

Ref: BHE/PW/PUR/MANUT-CVL Chimney Pkg-A (U-1&2) /1435/Pkg(U-3&4)/1437/Corrigendum-03  
Date 08/05/2015

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To

ALL BIDDERS

Sub: CORRIGENDUM -03: Out-come of Pre Bid Discussions held on 24/04/2015 and Revised Price Bid.

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

**PACKAGE B- CONSTRUCTION OF ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY ,INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNIT 3 & 4 AT 4X 270 MW BHADRADRI TPS, TELENGANA.**

SI No	Tender Specification Number	Unit Number & Project
1	BHE/PW/PUR/MANUT-CVL Chimney Pkg-A (U-1&2) /1435	Chimney, Package-A (Unit-1&2)
2	BHE/PW/PUR/MANUT-CVL Chimney Pkg-B (U-3&4)/1437	Chimney, Package-B (Unit-3&4)

Bidders to kindly take note of the following:

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**AA) Quantity Variation**

**Clause No 2.14 of Volume IC is amended as below:**

As per existing Clause 2.14 of Volume IC GCC	<b><u>Now Amended as</u></b>
<p><b>2.14 QUANTITY VARIATION</b></p> <p>2.14.1 The quoted rates shall remain firm irrespective of any variations in the individual quantities. No compensation becomes payable in case the variation of the final executed contract value is within the limits of Plus (+) or Minus (-) 15% of awarded contract value.</p> <p>2.14.2 Compensation due to variation of final executed value in excess of the limits defined in clause above, shall be as follows:</p> <p>i) In case the finally executed contract</p>	<p>Rates for individual items shall remain firm for any variation in the respective quantity up to plus (+) 30 % and minus (-) 100 %.</p> <p><b><u>For any variation in individual item quantities beyond plus (+) 30 %</u></b>, the item rate of that item shall be increased by 5 % i.e. payment for the quantities executed beyond 130 % of the tendered quantity shall be made @ of 105 % of the awarded rate of that particular item. Contractor shall not be eligible for any other compensation on this account</p> <p><b><u>For any variation in individual item quantity on</u></b></p>

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<p>value reduces below the lower limit of Contract Value due to quantity variation specified above, the contractor will be eligible for compensation @ 15% of the difference between the lower limit of the contract value and the actual executed value.</p> <p>ii) In case the finally executed contract value increases above the upper limit of Contract Value due to quantity variation specified above, there will be no revision in the rates within the contract period.</p>	<p><b><u>negative side or in case any item is not operated at all</u></b>, there will be no revision in the item rates during entire contract period and extended period if any.</p> <p><b><u>However In case the finally executed contract value reduces below 85 % of the ordered total value due to quantity variation</u></b>, the contractor will be eligible for compensation @ 15% of the difference between the 85% of the ordered value and the actual executed value. For this purpose executed contract value shall also include items quantities which are paid @ 105 % of ordered rate due to variation beyond plus (+) 30%.</p>
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## **BB: Acceptance of Bank Guarantee (BG)**

### **Clause No 1.10.3 (V) of Volume IC is amended as below:**

As per existing Clause 1.10.3 (v) of Volume IC GCC	<b><u>Now amended as</u></b>
<p>v) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format for Security Deposit shall be in the prescribed formats</p>	<p>(v) "Bank Guarantee issued by:</p> <p>a. Any of the BHEL consortium bank listed below :</p> <p style="padding-left: 40px;">State Bank of India ABN Amro Bank N.V. Bank of Baroda Canara Bank Citi Bank N.A. Corporation Bank Deutsche Bank HDFC Bank Ltd. The Hongkong and Shanghai Banking Corporation Ltd. ICICI Bank Ltd. IDBI Ltd. Punjab National Bank Standard Chartered Bank State Bank of Travancore State Bank of Hyderabad Syndicate Bank</p> <p>b. Any public sector Bank (other than consortium banks) with a clause in the text of Bank Guarantee that it is enforceable at Nagpur, Maharashtra</p>

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	<p>c. Any private sector banks, with a clause in the text of Bank Guarantee that it is enforceable by being presented at any branch of the bank</p> <p>Bank Guarantees issued by Co-operative Banks are not acceptable”</p>
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### **CC) Brief of Discussions during Pre-bid meeting held on 24/04/2015**

S. No.	Clause No	Description	Query	Clarification
1	TCC; Chapter - VIII Clause # 8.3	In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer, the Bidder/Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of Price Bid. Claim for any such impact after opening the Price Bid will not be considered by BHEL for reimbursement of tax or reassessment of offer	We understand that all statutory variations will be to BHEL's account. We therefore request BHEL to reimburse any fresh levies / modification of existing rates, if declared, during the time between bid submission date and order placement.	<b>Tender Conditions shall prevail</b>
2	TCC; Chapter - VIII Clause # 8.1.2	..... such applicable amount will be paid by BHEL at the prevailing Service Tax Rate (presently 12.36 %) on the admitted bill value.	We understand that all statutory variations will be to BHEL's account.	<b>Service tax shall be reimbursed as per Clause no 8.1.2 of Chapter - VIII of TCC at the prevailing rate.</b>
3	TCC; Chapter - VIII Clause # 8.3	No reimbursement/recovery on account of increase/reduction in the rate of taxes, levies, duties etc. on input goods/services/work shall be made. Such impact shall be taken care of by the Price Variation/Adjustment Clause (PVC) if any.	Stipulation regarding PVC available in GCC clause no. 2.17, do not specify provision for adjustment of tax rate variation in the PVC formula. Hence please clarify / modify the clause.	<b>Tender conditions shall prevail.</b>

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S. No.	Clause No	Description	Query	Clarification
4	Volume - IIB Tender Drawing No. PE-DG-411- 620-C001	General Arrangement Drawing - Chimney	Please furnish the chimney diameter (s) in the drawing.	<b>The diameter will be provided progressively after detailed engineering is completed.</b>
5	Volume II - Price Bid; Part A: Instruction to the Bidders		We find that indicated percentage weightage of few items in the BOQ is proportionally less than other items based on our estimation.	<b>The weightages will be as per revised price Bid rev-01.</b>
6	Volume II - Price Bid; Part A: Instruction to the Bidders Clause Nos. 3, 4 and 5		Whatever rounding-off may be done by BHEL in the unit price to arrive at the amount for each BOQ item, the grand total amount must be remain equal to the Lumpsum Total Price for entire Scope of Work indicated by us in our price bid.	<b>Accepted.</b>
7	Volume II - Price Bid; Part A: Instruction to the Bidders Claus e 6	For the convenience of bidders, BHEL has issued an excel sheet with all requisite formulae as detailed above. However this excel sheet shall not form part of contract document.	No excel sheet is available with the tender documents available in your website. Please furnish the same.	<b>Uploaded along with revised Price Bid Rev-01.</b>
8	Volume II - Price Bid; Part B Sr. no. 6 of Electrical works	Aviation obstruction lights	Please confirm that the number of Aviation lights indicated in the BOQ will be final. Based on ICAO norms, the quantities seem to be incorrect. However, if BHEL furnishes the diameter of chimney we can re-check the quantities given in the BOQ.	<b>Incorporated in Revised Price Bid Rev-01</b>
09	Volume II - Price Bid; Part B Sr. no. 24 of price bid	..... <b>galvani sed welded grating units</b> .....includin g 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection).....	Painting of galvanised parts are not required as per the standard pactice. We request your review on the same.	<b>Incorporated in Revised Price Bid Rev-01</b>

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S. No.	Clause No	Description	Query	Clarification
10	Volume II - Price Bid; Part BSr. no. 27, 28 of price bid	..... <b>miscellaneous mild steel items</b> complete with the cost of all labour, material and ..... painting, grouting etc. complete as per drawings and specifications:	Please furnish the specification of painting for these items	<b>Please Refer relevant clause of Section - D.</b>
11		General Layout Drawing of Chimney Area	Please furnish general layout drawing indicating Location of all panels ACDB, ELDB, Normal AC Lighting panel/emergency lighting panel.	<b>Shall be provided after detailed engineering.</b>

**12. Clause no 8. 4 is added to chapter-VIII of TCC**

The quoted rates shall be exclusive of the BOCW Cess which shall be paid extra by BHEL against Documentary evidence. However, the applicability of the BOCW Cess shall be got confirmed from BHEL in writing, before remitting such cess/tax

**13 : Refer NIT, PQ Criteria;** Explanatory notes; Clause # 7 (SI No 7 and 8) are amended as below:

Refer/Clause No	As per Refer NIT, PQ Criteria; Explanatory notes	Amended Now as
NIT, PQ Criteria; Explanatory notes; Clause # 7 (SI No 7)	<del>Completion of RCC Shell and liner (steel or brick as per tendered scope) up to the HEIGHT specified using slip form” in case of RCC Chimney.</del>	Completion of RCC Shell and liner (steel or brick as per tendered scope) up to the HEIGHT specified using slip form” in case of RCC Chimney.
NIT, PQ Criteria; Explanatory notes; Clause # 7 (SI No 8)	Achievement of physical Quantities as per respective PQRs in respect of Civil & Structures and Piling Works	<del>Achievement of physical Quantities as per respective PQRs in respect of Civil &amp; Structures and Piling Works</del>

**DD) REVISED VOLUME-II PRICE BID SPECIFICATION:**

VOLUME-II Price Bid Specification has been revised and up-loaded in BHEL web site as file titled **“Volume-II Revised Price Bid Specification-1435-1437 (Revision-01 dated 08/05/2015)”**

Revised price bids shall be enclosed in sealed envelopes superscribed with ‘Volume-II Revised Price Bid Specification-1435-1437 (Revision-01 dated 08/05/2015)’, tender specification No. etc.

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**Bidders to note that Price Bids submitted in revised format (Revision-01 dated 08/05/2015) shall only be considered for evaluation.**

**In case any bidder who has submitted/dispatched the offer prior to this amendment with earlier Price Bid, such bidder should submit their offer with the revised Price Bid as detailed above within scheduled date of offer submission.**

### **EE) Extension of Last Date**

The last date for submission of Tender has been re scheduled to 15/05/2015, 15.00 hrs.

Technical Bid shall be opened on 15/05/2015 at 16.00 hrs

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All other Terms and conditions of the Tender Specification shall remain unaltered unless expressly amended by BHEL in writing.

Bidders are requested to submit as a part of Technical Bid, a copy of this corrigendum duly countersigned by the authorized signatory and stamped with the Official seal as a token of Bidder's unqualified acceptance of this corrigendum.

This letter is hosted as file titled "Corrigendum-03: (Revised Price Bid and Clarification T. S. No -1435-1437)" against NIT-22138 in BHEL web page (www.bhel.com→Tender Notifications → View Corrigendum).

Thanking you,

Yours faithfully,

AGM (Purchase)

Enclosure:

1. Revised Volume II Price Bid Revision 01 dated 08/05/2015
2. Excel Sheet of Price bid for Reference

# TENDER SPECIFICATION

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

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

## **VOLUME- II Revised Price Bid Specifications Rev-01 dated 08/05/2015**

**TENDER SPECIFICATIONS CONSISTS OF:**

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



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

Date

Seal and Signature

## TENDER SPECIFICATION

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

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

EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR                      Refer Notice Inviting Tender  
TENDER SUBMISSION                      .

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING VOLUME-I-Tech Bid, VOLUME- II- Price Bid Revised price Bid Rev-01 dated 08/05/2015 and Vol-IBCD ARE ISSUED TO:

M/s. ....

PLEASE NOTE:  
THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

For Bharat Heavy Electricals Limited

AGM (Purchase)  
Place: Nagpur  
Date:

Date

Seal and Signature

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PART B: % weightage for amount of individual items of Schedule of quantity w.r.t. the total quoted price	11
Part C: Format to quote total Lumpsum Price	1

Date

Seal and Signature

## **VOLUME- II Revised Price Bid Specifications Rev-01 dated 08/05/2015**

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

### **Part A: Instructions to the Bidders**

1. **Bidders shall quote One Total Lumpsum Price for the entire scope of work in the format given in PART C in the price bid.** Any other entry elsewhere in the price bid shall be treated as Null and Void.
2. BHEL has fixed the % weightages for the amount of individual items of Schedule of Quantity w.r.t the total quoted price in PART B of Price Bid.
3. Based on the pre-fixed % weightages, amount of individual items shall be derived by BHEL. This amount shall not be rounded off.
4. Based on the quantities of individual item and the amount arrived in SI No 3 above, item rate of individual items shall be derived by BHEL. This item rate shall be rounded off to two decimal places.
5. The item rates thus derived as in SI No 4 above, shall be multiplied with respective quantities to arrive at the amount and grand total amount which shall be considered for award of work.
6. For the convenience of bidders, BHEL has issued an excel sheet with all requisite formulae as detailed above. However this excel sheet shall not form part of contract document.
7. **This is a combined tender for Construction 2 Nos Chimney Package-A (Unit 1 & 2) and Package-B (Unit 3 & 4) of height 275 Mtr each at 4X 270 MW BHADRADRI TPS,TELENGANA.**
  - i Tender specification (Volume I) is common for both Packages i.e. **Package-A (Unit 1 & 2) and Package-B (Unit 3 & 4).**
  - ii **Package-A (Unit 1 & 2) and Package-B (Unit 3 & 4)** shall be awarded to separate agencies.
  - iii **Bidder has to submit their Price for Package-A (Unit 1 & 2) Construction of a Chimney of 4X 270 MW BHADRADRI TPS,TELENGANA as indicated in the Price Bid.**
  - iv L-1 Bidder shall be considered for award of **Package-A (Unit 1 & 2).**
  - v For award of **Package-B (Unit 3 & 4)**, next bidder in the order of their price competitiveness ( i.e L-2, then L-3 and hence forth) shall be given an

Date

Seal and Signature

option to match their price/rate, with the Awarded/Finalised price/rate of **Package-A (Unit 1 & 2)**. In case none of the bidders agree to match the Awarded price/RATE of **Package-A (Unit 1 & 2)**, then BHEL may consider awarding the **Package-B (Unit 3 & 4)**, to L-1 bidder or opt any other suitable method to finalize Package-B (Unit 3 & 4).

Date

Seal and Signature

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
<b>Service Part</b>				
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 500 m, spreading/levelling of disposed materials etc all complete for following depths below ground level including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge			
	a) Depth from ground level but not exceeding 2 m	cum	<b>4818</b>	0.1782229234
	b) Depth exceeding 2 m but not exceeding 4 m	cum	<b>4110</b>	0.2067549256
	c) Depth exceeding 4 m but not exceeding 6 m	cum	<b>3235</b>	0.2117984053
	d) Depth exceeding 6 m but not exceeding 8 m	cum	<b>1450</b>	0.1394493469
	e) Depth exceeding 8 m but not exceeding 10 m	cum	<b>1025</b>	0.0993345414
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 500 m, spreading / levelling of disposed materials etc all complete for following depths below ground level including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.			
	a) Depth from ground level but not exceeding 2 m	cum	<b>0</b>	
	b) Depth exceeding 2 m but not exceeding 4 m	cum	<b>500</b>	0.0429074913
	c) Depth exceeding 4 m but not exceeding 6 m	cum	<b>1050</b>	0.1071947499
	d) Depth exceeding 6 m but not exceeding 8 m	cum	<b>650</b>	0.0754949912
	e) Depth exceeding 8 m but not exceeding 10 m	cum	<b>650</b>	0.0817461688
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 250 mm thickness using/with selected materials <b>from compulsorily excavated soil</b> available within a lead upto 500m and compacted as specified including re-excavation of stacked earth, watering, ramming/compaction by manual/mechanical means, dressing etc all complete.for the following including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.			
	a) Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	cum	<b>1216</b>	0.0373324766
	b) Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	<b>4345</b>	0.1333960616
	c) Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	<b>1216</b>	0.0346337433
9	Extra over item No. 1 and 3 to 7 for <b>carriage of excavated earth/selected materials</b> for every 1 km or part thereof beyond an initial lead of 500m.	cum	<b>5200</b>	0.0692438136

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
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 250 mm thickness <b>using/with approved borrowed soil</b> (borrowed soil to be arranged by the bidder) and compacted as specified including supplying borrowed soil, royalty (if any), watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.			
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	100	0.0103939698
11	<b>Supplying and filling sand</b> upto any depth below grade slab, around foundations, etc. in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.	cum	281	0.0675608042
12	<b>Supplying and laying</b> (inside chimney in the space below the grade level slab) <b>crushed rock</b> (63mm down graded) and sand fill in layers no more than 150 mm thick each and thoroughly compacted by compacting equipment and by water flooding to achieve maximum density for all leads and lifts including all labour, materials, equipment etc. complete as per drawings, specifications and directions of the Engineer.	cum	479	0.2763982228
13	Providing and laying <b>Nominal Mix plain cement concrete (1:3:6)</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, curing, testing etc. all complete as per specifications, drawings and instructions of the Engineer.	cum	190	0.1800561090
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:			
i	For all works below ground level (except chimney shell)			
a	Grade M-25 (foundations, etc)	cum	5984	8.1830681853
ii	For all other works			
a	Grade M-20 (grade level slab)	cum	84	0.1148382017
b	Grade M-30 for chimney shell, corbels and external platforms and other shell attachments.	cum	10217	16.0161998861
15	Providing and applying <b>two coats of bitumen</b> grade 85/25 as per IS 702 ( @ 1.7kg/sqm) with 1% antistripping compound conforming to IS 6241 in foundation, shell, pedestal etc <b>on concrete surfaces exposed to soil / ash</b> including surface preparation etc. all complete.	Sqm	1450	0.0793788590
16	Providing and placing <b>reinforcement, for reinforced concrete work</b> , at all levels, for all kinds of work, including transportation, cleaning, derusting, straightening, cutting, bending, binding in position with annealed wire and/or welding, providing concrete cover blocks, pins, separators, chairs, supports for reinforcement, etc. with all materials, labour, equipment, handling, transporting, testing, etc. preparation of bar bending schedules, all complete as per specifications, drawings and instructions of the Engineer.			
i	For all works below ground level (except chimney shell)			
a	High strength deformed bars	Mt	688	2.5270441016
ii	For all other works			
b	High strength deformed bars	Mt	1175	5.2350376019

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
17	Providing and fixing <b>formwork</b> of approved quality for cast-in-situ, plain or reinforced concrete works of any type and section (including curved surfaces and chimney shell) for all elevations, including labour, materials, equipment, waste of forms, shoring, strutting, scaffolding, staging, tying, nailing, caulking, bolting etc. and removal of form work and staging etc. all complete as per specifications, drawings and instructions of the Engineer.			
	For all works below ground level (except chimney shell)	Sqm	<b>1903</b>	0.2182104860
	For all other works			
a	Inner and outer faces of wind shield with slip form shuttering	Sqm	<b>30748</b>	13.8756021053
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	<b>774</b>	0.4294448058
18	Providing and fixing <b>formwork in shell openings</b> (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	<b>117</b>	0.0649160752
19	Providing and placing in position at all levels, <b>building paper (kraft paper)</b> , as per IS:1397, between concrete surfaces including the cost of labour, material, etc. complete as per drawings and instruction of the Engineer.	Sqm	<b>60</b>	0.0013316118
20	Providing and installing, at all levels, <b>bitumen impregnated fibre boards</b> , 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	<b>34</b>	0.0124128413
21	Providing and filling, at all levels, <b>bitumen sealing compound</b> (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	<b>508</b>	0.0469763051
22	Preparing detailed fabrication drawings and after approval by the Engineer, supplying, fabricating, erecting and installing <b>miscellaneous steel parts to be embedded/cast in concrete</b> (like staircase embedments, corbel face plates, etc) at all positions and levels including the cost of all labour, materials and equipments for setting materials in concrete, grouting, welding, bolts & bolting, expansion anchors, drilling, cutting, etc. complete as per drawings and specification. ALL MATERIALS TO BE SUPPLIED BY CONTRACTOR. <b>Payment terms :</b> a) on receipt of materials at site - 65 % b) Erection and fixing - 35 %	Mt	<b>6</b>	0.2713491947

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
23	<p>Taking delivery of structural steel from BHEL stores and transporting to site ,Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting <b>structural steel work</b> for the stair case (from grade level to roof level), internal platforms, walkway gallery structures,chequered plate panels (for floors of internal and external platforms), treads and landings of the staircase including brackets, kick plates, structural members, beam support bearings on the shell, stiffeners, seats, blockouts, ready to bolt fixtures, cost of all labour, material and equipment, transporting, lifting to all heights, setting in place, welding to cast in fixing place, cutting, grinding, drilling, bolts and bolting, anchor fasteners, welding, preheating and post heating for welding , testing, Shot blasting to near white metal surface as per customer specifications,primer and finish painting the structures shall be painted first with two coats of red oxide zinc chromate paint of each 25 micron (min ) thick confirming to IS:2074 and then with two coats of synthetic enamel painteach of 30 micron ( min) thick as per IS 2932 &amp; 2933 of etc.etc. complete as per drawing and specifications.</p> <p><b>Payment Terms :</b>  a) Fabrication : 65 %,  b) Erection : 15 %,  c) Alignment : 10 %  d) Painting: 10%  (STRUCTURAL STEEL SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)</p>	Mt	341	7.0382341738
24	<p>Supplying, fabrication, erection and alignment of factory made <b>galvanised welded grating units</b> with mild steel conforming to IS:2062 in platforms, staircases with edge binding strips and anti-skid nosing in treads etc. fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.</p> <p><b>Payment terms :</b>  a) on receipt of materials at site - 65 %  b) Erection and fixing - 35 %</p>	Mt	87	3.5398680374
25	<p>Providing and fixing in positing of <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.</p> <p><b>Payment terms :</b>  a) on receipt of materials at site - 65 %  b) Erection and fixing - 35 %</p>	Quintal	50	0.4129476151
26	<p>Taking delivery of structural steel (Mild Steel IS: 2062 ) from BHEL stores and transporting to site, 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.</p> <p><b>Payment Terms :</b>  a) Fabrication : 65 %,  b) Erection : 15 %,  c) Alignment : 10 %  d) Painting: 10%  (STRUCTURAL STEEL SHALL BE SUPPLIED BY BHEL FREE OF COST AS PER TCC)</p>	Mt	829	13.7834952568
27	<p>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:</p>			-

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
a	Mild steel ladders with cage, hood access hatch, louvers, bird screens, hood drain basin covers and other miscellaneous mild steel items not specifically mentioned.	Mt	17	0.8243786724
b	32/40 mm nominal bore medium class tubular hand railing for stair case and internal and external platforms.	Mt	24	1.2396861996
c	Providing minimum 275 gsm Hot dipped galvanisation on mild steel parts as per specification.	Mt	17	0.3140624927
28	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting, at all levels, mild steel strakes complete with all stiffeners, attachments, fasteners, pipe sleeves, etc. including the cost of all labour, material and equipment, transporting, lifting to all heights, setting in place, embedding components in concrete, fixing to cast-in embedments, cutting, grinding, drilling, bolts and bolting, welding, preheating and post heating for welding, testing, grouting, primer and finish painting of exposed components, etc. complete as per drawing and specifications.	Mt	25	0.6010747712
29	Supplying, fabricating and installing in the liners, gas sampling and gas opacity measurement ports made from SS grade 316L pipe including the cost of all labour, materials, bolts and bolting, asbestos gaskets, cover plates & all other accessories, painting etc., complete as per drawings and specifications.	Each	10	0.0620679056
30	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting, at all levels SS Mini Shell at roof shell of grade A316L, etc. complete as per drawing and specifications. (Stainless steel will be supplied by BHEL as per TCC)	Mt	30	0.4727221893
31	Taking delivery of structural steel from BHEL stores and transporting to site.,Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing at all levels, stainless plates (including stainless steel screws and fasteners) of grade AISI 316L and lead sheets beams and over the mild steel in the platform beam bearing, flue supports bearings, flue restraints brackets/ buffers etc. including the cost of all labour material & equipment, transporting, lifting to all heights, setting in place, cutting, grinding, drilling, welding of stainless steel using compatible & approved stainless steel electrodes, testing & machining flat and polishing the contact surfaces of stainless steel, coating the polished surfaces with silicone grease, etc., complete as per drawings and specifications. (Stainless steel will be supplied by BHEL as per TCC)			
a	Stainless steel components.	Mt	0.24	0.0037817775
b	Lead Sheets.	Kg	80	0.0122804199
32	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing expansion compensator joints including bolster in the flue liner including all labour, material and equipment transporting, hoisting, fixing in position, drilling, cutting, bolts and bolting, etc. along with the user handbooks (giving details of installation, dismantling and maintenance procedures for the expansion joints), testing, etc complete as per drawings and specifications.	Sqm	103	1.1416333345
33	Supplying ,Fabricated Ready to install, spare expansion compensators alongwith bolster including the cost of all labour, material and equipment, accessories, transporting, proper packaging (for several years of storage), and delivery to site store complete in all respects as per drawings and specification.	Sqm	30	0.2557804334
34	Supplying and laying in position shaped acid resisting bricks conforming to class - I of IS:4860 at all elevations for liner, baffle wall construction ( with sloped A/R mortar toppings over brick work ) complete including the cost,of all labour, material and equipment, raking joints, flush pointing, cleaning, curing, etc. complete as per drawings and specifications.	Cum	21	0.3626367320
38	Supplying and laying vermiculite concrete in the liner basin including the cost of all labour, material and equipment for handling, transporting, mixing, lifting, placing, curing, finishing of surface etc. complete as per drawings and specifications.	Cum	10	0.1190128047

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
40	Supplying, fabricating & installing, at all levels <u>mild steel circumferential reinforcing bands</u> around the brick liners at all elevations including the cost of all labour, transportation, materials & equipments, lifting to all heights, setting in place, a/r mortar fill behind bands, cutting, bending, drilling, grinding, bolts and bolting, priming, finish painting, etc. complete as per drawings and specification.	Mt	1	0.0240429908
41	Providing, fabricating and installing, at all levels, <u>chemical lead sheet</u> (2 mm thick) at expansion joints between brick lining segments including the cost of all labour, transportation, material & equipments, cutting, soldering of joints, testing etc. complete as per drawings and specifications.	Kg	50	0.0073053702
42	Supplying and installing ready mix castable refractory <u>concrete at opening</u> of chimney shell baffle wall and at other locations including all necessary arrangement for keeping them in position as per drawings and approval of Engineer.	Cum	5	0.0457556610
43	Providing, laying and packing, at all levels, <u>asbestos ropes</u> at expansion joints including the cost of all labour material, etc. complete as per drawing and specifications.			
a	<u>25 mm (diameter)</u> at expansion joints between brick lining segments.	Rm	118	0.0222601106
b	<u>12 mm (diameter)</u> at expansion joints between brick lining segments.	Rm	709	0.0629408511
44	Providing, fabricating and laying in position <u>asbestos mill boards</u> , over the mini shells below the cast iron cap segments, in between the cap segments and wherever as directed by the engineer, including the cost of all labours, material and equipment, cutting, drilling, etc., complete as per drawings and specifications.			
a	<u>25 mm thick</u> asbestos mill boards.	Sqm	7	0.0042334158
b	<u>3 mm thick</u> asbestos mill boards.	Sqm	1	0.0002552255
45	Supplying, fabricating and installing, on top of the mini shells, <u>grey cast iron caps</u> complete including the cost of all labour, material and equipment, transporting, test assembling, drilling, lifting to position, setting in place, bolts and bolting, inclusive of bronze rag bolts bronze bolts and nuts, brass washers, non-shrink grout, primer and finish painting, etc., complete as per drawings and specifications.	Mt	1.85	0.1025287452
46	Providing and installing, at all levels, <u>resin bonded glass wool insulation</u> slabs of density not less than 64 kg/m <sup>3</sup> with an installed thickness of not less than 100 mm, on the outside surface of steel flue liners, on the outside surface of brick liner, on the inside surface of concrete windshield, inside surface of concrete minishells, under the cast iron caps and wherever as directed by the Engineer, in two layers (each 50 mm thick) including the cost of all labour, material and equipment, transporting, lifting to all heights, etc., inclusive of plated or galvanised accessories such as pins/studs/anchors/wire netting, speed washers, tying wires, etc. welding of pins/studs to steel surfaces or embedding of pins/studs/anchors in concrete surfaces, fixing, cutting, cutting, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	4054	3.5989028273
47	Providing and installing, at all levels, <u>resin bonded rock wool insulation</u> slabs of density not less than 100 kg/cu.m with an installed thickness of not less than 100 mm, on the outside surface of steel flue liners, on the outside surface of brick liner, on the inside surface of concrete windshield, inside surface of concrete minishells, under the cast iron caps and wherever as directed by the Engineer, in two layers (each 50 mm thick) including the cost of all labour, material and equipment, transporting, lifting to all heights, etc., inclusive of plated or galvanised accessories such as pins/studs/anchors/wire netting, speed washers, tying wires, etc. welding of pins/studs to steel surfaces or embedding of pins/studs/anchors in concrete surfaces, fixing, cutting, cutting, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	4054	2.8191405480
48	Providing and packing, at all levels, <u>loose glass wool insulation</u> to a density not less than 64 kg/m <sup>3</sup> between the insulated minishells and brick liners at expansion joints between the lining segments and wherever as directed by the Engineer including the cost of all labour, material and equipment, filling, ramming, testing, etc. complete as per drawings and specifications.	Cum	5	0.0449418982

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
49	Providing and packing, at all levels, <u>loose rock wool insulation</u> to a density not less than 100 kg/cu.m between the insulated minishells and brick liners at expanjoints between the lining segments and wherever as directed by the Engineer including the cost of all labour, material and equipment, filling, ramming, testing, etc. complete as per drawings and specifications.	Cum	5	0.0202515961
50	Providing and painting, at all levels, inside surface of chimney shell, inside and outside surfaces of minishells, underside of roof slab and other concrete components/surfaces of the chimney as indicated in the drawings and wherever as directed by the Engineer, with <u>acid and heat resisting black bituminous paint</u> (conforming to type I(i) of IS:158) in as many number of coats (not less than four coats in any case) as required to give a paint DFT of not less than 150 microns including the cost of all labour, materials, equipment, surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specifications.	Sqm	14887	1.0462510909
52	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <u>cement based paint</u> in alternate bands of colours 'signal red' and 'pure/bright white including the cost of all labours, material and & equipment,surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specification.	Sqm	6461	0.5974683226
52 (a)	Providing and painting two coats of cement primer and two coats of synthetic enamel paint at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer 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	6461	0.6930632542
54	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <u>acid and heat resistant polyurethane paint</u> in alternate bands of colours 'signal red' and 'pure/bright white including the cost of all labours, material and & equipment surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specification.	Sqm	2198	0.2804929291
55	Proving and laying over the <u>chimney roof, a comosite acid and heat protection treatment</u> including providing of slopes for roof drainage including the cost of all labour, material and equipment, etc., complete as required for preparing the roof concrete, laying under bed of plain cement concrete screed to slopes, preparation of screed surface for painting, painting the screed surface with black bituminous paint, applying bitumenmastic in layers, laying acid resisting(A/R) mortar bed and laying 75 mm thick acid resisting(A/R) bricks with A/R mortar, curing, pointing(with phenolic based A/R cement), protection and cleaning, finishing, etc., complete as per drawing and specifications.	Sqm	170	0.2027933805
56	Providing, fitting& <u>fixing, outlet and overflow, cast iron roof drain heads (with gratings)</u> in chimney roof including sockets, adapters, brackets, hangers, supports, etc., casting-in and jointing to 150 mm nominal bore rainwater pipes, grouting, etc. including the cost of all labour material and equipement, transporting, lifting, setting in place, painting, etc. complete as per drawing and specifications.	Each	8	0.0426263733
a	150 mm nominal bore <u>cast iron pipes.</u>	Rm	32	0.0304791145
b	150 mm nominal bore <u>medium class galvanised mild steel pipes.</u>	Rm	550	0.6835607244
58	Providing and laying 50 mm thick <u>cement concrete flooring</u> (comprising of 12 mm thick mettalic concrete hardener topping over 38 mm thick under bed of concrete) over the grade level slab inside the chimney, including the cost of all labour, material and equipment, etc. complete as required for preparation of base, laying underbed and topping, finishing, rounding of edges, corners and junctions, curing, testing, etc. complete as per drawing and specifications.	Sqm	562	0.0935457290

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
59	Providing and installing an <b>electrically operated grill type steel roll-up door</b> (with the bottom 0.5 metres of the curtain in solid type) at chimney base, in opening of size 7 m by 7 m, with all hardware and mechanisms, fittings and fixtures, locking arrangements, frames, fasteners, gear handle arrangement for standby manual operation, all electrical accessories such as motors, control systems, cables, etc. including the cost of all labour, material and equipment, fixing in position, grouting primer and finish painting, testing, etc., complete as per drawing and specifications.	Each	1	0.1563127308
60	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	8	0.1065733311
a	Hood Access Hatch	Each	1	0.0069791254
66	Erection and commissioning of one number Rack & Pinnion Type stack Elevator of proven make after obtaining approval from BHEL/ TSGENCO from ground upto top of chimney with landing at various platform level complete as per spec. and drawings.	Lumpsum	1	1.2529722453
	<b>ELECTRICAL/MECHANICAL ERECTION WORKS ETC. (BIDDER TO QUOTE RATES FOR ERECTION AND COMMISSIONING ONLY)</b>			
S.NO	DESCRIPTION	UNIT	QTY.	
1	415V, 200A, 50 KA for 0.25 sec, 3-phase 4 wire AC Distribution Board with 1No. incomer (MCCB) & 9 nos. of 100A (TPN) outgoing complete in all respects.	No.	1	0.0064768118
2	415V, 200A, 3-phase 4 wire AC Emergency Lighting distribution board alongwith 50KVA lighting transformer (415/433 V, Dyn11, Z=4%, ±2x2.5% Off Ckt. Tap) with 2 nos. of incomers with auto changeover facility using contacts and 6 nos. 100A MCCB (TPN) outgoing complete in all respects.	No.	1	0.0048577938
3	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A MCCB (TPN) Incomer ,			
	(a)18 outgoing (16A SP MCBs)	No.	2	0.0056674877
	(b)12 outgoing (16A SP MCBs)	No.	1	0.0028337438
4	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A TPN/MCCB incomer and 12 outgoing (16A, SP MCBs)	No.	2	0.0032387758
5	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer , 8 outgoing 32A SFU (TPN), photodetector and timer circuit along with 100A contactor to control Aviation lighting systems	No.	1	0.0014573751
6	Aviation obstruction lights :			
	a) High intensity Type-A flashing white light having intensity of 4000 to 200,000 candles depending upon background luminance & flashing frequency 40-60/min.	No.	6	0.0106861847
	b) Medium intensity Type-B RED flashing LED light having intensity of as per ICAO depending upon background luminance & flashing frequency 40-60/min.	No.	3	0.0043721254
	c) A common flasher with flash frequency of 40 flashes per minute shall be provided in aviation control panel.	No.	1	0.0014573751
7	Flood light with 250W HPSV lamps with all controlgears & accessories	No.	4	0.0035628013
8	Well glass type luminaries with 150W/HPSV lamp with all controlgears & accessories	No.	150	0.0911044407
9	63Amp welding switch socket with plug & other Mounting accessories	No.	9	0.0054662664
10	3 pin, 1 ph, 240V,15Amp. Power socketscomplete with plug Switches etc.	No.	10	0.0036434378
11	Al conductor, PVC insulated, Armoured, , PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.	Meters		

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
	a. 3 $\phi$ C x95mm <sup>2</sup> Al for connection between ACDB/ELDB/ welding sockets	Meters	1400	0.1579439552
	b. 3 $\phi$ Cx35mm <sup>2</sup> Al for Lighting panel incoming supply	Meters	1000	0.0573332858
	c. 4Cx16mm <sup>2</sup> Al conductor, PVC insulated, Armoured, PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.	Meters	1600	0.0686519861
12	Control cables shall have stranded annealed tinned copper conductor, 1100V grade PVC insulation, extruded PVC inner sheath, galvanized steel wire armoured, overall extruded PVC sheath, FRLS type			
	a) 2.5 mm <sup>2</sup>	Meters	500	0.0192343926
13	Flexible trailing cable : annealed tinned copper conductor, EPR insulated, reinforced with nylon cord, cores laid up, HDCSP inner sheathed, cotton taped and HDCSP overall sheathed conforming to IS:9968.	Meters	50	0.0283366991
14	PVC insulated 650/1100V grade stranded Cu Conductor lighting wires conforming to IS-694.			
	a. From Lighting panels to junction boxes : 6 SQ.mm	Meters	2000	0.0258924516
	b. From junction boxes to lighting fixtures (Number of wires per lead as required) : 2.5 SQ.mm	Meters	1500	0.0171999857
	c. From Lighting panels to receptacles (15A) : 6 SQ.mm	Meters	2000	0.0303311576
15	GI conduit 32mm dia with junction Boxes,Pull boxes & accessories	Meters	5000	0.2034406918
16	Electro galvanise felxible steel conduit 32 mm dia with accessories	Meters	10	0.0036434378
17	Lightning protection Air terminal	Meters	45	0.1010027551
18	Earthing materials			
	i) Distribution Boards, Lighting Panels and motors above 90 KW : 50 mm x 6 mm GI Flat	Meters	300	0.0206399829
	ii) Motors above 30 KW upto 90 KW : 35 mm x 6 mm GI Flat	Meters	250	0.0130386988
	iii) Motors above 5 KW upto 30 KW : 25 mm x 3 mm GI Flat	Meters	400	0.0109488081
	iv) Motors upto 5 KW : 8 SWG GI wire	Meters	300	0.0015535471
	v) Lighting Fixtures, junction boxes,conduits, etc. : 16 SWG G.I. wire	Meters	250	0.0009247304
19	Telephone Socket with junction box	No.	10	0.0089328958
20	Telephone cable shall be of minimum 0.6 mm dia annealed high conductivity electro copper conductor. PVC insulated, twisted , PVC tape wrapped, screened, tip corded, PVC sheathed, conforming to relevent ITD ( Indian telephone department) specification.	Meters	150	0.0172277276
21	GS cable trays. Cable trays shall be of ladder type constructed of minimum 2 mm thick mild steel hot dip galvanised.	Meter		
	600 mm wide		150	0.0312373934
	450 mm wide		100	0.0136490209
	300 mm wide		150	0.0169225666
	150 mm wide		350	0.0332718004
22	Aviation distribution board (ADB) with one 32A MCCB(TPN) incomer and 6 nos. SP 20A MCB. Construction is same as LP	No.	4	0.0113349755
	<b>GRAND TOTAL Weightage ( SERVICE PART )</b>			<b>92.19458698</b>
<b>Supply Part</b>				
<b>Civil Works</b>				
S.NO	DESCRIPTION	UNIT	QTY.	
66	Supply one number Rack & Pinnion Type stack Elvator of proven make after obtaining approval from BHEL/ TSGENCO from ground upto top of chimney with landing at various platform level complete as per spec. and drawings.	Lumpsum	1	2.9236019059
<b>ELECTRICAL WORKS</b>				
<b>ELECTRICAL WORKS (Supply, of following items as per specification)</b>				

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
1	415V, 200A, 50 KA for 0.25 sec, 3-phase 4 wire AC Distribution Board with 1No. incomer (MCCB) & 9 nos. of 100A (TPN) outgoing complete in all respects.	No.	1	0.2079526364
2	415V, 200A, 3-phase 4 wire AC Emergency Lighting distribution board alongwith 50KVA lighting transformer (415/433 V, Dyn11, Z=4%, $\pm 2 \times 2.5\%$ Off Ckt. Tap) with 2 nos. of incomers with auto changeover facility using contacts and 6 nos. 100A MCCB (TPN) outgoings complete in all respects.	No.	1	0.3542553454
3	Normal AC lighting panel outdoor type with degree of protection IP 55 with one no. 100A MCCB (TPN) Incomer ,			
	(a)18 outgoing (16A SP MCBs)	No.	2	0.1435425736
	(b)12 outgoing (16A SP MCBs)	No.	1	0.0717712868
4	Emergency lighting panel outdoor type with degree of protection IP 55 with One no. of 100A TPN/MCCB incomer and 12 outgoings (16A, SP MCBs)	No.	2	0.1196186880
5	Aviation lighting panel outdoor type with degree of protection IP 55 with one no. 100A SFU (TPN) Incomer , 8 outgoing 32A SFU (TPN), photodetector and timer circuit along with 100A contactor to control Aviation lighting systems	No.	1	0.0782122191
6	Aviation obstruction lights :			
	a) High intensity Type-A flashing white light having intensity of 4000 to 200,000 candles depending upon background luminance & flashing frequency 40-60/min.	No.	6	0.7609362475
	b) Medium intensity Type-B RED flashing LED light having intensity of as per ICAO depending upon background luminance & flashing frequency 40-60/min.	No.	3	0.0993759693
	c) A common flasher with flash frequency of 40 flashes per minute shall be provided in aviation control panel.	No.	1	0.0331253231
7	Flood light with 250W HPSV lamps with all controlgears & accessories	No.	4	0.0191397002
8	Well glass type luminaries with 150W/HPSV lamp with all controlgears & accessories	No.	150	0.5796950040
9	63Amp welding switch socket with plug & other Mounting accessories	No.	9	0.0703923288
10	3 pin, 1 ph, 240V,15Amp. Power socketscomplete with plug Switches etc.	No.	10	0.0202441982
11	Al conductor, PVC insulated, Armoured, , PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.	Meters		
	a. $3 \times 95 \text{mm}^2$ Al for connection between ACDB/ELDB/ welding sockets	Meters	1400	0.3681906629
	b. $3 \times 35 \text{mm}^2$ Al for Lighting panel incoming supply	Meters	1000	0.1335310722
	c. $4 \times 16 \text{mm}^2$ Al conductor, PVC insulated, Armoured, PVC outer sheath, FRLS type 1100V grade conforming to IS-1554 Part I.	Meters	1600	0.1597934161
12	Control cables shall have stranded annealed tinned copper conductor, 1100V grade PVC insulation, extruded PVC inner sheath, galvanized steel wire armoured, overall extruded PVC sheath, FRLS type			
	a) $2.5 \text{mm}^2$	Meters	500	0.0447569521
13	Flexible trailing cable : annealed tinned copper conductor, EPR insulated, reinforced with nylon cord, cores laid up, HDCSP inner sheathed, cotton taped and HDCSP overall sheathed conforming to IS:9968.	Meters	50	0.0782122191
14	PVC insulated 650/1100V grade stranded Cu Conductor lighting wires conforming to IS-694.	Meters		
	a. From Lighting panels to junction boxes : 6 SQ.mm	Meters	2000	0.0599225310
	b. From junction boxes to lighting fixtures (Number of wires per lead as required) : 2.5 SQ.mm	Meters	1500	0.0393935157
	c. From Lighting panels to receptacles (15A) : 6 SQ.mm	Meters	2000	0.0702795117
15	GI conduit 32mm dia with junction Boxes,Pull boxes & accessories	Meters	5000	0.4734619736
16	Electro galvanise flexible steel conduit 32 mm dia with accessories	Meters	10	0.0322050314
17	Lightning protection Air terminal	Meters	45	0.2356619984
18	Earthing materials			
	i) Distribution Boards, Lighting Panels and motors above 90 KW : 50 mm x 6 mm GI Flat	Meters	300	0.0481599601

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

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

SL No.	Description of Item	Unit	Quantity	% weightage w.r.t. the total amount
	ii) Motors above 30 KW upto 90 KW : 35 mm x 6 mm GI Flat	Meters	250	0.0304236307
	iii) Motors above 5 KW upto 30 KW : 25 mm x 3 mm GI Flat	Meters	400	0.0254485810
	iv) Motors upto 5 KW : 8 SWG GI wire	Meters	300	0.0035509648
	v) Lighting Fixtures, junction boxes, conduits, etc. : 16 SWG G.I. wire	Meters	250	0.0020344069
19	Telephone Socket with junction box	No.	10	0.0208434236
20	Telephone cable shall be of minimum 0.6 mm dia annealed high conductivity electro copper conductor. PVC insulated, twisted, PVC tape wrapped, screened, tip corded, PVC sheathed, conforming to relevent ITD ( Indian telephone department) specification.	Meters	150	0.0401980312
21	GS cable trays. Cable trays shall be of ladder type constructed of minimum 2 mm thick mild steel hot dip galvanised.	Meter		
	600 mm wide		150	0.0728502622
	450 mm wide		100	0.0318477155
	300 mm wide		150	0.0394489996
	150 mm wide		350	0.0775478927
22	Aviation distribution board (ADB) with one 32A MCCB(TPN) incomer and 6 nos. SP 20A MCB. Construction is same as LP	No.	4	0.2357870220
	<b>GRAND TOTAL Weightage ( SUPPLY PART )</b>			<b>7.8054132008</b>
<b>SL NO</b>	<b>DESCRIPTION</b>			<b>Weightage in %</b>
1.0	Weightage OF SERVICE PART			92.19458698
2.0	Weightage OF SUPPLY PART			7.8054132008
<b>3.0</b>	<b>GRAND TOTAL Weightage ( SERVICE PART &amp; SUPPLY PART )</b>			<b>100.00</b>
1	schedule of equipments has been indicated for reference only. All electrical items shall be supplied on as required basis.			

## VOLUME- II Revised Price Bid Specifications Rev-01 dated 08/05/2015

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

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

<b>PACKAGE A-</b> CONSTRUCTION OF <b>ONE NUMBER OF 275M HIGH REINFORCED CONCRETE TWIN STEEL FLUE CHIMNEY</b> ,INSULATION, AVIATION LIGHTING & ASSOCIATED ELECTRICAL AND EARTHING SYSTEMS ALL COMPLETE FOR CHIMNEY OF UNIT 1&2 AT 4X 270 MW BHADRADRI TPS, TELENGANA.		
SI No 1	<b>Lumpsum Total Price for entire Scope of Work for One Chimney Package A (U # 1&amp;2) as detailed in T.S.No BHE/PW/PUR/MANUT-CVL Chimney Pkg-A (U-1&amp;2) /1435</b>	In figures:          In Words
<b>Note:</b> Bidders to quote Total Lumpsum Price in this format above which shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope defined in specification and in accordance with all terms & conditions of tender.		

Date

Seal and Signature  
Seal and

Signature