



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

**BHARAT HEAVY ELECTRICALS LIMITED**

(A Govt. of India Undertaking)

**TCN - 06**

Ref: PSER:SCT:NKP-C2005:TCN-06

Date: 01-02-2020

Sub	Tender Change Notice (TCN)- 06.	
Job	Construction of 3 nos. 150 meter high reinforced concrete single steel flue chimney with borosilicate glass block lining system on MS flue can and other incidentals complete including raft foundation for FGD system of 3 x 660 MW North Karanpura STPP, Jharkhand.	
Ref	1.0	Tender no: PSER:SCT:NKP-C2005:20
	2.0	BHEL's NIT, vide reference no PSER:SCT:NKP-C2005:7745 Date: 06-01-2020.
	3.0	BHEL's TCN-01, vide reference no PSER:SCT: NKP-C2005:TCN-01 Date: 14-01-2020.
	4.0	BHEL's TCN-02, vide reference no PSER:SCT:NKP-C2005:TCN-02 Date: 20-01-2020.
	5.0	BHEL's TCN-03, vide reference no PSER:SCT:NKP-C2005:TCN-03 Date: 21-01-2020.
	6.0	BHEL's TCN-04, vide reference no PSER:SCT:NKP-C2005:TCN-04 Date: 28-01-2020.
	7.0	BHEL's TCN-05, vide reference no PSER:SCT:NKP-C2005:TCN-05 Date: 31-01-2020.
	8.0	Other References, if any.

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

1. Revised BOQ cum Price Schedule, **VOLUME-III-PRICE SCHEDULE, REV-02** is attached superseding **VOLUME-III-PRICE SCHEDULE, REV-01** issued earlier along with TCN-01. **Bidders shall quote as per this revised Volume-III, Rev-02 only.** Bidders are also requested to submit a declaration in techno-commercial offer that they have submitted their price bid as per **REVISED Price Schedule** format.
2. Revised 'No deviation certificate' is attached. Bidder to submit 'No deviation certificate' as per attached format only.
3. All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,  
for BHARAT HEAVY ELECTRICALS LTD

Dy. Mgr (SCT)

Encl: As Above.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

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<b>VOLUME-III</b> <b>PRICE SCHEDULE, REV-02</b>	
<b>JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.</b>	
<b>TENDER NO PSER:SCT:NKP-C2005:20</b>	
<b>PREAMBLE</b>	
SL NO	DESCRIPTION
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 various volumes of tender 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 guidance/tender purposes giving some idea of the work involved. The work is to be executed as per terms & conditions of the tender and actual 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, 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 plus minus 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 service 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. The rates of unit rate/optional items shall remain valid till execution of the order, if the job/work is awarded to the bidder.
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 tenderer 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 before submission of his bid/offer. No claim whatsoever due to lack of knowledge of site conditions shall be entertained after award of the work.
13	No splitting of the job is envisaged unless the same is specifically indicated in the TCC/Vol-1F. 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. Also putting any comments instead of rates/price in the designated column of the rate schedule shall make the offer liable for rejection.
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. The same modality shall be applicable for other item rate service contracts where item with same description is repeated in different schedules.
16	For Lumpsum Service Contract : The items/components indicated in the tender is indicative and may vary to any extent. No compensation shall be payable in case of any variation in the items/components listed in the bill of quantities if the executed weight remains within the variation limit. However, in case of deletion of any item or addition of new items over and above the items listed or variation of existing quantity beyond variation limit specified, adjustment (i.e. Payment or recovery as the case may be ) shall be done on pro-rata basis based on the Rate per MT worked out from the quoted lumpsum Price and the total weight of components listed /indicated in price schedule plus 15% weight 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, if 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. PVC/escalation is not payable for these Non-scheduled items.
19	No interest, whatsoever, shall be payable by BHEL on the security deposit, any bank guarantee submitted or any amount due to successful bidder/contractor. No idling charge whatsoever (either for labour or any other resources ) is payable by BHEL for any reason whatsoever.
20	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.
21	Bidder's Total price shall be considered for evaluation unless stated otherwise.
22	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-02**

**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCH-1 : TOTAL PRICE**

<b>SL NO</b>	<b>DESCRIPTION</b>	<b>PRICE SCHEDULE REF</b>	<b>TOTAL PRICE (IN INR)</b>
1.0	TOTAL PRICE FOR CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.	<b>SCH 2 - PRICE BREAK UP</b>	<b><u>IN FIGURES:-</u></b>
			<b><u>IN WORDS:-</u></b>
2.0	NON-SCHEDULE ITEM For items not covered in Price Schedule , quote % above or below or at par the CPWD Schedule of rates 2018		
a)	Rate of complete item		% above / _____ % below/ at par of CPWD Rate Schedule 2018
b)	Rate of supply of material at site only		% above / _____ % below/ at par of CPWD Rate Schedule 2018
c)	Rate for execution complete excluding supply of materials.		% above / _____ % below/ at par of CPWD Rate Schedule 2018

**NOTE**

1.0	Bidder shall quote total price for SCH-1 Part only at SI No. 1 above. All other amounts / rates of each item of works in respective schedules / parts will be derived based on allocated percentages. As such, any uncalled figure/ amount noted at any other place / schedule of Volume-III will not be reckoned & will stand null & void.
2.0	Bidder to note that total price at SI No. 1 above shall be considered for evaluation & awarding. As such grand total price should be complete in all respect for the full scope defined and considering all terms and conditions.
3.0	Bidder's quoted total price of SCH-1 at SI. No 1 above, shall be apportioned into amount of various items of works based on allocated percentages against respective item, in respective schedules / parts. As such, bidder shall not indicate / quote any amount / rate in these schedules / parts and any amount / rate quoted against any item shall not be taken into cognizance / account and offer may be liable for rejection.
4.0	Bidder to note that percentage break-up of above total price into supply part, service part are frozen and indicated in SCH-2. Based on this break-up and further break-up in subsequent schedules, separate orders will be placed for Supply and Service part as per respective price components.
5.0	Based on the itemwise percentage allocations, the amount for the individual items of the Bill of Quantity shall be arrived at. The rates of individual items shall be derived from the amount against each items and its quantity after rounding off to upto 2 decimal places. However, RA bill payment shall be done after rounding off the gross amount to two decimal points. Any adjustment, if required, due to such methodology, will be effected / adjusted in final bill.
6.0	Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per SI No.3 above.
7.0	Any item as per scope of work, if not included in the price quoted above and shown separately will not be taken cognizance of and the offer shall be liable for rejection.
8.0	Price format shall not be changed by bidder in any case and it may lead to cancellation of their offer.
9.0	The quoted price shall be excluding GST including freight on FOR site basis.
10.0	The quantity of items may vary during execution mainly due to actual requirement etc. The unit rates work out from the overall amount quoted & accepted by BHEL shall be considered and no separate unit rates shall be allowed. Unit rates shall be valid throughout the contract period.
11.0	For payment of non schedule items, the rate shall be derived from CPWD Schedule - 2018.

**VOLUME-III  
PRICE SCHEDULE, REV-02**

**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 2 : TOTAL PRICE BREAK UP**

<b>SL NO</b>	<b>DESCRIPTION</b>	<b>WEIGHTAGE</b>
1.0	TOTAL SERVICE PART OF SCH-3	0.80317906
2.0	TOTAL SUPPLY PART OF SCH-4	0.19682094
3.0	<b>TOTAL</b>	1.00000000

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TENDER NO PSER:SCT:NKP-C2005:20

SCHEDULE - 3 : SERVICE

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
PART 1A	Civil Works						
1	Earth work in <b>excavation in all types of soil</b> 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 1 km, 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. [Measurement of excavation shall be paid as per clause 5.2.0 of Technical Specification, Section D, Sub-Section D1 sheet 20 Of 23]						
a	Depth from ground level but not exceeding 2 m	cum	2760	2760	2760.0	8280.0	0.00274319
b	Depth exceeding 2 m but not exceeding 4 m	cum	2050	2050	2050.0	6150.0	0.00251344
c	Depth exceeding 4 m but not exceeding 6 m	cum	1250	1250	1250.0	3750.0	0.00206637
d	Depth exceeding 6 m but not exceeding 8 m	cum	650	650	650.0	1950.0	0.00141696
2	Extra over Item No. 1 for <b>dewatering of ground water by well point method</b> as per IS 9759.	cum	800	800	800.0	2400.0	0.00020038
3	Earth work in <b>excavation in soft rock</b> (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 1 km, 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. [Measurement of excavation shall be paid as per clause 5.2.0 of Technical Specification, Section D, Sub-Section D1 sheet 20 Of 23]						
a	Depth from ground level but not exceeding 2 m	cum	200	200	200.0	600.0	0.0002357
b	Depth exceeding 2 m but not exceeding 4 m	cum	300	300	300.0	900.0	0.00041789
c	Depth exceeding 4 m but not exceeding 6 m	cum	700	700	700.0	2100.0	0.00126113
d	Depth exceeding 6 m but not exceeding 8 m	cum	650	650	650.0	1950.0	0.00148336
5	Earth work in <b>excavation in hard rock requiring controlled blasting</b> including wedging, line drilling, pre shearing etc as required, setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, necessary licenses/statutory clearances for blasting, supply, storage & handling of blasting materials, stacking/disposal of surplus excavated material within a lead upto 1 km, 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. [Measurement of excavation shall be paid as per clause 5.2.0 of Technical Specification, Section D, Sub-Section D1 sheet 20 Of 23]						
c	Depth exceeding 4 m but not exceeding 6 m	cum	100	100	100.0	300.0	0.0003075
d	Depth exceeding 6 m but not exceeding 8 m	cum	100	100	100.0	300.0	0.00038931
7	<b>Back filling</b> upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 300 mm thickness using/with selected materials <b>from compulsorily excavated soil</b> available within a lead upto 1 km 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. [Measurement of Backfilling shall be paid as per excavation quantity after deduction for concrete & other buried items etc.]						
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	cum	370	370	370.0	1110.0	0.00032606
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	3260	3260	3260.0	9780.0	0.00259002
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	370	370	370.0	1110.0	0.00031859
d	Each layer compacted so as to achieve at least 80% relative density as per IS-2720 part XIV in case of sandy soils.	cum	200	200	200.0	600.0	0.00018553

**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
8	<b>Back filling</b> upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 300 mm thickness <u>using / with selected materials directly from excavation</u> and compacted as specified including 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	100	100	100.0	300.0	0.00003196
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	200	200	200.0	600.0	0.0000605
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	100	100	100.0	300.0	0.00003195
d	Each layer compacted so as to achieve at least 80% relative density as per IS-2720 part XIV in case of sandy soils.	cum	100	100	100.0	300.0	0.00003364
9	Extra over item No. 1 and 3 to 7 for <b>carriage of excavated earth/selected materials</b> for every 500 m or part thereof beyond an initial lead of 1 km.	cum	12250	12250	12250.0	36750.0	0.00046541
10	<b>Back filling</b> upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 300 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. [Measurement of Backfilling shall be paid as per excavation quantity after deduction for concrete & other buried items etc.]						
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	cum	210	210	210.0	630.0	0.00057052
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	1580	1580	1580.0	4740.0	0.0042067
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	210	210	210.0	630.0	0.00054793
d	Each layer compacted so as to achieve at least 80% relative density as per IS-2720 part XIV in case of sandy soils.	cum	100	100	100.0	300.0	0.0002557
11	<b>Supplying and filling sand</b> upto any depth below grade slab, around foundations, etc. in layers not exceeding 300 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	150	150	150.0	450.0	0.00064122
12	<b>Supplying and laying</b> (inside chimney in the space below the grade level slab) <b>crushed rock</b> range 63 mm to 45 mm in layers not exceeding 200 mm in thickness including breaking of stone boulders to required sizes, filling the interstices with selected sand and compacting to 85 % of original volume of stone stack for all lifts etc. all complete. Payment shall be made for the measurement of the volume of the compacted fill.	cum	856	856	856.0	2568.0	0.01098536
13	Providing and laying <b>Nominal Mix plain cement concrete (M 7.5)</b> with graded aggregate (with maximum size of coarse aggregate not exceeding 40 mm) at all levels for all kinds of <b>work like mass concrete, lean concrete, mudmat, filling</b> etc. including labour, materials, equipment, handling, transporting, batching, mixing, placing, levelling, compacting, curing, testing etc. all complete as per specifications, drawings and instructions of the Engineer. [Cement will be issued by BHEL Free of cost]	cum	140	140	140.0	420.0	0.00231697
14	Providing and laying <b>design mix cement concrete</b> with graded aggregate (maximum size of coarse aggregate not exceeding 20 mm) <b>for reinforced concrete work</b> 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 will be issued by BHEL Free of cost]						
i	For all works below ground level (except chimney shell)						
b	Grade M-30 (foundations, etc)	cum	3200	3200	3200.0	9600.0	0.05787255
ia	Extra over St. No. 14(i) for <b>controlling of temperature</b> of fresh concrete for raft/pilecap 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	3200	3200	3200.0	9600.0	0.0183829
ii	For all other works						

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TENDER NO PSER:SCT:NKP-C2005:20

SCHEDULE - 3 : SERVICE

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
a	Grade M-25 grade level slab, pit, trenches, drain etc.	cum	72	72	72.0	216.0	0.00123332
c	Grade M-35 for chimney shell, corbels and external platforms and other shell attachments.	cum	4000	4000	4000.0	12000.0	0.14503749
d	Grade M-30 for all other components of the super structure, roof slab, mini -shells, beams, columns wall etc.	cum	45	45	45.0	135.0	0.00164052
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	1020	1020	1020.0	3060.0	0.00134738
16	Providing and placing <u>steel reinforcements</u> of TMT steel of grade Fe-500 /Fe 500D conforming to IS:1786 and having minimum elongation 14.5% , <u>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, testing, transportation to & from stores etc., preparation of bar bending schedules, all complete as per specifications, drawings and instructions of the Engineer.						
i	For all works below ground level (except chimney shell)						
a	High strength deformed bars [Reinforcement bars will be issued by BHEL Free of cost]	MT	350	350	350.0	1050.0	0.01481202
ii	For all other works						
a	Mild steel reinforcement bars [Mild steel reinforcement procurement in vendors scope]	MT	10	10	10.0	30.0	0.00299759
b	High strength deformed bars [Reinforcement bars will be issued by BHEL Free of cost]	MT	460	460	460.0	1380.0	0.02237084
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, tieing, nailing, caulking, bolting etc. and removal of form work and staging etc. all complete as per specifications, drawings and instructions of the Engineer.						
i	For all works below ground level (except chimney shell)	Sqm	902	902	902.0	2706.0	0.00285419
ii	For all other works						
a	Inner and outer faces of wind shield with slip form shuttering	Sqm	18850	18850	18850.0	56550.0	0.11098541
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	450	450	450.0	1350.0	0.00306529
18	Providing and fixing <u>formwork in shell openings</u> and pockets (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	120	120	120.0	360.0	0.00071113
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	70	70	70.0	210.0	0.0000297
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	32	32	32.0	96.0	0.00017817
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	475	475	475.0	1425.0	0.00040727
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.[Material supply including structural steel parts is in scope of contractor]	MT	3	3	3.0	9.0	0.0014562

**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
A23	Supply, fabrication and erection of <b>high strength structural steel (E350 )</b> in built up section conforming to IS:2062, in columns, beams, struts, monorails, stays, safety chains, ladders, gantry girders, roof trusses, portals, laced purlins, space frames, hangers, wall beams, sheeting runners, brackets, stiffeners, stub columns, bracings, cleats, base plates, splice plates,gussets, end plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, decking and seal plates, galleries etc including blast cleaning, providing & applying primer,providing and applying intermediate, final and final finish coat of paint (blast cleaning,primer and paint shall be paid separately as per item no C23, D23 & E23),connection design & preparation of fabrication drgs, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (However, permanent bolts are payable separately), assembly, edge preparation, preheating (min preheat and interpass temperature of 120-140o C for welding over 20 mm thickness & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), etc all complete. Including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.						
a	For shop fabricated structural steel(Supply of structural steel in vendor scope) Payment terms on : (a) Supply of fabricated material - 65 % (b) Erection - 25% (c) Alignment - 10%	MT	44	44	44	132.0	0.01998531
b	For site fabricated structural steel(Structural steel shall be issued by BHEL free of cost) Payment terms on : (a) Fabrication - 65 % (b) Erection - 25% (c) Alignment - 10%	MT	11	11	11	33.0	0.002076
B23	Supply, fabrication and erection of <b>structural steel of grade E 250 in rolled/built up section</b> conforming to IS:2062, mild steel rounds in columns, beams, struts, monorails, stays, safety chains, ladders, MS gratings, gantry girders, roof trusses, portals, laced purlins, space frames, hangers, wall beams, sheeting runners, brackets, stiffeners, stub columns, bracings, cleats, base plates, splice plates,gussets, end plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, decking and seal plates, galleries etc including blast cleaning, providing & applying primer,providing and applying intermediate, final and final finish coat of paint (blast cleaning,primer and paint shall be paid separately as per item no C23, D23 & E23),connection design & preparation of fabrication drgs, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts and nuts not payable), assembly, edge preparation, preheating / post heating if required, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), etc all complete. Including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.						
a	For shop fabricated structural steel(Supply of structural steel in vendor scope) Payment terms on : (a) Supply of fabricated material - 65 % (b) Erection - 25% (c) Alignment - 10%	MT	132	132	132	396.0	0.05533077
b	For site fabricated structural steel(Structural steel shall be issued by BHEL free of cost) Payment terms on : (a) Fabrication - 65 % (b) Erection - 25% (c) Alignment - 10%	MT	33	33	33	99.0	0.006228
C23	Extra over ST NO. A23 & B23 for blast cleaning of steel structures to near white metal surface conforming to Sa 2 1/2 finish of ISO 8501-1 with surface profile 40-60 Micron and providing and applying two component moisture curing <b>zinc (ethyl) silicate primer coat</b> (having minimum 80% of metallic Zinc content in dry film, solid by volume minimum 60% ±2%) of minimum 70 micron DFT including the cost of all labour, material, equipments, protection of surface and cleaning, scaffolding, touch-up painting etc., complete as per drawings, specifications and instructions of the Engineer. Zinc dust composition and properties shall be Type-II as perASTM D520-00. Primer coat shall be applied in Shop immediately after blast cleaning by airless spray technique.	MT	220	220	220.0	660.0	0.00544148
D23	Extra over ST NO. A23 & B23 for providing and applying (by airless spray technique) <b>intermediate coat of two component polyamide cured epoxy with MIO Content</b> (containing lamellar MIO minimum 30% on pigment, solid by volume minimum 80% ±2%) of minimum 100 micron DFT after an interval of minimum 24 hours (from the application of primer coat) and of approved make including the cost of all labour, material, equipments, protection and cleaning, scaffolding, touch-up painting etc. all complete as per drawing and specifications.	MT	220	220	220.0	660.0	0.00469413

**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
E23	Extra over ST NO. A23 & B23 for providing and applying <b>Finish coat of two-pack aliphatic Isocyanate cured acrylic finish paint</b> (solid by volume minimum 55% $\pm 2\%$ ) with Gloss retention (SSPC Paint Spec No 36, ASTM D 4587, D 2244, D 523) of Level 2 (after minimum 1000 hours exposure, Gloss loss less than 30 and colour change less than 2.0 $\Delta E$ ) and minimum 70 micron DFT over steel sections already having intermediate coats, including the cost of all labour, material, equipments, protection and cleaning, scaffolding etc. all complete as per drawing and specifications. This coat shall be applied after an interval of minimum 24 hours (from the application of sealer coat) and within six (6) months (from the completion of Intermediate coat). Colour and shade of the coat shall be as approved by the Employer.	MT	220	220	220.0	660.0	0.00469396
A24	Supplying, fabrication, erection and alignment of factory made <b>chequered plate</b> with mild steel conforming to IS:2062 in platforms, staircases with edge binding strips and anti-skid nosing in treads etc. including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete. [Structural steel & chequered plate shall be issued by BHEL free of cost]	MT	55	55	55.0	165.0	0.00515705
25	Fixing in positng of <b>high strength structural bolts</b> (Material as per SI No. S25 of SCH-4 SUPPLY) for structural steel work at all level etc. complete.	Quintal	50	50	50.0	150.0	0.00141908
26	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and erecting, at all levels, <b>structural steel flues (liners)</b> 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. [Structural steel shall be issued by BHEL free of cost]. <b>The Flue can be transported inside the concrete shell horizontally during erection activity . All necessary arrangement for horizontal movement of flue liner shall be in the scope of contractor .</b>	MT	360	360	360.0	1080.0	0.07032925
26 (i)	Supply & application including blast cleaning of outer surface of steel flue liner to near white metal surface conforming to Sa 2 1/2 finish of ISO 8501-1 with surface profile 40-60 Micron and providing and applying two component moisture curing <b>zinc (ethyl) silicate primer coat</b> (having minimum 80% of metallic Zinc content in dry film, solid by volume minimum 60% $\pm 2\%$ ) of minimum 70 micron DFT including the cost of all labour, material, equipments, protection of surface and cleaning, scaffolding, touch-up painting etc., complete as per drawings, specifications and instructions of the Engineer. Zinc dust composition and properties shall be Type-II as per ASTM D520-00. Primer coat shall be applied in Shop immediately after blast cleaning by airless spray technique.	SqM	2800	2800	2800.0	8400.0	0.00288456
26 (ii)	Providing and applying (by airless spray technique) on outer surface of steel flue liner, an <b>intermediate coat of two component polyamide cured epoxy with MIO Content</b> (containing lamellar MIO minimum 30% on pigment, solid by volume minimum 80% $\pm 2\%$ ) of minimum 100 micron DFT after an interval of minimum 24 hours (from the application of primer coat) and of approved make including the cost of all labour, material, equipments, protection and cleaning, scaffolding, touch-up painting etc. all complete as per drawing and specifications.	SqM	2800	2800	2800.0	8400.0	0.00248943
26 (iii)	Providing and applying on outer surface of steel flue liner, <b>Finish coat of two-pack aliphatic Isocyanate cured acrylic finish paint</b> (solid by volume minimum 55% $\pm 2\%$ ) with Gloss retention (SSPC Paint Spec No 36, ASTM D 4587, D 2244, D 523) of Level 2 (after minimum 1000 hours exposure, Gloss loss less than 30 and colour change less than 2.0 $\Delta E$ ) and minimum 70 micron DFT over steel sections already having intermediate coats, including the cost of all labour, material, equipments, protection and cleaning, scaffolding etc. all complete as per drawing and specifications. This coat shall be applied after an interval of minimum 24 hours (from the application of sealer coat) and within six (6) months (from the completion of Intermediate coat). Colour and shade of the coat shall be as approved by the Employer.	SqM	2800	2800	2800.0	8400.0	0.00248943
A26	Application of suitable epoxy primer including grit/shot blasting of inner flue surface(Sa 2 1/2 finish) , to fully cover the substrate material over all heights of chimney including cost of labour, material, tools & tackles etc. all complete as per drawings, specification, manufacturer's recommendation and engineer in charge. (Epoxy Primer shall be supplied by BHEL free of cost. Onsite supervision of borosilicate glass block lining work shall be provided by BHEL Free of Cost through the Borosilicate Glass Block Lining System supplier.)	SqM	2800	2800	2800.0	8400.0	0.00257125

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**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
C26	Installing borosilicate glass block lining over all heights of chimney by attaching it to inside surface of cleaned MS flue can, external exposed surface and internal surface of minishell, using suitable adhesive / membrane material under controlled temperature and humidity conditions mentioned in specification, including cost of skilled labour, material, tools & tackles, equipment required to create controlled temperature & humidity conditions inside chimney during installation, under the expert supervision by borosilicate glass manufacturer during installation, mixing of two components adhesive membrane by automated mixing machines etc. all complete. Nominal adhesive/ membrane thickness shall be minimum 3 mm behind & between each block. A 1.5 mm thick layer should be troweled onto the liner as well as to the sides and back of each block before installation. Double buttering technique shall be used to ensure full bond of each block to the liner and to each other. Cost of application of adhesive/membrane is included in this item and shall not be paid separately. Installation of blocks shall be carried out as per specification, drawings, direction of engineer in charge and accepted by the customer. The surface properties of the installed lining system allow, without any significant re-entrainment of flue gas condensate, a flue velocity of atleast 18.3 m/s, contractor shall get the required surface properties of the lining system approved from customer. Contractor shall get installation procedure approved by BHEL/NTPC before installation including verification of installation procedure & workmanship standards of the lining system. (Borosilicate Glass Blocks, Adhesive / membrane material and mixing machine shall be provided by BHEL free of cost. Onsite supervision of borosilicate glass block lining work shall be provided by BHEL Free of Cost through the Borosilicate Glass Block Lining System supplier.)	SqM	2800	2800	2800.0	8400.0	0.07644088
26F	Fabricating and erecting C276 strips, plates, gutters / vanes / pipes, bends, fittings and any other appurtenances as required ( <b>Material as per SI No. S26F or SCH-4 SUPPLY</b> ) at all elevation in chimney for collection and withdrawal of condensate from inside of flue liner to outside based on the approved design in line with gas-flow-model study report, sealing, testing including surface preparation, TIG or any other type of specialised welding for C276 Strips etc all complete as per specification, drawing and as directed by the Engineer-in-charge. Measurement for payment shall be done for net weight of C276 strip only (weld thickness not to be considered).	Kg	1800	1800	1800.0	5400.0	0.00412985
27	Providing, fabricating and installing at various locations and elevations of the chimney system the following <b>miscellaneous mild steel items</b> complete with the cost of all labour, material and equipment, transporting, lifting, setting in place, cutting, grinding, drilling, welding, bolts and bolting, anchor fasteners and anchoring, priming, painting, grouting etc. complete as per drawings and specifications:						
a	<b>Mild steel ladders</b> with cage, hood access hatch, louvers, bird screens, hood drain basin covers and other miscellaneous mild steel items not specifically mentioned.	MT	9	9	9.0	27.0	0.00536514
b	32 / 40 mm nominal bore medium class <b>tubular hand railing</b> for stair case and internal and external platforms.	MT	13	13	13.0	39.0	0.00801174
c	Providing minimum 275 gsm <b>Hot dipped galvanisation</b> on mild steel parts as per specification.	MT	11	11	11.0	33.0	0.00234421
d	Providing minimum 610 gsm <b>Hot dipped galvanisation</b> on mild steel parts as per specification.	MT	11	11	11.0	33.0	0.00293026
29A	Supplying, fabricating and installing gas sampling and gas opacity measurement ports made of <b>C276</b> pipe in chimney liners, including bolts, non metallic gaskets, cover plates and any other accessories as required, painting etc, all complete as per specification, drawing and as directed by the engineer-in-charge.	KG	80	80	80.0	240.0	0.00084853
30AA	Fabricating and erecting above roof level 2mm thick titanium sheet ( <b>Material as per SI S30AA of SCH-4 SUPPLY</b> ) wrapped over chimney mini-shell (as described in item no. 30AAA and insulation over it) external surface, including weldables/consumables, equipment, material, acid resistant nuts, bolts, washers, screws and any other accessories as required for proper fixing, surface finishing, testing, preparation of detailed fabrication drawings etc all complete per specification, drawing and as directed by the Engineer-in-charge.	MT	2.00	2.00	2.00	6.0	0.00300212
30AAA	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting, Mini Shell above roof level made of solid titanium plate( <b>Material as per SI S30AAA of SCH-4 SUPPLY</b> ) including all stiffeners, accessories, cover at top fixing arrangement, nut, bolts, washers, screws etc , weldables/consumables, equipment, material, surface finishing, sealing, testing for quality , etc. all complete as per drawing and specifications.	MT	12.00	12.00	12.00	36.0	0.01801274
31	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing at all levels, <b>stainless plates</b> (including stainless steel screws and fasteners) of grade AISI 316L <b>and lead sheets</b> 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.						
a	<b>Stainless steel</b> components.	KG	120	120	120.0	360.0	0.00014683
b	<b>Lead Sheets.</b>	KG	40	40	40.0	120.0	0.0001117

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**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
32	Preparing detailed fabrication drawings and after approval by the Engineer and as per actual site condition to withstand the wet flue gas, providing, fabricating and installing <b>expansion compensator joints</b> including bolster in the flue liner including all labour, material and equipment transporting, hoisting, fixing in position, drilling, cutting, bolts and bolting, etc. along with the user handbooks (giving details of installation, dismantling and maintenance procedures for the expansion joints), testing, approval form BHEL/NTPC etc complete as per drawings and specifications.	Sqm	40	40	40.0	120.0	0.00615567
37	Supplying, and placing in position (at the beam supports bearings) <b>Neoperne pads</b> between concrete surface and mild steel including the cost of all labour materials, cutting to shape, grinding, drilling etc., complete as per drawings and specifications.	Cum	0.5	0.5	0.5	1.5	0.00177107
42	Supplying and installing ready mix castable refractory <b>concrete at opening</b> of chimney shell baffle wall and at other locations including all necessary arrangement for keeping them in position as per drawings and approval of Engineer.	Cum	5	5	5.0	15.0	0.00079981
43	Providing, laying and packing, at all levels, <b>asbestos ropes</b> at expansion joints including the cost of all labour material, etc. complete as per drawing and specifications.						
b	<b>12 mm (diameter)</b> at expansion joints between lining segments.	Rm	320	320	320.0	960.0	0.00033662
47	Providing and installing, at all levels, <b>resin bonded rock wool insulation</b> 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, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	300	300	300.0	900.0	0.00212451
49	Providing and packing, at all levels, <b>loose rock wool insulation</b> to a density not less than 100 kg/cu.m between the insulated minishells and brick liners at expandjoints 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	10	10.0	30.0	0.00062188
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 <b>acid and heat resisting black bituminous paint</b> (conforming to type I(l) 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	500	500	500.0	1500.0	0.00080004
51	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 <b>epoxy phenolic coating system having total 220 microns DFT</b> including the cost of all labour, materials, equipment, surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specifications.	Sqm	500	500	500.0	1500.0	0.00056641
55	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <b>aliphatic acrylate system having total 170 microns DFT</b> including the cost of all labours, material and & equipment, surface preparation, primer and finish painting, and consisting of : i) Two component transparent polyamide cured epoxy sealer coating (having solid by volume minimum 40% ±2%) of minimum 100 micron DFT to be applied over cleaned surface in multiple coats. Surface to be coated shall be absolutely dry, clean and dust free. ii) finish coat of two-pack aliphatic Isocyanate cured acrylic finish paint (solid by volume minimum 55% ±2%) with Gloss retention (SSPC Paint Spec No 36, ASTM D 4587, D 2244, D 523) of Level 2 (after minimum 1000 hours exposure, Gloss loss less than 30 and colour change less than 2.0 ΔE) and minimum 70 micron DFT. This coat shall be applied after an interval of minimum 24 hours and within six (6) months (from the completion of Intermediate coat). Colour and shade of the coat shall be as approved by the Employer, protecting, cleaning etc. complete as per drawings and specification.	Sqm	500	500	500.0	1500.0	0.00092069
56	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <b>acid and heat resistant polyurethane paint</b> 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	10	10	10.0	30.0	0.00002554

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**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
57	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <b>epoxy phenolic coating having total 220 microns DFT in alternate bands of 'signal red' and 'bright white' colours</b> including the cost of all labours, material and & equipment surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specification. Concrete surfaces shall be provided with two component transparent polyamide cured epoxy sealer coating (having solid by volume minimum 40% ±2%) of minimum 50 micron DFT to be applied over cleaned surface in multiple coats. Surface to be coated shall be absolutely dry, clean and dust free. Sealer coat shall be followed with the application of Intermediate coat of epoxy phenolic coating (solid by volume minimum 63%) of minimum 100 micron DFT. This coat shall be applied after an interval of minimum 24 hours (from the application of primer coat) by airless spray technique. Intermediate coat shall be followed with the application of finish coat of two-pack aliphatic Isocyanate cured acrylic finish paint (solid by volume minimum 55% ±2%) with Gloss retention (SSPC Paint Spec No 36, ASTM D 4587, D 2244, D 523) of Level 2 (after minimum 1000 hours exposure, Gloss loss less than 30 and colour change less than 2.0 ΔE) and minimum 70 micron DFT. This coat shall be applied after an interval of minimum 10 hours and within six (6) months (from the completion of Intermediate coat). Colour and shade of the coat shall be as approved by the Employer.	Sqm	10000	10000	10000.0	30000.0	0.01132813
58	Providing and painting, at all levels, the inside surface of chimney shell above roof, horizontal surface of shell at top, underside of concrete roof slab, external surface of minishell above roof and wherever as directed by the Engineer, with <b>epoxy phenolic coating having total 220 microns DFT</b> including the cost of all labours, material and & equipment surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specification. All concrete surfaces shall be provided with two component transparent polyamide cured epoxy sealer coating (having solid by volume minimum 40% ±2%) of minimum 50 micron DFT to be applied over cleaned surface in multiple coats. Surface to be coated shall be absolutely dry, clean and dust free. Sealer coat shall be followed with the application of Intermediate coat of epoxy phenolic coating (solid by volume minimum 63%) of minimum 100 micron DFT. This coat shall be applied after an interval of minimum 24 hours (from the application of primer coat) by airless spray technique. Intermediate coat shall be followed with the application of finish coat of two-pack aliphatic Isocyanate cured acrylic finish paint (solid by volume minimum 55% ±2%) with Gloss retention (SSPC Paint Spec No 36, ASTM D 4587, D 2244, D 523) of Level 2 (after minimum 1000 hours exposure, Gloss loss less than 30 and colour change less than 2.0 ΔE) and minimum 70 micron DFT. This coat shall be applied after an interval of minimum 10 hours and within six (6) months (from the completion of Intermediate coat). Colour and shade of the coat shall be as approved by the Employer.	Sqm	400	400	400.0	1200.0	0.00045313
59	Proving and laying over the <b>chimney roof, a composite acid and heat protection treatment</b> 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	200	200	200.0	600.0	0.00435513
60	Providing, fitting & fixing, <b>outlet and overflow, cast iron roof drain heads (with gratings)</b> 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 equipment, transporting, lifting, setting in place, painting, etc. complete as per drawing and specifications.	Each	8	8	8.0	24.0	0.00040423
61	Providing, fitting and fixing <b>rainwater pipes</b> 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 sealant, 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 <b>cast iron pipes</b>	Rm	32	32	32.0	96.0	0.0004958
b	150 mm nominal bore <b>medium class galvanised mild steel pipes</b>	Rm	300	300	300.0	900.0	0.00402392
62	Providing and laying 50 mm thick <b>cement concrete flooring</b> (comprising of 12 mm thick metallic concrete hardener topping over 38 mm thick under bed of concrete) over the grade level slab inside the chimney, including the cost of all labour, material and equipment, etc. complete as required for preparation of base, laying underbed and topping, finishing, rounding of edges, corners and junctions, curing, testing, etc. complete as per drawing and specifications.	Sqm	472	472	472.0	1416.0	0.00145027
63	Providing and installing an <b>electrically operated grill type steel roll-up door</b> (with the bottom one third of the curtain in solid type) at chimney base, in opening of approx size of 65 square 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	1	1	3.0	0.0024095

**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
64	Providing and installing at any level and location, mild steel, double plate, <b>personnel access doors</b> , 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	1	1	1	3.0	0.00010186
65	Supply, fabricating and fixing of <b>cleanout door</b> 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 material 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 conforming 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 enamel paint.	Each	1	1	1	3.0	0.00009433
67	Supplying, fabricating and installing <b>mild steel hatches</b> 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	1	1.0	3.0	0.00016846
68	Conducting <b>load testing on girders</b> 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	1	1	1.0	3.0	0.00117311
69	Designing, supplying, fabricating and installing after approval by the Engineer, <b>non-metallic expansion joints</b> to seal gaps between chimney components and to meet the service requirements of wet stack and 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 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 <b>between ducts and liners</b> .	Sqm	50	50	50.0	150.0	0.00481076
b	Expansion joint <b>between duct and chimney shell</b> .	Sqm	50	50	50.0	150.0	0.00481076
70	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with Conbextra GP-1 or equivalent. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	Cum	1	1	1.0	3.0	0.00018703
71	Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips ) using non shrink admixture. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	1	1	1.0	3.0	0.00006754
72	Erecting after Supply as per Sl No. <b>S72</b> of SCH-4 SUPPLY, of <b>Elevator</b> from ground upto top of chimney with landing at various platform level complete as per spec. and drawings.	Lumpsum	1	1	1.0	3.0	0.00609766
73	Fabricating and erecting FRP Pipes (Material as per Sl No. S73 of SCH-4 SUPPLY) with all bends, flanges, stiffeners, all other flue attachments, including support system, collars, connection with C276 pipes and any other accessories as required outside chimney flue liner at all elevation based on the approved design in line with gas-flow-model study report, including surface finishing, sealing, lamination, moulding, testing, guarantee / warranty etc. complete as per drawings, specification, manufacturer's recommendations and relevant codes.	Kg	488	488	488.0	1464.0	0.00018345
PART 1B (E1 TO E29)	<b>ELECTRICAL WORKS (Installation, testing &amp; commissioning of following items as per specification) (Material as per Sl No. SE1 to SE29 of SCH-4 SUPPLY)</b>						
E1	415V, 200A, 50 KA for 1 sec, 4 wire AC Distribution Board with 1No. incomm (SFU) , 12 nos. of 100A SFU (TPN) outgoing alongwith 100KVA lighting transformer (415/433) V in incomm, Dyn11, Z=4%, ±2x2.5% off ckt. Tap) complete in all respects	no.	1	1	1	3.0	0.00005046
E2	415V, 200A, 4 wire AC Emergency Lighting distribution board alongwith 50KVA lighting transformer (415/433 V, Dyn11, Z=4%, ±2x2.5% off ckt. Tap) with 2 nos. of SFU (TPN) incommers with auto changeover facility using contactors and <b>8 nos.</b> 100A SFU (TPN) outgoings complete in all respects. In case load requirement of chimney can not be met by 50 KVA lighting transformer after considering loading, 100 kVA lighting transformer shall be provided alongwith suitably rated components without any commercial implications to the purchaser.	no.	1	1	1	3.0	0.00005046
E3	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomm , <b>20</b> outgoing (16A SP MCBS)	no.	2	2	2	6.0	0.00002747
E4	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A SFU(TPN) incomm and 12 outgoings (16A, SP MCBS)	no.	2	2	2	6.0	0.00002747

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**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
E5	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer , 8 outgoing <b>32A SFU (TPN)</b> , photodetector and timer circuit along with 100A contactor to control aviation lighting system.	no.	1	1	1	3.0	0.00001374
E6	Aviation obstruction lights (mounted on door panel openable from interior) :						
	a. High Intensity flashing white light Type-A as per ICAO standard having an effective intensity of 4000 to 200,000 cd (minimum) depending upon back ground illuminance. Obstacle lights shall have a day time effective intensity of minimum 200000 cd. The intensity of lights shall be 20000 cd $\pm$ 25% at twilight and shall reduce automatically to a night time intensity of 4000 cd $\pm$ 25% through the use of photocell. shall be provided with all accessories, photocell, timer etc.	no.	16	16	16	48.0	0.00017312
	b. Temporary obstruction light located at diametrically opposite points at the top of chimney during period of construction with four fixture each .	no.	4	4	4	12.0	0.00028318
E7	Aviation Distribution Board (ADB) with one 32A SFU (TPN) incomer and 8 nos. SP 20A MCB. Construction is same as Lighting Panel.	no.	1	1	1	3.0	0.00001177
E8	Flood light type 120W(approx) LED luminaire with fitting (integrated /retrofitted LED lamp ) having an integral driver.The luminaire efficacy shall not be less than 80 Lm/W.	no.	6	6	6	18.0	0.00029373
E9	Well glass type 30W(approx) LED luminaire with fitting (integrated /retrofitted LED lamp ) having an integral driver.The luminaire efficacy shall not be less than 80 Lm/W.	no.	64	64	64	192.0	0.00083221
E10	Well glass type 70W(approx) LED luminaire with fitting (integrated /retrofitted LED lamp ) having an integral driver.The luminaire efficacy shall not be less than 80 Lm/W.	no.	35	35	35	105.0	0.00032233
E11	Well glass type 50W(approx) LED luminaire with fitting (integrated /retrofitted LED lamp ) having an integral driver.The luminaire efficacy shall not be less than 80 Lm/W.	no.	20	20	20	60.0	0.00021412

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**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
E12	63Amp welding switch socket with plug & other Mounting accessories	no.	9	9	9	27.0	0.00004592
E13	3 pin, 1 ph, 240V, 20Amp. Industrial Power sockets complete with plug Switches etc.	no.	9	9	9	27.0	0.00002144
E14	Al conductor, HR PVC insulated, Armoured, PVC inner sheath,PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.						
a	3½ C x95mm <sup>2</sup> Al for connection between ACDB/ELDB/ welding sockets	Mtrs.	1500	1500	1500	4500.0	0.00079889
b	3½ Cx35mm <sup>2</sup> Al for Lighting panel incoming supply	Mtrs.	1000	1000	1000	3000.0	0.00033638
c	4C x16mm <sup>2</sup> Al for connection between ALP/ADB/Aviation Lights	Mtrs.	250	250	250	750.0	0.00007709
d	4C x 2.5mm <sup>2</sup> Cu Control cable for Aviation lighting system	Mtrs.	500	500	500	1500.0	0.00012442
E15	Cu conductor, HR-PVC insulated, PVC inner sheath,PVC outer sheathed and FRLS type 1100V grade conforming to IS-1554 Part I.						
a	2.5 mm <sup>2</sup>	Mtrs.	2000	2000	2000	6000.0	0.00020797
b	4.0 mm <sup>2</sup>	Mtrs.	5000	5000	5000	15000.0	0.00066957
E16	GI pipe conduit with minimum 25 mm dia with GI junction boxes, GI pull boxes (Size 200x200x100mm of 16 SWG sheet steel for junction & pull boxes) & accessories etc. complete in all respects.		2000	2000	2000	6000.0	0.00126686
E17	PVC coated Flexible steel conduit 25mm dia with accessories	Mtrs.	100	100	100	300.0	0.0000112
E18	Lightning protection Air terminal : Lead coated copper material of 20 mm dia & 3 metre long.	no.	6	6	6	18.0	0.00016426
E19	50x6 Lead Coated GI Strip for coronal band on flue and top platform	Mtrs.	100	100	100	300.0	0.00006977
E20	Electrical equipment earthing materials including down conductors 50x6 GI Strip	Mtrs.	700	700	700	2100.0	0.00043089
E21	Electrical equipment earthing materials including down conductors 25x3 GI Strip	Mtrs.	700	700	700	2100.0	0.00014354
E22	8 SWG GI wire for equipment earthing	Mtrs.	2000	2000	2000	6000.0	0.00005606
E23	Test links for 50x6 down conductors enclosed in 200mm X 200mm X 100mm GI box of 16SWG sheet steel..	no.	6	6	6	18.0	0.00008207
E24	40mm dia MS rod for earthing of down conductor (BHEL will provide Earthing Rod free of cost)	Mtrs.	200	200	200	600.0	0.00091196
E25	Earthpit with earthing electrode including brick chamber with cover, accessories etc. complete in all respect..	no.	6	6	6	18.0	0.00012549
E26	Telephone socket with junction box etc. complete.	no.	6	6	6	18.0	0.0000421
E27	Telephone handsets complete.	no.	6	6	6	18.0	0.00004065
E28	Telephone cable of minimum 0.6 mm dia annealed high conductivity electro copper conductor, PVC insulated, twisted, PVC tape wrapped, screened, tip corded, PVC sheathed, confirming to relevant ITD (Indian Telephones department) specification						
	a) 24 pairs	Mtrs.	300	300	300	900.0	0.0001457
	b) 2 pairs	Mtrs.	100	100	100	300.0	0.00001164
E29	GS cable trays. Cable trays shall be of ladder type constructed of minimum 2 mm thick mild steel hot dip galvanise including cover, cabling material, accessories etc.						
a	600 mm wide	Mtrs.	200	200	200	600.0	0.00028031
b	300 mm wide	Mtrs.	200	200	200	600.0	0.0001794
c	150 mm wide	Mtrs.	400	400	400	1200.0	0.00033638

**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 3 : SERVICE**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
	<b>Miscellaneous Works</b>						
<b>M1</b>	<b>BORE WELL</b>						
<b>M1.1</b>	Boring/drilling bore well of required dia for casing/strainer pipe, by suitable method prescribed in IS:2800 (Part I), including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all equipments, tools, plants & machinaries required for the job, all complete as per direction of Engineer-in-charge, Upto 90 metre depth below ground level. All types of soil						
	300 mm dia	metre	450			450.0	0.00031542
<b>M1.2</b>	Boring/drilling bore well of required dia for casing/strainer pipe, by suitable method prescribed in IS:2800 (Part I), including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all equipments, tools, plants & machinaries required for the job, all complete as per direction of Engineer-in-charge, beyond 90 metre & upto 150 metre depth below ground level. All types of soil						
	300 mm dia	metre	300			300.0	0.00024531
<b>M1.3</b>	Labour for boring through any type of soil for sinking tubewell of required dia. With top enlargement by rig boring system ( either by reverse circulation or by direct rotary method ) including hire charges and labour for Rig Machine tools and plants, staging force pumping set, and making arrangement for water required for boring etc. complete and lowering of casing pipes , strainers blind pipes etc. complete for 300 mm dia . Depth of boring to be decided at the time of execution.						
	Beyond 150 ( Hundred Fifty ) From Ground Level ( In case good water strata is not available upto 150 M Depth.)	metre	875			875.0	0.00097092
<b>M1.4</b>	Supplying assembling lowering and fixing in vertical position in bore well, upvc midium bell casing of required dia confirming to IS 12818 including required higher and labour charges fitting and nessessary etc all complete for all depths as per direction of ngineer incharge						
	200 mm dia Nominal bore GI pipe	metre	550			550.0	0.00080221
<b>M1.5</b>	Providing and fixing to filter / submersible pump and lowering to proper levels 40 mm G.I. pipe for tube well including cleaning and priming the tube well	Mtrs.	1500			1500.0	0.00089059
<b>M1.6</b>	Supply, installation, commissioning of 5 HP KSB make or equivalent submersible pump motor set having capacity of discharging minimum 4 LPS of clear water at a total head as per site requirement or maximum 300 mtr depth . Pump shall be connected with 40 mm dia GI column pipes of length as per site requirement as directed by BHEL . Supply , assembling, lowering and fixing in vertical position in bore well including required fixing and labour charges etc. of 40 mm column pipe shall be paid in separat item. Depths of lowering of pump will be as per direction of Engineer- incharge.	SET	5			5.0	0.00034743
<b>M1.7</b>	Supplying , delivery and installation of Shakti 3-phase DOL Submersible Pump Starter (with Auto Swich- 3 positon selection, with SPP), Overload Relay Range 6.0(A) - 9.0(A) of make BCH or equivalent to be installed for bore well.	SET	5			5.0	0.00020846
<b>M1.8</b>	Supplying & laying 10 Sq. m 1.1 Kv grade 3.5 core PVC armoured ALUMINIUM cable on wall by means of saddles from ICTPN switch to busbars to MCCB, NCCB to starter including all end termination and interconnections etc. complete.	Mtrs.	1500			1500.0	0.00031269
<b>M1.9</b>	Providing and fixing M.S. clamp of required dia to the top of casing/housing pipe of tubewell as IS:2800 ( part I), including nessessary bolts & nuts of required size complete.						
	200 mm clamp	Nos.	5			5.0	0.00001157
<b>M2</b>	Deployment of Tools & Plants like Poclain, dumper etc. at nearby Coal Mines ( around 10-15 km distance), liaising with concerned authority / owner, loading of the coal rejected boulders, transporting to the work place at North Karanpura site including incidental charges, if any, laying the boulders at designated location(s) as per instruction of BHEL engineer, deployment of dozer/poclain for spreading the boulders in required thickness, breaking the boulders in small sizes to fill up the interstitial voids and compacting with 8-10 Ton capacity roller so as to provide even finished surface. (Rate to be quoted excluding taxes. GST, as applicable will be paid extra on submission of requisite documents)	cum	5000			5000.0	0.00433817
	<b>TOTAL</b>						<b>0.80317906</b>

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**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

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**SCHEDULE - 4 : SUPPLY**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
S25	Supplying <b>high strength structural bolts</b> (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. (Final measurement of total qty of this item shall be shall be restricted to total quantity of Item no. 25 of SCHEDULE-3 admitted in final bill).	Quintal	50	50	50	150	0.00331119
S26F	Supplying C276 strips, plates, gutters / vanes / pipes, bends, fittings and any other appurtenances as required in chimney for collection and withdrawal of condensate from inside of flue liner to outside based on the approved design in line with gas-flow-model study report all complete as per specification, drawing and as directed by the Engineer-in-charge. Final measurement for payment shall be done for net weight of C276 strip only after erection (weld thickness not to be considered). (Final measurement of total qty of this item shall be shall be restricted to total quantity of Item no. 26F of SCHEDULE-3 admitted in final bill).	Kg	1800	1800	1800	5400	0.0165192
S30AA	Supplying 2mm thick titanium sheet (Grade 2 as per ASME B265) to be wrapped over chimney mini-shell (as described in item no. 30AAA and insulation over it) external surface as per specification, drawing and as directed by the Engineer-in-charge. (Final measurement of total qty of this item shall be shall be restricted to total quantity of Item no. 30AA of SCHEDULE-3 admitted in final bill).	MT	2.00	2.00	2.00	6	0.01200849
S30AAA	Supplying solid titanium (grade 2 as per ASME SB265) plate of minimum 10mm thk required for fabrication and erection of Mini Shell above roof level as per specification, drawing and as directed by the Engineer-in-charge. (Final measurement of total qty of this item shall be shall be restricted to total quantity of Item no. 30AAA of SCHEDULE-3 admitted in final bill).	MT	12.00	12.00	12.00	36	0.07205093
S33	Supplying, Fabricated Ready to Install, <b>spare expansion compensators</b> 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. (Final measurement of total qty of this item shall be shall be restricted to total quantity of Item no. 33 of SCHEDULE-3 admitted in final bill).	Sqm	30	30	30	90	0.00358257
S72	Design, engineering and supply after approval by Engineer for an <b>Elevator</b> from ground upto top of chimney with landing at various platform level complete as per spec. and drawings.	Lumpsum	1	1	1	3	0.03005165
S73	Supplying FRP Pipes with all bends, flanges, stiffeners, all other flue attachments, including support system, collars, connection with C276 pipes and any other accessories as required outside chimney flue liner at all elevation based on the approved design in line with gas-flow-model study report, including moulding, testing, guarantee / warranty etc. complete as per drawings, specification, manufacturer's recommendations and relevant codes. (Final measurement of total qty of this item shall be shall be restricted to total quantity of Item no. 73 of SCHEDULE-3 admitted in final bill).	Kg	488	488	488	1464	0.00073382
<b>ELECTRICAL WORKS (Design, Engineering and Supply of following items as per specification)</b>							
SE1	415V, 200A, 50 KA for 1 sec, 4 wire AC Distribution Board with 1No. incomm (SFU) , 12 nos. of 100A SFU (TPN) outgoing alongwith 100KVA lighting transformer (415/433) V in Incomm, Dyn11, Z=4%, ±2x2.5% off ckt. Tap) complete in all respects	no.	1	1	1	3	0.00255445
E2	415V, 200A, 4 wire AC Emergency Lighting distribution board alongwith 50KVA lighting transformer (415/433 V, Dyn11, Z=4%, ±2x2.5% off ckt. Tap) with 2 nos. of SFU (TPN) incommers with auto changeover facility using contactors and 8 nos. 100A SFU (TPN) outgoings complete in all respects. In case load requirement of chimney can not be met by 50 kVA lighting transformer after considering loading, 100 kVA lighting transformer shall be provided alongwith suitably rated components without any commercial implications to the purchaser..	no.	1	1	1	3	0.00256302

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**SCHEDULE - 4 : SUPPLY**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
SE3	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer, 20 outgoing (16A SP MCBS)	no.	2	2	2	6	0.00073386
SE4	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A SFU(TPN) incomer and 12 outgoings (16A, SP MCBS)	no.	2	2	2	6	0.00085059
SE5	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer , 8 outgoing 32A SFU (TPN), photodetector and timer circuit along with 100A contactor to control aviation lighting system.	no.	1	1	1	3	0.00056173
SE6	Aviation obstruction lights (mounted on door panel openable from interior) :						
	a. High intensity flashing white light Type-A as per ICAO standard having an effective intensity of 4000 to 200,000 cd (minimum) depending upon back ground illuminance.Obstacle lights shall have a day time effective intensity of minimum 200000 cd. The intensity of lights shall be 20000 cd $\pm$ 25% at twilight and shall reduce automatically to a night time intensity of 4000 cd $\pm$ 25% through the use of photocell. shall be provided with all accessories, photocell, timer etc.	no.	16	16	16	48	0.02939919
	b. Temporary obstruction light located at diametrically opposite points at the top of chimney during period of construction with four fixture each .	no.	4	4	4	12	0.00066075
SE7	Aviation Distribution Board (ADB) with one 32A SFU (TPN) incomer and 8 nos. SP 20A MCB. Construction is same as Lighting Panel.	no.	1	1	1	3	0.00013345
SE8	Flood light type 120W(approx) LED luminaire with fitting (integrated /retrofitted LED lamp ) having an integral driver.The luminaire efficacy shall not be less than 80 Lm/W.	no.	6	6	6	18	0.00033037
SE9	Well glass type 30W(approx) LED luminaire with fitting (integrated /retrofitted LED lamp ) having an integral driver.The luminaire efficacy shall not be less than 80 Lm/W.	no.	64	64	64	192	0.00137754
SE10	Well glass type 70W(approx) LED luminaire with fitting (integrated /retrofitted LED lamp ) having an integral driver.The luminaire efficacy shall not be less than 80 Lm/W.	no.	35	35	35	105	0.00127893
SE11	Well glass type 50W(approx) LED luminaire with fitting (integrated /retrofitted LED lamp ) having an integral driver.The luminaire efficacy shall not be less than 80 Lm/W.	no.	20	20	20	60	0.00069828
SE12	63 Amp welding switch socket with plug & other Mounting accessories	no.	9	9	9	27	0.00059215
SE13	3 pin, 1 ph, 240V, 20Amp. Industrial Power sockets complete with plug Switches etc.	no.	9	9	9	27	0.00012516
SE14	Al conductor, HR PVC insulated, Armoured, PVC inner sheath,PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.						
a	3½ C x 95mm <sup>2</sup> Al for connection between ACDB/ELDB/ welding sockets	Mtrs.	1500	1500	1500	4500	0.0039884
b	3½ C x 35mm <sup>2</sup> Al for Lighting panel incoming supply	Mtrs.	1000	1000	1000	3000	0.0013187
c	4C x 16mm <sup>2</sup> Al for connection between ALP/ADB/Aviation Lights	Mtrs.	250	250	250	750	0.0005106
d	4C x 2.5mm <sup>2</sup> Cu Control cable for Aviation lighting system	Mtrs.	500	500	500	1500	0.00029032
SE15	Cu conductor, HR-PVC insulated, PVC inner sheath,PVC outer sheathed and FRLS type 1100V grade conforming to IS-1554 Part I.						
a	2.5 mm <sup>2</sup>	Mtrs.	2000	2000	2000	6000	0.00048527
b	4.0 mm <sup>2</sup>	Mtrs.	5000	5000	5000	15000	0.00156233

**VOLUME-III  
PRICE SCHEDULE, REV-02**

**JOB: CONSTRUCTION OF 3 NOS. 150 METER HIGH REINFORCED CONCRETE SINGLE STEEL FLUE CHIMNEY WITH BOROSILICATE GLASS BLOCK LINING SYSTEM ON MS FLUE CAN AND OTHER INCIDENTALS COMPLETE INCLUDING RAFT FOUNDATION FOR FGD SYSTEM OF 3 X 660 MW NORTH KARANPURA STPP, JHARKHAND.**

**TENDER NO PSER:SCT:NKP-C2005:20**

**SCHEDULE - 4 : SUPPLY**

ITEM SL NO.	Description of Item	Unit	Quantity (Unit 1)	Quantity (Unit 2)	Quantity (Unit 3)	Total Quantity	Weightage
SE16	GI pipe conduit with minimum 25 mm dia with GI junction boxes, GI pull boxes (Size 200x200x100mm of 16 SWG sheet steel for junction & pull boxes) & accessories etc. complete in all respects.	Mtrs.	2000	2000	2000	6000	0.00295601
SE17	PVC coated Flexible steel conduit 25mm dia with accessories	Mtrs.	100	100	100	300	0.00002614
SE18	Lightning protection Air terminal : Lead coated copper material of 20 mm dia & 3 metre long.	no.	6	6	6	18	0.00038328
SE19	50x6 Lead Coated GI Strip for coronal band on flue and top platform	Mtrs.	100	100	100	300	0.00016279
SE20	Electrical equipment earthing materials including down conductors 50x6 GI Strip	Mtrs.	700	700	700	2100	0.0010054
SE21	Electrical equipment earthing materials including down conductors 25x3 GI Strip	Mtrs.	700	700	700	2100	0.00033493
SE22	8 SWG GI wire for equipment earthing	Mtrs.	2000	2000	2000	6000	0.00014397
SE23	Test links for 50x6 down conductors enclosed in 200mm X 200mm X 100mm GI box of 16 SWG sheet steel.	no.	6	6	6	18	0.00019149
SE25	Earthpit with earthing electrode including brick chamber with cover, accessories etc. complete in all respect.	no.	6	6	6	18	0.00029282
SE26	Telephone socket with junction box etc. complete	no.	6	6	6	18	0.00009823
SE27	Telephone handsets complete	no.	6	6	6	18	0.00009484
SE28	Telephone cable of minimum 0.6 mm dia annealed high conductivity electro copper conductor, PVC insulated, twisted, PVC tape wrapped, screened, tip corded, PVC sheathed, confirming to relevant ITD (Indian Telephones department) specification						
a	24 pairs	Mtrs.	300	300	300	900	0.00033996
b	2 pairs	Mtrs.	100	100	100	300	0.00002716
SE29	GS cable trays. Cable trays shall be of ladder type constructed of minimum 2 mm thick mild steel hot dip galvanise including cover, cabling material, accessories etc.						
a	600 mm wide	Mtrs.	200	200	200	600	0.00078581
b	300 mm wide	Mtrs.	200	200	200	600	0.00062378
c	150 mm wide	Mtrs.	400	400	400	1200	0.00108139
	<b>TOTAL</b>						<b>0.19682094</b>

**ANNEXURE - 2****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	Construction of 3 nos. 150 meter high reinforced concrete single steel flue chimney with borosilicate glass block lining system on MS flue can and other incidentals complete including raft foundation for FGD system of 3 x 660 MW North Karanpura STPP, Jharkhand.	
Ref	1.0	Tender no PSER:SCT:NKP-C2005:20.
	2.0	BHEL's NIT, vide reference no PSER:SCT:NKP-C2005:7745 Date: 06-01-2020.
	3.0	BHEL's TCN-01, vide reference no PSER:SCT: NKP-C2005:TCN-01 Date: 14-01-2020.
	4.0	BHEL's TCN-02, vide reference no PSER:SCT: NKP-C2005:TCN-02 Date: 20-01-2020.
	5.0	BHEL's TCN-03, vide reference no PSER:SCT: NKP-C2005:TCN-03 Date: 21-01-2020.
	6.0	BHEL's TCN-04, vide reference no PSER:SCT: NKP-C2005:TCN-04 Date: 28-01-2020.
	7.0	BHEL's TCN-05, vide reference no PSER:SCT: NKP-C2005:TCN-05 Date: 31-01-2020.
	8.0	BHEL's TCN-06, vide reference no PSER:SCT: NKP-C2005:TCN-06 Date: 01-02-2020.
	9.0	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/uploaded offer/documents in accordance with tender instructions with acceptance of the terms & conditions of the tender by us and as per aforesaid references.

Thanking you,

Yours faithfully,

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

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION DJ-9/1, SECTOR-II, SALTLAKE CITY, KOLKATA - 700 091  
फैक्स/Fax : (033) 23211960 फोन/Phone : बोर्ड/EPABX : 033-2339 8000/ 2339 8236