

TENDER SPECIFICATION

BHEL PSSR SCT 1421

**CONSTRUCTION OF TWO NOS OF 100MTR RCC
CHIMNEY-CIVIL, STRUCTURAL, ELECTRICALS,
C&I AND ALLIED WORKS**

FOR

PARADIP REFINERY CPP AT IOCL PARADIP, ORISSA

VOLUME - III

RATE SCHEDULE

BOOK NO



BHARAT HEAVY ELECTRICALS LIMITED

(A GOVERNMENT OF INDIA UNDERTAKING)

POWER SECTOR – SOUTHERN REGION

690, ANNA SALAI, NANDANAM, CHENNAI – 600 035

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
POWER SECTOR – SOUTHERN REGION,
690, ANNA SALAI, NANDANAM, CHENNAI – 600 035.

TENDER SPECIFICATION No. BHEL PSSR SCT 1421

NAME OF THE WORK

Construction of 2 nos of 100Mtr RCC Chimney-civil, Structural, Electricals, C&I and allied works for Paradip Refinery Project CPP at IOCL Paradip, Orissa

Volume III

RATE SCHEDULE

DATE:

Issued to

M/s.

For and on behalf of
BHARAT HEAVY ELECTRICALS LTD

AGM / CONTRACTS

The tender documents are not transferable.

Place: Chennai-600035

Date:

PREAMBLE FOR THE SCHEDULE OF QUANTITIES

PREAMBLE TO THE SCHEDULE OF QTS. (SOQ)

- 1) Details of the items in this Schedule shall be read in conjunction with the corresponding IOCL/EIL specifications and other documents and shall have precedence over any contrary statement mentioned any where in this document.
- 2) The work shall be carried out as per construction drawings (which will be issued progressively during the execution), specifications, the description of the items in this schedule and/or Engineer's instructions. The layout, sizes and details of the building, structures and foundations may vary at a large extent during actual construction.
- 3) Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
- 4) Unless specifically mentioned otherwise in the contract, the bidder shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant, temporary works, labour, materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services, temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.
- 5) The rate quoted shall be inclusive of cleaning the site of any vegetations, dressing and leveling etc., required for commencement of site activities. No separate payment will be made towards the same.
- 6) The rate shall also be inclusive of carrying out survey of site to establish levels and coordinates at suitable intervals, from existing grid levels and coordinates furnished by the owner, establish bench marks, setting out the location and levels of the proposed structures, constructions and making references, pillars and other identification marks etc. No separate payment will be made towards the same.
- 7) The quantities of the various items mentioned in the schedule are approximate and may vary up to any extent or be deleted altogether. The quoted rates of each item shall remain firm as long as the variation in the total value of the works executed under this contract, including extra items if any, remain within +/- 30% (thirty percent) of the Bid Price of the probable extent of the work to be executed under any particular item in this schedule, before under taking any preliminary work or purchasing bought out component related to the work. The variation clause will be applicable as stipulated in the General conditions of contract, Volume 1 of this tender.
- 8) Rates shall be quoted both in figures and in words in clear legible writing. No over writing is allowed. All scoring and cancellation should be counter signed by the bidder. In case of illegibility, the interpretation of the engineer shall be final. All entries shall be in English language.

- 9) Engineers decision shall be final and binding on the contractors regarding clarification of items in this schedule with respect to the other section of the contract.
- 10) Unless otherwise specified in the schedule of items Reinforcement steel and earth rod/flat will be issued by BHEL as FREE ISSUE for incorporation in the permanent works as specified elsewhere in this tender document.
- 11) In case of any discrepancy between item description, relevant drawing and/or specification clarification shall be sought at tender stage itself. Otherwise it shall be assumed that the bidder has quoted for the more stringent requirement.

HIERARCHY

In case of any conflict/deviations amongst various documents, the order of precedence shall be as follows

- Items in Schedule of quantities
- Statutory Regulations
- IOCL/EIL specification
- IS/BS standards

GENERAL:

NOTE: The bidder to note the following before submission of the offer

Technical requirements in Volume- II should be read in conjunction with BOQ in Volume – III and other sections of the tender / contract. In case of any conflict between the contents of BOQ in Volume – III and Technical Requirements in Volume – II, then BOQ will prevail over Technical requirements.

**BOQ FOR 2 NOS. RCC CHIMNEY (100M HIGH TWIN STEEL FLUE)****PARADIP REFINERY CPP****TENDER SPECIFICATION BHEL PSSR SCT 1421**

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
	CIVIL WORKS				
1	Earth work in excavation in all types of soil including 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	1500		
b	Depth exceeding 2 m but not exceeding 4 m	CUM	1200		
2	Extra over Item No. 1 for dewatering of ground water by well point method as per IS 9759.	CUM	2700		
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				

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
Af	Each layer compacted so as to achieve at least 80% relative density as per IS-2720 part XIV in case of sandy soils.	CUM	1400		
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	7000		
A11	Supplying and filling sand upto any depth under floors, tank pads, around foundations, plinths etc. in layers of 150 mm (compacted thickness) and compacted so as to achieve 85% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete. Sand for filling shall be clean and well graded conforming to IS: 383 with grading not inferior than zone III.	CUM	300		
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.	CUM	64		
A14	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:				

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
i	For works below bottom of shell				
a	Grade M-35 in foundation raft/ pilecap etc.	CUM	1400		
ii	For works above foundation raft/pile cap				
a	Grade M-25 in grade slab, paving etc.	CUM	30		
b	Grade M-35 in chimney shell, pedestals etc. upto ground level	CUM	35		
c	Grade M-30 for chimney shell, corbels, external platforms and other shell attachments at all levels above ground level including making recesses for platform supports.	CUM	2750		
d	Grade M-30 for all other components of the super structure, roof slab, mini - shells, beams, columns, wall etc.	CUM	60		
A15	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 16G 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,				

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
	drawings and instructions of the Engineer. Straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements of TMT steel of grade Fe-500 confirming to IS:1786 including cost of binding wire 16 gauge size, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer. BHEL will supply Reinforcement Steel as a free issue. However transporting from BHEL stores is in agency's scope. The Steel will be issued to the agency in standard lengths. In some instances for 8mm, 10mm & 12mm dia steel will be supplied in coil form. No extra claims against issue of non-standard lengths and de-coiling of 8mm,10mm & 12mm.				
i	For works below bottom of shell:				
a	TMT steel of grade Fe-500 confirming to IS:1786	MT	140		
ii	For works above foundation raft/pile cap				
a	TMT steel of grade Fe-500 confirming to IS:1786	MT	230		
16	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.				
i	For works below bottom of shell	SQM	400		
ii	For works above foundation raft/pile cap				
a	Inner and outer faces of wind shield with slip form shuttering	SQM	11000		
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	300		

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
17	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	40		
18	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	130		
A19	Supplying & installation of 20 mm thick bitumin impregnated fibre board conforming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumin, labour, material, equipments etc all complete at all levels as per specification, drawings and instruction of engineer in charge.	SQM	24		
20	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	50		
A21	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete at all positions and levels including the cost of all labour, materials and equipments for setting materials in concrete.	MT	0.6		

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A22	Preparation of detail Fabrication drawing and after approval by the Engineer, fabrication and erection of structural steel work with mild steel rolled section / built up section / combination of both conforming to IS:2062 for the stair case from grade level to roof level including brackets, kick plates, all fittings and fixtures etc including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation,				
	preheating (min preheat and interpass temperature of 20o C for welding over 20 mm and upto 40 mm & 66o C for welding over 40 mm and upto 63 mm & 110o C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, lifting to all heights, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. (Supply of structural steel sections only by BHEL for free of cost. However transporting from BHEL stores is in agency's scope. No extra claims against specials, fixtures, bolts, nuts, etc required for completing as per item specification)	MT	80		

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A23	Preparation of detail Fabrication drawing and after approval by the Engineer, fabrication and erection at all levels of structural steel work with mild steel rolled section / built up section / combination of both conforming to IS:2062 for internal platform and walkway gallery structures complete including all structural members, beam support bearings on the shell, stiffeners, seats, brackets, all other fittings and fixture, blockouts etc including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20° C for welding over 20 mm and upto 40 mm & 66° C for welding over 40 mm				

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
	and upto 63 mm & 110o C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, lifting to all heights, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. (Supply of structural steel sections only by BHEL for free of cost. However transporting from BHEL stores is in agency's scope. No extra claims against specials, fixtures, bolts, nuts, etc required for completing as per item specification)	MT	300		
A24	Preparation of detail Fabrication drawing and after approval by the Engineer, fabrication and erection at all levels, mild steel chequered plate panels for floors of internal and external platforms and treads and landings of the staircase complete with stiffeners, brackets, ready to bolt fixtures, etc including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20° C for welding over 20 mm and upto 40 mm & 66° C for welding				

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
	<p>over 40 mm and upto 63 mm & 110o C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, lifting to all heights, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. (Supply of structural steel sections only by BHEL for free of cost. However transporting from BHEL stores is in agency's scope. No extra claims against specials, fixtures, bolts, nuts, etc required for completing as per item specification)</p>	MT	30		
A25	<p>Preparation of detail Fabrication drawing and after approval by the Engineer, supply, fabrication and erection at all levels, structural steel work for mild steel flues (liners) conforming to IS 2062 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 etc including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable),</p>				

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
	assembly, edge preparation, preheating (min preheat and interpass temperature of 20o C for welding over 20 mm and upto 40 mm & 66o C for welding over 40 mm and upto 63 mm & 110o C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, lifting to all heights, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. (Supply of structural steel sections only by BHEL for free of cost. However transporting from BHEL stores is in agency's scope. No extra claims against specials, fixtures, bolts, nuts, etc required for completing as per item specification)	MT	300		
26	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 or galvanising, 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	2		
b	32 mm nominal bore tubular hand railing for stair case and internal and external platforms	MT	10		

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
27	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 castin embedments, cutting, grinding, drilling, bolts and bolting welding preheating and post heating for welding , testing, grouting, galvanising components to be embeded in concrete, primer and finish painting of exposed components, etc. complete as per drawing and specifications.	MT	1		
28	Supplying, fabricating and installing in the liners, gas sampling and gas oapacity 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	4		
A29	Preparing detailed fabrication drawings and after approval by the Engineer, supplying, fabricating and erecting for top 6m of flue, stainless steel flues (liners) grade AISI 316L complete with all bends, flanges, stiffeners 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 using compatible & approved electrodes, preheating and post-heating for welding, testing, etc. complete as per drawings and specifications.	MT	15		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A30	Supplying, detailing, fabricating, transporting to site and erecting in position the following material required for flue support brackets, restraint/ support arrangements at all levels, including supporting ducting at flue inlet wind shield, etc. all complete as per specification / drawings. 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, coating the polished surfaces with silicone grease, etc., complete as per drawings and specifications.				
a	Stainless steel plates conforming to AISI 316L for wear plates, bearing including SS screws of stainless steel etc.	MT	1		
b	50 mm thick load bearing insulation blocks/ sheets preset on MS plates as required.	SQM	2		
c	75 mm thick load bearing insulation blocks/ sheets preset on MS plates as required.	SQM	2		
d	Prefomed lead sheets	Kg	400		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A31	Preparing detailed fabrication drawings, supplying, transporting to site, fabricating and erecting in position non-mettalic expansion compensator including testing for impermeability and resistance to flue gas with instructions for storage, fitting instructions, spares, accessories, tools for installation etc. complete as per specifications and manufacturer's recommendation. Expansion joint material shall be as per specification and shall be of High neck centre break design with bolster and extended sleeve and bolster filled with glass fabric stuffed with glass felt B86 of type KE FLUAFLEX 25X (Pre-assembled on steel parts) supplied by KELD ELLENTOFT or approved equivalent. Measurement shall be the surface area calculated on the basis of internal diameter of expansion compensator and length flange to flange.	SQM	30		
A32	Supplying "Fabricated Ready to Install" spare expansion compensators same as item no. A31 with proper packaging (for several years of storage) and delivery to site store complete in all respects as per drawings and specification.	SQM	15		
36	Supplying, and placing in position (at the beam supports bearings) Neoperne pads between concrete surface and mild steel including the cost of all labour materials, cutting to shape, grinding, drilling etc., complete as per drawings and specifications .	CUM	0.1		
A49	Providing protective coating on outer surface of chimney with two coats of high build epoxy finish coating cured with polyamide hardener @100 micron DFT per coat having more than one colour in band as per the direction of Engineer. Cost to include for cleaning, removing of loose particle of sand, cement, aggregate by scrubbing with soft wire brush, acid etching with 10-15% HCL solution, washing the surface with water to remove acid & loose particles, compatible primer coat if required as per manufacturer's recommendation etc. complete with all arrangements for safety.	SQM	6000		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A50	Providing & laying on the roof slab of chimney - 25mm thick acid resisting tiles with pot.silicate mortar over a bed prepared with bitumunastic paint 6mm thick & 12mm thick acid resisting cement bed, pointing with phenolic based acid resisting cement, curing etc. all complete. The cost shall include for all materials, labour & equipments necessary to complete the work.	SQM	200		
51	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	4		
52	Providing, fitting and fixing rainwater pipes at all levels internally from the chimney roof to ground level upto the hood drain basin including shoes, bends, junctions, flanges,hoppers, sockets, adaptors, brackets, hangers, supports, anchor fasteners, spacers, pipe sleeve through shell, silicon or vulcanised butyl seaant, foam backing material, jointing, socketing, grouting, caulking, primer and finish painting etc. complete including the cost of all labour, material and equipment, complete as per drawing and specifications:				
a	150 mm nominal bore cast iron pipes.	RM	400		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A53	Providing & laying Heavy Duty Cement Concrete Flooring overall 50 thk. in panels and shall consist of base course 35mm thick of cement concrete (1 cement: 1.5 coarse sand: 3.5 stone agg of 10 to 6mm size by volume) in panels bound by panel strip dividers. Wearing top layer/ finishing layer shall be of cement, hardener and stone agg mix of 15mm thickness . UNO one part of approved quality hardner and four parts of cement by weight mixed dry which shall be mixed with stone grit 6mm and downsize in ratio of 1 hardner cum cement mixture : 2 stone grit by vol. Cost to include for all curing, cost of neat cement slurry @2.75 Kg of cement per sqm applied prior to laying of base course over underbed sub base etc. all complete. Panel strip divider shall be measured & paid separately.	SQM	200		
54	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 4 m by 5 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	2		
55	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	4		

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A61	Providing and fixing PVC strips 40 mm wide and 3 mm thick in joints of cast in situ floorings at various elevations, finishing, all labour, material etc. complete as per drawing, specification and instructions of engineer in charge.	RM	400		
A62	Providing and installing, at all levels, resin bonded glass wool insulation slabs of density not less than 64 kg/m ³ or resin bonded rock wool insulation slabs of density not less than 100 kg/cu.m with an installed thickness of 50 mm, on the outside surface of steel flue liners and wherever as directed by the Engineer 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.	CUM	180		
A63	Providing and installing, at all levels, resin bonded glass wool insulation slabs of density not less than 64 kg/m ³ or resin bonded rock wool insulation slabs of density not less than 100 kg/cu.m with an installed thickness of 100 mm, on the outside surface of steel flue liners 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.	CUM	20		

SIGNATURE OF BIDDER

ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words & figures)
A64	Providing and installing, at all levels, resin bonded glass wool insulation slabs of density not less than 64 kg/m ³ or resin bonded rock wool insulation slabs of density not less than 100 kg/cu.m with an installed thickness of 150 mm, on the outside surface of steel flue liners and wherever as directed by the Engineer, in three 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.	CUM	10		
A65	Providing and mixing approved Bipolar Concrete penetrating Corrosion inhibiting admixture in concrete as per detail specification of manufacturer etc. all complete.	Kg	19000		
A66	Supply, Fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete.	Kg	300		
A67	Extra over Item No. A22, A23, A24, A25, A70 for blast cleaning of steel structures to near white metal surface(Sa 2 1/2) and applying 1 coat of two component Inorganic zinc silicate coating @ 65-75 micron DFT/ coat at shop instead of primer coat of red oxide zinc-chromate , including touch up painting etc. all complete.	MT	726		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A68	Providing & painting on steel work - 1 coat of two component epoxy zinc phosphate primer cured with polyamine hadner 40 DFT + 2 coat of high build epoxy finish coating cured with polyamine hardner @ 100 DFT/coat + 1 coat of two component acrylic polyurethane finish paint @ 40 DFT/coat to achieve minimum total 345 DFT paint thickness including protection and cleaning, scaffolding etc. all complete.	MT	130		
A69	Providing & applying Antifungal treatment to exposed concrete surfaces complete as per EIL specification No. A011-06-42-PT-H09 R0.	SQM	7000		
A70	Preparation of detail Fabrication drawing and after approval by the Engineer,fabrication and erection at levels upto 15m above ground level , structural steel work for mild steel rectangular/ transition flue duct, ash hopper etc. conforming to IS 2062 complete with all bends, flanges, stiffeners, all other flue duct attachments, support system, collars, access manholes alongwith gaskets and other accessories, staying system etc including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20° C for welding over 20 mm and upto 40 mm & 66° C for				

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
	welding over 40 mm and upto 63 mm & 110o C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. (Supply of structural steel sections only by BHEL for free of cost. However transporting from BHEL stores is in agency's scope. No extra claims against specials, fixtures, bolts, nuts, etc required for completing as per item specification)	MT	16		
A71	Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel (having hot dip galvanisaion zinc coating minimum 900 g/ sqm of surface area) conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.	MT	10		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A72	Providing one coat of approved Sodium silicate solution of brushable consistency to give a smooth and even spread on the inner surface of RCC chimney shell including cleaning and preparation of surface, arrangement for the applicator to reach and apply coating at all levels, all safety arrangements, curing etc. complete all as per manufacturer's recommendation.	SQM	5500		
A73	Providing protective coating system to flues cans with 02 coats of Heat resistant silicone Aluminium paint @ 20 micron DFT/ coat including protection and cleaning, scaffolding etc. complete for both internal & extenal sides of flue cans.	MT	300		
A74	Providing lining on the flue cans with FRP (Fiber Reinforced Plastic) coating for anti-corrosive measures complete as per manufacturer's recommendation including protection and cleaning, scaffolding etc. all complete.	SQM	400		
A75	Supplying, fabricating and fixing stainless steel cladding of AISI grade 316L over stainless steel flue can with stainless steel screws, fasteners, fixtures, all arrangements for cutting, grinding, welding, all consumables etc. complete.	MT	6		
A76	Providing and fixing 300 mm dia stainless steel air inlet and outlet pipes in inclined position in RCC Chimney shell at bottom and top part respectively with lugs and stainless steel bird screen including wastages of pipes, screens etc. complete.	MT	1		
A77	Providing and fixing Stainless steel insert plate in RCC shell and slab of chimney at all height including lugs etc. all complete.	MT	1		
A78	Preparing detailed drawing and approval by Engineer, providing, fabricating and installation of roof access cover with frame made of 6 mm thick stainless steel of AISI grade 316L with locking lever and counter balance mechanism on both sides complete. Clear opening for roof access shall be approx. 0.5 SQM.	EACH	2		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
A79	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ platforms/ machinery/ pipe/duct supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with ConbextraGP-1 or equivalent at all positions and levels in chimney. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	1		
A80	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.	Kg	200		
A81	Providing complete protection coating system to structural steel work with two coats of high build chlorinated rubber zinc phosphate primer followed by two coats of chlorinated rubber paint of approved quality including protection and cleaning, scaffolding etc. all complete.	MT	300		
	ELECTRICAL WORKS: Preparing detailed drawing and after approval by the Engineer, supply, installation, testing and commissioning of following items of approved quality as per specification / IS codes:				
AE17	Lightening protection & earthing system work shall be carried out as per EIL specification.				
a	70 sq.mm lead coated copper conductor	RM	100		
b	vertical air terminal (25mm dia 2000mm long copper rods lead coated)	EACH	4		
c	Test link	EACH	4		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
d	Erection hardware like saddles with clamp for cleating lightening conductor. One lot comprise for one chimney.	LOT	2		
e	50X6 mm size GI flat earth strip	RM	100		
f	25 X 3 mm size GI flat earth strip	RM	700		
g	12 SWG GI wire	RM	500		
h	Earthpit with earthing electrode including brick chamber with cover etc. as p	EACH	2		
AE18	Lighting system				
a	Twin cluster LED type medium intensity (40W min) flashing lamps, maintenance free aviation lights as per aviation regulations and norms suitable for A.C. (alternative current). Mounting of aviation lamps & accessories shall be as per typical installation EIL standard . Supply shall include twin cluster aviation light/ fixture, GI pipe, reducers, suitable JBU bolts etc. complete.	SET	18		
b	Photo electric controller for aviation lighting	EACH	2		
c	Flash controller unit & all subitems for aviation lighting	EACH	2		
d	Non integral industrial type, well glass dust tight with 70W HPSV lighting fixtures with external reflector.	EACH	300		
e	Wall mounting bracket (1.5m long 40 dia GI conduit with clamps) for 70W HPSV light fixtures including fixing works.	EACH	60		
f	Hand rail mounting bracket (2.5m long 40 dia GI conduit with clamps) for 70W HPSV lighting fixtures.	EACH	60		
g	240V, 1 phase, 32A weather proof power receptible with interlock switch	EACH	24		
AE19	Junction Boxes & panels				
a	4 pole MCB for aviation lighting in a box	EACH	2		
b	Junction boxes for aviation lighting & fixtures	EACH	20		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
c	Lighting distribution board with 63A TPN MCB isolator as incomer & adequate no. of outgoing feeders for controlling the lighting fixtures provided with suitable rating outgoing MCBs. Loading of outgoing feeders maximum to 1000W & 25% of outgoing feeders to be left as spares.	EACH	4		
d	Power distribution board with 63A TPN MCB isolator as incomer & adequate no. of outgoing feeders of suitable rating MCBs for the control of power receptacles. Loading of outgoing feeders to maximum to 1000W & 25% of outgoing feeders to be left as spares.	EACH	4		
e	3 pin, 1 ph, 240V, 15 Amp. Power sockets complete with plug switches.etc.	EACH	4		
f	GI conduit 25mm dia with junction boxes, pull boxes & accessories etc. complete in al respect	RM	240		
g	63 Amp welding switch socket with plug & other mounting accessories etc complete in all respect.	EACH	2		
h	Adequate rating isolation transformer to be provided in Lighting distribution board(sl no. AE-19c) for coverting 3 ph 3 wire to 3 ph 4 wire	EACH	4		
i	Adequate rating isolation transformer to be provided in Power distribution board(sl no. AE-19d) for coverting 3 ph 3 wire to 3 ph 4 wire	EACH	4		
AE20	Cabling System				
a	4C X 2.5 sq.mm Cu (1100V grade HRPVC insulated armoured cable)	RM	800		
b	4C X 4 sq.mm Cu (1100V grade HRPVC insulated armoured cable)	RM	600		
c	3 1/2C X 16 sq.mm Cu for lighting panel incoming supply	RM	1000		
d	Cable glands & lugs. One lot comprise for one chimney.	LOT	2		
e	Galvanised steel cable trays including cover, cabling material, accessories etc. complete as per drg & specification.				
f	300 mm wide	RM	150		

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ITEM. NO	DESCRIPTION OF ITEM	UNIT	QTY	RATE (INR)	AMOUNT (INR) (in words& figures)
g	150 mm wide	RM	300		
		TOTAL			
	<u>Note to Rate schedule:</u>				
i)	The quantities of the various items mentioned in the schedule are approximate and may vary up to any extent or be deleted altogether. The quoted rates of each item shall remain firm as long as the variation in the total value of the works executed under this contract, including extra items if any, remain within +/- 30% (thirty percent) of the Bid Price of the probable extent of the work to be executed under any particular item in this schedule, before under taking any preliminary work or purchasing bought out component related to the work. The variation clause will be applicable as stipulated in the General conditions of contract, Volume 1 of this tender.				
ii)	PAYMENT FOR ADDITIONAL ITEMS				
	For working out the rates for supplemental / additional items, the least of the following will be operated.				
a)	Near similar item (or) derived from LOI items				
b)	Direct from CPWD schedule of rates. The cost index (based on formula) for the project site prevailing during the year of reckoning, shall be calculated and applied over the DSR-2007 item rate.				
c)	Derived from CPWD rates (While deriving the rate from CPWD, the above procedure (as given in (b)) shall be followed).				
	If any item could not be derived from the above, Rate will be worked out based on market rate for such item with 15% plus towards contractor's overhead and profit.				

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