

TENDER SPECIFICATION

SI No	Tender Specification Number	Unit Number & Project
1	BHE/PW/PUR/MANUT-CVL Chimney Pkg-A (U-1&2) /1435	Chimney, Package-A (Unit-1&2)

PACKAGE A- CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY ,INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNIT 1 & 2 AT 4X 270 MW BHADRADRI TPS,TELENGANA.

PRICE BID - VOLUME- II

TENDER SPECIFICATIONS CONSISTS OF:

- Notice Inviting Tender
- Volume 1 A - Technical Conditions of Contract,
- Volume 1 B - Special conditions of Contract,
- Volume 1 C - General conditions of Contract
- Volume 1 D - Forms & Procedures



Bharat Heavy Electricals Limited
(A Government of India Undertaking)
Power Sector - Western Region
345-Kingsway, Nagpur-440001

Date

Seal and Signature

TENDER SPECIFICATION

SI No	Tender Specification Number	Unit Number & Project
1	BHE/PW/PUR/MANUT-CVL Chimney Pkg-A (U-1&2) /1435	Chimney, Package-A (Unit-1&2)

PACKAGE A- CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY ,INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNIT 1 & 2 AT 4X 270 MW BHADRADRI TPS,TELENGANA.

EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR Refer Notice Inviting Tender
TENDER SUBMISSION .

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING VOLUME-I AND VOLUME- II ARE ISSUED TO:

M/s.

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PLEASE NOTE:
THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

For Bharat Heavy Electricals Limited

ADD. GENERAL MANAGER (Purchase)

Place: Nagpur

Date :

Date

Seal and Signature

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Volume II Price Bid

SI No	Tender Specification Number	Unit Number & Project
1	BHE/PW/PUR/MANUT-CVL Chimney Pkg-A (U-1&2) /1435	Chimney, Package-A (Unit-1&2)

Part A: Instructions to the Bidders

1. **Bidders shall quote One Total Lumpsum Price for the entire scope of work in the format given in PART C in the price bid.** Any other entry elsewhere in the price bid shall be treated as Null and Void.
2. BHEL has fixed the % weightages for the amount of individual items of Schedule of Quantity w.r.t the total quoted price in PART B of Price Bid.
3. Based on the pre-fixed % weightages, amount of individual items shall be derived by BHEL. This amount shall not be rounded off.
4. Based on the quantities of individual item and the amount arrived in SI No 3 above, item rate of individual items shall be derived by BHEL. This item rate shall be rounded off to two decimal places.
5. The item rates thus derived as in SI No 4 above, shall be multiplied with respective quantities to arrive at the amount and grand total amount which shall be considered for award of work.
6. For the convenience of bidders, BHEL has issued an excel sheet with all requisite formulae as detailed above. However this excel sheet shall not form part of contract document.
7. **This is a combined tender for Construction 2 Nos Chimney Package-A (Unit 1 & 2) and Package-B (Unit 3 & 4) of height 275 Mtr each at 4X 270 MW BHADRADRI TPS,TELENGANA.**
 - i Tender specification (Volume I) is common for both Packages i.e. **Package-A (Unit 1 & 2) and Package-B (Unit 3 & 4).**
 - ii **Package-A (Unit 1 & 2) and Package-B (Unit 3 & 4)** shall be awarded to separate agencies.
 - iii **Bidder has to submit their Price for Package-A (Unit 1 & 2) Construction of a Chimney of 4X 270 MW BHADRADRI TPS,TELENGANA as indicated in the Price Bid.**
 - iv L-1 Bidder shall be considered for award of **Package-A (Unit 1 & 2).**
 - v For award of **Package-B (Unit 3 & 4)**, next bidder in the order of their price competitiveness (i.e L-2, then L-3 and hence forth) shall be given an option to match their price/rate, with the Awarded/Finalised price/rate of **Package-A (Unit 1 & 2)**. In case none of the bidders agree to match the Awarded price/RATE of **Package-A (Unit 1 & 2)**, then BHEL may consider

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awarding the **Package-B (Unit 3 & 4)**, to L-1 bidder or opt any other suitable method to finalize Package-B (Unit 3 & 4).

Date

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PART B: % weightage for amount of individual items of Schedule of quantity w.r.t. the total quoted price ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY

PACKAGE A: CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY, INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNITS # 1 & 2 at 4X270 MW BHADRADRI TPS.

SL. No.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
Service Part				
CIVIL WORKS				
1	Earth work in excavation in all types of soil including moorum, ash which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 500 m, spreading/levelling of disposed materials etc all complete for following depths below ground level including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge			
a	Depth from ground level but not exceeding 2 m	cum	4818	0.1797189561
b	Depth exceeding 2 m but not exceeding 4 m	cum	4110	0.208490461
c	Depth exceeding 4 m but not exceeding 6 m	cum	3235	0.213576276
d	Depth exceeding 6 m but not exceeding 8 m	cum	1450	0.140619908
e	Depth exceeding 8 m but not exceeding 10 m	cum	1025	0.100168372
3	Earth work in excavation in soft rock (rock without any recovery of excavated materials in the form of hard stone/boulder) including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc but does not require chiselling or blasting including setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 500 m, spreading / levelling of disposed materials etc all complete for following depths below ground level including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.			
a	Depth from ground level but not exceeding 2 m	cum	0	
b	Depth exceeding 2 m but not exceeding 4 m	cum	500	0.043267664
c	Depth exceeding 4 m but not exceeding 6 m	cum	1050	0.10809456
d	Depth exceeding 6 m but not exceeding 8 m	cum	650	0.076128709
e	Depth exceeding 8 m but not exceeding 10 m	cum	650	0.08243236
7	Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with selected materials from compulsorily excavated soil available within a lead upto 500m and compacted as specified including re-excavation of stacked earth, watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.			
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	cum	1216	0.03764585160
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	4345	0.13451581020
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	1216	0.03492446470
9	Extra over item No. 1 and 3 to 7 for carriage of excavated earth/selected materials for every 1 km or part thereof beyond an initial lead of 500m.	cum	5200	0.069825058
10	Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with approved borrowed soil (borrowed soil to be arranged by the bidder) and compacted as specified including supplying borrowed soil, royalty (if any), watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.			
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	100	0.010481219

PART B: % weightage for amount of individual items of Schedule of quantity w.r.t. the total quoted price ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY

PACKAGE A: CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY, INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNITS # 1 & 2 at 4X270 MW BHADRADRI TPS.

SL. No	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
11	Supplying and filling sand upto any depth below grade slab, around foundations, etc. in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-IV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.	cum	281	0.068127921
12	Supplying and laying (inside chimney in the space below the grade level slab) crushed rock (63mm down graded) and sand fill in layers no more than 150 mm thick each and thoroughly compacted by compacting equipment and by water flooding to achieve maximum density for all leads and lifts including all labour, materials, equipment etc. complete as per drawings, specifications and directions of the Engineer.	cum	479	0.278718355
13	Providing and laying Nominal Mix plain cement concrete (1:3:6) with graded aggregate (with maximum size of coarse aggregate not exceeding 40 mm) at all levels for all kinds of work like mass concrete, lean concrete, mudmat, filling etc. including labour, materials, equipment, handling, transporting, batching, curing, testing etc. all complete as per specifications, drawings and instructions of the Engineer. (CEMENT SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	cum	190	0.18156753
14	Providing and laying design mix cement concrete with graded aggregate (maximum size of coarse aggregate not exceeding 20 mm) for reinforced concrete work at all levels for all kinds of work, including labour, materials, equipment, handling, transporting, batching, mixing, placing, levelling, compacting, curing, testing etc. and rendering or cleaning and finishing the exposed surface with cement mortar (1:3) to give smooth and even surface, all complete as per specifications, drawings and instructions of the Engineer, but excluding all formwork and reinforcing steel: (CEMENT SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)			
i	For all works below ground level (except chimney shell)			
a	Grade M-25 (foundations, etc)	cum	5984	8.251758214
ii	For all other works			
a	Grade M-20 (grade level slab)	cum	84	0.115802173
b	Grade M-30 for chimney shell, corbels and external platforms and other shell attachments.	cum	10217	16.15064252
15	Providing and applying two coats of bitumen grade 85/25 as per IS 702 (@ 1.7kg/sqm) with 1% antistripping compound conforming to IS 6241 in foundation, shell, pedestal etc on concrete surfaces exposed to soil / ash including surface preparation etc. all complete.	Sqm	1450	0.080045178
16	Taking delivery of structural steel from BHEL stores and transporting to site, providing and placing reinforcement, for reinforced concrete work at all levels, for all kinds of work, including transportation, cleaning, derusting, straightening, cutting, bending, binding in position with annealed wire and/or welding, providing concrete cover blocks, pins, separators, chairs, supports for reinforcement, etc. with all materials, labour, equipment, handling, transporting, testing, etc. preparation of bar bending schedules, all complete as per specifications, drawings and instructions of the Engineer.(Reinforcement steel SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)			
i	For all works below ground level (except chimney shell)			
a	High strength deformed bars	Mt	688	2.548256528
ii	For all other works			
b	High strength deformed bars	Mt	1175	5.278981374
17	Providing and fixing formwork of approved quality for cast-in-situ, plain or reinforced concrete works of any type and section (including curved surfaces and chimney shell) for all elevations, including labour, materials, equipment, waste of forms, shoring, strutting, scaffolding, staging, tying, nailing, caulking, bolting etc. and removal of form work and staging etc. all complete as per specifications, drawings and instructions of the Engineer.			
	For all works below ground level (except chimney shell)	Sqm	1903	0.220042181
	For all other works			
a	Inner and outer faces of wind shield with slip form shuttering	Sqm	30748	13.99207621

PART B: % weightage for amount of individual items of Schedule of quantity w.r.t. the total quoted price ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY

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SL. No.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
b	All other components of the superstructure including slabs, beams, columns, walls, enclosures, mini shells, external platforms, corbels, other shell attachments, chases/recesses in shell etc.	Sqm	774	0.433049637
18	Providing and fixing formwork in shell openings (above 0.1 sq.m surface area) including cutting, formation of shapes and all other operations required for making the required shape and size, removal of formwork, all complete as per specifications, drawings and instructions of the Engineer.	Sqm	117	0.065460992
19	Providing and placing in position at all levels, building paper (kraft paper) , as per IS:1397, between concrete surfaces including the cost of labour, material, etc. complete as per drawings and instruction of the Engineer.	Sqm	60	0.00134279
20	Providing and installing, at all levels, bitumen impregnated fibre boards , 12 mm thick, conforming to IS:1838, as joint filler at joints in concrete, including nailing, coating of both faces with coal tar pitch/bitumen, including the cost of all labour, material and equipments etc., complete as per drawings, specifications and instructions of the Engineer.	Sqm	34	0.012517037
21	Providing and filling, at all levels, bitumen sealing compound (hot applied type) conforming to IS:1834, for sealing gaps and joints in concrete, including cleaning, mixing, heating, pouring or injecting, application of primer, cost of all labour, material and equipments etc., complete as per drawings, specifications and instructions of the Engineer.	Kg	508	0.047370632
22	Preparing detailed fabrication drawings and after approval by the Engineer, supplying, fabricating, erecting and installing miscellaneous steel parts to be embedded/cast in concrete (like staircase embedments, corbel face plates, etc) at all positions and levels including the cost of all labour, materials and equipments for setting materials in concrete, grouting, welding, bolts & bolting, expansion anchors, drilling, cutting, etc. complete as per drawings and specification. ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR. Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %	Mt	6	0.273626945
23	Taking delivery of structural steel from BHEL stores and transporting to site ,Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting structural steel work for the stair case (from grade level to roof level), internal platforms, walkway gallery structures,chequered plate panels (for floors of internal and external platforms), treads and landings of the staircase including brackets, kick plates, structural members, beam support bearings on the shell, stiffeners, seats, blockouts, ready to bolt fixtures, cost of all labour, material and equipment, transporting, lifting to all heights, setting in place, welding to cast in fixing place, cutting, grinding, drilling, bolts and bolting, anchor fasteners, welding, preheating and post heating for welding , testing, Shot blasting to near white metal surface as per customer specifications,primer and finish painting the structures shall be painted first with two coats of red oxide zinc chromate paint of each 25 micron (min) thick confirming to IS:2074 and then with two coats of synthetic enamel painteach of 30 micron (min) thick as per IS 2932 & 2933 of etc.etc. complete as per drawing and specifications. Payment Terms : a) Fabrication : 65 %, b) Erection : 15 %, c) Alignment : 10 % d) Painting: 10% (STRUCTURAL STEEL SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	Mt	341	7.097314277
24	Supplying, fabrication, erection and alignment of factory made galvanised welded grating units with mild steel conforming to IS:2062 in platforms, staircases with edge binding strips and anti-skid nosing in treads etc. including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete. Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %	Mt	87	3.569582276

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SL. No.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
25	Providing and fixing in positing of high strength structural bolts (of property class 8.8 and product grade 'C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class '8' as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work etc all complete. Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %	Quintal	50	0.416413966
26	Taking delivery of structural steel from BHEL stores and transporting to site, Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and erecting, at all levels, structural steel flues (liners) complete with all bends, flanges, stiffeners, all other flue attachments, support system, collars, access manholes and gas sampling ports alongwith gaskets and other accessories, staying system, including the cost of all labour, material and equipment, transporting, lifting to all heights, setting in place, cutting, grinding, drillings, bending, bolts and bolting, welding, preheating and post-heating for welding, testing, etc. complete as per drawings and specifications. Payment Terms : a) Fabrication : 65 %, b) Erection : 15 %, c) Alignment : 10 % d) Painting: 10% (STRUCTURAL STEEL SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	Mt	829	13.8991962
27	Providing, fabricating and installing at various locations and elevations of the chimney system the following miscellaneous mild steel items complete with the cost of all labour, material and equipment, transporting, lifting, setting in place, cutting, grinding, drilling, welding, bolts and bolting, anchor fasteners and anchoring, priming, painting, grouting etc. complete as per drawings and specifications:			
a	Mild steel ladders with cage, hood access hatch, louvers, bird screens, hood drain basin covers and other miscellaneous mild steel items not specifically mentioned.	Mt	17	0.831298643
b	32/40 mm nominal bore medium class tubular hand railing for stair case and internal and external platforms.	Mt	24	1.250092331
c	Providing minimum 275 gsm Hot dipped galvanisation on mild steel parts as per specification.	Mt	17	0.316698785
28	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting, at all levels, mild steel strakes complete with all stiffeners, attachments, fasteners, pipe sleeves, etc. including the cost of all labour, material and equipment, transporting, lifting to all heights, setting in place, embedding components in concrete, fixing to cast-in embedments, cutting, grinding, drilling, bolts and bolting, welding, preheating and post heating for welding, testing, grouting, primer and finish painting of exposed components, etc. complete as per drawing and specifications.	Mt	25	0.606120292
29	Supplying, fabricating and installing in the liners, gas sampling and gas opacity measurement ports made from SS grade 316L pipe including the cost of all labour, materials, bolts and bolting, asbestos gaskets, cover plates & all other accessories, painting etc., complete as per drawings and specifications.	Each	10	0.062588914
31	Taking delivery of structural steel from BHEL stores and transporting to site, Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing at all levels, stainless plates (including stainless steel screws and fasteners) of grade AISI 316L and lead sheets beams and over the mild steel in the platform beam bearing, flue supports bearings, flue restraints brackets/ buffers etc. including the cost of all labour material & equipment, transporting, lifting to all heights, setting in place, cutting, grinding, drilling, welding of stainless steel using compatible & approved stainless steel electrodes, testing & machining flat and polishing the contact surfaces of stainless steel, coating the polished surfaces with silicone grease, etc., complete as per drawings and specifications. (Stainless steel will be supplied by BHEL as per TCC)			
a	Stainless steel components.	Mt	0.24	0.003813522

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SL. No.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
b	Lead Sheets.	Kg	80	0.012383504
32	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing expansion compensator joints including bolster in the flue liner including all labour, material and equipment transporting, hoisting, fixing in position, drilling, cutting, bolts and bolting, etc. along with the user handbooks (giving details of installation, dismantling and maintenance procedures for the expansion joints), testing, etc complete as per drawings and specifications.	Sqm	103	1.151216394
33	Supplying ,Fabricated Ready to Install, spare expansion compensators alongwith bolster including the cost of all labour, material and equipment, accessories, transporting, proper packaging (for several years of storage), and delivery to site store complete in all respects as per drawings and specification.	Sqm	30	0.257927497
34	Supplying and laying in position shaped acid resisting bricks conforming to class - I of IS:4860 at all elevations for liner, baffle wall construction (with sloped A/R mortar toppings over brick work) complete including the cost,of all labour, material and equipment, raking joints, flush pointing, cleaning, curing, etc. complete as per drawings and specifications.	Cum	21	0.365680765
38	Supplying and laying vermiculite concrete in the liner basin including the cost of all labour, material and equipment for handling, transporting, mixing, lifting, placing, curing, finishing of surface etc. complete as per drawings and specifications.	Cum	10	0.120011818
40	Supplying, fabricating & installing, at all levels mild steel circumferential reinforcing bands around the brick liners at all elevations including the cost of all labour, transportation, materials & equipments, lifting to all heights, setting in place, a/r mortar fill behind bands, cutting, bending, drilling, grinding, bolts and bolting,priming, finish painting, etc. complete as per drawings and specification.	Mt	1	0.024244812
41	Providing, fabricating and installing, at all levels, chemical lead sheet (2 mm thick) at expansion joints between brick lining segments including the cost of all labour, transportation, material & equipments, cutting, soldering of joints, testing etc. complete as per drawings and specifications.	Kg	50	0.007366693
42	Supplying and installing ready mix castable refractory concrete at opening of chimney shell baffle wall and at other locations including all necessary arrangement for keeping them in position as per drawings and approval of Engineer.	Cum	5	0.046139742
43	Providing, laying and packing, at all levels, asbestos ropes at expansion joints including the cost of all labour material, etc. complete as per drawing and specifications.			
a	25 mm (diameter) at expansion joints between brick lining segments.	Rm	118	0.022446966
b	12 mm (diameter) at expansion joints between brick lining segments.	Rm	709	0.063469187
44	Providing, fabricating and laying in position asbestos mill boards , over the mini shells below the cast iron cap segments, in between the cap segments and wherever as directed by the engineer, including the cost of all labours, material and equipment, cutting, drilling, etc., complete as per drawings and specifications.			
a	25 mm thick asbestos mill boards.	Sqm	7	0.004268952
b	3 mm thick asbestos mill boards.	Sqm	1	0.000257368
45	Supplying, fabricating and installing, on top of the mini shells, grey cast iron caps complete including the cost of all labour, material and equipment, transporting, test assembling, drilling, lifting to position, setting in place, bolts and bolting, inclusive of bronze rag bolts bronze bolts and nuts, brass washers, non-shrink grout, primer and finish painting, etc., complete as per drawings and specifications.	Mt	1.85	0.103389388
46	Providing and installing, at all levels, resin bonded glass wool insulation slabs of density not less than 64 kg/m3 with an installed thickness of not less than 100 mm, on the outside surface of steel flue liners,on the outside surface of brick liner, on the inside surface of concrete windshield, inside surface of concrete minishells, under the cast iron caps and wherever as directed by the Engineer, in two layers (each 50 mm thick) including the cost of all labour, material and equipment, transporting, lifting to all heights, etc., inclusive of plated or galvanised accessories such as pins/studs/anchors/wire netting, speed washers, tying wires, etc. welding of pins/studs to steel surfaces or embedding of pins/studs/anchors in concrete surfaces, fixing, cutting, cutting, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	4054	3.629112613

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SL. No.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
47	Providing and installing, at all levels, resin bonded rock wool insulation slabs of density not less than 100 kg/cu.m with an installed thickness of not less than 100 mm, on the outside surface of steel flue liners, on the outside surface of brick liner, on the inside surface of concrete windshield, inside surface of concrete minishells, under the cast iron caps and wherever as directed by the Engineer, in two layers (each 50 mm thick) including the cost of all labour, material and equipment, transporting, lifting to all heights, etc., inclusive of plated or galvanised accessories such as pins/studs/anchors/wire netting, speed washers, tying wires, etc. welding of pins/studs to steel surfaces or embedding of pins/studs/anchors in concrete surfaces, fixing, cutting, cutting, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	4054	2.84280488
48	Providing and packing, at all levels, loose glass wool insulation to a density not less than 64 kg/m ³ between the insulated minishells and brick liners at expan joints between the lining segments and wherever as directed by the Engineer including the cost of all labour, material and equipment, filling, ramming, testing, etc. complete as per drawings and specifications.	Cum	5	0.045319148
49	Providing and packing, at all levels, loose rock wool insulation to a density not less than 100 kg/cu.m between the insulated minishells and brick liners at expanjoints between the lining segments and wherever as directed by the Engineer including the cost of all labour, material and equipment, filling, ramming, testing, etc. complete as per drawings and specifications.	Cum	5	0.020421591
50	Providing and painting, at all levels, inside surface of chimney shell, inside and outside surfaces of minishells, underside of roof slab and other concrete components/surfaces of the chimney as indicated in the drawings and wherever as directed by the Engineer, with acid and heat resisting black bituminous paint (conforming to type I(i) of IS:158) in as many number of coats (not less than four coats in any case) as required to give a paint DFT of not less than 150 microns including the cost of all labour, materials, equipment, surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specifications.	Sqm	14887	1.055033496
52	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with cement based paint in alternate bands of colours 'signal red' and 'pure/bright white including the cost of all labours, material and & equipment, surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specification.	Sqm	12922	1.397761884
54	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with acid and heat resistant polyurethane paint in alternate bands of colours 'signal red' and 'pure/bright white including the cost of all labours, material and & equipment surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specification.	Sqm	2198	0.282847433
55	Proving and laying over the chimney roof, a comosite acid and heat protection treatment including providing of slopes for roof drainage including the cost of all labour, material and equipment, etc., complete as required for preparing the roof concrete, laying under bed of plain cement concrete screed to slopes, preparation of screed surface for painting, painting the screed surface with black bituminous paint, applying bitumenmastic in layers, laying acid resisting(A/R) mortar bed and laying 75 mm thick acid resisting(A/R) bricks with A/R mortar, curing, pointing(with phenolic based A/R cement), protection and cleaning, finishing, etc., complete as per drawing and specifications.	Sqm	170	0.204495662
56	Providing, fitting& fixing, outlet and overflow, cast iron roof drain heads (with gratings) in chimney roof including sockets, adapters, brackets, hangers, supports, etc., casting-in and jointing to 150 mm nominal bore rainwater pipes, grouting, etc. including the cost of all labour material and equipement, transporting, lifting, setting in place, painting, etc. complete as per drawing and specifications.	Each	8	0.042984186
a	150 mm nominal bore cast iron pipes.	Rm	32	0.030734961
b	150 mm nominal bore medium class galvanised mild steel pipes.	Rm	550	0.689298646

PART B: % weightage for amount of individual items of Schedule of quantity w.r.t. the total quoted price ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY

PACKAGE A: CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY, INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNITS # 1 & 2 at 4X270 MW BHADRADRI TPS.

SL. No.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
58	Providing and laying 50 mm thick cement concrete flooring (comprising of 12 mm thick mettalic concrete hardener topping over 38 mm thick under bed of concrete) over the grade level slab inside the chimney, including the cost of all labour, material and equipment, etc. complete as required for preparation of base, laying underbed and topping, finishing, rounding of edges, corners and junctions, curing, testing, etc. complete as per drawing and specifications.	Sqm	562	0.094330967
59	Providing and installing an electrically operated grill type steel roll-up door (with the bottom 0.5 metres of the curtain in solid type) at chimney base, in opening of size 7 m by 7 m, with all hardware and mechanisms, fittings and fixtures, locking arrangements, frames, fasteners, gear handle arrangement for standby manual operation, all electrical accessories such as motors, control systems, cables, etc. including the cost of all labour, material and equipment, fixing in position, grouting primer and finish painting, testing, etc., complete as per drawing and specifications.	Each	1	0.157624846
60	Providing and installing at any level and location, mild steel, double plate, personnel access doors , in shell openings of size 1.1m by 2.15m, complete with all fittings and fixtures, locking arrangements, frames, fasteners including the cost all labour, material and equipment, lifting to all heights, setting in place, grouting primer and finish painting, etc., complete as per drawing and specifications.	Each	8	0.107467925
a	Hood Access Hatch	Each	1	0.007037709
66	Erection and commissioning of one number Rack & Pinnion Type stack Elvator of proven make after obtaining approval from BHEL/ TSGENCO from ground upto top of chimney with landing at various platform level complete as per spec. and drawings.	Lumpsum	1	1.263489902
ELECTRICAL/MECHANICAL ERECTION WORKS ETC. (BIDDER TO QUOTE RATES FOR ERECTION AND COMMISSIONING ONLY)				
1	415V, 200A, 50 KA for 0.25 sec, 3-phase 4 wire AC Distribution Board with 1No. incomer (MCCB) & 9 nos. of 100A (TPN) outgoing complete in all respects.	No.	1	0.006531179
2	415V, 200A, 3-phase 4 wire AC Emergency Lighting distribution board alongwith 50KVA lighting transformer (415/433 V, Dyn11, Z=4%, ±2x2.5% Off Ckt. Tap) with 2 nos. of incomers with auto changeover facility using contacts and 6 nos. 100A MCCB (TPN) outgoings complete in all respects.	No.	1	0.004898571
3	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A MCCB (TPN) Incomer ,			
	(a)18 outgoing (16A SP MCBs)	No.	2	0.005715062
	(b)12 outgoing (16A SP MCBs)	No.	1	0.002857531
4	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A TPN/MCCB incomer and 12 outgoings (16A, SP MCBs)	No.	2	0.003265963
5	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer , 8 outgoing 32A SFU (TPN), photodetector and timer circuit along with 100A contactor to control Aviation lighting systems	No.	1	0.001469609
6	Aviation obstruction lights : a) High intensity Type-A flashing white light having intensity of 4000 to 200,000 candles depending upon background luminance & flashing frequency 40-60/min.	No.	6	0.010775886
	b) Medium intensity Type-B RED flashing LED light having intensity of as per ICAO depending upon background luminance & flashing frequency 40-60/min.	No.	3	0.004408826
	c) A common flasher with flash frequency of 40 flashes per minute shall be provided in aviation control panel.	No.	1	0.001469609
7	Flood light with 250W HPSV lamps with all controlgears & accessories	No.	4	0.003592708
8	Well glass type luminaries with 150W/HPSV lamp with all controlgears & accessories	No.	150	0.091869186
9	63Amp welding switch socket with plug & other Mounting accessories	No.	9	0.005512151
10	3 pin, 1 ph, 240V,15Amp. Power socketscomplete with plug Switches etc.	No.	10	0.003674021
	Al conductor, PVC insulated, Armoured, , PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.	Meters		

PART B: % weightage for amount of individual items of Schedule of quantity w.r.t. the total quoted price ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY

PACKAGE A: CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY, INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNITS # 1 & 2 at 4X270 MW BHADRADRI TPS.

SL. No.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
11	a. 3½ C x95mm ² Al for connection between ACDB/ELDB/ welding sockets	Meters	1400	0.069395365
	b. 3½ Cx35mm ² Al for Lighting panel incoming supply	Meters	1000	0.050617945
	c. 4Cx16mm ² Al conductor, PVC insulated, Armoured, PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.	Meters	1600	0.015103772
12	Control cables shall have stranded annealed tinned copper conductor, 1100V grade PVC insulation, extruded PVC inner sheath, galvanized steel wire armoured, overall extruded PVC sheath, FRLS type			
	a) 2.5 mm ²	Meters	500	0.058782105
13	Flexible trailing cable : annealed tinned copper conductor, EPR insulated, reinforced with nylon cord, cores laid up, HDCSP inner sheathed, cotton taped and HDCSP overall sheathed conforming to IS:9968.	Meters	50	0.028574562
14	PVC insulated 650/1100V grade stranded Cu Conductor lighting wires conforming to IS-694.	Meters		
	a. From Lighting panels to junction boxes : 6 SQ.mm	Meters	2000	0.01469534
	b. From junction boxes to lighting fixtures (Number of wires per lead as required) : 2.5 SQ.mm	Meters	1500	0.010205201
	c. From Lighting panels to receptacles (15A) : 6 SQ.mm	Meters	2000	0.006939611
15	GI conduit 32mm dia with junction Boxes,Pull boxes & accessories	Meters	5000	0.13470865
16	Electro galvanise felxible steel conduit 32 mm dia with accessories	Meters	10	0.003674021
17	Lightning protection Air terminal	Meters	45	0.152669952
18	Earthing materials			
	i) Distribution Boards, Lighting Panels and motors above 90 KW : 50 mm x 6 mm GI Flat	Meters	300	0.004490139
	ii) Motors above 30 KW upto 90 KW : 35 mm x 6 mm GI Flat	Meters	250	0.003102217
	iii) Motors above 5 KW upto 30 KW : 25 mm x 3 mm GI Flat	Meters	400	0.001795981
	iv) Motors upto 5 KW : 8 SWG GI wire	Meters	300	0.001469609
	v) Lighting Fixtures, junction boxes,conduits, etc. : 16 SWG G.I. wire	Meters	250	0.008572219
19	Telephone Socket with junction box	No.	10	0.00900788
20	Telephone cable shall be of minimum 0.6 mm dia annealed high conductivity electro copper conductor. PVC insulated, twisted , PVC tape wrapped, screened, tip corded, PVC sheathed, conforming to relevent ITD (Indian telephone department) specification.	Meters	150	0.01737234
21	GS cable trays. Cable trays shall be of ladder type constructed of minimum 2 mm thick mild steel hot dip galvanised.	Meter		
	600 mm wide		150	0.071844464
	450 mm wide		100	0.063680303
	300 mm wide		150	0.020410401
	150 mm wide		350	0.013062732
22	Aviation distribution board (ADB) with one 32A MCCB(TPN) incomer and 6 nos. SP 20A MCB. Construction is same as LP	No.	4	0.011430123
GRAND TOTAL Weightage (SERVICE PART)				92.45960925

Supply Part

CIVIL WORKS				
66	Supply one number Rack & Pinnion Type stack Elvator of proven make after obtaining approval from BHEL/ TSGENCO from ground upto top of chimney with landing at various platform level complete as per spec. and drawings.	Lumpsum	1	2.948143104
ELECTRICAL WORKS (SUPPLY OF FOLLOWING ITEMS AS PER SPECIFICATION)				
1	415V, 200A, 50 KA for 0.25 sec, 3-phase 4 wire AC Distribution Board with 1No. incomer (MCCB) & 9 nos. of 100A (TPN) outgoing complete in all respects.	No.	1	0.209698225
2	415V, 200A, 3-phase 4 wire AC Emergency Lighting distribution board alongwith 50KVA lighting transformer (415/433 V, Dyn11, Z=4%, ±2x2.5% Off Ckt. Tap) with 2 nos. of incomers with auto changeover facility using contacts and 6 nos. 100A MCCB (TPN) outgoings complete in all respects.	No.	1	0.357229023
3	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A MCCB (TPN) incomer ,			
	(a)18 outgoing (16A SP MCBs)	No.	2	0.144747494
	(b)12 outgoing (16A SP MCBs)	No.	1	0.072373747

PART B: % weightage for amount of individual items of Schedule of quantity w.r.t. the total quoted price ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY

PACKAGE A: CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY, INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNITS # 1 & 2 at 4X270 MW BHADRADRI TPS.

SL. No.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
4	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A TPN/MCCB incomer and 12 outgoing (16A, SP MCBs)	No.	2	0.120622787
5	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer , 8 outgoing 32A SFU (TPN), photodetector and timer circuit along with 100A contactor to control Aviation lighting systems	No.	1	0.078868745
6	Aviation obstruction lights :			
	a) High intensity Type-A flashing white light having intensity of 4000 to 200,000 candles depending upon background luminance & flashing frequency 40-60/min.	No.	6	0.767323672
	b) Medium intensity Type-B RED flashing LED light having intensity of as per ICAO depending upon background luminance & flashing frequency 40-60/min.	No.	3	0.100210148
	c) A common flasher with flash frequency of 40 flashes per minute shall be provided in aviation control panel.	No.	1	0.033403383
7	Flood light with 250W HPSV lamps with all controlgears & accessories	No.	4	0.019300362
8	Well glass type luminaries with 150W/HPSV lamp with all controlgears & accessories	No.	150	0.58456106
9	63Amp welding switch socket with plug & other Mounting accessories	No.	9	0.070983214
10	3 pin, 1 ph, 240V,15Amp. Power socketscomplete with plug Switches etc.	No.	10	0.020414131
11	Al conductor, PVC insulated, Armoured, , PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.	Meters		
	a. 3½ C x95mm ² Al for connection between ACDB/ELDB/ welding sockets	Meters	1400	0.25052425
	b. 3½ Cx35mm ² Al for Lighting panel incoming supply	Meters	1000	0.171655505
	c. 4Cx16mm ² Al conductor, PVC insulated, Armoured, PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.	Meters	1600	0.051032718
12	Control cables shall have stranded annealed tinned copper conductor, 1100V grade PVC insulation, extruded PVC inner sheath, galvanized steel wire armoured, overall extruded PVC sheath, FRLS type			
	a) 2.5 mm ²	Meters	500	0.148458815
13	Flexible trailing cable : annealed tinned copper conductor, EPR insulated, reinforced with nylon cord, cores laid up, HDCSP inner sheathed, cotton taped and HDCSP overall sheathed conforming to IS:9968.	Meters	50	0.078868745
14	PVC insulated 650/1100V grade stranded Cu Conductor lighting wires conforming to IS-694.	Meters		
	a. From Lighting panels to junction boxes : 6 SQ.mm	Meters	2000	0.032475366
	b. From junction boxes to lighting fixtures (Number of wires per lead as required) : 2.5 SQ.mm	Meters	1500	0.060311394
	c. From Lighting panels to receptacles (15A) : 6 SQ.mm	Meters	2000	0.019485369
15	GI conduit 32mm dia with junction Boxes,Pull boxes & accessories	Meters	5000	0.199491533
16	Electro galvanise felxible steel conduit 32 mm dia with accessories	Meters	10	0.032475366
17	Lightning protection Air terminal	Meters	45	0.357229023
18	Earthing materials			
	i) Distribution Boards, Lighting Panels and motors above 90 KW : 50 mm x 6 mm GI Flat	Meters	300	0.02319669
	ii) Motors above 30 KW upto 90 KW : 35 mm x 6 mm GI Flat	Meters	250	0.019485369
	iii) Motors above 5 KW upto 30 KW : 25 mm x 3 mm GI Flat	Meters	400	0.011134337
	iv) Motors upto 5 KW : 8 SWG GI wire	Meters	300	0.007423015
	v) Lighting Fixtures, junction boxes,conduits, etc. : 16 SWG G.I. wire	Meters	250	0.032475366
19	Telephone Socket with junction box	No.	10	0.021018387
20	Telephone cable shall be of minimum 0.6 mm dia annealed high conductivity electro copper conductor. PVC insulated, twisted , PVC tape wrapped, screened, tip corded, PVC sheathed, conforming to relevent ITD (Indian telephone department) specification.	Meters	150	0.04053546

PART B: % weightage for amount of individual items of Schedule of quantity w.r.t. the total quoted price ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY

PACKAGE A: CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY, INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNITS # 1 & 2 at 4X270 MW BHADRADRI TPS.

SL. No	DESCRIPTION OF ITEMS	UNIT	QUANTITY	% weightage w.r.t. the total amount
21	GS cable trays. Cable trays shall be of ladder type constructed of minimum 2 mm thick mild steel hot dip galvanised.	Meter		
	600 mm wide		150	0.094236599
	450 mm wide		100	0.06524055
	300 mm wide		150	0.031412324
	150 mm wide		350	0.026579401
22	Aviation distribution board (ADB) with one 32A MCCB(TPN) incomer and 6 nos. SP 20A MCB. Construction is same as LP	No.	4	0.237766257
	GRAND TOTAL Weightage (SUPPLY PART)			7.540390931
SL NO	DESCRIPTION			Weightage in %
1.0	Weightage OF SERVICE PART			92.45960925
2.0	Weightage OF SUPPLY PART			7.540390931
3.0	GRAND TOTAL Weightage (SERVICE PART & SUPPLY PART)			100.00

Volume II Price Bid

SI No	Tender Specification Number	Unit Number & Project
1	BHE/PW/PUR/MANUT-CVL Chimney Pkg-A (U-1&2) /1435	Chimney, Package-A (Unit-1&2)

Part C: Format to quote total Lumpsum Price for ONE CHIMENY

PACKAGE A- CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY ,INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNIT 1&2 AT 4X 270 MW BHADRADRI TPS, TELENGANA.		
SI No 1	Lumpsum Total Price for entire Scope of Work for One Chimney Package A (U # 1&2) as detailed in T.S.No BHE/PW/PUR/MANUT-CVL Chimney Pkg-A (U-1&2) /1435	In figures:
		In Words
Note: Bidders to quote Total Lumpsum Price in this format 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

Seal and Signature
Seal and

Signature