2349 (D) x2805(H) Weight of shipping for 1 panel - 1300 Kg(820mm wide) aprox.for shipping two panel - 2600 Kg aprox.(820 + 820mm wide)	SET	2	0.0190408	
A.4.4	AHP Auxiliary Switchboard OCC - 6.6 KV, 1250 A, 36 panels, 9 shipping sections . Over all panel sizes- 29300 (L) x 2873 (D) x2805(H) Weight of shipping for 1 panel - 1250 Kg(820mm wide) aprox.for shipping two panel - 2500 Kg aprox.(820 + 820mm wide)	SET	1	0.0121607	
A.4.5	RODM Auxiliary Switchboard OCD - 6.6 KV, 3500 A, 30 panels, 16 shipping sections . Over all panel sizes- 25580 (L) x 2873 (D) x2805(H) Weight of shipping for 1 panel - 1300 Kg(820mm wide) aprox.for shipping two panel - 2600 Kg aprox.(820 + 820mm wide)	SET	0.6	0.0063701	Panel Placment & Alignment completed. payment on completion of placement & Alignment is 40% of unit rate as per payment terms

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
A.4.6	CHP Bunker Switchboard OCE - 6.6 KV, 630 A, 21 panels, 11 shipping sections . Over all panel sizes- 17000 (L) x 2873 (D) x2805(H) Weight of shipping for 1 panel - 1300 Kg(820mm wide) aprox.for shipping two panel - 2600 Kg aprox.(820 + 820mm wide)	SET	1	0.0070508	
A.4.7	Ext.CHP Auxiliary Switchboard OCF - 6.6 KV, 1250 A, 22 panels, 11 shipping sections . Over all panel sizes- 17820 (L) x 2349 (D) x2805(H) Weight of shipping for 1 panel - 1300 Kg(820mm wide) aprox.for shipping two panel - 2600 Kg aprox.(820 + 820mm wide)	SET	1	0.0072816	
IV	ERECTION AND COMMISSIONING OF CONTROL PANEL SYSTEM				
A.5.1	Fast Bus Transfer System Panels for 11 KV SWGR size 800 (w) x 800 (d) x 2295 (h) weight 300 kg aprox, along with accessories computers, printers,table, checking of pre assembled LIUs, communication cables etc.	SET	2	0.0022289	
A.5.2	Protection panel for Generator/GT/UT/ST with associated loose supplied items such as Laptop, PC, Printer, UPS, interconnecting cables, RJ45 cables etc. Size of the Panel: 800 (W) x800 (D) x 2295 (H) mm Approximate weight of the panel : 450 kg. Lump sum rate to be quoted.	SET	8	0.0078379	
A.5.3, A.5.4, A.5.5, A.5.6, A.5.7	Data concentrator panels along with loose items size 800mm(W) x800mm(D) x 2000mm(H) aprox weight 200kg along with Loose items of Data concentrator system - HMI OWS computer with monitor - 3 nos, console table 75 KG (1000mm x 750mm x 574 mm) - 1 no, A4 color printer - 1 no, UPS 1 KVA - 1 no, Ethernet switch - 12 nos, LIU - 10 nos, Laptop computer - 1 nos, Patch cards & RJ45 conecters reqd qty, GPS antanna alongwith cable, GPS receiver, GPS clock etc. Assembling of loose supply computer table, printer table, chairs etc	SET	4	0.0063166	

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A.5.8, A.5.9, A.5.10, A.5.11	Earthing Trucks (feeders and busbars) 33 kV/ 11 kV/ 6.6 kV	SET	22	0.0034801	
D.7.8	11 kV Neutral Ground Resistor (NGR) with NGR Cubicle of size 1200x1350x950 of weight app. 495 kg and with Supporting Structures	SET	4	0.0044409	
D.7.9	6.6 kV Neutral Ground Resistor (NGR) with NGR Cubicle of size 1000x900x800 of weight app. 290 kg and with Supporting Structures.	SET	6	0.0066613	
D.8.1	Generator circuit breaker (GCB) below generator Rating 27000 A, 21 kV size app. 6751mm x 4000 mm x 3535 mm along with centralizing cubicle and overall weight - 10288 kg.	SET	1	0.0045375	
E.6	Unit Control Panel(UCP)- approx panel size 2216(L) x1000(W) x 2355(H) approx weight 900 kg	No.	1	0.0011102	
E.7	Unit Electrical Control Panel(UECP)- approx panel size 2792 (L)x 1000(W) x 2355(H) , approx weight 900 kg	No.	1	0.0011102	
E.8, E.9, E.11, E.12	EDMS/IEMS (CYJ-01,CYJ-02 & CYJ03) electrical interface system panel size 750(L) x750(W) x 2067(H) approx weight 400 kg each along with HMI items i.e Server,OWS,EOWS,Printer,Cable ,etc.	SET	2	0.0022383	

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HT Electrical works for Unit-1 (Main plant) and identified BOP areas of
2 x 660MW Udangudi Super Critical Thermal Power Project at Tuticorin Dt., Tamil Nadu**

Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
E.1	Digital AVR consisting of 2No. Regulation cubicle, 1 No. Thyristor cubicle & 1 No. Field suppression cubicle, and associated loose supplied items including laying & termination of loose supplied power & control cables for DAVR system.DAVR Overall dimension: 4053 (L)x 800 (Wx 2465(H) mm Approximate wt. : 3000 Kg. * Lump sum rate to be quoted.	SET	1	0.0035255	
V	LAYING OF HT CABLES				
V-A	LAYING OF HT CABLES 19/33KV (UE) ARMoured; ALUMINIUM CONDUCTOR ,XLPE INSULATED PVC/FRLS OUTER SHEATHED CABLE.				
G.1	1CX400 SQMM (AL)	Mtrs	700	0.0015966	
V-B	LAYING OF HT CABLES 11KV (UE) ARMoured; ALUMINIUM CONDUCTOR ,XLPE INSULATED PVC/FRLS OUTER SHEATHED CABLE.				
D.1.1	1C x 630 sqmm (AL)	Mtrs	34500	0.0786871	
D.1.2	1C x 300 sqmm (AL)	Mtrs	15000	0.0207072	
D.1.3	3C x 240 sqmm (AL)	Mtrs	7750	0.0204671	
VI	LAYING OF HT CABLES 6.6 KV (UE) ARMoured; ALUMINIUM CONDUCTOR ,XLPE INSULATED PVC/FRLS OUTER SHEATHED CABLE.				
D.2.1	1C x 630 sqmm (AL)	Mtrs	14500	0.0326363	
D.2.2	3C x 150 sqmm (AL)	Mtrs	10750	0.0264542	
VII	Installation of Cable termination and joint kits				

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
VII-A	Installation of Cable termination and joint kits for 33/33 KV (UE) GRADE, XLPE Insulated aluminium conductor armoured cables for the following sizes.				
G.2	Termination Kit for 1C x 400 Sq. mm., 19/33kV(E) , Stranded Circular and compacted Aluminium Conductor, XLPE insulated, Armoured, FRLS PVC outer sheath Power Cable	Nos.	28	0.0036660	
VII-B	Installation of Cable termination and joint kits for 11/11 KV (UE) GRADE, XLPE Insulated aluminium conductor armoured cables for the following sizes.				
D.3.1, D.4.1	Termination/Joint KIT 11KV 1C-630 sqmm AL ARM (indoor) AL LUG	Nos.	94	0.0123079	
D.3.2, D.4.2	Termination/Joint KIT 11KV 1C-300 sqmm AL ARM (indoor) AL LUG	Nos.	143	0.0113809	
D.3.3, D.4.3	Termination/ Joint KIT 11KV 3C-240 sqmm AL ARM (indoor) AL LUG	Nos.	48	0.0067012	
VII-C	Installation of Cable termination kits and joint kit for 6.6 KV (UE) GRADE, XLPE Insulated aluminium conductor armoured cables for the following sizes.				
D.5.1	Termination KIT 6.6 KV 1C-630 sqmm AL ARM (indoor) AL LUG	Nos.	22	0.0026838	
D.5.2, D.6.1	Termination /Joint KIT 6.6 KV 3C-150 sqmm AL ARM (indoor) AL LUG	Nos.	85	0.0113207	
VIII	INSTALLATION OF HOT DIP GALVANIZED STEEL FLATS	--			
D.7.1	GS FLAT 65 X 8 mm	Mtrs	3300	0.0116861	
D.7.2	GS FLAT 50 X 6 mm	Mtrs	2750	0.0064372	

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
D.7.3	GS FLAT 25 X 6 mm	Mtrs	1125	0.0023633	
D.7.4	GS FLAT 25 X 3 mm	Mtrs	330	0.0006933	
D.7.5	GI WIRE 14 SWG	Mtrs	1700	0.0002551	
IX	FABRICATION & ERECTION OF STRUCTURAL STEEL				
D.11.1, D.11.2, D.11.3, D.11.4	Structural Steel (ISMC, ISMB, ISA, etc)	MT	47	0.0248993	
X	COMMISSIONING OF THE FOLLOWING ERECTED BY MECHANICAL CONTRACTOR				
D.9.1	Generator 660 MW - H.V. testing, meggering of Bushings & Accessories, resistance measurement, meggering including dry out of Generator and as per field quality plan.	SET	0.6	0.0032608	
D.9.2	Exciter dryer / heater	No.	1	0.0001028	
D.9.3	Generator Air Drier	No.	1	0.0001028	
D.9.4	CO ₂ Vaporizer	No.	1	0.0000869	
D.9.5	Exciter Stroboscope	No.	1	0.0000869	
D.9.6	11 KV HT drives	Nos.	10	0.0036201	
D.9.7, D.9.8	6.6 KV HT Drives	Nos.	56	0.0105759	
XI	LAYING OF LT POWER / CONTROL CABLES 1.1KV, XLPE INSULATED, GALVANISED STEEL ARMoured SINGLE/MULTICORE CABLES FRLS PVC. (AL/CU CABLES)				

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Ref.No	Description	Unit	QTY	Weightage for amount of each item(Nearest to the 7 decimal points) w.r.t.to the total amount	Remarks
E.2	3C x 50 sqmm copper (Excitation + power input)	Mtrs	800	0.0004321	
E.4	1Cx 70 sqmm copper (earthing)	Mtrs	100	0.0000539	
XII	END TERMINATION OF LT POWER / CONTROL CABLES -1.1KV PVC/FRLS ARMOURED AL/CU CONDUCTOR PVC INSULATED, FRLS OUTER SHEATHED.				
E.3	3C x 50 sqmm copper (Excitation + power input)	Nos.	16	0.0001406	
E.5	1Cx 70 sqmm copper (earthing)	Nos.	4	0.0000076	
XIII	LAYING AND TERMINATION OF INSTRUMENTATION CABLES				
A.5.12	OFC cable includes fixing of fibre optic components and termination kits LIU, face plates,cabinets,SC coupler,grounding etc	Mtrs	11000	0.0075925	
A.5.13	OFC Cable splicing	Nos.	75	0.0002769	
A.5.14	D link 4 pair PVC, CAT 5 Lan cable	Mtrs	6000	0.0012605	
XIV	ERECTION OF MISCELLANEOUS ITEMS				
D.7.6, F.1	Flexible braided copper conductor with copper clamp for gate earthing & Earthing with MS earth rod 40 mm (Below ground earthing system)	Nos.	18	0.0000411	
D.7.7	Treated Earth pit of CI pipe 3000 m long with funnel and accessories including all civil works, 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 fising of manhole CI cover plate/RCC Slab etc. complete as per IS 3043 (only 100 mm CI pipe shall be supplied by BHEL)	SET	56	0.0150093	
	TOTAL			1.0000000	