

**TENDER SPECIFICATION
BHEL PSSR SCT 1897**

**FOR
Geo-technical investigation and topographical survey of
area of Flue Gas Desulphurisation Plants (FGD)**

At

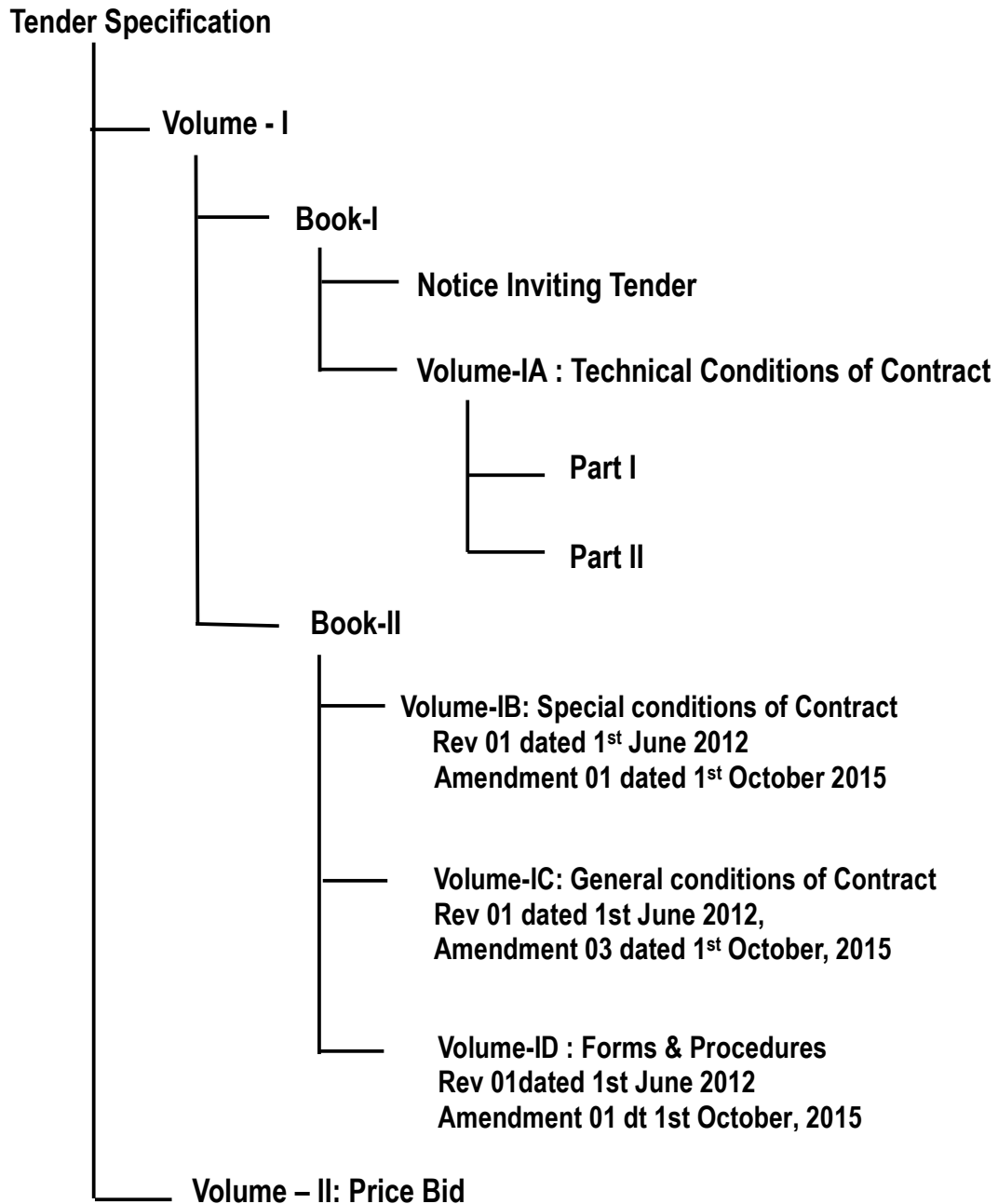
2 x 500 MW Tuticorin Thermal power station

**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



PRICE BID

CONTENTS	
Description	No. of pages
Part A : Instructions to the Bidders	01
Part B : Format to quote total amount	01
Part C: Bill of quantities with weightage for amount of each items with respect to the total quoted price	06

PRICE BID

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. Price Bid is to be quoted by the bidder and the successful bidder against this quote will be awarded the contract.
3. Bidders shall quote 'Total Amount' in the "Price Bid Form" available in e-Procurement portal.
4. The above mentioned 'Total amount' is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid.
5. Any other entry elsewhere in the price bid shall be treated as Null and Void.
6. The quantities given in the price bid are tentative and may change to any extent (both in plus side and minus side). The derived item rates (as mentioned above) for individual items shall remain firm irrespective of any variations in the individual quantities
7. 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.
8. Based on the quantities of individual item and the amount arrived in Sl. No: 7 above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.
9. 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 Sl No.8 above.

Part B: Format to quote Total Amount

**Tender Specification BHEL:PSSR:SCT:1897 for Topographical survey and geo-technical investigation works
at NTPL Tuticorin (2X500MW) FGD**

Total Amount for the entire Bill of Quantities(BOQ) given in Part C	In Figures Quoted
	In words Not Quoted

Note :

Bidders to quote Total Amount in this format given above, which shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope defined in specification and in accordance with all terms & conditions of tender.

Date

SIGNATURE OF BIDDER WITH SEAL

Part C : Bill of Quantities**Tender Specification BHEL:PSSR:SCT:1897 for Topographical survey and geo-technical investigation works
at NTPL Tuticorin (2X500MW) 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
A	TOPOGRAPHICAL SURVEY	--		
1.0	Carrying out bench mark from the nearest GTS bench mark or any other available source as approved by the engineer-in-charge to different locations in the project area including clearing of jungles and/or cutting trees and any other works required for completion of the said item etc all complete as per specification and instructions of the engineer-in-charge. (Construction of bench mark pillar to be paid separately)	km	5	.0081696
2.0	Carrying out topographical survey of plant and allied areas showing all permanent & general features and detailed contour survey by taking spot levels at 10m interval, carrying out cross section of canal/nallah/pipe corridor by taking spot levels at 5m interval or less including clearance of jungles and cutting of trees etc which are interfering with the survey works and any other field works necessary for the completion of the said item, preparation and submission of all plans (maps), reports, CD and originals etc all complete as per specification and instructions of the engineer-in-charge.	Hectare	4	.0233416
3.0	Construction of bench mark pillar/reference pillar/grid pillar at different locations including clearing of jungles, excavation, supply of materials, pillar marking, backfilling, white washing, painting on MS plate etc all complete as per specification, drawings and instructions of the engineer-in-charge.	--		
a	Bench mark pillar	Each	2	.0070025
b	Grid/reference pillar	Each	10	.0315112
B	GEO-TECHNICAL INVESTIGATION	--		
1.0	Mobilisation of necessary equipment, men and materials to the project site for carrying out the geotechnical investigation and demobilisation of the same after completion of all the field works etc all complete as per specification, drawings and as directed by the engineer-in-charge.	LS	1	.0811121

Part C : Bill of Quantities

**Tender Specification BHEL:PSSR:SCT:1897 for Topographical survey and geo-technical investigation works
at NTPL Tuticorin (2X500MW) 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
2.0	Making 150mm nominal diameter bore hole up to a maximum depth of 10 m below ground level at various locations in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 1.0m interval alternate to collection of undisturbed soil samples up to 10m depth below ground level and at every 1.5m interval alternate to collection of undisturbed soil samples beyond 10 m depth, at change of strata and at depths wherever undisturbed soil samples could not be collected; collection of undisturbed sample (UDS) at every 1.0m interval alternate to conducting standard penetration test up to 10 m depth below ground level and at every 1.5m interval alternate to conducting standard penetration test beyond 10 m depth; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer-in-charge.	M	288	.1025164
3.0	Core drilling (Nx size) up to a maximum depth of 30 m below ground level at various locations in rock using hydraulic feed rotary drill and double tube core barrel with diamond bit including collection of core samples, performing SPT at locations where core recovery is less than 20%, maintaining continuous record of core recovery and RQD, keeping the cores in wooden core boxes, transporting the cores to laboratory, back filling the holes with 1 part of cement : 3 part of sand grout on completion of the same etc all complete as per specification, drawings and as directed by the engineer-in-charge.	M	452	.2901363
4.0	Excavating trial pit of size 3m x 3m at various locations up to a maximum depth of 3m below ground level in all types of soil which can be excavated with pick axe/crow bar etc including sheeting or shoring the sides for the purpose of stability, dewatering and maintaining the pit dry at all times, collecting disturbed/undisturbed samples and conducting field density test at 1m interval, starting from 1m depth below ground level and transporting all the collected samples to the laboratory; backfilling of the pit with excavated material etc all complete as per specification and as directed by the engineer-in-charge.	cum	450	.0420149

Part C : Bill of Quantities

**Tender Specification BHEL:PSSR:SCT:1897 for Topographical survey and geo-technical investigation works
at NTPL Tuticorin (2X500MW) 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
5.0	Conducting plate load test in various locations at specified depth below ground level complete as per specification, drawings and as directed by the engineer-in-charge. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per item no.4.	Each	4	.0483171
6.0	Conducting cyclic plate load test in various locations at specified depth below ground level complete as per specification, drawings and as directed by the engineer-in-charge. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per item no.4.	Each	3	.0131297
7.0	Conducting electrical resistivity test at various locations complete as per specification, drawings and as directed by the engineer-in-charge.	Each	10	.0116708
8.0	Conducting pump in type field permeability test by constant head or falling head method (suitability of type of test shall be as per site conditions) in a borehole at 1.0m, 3.0m, 5.0m, 8.0m & 12m depth below ground level including providing packers as required etc all complete as per specification, drawings and as directed by the engineer-in-charge. Cost of the borehole and backfilling etc shall be paid separately as per item no.2.	Each	4	.0116708
9.0	Conducting cross hole shear wave test in bore hole in all types of strata at 2m, 4m, 6m, 8m, 10m, 12m, 15m, 18m & 20m depth below ground level including drilling and preparation of required number of bore holes, providing PVC liner, grouting and backfilling with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer-in-charge.	Each	2	.1108727
10.0	Conducting pump out type field permeability test below water table in a well including boring/drilling/preparation of 400mm diameter well up to specified depth, installing 250mm diameter GI/MS perforated pipes, providing and installing observation pipes of 50mm diameter at regular intervals along three radial lines and backfilling the same with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer-in-charge.	Each	1	.0612717

Part C : Bill of Quantities

**Tender Specification BHEL:PSSR:SCT:1897 for Topographical survey and geo-technical investigation works
at NTPL Tuticorin (2X500MW) 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
11.0	Conducting pressure meter test in bore hole at 2m, 4m, 6m, 8m, 10m, 12m, 15m, 18m, & 20m depth below ground level in all type of strata including drilling and preparation of bore hole of required size etc all complete as per specification, drawings and as directed by the engineer-in-charge.	Each	2	.0548528
12.0	Conducting laboratory test on soil samples at an approved laboratory including preparation of soil samples to determine the following properties etc all complete as per specification.	--		
a	Bulk density and moisture content	Each	75	.0052519
b	Sieve analysis	Each	75	.0052519
c	Hydrometer analysis	Each	15	.0010504
d	Liquid limit and plastic limit	Each	75	.005033
e	Shrinkage limit	Each	10	.0007002
f	Specific gravity	Each	25	.0018965
g	Swell pressure	Each	5	.0003793
h	Free swell index	Each	5	.0005835
i	Relative density	Each	5	.0003793
j	Unconfined compressive strength	Each	10	.0007586
k	Direct shear test	Each	10	.0009337
l	Triaxial shear test	--		
(i)	unconsolidated undrained test	Each	5	.0003939

Part C : Bill of Quantities

**Tender Specification BHEL:PSSR:SCT:1897 for Topographical survey and geo-technical investigation works
at NTPL Tuticorin (2X500MW) 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
m	One dimensional consolidation test	Each	8	.000817
n	Standard Proctor compaction test	Each	10	.0016923
o	CBR test	Each	5	.0008461
p	Chemical analysis	Each	5	.0005835
13.0	Conducting laboratory test on rock samples including preparation of the samples to determine the following properties etc all complete as per specification.	--		
a	Moisture content, porosity & density	Each	75	.0061272
b	Specific gravity	Each	25	.0018236
c	Slake durability index	Each	25	.00248
d	Unconfined compressive strength (both at saturated and in situ water content)	Each	25	.00248
e	Point load strength	Each	50	.0040848
f	Hardness	Each	25	.0020424
g	Soundness	Each	30	.0024509
h	Deformability (both at saturated and in situ water content)	Each	30	.0052519
14.0	Conducting chemical test on water samples to determine the carbonate, sulphate, chloride and nitrate contents, pH value, turbidity, organic matter and any other chemicals harmful to foundation material etc all complete as per specification.	Each	5	.0011671
15.0	Preparation and submission of draft report in 3 copies and final report in 6 hard copies and 2 soft copies on CD after the approval of draft report including all field records, laboratory test results, graphs, analysis of test results, photo graphs showing details of field tests/soil/rock samples/Trail pits and recommendation etc all complete as per specification.	LS	1	.0466832

Part C : Bill of Quantities

**Tender Specification BHEL:PSSR:SCT:1897 for Topographical survey and geo-technical investigation works
at NTPL Tuticorin (2X500MW) 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
216.0	Chipping of concrete in reinforced concrete work, cutting pockets, making openings at all levels and according to shapes, disposal of waste materials upto a lead of 2 km as directed by engineer in-charge including equipment, safety precautions, making good the broken surface etc all complete as per specification, drawing, instructions of engineer in- charge but excluding cutting of reinforcement.	cudm	50	.0012155
217.0	Extra over and above st. no. 216 for cutting of reinforcement, all sizes and types including labour, equipment, return of cut reinforcement to store etc all complete as per specification, drawings and instructions of engineer in- charge. Measurement shall be on the cross sectional area of reinforcement.	sqcm	50	.0000522
TOTAL Weightage				1.0