

Rev 01
1st Jun
2012

NOTICE INVITING TENDER

(Document No PS:MSX:NIT)

Bharat Heavy Electricals Limited



Ref:

Date: --/--/----

=====

NOTICE INVITING TENDER (NIT)

NOTE: BIDDER MAY DOWNLOAD FROM WEB SITES

OR

PURCHASE TENDERS FROM THIS OFFICE ALSO

=====

To

Dear Sir/Madam

Sub : **NOTICE INVITING TENDER**

Sealed offers in two part bid system are invited from reputed & experienced bidders (meeting PRE QUALIFICATION CRITERIA as mentioned in Annexure-I) for the subject job by the undersigned on the behalf of BHARAT HEAVY ELECTRICALS LIMITED as per the tender document. Following points relevant to the tender may please be noted and complied with.

1.0 Salient Features of NIT

SL NO	ISSUE	DESCRIPTION	
i	TENDER NUMBER	BHEL/NR/SCT/ LALITPUR/AUX. BOILER/981	
ii	Broad Scope of job	"E/T/C, Trial Operation & Handing Over of Auxiliary Boiler at 3X660 MW Lalitpur STPP of M/s LPGCL."	
iii	DETAILS OF TENDER DOCUMENT		
a	Volume-IA	<i>Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc</i>	Applicable
b	Volume-IB	<i>Special Conditions of Contract (SCC)</i>	Applicable
c	Volume-IC	<i>General Conditions of Contract (GCC)</i>	Applicable
d	Volume-ID	<i>Forms and Procedures</i>	Applicable
e	Volume-II	<i>Price Schedule (Absolute value).</i>	Applicable
iv	Issue of Tender Documents	1. <u>Sale from BHEL PS Regional office at :</u> Start : 2/12/2014 , Time :0900 Hrs (IST) Closes: 17/12/2014 , Time : 1200Hrs (IST) 2. From BHEL website (www.bhel.com) Tender documents will be available for downloading from website till due date of submission	Applicable
v	DUE DATE & TIME OF OFFER SUBMISSION	Date : 17/12 /2014, Time :1330 Hrs (IST) Place : BHEL-PSNR-Noida	Applicable
vi	OPENING OF TENDER	Date : 17/12 /2014, <i>(within 2 hours of the latest due date and time of offer</i>	Applicable

		submission). Notes: (1) In case the due date of opening of tender becomes a non-working day, then the due date & time of offer submission and opening of tenders get extended to the next working day. (2) Bidder may depute representative to witness the opening of tender	
vii	EMD AMOUNT	Rs 2,00,000/-	Applicable
viii	COST OF TENDER	Rs 2000/-.	Applicable
ix	LAST DATE FOR SEEKING CLARIFICATION	Date: 12/12/2014 Along with soft version also, addressing to undersigned & to others as per contact address given below	Applicable
x	SCHEDULE OF Pre Bid Discussion (PBD)		Not applicable.
xi	INTEGRITY PACT & DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)		Not Applicable
xii	Latest updates	Latest updates on the important dates, Amendments, Correspondences, Corrigenda, Clarifications, Changes, Errata, Modifications, Revisions, etc to Tender Specifications will be hosted in BHEL webpage (www.bhel.com -->Tender Notifications →View Corrigendums) and not in the newspapers . Bidders to keep themselves updated with all such information	

- 2.0 The offer shall be submitted as per the instructions of tender document and as detailed in this NIT. Bidders to note specifically that all pages of tender document, including these NIT pages of this particular tender together with subsequent correspondences shall be submitted by them, duly signed & stamped on each page, as part of offer. **Rates/Price including discounts/rebates, if any, mentioned anywhere/in any form in the techno-commercial offer other than the Price Bid, shall not be entertained.**
- 3.0 Unless specifically stated otherwise, bidder shall remit cost of tender and courier charges if applicable, in the form of Demand Draft drawn in favour of Bharat Heavy Electricals Ltd, payable at Power Sector Regional HQ at Noida issuing the Tender, along with techno-commercial offer. Bidder may also choose to deposit the Tender document cost by cash at the Cash Office as stated above against sl no iv of 1, on any working day; and in such case copy of Cash receipt is to be enclosed with the Techno Commercial offer. Sale of tender Documents shall not take place on National Holidays, holidays declared by Central or State Governments and BHEL PS HQ at Noida, Sundays and second/ last Saturdays
- 4.0 Unless specifically stated otherwise, bidder shall deposit EMD through Demand Draft/Pay Order in favour of Bharat Heavy Electricals Ltd, payable at Noida. For other details and for 'One Time EMD' please refer General Conditions of Contract.
- 5.0 **Procedure for Submission of Tenders:** The Tenderers must submit their Tenders to Officer inviting Tender, as detailed below:
- PART-I consisting of 'PART-I A (Techno Commercial Bid)' & 'PART-I B (EMD/COST of TENDER)' in two separate sealed and superscribed envelopes (ENVELOPE-I & ENVELOPE-II)
 - PART-II (Price Bid) – in sealed and superscribed envelope (ENVELOPE-III)
 - One set of tender documents shall be retained by the bidder for their reference

6.0 The contents for ENVELOPES and the superscription for each sealed cover/Envelope are as given below.

(All pages to be signed and stamped)

Sl no	Description	Remarks
Part-I A		
	<p>ENVELOPE – I superscribed as : PART-I (TECHNO COMMERCIAL BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:</p> <p>CONTAINING THE FOLLOWING:-</p>	
i.	Covering letter/Offer forwarding letter of Tenderer.	
ii.	<p>Duly filled-in 'No Deviation Certificate' as per prescribed format to be placed after document under sl no (i) above.</p> <p>Note:</p> <p>a. In case of any deviation, the same should be submitted separately for technical & commercial parts, indicating respective clauses of tender against which deviation is taken by bidder. The list of such deviation shall be placed after document under sl no (i) above. It shall be specifically noted that deviation recorded elsewhere shall not be entertained.</p> <p>b. BHEL reserves the right to accept/reject the deviations without assigning any reasons, and BHEL decision is final and binding.</p> <p>i). In case of acceptance of the deviations, appropriate loading shall be done by BHEL</p> <p>ii). In case of unacceptable deviations, BHEL reserves the right to reject the tender</p>	
iii.	<p>Supporting documents/ annexure/ schedules/ drawing etc as required in line with Pre-Qualification criteria.</p> <p>It shall be specifically noted that all documents as per above shall be indexed properly and credential certificates issued by clients shall distinctly bear the name of organization, contact ph no, FAX no, etc.</p>	
iv.	All Amendments/Correspondences/Corrigenda/Clarifications/Changes/ Errata etc pertinent to this NIT.	
v.	Integrity Pact Agreement (Duly signed by the authorized signatory)	If applicable
vi.	Duly filled-in annexures, formats etc as required under this Tender Specification/NIT	
vii.	Notice inviting Tender (NIT)	
viii.	Volume – I A : <u>Technical</u> Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc	
ix.	Volume – I B : Special Conditions of Contract (SCC)	
x.	Volume – I C : General Conditions of Contract (GCC)	
xi.	Volume – I D : Forms & Procedures	
xii.	Volume – II (UNPRICED – without disclosing rates/price, but mentioning only 'QUOTED' or 'UNQUOTED' against each item	
xiii.	Any other details preferred by bidder with proper indexing.	

PART-I B		
	<p>ENVELOPE – II superscribed as: PART-I (EMD/COST of TENDER) TENDER NO : NAME OF WORK :</p>	

	PROJECT: DUE DATE OF SUBMISSION: CONTAINING THE FOLLOWING:-	
i.	1. Earnest Money Deposit (EMD) in the form as indicated in this Tender OR Documentary evidence for 'One Time EMD' with the Power Sector Region of BHEL floating the Tender 2. Cost of Tender (Demand Draft or copy of Cash Receipt as the case may be)	

	PART-II	
	PRICE BID consisting of the following shall be enclosed	
	ENVELOPE-III superscribed as: PART-II (PRICE BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION: CONTAINING THE FOLLOWING	
i	Covering letter/Offer forwarding letter of Tenderer enclosed in Part-I	
ii	Volume II – PRICE BID (Duly Filled in Schedule of Rates – rate/price to be entered in words as well as figures)	

	OUTER COVER	
	ENVELOPE-IV (MAIN ENVELOPE / OUTER ENVELOPE) superscribed as: TECHNO-COMMERCIAL BID, PRICE BID & EMD TENDER NO: NAME OF WORK: PROJECT: DUE DATE OF SUBMISSION: CONTAINING THE FOLLOWING:	
i	<ul style="list-style-type: none"> ○ Envelopes I ○ Envelopes II ○ Envelopes III 	

SPECIAL NOTE : All documents/ annexures submitted with the offer shall be properly annexed and placed in respective places of the offer as per enclosure list mentioned in the covering letter. BHEL shall not be responsible for any missing documents.

7.0 Deviation with respect to tender clauses and additional clauses/suggestions in Techno-commercial bid / Price bid shall NOT be considered by BHEL. Bidders are requested to positively comply with the same.

8.0 BHEL reserves the right to accept or reject any or all Offers without assigning any reasons thereof. BHEL also reserves the right to cancel the Tender wholly or partly without assigning any reason thereof. Also BHEL shall not entertain any correspondence from bidders in this matter (except for the refund of EMD).

9.0 Assessment of Capacity of Bidder: Bidders capacity for executing the job under tender shall be assessed 'LOAD' wise and 'PERFORMANCE' wise as per the following:

- I. **LOAD:** Load takes into consideration **ALL** the contracts of the Bidder under execution with BHEL Regions, irrespective of whether they are similar to the tendered scope or not. The 'Load' is the sum of the unit wise identified packages (refer Table-1) for contracts with BHEL Regions. The cut off month for reckoning 'Load' shall be the month, two (2) months preceding the month corresponding to the 'latest date of bid submission', in the following manner:

(Note: For example if latest bid submission is in Aug 2011, then the 'load' shall be calculated upto and inclusive of June 2011)

- i). Total number of Packages
 Total number of Packages in hand = P
 Where

- 'P' is the sum of all unit wise identified packages under execution with BHEL Regions as of the cut off month defined above, including packages yet to be commenced, excepting packages which are on HOLD due to reasons not attributable to Bidder..

- II. **PERFORMANCE:** Here 'Monthly Performance' of the bidder for all the packages (**under execution/** executed during the 'Period of Assessment' in all the Power Sector Regions of BHEL) **SIMILAR** to the packages covered under the tendered scope, excepting packages not commenced shall be taken into consideration. The 'Period of Assessment' shall be 6 months preceding the cut off month. The cut off month for reckoning 'Period of Assessment' shall be the month two (2) months preceding the month corresponding to the 'latest date of bid submission', in the following manner:

(Note: For example if 'latest date of bid submission' is in Aug 2011, then the 'performance' shall be assessed for a 6 month period upto and inclusive of June 2011, for all the unit wise identified packages (refer Table I)

- i). Calculation of Overall 'Performance Rating' for 'similar Package/Packages' for the tendered scope under execution at Power Sector Regions for the 'Period of Assessment':
 This shall be obtained by summing up the 'Monthly Performance Evaluation' scores obtained by the bidder in all Regions for all the similar Package/packages', divided by the total number of Package months for which evaluation should have been done, as per procedure below:

- P₁, P₂, P₃, P₄, P₅, P_N etc be the packages (**under execution/** executed during the 'Period of Assessment' in all Regions) **SIMILAR** to the packages covered under the tendered scope, excepting packages not commenced. Total number of similar packages for all Regions = P_T (ie P_T = P₁+P₂+ P₃+P₄ + .. P_N)
- Number of Months 'T₁' for which 'Monthly Performance Evaluation' as per relevant formats, should have been done in the 'Period of Assessment' for the corresponding similar package P₁. Similarly T₂ for package P₂, T₃ for package P₃, etc for the tendered scope. Now calculate cumulative total months 'T_T' for total similar Packages 'P_T' for all Regions (i.e T_T = T₁+ T₂+ T₃+T₄ + .. T_N)
- Sum 'S₁' of 'Monthly Performance Evaluation' Scores (S₁₋₁, S₁₋₂, S₁₋₃, S₁₋₄, S₁₋₅,.... S_{1-N}) for similar package P₁, for the 'period of assessment' 'T₁' (i.e S₁ = S₁₋₁+ S₁₋₂+ S₁₋₃+ S₁₋₄+ S₁₋₅+...S_{1-N}). Similarly S₂ for package P₂ for period T₂, S₃ for package P₃ for period T₃, etc for the tendered scope for all Regions. Now calculate cumulative sum 'S_T' of 'Monthly Performance Evaluation' Scores for total similar Packages 'P_T' for all Regions (i.e 'S_T' = S₁+ S₂+ S₃+ S₄+ S₅+.... S_N).

- d) **Overall Performance Rating 'R_{BHEL}' for the similar Package/Packages (under execution/** executed during the 'Period of Assessment') in all the Power Sector Regions of BHEL:

$$= \frac{\text{Aggregate of Performance scores for all similar packages in all the Regions}}{\text{Aggregate of months for each of the similar package for which performance should have been evaluated in all the Regions}}$$

$$= \frac{S_T}{T_T}$$

e) Bidders to note that the risk of non-evaluation or non-availability of the ‘Monthly Performance Evaluation’ reports as per relevant formats is to be borne by the Bidder

f) Table showing methodology for calculating ‘a’, ‘b’ and ‘c’ above

Sl no	Item Description	Details for all Regions							Total
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
1	Similar Packages for all Regions → (under execution/ executed during period of assessment)	P ₁	P ₂	P ₃	P ₄	P ₅	...	P _N	Total No of similar packages for all Regions = P _T ie Sum (Σ) of columns (iii) to (ix)
2	Number of Months for which ‘Monthly Performance Evaluation’ as per relevant formats should have been done in the ‘period of assessment for corresponding similar Package (as in row 1)	T ₁	T ₂	T ₃	T ₄	T ₅	...	T _N	Sum (Σ) of columns (iii) to (ix) = T _T
3	Monthly performance scores for the corresponding period (as in Row 2)	S ₁₋₁ , S ₁₋₂ , S ₁₋₃ , S ₁₋₄ , ... S _{1-T1}	S ₂₋₁ , S ₂₋₂ , S ₂₋₃ , S ₂₋₄ , ... S _{2-T2}	S ₃₋₁ , S ₃₋₂ , S ₃₋₃ , S ₃₋₄ , ... S _{3-T3}	S ₄₋₁ , S ₄₋₂ , S ₄₋₃ , S ₄₋₄ , ... S _{4-T4}	S ₅₋₁ , S ₅₋₂ , S ₅₋₃ , S ₅₋₄ , ... S _{5-T5}	S _{N-1} , S _{N-2} , S _{N-3} , S _{N-4} , ... S _{N-TN}	-----
4	Sum of Monthly Performance scores of the corresponding Package for the corresponding period (as in row-3)	S ₁	S ₂	S ₃	S ₄	S ₅	...	S _N	Sum (Σ) of columns (iii) to (ix) = S _T

ii) Calculation of Overall ‘Performance Rating’ (R_{BHEL}) in case ‘similar Package/Packages’ for the tendered scope ARE NOT AVAILABLE, during the ‘Period of Assessment’:

This shall be obtained by summing up the ‘Monthly Performance Evaluation’ scores obtained by the bidder in all Regions for ALL the packages, divided by the total number of Package months for which evaluation should have been done. ‘R_{BHEL}’ shall be calculated subject to availability of ‘performance scores’ for at least.6 ‘package months’ in the order of precedence below:

- a) ‘Period of Assessment.
- b) 12 months preceding the cut-off month
- c) 24 months preceding the cut-off month
- d) 36 months preceding the cut-off month

In case, R_{BHEL} cannot be calculated as above, then Bidder shall be treated as ‘NEW VENDOR’. Further eligibility and qualification of this bidder shall be as per definition of ‘NEW VENDOR’ described in ‘Explanatory Notes’

iii) Factor “L” assigned based on Overall Performance Rating (R_{BHEL}) at Power Sector Regions.:

Sl no	Overall Performance Rating (R _{BHEL})	Corresponding value of ‘L’
1	=60	NA
2	> 60 and ≤ 65	0.4

3	> 65 and ≤ 70	0.35
4	> 70 and ≤ 75	0.25
5	> 75 and < 80	0.2
6	≥ 80	NA

III. 'Assessment of Capacity of Bidder':

'Assessment of Capacity of Bidder' is based on the Maximum number of packages for which a vendor is eligible, considering the performance scores of similar packages, as below:

Max number of packages $P_{Max} = (R_{BHEL} - 60)$ divided by corresponding value of 'L'
i.e. $(R_{BHEL} - 60)/L$

Note:

- In case the value of P_{Max} results in a fraction, the value of P_{Max} is to be rounded off to next whole number
- For $R_{BHEL} = 60$, $P_{Max} = '1'$
- For $R_{BHEL} \geq 80$, there will be no upper limit on P_{Max}

The Bidder shall be considered 'Qualified' as per 'Assessment of Capacity of Bidder' for the subject Tender if $P \leq P_{Max}$
(where P is calculated as per clause 9.1)

IV. Explanatory note:

- Similar package means Boiler or ESP or Piping or Turbine or Civil or Structure or Electrical or CI, etc at the individual level irrespective of rating of Plant, and irrespective of whether the subject tender is a single package or as part of combined/composite packages. Normally Boiler, ESP, Piping, Turbine, Electrical, CI, Civil, Structure, etc is considered individual level of package. For example in case the tendered scope is a Boiler Vertical Package comprising of Boiler, ESP and Power Cycle Piping (i.e the 'identified packages as per Table-1 below), the 'PERFORMANCE' part against sl no II above, needs to be evaluated considering all the identified packages (ie Boiler, ESP and Power Cycle Piping) and finally the Bidder's capacity to execute the tendered scope is assessed in line with III above
- Identified Packages (Unit wise)

Table-1

	Civil	Electrical & CI	Mechanical
	i). Enabling works ii). Pile and Pile Caps iii). Civil Works including foundations iv). Structural Steel Fabrication & Erection v). Chimney vi). Cooling Tower vii). Others (Civil)	i). Electrical ii). CI iii). Others (Elec & CI)	i). Boiler & Aux (All types including CW Piping if applicable) ii). Power Cycle Piping/Critical Piping iii). LP Piping iv). ESP v). Steam Turbine Generator set & Aux vi). Gas Turbine Generator set & Aux vii). Hydro Turbine Generator set & Aux viii). Turbo Blower (including Steam Turbine) ix). Material Handling x). Material Management xi). Material Handling & Material Management xii). Others (Mechanical)

- Bidders who have not been evaluated for at least six package months in the last 36 months in the online BHEL system for contractor performance evaluation in BHEL PS Regions, wef July'2010 shall be considered "NEW VENDOR".

A 'NEW VENDOR' shall be considered qualified subject to satisfying all other tender conditions

A 'NEW VENDOR' if awarded a job (of package/packages identified under this clause) shall be tagged as "FIRST TIMER" on the date of first LOI from BHEL.

The "FIRST TIMER" tag shall remain till execution of work for a period of not less than 09 months, from the commencement of work of first package

A Bidder shall not be eligible for the next job as long as the Bidder is tagged as "FIRST TIMER" excepting for the Tenders which have been opened on or before the date of the bidder being tagged as 'FIRST TIMER'.

After removal of 'FIRST TIMER' tag, the Bidder shall be considered 'QUALIFIED' for the future tenders subject to satisfying all other tender conditions including 'Capacity Evaluation of Bidders'.

- d) In the unlikely event of all bidders shortlisted against Technical and Financial Qualification criteria not meeting the criteria on 'Assessment of Capacity of Bidders' detailed above, OR leads to a single tender response on applying the criteria of 'Assessment of Capacity of Bidders' or due to non-approval by Customer, then BHEL at its discretion reserves the right to consider the further processing of the Tender based on the **Overall Performance Rating 'R_{BHEL}'** only, starting from the upper band.
- e) 'Under execution' shall mean works in progress as per the following:
- i. up to Boiler Steam Blowing in case of Steam Generator and Auxiliaries
 - ii. upto Synchronisation in case of all other works excepting sl no (i) and (iii)
 - iii. Upto execution of at least 90% of anticipated contract value in case of Civil & Structures (unit wise), Enabling works and upto 90% of material unloading (in tonnage) as per the original contract in case of MM Package.

Note : BHEL at its discretion can extend (or reduce in exceptional cases in line with Contract conditions) the period defined against (i), (ii) and (iii) above, depending upon the balance scope of work to be completed.

- f) Performance evaluation in CL 9 above is applicable to Prime bidder and consortium partner (or Technical tie up partner) for their respective scope of work.

10.0 Since the job shall be executed at site, bidders must visit site/ work area and study the job content, facilities available, availability of materials, prevailing site conditions including law & order situation, applicable wage structure, wage rules, etc before quoting for this tender. They may also consult this office before submitting their offers, for any clarifications regarding scope of work, facilities available at sites or on terms and conditions.

11.0 For any clarification on the tender document, the bidder may seek the same in writing or through e-mail, as per specified format, within the scheduled date for seeking clarification, from the office of the undersigned. BHEL shall not be responsible for receipt of queries after due date of seeking clarification due to postal delay or any other delays. Any clarification / query received after last date for seeking clarification may not be normally entertained by BHEL and no time extension will be given.

12.0 BHEL may decide holding of pre-bid discussion [PBD] with all intending bidders as per date indicated in the NIT. The bidder shall ensure participation for the same at the appointed time, date and place as may be decided by BHEL. Bidders shall plan their visit accordingly. The outcome of pre-bid discussion (PBD) shall also form part of tender.

13.0 In the event of any conflict between requirement of any clause of this specification/ documents/drawings/data sheets etc or requirements of different codes/standards specified, the same to be brought to the knowledge of BHEL in writing for clarification before due date of seeking clarification (whichever is applicable), otherwise, interpretation by

BHEL shall prevail. Any typing error/missing pages/ other clerical errors in the tender documents, noticed must be pointed out before pre-bid meeting/submission of offer, else BHEL's interpretation shall prevail.

- 14.0 Unless specifically mentioned otherwise, bidder's quoted price shall be deemed to be in compliance with tender including PBD.
- 15.0 Bidders shall submit Integrity Pact Agreement (Duly signed by authorized signatory who signs in the offer), **if applicable**, along with techno-commercial bid. This pact shall be considered as a preliminary qualification for further participation. **The names and other details of Independent External Monitor (IEM) for the subject tender is as given at point (1) above.**
- 16.0 The Bidder has to satisfy the Pre Qualifying Requirements stipulated for this Tender in order to be qualified. The Price Bids of only those bidders will be opened who will be qualified for the subject job on the basis of satisfying the Pre Qualification Criteria specified in this NIT as per Annexure-I (as applicable), past performance etc. and date of opening of price bids shall be intimated to only such bidders. BHEL reserves the right not to consider offers of parties under HOLD.
- 17.0 In case BHEL decides on a 'Public Opening', the date & time of opening of the sealed PRICE BID shall be intimated to the qualified bidders and in such a case, bidder may depute one authorised representative to witness the price bid opening. BHEL reserves the right to open 'in-camera' the 'PRICE BID' of any or all Unsuccessful/Disqualified bidders under intimation to the respective bidders.
- 18.0 Validity of the offer shall be for **six months** from the latest due date of offer submission (including extension, if any) unless specified otherwise.
- 19.0 BHEL reserves the right to decide the successful bidder on the basis of Reverse Auction process. In such case all qualified bidders will be intimated regarding procedure/ modality for Reverse Auction process prior to Reverse Auction and price will be decided as per the rules for Reverse Auction. .
- However, if reverse auction process is unsuccessful as defined in the RA rules/procedures, or for whatsoever reason, then the sealed 'PRICE BIDS' will be opened for deciding the successful bidder. BHEL's decision in this regard will be final and binding on bidder.
- 20.0 On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.
- 21.0 In case the bidder is an "Indian Agent of Foreign Principals", 'Agency agreement has to be submitted along with Bid, detailing the role of the agent along with the terms of payment for agency commission in INR, along with supporting documents.
- 22.0 The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.
- 23.0 **Not Used**
- 24.0 The bidder shall submit documents in support of possession of 'Qualifying Requirements' duly self-certified and stamped by the authorized signatory, indexed and properly linked in the format for PQR. In case BHEL requires any other documents/proofs, these shall be submitted immediately.
- 25.0 The bidder may have to produce original document for verification if so decided by BHEL.
- 26.0 The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected. The list of **banned firms** is available on BHEL web site www.bhel.com.
- 27.0 BHEL reserves the right to go for **Reverse Auction (RA)** instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.

In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their

acceptance to participate in Reverse Auction will have to necessarily submit „online sealed bid“ in the Reverse Auction. Non-submission of „online sealed bid“ by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.”

Information and General Terms and Conditions governing RA shall form part of the RFQ/ Enquiry.

28.0 It may please be noted that **guidelines/rules** in respect of Suspension of Business dealings', 'Vendor evaluation format', 'Quality, Safety & HSE guidelines', etc may **undergo change** from time to time and the latest one shall be followed.

29.0 **Micro and Small Enterprises (MSE)**

Any Bidder falling under MSE category, shall furnish the following details & submit documentary evidence/ Govt. Certificate etc. in support of the same along with their techno-commercial offer

Type under MSE	SC/ST owned	Others
Micro		
Small		

Note: - If the bidder does not furnish the above, offer shall be processed construing that the bidder is not falling under MSE category.

MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM-II certificate having deemed validity (five years from the date of issue of acknowledgement in EM-II) or valid NSIC certificate or EM-II certificate along with attested copy of a CA certificate (format enclosed as Annexure – 3 where deemed validity of EM-II certificate of five years has expired) applicable for the relevant financial year (last audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bids at par with other bidders. No benefits shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer.

30.0 Order of Precedence

In the event of any ambiguity or conflict between the Tender Documents, the order of precedence shall be in the order below:

- a. Amendments/Clarifications/Corrigenda/Errata etc issued in respect of the tender documents by BHEL
- b. Notice Inviting Tender (NIT)
- c. Price Bid
- d. Technical Conditions of Contract (TCC)—Volume-1A
- e. Special Conditions of Contract (SCC) —Volume-1B
- f. General Conditions of Contract (GCC) —Volume-1C
- g. Forms and Procedures —Volume-1D

for BHARAT HEAVY ELECTRICALS LTD
(SCT)

Enclosure

01. Annexure-1: Pre Qualifying criteria.
02. Annexure-2: Check List.
03. Annexure-3: Chartered Accountant certificate for MSMED
04. Other Tender documents as per this NIT.

ANNEXURE - 1**PRE QUALIFYING REQUIREMENTS**

JOB	“E/T/C, Trial Operation & Handing Over of Auxiliary Boiler at 3X660 MW Lalitpur STPP of M/s LPGCL.”
TENDER NO.	BHEL/NR/SCT/ LALITPUR/AUX. BOILER/981

SL. NO.	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria
A	Submission of Integrity Pact duly signed	Not Applicable
B	<p><u>Technical Criteria</u></p> <p>1. Bidder who wishes to participate should have executed similar nature E/T/C works of Boiler of capacity of 60TPH or of higher rating during last 7 years, ending last day of month previous to the one in which applications are invited.</p> <p style="text-align: center;">AND</p> <p>2. Bidder should have executed, similar work (Boiler) during last 7 years, ending last day of month previous to the one in which applications are invited.</p> <p>1) One(1) work of value not less than 87.34 Lakhs</p> <p style="text-align: center;">‘OR’</p> <p>2) Two (2) works of each of value not less than 54.58 Lakhs</p> <p style="text-align: center;">‘OR’</p> <p>3) Three (3) works of each of value not less than 43.67 Lakhs</p> <p>(Relevant document in support of above works shall be submitted)</p>	Applicable
C-1	<p><u>Financial Criteria</u></p> <p><u>TURNOVER</u> Bidders should have achieved an average annual Financial Turnover (Audited) of Rs 32.70 Lakh or more, during last three Financial Years (F.Y) i.e 2011-2012, 2012-2013, 2013-2014.</p>	Applicable

C-2	<u>NETWORTH</u> Net worth of the bidder based upon the latest Audited Accounts as furnished for 'C 1' above should be positive.	Applicable
C-3	<u>PROFIT</u> Bidder must have earned cash profit i.e (PAT + Non Cash Expenditure viz depreciation) in any one of the three Financial Years as applicable in the last three Financial Years defined in 'C 1' above in latest Audited Accounts.	Applicable
	Audited Balance Sheet and Profit & Loss Account of above three Financial years meeting the requirement at "C-1" shall be submitted by bidder. In case the audited Financial statements are not submitted for all the three years as indicated at "C-1", then the applicable audited statements submitted against the requisite three years, will be averaged for three years.	Applicable
D	Assessment of Capacity of Bidder to execute the work as per NIT (if applicable)	Applicable
E	Approval of Customer	Not Applicable
F	Consortium criteria	Not Applicable

Explanatory Notes for QR 'B'

1. "Boiler" means Boiler/ HRSG or WHRB or any other types of Steam Generator.
2. "Similar" work means – Boiler consisting of Pressure parts, Structures/ESP and IBR/Power Cycle Piping of the same unit as a standalone bidder.
3. For B, 'Executed' means that Boiler Light up or safety valve floating of HRSG/ Boiler should have been completed.
4. If the qualifying work is completed in the Seven (7) years period specified above, even if it has been started earlier, the same will also be considered meeting the qualifying requirements.
5. Bidder shall submit above Pre-qualification criteria format, duly filled-in, specifying respective Annexure number against each criteria and furnish relevant document in the respective annexure in their offer.

ANNEXURE - 2**CHECK LIST****NOTE:- Tenderers are required to fill in the following details and no column should be left blank**

1	Name and Address of the Tenderer		
2	Details about type of the Firm/Company		
3.a	Details of Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
3.b	Details of alternate Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
4	EMD DETAILS	DD No: Date : Bank : Amount: Please tick (<input type="checkbox"/>) whichever applicable:- ONE TIME EMD / ONLY FOR THIS TENDER	
5	Validity of Offer	TO BE VALID FOR SIX MONTHS FROM DUE DATE	
		APPLICABILITY (BY BHEL)	ENCLOSED BY BIDDER
6	Whether the format for compliance with PRE QUALIFICATION CRITERIA (ANNEXURE-I) is understood and filled with proper supporting documents referenced in the specified format	Applicable	YES / NO
7	Audited profit and Loss Account for the last three years	Applicable/Not Applicable	YES/NO
8	Copy of PAN Card	Applicable/Not Applicable	YES/NO
9	Whether all pages of the Tender documents including annexures, appendices etc are read understood and signed	Applicable/Not Applicable	YES/NO
10	Integrity Pact	Applicable/Not Applicable	YES/NO
11	Declaration by Authorised Signatory	Applicable/Not Applicable	YES/NO
12	No Deviation Certificate	Applicable/Not Applicable	YES/NO
13	Declaration confirming knowledge about Site Conditions	Applicable/Not Applicable	YES/NO
14	Declaration for relation in BHEL	Applicable/Not Applicable	YES/NO
15	Non Disclosure Certificate	Applicable/Not Applicable	YES/NO
16	Bank Account Details for E-Payment	Applicable/Not Applicable	YES/NO
17	Capacity Evaluation of Bidder for current Tender	Applicable/Not Applicable	YES/NO
18	Tie Ups/Consortium Agreement are submitted as per format	Applicable/Not Applicable	YES/NO

19	Power of Attorney for Submission of Tender/Signing Contract Agreement	Applicable/ Not Applicable	YES/ NO
20	Analysis of Unit rates	Applicable/ Not Applicable	YES/ NO

NOTE : STRIKE OFF 'YES' OR 'NO', AS APPLICABLE. TENDER NOT ACCOMPANIED BY THE PRESCRIBED **ABOVE APPLICABLE DOCUMENTS** ARE LIABLE TO BE SUMMARILY REJECTED.

DATE :

AUTHORISED SIGNATORY
(With Name, Designation and Company seal)

ANNEXURE - 3

Certificate by Chartered Accountant on letter head

This is to Certify that M/S ,
(hereinafter referred to as 'company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part—II) dtd:..... ,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per
the latest audited financial year..... as per MSMED Act 2006 is as follows:

1. For Manufacturing Enterprises: Investment in plant and machinery (i.e. original cost
excluding land and building and the items specified by the Ministry of Small Scale Industries vide
its notification No. S.O.1722(E) dated October 5, 2006:
Rs.....Lacs

2. For Service Enterprises: Investment in equipment (original cost excluding land and building
and furniture, fittings and other items not directly related to the service rendered or as may be notified
under the **MSMED** Act, 2006:
Rs.....Lacs

(Strike off which is not applicable)

The above investment of Rs.....Lacs is within permissible limit of
Rs.....Lacs for Micro / Small **(Strike off which is not applicable)**
Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/Small) (Strike off which is not
applicable) and the date of graduation of such enterprise from its original category is
(dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from
its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette
notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant

GENERAL TERMS AND CONDITIONS OF REVERSE AUCTION (RA)

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit "online sealed bid" in the Reverse Auction. Non submission of "online sealed bid" by the bidder for any of the eligible items for which techno commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
4. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
5. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
6. Bidders have to fax the Compliance form before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
8. Reverse auction will be conducted on scheduled date & time.
9. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.
10. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, as provided on case-to-case basis to Service provider within two working days of Auction without fail.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL"s standard practice.
12. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the

„Business Rules of Reverse Auction“, which will be communicated before the Reverse Auction.

13. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines*, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
14. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
15. In case BHEL decides to go for reverse auction, the H1(s) bidder (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

ANNEXURE – 4**Authorization of representative who will participate in the on line Reverse Auction Process;**

1	NAME & DESIGNATION OF OFFICIAL	
2	POSTAL ADDRESS (COMPLETE)	
3	TELEPHONE NOS. (LAND LINE & MOBILE BOTH)	
4	FAX NO.	
5	E-MAIL ADDRESS	
6	NAME OF PLACE/ STATE/ COUNTRY, WHEREFROM S/HE WILL PARTICIPATE IN THE REVERSE AUCTION	

Rev 01
1st June
2012

TECHNICAL CONDITIONS OF CONTRACT (TCC)

(Document No PS:MSX:TCC)

BHARAT HEAVY ELECTRICALS
LIMITED



**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

CONTENTS

SI	<u>DESCRIPTION</u>	<u>Chapter No.</u>	<u>PAGES</u>
	Part-I: Contract specific details		
1.	Project Information	Chapter-I	
2.	Scope of Works	Chapter-II	
3.	Facilities in the scope of Contractor/BHEL (Scope Matrix)	Chapter-III	
4.	T&Ps and MMEs to be deployed by Contractor	Chapter-IV	
5.	T&Ps and MMEs to be deployed by BHEL on sharing basis	Chapter-V	
6.	Time Schedule	Chapter-VI	
7.	Terms of Payment	Chapter-VII	
8.	Taxes and other Duties	Chapter-VIII	
9.	Others	Chapter-IX	
	Part-II: Technical Specifications		
1.	General	Chapter-I	
2.	Foundation & Grouting	Chapter-II	
3.	Erection	Chapter-III	
4.	Preservation	Chapter-IV	
5.	Progress work	Chapter-V	
6.	Welding, Radiography, NDT, Heat Treatment	Chapter-VI	
7.	Testing & Commissioning	Chapter-VII	
8.	Final Painting	Chapter-VIII	
9.	Annexure	Chapter-IX	
10.	Price Schedule	Chapter-X	

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

Chapter-I

PROJECT INFORMATION

Name of the Owner : LALITPUR POWER GEN. CO. LTD. OF

BAJAJ HINDUSTAN LTD.

Address : 3X660MW SUPER CRITICAL TPP at Mirchwara
and Buraugaon near Utaririver, Lalitpur, U.P.

New Installation : 3 x 660 MW

Nearest Railway station : Lalitpur railway station (37 kms from site) on
Jhansi – Bhopal line

Nearest Road : Approach to site from NH which about 23 km
from Bansi on NH-26 connects Jhansi and
Sagar

Nearest City : LALITPUR

Nearest Airport : GWALIOR AIRPORT (186 km)

Highest Temperature : 45.1 C⁰

Lowest Temperature : 1.9 C⁰

Relative Humidity : 87% maximum
22% minimum

Seismic Zone : III

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter-II : Scope of Work

1.0 Scope of Work

The work to be carried out under the scope of these specifications is broadly as under.

1.1 Erection, Testing and Commissioning of 60 TPH Auxiliary Boiler with all its accessories, instrumentations, Electricals, application of insulation including supply and application of final painting at 3X660 MW LALITPUR STPS.

1.2 Erection, alignment and welding, bolting, tube expansion, fastening grouting as applicable of:

- Boiler Supporting Structures
- Boiler Pressure Parts
- Boiler Trim & Integral Piping and Mountings
- Fuel Oil Piping
- Non-Pressure Parts, Ducts , Dampers
- Rotating Machines(e.g. Fans etc with their drives & Lube oil System etc.)
- Piping
- Insulation
- Hydro Test
- Chemical cleaning

1.3 (A) SERVICE PORTION

Erection & commissioning including chemical cleaning and steam blowing of 1 no. Auxiliary Boiler with auxiliaries is included in the scope. The major components of Auxiliary Boilers are Supporting structures, Floor & platforms, Upper & lower drum, pressure parts, Insulation, Oil systems, Air & gas duct work, integral piping, Soot blowing system, Blow down system, BFPs, FD fans, Deaerator, Dozing systems.

(B) SUPPLY PORTION

Procurement of Paints

Contractor has to supply all paints, primers and other consumables for painting of

relevant area of boiler & auxiliaries of Unit-I. BHEL reserves the right to reject any material not found satisfactory. Contractor shall produce manufacturer's test certificate.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

Note:

1. Material which will be supplied by contractor as per supply rate schedule for which separate order shall be issued. Price for supply items as per supply rate schedule remains firm i.e. price variation compensation close mentioned in clause no. 2.17 of GCC and overrun compensation in clause no. 2.12 of GCC of contract shall not be applicable for supply order.
2. Paints, primers etc to be procured from LPGCL/BHEL approved suppliers.
3. Contractor has to supply paints required for painting the total scope of work as envisaged in service portion of contractor.
4. Separate order shall be issued for service items (A) and Supply items (B).

Approx. weight to be erected for the Auxiliary boiler shall be 407 MT. **The PG wise break up of Auxiliary Boiler in Annexure-I.**

Painting and insulation shall be done for Auxiliary Boiler as per drawings and specifications shall be within the scope.

1.4 The contractor is required The contractor is required to erect actual tonnage (irrespective of any variation plus or minus) which may be necessary to complete their work and commission above Auxiliary boiler and complete the work in all respects as detailed in tender specifications, for which payments shall be released on finally accepted tonnage rates. The contractor undertakes to erect / commission actual quantities as per advice of BHEL Engineer and accordingly the final contract price shall be worked out on the basis of quantities actually erected at site and payments will also be regulated for the same.

The Customer M/s. LPGCL and /or their consultant may depute their representative for checking and supervision of important stages of work. The contractor shall be required to provide all facilities for inspection of works, without any cost implications to the BHEL. Any defect in quality of work or deviations from drawings / specifications pointed out during such inspection shall be made good by the contractor in the same way as if pointed out by the BHEL Engineer, without any cost implication to BHEL.

- 1.5** Contractor shall make necessary arrangements to ensure that the atmosphere in working area (under the scope of work in this tender) and on roads is free from particulate matter like dust, sand etc. by keeping the top surface wet for ease in breathing. Provision of required tanker with

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

spraying arrangement has to be ensured by contractor within the quoted rates, at no extra cost to BHEL.

Contractor shall ensure following:

1. Contractor has to maintain contact with local hospital having scanning & other ultra modern medical facilities required during emergency.

2. Contractor has to ensure pre employment medical check for all staff & workers.

3. Contractor has to ensure that adequate First Aid facilities with trained nurse are available at work site for emergency purpose. This emergency set-up should include, but not limited to, following

- Oxygen set up
- Breathing apparatus
- Eye wash facility
- Stretcher
- Trauma blanket
- Medicines

In addition to above, BHEL (through its other contractor) has arranged ambulance at work site for emergency purpose, which can be utilized by the contractor in case of emergency. The charges for the same will be decided mutually at site. In case, under unavoidable circumstances, if the ambulance is not available / being used elsewhere, the contractor will have to arrange for the same.

1.6 The contractor shall comply with following towards Social Accountability;

- a) The contractor shall not employ any employee less than 15 years of age in pursuant to ILO convention. If any child labour were found to have been engaged, the Contractor shall be levied with expenses of bearing his education expenditure which will include stipend to substantiate appropriate education or employ any other member of family enabling to bear the child education expenditure.
- b) The contractor shall not engage Forced/ Bonded Labour and shall abide by abolition of Bonded Labour System (Abolition) Act, 1976.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

- c) The contractor shall maintain Health & safety requirement as stipulated in the Contract and Contract Labour (Regulation & Abolition) Act, 1970.
 - d) The Contractor shall abide by UN convention w.r.t. Human Rights and shall be liable for Decimation/ Corporal punishment for failure in meeting with relevant requirements.
 - e) The Contractor shall abide the requirement of Contract Labour (Regulation & Abolition) Act, 1970 for working hours.
 - f) The Contractor shall abide by the Statutory requirement of Minimum Wages Act 1948, payment of Wages Act 1936.
 - g) The Contractor shall arrange potable drinking water to its employees & workers.
- 1.7** Contractor shall ensure daily housekeeping and keep proper cleanliness of work place and do the disposal of wastes to certified area.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter-III Facilities in the scope of Contractor/BHEL

3.0 Facilities in the scope of Contractor/BHEL

SI No.	Description	Scope/to be taken care by		Remarks
		BHEL	CONT	
1.	ESTABLISHMENT			
1.1.1	For construction Purpose			
A	Open space for office	YES		Limited space (free of charge) As and where made available by customer M/s LPGCL.
B	Open space for storage	YES		Limited space (free of charge) as and where by customer M/s LPGCL
1.1.2	For Labour Colony			
A	Open Space	YES		Contractor have to make their own arrangement
1.2.0	ELECTRICITY			
1.2.1	Electricity for construction purposes (Chargeable/free)			
1.2.1.1	Single point source	YES		Chargeable Basis
1.2.1.2	Further distribution for the work to be done which include supply of materials & execution		YES	
1.2.2	Electricity for the office, stores, canteen etc of the bidder which include:			
1.2.2.1	Distribution from single point including supply of materials & service		YES	
1.2.2.2	Supply, Installation & connection of material of energy meter including operation & maintenance		YES	
1.2.2.3	Duties & deposits including statutory clearances for above		YES	
1.2.2.4	Demobilization of the facilities after completion of works		YES	
1.2.2.5	Electricity for living accommodation of the bidder's Staff, engineers, supervisors etc. on the above lines		YES	Chargeable As per prevailing rates Contractor shall install calibrated energy meter for metering electricity consumption.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

1.3.0	Water Supply			
1.3.1	For Construction:			
1.3.1.1	Making the water available at single point	YES		Contractor have to make bore wells it self, wherever approved by M/s LPGCL
1.3.1.2	Further distribution as per the requirement of work including supply of materials & execution		YES	
1.3.2	Labour Colony			
1.3.2.1	Making the water available at single point			Contractor have to arrange on his own.
1.3.2.2	Further distribution as per the requirement of work including supply of materials & execution			
1.4.0	Lighting			
1.4.1	For construction work (supply of all materials) 1. At office storage area 2. At preassembly area 3. At construction site/area		YES	
1.4.2	For Construction work (execution of lighting work/arrangements) 1. At office storage area At preassembly are At construction site/area Providing the necessary consumables like bulbs, Switches, etc during the course of construction		YES	
1.5.0	Communications facilities for site operations of the bidder			
1.5.1	Telephone, Fax, internet, intranet, email etc.		YES	
1.6.0	Compressed Air Supply			
1.6.1	Supply of compressor and all other equipments required for compressor & compressed air system including pipes, valves, storage system etc.		YES	
1.6.2	Installation of the above system and operation & maintenance of the same		YES	
1.6.3	Supply of all the consumables for the above system during the contract period		YES	
	Erection Facilities			
2.1.1	Providing erection drawing for all the	YES		

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

	Equipments covered under this scope			
2.1.2	Drawings for construction method	YES		
2.1.3	As-built-drawings- where ever deviations observed & executed and also based on Decision taken at site		YES	
2.1.4	Shipping lists etc for reference & planning the activities	YES	YES	
2.1.5	Preparation of site erection schedules and other input requirements		YES	
2.1.6	Review of performance & revision of site erection schedules in order to achieve the end dates & commitments	YES	YES	
2.1.7	Weekly erection schedule based on SI. No. 2.1.5		YES	
2.1.8	Daily erection/ work plan based on SI no. 2.1.7		YES	
2.1.9	Periodic visit of senior official of bidder to site to review the process so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two month		YES	
2.1.10	Preparation of preassembly bay		YES	

- 3.1** BHEL will not be responsible for any loss or damage to the contractor's equipment as a result of variation in voltage or frequency or interruptions in power supply.
- 3.2** The Contractor shall be responsible for providing all necessary facilities like residential accommodation, transport, electricity, water, medical facilities etc. at his own cost as required under various labour laws and statutory rules and regulations framed there under to the personnel employed by him.
- 3.3** Provision of distribution lines of both electrical power and water from the central points to the required place with proper distribution boards observing the safety rules laid down by the electrical authorities of the state shall be done by the contractor, supplying all the materials like cables, distribution board, switch boards, TPN, CBS, ELCBS/ MCCBS/ Copper / Brass clamps, copper conductor, change over switches pipes

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

etc. at his own cost. If any failure is caused in supply of the power and water, it is the responsibility of the contractor to make alternate arrangements at his cost. The contractor shall adjust his working shifts / hours accordingly and deploy additional manpower if necessary so as to achieve the targets. **The energy meter to be installed by the contractor & shall be tested and certified by State Electricity Board or any other agency approved by the LPGCL at his cost.**

- 3.4** The contractor while drawing construction power supply from Distribution Board should strictly adhere to following points.
- a) All electrical installations should be as per Indian Electricity rules.
 - b) All distribution Boards installed by the contractor should be constructed with fireproof materials viz. Steel frames, Bakelite sheets etc.
 - c) Connection for single phase should be taken from phase and neutral. Nowhere the connection should be taken with earth as neutral.
 - d) All electrical connections should be made through connectors, nuts and bolts, switches, plug and sockets. Loose connections or hooking up of wires shall not be permitted.
 - e) Contractor have to make their own earthing arrangement for their equipment / DB earthing.
 - f) All electrical equipment / tools and plants should be properly earthed. DBs to be earthed diagonally opposite at two points.
 - g) Contractor should use “MCCB” and “ELCB” either on incoming or outgoing connections to the DBs.
 - h) Contractor should ensure that all the CBs / TPNs/ Fuses/ MCCB / ELCB cables etc. should be of adequate rating/ capacity.
 - i) For permission of supply connections contractor has to submit a test report of their installations with a single line diagram of connected/ proposed loads.
- 3.5** ELCB will be tested once in a week or as directed by BHEL by actually simulating the earth leakage for all installations and the same shall be recorded in the logbook to be maintained by the contractor.
- 3.6** In case of power cuts / load shedding no compensation for idle labour or extension of time for completion of work will be given to contractor.
- 3.7** On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and levelled and debris shall be removed, as per instructions of BHEL, by the contractor at his cost. In the event of his failure to do so, the Engineer will get it done and expenses incurred shall be

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

recovered from the contractor along with prevailing overheads. The decision of BHEL Engineer in this regard shall be final.

- 3.8** Compressor required capacity for construction purposes shall be arranged by Contractor.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter-IV : T&P AND MMD DEPLOYED BY CONTRACTOR

4.0 T&P AND MMD DEPLOYED BY CONTRACTOR

Sl. No.	Equipment	Capacity	Minimum Qty.	Remarks
1	Hydra CRANE	12 MT	1	To be deployed within 30 days from start of contract period*
2	Trailer with pulling unit	10/12 MT	1	1 no. to be deployed within 30 days from start of contract period.

***The date of start of contract period shall be the mutually agreed date between the contractor and BHEL engineer to start the work. In case of discrepancy the decision of BHEL engineer is final.**

NOTES:

1. The above list specifies only major T&P/MMD (may not be complete) to be deployed by the contractor. All additional/ other tools and plants which are required for satisfactory & timely completion of work shall also be deployed by the contractor within finally accepted rate/ price.
2. If works gets delayed due to non-availability of T&P and MMD, BHEL reserves the right to get work done at the risk & cost of contractor without prejudice to right of BHEL as in GCC
3. Contractor must re-ascertain/ recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration/ deployment.
4. Other terms and conditions regarding above items shall be as per T&P clause in SCC.
5. If works gets delayed due to non-availability of T&P and MMD, BHEL reserves the right to get work done at the risk & cost of contractor without prejudice to right of BHEL as in GCC. Risk & cost will cover, cost incurred by BHEL along with overhead charges as per GCC.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

Chapter-V : T&P AND MMD DEPLOYED BY BHEL ON SHARING BASIS

5.0 T&P AND MMD DEPLOYED BY BHEL ON SHARING BASIS

LIST OF T&P BEING PROVIDED BY BHEL ON FREE OF HIRE CHARGES AND ON SHARING BASIS				
Sl. No.	Equipment	Capacity	Qty.	Remarks
1.	Crawler/ tyre mounted General Purpose Crane	135 MT/250 MT	1Nos	On sharing basis
2.	Tube Expanding Machine			As required

NOTES:

1. **Cl.4.2.2.16 c.) of SCC** shall read as day-to-day upkeep and running maintenance like filling topping up of lubricants, changing filters, etc including repair of self starter, batteries and dynamo of these cranes shall be the responsibility of the contractor. If on checking it is found that the same is not followed, BHEL will exercise its right to get the job/works done at the risk and cost of contractor. BHEL may also provided cranes through crane hiring agencies in which case the day-to-day upkeep and running maintenance shall be excluded from scope of contractor.
2. **Cl.4.2.2.16 e.) of SCC** The **operator** for BHEL's cranes **100 MT & above capacity** being provided by BHEL free of cost. **Further, Helpers and fuel for operation of all BHEL cranes shall be provided by contractor within the final accepted rates.**
3. **These Cranes (S. No.1) will be provided on sharing basis on specific instruction of the BHEL Engineer as per the work requirement.**
4. **The contractor shall make necessary arrangement like lying of steel plates, assembly & dismantling of heavy lift attachment, boom, jib etc. for movement and operation of crane.**
5. **Other T&P mention above contractor shall transport from BHEL stores, install, operate, carry out maintenance, dismantle after use and return to BHEL stores.**
6. Steel plates for making base for heavy equipments shall be provided by BHEL.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

Chapter-VI : Time Schedule

6.0 Time Schedule

- 6.1** The contractor is required to commence the work within 15 days from the date of issue of LOI unless BHEL decides to fix any other later date. However, the actual date of start of work, to fix up the zero date of the contract, will be certified by BHEL Engineer after adequate mobilization of manpower and T&Ps by the contractor.
- 6.2** Entire work as detailed in the tender specifications shall be completed within **4 months** from the Zero date as per program/ milestones indicated by BHEL Engineer. Contractor has to mobilise adequate resources to meet BHEL's commitments to their customer as indicated from time to time.
- 6.3** The contractor has to ensure that work is completed in all respects leaving no pending points. However the punch list/ pending points, which are possible to be attended at site, shall be fully liquidated within two months from successful trial operation of the unit.
- 6.4** The work under the scope of this contract is deemed to be complete in all respects, only when the contractor has discharged all the responsibilities laid down in the contract. The decision of BHEL on completion date shall be final and binding on the contractor.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter-VII : Terms OF Payment

7.0 Terms OF Payment

7.1 The 'Engineer' will certify regarding the actual work executed in the measurement books and bills, which shall be accepted by the contractor in measurement book.

7.2 Contractor shall submit bills for the work completed under the specification, once in a month detailing work done during the month. The format for billing shall be approved by BHEL before raising invoices.

7.3 Subject to any deduction, which BHEL may be authorised to make under the contract, the contractor on the certificate of the Engineer at site be entitled for payment as explained hereunder.

7.3.1 PROGRESSIVE PAYMENT ON PRORATA BASIS

I. 85 % of unit rates

(Applicable for ITEM. No. 1 of Rate Schedule for SERVICE CONTRACT)

SL. No.		FOR ITEM NO.1 (Str.& Non pr. Parts)
1.	Completion of pre-assembly, (if not applicable this portion shall be clubbed with Placement in position)	20%
2.	Placement in position	25 %
3.	Alignment	20 %
4.	welding /bolting/fixing as required	15%
5.	Completion of non destructive examination & stress relieving/ heat treatment, (if not applicable, then this portion to be paid along with welding)	5 %
	TOTAL FOR PRO RATA PAYMENTS	85%

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Progressive payment (for item no. 1) of rate schedule for service contract.

Payment to the Contractor shall be limited to 85% of the value of the monthly running bill on item rate basis provided that work has been executed to the satisfaction of the Engineer. **BHEL site in-charge, at his discretion can further split this 85 % payment, to facilitate site operations.** The Engineer may after a measured bill allow & certify payment to the contractor on the basis of abstract measurement bill submitted by the contractor. Contractor will also submit the floppy / CD containing abstract & measurement sheets of the bill which will be returned to him after correction for further resubmission of bill. From this amount recovery such as advances, security deposit taxes, retention etc. would be made. The certificate of the Engineer regarding such approval and passing of sums so payable shall be final and conclusive and binding on the contractor.

**II. STAGE/MILESTONE PAYMENTS (15%) for SERVICE CONTRACT
(Applicable for item no. 1 of Annexure-B)**

1.0	AIR & GAS TIGHTNESS TEST	1
1.2	BOILER HYDRAULIC TEST (NON DRAINABLE)	3
1.3	Boiler Light Up	1
1.4	ABO/chemical cleaning	1
1.5	SVF (Safety Valve Floating)	2
1.6	Full Load	1
1.7	Trial Operation of Unit	1
1.8	Final Painting	1
1.9	Area cleaning, temporary structures cutting/removal and return of Scrap	1
1.10	Punch List points/pending points liquidation	1
1.11	Material Reconciliation	1
1.12	Completion of Contractual Obligation	1
	TOTAL FOR STAGE/MILESTONE PAYMENTS (15%)	15

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Note:

1. If the commissioning activities could not be carried out due to no fault of contractor, BHEL Site in-charge, at his discretion, after recording reasons for exercising such option, can split and release payment up to 50% of milestone payment on completion of work, to the extent possible, required for carrying out that particular milestone/ commissioning activity.

III. SUPPLY PORTION: (Applicable for item no. 2 of Annexure-B)

100% payment after completion of finish painting as certified by BHEL Engineer.

IV. Retention amount, final bills & RA bill payment shall be done as per GCC & SCC clauses.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

Chapter - VIII: TAXES, DUTIES, LEVIES

A. TAXES , DUTIES ,LEVIES FOR SERVICE CONTRACT

8.0 TAXES & DUTIES

The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.

However, provisions **regarding Service Tax and Value Added Tax (VAT)** on output services and goods shall be as per following clauses.

8.1 Service Tax & Cess on Service Tax

Service Tax and Cess on Service Tax as applicable on output Services are excluded from contractor's scope; therefore contractor's price/rates shall be **exclusive** of Service Tax and Cess on Output Services.

Contractor shall obtain prior written consent of BHEL before billing the amount towards such taxes. The Service Tax Rules permit more than one option or methodology for discharging the liability of tax/levy/duty and BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Contractor. Contractor shall submit to BHEL documentary evidence of Service Tax registration certificate specifying name of services covered under this contract.

For the purpose of claiming Service Tax from BHEL, the following procedure shall be adopted :

Contractor shall submit serially numbered Service Tax and Cess Invoices, signed by him or a person authorized by him in respect of taxable service provided, and shall contain the following, namely:

The name, address and registration number of the contractor

The name and address of the party receiving taxable service (BHEL)

Description, classification and value of taxable service provided and

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

The Service Tax payable thereon.

All the four conditions shall be fulfilled in the invoice for payment of Service Tax by BHEL. Where more than one nature of Service under Service Tax Rules is involved, the invoice mentioned above shall contain the break up of all values for each nature of Service.

Name and address of the contractor should be same in the service tax invoice and monthly bill. Any change in the name and address in past should be supported by documentary evidence duly certified by the registering authority.

Purpose of above requirements, inter alia, is to enable availment of CENVAT credit by BHEL. As per recent amendment time restrictions for taking cenvat credit is within Six months from date of invoice. Wherever CENVAT credit could not be availed by BHEL within statutory time limit of 6 months due to delay in submission of invoice or for any other reason attributable to contractors, liability towards loss of such CENVAT credit shall be passed on to contractors.

8.2 VAT (Sales Tax /WCT)

Civil Works:

As regards Value Added Tax (VAT) on transfer of property in goods involved in Works Contract (previously known as Works Contract Tax) applicable as per local laws, the price quoted by the contractor shall be exclusive of the same. Contractor shall obtain prior written consent of BHEL before billing the amount towards such taxes. In case contractor opts for composition, it will be with the prior express consent of BHEL. The VAT Rules permit more than one option or methodology for discharging the liability of tax/levy/duty and BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Contractor. BHEL also reserves the right to demand "Tax Invoice" under the relevant VAT Act, from the Contractor. Where such taxes are required to be paid by the contractor subject to the above, this will be reimbursed on production of proof of payment made to the authorities by the Contractor. The contractor has to take all necessary steps to minimize tax on input goods by purchasing the materials from any registered dealer of the concerned state only.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

Works other than Civil Works:

The rates quoted by the Contractor shall be inclusive of VAT/Sales Tax and BHEL shall not reimburse any amount on this account due to any reason whatsoever.

Common to all Works (Both Civil and Other than Civil)

The Contractor shall register himself with the respective Sales Tax authorities of the state and submit proof of such registration to BHEL along with the first RA bill.

Deduction of tax at source shall be made as per the provisions of law unless otherwise found exempted. In case tax is deducted at source as per the provisions of law, this is to be construed as an advance tax paid by the contractor and no reimbursement thereof will be made unless specifically agreed to.

Contractor has to make his own arrangement at his cost for completing the formalities, if required, with Sales Tax/VAT Authorities, for bringing all their material, plant and equipment etc at site for the execution of the work, including arrangement of Road Permits if and as applicable under the relevant VAT Act.

8.2.1 Modalities of Tax Incidence on BHEL

Wherever the relevant tax laws permit more than one option or methodology for discharging the liability of tax/levy/duty, BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Contractor.

8.2.2 New Taxes/Levies

In case the Government imposes any new levy/tax on the output service/ goods/work after award of the contract, the same shall be reimbursed by BHEL at actual.

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.

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

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

impact shall be taken care of by the Price Variation/Adjustment Clause (PVC) if any. In case PVC is not applicable for the contract, Bidder has to make his own assessment of the impact of future variation if any, in rates of taxes/duties/ levies etc. in his price bid.

B. TAXES, DUTIES, LEVIES FOR SUPPLY CONTRACT.

8.3 TAXES AND DUTIES:

Price quoted should be inclusive of all the applicable charges, taxes and duties, including entry tax. However rates of sales tax, excise duty & other statutory levies should be indicated separately. Variation in excise duty, sales tax/ vat or any other statutory levies during contractual delivery period should be to BHEL's account. No "C" form will be issued for this supply. Contractor should arrange own road permit, if any, himself for arranging material and they have to arrange cenvatable invoice. In case of material purchased within the state, vat shall be payable extra on submission of vat invoices/ documentary evidence by the vendor.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

Chapter - IX : Others

9.0 Others

9.1 Price Variation

The price shall remain firm throughout the period of contract. Hence, Price Variation Clause No. 2.17 of GCC shall not be applicable for this tender.

9.2 Quantity Variation

GCC clause No. 2.14 may be read s below:

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 +/- 30% in place of +/- 15%.

9.3 Interest bearing recoverable advance: NOT Applicable

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Part-II : Technical Specification

Chapter-I General

1.0 The work to be carried out at quoted / accepted rates by the contractor under the scope of these specifications covers the complete work of handling, loading and transporting of materials from project stores sheds / storage yards to site of erection or preassembly yard and unloading at pre-assembly area/erection site, checking, cleaning chipping and leveling of foundations, providing packers and shims/pre-assembling of equipments at the pre-assembly yard, inspection, minor rectification, preservation, erection, leveling, and other adjustments, cutting, edge/ surface preparation, welding, grinding, radiography, LPI/ MPI/ UT testing wherever needed, heat treatment, carrying out air tightness test by soap solution/ kerosene, hydraulic test, steam /air blowing light up, chemical cleaning, passivation, steam blowing and safety valve floating including inter connection of all the termination points, erection and dismantling of all temporary piping, valves, pumps, tanks etc., required for the above operations, all commissioning tests and trial runs of the Boiler, piping, chimney, Rotating Machines & auxiliaries with Insulation, Electrical & instrumentation, supply and application of final painting covered under the tender specifications and providing adequate assistance during entire commissioning of Auxiliary Boiler at 3X660 MW LALITPUR STPS.

1.1The work shall conform to dimensions and tolerances given in various drawings and quality manuals provided by BHEL. If any portion of work is found to be defective in workmanship not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at his cost, failing which the job will be carried out by BHEL by engaging other agencies / departmentally and recoveries will be effected from contractor's bill towards expenditure incurred including BHEL's overhead charges.

1.2 The quantities indicated in the tender specification are approximate and are liable for variation and alteration at the discretion of BHEL. The quoted unit rate shall be applicable for any additional product group also, if included at a later date integral to the main scope of work /package envisaged. The work executed shall be measured and priced as per the unit rate arrived at for each work area as mentioned in the relevant clauses.

1.3 Contractor shall submit a copy of license to undertake construction /repair of Boilers & Piping issued by Boiler inspectorate before commencement of Pressure Parts / Piping Erection.

1.4 The PG wise breakup of Auxiliaries Boiler are indicated in the

TECHNICAL CONDITION OF CONTRACT E/T/C & Handing over of Auxiliary Boiler 3x660 MW Lalitpur, STPP

Annexure / appendices, but the contractor is required to erect actual tonnage which may be necessary to complete the work in all respects as detailed in the tender specifications, for which payments shall be released on finally settled rates. The weights and dimensions of material shown are approximate and are liable to vary. No increase in quoted / accepted rates / prices shall be allowed due to change in weights and dimensions of the equipment / materials.

1.5 The terminal points as decided by BHEL shall be final and binding on the Contractor.

1.6 The weights given in the TCC, Annexure – I & in Price Bid are approximate and these are subject to change as per site conditions.

1.7 The work covered under this specification is of highly sophisticated nature requiring the best quality of workmanship, engineering and construction management. The contractor should ensure timely completion of the work. The contractor must have the adequate quantity of tools, construction aids, equipments, etc in his possession. He must also on his rolls adequate trained, qualified and experienced supervisory staff and skilled personnel.

1.8 Contractor shall execute the work as per sequence and procedure prescribed by BHEL at site. The erection manuals for boiler pressure parts, structures etc which are available with BHEL site office are to be referred for compliance and guidance before taking up the work. Any rework on this failure to comply with will be to account contractor only. BHEL engineer, depending upon the availability of materials, fronts etc, will decide the sequence of erection and methodology. No claims for extra payment from the contractor will be entertained on the grounds of deviation from the method of erection adopted in erection of similar jobs or for any reason whatsoever.

1.9 Activities and erection program have to be planned in such a way that the milestone events Drum lifting, Safety Valve Floating etc are achieved as per schedule / plans. Contractor shall arrange & augment the resources accordingly.

1.10 During the course of execution of work, certain rework/modification/rectification/Repairs / fabrication etc will be necessary on account of feed back from various relevant source, and also on account of design discrepancies/alterations, manufacturing defects, site operations/ maintenance requirements. Contractor shall carry out such rework / modification / rectification / fabrication / repairs etc promptly and expeditiously daily log sheets indicating the details of work carried out, man-hours etc shall be maintained by the contractor and got signed by BHEL engineer every day. Claims of contractor, if any, for such works will be dealt as per conditions of contract and payments will be released as per the agreed rates.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

1.11 Supervisors/Engineers, consumable etc required for the contractor shall provide this scope of work. All the expenditure including taxes and incidentals in this connection will have to be borne by him unless otherwise specified in the relevant clause. The contractors quoted rates should be inclusive of all such contingencies.

1.12 It shall be specially noted that the contractor's labour and staff may have to work round the clock to meet the completion schedules/ plans, which may involve payment of considerable overtime. The contractors quoted rates should be inclusive of all such contingencies.

1.13 The contractor is strictly prohibited from using BHEL's regular components like angles, channels, beams, plates, pipe/tubes, and handrails etc for any temporary supporting or scaffolding works. Contractor shall arrange himself all such materials. In case of such misuse of BHEL materials, a sum as determined by BHEL engineer will be recovered from the contractor's bill. The decision of BHEL engineer is final and binding on the contractor.

1.14 No member of the already erected structure/ platform, pipes, grills; platform, other component and auxiliaries should be cut without specific approval of BHEL engineer.

1.15 The terminal points can be inferred from the relevant appendices/annexure (scope of work) and any further clarifications can be obtained/decided by BHEL and that is final and binding on the contractor for deciding the scope of work and effecting the payment for the work done up to the terminals. Carrying out work as per the specification between equipments constituting terminal points, whether the terminal equipments fall within the scope of work/specification, contractor shall carry out the terminal joints at either end. Also where the piping connection to the terminal points involve flanged joints, matching of flanges, fixing gaskets, bolting and tightening as per BHEL Engineers instructions is in the scope of work. In case piping connected to equipment, matching of flanges for achieving the parallelism and alignment at the equipment end, by suitably resorting to heat correction or other method as instructed by BHEL Engineer, with in the quoted rate.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter- II : Foundations and Grouting

2.0 FOUNDATION DRESSING FOR GROUTING:

2.1 It shall be contractor's responsibility to check the various equipment foundations for their correctness with respect to level, orientation, dimensions etc., and ascertained dimensions shall be measured and submitted to BHEL for approval before erection. Also minor chipping, dressing of foundations up to **30 mm** for obtaining proper face for packer plates/shims, and may be required for the erection of the equipment/plants will have to be carried out by the contractor without extra cost.

2.2 The surface of foundations shall be dressed to bring the surface of the foundations to the required level and smoothness prior to placement of equipment/equipments based on the foundations including shear lug provisions/openings. Foundation pockets are to be cleaned thoroughly before placing the columns/equipments. Verticality of foundation bolts to be checked along with correctness of the threads and freeness of the nuts movement. If required cleaning of the threads to be done with proper dies.

2.3 All equipment bases and structural steel bases and foundations pockets shall be grouted and finished as per these specifications after surface preparation unless otherwise recommended by the equipment manufacturers. The surface preparation includes soda washing of the foundations to remove oil, grease etc. to ensure proper grouting. The required materials like sand, gravel, cement etc and cleaning consumables shall be arranged by the contractor at his cost. Special free flow cement like conbextra GP1/GP2, shrink-comp or its equivalent etc. for grouting will be arranged by the contractor at his cost.

2.4 The concrete foundation, surfaces shall be properly prepared by chipping, as required to bring the top of such foundation to the required level to provide the necessary roughness for bondage and to ensure enough bearing strength. All laitance and surface film shall be removed and cleaned and the packers placed with suitable mortar prior to erection of the equipment. The contractor shall ensure perfect matching of the packer plates with foundations by dressing the foundation and between the packer plates and base plates of structural columns to the satisfaction of BHEL Engineer.

2.5 Total grouting of the columns/equipments including pocket grouting, grouting at the gap between foundation and base plates top surface of column/equipments is in the scope of the contractor. All the grouting should be carried out by non-shrink cement like conbextra GPI/Conbextra GP II / Shrinkomp or its equivalent etc. This special non-shrink cement shall be

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

arranged by the contractor at his cost. The quoted rate shall be inclusive of the same.

2.6 The certificates of the grout is to be submitted BHEL. If necessary test cubes are to be made and tested at site to ensure the quality of the grout as per relevant IS standards. In case grouting with Portland cement is approved, necessary cement, sand etc to be arranged by the contractor including the fine aggregates. The grouting is to be carried out as per the suppliers recommendation/IS standard. Copy of those recommendations is to be submitted to BHEL for records. No additional payment will be made by BHEL for meeting this condition.

PROCEDURE FOR GROUTING:

2.7 Contractor has to carryout the grouting as per the work instructions for grouting available at site.

2.8 All the materials required for grouting including special cements like Conbextra GPI, GP2, ACC- Shrinkkomb-N20, Sika Anckor, NSG/ NSG -1, CICO Excem GP, or its equivalent as approved by BHEL and other materials like Portland cement, sand etc., are to be arranged by the contractor at his cost.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter- III : Erection

3 ERECTION

The scope of the work will comprise of but not limited to the following

3.1 Brief list of System/ sub-system to be erected by the contractor & approximate weight individual PGMA's and number of welding joints are given in the Annexure and are meant for giving general idea to the tender only about magnitude of the work involved. This should not be taken for billing or any other claims. All weights for such purposes will have to be taken from design documents only (shipping list). This section also gives general idea about various components to be erected with expected accuracy level. However the contractor is requested to get the correct details from the engineer to avoid mistakes and rework.

3.2 The column and girder pieces are to be measured individually to check for camber, sweep etc. The level markings on the columns to be checked before erection. The verticality stickers are to be fixed over individual column pieces on both the flanges (90* apart in two places) if required. These stickers are to be arranged by the contractor within the quoted rates.

3.3 Tier by tier erection method is to be followed. Columns are to be tied up with horizontal and diagonal bracing in each tier before proceeding to next level. Log sheets are to be maintained in line with log sheets which are available with BHEL. After grouting the first tier columns, second tier erection is to be taken up. Adequate curing of the grout is to be ensured. Verticality of the columns is to be ensured either by plum bob or theodolite.

3.4 The required measuring and test equipments with proper calibration certificates are to be made by the contractor before taking up the structural and other pressure parts erection and calibration certificate for the same to be submitted to BHEL for records.

3.5 Suitable crane to be used for erection. The consolidation of the area where the crane is to be positioned is to be done with boulders, aggregates etc and leveled to take the thrust. The scope includes consolidation and raising the ground level if required up to 500 mm. No separate payment will be paid for this consolidation. Required sleepers to be arranged and spread to march the cranes if required within the quoted rates.

3.6 The procedures for HSFG bolt tightening and **tube expansion** are to be Obtained from BHEL site/Engineer before taking up the work. Normally HSFG bolt tightening is done by turn of nut method. Torque wrenches also can be used .The bolted joints will be checked jointly by BHEL/ Customer engineers for required tightness and retightening is to be done as per requirement. The

TECHNICAL CONDITION OF CONTRACT

E/T/C & Handing over of Auxiliary Boiler

3x660 MW Lalitpur, STPP

tightened bolts will be marked with colour paints. Facility for random checking by torque wrench will have to be done. The required calibrated torque wrench will be provided by the contractor. The tube shall be expanded using tube expander so as to get the % thinning of the tube walls and elongation of tube ends as recommended in the Drg./ Tube expansion procedure.

3.7 Some platform materials for approach ladders, suspension materials etc. will be supplied in running meters. The contractor has to fabricate these materials wherever they are supplied in running meters to the required size/shape, to be welded and erected them within the quoted rates.

3.8 It shall be the responsibility of the contractor to provide ladders on column for initial works till such time stairways are completed. For this the ladder should not be welded on the column and should be fabricated clamping type ladders. No temporary welding on any structural members is permitted except under special circumstances with the approval of BHEL. The necessary materials for the ladders are to be arranged by bidder within quoted rate.

3.9 All normal erection and assembly techniques necessary for completion of works under this specification and magnitude have to be carried out. It is not possible to specifically list out all of them. Absence of any specific reference will not absolve the contractor of his responsibility for the particular operation. These would include

- Scaffolding and rigging operations
- Machine / flame / electric cutting, grinding, welding, **tube expansion**, radiography and stress relieving.
- Fitting, fettling, filing, straightening, chamfering chipping, scrapping, reaming, cleaning, checking, leveling, blue matching, aligning and assembly.
- Machining, surface grinding, drilling, doweling, shaping
- Temporary erections for alignment, dismantling of certain equipment for checking, cleaning, servicing and site fabrication
- **The contractor should get the formal approval from the Director/Boilers to take up the boiler erection work(mainly pressure parts, piping etc).Necessary assistance will be extended by BHEL for the same**

3.10 Normally the high pressure valves will have prepared edges for welding. But if it becomes necessary the contractor shall prepare new edges or recondition the edges by grinding or chamfering to match the corresponding tubes and pipes. All fittings like "T" pieces , weld neck flanges,

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

reducers etc., shall be suitably matched with pipes for welding. The valves will have to be checked, cleaned or overhauled in full or in part before erection, after chemical cleaning and during commissioning. Edge preparation becomes the part of erection work. **All the valves, after chemical cleaning, have to be checked, cleaned or over hauled in full or part before erection if called for as part of scope.**

3.11 Adjustments like removal of ovalities in pipes and opening or closing the fabricated bends of high pressure piping to suit the layout shall be considered part of work and the contractor is required to carry out such work free of cost, as per instructions of BHEL, which shall include specific heat treatment procedures etc.,

3.12 Certain adjustments in length of steel members may be necessary while erecting high pressure pipelines of boiler and piping (pre fabricated lines) and the contractor should remove the extra lengths / and extra lengths to suit the final layout after preparing edges afresh and adopting specified heat treatment procedures at no extra cost, wherever indicated. Depending up on the type of deviation BHEL will consider the reimbursement at man hour rates. If the drawing provides for erection allowance, then it becomes part of the work and no compensation is payable. The prepared edges in pressure parts shall be applied with weldable primer as preservation and supply of the primer is in contractor scope

3.13 Suspension for piping, pressure parts, ducting etc., will be supplied in running lengths which shall be cut to suitable sizes and adjusted as required.

3.14 Ducts / expansion pieces are dispatched to site in loose walls / plates and these are to be assembled at site before erection. All field connection duct / expansion pieces and dampers shall be seal welded inside as well as outside.(Walls with stiffeners in welded condition will be provided)

3.15 Fabricated pipes are sent in standard length and will be cut to suit the site conditions and the layouts. Tubes or pipes wherever deemed to be convenient will be sent in running lengths with sufficient bends. Bends up to NB 65 mm will have to be fabricated at site adopting specified heat treatment procedures, Wherever required at no extra cost.

3.16 All welded joints should be painted with anti corrosive paint, once radiography and stress relieving works are over. Daily welding/tube expansion reports in the proforma suggested by BHEL should be submitted by next morning without fail.

3.17 All the dampers, valves, lifting equipments, power cylinders, etc., shall be serviced and lubricated to the satisfaction of BHEL engineer before erecting the same and also during pre commissioning. The bearings of dampers shall

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

be properly cleaned, serviced and lubricated before commissioning at no extra cost. Even after commissioning in the equipments, if there are problems in the operation they have to be attended by the contractor during the tenure of the contract.

3.18 In case of any class of work for which there is no such specifications as laid down in the contract such as blue matching, welding of stainless steel parts etc., the work shall be carried out in accordance with instructions and requirements of the BHEL engineer at the quoted rates only.

3.19 In the case of structural members / ducts in certain cases, the raw material will be supplied in random lengths and the contractor will have to make up the length / prepare the edges to suit the matching profiles, weld / bolt connect the joints at no extra cost. Normally, the machine profile will be cut out for the structural members but the contractor will have to carry out suitable alteration / adjustments at site, without any extra payment in case it becomes necessary.

3.20 Attachment, welding of necessary instrumentation tapping points, thermocouple pads, root valves, condensing vessels, flow nozzles and control valves etc., both for regular measurements and performance testing to be provided on boiler / its auxiliaries or pipelines covered within scope of this tender, will also be the responsibility of the contractor and the same will be done as per the instructions of BHEL Engineer. The erection and welding of all above items will be contractor's responsibility even if, (a) Product group under which these items are released are not covered in the scope of this tender, (b) Items are supplied by an agency other than BHEL if they are integral to the scope envisaged under this package. Payment will be regulated as per the settled terms and conditions.

3.21 Spring suspensions / constant load hangers have to be preassembled and adjusted for the required loading and erected as per instructions, of BHEL's engineer. Any adjustments, removal of temporary arrestors / lockers, etc., have to be carried out as and when required.

3.22 The contractor shall carry out necessary preservative painting, periodic application of preservations on pressure parts and other equipments during erection / after erection until completion of work. Necessary preservatives / paints, thinner are to be arranged by the contractor at his cost.

3.23 The contractor shall take all reasonable care to protect the materials and equipment during erection. Touch up painting required to be done on any equipment or part during the course of erection will have to be done by the contractor. Contractor shall provide necessary crew with all items like wire brushes, paint brushes, emery paper, cotton waste,

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

scaffolding materials etc., at his cost.

3.24 The contractor shall fabricate piping, install lub oil systems and carry out the acid cleaning of fabricated piping. The contractor shall also service the lub oil system, carry out the hydraulic test of oil coolers. etc.,

3.25 All the tubes and pipes shall be cleaned and blown with compressed air and shown to the Engineer before lifting. Sponge ball test shall be carried out for all tubes before erecting the same. Bigger size pipes should be cleaned with flexible wire brush, wherever necessary. After cleaning is over, the end caps shall be put back in tube openings till such time they are welded to other tubes. Required compressors shall be arranged by the contractor at his cost.

3.26 All attachment welding including those for insulation and refractory work coming on the pressure parts shall have to be done by the contractor. The hooks are suitable for stud welding machines. Contractor's quoted rate shall include all these contingencies. Attachment welding on pressure parts shall be done by qualified and certified welders only.

3.27 It is the responsibility of the contractor to do the alignment, checking, etc., if necessary, repeatedly to satisfy BHEL Engineer / customer Engineers with all necessary tools and tackles manpower, etc., without any extra cost. The alignment will complete only when jointly certified so, by the BHEL Engineer & customer. Also the contractor should ensure that the alignment is not disturbed afterwards.

3.28 Burner mechanism will be checked for freeness, serviced and adjusted before and after installation.

3.29 Fine fittings, boiler trim piping, oil system and other small bore piping have to be routed according to site conditions and hence shall be done only in position. As such, layout of small bore piping in boiler and oil system shall be done as per the site requirement. Necessary sketch for routing these lines should be got approved from BHEL by the contractor. There is a possibility of slight change in routing the above pipelines when after completion, to suit the site conditions. The contractor should absorb this cost in his quoted rate.

3.30 Additional platforms for approaching different equipments as per the site requirement, which may not be indicated in drawings, shall be assembled and erected by contractor. However, the contractor shall be paid for this work on accepted tonnage rate for erection. The steel materials required for these works shall be supplied by BHEL free of cost and the contractor will have to install them to suit the requirement. Works of major nature not covered under this clause

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

3.31 Complete penetration of water wall (Panel to panel) tube to tube and fins welding shall be achieved either by single side or double side welding. The decision of BHEL Engineer is final.

3.32 Work such as minor rectification of foundation bolts, reaming of holes, drilling of dowels, matching of bolts and nuts, making new dowel pin, etc. are covered in the scope of work.

3.33 Certain extra lengths of various tubes/pipes and fabricated ducts are provided as erection allowance and the same have to be cut/adjusted to suit the site conditions and layouts or certain small lengths may have to be added for adjustments to suit the site conditions. For any mismatch while matching the joints in tubes, the cutting, adjusting, re welding, addition spool pieces should be done by the contractor to match site conditions without any extra payment.

3.34 No temporary supports shall be welded on the pressure parts of piping. Welding of temporary supports, cleats, etc. on the boiler columns shall be avoided. In case of absolute necessity contractor shall take prior approval from BHEL Engineer. Further, any cutting or alternation of member of the structure of platform or other equipment shall not be done without specific prior approval of BHEL Engineer.

3.35 All hangers, supports and anchors (including concreting or welding) shall be installed as per drawing to obtain are reliable and complete pipe installation as per instructions of BHEL Engineer. Normally supports are issued in running meters. Any additional supports as called for by BHEL Engineer shall be fabricated by the contractor and provided at no extra cost. However, the raw material required for fabrication of such supports shall be supplied by BHEL free of cost. (Any machining or threading is involved will only be done by BHEL).

3.36 Assistance for calibrating / testing the power cylinders / valves, gauges, instruments, etc. and setting to actuators coming under various groups shall be provided by contractor within the quoted rates.

3.37 Hanger rods are shown in the pressure parts arrangement drawing for boiler. Any cutting / welding and required heat treatment and necessary NDT of such hanger rods will be done by the contractor. The hangers for pressure parts will be tested for even distribution of load with the help of torque wrench.

3.38 Skin casing sheet for covering the boiler roof panels, and other areas will be supplied as fabricated items. Any cutting and re-fabrication to suit the site conditions shall be carried out within the quoted rates.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

3.39 The contractor is strictly prohibited in using any of the boiler components like angles, channels, hand-rails for any temporary supporting or scaffolding work. In case of such misuse, a sum as determined by BHEL shall be recovered from contractor's bills. Also the contractor will be responsible for the safe custody and proper accounting of all materials in connection with the work. If the contractor has drawn materials in excess of design requirements, recoveries will be effected for such excess draws at the rate prescribed by manufacturing units.

3.40 For all the site routed piping under PG-21, 24, 42&80 as built drawings are to be submitted by the contractor immediately after erection. The Number of site welds indicated for PG21, 24 in the welding schedule is approximate. It is to be noted that piping for fine fittings, trim piping, oil system (PG 42) soot blower system shall be supplied mostly in running metres which will be erected and all joints are to be welded as per the drawings/site routing within the quoted rates by the bidder.

3.41 All Rotating machineries and equipment shall be cleaned, lubricated, checked for their smooth rotation, if necessary dismantling and refitting before erection. If in the opinion of BHEL Engineer, the equipment is to be checked for clearance, tolerance at any stage of work or during commissioning period, all such works are to be carried out by contractor at his cost.

3.42 The HT motor bearings shall be blue matched at site and checked for bearing clearance. Scrapping of bearing housing, if required to any extent shall be carried out by the contractor. No extra claim for blue matching of any two surfaces will be entertained. The HT motors will also be checked for air gap and adjustment stator / rotor to magnetic center shall be carried out as part of erection.

3.43 The fans shall be checked for blade clearance and other vital tolerances. The Flow control devices in fans like IGV/Damper units shall be serviced. Necessary assistance for balancing of equipment during trial run shall be provided by the contractor.

9.2 All welded joints shall be subjected to acceptance by BHEL Engineer.

3.45 D.S.L / equivalent system for hoisting equipments are also to be erected and commissioned including load testing by the contractor within the quoted rates. Required manpower including electricians is to be arranged by the contractor for carrying out commissioning of electrical hoist and load testing of the above electrical hoist. Required loads will be provided by BHEL free of cost.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

3.46 The contractor has to remove the scrap/debris periodically as and when required and returned to BHEL stores. In case the contractor fails to remove the scrap/debris, the same shall be done by BHEL at the cost of contractor. The temporary structures/items welded to permanent members/pipes are to be cut and removed without any damage. Any damage so to be made good by the contractor at his cost. Refer Form F15 in GCC.

3.47 All insulations and refractory materials including iron components and other sheets casing materials, etc., required as per drawing will be supplied by BHEL and the same have to be erected / applied as per the drawings and specifications of BHEL by the contractor.

3.48 It is the responsibility of the contractor to ensure that the insulation and refractory materials and sheet metal covering issued to him for application are well protected against loss or damage or weather conditions tending to affect its quality by the provision of close / semi closed sheds at his cost.

3.49 All the insulation and refractory materials and sheet metal covering etc., issued to the contractor shall be properly stored and handled before application due the same. If any damage occur to the materials due to improper storage or due to any causes attributable to the contractor except for normal breakage or damaged material shall be to the cost of the contractor.

3.50 Contractor is liable for the exact accounting of the materials issued to him and any unaccountable losses shall be made good by him. The necessary accounting of the material issued will have to be furnished by the contractor periodically.

3.51 All surplus, unused materials etc, supplied by BHEL shall be returned to BHEL after the work is over. Materials like gunny bags packing materials and empty containers etc., shall be returned to BHEL stores at periodical intervals by the contractor.

3.52 The contractor shall provide the required quantity of wire nails and other materials for centering works at their cost.

3.53 Wherever iron components are to be welded on non pressure parts, the contractor shall employ only approved structural welders. It shall also be the responsibility of the contractor to arrange for welding hooks, flats, plates, supports and other fixtures also. All consumables tools and plants etc., required for the work shall be arranged by the contractor at their cost. Wherever iron components are to be welded on the pressure parts and HP piping the contractor shall employ certified

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

IBR high pressure welders as required by BHEL and only welding generators are to be used.

3.54 Application of refractory, wool insulation, sheet metal cladding, welding of hooks / supports to hold insulation and refractory's under this contract including but are not limited to the following. Insulation of main boiler portion, boiler drum, ceiling heat recovery area, air and flue gas ducts, and connected ducts, HP & LP piping, temporary acid cleaning and steam blowing piping connected tubes, oil burners, oil and steam lines, all drain lines, traps, flanges, fine fittings, sampling lines etc.,

3.55 Removal type of insulation to be provided for valves fittings, expansion joints etc., as per the drawings or as directed by BHEL Engineer.

3.56 All piping insulations ends shall be carried out in such a manner as to facilitate removal of bolts nuts and washers from the flanges.

3.57 Refractory works at complete combustion chambers, ceiling heat recovery area, burner areas and application of castable refractory whether specified in drawing or as directed by BHEL Engineer have to be carried out.

3.58 Fabrication of covering sheets may be necessary like preparing the sheets to the sizes and shapes specified in drawings, beading, swaging, beveling of sheets crowning of the sheets if necessary the same to supports over wool insulation with screws as specified in BHEL drawings or as instructed by BHEL engineer.

3.59 Fabrication, fixing or welding of hooks / supports to equipment of boiler parts, piping and other connected equipments to support wool insulation applying of primer paint to welded portion parts welding certain supports on parts other than pressure parts to hold refractory's (by engaging approved welders) as per the drawings or as instructed by BHEL Engineer will have to be carried out by the contractor.

3.60 Painting of inner side of sheet metal covering over the insulation walls with anti-corrosive paint (two coats) to the entire satisfaction of BHEL Engineer. Application of bituministic sealing compound on roof top of cladding joints, if necessary, shall also be carried out by the contractor. The required amount of paint, thinner shall be arranged by the bidder at his cost. Other accessories for painting, cleaning the surfaces etc., shall be arranged by the contractor.

3.61 The contractor should ensure that the finished surface of the insulation and refractory works conforms to the dimensions and tolerances given in the drawings.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

3.62 The contractor shall leave certain gap and opening while doing the work as per the instructions of BHEL Engineer to facilitate inspection by Boiler Inspector or doing commissioning to fix gauges, fittings, instruments. Those gaps will have to be finished as per drawings at a later date by the contractor at his cost, as required by BHEL .

3.63 Cladding sheets shall be suitably pressed along with diagonals to form diamond shape so as to improve the strength of the sheets, to avoid humpiness and to give aesthetic look.

3.64 Plates ,bars, rods and other materials that are to be cut, and re-welded from the fabricated places to suit erection requirements for which no extra payment will be made to the contractor.

3.65 The contractor shall draw only one week's requirement of insulation material for their work from BHEL stores and keep them in their semiclosed shed near to the work area. The materials required for a particular case work only shall be taken to the work spot. At the end of the day's work the leftover or unused materials shall be taken back to their semi-closed shed for keeping the materials safe. Necessary records shall have to be maintained by the contractor in respect of the above drawals / deposits, on daily basis as instructed by BHEL. The contractor shall draw only one week's requirement.

3.66 Red oxide painting after proper surface cleaning wherever required to be done as per site requirement over all surfaces to be insulated prior to the application of the insulation. This is to be done as a part of contract without any additional charges. Red oxide paint and other consumables like brush etc., will be arranged by the contractor at his cost.

3.67 Wastages allowance for the materials issued are envisaged as follows:

- a) Castable refractory 2%
- b) Insulation bricks & mortar 2%
- c) Wool mattresses 2%
- d) Cladding sheets 5%

3.68 Welding of hooks as per pitch, non pressure parts, applying red oxide paint to the welded portion as directed as per drawings before application of mineral wool mattresses will have to be done by the contractor.

3.69 Application of Castable refractory between tubes around burners, on ceiling and as directed by Engineers and as per detailed drawings and specifications will have to be done by the contractor.

3.70 Applying different layers of mineral wool as directed and as per

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

drawings and specifications for boiler and its auxiliaries, pipelines valves and other vessels and after fixing require holdings materials, suitably if necessary, fabrication of rings etc., and fixing as directed and as per drawings and specifications shall also form part of this work.

3.71 If necessary the hooks may have to be made from the rods, raw materials supplied in running lengths. The contractor may have to carry out this work also and use the same hooks.

3.72 Wherever additional / clamps, frame works, etc., are required to be fabricated and installed even though not indicated in the drawings shall be fabricated and installed at their cost. Only steel materials shall be given by BHEL free of cost , consumables like electrodes, gases etc., are to arranged by the contractor at his cost.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

Chapter - IV : Preservation

4.0 PRESERVATION / TOUCH UP PAINTING

4.1 Contractor shall carryout cleaning and preservation / touch up painting as a part of erection work for the materials / equipments under this tender specification right from pre-assy stage, during erection and after erection till the equipment is cleared for final painting, wherever deficiency in painting / rusting is noticed. The primer paint shall be matching shop primer. The required manpower, other required consumables, T & P etc shall be provided by the contractor with in the quoted rate. The arrangement of primer/paint will be in contractor's scope.

4.2 The contractor shall effectively protect the finished work from action of weather and from damage of defacement and shall cover the finished parts, then and there, for their protection.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter – V : Progress of Work

5.0 PROGRESS OF WORK

5.1 Refer forms F14, F15, F16, F17 and F18 in GCC. Plan and review will be done as per the formats.

5.2 Contractor is required to draw mutually agreed monthly erection programs in consultation with BHEL well in advance. Contractor shall ensure achievement of agreed program and shall also timely arrange additional resources considered necessary at no extra cost to BHEL.

5.3 Progress review meetings will be held at site during which actual progress during the week vis-a-vis scheduled program shall be discussed for actions to be taken for achieving targets. Contractor shall also present the program for subsequent week. The contractor shall constantly update / revise his work program to meet the overall requirement. All quality problems shall also be discussed during above review meetings. Necessary preventive and corrective action shall be discussed and decided upon in such review meetings and shall be implemented by the contractor in time bound manner so as to eliminate the cause of nonconformities.

5.4 The contractor shall submit daily, weekly and monthly progress reports, manpower reports, materials reports, consumables (gases / electrodes) report, cranes availability report and other reports as per Performa considered necessary by the Engineer as per the format enclosed with this tender document.

5.5 The monthly report ending on 24th of every month shall be submitted in a spiral bounded book and shall contain the following details :-

- a) Colour Progress photographs to accompany the report should be submitted.
- b) Erection progress in terms of tonnage and welding joints, radiography and stress relieving completed as relevant to the respective work areas against planned.
- c) Site Organization chart of engineers & supervisors as on 24th of the month with further mobilization plan
- d) Category- wise man hours engaged during the previous month under the categories of fitters, welders, riggers, khalasis, grinder-men, gas-cutters, electricians, crane operations and helpers. Data will be split up under the work area of Boiler
- e) Consumables report giving consumption of all types of gases and

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

electrodes during the previous month.

f) Availability report of cranes

g) Safety implementation report in the format

h) Pending material and any other inputs required from BHEL for activities planned during the subsequent month.

5.6 The manpower reports shall clearly indicate the manpower deployed, category wise specifying also the activities in which they are engaged.

5.7 During the course of erection, if the progress is found unsatisfactory, or if the target dates fixed from time to time for every milestone are to be advanced, or in the opinion of BHEL, if it is found that the skilled workmen like fitters, operators, technicians employed are not sufficient BHEL will induct required additional workmen to improve the progress and recover all charges incurred on this account including all expenses together with BHEL overheads from contractor's bills.

5.8 The contractor must obtain the signature and permission of the security personnel of the customer for bringing any of their materials inside the site premises. Without the Entry Gate Pass these materials will not be allowed to be taken outside.

5.9 The contractor shall maintain a record in the form as prescribed by BHEL for all operations carried out on each weld and maintain a record indicating the number of welds, the name of welders who welded the same, date and time of start and completion, preheat temperature, radiographic results, rejections if any, percentage of rejection, etc. and submit copies of the same to the BHEL Engineer as required.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter - VI : Welding, RADIOGRAPHY, NDT, Heat treatment

6.0 WELDING, HEAT TREATMENT & RADIOGRAPHY AND NONDESTRUCTIVE TESTING

6.1 The pressure parts, equipments and piping shall be erected in conformity with the provisions of Indian Boiler Regulations and as may be directed, as per other standard / specification in practice in BHEL. The method of welding (viz) ARC, TIG or other methods as indicated in the detailed drawing or as instructed by BHEL Engineer shall be followed. BHEL Engineer will have the option to change the method to suit site conditions.

6.2 Welding of pressure parts, high tensile structural steel, Piping shall be done by certified high pressure welders who possess valid certificate and who are approved by BHEL Engineer.

6.3 All welders including tack welders, structural and high pressure welder shall be tested and approved by BHEL Engineer before they are actually engaged on work even though they may possess a valid certificate. BHEL reserves the right to reject any welder if the welder's performance is not found to be satisfactory. The contractor shall maintain the records of qualification and performance of welders. BHEL Engineer will issue all the welders qualified for the work, an identity card. The welder will keep the same with him at work place at all times. He may be stopped from work if he is not found in possession of the same.

6.4 Engineer may stop any welder from the work if his performance is unsatisfactory for any technical reason or if there is a high percentage of rejection in the joints welded by him. The welders having passed qualification tests does not absolve the contractor of contractual obligation to continuously check the welder's performance.

6.5 Faulty welds caused by the poor workmanship shall be cut and re-welded at the contractor's expense. The Engineer prior to any repair being made shall approve the procedure for the repair of defective welds. After the repair has been carried out, the compliance shall be submitted to the quality engineer.

6.6 The contractor shall carry out the root run welding of all HP / LP piping, valves by TIG welding method only. The contractor shall have to carry out full TIG welding of butt weld joints of tubes / pipes of lesser thickness if required. During the root runs of stainless steel joints, the contractor shall before and during welding have to purge the pipes with inert gas.

6.7 All expenses for testing of contractor's welders including destructive and Nondestructive tests conducted by BHEL at site or at laboratory shall have to

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

be borne by the contractor only. Limited quantity of tube and pipe material required for making test pieces will be supplied by BHEL free of cost.

6.8 Only BHEL approved electrodes and filler wire will be used. All electrodes shall be baked and dried in the electric electrode-drying oven to the required temperature for the period specified by the Engineer before these are used in erection work. All welders shall have electrodes drying portable oven at the work spot. The electrodes brought to the site will have valid manufacturing test certificate. The test certificate should have a co-relation with the lot number / batch number given on electrode packets. No electrodes will be used in the absence of above requirement. The thermostat and thermometer of electrode drying oven will be also calibrated and test certificate from Govt. approved / accredited test house traceable to National / International standards will be submitted to BHEL before putting the oven in use. The contractor shall also arrange periodical calibration for the same. Separate ovens shall be used for baking and holding.

6.9 All butt / fillet welds shall be subject to Non –Destructive testing as per the Drawing/Procedures/Welding Schedules/Documents at no additional cost.

6.10 The contractor shall maintain a record in the form as prescribed by BHEL of all operations carried out on each weld. He has to maintain a record indicating the number of welds, the names of welders who welded the same, date and time of start and completion, preheat temperature, radiographic results, rejection if any, percentage of rejection etc. and submit copies of the same to the BHEL Engineer as required. Interpretation of the BHEL Engineer regarding acceptability or other wise of the welds shall be final.

6.11 The contractor shall carry out the edge preparation of weld joints at site in accordance with the details acceptable to BHEL Engineer. Wherever possible machining or automatic flame cutting should be done. Gas cutting will be allowed only wherever edge preparation otherwise is impractical. All slag / burrs shall be removed from the edge and all the hand cuts shall be ground smooth to the satisfaction of engineer. Prepared edges to be preserved / applied with weldable primer.

6.12 All welds shall be painted with anticorrosive red oxide paint once radiography and stress relieving works are over. Necessary consumables and scaffolding etc including paints shall be provided by contractor at his own cost.

6.13 Pre-heating, radiography and other NDT tests, post heating and stress relieving after welding of tubes, pipes, Non Pressure Parts assly, including attachment welding wherever necessary, are parts of erection work and shall be carried out by the contractor in accordance with the instructions of the

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

Engineer. Contractor at his cost shall arrange all equipment and consumables essential for carrying out the above process.

6.14 Contractor shall arrange all necessary stress relieving equipment with automatic recording devices. The contractor shall arrange for labour, heating elements, thermocouples, thermo-chalks, temperature recorders, thermocouple attachment units, graphs, sheets insulating materials like asbestos cloth, ceramic beads, asbestos ropes etc. required for heat treatment/ stress-relieving operations.

The contractor should take a note of the following,

- Temperature shall be measured by thermocouple and recorded on a continuous printing type recorder. All the recorded graphs for heat treatment works shall be the property of BHEL.
- All stress relieving equipment will be used after due calibration and submission of test certificate to BHEL. Periodic calibration from Govt. Approved / accredited Test Houses traceable to National / International standards will also be arranged by the contractor for such equipment at his cost.

The contractor shall obtain the signature of Engineer or his representative on the strip chart of the recorder prior to the starting of SR operations.

6.15 The contractor shall also be equipped for carrying out other NDT like LPI /MPI / Hardness test etc. as required as per welding schedules / drawings within the finally accepted price / rates. Ultrasonic testing, wherever required, will be arranged by contractor within the quoted rate.

6.16 The technical particulars, specification and other general details for radiography work shall be in accordance with ASME, IBR or ISO as specified by BHEL.

6.17 The contractor for radiography work shall use iridium-192/ Cobalt 60; the geometric un-sharpness shall not exceed 1.5 mm. The contractor should take adequate safety precautions while carrying out radiography. Contractor at his cost shall arrange necessary safe guards required for radiography (including personnel from BARC).

6.18 Low speed high contrasts, fine grain films (D-7 or equivalent) in 10 cm width only are used for weld joint radiography. Film density shall be between 1.5 and 2.0.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

6.19 All radiographs shall be free from mechanical, chemical or process marks, to the extent they should not confuse the radiographic image and defect finding. Penetrameter as per ASME or ISO must be used for each exposure.

6.20 Lead numbers and letters are to be used (generally 6mm size) for identification of radiographs. Contract number, joint identification, source used, welder's identification and SFD are to be noted down on paper cover of radiograph.

6.21 Lead intensifying screens for front and back of the film should be used as per the above-referred ASME specification. The joint is to be marked with permanent mark A, B, C to identify the segments. For this a low stress stamp shall be used to stamp the pipe on the down streamside of the weld. For multiple exposures on pipes, an overlap of about 25-mm of film should be provided.

6.22 Radiography personnel with sufficient experience and certified by M/s BARC for conducting radiographic tests in accordance with safety rules laid down by Division of Radiological protection only have to be deployed. These personnel should also be registered with DRP / BARC for film badge service.

6.23 All arrangements for carrying out radiography work including dark room and air conditioner and other accessories shall be provided by contractor within the space allotted for office at his cost. As an alternative the contractor may deploy an agency having all above facilities and who are duly approved / accredited by BARC and / or other Regulatory authorities. Detailed particulars of such agencies will be submitted and got approved by BHEL Engineer before the actual deployment of agency for radiography work.

6.24 The contractor shall have a dark room fully equipped with radiography equipment, film (un-exposed), chemicals and any other dark room accessories. All radiography films shall be developed in the dark room at site.

6.25 Contractor shall note that 100% radiography will be done at the initial stages on all the piping welding joints. Subsequently radiographic inspection will be done on the basis of quality of welding. However minimum percentage of joints to be radio graphed shall not be less than the requirement of BHEL welding schedule/ IBR / Customer's requirements. The percentage may be increased depending upon the quality of joints and at the discretion of BHEL. Radiography on LP piping joints is not envisaged. However other NDT test as called for in the FQP including LPI, MPI and HT will have to be carried out.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

6.26 All the Radiographs shall be properly preserved and shall become the property of BHEL. They are to be reconciled with the work done, joints radiographed and submitted to BHEL / customer.

6.27 Since radioisotopes are being used, all precautions and safety rules as prescribed by BHEL/BARC/ Customer shall be strictly followed. BARC /DRP certificate to be provided before taking up the work.

6.28 Radiography of joints shall be so planned after welding, that the same is done either on the same day or next day of the welding to assess the performance of HP welders. If the performance of welder is unsatisfactory, he is to be replaced immediately.

6.29 Wherever radiographs are not accepted, on account of bad shot, joints shall be re-radio graphed and re- submitted for evaluation.

6.30 However, if the defect persists after first repair, further repair work followed with radiography shall be repeated till the joint is made acceptable. In case the joint is not repairable, the same shall be cut, re-welded and re-radio graphed at contractor's cost.

6.31 Heat treatment and radiography may be required to be carried out at any time (day and night) to ensure the continuity of the progress. The contractor shall make all necessary arrangements including labour, supervisors/ Engineer required for the work as per directions of BHEL.

6.32 The contractor shall assist BHEL Engineer in preparing complete field welding schedule for all the field welding activities to be carried out in respect of piping and equipment erected by him involving high pressure welding at least 30 days prior to the scheduled start of erection work at site. The contractor shall strictly adhere to such schedules.

6.33 The contractor shall deploy required number of H.P. welders to carry out the H.P. weld joints. The welding works should not be held up due to shortage / want of I.B.R./H.P. welders.

6.34 All welded joints shall be subjected to acceptance by BHEL Engineer.

6.35 The technical particulars, specifications and other general details of work shall be in accordance with BHEL welding, Heat treatment and NDE manuals or equivalent as decided by BHEL Engineer.

6.36 Contractor shall carryout Radiography as per welding Manual booklet applicable as per IBR, enclosed. However percentage radiography shown in the respective drawings shall be final and binding on the contractors.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

6.37 The field joints are to be radiographed and preheating and post weld heat treatment to be done as per BHEL procedure and manuals.

6.38 The percentage of Radiography are tentative, which may be increased depending upon the quality of joints at the discretion of BHEL.

6.39 Penetrometer as per ASME/ISO shall be used for all exposures. Lead numbers and letters (generally of 6mm size) are to be used for identification of radiographic contract No., joints identification, sources used welders identification, SFD used are to be noted down in the paper cover of radiography. Lead intensifying screens for front and back of the film shall be used as per the instructions of BHEL Engineer.

6.40 The weld joint is to be marked with permanent mark A, B, C, etc. to identify the segments. For this a low stress stamp shall be used to stamp the pipe on the down stream side of the weld. For multiple exposures on pipes, an overlap of about 25 mm of film shall be provided.

6.41 The contractor shall be fully equipped with radiography equipments, films, chemicals and other dark room facilities. There must be a number of radiographic personnel with sufficient experience and certified by BARC for field radiographic inspection. Further, the contractor must follow strictly the safety rules laid down by BARC, from time to time, contractor's radiographers shall also be registered with BARC for film badge service.

6.42 Contractor shall provide all skilled, unskilled work men required for the job, which will include Engineers, supervisors, operators, as required for timely and satisfactory execution of radiography work.

6.43 All the radiographs shall be properly preserved in air-conditioned rooms and shall become the property of BHEL.

6.44 Radiography of joints shall be so planned after welding that the same is done either on the same day or next day of the welding to assess the performance of high pressure welders. If the performance of the welder is unsatisfactory, he shall be replaced immediately.

6.45 The defects as pointed out by the Engineer shall be rectified immediately to the satisfaction of Engineer and Re-radiographed. The decision of Engineer regarding acceptance or otherwise of the joint shall be final and binding on the contractor.

6.46 Wherever radiographs are not accepted on account of poor exposure, joints shall be re-radiographed and new film submitted for evaluation. Radiographs shall be taken again on joints after carrying out repairs. However,

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

if the defect persists after first repair as per radiograph, carrying out radiography shall be repeated till the joint is made acceptable. In case the joint is not repairable, the same shall be cut, re-welded and re-radiographed at contractor's cost.

6.47 The contractor shall also be equipped for carrying out other NDT like liquid penetrant inspection, magnetic particle inspection, etc as and when required in the interest of work within the quoted rates.

6.48 For carrying out ultrasonic testing of welded joints of large size tubes and pipes, it will be necessary to prepare the surface by grinding to a smooth finish and contour as desired by BHEL Engineer. The contractor's scope of work include such preparation and no extra charges are payable for this.

6.49 It may also become necessary to adopt inter layer radiography / MPT / UT depending upon the site/technical requirement necessitating interruptions in continuity of the work and making necessary arrangements for carrying out the above work. The contractor shall take all this into account and quote the price inclusive of all such work and radiography.

6.50 The welded surface irrespective of place of welding shall be cleaned of slag and painted at the center with primer paint to prevent corrosion at no extra cost towards this.

6.51 All welders shall be tested and approved by BHEL Engineer before they are actually engaged on work though they may possess the required certificate. BHEL reserves the right to reject any welders without assigning any reason. The welder Identification code as approved by the BHEL Engineer shall be stamped by the welder on each joint done by them. The contractor will be responsible for the periodic renewal, retesting of the welders as demanded by BHEL.

2.6.52 BHEL Engineer is entitled to stop any Welder from the work if his work is unsatisfactory for any technical reasons or there is a high percentage of rejection of joints welded by him, which in opinion of the BHEL Engineer will adversely affect the quality of the welding though the Welders, has earlier passed the tests prescribed by BHEL Engineers. The welders having passed qualification tests do not relieve the contractor of a contractual obligation to check the welder's performance.

6.53 All charges towards testing of Welders for destructive and non destructive test, testing and approval of welders for engaging in the erection work shall be borne by the contractor.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

6.54 All welded joints shall be subjected to acceptance by BHEL Engineer.

6.55 The welding process, weld joint details, joint configuration and material specification may change to suit the design requirements. The contractors quoted rates shall be inclusive of each contingency. All welds involved in the erection of temporary pipe lines for hydraulic test, chemical cleaning, steam blowing etc to be carried out within the quoted rates. The number of joints to be welded as mentioned in the welding schedule consists of butt welds. All other welds viz attachment welds on pressure parts/non pressure parts, fillet welds in non pressure parts welding in the boiler and Rotating Machines has to be carried out by the bidder within quoted rates.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter –VII : Testing and Commissioning

7.0 TESTING, PRE-COMMISSIONING & COMMISSIONING AND POST COMMISSIONING

7.1 The Contactor shall carry out all the required tests and pre-Commissioning and commissioning activities required for their successful and reliable operation. These would include Air leak test of Boiler, Ducts, hydraulic test of boiler, chemical cleaning of piping and boiler, water washing, oil lushing of oil system etc. as instructed by BHEL using contractors own consumables, labour and scaffoldings etc. Air leak test on pressure parts preliminary to hydraulic test by compressed air shall also be carried out to check and rectify the various leakage and defects etc. All the chemicals required for carrying out these activities will be supplied by BHEL free of cost.

7.2 All required tests (Mechanical and electrical) indicated by BHEL and their clients for successful commissioning are included in the scope of these specifications. These tests / activities may not have been listed in these specifications. Specialized test equipment, if any, shall be provided by BHEL/ its client free of hire charges. However contractor has to take proper care of the equipment issued to him.

7.3 After completion of erection of furnace, ducts, a test shall be performed on the steam generator by the contractor to establish the gas tightness of the erected equipment from the outlet of fan through the steam generator up to stack.

7.4 All the tests may have to be repeated till all the equipment satisfy the requirement / obligation of BHEL at various stages. The contractor shall do all the repairs for site-welded joints arising out of the failure during testing.

7.5 The scope of pre-commissioning activities cover installation of all necessary equipment including temporary piping, supports, valves, blanking, pumps, tanks, with access platforms valves, along with accessories required for hydro test, chemical cleaning, steam blowing or for any other tests. The scope also covers the offsite disposal of effluents

7.6 All items / material required for conducting hydraulic test, alkali boil out, acid cleaning/EDTA cleaning if required, steam blowing etc., will be supplied by BHEL / its customer. However, servicing, dismantling and returning of the same to stores is the responsibility of the contractor who is erecting the equipment / piping. The contractor may note that no separate payment shall be released for any temporary works that are to

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

be carried out for conducting precommissioning and commissioning tests. Bidders are advised to include expenses on temporary works along with the rates being quoted by them. Broadly the work on temporary systems will be as under:

- Erection etc. of all temporary piping including valves, tanks, effluent pumps, electrical control panel and cabling along with insulation and supports for steam blowing; chemical cleaning and effluent disposal are to be carried out as part of work. Contractor will be responsible for their operation and any servicing required during the pre-commissioning activities. All the pumps, motors and electrical control panels/ switch gear, valves and actuators will be furnished to the contractor after due servicing.
- □ Erection of blanks etc and applying putty, temporary fixtures on ducts required for conducting air tightness test are to be installed. (Putty to be procured by the contractor).

The above is only a broad breakup of the temporary works. The engineer at site will make final break up. His decision will be final and binding by all the parties.

Dismantling of the temporary equipment, piping and return the same to the BHEL stores is also included in the scope of work

7.7 Commissioning of the boiler will involve trial run of all the equipment erected. The boiler has to be lighted up for refractory drying, alkali boil out, acid cleaning/ EDTA cleaning if required, passivation, preservation, steam blowing and floating of safety valves. Flushing of all the lines by air, oil or steam as the case may be, trial run of the boiler, servicing of valves, commissioning of ELECTRICAL/C&I equipments included in the scope of work and any other works incidental to commissioning are to be carried out. Contractor shall supply manpower round the clock.

7.8 It shall be the responsibility of the contractor to preserve the boiler as per BHEL's requirement. The required N₂ will be provided by BHEL for boiler preservation if required.

7.9 It shall be the responsibility of the contractor to provide various categories of workers in sufficient numbers along with Supervisors during pre commissioning, commissioning and post commissioning of equipment and attending any problem in the equipment erected by the contractor till handing over. The contractor will provide necessary consumables, T&Ps, IMTEs etc., and any other assistance required during this period. Association of BHEL's / Client's staff during above period will not absolve contractor from above responsibilities.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

7.10 It shall be specifically noted that the above employees of the contractor may have to work round the clock along with BHEL Engineers and hence overtime payment by the contractor to his employees may be involved. The contractors finally accepted rates should be inclusive of all these factors also.

7.11 In case, any rework is required because of contractor's faulty erection, which is noticed during pre-commissioning and commissioning, the same has to be rectified by the contractor at his cost. If any equipment / part is required to be inspected during pre-commissioning and commissioning, the contractor will dismantle / open up the equipment / part and reassemble / redo the work without any extra claim.

7.12 During commissioning, opening / closing of valves, changing of gaskets, Realignment of rotating and other equipment, attending to leakage and adjustments of erected equipment may arise. The finally accepted price /rates shall also include all such work.

7.13 The contractor shall make all necessary arrangements including making of temporary closures on piping / equipment for carrying out the hydro-static testing on all piping, equipment covered in the specification at no extra cost.

7.14 The valves will have to be checked, cleaned or overhauled in full or in part before erection, after acid /chemical cleaning, steam blowing and during commissioning as may be necessary.

7.15 In case any defect is noticed during tests, trial runs and commissioning such as loose components, undue noise or vibration, strain on connected equipment etc., the contractor shall immediately attend to these defects and take necessary corrective measures. If any readjustment and re-alignment are necessary, the contractor at his cost shall do the same as per Engineer's instructions including repair, rectification and replacement work. The parts to be replaced shall be provided by BHEL.

7.16 All temporary supports shall be removed in such ways that pipe supports are not subjected to any sudden load. During hydraulic testing of pipes, all piping having variable spring type supports shall be held securely in place by temporary means while constant spring type support hangers shall be pinned or blocked solid during the test.

7.17 The contractor shall carry out cleaning and servicing of valves and valve actuators prior to pre-commissioning tests and / or trial operations of the plant. A system for recording of such servicing operations shall be developed and maintained in a manner acceptable to BHEL Engineer to ensure that no valves and valve actuators are left un-serviced. Wherever necessary as required by

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

BHEL Engineer, the contractor shall arrange to lap / grind valve seats.

7.18 Cleaning and servicing of all the filters / strainers, in the system shall be done by the contractor within the accepted price. All oils and greases to be filled in the main equipments as first fill and subsequent topping ups will be furnished by BHEL.

7.19 At the time of each inspection, the contractor shall take note of the decisions/ changes proposed by the Engineer and incorporate the same at no additional cost.

7.20 Hydraulic testing pump for Boiler shall be provided by BHEL free of hire charges. The testing pump will be issued to the contractor in working conditions. Installation, electrical connection, erection, testing and dismantling and returning to BHEL stores, etc, shall be carried out by the contractor as part of this work without any extra charges. In case any servicing of the test pump is to be done during the course of the test, the contractor shall provide the necessary labour for the same and spares will be arranged by BHEL.

7.21 All pressure parts and some of the Low Pressure parts shall be subjected to hydraulic test as per the Standard / statutory requirements. The contractor shall make necessary arrangements and other services to carry out the required tests as per the instructions and directions of the BHEL Engineers.

7.22 Contractor at his cost shall lay all necessary temporary piping, install the pumps, blanks, valves required for the test, pressure gauges etc. Required pipes, valves, plates etc., will be given by BHEL. Temporary piping, pumps, valves, flanges, blanks etc shall be removed by him and returned to BHEL. All thermo well points are to be seal welded, with plug in position. All Temperature Element points are to be provided with blanks and welded. Necessary blanks will be provided by BHEL.

7.23 Welding and stress relieving of temporary blanks or suitably fixing temporary blank flanges with gaskets and fasteners and welding and providing suitable deaeration / venting / draining points with valves as per BHEL Engineer's instructions, for performing hydro-test of piping and other equipments is within the scope of work. Gaskets, valves, fasteners will be provided free of cost by BHEL. Contractor shall cut steel blanks from steel provided within quoted rate.

After completion of hydraulic test, welded blanks shall be cut and removed and weld burrs ground finished and cavities / scars of cutting weld filled and ground as per BHEL Engineer's instructions. Seal welding of thermo-wells and blanks of Temperature Element are to be removed by grinding only after steam blowing.

TECHNICAL CONDITION OF CONTRACT E/T/C & Handing over of Auxiliary Boiler 3x660 MW Lalitpur, STPP

7.24 The hydraulic testing of the equipment and piping, covered under this scope of work has to be carried out by the contractor as per instructions of BHEL Engineer. The contractor shall provide all facilities required for hydraulic testing. Before hydraulic test, all the hangers are to be locked by locking pin/plate or temporary support. After completion of Hydraulic test, these are to be removed and all hangers are to be readjusted if required, to the desired valve within quoted valve.

7.25 All the above tests shall be repeated till all the equipment satisfy the requirement of BHEL to their customer. As far as the hydraulic pressure test is concerned and same shall be conducted to the satisfaction of Boiler inspector wherever applicable. Any rectifications required shall have to be done / redone by the contractor at his cost.

7.26 Transportation of oil drums from customer's BHEL's stores, filling of lubricants and filling of oil for flushing and first filling and subsequent topping up during commissioning and post commissioning is included in the scope of this contract. The contractor shall have to return all the empty drums to the customer / BHEL stores. Similarly transport of chemicals for various precommissioning activities / processes mentioned in the above clauses and returning of remaining and / or the empty containers of the chemicals to customer / BHEL stores is the responsibility of the contractor.

7.27 Replacing / cleaning of filters of the erected equipments and piping system etc. during pre-commissioning / commissioning stage are within the scope of work.

7.28 Contractor shall lay the temporary pipelines with fittings, accessories and erection / commission pumps, tanks, valves, fittings, hangers and supports and other installations as instructed by BHEL, Engineer for the purpose of chemical cleaning / alkali flushing / steam blowing / steam washing / steam flushing / water flushing / water washing / oil flushing etc. of piping and other equipments are in the scope of work. Necessary, materials for this will be provided by BHEL. Overhauling / cleaning / servicing of valves, pumps, fittings in temporary system and chemical/acid cleaning tanks etc prior to the above operations / activities will also be carried out by the contractor at his cost. All the chemicals will be supplied by BHEL free of cost.

7.29 Chemical cleaning (Acid cleaning of piping if required /EDTA cleaning if required/alkali flushing) will involve the installation of temporary piping, valves, cutting of some of the existing valves, placing the rubber, wedges in the valves, gagging of valves, and installation of temporary tanks for chemical and for mixing. Necessary temporary access platforms to mixing tank are to be made by the contractor. The dissolving tank, neutralizing tank etc. required for

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

acid pickling/chemical cleaning will have to be fabricated by the contractor with in the quoted rate. Required materials will be provided by BHEL free of cost. Chemicals for chemical cleaning will be provided by BHEL and handling of chemicals & other consumables and other connected activities has to be carried out by the contractor at their cost. All other consumable would have to be provided by the contractor.

7.30 Laying of insulation of this temporary piping, tanks are to be carried out by the contractor within quoted rate, and required insulation materials will be provided by BHEL. The welding joints in the temporary pipe lines for acid cleaning and steam blowing are to be welded by HP welders only. Required NDT tests are to be carried out for the above joints within quoted as per customer / BHEL requirement.

7.31 Contractor shall lay all necessary electric cables and switches etc. required for the hydraulic test and other tests, flushing etc., and maintain the system till the tests are completed satisfactorily.

7.32 During steam blowing operations the required manpower shall be arranged by the contractor as per the instructions of BHEL Engineer within the quoted rates. The manpower for the above operation may be required round the clock if necessary. The contractor shall carry out the above operation as per the instructions of BHEL Engineer within the quoted rates.

7.33 During the initial stages of work, trenches for draining water may not be available for alkali flushing or mass flushing for discharging and draining the system and piping. Necessary low point drains and temporary piping for this will have to be erected by contractor from materials provided by BHEL.

7.34 After the chemical cleaning/alkali boil out has been successfully completed, removing all temporary piping, fittings of tanks etc. checking all the valves for any accumulation of foreign materials, welding the valves, pipes which were cut and cleaning, re-fixing as per BHEL Engineer's instructions is within the scope of work/specification.

7.35 Contractor may have to replace old/damaged gaskets / packing etc. for equipments and the same shall be carried out by contractor as per requirement. Materials will be given by BHEL.

7.36 In case any erection defect is detected during various tests / operations trial runs as detailed above such as loose components undue noises or vibration strain on connected equipment steam or oil or water leakage etc. the contractor shall immediately attend these defects and take necessary

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

corrective measures. The parts to be replaced shall be provided by BHEL free of cost. If the insulation is to be removed to attend any of the defects the cost of removal and reapplication of insulation should be borne by the contractor.

7.37 Necessary scaffolding and approaches for conducting the above shall also be within the scope of the contract.

7.38 The contractor shall carryout any other test as desired by BHEL Engineer on erected equipment covered under the scope of this contract during testing, precommissioning, commissioning, and operation, to demonstrate the completion of any part or whole work performed by the contractor.

7.39 During this period, though BHEL's and customer's staff will also be associated in the work, the contractor's responsibility is to make available resources in his scope till such time the commissioned units are taken by the customer.

7.40 Contractor shall cut / open works if needed, as per BHEL engineer's instructions during commissioning for inspection, checking and make good the works after inspection is over. This contingency shall be included within the quoted value. During commissioning opening of valves, changing of gaskets, attending to leakages, minor modification / rectification works may arise. The contractor has to carry out these works at his cost by providing required manpower in all the three shifts. In case any rework is required because of contractor's faulty erection and which is noticed during commissioning the same has to be rectified by the contractor at his cost.

7.41 Contractor to provide necessary commissioning assistance from precommissioning state onwards and up to continuous operation of the unit & handing over to customer. The category of personnel to be as per site requirement and to meet the various pre-commissioning and commissioning programmes made to achieve the schedule agreed with customer.

7.42 Commissioning of the boiler will involve trial runs of all the equipments erected, lighting up of the boiler for refractory drying, blowing of the steam lines, floating of safety vales, flushing of all the lines by air, oil or steam as the case may be, trial run of the fans, Lub. Oil pumps, servicing of all equipments like dampers, actuators, valves etc. and any other works incidental to commissioning. Contractor shall provide required workers along with supervisors with all the requisite tools round the clock and material for all these works, which shall form part of the work to be done.

7.43 During this period though the BHEL's/Clients staff will also be associated in the work, the contractor's responsibility will be to arrange required tools,

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

man and plants till such time the commissioned units are taken over by BHEL's client.

7.44 After floating of safety valves, the commissioning activities and trial operations will continue upto handing over of the unit. It shall be the responsibility of the contractor to provide various categories of workers in sufficient numbers as per the work requirement along with supervisors including necessary consumable tools etc., during this period. The rate quoted shall indicate all these contingencies also. The various categories of workers required for pre-commissioning, commissioning and post-commissioning activities are as follows:

- a. Pipe fitters
- b. Millwright Fitters
- c. HP& structural welders
- d. Riggers
- e. Unskilled workers
- f. Supervisors
- g. Electricians
- h. Any other category of workers as may be required.

Further in addition to the above, contractor has to arrange the following minimum manpower exclusively for assisting BHEL commissioning engineers during stabilization and trial operation period. This manpower will be directly controlled by BHEL commissioning engineers.

1. One supervisors per shift for three shifts
2. One fitter per shift for three shifts
3. Three helpers per shift for three shifts

It shall be specifically noted that the above employees of the contractor may have to work round the clock along with BHEL commissioning Engineers and hence, overtime, may be involved. The contractor's quoted rate shall be inclusive of all these factors also.

7.45 During commissioning any improvement or rectification due to design requirement is involved and if the contractor is asked to carry out the job, they shall be paid at man-day rates. For this purpose, daily labour report indicating therein nature of work carried out, consumables used, etc. shall be maintained by contractor, and got signed by BHEL Engineer every day. It is not obligatory on the part of BHEL to get the works done by the contractor. They can employ any other agency if they so desire at that time.

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

7.46 Hanger adjustment / re adjustment during erection, before and after Hydraulic Test, before and after steam blowing, are to be carried out by the contractor within Quoted Rate.

7.47 The contractor has to provide required man power assistance during pre-commissioning and commissioning checks of motor operated valves, actuators, control valves etc without any extra charges.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter- VIII : Final Painting

8.0 FINAL PAINTING

8.1 The scope of work shall also include supply and application of final painting as required and specified for the components of boiler and its auxiliaries. Before commencement of final painting contractor has to obtain written clearance from BHEL/Customer for effective completion of surface preparation.

8.2 Any equipment which has been given the shop coat of primer shall be carefully examined after its erection in the field and shall be treated with touch up coat of red oxide primer wherever the shop coat has been abraded, removed or damaged during transit / erection, or defaced during welding.

8.3 Required paints, thinner other consumable such as wire brush, brush etc shall have to be arranged by the contractor at their own cost.

8.4 In the case of steel fabricated items, raw steel after fabrication has to be cleaned and subsequent painting to be carried out.

8.5 All the exposed metal parts of the equipments including piping, structures, hangers etc., wherever applicable after installation unless otherwise specified the surface protected, are to be first painted with at least one coat of suitable primer and required number of finish coats as indicated in the Painting Specification in TCC which matches the shop primer paint used, after thoroughly cleaning the dust, rust, scales, grease oil, and other foreign materials by wire brushing scrapping and chemical cleaning and the same being inspected and approved by BHEL engineers for painting. Afterwards the above parts shall be finished with as per the instructions of BHEL/Customer official.

8.6 Mostly the equipment / items/ components will be supplied with one coat of primer paint and one coat of finish paint. However during storage and handling, the same may get peeled off / deteriorate. All such surfaces are to be thoroughly cleaned and to be touch up painted with suitable approved primer and finish paint matching with shop paint / approved final colour. Besides above two coats of approved primer paint is to be applied on all the bare / unpainted surfaces. The gas cut stubs would require being ground and rounded.

8.7 Paint shall be applied by brushing or by spray painting as per the instruction of BHEL Engineer. Spray painting gun and compressed air

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

arrangement ash to be made by the contractor himself. It shall be ensured that brush marks are minimum.

8.8 Before applying the subsequent coats the thickness of each coat shall be measured and recorded with BHEL / Customer. The instrument for checking the thickness of coat is to be procured by the contractor and should be calibrated after periodical intervals.

8.9 Primer & finish paint shall be of reputed paint supplier approved by BHEL. The quality of the finish paint shall be as per the standards of IS or equivalent as approved by BHEL / Customer. Paint used shall be stirred frequently to keep the pigment in suspension. Paint shall be of the ready mix type in original sealed containers as packed by the paint manufacturer. No thinners shall be permitted. Paint manufacturers instructions shall be followed in method of application, handling, drying time etc.,

8.10 The actual colour to be applied shall be approved by the customer before starting of actual painting work. The scope of painting includes application of colour bands, lettering the names of the systems equipments; tag Nos of valves, marking the directions of flow and other data required by BHEL within the quoted rate.

8.11 All surfaces shall be thoroughly cleaned, free from scales, dirt and other foreign matter. Each coat shall be applied in an even & uniform film free from lumps, streaks, runs, sags and uncoated spots. Each coat (Primer, intermediate, finish) shall have a minimum thickness of DFT in microns as per painting specification and the dry film thickness of finish paint shall not be less than the specified. Necessary instrument for measuring the thickness of paint applied is to be arranged by the contractor. (Refer Painting Schedule for Required DFT)

8.12 No paint shall be applied when the surface temp is above 55 deg. Centigrade or below 10 deg. Centigrade, and when the humidity is greater than 90% to cause condensation on the surface or frost / foggy weather.

8.13 The paints are to be purchased from BHEL / Customer approved agencies only. The tenderers have to keep in mind that paints of reputed makes like BERGER, ASIAN, SHALIMAR; JENSON & NICHOLSON are only permitted. Before procurement of paint the contractor has to obtain the clearance from BHEL authorities. Finish coat paint No of coat and DFT shall be as indicated in the painting specification enclosed in this tender / relevant BHEL document/ customer's specifications. The painting specification which is forming part of this tender as in TCC shall be used as guidelines to be followed.

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

Chapter-IX : Annexure

WEIGHT SCHEDULE OF Auxiliary Boiler

Annexure-I

SUMMARY OF WEIGHTS

Tentative weight to be erected for a Auxiliary Boiler:

a) Auxiliary Boiler Package: 407 MT

Product Group (PG) Wise Weight Schedule For a Auxiliary Boiler

SL NO	PRODUCT GROUP	DESCRIPTION OF PG	APPROX WEIGHT (IN MT)
1.	04	BOILER DRUMS	30.9
2.	06	WATER WALL PANELS	16.6
3.	07	CIRCULATION SYSTEM COMPONENTS	20.3
4.	09	SEAL BOXES	0.8
5.	10	SUPER HEATER HEADERS	0.9
6.	11	SUPER HEATER COILS & WALLS	0.8
7.	12	SUPER HEATER COMPONENTS	3.2
8.	19	ECONOMISER	0.2
9.	20	SOOT BLOWERS	0.8
10.	21	SOOT BLOWER AND SOOT BLOWING SYSTEM	1.2
11.	24	BOILER INTEGRAL PIPING & FITTINGS	7.1
12.	28	MAN HOLES AND FURNACE OPENINGS	1.5

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

13.	30	FIXING COMPONENTS FOR MAIN BOILER LINING AND INSULATION	0.7
14.	31	BOILER SKIN CASING	2.1
15.	32	FIXING COMPONENTS FOR BOILER AUXILIARIES INSULATION	2.9
16.	33	LINING AND INSULATION MATERIALS LRBM 100 KG/M3	69.3
17.	35	BOILER SUPPORTING STRUCTURE	58.7
18.	36	Galleries and Stair Ways	23.8
19.	37	Boiler Outer Casing	1.6
20.	39	External Structures (Supporting Structures for ID System)	14.9
21.	41	Oil and Gas Burners, Ignitors and Scanners	2.3
22.	42	Oil and Gas System	3.0
23.	48	Ducts, Dampers & Expansion Joints	17.1
24.	56	Radial Fans	24.0
25.	80	External Pipe Lines	23.2
26.	81	Tanks and Vessels (Pipe Lines)	43.7
27.	87	Chimney(35 m)	30.8
28.	99	Lifting Tackles	5
		TOTAL (IN MT)	407

**TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP**

NOTE:

- 1. Above details are only to give a general idea to the contractor to quote the rates as per rate schedule. Besides PGs indicated above, there is likelihood of addition of new PGs for release of some items integral to Boiler. Contractor is required to carryout such PGs also within their applicable tonnage rate. The decision of BHEL regarding inclusion of new / additional PG in Boiler will be final & binding on the contractor.**
- 2. Certain items like insulation material, cladding, valves etc. may be supplied by other suppliers / BHEL units like PEM etc. and not included in PGMA applicable for Boiler system mentioned above . Such items that are also to be erected as per tonnage rates for the respective systems as mentioned above & as directed by BHEL. No extra claim shall be entertained on this account.**

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

ANNEXURE-A
UNPRICED RATE SCHEDULE

Item No.	DESCRIPTION OF WORK	Total Value In Rupees (In figures and words "A")
1.0	Total Lumpsum price for Handling, Erection, Testing, commissioning, Trial Operation & Handing over of Auxiliary Boiler including Final Painting including supply of paints at 3X660 MW LPGCL Lalitpur STPP, U.P. for 407 MT (As per tender specification)	

Note:

The rates of different items for the entire scope shall be worked out & awarded as per Annexure "B".

TECHNICAL CONDITION OF CONTRACT
E/T/C & Handing over of Auxiliary Boiler
3x660 MW Lalitpur, STPP

ANNEXURE-B

Calculation ratio for different items based upon the total value as per rate Schedule

SI No.	Description of work	Qty in MT	Rate per MT in Rupees (In figures and words)
A	SERVICE PORTION		
1	Erection, Testing and Commissioning of 60 TPH Auxiliary Boiler with all its accessories, instrumentations, Electricals, application of insulation including supply and application of final painting at 3X660 MW LALITPUR STPS.	407	$\frac{A*98.5}{100*407}$
B	SUPPLY PORTION		
2	Supply of all paints, primers & other consumables required for complete painting of boiler and Aux. As per Tender specification (Equivalent to 1.5% of total quoted value)	LumpSum	$\frac{A*1.5}{100}$

NOTE:

1. The quantities indicated above are tentative and are liable to vary depending upon the site requirement. The contractor has to supply / erect / commission all the items indicated by BHEL for achieving the milestones and completion of work.
2. Separate order shall be issued for service items (A) and Supply items (B).
3. Evaluation of bids shall be done on total price against this Rate Schedule.
4. Quoted value for supply portion will remain fixed with no compensation for variation in quantities, escalation of rates etc during the contract period.
5. In case of any mismatch in Rate and amount on Price discrepancy, the same will be dealt as per clause No. 1.4 of GCC.