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# NOTICE INVITING TENDER

(Document No PS:MSX:NIT)

Bharat Heavy Electricals Limited



Ref: BHEL/NR/SCT/SINGRAULI/ESP/R&amp;M/1031

Date: 24/05/16

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**NOTICE INVITING E-TENDER (NIT)**  
**BIDDER TO SUBMIT OFFERS ON PORTAL**  
<https://bheleps.buyjunction.in>

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To

Dear Sir/Madam

**Sub : NOTICE INVITING E-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	<b>BHEL/NR/SCT/SINGRAULI/ESP/R&amp;M/1031</b>
ii	Broad Scope of job	<b>RENOVATION AND RETROFITTING OF ESP FOR ANY TWO UNITS OF 5 X 200 MW AT SSTPS SINGRAULI</b>
iii	<b>DETAILS OF TENDER DOCUMENT</b>	
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> <span style="float: right;">Applicable</span>
b	Volume-IB	<i>Special Conditions of Contract (SCC)</i> <span style="float: right;">Applicable</span>
c	Volume-IC	<i>General Conditions of Contract (GCC)</i> <span style="float: right;">Applicable</span>
d	Volume-ID	<i>Forms and Procedures</i> <span style="float: right;">Applicable</span>
e	Volume-II	<i>Price Schedule (Absolute value).</i> <span style="float: right;">Applicable</span>
iv	Issue of Tender Documents	<ol style="list-style-type: none"> <li><b><u>Sale from BHEL PS Regional office at :</u></b>  <b>Start : 24/05/16 , Time :0900HRS</b>  <b>Closes: 3/06/16 , Time :1200 HRS</b></li> <li>From BHEL website (<a href="http://www.bhel.com">www.bhel.com</a>) and <a href="https://bheleps.buyjunction.in">https://bheleps.buyjunction.in</a>  Tender documents will be available for downloading from website till due date of submission</li> </ol> <span style="float: right;">Applicable</span>
v	DUE DATE & TIME OF OFFER SUBMISSION	<b>Date : 3/06/16 , Time : 1500 HRS</b> <b>Place : on <a href="https://bheleps.buyjunction.in">https://bheleps.buyjunction.in</a></b> <span style="float: right;">Applicable</span>
vi	OPENING OF TENDER	<b>Date : 3/06/16</b> <i>(within 2 hours of the latest due date and time of offer submission).</i> Notes: <span style="float: right;">Applicable</span>

		(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. <b>However it being an e-tender it shall be opened on online</b>	
vii	EMD AMOUNT	Rs 2,00,000/-	Applicable
viii	COST OF TENDER	Rs 2,000/-	Applicable
ix	LAST DATE FOR SEEKING CLARIFICATION	Date:30/05/16 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)	Mrs. Pravin Tripathi, IA & AS (Retd.) D-243, Anupam Gardens, Lane IB, Neb Sarai, Sainik Farms, New Delhi – 110 068	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) & portal <a href="https://bheleps.buyjunction.in">https://bheleps.buyjunction.in</a> <b>and not in the newspapers</b> . 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. **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. As this tender is an E-Tender and no paper bids will be accepted therefore the scanned copy of the Demand Draft or the Cash Receipt issued by BHEL PSNR should be uploaded in the E procurement portal. Hard Copy of the demand draft should reach BHEL PSNR HQ Noida before the due date and time of bid submission. BHEL shall not be responsible for postal or any other delays in this regard.
- 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. As this tender is an E-Tender and no paper bids will be accepted therefore the scanned copy of the Demand Draft/Pay Order should be uploaded in the E procurement portal. Hard Copy of the Demand Draft/Pay Order should reach BHEL PSNR HQ Noida before the due date and time of bid submission. BHEL shall not be responsible for postal or any other delays in this regard. For other details and for 'One Time EMD' please refer General Conditions of Contract.

- 5.0 **Procedure for Submission of Tenders:** This is an E-tender floated online through our E-Procurement Site <https://bheleps.buyjunction.in>. The bidder should respond by submitting their offer online only in our e-Procurement platform at <https://bheleps.buyjunction.in>. Offers are invited in two-parts only.

### **Documents Comprising the e-Tender**

The tender shall be submitted online ONLY EXCEPT Tender Cost and EMD (in physical form) as mentioned below:

#### **a. Technical Tender (UN priced Tender)**

All Technical details(eg. Eligibility Criteria requested (as mentioned below)) should be attached in e-tendering module, failing which the tender stands invalid & may be REJECTED. Bidders shall furnish the following information along with technical tender (preferably in pdf format):

- i. Earnest money Deposit (EMD) furnished in accordance with NIT Clause 4.0. Alternatively, documentary evidence for claiming exemption as per clause 29 of NIT.
- ii. Technical Bid (without indicating any prices).

#### **b. Price Bid:**

- i. Prices are to be quoted in the attached Price Bid format online on e-tender portal.
- ii. The price should be quoted for the accounting unit indicated in the e-tender document.
- iii. Note: It is the responsibility of tenderer to go through the Tender document to ensure furnishing all required documents in addition to above, if any. Any deviation would result in REJECTION of tender and would not be considered at a later stage at any cost by BHEL.
- iv. A person signing (manually or digitally) the tender form or any documents forming part of the contract on behalf of another shall be deemed to warrantee that he has authority to bind such other persons and if, on enquiry, it appears that the persons so signing had no authority to do so, the purchaser may, without prejudice to other civil and criminal remedies, cancel the contract and hold the signatory liable for all cost and damages.
- v. A tender, which does not fulfil any of the above requirements and/or gives evasive information/reply against any such requirement, shall be liable to be ignored and rejected.
- vi. In case offer is sent through hard copy/fax/telex/cable/electronically in place of e-tender, same shall not be considered.

### **DO NOT'S**

Bidders are requested NOT to submit the hard copy of the Bid. In case offer is sent through hard copy/fax/telex/cable/electronically in place of e-tender, the same shall not be considered. **Also, uploading of the price bid in prequalification bid or technical bid may RESULT IN REJECTION of the tender.**

### **Digital Signing of e-Tender**

Tenders shall be uploaded with all relevant PDF/zip format. The relevant tender documents should be uploaded by an authorized person having Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION digital signature certificate (DSC).

#### **The Requirement:**

1. A PC with Internet connectivity &
2. DSC (Digital Signature Certificate)( **Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION**)

BHEL has finalized the e-procurement service Provider:-

#### **M/s M Junction services Limited, Kolkata**

Godrej Water Side, 3rd Floor, Tower-1, Plot-V, Block - DP  
Sector - V, Salt Lake, Kolkata-700091, West Bengal, INDIA

The contact details of the service provider are given below:

- 1) First level: MJ Helpdesk : 033-66011717, [eps.customercare@mjunction.in](mailto:eps.customercare@mjunction.in)
- 2) Second Level: Bhaskar Chakraborty: 8584008205, [bhaskar.chakraborty@mjunction.in](mailto:bhaskar.chakraborty@mjunction.in),  
Santosh Kumar: 9717149600, [santosh.kumar@mjunction.in](mailto:santosh.kumar@mjunction.in)
- 3) Third Level: Rimi Ghosh: 9650044156, [rimi.ghosh@mjunction.in](mailto:rimi.ghosh@mjunction.in)

1. Customer care Help Desk of M/s MJUNCTION SERVICES LIMITED, Kolkata:  
Tel ~ 033 - 66011717 (From 9.30 am to 5.30 pm),  
Mob - 91633 48283 - 86/ 85840 08116 (From 5.30 pm to 8.30 pm)  
HELPDESK email: [eps.customercare@mjunction.in](mailto:eps.customercare@mjunction.in),  
The process of utilizing e-procurement necessitates usage of **DSC (Digital Signature Certificate) (Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION)** and you are requested to procure the same immediately, if not presently available with you. Please note that only with DSC, you will be able to login the e-procurement secured site and take part in the tendering process.

2. The contact details of the DSC Certifying Authority as given below

1	<b>GNFC</b>	<a href="http://www.ncodesolutions.com">www.ncodesolutions.com</a>
2	<b>e-Mudhra</b>	<a href="http://www.e-Mudhra.com">http://www.e-Mudhra.com</a>
3	<b>Safescrypt</b>	<a href="http://www.safescrypt.com">www.safescrypt.com</a>

Vendors are also requested to go through seller manual available on [www.bheleps.buyjunction.in](http://www.bheleps.buyjunction.in)

#### 6.0 Not Used

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 Bidders:**

**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:
  - a)  $P_1, P_2, P_3, P_4, P_5, \dots, P_N$  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  $P_T = P_1 + P_2 + P_3 + P_4 + \dots + P_N$ )
  - b) Number of Months ' $T_1$ ' for which 'Monthly Performance Evaluation' as per relevant formats, should have been done in the 'Period of Assessment' for the corresponding similar package  $P_1$ . Similarly  $T_2$  for package  $P_2$ ,  $T_3$  for package  $P_3$ , etc for the tendered scope. Now calculate cumulative total months ' $T_T$ ' for total similar Packages ' $P_T$ ' for all Regions (ie  $T_T = T_1 + T_2 + T_3 + T_4 + \dots + T_N$ )
  - c) Sum ' $S_1$ ' of 'Monthly Performance Evaluation' Scores ( $S_{1-1}, S_{1-2}, S_{1-3}, S_{1-4}, S_{1-5}, \dots, S_{1-N}$ ) for similar package  $P_1$ , for the 'period of assessment' ' $T_1$ ' (ie  $S_1 = S_{1-1} + S_{1-2} + S_{1-3} + S_{1-4} + S_{1-5} + \dots + S_{1-N}$ ). Similarly  $S_2$  for package  $P_2$  for period  $T_2$ ,  $S_3$  for package  $P_3$  for period  $T_3$ , 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 (ie ' $S_T = S_1 + S_2 + S_3 + S_4 + S_5 + \dots + S_N$ ')
  - d) **Overall Performance Rating ' $R_{BEHL}$ ' 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 ( $\Sigma$ ) of columns (iii) to (ix)
2	Number of Months for which 'Monthly Performance Evaluation' as per relevant formats should have been done in	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	...	$T_N$	Sum ( $\Sigma$ ) of columns (iii) to (ix)  = $T_T$

	the 'period of assessment for corresponding similar Package (as in row 1)								
3	Monthly performance scores for the corresponding period (as in Row 2)	S <sub>1-1</sub> , S <sub>1-2</sub> , S <sub>1-3</sub> , S <sub>1-4</sub> , ... S <sub>1-T1</sub>	S <sub>2-1</sub> , S <sub>2-2</sub> , S <sub>2-3</sub> , S <sub>2-4</sub> , ... S <sub>2-T2</sub>	S <sub>3-1</sub> , S <sub>3-2</sub> , S <sub>3-3</sub> , S <sub>3-4</sub> , ... S <sub>3-T3</sub>	S <sub>4-1</sub> , S <sub>4-2</sub> , S <sub>4-3</sub> , S <sub>4-4</sub> , ... S <sub>4-T4</sub>	S <sub>5-1</sub> , S <sub>5-2</sub> , S <sub>5-3</sub> , S <sub>5-4</sub> , ... S <sub>5-T5</sub>	.. ... ... ...	S <sub>N-1</sub> , S <sub>N-2</sub> , S <sub>N-3</sub> , S <sub>N-4</sub> , ... S <sub>N-TN</sub>	-----
4	Sum of Monthly Performance scores of the corresponding Package for the corresponding period (as in row-3)	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	...	S <sub>N</sub>	Sum ( $\Sigma$ ) of columns (iii) to (ix)  = S <sub>T</sub>

ii) Calculation of Overall 'Performance Rating' (R<sub>BHEL</sub>) 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<sub>BHEL</sub>' shall be calculated subject to availability of 'performance scores' for at least 6 'package months' in the order of precedence below:

- 'Period of Assessment.
- 12 months preceding the cut-off month
- 24 months preceding the cut-off month
- 36 months preceding the cut-off month

In case, R<sub>BHEL</sub> 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<sub>BHEL</sub>) at Power Sector Regions,:

Sl no	Overall Performance Rating (R <sub>BHEL</sub> )	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<sub>Max</sub> = (R<sub>BHEL</sub> - 60) divided by corresponding value of 'L'  
i.e. (R<sub>BHEL</sub> - 60)/L

Note:

- In case the value of P<sub>Max</sub> results in a fraction, the value of P<sub>Max</sub> is to be rounded off to next whole number
- For R<sub>BHEL</sub> = 60, P<sub>Max</sub> = '1'
- For R<sub>BHEL</sub> ≥ 80, there will be no upper limit on P<sub>Max</sub>

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.I)

IV. **Explanatory note:**

- a) 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
- b) 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)

- c) 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/LOA 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'.

In case assessment of 'FIRST TIMER' cannot be done for 9 months due to **completion of work in less than 9 months**, the 'FIRST TIMER' tag will be removed and the vendor shall be considered as 'NEW VENDOR' for any new tender/s, provided the average score for which Performance Evaluation has been done, is not less than 60%.

- 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<sub>BHEL</sub>'** 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 through e-procurement portal , 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 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 NOT USED.

18.0 An email intimation regarding e - price bid opening shall be sent to all technocommercially qualified parties .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/Upload 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/ hold list as also the offer of the bidders, who engage the services of the banned/ hold firms, shall be rejected. The list of **banned/ hold firms** is available on BHEL web site [www.bhel.com](http://www.bhel.com).

27.0 BHEL reserves the right to go for **Reverse Auction (RA)** instead of opening the 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. The abridge version of extant 'Guidelines for suspension of business dealings with suppliers/ contractors' is available on [www.bhel.com](http://www.bhel.com) on "**supplier registration page**".

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 – 4 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.

MSEs shall be exempted from payment of tender fee.

MSEs shall be exempted from payment of earnest money at the time of tender deposit. However, there is no exemption of security deposit submission.

30.0 The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

31.0 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:-**

- (i) Annexure-1: Pre Qualifying criteria.
- (ii) Annexure-2: Check List.
- (iii) Annexure-3: Modification / Deletions in Standard Clause of General Conditions of Contract (GCC) or Special Conditions of Contract (SCC)
- (iv) Annexure-4: Chartered Accountant certificate for MSMED
- (v) Annexure-5 General Terms and Conditions of Reverse Auction (RA)
- (vi) Annexure-6: Authorization of representative who will participate in the online Reverse Auction Process
- (vii) Annexure-7: Feedback form
- (viii) Annexure-8: Integrity Pact
- (ix) Other Tender documents as per this NIT.

**ANNEXURE - 1****PRE QUALIFYING REQUIREMENTS**

<b>S. No.</b>	<b>Name and Description of qualifying criteria</b>	<b>Bidders claim in respect of fulfilling the PQR Criteria</b>
<b>A</b>	<b>Submission of Integrity Pact duly signed.</b>	Applicable
<b>B</b>	<b>Assessment of Capacity of Bidder to execute the work as per clause assessment of capacity of NIT</b>	Applicable
<b>C</b>	<b>FINANCIAL CRITERIA</b>	Applicable
<b>C-1</b>	<b>TURNOVER</b> Tenderers should have an average annual turnover minimum of INR 339.00 Lacs of last three Financial Years (2012-2013, 2013-2014, 2014-15). Bidders shall submit audited annual accounts (balance sheets and profit & loss account) in support of this.	
<b>C-2</b>	<b>NETWORTH</b> Net worth of the Bidder based on the latest Audited Accounts as furnished for 'C-1' above should be positive	
<b>C-3</b>	<b>PROFIT</b> Bidder must have earned cash profit in any one of the three Financial Years as applicable in the last three years defined in 'C-1' above based on latest Audited Accounts.	
<b>D</b>	<b>TECHNICAL CRITERIA</b>	Applicable
	Bidder who wish to participate should have 'Executed' works of similar nature of at least One Boiler/ ESP of one unit of 100MW or higher Or One STG of 190MW or higher, under direct order of BHEL Or R&M/Retrofitting of one ESP of 100 MW of higher involving minimum 800 Tonnes in a single unit during last 7 years, as on the date of opening of Technical Bid.	
<b>E</b>	<b>APPROVAL OF CUSTOMER</b> Note: Names of bidders who stand qualified after compliance of criteria A to D shall be forwarded to customer for their approval. Price bid of only those bidders shall be opened who are approved by customer	Applicable
<b>F</b>	<b>Consortium criteria</b>	Not Applicable

**Explanatory Notes for QR**

1. For D , 'Executed' means  
"BOILER LIGHT UP" in respect of Boiler & Aux and ESP  
"SYNCHRONISATION" in respect of STG.  
The bidder should have achieved the above criteria, even if the total contract has not been completed or closed.
2. In case audited financial statements have not been submitted for all the three years as indicated at c 1) above ,then the applicable audited statements submitted by the bidders against the requisite 3 years, will be averaged by three.
3. Boiler means HRSG or WHRB or any other types of Steam generator
4. If the Qualifying work is executed in the last seven years period, as specified above, even if it has been started earlier, the same will also be considered meeting the qualifying requirements.
5. Relevant documents, meeting above requirements at C, D shall be submitted by bidders. Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as given above along with all annexure.

BIDDER SHALL SUBMIT ABOVE PRE-QUALIFICATION CRITERIA FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT INCLUSIVE OF WORK ORDER AND WORK COMPLETION CERTIFICATE ETC IN THE RESPECTIVE ANNEXURES 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 <b>PRE QUALIFICATION CRITERIA</b> (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/ <del>Not Applicable</del>	YES/NO
8	Copy of PAN Card	Applicable/ <del>Not Applicable</del>	YES/NO
9	Whether all pages of the Tender documents including annexures, appendices etc are read understood and signed	Applicable/ <del>Not Applicable</del>	YES/NO
10	Integrity Pact	Applicable/ <del>Not Applicable</del>	YES/NO
11	Declaration by Authorised Signatory	Applicable/ <del>Not Applicable</del>	YES/NO
12	No Deviation Certificate	Applicable/ <del>Not Applicable</del>	YES/NO
13	Declaration confirming knowledge about Site Conditions	Applicable/ <del>Not Applicable</del>	YES/NO
14	Declaration for relation in BHEL	Applicable/ <del>Not Applicable</del>	YES/NO
15	Non Disclosure Certificate	Applicable/ <del>Not Applicable</del>	YES/NO
16	Bank Account Details for E-Payment	Applicable/ <del>Not Applicable</del>	YES/NO
17	Capacity Evaluation of Bidder for current Tender	Applicable/ <del>Not Applicable</del>	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****Modification/ Deletions in Standard Clause of General Conditions of Contract (GCC)& Special Conditions of Contract (SCC)**

<b>Modification/ deletion in Price Variation Compensation Clause no. 2.17 of GCC:</b>	
a)	<b>Clause No. 2.17.5 of GCC shall be modified as below:-</b> Base date shall be the calendar month of the schedule completion date of the contract. Schedule Completion date shall be the actual start date plus delivery period as defined in chapter no 10.0 of TCC (Part-I)
b)	<b>Clause No. 2.17.9 shall be modified as:-</b> PVC shall be applicable only for the extended period of contract (if any) after the schedule completion date. However, the total Quantum of Price Variation amount payable/recoverable shall be regulated as follows:
c)	For the portion of backlog attributable to the contractor, no PVC shall be paid.
d)	For the period of Force Majeure, the PVC (if applicable) will be limited to the indices applicable at the beginning of the force majeure period.
e)	For the period of Force Majeure, the PVC (if applicable) will be limited to the indices applicable at the beginning of the force majeure period.
f)	For the portion of backlog attributable to BHEL, the PVC will be as per the indices applicable for the respective months
g)	The total amount of PVC shall not exceed 15% of the cumulatively executed contract value. Executed contract value for this purpose is exclusive of PVC, ORC, Supplementary/Additional Items and Extra works.
<b>Modification/ deletion in Overrun Compensation Clause no. 2.12 of GCC:</b>	
<b>Clause No. 2.12 of GCC shall be modified as below:-</b>	
a)	In case due to reasons not attributable to the contractor, the work gets delayed and the scheduled completion gets extended, the contractor shall not be entitled for any overrun compensation for a period of first 2 (Two) months after the contractual completion date. In case the scheduled completion time gets extended beyond 2 (Two) months as stated above, the contractor shall be considered for payment of fixed over run charges, @ Rs.100,000/- (Rupees One Lakh only) per month on receipt of advance notice intending to claim over run and on fulfilment of following conditions:-  1. The reasons for delay in completion of work are not attributable to contractor and other than Force Majeure conditions. 2. Contractor achieves the targets fixed during the overrun period
b)	Once the claim of overrun charges is admitted no other compensation except PVC whatsoever (like for delays in receipt of materials, availability of fronts etc.) will be entertained.  <b>However, the overrun charges shall be limited to 10% of the contract value.</b>
<b>Deletion in following Clauses of SCC:</b>	
a)	Following clauses shall be deleted from SCC: Clause No. 4.1.2, 4.1.4 & 4.2.2 shall not applicable for this tender and shall be deleted.

**All other terms & conditions of GCC & SCC shall remain same.**

**ANNEXURE - 4****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.

**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	

**ANNEXURE – 7****Feedback Form: From where did you get information reg. this tender**

1	NEWSPAPER ADVERTISEMENT (NAME)	
2	BHEL WEBISTE (TENDER NOTIFICATION)	
3	CENTRAL PUBLIC PROCUREMENT PORTAL OF GOVERNMENT OF INDIA (CPP PORTAL)	
4	EMAIL COMMUNICATION FROM BHEL	
5	ANY OTHER SOURCE	

## INTEGRITY PACT

### **Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi – 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

### **and**

\_\_\_\_\_, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

### **Preamble**

The Principal intends to award, under laid-down organizational procedures, contract/s for

\_\_\_\_\_  
\_\_\_\_\_. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

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## **Section 1 – Commitments of the Principal**

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-
- 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
- 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
- 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

## **Section 2 – Commitments of the Bidder(s)/ Contractor(s)**

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved

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in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

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### **Section 3 – Disqualification from tender process and exclusion from future contracts**

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors". framed by the Principal.

### **Section 4 – Compensation for Damages**

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/Bid Security.
- 4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

### **Section 5 – Previous Transgression**

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

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## **Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors**

- 6.1 The Bidder(s)/ Contractor(s) undertake(s) to obtain from all subcontractors a commitment consistent with this Integrity Pact and report Compliance to the Principal. This commitment shall be taken only from those sub-contractors whose contract value is more than 20 % of Bidder's/ Contractor's contract value with the Principal. The Bidder(s)/ Contractor(s) shall continue to remain responsible for any default by his Sub-contractor(s).
- 6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
- 6.3 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

## **Section 7 – Criminal Charges against violating Bidders/ Contractors /Sub-contractors**

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

## **Section 8 –Independent External Monitor(s)**

- 8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

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- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality.
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- 8.5 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or heal the situation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- 8.6 The Monitor will submit a written report to the CMD, BHEL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- 8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC / PC Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the

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Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.10 The word 'Monitor' would include both singular and plural.

### **Section 9 – Pact Duration**

9.1 This Pact begins and shall be binding on and from the submission of bid(s) by bidder(s). It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

### **Section 10 – Other Provisions**

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/ contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

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For & On behalf of the Principal  
(Office Seal)

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For & On behalf of the Bidder/ Contractor  
(Office Seal)

Place-----

Date-----

Witness: \_\_\_\_\_

(Name & Address) \_\_\_\_\_

\_\_\_\_\_

Witness: \_\_\_\_\_

(Name & Address) \_\_\_\_\_

\_\_\_\_\_

Rev 01  
1<sup>st</sup> June  
2012

# TECHNICAL CONDITION OF CONTRACT (TCC)

(Document No. PS: MSX:TCC)

BHARAT HEAVY ELECTRICALS  
LIMITED



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

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TECHNICAL CONDITION OF CONTRACT (TCC) VOL I

TENDER NO BHEL/NR/SCT/SINGRAULI/ESP/R&M/1031

FOR  
RENOVATION & RETROFITTING OF ELECTROSTATIC PRECIPITATORS FOR ANY TWO UNITS  
OF 5X200 MW , STAGE-I , AT NTPC, SINGRAULI SUPER THERMAL POWER STATION  
SHAKTINAGAR, SONEBHADRA.(U.P)

PART-I OF TCC



**Bharat Heavy Electricals Limited**  
**(A Govt. of India Undertaking)**  
**Power Sector –Northern Region,**  
**Plot No. 25, Sector-16 A,**  
**Distt. GautamBudh Nagar, Noida-201301**

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**TECHNICAL CONDITIONS OF CONTRACT (TCC)**

**CHAPTER-I: PROJECT INFORMATION**

<b>1.0 Project information</b>		
<b>Sl. No.</b>	<b>Title</b>	<b>Description</b>
1.1	Name of the Owner	<b>NATIONAL THERMAL POWER CORPORATION LTD. (NTPC)</b>
1.2	Address	SINGRAULI SUPER THERMAL POWER STATION  SHAKTINAGAR  SONEBHADRA (U.P.)  231222
1.3	Existing	2x200 MW
1.4	Nearest Railway station	SHAKTINAGAR (3 KM) on East Central Railway
1.5	Nearest Road	VARANASI (206 KM)
1.6	Nearest City	VARANASI (206 KM)
1.7	Nearest Airport	VARANASI (206 KM)
1.8	Highest Temperature	46 deg C
1.9	Lowest Temperature	1deg C
1.10	Elevation	301 meters

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER-II: PREAMBLE

2.0

PREAMBLE

2.1

NTPC Singrauli super thermal power project located in Sonbhadra district in Uttar Pradesh comprising of 5 units of 200 MW (stage-I-units 1 to 5) each and 2 units of 500 MW (stage-II- Units 6&7) each. The stage-I & stage-II Units are supplied by BHEL and commissioned in 1983-84 and 1986-87 respectively.

The stage-I and stage-II Units are provided with BHEL make ESPs to control the particulate emission. The stage-I ESP (of type 2x 2FAA-6X32-11190-2) was originally designed for an outlet emission of 300 mg/Nm<sup>3</sup> and stage-II ESP (of type 4xFAA-7X36-4x48125-2) was originally designed for an outlet emission of 367 mg/Nm<sup>3</sup>. Due to deterioration in the coal quality & change in the operating condition of the boiler, the present level of emission is more than the specified norms by Pollution Control Board. Therefore now, NTPC intends to take up Renovation & Retrofitting of existing ESPs to meet the latest environmental norms of UP state, to reduce the emission level less than 50 mg/Nm<sup>3</sup>.

**FOR STAGE-I, ANY TWO UNITS OF 5X200 MW**

The existing ESP's casing will be modified to accommodate taller electrodes of latest design after dismantling the existing complete internals, retaining the existing supporting structures, hoppers, casing, etc.,. In addition to that three numbers of new fields are to be added in series.

Existing ducting system will be modified/replaced/relocated suitably at ESP inlet and outlet.

All the internals of existing ESPs will be replaced with the internals of new design. The existing 6 field internals are replaced with 5 fields of new improved design internals by changing field height from 9.0 m to 13.5 m, changing field length to 3.0 & 3.75 meter with 750 mm wide collecting electrode, 400 mm pitch design, and by superior design of tumbling hammer type rapping mechanism.

Also the existing ESP casing is extended to have two numbers of fields in series between APH outlet and ESP inlet and one new field in series at outlet side of ESP before ID fan, thus totally ESP will have 8 fields in series. The final ESP configuration will be 2 no. of Passes (Four gas paths) per ESP (per boiler).

**Shut Down of Units for renovation works shall be provided by NTPC as per their suitability. It may be possible that shut down of both the units are made available at a time or after some period of interval. According to availability of shut down contractor has to make their arrangement for deployment of suitable numbers of manpower, consumables & T&Ps for entire period of execution of work. No compensation on account of early/delay shut down of units shall be claimed by contractor for entire period of contract. Agency has to deploy separate manpower, consumables & T&Ps till completion of work. Total completion period for each unit shall be 16 month from the date of start of work for each unit independently.**

## TECHNICAL CONDITIONS OF CONTRACT (TCC)

### CHAPTER-III: GENERAL SCOPE OF WORK

<b>3.0</b>	<b>GENERAL SCOPE OF WORK</b>
3.1	The intent of this specification is to provide services for execution of the project according to most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for the proper and efficient services towards installation of the plant shall not relieve the contractor of the responsibility of providing such services / facilities to complete the work or portion of work awarded to him. The quoted / accepted rates / lump sum price shall deem to be inclusive of all such contingencies.
3.2	The contractor shall carry out the work in accordance with standard practices / codes / instructions / drawings / documents / specification supplied by BHEL from time to time.
3.3	The work shall conform to dimensions and tolerances given in various drawings and documents that will be provided during erection. 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 affected from contractor's bills towards expenditure incurred including BHEL's usual overhead charges.
3.4	<p>Following shall be the responsibility of contractor and have to be provided within finally accepted rates / prices:</p> <ul style="list-style-type: none"> <li>➤ Provision, as required of all types of labour, supervisors, engineers, watch and ward of the material in his custody at site, tools &amp; tackles, calibrated inspection, measuring and testing equipment as specified and otherwise required for the work, consumables for renovation, retrofitting, erection, testing and commissioning including handling of materials ( transporting, stacking, preservation of material received from BHEL store at site) .</li> <li>➤ Proper out-turn as per BHEL plan and commitment.</li> <li>➤ Completion of work as per BHEL Schedule.</li> <li>➤ Good quality and accurate workmanship for proper performance of the equipment.</li> <li>➤ Repair and rectification.</li> <li>➤ Preservation / Re-conservation of all components during erection / commissioning till handing over.</li> <li>➤ Disposal of scrap &amp; garbage at regular interval to the scrap yard within the TPS.</li> </ul>
3.5	<p>BHEL-Power Sector (NR) is ISO 9001-2008, ISO 14001-2004, OHSAS 18001-2007 certified company. Quality of work, to customer's satisfaction and system requirements is the essence of these certifications. The contractor in all respects will organize his work, systems, environment, process control documentation, tools, plant, inspection, measuring and testing equipments etc. as per instructions of BHEL engineer.</p> <p>The contractor shall also comply with applicable legislation and regulations with regards to Health, Safety and Environmental aspects for minimizing risk arising from occupational health &amp; safety hazards, controlling pollution and wastage. The Contractor will be responsible for Health, Safety &amp; Environment management (HSE) at site for the construction activities to be carried out by them in accordance with requirements as per SCC and elsewhere in this tender document. The contractor, who is awarded the work, shall have to sign an MOU w.r.t implementation of HSE conditions with BHEL (Safe Work Practices).</p>
3.6	In order to meet the environmental concerns it is expected that the contractor shall plant, protect and maintain at least 50 trees or equivalent in the vicinity of the project as per the available space and as per the advice of Engineers by contractor. In case no area is earmarked for tree plantation, the contractor may take up any other equivalent environment related project after due approval of the BHEL Engineer. In case, trees are not planted or other equivalent environment related project is not taken up by the contractor for any reason whatsoever, recovery at the rate of Rs. 500/- (Rupees Five Hundred Only) per tree will be made from the final bill of the contractor.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## CHAPTER-IV: BROAD SCOPE OF WORK

### 4.0 BROAD SCOPE OF WORK

#### 4.1 Service Portion (ESP)

**DISMANTLING OF EXISTING INTERNALS & OTHER COMPONENTS, DISPOSAL OF THE SAME TO SCRAP YARD, TRANSPORTATION OF MATERIALS FROM STORAGE YARD TO SITE OF WORK, ILLUMINATION IN ESP & CONTROL ROOM AREA AND CARRYING OUT MODIFICATIONS AS REQUIRED, ERECTION, TESTING & COMMISSIONING, APPLICATION OF INSULATION/CLADDING, PAINTING FOR THE WORK OF RENOVATION & RETROFITTING OF EXISTING ELECTROSTATIC PRECIPITATORS & DUCTS FOR ANY TWO UNITS OF 5X200 MW SETS STAGE-I, AT NTPC, SINGRAULI SUPER THERMAL POWER STATION SHAKTINAGAR(U.P.) BUT NOT LIMITED TO FOLLOWING:**

- Dismantling of all the internals and associated items required for renovation & retrofitting works and their disposal to scrap yard of existing ESP as per instruction of BHEL/NTPC.
- Disposal of scrap/garbage/ insulation as per instruction of BHEL/NTPC to scrap yard.
- Shifting of dismantled reusable items to yard provided by CUSTOMER/BHEL.
- Dismantling of OPM from ESP outlet ducts & shifting to another location for reuse.
- House keeping & area cleaning on daily basis at workplace.
- Checking, dressing, chipping, leveling of all foundations.
- Taking the materials from the project storage yard / stores / sheds to erection site.
- Erection two new fields at inlet and one new field at outlet side of existing ESP in series and replacement of at the internals with new in existing ESP.
- Pre-assembly, modification, relocation, restoration, renovation, retrofitting, erection, alignment of various equipments.
- Welding as per drawing or as per instruction of BHEL engineer up to their satisfaction wherever required.
- Insulation and finish painting including arrangement of paints etc.
- Rain water test, air tightness test and Gas Distribution test.
- Testing of all electrical equipment & charging of ESP field.
- Unit trial operation, resolving any deficiencies observed and handing over.
- Installation, testing, other pre-commissioning tests and commissioning of all items and assistance like providing manpower, erection of temporary platform etc. as required during PG test of the unit.
- Illumination/Lighting arrangement for the entire ESP & control room area. Supply for lighting distribution board shall be tapped from Main LT MSB for ESP.
- Handing over of ESP to customer after completion of work in all respect.
- Providing all type of assistance required during checking/inspection and further preparation/submission of protocols/logsheets duly signed from BHEL/Customer to site office.

The work to be carried out under the scope of this specification covers work of dismantling, material handling/transportation at site, temporary storage prior to erection, cleaning, preservative painting, renovation, retrofitting, erection, re-erection, alignment, welding, leveling, adjustment, chipping & leveling of foundation, welding of Insulation hooks, plates, insulation of all mechanical equipment, works of all electrical, cabling and C&I, final painting, etc., Gas distribution test, Gas tightness test, all pre-commissioning tests, start-up and initial run of individual equipment, final commissioning, initial run of total ESPs and other items covered in this tender etc. for NTPC Singrauli SSTPS stage-I of any two units of 5x200 MW up to handing over of the unit to BHEL/their customer including PG test of the unit.

The work shall conform to dimensions and tolerances given in various drawings, manuals, FQP and other documents that will be provided during erection. If any portion of works is found to be defective in workmanship not conforming to drawings/documents or other stipulations, the contractor shall dismantle and re-do the work duly replacing the defective materials at their own cost, failing which recoveries, as determined by BHEL, shall be effected from contractor's bills.

Items dismantled have to be removed, transported and disposed in specified areas within the plant boundary as per instruction of BHEL Engineer.

The work to be carried out under this scope covers the complete work for renovation and retrofitting of electrostatic precipitator (ESPs), Ducts, Supports, Approach platforms, Structures, Gates, Actuators Insulation, Painting, testing, commissioning and handing over of Unit setc of stage-I, of any two units of 5x200 MW at NTPC SINGRAULI SUPER THERMAL POWER STATION and terminals points shall be as per Annexure-A7. The work to be carried out under the scope of this specification shall broadly comprise of but not to be limited to the above.

**Work is to be carried out in sequence as mentioned below**

**A. PRE-SHUTDOWN ACTIVITIES**

1. Pre-assemblyworks.
2. Modification, strengthening & dismantling of duct supports.
3. Erection oftemporary arrangementsfor lifting purpose .
4. Identification of cables.
5. Laying of new cable trays and cables with tags for the ESP pass to be kept in circuit.
6. Re routing of cable trays, cables, pipe lines (except termination) to the extent possible.
7. Shifting of ESP control room new panels.

**OTHER ITEMS AS DIRECTED BY BHEL REQUIRED FOR RENOVATION OF ESP NOT SPECIFIED AS ABOVE.**

**B. SHORT SHUTDOWN ACTIVITIES**

Shortshutdown period for each unit shall be provided by NTPC as per their suitability for facilitating

1. Dismantling, erection and modification of ducts& supports.
2. Dismantling, erection/relocation of gatesat ESP inlet & outlet.
3. Dismantling, erection of actuators and re-erection/restoration of actuatorsplatforms.
4. Cable termination of actuators, testing, commissioning & trail runs of gates.
5. Replacement of old Panels with new panels in ESP control room.
6. Termination of old cables( old cable are to be reused to make ESP operative, however these cable are to be replaced during renovation & retrofitting work in each pass) with new panels.
7. Testing, commissioning, trail run, field charging of existing ESP after completion of work as prescribed above.

**Above activities must be completed in short shut down period. After completion of works as specified above during short shut down period ESPto be handed over to customer in operating condition. Further depending upon availability of ESP foundations (for extension of new fields at ESP inlet & outlet) a single pass (two gas paths) will be provided for renovation works for limited period.**

**OTHER ACTIVITIES AS DIRECTED BY BHEL REQUIRED FOR SHORT SHUTDOWN WORKS OF ESP NOT SPECIFIED AS ABOVE**

**C. SHUTDOWN ACTIVITIES**

**RENOVATION OF ESPBY ISOLATING ONE PASS (TWO GAS PATH) AT A TIME WHEN THE UNIT IN OPERATION OF FIRST UNIT**

**As per availability of ESP foundations, shut down of one pass (two gas path) will be provided for renovation & retrofitting works for limited period of time. Agency has to deploy sufficient resources to complete the work within schedule time. On completion of renovation,retrofitting,erection, testing & commissioning of new additional fields & existing fields of one ESP pass (two gas paths) in all respects, the pass will be taken in service and then only next pass (two gas paths) will be provided for retrofitting / R&M works.**

**4.2 Supply Portion (ESP)**

Procurement of Paints

Contractor has to supply all paints, primers and other consumables for painting of relevant area of ESP of both Units. BHEL reserves the right to reject any material not found satisfactory. Contractor shall produce manufacturer's test certificate.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER-IV: BROAD SCOPE OF WORK

	Note:
	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.
	Paints, primers etc to be procured from NTPC/BHEL approved suppliers.
	Contractor has to supply paints required for painting the total scope of work as envisaged in service portion of contractor.
	<b>Separate order shall be issued for Service portion(ESP) and Supply Portion(paints).</b>

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**CHAPTER-V: SCOPE OF WORK FOR DISMANTLING**

<b>5.0</b>	<p><b>SCOPE OF WORK FOR DISMANTLING</b></p> <p>Dismantling of insulation, cladding sheets, duct &amp; duct supporting structures as per requirement, funnels, GD housing, gable plates, penthouse, HVRs, cable, cable trays, all the panels in control room, outer roof, inner roof, complete rapping system, all types of electrodes, suspension system, insulator panels, roof beams/TR beam, ESP transformer etc.</p> <p><b>Only ESP casing, hoppers &amp; supporting structures, stair case, platforms &amp; galleries are to be retained.</b></p> <p><b>OTHER ITEMS AS DIRECTED BY BHEL REQUIRED FOR RENOVATION OF ESP NOT SPECIFIED AS ABOVE.</b></p> <p>Many of the items of ESP are not in scope of supply hence existing materials are to be reused in each unit after modification, straightening, strengthening, alignment &amp; painting. Extra care should be taken during dismantling works, minimum wastage shall be permitted. It will be the responsibility of contractor to identify the material that can be reused during dismantling works in each unit and make it usable within final quoted rate. Transporting of the entire dismantled scrap and reusable items to yard provided by CUSTOMER/BHEL.</p>
5.1	<p><b>Total approx. weight to be dismantled will be 5600 MT.</b></p> <p><b>NOTE:-</b></p> <ul style="list-style-type: none"> <li>➤ Dismantling of all the internals &amp; other item shall be done from top of the ESP as the hoppers &amp; casing shells/structures are to be retained. Contractor has to make all necessary &amp; sufficient lifting arrangement like derricks, winches &amp; cranes (telescopic tire mounted &amp; tower cranes) for dismantling/erection work. In each unit only one pass (two gas paths) is proposed to be available for renovation &amp; retrofit work at a time. Work can only be taken up after complete isolation of passes. It is responsibility of contractor to ensure complete isolation of passes before start of any work by closing gates &amp; if required some additional arrangement should be done for isolation within quoted rate.</li> <li>➤ Dismantling/strengthening of duct supporting structures at inlet &amp; outlet and other items obstructing the access of crane approach or movement of crane/trailer/hydra has to be removed and restored by contractor after completion of work without any extra cost &amp; as per direction of BHEL/NTPC engineer.</li> <li>➤ <b>Pipe lines, cables &amp; other structures obstructing work or movement/approachability of cranes are to be dismantled &amp; restored/rerouted within the quoted rate.</b></li> </ul>
	<p><b>Separate order shall be issued for Service portion(ESP) and Supply Portion(paints).</b></p>

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CHAPTER-VI: SCOPE OF WORK FOR RENOVATION & ERECTION (MECHANICAL)

6.0 SCOPE OF WORK FOR RENOVATION & ERECTION (MECHANICAL)

6.1

Shifting of materials from storage area to site. Erection of all the internals of the existing ESP shall be done from top of ESP. For loading of collecting electrodes special arrangement should be done for their loading from top of ESP. Suitable Cranes, derricks & winches may be used for loading purpose. At a time only one pass (two gas paths) will be provided under shut down, and other pass (two gas paths) will be remain in service of same unit. On completion of erection & commissioning of existing fields & new additional fields in all respects, charging of field will be done & on successful completion the pass will taken in service and then only next pass (two gas paths) will be provide for retrofitting & R&M works.

The existing 6 field internals are replaced with 5 fields of new improved design internals by changing field height from 9.0 m to 13.5 m, changing field length to 3.0 & 3.75 meter with 750 mm wide collecting electrode, 400 mm pitch design, and by superior design of tumbling hammer type rapping mechanism.

Also the existing ESP casing is extended to have two numbers of fields in series between APH outlet and ESP inlet and one new field in series at outlet side before ID fan, thus totally ESP will have 8 fields in series.

Existing inlet and outlet ducts and its gates, actuators and expansion joint will be replaced after and before the new fields respectively. Existing ducting system will be retained, relocated/erected and modified suitably at the ESP inlet and outlet to the extent necessary.

**Erection of all materials supplied from BHEL MUs as per drawings/ instruction of BHEL engineers but not limited to:**

- Replacement of all the internals in existing fields.
- Complete erection of additional fields two new fields at inlet and one new field at outlet side by extending the casing, hopper including supporting structure with bearings, casings, all internals, all rapping mechanisms, Hoppers with SS liners, approach platforms, HVRs sets and handling system, all electrical and C&I items.
- Erection of inlet & outlet funnels, GD and gas screens, replacement of inlet/outlet duct and Guillotine gates at both inlet and outlet of ESP passes.
- Erection of duct supporting structure. Replacement/ strengthening the existing ESP supporting structure.
- Erection/laying of all cables, panels in ESP control rooms, all electrical and C&I items.
- Water washing system for ESP and hoppers along with all piping valves and nozzles etc.
- Modification & strengthening of existing duct support columns at inlet outlet by introducing brackets etc to support ESP ducting & new ID bus duct.
- Modification/Change in location of Actuators & Drives with electrical relocation.
- Rerouting of pipelines between boiler and ESP inlet
- Modification of tower type stair at inlet side by trimming up to rapping platform
- Modification to make cut out, etc in existing ESP control room to position ESP panels & auxiliary panels for new fields.
- Arranging the air in leakage test materials, test instruments & conducting air leak test for all passes.
- Application of insulation wherever required.
- Existing supports & platforms/stairs to be retained wherever feasible.
- Illumination/ Lighting arrangement for the entire ESP & control room area. Supply for lighting distribution board shall be tapped from Main LT MSB for ESP.

**OTHER ITEMS AS DIRECTED BY BHEL REQUIRED FOR RENOVATION OF ESP NOT SPECIFIED AS ABOVE.**

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER-VII: SCOPE OF WORKFOR RENOVATION& ERECTION (ELECTRICAL)

7.0

**SCOPE OF WORK FOR RENOVATION & ERECTION (ELECTRICAL)**

**Electrical and C&I Equipment:**

Panels.,Floor trenches for cable routing,Cables new – LT Control, Power and instrumentation,Insulators (shaft, support & Bushing),Disconnecting switch,Start stop Push button stations,Geared Motors,Junction boxes,ALI,STATCON,Erection of all new electrical and C&I items including microprocessor based ESP management and control system, opacity monitors, ALIs etc.,Safety interlocks system.,Laying of PVC armoured control cable from panel to field mounted equipments. Erection of service transformer and high voltage transformer rectifiers, Erection of cable trays and tray supports. Installation of above and ground earthing. Installation of one set of instruments like pressure gauges for the system. Installation of all pneumatic actuators including pneumatic cylinders, solenoid valves, and pneumatic accessories limits switches etc. Relaying of instrument air pipes to various valves and instruments form the terminal points onward as required. Testing and commissioning of the ESP's. Illumination/ Lighting arrangement for the entire ESP & control room area. Supply for lighting distribution board shall be tapped from Main LT MSB for ESP. Commissioning & trail run of rapping system. Commissioning, charging and trail of ESP fields. Assistance in performing Air leak, GD & PG test.

**OTHER ITEMS AS DIRECTED BY BHEL REQUIRED FOR RENOVATION OF ESP NOT SPECIFIED AS ABOVE.**

**After completion of renovation, retrofitting, erection, testing & commissioning of new additional fields & existing fields of one ESP pass ( two gas paths) in all respects, the pass will be taken in service and then only next pass (two gas paths) will be provided for retrofitting / R&M works.**

7.1

The details of equipments to be erected under this work are generally as per the weight schedule given in Annexure-A1. These details are approximate and meant only to give a general idea about the magnitude of the work involved, actual quantum and type of equipments will be based on the erection documents, which will be furnished in the course of erection.

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 equipments 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. NTPC 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

**Total approx weight to be erected will be 5300 MT.**

**NOTE:**

Due to confined space, there may be most of the areas being non-approachable by crane. Agency has to use improvised methods for dismantling and assembly /erection of various equipment, components etc. to complete the erection of new ESP & retrofitting work. These methods may include tying of ropes through existing structures /equipment and other available structures etc. At some locations, such structures are not available and crane also cannot approach. In such cases, derrick arrangement to be made for dismantling and erection. Bidders are strongly advised to visit the site to assess the possibility of using alternate arrangements apart from crane. No separate payment shall be made for any such arrangements used during the execution of the contract. All safety precautions have to be taken for such alternate arrangements and no damage should be caused to the existing equipment, structure, customer property etc.

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CHAPTER-VIII: FACILITIES TO BE PROVIDED BY BHEL/NTPC TO CONTRACTOR

<b>8.0</b>	<b>FACILITIES TO BE PROVIDED BY BHEL/NTPC TO CONTRACTOR</b>
8.1	<p>BHEL/NTPC shall provide limited open space for office and store/ workshop at site free of rental charge. It is the responsibility of the contractor to construct sheds, provide all utilities like electricity, drinking water etc at site, as a part of his scope of work within the accepted rates.</p> <p><b>Raw Water will be provided at one point by BHEL/NTPC from the water pipe line / source at plant premises / plant. Electricity for office will be provided at one point as decided by BHEL/NTPC. Energy Meter for electricity will have to be provided by the Contractor at his own cost. All safety regulations are to be followed by the contractor.</b></p> <p>Construction power will be provided at one point near the site free of charge by BHEL / customer. Further distribution will have to be made by the contractors at their own cost. Accordingly, required energy meter, all cables, fuses, distribution boards, switches, switchboards, bus bars, ear thing arrangements, protection devices e.g. ELCB if any, and any other installation as specified by statutory authority, client in this regard, for drawl of construction power shall be arranged by the contractor <b>at his own cost.</b> Obtaining approvals, payment of necessary fees, duties etc towards the clearance of such installations, prior to their being put to use or as may be specified, shall be the responsibility of the contractor.</p> <p>In case of non-availability of customer supplied power, it is the responsibility of the contractor to make alternative arrangements. Essential welding jobs shall not be stopped on account of main construction power failure.</p> <p>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.</p>
8.2	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.
8.3	On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc shall be dismantled and leveled 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 recovered from the contractor along with prevailing overheads. The decision of BHEL Engineer in this regard shall be final.

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CHAPTER-IX: FACILITIES TO BE PROVIDED BY CONTRACTOR

9.0	<b>FACILITIES TO BE PROVIDED BY CONTRACTOR FOR EXCLUSIVELY USE OF BHEL FOR ANY TWO UNITS 5X200 MW</b>
9.1	<p>The contractor under this contract shall provide 160 Man-months by the contractor exclusively for use by BHEL.</p> <ul style="list-style-type: none"><li>➤ Qualified computer operators for office work. (34 Man months)</li><li>➤ Skilled workers for working in site, store, office and colony. (63 Man months)</li><li>➤ Unskilled workers for working in store, office and colony. (63 Man months)</li></ul> <p>Persons so deployed shall have to work in extended hours whenever required. Workmen provided as per the above provisions shall be fully trained and experienced in the nature of work for which they are deployed.</p> <p><b>In case contractor fails to provide the above mentioned services, BHEL shall have the right to hire these services from other agencies at the risk and cost of the contractor along with overheads. In case these services are not utilized for any reason whatsoever, fully or partly, recovery at the average rate of Rs 10000.00 per man month for the categories given plus 10% will be made from the final bill of the contractor.</b></p> <p><b>Contractor under this contract shall make site office/ room near to work site for BHEL's engineer for seating capacity of 5- 6 engineers. Site office to be furnished reasonably suitable for BHEL &amp; customers supervisory staff.</b></p>

**TECHNICAL CONDITIONS OF CONTRACT (TCC)**

**CHAPTER-X: TIME SCHEDULE**

Retrofitting and Renovation of ESPs for any two units of 5x200 MW Units, Stage-I Singrauli Super Thermal Power Station, NTPC Limited. Completion Period: 16 Months for each unit

<b>SL. No.</b>	<b>Activity</b>	<b>Duration (Days)</b>	<b>Remarks</b>
1.	Pre Shut Down activities before shut down of First Unit	<b>35</b>	Modification, Strengthening & Dismantling of duct supports wherever is possible, rerouting of pipes, cables, trenches, pre assembly works.
2.	Shut Down activities during first shut down of First Unit	<b>25</b>	Erection of gates, Modification of ducts, Isolation of passes, dismantling work, termination of cable, pipes.
3.	Renovation of ESP for both passes by isolating one pass at a time when the unit in operation of First Unit	<b>385</b>	Dismantling, Erection and commissioning of passes one by one
4.	Shut Down activities during second shut down of First Unit	<b>35</b>	GD test, PG test and taking the unit on full load
<b>Total work completion period</b>		<b>480</b>	16 Months
1.	Pre Shut Down activities before shut down of Second Unit	<b>35</b>	Modification, strengthening & Dismantling of duct supports wherever is possible, rerouting of pipes, cables, trenches, pre assembly works.
2.	Shut Down activities during first shut down of Second Unit	<b>25</b>	Erection of gates, Modification of ducts, Isolation of passes, dismantling work, termination of cable, pipes.
3.	Renovation of ESP for both passes by isolating one pass at a time when the unit in operation of Second Unit	<b>385</b>	Dismantling, Erection and commissioning of passes one by one
4.	Shut Down activities during second shut down of Second Unit	<b>35</b>	GD test, PG test and taking the unit on full load
<b>Total work completion period</b>		<b>480</b>	16 Months

**Note:**

The contractor is required to **commence the work within 07 days from the date of issue of letter of intent** unless BHEL decides to fix any other later date.

Entire scope of work as detailed in tender specification **shall be completed within 16 months for each unit from** the scheduled date of start of work as per the programs / milestones indicated by BHEL from time to time.

**Contractor has to adopt 3 shift round the clock working at site since the work has to be completed within a tight time schedule**

Contractor has to mobilise adequate resources accordingly to meet BHEL's commitments to their customer as indicated from time to time. **In case due to reasons not attributable to the contractor, the work gets delayed and additional manpower / resources have to be mobilized so as to expedite the work to meet various milestones, same shall be done within the quoted rates as per Rate Schedule, at no extra cost to BHEL. In the event the contractor fails to respond to these requirements, BHEL shall take appropriate actions to meet customer's commitments.**

**TECHNICAL CONDITIONS OF CONTRACT (TCC)**

<b>11.0</b>		<b>CHAPTER-XI: TERMS OF PAYMENT:</b>
11.1		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.
11.2		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.
11.3		Subject to any deduction that BHEL may be authorized to make under the contract, the contractor on the certificate of the Engineer at site be entitled for payment as explained hereunder.
11.4		<p><b>PROGRESSIVE PAYMENT on pro-rata basis (85%)</b>  <b>(Applicable for installation of all items work for SL. No. B1 of rate schedule)</b></p> <ol style="list-style-type: none"> <li>1. 15% of the applicable contract unit rate on pro-rata basis on completion of pre-assembly, (if not applicable this portion shall be clubbed with placement in position).</li> <li>2. 20% of the applicable contract unit rate on pro-rata basis on placement in position and rough alignment.</li> <li>3. 15% of the applicable contract unit rate on pro-rata basis on completion of final alignment.</li> <li>4. 20% of the applicable contract unit rate on pro-rata basis on welding/bolting/fixing.</li> <li>5. 5% of the applicable contract unit rate on pro-rata basis on completion of hoppers along with all doors, heating element, pocking doors etc.</li> <li>6. 5% of the applicable contract unit rate on pro-rata basis on completion of inner, outer roof, insulator housing, rectifier transformer etc.</li> <li>7. 5% of the applicable contract unit rate on pro-rata basis on completion of erection of emitting &amp; collecting rapping system with all drives.</li> </ol> <p><b>Milestone payments (15%)</b></p> <ol style="list-style-type: none"> <li>1. 1.0 % on successful completion of Air &amp; Gas tightness test.</li> <li>2. 1.0 % on successful completion of gas distribution test.</li> <li>3. 1.0 % on successful charging of fields.</li> <li>4. 2.0 % on trial run and handing over of unit.</li> <li>5. 2.0 % on completion of painting works.</li> <li>6. 1.0 % on area cleaning, temporary cutting/removal and return of scrap.</li> <li>7. 1.0 % on attending punch list points/pending point's liquidation.</li> <li>8. 1.0 % on submission of 'As Built Drawings'.</li> <li>9. 1.0 % on material reconciliation.</li> <li>10. 1.0 % on completion of contractual obligations.</li> <li>11. 1.0 % on completion of ETC of illumination system.</li> <li>12. 2.0 % on completion of PG test.</li> </ol>
11.5		<p><b>PROGRESSIVE PAYMENT on pro-rata basis (100 %)</b>  <b>(Applicable for dismantling work for SL. No. B2 of rate schedule)</b></p> <ol style="list-style-type: none"> <li>1. 2 % of the applicable contract value / unit rate on pro-rata basis payable on completion of total dismantling of insulation &amp; their disposal.</li> <li>2. 4 % of the applicable contract value/ unit rate on pro-rata basis payable on completion of total dismantling of dismantling of Electrical &amp; C&amp;I related items &amp; their disposal.</li> <li>3. 6 % of the applicable contract value / unit rate on pro-rata basis payable on completion of total dismantling of outer roof, inner roof &amp; housings &amp; their disposal.</li> <li>4. 8 % of the applicable contract value / unit rate on pro-rata basis payable on completion of total dismantling of collecting rapping system, emitting rapping system and gas distribution rapping system &amp; their disposal.</li> <li>5. 10% of the applicable contract value / unit rate on pro-rata basis payable on completion of total dismantling of dismantling of Outlet &amp; inlet funnel, GD housing system &amp; gable plates &amp; their disposal.</li> <li>6. 5 % of the applicable contract value / unit rate on pro-rata basis payable on completion of total dismantling of Emitting Suspension system &amp; emitting electrodes &amp; their disposal.</li> <li>7. 10 % of the applicable contract value / unit rate on pro-rata basis payable on</li> </ol>

	<p>completion of total dismantling of Collecting suspension system &amp; collecting electrodes &amp; their disposal.</p> <p>8. 5 % of the applicable contract value / unit rate on pro-rata basis payable on completion of total dismantling of LR, TR &amp; insulator panels &amp; their disposal.</p> <p>9. 20 % of the applicable contract value / unit rate on pro-rata basis payable on dismantling of structural, material, relocation/ restoration, straightening, strengthening, alignment, painting as per direction of BHEL engineer, their reuse as per requirement and balanced materials to be transported to store and stacked properly.</p> <p>10. 20 % of the applicable contract value / unit rate on pro-rata basis payable on dismantling of other items not specified above as per instruction of BHEL and area cleaning and return of scrap.</p> <p>11. 10 % of the applicable contract value / unit rate on pro-rata basis payable on completion of dismantling work in all respect.</p>
11.6	<b>PAYMENT FOR SUPPLY PORTION (Applicable for ITEM. No SL. No. B3 of rate schedule</b>
11.7	100% payment after completion of finish painting as certified by BHEL Engineer.

TECHNICAL CONDITIONS OF CONTRACT (TCC)	
CHAPTER-XII: TAXES & DUTIES	
12.0	<b>TAXES &amp; DUTIES (SERVICE PORTION-ESP)</b>
12.1	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 <b>Service Tax</b> on output service and <b>Value Added Tax (VAT)</b> on goods shall be as per following clauses.
12.2	<b>Service Tax &amp; Swachh Bharat Cess</b>
12.2.1	Service Tax and Swachh Bharat Cess as applicable on output Services are excluded from contractor's scope; therefore contractor's price/rates shall be <b>exclusive</b> of Service Tax and Swachh Bharat Cess.
12.2.2	Contractor shall obtain prior written consent of BHEL before billing the amount towards such taxes. Where the Service Tax Act 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. Contractor shall submit to BHEL documentary evidence of Service Tax registration certificate specifying name of services covered under this contract.
12.2.3	<b>For the purpose of claiming any Service Tax &amp; SBC from BHEL, the following procedure shall be adopted :</b>
12.2.3.1	Contractor shall submit serially numbered Service Tax and SBC Invoices, signed by him or a person authorized by him in respect of taxable service provided, and shall contain the following, namely:
12.2.3.1.1	The name, address and registration number of the contractor
12.2.3.1.2	The name and address of the party receiving taxable service (BHEL)
12.2.3.1.3	Description, classification and value of taxable service provided and
12.2.3.1.4	The Service Tax and Swachh Bharat Cess payable thereon.
12.2.3.1.5	The service invoice for output services provided should show service tax and the SBC amount separately
12.2.4	All the five conditions shall be fulfilled in the invoice for payment of Service Tax and SBC by BHEL. Where more than one nature of Service as per Service Tax act is involved in the execution of contract, the invoice mentioned above shall contain the breakup of values for each nature of Service.
12.2.5	Name and address of the Contractor should be same in the service tax invoice and monthly bill as it is in the service tax registration certificate. Any change in the name and address should be supported by documentary evidence duly certified by the authorized signatory.
12.2.6	Purpose of above requirements, inter-alia, is to enable availment of Cenvat credit by BHEL. As per recent amendments, Time restrictions for taking Cenvat credit is one year from date of invoice. Hence subcontractor must submit its invoice within 30 days from the date of completion of service. Wherever Cenvat credit could not be availed by BHEL due to delay in submission of invoices or for any other reasons attributable to contractors, Liability towards loss of such Cenvat credit shall be passed on to sub-contractors.
12.2.7	The documentary evidence of deposition of service tax and SBC is to be submitted at the earliest opportunity.
12.2.8	The payment or service tax and SBC as per clause no 12.2 is restricted to the direct transactions between BHEL & its sub-contractor only.
12.3	<b>Modalities of Tax Incidence on BHEL</b>
12.3.1	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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)	
CHAPTER-XII: TAXES & DUTIES	
<b>12.4</b>	<b>New Taxes/Levies</b>
12.4.1	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. The reimbursement under this clause is restricted to the direct transaction between BHEL and its subcontractor only.
12.4.2	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.
<b>12.5</b>	<b>TAXES &amp; DUTIES (SUPPLY PORTION)</b>
<b>12.5.1</b>	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. BHEL shall issue 'C' form against submission of E1 forms by suppliers for supply of material from outside the state and the road permits shall be issued by the customer, as the material shall be consigned to the ultimate customer. In case of material purchased within the state, vat shall be payable on submission of vat invoices and documentary evidence towards deposit of vat by the vendor.
<b>12.5.2</b>	Contractor shall get his organization registered with concerned Sales tax/ VAT authorities within 15 days of award of this contract and forward the same to BHEL. The delay on this account and delay in bringing the material shall be to contractors account and no extension of time shall be allowed on this account. In case the contractor is already registered for Sales tax/ VAT with Govt. Authorities, the same must quote his registration no. While submitting their tender.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER-XIII: RATE SCHEDULE

RATE SCHEDULE

A	DESCRIPTION OF WORK	TOTAL VALUE( in Rupees)			
1	lump sum rate in rupees for entire SOW  <b>Dismantling of existing internals and other components, disposal of the same to scrap yard, transportation of materials from storage yard to site of work and carrying out modifications as required, erection, testing &amp; commissioning and application of paint, insulation/cladding for the work of renovation &amp;retrofitting of existing ESP &amp; ducts for any two units of 5x200 MW sets stage-I, at NTPC SSTPS Shaktinagar (U.P).</b>  As per tender specifications.	*****			
2	Extra work rate on per man-hour basis (inclusive of supervision, T&P, consumables and all other costs)	<b>Rs. 60 ONLY</b>			
B	DESCRIPTION OF WORK	%	TOTAL VALUE IN RUPEES	QTY. (MT)	Rate in Rupees/ MT
	Rate in Rupees per MT for handling, erection, testing, commissioning, trial operation, including auxiliaries, insulation, electrical, controls and instrumentation, etc and handing over of ESP of any two units of 5x 200 MW (for works as detailed in Annexure – A) as per tender specifications. (Approx. tonnage involved is 5300 MT as per Annexure-A1).	83.5 % of Total value at SL NO.- A1	/	5300	/
2	Lumps Rate in Rupees per MT for dismantling items of ESP, duct and duct supporting structures Approx tonnage involved is 5600 MT as per Annexure-A1.	16.0 % of Total value at SL NO.- A1	/	5600	/
3	Supply of Paint.	0.5 % of Total value at SL NO.- A1	/	/	/
<b>TOTAL PRICE IN RUPEES</b>					

- For Sl. No. B I & B2 single order shall be issued &for Sl. No. -B3 separate order shall be issued.
- The quantities indicated against each item above are tentative and these are liable to vary depending upon the site requirement. The contractor has to handle / erect / commission all items indicated by BHEL Engineer for achieving unit wise milestone and completion of work.
- Incomplete offer received may not be considered for the subject work.
- The Rate shall be entered in figures as well as in words. In case of difference in rates between words and figures THE LESSER OF THE TWO will be treated as valid rate. In case of omission in quoting any rate, the evaluation will be done considering the highest quoted rate obtained against that item but the work, if awarded, will be on the lowest quoted rate obtained against that item.

**TECHNICAL CONDITIONS OF CONTRACT  
(TCC) CHAPTER XIV : WARRANTY PERIOD**

<b>14.0</b>	<b>WARRANTY PERIOD/DEFECT LIABILITY</b>
14.1	The warranty/defect liability period shall be <b>18 months</b> from date of successful completion of work or <b>12 (Twelve) Months</b> from date of operation acceptance by BHEL's customer, whichever occurs first. Handing Over of the Unit or Performance Guarantee Test whichever is later and all defects observed during this period shall be attended by the contractor free of cost.

Rev 01  
1<sup>st</sup> June  
2012

# TECHNICAL CONDITION OF CONTRACT (TCC)

(Document No. PS: MSX:TCC)

BHARAT HEAVY ELECTRICALS  
LIMITED



# TECHNICAL CONDITIONS OF CONTRACT VOL-II

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TECHNICAL CONDITION OF CONTRACT (TCC)- VOL II

TENDER NOBHEL/NR/SCT/SINGRAULI/ESP/R&M/1031

FOR  
RENOVATION & RETROFITTING OF ELECTROSTATIC PRECIPITATORS FOR ANY TWO UNITS  
OF 5X200 MW, STAGE-I ,AT NTPC, SINGRAULI SUPER THERMAL POWER STATION  
SHAKTINAGAR, SONEBHADRA.(U.P)

PART-II OF TCC



**Bharat Heavy Electricals Limited**  
**(A Govt. of India Undertaking)**  
**Power Sector –Northern Region,**  
**Plot No. 25, Sector-16 A,**  
**Distt.GautamBudh Nagar, Noida-201301**

## TECHNICAL CONDITIONS OF CONTRACT VOL-II

<b>Sl. No.</b>	<b>DESCRIPTION</b>	<b>Chapter No.</b>	<b>Pages</b>
1.	General guidelines for Renovation & Erection	Chapter-I	4-6
2.	Testing, pre-commissioning, commissioning and post-commissioning.	Chapter-II	7
3.	Rerouting	Chapter-III	8
4.	Illumination & lightning	Chapter-IV	9
5.	Civil works, foundations and grouting	Chapter-V	10
6.	Tools and plants / IMTE'S	Chapter-VI	11-12
7.	Consumables	Chapter-VII	13-14
8.	Supervisory staff and workmen&Gatepass and Police verification of pesronnel	ChapterVIII	15-16
9.	Material handling and storage for the material received from BHEL store	Chapter-IX	17-18
10.	Preservation of components	Chapter-X	19
11.	Welding	Chapter-XI	20
12.	Application of insulation	Chapter-XII	21
13.	Finish painting	Chapter-XIII	22
14.	Progress reporting	Chapter-XIV	23
15.	Drawings and documents	Chapter-XV	24
16.	Annexures	Chapter-XVI	25-35

# TECHNICAL CONDITIONS OF CONTRACT VOL-II

## CHAPTER-I GENERAL GUIDELINES FOR RENOVATION & ERECTION

<b>1.0</b>	<b>GENERAL GUIDELINES FOR RENOVATION &amp; ERECTION</b>
1.1	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, fitting, filing, straightening, chamfering, chipping, scrapping, as cleaning, checking, leveling, aligning and assembly. Surface grinding, drilling. Temporary erections for alignment, dismantling of certain equipment for checking, cleaning, servicing and site fabrication.
1.2	All site welds for casing, inlet & outlet duct connections have to be kerosene tested for establishing leak proof.
1.3	Loading of collecting electrodes shall be done with due care as per BHEL's instructions
1.4	Straightness of all collecting electrodes has to be checked on ground prior to loading in to the field. Straightening of the collecting electrodes, if necessary, shall be done by the contractor within the quoted price as per instruction of BHEL engineer.
1.5	Bundle of collecting electrodes should be handled only with special fixture supplied for the purpose as regular DU.
1.6	Clearances as prescribed between collecting electrodes and with casing wall / emitting electrodes have to be maintained. Spot heating of collecting electrodes wherever called for, shall be done as part of work.
1.7	Erection, alignment/ fixing in final position, of high voltage rectifiers of ESP is in the scope of work.
1.8	Complete erection, alignment, testing, pre-commissioning and commissioning etc for drive motors of collecting electrodes and emitting electrode rapping mechanism is in the scope of work.
1.9	Contractor has to fabricate and erect canopies for motors, actuators etc. as per instruction of BHEL if the same is not indicated in the drawings within the quoted rate. BHEL will supply the material required for platforms/canopies in random lengths & sizes.
1.10	It shall be the responsibility of the contractor to provide temporary ladders on columns for initial works, if required, till permanent ladder/ stairways are completed. Material and fabrication of temporary ladders is in the scope of contractor. All temporary ladders are to be of bolting type and no welding on to permanent members will be permitted.
1.11	Following installation jobs are also to be carried out by the contractor within his quoted price. A) Matching flanges along with all bolts, nuts, gaskets, and all the expansion joints etc. as required to be connected to the ESPs to the duct wall. B) Flue gas inlet distribution system complete with perforated plates, turning vanes, deflector plates, flow splitters, guide vanes and all necessary gas flow control devices in the inlet and outlet cones and duct warranted by the results of flow model test, complete duct stiffening devices, interior bracings, slide plates, access doors, brackets, supporting structures, hangers, sampling connections, etc. C) Rapping system complete with structural supporting frame, drives, and automatic rapping control, etc. D) Ash hoppers complete with panel type heaters, level monitors and indicators, outlet flanges, jointing material, poke holes, access doors and walkways beneath the hoppers. E) Opacity monitors complete with all accessories at the outlet of each gas stream of each F) Safety devices, safety barriers, etc. G) Monorails with electrically operated hoists on the roof for handling transformer rectifiers. Water washing system for the precipitator and hoppers along with all piping, valves and nozzles etc.
1.12	Temporary blanking of ESP inlet / outlet for commissioning, if required, has to be done by contractor free of cost.
1.13	Instrument tapping coming on the ESP to be welded/fitted by the contractor within the quoted price.
1.14	Fixing of deflection plates in the inlet screen sheet of ESP as per flow model report, drawing, to be provided by BHEL. However, adjustment / re-positioning of the plates may be required to be done by the contractor during gas distribution test within the quoted rate.
1.15	All the collecting and emitting frames are to be checked in dimension and pitches before erection. All the readings are to be logged.
1.16	Any fixtures, scaffolding materials, approach ladder, concrete block supports, steel structures required for temporary supporting, pre-assembly or checking, welding, lifting and handling during pre-assembly and erection shall be arranged by contractor at his cost.

## TECHNICAL CONDITIONS OF CONTRACT VOL-II

### CHAPTER-VIII: GENERAL GUIDELINES FOR RENOVATION & ERECTION

1.17	No members of any ladder / structure / platform should be cut without specific approval of BHEL. In case it is necessary to cut, the contractor shall rectify / repair in a manner acceptable to BHEL / customer without any additional cost.
1.18	The contractor shall erect scaffolding / temporary platforms for erection. These should be of adequate capacity and shall never be over loaded. These should be replaced when not found suitable during erection work and dismantled on work completion and removed from work site.
1.19	It shall be the responsibility of the contractor to provide ladders on columns for initial work till such time stairways are completed. For this, the ladder should not be welded on the column and should be pre-fabricated clamping type ladders. No temporary welding on any structural member is permitted except under special circumstances with the approval of BHEL. In case it is absolutely necessary then the contractor shall cut the temporary structure and rectify the column as directed by the engineer.
1.20	The contractor is strictly prohibited in using the Boiler / ESP / Auxiliary Components for any temporary supporting or scaffolding works etc. In case of such misuse a sum of determined by Engineer will be recovered from contractor's bills.
1.21	The material for platform section shall be supplied in running meters. These shall be cut to size / shape / fabricated to required size / shape and to be welded by contractor.
1.22	Certain adjustment in length may be necessary while erecting pipelines / ducts / casings etc. The contractor should remove the extra lengths / add extra lengths to suit the final layout after preparing edges afresh by adopting specified heat treatment procedures.
1.23	Suspensions for ducting will be supplied in running lengths, which shall be cut to size and adjusted as required. Ducts / expansion bellows are dispatched to site in loose walls plates / pieces and these are to be assembled and welded at site along with stiffeners etc., before erection within the finally accepted rates. All joints connecting duct expansion piece and dampers shall be seal welded on inside as well as on outside
1.24	Material may require straightening and repair due to minor transport damages before erection and spot heating in position to get correct alignment and same will be carried out by the contractor at no extra cost.
1.25	Some of the rotating equipment and electrical motors are provided with protective greases only. Contractor shall arrange for cleaning of the same with kerosene or some other reagent. If necessary, dismantling some of the parts of the equipment would be necessary. He shall arrange for re-greasing / lubricating them with recommended lubricants and for assembling back the dismantled parts, at quoted rate. Lubricants will, however, be supplied free of cost by BHEL.
1.26	Contractor shall arrange changing of preservative oil in the gearboxes, journal and other bearing assemblies of rotating equipment when in storage areas or after erection of equipment as the case may be as per the instructions of BHEL engineer. Necessary lubricants / oil will be supplied by BHEL and the same will be drawn by contractor from BHEL / customer's stores and transporting to site. No additional payment will be made for such works.
1.27	All electrical cabling including proper glanding, termination, dressing etc., control and instrumentation works required for completion of Electrostatic Precipitator including its commissioning shall be part of this work. This will include erection of all electrical equipment such as rectifier, transformers, and power supply and control panel, laying of trays and cables and other associated equipment. For cabling job as included in above in the scope, while BHEL shall supply cable lugs (beyond 4 sqmm size free of cost, bidder shall supply necessary copper-tinned cable lugs (upto 4 sqmm), clamp, ferrule, wire markers, pvc binding strap, adhesive tape etc. Bidder's quoted rates shall be inclusive of this. Cable gland shall be of double compression type and of brass material.
1.28	All rotating machines and equipment shall be cleaned, lubricated, checked for their smooth rotation, if necessary by dismantling and refitting before erection. If, in the opinion of 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.
1.29	All the shafts of rotating equipment shall be properly aligned to those of the matching equipment within design tolerances All bearings; shafts and other rotating parts shall be thoroughly cleaned and suitably lubricated before starting.
1.30	All electrical panels, control gears, motors and such other devices shall be properly dried by heating to improve IR valve, before they are energized. Bearings, slip rings commutators and other exposed parts shall be protected against moisture ingress and corrosion during storage and periodically inspected.

TECHNICAL CONDITIONS OF CONTRACT VOL-II

CHAPTER-VIII: GENERAL GUIDELINES FOR RENOVATION & ERECTION

1.31	It is possible that a few flanges may not be matching. The contractor shall be required to cut and re-weld the same as and when required without any additional cost.
1.32	It may be possible that certain existing structures, hoppers, casing shells and other items requires strengthening/repairing/replacement/patching works. The contractor has to carry out all the works at site as per instruction of BHEL engineer within the quoted rate.
1.33	All the gates, actuators etc. shall be serviced and lubricated to the satisfaction of Engineer before erecting the same and during pre- commissioning also.
1.34	The Erection, testing and commissioning of all electrically operated valves, actuators and dampers is covered within the scope of this specification.

**TECHNICAL CONDITIONS OF CONTRACT VOL-II**

**CHAPTER-II TESTING, PRE-COMMISSIONING, COMMISSIONING AND POST-COMMISSIONING.**

<b>2.0</b>	<b>TESTING, PRE-COMMISSIONING, COMMISSIONING AND POST-COMMISSIONING.</b>
2.1	<p>The contractor shall carry out all the required tests and pre-commissioning and commissioning activities required for their successful and reliable operation.</p> <p>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.</p> <p>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.</p> <p>Commissioning of ESP shall involve required tests such as air leak test, gas distribution test, motor no load test, rapping mechanism trial runs, interlock tests, charging of transformer fields, commissioning of all electrical equipment / panels, heaters and their proper tuning etc. The contractor shall provide all consumables, labour, scaffoldings and items required for satisfactory testing.</p> <p>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.</p>
2.2	<p>The contractor may note that no separate payment shall be released for any temporary works that are to be carried out for conducting pre-commissioning 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 divided as under:</p> <p>Erection etc. of blowers and blanks and putty required for conducting air tightness test and GD Test are to be installed. (Putty to be procured by the contractor).</p> <p>Dismantling of the temporary equipment will be done by the agency that has erected the equipment. He will also return the equipment to the stores.</p>
2.3	<p>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&amp;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.</p>
2.4	<p>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.</p>
2.5	<p>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.</p>
2.6	<p>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</p>
2.7	<p>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 realignment 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.</p>
2.8	<p>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. The contractor shall carry out any other test as desired by BHEL Engineer/ Manufacturer on erected equipment covered under scope of this contract during testing and commissioning to demonstrate the physical completion of any part or parts of the work performed by the contractor</p>

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CHAPTER-III REROUTING

<b>3.0</b>	<b>REROUTING</b>
<b>3.1</b>	Rerouting of over head cable trays, cables & pipe lines shall be in contractor's scope. Maximum of the work shall be done during pre shut down period shut down period (except termination), whatever possible as per instruction of BHEL Engineer. Most of the dismantled material will be reused as per instruction of BHEL Engineer, if additional material required for the rerouting works will be arranged by contractor at his own cost. Transporting, proper stacking and preservation of dismantled usable material at storage yard and transporting of the entire dismantled unused items to scrap yard shall be the responsibility of the contractor.

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CHAPTER-IV: ILLUMINATION/ LIGHTING

4.0	<b>ILLUMINATION/ LIGHTING</b>
4.1	Illumination/ Lighting arrangement for the entire ESP & control room area shall be the part of this scopematerial shall be provided by BHEL are given as per Annexure-A3. Supply for lighting distribution board shall be tapped from Main LT MSB for ESP or as directionof BHEL Engineer.

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**CHAPTER-V: CIVIL WORKS, FOUNDATIONS AND GROUTING**

<b>5.0</b>	<b>CIVIL WORKS, FOUNDATIONS AND GROUTING.</b>
<b>5.1</b>	<p>Foundation and other necessary civil works for supporting structures, equipment etc, will be provided by BHEL. The dimensions of the foundation and anchor bolt pits shall be checked by contractor for their correctness with respect to the above access as per the erection drawings. Further, top elevation column foundations shall be checked with respect to benchmark etc. All minor adjustments of foundation level, dressing &amp; chipping of foundation surfaces for achieving the required elevation of the base of columns, enlarging the pocket of foundation etc., as may be required for the erection of equipment/ plants shall be carried by the contractor within quoted price. Grouting of all columns, equipment base plates, anchor bolt holes etc are included in the scope. The foundation pockets shall be cleaned by using compressed air. The grouting mixture shall be either composed of port land cement or ready mix grout of proven quality. However, in both the cases the vendor has to arrange Portland cement and ready mix grout component respectively within the included cost and no payment shall be released by BHEL to the contractor on this account. Before arranging the type of cements/grouting materials, the contractor must take approval from BHEL/Customer for the brand to be used. Application of the two options will depend on drawing/specification/ instruction of BHEL Engineer. The contractor shall arrange for sand, stone chips, gravels, anti shrink compound, plasticizer, shuttering, grout mixing machine, laboursetc at his cost. The contractor shall prepare the required test pieces/test cubes to ensure the strength of grout and get the same tested in laboratory at his cost. Test cube shall also be taken during grouting for testing in the laboratory and shall be tested at his cost. A necessary arrangement along with watering till complete curing has to be arranged by the vendor.</p>
<b>5.2</b>	<p>While on the job, care is essential to avoid too much chipping and resultant lowering of level. In case of excess chipping, contractor has to arrange additional packing plates as per requirements provided BHEL Engineer allows it. When required by manufacturers, the embedded sub-sole plates shall be scraped and checked with Prussian blue to get the required contact with frames.</p>
<b>5.3</b>	<p>Besides grouting as above, any civil works required for safe and efficient operation of tools and tackles like grouting / excavation/ casting of foundation / anchor points for derricks, winches, guy ropes fastening, etc and any other temporary supports shall also be the contractor's responsibility. For these civil works, all materials including cement and required facilities shall have to be arranged by contractor at his own cost.</p>

**TECHNICAL CONDITIONS OF CONTRACT VOL-II**

**CHAPTER-VI: TOOLS AND PLANTS / IMTE's**

<b>6.0</b>	<b>TOOLS AND PLANTS / IMTE's</b>
<b>6.1</b>	<p>All T&amp;Ps, lifting tackles and pulling devices to be deployed by the contractor must bear valid/latest test certificates for their suitability and the documents shall be preserved at site. The contractor shall ensure deployment of reliable and calibrated instrument, measuring and test equipments (IMTE). The IMTE, as required for the job, shall have valid test /calibration certificate from authorized /Govt. approved agencies. The contractor shall also keep provision of alternate arrangement for such IMTE so that the work does not suffer when a particular IMTE is sent for calibration. Re-testing / re-calibration shall also to be arranged by the contractor at their own cost at regular interval during the period of use as advised by BHEL.</p> <p>All lifting tackles including wire-ropes slings, D shackles, used by the contractor, shall be got approved by BHEL Engineer. It will be the responsibility of the contractor to ensure safe lifting of the equipment taking due precautions to avoid any accidents and damages to equipment and personnel. Calibration/fitness testing certificates from recognized agency are to be submitted to BHEL site office for equipment/instrument/appliances to be used, as per requirement of BHEL/ISO system. Expenditure on such works forms a part of the scope of work.</p>
<b>6.2</b>	<p>All the T&amp;Ps and IMTEs which are required for successful and timely execution of the work covered within the scope of this tender, shall be arranged and provided by the contractor including its transportation before and after work and including storage, insurance etc. He should ensure that these are in good working condition. In event of any failure on the part of the contractor in providing necessary T&amp;P etc BHEL may at its discretion also terminate the contract on this ground and take out any or whole amount of the contract from the scope of the contractor or impose penalty as per penal rates of BHEL. BHEL will be at liberty to arrange the same and hire charges as applicable shall be deducted from contractor's bill. Decision of BHEL in this regard shall be final and binding on contractor.</p>
<b>6.3</b>	<p>Timely deployment of adequate quantity of T &amp; P is the responsibility of the contractor. The contractor shall be prepared to augment the T&amp;P at short notice to match the planned program and to achieve the milestones.</p>
<b>6.4</b>	<p>Contractor shall ensure deployment of serviced and healthy T&amp;Ps including cranes, lifting tackles, wire ropes, manila ropes, winches and slings etc. History card and maintenance records for major T&amp;Ps will be maintained by the contractor and will be made available to BHEL Engineer for inspection as and when required. Fitness certificate of T&amp;P shall have to be submitted before it is put in use. Identification for such T&amp;Ps will be done as per BHEL Engineer's advice. The T &amp; P to be arranged by the contractor shall be in proper working condition and their operation shall not lead to unsafe condition. The movements of cranes and other equipment should be such that no damage / breakage occur to foundations, other equipments, material, property and men. In the event of major breakdown, contractor shall make alternative arrangements expeditiously so that the progress of work is not hampered.</p>
<b>6.5</b>	<p>All the necessary lifting tackles, tools and plants including tractors, trailers, Lorries, trucks, welding rectifiers (16 Nos per unit), oil filtration machine (1 no), huck bolting machine (2 nos.), Pulley blocks, jacks, winches, wire rope, tire mounted telescopic cranes 90/100 MT, Tower cranes 6 MT, derrick etc. of suitable capacities &amp; numbers for entire period of contract and other equipment incidental to carry out this work shall have to be arranged by the contractor himself at his cost. Consumables &amp; trained operators for all cranes will be provided by Contractor as required for execution of work. Indicative lists but not limited to are as per Annexure-A5.</p>
<b>6.6</b>	<p>BHEL Engineer reserves the right to inspect lifting tackles and equipment before allowing their use. Such approval however, shall not relieve the contractor of his responsibility to ensure safe handling of equipment taking due precautions to avoid any accident and damage to other equipment and personnel. All tools and tackles to be deployed by the contractor for the work shall have the prior approval of BHEL engineer with regard to brand, quality and specification.</p>
<b>6.7</b>	<p>All distribution boards, connecting cables, wire ropes, hoses, pipes etc, including temporary air / water / electrical connections etc shall have to be arranged by the contractor at his own cost.</p>
<b>6.8</b>	<p>The contractor shall engage trained and experienced operators at his own cost for the operation of T&amp;Ps. Their skill / performance will be checked by BHEL Engineer before they are allowed to operate the same. However checking of skills by BHEL does not absolve the contractor of his responsibilities for proper and safe handling of equipment, consistent good performance of operators and regular performance evaluation of operators.</p>
<b>6.9</b>	<p>Contractor shall provide all the necessary scaffolding materials, temporary structures, as may be required and necessary safety devices etc.</p>

**TECHNICAL CONDITIONS OF CONTRACT VOL-II**

**CHAPTER-VI: TOOLS AND PLANTS / IMTE's**

<b>6.10</b>	The contractor at his cost shall carry out periodical testing of his construction equipments and calibration of measuring instruments (MMDs) and tests. Test/ calibration certificates shall be furnished to BHEL. MMDs shall be calibrated only at accredited laboratory as per the list available with BHEL or any other laboratory approved by BHEL.
<b>6.11</b>	Contractor shall ensure deployment of reliable and calibrated IMTEs (Inspection measuring and testing equipment). The IMTEs shall have test / calibration certificates from authorized / Government approved / accredited agencies traceable to National / International standards. Each IMTE shall have a label indicating calibration status i.e. date of calibration, calibration agency and due date for calibration. A list of such instruments deployed by contractor at site with its calibration status is to be submitted to BHEL Engineer for control.
<b>6.12</b>	Re-testing / re-calibration shall also be arranged at regular intervals during the period of use as advised by BHEL Engineer within the contract price. The contractor will also have alternate arrangements for such IMTE so that work does not suffer when the particular instrument is sent for calibration. If any IMTEs not found fit for use, BHEL shall have the right to stop the use of such item. It will be necessary for the contractor to deploy proper item. Any readings taken by the defective instrument will be recalled and repeat the readings taken by that instrument with a proper one. In case he fails to do so, BHEL may deploy IMTEs and retake the readings at contractor's cost.
<b>6.13</b>	The month wise T&P deployment plan to be submitted to assess the capability as well as understanding of the contractor to execute the work. It shall be the contractor's responsibility to deploy the required T&P, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account.
<b>6.14</b>	All cranes, transport equipment, handling equipment, tools, tackles, fixtures, equipment, manpower, supervisors / Engineers, consumables etc., required for this scope of work shall be provided by the contractor. All expenditure including taxes and incidentals in this connection will have to be borne by the contractor. The contractor's quoted rates should be inclusive of all such contingencies.
<b>6.15</b>	The contractor shall arrange Huck-bolting machine including electrical connections, operation, maintenance etc. Required Jaws, spares and Hydraulic oil of the Machine will also to be arranged by the contractor as required within quoted price.

**TECHNICAL CONDITIONS OF CONTRACT VOL-II**

**CHAPTER-VII: CONSUMABLES**

7.0	<b>CONSUMABLES</b>
7.1	<p>The contractor shall provide within finally accepted price / rates, all consumables like all welding electrodes (including alloy steel and stainless steel), filler wires, TIG filler wires, all gases (inert, welding, cutting), soldering material, dye penetrants. Other erection consumables such as tapes, all types of fasteners, jointing compound, grease, mobile oil, M-seal, Araldite, petrol, CTC / other cleaning agents, grinding and cutting wheels are to be provided by the contractor. Steel, H&amp;S, packers, shims, wooden planks, scaffolding materials hardware items etc required for temporary works such as supports, scaffoldings are to be arranged by him. Sealing compounds, gaskets, gland packing, wooden sleepers, for temporary work, required for completion of work except those which are specifically supplied by manufacturing unit are also to be arranged by him.</p> <p>The contractor shall provide all consumables required for carrying out the work covered under these specifications. All consumables to be used for the work shall have prior approval of BHEL engineer with regard to brand and quality specifications. Test reports / certificates in respect of these consumables, wherever applicable, shall be submitted to BHEL engineer.</p>
7.2	<p>All the shims, gaskets, packing rope and asbestos rope, which go finally as part of equipment, shall be supplied by contractor free of cost.</p>
7.3	<p>It shall be the responsibility of the contractor to plan the activities and store sufficient quantity of consumables. Non-availability of any consumable materials or equivalent suggested by BHEL cannot be considered as reason for not attaining the required progress or for additional claim.</p>
7.4	<p>It shall be the responsibility of the contractor to obtain prior approval of BHEL, regarding suppliers, type of electrodes etc before procurement of welding electrodes. On receipt of electrodes at site these shall be subjected to inspection and approval by BHEL. The contractor shall inform BHEL details regarding type of electrodes, batch number, date of expiry etc and produce test certificate for each lot / batch with correlation of batch / lot number with respective test certificate. No electrode without a valid test certificate will be used.</p>
7.5	<p>BHEL reserves the right to reject the use of any consumable including electrodes, gases, lubricants / special consumables if it is not found to be of the required standard / make / purity or when shelf life has expired. Contractor shall ensure display of shelf life on consumable wherever required and records maintained.</p>
7.6	<p>Storage of all consumables including welding electrodes shall be done as per requirement / instruction of the Engineer by the contractor at his cost.</p>
7.7	<p>In case of improper arrangement for procurement of any consumable, BHEL reserves the right to procure the same from any source and recover the cost from the Contractor's first subsequent bill at market value plus the departmental charges of BHEL from time to time. Postponement of such recovery is normally not permitted. The decision of Engineer in this regard shall be final and binding on the Contractor.</p>
7.8	<p>All lubricants and chemicals required for cleaning, pre-commissioning, commissioning, testing, preservation and lubricants for trial runs of the equipment shall be supplied by contractor. All services including labour and T&amp;P will be provided by the contractor for handling, filling, emptying, refilling etc. the consumption of lubricants / chemicals shall be properly accounted for. Surplus material if any shall be properly stacked and returned to BHEL/ NTPC stores at no extra cost to BHEL. Recoveries shall be affected for wastage by the contractor.</p>
7.9	<p>Transportation of oil drums, from stores, filling of oil and filling of oil for flushing, first filling of oil and subsequent changeover or topping / making up till the unit is fully commissioned and handed over to customer is included in scope of this contract. The contractor shall have to return all the empty drums to BHEL / BHEL's client store at no extra cost. Any loss / damage to above drums shall be to contractor's account.</p>
7.10	<p>All charges on account of Octroi, terminal or sales tax and other duties on materials obtained for the works from any source shall be borne by the contractor.</p>
7.11	<p>Contractor shall arrange changing of preservative oil in the gear boxes, journal and other bearing assemblies of rotating equipment when in storage areas or after erection of equipment as the case may be as per the instructions of BHEL engineer. Necessary lubricants / oil will be supplied by BHEL and the same will be drawn by contractor from BHEL / customer's stores and transporting to site. No additional payment will be made for such works even though supply of lube oil might have been made under regular dispatch-able unit (DU) number against product group main assembly (PGMA) and airing in the shipping list. Prior to the commissioning of the equipment, oil should be drained and collected in drums provided by BHEL and returned to BHEL / customer's stores.</p>

TECHNICAL CONDITIONS OF CONTRACT VOL-II

CHAPTER-VII: CONSUMABLES

7.12	The contractor at his own cost shall provide all consumables required for the work. The consumables supplied by the contractor shall be subject to prior approval of BHEL.
7.13	All tools, tackles, fixtures, equipments, materials, manpower, supervisors/ engineers, consumables, Copper washers, Teflon tube, electrodes including oxygen, acetylene argon etc gases, paints etc. required for this scope of work shall be provided by the contractor. All expenditure including taxes and incidentals in this connection will have to be borne by him unless otherwise specified in the relevant clause. The contractor's quoted rates should be inclusive of all such contingencies. Electrodes shall be baked / dried in the electrode drying oven (range 375 – 425 deg C) to the temperature and period specified by BHEL Engineer before their use. Necessary drying oven / portable oven shall be provided by the contractor at his cost.
7.14	The contractor shall also be equipped for carrying out NDT, like liquid penetrant inspection, etc as & when required for work within the quoted rates.

**TECHNICAL CONDITIONS OF CONTRACT VOL-II**

**CHAPTER-VIII: SUPERVISORY STAFF AND WORKMEN**

<b>8.0</b>	<b>SUPERVISORY STAFF AND WORKMEN</b>
8.1	<p>The contractor shall deploy all the skilled Supervisory staff and workmen like fitters, welders, crane operators, drivers, gas cutters, riggers, sarangs, masons, carpenters, electricians, helpers and instrument technicians in sufficient numbers for entire period of contract to carry out the works as per specifications. In addition to skilled, semi-skilled and unskilled workmen required for all the works, suitable workmen required for handling and transporting of equipment from site storage to erection site, erection, testing and commissioning as contemplated under this specification shall be deployed. Only fully trained and competent men with previous experience on the job shall be employed as per Annexure-4. They shall hold valid certificates wherever necessary.</p> <p>BHEL reserves the right to decide on the suitability of the workers and other personnel who will be deployed by the contractor. BHEL reserves the right to insist on removal of any employee / workman of the contractor at any time, if they find him unsuitable. The contractor shall remove him forthwith.</p>
8.2	<p>The contractor shall execute the work in the most substantial and workman like manner. The same shall be, handled with care and diligence. Any loss to BHEL due to contractor's lapses shall have to be made good by the contractor. All surplus, damaged, unused materials, package materials/containers, gunny bags etc. shall be returned to BHEL.</p>
8.3	<p>The supervisory staff including qualified Engineers deployed by the contractor shall ensure proper out-turn of work and discipline on the part of the labour put on the job by the contractor. They should in general see and ensure that the works are carried out in a safe and proper manner and in coordination with other labour and staff deployed directly by BHEL or other contractors of BHEL or BHEL's client / other agency.</p>
8.4	<p>The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations / activities at site. The contractor and his personnel shall cooperate with other personnel / contractors, coordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.</p>
8.5	<p>The contractor's supervisory staff shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and aesthetic finish are essential part of this contract. The contractor shall be responsible to ensure that assembly and workmanship conforms to the dimensions and tolerances given in the drawings / documents / instructions given by BHEL Engineer from time to time.</p>
8.6	<p>It is the responsibility of the contractor to engage his workmen in shifts or on overtime basis for achieving the targets set by BHEL and also during the period of commissioning and testing of unit. The contractor's finally accepted rates / prices shall include all these contingencies.</p>
8.7	<p>During the course of erection,</p> <ul style="list-style-type: none"> <li>➤ If the progress is found unsatisfactory,</li> <li>➤ If the target dates fixed from time to time for every mile stones are to be advanced / not being met,</li> <li>➤ If it is found that the skilled workmen like fitters, operators, technicians etc deployed are not sufficient, BHEL after giving reasonable opportunity to the contractor will induct on the work the required workmen in addition to contractor's workmen to improve the progress. The expenses so incurred will be recovered from the contractor's bills with overheads.</li> </ul>
8.8	<p>If the contractor or his workmen or employees shall break, deface, injure or destroy any part of a building, road kerb, fence, enclosure, water pipes, cables, drains, electric / telephone poles, wire, trees or any other property or to any part of erected components, the contractor shall make the same good at his own expense. In default, BHEL may cause the same to be made good by other workmen or by other means and deduct the expenses from any money due to the contractor. BHEL's decision will be final and binding.</p>
8.9	<p>Though every endeavor shall be made to ensure that all plant materials are supplied as per schedule. However in a job of this kind it is possible that some materials may be delayed. In order to achieve the ultimate targets, the contractor may have to augment his manpower and resources. No compensation on this account shall be admissible.</p>
8.10	<p>The month wise manpower deployment plan to be submitted to assess the capability as well as understanding of the contractor to execute the work. It shall be the contractor's responsibility to deploy the required manpower, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account. The contractor shall identify separate persons at site for quality control and safety.</p>

TECHNICAL CONDITIONS OF CONTRACT VOL-II

CHAPTER-VIII: SUPERVISORY STAFF AND WORKMEN

8.11	The contractor shall make suitable security arrangements including employment of security personnel and ensure protection of all materials/equipment in their custody and installed equipments from theft/fire/pilferage and any other damages and losses.
8.12	The contractor will make his own arrangement for his communication needs at his site office or residential area/labour colony.
8.13	The contractor shall be responsible to ensure that none of the personnel move beyond the areas marked out for his operation. In case of a need for the contractor's personnel to move beyond the area marked for him, the same shall be done with a written permission of the construction manager.
8.14	<b>GATE PASS &amp; POLICE VERIFICATION OF PERSONNEL</b>
	The agency shall arrange entry/exit gate passes for Manpower, Materials & Vehicles from concerned Security Agency of the Customer at their own cost as per the prescribed procedures of the customer. The agency must get the character & antecedents of all personnel deployed to site duly verified from the concerned Police station (Home Town police station/ Shaktinagar concerned SP office).

**TECHNICAL CONDITIONS OF CONTRACT VOL-II**

**CHAPTER-IX: MATERIAL HANDLING AND STORAGE FOR THE MATERIAL RECEIVED FROM BHEL STORE**

<b>9.0</b>	<b>MATERIAL HANDLING AND STORAGE FOR THE MATERIAL RECEIVED FROM BHEL STORE</b>
9.1	All the equipment furnished under this contract for any two units of 5x200 MW units shall be received from the project stores, sheds / storage yards area after getting the approval of BHEL Engineer on standard indent forms and transported to pre assembly area / erection site and stored in the storage spaces in a manner so that they are easily retrievable till the contractor erects them. While drawing / lifting material from BHEL / customer stores, contractor shall ensure that the balance / other materials are stacked back immediately. No claim is admissible on this account.
9.2	Contractor shall be responsible for examining all the plant and materials issued to him and notify the Engineer immediately of any damage, shortage, discrepancy etc before they are moved out of the stores / storage area. The contractor shall be solely responsible for any shortages or damages in transit, handling, storage and erection of the equipment once received by him. As the erection work will be spread in different areas / locations of the project, contractor has to arrange sufficient number of watch / ward personal to avoid any pilferage of material. BHEL will reserve the right to recover the cost of repair / replacement, if any, to bring back the equipment in original order, in case the equipment / material is lost / damaged while in the custody of the contractor. BHEL's decision in this regard shall be final and binding on the contractor.
9.3	Contractor shall plan and transport equipments/components from storage yard/sheds to erection site and erect them in such a manner and in a sequence that material accumulation at site should not lead to congestion. Materials shall be stacked neatly, preserved and stored in the contractor's shed and work areas in an orderly manner. It may be specifically noted that the space available for putting up the thermal power plant is limited and accumulation of material may lead to the necessity of shifting and restacking the materials to enable other agencies to carry on with their work or to comply with customer's requirements. If required, the contractor shall arrange shifting of surplus material expeditiously failing which the same will be arranged by BHEL and all charges together with departmental charges will be recovered from his bills.
9.4	The contractor shall identify and deploy necessary Engineers / supervisors / workmen for the above work in sufficient number as may be needed by BHEL.
9.5	All the equipment shall be handled very carefully to prevent any damage or loss. No untested wire ropes / slings etc. shall be used for unloading / handling. The equipment shall be properly protected to prevent damage either to the equipment or to the floor where they are stored. The equipment from the stores shall be moved to the actual location at the appropriate time so as to avoid damage of such equipment at site.
9.6	Contractor shall ensure that while lifting slings shall be put over the points indicated on the equipment or as indicated in the manufacturer's drawings. Slings / shackles of proper size shall be used for all lifting and rigging purposes. All care shall be taken to safe guard the equipment against any damage. Dragging of piping / valves should be avoided. In case of any damage the cost shall be covered from the contractor
9.7	All the material in the custody of contractor and stored in the open or dusty locations must be covered with suitable weather proof / fire retardant covering material wherever applicable and shall be blocked up on raised level above ground. All covering materials including blocks and sleeper shall be arranged by the contractor at his cost.
9.8	The contractor shall be responsible for making suitable indoor storage facilities to store all equipment (drawn by the contractor from BHEL / customer stores), which require indoor storage till the time of their installation. The Engineer will direct the contractor in this regard, which item in his opinion will require indoor storage, and the contractor shall comply with Engineer's decision.
9.9	The contractor shall maintain an accurate and exhaustive record-detailing out the list of all equipment received by him for the purpose of erection and keep such record open for the inspection of the engineer at any time.
9.10	Approach road conditions from the stores / yards to the erection site may not be equipped and ideal for smooth transportation of the equipment. Contractor may have to be adequately prepared to transport the materials under the above circumstances without any extra cost.
9.11	If the material belonging to the contractor are stored in area other than those earmarked for his operation the engineer will have the right to get it moved to the area earmarked for the contractor at the contractors risk and cost.
9.12	The contractor shall ensure that all surplus / damaged / scrap / unused material, packing wood / containers/ special transporting frames etc are returned to BHEL at a place in project area identified by the Engineer. The contractor will maintain an account for all items received and returned to BHEL. Any shortage in returning such items shall be chargeable to the contractor except for a 5% allowable against

	wastage for packing wood only.
<b>TECHNICAL CONDITIONS OF CONTRACT VOL-II</b>	
<b>CHAPTER-IX MATERIAL HANDLING AND STORAGE FOR THE MATERIAL RECEIVED FROM BHEL STORE</b>	
9.13	The contractor shall hand over all parts / materials remaining extra over the normal requirement with proper identification tags to the stores as directed by the concerned BHEL engineer.
9.14	The contractor shall ensure that all the packing materials and protective devices installed on equipment during transit and storage are removed before installation.
9.15	It shall be the responsibility of the contractor to keep the work / storage areas in neat, tidy and working conditions. All surplus/unusable packing and other materials shall be removed and deposited at location(s) specified by BHEL within the project premises. If required weighing of the same within the project premises will have to be carried out.
9.16	Contractor shall ensure at all times that his work areas & approach/access roads are free from accumulation of water, so that the materials are safe and the erection/progress schedule are not affected. No separate claim in this regards shall be admitted by BHEL. No separate payments for dewatering of sub soil or surface water if required at any time during execution of the work including monsoon period shall be considered by BHEL
9.17	Housekeeping in the erection and preassembly area is as important as the well-planned and orderly work is to be done. The access to site for inspection approaches by BHEL and customer engineers and leading of the material shall be made available by the contractor at all times. The shifting and re-shifting of erection materials, tools and plants and clearance of restrictions, filling of ditches, undulation near the preassembly and boiler area is the responsibility of the contractor. Contractor should visit the site and acquaint himself with all restrictions and difficulties that he may encounter during erection/commissioning stages.
9.18	All hardware such as rails, sleepers, and maxpuller etc., required for dragging or for any other connected works shall be arranged by the contractor at his own cost.
9.19	The contractor shall have total responsibility for all materials in his custody, and shall ensure protection of all materials from theft, fire, pilferage and any other damage and loss. The contractor shall make suitable security arrangement to ensure the above.

TECHNICAL CONDITIONS OF CONTRACT VOL-II

CHAPTER-X PRESERVATION OF COMPONENTS

<b>10.0</b>	<b>PRESERVATION OF COMPONENTS</b>
<b>10.1</b>	<p>After taking delivery from BHEL / customer's stores, plant materials storage shall be subjected to the following protection besides other provisions indicated in these specifications elsewhere. Items stored outdoors shall be blocked up at least six inches (6") off the ground.</p> <p>Motors, electrical equipment, control equipment and instruments etc shall be stored indoors in a closed shed. Motor windings shall be kept dry by use of external heat or space heaters. Bearings and other wearing surfaces of plant materials shall be protected against corrosion and kept clean. Insulation materials shall be stored indoors or otherwise protected against getting wet.</p>
<b>10.2</b>	<p>It shall be the responsibility of the contractor to apply preservatives / touch up paints (primer) on equipment handled and erected by him till such time of final painting. It shall be contractor's responsibility to arrange for required paints (primer), thinners, labour, scaffolding materials, cleaning materials like wire brush, emery sheets, etc, cleaning of surface and provide one coat of preservatives / paints (primer) from time to time as decided by BHEL engineer. The accepted rate shall include this work also. It is to be noted that such painting may have to be done as and when required till such time the final painting is carried out.</p>
<b>10.3</b>	<p>The contractor shall effectively protect the finished work from action of weather and from damage or defacement and shall cover the finished parts then and there for their protection. Contractor shall ensure at all times that his work areas &amp; approach/access roads are free from accumulation of water, so that the materials are safe and the erection/progress schedule are not affected. No separate claim in these regards shall be admitted by BHEL. No separate payments for dewatering of sub soil or surface water if required at any time during execution of the work including monsoon period shall be considered by BHEL.</p>
<b>10.4</b>	<p>Any failure on the part of contractor to carry out works according to above clauses will entail BHEL to carry out the job from any other party and recover the cost from contractor</p>

TECHNICAL CONDITIONS OF CONTRACT VOL-II

CHAPTER-XI WELDING

<b>11.0</b>	<b>WELDING</b>
<b>11.1</b>	All welders shall be tested and approved by BHEL Engineer/ customer before they are actually engaged on the work even though they may possess the requisite certificates. BHEL reserves the right to reject any welder without assigning any reasons. The contractor will be responsible for the periodic renewal, re-testing of the welders as demanded by BHEL/statutory requirements
<b>11.2</b>	All charges for testing of welders including destructive and non destructive tests, if conducted by BHEL or by the inspecting authority shall have to be borne by the contractor. All testing facility shall be made available by contractor.
<b>11.3</b>	BHEL Engineer/ customer may stop any contractor's welders from his work if his work is unsatisfactory for any technical reason or in the opinion of BHEL Engineer, will adversely affect the quality of welding. Even though the welder has earlier passed the tests it does not relieve the contractor from his contractual obligations, to check the performance of the welders.
<b>11.4</b>	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.
<b>11.5</b>	Only BHEL/CUSTOMER approved electrodes and filler wire will be arranged and used by the contractor, within the finally quoted price. BHEL reserves the right to test any approved electrode being used by the contractor. Testing charges for the same shall be borne by the contractor. 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.
<b>11.6</b>	Approved list of welding electrodes will be provided to agency during execution of work at site with the specification. It is mandatory on part of the vendor to use welding electrodes strictly in conformance of the list. For use of any alternative brand in case of necessity, necessary written permission from BHEL / Customer need to be obtained.
<b>11.7</b>	Baking and holding of welding consumables shall be as per BHEL Welding Manual. Electrodes shall be baked and dried in Thermostat controlled oven before they are used in erection work, and all welders shall have a portable electrode drying oven at the work spot.
<b>11.8</b>	The regulators used on welding machines shall be calibrated before putting these into use for work. The Contractor at his cost shall also arrange periodic calibration for the same.

**TECHNICAL CONDITIONS OF CONTRACT VOL-II**

**CHAPTER-XII: APPLICATION OF INSULATION**

<b>12.0</b>	<b>APPLICATION OF INSULATION</b>
12.1	All attachment welding, including welding of hooks / supports as per pitch both on equipment shall be done as directed by Engineer. Attachment welding shall have to be done by certified welders. If necessary contractor may have to cut the hooks to correct length without any extra cost to BHEL.
12.2	Contractor has to arrange and apply heat resistant primer on welded portions before application of insulation.
12.3	The mineral wool mattresses (bonded / un-bonded) / LRB mattresses are received at site in standard sizes. These are to be dressed / cut to suit site requirements by the contractor.
12.4	The contractor should ensure that the finished surface of the insulation works conforms to the dimensions and tolerances given in the drawings. Aesthetic finish and accuracy of work are most important. The number of layers / thickness of mineral wool / LRB mattresses shall be as per drawings and as directed by Engineer. For applying the mineral wool mattress, the required holding materials, if necessary by fabrication of rings/ hooks shall be fixed as directed and as per drawings and spec. The contractor should ensure, proper finishing of surface of the insulation and sheeting.
12.5	It is the responsibility of the contractor to ensure that the insulation materials and sheet metal covering issued to him for application are well protected against loss or damage from weather conditions. Closed / semi closed sheds or any other arrangements required for this will be made by him at his cost. If any damage occurs to the material due to improper storage or due to any causes attributable to the contractor except for normal breakage or damages allowed in such cases, the cost of such damaged material shall be to the account of the contractor.
12.6	Sheet cladding will be fabricated to the sizes and shapes specified in drawings. Beading, swaging, beveling of sheets, crowning the sheets will be carried out by him. Two coats of anti-corrosive black bituminous paint are to be applied on inner surfaces of the cladding. Bitumen sealing compound on the joints is included in the scope of this work. Contractor may note that they will also arrange anti-corrosive black bituminous paint and bituminous sealing compound required for above works at his cost.
12.7	Sheet metal cladding over insulation will consists of plain / ribbed / corrugated sheets. The sheets will be supplied in standard sizes. Cutting them to required size, grooving, fabricating bends, boxes etc., for proper covering is contractor's responsibility. Any cutting / bending / welding of fabricated skin casing sheets if required will also be covered within the scope of this contract.
12.8	A logbook shall be maintained by the contractor to obtain clearance for application of insulation. If the contractor does the work on his own accord without prior permission the area may have to be redone at his cost.
12.9	Contractor is liable for the exact accounting of the material issued to him and he shall make any unaccountable losses good. Wastage allowances for the material issued should be minimum.
12.10	The entire surplus, unused materials etc., supplied by BHEL shall be returned to BHEL after the work is over. Materials like gunny bags and packing materials, empty containers may be returned at periodical intervals.
12.11	The contractor shall leave certain gaps and opening while doing the work as per instructions of BHEL engineer to facilitate inspection during commissioning and to fix gauges, fittings and instruments. The gaps will have to be finished as per drawings at a later date by the contractor at his cost.
12.12	Insulation of expansion joints, gates, etc shall be carried out after NDT / gas tightness test is completed.

TECHNICAL CONDITIONS OF CONTRACT VOL-II

CHAPTER-XIII: FINISH PAINTING

<b>13.0</b>	<b>FINISH PAINTING</b>
<b>13.1</b>	All exposed metal parts of the equipment, structure and other items (covered within the scope of this contract) after installations are to be painted. The surfaces are to be thoroughly cleaned of all dirt, rust, scales, grease, oils and other foreign materials by wire brushing, scrapping, and any other method as per requirement of BHEL. The same will be inspected and approved by the engineer before painting.
<b>13.2</b>	Mostly the equipment / items/ components will be supplied with one coat of primer paint and one coat of finish paint. However during long storage and handling, the same may get peeled off / deteriorate. Before erecting the material it is essential that 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 color. 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.
<b>13.3</b>	After applying the primer paints, wherever required, all structure / equipment / items, shall be finish painted with paints as specified by BHEL engineer. Specification of painting will be as per Annexure-6. The number of coats / paint thickness shall be as indicted in the drawing / documents. However at least two coats of finish painting is to be applied. In case proper finish is not obtained in two coats, the contractor shall apply additional coat (s) till proper finish / paint thickness is achieved. Certain equipment / Items are required to be painted with approved quality heat resistant paint / primer. After completion of painting all bright spots shall be cleaned to the satisfaction of Engineer.
<b>13.4</b>	Contractor has to arrange all paints, primers, tools and other consumables including scaffolding materials required for finish painting at his own cost. Paint is to be BHEL approved make only and painting should be as per color scheme and quality approved / specified by Engineer. Valid Test Certificate for the paint so supplied shall be made available before use of the same on work
<b>13.5</b>	The contractor may be required to fill up dents / marks by applying putty before final painting of equipment. All materials and arrangements have to be made within quoted lump sum price/rates.
<b>13.6</b>	All the fabricated frames, JB's, instrument racks, Junction box frame, trays, supports, panel base frame, etc., wherever applicable shall be first painted with one coat of primer paint (metal red oxide) and then two coats of synthetic enamel paint of approved shade by BHEL Engineer after thoroughly cleaning the surface of dust, rust, scale, grease, oil, etc., by wire brushing, scrapping or any other suitable method. The quoted rates should be inclusive of all these including arrangement of paints and consumables
<b>13.7</b>	All the weld joints of GI cable trays and GI structural members shall be applied with a coat of cold galvanizing zinc paint and paint shall be arranged by contractor at his cost.

TECHNICAL CONDITIONS OF CONTRACT VOL-II

CHAPTER-XIV: PROGRESS REPORTING

<b>14.0</b>	<b>PROGRESS REPORTING</b>
<b>14.1</b>	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.
<b>14.2</b>	Contractor shall submit periodical reports in respect of following aspects of operation: Consumption of consumables like welding electrodes gases and paints, Consumption of construction power. Availability and utilization of BHEL's tools & plants, availability and utilization of contractor's tools & plants, Daily manpower reports, Daily progress reports of activities & incidents, Test / Calibration reports, Records of wages, EPF payment, BHEL/client may specify any other report/record as required. Record of Protocol/Log sheet, Reporting may also be done in the form photography.
<b>14.3</b>	Weekly progress review meetings will be held at site during which actual progress during the week vis-à-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 non-conformities.
<b>14.4</b>	The progress report shall indicate the progress achieved against planned, with reasons indicating delays, if any. This should give the remedial actions which the contractor intends to take to make good the slippage or lost time, so that further works again proceed as per the original program and the slippage do not accumulate and effect the overall program.

TECHNICAL CONDITIONS OF CONTRACT VOL-II

CHAPTER-XV: DRAWINGS AND DOCUMENTS

<b>15.0</b>	<b>DRAWINGS AND DOCUMENTS</b>
<b>15.1</b>	The detailed drawings, specifications available with BHEL engineers will form part of this tender specification. These documents will be made available to the contractor during execution of work at site. The contractor will also ensure availability of all drawings / documents at work place.
<b>15.2</b>	Necessary drawings to carry out the erection work will be furnished to the contractor by BHEL on loan, which shall be returned to BHEL Engineer at site after completion of work. Contractor shall ensure safe storage and quick retrieval of these documents.
<b>15.3</b>	The contractor shall maintain a record of all drawings and documents available with him in a register as per format given by BHEL Engineer. Contractor shall ensure use of pertinent drawings / data / documents and removal of obsolete ones from work place and returning to BHEL.
<b>15.4</b>	It is the responsibility of contractor to make erection,testing&commissioning protocols for various activities and they should get duly certified by BHEL and NTPC engineer and should be submitted to BHEL engineer regularly. However, sample formats will be given by BHEL and have to be printed by contractor in adequate numbers.
<b>15.5</b>	The data furnished in various annexure enclosed with this tender specification are only approximate and for guidance. However, the change in the design and in the quantity may occur as is usual in any such large scale of work.
<b>15.6</b>	Should any error or ambiguity be discovered in the specification or information the contractor shall forthwith bring the same to the notice of BHEL before commencement of work. BHEL's interpretation in such cases shall be final and binding on the contractor.
<b>15.7</b>	Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimension / details, without specific approval of BHEL.

DETAILS OF QUANTITIES

ESTIMATED WEIGHT FOR ERECTION OF VARIOUS PRODUCT GROUPS

PRODUCT GROUP (PG)	DESCRIPTION OF PG	DESIGN WEIGHT (MT) FIRST UNIT	DESIGN WEIGHT (MT) SECOND UNIT
79	ESP AS PER ANNEXURE-A2	2521	2507
89	GALLERIES & RAILS AS PER ANNEXURE-A2	92	92
	ACTUATORS, GATES & OTHERS AS PER ANNEXURE-A2	44	44
	TOTAL	2657	2643
	TOTAL MATERIAL FOR BOTH UNITS		<b>5300</b>

The quantity in scope of dismantling is approximately 2800 MT for each unit(5600 MT for both units). The quantity for dismantling mentioned is based on the technical assessment made and may vary to some extent. The rates for dismantling to be quoted should be on lump sum basis

**NOTES:**

1. Besides product groups indicated herein, there is likelihood of addition of new product groups by BHEL's unit for release of some items, integral to this work.
2. BHEL's decision with regard to classification of a particular product group is binding on the contractor.
3. The weights indicated in above schedule are approximate only and are liable to variations and alternations.

TECHNICAL CONDITIONS OF CONTRACT VOL-II

CHAPTER-XVI: ANNEXURES

ANNEXURE-2

Tentative weight for Renovation of ESP package at NTPC Singrauli TPS  
First Unit, Stage-I Units (5 X 200 MW)

SL NO	PGMA	Description	Tentative WT(KG)
1	79401	ROLL/SLIDE SUPPORTS	6000
2	79405	ESP-SUB-DELIVERY COMPO	200
3	79406	INSULATOR HOUSING AS	24300
4	79408	GAS DIST. ASSY	40000
5	79409	GD-RAPPING MECHANISM	7700
6	79410	GD_DRIVE ARRANGEMENT	450
7	79411	GAS SCREEN-EP	4300
8	79413	EMIT SYST SUSPENSION	9000
9	79414	SUPPORT INSULATORS	8576
10	79415	EMITTING ELECTRODES	13000
11	79416	EMIT ELECT RAPP MECH	20000
12	79417	DRIVE ARGT. FOR EMIT.	16700
13	79419	COL ELEC SUSPENSION	58600
14	79420	COLLECTING ELECTRODE	522000
15	79421	EMIT SYS FRAME-TOP	80400
16	79422	EMIT SYS FRAME BOTOM	83800
17	79423	INSPECTION DOORS	5000
18	79424	SHOCK BARS	49900
19	79425	COLL ELECT RAPP MECH	52400
20	79426	COLL ELEC RAPP DRIVE	3500
21	79428	ESP ROOF BEAM	70000
22	79430	ELECTRICAL SD COMPTS	4032
23	79431	GEARED MOTORS FOR RAPP	9900
24	79432	EMIT SYS FRAME-MIDLE	81600
25	79437	JUNCTION BOX & PUSH BU	1400
26	79442	OUTER ROOF-EP	88300
27	79443	HOPPER RIDGES	15000
28	79444	HOPPER UPPER PART	65000
29	79445	HOP MLD&LOWER PART	75000
30	79446	INSULATOR SUPP PANEL	55300
31	79447	ROOF PANEL ASSY	39300
32	79448	CASING STRUCTURE	100000
33	79449	CASING SHELL/PANEL	181000
34	79450	INLET-OUTLET FUNNEL	85900
35	79451	EXPANSION JOINTS	8000
36	79452	DUCTS BETWEEN APH & ES	70000
37	79453	DUCTS BET ESP & ID FAN	12000

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38	79454	DUCTS BETWEEN IDFAN AN	10000
39	79456	RECTIFIER HANDL SYST	30000
40	79457	SPLITTER&GUIDE VANES	14000
41	79459	CONTROL ROOM-INSERTS	17300
42	79460	CABLE-CABLE RACKS	42200
43	79461	EP PERF TEST EQUIPT	500
44	79462	CABLE TRAY AND FLEXIBL	49200
45	79463	ASH LEVEL INDICATOR	1154.944
46	79464	MISCELLANEOUS ITEMS	20000
47	79465	APP PLATFORM-HOPPER	20000
48	79466	WATER WASHING SYSTEM	2600
49	79467	MIN WOOL FOR ESP INSUL	77200
50	79468	FIXING COMP. FOR ESP I	40000
51	79469	MINERAL WOOL FOR DUCT	14790
52	79470	FIXING COMP FOR DUCT I	10000
53	79472	INTERLOCKS-EP	1000
54	79476	RECTIFIRS&CONTRLS-EP	48000
55	79477	LT SWITCH BOARD/ESP SW	13000
56	79478	BAPCON & ACCESSORIES	300
57	79480	FOUNDATION MATLS FOR E	4000
58	79481	SUPPOTING STRUCTURES F	85000
59	79482	SUPP STRU FOR DUCTS AP	10000
60	79483	SUPP STRU FOR DUCT ESP	5000
61	79484	DUCT SUPP BET ID AND C	4000
62	79485	DUCT SUPPORTS	8000
63	79486	ACCESS DOOR AND PLATFO	5000
64	79490	HEATING ELEMENTS	2200
65	79492	AUXILIARY CONTROL PANE	18000
66	79495	IOS PANEL	300
67	79988	COMMISSIONING SPARES	500
68	79996	TOOLS & TACKLES	200
69	89610	EP GALLERIES&STAIRS	39250
70	89611	ESP ROOF HANDRAILS	4700
71	89612	FLOOR GRILL AND STEP T	14477.244
72	89613	FLOOR GRILL AND MOBILE	13478.672
73	89615	INSULATION CLADDING SH	20000
74		ACTUATORS & GATES	44000
APPROX. TOTAL WEIGHT (KG)			<b>2657000</b>

**Tentative weight for Renovation of ESP package at NTPC Singrauli TPS  
Second Units, Stage-I (5 X 200 MW)**

SL NO	PGMA	Description	TENTATIVE WT(KG)
1	79401	ROLL/SLIDE SUPPORTS	6000
2	79405	ESP-SUB-DELIVERY COMPO	200
3	79406	INSULATOR HOUSING AS	24300
4	79408	GAS DIST. ASSY	40000
5	79409	GD-RAPPING MECHANISM	7700
6	79410	GD DRIVE ARRANGEMENT	450
7	79411	GAS SCREEN-EP	4300
8	79413	EMIT SYST SUSPENSION	9000
9	79414	SUPPORT INSULATORS	8576
10	79415	EMITTING ELECTRODES	13000
11	79416	EMIT ELECT RAPP MECH	20000
12	79417	DRIVE ARGT. FOR EMIT.	16700
13	79419	COL ELEC SUSPENSION	58600
14	79420	COLLECTING ELECTRODE	522000
15	79421	EMIT SYS FRAME-TOP	80400
16	79422	EMIT SYS FRAME BOTOM	83800
17	79423	INSPECTION DOORS	5000
18	79424	SHOCK BARS	49900
19	79425	COLL ELECT RAPP MECH	52400
20	79426	COLL ELEC RAPP DRIVE	3500
21	79428	ESP ROOF BEAM	70000
22	79430	ELECTRICAL SD COMPTS	4032
23	79431	GEARED MOTORS FOR RAPP	9900
24	79432	EMIT SYS FRAME-MIDLE	81600
25	79437	JUNCTION BOX & PUSH BU	1400
26	79442	OUTER ROOF-EP	88300
27	79443	HOPPER RIDGES	15000
28	79444	HOPPER UPPER PART	65000
29	79445	HOP MLD&LOWER PART	75000
30	79446	INSULATOR SUPP PANEL	55300
31	79447	ROOF PANEL ASSY	39300
32	79448	CASING STRUCTURE	100000
33	79449	CASING SHELL/PANEL	181000
34	79450	INLET-OUTLET FUNNEL	85900
35	79451	EXPANSION JOINTS	8000
36	79452	DUCTS BETWEEN APH & ES	70000
37	79453	DUCTS BET ESP & ID FAN	12000
38	79456	RECTIFIER HANDL SYST	30000

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39	79457	SPLITTER&GUIDE VANES	14000
40	79459	CONTROL ROOM-INSERTS	17300
41	79460	CABLE-CABLE RACKS	42200
42	79461	EP PERF TEST EQUIPT	500
43	79462	CABLE TRAY AND FLEXIBL	49200
44	79463	ASH LEVEL INDICATOR	1154.944
45	79464	MISCELLANEOUS ITEMS	20000
46	79465	APP PLATFORM-HOPPER	20000
47	79466	WATER WASHING SYSTEM	2600
48	79467	MIN WOOL FOR ESP INSUL	77200
49	79468	FIXING COMP. FOR ESP I	40000
50	79469	MINERAL WOOL FOR DUCT	14790
51	79470	FIXING COMP FOR DUCT I	10000
52	79472	INTERLOCKS-EP	1000
53	79476	RECTIFIRS&CONTRLS-EP	48000
54	79477	LT SWITCH BOARD/ESP SW	13000
55	79478	BAPCON & ACCESSORIES	300
56	79480	FOUNDATION MATLS FOR E	4000
57	79481	SUPPOTING STRUCTURES F	85000
58	79482	SUPP STRU FOR DUCTS AP	10000
59	79483	SUPP STRU FOR DUCT ESP	5000
60	79485	DUCT SUPPORTS	8000
61	79486	ACCESS DOOR AND PLATFO	5000
62	79490	HEATING ELEMENTS	2200
63	79492	AUXILIARY CONTROL PANE	18000
64	79495	IOS PANEL	300
65	79988	COMMISSIONING SPARES	500
66	79996	TOOLS & TACKLES	200
67	89610	EP GALLERIES&STAIRS	39250
68	89611	ESP ROOF HANDRAILS	4700
69	89612	FLOOR GRILL AND STEP T	14477.244
70	89613	FLOOR GRILL AND MOBILE	13478.672
71	89615	INSULATION CLADDING SH	20000
72		ACTUATORS & GATES	44000
APPROX. TOTAL WEIGHT (KG)			<b>2643000</b>

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TENTATIVE BOQ FOR ILLUMINATION PACKAGE FOR ESP AREA SINGRAULI TPS STAGE-I (FOR ANY TWO UNITS OF 5X200 MW)				
S. No.	Description	Qty.	Qty. for 1st Unit	Qty. for 2nd Unit
1	70/100/150W Well Glass Lighting Fixture Philips / Reputed HPSV	Nos.	75	75
2	2X28W Lighting Fixture Philips / Reputed	Nos.	25	25
3	Lighting Panel Normal AC / Emergency / DC Supply Panels	Nos.	6	6
4	63A, 415V, 5 pin & 20A, 230V, 3 Pin Industrial Receptacle	Nos.	8	8
5	J 'Type' Pole (3.5 Mtrs.) with Junction Box with Hardware	Nos.	30	30
6	Junction Box with termination Glands, Lugs etc.	Nos.	25	25
7	Stranded Flexible 2.5 / 4 sq. mm. Cu, PVC, FRLS Wire	Mtrs.	7500	7500
8	Hot Dip GI Conduit Heavy Duty – 20/25 mm Dia. 2mm Thick with Accessories with GI earth wire	Mtrs.	2500	2500
9	4CX25/35 sq. mm. AL, PVC, FRLS Armoured Cable	Mtrs.	500	500
10	Lighting Transformer approx. 100 KVA	Nos.	2	2

NOTE: These Items and quantities are tentative and may vary as per site requirement

**INDICATIVE LIST OF MANPOWER TO BE PROVIDED BY CONTRACTOR FOR EXECUTION OF TENDERED WORKS FOR MOST DURATION OF THE CONTRACT UNLESS OTHERWISE SPECIFIED**

<b>I</b>	<b>GENERAL MANPOWER</b>	<b>Unit-I (Nos.)</b>	<b>Unit-II (Nos.)</b>
1	Site In charge	1	1
2	Engineer	1	1
3	Supervisor	5	5
4	Safety/Quality officer	1	1
5	Office Assistant	1	1
6	Computer Operator	1	1
7	Accountant	1	1
8	Store Keeper/ Time Keeper	2	2
9	Foreman	2	2
10	EP Internal Fitter	3	3
11	Structural Fitter	6	6
12	Pipe Fitter	1	1
13	Junior Fitter	2	2
14	Sheet Fabricator	1	1
15	Structural Welder/LP Welder	12	12
16	Electrician	1	1
17	Junior Electrician	1	1
18	Gas Cutter	7	7
19	Grinder Man	4	4
20	Sarang	6	6
21	Rigger	20	20
22	Helper	30	30
23	Lagger	8	8
24	Painter	1	1
25	Hydra/Crane/Trailer Operator	6	6
26	Security Guards	2	2
	<b>Total</b>	<b>126</b>	<b>126</b>

The above list is only tentative and does not list out each and every item or grade of manpower or the quantity thereof. The Sub-contractor has to deploy all Manpower **ON THREE SHIFT BASIS** to complete the entire scope of work. The deployment of manpower shall be as per site requirement.

**INDICATIVE LIST OF MAJOR T&P AND IMTE'S TO BE PROVIDED BY CONTRACTOR FOR EXECUTION OF TENDERED WORKS PER UNIT FOR MOST DURATION OF THE CONTRACT UNLESS OTHERWISE SPECIFIED**

SL. No.	T&Ps, MMDs, Consumables & Other Materials	Quantity/Unit First Unit	Quantity/Unit Second Unit
1	Tower crane 6 MT	6 Crane Month or till completion of work	6 Crane Month or till completion of work
2	Crane, Tire mounted telescopic boom hydraulic crane (90/100 MT)	6 Crane Month or till completion of work	6 Crane Month or till completion of work
3	Hydra Crane (14/12T)	3	3
4	Tractor & Trailer 15/20T	2	2
5	Electric Winch 15T/10T/5T	10	10
6	Hydraulic Jacks 100T/50T/25T	2	2
7	Cutting torch	16	16
8	Scaffolding Materials Steel	400	400
9	Torq wrench	2	2
10	Wooden planks	100	100
11	Pistol drilling machine	1	1
12	Column Alignment Checking Device	2	2
13	Chain Pulley Block – 10T/5T/3T	As required	As required
14	Master Level – 0.02 mm/m	As required	As required
15	Spirit Level	As required	As required
16	Water Level	As required	As required
17	Piano Wire	As required	As required
18	Set of Spanners up to 90 mm	As required	As required
19	Welding Electrodes & Filler Wires	As required	As required
20	DA, Oxygen, Argon Gas	As required	As required
21	DPT Kits	As required	As required
22	Drilling Machines	As required	As required
23	D-shackles, wooden planks, Slings, Huck-chucks etc.	As required	As required
24	5KVA Motorized Meggar/electrical testing instruments/equipments	As required	As required
25	Other T&Ps, MMDs , Consumables & Materials	As required	As required
26	Tong Tester 10, 20 or 50 Amp + / - 3 % Accuracy.	As required	As required
27	Digital and Analogue Millimeters	As required	As required
28	U Tube Manometer 0-2000 mm Water Column	As required	As required
29	Inclined Manometer 0-50 mm Water Column	As required	As required
30	Digital Clamp Meter - 225	As required	As required
DURATION OF DEPLOYMENT OF THE ITEMS MENTIONED SHALL BE AS PER THE SCOPE OF REQUIREMENT.			

**Note:**

1. The subcontractor shall arrange, at his own cost, fuel and other consumables for the operation of the Cranes. The operators and helpers for cranes/tractor shall be provided by sub-contractor free of cost. The sub-contractors shall ensure that the cranes are in good working condition and carry out day to day maintenance of Cranes as per manufacturer's maintenance schedule at his cost. The supervision and labour required for maintenance of cranes shall be arranged by sub-contractor free of cost. For cranes, replacement of filter and repair of batteries, self, dynamo shall be the responsibility of the subcontractor.
2. The above list is only tentative and does not list out each and every item or grade of manpower or the quantity thereof. The Sub-contractor has to deploy all Manpower, T&Ps, MMDs, Consumables and other materials **ON THREE SHIFT BASIS** to complete the entire scope of work. The deployment of cranes shall be as per site requirement.
3. **MEASURING AND MONITORING DEVICES (MMD):**As per requirement to be finalized at site.
4. As there are bound to be interruptions in regular power supply, power cut/ load shedding in any construction site due to inherent power shortage in state; it shall be the responsibility of the contractor to arrange minimum numbers of diesel operated welding generator sets to get urgent and important work to go on without interruptions. The consumables required to operate the generators are to be provided by the bidders at their cost. No separate payment shall be made for this contingency.
5. Depending upon the nature of work and availability of facilities locally, contractor may have to arrange for a temporary workshop for facilitating uninterrupted progress of work.All the T&Ps required for this scope of work are to be arranged by the contractor within the quoted rates.

**SPECIFICATION OF PAINTING WORK**

1.0	The following Indian Standards may be referred to for carrying out the painting job: IS - 1303, 2379, 1477, 2524, 2395, 2338, 6278, 3140, 158, 2074, 104, and 2932.
2.0	All surfaces to be painted shall be thoroughly cleaned of all grease, oil, loose mill scale, dust, rust and any other foreign matter by mechanical cleaning with power tool, scrapping with steel wire brushes, and sand scrapping with wire brush/emery paper as per requirement. Cleaning with solvents shall be adopted only after approval of the customer.
3.0	After the surface is prepared, one coat of Zinc Phosphate primer conforming to IS: 2074 shall be applied. After first coat is dried up completely, second coat of red oxide primer shall be applied by brushing to ensure continuous film. The <b>dry film thickness</b> of each coat shall be <b>minimum 25 microns</b> .
4.0	Synthetic enamel paint conforming to IS: 2932 shall be used for finish coats. The color/ shade shall be as approved by the customer. After cleaning the dust on the dried up primer, first coat of synthetic enamel shall be applied. After this first coat dries up hard, the surface should be wet scrubbed cutting down to smooth finish and ensuring that at no place the first coat is completely removed. After applying second coat, allowing the water to get evaporated completely, third finish coat of painting shall be applied.
5.0	For all electrical equipment, powder coating shall be done as per the relevant standard.
6.0	Painting and Marking/Labeling of the materials erected. Arrangement of paints is included in the Scope of Work of the Contractor within quoted rate.

**TERMINAL POINTS**

**TERMINAL POINTS:**

The terminal points of the equipment and accessories offered under this specification shall be as follows:

- Air heater outlet.
- Inlet of expansion joints at ID fan(s) inlet.

**MEMO for imposition of penalty against non-compliances in Quality area**

The Lapse as tick marked below has been observed in your area and penalty is being imposed as per the details mentioned at the bottom of this memo:-

S. No	Nature of non- compliance	Penalty (in Rs.)	Remarks
1.	Non availability of required no. of Quality Engineers/NDT certified person as per contract	1000	Per Person per day
<b><u>Calibration:-</u></b>			
2.	Use of IMTEs without having valid calibration certificate	1000	Per equipment per instance
3.	Use of NDT equipment, welding equipment's without having valid calibration certificate, condition not as per requirement	1000	Per equipment per instance
<b><u>Welding &amp; NDT area:-</u></b>			
4.	Unqualified Welder carrying out weld/ tack weld	1000	Per welder per instance
5.	Not using portable oven	500	Per welder per instance
6.	Not using electrodes pre- baked in master oven/ approved make of electrodes/correct electrodes as per EWS/ WPS	500	Per instance
7.	Non- removal of slag and spatters after welding	200	Per Joint
8.	Not using NDT equipment as prescribed in the manual/ contract/ guidelines	1000	Per equipment per instance
9.	Welder doing welding without job card	500	Per instance
10.	Discrepancy observed in the RT taken of weld joints vs. RT offered	2000	Per joint
<b><u>Material management:-</u></b>			
11.	Mismatch of location of material in store area wrt in Stock register	200	Per instance
12.	Non-compliance of preservation of material as per storage & preservation manual	1000	Per equipment
13.	Non verification of material within stipulated time as per contract	500	Per instance
<b><u>Other Areas:-</u></b>			
14.	Painting without surface cleaning	500	Per instance
15.	Not attending Quality meeting by the nominated member	1000	Per meeting

Details of non- compliance (Name of Sub contractors, persons, description of deficiency, etc.)

Penalty imposed:-

1, Rate as per above chart \_\_\_\_\_

2. No. of Persons/ equipment/ instance/ Joint/ welder/meeting. \_\_\_\_\_

3. Total Penalty= 1. X 2. = \_\_\_\_\_

Signature

(Witnessed by Sub- Contractor representative)

Name \_\_\_\_\_

Distribution: 1. Sub- contractor

(Witnessed by PSNR Personnel)

Name \_\_\_\_\_

2. Head (Quality & Safety)/ BHEL PSNR