



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

TCN - 01

Ref: PSER:SCT: NKP-C1615:TCN-01

Date: 11-11-2014

Sub	Tender Change Notice (TCN)- 01.	
Job	(i) PACKAGE A - Construction of 275 meter high Reinforced Concrete single steel flue chimney and other incidentals complete, including raft foundation for chimney of unit#1 at 3 x 660 MW North Karanpura STPP, Jharkhand. (ii) PACKAGE B - Construction of 275 meter high Reinforced Concrete single steel flue chimney and other incidentals complete, including raft foundation for chimney of unit#2 at 3 x 660 MW North Karanpura STPP, Jharkhand.	
Ref	1.0	Tender no PSER:SCT:NKP-C1615:14
	2.0	BHEL's NIT, vide reference no PSER:SCT:NKP-C1615:4003 Date: 22-10-2014
	3.0	Other References, if any.

With reference to above, following points, relevant to tender, may please be noted and complied with while submitting the offer.

1. [Clarification is attached vide Annexure-A to TCN-01.](#)
2. BOQ cum Price Schedule format "VOLUME-III - PRICE SCHEDULE (PACKAGE-A), REV-00 and VOLUME-III-PRICE SCHEDULE (PACKAGE-B), REV-00" has been revised as "[VOLUME-III-PRICE SCHEDULE \(PACKAGE-A\),REV-01 and VOLUME-III- PRICE SCHEDULE \(PACKAGE-B\), REV-01](#)" which is enclosed herewith.
Bidders are requested to submit their offer as per revised BOQ/Price Schedule only and quote their price accordingly. Offer from bidders in superseded price schedules (Vol-III-Price schedule (Package-A)-REV-00 & Vol-III- Price schedule(Package-B)-REV-00) shall not be considered. Bidders are also requested to submit a declaration in techno-commercial offer that they have submitted their price bid in sealed envelopes as per REVISED Price Schedule format.
3. Due date of offer submission is extended from 12-11-2014 to 20-11-2014 (15=00 Hrs). Bidders are requested to submit their offer by extended due date positively.
4. Revised 'No deviation certificate' is attached. Bidder to submit 'No deviation certificate' as per attached format only.
5. All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,
for BHARAT HEAVY ELECTRICALS LTD

Sr.Engineer (SCT)

Encl: As Above.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211798/ 1691

ANNEXURE-A TO TCN-01**TENDER NO : PSER:SCT:NKP-C1615:14**

(i) PACKAGE A - Construction of 275 meter high Reinforced Concrete single steel flue chimney and other incidentals complete, including raft foundation for chimney of unit#1 at 3 x 660 MW North Karanpura STPP, Jharkhand.

(ii) PACKAGE B - Construction of 275 meter high Reinforced Concrete single steel flue chimney and other incidentals complete, including raft foundation for chimney of unit#2 at 3 x 660 MW North Karanpura STPP, Jharkhand.

CLARIFICATION OF BIDDERS' QUERY

SL NO	REFERENCE CLAUSE OF TENDER DOCUMENT	EXISTING PROVISION	BIDDER'S QUERY	BHEL'S CLARIFICATION
1.0	Clause no. 5.0 & 6.0 of NIT	Procedure for Submission of Tenders:	<p>We presume the Procedure for submission of tender shall be as below,</p> <p>i. Envelope - I (Techno Commercial Bid) consisting of signed tender document.</p> <p>ii. Envelope - II – (EMD &/or Cost of Tender) consisting of EMD & Cash Receipt or DD for cost of tender.</p> <p>iii. Envelope-III-Package-A – (Price Bid) consisting of Filled in Schedule of Rates for Package A.</p> <p>iv. Envelope-IV-Package-B – (Price Bid) consisting of Filled in Schedule of Rates for Package B.</p> <p>v. Envelope - V (Main Envelope/Outer Envelope) Containing above said Envelope no. I to IV</p> <p>We presume, Offer should be submitted in original copy only.</p> <p>Please clarify.</p>	Shall be as per tender provision.
2.0	Clause no. 1.0.vii of NIT	EMD Amount	We presume the EMD of Rs. 2.0 Lakhs will be common for Package A & Package B. i.e. No separate EMD & cost of tender is required for bidding both packages.	Shall be applicable as per tender provision.
3.0	General		We request you to provide us the tender drawings like General arrangement drawing of chimney etc.	GA drawing is attached for tender purpose only.
4.0	Volume – III	Price Bid	We request you to provide us the soft copy of Price Schedule in MS excel format & allow us to submit the printed price schedule by filing rates & amount in price bid instead of handwritten rates & amounts in price schedule. Please consider & confirm.	SOFT COPY(PDF FORMAT) FURNISHED.

SL NO	REFERENCE CLAUSE OF TENDER DOCUMENT	EXISTING PROVISION	BIDDER'S QUERY	BHEL'S CLARIFICATION
5.0	Clause no. 2.17 of GCC(Service), Volume-IB,	Price Variation Compensation	We presume Price Variation Compensation clause shall be applicable to entire BOQ i.e for Service (Part-1)(SCH-2) & Supply (Part-2)(SCH-3) of Price Schedule. Please confirm.	Price Variation Clause is not applicable for this tender . Please refer Clause No 9 of VOLUME-IF-TCC-SUPPLY and Clause No 37 of VOLUME-IF-TCC-SERVICE.Also refer Clause No 31 of NIT. TCC prevails over GCC as per NIT.
6.0	Sr. No. 10 of Preamble of Price Schedule, Volume – III (Package A & B)	Rates shall be quoted in figures and in words in clear legible writing. _____ All entries shall be in English language	In the price schedule format, width of Rate column is small and there is no extra column or additional space for writing rate in words. We presume we have to write rate in figures only. Please consider & confirm.	Shall be as per tender provision.
7.0	Clause No. 35.7 of TCC (Service)	Service Tax	We presume service tax on our contract value plus value of free issue material shall be payable to us extra. Please confirm.	Service Tax is applicable on Service Contract . BHEL will reimburse full rate of Service Tax vide Clause No: 35.7.1 of VOLUME-IF-TCC-SERVICE Clubbing of value of Free issue of Materials while arriving at Gross Taxable Services arises only in case of Composition Mode i.e. partially exempted Services . When Full rate of Service Tax is reimbursable by BHEL , further clubbing of value of free issue of materials does not arise .
8.0	Annexure-A to NIT, Amendment to GCC	Additional Security Deposit = 30 % of (A-B) will be calculated as below: A = 80% of BHEL estimate B = The final offered price of successful bidder through RA (In case of RA) OR Sealed paper price bid of successful bidder (in case of paper bid)	Please provide us the BHEL's estimated cost.	The BHEL's estimated value shall be disclosed to the successful bidder (on their request) at appropriate juncture in case 'Additional Security Deposit' is applicable." Please refer last para of Clause No.1 of Annexure-A-Amendment to GCC of NIT.

SL NO	REFERENCE CLAUSE OF TENDER DOCUMENT	EXISTING PROVISION	BIDDER'S QUERY	BHEL'S CLARIFICATION
9.0	Clause No. 6.10 & 6.11 of TCC (Supply)	Entry Tax : Presently no Entry Tax is applicable in JHARKHAND as the applicability of Entry Tax has been quashed by Hon'able JHARKHAND HIGH COURT If however , on a later date , Entry Tax is applicable , ____ and has to pay Entry Tax for bringing scheduled goods to local area Karanpura for use	As per clause no. 6.10 of TCC (Supply), Entry ax is not applicable in Jharkhand. We presume, if however, on later date, entry tax is applicable on all material (including on materials included in service's price schedule), the same shall be payable to us extra. Please consider and confirm.	Shall be as per tender provision. Please refer Clause No. 35.6 of Volume-IF-TCC-SERVICE.
10.0	Clause no. 1.0.V of NIT	Due date & time of offer submission	Please extend the due date of offer submission by at least three weeks.	Due Date of submission of offer is extended upto 20-11-2014 (15=00 Hrs).
11.0	Annexure-B to NIT	Terms & Conditions of Reverse Auction	In case of reverse auction, whether it is mandatory to enter the "initial online sealed bid price" equivalent to sealed price bid or we may increase or decrease the price while entering initial online sealed bid price during reverse auction. Please clarify.	Shall be as per tender provision.
12.0	Clause no. 2.21 of GCC(service)	Arbitration & Reconciliation In case amicable settlement is not reached in the event of any dispute or difference, such dispute or difference shall be referred to the sole arbitration of the arbitrator appointed by BHEL/In charge (Region).	We request you that, The arbitral tribunal shall be composed of three arbitrators one appointed by each Party and the third arbitrator (Presiding Arbitrator) shall be appointed jointly by the two appointed arbitrators. Please consider & confirm.	Shall be as per tender provision.
13.0	TCC (Service) Vol. 1F-CML-E-REV-00 Cl. No. 14.1.3 Page no. 6 of 32	PC's for project Management work	The facilities of Computer Softwares and Operator shall be made available to BHEL only upto Contract Period For extension of contract period for reasons not attributable to the Contractor such services, facilities and manpower shall be payable to Contractor at agreed rate - Please confirm.	Shall be as per tender provision. Please refer clause no. 14.1.3.4 of Volume-IF-TCC-Service
14.0	TCC (Service) Cl. No. 30.0 Page no. 22 of 32	Mobilization advance	We will request you to make a provision for interest free mobilization advance @ 10% of the total contract value - Please confirm.	Mobilisation Advance/Interest bearing recoverable advance is not applicable for this tender. Please refer clause no 11 of volume-IF-TCC-SUPPLY and clause no 30 of volume-IF-TCC-Service.

SL NO	REFERENCE CLAUSE OF TENDER DOCUMENT	EXISTING PROVISION	BIDDER'S QUERY	BHEL'S CLARIFICATION
15.0	TCC (Service) Cl. No. 8.7 Page no. 5 of 32	Power for labour colony	We would request you to provide electricity for Labour hutment on free issue basis.	As per existing provision of TCC - there may be provision of Chargeable Power for labor colony for which contractor has to install meters and necessary accessories.
16.0	TCC (Service) Cl. No. 24.4.18 Page no. 18 of 32	4 nos reinforcement cutting machine	We presume the No of reinforcement cutting machine will be 1 No. instead of 4 Nos. Please confirm.	Shall be as per tender provision.
17.0	TCC-TS-CHIMNEY SEC-C page 6 of 7	Tech Spec stipulates cables shall be laid on galvanized sheet steel cable trays.	Price schedule Rev 00 Package A & B does not have items for cable tray. Please clarify	Cable tray shall be supplied by BHEL. Bidder to furnish cable tray layout and BOQ during detail engineering.
18.0	VOL-IF_C1615-TCC-TS-CHIMNEY SEC-C page 7 of 7	Tech spec stipulates communication system comprising of telephone socket at.....installation, a telephone hand set, junction boxes etc. shall also be provided.	Price schedule Rev 00 Package A & B does not have items for communication system. Please clarify	Bidder to provide communication system comprising of telephone socket at every internal platform level and at grade level, necessary wiring installation, a telephone hand set, junction boxes etc. shall also be provided. For further detail please refer attached GA drawing of chimney for reference.
19.0	PRICE SCHEDULE-REV 00 Package A & B page 19 of 21, item No. 2	415V, 200A, 4 wire AC Emergency Lighting distribution----- 50KVA lighting transformer -----Dyn11, Z=4%, ±2x2.5% Off Ckt. Tap) -----complete in all respects	Please confirm if 50 KVA transformer will be adequate for catering emergency load 20% platform, 50% staircase, 100% Stack Elevator and 100% Aviation Obstruction Lights.	Confirmed.
20.0	PRICE SCHEDULE-REV 00 Package A & B page 20 of 21, item 6a & 6b	Item 6a :- FTB 205 AND FTC 140 of flash technology of USA or equivalent - 20 nos Item 6b :- High intensity light having an effective intensity of 4000 to 200000 cd depending upon back ground luminance. & flashing frequency 40-60/min – 14 nos	Both item 6a & 6b is equivalent to High Intensity Aviation Obstruction Light & total Nos to be installed is 20 + 14 = 34). Please clarify where these 34 nos will be installed.	Aviation obstruction lights shall be four light units per level. There shall be 3 levels. Total quantity shall be 12 nos. Bidders are requested to quote accordingly.

SL NO	REFERENCE CLAUSE OF TENDER DOCUMENT	EXISTING PROVISION	BIDDER'S QUERY	BHEL'S CLARIFICATION
21.0	PRICE SCHEDULE-REV 00 Package A & B page 20 of 21, item No. 14	Lightning protection Air terminal	Please confirm if item No. 14 includes complete lighting protection system.	Lightning protection system shall comprise minimum 3 vertical air terminations for each flue liner, horizontal air terminations and minimum 4 Nos. of down conductors spaced 90 degrees apart routed all along chimney height on external surface and connected to the earthing system. Above ground level earthing and lightning protection system shall comprise galvanised steel strips. These materials provided at top 12 meters shall have additional coating of 2 mm thick seamless lead cover and the accessories like nuts, bolts, washers etc. shall be of stainless steel to take care of corrosion. For further clarification please refer GA drawing of chimney. Bidders are requested to quote accordingly.
22.0	General		Please provide GA drawing of chimney.	Please refer SI No.3 above.
23.0	NIT-Page 1	DUE DATE & TIME OF OFFER SUBMISSION	We request you to extend the date of submission of tender by at least 07 days subsequent to date of receipt of Clarification from BHEL against our queries instead of 12.11.2014 .	Please refer SI No.10 above.

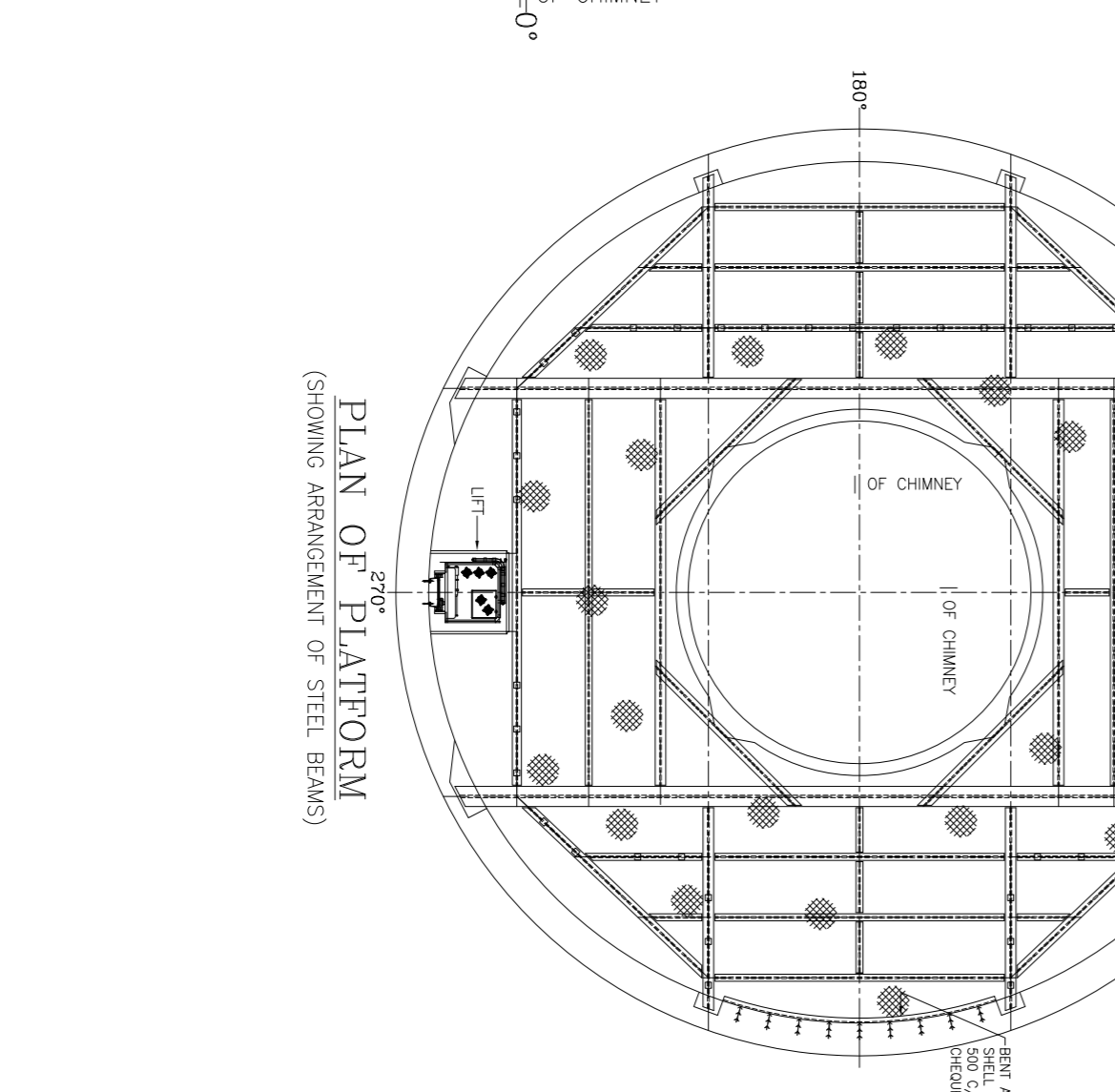
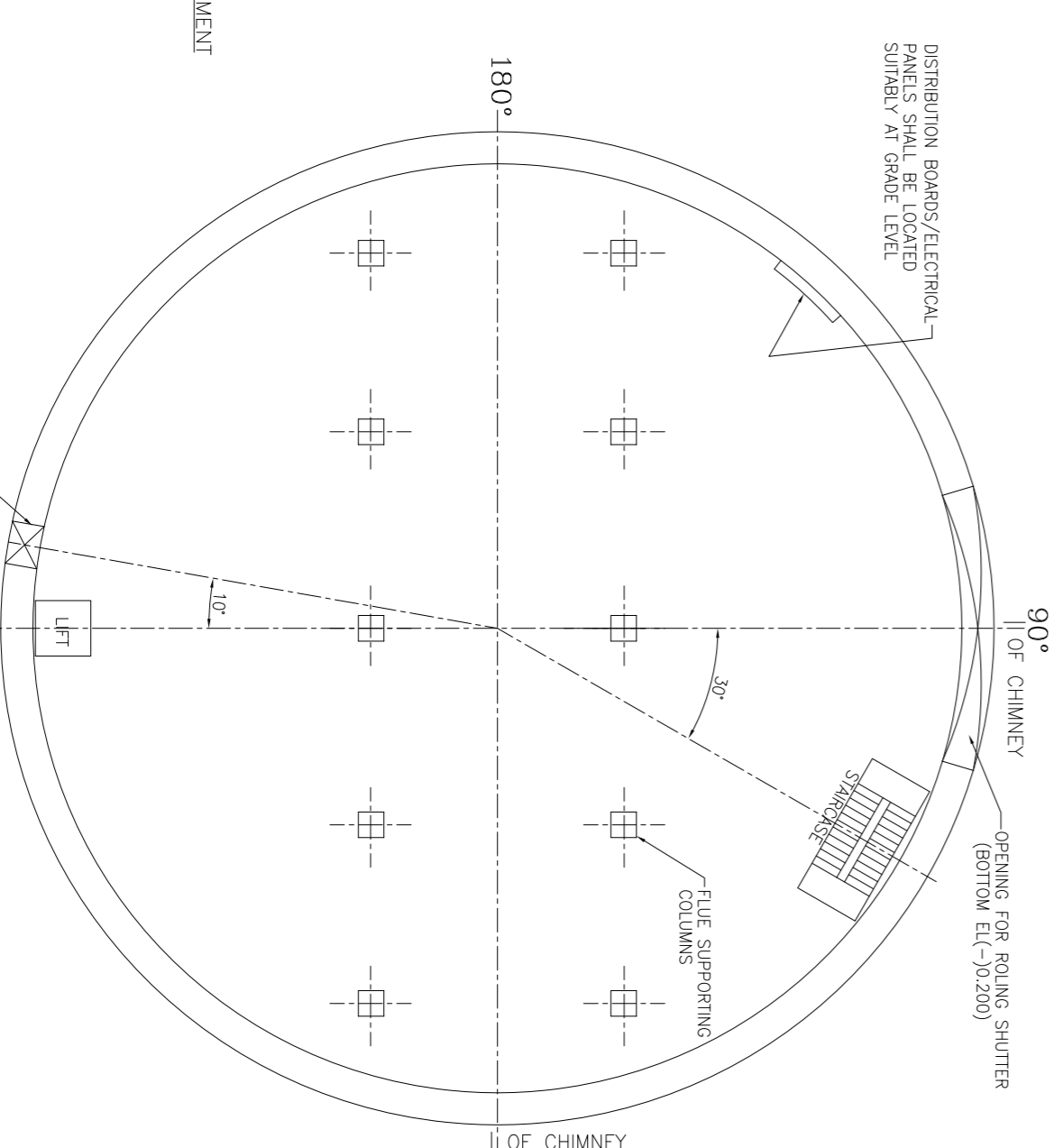
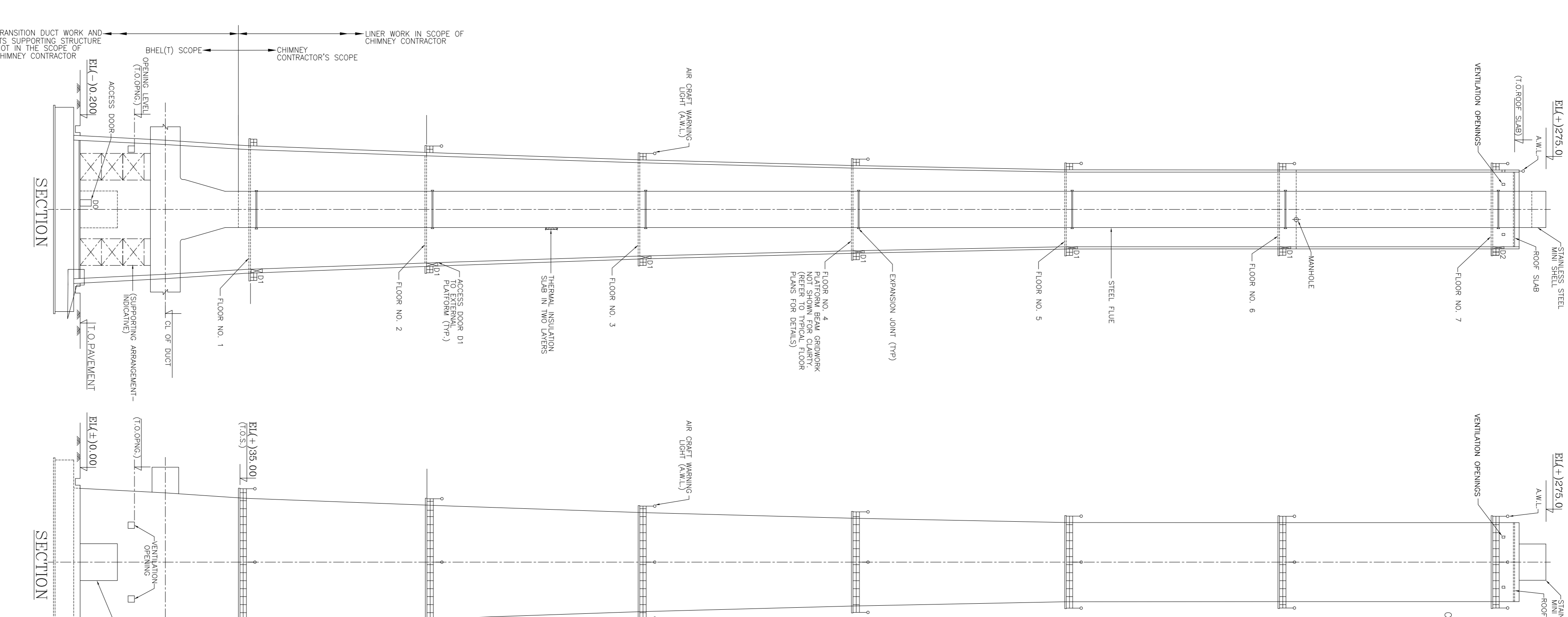
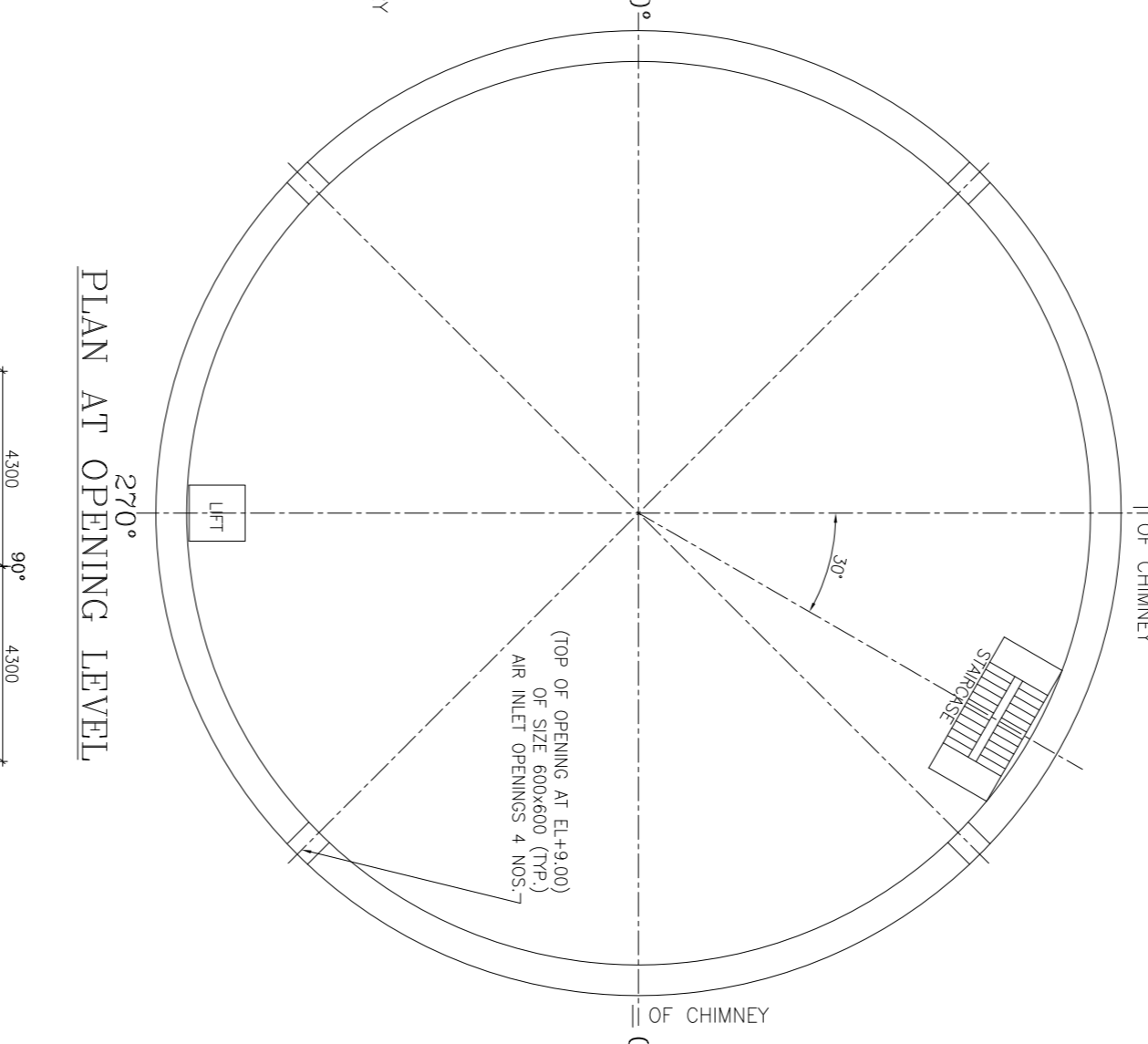
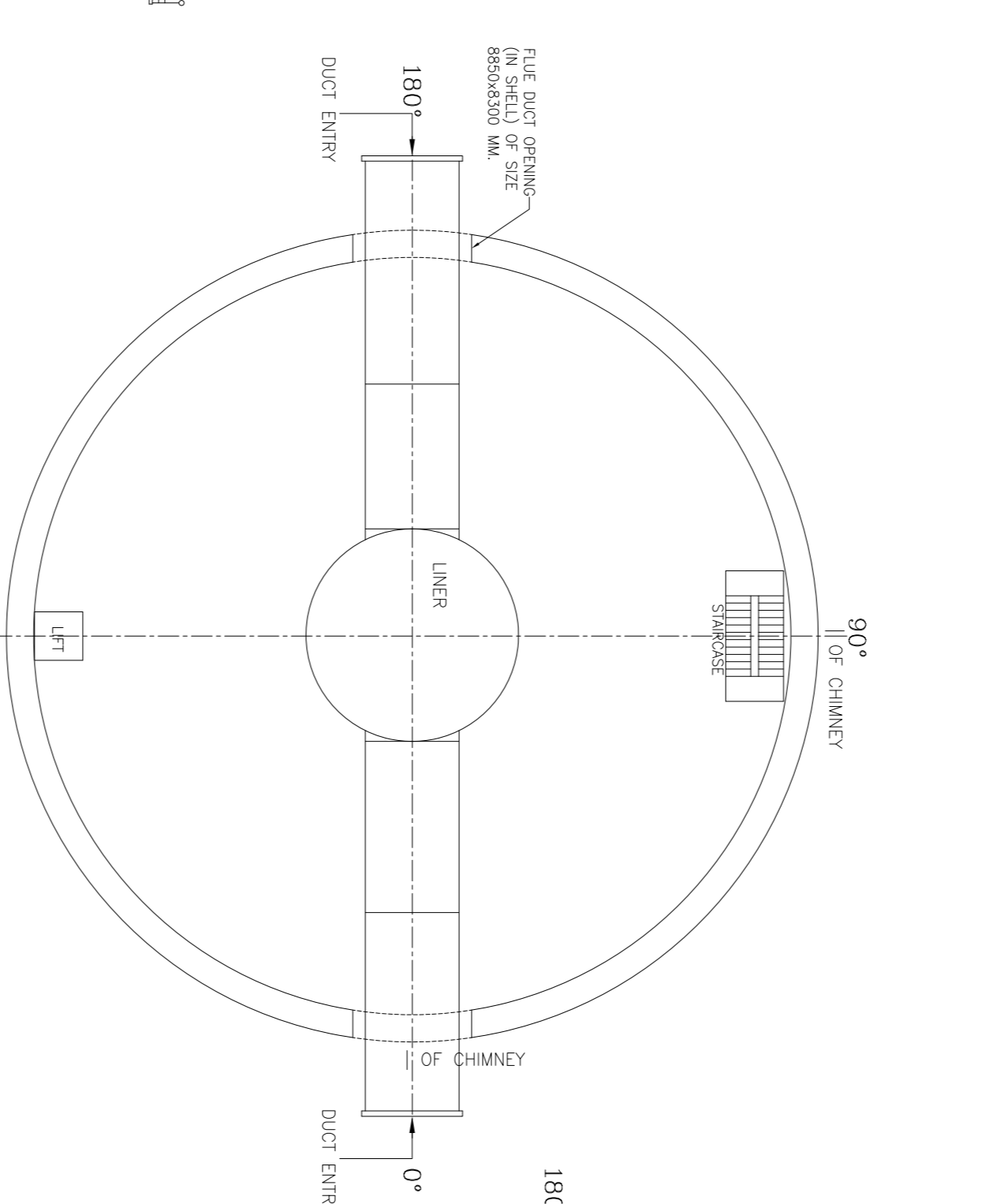
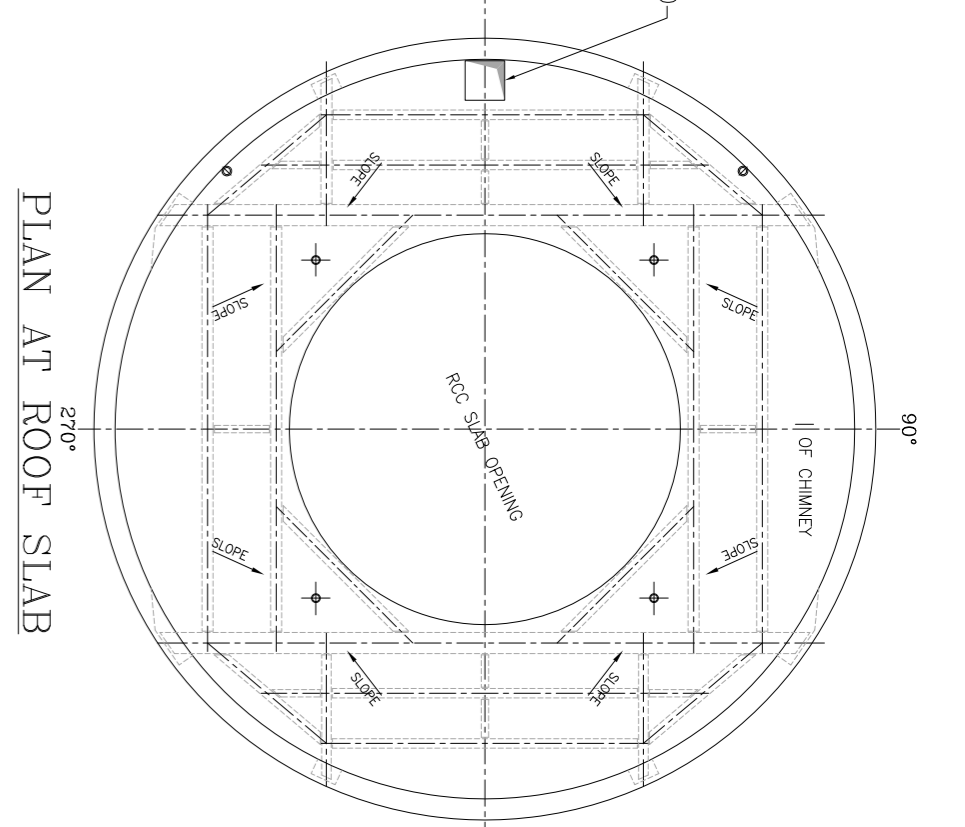
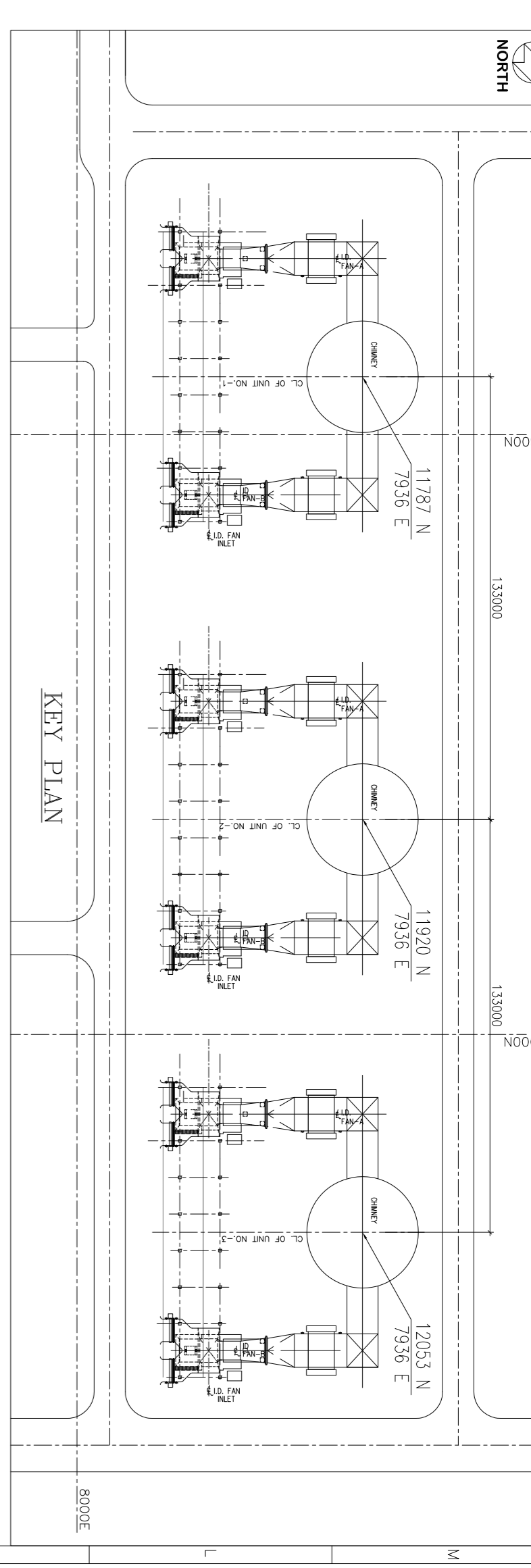
SL NO	REFERENCE CLAUSE OF TENDER DOCUMENT	EXISTING PROVISION	BIDDER'S QUERY	BHEL'S CLARIFICATION
24.0	BOQ Item No 57	Providing, fitting and fixing rainwater pipes at all levels internally from the chimney roof to ground level upto the hood drain basin including shoes, bends, junctions, flanges, hoppers, 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:	Qty. of BOQ is 220M for 275m Chimney. Please review	Quantity is revised to 550 M. Refer revised Price schedule Volume-III-(Rev-01)
	(b)	150 mm nominal bore medium class galvanised mild steel pipes.	Quantity is revised to 550 M. Revised BOQ may be referred.	
25.0	BOQ Item No 46	Providing and installing, at all levels, resin bonded glass wool insulation slabs of density not less than 64 kg/m ³	Generally only Rock Wool of 100Kg/cum is used in Chimney. Moreover Rock wool will be economical as compared to Glass Wool. Please Review	Please refer technical Specification attached with NIT.
26.0	BOQ Item No 64	Conducting load testing on girders for 1.25 times the full load, on ground, including provision of test bed and jacks, dial gauges and other supplies complete as per specification and drawings and approval of engineer –in-charge.	Generally load test on Girders in case of steel flue liner are not done. Please review	Please refer technical Specification attached with NIT.
27.0	Clause No. 3.0 of TCC(Services)	Scope of Work: The work to be done under this specification comprises of construction of 275 meter high reinforced concrete single steel flue chimney and other incidentals complete as detailed in the specification under Volume-II and elsewhere in the tender document, including raft foundation for Chimney at 3 X 660 MW North Karanpura STPP, Jharkhand as follows :	Technical Specification under Volume-II is not available in the linkage provided in NIT. Moreover you have provided the Technical Requirement in Vol. IF which speaks about the Design of Chimney and Wind Tunnel Testing. Since it is not relevant to this tender, please give the required specification under Vol.II and BOQ Item for Wind Tunnel Testing if required. If minishell is of SS then allowable wastage in Clause 20 of TCC(Services) to be introduced. To be more transparent only one item should be in BOQ either for RCC with other related items including C.I.Caps etc. or SS. Also Bore log data is not available in the tender document.	Please refer technical Specification attached with NIT. Bore Log data for Chimney shall be furnished to successful bidder during execution.

CLARIFICATION

SL NO	REFERENCE CLAUSE OF TENDER DOCUMENT	EXISTING PROVISION	BIDDER'S QUERY	BHEL'S CLARIFICATION
28.0	NIT Clause No. 5.0	Procedure for Submission of Tenders:	Please clarify if there is any Envelop naming Envelope - V to be submitted in this tender.	Main Envelope/Outer envelope shall be Superscribed as ENVELOPE-V.
29.0	BOQ Item No 6, Page 17 of 21	Aviation obstruction lights: 6a. FTB 205 AND FTC 140 of flash technology of USA or equivalent. 6b. High intensity light having an effective intensity of 4000 to 200000 cd depending upon back ground illuminance. & flashing frequency 40-60/min.	Sub Item 6a & 6b are same and the description of items should be in continuation. If 4 no lights/ platform are provided then for 5 no. platform Qty. should be 20nos not 14 nos. Please review	These are high intensity light and it is sufficient to provide lights at three level. Hence total requirement is of 12 nos high intensity lights. Bidders are requested to quote accordingly. Refer revised Price schedule Volume-III-(Rev-01)
30.0	Cl. No. 2.17 of GCC - Service	Price Variation Clause (PVC) is applicable	As per Cl. No. 37 of TCC- Service, PVC is not applicable; please clarify regarding the applicability of PVC	Price Variation Clause is not applicable for this tender . Please refer Clause No 9 of VOLUME-IF-TCC-SUPPLY and Clause No 37 of VOLUME-IF-TCC-SERVICE. Also refer Clause No 31 of NIT. TCC prevails over GCC as per NIT.
31.0	Cl. No. 2.12 of GCC - Service	Over run charges (ORC) is applicable	As per Cl. No. 38 of TCC- Service, ORC is not applicable; please clarify regarding the applicability of ORC	ORC is not applicable for this tender . Please refer Clause No 10 of VOLUME-IF-TCC-SUPPLY and Clause No 38 of VOLUME-IF-TCC-SERVICE. Also refer Clause No 31 of NIT. TCC prevails over GCC as per NIT.
32.0	Cl no. 35.7.1 of TCC - Service	Service Tax with educational cess to service tax as legally leviable & payable to the contractor, vide Sec-656 (44), shall be paid by BHEL on the contractors gross bill. Under section- 68(1) of Finance Act, 1994 read with Rule 6(1) of service tax rules, 1994, payment of service tax at the rate specified in Section	In case LANCO discharges its service tax liability through adjustment of input credit available with LANCO, then LANCO will not be able to submit G.A.R.7 challan although LANCO may provide declaration along with copy of service tax return	In case of Service tax amount adjusted against the availabement of CENVAT credit, Certificate duly signed by Chartered Accountant is required to be submitted
33.0	Clause no. 24.4.6 of TCC- Service	Contractor to arrange 1 no. of 18/20 T crawler crane	LANCO proposes to replace the same with 1 no of Hydra (10/12 T cap) at the time of structural work & flue can assy. And erection.	Shall be as per tender provision.

SL NO	REFERENCE CLAUSE OF TENDER DOCUMENT	EXISTING PROVISION	BIDDER'S QUERY	BHEL'S CLARIFICATION
34.0	Clause no.24.4.11 of TCC- Service	Contractor to arrange one no. of portable I stationary automatic batching plant with printing facilities (approx.30 cum I hr)- to be commissioned at site	One no,.. of 18 to 20 cum I hr capacity Batching plant will be installed for chimney works by the side of the chimney (within a radius of 5-10 Mtr)	Shall be as per tender provision.
35.0	Clause no.24.4.12 of TCC- Service	Contractor to arrange 2 nos. of Transit Mixer (4.5 I 5 I 6 cum cap)	LANCO proposes to use rails (in place of transit mixer) for transportation of concrete in bucket from Batching plant to Chimney.	Shall be as per tender provision.
36.0	Clause no.24.4.24 of TCC- Service	Contractor to arrange 1 no of total station	Not required as Theodolite & auto level will serve the purpose of survey along with laser plumb.	Shall be as per tender provision.
37.0	Clause no. 24.4.29a of TCC- Service	Contractor to arrange Slip I Inter form equipment set including hydraulic spare pump, 10% spare jack, epoxy painted MS shutter plate, materials and passenger hoist with safety block(safety devices), Safety ropes etc complete - 1 set	LANCO's own equipment (1 set) will be deployed with relevant supporting design & details, if required. We have been using this equipment for our various projects (including BHEL • projects) to entire satisfaction.	Shall be as per tender provision.
38.0	Clause no.24.4.32 of TCC- Service	Contractor to arrange 1 no of Ultra-sonography testing machine (UTM) for structural work	This work of Ultra-sonography will be out sourced & the party will bring UTM for testing work as and wh.en required.	Shall be as per tender provision.
39.0	Clause no.24.4.33 of TCC Service	Contractor to arrange 1 no of Rudiography source	This work of Radiography will be out sourced & the party will bring machine for radiography work as and when required.	Shall be as per tender provision.
40.0	Vendor list of TCC - Supply (page no.11 to 13)	Vendor list for certain items are given in page no.11 to 13 of TCC- Supply	Items & their proposed vendors to be included as per Annexure – I	Shall be as per tender provision.
41.0	Vendor list of TCC - Service (page no.28 to 32)	Vendor list for some items are given in page no. 28 to 32 of TCC - Service	Items & their proposed vendors to be included as per Annexure - I	Shall be as per tender provision.
42.0	Sl. no. 17a of Price schedule of Package - A	Formwork - Inner and outer faces of wind shield with slip form shuttering - 28,000 sqm	28,000 sqm is the area of one surface (i.e, either inner or outer chimney surface) or it is numerical addition of both inside & outside surfaces	28000 m ² is cumulative surface area for slip form, including external as well as internal surface area

SL NO	REFERENCE CLAUSE OF TENDER DOCUMENT	EXISTING PROVISION	BIDDER'S QUERY	BHEL'S CLARIFICATION
43.0	Sl. no. 64 of Price schedule of Package - A	Conducting load testing on girders for 1.25 times the full load, on ground, including provision of test bed and jacks, dial gauges and other supplies complete as per specification and drawings and approval of engineer in-charge.	Kindly clarify what is this item & which girder is to be tested?	main girders for internal platforms in chimney are tested by preparing a test bed, and applying design load through hydraulic jack, and deflections are noted.
44.0	Drawing			GA drawing is attached for tender purpose only.
45.0	Bore Log Data			Bore Log data for Chimney shall be furnished to successful bidder during execution.



- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES.
 2. COMPLIANCE WITH STANDARDS SHALL RELATE TO LATEST PUBLISHED EDITIONS.
 3. THE OTHER COMPONENTS OF THE CHIMNEY INCLUDE: RAIL UP DOORS, ELEVATOR, NON METALLIC EXPANSION JOINTS, RAIN WATER DRAINAGE SYSTEM, VENTILATION OPENINGS, ELECTRICAL POWER SUPPLY DISTRIBUTION BOARDS, LIGHTING PANELS, SOCKET OUTLETS, POWER AND CONTROL CABLING, RACKING SYSTEM, STAIR AND PLATFORM LIGHTING, LIGHTNING PROTECTION & GROUNDING SYSTEM, STAIR AND COMMUNICATIONS SYSTEM ETC. AND SHALL BE PROVIDED AS PER TECHNICAL SPECIFICATIONS.
 4. AIRCRAFT WARNING LIGHT (A.W.L.) SHALL BE PROVIDED TO MEET THE REQUIREMENT OF RELEVANT STANDARD STATUTORY BODY.
 5. PROJECT NAME SHALL BE PAINTED ON THE FACE BY FLUORESCENT PAINT WITH WITH FOCUSED DAMP.

FOR TENDER PURPOSE ONLY

3X660 MW NORTH KARANPURA
 STPP
 GA OF CHIMNEY
 TENDER DRAWING

NO.	REV.	DATE	BY	CHKD.	APPD.	DATE	BY	CHKD.	APPD.
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**VOLUME-III
PRICE SCHEDULE, REV-01**

JOB: PACKAGE A - CONSTRUCTION OF 275 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY AND OTHER INCIDENTALS COMPLETE, INCLUDING RAFT FOUNDATION FOR CHIMNEY OF UNIT#1 AT 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.

TENDER NO. PSER:SCT:NKP-C1615:14

SL. No.	PREAMBLE
1	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully before filling in rates for various items. Clauses under this preamble shall be read in conjunction with Volume-IB, ID, IE, Volume – IF and other tender sections as applicable and shall have precedence over any contrary statement mentioned anywhere in this document.
2	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions. Drawings enclosed with the tender are only preliminary and for tender purposes and giving some idea of the work involved. The work is to be executed as per drawings & documents, which shall be furnished during execution.
3	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc. equipment, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, levies, taxes(except service tax), transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the complete tender document and this schedule.
5	The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of work executed under any part of this contract including extra items, if any but excluding any price variation remains, within fifteen percent ($\pm 15\%$) of the awarded price as per LOI.
6	Prior written approval of BHEL shall be sought by the contractor in case quantity variation of any item crosses +50% (plus fifty percent) limit during execution and approval to be obtained before execution of further quantity for this item.
7	In case Sealed /Paper Price Bids are opened for finalisation of the tender, for any Item Rate/BOQ based contract, possibility of variation of quantity/ addition/deletion of items can not be ruled out. Under such circumstances, after execution of work, if it is observed that standing as L-1 is changed based on actual quantity executed, the bidder shall give suitable rebate to maintain your standing as L-1. Since this aspect can be assessed at the end of execution, necessary adjustment will be effected at the end of execution in final bill. This condition shall not be applicable where the tender is finalised through Reverse Auction.
8	BHEL reserve the right to rationalize the rates, quoted by L-1 bidder against unit rate items and/ or other optional items with respect to item-wise lowest rates (amongst the participating bidders), before placement of order.
9	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing, clearing of old structures and leveling etc. including fixing of grid pillars, benchmarks etc. required for commencement of site activities. No separate payment will be made towards the same. However, if separate rate for such item is available in the rate schedule, the same shall be considered.
10	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English language.
11	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted as per BHEL approved payment schedule/billing break-up.
12	The tender shall be deemed to have visited site and made himself aware of all the site conditions, studied the specifications and details of work to be done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
13	No splitting of the job is envisaged. Decision of BHEL in this regard shall be final and binding to the bidders.
14	Bidders are not allowed to alter the Price Schedule format including item description, quantity etc. and the offer is liable for rejection if the bidders submit their prices in Price Schedules modified by them. BHEL reserves the right to reject the offers of bidders who submit offers in Price Formats which are modified/altered by them.
15	Bidders to note that for Civil &/Structural packages, against a particular item against a ST No. appearing in more than one schedule of the BOQ, same rate must be quoted in all schedules for that particular items with same descriptions. If by error, different rates are quoted in different schedules for same ST No. (i.e. item with same description), then the higher of the rates shall be considered for evaluation but awarding shall be done with the lower rate, if the bidder becomes L-1."
16	In case of Lumpsum contracts, addition or deletion of the scope beyond the variation limit specified shall be derived from the quoted Lumpsum price and the tendered scope of work considering the allowable variation limit.
17	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.
18	In case of tender for Civil and/or Structural works, the Non-schedule items are not quoted by the bidder, it will be treated at par with rate of corresponding item of CPWD/PWD/DSR schedule as prescribed in the tender/BOQ cum Rate Schedule.
19	Size and weights of various items are mentioned in the attached BOQ cum rate/price schedule for reference purpose only & these shall not be taken into consideration for quoting/calculating amount in the rate schedule. These shall be utilised as per relevant sections of tender. Bidders shall quote for each item in the rate column, taking unit as mentioned in the quantity column. Rates shall be filled in both figures and words. Amount shall be calculated based upon these rates multiplied by the mentioned quantity for the respective items.
20	Bidder's Grand Total price shall be considered for evaluation unless stated otherwise.
21	In case of BOP packages, if Bidder does not quote/indicate the price for freight charges against indicated rate schedule, the same shall be considered as 2% of basic price and adjusted with the total quoted price against each item keeping the total quoted price unaltered.

**VOLUME-III
PRICE SCHEDULE, REV-01
PACKAGE-A**

JOB: PACKAGE A - CONSTRUCTION OF 275 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY AND OTHER INCIDENTALS COMPLETE, INCLUDING RAFT FOUNDATION FOR CHIMNEY OF UNIT#1 AT 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.

TENDER NO : PSER:SCT:NKP-C1615:14

SCH-1 - TOTAL PRICE

SL NO	DESCRIPTION	AMOUNT (Rs.)
1.0	TOTAL PRICE OF SERVICE (PART-1) (SCH-2).	
2.0	TOTAL PRICE OF SUPPLY (PART-2) (SCH-3).	
3.0	GRAND TOTAL PRICE	

NOTE

1.0	Bidder's quoted total price at sl no 3.0 above shall be taken into account for evaluation. However, bidder shall furnish break-up of grand total price for various systems in the respective schedules and shall be complete in all respects as per provision of tender and technical specification.
2.0	Bidder shall furnish item-wise break-up of above grand total price in the respective schedule as per following. Total of prices of various schedules shall match with above total price.
2.1	SCH-2 - SERVICE (PART-1).
2.2	SCH-3 - SUPPLY (PART-2).
3.0	Bidder shall quote their rates/ prices against all components as per the schedules & terms & conditions of tender.
4.0	Schedule of Equipment has been indicated for reference only. All electrical items/accessories required for completeness of Chimney Electrical System shall be supplied by the contractor.

**VOLUME-III
PRICE SCHEDULE, REV-01
PACKAGE-A**

JOB:PACKAGE A - Construction of 275 meter high Reinforced Concrete single steel flue chimney and other incidentals complete, including raft foundation for chimney of unit#1 at 3 x 660 MW North Karanpura STPP, Jharkhand.

TENDER NO : PSER:SCT:NKP-C1615:14

SCH-2-SERVICE PART (PART-1)

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
PART - 1A (CIVIL & STRUCTURAL 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	4300		
b	Depth exceeding 2 m but not exceeding 4 m	cum	3200		
c	Depth exceeding 4 m but not exceeding 6 m	cum	2100		
d	Depth exceeding 6 m but not exceeding 8 m	cum	1000		
2a	Extra over Item No. 1 for dewatering of ground water by well point method as per IS 9759 for the depth of excavation as per drawing and period of excavation, concrete casting and backfilling complete.	cum	1300		
2b	Extra over Item No. 1 for dewatering of ground water by providing pump of required capacity in pit excavated for pumping for the depth of excavation as per drawing, period of excavation, concrete casting and backfilling complete.	cum	1800		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
3	Earth work in <u>excavation in soft rock</u> (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.				
b	Depth exceeding 2 m but not exceeding 4 m	cum	500		
c	Depth exceeding 4 m but not exceeding 6 m	cum	1000		
d	Depth exceeding 6 m but not exceeding 8 m	cum	1000		
7	<u>Back filling</u> 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 <u>from compulsorily excavated soil</u> 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	600		
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	5000		
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	550		
9	Extra over item No. 1 and 3 to 7 for <u>carriage of excavated earth/selected materials</u> for every 1 km or part thereof beyond an initial lead of 500m.	cum	3800		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
10	<u>Back filling</u> upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness <u>using/with approved borrowed soil</u> (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.				
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	cum	250		
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	2500		
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	300		
11	<u>Supplying and filling sand</u> 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-XIV) 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	208		
12	<u>Supplying and laying</u> (inside chimney in the space below the grade level slab) <u>crushed rock</u> (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	1467		
13	Providing and laying <u>Nominal Mix plain cement concrete (1:3:6)</u> with graded aggregate (with maximum size of coarse aggregate not exceeding 40 mm) at all levels for all kinds of <u>work like mass concrete, lean concrete, mudmat, filling</u> 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	165		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
14	Providing and laying <u>design mix cement concrete</u> with graded aggregate (maximum size of coarse aggregate not exceeding 20 mm) <u>for reinforced concrete work</u> 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	4500		
ii	For all other works				
a	Grade M-20 (grade level slab)	cum	62		
b	Grade M-30 for chimney shell, corbels and external platforms and other shell attachments.	cum	114		
c	Grade M-35 for chimney shell, corbels and external platforms and other shell attachments.	cum	9600		
14A	Extra over St. No. 14(i) for controlling of temperature of fresh concrete to less than 23 degree centigrade using ice, including all related arrangements for providing, storing and mixing of ice with water, cooling of aggregates etc. All complete as per specification, drawing and instruction of engineer in charge.	cum	4500		
15	Providing and applying <u>two coats of bitumen</u> grade 85/25 as per IS 702 (@ 1.7kg/sqm) with 1% antistripping compound conforming to IS 6241 in foundation, shell, pedestal etc <u>on concrete surfaces exposed to soil / ash</u> including surface preparation etc. all complete.	Sqm	1750		
16	Providing and placing <u>reinforcement, for reinforced concrete work</u> , 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	450		
ii	For all other works				
b	High strength deformed bars	Mt	1050		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
17	Providing and fixing <u>formwork</u> 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	1460		
	For all other works				
a	Inner and outer faces of wind shield with slip form shuttering	Sqm	28000		
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	717		
18	Providing and fixing <u>formwork in shell openings</u> (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	141		
19	Providing and placing in position at all levels, <u>building paper (kraft paper)</u> , as per IS:1397, between concrete surfaces including the cost of labour, material, etc. complete as per drawings and instruction of the Engineer.	Sqm	61		
20	Providing and installing, at all levels, <u>bitumen impregnated fibre boards</u> , 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	29		
21	Providing and filling, at all levels, <u>bitumen sealing compound</u> (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	441		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
22	Preparing detailed fabrication drawings and after approval by the Engineer, supplying, fabricating, erecting and installing <u>miscellaneous steel parts to be embedded/cast in concrete</u> (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		
23	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting <u>structural steel work</u> 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, primer and finish painting etc. complete as per drawing and specifications. Payment Terms : a) Fabrication : 65 %, b) Erection : 25 %, c) Alignment : 10 % (STRUCTURAL STEEL SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	Mt	430		
25	Providing and fixing in positing of <u>high strength structural bolts</u> (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. ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR. Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %	Quintal	40		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
26	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and erecting, at all levels, <u>structural steel flues (liners)</u> 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 : 25 %, c) Alignment : 10 % (STRUCTURAL STEEL SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	Mt	700		
27	Providing, fabricating and installing at various locations and elevations of the chimney system the following <u>miscellaneous mild steel items</u> 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: ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR. Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %				
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		
b	32/40 mm nominal bore medium class tubular hand railing for stair case and internal and external platforms.	Mt	24		
c	Providing minimum 275 gsm Hot dipped galvanisation on mild steel parts as per specification.	Mt	24		
29	Supplying, fabricating and <u>installing in the liners, gas sampling and gas opacity measurement ports</u> 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	5		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
30	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting, at all levels <u>SS Mini Shell</u> at roof shell of grade A316L , etc. complete as per drawing and specifications. (STAINLESS STEEL PLATE SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	Mt	18		
31	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing at all levels, <u>stainless plates</u> (including stainless steel screws and fasteners) of grade AISI 316L and <u>lead sheets beams</u> 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. (ALL MATERIALS EXCEPT SS PLATE TO BE SUPPLIED BY THE CONTRACTOR. SS PLATE SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)				
a	Stainless steel components.	Mt	0.24		
b	Lead Sheets.	Kg	80		
32	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing <u>expansion compensator joints</u> 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 maintainance procedures for the expansion joints), testing, etc complete as per drawings and specifications. ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR. Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %	Sqm	81		
33	Supplying ,Fabricated Ready to Install, <u>spare expansion compensators</u> 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	23		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
34	Supplying and laying in position <u>shaped acid resisting bricks</u> 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	5		
35	Supplying and laying in position <u>shaped fire bricks</u> conforming to IS-6 group A 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	5		
38	Supplying and laying <u>vermiculite concrete</u> 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	5		
39	Supplying and laying <u>acid resisting castable refractory lining</u> as indicated in the drawings 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	5		
43	Providing, laying and packing, at all levels, <u>asbestos ropes</u> at expansion joints including the cost of all labour material, etc. complete as per drawing and specifications.				
b	12 mm (diameter) at expansion joints between brick linig segments.	Rm	1040		
44	Providing, fabricating and laying in position <u>asbestos mill boards</u> , 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	10		
46	Providing and installing, at all levels, <u>resin bonded glass wool insulation</u> 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	2750		

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PRICE SCHEDULE

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
47	Providing and installing, at all levels, <u>resin bonded rock wool insulation</u> 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	2750		
48	Providing and packing, at all levels, <u>loose glass wool insulation</u> to a density not less than 64 kg/m3 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	10		
49	Providing and packing, at all levels, <u>loose rock wool insulation</u> 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	10		
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 <u>acid and heat resisting black bituminous paint</u> (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	14200		
53	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <u>synthetic enamel paint</u> 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	12750		

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PRICE SCHEDULE

VOLUME-III, REV-01

PACKAGE-A

SCH-2-SERVICE (PART-1)

TENDER NO PSER:SCT:NKP-C1615:14

SIGNATURE WITH SEAL OF THE BIDDER

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
54	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <u>acid and heat resistant polyurethane paint</u> 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	2450		
55	Proving and laying over the <u>chimney roof, a comosite acid and heat protection treatment</u> 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	135		
56	Providing, fitting & <u>fixing, outlet and overflow, cast iron roof drain heads (with gratings)</u> 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		
57	Providing, fitting and fixing <u>rainwater pipes</u> 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 <u>cast iron pipes.</u>	Rm	25		
b	150 mm nominal bore <u>medium class galvanised mild steel pipes.</u>	Rm	550		
58	Providing and laying 50 mm thick <u>cement concrete flooring</u> (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. (CEMENT SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	Sqm	460		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
59	Providing and installing an <u>electrically operated grill type steel roll-up door</u> (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	1		
60	Providing and installing at any level and location, mild steel, double plate, <u>personnel access doors</u> , 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	7		
61	Supply, fabricating and fixing of <u>cleanout door</u> of size 650X825 mm. The door should be solid steel construction with inner plate 8mm and outer plate 6mm with suitable infill of stiffeners, & filled with insulation mateterial and all other fittings, fixtures, fasteners including the cost of painting etc complete as per drawings and specification. The door should be hinged type and providing with locking device in addition to swivel studs with wing nuts on remaining 3 edges. The should be openable both from inside & outside and removable insulation to be provided around door opening. The door shall be provided with a minimum two coats of acid & alkali resistant paint confirming to IS158 type-I to give a DFT of 75microns. The outside surface shall be provided with minimum 2 coats of Zinc redoxide primer and two coats of synthetic enamil paint.	Each	12		
63	Supplying, fabricating and installing <u>mild steel hatches</u> at various locations in the chimney system complete with locking arrangements, frames, insulation, fittings and fixtures and all mechanisms and accessories reqd. for proper operation including all labour, painting etc. complete as per drawings and specifications.				
a	Hood Access Hatch	Each	1		
c	Liner Access Hatch	Each	2		
64	Conducting <u>load testing on girders</u> for 1.25 times the full load, on ground , including provision of test bed and jacks, dial gauges and other supplies complete as per specification and drawings and approval of engineer in-charge.	Pair	3		

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ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
65	Designing, supplying, fabricating and installing after approval by the Engineer, <u>non-metallic expansion joints</u> to seal gaps between chimney components and to meet the service requirements as given in the specifications alongwith the cost of all components of the expansion joint, insulation, galvanised bolts, nuts, washers, anchor fasteners and retaining bars, packing materials and reinforcements at the connecting ends and flanges, lapping etc. including preparation of brick surface (to be connected to the expansion joint) with potassium silicate resisting mortar for proper leak tight bearing surface, with the cost of all labour and equipment, user hand books (giving details of installation, dismantling and maintenance procedures for the expansion joints) etc. complete as per drawings and specifications for:				
a	<u>Expansion joint between ducts and liners.</u> (2 Nos.)	Sqm	18		
66	Erecting rack and pinion type elevator of proven make after obtaining approval from BHEL/NTPC, with a load carrying capacity of 400 kg (min) (passenger cum goods) , cabin floor size of 1100 mm x 1000 mm (min.) and an operating speed of 40 m/min. (approx.), for travel from the grade level to the top of the chimney with stopages at landing platforms/ other levels as per drawing, specification and approval of engineer in charge. The elevator shall be of a proven and approved make. Enclosure shall be fabricated from tubular steel and expanded metal or wire mesh, 2.1 m high (Approx.). A Safety device comprising of an over speed governor in constant mesh with the rack by means of a flame hardened steel pinion shall be provided to protect the cab against over speed during the cab downward motion and the same shall actuate the brake mechanism and stop the down ward motion gradually. The lift shall be installed using anchor fasteners. Drive motor shall be of S3 duty class with CDF of 25% and maximum number of 120 starts per hour in 55 degree C ambient temperature. The motor shall be provided with internal 220 V AC single phase space heaters or an alternate heating system The elevator shall be supplied, installed, painted, tested, commissioned etc. complete with all mandatory spares and operation maintenance manual.	Lumpsum	1		
67	Quote % above or % below or at par for items not covered as above of this schedule (i.e. ST. No. 1 to 66). The rate shall be derived from Delhi schedule of rate 2013.				
a	Rate of complete item			_____ %	
b	Rate of supply of material at site only			_____ %	
c	Rate for execution complete excluding supply of materials.			_____ %	

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
SUB-TOTAL (PART-1A except ST NO 67.0)					
PART - 1B					
ELECTRICAL/MECHANICAL ERECTION WORKS ETC. (BIDDER TO QUOTE RATES FOR ERECTION, COMMISSIONING ONLY).					
1	415V, 200A, 50 KA for 0.25 sec, 4 wire AC Distribution Board with 1No. incomer (SFU) along with 100KVA lighting transformer (415/433 V, Dyn11, Z=5%, ±2x2.5% Off Ckt. Tap) & 9 nos. of 100A (TPN) outgoing complete in all respects	No.	1		
2.	415V, 200A, 4 wire AC Emergency Lighting distribution board along with 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 SFU (TPN) outgoings complete in all respects	No.	1		
3.	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer, 18 outgoing (16A SP MCBs)	No.	3		
4.	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A TPN/SFU incomer and 12 outgoings (16A, SP MCBs)	No.	2		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
5.	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer, 8 outgoing (20A SP MCBs)	No.	1		
6.	Aviation obstruction lights:				
6a.	FTB 205 AND FTC 140 of flash technology of USA or equivalent	No.	20		
6b.	High intensity light having an effective intensity of 4000 to 200000 cd depending upon back ground illuminance. & flashing frequency 40-60/min.	No.	12		
7.	Flood light with 250W HPSV lamps with all controlgears & accessories	No.	6		
8.A	Well glass type luminaries with 70W/HPSV lamp with all controlgears & accessories	No.	60		
8.B	Well glass type luminaries with 150W/HPSV lamp with all controlgears & accessories	No.	45		
9.	63 Amp welding switch socket with plug & other Mounting accessories	No.	10		
10.	3 pin, 1 ph, 240V,20Amp. Power sockets complete with plug Switches etc.	No.	10		
11.	Al conductor, XLPE insulated, Armoured, PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.				
11a	3½ C x 95mm ² Al for connection between ACDB/ELDB/ welding sockets	Lot as reqd.	1		
11b	b. 3½ C x 35mm ² Al for Lighting panel incoming supply	Lot as reqd.	1		
12.	XLPE insulated 650/1100V grade stranded Cu Conductor lighting wires conforming to IS-694. (2.5 mm ² / 4.0 mm ²)	Lot as reqd.	1		
13.	GI conduit 25mm dia with junction Boxes, Pull boxes & accessories	Lot as reqd.	1		
14.	Lightning protection Air terminal	Lot as reqd.	1		
15.	Earthing materials	Lot as reqd.	1		
SUB-TOTAL (PART-1B)					
TOTAL (PART-1A + PART-1B)					
NOTES					

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
1	Various platforms shall be illuminated by 70/150W HPSV well glass lighting fixtures. Staircase lighting shall be with 70W HPSV well glass fixtures. Average illuminations level of 150 lux shall be maintained on equipment and 50 lux on platforms & staircases (minimum 1 lighting fixture at each landing). Lighting system shall be controlled through MCB provided in lighting panel.				
2	A lighting and power panel each shall be located at grade level and at other in between levels as required. All distribution boards, aviation lighting controls, etc. shall be located at grade level only. At each platform, 1 No. 63A, 415V welding receptacle and 1 No. 20A, 240V receptacle shall be provided and shall be fed from power panel. Wiring installation for lighting fixture shall be of PVC insulated copper/aluminium wires through galvanised steel conduits.				
3	Aviations obstruction lighting system shall conform to the requirements of the latest rules and regulations of the International Civil Aviation Organisation (ICAO), National Airports Authority (NAA) and Directorate of Air Routes and Aerodromes (DARA). The type of aviation obstruction lighting system shall be of high intensity aviation obstruction lights having an effective intensity of 4000 to 2,00,000 cd depending upon back ground illuminance. The aviation obstruction lighting system shall be of type FTB 205 and FTC 140 of Flash Technology Corporation of USA or equivalent. A minimum of three levels will be provided with aviation obstruction lights and there will be four light units per level. The lowest level should not be lower than 70 meters above the ground and vertical spacing of the intermediate levels could vary between 70 and 105 meters. Aviation obstruction lighting shall be complete with lights, photo cell, controller, special cables, etc.				
4	A temporary aviation obstruction lighting system shall be provided during construction of the chimney.				
5	Cables from distribution board to lighting panels/power panels/receptacles shall be 1100V grade, XLPE insulated armoured aluminium conductor FRLS PVC sheathed with a minimum size of 4 sq.mm. cables shall be laid on galvanised sheet steel cable trays. Cables shall be terminated using double compression type cable glands and solderless crimping type tinned copper cable lugs.				
6	Lightning protection system shall comprise minimum 3 vertical air terminations for each flue liner, horizontal air terminations and minimum 4 Nos. of down conductors spaced 90 degrees apart routed all along chimney height on external surface and connected to the earthing system. Above ground level earthing and lightning protection system shall comprise galvanised steel strips. These materials provided at top 12 meters shall have additional coating of 2 mm thick seamless lead cover and the accessories like nuts, bolts, washers etc. shall be of stainless steel to take care of corrosion. Chimney earthing system shall be interconnected to main plant earthing system.				
7	A temporary lightning protection system shall be provided during construction of the chimney till a permanent lightning protection system is installed. In no case reinforcement bars of Shell should be used as earthing Down Conductors.				
8	Communication system comprising of telephone socket at every internal platform level and at grade level, necessary wiring installation, a telephone hand set, junction boxes etc. shall also be provided.				
9	415V, normal and emergency AC power supply for chimney shall be derived from main plant power supply system. Emergency supply shall feed 20% of platform lighting, 50% of staircase lighting, aviation obstruction lighting and elevator load. All other loads shall be connected on normal power supply.				
10	Ambient temperature for design of all equipment shall be considered as 55 deg. C which is likely to be encountered inside the chimney.				
11	Schedule of Equipment has been indicated for reference only. All electrical items shall be supplied on as required basis.				

VOLUME-III
PRICE SCHEDULE, REV-01
PACKAGE-A

JOB:PACKAGE A - Construction of 275 meter high Reinforced Concrete single steel flue chimney and other incidentals complete, including raft foundation for chimney of unit#1 at 3 x 660 MW North Karanpura STPP, Jharkhand.

TENDER NO : PSER:SCT:NKP-C1615:14

SCH-3-SUPPLY (PART-2)

ST NO	Description of Item	Unit	Quantity	RATE (Rs)					AMOUNT (Rs)					
				BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL	BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL	
	Civil Works													
66	Supplying rack and pinion type elevator of proven make after obtaining approval from BHEL/NTPC, with a load carrying capacity of 400 kg (min) (passenger cum goods) , cabin floor size of 1100 mm x 1000 mm (min.) and an operating speed of 40 m/min. (approx.), for travel from the grade level to the top of the chimney with stopages at landing platforms/ other levels as per drawing, specification and approval of engineer in charge. The elevator shall be of a proven and approved make. Enclosure shall be fabricated from tubular steel and expanded metal or wire mesh, 2.1 m high (Approx.). A Safety device comprising of an over speed governor in constant mesh with the rack by means of a flame hardened steel pinion shall be provided to protect the cab against over speed during the cab downward motion and the same shall actuate the brake mechanism and stop the down ward motion gradually. The lift shall be installed using anchor fasteners. Drive motor shall be of S3 duty class with CDF of 25% and maximum number of 120 starts per hour in 55 degree C ambient temperature. The motor shall be provided with internal 220 V AC single phase space heaters or an alternate heating system The elevator shall be supplied, installed, painted, tested, commissioned etc. complete with all mandatory spec and operation maintenance manual	Lumpsum	1											
	Electrical Works													
1	415V, 200A, 50 KA for 0.25 sec, 4 wire AC Distribution Board with 1No. incomer (SFU) along with 100KVA lighting transformer (415/433 V, Dyn11, Z=5%, ±2x2.5% Off Ckt. Tap) & 9 nos. of 100A (TPN) outgoing complete in all respects	No.	1											
2	415V, 200A, 4 wire AC Emergency Lighting distribution board along with 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 SFU (TPN) outgoings complete in all respects	No.	1											
3	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer, 18 outgoing (16A SP MCBs)	No.	3											
4	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A TPN/SFU incomer and 12 outgoings (16A, SP MCBs)	No.	2											

ST NO	Description of Item	Unit	Quantity	RATE (Rs)					AMOUNT (Rs)					
				BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL	BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL	
5	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer, 8 outgoing (20A SP MCBs)	No.	1											
6	Aviation obstruction lights:													
6a	FTB 205 AND FTC 140 of flash technology of USA or equivalent	No.	20											
6b	High intensity light having an effective intensity of 4000 to 200000 cd depending upon back ground illuminance. & flashing frequency 40-60/min.	No.	12											
7	Flood light with 250W HPSV lamps with all controlgears & accessories	No.	6											
8A	Well glass type luminaries with 70W/HPSV lamp with all controlgears & accessories	No.	60											
8B	Well glass type luminaries with 150W/HPSV lamp with all controlgears & accessories	No.	45											
9	63 Amp welding switch socket with plug & other Mounting accessories	No.	10											
10	3 pin, 1 ph, 240V,20Amp. Power sockets complete with plug Switches etc.	No.	10											
11	Al conductor, XLPE insulated, Armoured, PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.													
11a	3½ C x 95mm ² Al for connection between ACDB/ELDB/ welding sockets	Lot as reqd.	1											
11b	3½ C x 35mm ² Al for Lighting panel incoming supply	Lot as reqd.	1											
12	XLPE insulated 650/1100V grade stranded Cu Conductor lighting wires conforming to IS-694. (2.5 mm ² / 4.0 mm ²)	Lot as reqd.	1											
13	GI conduit 25mm dia with junction Boxes, Pull boxes & accessories	Lot as reqd.	1											
14	Lightning protection Air terminal	Lot as reqd.	1											
15	Earthing materials	Lot as reqd.	1											
TOTAL (PART-2)														

NOTES

1	Various platforms shall be illuminated by 70/150W HPSV well glass lighting fixtures. Staircase lighting shall be with 70W HPSV well glass fixtures. Average illuminations level of 150 lux shall be maintained on equipment and 50 lux on platforms & staircases (minimum 1 lighting fixture at each landing). Lighting system shall be controlled through MCB provided in lighting panel.
2	A lighting and power panel each shall be located at grade level and at other in between levels as required. All distribution boards, aviation lighting controls, etc. shall be located at grade level only. At each platform, 1 No. 63A, 415V welding receptacle and 1 No. 20A, 240V receptacle shall be provided and shall be fed from power panel. Wiring installation for lighting fixture shall be of PVC insulated copper/aluminium wires through galvanised steel conduits.
3	Aviations obstruction lighting system shall conform to the requirements of the latest rules and regulations of the International Civil Aviation Organisation (ICAO), National Airports Authority (NAA) and Directorate of Air Routes and Aerodromes (DARA). The type of aviation obstruction lighting system shall be of high intensity aviation obstruction lights having an effective intensity of 4000 to 2,00,000 cd depending upon back ground illuminance. The aviation obstruction lighting system shall be of type FTB 205 and FTC 140 of Flash Technology Corporation of USA or equivalent. A minimum of three levels will be provided with aviation obstruction lights and there will be four light units per level. The lowest level should not be lower than 70 meters above the ground and vertical spacing of the intermediate levels could vary between 70 and 105 meters. Aviation obstruction lighting shall be complete with lights, photo cell, controller, special cables, etc.
4	A temporary aviation obstruction lighting system shall be provided during construction of the chimney.
5	Cables from distribution board to lighting panels/power panels/receptacles shall be 1100V grade, XLPE insulated armoured aluminium conductor FRLS PVC sheathed with a minimum size of 4 sq.mm. cables shall be laid on galvanised sheet steel cable trays. Cables shall be terminated using double compression type cable glands and solderless crimping type tinned copper cable lugs.
6	Lightning protection system shall comprise minimum 3 vertical air terminations for each flue liner, horizontal air terminations and minimum 4 Nos. of down conductors spaced 90 degrees apart routed all along chimney height on external surface and connected to the earthing system. Above ground level earthing and lightning protection system shall comprise galvanised steel strips. These materials provided at top 12 meters shall have additional coating of 2 mm thick seamless lead cover and the accessories like nuts, bolts, washers etc. shall be of stainless steel to take care of corrosion. Chimney earthing system shall be interconnected to main plant earthing system.
7	A temporary lightning protection system shall be provided during construction of the chimney till a permanent lightning protection system is installed. In no case reinforcement bars of Shell should be used as earthing Down Conductors.

ST NO	Description of Item	Unit	Quantity	RATE (Rs)					AMOUNT (Rs)				
				BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL	BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL
8	Communication system comprising of telephone socket at every internal platform level and at grade level, necessary wiring installation, a telephone hand set, junction boxes etc. shall also be provided.												
9	415V, normal and emergency AC power supply for chimney shall be derived from main plant power supply system. Emergency supply shall feed 20% of platform lighting, 50% of staircase lighting, aviation obstruction lighting and elevator load. All other loads shall be connected on normal power supply.												
10	Ambient temperature for design of all equipment shall be considered as 55 deg. C which is likely to be encountered inside the chimney.												
11	Schedule of Equipment has been indicated for reference only. All electrical items shall be supplied on as required basis.												

**VOLUME-III
PRICE SCHEDULE, REV-01**

JOB: PACKAGE B - CONSTRUCTION OF 275 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY AND OTHER INCIDENTALS COMPLETE, INCLUDING RAFT FOUNDATION FOR CHIMNEY OF UNIT#2 AT 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.

TENDER NO. PSER:SCT:NKP-C1615:14

SL. No.	PREAMBLE
1	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully before filling in rates for various items. Clauses under this preamble shall be read in conjunction with Volume-IB, ID, IE, Volume – IF and other tender sections as applicable and shall have precedence over any contrary statement mentioned anywhere in this document.
2	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions. Drawings enclosed with the tender are only preliminary and for tender purposes and giving some idea of the work involved. The work is to be executed as per drawings & documents, which shall be furnished during execution.
3	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc. equipment, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, levies, taxes(except service tax), transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the complete tender document and this schedule.
5	The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of work executed under any part of this contract including extra items, if any but excluding any price variation remains, within fifteen percent ($\pm 15\%$) of the awarded price as per LOI.
6	Prior written approval of BHEL shall be sought by the contractor in case quantity variation of any item crosses +50% (plus fifty percent) limit during execution and approval to be obtained before execution of further quantity for this item.
7	In case Sealed /Paper Price Bids are opened for finalisation of the tender, for any Item Rate/BOQ based contract, possibility of variation of quantity/ addition/deletion of items can not be ruled out. Under such circumstances, after execution of work, if it is observed that standing as L-1 is changed based on actual quantity executed, the bidder shall give suitable rebate to maintain your standing as L-1. Since this aspect can be assessed at the end of execution, necessary adjustment will be effected at the end of execution in final bill. This condition shall not be applicable where the tender is finalised through Reverse Auction.
8	BHEL reserve the right to rationalize the rates, quoted by L-1 bidder against unit rate items and/ or other optional items with respect to item-wise lowest rates (amongst the participating bidders), before placement of order.
9	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing, clearing of old structures and leveling etc. including fixing of grid pillars, benchmarks etc. required for commencement of site activities. No separate payment will be made towards the same. However, if separate rate for such item is available in the rate schedule, the same shall be considered.
10	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English language.
11	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted as per BHEL approved payment schedule/billing break-up.
12	The tender shall be deemed to have visited site and made himself aware of all the site conditions, studied the specifications and details of work to be done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
13	No splitting of the job is envisaged. Decision of BHEL in this regard shall be final and binding to the bidders.
14	Bidders are not allowed to alter the Price Schedule format including item description, quantity etc. and the offer is liable for rejection if the bidders submit their prices in Price Schedules modified by them. BHEL reserves the right to reject the offers of bidders who submit offers in Price Formats which are modified/altered by them.
15	Bidders to note that for Civil &/Structural packages, against a particular item against a ST No. appearing in more than one schedule of the BOQ, same rate must be quoted in all schedules for that particular items with same descriptions. If by error, different rates are quoted in different schedules for same ST No. (i.e. item with same description), then the higher of the rates shall be considered for evaluation but awarding shall be done with the lower rate, if the bidder becomes L-1."
16	In case of Lumpsum contracts, addition or deletion of the scope beyond the variation limit specified shall be derived from the quoted Lumpsum price and the tendered scope of work considering the allowable variation limit.
17	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.
18	In case of tender for Civil and/or Structural works, the Non-schedule items are not quoted by the bidder, it will be treated at par with rate of corresponding item of CPWD/PWD/DSR schedule as prescribed in the tender/BOQ cum Rate Schedule.
19	Size and weights of various items are mentioned in the attached BOQ cum rate/price schedule for reference purpose only & these shall not be taken into consideration for quoting/calculating amount in the rate schedule. These shall be utilised as per relevant sections of tender. Bidders shall quote for each item in the rate column, taking unit as mentioned in the quantity column. Rates shall be filled in both figures and words. Amount shall be calculated based upon these rates multiplied by the mentioned quantity for the respective items.
20	Bidder's Grand Total price shall be considered for evaluation unless stated otherwise.
21	In case of BOP packages, if Bidder does not quote/indicate the price for freight charges against indicated rate schedule, the same shall be considered as 2% of basic price and adjusted with the total quoted price against each item keeping the total quoted price unaltered.

**VOLUME-III
PRICE SCHEDULE, REV-01
PACKAGE-B**

JOB: PACKAGE B - CONSTRUCTION OF 275 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY AND OTHER INCIDENTALS COMPLETE, INCLUDING RAFT FOUNDATION FOR CHIMNEY OF UNIT#2 AT 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.

TENDER NO : PSER:SCT:NKP-C1615:14

SCH-1 - TOTAL PRICE

SL NO	DESCRIPTION	AMOUNT (Rs.)
1.0	TOTAL PRICE OF SERVICE (PART-1) (SCH-2).	
2.0	TOTAL PRICE OF SUPPLY (PART-2) (SCH-3).	
3.0	GRAND TOTAL PRICE	

NOTE

1.0	Bidder's quoted total price at sl no 3.0 above shall be taken into account for evaluation. However, bidder shall furnish break-up of grand total price for various systems in the respective schedules and shall be complete in all respects as per provision of tender and technical specification.
2.0	Bidder shall furnish item-wise break-up of above grand total price in the respective schedule as per following. Total of prices of various schedules shall match with above total price.
2.1	SCH-2 - SERVICE (PART-1).
2.2	SCH-3 - SUPPLY (PART-2).
3.0	Bidder shall quote their rates/ prices against all components as per the schedules & terms & conditions of tender.
4.0	Schedule of Equipment has been indicated for reference only. All electrical items/accessories required for completeness of Chimney Electrical System shall be supplied by the contractor.

**VOLUME-III
PRICE SCHEDULE, REV-01
PACKAGE-B**

JOB: PACKAGE B - CONSTRUCTION OF 275 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY AND OTHER INCIDENTALS COMPLETE, INCLUDING RAFT FOUNDATION FOR CHIMNEY OF UNIT#2 AT 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.

TENDER NO : PSER:SCT:NKP-C1615:14

SCH-2-SERVICE(PART-1)

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
PART - 1A (CIVIL & STRUCTURAL WORKS)					
1	Earth work in <u>excavation in all types of soil</u> 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	4300		
b	Depth exceeding 2 m but not exceeding 4 m	cum	3200		
c	Depth exceeding 4 m but not exceeding 6 m	cum	2100		
d	Depth exceeding 6 m but not exceeding 8 m	cum	1000		
2a	Extra over Item No. 1 for dewatering of ground water by well point method as per IS 9759 for the depth of excavation as per drawing and period of excavation, concrete casting and backfilling complete.	cum	1300		
2b	Extra over Item No. 1 for dewatering of ground water by providing pump of required capacity in pit excavated for pumping for the depth of excavation as per drawing, period of excavation, concrete casting and backfilling complete.	cum	1800		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
3	Earth work in <u>excavation in soft rock</u> (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.				
b	Depth exceeding 2 m but not exceeding 4 m	cum	500		
c	Depth exceeding 4 m but not exceeding 6 m	cum	1000		
d	Depth exceeding 6 m but not exceeding 8 m	cum	1000		
7	<u>Back filling</u> 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 <u>compulsorily excavated soil</u> 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	600		
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	5000		
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	550		
g	Extra over item No. 1 and 3 to 7 for <u>carriage of excavated earth/selected materials</u> for every 1 km or part thereof beyond an initial lead of 500m.	cum	3800		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
10	<u>Back filling</u> upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness <u>using/with approved borrowed soil</u> (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.				
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	cum	250		
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	2500		
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	300		
11	<u>Supplying and filling sand</u> 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-XIV) 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	208		
12	<u>Supplying and laying</u> (inside chimney in the space below the grade level slab) <u>crushed rock</u> (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	1467		
13	Providing and laying <u>Nominal Mix plain cement concrete (1:3:6)</u> with graded aggregate (with maximum size of coarse aggregate not exceeding 40 mm) at all levels for all kinds of <u>work like mass concrete, lean concrete, mudmat, filling</u> 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	165		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
14	Providing and laying <u>design mix cement concrete</u> with graded aggregate (maximum size of coarse aggregate not exceeding 20 mm) <u>for reinforced concrete work</u> 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	4500		
ii	For all other works				
a	Grade M-20 (grade level slab)	cum	62		
b	Grade M-30 for chimney shell, corbels and external platforms and other shell attachments.	cum	114		
c	Grade M-35 for chimney shell, corbels and external platforms and other shell attachments.	cum	9600		
14A	Extra over St. No. 14(i) for controlling of temperature of fresh concrete to less than 23 degree centigrade using ice, including all related arrangements for providing, storing and mixing of ice with water, cooling of aggregates etc. All complete as per specification, drawing and instruction of engineer in charge.	cum	4500		
15	Providing and applying <u>two coats of bitumen</u> grade 85/25 as per IS 702 (@ 1.7kg/sqm) with 1% antistripping compound conforming to IS 6241 in foundation, shell, pedestal etc <u>on concrete surfaces exposed to soil / ash</u> including surface preparation etc. all complete.	Sqm	1750		
16	Providing and placing <u>reinforcement, for reinforced concrete work</u> , 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	450		
ii	For all other works				
b	High strength deformed bars	Mt	1050		

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PACKAGE-B

SCH-2-SERVICE (PART-1)

TENDER NO PSER:SCT:NKP-C1615:14

SIGNATURTE WITH SEAL OF THE BIDDER

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
17	Providing and fixing <u>formwork</u> 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	1460		
	For all other works				
a	Inner and outer faces of wind shield with slip form shuttering	Sqm	28000		
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	717		
18	Providing and fixing <u>formwork in shell openings</u> (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	141		
19	Providing and placing in position at all levels, <u>building paper (kraft paper)</u> , as per IS:1397, between concrete surfaces including the cost of labour, material, etc. complete as per drawings and instruction of the Engineer.	Sqm	61		
20	Providing and installing, at all levels, <u>bitumen impregnated fibre boards</u> , 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	29		
21	Providing and filling, at all levels, <u>bitumen sealing compound</u> (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	441		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
22	<p>Preparing detailed fabrication drawings and after approval by the Engineer, supplying, fabricating, erecting and installing <u>miscellaneous steel parts to be embedded/cast in concrete</u> (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.</p> <p>ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR.</p> <p>Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %</p>	Mt	6		
23	<p>Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting <u>structural steel work</u> 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, primer and finish painting etc. complete as per drawing and specifications. Payment Terms : a) Fabrication : 65 %, b) Erection : 25 %, c) Alignment : 10 % (STRUCTURAL STEEL SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)</p>	Mt	430		
25	<p>Providing and fixing in positing of <u>high strength structural bolts</u> (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.</p> <p>ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR.</p> <p>Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %</p>	Quintal	40		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
26	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and erecting, at all levels, <u>structural steel flues (liners)</u> 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 : 25 %, c) Alignment : 10 % (STRUCTURAL STEEL SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	Mt	700		
27	Providing, fabricating and installing at various locations and elevations of the chimney system the following <u>miscellaneous mild steel items</u> 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: ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR. Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %				
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		
b	32/40 mm nominal bore medium class tubular hand railing for stair case and internal and external platforms.	Mt	24		
c	Providing minimum 275 gsm Hot dipped galvanisation on mild steel parts as per specification.	Mt	24		
29	Supplying, fabricating and installing in the liners, <u>gas sampling and gas opacity measurement ports</u> 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	5		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
30	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting, at all levels <u>SS Mini Shell</u> at roof shell of grade A316L , etc. complete as per drawing and specifications. (STAINLESS STEEL PLATE SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	Mt	18		
31	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing at all levels, <u>stainless plates</u> (including stainless steel screws and fasteners) of grade AISI 316L <u>and lead sheets beams</u> 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. (ALL MATERIALS EXCEPT SS PLATE TO BE SUPPLIED BY THE CONTRACTOR. SS PLATE SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)				
a	Stainless steel components.	Mt	0.24		
b	Lead Sheets.	Kg	80		
32	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing <u>expansion compensator joints</u> 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 maintainance procedures for the expansion joints), testing, etc complete as per drawings and specifications. ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR. Payment terms : a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %	Sqm	81		
33	Supplying ,Fabricated Ready to Install, <u>spare expansion compensators</u> 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	23		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
34	Supplying and laying in position <u>shaped acid resisting bricks</u> 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	5		
35	Supplying and laying in position <u>shaped fire bricks</u> conforming to IS-6 group A 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	5		
38	Supplying and laying <u>vermiculite concrete</u> 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	5		
39	Supplying and laying <u>acid resisting castable refractory lining</u> as indicated in the drawings 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	5		
43	Providing, laying and packing, at all levels, <u>asbestos ropes</u> at expansion joints including the cost of all labour material, etc. complete as per drawing and specifications.				
b	12 mm (diameter) at expansion joints between brick linig segments.	Rm	1040		
44	Providing, fabricating and laying in position <u>asbestos mill boards</u> , 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	10		
46	Providing and installing, at all levels, <u>resin bonded glass wool insulation</u> 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	2750		

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SIGNATURTE WITH SEAL OF THE BIDDER

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
47	Providing and installing, at all levels, <u>resin bonded rock wool insulation</u> 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	Sqm	2750		
48	Providing and packing, at all levels, <u>loose glass wool insulation</u> to a density not less than 64 kg/m3 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	10		
49	Providing and packing, at all levels, <u>loose rock wool insulation</u> 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	10		
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 <u>acid and heat resisting black bituminous paint</u> (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	14200		
53	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <u>synthetic enamel paint</u> 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	12750		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
54	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <u>acid and heat resistant polyurethane paint</u> 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	2450		
55	Proving and laying over the <u>chimney roof, a comosite acid and heat protection treatment</u> 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	135		
56	Providing, fitting& <u>fixing, outlet and overflow, cast iron roof drain heads (with gratings)</u> 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		
57	Providing, fitting and fixing <u>rainwater pipes</u> 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 <u>cast iron pipes.</u>	Rm	25		
b	150 mm nominal bore <u>medium class galvanised mild steel pipes.</u>	Rm	550		
58	Providing and laying 50 mm thick <u>cement concrete flooring</u> (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. (CEMENT SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)	Sqm	460		

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SIGNATURTE WITH SEAL OF THE BIDDER

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
59	Providing and installing an <u>electrically operated grill type steel roll-up door</u> (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	1		
60	Providing and installing at any level and location, mild steel, double plate, <u>personnel access doors</u> , 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	7		
61	Supply, fabricating and fixing of <u>cleanout door</u> of size 650X825 mm. The door should be solid steel construction with inner plate 8mm and outer plate 6mm with suitable infill of stiffeners, & filled with insulation mateterial and all other fittings, fixtures, fasteners including the cost of painting etc complete as per drawings and specification. The door should be hinged type and providing with locking device in addition to swivel studs with wing nuts on remaining 3 edges. The should be openable both from inside & outside and removable insulation to be provided around door opening. The door shall be provided with a minimum two coats of acid & alkali resistant paint confirming to IS158 type-I to give a DFT of 75microns. The outside surface shall be provided with minimum 2 coats of Zinc redoxide primer and two coats of synthetic enamil paint.	Each	12		
63	Supplying, fabricating and installing <u>mild steel hatches</u> at various locations in the chimney system complete with locking arrangements, frames, insulation, fittings and fixtures and all mechanisms and accessories reqd. for proper operation including all labour, painting etc. complete as per drawings and specifications.				
a	Hood Access Hatch	Each	1		
c	Liner Access Hatch	Each	2		
64	Conducting <u>load testing on girders</u> for 1.25 times the full load, on ground , including provision of test bed and jacks, dial gauges and other supplies complete as per specification and drawings and approval of engineer in-charge.	Pair	3		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
65	Designing, supplying, fabricating and installing after approval by the Engineer, <u>non-metallic expansion joints</u> to seal gaps between chimney components and to meet the service requirements as given in the specifications alongwith the cost of all components of the expansion joint, insulation, galvanised bolts, nuts, washers, anchor fasteners and retaining bars, packing materials and reinforcements at the connecting ends and flanges, lapping etc. including preparation of brick surface (to be connected to the expansion joint) with potassium silicate resisting mortar for proper leak tight bearing surface, with the cost of all labour and equipment, user hand books (giving details of installation, dismantling and maintenance procedures for the expansion joints) etc. complete as per drawings and specifications for:				
a	Expansion joint <u>between ducts and liners.</u> (2 Nos.)	Sqm	18		
66	Erecting rack and pinion type elevator of proven make after obtaining approval from BHEL/NTPC, with a load carrying capacity of 400 kg (min) (passenger cum goods) , cabin floor size of 1100 mm x 1000 mm (min.) and an operating speed of 40 m/min. (approx.), for travel from the grade level to the top of the chimney with stopages at landing platforms/ other levels as per drawing, specification and approval of engineer in charge. The elevator shall be of a proven and approved make. Enclosure shall be fabricated from tubular steel and expanded metal or wire mesh, 2.1 m high (Approx.). A Safety device comprising of an over speed governor in constant mesh with the rack by means of a flame hardened steel pinion shall be provided to protect the cab against over speed during the cab downward motion and the same shall actuate the brake mechanism and stop the down ward motion gradually. The lift shall be installed using anchor fasteners. Drive motor shall be of S3 duty class with CDF of 25% and maximum number of 120 starts per hour in 55 degree C ambient temperature. The motor shall be provided with internal 220 V AC single phase space heaters or an alternate heating system The elevator	Lumpsum	1		
67	Quote % above or % below or at par for items not covered as above of this schedule (i.e. ST. No. 1 to 66). The rate shall be derived from Delhi schedule of rate 2013.				
a	Rate of complete item			_____ %	
b	Rate of supply of material at site only			_____ %	
c	Rate for execution complete excluding supply of materials.			_____ %	
SUB-TOTAL (PART-1A except ST NO 67.0)					

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
PART - 1B					
ELECTRICAL/MECHANICAL ERECTION WORKS ETC. (BIDDER TO QUOTE RATES FOR ERECTION, COMMISSIONING ONLY).					
1	415V, 200A, 50 KA for 0.25 sec, 4 wire AC Distribution Board with 1No. incomer (SFU) along with 100KVA lighting transformer (415/433 V, Dyn11, Z=5%, ±2x2.5% Off Ckt. Tap) & 9 nos. of 100A (TPN) outgoing complete in all respects	No.	1		
2.	415V, 200A, 4 wire AC Emergency Lighting distribution board along with 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 SFU (TPN) outgoing complete in all respects	No.	1		
3.	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer, 18 outgoing (16A SP MCBs)	No.	3		
4.	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A TPN/SFU incomer and 12 outgoing (16A, SP MCBs)	No.	2		

ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
5.	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer, 8 outgoing (20A SP MCBs)	No.	1		
6.	Aviation obstruction lights:				
6a	FTB 205 AND FTC 140 of flash technology of USA or equivalent	No.	20		
6b	High intensity light having an effective intensity of 4000 to 200000 cd depending upon back ground illuminance. & flashing frequency 40-60/min.	No.	12		
7.	Flood light with 250W HPSV lamps with all controlgears & accessories	No.	6		
8.A	Well glass type luminaries with 70W/HPSV lamp with all controlgears & accessories	No.	60		
8B	Well glass type luminaries with 150W/HPSV lamp with all controlgears & accessories	No.	45		
9.	63 Amp welding switch socket with plug & other Mounting accessories	No.	10		
10.	3 pin, 1 ph, 240V,20Amp. Power sockets complete with plug Switches etc.	No.	10		
11.	Al conductor, XLPE insulated, Armoured, PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.				
11a	3½ C x 95mm ² Al for connection between ACDB/ELDB/ welding sockets	Lot as reqd.	1		
11b	3½ C x 35mm ² Al for Lighting panel incoming supply	Lot as reqd.	1		
12.	XLPE insulated 650/1100V grade stranded Cu Conductor lighting wires conforming to IS-694. (2.5 mm ² / 4.0 mm ²)	Lot as reqd.	1		
13.	GI conduit 25mm dia with junction Boxes, Pull boxes & accessories	Lot as reqd.	1		
14.	Lightning protection Air terminal	Lot as reqd.	1		
15.	Earthing materials	Lot as reqd.	1		
SUB-TOTAL (PART-1B)					
TOTAL (PART-1A + PART-1B)					
Notes					
1	Various platforms shall be illuminated by 70/150W HPSV well glass lighting fixtures. Staircase lighting shall be with 70W HPSV well glass fixtures. Average illuminations level of 150 lux shall be maintained on equipment and 50 lux on platforms & staircases (minimum 1 lighting fixture at each landing). Lighting system shall be controlled through MCB provided in lighting panel.				

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PRICE SCHEDULE
VOLUME-III,REV-01
PACKAGE-B

SCH-2-SERVICE (PART-1)
TENDER NO PSER:SCT:NKP-C1615:14

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ST NO	Description of Item	Unit	Quantity	Rate (INR)	Amount (INR)
2	A lighting and power panel each shall be located at grade level and at other in between levels as required. All distribution boards, aviation lighting controls, etc. shall be located at grade level only. At each platform, 1 No. 63A, 415V welding receptacle and 1 No. 20A, 240V receptacle shall be provided and shall be fed from power panel. Wiring installation for lighting fixture shall be of PVC insulated copper/aluminium wires through galvanised steel conduits.				
3	Aviations obstruction lighting system shall conform to the requirements of the latest rules and regulations of the International Civil Aviation Organisation (ICAO), National Airports Authority (NAA) and Directorate of Air Routes and Aerodromes (DARA). The type of aviation obstruction lighting system shall be of high intensity aviation obstruction lights having an effective intensity of 4000 to 2,00,000 cd depending upon back ground illuminance. The aviation obstruction lighting system shall be of type FTB 205 and FTC 140 of Flash Technology Corporation of USA or equivalent. A minimum of three levels will be provided with aviation obstruction lights and there will be four light units per level. The lowest level should not be lower than 70 meters above the ground and vertical spacing of the intermediate levels could vary between 70 and 105 meters. Aviation obstruction lighting shall be complete with lights, photo cell, controller, special cables, etc.				
4	A temporary aviation obstruction lighting system shall be provided during construction of the chimney.				
5	Cables from distribution board to lighting panels/power panels/receptacles shall be 1100V grade, XLPE insulated armoured aluminium conductor FRLS PVC sheathed with a minimum size of 4 sq.mm. cables shall be laid on galvanised sheet steel cable trays. Cables shall be terminated using double compression type cable glands and solderless crimping type tinned copper cable lugs.				
6	Lightning protection system shall comprise minimum 3 vertical air terminations for each flue liner, horizontal air terminations and minimum 4 Nos. of down conductors spaced 90 degrees apart routed all along chimney height on external surface and connected to the earthing system. Above ground level earthing and lightning protection system shall comprise galvanised steel strips. These materials provided at top 12 meters shall have additional coating of 2 mm thick seamless lead cover and the accessories like nuts, bolts, washers etc. shall be of stainless steel to take care of corrosion. Chimney earthing system shall be interconnected to main plant earthing system.				
7	A temporary lightning protection system shall be provided during construction of the chimney till a permanent lightning protection system is installed. In no case reinforcement bars of Shell should be used as earthing Down Conductors.				
8	Communication system comprising of telephone socket at every internal platform level and at grade level, necessary wiring installation, a telephone hand set, junction boxes etc. shall also be provided.				
9	415V, normal and emergency AC power supply for chimney shall be derived from main plant power supply system. Emergency supply shall feed 20% of platform lighting, 50% of staircase lighting, aviation obstruction lighting and elevator load. All other loads shall be connected on normal power supply.				
10	Ambient temperature for design of all equipment shall be considered as 55 deg. C which is likely to be encountered inside the chimney.				
11	Schedule of Equipment has been indicated for reference only. All electrical items shall be supplied on as required basis.				

VOLUME-III
PRICE SCHEDULE, REV-01
PACKAGE-B

JOB: PACKAGE B - CONSTRUCTION OF 275 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY AND OTHER INCIDENTALS COMPLETE, INCLUDING RAFT FOUNDATION FOR CHIMNEY OF UNIT#2 AT 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.

TENDER NO : PSER:SCT:NKP-C1615:14

SCH-3-SUPPLY (PART-2)

ST NO	Description of Item	Unit	Quantity	RATE (Rs)					AMOUNT (Rs)				
				BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL	BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL
Civil Works													
66	Supplying rack and pinion type elevator of proven make after obtaining approval from BHEL/NTPC, with a load carrying capacity of 400 kg (min) (passenger cum goods) , cabin floor size of 1100 mm x 1000 mm (min.) and an operating speed of 40 m/min. (approx.), for travel from the grade level to the top of the chimney with stopages at landing platforms/ other levels as per drawing, specification and approval of engineer in charge. The elevator shall be of a proven and approved make. Enclosure shall be fabricated from tubular steel and expanded metal or wire mesh, 2.1 m high (Approx.). A Safety device comprising of an over speed governor in constant mesh with the rack by means of a flame hardened steel pinion shall be provided to protect the cab against over speed during the cab downward motion and the same shall actuate the brake mechanism and stop the down ward motion gradually. The lift shall be installed using anchor fasteners. Drive motor shall be of S3 duty class with CDF of 25% and maximum number of 120 starts per hour in 55 degree C ambient temperature. The motor shall be provided with internal 220 V AC single phase space heaters or an alternate heating system The elevator shall be supplied, installed, painted, tested, commissioned etc. complete with all mandatory spares and operation maintenance manual.	Lumpsum	1										
Electrical Works													
1	415V, 200A, 50 KA for 0.25 sec, 4 wire AC Distribution Board with 1No. incomer (SFU) along with 100KVA lighting transformer (415/433 V, Dyn11, Z=5%, ±2x2.5% Off Ckt. Tap) & 9 nos. of 100A (TPN) outgoing complete in all respects	No.	1										
2.	415V, 200A, 4 wire AC Emergency Lighting distribution board along with 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 SFU (TPN) outgoing complete in all respects	No.	1										
3.	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer, 18 outgoing (16A SP MCBs)	No.	3										

ST NO	Description of Item	Unit	Quantity	RATE (Rs)					AMOUNT (Rs)					
				BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL	BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL	
4.	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A TPN/SFU incomer and 12 outgoing (16A, SP MCBs)	No.	2											
5.	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer, 8 outgoing (20A SP MCBs)	No.	1											
6.	Aviation obstruction lights:													
6a	FTB 205 AND FTC 140 of flash technology of USA or equivalent	No.	20											
6b	High intensity light having an effective intensity of 4000 to 200000 cd depending upon back ground illuminance. & flashing frequency 40-60/min.	No.	12											
7.	Flood light with 250W HPSV lamps with all controlgears & accessories	No.	6											
8.A	Well glass type luminaries with 70W/HPSV lamp with all controlgears & accessories	No.	60											
8.B	Well glass type luminaries with 150W/HPSV lamp with all controlgears & accessories	No.	45											
9.	63 Amp welding switch socket with plug & other Mounting accessories	No.	10											
10.	3 pin, 1 ph, 240V,20Amp. Power sockets complete with plug Switches etc.	No.	10											
11.	Al conductor, XLPE insulated, Armoured, PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.													
11a.	3½ C x 95mm ² Al for connection between ACDB/ELDB/ welding sockets	Lot as reqd.	1											
11b.	3½ C x 35mm ² Al for Lighting panel incoming supply	Lot as reqd.	1											
12.	XLPE insulated 650/1100V grade stranded Cu Conductor lighting wires conforming to IS-694. (2.5 mm ² / 4.0 mm ²)	Lot as reqd.	1											
13.	GI conduit 25mm dia with junction Boxes, Pull boxes & accessories	Lot as reqd.	1											
14.	Lightning protection Air terminal	Lot as reqd.	1											
15.	Earthing materials	Lot as reqd.	1											
TOTAL (PART-2)														

Notes	
1	Various platforms shall be illuminated by 70/150W HPSV well glass lighting fixtures. Staircase lighting shall be with 70W HPSV well glass fixtures. Average illuminations level of 150 lux shall be maintained on equipment and 50 lux on platforms & staircases (minimum 1 lighting fixture at each landing). Lighting system shall be controlled through MCB provided in lighting panel.
2	A lighting and power panel each shall be located at grade level and at other in between levels as required. All distribution boards, aviation lighting controls, etc. shall be located at grade level only. At each platform, 1 No. 63A, 415V welding receptacle and 1 No. 20A, 240V receptacle shall be provided and shall be fed from power panel. Wiring installation for lighting fixture shall be of PVC insulated copper/aluminium wires through galvanised steel conduits.
3	Aviations obstruction lighting system shall conform to the requirements of the latest rules and regulations of the International Civil Aviation Organisation (ICAO), National Airports Authority (NAA) and Directorate of Air Routes and Aerodromes (DARA). The type of aviation obstruction lighting system shall be of high intensity aviation obstruction lights having an effective intensity of 4000 to 2,00,000 cd depending upon back ground illuminance. The aviation obstruction lighting system shall be of type FTB 205 and FTC 140 of Flash Technology Corporation of USA or equivalent. A minimum of three levels will be provided with aviation obstruction lights and there will be four light units per level. The lowest level should not be lower than 70 meters above the ground and vertical spacing of the intermediate levels could vary between 70 and 105 meters. Aviation obstruction lighting shall be complete with lights, photo cell, controller, special cables, etc.
4	A temporary aviation obstruction lighting system shall be provided during construction of the chimney.
5	Cables from distribution board to lighting panels/power panels/receptacles shall be 1100V grade, XLPE insulated armoured aluminium conductor FRLS PVC sheathed with a minimum size of 4 sq.mm. cables shall be laid on galvanised sheet steel cable trays. Cables shall be terminated using double compression type cable glands and solderless crimping type tinned copper cable lugs.
6	Lightning protection system shall comprise minimum 3 vertical air terminations for each flue liner, horizontal air terminations and minimum 4 Nos. of down conductors spaced 90 degrees apart routed all along chimney height on external surface and connected to the earthing system. Above ground level earthing and lightning protection system shall comprise galvanised steel strips. These materials provided at top 12 meters shall have additional coating of 2 mm thick seamless lead cover and the accessories like nuts, bolts, washers etc shall be of stainless steel to take care of corrosion. Chimney earthing system shall be interconnected to main plant earthing system.
7	A temporary lightning protection system shall be provided during construction of the chimney till a permanent lightning protection system is installed. In no case reinforcement bars of Shell should be used as earthing Down Conductors.
8	Communication system comprising of telephone socket at every internal platform level and at grade level, necessary wiring installation, a telephone hand set, junction boxes etc. shall also be provided.

ST NO	Description of Item	Unit	Quantity	RATE (Rs)					AMOUNT (Rs)				
				BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL	BASIC PRICE	CST (If any, as per tender)	VAT (If any, as per tender)	FREIGHT	TOTAL
9	415V, normal and emergency AC power supply for chimney shall be derived from main plant power supply system. Emergency supply shall feed 20% of platform lighting, 50% of staircase lighting, aviation obstruction lighting and elevator load. All other loads shall be connected on normal power supply.												
10	Ambient temperature for design of all equipment shall be considered as 55 deg. C which is likely to be encountered inside the chimney.												
11	Schedule of Equipment has been indicated for reference only. All electrical items shall be supplied on as required basis.												

FORMAT FOR NO DEVIATION CERTIFICATE
(To be submitted in the bidder's letter head)

BHARAT HEAVY ELECTRICALS LIMITED,
Power Sector - Eastern Region,
Plot no 9/1, DJ Block, Sector – II, Salt Lake City,
Kolkata – 700 091

Sub	No Deviation Certificate.	
Job	(i) PACKAGE A - Construction of 275 meter high Reinforced Concrete single steel flue chimney and other incidentals complete, including raft foundation for chimney of unit#1 at 3 x 660 MW North Karanpura STPP, Jharkhand. (ii) PACKAGE B - Construction of 275 meter high Reinforced Concrete single steel flue chimney and other incidentals complete, including raft foundation for chimney of unit#2 at 3 x 660 MW North Karanpura STPP, Jharkhand.	
Ref	1.0	Tender no PSER:SCT:NKP-C1615:14
	2.0	BHEL's NIT, vide reference no PSER:SCT:NKP-C1615:4003 Date: 22-10-2014
	3.0	BHEL's TCN-01, vide reference no PSER:SCT: NKP-C1615:TCN-01 Date: 11-11-2014
	4.0	All other pertinent issues till date.

Dear Sirs,

With reference to above, this is to confirm that as per tender conditions, we have visited site before submission of our offer and noted the job content & site conditions etc. We also confirm that we have not changed/ modified the tender documents as appeared in the website/ issued by you and in case of such observance at any stage, it shall be treated as null and void.

We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT. We hereby confirm our unqualified acceptance to all terms & conditions, unqualified compliance to technical specification, integrity pact (if applicable) and acceptance to reverse auctioning process.

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized representative of the bidder)