

TENDER SPECIFICATION BHEL PSSR SCT 2022

FOR

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 -5 of 5x800 MW Yadadri Thermal Power Plant at Veerlapalem Village, Dameracherla Mandal, Nalgonda DT., TSGENCO, Telangana, India

**PRICE BID
VOLUME –II**



BHARAT HEAVY ELECTRICALS LIMITED

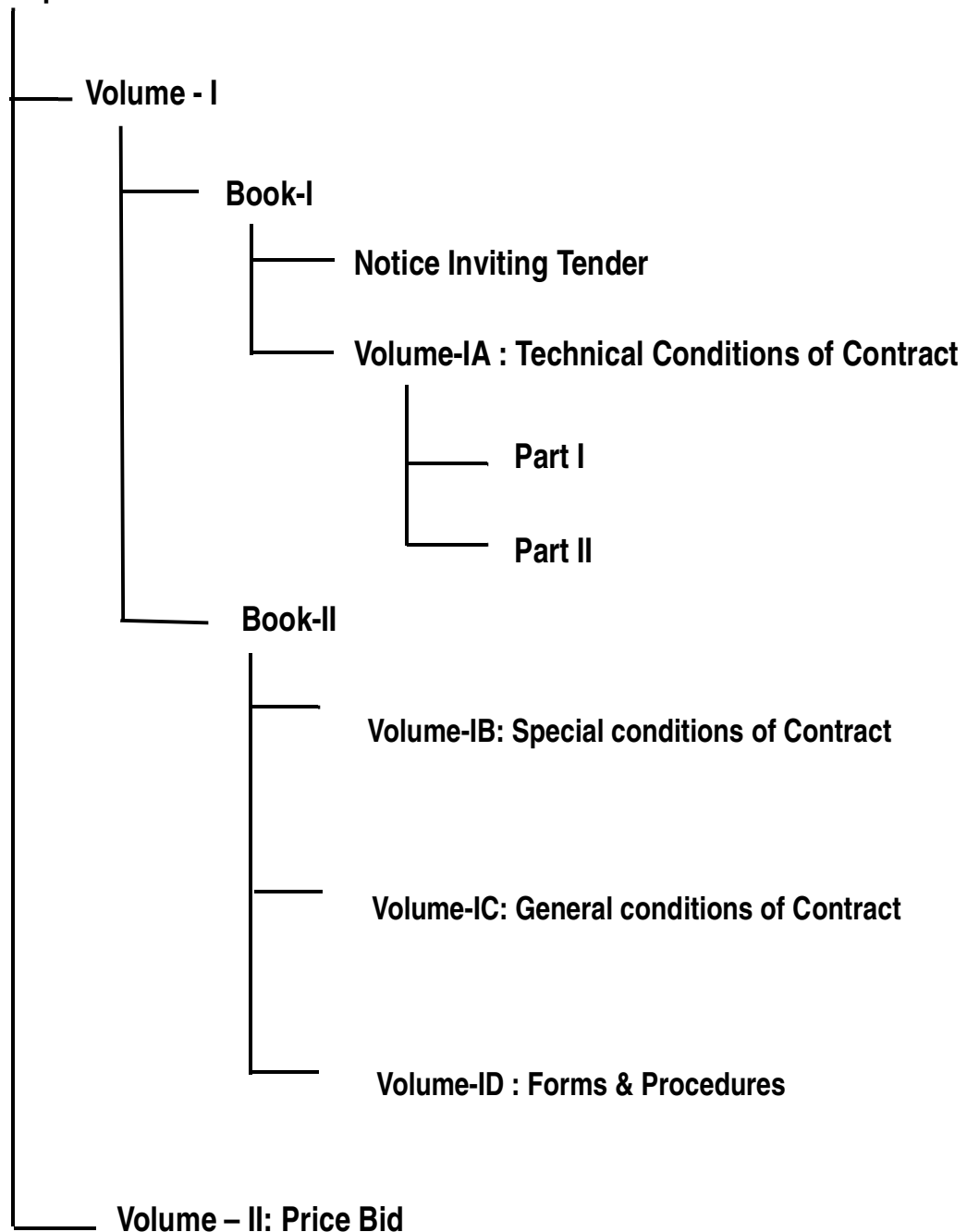
(A Government of India Undertaking)

Power Sector – Southern Region

690, Anna Salai, Nandanam, Chennai – 600 035

TENDER SPECIFICATION CONSISTS OF

Tender Specification



PRICE BID

CONTENTS	
Description	No. of pages
Part A : Instructions to the Bidders	01
Part B : Format for total amount (Enclosed as a separate Excel File in BHEL NIC e-Procurement portal for the subject tender)	(Separate Excel File)
Part C: BOQ	08

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 BHEL:PSSR:SCT:2022 for 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 -5 of 5x800 MW Yadadri Thermal Power Plant at Veerlapalem Village, Damercherla Mandal, Nalgonda DT., TSGENCO, Telangana, India.

at 5 X 800 MW Yadadri TPS

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
I	ERECTION AND COMMISSIONING OF TRANSFORMERS	--		
A.1	Generator Transformer (GT#1) 198/264/330 MVA,27/(400/Sq.root(3) kV, 1 phase, ONAN/ONAF/OFAF cooled,YNd11	SET	4	.1906765
A.2	Station Transformer (ST#3) 81/108/135MVA,400/11.5 kV3 phaseONAN/ONAF/OFAFcooled,YNyn0yn0	SET	1	.0360249
A.3	Unit Transformer (5A & 5B) 52/65MVA,27/11.5 kV,3 phaseONAN/ONAF cooled,Dyn1,Unit Transformer (5A & 5B)	SET	2	.0518481
B.1	Unit Aux Transformer (5CAT01 & 5CAT02) 16 MVA, 11/3.6 kV, 3 phase, ONAN/ONAF/Dyn11, Unit Aux Transformer (5CAT01 & 5CAT02)	SET	2	.0280912
B.2, B.3, B.4, B.5	Cast Resin Dry Type Station Service Transformer Approximate Shipping Dimensions:3000(L) x2015(B) x3100(H) Weight of Shipment:8000kg approx each.	SET	16	.0812629
II	ERECTION AND COMMISSIONING OF HT BUSDUCT	--		
C.1	IPBD	--		
C.1.1	27 kV IP Busduct (Maximum Voltage - 36kV) along with support structures	SET	1	.1144909
C.2	SPBD	--		

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C.2.1	11 kV-4000 A SPBD BUSDUCT, SIZE - 3.15tk x 500 mm (height) x 1500 mm (width) x 3720 mm (length) for standard size, Conductor size - Channel Box (2 x 177.8 x 58.4 x 9.98 tk) mm, aprox weight 150 kg/mtr and includes Seal-off Bushing, Rubber Bellows, Aluminium Splice Plate & Flexibles, Copper Flexibles, Support Steel Structure, Space Heater arrangemnt, Grounding.	--		
C.2.1. 1,C.2. 1.2, C.2.1. 3,C.2. 1.4, C.2.1. 5,C.2. 1.6, C.2.1. 7,C.2. 1.8	11 kV, 4000Amp	Mtrs	726	.0728161
C.2.2.	3.3 kV / 11kV-3150 A SPBD BUSDUCT, SIZE - 3.15tk x 450 mm (height) x 1350 mm (width) x 3720 mm (length) for standard size, Conductor size - Channel Box (2 x 127 x 47.8 x 8 tk) mm, aprox weight 125 kg/mtr and includes Seal-off Bushing, Rubber Bellows, Aluminium Splice Plate & Flexibles, Copper Flexibles, Support Steel Structure, Space Heater arrangemnt, Grounding.	--		

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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
C.2.2.1, C.2.2.2, C.2.2.3	3.3 kV, 3150Amp	Mtrs	144	.0138068
III	ERECTION AND COMMISSIONING OF HT SWITCHGEAR	--		
D.1	11 kV Switchgear	--		
D.1.1	Unit SWBD (5BA) 4000 A Overall panel sizes 16980 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1220 mm - 1600 kg;1640 mm - 2500 kg; approx.	SET	1	.0074792
D.1.2	Unit SWBD (5BB) 4000 A Overall panel sizes 16160 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;1640 mm - 2500 kg;2040 mm - 3500 kg; approx.	SET	1	.007057
D.1.3	Station SWBD (0BE) 4000 A Overall panel sizes 14100 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;1640 mm - 2500 kg;2040 mm - 3500 kg; approx.	SET	1	.0061848
D.1.4	Station SWBD (0BF) 4000 A Overall panel sizes 11640 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;1640 mm - 2500 kg;2040 mm - 3500 kg; approx.	SET	1	.0050969
D.2.	3.3 kV Switchgear	--		
D.2.1	Unit Aux SWBD (5CA) 3150 A 2X12900 (L) x2349 (D) x2805 (H). Approximate weight of shipping sections 600 mm - 200 kg;820 mm - 1250 kg;1640 mm - 2500 kg; approx.	SET	1	.0113168

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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	ERECTION AND COMMISSIONING OF CONTROL PANEL SYSTEM	--		
D.3.1	Fast Bus Transfer System Panels for 11 KV SWGR size 800 (w) x 800 (d) x 2295 (h) weight 300 kg approx, along with accessories computers, printers,table, checking of pre assembled LIUs, communication cables etc.	SET	2	.0023541
D.3.2, D.3.3	Earthing Trucks (feeders and busbars)	SET	8	.001371
D.3.4	Protection panel for Generator, Generator Transformer & Unit Transformer with associated loose supplied items	SET	1	.0031902
D.3.5, D.3.6	Data concentrator panels along with loose items size 800mm(W) x800mm(D) x 2000mm(H) aprox weight 200kg	SET	2	.003433
E.7.8	11 kV Neutral Ground Resistor (NGR) with NGR Cubicle of size 3500x3000x2000 and with Supporting Structures.	SET	3	.0035715
E.7.9	3.3 kV Neutral Ground Resistor (NGR) with NGR Cubicle of size 2000x1500x800 and with Supporting Structures.	SET	6	.0071429
E.8.1	Generator circuit breaker (GCB) below generator Rating 22244 A, 27 kV size app. 8500mm x 6175mm x 3457mm along with centralizing cubicle and overall weight - 13000 kg.	SET	1	.0087814
F.6	Unit Control Panel(UCP)- approx panel size 1448(w) x1000(d) x 2355(h) approx weight 900 kg	No.	1	.0011905
F.7	Unit Electrical Control Panel(UECP)- approx panel size 3128(w) x 1000(d) x 2415(h) , approx weight 900 kg	No.	1	.0011905
F.8,F. 9	SCADA (CYJ-01) electrical interface system size 800(w) x800(d) x 2067(h) approx weight 400 kg along with accessories	SET	1	.0012

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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	Digital AVR consisting of 2No. Regulation cubicle, 2 Nos. 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: 4804x 800x 2295 mm Aproximate wt. : 3000 Kg. * Lump sum rate to be quoted.	SET	1	.0037634
V	LAYING OF HT CABLES 11KV (UE) ARMOURED; ALUMINIUM CONDUCTOR ,XLPE INSULATED PVC/FRLS OUTER SHEATHED CABLE.	--		
E.1.1	1C x 630 sqmm (AL)	Mtrs	30,000	.0733886
E.1.2	1C x 240 sqmm (AL)	Mtrs	2,800	.0034248
E.1.3	3C x 240 sqmm (AL)	Mtrs	13,100	.0373874
VI	LAYING OF HT CABLES 3.3KV (UE) ARMOURED; ALUMINIUM CONDUCTOR ,XLPE INSULATED PVC/FRLS OUTER SHEATHED CABLE.	--		
E.2.1	3C x 185 sqmm (AL)	Mtrs	7,650	.0200137
E.2.2	1C x 240 sqmm (AL)	Mtrs	7,600	.0149767
VII	Installation of Cable termination and joint kits for 11/11 KV (UE) GRADE, XLPE Insulated aluminium conductor armoured cables for the following sizes.	--		
E.3.1, E.4.1	Termination KIT/Joint KIT 11KV 1C-630 sqmm AL ARM (indoor) AL LUG	Nos.	122	.017111
E.3.2, E.4.2	Termination KIT/Joint KIT 11KV 1C-240 sqmm AL ARM (indoor) AL LUG	Nos.	135	.0114899

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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.3.3, E.4.3	Termination KIT/Joint KIT 11KV 3C-240 sqmm AL ARM (indoor) AL LUG	Nos.	65	.0097415
VIII	Installation of Cable termination kits and joint kit for 3.3 KV (UE) GRADE, XLPE Insulated aluminium conductor armoured cables for the following sizes.	--		
E.5.1, E.6.1	Termination KIT/Joint KIT 3.3 KV 1C-240 sqmm AL ARM (indoor) AL LUG	Nos.	43	.0056248
E.5.2, E.6.2	Termination KIT/Joint KIT 3.3 KV 3C-185 sqmm AL ARM (indoor) AL LUG	Nos.	73	.0104245
IX	INSTALLATION OF HOT DIP GALVANIZED STEEL FLATS	--		
E.7.1	GS FLAT 75 X 10 mm	Mtrs	9,560	.0367038
E.7.2	GS FLAT 50 X 6 mm	Mtrs	11,600	.0291652
E.7.3	GS FLAT 25 X 6 mm	Mtrs	1,666	.0036227
E.7.4	GS FLAT 25 X 3 mm	Mtrs	333	.000758
E.7.5	GS WIRE 8 SWG	Mtrs	5,400	.0007339
X	FABRICATION & ERECTION OF STRUCTURAL STEEL	--		
E.9.1, E.9.2, E.9.3, E.9.4	Structural Steel (ISMC, ISMB, ISA, etc)	MT	50	.0284924

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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	COMMISSIONING OF THE FOLLOWING ERECTED BY MECHANICAL CONTRACTOR	--		
E.10.1	Generator 800 MW - H.V. testing, meggering of Bushings & Accessories, resistance measurement, meggering including dry out of Generator and as per field quality plan.	SET	1	.0056843
E.10.2	Exciter dryer / heater	No.	1	.0001139
E.10.3	Generator Air Drier	No.	1	.0001139
E.10.4	CO2 Vaporizer	No.	1	.0000956
E.10.5	Exciter Stroboscope	No.	1	.0000956
E.10.6	11 KV HT drives	Nos.	12	.0047417
E.10.7	3.3 KV HT motor	Nos.	22	.0045544
XII	LAYING OF LT POWER / CONTROL CABLES 1.1KV, XLPE INSULATED, GALVANISED STEEL ARMOURED SINGLE/MULTICORE CABLES FRLS PVC. (AL/CU CABLES)	--		
F.2	3C x 50 sqmm copper (Excitation + power input)	Mtrs	800	.0004621
F.4	1Cx 70 sqmm copper (earthing)	Mtrs	100	.0000578
XIII	END TERMINATION OF LT POWER / CONTROL CABLES -1.1KV PVC/FRLS ARMOURED AL/CU CONDUCTOR PVC INSULATED, FRLS OUTER SHEATHED.	--		
F.3	3C x 50 sqmm copper (Excitation + power input)	Nos.	16	.0001473
F.5	1Cx 70 sqmm copper (earthing)	Nos.	4	.0000083

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XIV	LAYING AND TERMINATION OF INSTRUMENTATION CABLES	--		
D.3.7	OFC cable includes fixing of fibre optic components and termination kits LIU, face plates,cabinets,SC coupler,grounding etc	Mtrs	2,000	.001495
D.3.8	D link 4 pair PVC, CAT 5 Lan cable	Mtrs	2,000	.0004077
D.3.9	OFC Cable splicing	Nos.	100	.0003839
XV	ERECTION OF MISCELLANEOUS ITEMS	--		
E.7.6 & G.1	Flexible braided copper conductor with copper clamp for gate earthing & Earthing with MS earth rod 40 mm (Below ground earthing system)	Mtrs	172	.0004266
E.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	52	.0148125
TOTAL Weightage				1.0