



BHARAT HEAVY ELECTRICALS LIMITED

(A GOVT. OF INDIA UNDERTAKING)

ELECTRONICS DIVISION

P.B.No. 2606 ,Mysore Road, Bangalore 560 026

External Services Department

Notice Inviting Tender (NIT)

For

Receipt of Station Control & Instrumentation Equipments and Cable Drums from BHEL Stores / Open yard, Verification / identification, shifting to place of Erection, Erection, Cable Laying & Termination and Providing Commissioning Assistance for Station Control & Instrumentation (C & I) package at Main Plant (TWO Units) and Common system (Off site areas),

AT

**TANDA THERMAL POWER PROJECT (TTPP),
STAGE-II, UNIT-5 & UNIT-6, (2 X 660 MW),**

**P.O. Vidyuth Nagar, Dist. Ambedkar Nagar,
Uttar Pradesh-224 238 of**

NTPC Ltd.

TENDER Ref. No.CE-ES/2017-18/07/NTPC TANDA-II/E & C/SNU

Dated 30.10.2017

Due Date and Time for submission of Bid: 22/11/2017, 13:00 Hrs.

Due Date and Time of Tender Opening: 22/11/2017 at 13:30 Hrs.

Total Number of pages (Including Cover page) 152



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भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited

(A Government of India Undertaking)

ELECTRONICS DIVISION

P.B. No. 2606, Mysore Road, Bangalore - 560 026

An ISO 9001, ISO 14001, OHSAS 18001 & ISO/IEC 27001:2005 Company

Gram : BHARATELEC
Fax : 080-26989217
PHONE : 26998.....
(EPABX. NO.)

IMPORTANT NOTE

BIDDER TO THIS TENDER DOCUMENT IS ADVISED TO CHECK AND ENSURE COMPLETION OF ALL PAGES OF TENDER DOCUMENT AND REPORT ANY DISCREPANCY TIMELY FOR CORRECTIVE ACTION, IF ANY, TO THE ISSUING AUTHORITY BEFORE THE BIDS ARE SUBMITTED. ORIGINAL COPY OF TENDER DOCUMENT COMPLETE IN ALL RESPECT MUST BE SUBMITTED BEFORE THE DUE DATE AND TIME SPECIFIED IN TENDER.

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SECTION-1 TENDER NOTICE

TENDER REFERENCE	CE-ES/2017-18/07/NTPCTANDA-II /C&I/SNU DATED 30.10.2017
JOB	Receipt of Station Control & Instrumentation Equipments and Cable Drums from BHEL Stores / Open yard, Verification / identification, shifting to place of Erection, Erection, Cable Laying & Termination and Providing Commissioning Assistance for Station Controls & Instrumentation (C & I) package at Main Plant (TWO Units) and Common system (Off site areas)
PROJECT SITE	NTPC, TANDA THERMAL POWER PROJECT, STAGE-II, 2 X 660 MW, UNIT # 5, UNIT # 6, P.O. Vidyuth Nagar, Dist. Ambedkar Nagar, Uttar Pradesh-224 238.
TENDER TYPE	TWO PART BID
EARNEST MONEY DEPOSIT	Rs.6,52,000/- (Rupees Six Lakhs Fifty Two Thousand only)
WEB SITE FOR TENDER NOTIFICATION DETAILS	www.bhel.com / www.tender.gov.in
DUE DATE & TIME FOR SUBMISSION	22.11.2017 up to 13:00 Hrs.
ESTIMATE	Rs.326 Lakhs (Rupees Three Crores Twenty Six Lakhs only)
CONTACT PERSONS	Sri. S.N. Udaya Shankar Senior Manager / External Services Mobile No. 9535177555, e-mail : uday@bheledn.co.in Sri. G. Saravanan Additional General Manager External services Mobile No. :9900541230 e-mail : saravanang@bheledn.co.in
THE OFFICER INVITING TENDER AND ADDRESS FOR COMMUNICATION	Sri. S.N. Udaya Shankar Senior Manager / CE External Services NEB 5TH Floor, Bharath Heavy Electricals Limited Electronics Division



	<p>P.B.No. 2606, Mysore Road, Bangalore-560 026, Karnataka. Phone: 080-26989240 / 26998658 / 26998896</p>
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**Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)
External Services Department
Electronics Division
Mysore Road
BANGALORE-560 026.**

Phone No. 080-26998896 / 26989240 / 26998658 /

Fax No. 080-26989222

e-mail: uday@bheledn.co.in, extservices@bheledn.co.in

Tender Notice – News Paper

Ref.: CE-ES/2017-18/07/NTPC TANDA-2/E&C/SNU	Date: 27.10.2017
Sealed tenders in the prescribed form are invited from Contractors having experience in execution of similar nature of work.	
Erection & Commissioning of Station C & I system 2x660MW, NTPC Tanda, UP.	
For details, visit www.bheledn.com . www.bhel.com and www.tenders.gov.in .	
All corrigendum, addendum, amendments, time extensions, clarifications, etc. (if any) to the tender will be hosted on www.bheledn.com and www.bhel.com websites only.	
Bidders should regularly visit websites to keep themselves updated.	
Authorised Signatory	



SECTION-II

PROCEDURE FOR SUBMISSION OF SEALED TENDERS

- 1) The Bidders must submit their **TWO PART** Offers in the following manner .

TECHNICAL BID (COVER-I)

- 2) Except Price bid Part-II, complete set of tender documents consisting of General Conditions of Contract “ Technical Specification & Special Terms and Conditions ” (Part-I) issued by BHEL shall be enclosed in Part-I technical Bid only. All schedules, Data sheets and details called for in the specification shall also be submitted along with Technical bid including offer letter duly signed and stamped. This Sealed Cover shall be super scribed with Tender Reference number, Due date, Time.

PRICE BID (COVER-II)

- 3) Bidders may please note that Price bid is to be submitted only in Original copy of Tender- Part-II, (PRICE BID) issued by BHEL and **NO duplicate copy** of the same is required. This Sealed Cover shall be super scribed with Tender Reference number, Due date, Time.

EARNEST MONEY DEPOSIT (COVER-III)

- 4) The EMD amount in prescribed form need to be submitted in this cover and this Sealed Cover shall be super scribed with Tender Reference number, Due date, Time.

COVER – IV

- 5) The above separate Covers i.e., Cover-I, Cover-II & Cover-III shall together be kept in a fourth Cover (Cover-IV) and this Sealed Cover shall be super scribed with Tender Reference number, Due date, Time and submitted to Officer inviting tender as indicated in tender notice on OR before due date, as indicated.
- 6) NOTE : BHEL reserves the right to go for REVERSE Auction (RA) instead of opening the sealed cover Price Bid, submitted by the Bidder. This will be decided after Techno-commercial evaluation. All Bidders have 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 R.A. In case BHEL decides to go for Reverse Auction, only those Bidders who have given their acceptance to participate in R.A. 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 extent guide lines in vogue. Information and General Terms and Conditions governing RA is provided in Annexure-III (Section-5) of General Conditions of Contract (GCC). Before RA, BHEL will be provided with BOQ with Factor for calculating Unit Rates, which should be adhered strictly after Reverse Auction for Price Breakup.

7) Note: Bidders selection is subject to approval of BHEL’s Customer for this work, i.e. M/s. NTPC Ltd., Tanda.

8) The Tender Documents comprises of following-

a. PART I – TECHNICAL BID

- i. Tender Notice
- ii. Procedure for submission of Tender and Qualifying Requirements
- iii. Project Synopsis
- iv. General Instruction to Bidders
- v. General Conditions of Contract
- vi. Special Conditions of Contract
- vii. Specification for Health, Safety and Environment (HSE)
- viii. Annexure to Part-I

b. PART – II PRICE BID

- i. Rate Schedule (Total Price)
- ii. Bill of Quantities and Unit Rate Calculation of individual Items.

9) The tender documents with complete details are hosted on BHEL’s web page www.bhel.com and also www.tenders.gov.in. Bidders intending to participate may download the tender document from the web site.

10) Bidders intending to participate may download the tender documents from the web site. The successful bidder will be decided on the least overall price quoted by the bidder.

11) Tenders must be submitted to the undersigned latest by 13:00 Hrs on 22.11.2017. Technical bids shall be opened at 13:30 Hrs. on 22.11.2017 at the Tender opening Room next to Reception at BHEL, Electronics Division, Mysore Road, Bangalore. Tenders not accompanied with full Earnest Money Deposit of Rs.6,52,000/- (Rupees Six Lakhs Fifty Two Thousand only) by Pay Order or Demand Draft will not be considered. Tenders received after the due date and time shall be liable to be summarily rejected.

12) All corrigenda ,addenda, amendments and clarifications to this tender will be hosted in BHEL websites www.bhel.com and www.tenders.gov.in only and not in the newspaper.



Bidders shall keep themselves updated with all such amendments by visiting the websites regularly.

13) BHEL reserves the right to accept or reject any or all tenders without assigning any reason whatsoever.

14) BHEL takes no responsibility for any loss / delay of documents correspondences sent by courier / post.

15) Bids once submitted, shall not be returned.

16) Unsolicited rebate/ discount shall Not be accepted after bid opening.

17) In case BHEL decides not to go for Reverse Auction (RA) 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 without seeking anymore price Impacts on account of BHEL not going for Reverse Auction. Hence, please quote your best lowest price in first instant itself. After Reverse Auction, Unit Rates should be inline with the factor given in BOQ.

**Senior Manager
External Services**



Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)
External services Department
Electronics Division,
Mysore Road, Bangalore-560 026.

BHEL EDN GSTIN number is 29AAACB4146P1ZB.

PART – I

TECHNICAL BID



PRE-QUALIFYING REQUIREMENTS (PQR):

“Bidder who wish to participate should full fill following ‘Qualifying Requirements’:

1. Experience of having successfully completed Erection & Commissioning (E&C) along with cabling Works of Controls & Instrumentation System in coal-based Thermal Power Plant at least 200 / 210 MW rating OR above, during last 7 years ending 31.03.2017 should be any one of the following.
 - a. Three similar completed works each costing not less than the amount equal to Rs.131 Lakhs
OR
 - b. Two similar completed works each costing not less than the amount equal to Rs.163 Lakhs
OR
 - c. One similar completed work costing not less than the amount equal to Rs.261 Lakhs
2. Average Annual **financial turn over** during the last 3 years, ending 31st March 2017, should be at least **Rs.98 Lakhs**.
 - Bidder shall submit copies of relevant documents like Work Order along with certification/proof in support of execution for the above along with duly filled in Annexure –B.
 - Evaluation of Turnover criteria for the tenders received from bidders shall be calculated from the Audited Balance Sheet and Profit & Loss Account for the last three Financial Years (FY) submitted with duly filled in Annexure-A.
 - The value of Work order to be furnished by the Bidder shall be for Installation and Commissioning work only.

**Essential Criteria for Techno-Commercial Acceptance of Bid**

1.0	PAN No. of Tenderer (Copy of the same to be enclosed)	Enclosed/Not enclosed
2.0	GSTIN (Copy of the same to be enclosed)	Enclosed/Not enclosed
3.0	If not registered under GST, undertaking to be submitted that Contractor will register and furnish copy of certificate, before submitting the first bill	Acceptable/ Not Acceptable
4.0	Taxes quoted in price Bid . Tick as applicable with %	IGST Or SGST + CGST Or UTGST + CGST
5.0	SAC Code	

SECTION - III PROJECT SYNOPSIS

The NTPC Ltd., is setting up a Coal fired Thermal Power station at TANDA in their Stage-II, (Rating:- 2 x 660MW), P.O.Vidyuthnagar, Ambedkarnagar District of Uttar Pradesh-224 238. The Stage-I, (4x210 MW) of this project has already been commissioned.

BHEL has been awarded the work of supply, material receipt, storage preservation, erection, testing and commissioning of stage II (2 x 660 MW) Unit-5 & 6, Station Controls & Instrumentation (C & I) package by NTPC. The site is surrounded by East –Makhdoom nagar Village, West - Dharpur Village, South- Karimpatti Village, Faridpur Kala Village North - Salarpur Rajaur Village, Vajidpur Village & Ghaghra River in the Ambedkarnagar District of Uttar Pradesh.

On the part of BHEL, it has to create its own storage, residential and Office facility at site. NTPC has given the open land for development of infrastructure at site and BHEL shall have to develop it for construction of closed shed and open storage yard & office complex.





Approach to site : - The nearest Rail Head is Akbarpur Railway Station of Northern Railway broad gauge link, at a distance 25 Kms. from the Power Station.

The Project is approachable from Lucknow on Lucknow – Gorakhpur NH 28 (200 kms) or 70 km from Faizabad, 5 Kms. From TANDA Town by all weather road which runs along the Eastern Boundary of the plant.

Nearest Air port : Lucknow

The distances of Project location from Lucknow : 200 kms

from Faizabad : 70 kms.

Note: Bidders are advised to visit the project site and collect adequate information regarding the local site conditions before submitting their offer.

Contact Details for Site Visit:

- 1) Sri. Ravi Ojha, Senior Engineer, BHEL EDN Site Office
Mobile phone No. 8800818520 / 9453126345
- 2) Sri. S.N. Udaya Shankar,
Senior Manager, External Services, BHEL EDN, Bangalore.
Office: 080-26998896 / Mobile phone no. 9535177555
- 3) Sri. G.Saravanan,
Addl. General Manager, External Services, BHEL EDN, Bangalore
Office: 080-26989240 and 26998658 / Mobile phone no. 9900541230

Accommodation: No Accommodation will be available for the Bidder inside NTPC Tanda Township. Bidders have to arrange their own accommodation outside NTPC Tanda Township. Wherever Bidder sets up the accommodation, to and fro transportation for their Staff, workmen and material between Tanda Thermal power Project (TPP) and Bidder's place of accommodation will be the sole responsibility of the Bidder.



SECTION- IV

GENERAL INSTRUCTIONS TO BIDDERS

- 1) This tender specification as a whole, furnishing all the details and other documents as required in the following pages, **shall be duly signed** and sent in a sealed cover (IN DUPLICATE) super-scribing the name of work, tender enquiry number, due date and time for tender opening as given in the tender notice.
- 2) The tender shall be addressed to : THE OFFICER INVITING TENDER AS INDICATED IN THE TENDER NOTICE.
- 3) Tenders submitted by post shall be sent as "**REGISTERED/ SPEED/ COURIER POST** " and shall be posted with due allowance for any postal delay. The tenders received after the due date and time of opening are liable to be rejected.
- 4) Tenders shall be opened at the time and date as specified in the tender notice in the presence of such of those Bidders OR their authorised Representatives who may be present.
- 5) The Bidders shall closely peruse all the clauses, specifications and drawings indicated in the Tender Documents before quoting. Should the Bidder have any doubt about the meaning of any portion of the Tender Specifications or find discrepancies / omission in the Drawings or the tender documents issued are incomplete or shall require clarification on any of the technical aspect, scope of work etc., he shall at once contact the authority inviting the tender for clarification before the submission of the tender.
- 6) Before tendering, the Bidders are advised to visit the project site of work and the environments and be acquainted with the actual working and other prevalent conditions, facilities available accommodation like, position of material and labour etc. No claim will be entertained later on grounds of lack of knowledge.
Accommodation: No Accommodation will be available for the Bidder inside NTPC Tanda Township. Bidders have to arrange their own accommodation outside NTPC Tanda Township. Wherever Bidder sets up the accommodation, to and fro transportation for their Staff, workmen and material between Tanda Thermal power Project (TPP) and Bidder's place of accommodation will be the sole responsibility of the Bidder. **It may be required for the Bidder to produce the proof of visit to site, in case BHEL requires during scrutiny of the offers.**
- 7) Bidders must fill up all the schedules and furnish all the required information as per the instructions given in various sections of the tender specification. Each and every page of the Tender Document along with filled in Annexures, appendices, drawing etc must be SIGNED, STAMPED AND SUBMITTED ALONG WITH THE



OFFERED DOCUMENTS by the Bidder in token of complete acceptance thereof. The information furnished shall be complete by itself.

- 8) The Bidder shall quote the Rate in English Language and international numerals. The Rate shall be entered in figures as well as in words. In case of difference in Rate between words and figures THE LESSER OF THE TWO will be treated as valid rate. For the purpose of tender, the metric system of units shall be used.
- 9) All entries in the tender shall either be typed or be written in ink. Erasing and over writings are not permitted and may render such tenders liable to be summarily rejected. **All cancellations and insertions shall be duly attested by the Bidder.**
- 10) **QUALIFICATIONS OF BIDDERS** : Only Bidders who have previous experience in the work of this nature and description detailed in this tender specification are expected to quote for this work. Offers from Bidders who do not have proven and established experience in the field are not likely to be considered. Bidders should meet the **Pre-Qualifying Requirements (PQR)** conditions and **Essential Criteria for Techno-Commercial Acceptance**, as given in Technical Bid –PART-I on page-12 and 13.
- 11) **DATA TO BE ENCLOSED** : Full information shall be given by the Bidder in respect of the following. Non submission of these information may lead to rejection of the offer.

11.1 **FINANCIAL STATUS** : Financial viability as per proforma enclosed at **Annexure-`A'**

11.2 **INCOME TAX CLEARANCE CERTIFICATE**: A certificate of Income tax clearance from the appropriate authority in the forms prescribed thereof duly indicating annual turnover. These certificates shall be valid for one year from the date of issue or for the period prescribed therein for all tenders submitted during the period. This is to be submitted on demand from BHEL.

11.3 **PREVIOUS EXPERIENCE**: A certificate giving details particulars (giving documentary evidence) of the various service rendered in progress for each similar works by the Bidder indicating the particulars and value of each work, the site location, the duration, date of completion etc., strictly as per pro forma enclosed at ANNEXURE-B.

11.4 **ORGANISATION CHART** :The organisation pattern that are totally available with him and that will be employed by the Bidder for this work in the form of month wise and category wise deployment plan duly indicating the number of Engineers, Supervisors, Skilled and Unskilled workers etc., as per proforma enclosed at ANNEXURE-`C'.

11.5 In case of an Individual : His Full name experience, address and nature of business
NIT No. CE-ES/2017-18/07/ NTPC TANDA-II/C&I/SNU
dated 30.10.2017

Signature & Seal of the Bidder



OR

IN CASE OF PARTNERSHIP FIRMS : The names of all the partners with addresses and their experience. A copy of the partnership deed/ instrument of Partnership duly certified by a Notary Public shall be enclosed.

OR

IN CASE OF COMPANIES : Date and place of registration including date of commencement certificate in case of public companies and the nature of business carried or by the Company. Certified copies of memorandum and Articles of Association are also to be furnished. Also indicate names, addresses and experience of the Directors.

11.6 Status of tools and tackles (including cranes, tractor-trailers, winches, Derricks, welding sets etc., wherever applicable) that the Bidder is having and those that will be deployed on this job as per pro forma enclosed at ANNEXURE-`D'.

11.7 Analysis of unit rate quoted as per pro forma enclosed at ANNEXURE-`E'.

11.8 Declaration sheet as per Pro forma enclosed at ANNEXURE-`F'.

11.9 In addition to the above, the particulars required elsewhere in tender documents.

11.10 Checklist and schedule of general particulars duly filled in, signed and stamped as per ANNEXURE-`G'.

NOTE : In terms of clauses 11.1 to 11.10 above, all the data required to be enclosed with the tender need to be furnished neatly typed, signed and stamped in the given formats only (in the form of separate sheets) failing which the tender may be considered as incomplete and is liable for rejection. Documentary proofs wherever necessary also need to be enclosed.

11.11. All entries in the tender documents should be in the same ink. Erasures and over writing are not permitted. The tenderer concerned with proper indication of the name, designation and address of the person signing should duly sign all cancellations and insertions.

11.12. Unit rates should be quoted in figures as well as in words in Indian Currency only i.e. Rupees and Paise with reference to each item and for all the items shown in the attached schedule. The tenderers shall fill amount of each item and the total on each sheet as also the grand total amount of the whole contract.

11.13. In quoting their rates, the tenderers are advised to take into account all factors including any fluctuations in market rates. No claim for enhanced rates will be entertained on this account after acceptance of the tender or during the currency of the contract. The



changes in GST rates due to statutory amendment of GST Act during the course of contract will be paid as applicable.

12 EARNEST MONEY DEPOSIT : Every tender must be accompanied by the prescribed amount of Earnest Money Deposit in any one of the following forms :-

- Pay Order OR Demand Draft in favour of BHEL payable at Bangalore
- Through **SBI Collect Online transaction** (A copy of receipt to be enclosed along with the offer) as per the following steps :-

SBI E Collect

- 1 Click on the link: <https://www.onlinesbi.com/prelogin/icollecthome.htm>
- 2 **Agree** the terms and condition Click on proceed
- 3 Choose State of Corporate : **KARNATAKA**
- 4 Type of Corporate : **INDUSTRY**
- 5 Select Industry : **BHARAT HEAVY ELECTRICALS LTD**
- 6 Select category : **EMPLOYEES / OTHERS**
- 7 Fill the necessary information
- 8 Make the payment through any **net banking/Debit card**
- 9 Download Receipt keep it for reference.

NOTE : Bank Guarantee, Cheques, Currency Notes, Money Orders or Postal Orders will not be accepted.

12.1 Pay Order or Demand Draft in favour of Bharat Heavy Electricals Limited, Bangalore

12.2 Tenders received without Earnest Money in full in the manner prescribed above will not be considered.

12.3 The Earnest Money Deposit of the successful Bidder will be retained towards part of Security Deposit.

12.4 In the case of unsuccessful Bidders, the Earnest Money Deposit will be refunded normally within Thirty days of acceptance of award of work by the successful Bidder. Refund of EMD to the **unsuccessful bidders** will be made to their Bank Account through EFT only. For this purpose bidder has to submit the EFT form duly filled in, endorsed by Banker & cancelled Cheque along with their offer



12.5 BHEL reserves the right of forfeiture of Earnest Money deposit in case the successful Bidder : -

(a). After opening of Tender, revokes his tender within the validity period or increases his earlier quoted rates.

(b) Does not commence the work within the period as per LOI/Contract. In case the LOI/Contract is silent in this regard, then within 15 days after award of Contract.

12.6 EMD shall not carry any interest.

13. AUTHORISATION AND ATTESTATION : Tenders shall be signed by persons duly authorised / empowered to do so. Certified copies of such authority and relevant documents shall be submitted along with the tenders.

14 VALIDITY OF OFFER : THE OFFER SHALL BE KEPT OPEN FOR ACCEPTANCE FOR A MINIMUM PERIOD OF THREE (3) MONTHS FROM THE DATE OF OPENING OF TENDERS. In case Bharat Heavy Electricals Limited calls for negotiations, such negotiations shall not amount to cancellation or withdrawal of the original offer which shall be binding on the Bidders.

15 EXECUTION OF CONTRACT :The successful Bidder's responsibility under this Contract commences from the date of issue of the Letter of Intent (LOI) by Bharat Heavy Electricals Limited. The successful Bidder shall be required to execute an agreement in the prescribed form as per ANNEXURE-I, with BHEL within a reasonable time after the acceptance of his tender and in any case before submitting the first bill for payment.

16. **SECURITY DEPOSIT** : Upon acceptance of tender, the successful Bidder must deposit the required amount of security deposit within the time specified in the Letter of Intent for the execution of work.

16.1 **The total amount of Security Deposit shall be 5 % of the Contract Value (Basic Value + GST).**

16.2 The Security Deposit will be deposited within 15 days from the date of issue of Letter of Intent but before start of work in any one of the following forms :-

(a) The total Security Deposit as indicated in the Letter of Intent in cash (As permissible under Income Tax Act).

(b) Pay Order, Demand Draft in favour of BHEL, SBI e-Collect



(c) Local cheques of scheduled banks, subject to realization.

d) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of Contractor furnishing the security and duly pledged in favour of BHEL and discharged on the back).

e) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act subject to a maximum of 50% of the total security deposit value. The balance 50% has to be remitted either by cash or in the other form of security. The Bank Guarantee format should have the approval of BHEL.

f) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act . The FDR should be in the name of the Contractor, A/C BHEL, duly discharged on the back.

g) Security deposit can also be recovered at the rate of 10% from the running bills. However in such cases at least 50% of the Security Deposit should be collected before start of the work and the balance 50% may be recovered from the running bills.

h) EMD of the successful Bidder shall be converted and adjusted against the security deposit.

16.3 The security deposit shall not carry any interest.

NOTE: Acceptance of Security Deposit against Sl. No. (d) and (f) above will be subject to hypothecation or endorsement on the documents in favour of BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith.

16.4 Security deposit shall not be refunded to the Contractor except in accordance with the terms of the Contract.

16.5 The validity of the Bank Guarantee furnished towards Security Deposit under (e) above shall be up to the period of completion of work as stipulated in the Letter of Intent + 6 (six) months claim period and the same will be kept valid by proper renewal till the satisfactory completion of the Guarantee Period.

16.6 If the value of the work done at any time exceeds the accepted agreement value, the Security Deposit shall be correspondingly enhanced and the extra Security Deposit shall be immediately deposited by the Contractor or recovered from payments due to him.

16.7 Failure to deposit the Security Deposit within the stipulated time, may lead to forfeiture of Earnest Money Deposit and Cancellation of the award of work.



16.8 If any part of Security Deposit of the Contractor is held in the form of approved securities, it shall be kept transferred in the name of Bharat Heavy Electricals Limited, in such a manner that the same can be realised fully without referring to the Contractor. BHEL shall not be responsible for any depreciation in the value of the Security while in BHEL's custody or for any loss of interest thereon.

16.9 BHEL reserves the right of forfeiture of Security Deposit in addition to other claims and penalties in the event of the Contractor's failure to fulfil any of the Contractual obligations or in the event of termination of Contract as per terms and conditions of Contract. BHEL reserves the right to set off the Security Deposit, against any claims of any other Contracts with BHEL.

16.10 RETURN OF SECURITY DEPOSIT : If the Contractor fully performs and completes the work in all respects to the entire satisfaction of BHEL and presents an absolute "No Demand Certificate" in the prescribed form and returns properties belonging to BHEL, taken, borrowed or hired by him for carrying out the said works, half the amount of Security Deposit will be released to the Contractor after deducting all costs, expenses and other amounts that are to be paid to BHEL under this or other Contracts entered into with the Contractor.

It may be noted that, in no case the Security Deposit shall be refunded / released prior to passing of final bill. Balance half of the amount of Security Deposit will be released only after the Guarantee period is over.

NOTE : All the BGs are to be submitted as per BHEL proforma.

17 **No interest** shall be payable by BHEL on Earnest Money Deposit, Security Deposit or on any moneys due to the Contractor.

18 **REJECTION OF TENDER AND OTHER CONDITIONS :**

18.1 The acceptance of Tender will rest with BHEL which does not bind itself to accept the lowest tender or any tender and reserves to itself full rights for the following without assigning any reasons whatsoever.

- a) To reject any or all of the tenders.
- (b) To split up the work amongst two or more Bidders.
- (c) To award the work in part.
- (d) In either of the contingencies stated in (b) and (c) above to modify the time for completion Suitably.

18.2 Conditional and un-witnessed tenders, tenders containing absurd or unworkable rates and amounts, tenders which are incomplete or otherwise considered defective and



tenders not in accordance with the tender conditions, specifications, etc., are liable to be rejected.

18.3 If a Bidder expires after the submission of his tender or after the acceptance of his tender, BHEL may at its discretion, cancel such tender. If a partner of a firm expires after the submission of the tender or after the acceptance of the tender, BHEL may cancel such tender at its discretion unless the firm retains its character.

18.4 BHEL will not be bound by any Power of Attorney granted by the Bidder or by changes in the composition of the firm made subsequent to the execution of the Contract. BHEL may, however, recognise such Power of Attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the Contractor concerned.

18.5 If the Bidder deliberately gives wrong information in his tender, BHEL reserves the right to reject such tender at any stage or to cancel the Contract, if awarded and forfeit the Earnest Money/ Security Deposit/ any other amounts due.

18.6 Canvassing in any form in connection with the tender is strictly prohibited and the tenders submitted by the Bidder who resorts to canvassing are liable to be rejected.

18.7 Should a Bidder or Contractor or in the case of a firm or Company of Contractors/ one or more of its Partners/ share holders / Directors have a relation or relations employed in BHEL, the authority inviting tender shall be informed to the fact along with the offer, failing this, BHEL may, at its sole discretion reject the tender or cancel the Contract and forfeit the Earnest Money/ Security Deposit

18.8 The **successful Bidder should not sub-Contract** the part or complete work detailed in the tender specification without written permission from BHEL. The Bidder is solely responsible for the work awarded to him by BHEL.

18.9 **NO DEVIATIONS** to the tender conditions will normally be accepted. However, if the Bidder insists for certain deviations to the conditions, financial implication thereof shall be loaded to the quoted price for evaluating the Bidder's offer.

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SECTION – V
GENERAL CONDITIONS OF CONTRACT (GCC)

1. The following terms and expressions shall have the meaning hereby assigned to them except where the context otherwise requires.
2. BHEL (or B.H.E.Ltd.) shall mean Bharat Heavy Electricals Limited, a Company registered under the Indian Companies Act, 1956, with its Registered Office at BHEL HOUSE, SIRI FORT, NEW DELHI-110049 or its authorised officers or its Engineer or other employees authorised to deal with any matters with which these persons are concerned, on its behalf.
3. 'GENERAL MANAGER' shall mean the Officer in Administrative charge of the Contracting Unit of BHEL.
4. 'ENGINEER' or 'ENGINEER-IN-CHARGE' shall mean Engineer deputed by BHEL. The terms includes Deputy General Manager, Construction Manager, Resident Manager, Site Engineer, Resident Engineer and Assistant Site Engineer of BHEL at the site as well as the officers in Charge at BHEL Bangalore.
5. 'SITE' shall mean the place or places at which the plants/ equipment are to be erected and services are to be performed as per the specifications of this Tender.
6. 'CLIENTS OF BHEL' or 'CUSTOMER' shall mean the project authorities to whom BHEL is supplying the equipment.
7. 'CONTRACTOR' shall mean the individual, Firm or Company who enters into Contract with BHEL and shall include their executors, administrators, successors and permitted assigns.
8. 'CONTRACT' or 'CONTRACT DOCUMENT' shall mean and include the agreement, the work order, the accepted appendices of rates, Schedules of Quantities, if any, General Conditions of Contract, Special Conditions of Contract, Instructions to Bidders, the drawings, the technical specifications, the special Conditions, etc. if any.
9. The tender terms stipulated by the Bidder in the tender documents or subsequent letter shall not form part of the Contract unless specifically accepted in writing by BHEL in the Letter of Intent and incorporated in the Agreement.
10. Acceptance Letter Issued by BHEL : Any conditions or terms stipulated by the Contractor in the tender documents or subsequent letters shall not form part of the



Contract unless specifically accepted in writing by BHEL in the Letter of Intent and incorporated in the Agreement.

11. **`GENERAL CONDITIONS OF CONTRACT'** shall mean the `Instructions to Bidders and `General Conditions of Contract' pertaining to the work detailed.
12. **`TENDER SPECIFICATIONS'** shall mean the Special Conditions, Technical Specifications, appendices, Site information and drawings pertaining to the work for which the Bidders are required to submit their offer. Individual Specifications Number will be assigned to each tender specifications.
13. **`TENDER DOCUMENTS'** shall mean the General Conditions of Contract (Clause 11) and Tender Specifications (Clause 12).
14. **`LETTER OF INTENT'** shall mean the Intimation by a letter / telegram / telex / fax to the Bidder that the tender has been accepted in accordance with provisions contained in the letter. The responsibility of the Contractor commences from the date of issue of this letter and all the terms and conditions of Contract are applicable from this date.
15. **`COMPLETION TIME'** shall mean the period by date specified in the Letter of Intent or date mutually agreed upon for handing over the erected equipment/ plant which are found acceptable by BHEL Engineer being of required standard and conforming to the specifications of the Contract.
16. **`PLANT'** shall mean and connote the entire assembly of the plant and equipment covered by the Contract.
17. **"EQUIPMENT"** shall mean all equipment, machineries, materials, structurals, electricals and other components of the plant covered by the Contract.
18. **`TESTS'** shall mean and include such test or tests to be carried out by the Contractor as are prescribed in the Contract or considered necessary by BHEL in order to ascertain the quality, workmanship, performance and efficiency of the Contracted work or part there of.
19. **`APPROVED', `DIRECTED' or `INSTRUCTED'** shall mean approved, directed or instructed by BHEL.
20. **`WORK' or `CONTRACT WORK'** shall mean and include supply of all categories of labour, specified consumables, tools and tackles required for complete and satisfactory site transportation, handling, stacking, storing, erecting, testing and commissioning of the equipment to the entire satisfaction of BHEL.



21. **'SINGULAR'** and **'PLURAL'** etc. Words carrying singular number shall also include plural and vice versa where the context so requires. Words importing masculine gender shall be taken to include the feminine gender and words importing persons shall include any Company or association or Body of Individuals, whether incorporated or not.
22. **'HEADINGS'** The headings in these General Conditions are solely for the purpose of facilitating reference and shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or the Contract.
23. **'MONTH'** shall mean calendar month.
24. **'WRITING'** shall include any manuscript, type written or printed statement under the signature or seal as the case may be.

25. LAW GOVERNING THE CONTRACT AND COURT JURISDICTION:

The Contract shall be governed by the Law for the time being in force in the Republic of India. The Civil Court at Bangalore, having ordinary Original Civil Jurisdiction shall alone have exclusive jurisdiction in regard to all claims in respect of this Contract.

26. **ISSUE OF NOTICE** : The Contractor shall furnish to the Engineer, the name, designation and address of his authorised agent and all complaints, notices, communications and references shall be deemed to have been duly given to the Contractor, if delivered to the Contractor or his authorised agent or left at or posted to the address either of the Contractor or his authorised agent and shall be deemed to have been so given in the case of posting on the day on which they would have reached such address in the ordinary course of post or at which they were so delivered or left.
27. **USE OF LAND** : No land belonging to BHEL or its Customer under temporary possession of BHEL shall be occupied by the Contractor without the written permission of BHEL.

28. COMMENCEMENT AND COMPLETION OF WORK :

28.1 The Contractor shall commence the work within the time indicated in the Letter of Intent and shall proceed with the same with due expedition without delay.

28.2 If the successful Bidder fails to commence the work within the stipulated time, BHEL, at its sole discretion, will have the right to cancel the Contract. His Earnest Money and/ or Security Deposit will stand forfeited without any further reference to him without prejudice to any and all of BHEL's other rights and remedies in this regard.



28.3 All the works shall be carried out under the direction and to the satisfaction of BHEL.

28.4 The transported equipment, erected /constructed plant or work performed under the Contract, as the case may be, shall be taken over when it has been completed in all respects and/or satisfactorily put into operation at site.

29. MEASUREMENT OF WORK AND MODE OF PAYMENT

29.1 All payments due to the Contractor shall be made through Electronic Fund Transfer (EFT) only to their Bank account directly.

29.2 For progress/running bill payments, the Contractor shall present detailed measurement sheets in Quadruplicate duly indicating all relevant details based on technical documents and connected drawings for the work done during the month/ period under different categories in line with terms of payment as per Letter of Intent. The basis of arriving at the quantities/ weights shall be the relevant documents and drawings released by BHEL. These measurement sheets shall be prepared jointly with Engineer and signed by both the parties.

29.3 These measurement sheets will be checked by the Engineer and quantities and percentages eligible for payment under different groups shall be decided by him. The abstract of quantities and percentages so arrived at based on the terms of payment shall be entered in the **Measurement Book and signed by both the parties.**

29.4 Based on the above quantities, Contractor shall prepare the bills in the prescribed proforma and work out the financial value. These will be entered in the Measurement Book and signed by both the parties. Payment shall be made by BHEL after effecting the recoveries dues, if any, from the Contractor.

The payment against each RAB shall be done up to the limit of passed amount according to measurement sheet, subject to submission of all the HR-ER documents like Insurance, worker's wage sheet, Wage register copy, papers for PF submission proof and proof related to compliance of tax liabilities. Failing to submit documents 5% of the passed amount of the subject RAB shall be recovered which shall be paid after submission the above documents.

29.5 All recoveries due from the Contractor for the month / period shall be effected in full from corresponding Running bills unless specific approval from Competent authority is obtained to the contrary.

29.6 Measurement shall be restricted to that quantity for which it is required to ascertain the financial liability of BHEL under this Contract.



29.7 Measurement shall be taken jointly by persons duly authorised by BHEL and the Contractor.

29.8 The Contractor shall bear the expenditure involved, if any, in making the measurements and testing of materials to be used/ used in the work. The Contractor shall, without extra cost to BHEL, provide all the assistance with appliances and other things necessary for measurement.

29.9 If, at any time due to any reason whatsoever, it becomes necessary to remeasure the work done, in full or in part, the expenses towards such re-measurement shall be borne by the Contractor.

29.10 Passing of bills covered by such measurements does not amount to acceptance by BHEL of the completion of the work measured. Any left out work has to be completed by the Contractor, as directed.

29.11 Final measurement bill shall be prepared in the proforma prescribed for the purpose, based on the certificate issued by the Engineer that the entire work as stipulated in the tender specifications has been completed in all respects to the entire satisfaction of BHEL. The Contractor shall give unqualified 'No Claim' and 'No Demand' certificates. All the tools and tackles loaned to him should be returned in condition satisfactory to BHEL. The abstract of final quantities and financial values shall also be entered in the Measurement Book and signed by both the parties. The final bill shall be paid within a reasonable time after completion of the work.

30. RIGHTS OF BHEL

BHEL reserves to itself the following rights in respect of this Contract without entitling the Contractor to any compensation.

30.1 To get the work done through another agency at the risk and cost of the Contractor, in the event of poor progress or the Contractor's inability to progress the work for completion as stipulated in the Contract, poor quality of work, persistent disregard of instructions of BHEL, assignment, transfer, subletting of the Contracted work without written permission of BHEL, non-fulfillment of any Contractual obligations etc. and to claim / recover compensation for such losses from the Contractor including BHEL's supervision charges and overheads from Security Deposit/ other dues.

30.2 To withdraw any portion of work and / or to restrict / alter quantum of work as indicated in the Contract during the progress of work and get it done through another agency and/ or by the departmental labour to suit BHEL's commitments to its Customer or in case BHEL decides to advance the completion due to other emergent reasons / BHEL's obligation to its Customer.



30.3 To terminate the Contract after due notice and forfeit the Security Deposit and recover the loss sustained in getting the balance work done through other agencies in addition to liquidated damages in the event of :

- (a) Contractor's continued poor progress.
- (b) Withdrawal from or abandonment of the work before completion of the work.
- (c) Corrupt act of the Contractor.
- (d) Insolvency of the Contractor.
- (e) Persistent disregard of the instructions of BHEL.
- (f) Assignment, transfer, subletting of the Contract work without BHEL's written permission.
- (g) Non-fulfillment of any Contractual obligations.

30.4 To recover any amounts due from the Contractor from any amounts payable to the Contractor under this or any other Contract or from the Security Deposit.

30.5 To claim compensation for losses sustained including BHEL's supervision charges and overheads in case of termination of Contract and to levy liquidated damages for delay in completion of work, at the rate of 1/2% of the Contract value per week of delay or part thereof subject to a ceiling of 10% of the Contract value.

30.6 To determine the Contract or to restrict the quantum of work and pay for the portion of work done in case BHEL's Contract with its Customer is terminated for any reason.

30.7 To effect recoveries from any amounts due to the Contractor under this or any other Contract or in any other form the amount which BHEL is forced to pay to anybody due to Contractor's failure to fulfil any of his obligations.

30.8 To restrict or increase the quantity and nature of work to suit site requirements, since the tender specification is based on preliminary documents and quantities furnished therein are indicative and approximate and the rates quoted shall not be subject to revision.

30.9 To deploy BHEL's skilled and semiskilled workmen in case of emergency / poor progress/ deficiency in skill on the part of the employees of the Contractor and to recover the expenditure on account of the same from the moneys due to the Contractor.

30.10 While every endeavor will be made by BHEL to this end, BHEL can not guarantee uninterrupted work due to conditions beyond its control. The Contractor will not be entitled to any compensation/ extra payment on this account.



30.11 In the event of any dispute of technical nature, the decision of BHEL shall be final and binding on the Contractor.

31. RESPONSIBILITIES OF CONTRACTOR IN RESPECT OF LOCAL LAWS, EMPLOYMENT OF WORKERS, ETC.

The following are the responsibilities of the Contractor in respect of observance of local laws, employment of personnel, payment of taxes etc.:

31.1 As far as possible, unskilled workers shall be engaged from the local areas in which the work is being executed.

31.2 The Contractor at all times during the continuance of this Contract, shall in all his dealings with the local labour for the time being employed on or in connection with the work, have due regard to all local festivals, religious and other customs. **The minimum wages, Bonus payment, PF payments, Leave payment as per local procedures to be adopted strictly by the bidder. The P.F even for temporary labours to be paid strictly and document like payment voucher to be produced every month.**

31.3 The Contractor shall comply with all State and Central Laws, Statutory Rules, Regulations, etc., such as The payment of wages Act, The Minimum Wages Act, The workmen's Compensation Act, The Employer's Liability Act, The industrial Disputes Act, The Employees' Provident Fund Act, Employees' State Insurance Scheme, the Contract Labour (Regulations and Abolition Act, 1970) and other Acts, Rules and Regulations for labour as may be enacted by the Government during the tenure of the Contract and having force or jurisdiction at site. The Contractor shall give to the local Governing Body, Police and other concerned Authorities all such notice as may be required under law.

31.4 The Contractor, in the event of his engaging 20 or more workmen, will obtain independent license under the Contract Labour (Regulations and Abolition Act, 1970) from the concerned authorities based on the certificate (Form-V) issued by the principal employer/ Customer. **The labour license is to be obtained from Labour Office (from nearest labour Office to TANDA as applicable) i.e from Central government.**

31.5 The Contractor shall pay all taxes, fees, license charges, deposits, duties, tolls, royalty, commissions or other charges which may be leviable on account of any of his operations connected with this Contract. In case BHEL is forced to make any such payment, BHEL shall recover the same from the Contractor either from amounts due to him or otherwise as deemed fit.

31.6. The Contractor will meet all expenses in connection with his welder's qualification/ requalification tests etc.



31.7 The Contractor shall be responsible for the provision of health and sanitary arrangements more particularly described in the Contract Labour (Regulations and Abolition Act, 1970) and safety precautions as may be required for safe and satisfactory execution of the Contract.

31.8 The Contractor shall be responsible for proper accommodation including adequate medical facilities for the personnel employed by him.

31.9 The Contractor shall be responsible for the proper behavior and observance of all regulations by the staff and workmen employed by him.

31.10 The Contractor shall ensure that no damage is caused to any person / property of other parties working at site. If any such damage is caused, it shall be the responsibility of the Contractor to make good the losses and compensate them. **All such issues will be settled independently by the Contractor with the parties.**

31.11 All the properties/ equipment/ components of BHEL/ its Customer loaned with or without deposit, to the Contractor shall remain the properties of BHEL/ its Customer. The Contractor shall use such properties for the purpose of execution of this Contract. All such properties/ equipment/ components shall be taken to be in good condition unless notified to the contrary by the Contractor within 48 hours. The Contractor shall return them in good condition as and when required by BHEL/ its Customer. In case of non-return, loss, damage, repairs etc., the cost thereof, as may be fixed by the Engineer, will be recovered from the Contractor.

31.12 It shall not be obligatory on the part of BHEL to supply any tools and tackles or materials other than those specifically agreed to be given by BHEL. However, depending upon availability / possibility, BHEL/ its Customer's equipment and other materials may be made available to the Contractor on payment of hire charges as fixed by them, subject to the conditions laid down by BHEL/ its Customer from time to time. Unless paid in advance, such hire and other charges shall be recovered from out of dues to the Contractor or security deposit in one installment.

31.13 The Contractor shall fully indemnify and keep indemnified BHEL/ its Customer against all claims of whatever nature arising during the course of execution of this Contract.

31.14 In case the Contractor is required to undertake any work outside the scope of this Contract, the amount payable shall be as may be mutually agreed upon.

31.15 Any delay in completion of works or non-achievement of periodical targets, due to reasons attributable to the Contractor, will have to be compensated by the Contractor



either by increased manpower and resources or by working extra hours or more than one shift at no extra cost to BHEL.

31.16 The Contractor shall execute the work under the conditions usual to such power plant construction and in conjunction with numerous other operations at site. The Contractor and his personnel shall cooperate and coordinate with other agencies at project site and proceed in a manner that shall help in the progress of work at site as a whole.

31.17 The Contractor will be directly responsible for payment of wages to his workmen. A pay-roll sheet giving details of all payments made to the workmen duly signed by the Contractor's representative should be furnished to BHEL periodically.

31.18 In case of any class of work for which there is no specification laid down in the Contract, such work shall be carried out in accordance with the instructions and requirements of the Engineer.

31.19 No levy, payment or charges made or imposed shall be impeached by reason of any clerical error or by reason of any mistake in the amount levied, demanded or charged.

31.20 No idle labour charges will be admissible in the event of any stoppage of work resulting in the Contractor's workmen being rendered idle due to any reason at any time.

31.21 The Contractor shall take all reasonable care to protect the materials and the work till such time the plant / equipment has been taken over by BHEL / its Customer

31.22 Contractor shall not stop work or abandon the site for whatsoever reason or dispute, excepting for force majeure conditions. All problems / disputes shall be separately discussed and settled without effecting the progress of work.

Stoppage or abandonment of work, other than under force majeure conditions, shall be treated as breach of work of Contract and dealt with accordingly.

31.23 The Contractor shall keep the area of work clean and shall remove the debris etc. while executing day-to-day work. Upon completion of work, the Contractor shall remove from the vicinity of work, all scrap, packing materials, rubbish, unused and other materials and deposit them in places specified by the BHEL Engineer. The Contractor will also demolish all the hutments, sheds, offices, etc. constructed and used by him and shall clean the debris. In the event of his failure to do so, the same will be arranged by the BHEL Engineer and the expenses recovered from the Contractor.

31.24 The Contractor shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and timely execution shall be the essence of this Contract. The Contractor shall be responsible to ensure that the quality, assembly



and workmanship conform to the dimensions and clearance given in the drawings and/or as per the instructions of the BHEL Engineer.

31.25 The Contractor shall furnish **daily labour deployment report** indicating the classification and number of workmen engaged, date wise and category wise. Besides, the Contractor shall also furnish daily progress reports on work as required by BHEL Engineer.

32 RESPONSIBILITIES OF CONTRACTOR IN RESPECT OF SAFETY OF MEN, EQUIPMENT, MATERIAL AND ENVIRONMENT.

32.1 All safety rules and codes applied by BHEL and its Customer at site shall be observed by the Contractor and his workmen without any exception. The Contractor shall be responsible for the safety of the equipment / material and work to be performed by him and shall maintain all lights, fencing guards, signs etc. or other protections necessary for the purpose. Contractor shall also take such additional precautions as may be indicated from time to time by BHEL Engineer, with a view to prevent pilferage, accidents, fire hazards etc. Suitable number of clerical staff, watch and ward, store keepers to take care of equipment, materials, construction tools and tackles shall be posted at site by the Contractor till the completion of the work under this Contract.

The Contractor shall arrange for such safety devices as are necessary for this type of work and carry out the requisite site tests of handling equipment, lifting tools, tackles etc. as per usual standards and practices.

32.2 The Contractor shall provide to it's work force and ensure the use of the following personal protective equipment as found necessary and as directed by the authorized BHEL officials.

- (a) Safety Helmets conforming to IS-2925
- (b) Safety Belts conforming to IS-3521
- (c) Safety shoes conforming to IS-1989
- (d) Eye & Face Protection devices conforming to IS-8520 and IS-8940
- (e) Hand & body protection devices conforming to IS-2573, IS-6994, IS-8807 & IS-8519.

32.3 All tools, tackles, lifting appliances, material handling equipment, scaffolds, cradles, safety nets, ladders, equipment etc. used by the Contractor shall be of safe design and construction. These shall be tested and certificate of fitness to be obtained before putting them to use and from time to time as instructed by authorized BHEL official who shall have the right to ban the use of any item.

32.4 All electrical equipment, connections and wiring for construction power, it's distribution and use shall conform to the requirements of Indian Electricity Act and Rules. Only electricians licensed by the appropriate statutory authority shall be employed by the



Contractor to carry out all types of electrical works. All electrical appliances including portable electric tools used by Contractor shall have safe plugging system to source of power and be appropriately earthed.

32.5 The Contractor shall not use any hand lamp energised by electric power with supply voltage of more than 24 volts. For work in confined spaces, lighting shall be arranged with power source of not more than 24 volts.

32.6 Where it becomes necessary to provide and / or store petroleum products, explosives, chemicals and liquid or gaseous fuel or any other substance that may cause fire or explosion, the Contractor shall be responsible for carrying out such provision and/or storage in accordance with the rules and regulations laid down in the relevant Government Acts, such as Petroleum Act, Explosives Act, petroleum and Carbides of Calcium Manual of the Chief Controller of Explosives, Government of India etc. The Contractor in all such matters shall also take prior approval of the authorised BHEL official at the site.

32.7 The Contractor shall arrange at his cost (wherever not specified) appropriate illumination at all work spots for safe working, when natural daylight may not be adequate for clear visibility.

32.8 In case of a fatal or disabling injury / accident to any person at construction sites due to lapses by the Contractor, the victim and / or his / her dependents shall be compensated by the Contractor as per statutory requirements. However, if considered necessary, BHEL shall have the right to impose appropriate financial penalty on the Contractor and recover the same from payments due to the Contractor for suitably compensating the victim and / or his / her dependents. Before imposing any such penalty, appropriate enquiry shall be held by BHEL giving opportunity to the Contractor to present his case .

32.9 In case of any damage to property due to lapses by the Contractor, BHEL shall have the right to recover the cost of such damages from the payments due to the Contractor after holding an appropriate enquiry.

32.10 In case of any delay in the completion of a job due to mishaps attributable to lapses by the Contractor, BHEL shall have the right to recover cost of such delay from the payments due to the Contractor, after notifying the Contractor suitably and giving him opportunity to present his case.

32.11 If the Contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given reasonable opportunity to do so and / or if the Contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instructions regarding safety issued by the



authorized BHEL official, BHEL shall have the right to take the corrective steps at the risk and cost of the Contractor after giving a notice of not less than seven days indicating the steps that would be taken by BHEL.

32.12 The Contractor shall submit report of all accidents, fires, property damage and dangerous occurrences to the authorized BHEL official immediately after such occurrence, but in any case not later than 12 hours of the occurrence. Such reports shall be furnished in the manner prescribed by BHEL. In addition, periodic reports on safety shall also be submitted by Contractor to the authorized BHEL official from time to time as prescribed.

32.13 During the course of construction, alteration or repairs scrap lumbars with protruding nails, sharp edges etc., and all other debris including combustible scrap shall be kept cleared from working areas, passage ways and stairs in and around site.

32.14 Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dropped, struck or permitted to strike each other violently. When cylinders are transported by powered vehicles, they shall be secured in a vertical position.

32.15 The Contractor shall be responsible for the safe storage of his radioactive sources.

32.16 All the Contractor's supervisory personnel and sufficient number of workers shall be trained for fire fighting and shall be assigned specific fire protection duties. Enough number of such trained personnel must be available during the tenure of the Contract.

32.17 Contractor shall provide enough fire protecting equipment of the types and numbers at his office, stores, erection site, other temporary structures, labour colony area etc. Access to such fire protection equipment shall be easy and kept open at all times. Compliance of the above requirement under fire protection shall in no way relieve the Contractor of any of his responsibility and liabilities to fire accident occurring. In the event fire safety measures are not to BHEL's satisfaction, BHEL shall have option to provide the same and recover the cost plus incidentals from Contractor's bills and / or impose penalty as deemed fit by BHEL Engineer.

32.18 Before commencing the work, the Contractor shall appoint /nominate a responsible officer to supervise implementation of all safety measures and liaison with his counterpart of BHEL.

32.19 If safety record of the Contractor in execution of the awarded job is to the satisfaction of Safety Department of BHEL, issue of an appropriate certificate to recognize the safety performance of the Contractor may be considered by BHEL after completion of the job.



33.0 CONSEQUENCES OF CANCELLATION

33.1 Whenever BHEL exercises its authority to terminate the Contract / withdraw a portion of work under clause 30, the work may get completed by any other means at the Contractor's risk and cost provided that in the event of the cost of completion (as certified by the BHEL Engineer which shall be final and binding on the Contractor) being less than the Contract value, the advantage shall accrue to BHEL. If the cost of completion exceeds the amount due to the Contractor under the Contract, the Contractor shall either pay the excess amount demanded by BHEL or the same shall be recovered from the Contractor. This will be in addition to the forfeiture of Security Deposit and recovery of liquidated damages as per relevant clauses.

33.2 In case BHEL completes the work under the provisions of this clause, the cost of such completion to be taken into account for determining the excess cost to be charged to the Contractor shall consist of cost of materials purchased and / or labour provided by BHEL with an addition of such percentage to cover supervision and establishment charges as may be decided by BHEL.

34.0 INSURANCE

34.1 BHEL / its Customer shall arrange for insuring the materials / property of BHEL / its Customer covering the risks during transit, storage, erection and commissioning.

34.2 It shall be the sole responsibility of the Contractor to insure his workmen against risks of accidents and injury while at work as required by the relevant Rules and to pay compensation, if any, to them as per Workmen's Compensation Act. The Contractor shall also insure his staff against accidents.

The work will be carried out in a protected area and all the Rules and Regulations of BHEL / its client in the Project Area which are in force from time to time will be followed by the Contractor.

34.3 If due to negligence and/or non-observance of safety and other precautions, any accident / injury occurs to any other persons/ public, the Contractor shall pay necessary compensation and other expenses, if so decided by the appropriate authority.

34.4 The Contractor will take necessary precautions and due care to protect the material, while in his custody from any damage/ loss till the same is taken over by BHEL or Customer. For lodging / processing of insurance claim the Contractor will submit necessary documents. BHEL will reserve the right to recover the loss from the Contractor, in case the damage / loss is due to carelessness / negligence on the part of the Contractor. In case of any theft of material under Contractor's custody , matter shall be



reported to police by the Contractor immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL for taking up with insurance.

34.5 If due to negligence/ carelessness on the part of the Contractor, any material/ equipment gets damaged, the Contractor shall submit necessary documents for lodging insurance claims as required by BHEL Engineer. BHEL shall however reserves the right to recover deductible franchise and also unsettled portion of insurance claim amount from the Contractor.

34.6 If due to negligence/ carelessness on the part of the Contractor, any surrounding properties also gets damaged, the Contractor shall submit necessary documents for lodging insurance claims as required by BHEL Engineer. BHEL shall however reserves the right to recover deductible franchise and to unsettled portion of insurance claim amount from the Contractor.

34.7 The Contractor may note that BHEL T&Ps / IMTEs are not insured. The Contractor will take necessary precautions and due care to protect the same while in his custody from any damage/ loss till the same is handed over back to BHEL.

In case the damage / loss is due to carelessness/ negligence on the part of the Contractor, the Contractor is liable to get them repair/ replaced immediately and in case of his failure to do so within a reasonable time, BHEL will reserve the right to recover the loss from the Contractor.

35.0 STRIKES AND LOCKOUTS

35.1 The Contractor will be solely responsible for all disputes and other issues connected with his workmen. In the event of Contractor's workmen resorting to strike or the Contractor resorting to lockout and if the strike or lockout so declared is not settled within a period of one month, BHEL shall have the right to get the erection work executed by employing its own men or through other agencies or both. The cost incurred by BHEL in this regard shall be recovered from the Contractor.

35.2 For any purpose whatsoever, the employees of the Contractor shall not be deemed to be in the employment of BHEL

36.0 FORCE MAJEURE

36.1 The following shall amount to force majeure conditions- Acts of God, Act of any Government, War, Sabotage, Riots, Civil Commotion, Police Action, Revolution, Flood, Fire, Cyclone, Earthquake and Epidemic and other similar causes over which the Contractor has no control.



36.2 If the Contractor suffers delay in the due execution of the Contract, due to delays caused by force majeure conditions, as defined above, the agreed time for completion of the work covered by this Contract shall be extended by a period of time equal to the period of delay, provided that on the occurrence of any such contingency, the Contractor immediately reports to BHEL in writing the causes for the delay but the Contractor shall not be eligible for any compensation on this account.

37.0 GUARANTEE Even though the work will be carried out under the supervision of BHEL Engineer, the Contractor will be responsible for the quality of the workmanship and shall guarantee the work done for a period of **12 (Twelve) months** from the date of completion of work as certified by BHEL Engineer, and shall rectify, free of cost to BHEL, all defects arising out of faulty erection during the guarantee period starting from the date of completion of rectification. In the event of the Contractor failing to repair the defective works within the time specified by BHEL Engineer, BHEL may proceed to undertake the repairs of such defective works at the Contractor's risk and cost, without prejudice to any other rights and recover the same from out of any amount payable to the Contractor or by other legal means.

38.0 ARBITRATION : All disputes between the parties to the Contract arising out of or in relation to the Contract, other than those for which the decision of BHEL Engineer or any other person is by the Contract expressed to be final and conclusive, shall after written notice by either party to the Contract to the other party, be referred to sole arbitration of the General Manager or his nominee. The arbitration shall be conducted in accordance with the provisions of the Arbitration and Reconciliation Act, 1996. The parties to the Contract understand and agree that it will be no objection that the General Manager or the person nominated as Arbitrator had earlier in his official capacity to deal directly or indirectly with the matters to which the Contract relates or that in the course of his official duties had expressed views on all or any of the matters in dispute or difference. The award of the Arbitrator shall be final and binding on the parties to this Contract. In the event of the Arbitrator dying, neglecting or refusing to act or resigning or being unable to act for any reason or his award being set aside by the Court for any reason, it shall be lawful for the General Manager or his successor, as the case may be, either to act himself as the Arbitrator or to appoint another Arbitrator in place of the outgoing Arbitrator in the manner aforesaid. The Arbitrator may, from time to time, with the consent of both the parties to the Contract, enlarge the time for making the award. Work under the Contract shall be continued during the arbitration proceedings. The venue of the arbitration shall be the place from which the Contract is issued or such other place as the Arbitrator at his discretion may determine.



ANNEXURE - I

CONTRACT AGREEMENT

Agreement No. and Date _____

Name of the Work _____

Name of the Contractor with Full Address _____

Value of work awarded _____
Letter of Intent No. and Date _____
Scheduled Commencement Date _____
Scheduled Completion Date _____

THIS AGREEMENT MADE THIS _____ DAY OF _____ 2017 between BHARAT HEAVY ELECTRICALS LIMITED (A Government of India Enterprise) a Company incorporated under the Companies Act, 1956, having its Registered Office at BHEL House, Siri Fort New Delhi- 110049 (herein after called BHEL) of the ONE PART.

AND

M/S _____

_____ (hereinafter called the `Contractor') of the SECOND PART.

WHEREAS M/s -----state that they have acquired and possess extensive experience in the field of -----

And Whereas in response to an Invitation to Tender No. ----- issued by BHEL for execution of ----- the Contractor submitted their offer No.-----dated -----And whereas BHEL has accepted the offer of the Contractor on terms and conditions specified in the Letter of Intent No.-----dated -----read with the references cited therein.



THIS AGREEMENT WITNESSES AND it is hereby agreed by and between the parties as follows:

1. That the Contractor shall execute the work of -----and more particularly described in Tender Specification No -----including Drawings and Specifications (hereinafter called the said works) in accordance with and subject to terms and conditions contained in these presents, instructions to Bidders, General Conditions of Contract, Special Conditions, Annexures, Letter of Intent dated ----- and such other instructions, Drawings, Specifications given to him from time to time by BHEL.
2. The Contractor is required to furnish to BHEL Security deposit in the form of cash/ approved securities/ Bank Guarantee valid upto ----- for a sum of Rs.----- - towards satisfactory performance and completion of the Contract.
3. The Contractor has furnished a Bank Guarantee bearing no.-----dated ----- for a sum of Rs.-----executed by ----- in favour of BHEL towards Security Deposit valid upto -----

OR

The Contractor has furnished to BHEL an initial Security Deposit of Rs.----- in the form of cash / approved Securities/ B.G No.----- dated ----- for Rs.-----executed by ----- in favour of BHEL valid upto ----- and has agreed for recovery of the balance security deposit by BHEL @ 10% of the value of work done from each running bill till the entire Security Deposit is recovered.

OR

The Contractor has furnished to BHEL an initial Security Deposit of Rs.----- (Rs.----- - vide Bank draft No.-----dated -----and by adjusting EMD of Rs.----- submitted vide Bank draft No.----- dt.-----) and has agreed for recovery of balance Security Deposit by BHEL @ 10% of the value of work done from each running bill till the entire security deposit is recovered.

4. The Contractor hereby agrees to extend the validity of the Bank Guarantee for such further period or periods as may be required by BHEL and if the Contractor fails to obtain such extension(s) from the Bank, the Contractor, shall pay forthwith or accept recovery of Rs.----- from the bills in one installment and the Contractor further agrees that failure to extend the validity of the Bank Guarantee or failure to pay the aforesaid amount in the manner specified above shall constitute breach of Contract. In addition to above, BHEL shall be entitled to take such action as deemed fit and proper for recovering the said sum of Rs.-----.



OR

In case the Contractor furnishes the bank guarantee at a later date the Contractor hereby agrees to extend the validity of bank guarantee for such further period or periods as may be required by BHEL and if the Contractor fails to obtain such extension(s) from the bank, the Contractor shall pay forthwith or accept recovery of the amount of bank guarantee given in lieu of security deposit from the bills in one installment and the Contractor further agrees that failure to extend the validity of bank guarantee or failure to pay the aforesaid amount in the manner specified above shall constitute breach of Contract. In addition to above, BHEL shall be entitled to take such action as deemed fit and proper for recovering the said sum.

5. That in consideration of the payments to be made to the Contractor by BHEL in accordance with this Agreement the Contractor hereby covenants and undertakes with BHEL that they shall execute, construct, complete the works in conformity, in all respects, with the terms and conditions specified in this Agreement and the documents governing the same.

6. That the Contractor shall be deemed to have carefully examined this Agreement and the documents governing the same and also to have satisfied himself as to the nature and character of the Works to be executed by him.

7. That the Contractor shall carry out and complete the execution of the said works to the entire satisfaction of the Engineer or such other officer authorised by BHEL, within the agreed time schedule, the time of completion being the essence of the Contract.

8. That BHEL shall, after proper scrutiny of the bills submitted by the Contractor, pay to him during the progress of the said works such sum as determined by BHEL in accordance with this Agreement.

9. That this Agreement shall be deemed to have come into force from ----- the date on which the letter of intent has been issued to the Contractor.

10. That whenever under this Contract or otherwise, any sum of money shall be recoverable from or payable by the Contractor, the same may be deducted in the manner as set out in the General Conditions of Contract or other conditions governing this Agreement.

11. That all charges on account of Octroi, Terminal and other taxes including sales tax or other duties on material obtained for execution of the said works shall be borne and paid by the Contractor.

12. That BHEL shall be entitled to deduct from the Contractor's running bills or otherwise Income Tax under Section 194 (C) of the Income Tax Act, 1961.



13. That BHEL shall be further entitled to recover from the running bills of the Contractor or otherwise such sum as may be determined by BHEL from time to time in respect of consumables supplied by BHEL, hire charges for tools and plants issued (Where applicable) and any other dues owed by the Contractor.

14. That it is hereby agreed by and between the parties that non-exercise, forbearance or omission of any of the powers conferred on BHEL and /or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents and the liability of the Contractor with respect to compensation payable to BHEL or Contractor's obligations shall remain unaffected.

15. It is clearly understood by and between the parties that in the event of any conflict between the Letter of Intent and other documents governing this Agreement, the provisions in the Letter of Intent shall prevail.

16. The following documents

1. Invitation to Tender No-----
and the documents specified therein.

2. Contractor's Offer No-----dated-----.

3. _____

4. _____

5. _____

6. Letter of Intent No _____ dated _____.

7. _____

shall also form part of and govern this Agreement

IN WITNESS HEREOF, the parties hereto have respectively set their signatures in the presence of

WITNESS

(to be signed by a person holding a valid Power of Attorney)
(CONTRACTOR)

1.

2.

WITNESS

1.

2.

NIT No. CE-ES/2017-18/07/ NTPC TANDA-II/C&I/SNU
dated 30.10.2017

Signature & Seal of the Bidder



Annexure-II

**Electronic Funds Transfer (EFT) OR
Pay link Direct Credit Form**

Please Fill up the form in **CAPITAL LETTERS** only.

TYPE OF REQUEST(Tick one): _____ CREATE _____ CHANGE

BHEL Vendor / Supplier Code:	
Company Name :	
Permanent Account Number(PAN):	
Address	

City: _____	PINCODE _____	STATE _____
-------------	---------------	-------------

Contact Person(s)	
Telephone No:	
Fax No:	
e-mail id:	

1 Bank Name:	
2 Bank Address:	
3 Bank Telephone No:	
4 Bank Account No:	
5 Account Type: Savings/Cash Credit	
6 9 Digit Code Number of Bank and branch appearing on MICR cheque issued by Bank	
7 Bank swift Code(applicable for EFT only)	
8 Bank IFSC code(applicable for RTGS)	
9 Bank IFSC code(applicable for NEFT)	

- A I hereby certify that the particulars given above are true, correct and complete and that I, as a representative for the above named Company, hereby authorise BHEL, EDN, Bangalore to electronically deposit payments to the designated bank account.
- B If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold BHEL / transferring Bank responsible.
- C This authority remains in full force until BHEL, EDN, Bangalore receives written notification requesting a change or cancellation.
- D I have read the contents of the covering letter and agree to discharge the responsibility expected of me as a participant under ECS / EFT.



Date:

Authorised Signatory:

Designation:

Telephone NO. with STD Code

Company Seal

Bank Certificate

We certify that _____ has an Account No _____ with us and we confirm that the bank details given above are correct as per our records.

Date:

(.....)

Place:

Signature

Please return completed form along with a blank cancelled cheque or photocopy thereof to:

Bharath Heavy Electricals Ltd,

Attn:

Electronics Division, Mysore Road,

BANGALORE - 560 026

In case of any Querry, please call : 080-26998xxx / 2674xxxx or fax no. 080-2674xxxx



ANNEXURE-III

GENERAL TERMS AND CONDITIONS OF REVERSE AUCTION (RA)

Against this NIT for the subject work, 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). The General Terms and Conditions of the RA shall be as follows:-

- 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, Start Price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
- 6) Bidders have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse Auction. Without this, the Bidder will not be eligible to participate in the event.
- 7) **BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "the total Contract value (Tentative)based on rate schedule /BOQ."It may be noted that sealed price bid of L1 bidder will be opened by BHEL after reverse auction so as to apportion the difference between initial price & final price proportionately on all the items of the rate schedule.**
- 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 the auction portal.
- 10) The lowest bidder has to Fax/email the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL through Service Provider within 24 hours of Auction without fail.
- 11) During Reverse Auction, if no bid is received within the specified time, BHEL at its discretion, may decide to revise opening price/scrap the reverse auction process & proceed with conventional mode of tendering.
- 12) **Sealed Bid Reverse Auction:** The opening bid (In the initial auction) of the bidders shall be same as that quoted in their Final Sealed price submitted to BHEL. **The bidders shall confirm in writing to BHEL that their opening bid (In both cases) shall be same as that quoted in their final sealed price bids submitted to BHEL against this NIT along with Technical Bid (Part-I).**



12. BHEL reserves the right to cancel Reverse Auction (RA) without assigning any reasons and resort to considering the sealed bids submitted by Bidder for processing and finalizing the tender.

13. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of bidder to conduct business with BHEL as per prevailing procedure.

14. 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 without seeking anymore price impacts.

15. Bids given by the bidders during the Reverse Auction process will be taken as an offer to execute the work. Bids once made by the bidder, can not be cancelled/ withdrawn and bidders shall be bound to execute the work as mentioned above at the final bid price. Should be Bidder (Lowest) back out and not execute the Contract as per the rates quoted, BHEL shall take action as appropriate.



ANNEXURE-III A

Authorisation 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, WHERE FROM SHE / HE WILL PARTICIPATE IN THE REVERSE AUCTION	



SECTION-VI
PART-A
SPECIAL CONDITIONS OF CONTRACT
INDEX

Clause	Description
39.0	General
40.0	Civil works, foundation and grouting
41.0	Consumables
42.0	Tools & Plants/ IMTE's
43.0	Supervisory staff & workmen
44.0	Material handling and storage
45.0	Preservation of components
46.0	Welding and NDT
47.0	Progress reporting
48.0	Drawings & documents
49.0.	Income tax, Service Tax & sales tax etc.
50.0	Extra work
51.0	Price variation
52.0	Rate schedule
53.0	Instructions to Bidder
54.0	Liquidated Damages(LD)
55.0	Security Deposit
56.0	Others



SECTION-III

PART `A`

SPECIAL CONDITIONS OF CONTRACT

39.0 GENERAL

39.1 The intent of this specification is to provide services for execution of 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 / price shall deem to be inclusive of all such contingencies.

39.2 The Contractor shall carry out the work in accordance with standard practices / codes /instructions /drawings/ documents / specification/ supplied by BHEL from time to time or BHEL Site Engineers Instructions.

39.3 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 re do the work duly replacing the defective materials at his cost failing which the job will be carried out by BHEL by engaging other agencies / departmentally and recoveries will be effected from Contractor's bills towards expenditure incurred including BHEL's usual overhead charges.

39.4 Following shall be the responsibility of Contractor and have to be provided within finally accepted rates / prices :

(a) Provision of all types of labour, supervisors, Engineers, watch and ward as required, tools & tackles, calibrated inspection, measuring and test equipment as specified and otherwise required for the work and consumable for erection, testing and commissioning including material handling.

(b) The watch and ward as required for safe guarding materials after withdrawal from BHEL stores.

(c) Proper out-turn as per BHEL plan and commitment.

(d) Completion of work as per BHEL Schedule.



(e) Good quality and accurate workmanship for proper performances of equipment.

(f) Repair, rectification and modification in electrical circuits/wiring involving removal of connections & redoing as per modification.

(g) Preservation / Re-conservation of all components during storage at Contractor's place / erection.

(h) House keeping : The Contractor is supposed to carry out house keeping of work area on regular basis to keep the work place neat and tidy. The scrap generated during execution activities is to be dumped at designated area as decided by BHEL / its Customer. Compliance report on above shall be submitted by the Contractor to BHEL. In case Contractor fails to do so, BHEL shall get the same done at the risk and cost of the Contractor.

39.5 BHEL- is ISO 9001-2000, ISO 14001-1996, OHSAS 18001-1999 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 equipment etc. as per instructions of BHEL engineer.

The Contractor shall also comply with applicable legislation and regulations (State / Central) with regards to Health, safety and environmental aspects for minimizing risk arising from occupational health, safety hazards, controlling pollution and wastage and he will be responsible for Health, Safety & Environment management at site for the construction activities to be carried out by them.

39.6 Contractor shall ensure availability of the following

- a) Medicines for normal ailments
- b) First Aid Kit
- c) Sufficient no. of Fire fighting equipment in the area of working, Calibration Lab, and pre fabrication area.

The Contractor shall comply with following towards Social Accountability

(a) The Contractor shall not employ any employee less than 18 years of age in pursuant to ILO convention. If any child labour were found to have been engaged, the Contractor shall be levied with expenses of bearing his education expenditure which will include stipend to substantiate appropriate education or employ any other member of family enabling to bear the child education expenditure.



- (b) The Contractor shall not engage Forced / Bonded Labour and shall abide by abolition of Bonded Labour System(Abolition) Act, 1976.
- (c) The Contractor shall maintain Health & safety requirement as stipulated in the Contract and Contract Labour (Regulation & Abolition) Act,1970.
- (d) The Contractor shall abide by UN convention w.r.t Human Rights and shall be liable for Discrimination / Corporal punishment for failure in meeting with relevant requirements.
- (e) The Contractor shall abide by the requirement of Contract Labour (Regulation & Abolition) Act, 1970 for working hours.
- (f) The Contractor shall abide by the Statutory requirement of Minimum Wages Act 1948, payment of Wages Act 1936.
- (g) The Contractor shall arrange potable drinking water to its employees & workers.
- h) Please refer to clause 31.2 of GCC and annexure VIII. The Minimum wages are indicated as per NTPC Circular dated 05.05.2017. Bidders to ascertain the prevailing rates. The benefits to be considered for Contract labour is indicative only and given as guidance to bidders. The format for wage slip & employment card is for information of bidders.**

39.7 Any cutting of masonry work, which is necessary shall be done by the Contractor at his own cost and shall be restored to match the original work. The Contractor shall obtain prior approval before cutting any masonry / concrete work.

39.8 Pipes sent in standard length shall be cut to suit the site conditions and the layouts. Tubes or pipes wherever deemed to be convenient will be sent in running lengths with sufficient bends.

39.9 Contractor shall fabricate and erect stands / supports for Junction boxes, push button stations, fixing of push button and plugging of holes in Junction boxes .All such fabrication work shall be paid under structural steel fabrication rates.

39.10 Calibration log-sheets / history cards of all the instruments, panels, drives, relay testing etc. under the scope shall be recorded and submitted on BHEL approved formats. Proper logging will form part of calibration / erection activity. Contractor shall provide assistance to BHEL for obtaining protocols / attestation by NTPC engineers .



39.11 DRIP SHIELDS shall be fabricated for all field mounted panels / instruments / instrument racks / JB Racks / control cabinets etc. The hardware / material shall be supplied by BHEL. The fabrication forms part of erection work under structural steel work.

39.12 The Contractor shall use only SHEARING machine or HACKSAW for cutting angles, flats, channels and trays. No gas cutting is permitted. Drill machine shall be used for drilling holes.

39.13 The Contractor should note that after execution of work they will hand over marked up cable Inter connection schedule, signal flow diagram and calibration data sheet, "as erected" drawings to BHEL Engineer at site for preparation of firm "as built" drawings. "As erected" drawings will bear the signature of BHEL Engineer and Contractor.

39.14 The Contractor shall paint the name / put tag numbers on all the equipment /instruments / cables etc. erected by him. Materials for tagging shall be supplied by Contractor at his cost. The adhesive etc. shall be arranged by Contractor at his cost.

39.15 The Motors, power cylinders, control valve actuators, motorized valves actuators and solenoid valves will be erected by other agency. However their electrical and C&I commissioning is to be carried out by the agency within the subject scope of work. The staff earmarked for commissioning will carry out the work in association and guidance of BHEL Engineer as a part of system commissioning for which no extra cost will be paid by BHEL.

39.16 Certain instrumentation like gauges, transmitters, switches and indicators are received in assembled condition and will be erected along with main equipment by other agency. Contractor for subject work will get these equipment dismantled for calibration and will reinstall them in original location as and when directed by BHEL. Payment for above work shall be released as per respective items indicated in the price bid.

40.0 CIVIL WORKS, FOUNDATIONS AND GROUTING.

40.1 Foundation for all equipment /Panels shall be provided by client of BHEL.

Minor Civil works like chipping, grouting etc. wherever required is to be carried out by the Contractor within the quoted price. The Contractor has to carry all material required for carrying out the grouting including supply of cement etc.

41 CONSUMABLES

41.1 The Contractor shall provide within finally accepted rates, all consumables like, welding electrodes including alloy steel & stainless steel welding electrodes, Primer, Paints, soldering material, Chemicals for dye penetrant Test, other erection consumables



such as teflon tapes, jointing compound, grease, M-seal, Araldite, diesel or petrol, CTC / other cleaning agents, petroleum jelly, insulation tape, PVC sealing compound, sleeves of all sizes, Nylon cable ties of all required sizes, gaskets, cable lugs (up to 2.5 sq.mm cable size) Cable tags, cable sleeves, ferrules, anchor bolts and fasteners of all required sizes, saddles, jumpers etc. Please note 0.5 sq.mm cable may be required to be lugged if insisted by NTPC.

41.2 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.

41.3 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/ NTPC.

41.4 BHEL reserves the right to reject the use of any consumable including electrodes, gases, 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 & records maintained.

41.5 Storage of all consumables including welding electrodes shall be done as per requirement / instruction of BHEL Engineer by the Contractor at his cost.

41.6 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 (30% at present). Postponement of such recovery is normally not permitted. The decision of Engineer in this regard shall be final and binding on the Contractor.

42.0 TOOLS AND PLANTS / IMTEs

42.1 T&Ps & IMTEs are to be arranged by the Contractor and the rates quoted are deemed to be inclusive of these charges. List of such T&P and IMTE is indicated separately .

42.2 All T&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 at his own cost in working condition (As per Annexure-IV, V, VI, VIA) . In the event of the failure of Contractor to bring necessary and sufficient T&Ps and IMTEs, BHEL will be at liberty to arrange the same at the risk and cost of Contractor 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.

42.3 All distribution boards, connecting cables / welding cables, wire ropes, hoses etc. including temporary air/water / electrical connections etc. shall have to be arranged by the Contractor at his own cost. Power cables including supply of **the main incomer cable of size 3 ½ core x 50 sq.mm Aluminium conductor (from substation to Contractors point approx. length 1000 mtrs.) and associated MCCB etc.** of sufficient capacity shall be arranged for the construction power supply requirement, by the Contractor .

42.4 Contractor shall ensure deployment of reliable and calibrated IMTEs (Inspection measuring and Test equipment). The IMTEs shall have test / calibration certificates from authorised / Govt. 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.

42.5 Retesting/ re-calibration (calibration equipment) 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. Also, if any IMTEs not found fit for use, BHEL shall have the right to stop the use of such item and instruct the Contractor to deploy proper item and recall i.e. repeat the readings taken by that instrument, failing which BHEL may deploy IMTEs and retake the readings at Contractor's cost.

42.6 BHEL shall have lien on all T&PS, IMTEs & other equipment of the Contractor brought to the site for the purpose of erection, testing and commissioning. BHEL shall continue to hold the lien on all such items throughout the period of Contract. No material brought to the site shall be removed from the site by the Contractor and/or his Sub-Contractors without the prior written approval of the Engineer.

42.7 It shall be the Contractor's responsibility to deploy the required T&P, for timely and successful completion of the job.

43.0 SUPERVISORY STAFF AND WORKMEN

43.1 The Contractor shall deploy all the skilled workmen like fitters, welders, gas cutter, riggers, electricians, instrument technicians, etc., in addition to other skilled, and unskilled workmen required for all the works of unloading, handling and transporting from site storage to erection site, erection, testing and commissioning as contemplated under these specification.



Only fully trained and competent men with previous experience on the job shall be employed. They shall hold valid certificates wherever necessary. 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 ask for removal of any employee workman of the Contractor at any time, if they find him unsuitable and the Contractor shall forthwith remove him.

43.2 The adequate supervisory staff, including qualified Engineers, shall be deployed by the Contractor to ensure proper out-turn of work and discipline on the part of the labour put on the job by the Contractor and in general see 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.

43.3 The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site. The Contractor and his personnel shall cooperate with other personnel / Contractor, coordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

43.4 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 conform to the dimensions and tolerances given in the drawings /documents/ instructions given by BHEL Engineer from time to time.

43.5 The Contractor shall deploy the necessary number of qualified and approved full time electricians at his cost to maintain his temporary electrical installation till the completion of work.

43.6 During the course of erection, if the progress is found unsatisfactory, or if the target dates fixed from time to time for every mile stones are to be advanced or in the opinion of BHEL, if it is found that the skilled workmen like fitters, Electricians, 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 and recover from the Contractor's bills any charges incurred for engaging the additional workmen with overheads. Decision of BHEL engineer will be final and binding on the Contractor

43.7 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.



43.8 If the Contractor or his workmen or employees shall break, deface, injure or destroy any part of a building, road, fence, enclosure, water pipes, cables, drains, electric or telephone posts or wire, trees or any other property or to any part of erected components etc., the Contractor shall make the same good at his own expense or in default, BHEL may cause the same to be made good by other workmen or by other means and deduct the expenses (of which BHEL's decision is final) from any money due to the Contractor.

43.9 The month wise manpower deployment plan to be submitted as per format (at **Annexure-C** to General Conditions of Contract) is only 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 man power, 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. Separate persons shall be identified at site for quality control and safety by the Contractor.

44.0 MATERIAL HANDLING AND STORAGE (Contractor's Place)

44.1 All the equipment and material furnished under this Contract shall be received from the project stores, sheds/storage yards (any place within site) and transported to erection site and stored (at Contractor's stores) in the storage spaces in a manner so that they are easily retrievable till they are erected by the Contractor. While drawing / lifting material from BHEL / Customer stores, Contractor shall ensure that the balance / other materials are stacked back immediately.

44.2 While BHEL will endeavor to store / stack / identify materials properly in their open / close / semi closed / tarpaulins covered storage yard/ shed (for this separate manpower is sought exclusively for BHEL use), it shall be Contractors responsibility to assist (while withdrawing materials only) BHEL in identifying materials well in time for erection, taking delivery of the same, following the procedure indicated by BHEL and transport the material safely to pre-assembly yard/ erection site in time, according to program.

44.3 The Contractor shall take delivery of components, equipment from storage area after getting the approval of BHEL Engineer on standard indent forms.

44.4 The Contractor shall identify and deploy necessary Engineers/ supervisors / workmen for the above work in sufficient number as may be needed by BHEL, for areas covering their scope.

44.5 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. Test certificates for lifting tackles shall be produced by the Contractor before use.

44.6 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. In no case piping should be dragged. In case of any damage the cost shall be covered from the Contractor.

44.7 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 to BHEL.

44.8 Contractor shall be responsible for examining all the plant and material 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 submit to the Engineer every week, a report detailing all the receipts during the week. However, 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 no. of watch/ward personal to avoid any pilferage of material. In case any equipment / material is lost / damaged while in the custody of the Contractor, the cost of repair / replacement if any to bring back the equipment in original order shall be deducted from the Contractor's bill.

BHEL's decision in this regard shall be final and binding on the Contractor.

44.9 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.

44.10 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.

44.11 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.



44.12 The Contractor shall ensure that all the packing materials and protective devices used for various equipment during transit and storage are removed before the equipment are installed.

44.13 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

44.14 The Contractor shall ensure that all surplus / damaged / scrap / unused material, packing wood / containers/ special transporting frames etc. are returned to BHEL / NTPC at a place in project area identified by the Engineer. An account will be maintained by the Contractor for all such items received and returned to BHEL and duly reconciled before closing of the Contract.

44.15 The Contractor shall hand over all parts / materials remaining extra over the normal requirement with proper identification tags to the concerned BHEL / Customer or at a place in project area as directed by BHEL Engineer.

45.0 PRESERVATION OF COMPONENTS

45.1 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.

- a) Items stored outdoors shall be stored in such a way that item is at least six inches (6") above the ground
- b) Panels and other electronics components should be protected from rain / water

45.2 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.

46.0 WELDING and NDT

46.1 The method of manual welding (ARC welding) to be carried out shall be indicated in the detailed drawings / schedules/BHEL Engineers instruction. BHEL Engineer will have the option of changing the method of welding as per site requirements. For P91 material welding, pre heating ,post heating, and post weld stress relief operations shall be performed as per the welding procedure of BHEL/NTPC. Heating may be by means



of electric induction coils or electric resistance coils .Please refer WPS Form No. 101-401(Pages 1-2) enclosed.

46.2 All welders including tack welder , structural and pipe welder shall be tested and approved by NTPC./ FQA dept. before they are actually engaged on work. BHEL reserves the right to reject any welder if the welder's performance is not found to be satisfactory. All charges for testing of Contractor's welders including destructive and non destructive tests conducted by NTPC at site or at laboratory shall have to be borne by the Contractor only.

46.3 Engineer may stop any welder from the work if his performance is unsatisfactory for any technical reason or if there is a high percentage of rejection of joints welded by a particular welder which, in the opinion of the Engineer will adversely affect the quality of the welding though the welder has earlier passed the tests prescribed by Engineer. The welder's having passed qualification tests does not absolve the Contractor of Contractual obligation to continuously check the welder's performance.

46.4 Faulty welds shall be cut and re-welded at the Contractors expenses. The procedure for the repair of defective welds shall be approved by BHEL Engineer prior to any repair being made. Records of such repairs and defects shall be maintained by the Contractor as per BHEL Engineer's advice

46.5 All charges for testing of Contractor's welders including destructive and non destructive tests conducted by BHEL/ NTPC at site or at laboratory shall have to be borne by the Contractor only.

46.6 Only BHEL/NTPC approved make electrodes will be used. All electrodes shall be baked and dried in the electric electrode baking 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. Electrodes from holding oven shall be transferred to portable ovens. The electrodes brought to the site will have valid manufacturing test certificate.

46.7 All welds shall be painted with anticorrosive red oxide paint. Necessary consumables and scaffolding etc. including paints shall be provided by Contractor at his own cost and deemed to have been included in the rates quoted in the rate schedule.

46.8 Non-destructive testing are part of erection work and shall be carried out by the Contractor in accordance with the quality plan and as per instruction of Engineer. Decision of Engineer shall be final and binding on the Contractor.



47.0 PROGRESS REPORTING

47.1 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

47.2 Weekly progress review meetings will be held at site during which actual progress during the week vis-a-vis scheduled program shall be discussed for actions to be taken for achieving targets. The program for subsequent week shall also be presented by Contractor for discussions. 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.

47.3 The Contractor shall submit compulsorily daily, weekly and monthly progress reports, manpower reports, materials reports, consumables (gases / electrodes) report and other reports as per proforma considered necessary by the Engineer.

47.4 The progress report shall indicate the progress achieved against planned, with reasons indicating delays, if any, and shall 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 slippages do not accumulate and effect the overall program.

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

48.0 DRAWING AND DOCUMENTS

48.1 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.

48.2 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.

48.3 The data furnished in various Annexures 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.



48.4 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.

48.5 Deviation from design dimensions should not exceed permissible limit. The Contractor shall not correct or alter any dimension / details, without specific approval of BHEL.

49.0 INCOME TAX , GOODS & SERVICES TAX (GST) ETC.

49.1 Income tax & surcharge, if any at prevailing rates shall be deducted on gross invoice value from the running bills unless Exemption Certificate from appropriate Income Tax Authority is furnished.

49.2 Price quoted shall be exclusive of GST. The GST, as legally leviable & payable to the Contractor under the provisions of applicable law/act, shall be paid by BHEL as per Contractor's bill. However, Contractor shall have to submit proof of GST deposited by them immediately after the deposit. The Contractor shall furnish proof of GST registration with Central Excise Division covering the services covered under this Contract

49.3 Contractor has to make his own arrangement at his cost for completing the formalities, if required, for bringing their materials, plants, and equipment at site for the execution of the work under this Contract.

49.4 Goods and Services Tax (GST):

49.4.1 BHEL EDN GSTIN number is 29AAACB4146P1ZB. All invoices to contain BHEL GSTIN No.

49.4.2 The Bidder shall mention Bidder's GSTIN number in all quotations and Invoices submitted.

49.4.3 Invoice submitted should be in the format as specified under GST Laws viz. all details as mentioned in Invoice Rules like GSTN registration number, invoice number, quantity, rate, value, taxes with nomenclature – CGST, SGST, UGST,IGST mentioned separately, HSN Code / SAC Code etc. Invoice should be submitted in original for buyer plus duplicate for credit availment.

49.4.4 Payment of GST to Bidder will be made only if it is matching with data uploaded by the Bidder.

49.4.5 Bidders to give undertaking that GST as mentioned in the Invoice has been paid either through cash or admissible input credit and also filed the returns at the time of submission of invoice.



- 49.4.6 For invoices paid on Reverse charge basis – “Tax payable on reverse charge basis” to be mentioned on the invoice.
- 49.4.7 In case GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount will be recoverable from vendor along with interest levied/leviable on BHEL.
- 49.4.8 In case vendor delays declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law will be recoverable from vendor/contractor along with interest levied/leviable on BHEL.

50.0 EXTRA WORK:

50.1 BHEL may consider for **payment of extra works (if any) on man hour basis only.**

- a) Require major revamping or rework and which are totally unusual to normal erection work.
- b) Require rectification / modification for improvement in the design during commissioning,
- c) Requiring fresh fabrication of components in place of rejected / replaced components.

However reworks carried out by a gang of one technician, two helpers for less than Four (4) hrs. will not be considered for extra work.

50.2 The rates shall include over time, if any, consumables, supervision, use of tools and tackles and other site expenses and incidentals.

50.3 The extra works, if any, shall be carried out by a separate gang or beyond working hours which can be identified for certification of man hours. Log book should be maintained and should be signed (within FIFTEEN days time) jointly by the Contractor's site in charge and the BHEL Engineer on day to day basis. However, signing of the log book does not necessarily mean acceptance of the extra works which would be identified by Engineer whether work is covered in one of the above categories. Only those works and man hours which are certified by the BHEL Engineer-in-charge, may be considered for payment. The decision of BHEL in this regard shall be final and binding on the Contractor.

51.0 PRICE VARIATION

51.1 The finally accepted rates for scope of work as defined in this tender shall be **FIRM for the entire Contract** period. No price variation on accepted unit rates is allowed.

NIT No. CE-ES/2017-18/07/ NTPC TANDA-II/C&I/SNU
dated 30.10.2017

**Signature & Seal of the
Bidder**



52.0 RATE SCHEDULE (IN THE PRESCRIBED PRICE BID FORMAT – PART-II)

52.1 Contractor shall fully understand equipment description and scope of work before quoting. The scope of work and responsibility of the Contractor as mentioned under these specifications shall be covered within the quoted rates / price.

52.2 The Bidder shall quote the Unit Rate for the Individual items in the space provided both in **Figures and Words along with the Sub-Totals and Grand Total Value** as per the rate schedule only, in part II price bid (Original). Conditional price bids or price bids with any deviation / clarification etc. are liable to be rejected. No cutting / erasing / over writing shall be done.

52.3 Contractor's total quoted price as per rate schedule will be taken as tentative only.

The quantities indicated in the rate schedule against each item may vary as per the actual engineering / requirement to complete the work.

Some of the items may be added or deleted which shall have to be executed by the Contractor within his scope of work and shall be paid as per the rates awarded in the Contract. 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 on the basis of unit rates.

53.0 INSTRUCTIONS TO BIDDER

53.1 Offers received without data / information required to be submitted under tender clauses-11.1 to 11.10 of GCC are to be furnished by the Bidder. All these data / information should be duly supported by documentary evidences (Refer note below clause-11)

53.2 No deviations to the tender conditions will normally be accepted.

53.3 The Bidders are advised to actually visit the site and fully acquaint themselves with site conditions, location of stores, transportation routes, quantum of work etc. before quoting their rates for this work. BHEL shall not be responsible in any way for non-familiarization of site conditions. Once the Bidder has quoted for the work, it is implied that he has ascertained various site condition and NO CLAIM whatsoever will be entertained by BHEL on any such account.



53.4 The Contractor in the event of this work awarded to him, shall establish a site office at site and keep posted an authorised responsible officer who should hold a valid power of attorney for the purpose of the Contract. Any order or instruction of the Engineer or his duly authorised representative shall be communicated to the Contractor's representative at site office and the same will be deemed to have been communicated to the Contractor at his legal address.

54.0 LIQUIDATED DAMAGES / PENALTIES

54.1 If the Contractor fails to maintain required progress of work which results in delay in completion of work as per the Contractual completion period, BHEL shall have the right to impose Liquidated Damages / Penalty @ 0.5 % of the Contract value (Basic + GST) per week of delay OR part thereof subject to maximum of 10% of the Contract Value. For this purpose, the period of delay shall be the delay attributable to the Contractor for the completion of work as per the Contract. Contract value for this purpose shall be the Final executed value exclusive of ORC, Extra works executed on Man day Rate basis, supplementary / additional item and PVC (if any)

54.2 If the Contractor fails in providing safe working environment as per the safety rules of NTPC or continues to work even after being instructed to stop the work by BHEL Engineer In Charge / Safety co-ordinator the Contractor shall be penalized. The Rate of penalty will be as per the prevailing norms on penalty, existing at site and the local authority.

If the Contractor does not take all safety precautions or fails to comply with the safety rules as prescribed by the owner or under the applicable law for the safety of the plant and equipment, the Contractor shall be responsible for payment of penalty to NTPC as per the enforcement by NTPC from time to time:-

If any worker of the Contractor is found working without safety equipment like safety helmet, safety shoes, safety belts etc. The safety officer of NTPC / BHEL shall have the right to penalize the Contractor for Rs. 200/- per person per day and such worker shall be sent out of the work place and shall not be allowed to work on that day.

55.0 SECURITY DEPOSIT

55.1 The Contractor shall submit Security Deposit within 15 days from the date of issue of LOI as per the General Conditions of Contract (GCC). In case the Contractor opts to furnish Bank Guarantee as a part Security Deposit, the BG shall be issued as per the Proforma enclosed as per Annexure-H of the GCC and also that the BG should be issued preferably through any of the Member Banks listed in the GCC;



For BG through any other Nationalized Bank (Not covered in the list of Member Banks of GCC), the discretion of its acceptance shall lie solely with BHEL.

56.0 OTHERS

56.1 In case of any contradiction between General Conditions of Contract(GCC) and Special Conditions of Contract (SCC), the latter shall prevail.

56.2 The Bidder shall specifically confirm he has inspected the site of work and is fully conversant with the prevailing conditions under which work is to be executed and will not raise claim of any nature due to lack of knowledge of site condition. He will also confirm that local taxation laws at the site have been clearly understood by him.

56.3 For reverse auction / for price bid opening, only those bidders will be considered who will be qualified for the subject job on the basis of pre-qualification evaluation/ techno commercial bids. BHEL reserves the right to reject the bidders with unsatisfactory past performance in the execution of the Contract. BHEL's decision in this regard shall be final & binding. **It may be noted that the sealed price bid of L1 bidder will be opened by BHEL after reverse auction so as to apportion difference between the initial price & final price proportionately on all the items of the rate schedule.**



SECTION – VI
SPECIAL CONDITIONS OF CONTRACT (SCC)
PART – B

SI.No.	Description
57.	SCOPE OF WORK
58.	ERECTION OF EQUIPMENT
59.	CABLE LAYING
60.	CABLE TERMINATION
61.	LAYING OF OPTIC FIBER CABLE
62.	CABLE TRAY ERECTION
63.	TESTING (PRE-COMMISSIONING, COMMNG. & POST COMMNG.)
64.	PAINTING
65.	SITE OFFICE CUM STORES OF CONTRACTOR
66.	TIME SCHEDULE
67.	OVER RUN CHARGES (ORC)
68.	PAYMENT TERMS
69.	Bill of Quantities (BOQ) FOR THE SCOPE OF WORK



SECTION-VI (PART-B) SPECIAL CONDITIONS OF CONTRACT

57.0 SCOPE OF WORK

Work mentioned in the sections “scope of work” & its subsections completely lies in scope of work to be executed by contractor using its manpower, tool plant within the quoted rates.

57.1 Scope of these specifications cover complete work of Receipt of Station Control & Instrumentation Equipments and Cable Drums from BHEL Stores / Open yard, Verification / identification, shifting to place of Erection, Erection, Cable Laying & Termination and Providing Commissioning Assistance for Station Controls & Instrumentation (C & I) package at Main Plant (TWO Units) and Common system (Off site areas), at TANDA, District: Ambedkarnagar, Uttar Pradesh -224 238, of NTPC Ltd. The work also includes checking, testing, pre-assembly, erection, calibration, alignment, grouting, welding, NDT wherever required, preservative / touch-up painting (including supply of paints), earthing of equipment, any other activities required for erection, testing, commissioning assistance, post commissioning assistance, trial operations assistance for items indicated in the rate schedule covered within the scope of these specifications for 2 x 660 MW units at NTPC TANDA Unit-5 & 6. **The work is distributed throughout the plant including the off site areas like Coal Handling Plant, Ash Handling Plant, DM Water plant, Ash Water Recirculation System, Cooling Water Pump House, , Service Building etc.**

57.2 The scope of work also covers all tests necessary to ensure that workmanship confirms to relevant standards and that such tests are adequate to demonstrate that the installations complies with the requirements of this specification.

All arrangement for conducting tests are to be made by Contractor within their quoted rates and tests may have to be repeated to satisfy BHEL / NTPC.

57.3 Contractor shall erect, test, commission all the field equipments, cabinets, panels, instruments etc. as per sequence prescribed by BHEL Engineer at site. The sequence of erection / commissioning methodology will be decided by the BHEL Engineer depending upon the availability of materials / work fronts etc. **No claim for extra payment from the Contractor will be entertained on the grounds of deviation from the methods of erection / commissioning adopted in erection / commissioning of similar jobs elsewhere or for any reasons whatsoever.** For some of the equipment, Erection supervision or Commissioning expertise will be arranged by BHEL. The rate schedule indicates such details against each item. However all assistance with sufficient manpower, required tools and facilities (like temporary power supply, Lighting, Scaffolding etc) required shall be provided by the Contractor.



57.4 The Customer NTPC 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 Engineer. 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 if pointed out by the Engineer, without any cost implication to BHEL.

57.5 Contractor shall plan and transport equipment / 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. Contractor shall plan activities considering plying of his vehicles on ring road also. Materials shall be stacked neatly, preserved and stored in the Contractor's shed and work areas in an orderly manner. If required, the Contractor shall arrange shifting of surplus material expeditiously failing which the same will be arranged by BHEL at Contractor's risk and cost.

57.6 The brief description of major equipment/ items to be erected, tested and commissioning under the scope of subject work are described in BOQ/Rate Schedule. However change in design/specification may occur as is usual in any such large work, for which no compensation will be payable. Contractor shall complete the entire work as detailed in tender specification within the Contractual rates.

57.7 Receipt of all type of C&I material from BHEL Stores (Closed or Open) and shifting them to Site of erection means –

- a. Identifying & verifying proper material to be erected at that time, issuing it from BHEL Stores with proper entry in RIV (Requisition Cum Issue Voucher) copies duly authorised by BHEL Engineer & issued from BHEL representative, Loading of material with proper Lifting arrangements to suitable & safe transport vehicle , then unloading it to site of erection using required Shifting machinery.
- b. Bidder must note that erection site for different materials may be at different locations & elevations throughout the main plant boiler, turbine floor, control room & Off-Site areas CHP, AHP, Water-System etc. Contractor must arrange for suitable lifting /shifting machinery at these locations for final stacking of material at place of erection. EOT cranes or any other such lifting cranes if provided by BHEL's Customer it shall be on chargeable basis. Provision of such machineries/cranes will be subject to acceptance of BHEL's customer.
- c. At present BHEL's Store & office are located inside Stage-1 of NTPC Tanda TPP whereas Site of erection is inside Stage-2 Area of NTPC Tanda TPP. Though both stages are adjacent but due to different entry Gates , Gate Pass may have to be arranged for shifting material from BHEL Stores in Stage-1 area to Erection Site in



Stage-2 area. Bidder shall arrange for meeting any such requirement of the Gate-pass for shifting of material from Stage-1 to Stage-2 or vice versa.

- d. Further to understand site conditions better bidders are advised to visit the site.
- e. Charges for all the works mentioned above shall be included in BOQ rates/ Rate Schedule and no separate payment shall be made for any of the above works.

58.0 ERECTION OF EQUIPMENT

58.1 All works such as cleaning, checking, leveling, aligning, assembling and temporary erection for alignment, dismantling of certain equipment for checking, cleaning, surface preparation, fabrication at site, cutting, grinding, straightening, chamfering, filing, chipping, drilling, machining, surface grinding, shaping, fitting up etc. as may be applicable in such erection works are to be treated as incidental to erection and necessary to complete the work satisfactorily and shall be carried out by the Contractor as part of the work.

58.2 Any fixtures, scaffolding materials, concrete block supports, steel structures required for temporary supporting, for pre-assembly or checking, welding, lifting and handling during pre-assembly and erection shall be arranged by Contractor at his cost.

58.3 The following provisions cover the technical requirements for some of equipment installation. The brief idea about the work involved is indicated below however the work is to be carried out in accordance with the recommendations of the equipment manufacturer drawings, documents furnished to the Contractor by BHEL or as directed by BHEL Engineer.

58.4 ERECTION, CABLING, INSTALLATION & COMMISSIONING IN VARIOUS SYSTEMS

This detail is to inform the bidder about scope of work related to individual systems. All the works related to each individual system shall be executed within the quoted rates. Notwithstanding the fact that attempt has been made to clearly specify the scope of work here, contractor shall execute any other work required to complete the individual systems erection & commissioning work in overall within the quoted rates.

58.5 DDCMIS PANELS

- a) Items covered under panels are – DCS/DDCMIS PANELS, UCP, ECP, Relay panel, Transducer panel, and Network panel etc. of Unit area, Water System, AHP, CHP, Makeup Water System, Standalone common System and RIOs etc.

Dimensional Details are as follows:-

- 1. Single suite: L x B x H - 756 x 800 x 2067 mm, Weight- 500 Kg. Approx.
- 2. Suite of Two: L x B x H - 1506 x 800 x 2067 mm, Weight - 1000 Kg. approx.



3. Suite of Three: L x B x H - 2256 x 800 x 2067 mm, Weight - 1500 Kg. approx.
 4. Suite of Four : L x B x H - 3006 x 800 x 2067 mm, Weight - 2000 Kg. approx.
 5. Network Enclosure for Power Distribution, Dimension: L x B x H - 600 x 450 x 600 mm, Weight- 30 Kg. Approx. (Off site locations like Service water pump house, Make up water system, Ash handling system,
- b) Erection at site / control room including chipping of floor, fabrication and fixing of base channel frame, leveling & alignment with spirit level, welding the base channel to the embedded plates / channels, grouting (if required), fixing of anti-vibration pads, termination of inter panel connections, mounting / connections of loose instruments, inter panel bus bar connections, Body earthing with GI Strips, Gland Plate Hole drilling, Cable Glanding & lifting, Cable termination, I/p power Cable, Earthing cable termination, cable dressing, shield wire termination.
- c) Commissioning involves charging of panels; network testing, loop checking, signal conditioning, system checking, commissioning of transmitters drives operation from remote, and putting necessary controls on automatics, fault tracing, checking of internal wiring when required. Terminations of cables will be by conventional screwed connections/cage-clamp type and crimping connections.
- d) Checking of internal wiring, rectification, testing and calibration of equipment mounted inside is in the scope of contractor. The contractor may have to change / replace items found faulty without any extra cost, however materials for this shall be provided by BHEL. Mostly panels will be delivered fully wired. Wherever required termination of loose wires or bus wires to be done. Canopy for panels if be supplied loose, shall be installed by the contractor after erection of panels within the quoted rates indicated in rate schedule. The cleaning of panels have to be done with electrical vacuum cleaner, besides conventional cleaning with brush etc. The drilling of holes in the gland plates for cable entry shall be part of panel erection. All blank holes / gaps in the gland plates / boxes etc. shall be properly sealed. The base frames shall be painted suitably. The contractor shall carry out the plugging and sealing of left out holes in the gland plates and other openings at the bottom of panels at his own cost by using good quality sealing material as advised by BHEL. Any minor alterations required in the bus bar arrangement, wiring in the panels/ cubicles shall also form part of the work. During testing, commissioning, some equipment / modules may need replacement / repair.

58.6 COMPUTER, PRINTER & PERIPHERALS

- a) All computer related items / equipment like Work Stations(PCs),Peripherals, monitors, LVS controller, KVM Switches, KVM Multiplexer, to be shifted to control rooms, Powered up by UPS supplies, and assistance shall be provided by contractor for testing & commissioning.

58.7 LARGE VEDIO SCREEN (LVS)

- a) LVS shifting, Erection, cabling, testing & commissioning shall be carried out by the contractor under the supervision of the supplier's representative. All care shall be taken while handling LVS packages as these items are fragile and very delicate.

58.8 CONTROL DESKS & DRAW OUT CONSOLE

- a) Each of the two Unit control Rooms are provided with 1 no. of 7 Mtr. Length Control desk, 1no. of 2 Mtr. desk is given for Shift In Charge and Control Desks of approx. 4.0 Mtr. size for each of the Control Rooms of CHP (Coal Handling Plant), AHP (Ash Handling Plant) & Water System.
- b) These Control desks shall be shifted by the contractor for erection under supervision of supplier's representative. Contractor shall provide suitable manpower & T&P to complete the work.
- c) Also, there will be a set of **draw out console** for Hardwired control of critical drives & feedback signals in both Unit Control Rooms. These draw Out consoles in both units shall be shifted from BHEL stores, lifted to Control room, erected, cabled, terminated with cables and tested & commissioned.

58.9 MINI UPS-

- a) Mini UPSs of small size (approx. 1.5 ft x1 ft x 0.75ft) of rating 1 KVA /3 KVA with dry battery sets shall be shifted & installed in control rooms.

58.10 GRAPHICAL INTERFACE UNIT (GIU)

- a) GIUs with TFT touchscreen monitors shall be shifted, erected with base frames, connected with cables powered up, and commissioned in field area of Offsite locations like Water System, Stand Alone, AHP etc.

58.11 FURNITURE-

- a) Set of Chairs, Printer Tables (Dimension: LxBxH - 950x650x740mm approx.), Computer Tables(Dimension: LxBxH- 1500x750x735mm approx.), Almirah, Dimension: L x B x H - 915 x 320x 1742mm shall be shifted and assembled in each Unit and offsite Control rooms.
- b) PC racks & Server racks will be assembled under supervision of Suppliers representatives.
- c) Keypad, Dimension: L x B x H - 250 x 350x 250mm, Weight 10kg., Locker Set,, Dimension: L x B x H - 380 x 457x 1830mm, shall be shifted from BHEL Stores to the designated locations

58.12 Master & Slave Clocks System:-

Panel has to be erected in Main Control Room. GPS Antenna has to be installed suitably for catching the satellite signals as per the instruction of BHEL / Vendor Engineer. Work also includes signal Cable from panel to antenna

59.0 CABLE LAYING-

- a) Cables of type as specified in BOQ/Rate Schedule shall be laid as per BHEL provided Cables Schedule and as per BHEL Engineer's instruction.
- b) Laying, dressing & clamping (by Nylon / PVC ties or Aluminum strips or any other method specified by BHEL Engineer) of the cables in the cable trays / angles. The cables shall be lifted in the enclosures(panels/JBs etc) through cable glands of appropriate size. For lifting the cable if required contractor shall make proper number of hole of suitable size in gland plates. The final dressing of all cables laid by the contractor and in all cable trays erected by the contractor shall also be done with Nylon Cord / Aluminum strip. Cost of cable laying as per Bill of Quantities Cum Rate Schedule shall include the cost of Nylon / PVC ties & Aluminum strip, cable tags, required for dressing / clamping.
- c) The cables shall be laid in the cable trays and the route as given in the cable schedule. The contractor shall intimate the engineer in charge whenever the cable tray is filled. Extra cables if laid by the contractor due to mistake, the same shall be removed at no extra cost to BHEL.
- d) The cable run number shall be provided by punching Aluminum Tag plates and tying suitably with nylon ties (at both ends and **at regular intervals of 5 meters** or as advised by BHEL Engineer) which shall be arranged by contractor at his cost.
- e) While laying cables, existing cable tray covers and false flooring may require to be removed and re-fixed. The same has to be done within the quoted rates & at no extra cost to BHEL.
- f) The screen of signal cables shall be run in insulated sleeve (of approved quality to be provided by the Contractor) and shall be terminated as per the instruction of the BHEL Engineer .
- g) **UTP Cabling** : UTP cables are to be laid through separate trays or metallic conduits (Flexible / rigid as the case may be) with complete sealing against exposure to rat bite. 10 mm ferrule sleeve to be supplied by the contractor for Printed ferruling of both ends of the UTP. Metallic tags shall not be permitted for UTP cables inside the panels. Both end of the UTP Cables will be crimped with RJ-45 connectors with crimping tool and terminated. Loop testing for checking link establishment also shall be done.



60.0 CABLE TERMINATION

- a) For Cables, the Cost Of Cable Laying as Per BOQ / Rate Schedule shall also include the cost of Termination with Suitable Crimping Type Lugs and Ferrules.
- b) Cable glands and lugs for LT Power cables above core size 2.5 sq.mm shall be provided by BHEL whereas lugs for 0.5 sq.mm to 2.5 sq.mm size shall be arranged by contractor Drilling of holes in gland plates of HT / LT switchgear, control panels, JB's etc. as per the requirement shall also be part of cabling at no extra cost to BHEL.
- c) The contractor shall carryout insulation testing, simulation testing etc. as part of cabling with no extra cost as per the instructions of BHEL Engineer at site.
- d) Screen of signal cables shall run in insulated sleeve (to be arranged by contractor at no extra cost) and shall be terminated as per the instructions of the BHEL Engineer.

61.0 Optical Fiber Cables Laying & Termination:

- a) Where OFC will be laid Outside Building Area - to be laid necessarily inside GI conduit with support from cable tray OR structure.
- b) Where OFC will be laid Inside Building Area - to be laid on separate cable sub-trays
- c) While OFC will be buried –it will be in separate buried trench approx. 1.0 meter depth, to be laid in 2" rodent proof HDPE conduits covered with sand, brick laid breadthwise and soil along the pipe line route by Contractor. Buried trench is in the scope of Contractor;
- d) While OFC will be laid crossing roads - to be laid in GI/rodent proof HDPE conduits with sand filling at bottom and sand, soil filling at top with cement concrete;
- e) **Cable termination shall be done with proper splicing kit, LASER light test for establishing link and testing of db losses on demand of BHEL Engineer for each or any cable.**
- f) Though Cable Trays will be available for most of the OFC laying or but in rare cases wherever required civil works including excavation, covering with bricks, road cutting etc. shall be carried out by the contractor for burying the cable within Conduits. After cable laying the excavated area / roads shall be refilled and restored by the contractor. Supply of all materials for civil works like bricks, sand, cable route markers ,preparation of pits etc. shall be carried out by the contractor including within the quoted rate.
- g) The approval of customer's field quality department /engineer may be required and the same shall be carried out by the contractor at no extra cost to BHEL.
- h) The Bidder shall carry out the civil works including supply of materials as detailed above for directly buried Instrumentation/control/cable also.

61.1 MEASUREMENT OF INSTRUMENTATION CABLES

- a) The methodology for measurement of instrumentation cables laid by the contractor shall be as under.
 - i) The lengths shall be measured from terminal to terminal plus height plus depth of the panels. Only one left over cut length of cable from each cable drum shall be acceptable.
 - ii) The contractor shall hand over cut length of cable from each cable drum and cut pieces / scraps to the BHEL's stores or any place identified by the BHEL.
 - iii) The bidder shall keep a proper record drum wise and submit to BHEL Engineer periodically the details of cables laid.
- b) The scope of work shall also include the following within the quoted item rates
 - a. Re-rolling of cables on drums as required by site engineer.
 - b. Return of cut pieces & scrap cables to the scrap yard / NTPC stores as directed by engineer in charge.

62.0 CABLE TRAYS & COVER

- a) Tray work involved is mainly cable sub-tray/ branch tray work of size 50mm, 100 mm, 150 mm size.
- b) Cable trays shall be supplied either ladder, perforated, slotted or duct type. Contractor shall carry out cutting of tray only by Hacksaw, GRINDER for obtaining proper routing from standard lengths supplied.
- c) Materials for support fabrication like flats, channels, angles etc. shall be supplied by BHEL. The cutting points on trays will be painted by primer & Aluminum paint by the contractor including supply of paint within the quoted price and no extra cost to BHEL.
- d) These cable trays may also be required for laying copper tubing, plica type / GI flexible conduits, local cabling and metal temp thermocouples. Rate quoted shall be for laying of trays only.
- e) *Tray covers wherever laid shall be paid separately as per the unit rates indicated in the rate schedule.*

62.1 STRUCTURAL STEEL FABRICATION-

- a) Steel fabrication work shall be done from structural steel supplied by BHEL for the fabrication of base frames, support frames for trays, JB's, Impulse Pipes etc.



- b) Cutting shall be done by Grinding machine with proper finishing & measurements. Welding shall be done by qualified welders with suitable rods and after welds shall be properly chipped & finished.
- c) After erection structure shall be painted with coats of primer & suitable paints.
- d) Payment for support fabrication / erection shall be released as per BOQ rates for structural steel fabrication work.

62.2 JUNCTION BOX AND FMUs

- a) Erection Junction Boxes , FMU(Field marshalling Units) , shall be done .It involves Fabrication of Support Frame with structural steel , erection of frame by welding /grouting , mounting of JB, PDB , body earthing with GI Flats and painting if required.

62.3 CONDUITS (RIGID G.I./ FLEXIBLE /HDPE):

- a) Conduits shall be used & laid for carrying cables from field instruments to local JB's , for UTP cables and for OFC as per the instruction of BHEL Engineer with suitable connectors / unions bends etc.(which shall be supplied by BHEL). Flexible conduits will be supplied in sizes of 18mm dia. And 25 mm dia. (OD) of Zinc coated and Lead coated varieties.
- b) For laying OFC cables GI Rigid conduits & HDPE conduits shall be used as per procedure mentioned for OFC laying. G.I. Rigid conduits are supplied in sizes of OD 1" and 2"

62.4 UPS & 24 DC CHARGERS

- a) 1 Set of UPS (140 KVA) power supply system for main Unit comprises of 2 panels of rectifier(1200x950x2100mm), 2 panels of inverter(1200x950x2100mm), 1 Aux panel(1200x950x2100mm) , 2 Static Switch Panels (800x1000x2200mm), 1ACDB panel (1650x1000x2200mm) with ACDB-1 &2 at front & backside , 1 BHMS (battery health monitoring system) box & hardware. BHMS (battery health monitoring System) for UPS includes a wall mount box (500x500x150) along with System chip & wiring over batteries & interconnection between UPS, BHMS & Battery.
- b) 7 no of power Distribution Boxes (800x200x600mm) also shall be erected at various location in Main Plant Area for distribution of ACDB power Output. These are separate items in BOQ.
- c) Each of the Offsite areas AHP-10KVA, CHP-25KVA, WS-15KVA shall have 1 Set of UPS erected & commissioned. Each set will have 1 panel for Inverter (660x750x1750mm)& 2 Aux panels(660x750x1750mm) along with 1 BHMS



system with 1 no. of BHMS wall mount Box (500x150x500mm) to erect & commission.

- d) Each of the two Units shall have 1 set of Unit- Charger with Rating 1000Amps with 1 Charger1 panel (800x800x2100mm) , DCDB1 Panel (1200x800x2100mm) & Charger2- DCDB2 of same dimensions. BHMS
for each of Charger 1 & Charger2 shall be erected & commissioned.
- e) Each of the Common Area Charger like AHP , CHP , WS ,MUWS ,Stand Alone and ESP/VFD1 &2 shall have Sets of chargers erected & commissioned as per numbers indicated in the BOQ/rate Schedule. Ratings of Chargers at each of these locations also are indicated in BOQ. Each Set of charger for common System comprises of 2 panels, each panel of dimension approx. between 700x700x1500 mm to 800x800x1850 mm . 1st Panel has Charger1, DCDB1 & 2nd panel has Charger2, DCDB2.
- f) Each of the Chargers & UPS shall be erected, aligned, welded to bottom frame at respective locations .Body ground will be done with GI Strips or Suitable size of cables . I/P – O/p power and other earthing cables, instrumentation Cables shall be laid, glanded, lifted & terminated with proper lugging through crimping tools as per cable schedule. Commissioning involves complete assistance to supplier's representative in charging, testing, full load- testing with discharge resistor, battery connection & charging, alarm testing ,BHMS erection & commissioning , DCS interconnection etc.

62.5 BATTERY BANK SETS

- a) Each of the two Units shall have 1 No of battery Bank of Rating 600AH for UPS of 140kVA, comprises of 290 to 295 cells of dimensions L x B x H - 345x195x405 mm, each cell weight = 47.2 Kg.approx.
- b) For Offsite Locations (Common to both units) like AHP- UPS Battery along with Manual Discharge Resistor Bank (MDRB) and Battery Accessories for UPS of AHP DDCMIS, consisting of 180 no. of cells 75 AH of Dimension L X W X H - 75x139x361mm, Weight of each Cell=6.8 Kg.
- c) For Offsite location (Common to both units) like CHP – UPS Battery along with Manual Discharge Resistor Bank (MDRB) and Battery Accessories for UPS of CHP DDCMIS, consisting of 180 no. of cells 180 AH of Dimension L X W x H - 128 x 165 x 361mm, Weight of each cell= 14.4 Kg.
- d) For Offsite location (Common to both units) like Water System (WS) – UPS system consisting of 180 no. of cells 111 AH of Dimension L X B X H - 105x139x361 mm, Weight of each cell=9.3 Kg.



- e) For Offsite location (Common to both units) like Water System (WS) – 24 V DC Charger system - Battery along with one common MDRB and Accessories for Water System DDCMIS, Consisting of 19 no. of cells of 715AH of Dimension L X B X H - 430x195x405 mm, each cell weight=57.8 Kg.
- f) For Offsite location (Common to both units) like Make Up Water System (MUWS) 24V DC Charger system - Battery along with accessories for MAKEUP WATER SYSTEM , Consisting of 19 No. Cells of 265AH, Dimension L x B x H - 176x195x405 mm, each cell weight=22.4Kg.
- g) Stand Alone Common System (SAC) – for 24 V DC Charger system, Battery along with one common MDRB and Accessories, Consisting of 19 cells of 353 AH of dimension: L x B x H - 261x195x405 mm, each cell weight = 32.4 Kg.
- h) ESP VFD of Unit-1 & Unit-2 , number of battery bank sets have been indicated in BOQ. Rating of the battery banks also have been given in BOQ. Battery along with MDRB and Accessories for ESP/VFD SYSTEM, Consisting of 19 cells of 575AH, Dimension: L x B x H - 375x195x405 mm, each cell weight=46.4 Kg.
- i) For purpose of Charging & discharging of battery banks “Discharge Resistor banks” of size approx. 500x500x1000 mm have to be shifted to each battery bank locations.
- j) Erection of battery bank involves assembly of battery stands , erection of batteries over stands, inter-connection of batteries with IPC & ICC, electrolyte filling, charger to battery cable connection (630 sq.mm for Unit Battery & WS-01 Battery and 120 Sq.mm for others), charge-discharge cycle and Capacity testing using discharge load and subsequent recharging (in case of failure of capacity test, the charging Discharging cycle is to be repeated) Dummy load test of chargers includes erection, temporary connections of Discharge load resistors, and temporary connection in absence of regular power supply. Erection of Battery Isolator Boxes / Terminal Board and interconnection is included in Battery erection. Replacement of defective cells during warranty is also in contractor’s scope and price indicated is deemed to be inclusive of this work
- k) In case Battery bank charging cycle has to be repeated due to failure of banks or on demand of customer with amended guidelines same shall be carried out by contractor without any extra charge.

62.6 VIBRATION MONITORING SYSTEM

- a) 1 Set of Vibration Monitoring System (VMS) shall be erected & commissioned for each of the two Units , Unit-5 & Unit-6 for measurement of vibration, axial shift.

- b) VMS for UNIT area shall be for drives ID, FD, PA, CEP, MDBFP-1, MDBP-2.
- c) One set of VMS for CWP (Cooling Water Pump and One set of VMS for makeup water system also is provided separately.
- d) Each VMS erection & commissioning involves erection, alignment and earthing of panel, electronics cards & transducers in Panel , mounting of brackets over drive-housing/cabinet, erection of sensors over brackets, erection of JBs, Branch Trays , Termination of probes & cables ,testing & commissioning of sensors , interconnection with DCS panel and complete commissioning of system.

62.7 LOCAL INSTRUMENT ENCLOSURES & RACKS (LIE/ LIR)

- a) LIEs & LIRs with internal mechanical assembly for transmitters & integrated JBs shall be shifted and erected at different elevations and locations in Boiler & Turbine area as per drawing /documents.
 - LIE TYPE A, Size: LxBxH - 1400 x 800 x 2200 mm, Weight 650 Kg. approx.
 - LIE TYPE B, Size: LxBxH - 1000 x800 x 2200 mm, Weight 600 Kg. approx.
 - LIE TYPE C, Size: LxBxH - 700 x 800 x 2200 mm, Weight 550 Kg. approx.
 - LIR TYPE B, Size: LxBxH - 1330 x800 x 2200 mm, Weight 600 Kg. approx.
 - LIR TYPE C, Size: LxBxH - 1010 x 800 x 2200 mm, Weight 550 Kg. approx.
- b) Erection & commissioning shall include erection over fabricated channel frame, alignment, Welding, connection of drain pipe to main drain line, Impulse Piping to root valves provided by Mechanical group, Connection with purge Lines (wherever applicable in case of Air & Flue gas lines), erection of transmitter , instrumentation cable lifting -glanding and termination, Flushing & charging of Impulse lines and final commissioning of instruments/transmitters, Cabling, termination & installation for illumination.

62.8 TRANSMITTERS

- a) Pressure Transmitters & DP Transmitters shall be erected as per drawing inside **LIEs/LIRs** which have come with pre-fitted assembly. Few Pressure /DP transmitters shall be erected as **Stand Alone** as per drawing with SS Tubing & other Fittings. E&C includes mounting of transmitter with Angle/ Channel/Pipe/Plate support with screwed arrangement / welding arrangement, calibration, range setting, termination of cable, final commissioning.
- b) **ANNUBAR**(Impact Head Flow Element & Transmitter) 2 no in each unit shall be erected inside the Cooling water pipe line with related mechanical arrangement. Approximate length of the Annubar is 2.4 Mtr. The work also includes Cable termination , Flushing , commissioning shall be executed.



- c) **Guided Wave Radar Type Level Transmitter**-along with Chamber Assembly shall be erected & commissioned in both Units. Chamber erection consists of welding counter flange to mechanical tapping point (valve), fixing of gasket and tightening of bolts & nuts apart from Cable termination, Flushing, commissioning shall be done.

62.9 SS TUBING

- a) Where ever required some length of SS Tubing shall be done along with other mechanical fitting for erecting field instruments like Pressure / DP Transmitters, Sox/NOx analyzers, Low temperature oxygen analyzers, High temperature oxygen analyzers etc. But cost shall be included in erection of equipment only. No separate payment shall be done for tubing or mechanical fitting erections.
- b) No extra charges will be claimed by contractor for any modification carried out due to site requirement in general.

62.10 HMS (HART MANAGEMENT SYSTEM)-

- a) Each of the two units is provided with 1 set of HART Management System. Each set comprises of PC , printer , 5 No of panels and other associated hard wares. Each panel shall be erected , aligned , power and instrumentation Cables to be laid and terminated at both the ends. Panel & PC to be powered up and system to be tested & commissioned under supervision of Supplier's Engineer.
- b) Separate cables shall run between DDCMIS panels & HMS panels for interconnection. All the cable laying , termination on both sides shall be done by Contractor.

62.11 MASTER & SLAVE CLOCK –

- a) One set of master clock system common for Units & Offsite having panel with associated hardware of GPS hardware & antenna shall be erected & aligned installed under supervision of Supplier's Representative,
- b) Slave clocks shall be erected, aligned & installed at various locations throughout the plant along with Control Cable, Instrumentation Cable , & Coaxial Cable terminations for the system, as per instruction under supervision of Supplier's Representative.

62.12 FLUE GAS ANALYSERS (SOX, NOX,CO, CO2 ANALYSER at CHIMNEY)

- a) A system of SOX, NOX,CO, CO2 Analyser system shall be erected at approx. height of 60 to 80 mtr. with 1 set of sampling system box & associated hardware, 1 set of probe Bracket/housing, 1 Flow meter . ,1 set of Sensors for SOX, NOx, CO, CO2. One set of Analyser panel (Dimension: LxBxH - 1200 x 800 x 2200 mm weight 400 Kg. approx..) shall be erected at Zero meter.
- b) Tubing, Impulse Piping shall be done for process connection. Cable tray erection for cable laying, Cabling for interconnection in system & connectivity with DCS

(including shifting and placement of calibration gas cylinders in a stand) shall be done.

- c) Testing & commissioning of System shall be done under supervision of supplier's Engineer.

62.13 DUST /OPACITY ANALYSER(SPM)

- a) System shall be erected & commissioned under supervision of Supplier's representative with 1 set of equipment at Chimney of each Unit where each set consists of One set of Transmitter and Receiver Probe with Stub, 1 Reflector Probe with SS Tube, One Set Purging valve & regulator, other fittings etc., Junction Box- 1 no. Cabling shall be done for Signal carrying to DCS and power supply to equipment.

62.14 MERCURY ANALYSER AT CHIMNEY

- a) One Set of probe with Sensor shall be erected in Chimney along with erection of 1 no of panel, cabling & termination with DCS.

62.15 HIGH TEMP OXYGEN ANALYSERS:-

Brief description of work is as follows:-

High Temp Oxygen Analyzers (at Super Heater Zone) consisting of cabinet of dimension LxBxH - 400 x 120 x 300mm - 1 no. and Reference Air + verification kit cabinet of dimension LxBxH - 560x230x500mm Qty. 1 no. along with Junction box - 2 no., Calibration gas cylinders. Scope includes cabling from sensor probe to analyser, SS tubing etc. Total qty. 2 sets per unit.

62.16 LOW TEMP OXYGEN ANALYSERS

- a) Probe protector installation, fixing of probe, installation of Calibration unit, SS tubing between probe and analyser box, Mechanical fittings etc. for erection, Junction box erection, Power Cabling between UPS feeder to PDB, Instrument cabling between Analyser to DDCMIS panel in main control room, & installation of 14 sets of Low Temperature Oxygen (LT O2) Analysers in each unit.

62.17 SWAS (STEAM & WATER ANALYSIS SYSTEM)

- a) One set SWAS in each of the two Units.
b) SWAS System of each unit comprises of the following:-

- Erection of Primary Racks in Boiler area and Turbine area, Dimension- Primary Cooler Rack-1, Dimension: LxBxH - 1800 x 800 x 2100 mm, Weight 800 kg. approx.



- Primary Cooler Rack-2, Dimension: LxBxH -500 x 800 x 2100 mm, Weight 500 kg. approx.
 - 1 set of Sampling Panel (Wet Panel, Size: LxBxH - 4000 x 1600 x 2115 mm, Weight: 2000 Kg. approx.), 1 set of Analyser Panel (Dry Panel, Size: LxBxH - 4200 x 800 x 2115 mm, Weight: 1200 kg. approx.), 1 set of sensors & transmitters
 - Hot Well Rack, Dimension: LxBxH -600 x 600 x 1800 mm, Weight 200 kg. approx.
- c) Chiller- 1 set (Common for 2 units), Dimension: LxBxH - 2500 x 1200 x 1800 mm, Weight: 1500 kg. approx.
- d) The System shall be erected aligned , Impulse piping , tubing shall be done , Cabling & termination shall be done for powering the system & DATA transfer to DCS.
- e) Work also includes, erection of flanges in chiller unit, Carbon steel piping (size: 2" dia.) between Chiller unit to Wet panel and back along with waste drain. SS piping (Size 1" dia.) between Wet panel to chiller.

62.18 IMPULSE LINE – ALLOY STEEL, CARBON STEEL, STAINLESS STEEL (AS / CS / SS)

The impulse line work comprises of Identifying the proper type (refer specification) of Impulse pipe, cleaning with wire brush and compressed air, edge preparation, cold bending, laying to the required slopes, giving proper supports by using structural steel (Angle/Channel, plates – supplied by BHEL), clamping, installation of isolation / drain valves, condensate pots and other fittings by socket welding, connecting with the process end and to the instruments, carrying out NDT, Hydraulic testing the impulse lines, and painting the lines as per requirement of BHEL engineer. Proper tagging of valves and impulse lines on both ends shall be done for proper identification. **Painting of impulse lines with primer and with final paint of color as per NTPC standards Including supply of paint is in Contractor's scope.** Flow elements are provided with SS root valves. Welding of these SS root valves with Alloy Steel /Carbon Steel impulse pipes is to be carried out within the quoted rates for Impulse pipes. The rate quoted per meter shall include all the above work.

Pre heating, Post weld Heat Treatment (PWHT) and Non Destructive Tests are to be carried out for welding of impulse pipe with specification ASTM A 335 P91 SCH XXS. Contractor to consider this aspect while quoting Form 101-401 (Two Pages). A copy of PWHT reports (for those Alloy steel impulse pipe lines where the test was carried out) to be submitted to BHEL.

- a) **Contractor must use suitable welding rods only for individual works**



62.19 G.I. RIGID PIPE/ Air line pipe (Size- ½” dia, 1” dia, 2” dia)

Cutting / threading of standard lengths of conduits, laying on fabricated supports or on floor, using screwed fittings, clamping, sealing of open ends. Approved Good quality sealant shall be arranged by the Contractor to make the joint water proof, within the quoted rates.

63.0 TESTING (PRE-COMMISSIONING, COMMISSIONING AND POST-COMMISSIONING)

63.1 Site testing shall be required for all equipment installed by the Contractor to ensure proper installation, setting, connection and functioning in accordance with drawings, specifications and manufacturer's recommendations.

63.2 Commissioning protocols are to be prepared as advised by BHEL Engineer .

63.3 Testing, and pre-commissioning checks shall be as per relevant codes / practices and BHEL drawings / specifications/ approved commissioning Protocols and same shall include, but not be limited to the following :

63.4. BATTERY AND BATTERY CHARGER

- (a) Checking of battery charger panel.
- (b) Calibration of all indicating and measuring instruments.
- (c) Dummy load test of battery charger.
- (d) Charging of battery and recharging after carrying out battery discharge test/ capability test of battery using dummy load.
- (e) In the absence of regular power supply to battery chargers arrangements are to be made for battery charging from temporary construction power supply points.

63.5 Contractor shall carry out air leak test, pressure drop test for pneumatic tubes, impulse and air lines to the satisfaction of BHEL's Engineer as per test procedures of manufacturing units or advised by BHEL Engineer. All impulse pipes of water and steam circuits shall be hydraulically tested for 1.5 times of working pressure.

63.6 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 same shall be done as per Engineer's



instructions including repair, rectification and replacement work by the Contractor at his cost. The parts to be replaced shall be provided by BHEL.

63.7 During this period, though the BHEL's / Client's staff will also be associated in the work, the Contractor's responsibility will be to arrange for the complete requirement of supervision, labour, consumable, T&P and IMTEs required till such time the commissioned units are taken over by the BHEL's Customer.

63.8 During the mile stone activities certain gauges, manometers and Temp elements have to be temporarily erected and commissioned. Contractor has to carry out this work. After completion of activities the temporary systems have to be removed and system restored. If this work is carried out as per the instruction of BHEL Engineer In Charge, the manpower charges as applicable for extra work will be considered.

63.9 During erection of various equipment, prior to commissioning and after commissioning, protocols have to be made as per the instruction of BHEL Engineer In Charge.

The pre-commissioning activities will start with various trials, commissioning operations shall continue till units are handed over to Customer. Simultaneous commissioning activities will be progress in various areas, checking of equipment erected, making ready for trial runs, alkali flushing, chemical cleaning, mass flushing etc., all these works need specialized gangs including electricians / instrument technicians in each area to render assistance to BHEL commissioning staff.(refer clause 52.0) Contractor shall earmark separate manpower for various commissioning activities. The manpower shall not be disturbed or diverted.

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

63.11 During commissioning, opening and closing of valves, attending to leakage, changing of gaskets, modifications in wiring, realigning of equipment, recalibration of instrument, attending to leakage, minor adjustments of erected equipment may arise. The accepted rates shall include all such works.

64.0 PAINTING

64.1 All structural steel fabricated for support / erection of LIEs, Junction box, Cable trays, Impulse lines work, impulse lines are to be painted with primer & finish paint. For panels, touch up painting by spraying is to be arranged by Contractor at his cost.

64.2 All surfaces are to be thoroughly cleaned and to be touch up painted with suitable approved primer and finish paint matching with approved final color. Besides above two coats of approved primer paint, two coats of approved finish painting is to be done by the Contractor to get the desired dry film thickness. **All paints, tools and other consumables including scaffolding materials required for painting shall be arranged and provided by Contractor within the quoted rates.** Paint and other materials so purchased shall be ISI marked and painting should be as per colour scheme and quality approved / specified by BHEL Engineer In Charge. The Contractor shall provide legend on equipment in size specified by Engineer. Letter writing shall be done in Hindi / English or in both language. The painters have to under go test and only qualified painters will be allowed to work. Paint thickness shall be as per NTPC requirement i.e 100 microns minimum.

65.0 SITE OFFICE CUM STORES OF CONTRACTOR

BHEL/NTPC shall provide limited open space for Contractor's site office & Contractor's Stores It is the responsibility of the Contractor to construct sheds, provide all utilities like electricity, drinking water etc. He is to dismantle and clear the site after completion of work or as and when required.

65.1 **Quarters / residential accommodation will not be provided.** 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.

65.2 The Contractor shall submit to the BHEL Engineer his electrical power requirements. Construction power shall be provided free of charge at one point. Contractor at his own cost shall do further distribution.

All wiring must comply with local regulations and will be subject to Engineer's inspection and approval before connecting supply.

65.3 Water for construction purposes shall be provided free of charge at a one point. Contractor shall arrange further distribution of water for construction purposes.



NOTE:

Though BHEL is getting the construction power and water on free of charge basis from the Customer, the Contractor shall ensure that there is no wastage. The Contractor may have to install a meter for this purpose . Periodical audits will be held to ensure that these resources are being optimally used.

In case any wastage is observed BHEL reserves the right to recover any charges / penalty as deemed fit to be decided by BHEL engineer

Contractor will have to provide insulated cables for power distribution and jointing (if any) will have to be done with proper jointing kits .

65.4 Provision of distribution lines of both electrical power and water from the central points to the required place with proper distribution boards observing the safety rules laid down by the electrical authorities of the state shall be done by the Contractor, supplying all the materials like cables, distribution board, switch boards, TPN, CBS, ELCBS/ MCCBS / Copper / Brass clamps, copper conductor, change over switches pipes etc. at his own cost. If any failure is caused in supply of the power and water, it is the responsibility of the Contractor to make alternate arrangements at his cost. The Contractor shall adjust his working shifts / hours accordingly and deploy additional manpower if necessary so as to achieve the targets.

65.5 Following points should be strictly adhered to by the Contractor while drawing construction power supply from Distribution Board.

(a) All electrical installations should be as per Indian Electricity rules.

(b) All distribution Boards installed by the Contractor should be constructed with fire proof materials viz. steel frames, bakelite sheets etc.

(c) Connection for single phase should be taken from phase and neutral. No where the connection should be taken with earth as neutral.

(d) All electrical connections should be made through connectors, nuts and bolts, switches, plug and sockets. Loose connections or hooking up of wires shall not be permitted.

(e) Contractor have to make their own earthing arrangement for their equipment / DB earthing. Earthing connection have to be done with copper conductor and copper / brass clamps with BHEL's prior permission.



- (g) All electrical equipment / tools and plants should be properly earthed. DBs to be earthed diagonally opposite at two points.
- (h) Contractor should use “MCCB” and “ELCB” either on incoming or outgoing connections to the DBs.
- (i) Contractor should ensure that all the CBs / TPNs / Fuses / MCCB / ELCB cables etc. should be of adequate rating/ capacity.
- (j) For permission of supply connections Contractor has to submit a test report of their installations with a single line diagram of connected / proposed loads. Contractor will submit a report on all electrical connected load by the 7th every month.
- (k) ELCB will be tested once in a week or as deemed fit by BHEL Engineer by actually simulating the earth leakage for all installations and the same shall be recorded by BHEL Engineer in the log book to be maintained by the Contractor.
- (l) 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.
- (m) Adequate lighting facilities such as flood lights, hand lamps and area lighting shall be arranged by the Contractor at the site of construction, especially in cable gallery and offsite locations, Contractor’s material storage area etc.

65.6 On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables, cable sleeves etc. shall be dismantled and levelled and debris shall be removed as per instruction of BHEL by the Contractor at his cost.

In the event of his failure to do so, same will be got done by the Engineer and expenses incurred shall be recovered from the Contractor along with prevailing overhead. The decision of BHEL Engineer in this regard shall be final.

66.0 TIME SCHEDULE

66.1 The Contractor is required to commence the work within 15 days from the date of issue of Letter of Intent (LOI) unless BHEL decides to fix any other later date. However, the actual date of start of work, to fix up zero date of the Contract, will be certified by BHEL Engineer after adequate mobilisation of manpower and T&Ps by the Contractor.

66.2 Entire work as detailed in the tender specifications shall be completed within 30 (Thirty) months from Zero date . **For all Contractual purposes the completion period of 30 months from Zero date is considered.**



66.3 Depending upon front and material availability Erection activities may be required to be pre-poned. Contractor is required to mobilize additional resources to meet above requirement within their quoted price.

66.4 Contractor has to mobilize additional resources including manpower to achieve above schedule for which no compensation will be payable. The work under the scope of this Contract is deemed to be completed in all respects, only when the Contractor has discharged all the responsibilities laid down in the Contract. The decision of BHEL on completion date shall be final and binding on the Contractor.

66.5 In case due to reasons not attributable to the Contractor, the work gets delayed and additional manpower / resources scheduled have to be mobilized so as to meet various mile stones, same shall be done within the quoted rates, 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 in line with provisions of general Conditions of Contract.

67.0 OVER RUN CHARGES (ORC)

67.1 In case due to reasons not attributable to the Contractor, the work gets delayed and scheduled completion gets extended, the Contractor shall not be entitled for any over run 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 from the third month onwards @ Rs 60000/= (Rupees Sixty thousand only) per month** on receipt of advance notice intending to claim over run & on fulfillment of following conditions:-

- a) The reasons for delay in completion of work are not attributable to Contractor but however subject to the provisions of clause – 31 of Section - I General Terms and Conditions.
- b) The targets fixed during the over run period are achieved by Contractor.

67.2 Once the claim of over run charges is admitted, no other compensation whatsoever (like for delays in receipt of materials, availability of fronts etc.) will be entertained.

67.3 The Contractor shall maintain sufficient workforce and other resources required for completion of the job expeditiously for the entire Contractual period including total extended period.



68.0 PAYMENT TERMS

68.1 All payments will be released in stages on Prorata basis as per the work completion. **BHEL Engineer** will certify the actual work executed in the measurement books and bills, which shall be accepted by the Contractor in measurement book.

68.2 Contractor shall submit bills for the work completed under the specification, once in a month (for the period 1st to 30 / 31st of each calendar month) preferably in the last week, detailing work done during the previous month. The format for billing shall be approved by **BHEL ENGINEER** before raising invoices.

68.3 All payments shall be released from BHEL Bangalore through Electronic Fund Transfer (EFT) only to the Contractor's bank account directly. After the bills are received at Bangalore after certification by BHEL site Engineer along with all statutory documents, the process of release of payment to Contractor is expected to take 30 to 45 days.

68.4 Non - receipt of payment / delay in getting payment from BHEL can not be the reason for Contractor to delay in making payment of wages to their workmen.

68.5 Any interruption, delay in the ongoing activities affecting the progress of work can not be tolerated and viewed very seriously. Contractor is advised to take note of this and ensure labour payments in time (by 10th of every month) without fail.

68.6 The Contractor has to submit his running bills in printed format with serial numbers and mentioning the registration numbers for service tax (GST), TIN, sales tax etc .

68.7 Subject to any deduction which BHEL may be authorized to make under the Contract, the Contractor on the certificate of the **BHEL Engineer** at site be entitled for payment as explained hereunder:

For Equipment erection :

(A) For Equipment Erection, 60 % (Sixty) of item rate shall be payable on pro rata basis on erection of equipment as certified by **BHEL Engineer In Charge**. The following shall be furnished along with the bill.

- Certified Measurement sheets for completed portion of work duly signed by BHEL Engineer is to be furnished along with the monthly Bill.
- Wage sheet, Muster roll, ESI for the **previous month** along with Provident fund deposit challan
- GST paid details for the present RA Bill which is being submitted



(B) 20 % (Twenty) of the item rate value shall be payable on pro rata basis on completion of pre commissioning checks of equipment as certified by **BHEL Engineer In Charge**.

(C) 15 % (Fifteen) of the item rate value shall be payable on pro rata basis on commissioning of equipment as certified by **BHEL Engineer In Charge**.

(D) Last 5 % (Five) of the item rate value of work on completion of all pending works, reworks, material reconciliation, area cleaning and fulfillment of Contractual obligations and on submission and passing of Final bill as certified by **BHEL Engineer In Charge**

The bills with all enclosures shall be submitted in Triplicate and made separately for Unit 5 & Unit 6. The checklist is to be submitted as per Annexure VII. Attendance certification by BHEL Site in charge is to be furnished for manpower provided under free of cost basis along with each RAB.

The payment for the First running bill will be released only after production of copies of following certificates

- **PF Registration /membership certificate**
- **Labour Licence (Form V till licence is obtained)**
- **Workmen COMPENSATION Insurance policy**

**Annexure-IV****LIST OF T&Ps AND IMTES REQUIRED FOR WORK**

SL No.	EQUIPMENT	QTY	Remarks
A:	T & Ps		
1.	Crane- 8/10 T	1 No.	Can be arranged locally as per requirement
2.	EOT crane (125 T) in TG hall	1 No.	See Note 2 below

NOTES: 1. In addition to above any winch / special crane , is to be arranged by the Contractor for erection work at his cost

2. EOT crane in TG Hall belongs to NTPC and will be issued on **chargeable basis** Contractor has to make arrangement of these equipment at his own cost.

BHEL EDN will coordinate for Contractor in obtaining above equipment at site for C&I Erection purpose.

Annexure-V**INDICATIVE LIST OF T & P TO BE ARRANGED BY THE CONTRACTOR**

1.	Pull Lifts & Ratchet hoist	Adequate Nos.
2	5 / 10 T Chain Pulley blocks	2 nos each
3	Welding Transformers	8 nos.
4	Welding generators	4 Nos.
5	Gas cutting set	Adequate Nos.
6	Grinders	Adequate Nos.
7	Hydraulic Pipe Bending machine	4 No.
8	Pedestal mounted Drill Machine (up to 36 mm)	2 no.s
9	Hammer / Pistol Drill Machine	Adequate no .
10	Portable Compressor.	1 No
11	Hydraulic Test Pump (1 no. up to 600kg/cm2)	3 No.
12	Hand crimping tools	Adequate Nos.
13	Blower	1 No
14	Vacuum Cleaner	1 No
15	Electrician's standard tool kit	12 sets
16	Fitter's standard tool kit	10 sets
17	Hand pulling trailer	1 no.
18	Torches	5 no.s
19	Hot air blowers	1 no.
20	Tap set including M 33	1 set
21	Personal Computer with Printer	1 set
22	Ferrule Letter Printing Machine with cable schedule down loading facility from PC preferably LETATWIN make	2 nos
23	Fire extinguishers	4 no.s
24	Power hack saw / Angle cutting machine	1 no.
25	Electrode oven (Mother oven)	1 No.
26	Electrode flask (Portable oven)	3 no.s

NOTE:

1.The above list specifies only major T&Ps (may not be complete to be deployed by the Contractor). All additional / other tools and plants in good and safe working conditions which are required for satisfactory & timely completion of work shall also be deployed by the Contractor within finally accepted rates.

2. Other terms and conditions regarding above items please also refer clause 37 (T&Ps/IMTEs).

NIT No. CE-ES/2017-18/07/ NTPC TANDA-II/C&I/SNU
dated 30.10.2017

**Signature & Seal of the
Bidder**

Annexure-VI

Indicative list of IMTE to be arranged by the CONTRACTOR for C&I works

Calibration Laboratory to be set up by Contractor at site

S.N O	DESCRIPTION	RANGE	ACCURACY	QTY
1.0	Dead Weight Tester	600Kg/cm ²	LC- 0.5Kg/cm ²	1 Set
2.0	Comparator test set with sub standard pressure gauges	0-1 kg/cm ² 0-4 kg/cm ² 0-6 kg/cm ² 0 –10 kg/cm ² 0-25 kg/cm ² 0 –60 kg/cm ² 0-250 kg/cm ² 0-400 kg/cm ²	+/- 0.25%LC –0.2 kg/cm ² -----do----- -----do----- -----do----- +/- 0.25% LC –0.2 kg/cm ² +/- 0.25% LC –0.2 kg/cm ² +/- 0.25% LC –0.2 kg/cm ² +/- 0.25% LC –0.2 kg/cm ²	1 Set
3.0	Variable DC regulated supply	0 – 30 V DC	+/- 0.2%	1 No.
4.0	Oil bath with thermostat, stirrer and sub-standard glass Thermometers in multiple ranges	0- 300 deg. C		1 Set
5.0	Glass U tube mercury manometer with standard steel scale having leveling arrangement	0-760 mm		1 no.
6.0	Glass U tube mercury manometer with standard steel scale having leveling arrangement	0-1000mm		1 no.
7.0	Inclined tube manometer	0-1000 mm		1 no.
8.0	mA /mV Source	0-200mA/ 0-200mV		2 no.
9.0	Rheostat	100 ohm ,10A		3 no.
10.0	Precision Digital multimeter	4 1/2 Digits	0.2 % accuracy	2 no.
11.0	Precision Digital multimeter	3 1/2 Digits	1.0 % accuracy	2 no.



Notes:-

- 1) The above list of testing instruments/equipment required for testing / commissioning is only for guidance to Contractor and not complete. Any other / additional testing instruments / equipment required for timely and satisfactory completion of job will also be arranged by Contractor at his own cost.
- 2) Contractor must re-ascertain /recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration / deployment of IMTE's.
- 3) Other terms and conditions regarding above items shall be as per clause no. 37 (tools & plants / testing & measuring instruments).

Annexure-VI A

Indicative list of IMTEs to be arranged by the CONTRACTOR for ELECTRICAL RELATED WORK

Sl. No.	EQUIPMENT	QTY
1.	500 V / 1000V, (Hand operated) Megger	2 No.
2.	Earth resistance measuring meter	1 no.
3.	3 1/2 Digital Multi meters	12 Nos
4.	4 1/2 Digital Multi meters	3 No.s
5	Analog multi meter	1 No
6	Inter com Sets for cable Checking	Adequate Nos
7	Decade resistance Box	1 no
8	Mobile set for communication	4 no.s
9	Continuity tester	6 no.s

Notes:

1. The above list of testing instruments / equipment required for testing / commissioning is only for guidance to Contractor and not complete. Any other / additional testing instruments / equipment required for timely and satisfactory completion of job will also be arranged by Contractor at his own cost.
2. Contractor must re-ascertain / recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration / deployment of IMTE's
3. Other terms and conditions regarding above items shall be as per clause no. 37 (Tools & plants / IMTEs).



ANNEXURE-VII

CERTIFICATE OF DECLARATION FOR CONFIRMING THE KNOWLEDGE OF SITE CONDITIONS

(To be submitted in Bidder's letter head)

We,.....

hereby declare and confirm that we have visited the project site under the subject namely,.....

.....and acquired full knowledge about the site conditions ,wage structure ,Industrial climate and total work involved.

We further confirm that the above information is true and correct and we will not raise any claim of any nature due to lack of knowledge of site condition.

Bidder's Name and Address.

Place: (Signature of the Bidder With stamp)

Date:



ANNEXURE-VIII

NON DISCLOSURE AGREEMENT

(On Bidders letter head)

Memorandum of Understanding

BHEL EDN is committed to Information Security Management System as per Information Security Policy.

M/s....., providing.....service to BHEL EDN Bangalore hereby undertake to comply with the following in line with Information Security Policy of BHEL EDN Bangalore

To maintain confidentiality of documents & information which shall be used during the execution of the Contract.

The documents & information shall not be revealed to or shared with third party which shall not be in the business interest of BHEL EDN Bangalore .

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



ANNEXURE-IX

**NO DEVIATION CERTIFICATE
(On Bidders letter head)**

FORMAT OF UNDERTAKING

REF:

Date:

To
Bharat Heavy Electricals Limited
Electronics Division
Mysore Road
Bangalore 560 026

Sub: Receipt of Materials from BHEL Stores / Open yard, shifting to place of installation, Erection, Cable laying and termination, testing, and commissioning assistance of Station C&I equipment for 2x660 MW Unit-5 & 6 (Stage-II), NTPC LTD. at TANDA ,Distt. Ambedkarnagar, U.P of National Thermal Power Corporation Ltd.

TENDER No. CE:ES: 2017-18/07/NTPC TANDA-II/C&I/SNU Dated 30.10.2017

Dear Sir/s,

With reference to above ,this is to confirm that as per tender conditions ,we have visited site before submission of our offer and noted the job content and site conditions etc.

We also confirm that we have not changed/ modified the tender documents as appeared in the website and in case of observance at any stage ,it shall be treated as null & void. We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT and **confirm our acceptance to reverse auctioning process and** we hereby confirm our unqualified acceptance to all terms and conditions as stipulated in the tender and NIT. In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit , the deviations shall stand null & void.

We confirm to have submitted our offer in accordance with tender instructions.

Thanking you

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

NIT No. CE-ES/2017-18/07/ NTPC TANDA-II/C&I/SNU
dated 30.10.2017

**Signature & Seal of the
Bidder**

**ANNEXURE X****CHECK LIST TO BE SUBMITTED ALONG WITH EVERY RA BILL**

NAME OF THE CONTRACTOR

RAB NO:

LOI NO & DATE

RAB DATE:

DESCRIPTION OF WORK

SL. NO.	PARTICULARS	YES	NO	REMARKS
1	ALL T&PS AND OTHER INSTRUMENTS REQUIRED AS PER CONTRACT HAVE BEEN DEPLOYED AT SITE AND ARE AVAILABLE IN GOOD WORKING CONDITION & UTILISATION REPORT HAS BEEN SUBMITTED.			
2	LABOUR LICENSE FOR THE WORKMEN ENGAGED AND IS VALID UPTO			
3	WCI POLICY FOR THE WORKMEN ENGAGED ARE AVAILABLE & VALID UPTO			
4	COPIES OF THE ABOVE HAVE BEEN SUBMITTED TO BHEL			
5	WORKERS WAGES FOR THE PREVIOUS MONTH HAVE BEEN DISBURSED AND PAID ACQUITTANCE ROLL SUBMITTED TO BHEL			
6	PF HAS BEEN DEDUCTED AS PER RULES AND PAID CHALLAN SUBMITTED TO BHEL			
7	PLEASE QUOTE YOUR PAN NO.			
8	PLEASE QUOTE YOUR GST REGN. No.			
9	GST FOR THE PRESENT RA BILL HAS BEEN REMITTED AND PROOF OF PAYMENT HAS BEEN ATTACHED WITH THE CURRENT BILL			
10	BANK GUARANTEE FOR SECURITY DEPOSIT/ADVANCE PAID ARE VALID UPTO			
11	PROOF OF SALES TAX REGISTRATION AND EXEMPTION, IF ANY, FOR NON DEDUCTION / SHORT DEDUCTION OF WCT HAS BEEN SUBMITTED TO BHEL			
12	PERIODICAL REPORTS AS PER CONTRACT HAS BEEN SUBMITTED			
13	"QUALITY ASSURANCE LOG SHEETS, PROTOCOLS & OTHER DOCUMENTS AS REQUIRED UNDER SECTION 8 OF THE CONTRACT HAS BEEN SUBMITTED AND NECESSARY APPROVAL OBTAINED.			
14	LOG SHEETS FOR EXTRA / ADDITIONAL WORK CARRIED OUT AS PER CONTRACT HAS BEEN SUBMITTED TO BHEL			

CONTRACTOR

DATE:

PLACE:

NIT No. CE-ES/2017-18/07/ NTPC TANDA-II/C&I/SNU
dated 30.10.2017

BHEL

DATE:

**Signature & Seal of the
Bidder**

**ANNEXURE-XI**

NTPC Limited
National Capital Power Station, TANDA
(Human Resources – Employee Relations group)

Inter Office Memo

From : Sr. Manager (HR-ER/W) **To:** All HODs

Ref : 08:HR-ER:2007

Date : July 18,2007

Subject: Benefits considered for Contract labour during estimate.

Henceforth while processing for award of a Contract, the following components are to be taken into a account in the estimate in addition to the minimum wages notified by the U P government from time to time.

SN	Components	Loading	Remarks
A	Labour License and other administrative charges	1%	
B	WC Insurance	2.14%	
C	EL	5%	Continuous service of 240 days
D	Retrenchment	4.67%	Continuous service of 240 days
E	National Holiday (NH)	3 Nos	26 th Jan, 15 th Aug & 2 nd Oct.
F	PF & Administrative charges	13.61%	
G	Bonus	8.33%	
H	Medical/Safety	2%	
I	T&P	2%	

Further, all the Contractor working in your area may be advised/ persuaded for making monthly **payment through cheque to ensure disbursement of proper minimum wages to the Contract labour.**



NTPC Limited
National Capital Power Station, TANDA
(Human Resources – Employee Relations group)

REF: NTPC/HR/ER/MW/17

Date: May 05, 2017

CIRCULAR

Minimum Wages as applicable at NTPC TANDA (which falls Under Area “C”) for respective skill category of Contract Labour have been revised vide Circular no. K-27(MW-RATES)/2017-B.IV) dated 04.05.2017 which shall come into force with effect from 01.04.2017 (1st April 2017).

The minimum wages applicable for respective skill category of Contract Labour at NTPC TANDA with effect from 01.04.2017 (1st April 2017) shall be as per details mentioned below:-

Sl. No.	SKILL CATEGORY	DAILY WAGE RATE (in Rs.)
1	UNSKILLED	359.00
2	SEMI-SKILLED	420.00
3	SKILLD	506.00
4	HIGHLY SKILLED WORKER	593.00

The multiplication factor to arrive monthly wages will be 26 (for Ex. SW – the monthly wages will be Rs.506.00 x 26 = Rs.13156.00)

All EICs are requested to ensure the payment of wages to contract labour through Bank only.

This is implementation of the wages accordingly by all concerned.

(PAWAN Kr. PANDEY)
DY. MANAGER (HR-ER)

Distribution :

1. ES TO GGM (TANDA) – for kind information of GGM
2. ES to GM (HR) - for kind information GM(HR)
3. ES to GM (O&M) – for kind information of GM(O&M)
4. All HODs / EICs – for kind information please
5. RM UPL TANDA – for information and implementation please
6. All Contracting Agencies through EICs
7. All notice boards.

**FORM XIX****[See Rule 78 (2) (b)]
WAGE SLIP**

Name and address of Contractor	Name & Father's/ Husband's Name of the workman
Name and location of work	For the week/Fortnight/ Month ending

1.	No. of days worked	
2.	No. of units in case of piece-rate workers	
3.	Rate of daily wages/piece-rate	
4.	Amount of overtime wages	
5.	Gross wages payable	
6.	Deduction, if any (PF 12%)	
7.	Net amount of wages paid	

(Initials of the Contractor or his representative)

**FORM XIV
(See Rule 76)
EMPLOYMENT CARD**

Name and address of Contractor	Name & Address of establishment in/under which Contract is carried on
Name of work and location of work	Name & Address of Principal Employer

1.	Name of workman	
2.	Serial No. in the register of workman employed	
3.	Nature of employment / Designation	
4.	Wage rate with particulars of unit, in case of piece work	
5.	Wage period	
6.	Tenure of employment	
7.	Remarks	



(Signature of Contractor)

SECTION – I (a)

69.0 SPECIFICATION FOR HEALTH, SAFETY AND ENVIRONMENT (HSE)

SCOPE

This specification establishes the Health, Safety and Environment (HSE) management requirement to be complied with by the Contractors during construction. Requirements stipulated in this specification shall supplement the requirements of HSE Management given in relevant Act (s) /legislations, General Condition Contract (GCC). Special Conditions of Contract (SCC) and job specification where different documents stipulates different requirements, the most stringent be adopted.

1.0 REFERENCES

This document should be read in conjunction with following :

- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Scope of work
- Relevant IS Codes (refer Annexure-I)
- Reporting Formats (refer Annexure-II)

2.0 REQUIREMENTS OF HEALTH, SAFETY & ENVIRONMENT (HSE) MANAGEMENT SYSTEM TO BE COMPLIED BY CONTRACTORS.

2.1 MANAGEMENT RESPONSIBILITY

2.1.1 The Contractor to comply with HSE requirement at Construction sites as enclosed to cover commitment of their organization to ensure health, safety and environment aspects in their line of operations.

2.1.2 The HSE management system shall cover the HSE requirements including but not limited to what is specified under Para 1.0 and para 2.0 above.

2.1.3 Contractor shall be fully responsible for planning and implementing HSE requirements. Contractor as a minimum requirement shall designate/deploy the following to co-ordinate the above

No. of workers deployed upto 250

- Designate one safety Supervisor



Above 250 & upto 500
safety Engineer/ Officer

- Deploy one qualified and Experienced

Above 500
for every 500 or less

- One additional safety engineer /
officer, as above.

Contractor shall indemnify & hold harmless Owner/BHEL & their representatives free from any and all liabilities arising out of non-fulfillment of HSE requirement.

2.1.4 The Contractor shall ensure that the Health, Safety and Environment (HSE) requirements are clearly understood & faithfully implemented at all levels at site.

2.1.5 BHEL shall promote and develop consciousness for Health, Safety and Environment among all personnel working for the Contractor. Regular awareness programs and work site meetings shall be arranged on HSE activities to cover hazards involved in various operations during struction.

2.1.6 The Contractor shall arrange suitable first aid measures such as First Aid Box, trained personnel to give First Aid and install fire protection measures such as adequate number of steel buckets with sand and water to the satisfaction of BHEL/Owner.

2.1.7 Non-Conformance on HSE by Contractor (including his Sub-Contractors) as brought out during review / audit by BHEL/Owner representative shall be resolved forthwith by Contractor. Compliance report shall be provided to BHEL.

2.1.8 The Contractor shall ensure participation of his Resident Engineer / Site-In- Charge in the Safety Committee / HSE Committees meetings arranged by BHEL / Owner. The compliance of any observations shall be arranged urgently. He shall assist BHEL / Owner to achieve the targets set by them on HSE during the project implementation.

2.1.9 The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliance or continuous failure in implementation of any of HSE provisions, BHEL / Owner may impose stoppage of work without any Cost & Time implication to BHEL / Owner and / or impose a suitable penalty for noncompliance with a notice of suitable period, up to a cumulative limit of 1.0% (one percent) of Contract value. This penalty shall be in addition to all other penalties specified else where in the Contract. The decision of imposing stoppage of work, its extent & minority penalty shall rest with BHEL / Owner & binding on the Contractor.

2.1.10 All fatal accidents and other personnel accidents shall be investigated by a team of Contractor's senior personnel for root cause & recommended corrective and preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to BHEL / Owner. BHEL / Owner shall have the liberty to independently investigate such occurrences and Contractor shall extend all necessary help and co-operation in this regard.



2.2 HOUSE KEEPING

2.2.1 Contractor shall ensure that a high degree of house keeping is maintained and shall ensure interalia; the following :

- a) All surplus earth and debris are removed / disposed off from the working areas to identified locations (s).
- b) Unused/Surplus Cables, Steel items and steel scrap lying scattered at different places within the working areas are removed to identified location (s).
- c) All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).
- d) Roads shall be kept clear and materials like : pipes, steel, sand boulders, concrete, chips and brick etc., shall not be allowed on the roads to obstruct free movement of men & machineries.
- e) Fabricated steel structurals, pipes & piping materials shall be stacked properly for erection.
- f) Water logging on roads shall not be allowed.
- g) No parking of trucks/trolleys, cranes and trailers etc., shall be allowed on roads which may obstruct the traffic movement.
- h) Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.
- i) Trucks carrying sand, earth and pulverized materials etc., shall be covered while moving within the plant area.

In case of non-compliance of any of above, BHEL shall have the liberty to get it done from some other agency at this risk and cost.

3.0 HEALTH, SAFETY AND ENVIRONMENT

3.1 The Contractor shall provide safe means of access to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen, and BHEL / Owner.

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**Signature & Seal of the
Bidder**



Contractor shall ensure deployment of appropriate equipment and appliances for adequate safety and health of the workmen and protection of surrounding areas.

3.2 The Contractor shall ensure that all their staff and workers wear Safety Helmet and Safety shoes. Contractor shall also ensure use of safety belt, protective goggles, gloves etc., by the personnel as per job requirements. All these gadgets shall conform to relevant IS specifications or equivalent.

3.3 The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health for driving of vehicles, handling and erection of material and equipments. All lifting equipments shall be tested certified for its capacity before use. Adequate and suitable lighting at every work place and approach there to, shall be provided by the Contractor before starting the actual operations at night. It is mandatory for Contractor to get his workmen medically examined / checked for fitness of work assigned once a year and furnish the certificate to that effect from RMP / Govt. Hospital.

3.4 Hazardous and / or toxic materials such as solvent, coating or thinners shall be stored in appropriate containers.

3.5 All hazardous materials shall be labeled with the name of the materials, the hazards associated with its use and necessary precautions to be taken.

3.6 Contractor shall ensure that during the performance of the work, all hazards of the health of personnel, have been identified, assessed and eliminated.

3.7 Chemical spills shall be contained and cleaned up immediately to prevent further contamination.

3.8 All personnel exposed to physical agents such as ionizing or non-ionizing radiation, ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.

3.9 Where contact or exposure of hazardous materials could exceed limits or could otherwise have harmful effects, appropriate personnel protective equipment such as gloves, goggles, aprons, chemicals resistant clothing and respirator shall be used.

3.10 All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials substances and wastes. Contractor shall not dump, release or otherwise discharge or dispose off any such materials without the express authorization of BHEL / Owner.

a. DURING JOB EXECUTION



b. Implement Health, Safety and Environment requirements including but not limited to as brought out under para 3.0. Contractor shall ensure to :

- arrange workmen compensation insurance, registration under ESI Act, third party liability insurance etc., as applicable.
- Arrange all HSE permits before start of activities (as applicable) like hot work, confined space, work at heights, storage of chemical / explosive materials and its use and implement all precautions mentioned therein.
- Submit timely the completed checklist on HSE activities, Monthly HSE report, accident reports, investigation reports etc., as per BHEL / Owner requirements. Compliance of instructions on HSE shall be done by Contractor and informed urgently to BHEL / Owner.
- Ensure the Resident Engineer / Site-Incharge of the Contractor shall attend all the Safety Committee / HSE meetings arranged by BHEL/Owner. In case of his absence from site that a second senior most person shall be nominated by him in advance and communicated to BHEL/Owner.
- Display at site office and work locations caution boards, list of hospitals, emergency services available.
- Display posters, banners made available by BHEL for safe working to promote safety consciousness.
- Assist in HSE audits by BHEL / Owner and submit compliance report.
- Generate and submit HSE records / report as per HSE plan.
- Appraise BHEL / Owner on HSE activities at site.



RELEVANT INDIAN STANDARDS (IS) – CODES FOR PERSONAL PROTECTION

IS: 2925-1984	Industrial Safety Helmets
IS: 4770-1968	Rubber gloves for electrical purposes
IS: 6994, 1973 (Part-I)	Industrial Safety Gloves (Leather & Cotton Gloves)
IS: 1989-1986 (Part I & III)	Leather safety boots and shoes
IS: 3738-1975	Rubber knee boots
IS: 5557-1969	Industrial and Safety rubber knee boots
IS: 6519-1971	Code of practice for selections, care and repair of Safety footwear
IS: 11226-1985	Leather Safety footwear having direct moulding sole
IS: 5983-1978	Eye protectors
IS: 9167-1979	Ear protectors
IS: 3521-1983	Industrial Safety belts and harness



ANNEXURE – II

1.0 HEALTH, SAFETY & ENVIRONMENT (HSE) PLAN

PROJECT: ----- CONTRACTOR :-----

DATE :----- OWNER :-----

(To be prepared by each construction Agency)

ACTIVITY DESCRIPTION	PROCEDURE W.I/ GUIDELIES	CODE OF CONFORMANCE	PERFORMANCE FUNCTIONS		
			PERFORMER	CHECKER	APPROVER

PREPARED BY

REVIEWED BY

APPROVED BY
(RESIDENT ENGINEER)



1.0 MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (1/6)

PROJECT:----- CONTRACTOR:-----

DATE :----- OWNER:-----

INSPECTION BY:-----

Note: Write 'NA' wherever the item is not applicable.

ITEM	YES NO	REMARKS	ACTION
HOUSING KEETING			
Waste containers provided and used			
Sanitary facilities adequate and clean			
Passageways and Walkways Clear			
General neatness of working areas			
Others			
PERSONNEL PROTECTIVE EQUIPMENT			
Goggles: Shelds			
Face protection			
Hearing protection			
Safety Shoes provided			
Hand protection			
Safety Belts			
Others			
EXCAVATIONS / OPENINGS			



Openings properly covered or barricaded			
Excavations shored			
Excavations barricaded			
Overnight lighting provided			
Other			
48 SCAFFOLDING			
Fully decked platforms			
Guard and intermediate rails in place			
Toe boards in place			
Adequate shoring			
Adequate access			
Other			
LADDERS			
Extension side rails 1 m above			
Top of landing			
Properly secured			
Angle + 70 from horizontal			
Other			



MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.. 2/6)

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.3/6)

ITEM	YES NO	REMARKS	ACTION
WELDING, CUTTING Gas cylinders chained upright Cables and hoses not obstructing Screens or shields used Flammable materials protected Fire extinguisher (s) accessible Other			

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.4/6)

ITEM	YES NO	REMARKS	ACTION
HOIST. CRANES AND DERRICKS MACHINERY, TOOLS AND EQUIPMENT Proper instruction Safety devices Proper cords Inspection and maintenance Other VECHICLE AND TRAFFIC Rules and regulations observed			



Inspection and maintenance Licensed drivers Other TEMPORARY FACILITIES Emergency instructions posted Fire extinguishers provided Fire-aid equipment available Secured against storm damage General neatness In accordance with electrical requi FIRE PREVENTION Personnel instructed Fire extinguishers checked No smoking in Prohibited areas Hydrants Clear Other ELECTRICAL Proper wiring ELCB's provided Ground fault circuit interrupters Protection against damage Prevention of tripping hazards Other				
--	--	--	--	--

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.5/6)

ITEM	YES	NO	REMARKS	ACTION
HANDLING AND STORAGE OF MATERIALS Properly stored or stacked Passage ways clear Other FLAMMABLE GASES AND LIQUIDS WORKING AT HEIGHT Containers clearly identified				



<p>Proper storage</p> <p>Fire extinguishers nearby</p> <p>Other</p> <p>Erection plan</p> <p>Safety belts and lanyards; chute lines</p> <p>Other</p> <p>ENVIRONMENT</p> <p>Chemical and other Effluents properly disposed</p> <p>Cleaning liquid of pipes disposed off properly</p> <p>Water used for hydrotesting disposed off as Per agreed procedure</p> <p>Lubricant Waste/Engine Oil properly disposed</p> <p>Waste from Canteen, offices, sanitation etc., Disposed properly</p> <p>Disposal of surplus earth, stripping materials, Oily rags and combustible materials done Properly</p>				
---	--	--	--	--

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.6/6)

ITEM	YES	NO	REMARKS	ACTION
Green belt protection				
Hygienic conditions at labour camps O.K?				



Availability of First Aid facilities			
Proper sanitation at site, office and Labour camps			
Arrangement of medical facilities			
Measures for dealing with illness			
Availability of Potable drinking water For workmen & staff			

**Signature of Resident
Engineer with Seal**



3.0 ACCIDENT CUM FIRE REPORT

(To be submitted by Contractor after every accident within 24 hours of accident)

Report : _____

Date: _____

Name of Site: _____

CONTRACTOR _____

NAME OF THE INJURED _____

FATHER'S NAME _____

SUB-CONTRACTOR M/S _____

DATE & TIME OF ACCIDENT _____

LOCATION _____

BRIEF DESCRIPTION OF ACCIDENT

CAUSE OF ACCIDENT

NATURE OF INJURY/DAMAGE

MEDICAL AID PROVIDED/ACTIONS TAKEN

INTIMATION TO LOCAL AUTHORITIES

DATE:

SIGNATURE OF CONTRACTOR
WITH SEAL

TO: SITE-IN-CHARGE/BHEL 1 COPY

NIT No. CE-ES/2017-18/07/ NTPC TANDA-II/C&I/SNU
dated 30.10.2017

**Signature & Seal of the
Bidder**



1.0 SUPPLEMENTARY ACCIDENT & INVESTIGATION REPORT

Project: _____ Supplementary to Report No. _____

(Copy enclosed)

Site: _____ Date: _____

CONTRACTOR _____

NAME OF THE INJURED _____

FATHER'S NAME _____

SUB-CONTRACTOR M/S _____

DATE & TIME OF ACCIDENT _____

LOCATION _____

BRIEF DESCRIPTION & CAUSE OF ACCIDENT

NATURE OF INJURY/DAMAGE

COMMENTS FROM MEDICAL PRACTITIONER, WHO ATTENDED THE

VICTIM / INJURED

SUGGESTED IMPROVEMENT IN THE WORKING CONDITION, IF ANY

LOSS OF MANHOURS AND IMPACT ON SITE WORKS

ANY OTHER COMMENT BY SAFETY OFFICER

DATE:

SIGNATURE OF CONTRACTOR
WITH SEAL

TO: SITE-IN-CHARGE/BHEL 1 COPY



5.0 MONTHLY HEALTH, SAFETY & ENVIRONMENT (HSE) REPORT
(To be submitted by each Contractor)

Actual work start Date:_____ For the month of _____

Project:_____ Report No. _____

Name of the Contractor:_____ Status as on: _____

Name of Work:_____ Name of safety officer _____

ITEM	THIS MONTH	CUMMULATIVE
------	------------	-------------

Total Strength (Staff + Workmen)

Number of HSE meetings organized at site

Number of HSE awareness programmes

Attended at site

Whether workmen compensation policy taken Y/N

Whether workmen compensation policy is valid Y/N

Whether workmen registered under ESI Act Y/N

Number of Fatal Accidents

Number of Loss Time Accidents (Other than Fatal

Other accidents (Non Loss Time)

Total No. of Accidents

Total man-hours worked

Man-hour loss due to fire and accidents

Compensation cases raised with Insurance



Compensation cases resolved and paid to workmen

Remarks

—
Date
Engineer

Safety Officer/Resident

(Signature & Name)

To: BHEL SITE IN CHARGE – one copy



ANNEXURE-A

FINANCIAL VIABILITY

1. Owner's capital in the business (incase of Partnership, please mention percentage shares and amounts).
2. Quantum of business done during last three financial years
 - i) Rs..
 - ii) Rs.
 - iii) Rs.
3. Value of fixed Assets of the business in last three YEARS
 - i) Rs.
 - ii) Rs.
 - iii) Rs.
4. Guarantee limits (if any) enjoyed by the firm.
5. Over draft limits (if any) enjoyed by the firm.
6. Please enclose audited profit and loss account and balance sheet for last 3 years (indicate no. of sheets).
7. Certificate from Scheduled Bank to prove Contractor's financial capacity to undertake the work duly indicating the financial limits the Bidder enjoys.

NOTE:

All the above documents should be duly certified by auditors/ Bank as may be applicable.

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dated 30.10.2017

**Signature & Seal of the
Bidder**



ANNEXURE – B

ANALYSIS OF SIMILAR JOBS EXECUTED / IN PROGRESS

S.No.	Agency By whom Awarded	Location of project	Capacity & unit nos.	Scope of work	Date of award	Contract value
1	2	3	4	5	6	7

%age work completed and due date for completion	Date of completion if job is already over	No. of skilled / unskilled workers deployed at peak	No. of Engrs.& Super- visors deployed at peak	Details of major T&P like		Consumables by whom
				welding M/c s supplied		
				By Con- Tractor	By other Agency	
8	9	10	11	12	13	14

(SIGNATURE OF BIDDER)



ANNEXURE – C

MONTHWISE MANPOWER DEPLOYMENT PLAN

S.No.	Category	No. of Person Available on Roll of the Organisation	Month						
			(Indicate No. of Persons to be in each month)						
so on			1 st	2 nd	3 rd	4 th	5 th	6 th	and

1.

2.

3.

Total



ANNEXURE – D

(A) STATUS OF TOOLS & PLANTS

S.No.	Name of Equipment proposed	Quantity owned	Registration no. wherever Applicable	Documents enclosed for proof of Ownership	Present Location	Quantity to be deployed for this job

(B) MONTHWISE T&P DEPLOYMENT PLAN

S.No.	Description of T & P	Month (indicate No. to be deployed in each month)							
		1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th and so on

(SIGNATURE OF BIDDER)
WITH STAMP



ANNEXURE -E

ANALYSIS OF UNIT RATE QUOTED

S.NO.	DESCRIPTION	PERCENTAGE OF THE UNIT RATE QUOTED	REMARKS
1.	Salary & wages for staff & workers		
2.	Consumables		
(a)	Gases		
(b)	Welding Electrodes		
(c)	P.O.L.		
(d)	Others		
3.	Depreciation & maintenance for T&P		
4.	Depreciation & Maintenance for other		
5.	Establishment and Administration expenses of site		
6.	Over Heads		
7.	Profit		

(SIGNATURE OF BIDDER)
WITH STAMP



ANNEXURE - F

DECLARATION SHEET

I, -----hereby certify that, all the information and data furnished by me with regard to this Tender Specification No.----- are true and complete to the best of my knowledge. I have gone through the specification, conditions and stipulations in detail and agree to comply with the requirements and intent of specification.

I, further certify that I am the duly authorised representative of the under mentioned Bidder and a valid power of attorney to this effect is also enclosed.

Bidder's Name & Address

Authorised representative's signature with name and address.



CHECKLIST AND SCHEDULE OF GENERAL PARTICULARS

NOTE : Bidders are requested to fill in the following details and no column should be left blank

2. Name and address of the Bidder

3. Telegraphic/ telex address

4. Phone No. (Office)/ Fax No.

4. Name & designation of the official of the Bidder to whom all the references shall be made.

5. Bidder's proposal No. & date

5. Whether EMD submitted (By cash/Pay order / bank draft) Yes/No

6. Validity of offer/ rates quoted for THREE months from the date of opening of tender Yes/No

7. Financial Status as per Clause 11.1 (in the format as per Annexure-A) Yes /No

8. Income tax Clearance certificate as per Clause 11.2 Yes/No

9. Details of experience as per clause 11.3 (in the format as per Annexure-B) Yes /No

11. Monthwise & Categorywise manpower deployment plan as per Clause 11.4 (in the format as per Annexure-C) Yes/No

12. Attested copy of power of attorney as per clause 11.5 Yes/No

NIT No. CE-ES/2017-18/07/ NTPC TANDA-II/C&I/SNU dated 30.10.2017

Signature & Seal of the Bidder



- | | |
|--|----------|
| 13. Details about type of the firm as per clause 11.6 | Yes / NO |
| 14. Status of T&P and monthwise deployment plan as per clause 11.7 (in the format as per Annexure-D) | Yes /No |
| 15. Analysis of unit rate quoted as per Clause 11.8 (in the format as per Annexure-E) | Yes / No |
| 16. Declaration sheet as per clause 11. 09 (in the format as per Annexure-F) | Yes /No |

Date: (SIGNATURE OF BIDDER WITH STAMP)

WITNESS

(SIGNATURES WITH FULL PARTICULARS)

1.

2.



ANNEXURE - H

BANK GUARANTEE FOR SECURITY DEPOSIT

B.G. NO.

Date

This deed of Guarantee made this ----- day of -----two thousand by -----
 ----- (Bank) hereinafter called the "The Guarantor" (which expression shall
 unless repugnant to the context or meaning thereof be deemed to include its successors
 and assigns) in favour of M/s Bharat Heavy Electrical Limited (A Govt. of India
 Undertaking) a company incorporated under the Companies Act, 1956, having its
 registered office at BHEL House, Siri Fort, Asiad, New Delhi – 110049 through its unit at
 Electronics Division , P.B No. 2606 Mysore Road ,Bangalore 560 026 hereinafter called
 "The Company" (which expression shall unless repugnant to the context or
 meaning thereof by deemed to include its successors and assigns) WHEREAS -----
 -----(hereinafter referred to as the Contractor) have entered into
 a Contract arising out of Letter of Intent no.----- dt.----- (hereinafter
 referred to as "the Contract") for the construction of ----- with the company.

AND WHEREAS the Contract inter-alia provides that the Contractor shall furnish to the
 company a sum of Rs.----- (Rupees-----) towards
 security deposit for due and faithful performance of the Contract in the form and manner
 specified therein.

AND WHEREAS the Contractor has approached the Guarantor and in consideration of
 the arrangement arrived at between the Contractor and the Guarantor, the Guarantor has
 agreed to give the Guarantee as hereinafter mentioned in favour of the company.

The Guarantor do hereby guarantee to the company the due and faithful performance,
 observance or discharge of the Contract by the Contractor and further unconditionally
 and irrevocably undertake to pay to the Company without demur and merely on a
 demand, to the extent of Rs.----- (Rupees-----) against any
 claim by the company on them for any loss, damage, costs, charges and expenses
 caused to or suffered by the company by reasons of the Contractor making any default in
 the performance, observance or discharge of the terms, conditions, stipulations or
 undertakings or any of them as contained in the Contract.

The decision of the company whether any default has occurred or has been committed
 by the Contractor in the performance, observance or discharge of any of the terms,
 conditions, stipulations or undertakings or any one of them as contained in the Contract
 and / or as to the extent of loss, damage, costs, charges and expenses caused to or
 suffered by the company by reason of the Contractor making any default in the
 performance, observance or discharge of any of the terms, conditions, stipulations or



undertakings or any one of them shall be conclusive and binding on the Guarantor irrespective of the fact whether the Contractor admits or denies the default or questions the correctness of any demand made by the company in any Court, Tribunal or Arbitration proceedings or before any other Authority.

The company shall have the fullest liberty without affecting in any way the liability of the Guarantor under this Guarantee, from time to time to vary any of the terms and conditions of the Contract or extend time of performance by the Contractor or to postpone for any time and from time to time any of the powers exercisable by it against the Contractor and either enforce or forebear from enforcing any of the terms and conditions governing the Contract or securities available to the company and the Guarantor shall not be released from its liability under these presents by any exercise by the company of the liberty with reference to the matters aforesaid or by reasons of time being given to the Contractor or any other forbearance, act or commission on the part of the company or any indulgence by the company to the Contractor or any other matter or thing whatsoever which under the law relating to sureties would, but for this provision have the effect of so releasing the Guarantor from its liability under this guarantee.

The Guarantor further agrees that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the Contract and its claim satisfied or discharged and till the company certifies that the terms and conditions of the Contract have been fully and properly carried out by the Contractor and accordingly discharges this Guarantee, subject however, that the company shall have no claim under this Guarantee after ----- i.e. (the present date of validity of Bank Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time, as the case may be) unless a notice of the claim under this Guarantee has been served on the Guarantor before the expiry of the said period in which case the same shall be enforceable against the Guarantor notwithstanding the fact that the same is enforced after the expiry of the said period.

The Guarantor undertakes not to revoke this Guarantee during the period it is in force except with the previous consent of the Company in writing and agrees that any liquidation or winding up or insolvency or dissolution or any change in the constitution of the Contractor or the Guarantor shall not discharge the Guarantor's liability hereunder.

It shall not be necessary for the company to proceed against the Contractor before proceeding against the Guarantor and the Guarantee herein contained shall be enforceable against them notwithstanding any security which the Company may have obtained or obtain from the Contractor shall at the time when proceedings are taken against the Guarantor hereunder be outstanding or unrealized.

Notwithstanding anything contained herein before, our liability under the Guarantee is restricted to Rs.----- (Rupees-----) Our guarantee shall remain in force until -----, i.e. (the present date of validity of Bank



Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time) unless a claim or demand under this guarantee is made against us on or before ----- we shall be discharged from our liabilities under this Guarantee thereafter. Any claim or dispute arising under the terms of this documents shall only be enforced or settled in the courts of Bangalore only.

The Guarantor hereby declares that it has power to execute this guarantee and the executant has full powers to do so on behalf of the Guarantor.

IN WITNESS whereof the ----- (Bank) has hereunto set and subscribed its hand the day, month and year first, above written.

Signed for and on behalf of the Bank

Signatory No.-----)

WITNESSES

2. Name & Address

3. Name & Address

Notes :

- a) The above BG shall be executed on the non-judicial stamp papers of adequate value procured in the name of the bank in the state where the bank is located.
- b) The above BG is required to be sent by the executing bank directly to BHEL at the address where tender is submitted / accepted under seal cover.
- c) **Bank guarantee period shall be for the period of Contract plus claim period of SIX months.**

**LIST OF MEMBER BANKS**

NATIONALISED BANKS	PUBLIC SECTOR BANKS
1. Allahabad Bank	18. IDBI
2. Andhra Bank	FOREIGN BANKS
3. Bank of Baroda	19. CITI Bank NA
4. Canara Bank	20. DEUTSCHE Bank AG
5. Corporation Bank	21. HSBC Corporation Ltd.
6. Central Bank	22. Standard Chartered Bank
7. Indian Bank	23. J P Morgan
7. Indian Overseas Bank	PRIVATE BANKS
8. Oriental Bank of Commerce	24. Axis Bank
9. Punjab National Bank	25. The Federal Bank Ltd.
10. Punjab And Sindh Bank	26. HDFC
11. State Bank of India	27. Kotak Mahindra Bank
12. Syndicate Bank	28. ICICI Bank
13. UCO Bank	29. IndusInd Bank
14. Union Bank India	30. YES Bank
16. United Bank of India	
17. Vijaya Bank	



Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)
External services Department
Electronics Division,
Mysore Road, Bangalore-560 026.

PART – II

PRICE BID

PROJECT: NTPC TANDA TPP, STAGE-II (2 X 660 MW), UNIT-5, UNIT-6 & COMMON SYSTEM

WORK: Receipt of Control & Instrumentation materials from BHEL Stores / Open yard, Verification / identification, shifting to place of Erection, Erection, Cable Laying & Termination and Providing Commissioning Assistance for Station Controls & Instrumentation (C & I) package at Main Plant (TWO Units) and Common system including Off site areas

RATE SCHEDULE										
SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
	DDCMIS PANELS & ENCLOSURES									
	PANELS FOR DDCMIS SYSTEM									
1	Panels for UNIT DDCMIS System, (Main Plant Control Room)	No.	61	61	0	122				704.974
2	Panels for STAND ALONE DDCMIS System	No.	0	0	23	23				132.905
3	Panels for Water System DDCMIS System	No.	0	0	31	31				179.133
4	Panels for AHP DDCMIS System	No.	0	0	46	46				265.810
5	Panels for CHP DDCMIS System	No.	0	0	44	44				254.253
6	Panels for MakeUp water DDCIMS System	No.	0	0	3	3				17.335
	NETWORK & PDNL PANELS FOR HMI									

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
7	NETWORK & PDNL PANELS FOR UNIT DDCMIS System	No.	3	3	0	6				34.671
8	NETWORK PANELS FOR STAND ALONE HMI	No.	0	0	1	1				5.778
9	NETWORK PANELS FOR WATER System HMI	No.	0	0	1	1				5.778
10	NETWORK PANELS FOR AHP HMI	No.	0	0	1	1				5.778
11	NETWORK PANELS FOR CHP HMI	No.	0	0	1	1				5.778
12	NETWORK PANELS FOR Station LAN System	No.	0	0	2	2				11.557
	NETWORK ENCLOSURES(WALL MOUNT TYPE)									
13	Network Enclosure for Stand Alone System	No.	0	0	1	1				0.867
14	Network Enclosure for Water System	No.	0	0	3	3				2.600
15	Network Enclosure for AHP Area	No.	0	0	2	2				1.734
16	Network Enclosure MUWP Area	No.	0	0	1	1				0.867

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
17	Network Enclosure for Station LAN System	No.	0	0	4	4				3.467
18	PDBs (Power Distribution Boxes- Wall Mount Type	No.	10	10	0	20				17.335
COMPUTER & PRINTERS										
19	Work Stations (Computers) in Unit Area	Set	14	14	0	28				8.090
20	Work Stations (Computers) in Water System Area	Set	0	0	11	11				3.178
21	Work Stations (Computers) in Stand Alone Area	Set	0	0	4	4				1.156
22	Work Stations (Computers) in AHP Area	Set	0	0	10	10				2.889
23	Work Stations (Computers) in CHP Area	Set	0	0	8	8				2.311
24	Work Stations (Computers) in MU Water Area	Set	0	0	3	3				0.867
25	Work Stations (Computers) in Station LAN system	Set	0	0	10	10				2.889
26	Printer A3/A4 Size in Unit Area	No.	4	4	0	8				3.467
27	Printer A3/A4 Size in Water System Area	No.	0	0	1	1				0.433
28	Printer A3/A4 Size in Stand Alone Area	No.	0	0	1	1				0.433

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
29	Printer A3/A4 Size in AHP Area	No.	0	0	1	1				0.433
30	Printer A3/A4 Size in CHP Area	No.	0	0	2	2				0.867
31	Printer A3/A4 Size in MU Water Area	No.	0	0	1	1				0.433
32	Printer A3/A4 Size for Station LAN System	No.	0	0	4	4				1.734
33	Printer Line Matrix in Unit Area	No.	1	1	0	2				0.867
34	Printer Line Matrix in CHP Area	No.	0	0	1	1				0.433
	LARGE VIDEO SCREENS (LVS)									
35	LVS in Unit Control Room	No.	6	6	0	12				69.342
36	LVS in Water System Control Room	No.	0	0	3	3				17.335
37	LVS AHP Control Room	No.	0	0	2	2				11.557
38	LVS in CHP Control Room	No.	0	0	2	2				11.557
	GIU									
39	Graphical Interface Units (GIU -10" TFT Screen with Enclosures)	No.	0	0	19	19				27.448
	MINI UPS									

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
40	Mini UPS with Battery & Enclosure (1KVA)	Set	39	0	0	39				5.634
41	Mini UPS with Battery & Enclosure (3KVA)	Set	9	0	0	9				1.300
	CONTROL DESK & DRAW OUT CONSOLE									
42	Control Desk of 7 mtr. Length in Unit Control Room	Set	1	1	0	2				11.557
43	Draw Out Console (Unit / Electrical) in Unit Control Room	Set	1	1	0	2				28.892
44	Unit Incharge Desk - 2 mtr. Length	Set	0	0	1	1				2.311
45	Control desk 4 mtr. Length in Water System Control Room	Set	0	0	1	1				2.889
46	Control desk 4 mtr. Length in AHP Control Room	Set	0	0	1	1				2.889
47	Control desk 4 mtr. Length in CHP Control Room	Set	0	0	1	1				2.889
	FURNITURE									
48	PC RACK	LOT	1	1	3	5				4.334
49	SERVER RACK	LOT	1	1	0	2				1.734
50	COMPUTER TABLE	No.	0	0	7	7				3.034
51	PRINTER TABLE	No.	1	1	5	7				3.034

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
52	CHAIR	No.	17	17	38	72				10.401
53	ALMIRAH	No.	3	3	0	6				0.867
54	KEPAD & LOCKER SET	SET	2	2	9	13				1.878
55	CONFERENCE TABLE WITH 15 NO CHAIR	LOT	1	0	0	1				1.445
56	WORKSTATION FURNITURE FOR WATER SYSTEM	LOT	1	0	0	1				0.578
57	WORKSTATION FURNITURE FOR AHP	LOT	1	0	0	1				0.578
58	WORKSTATION FURNITURE FOR CHP	LOT	1	0	0	1				0.578
	CABLES									
	INSTRUMENTATION CABLES									
	Overall Shield (G- Type) -Unarmoured									
59	2P X 0.5mm ² -Overall Shield(G-type) Unarmoured Cables	Mtr.	0	0	3600	3600				8.321
60	4P X 0.5mm ² -Overall Shield(G-type) Unarmoured Cables	Mtr.	0	0	271350	271350				783.994
61	8P X 0.5mm ² -Overall Shield(G-type) Unarmoured Cables	Mtr.	0	0	27000	27000				93.611
62	12P X 0.5mm ² -Overall Shield(G-type) Unarmoured Cables	Mtr.	0	0	20250	20250				87.761
63	16P X 0.5mm ² -Overall Shield(G-type) Unarmoured Cables	Mtr.	0	0	13500	13500				70.208

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
64	24P X 0.5mm ² -Overall Shield(G-type) Unarmoured Cables	Mtr.	0	0	10800	10800				68.648
65	48P X 0.5mm ² -Overall Shield(G-type) Unarmoured Cables	Mtr.	0	0	4050	4050				30.424
	Individual & Overal Shield (F-Type) -Unarmoured									
66	4P X 0.5mm ² -Individual and Overall Shield(F-type) Unarmoured Cables	Mtr.	0	0	176460	176460				509.835
67	8P X 0.5mm ² -Individual and Overall Shield(F-type) Unarmoured Cables	Mtr.	0	0	40500	40500				140.417
68	12P X 0.5mm ² -Individual and Overall Shield(F-type) Unarmoured Cables	Mtr.	0	0	6750	6750				29.254
69	16P X 0.5mm ² -Individual and Overall Shield(F-type) Unarmoured Cables	Mtr.	0	0	3375	3375				17.552
70	24P X 0.5mm ² -Individual and Overall Shield(F-type) Unarmoured Cables	Mtr.	0	0	2025	2025				12.872
	Individual & Overal Shield - Armoured									
71	4P X 0.5mm ² -Individual and Overall Shield(F-type) Armoured Cables (for VMS)	Mtr.			20000	20000				69.342
72	2T X 0.5mm ² -Individual and Overall Shield Armoured Cables (for VMS)	Mtr.	0	0	7000	7000				24.270
73	Coaxial Cable (for IRIG Master Clock Panel)	Mtr.	0	0	2000	2000				4.623
	CONTROL CABLES (Unarmoured)	Mtr.								
74	CONTROL CABLES- 2Cx2.5 Sq. mm	Mtr.	0	0	48870	48870				112.958

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
75	CONTROL CABLES- 3Cx2.5 Sq. mm	Mtr.	0	0	8030	8030				23.201
76	CONTROL CABLES- 3Cx1.5 Sq. mm (for IRIG Master Clock Panel)	Mtr.	0	0	1800	1800				4.160
	LT POWER CABLE (Unarmoured)									
77	2C x 2.5 mm2, Copper Cable, un-armoured	Mtr.	0	0	8000	8000				23.114
78	2C x 35 mm2, Aluminium Cable, Un-armoured	Mtr.	0	0	26500	26500				153.129
79	1C x 35 mm2, Aluminium Cable, Un-armoured	Mtr.	0	0	1400	1400				4.045
80	2C x 70mm2, Aluminium Cable, Un-armoured	Mtr.	0	0	3000	3000				21.669
81	1C x120 mm2, Aluminium Cable. Un-armoured	Mtr.	0	0	5650	5650				40.810
82	1C x 630mm2,Aluminium Cable , un-armoured	Mtr.	0	0	800	800				23.114
	UTP / Ethernet cable									
83	UTP / Ethernet cable	Mtr.	0	0	20000	20000				57.785
	OFC									
84	4 Core x SM	Mtr.	0	0	10000	10000				28.892
85	8 Core x SM	Mtr.	0	0	5000	5000				17.335

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
86	4 Core x MM	Mtr.	0	0	25000	25000				72.231
87	12 Core x SM	Mtr.	0	0	5000	5000				20.225
88	Termination (the work includes splicing, termination and db loss checking)	No.	0	0	1000	1000				86.677
	CABLE TRAY & COVERS ,CONDUIT , JB & FMU,STRUCTURAL STEEL									
	CABLE TRAY & TRAY COVERS									
89	Cable sub-tray, Size: - 2"(50mm)	Mtr.	975	975	0	1950				28.170
90	Cable sub-tray, Size: - 4"(100mm)	Mtr.	1950	1950	0	3900				84.510
91	Cable sub-tray, Size: - 6"(150mm)	Mtr.	450	450	0	900				26.003
92	Cover of Cable Tray , Size:- 2"(50mm)	Mtr.	488	488	0	976				5.640
93	Cover of Cable Tray, Size: - 4"(100mm)	Mtr.	975	975	0	1950				16.902
94	Cover of Cable Tray, Size:- 6"(150mm)	Mtr.	450	450	0	900				10.401
	CONDUITS									
95	G.I. Rigid Conduits - 1"(25mm)	Mtr.	5300	5300	0	10600				153.129
96	G.I. Rigid Conduits - 2"(50mm)	Mtr.	1300	1300	0	2600				56.340

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
97	Flexible Conduits(Zinc/Lead Coated) - 3/4"(18mm)	Mtr.	3450	3450	0	6900				79.743
98	Flexible Conduits(Zinc/Lead Coated)- 1"(25mm)	Mtr.	975	975	0	1950				28.170
99	HDPE Flexible CONDUITS 2" (For OFC)	Mtr.	10000	10000	0	20000				86.677
	JUNCTION BOXES + Field Marshalling Units									
100	24 Way JB	No.	30	30	0	60				8.668
101	36 Way JB	No.	19	19	0	38				6.587
102	48 Way JB	No.	70	70	0	140				30.337
103	64 Way JB	No.	9	9	0	18				4.681
104	72 Way JB	No.	4	4	0	8				2.311
105	96 Way JB	No.	17	17	0	34				10.806
106	128 Way JB	No.	10	10	0	20				6.934
107	FMU-512 Way	No.	0	0	8	8				3.467
108	FMU-1024 Way	No.	0	0	6	6				2.600
	STRUCTURAL STEEL									

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
109	Structural Steel fabrication - (fabrication of the base frame, JB Frame, Impulse pipe support, Tray Support etc. from BHEL Supplied Angle, channel, plate, pipe)	Metric Tonne	12	12	6	30				173.354
	TRANSMITTERS									
110	Guided wave Radar type level Transmitters	No.	21	21	0	42				72.809
111	Differential Pressure Transmitters	No.	169	169	0	338				122.070
112	Pressure Transmitters	No.	114	114	12	240				86.677
	Impact Head Type flow element with Flow Transmitters (ANUBAR)									
113	Impact Head Type flow element with Flow Transmitters (ANUBAR)	Set	2	2	0	4				6.934
	LOCAL INSTRUMENTS ENCLOSURE / RACK (LIE / LIR)									
	LIE OF NON-PURGING TYPE									
114	LIE TYPE A, Size: LxBxH - 1400 x 800 x 2200 mm, Weight 625 Kg. approx.	No.	5	5	0	10				23.114
115	LIE TYPE B, Size: LxBxH - 1000 x800 x 2200 mm, Weight 575 Kg. approx.	No.	10	10	0	20				34.671
116	LIE TYPE C, Size: LxBxH - 700 x 800 x 2200 mm, Weight 525 Kg. approx.	No.	9	9	0	18				20.802
	LIE OF PURGING TYPE									
117	LIE TYPE A, Size: LxBxH - 1400 x 800 x 2200 mm, Weight 650 Kg. approx.		2	2	0	4				9.246
118	LIE TYPE B, Size: LxBxH - 1000 x800 x 2200 mm, Weight 600 Kg. approx.	No.	19	19	0	38				65.875

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
119	LIE TYPE C, Size: LxBxH - 700 x 800 x 2200 mm, Weight 550 Kg. approx.	No.	5	5	0	10				11.557
	LOCAL INSTRUMENT RACK - LIR									
120	LIR TYPE B, Size: LxBxH - 1330 x800 x 2200 mm, Weight 600 Kg. approx.	No.	12	12	0	24				34.671
121	LIR TYPE C, Size: LxBxH - 1010 x 800 x 2200 mm, Weight 550 Kg. approx.	No.	23	23	0	46				53.162
	IMPULSE PIPES									
122	IMPULSE PIPE ASTM A335 P91 1/2" NB SCH XXS	Mtr	850	850	0	1700				343.819
123	IMPULSE PIPE ASTM A213 TP316L 1/2" NB SCH 80	Mtr	600	600	0	1200				121.348
124	IMPULSE PIPE ASTM A213 TP316H 3/4" NB SCH 80	Mtr	800	800	0	1600				161.797
125	IMPULSE PIPE ASTM A213 TP316H 3/4" NB SCH 160	Mtr	700	700	0	1400				141.573
126	IMPULSE PIPE ASTM A106 GR C 1/2" NB SCH 160	Mtr	1700	1700	0	3400				245.585
127	IMPULSE PIPE ASTM A335 P22 1/2" NB SCH 160	Mtr	1600	1600	0	3200				277.367
128	IMPULSE PIPE ASTM A335 P22 1/2" NB SCH 80	Mtr	200	200	0	400				34.671
129	IMPULSE PIPE ASTM A106 GR B/C 1/2" NB SCH 80	Mtr	3250	3250	0	6500				469.501
130	IMPULSE PIPE ASTM A106 GR B/C 3/4" NB SCH 80	Mtr	2700	2700	0	5400				390.047
131	IMPULSE PIPE ASTM A335 P22 3/4" NB SCH 80	Mtr	750	750	0	1500				130.016

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
	GALVONISED IRON (G.I.) PIPES									
132	G.I. Pipe - Size: 1/2 " Nb	Mtr.	3000	3000	0	6000				130.016
133	G.I. Pipe - Size: 1 " Nb	Mtr.	250	250	0	500				14.446
	POWER SUPPLY SYSTEM									
	UPS POWER SUPPLY SYSTEM									
134	UPS 140KVA {Set of 8to 9 Panels for (Rectifier, Invereter, Aux, Static Switch , ACDB) & 1-BHMS }for ---UNIT (Main Plant BOP)	Set	1	1	0	2				86.677
135	BATTERY BANK SET - Rating 600AH (Each set Comprise 1 No Battery Bank approx 295 cells) along with Discharge Resistor Bank ,Stand ,Battery Accessories etc for UPS of ----Unit (Main Plant BOP)	Set	1	1	0	2				86.677
136	PDBs (Power Distribution Boxes -Wall Mount Type) for UPS power supply distribution	No.	7	7	0	14				20.225
137	UPS 15KVA {Set of 3 Panels for (UPS, Aux ,ACDB)and 1-BHMS} for--- Water System	Set	0	0	1	1				28.892
138	BATTERY BANK SET - Rating 111AH (Each set Comprise 1 No Battery Bank approx 180 cells) alongwith ,Stand ,MDRB and Battery Accessories for 15 KVA UPS of Water System	Set	0	0	1	1				28.892
139	UPS 10 KVA (Panels for 1UPS, 2Aux ,2ACDB, 1-BHMS) for--- ASH HANDLING PLANT (AHP)	Set	0	0	1	1				28.892
140	BATTERY BANK SET - (Each set Comprise 1 No Battery Bank approx 180 cells) alongwith, Stand, MDRB and Battery Accessories for 10 KVA UPS of ---ASH HANDLING PLANT	Set	0	0	1	1				28.892
141	UPS 25 KVA (Panels for 1UPS, 2Aux ,2ACDB, 1-BHMS) for--- COAL HANDLING PLANT (CHP)	Set	0	0	1	1				28.892
142	BATTERY BANK SET - (Each set Comprise 1 No Battery Bank approx 180 cells) alongwith ,Stand ,MDRB and Battery Accessories for 25 KVA UPS of ---COAL HANDLING PLANT (CHP)	Set	0	0	1	1				28.892
	24 V DC POWER SUPPLY SYSTEM									

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
143	24 V DC CHARGER SET Rating1000Amp (Each Set comprises 2 Panels for Charger1-DCDB1-BHMS1 & 2 Panels for Charger2-DCDB2-BHMS2) for --Unit (Main Plant BOP)	Set	1	1	0	2				101.123
144	BATTERY BANK SET Rating 910AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of - Unit (Main Plant BOP)	Set	2	2	0	4				144.462
145	24 V DC CHARGER SET Rating 275Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for- ESP/VFD Building	Set	1	1	0	2				46.228
146	BATTERY BANK SET Rating 575AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of --ESP/VFD Building	Set	1	1	0	2				46.228
147	24 V DC CHARGER SET Rating 175Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for ---- STAND ALONE Common System	Set	0	0	1	1				23.114
148	BATTERY BANK SET Rating 353AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of- STANDALONE Common System	Set	0	0	1	1				23.114
149	24 V DC CHARGER SET Rating 350 Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for - Water System (WS01)	Set	0	0	1	1				23.114
150	BATTERY BANK SET Rating 715AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of - Water System (WS01)	Set	0	0	1	1				23.114
151	24 V DC CHARGER SET Rating 35Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for --Water System (WS04)	Set	0	0	1	1				23.114

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
152	BATTERY BANK SET Rating 75 AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of--Water System (WS04)	Set	0	0	1	1				23.114
153	24 V DC CHARGER SET Rating 125 Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for -- Water System (WS05)	Set	0	0	1	1				23.114
154	BATTERY BANK SET Rating 265 AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of--Water System (WS05)	Set	0	0	1	1				23.114
155	24 V DC CHARGER SET Rating 125Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for --Makeup Water System	Set	0	0	1	1				23.114
156	BATTERY BANK SET Rating 265AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of- MAKEUP WATER SYSTEM	Set	0	0	1	1				23.114
157	24 V DC CHARGER SET Rating 176 Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for---AHP (Ash Handling Plant)	Set	0	0	1	1				23.114
158	BATTERY BANK SET Rating 353 AH(Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of---AHP (Ash Handling Plant)	Set	0	0	1	1				23.114
159	24 V DC CHARGER SET Rating 160 Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for---AHP (Ash Handling Plant)	Set	0	0	1	1				23.114
160	BATTERY BANK SET Rating 330AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of---AHP (Ash Handling Plant)	Set	0	0	1	1				23.114

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
161	24 V DC CHARGER SET Rating 125 Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for---AHP (Ash Handling Plant)	Set	0	0	1	1				23.114
162	BATTERY BANK SET Rating 265AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of---AHP (Ash Handling Plant)	Set	0	0	1	1				23.114
163	24 V DC CHARGER SET rating 175Amp (Each Set comprises 1panel for Charger1-DCDB1-BHMS1 and 1 panel for Charger2-DCDB2-BHMS2) for---CHP (Coal Handling Plant)	Set	0	0	4	4				92.456
164	BATTERY BANK SET Rating 353 AH (Each Set Comprises BATTERY BANK 1 of 19 cells & BATTERY BANK 2 of 19 cells) with Common Discharge Resistance Bank and accessories for 24 V DC Charger of---CHP (Coal Handling Plant)	Set	0	0	4	4				92.456
VMS (Vibration Monitoring System)										
165	Panel, Dimension: L x B x H - 800 x 800 x 2415 mm, Weight - 500 Kg. approx.	No.	1	1	2	4				23.114
166	Vibration Sensor Mounting Block, Dimension: LxBxH - 40x40x40mm to be mounted on equipments like MD BFP, CEP, ID Fan, FD Fan, PA Fan, CW Pump, Make Up water pump	No.	35	35	21	91				5.258
167	Junction Box, Dimension: LxBxD - 250x255x165mm	No.	23	23	16	62				3.583
168	Driver Housing, DH-1, Dimension: LxBxD - 170x130x85mm	No.	11	11	5	27				1.560
169	Driver Housing, DH-4, Dimension: LxBxD - 170x130x85mm	No.	2	2	0	4				0.231
170	Flexible conduit laying, Size: 1" dia.	Mtr.	750	750	0	1500				10.835
171	Installation of computer in Main Control room	Set	1	1	0	2				0.289
FLUE GAS ANALYSER SYSTEM										
SOx/NOx/CO/CO2 Analysers										
172	Flue Gas Analyser - SOX/NOX,CO & CO2 Analyzer and Flowmeter - work includes Erection of panel in Chimney area loction Zero Mtr., fixing of analysers on flanges, shifting of Calibration Gas cylinders, panel to analyser cabling etc. - Panel size: LxBxH - 1200 x 800 x 2200 mm weight 400 Kg.	Set	1	1	0	2				14.446
173	Sample Handling System Panel for Flue Gas Analyser - SOX/NOX,CO & CO2	Set	1	1	0	2				2.889

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
174	Flue Gas Analyser, Sox, Nox, Wall mounted box, Dimension: LxBxH - 700 x 500 x 925mm, Weight: 100 Kg. approx.	No.	1	1	0	2				2.889
175	Mercury Analyzers (at Chimney) consisting of Installation of Cabinet of size LxBxH - 800x500x1950mm, fixing of Probe and related cabling work etc.	Set	1	1	0	2				14.446
176	Dust / Opacity Analyser (at Chimney 88 Mtr. Location)	Set	1	1	0	2				8.668

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
177	Low Temp O2 Analyzers (at Eco O/L, APH O/L, IDFAN I/L)	Set	14	14	0	28				80.899
178	High Temp Oxygen Analyzers (at Super Heater Zone) consisting of cabinet of dimension LxBxH - 400 x 120 x 300mm - 1 no. and Reference Air + verification kit cabinet of dimension LxBxH - 560x230x500mm Qty. 1 no. along with Junction box - 2 no., Calibration gas cylinders. Scope includes cabling from sensor probe to analyser, SS tubing etc.	Set	2	2	0	4				11.557
STEAM & WATER ANALYSIS SYSTEM (SWAS)										
179	Sample Conditioning Panel (Wet Panel), Size: LxBxH - 4000 x 1600 x 2115 mm,	Set	1	1	0	2				17.335
180	Analyser Panel (Dry Panel), Size: LxBxH - 4200 x 800 x 2115 mm,	Set	1	1	0	2				12.713
181	Primary Cooler Rack-1, Dimension: LxBxH - 1800 x 800 x 2100 mm,	Set	1	1	0	2				6.934
182	Primary Cooler Rack-2, Dimension: LxBxH -500 x 800 x 2100 mm,	Set	1	1	0	2				2.889
183	Hot Well Rack, Dimension: LxBxH -600 x 600 x 1800 mm, Weight 200 kg. approx.	Set	2	2	0	4				2.311
184	Conductivity Analyser (Specific & Cation)	No.	15	15	0	30				17.335
185	Dissolved Oxygen Analyser	No.	3	3	0	6				3.467
186	Hydrazine Analyser	No.	2	2	0	4				2.311

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
187	pH Analyser	No.	7	7	0	14				8.090
188	Silica Analyser	Set	2	2	0	4				2.311
189	Sodium Analyser	Set	2	2	0	4				2.311
190	Turbidity Analyser	No.	1	1	0	2				1.156
191	Conductivity analyser withdrawable type	No.	4	4	0	8				4.623
192	Chiller (Common for 2 units), Dimension: LxBxH - 2500 x 1200 x 1800 mm,	Set	0	0	1	1				4.334
193	C.S. PIPE Size 2" NB Sch 40	Mtr	0	0	140	140				4.045
194	S.S. PIPE Size 2" NB Sch 40/160	Mtr	0	0	60	60				4.334
	Hart Management System									
195	HMS Panels in Control Room	Set	5	5	0	10				57.785
196	Installation of PC Printer Furniture	Set	1	1	0	2				0.867
	MASTER SLAVE CLOCK SYSTEM (Common for Two Units)									

SL. NO.	DESCRIPTION	UOM	UNIT-1	UNIT-2	COMMON SYSTEM	TOTAL QTY.	RATE IN FIGURES (Rs.) ** Refer Note1	RATE IN WORDS (RUPEES)	TOTAL VALUE IN (Rs.)	Weightage Factor with respect to Total Value
197	Master clock system panel in CER including laying of Instrument Cable	Set	1	0	0	1				8.668
198	Slave clocks	No.	10	10	13	33				14.302
199	Shifting of Panels from Stores to place of erection (for CCTV & PA System)	No.	0	0	15	15				8.668
GRAND TOTAL VALUE IN RS. EXCLUSIVE OF GST (A) :										
Grand Total in words :										

SAC CODE: _____

GST RATE in %

GST Amount in Rs.

Total including GST in Rs.

****Notes:**

1 **Unit Rate of each item shall be calculated as below**
Unit Rate of each Item= $\frac{\text{GRAND TOTAL VALUE (A)}}{\text{Total Quantity of each Item} \times 10000} \times \text{Weightage Factor given against each Item}$

2 **For simplicity in computation of fractional numbers FOR WEIGHTAGES, a multiplication factor of 10000 has been considered instead of 100 in the above formula.**

3 The Quoted Value for each items & total value shall be in Indian Rupees both in "Figures" and "Words" . In case of difference in rates between Words and Figures, THE LESSER OF THE TWO will be treated as valid

4 Quantity is Indicative only. Rate shall be valid for any Upward or downward revision in quantity upto 20%

5 Unit Rates, Total value & Grand Total value should be exclusive of GST.

6 L1 bidder will be decided on overall least value quoted.

7 GST shall be payable extra by BHEL at the prevailing rates.