

TENDER SPECIFICATION

No. BHE/PW/PUR/NT-CRH/1121/OJ

FOR

SERVICES OF HLHR CRAWLER CRANE ON MONTHLY HIRING BASIS

FOR

CONSTRUCTION WORK IN THERMAL POWER PROJECT

FOR

1x500 MW NTPC STPP STAGE-V UNIT-13

AT

**NATIONAL THERMAL POWER CORPORATION LIMITED (NTPC),
VINDHYACHAL**

DISTRICT- SINGRAULI

MADHYA PRADESH

PART: I

**(TECHNICAL BID SPECIFICATION, NOTICE INVITING TENDER & GENERAL CONDITIONS OF
CONTRACT)**



**BHARAT HEAVY ELECTRICALS LIMITED
(A Govt. of India Undertaking)
POWER SECTOR - WESTERN REGION
345-KINGSWAY, NAGPUR-440 001**

SPECIAL CONDITIONS OF CONTRACT

SECTION-A

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)
POWER SECTOR - WESTERN REGION
345, KINGS WAY - NAGPUR 440 001

TENDER SPECIFICATION NO - BHE/PW/PUR/VNT-CRH/1121/OJ

ISSUE DETAILS

NAME OF THE WORK:

SERVICES OF HLHR CRAWLER CRANE ON MONTHLY HIRING BASIS FOR CONSTRUCTION WORK IN THERMAL POWER PROJECT FOR 1X500 MW NTPC VINDHYACHAL PROJECT DISTRICT SINGRAULI STATE MADHYA PRADESH

LAST DATE & TIME FOR SUBMISSION OF COMPLETED OFFERS: PLEASE OBTAIN THE LATEST DETAILS FROM OUR WEB PAGE <http://www.bhel.com> (Tender Notifications, → View Corrigendums)

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING **PART-I** AND **PART-II** ARE ISSUED TO:

M/s.....

.....

.....

(THESE TENDER SPECIFICATION DOCUMENTS ARE NOT TRANSFERABLE)

FOR BHARAT HEAVY ELECTRICALS LIMITED

Addl General Manager (Purchase)

PLACE: NAGPUR

DATE :

Bharat Heavy Electricals Limited: PSWR: Nagpur

Tender Specs. No **BHE/PW/PUR/VNT-CRH/1121/OJ**

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LEGEND:

@: Issued as separate booklets titled **Part-II** as hard copy. Soft Copy furnished as a single downloadable file containing all eleven volumes in the web page (www.bhel.com) as file titled "Price Bid- XXXX".

This entire document is also hosted in website (www.bhel.com) as downloadable file titled "Tech Bid- XXXX"

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ATTACHMENTS

1. 1X500 MW NTPC VINDHYACHAL
 - a) BOILER GA DRAWINGS:

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DECLARATION BY BIDDER'S AUTHORIZED SIGNATORY

TENDER SPECIFICATION No BHE/PW/PUR/VNT-CRH/1121/OJ

I, _____ HEREBY CERTIFY THAT ALL THE INFORMATION AND DATA FURNISHED BY ME WITH REGARD TO THIS TENDER SPECIFICATION ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE. I HAVE GONE THROUGH THE SPECIFICATIONS, CONDITIONS AND STIPULATIONS IN DETAIL AND AGREE TO COMPLY WITH THE REQUIREMENTS AND INTENT OF THE SPECIFICATION. I FURTHER CERTIFY **THAT I AM DULY AUTHORISED REPRESENTATIVE OF THE UNDERMENTIONED BIDDER AND A VALID POWER OF ATTORNEY TO THIS EFFECT IS ALSO ENCLOSED.**

SIGNATURE OF AUTHORIZED SIGNATORY WITH SEAL

DATE:

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CERTIFICATE OF NO-DEVIATION

TENDER SPECIFICATION No BHE/PW/PUR/VNT-CRH/1121/OJ

I/WE, M/s

HEREBY CERTIFY THAT NOTWITHSTANDING ANY CONTRARY INDICATIONS/ CONDITIONS ELSEWHERE IN OUR OFFER DOCUMENTS, I/WE HAVE NEITHER SET ANY TERMS AND CONDITIONS NOR THERE IS ANY DEVIATION TAKEN FROM THE CONDITIONS OF BHEL'S TENDER SPECIFICATIONS, EITHER TECHNICAL OR COMMERCIAL, AND I/WE AGREE TO ALL THE TERMS AND CONDITIONS MENTIONED IN BHEL'S TENDER SPECIFICATION WITH ASSOCIATED AMENDMENTS AND CLARIFICATIONS.

Date:

Signature of the Bidder

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**CERTIFICATE CONFIRMING
KNOWLEDGE ABOUT SITE CONDITIONS**

TENDER SPECIFICATION No BHE/PW/PUR/VNT-CRH/1121/OJ

We, M/s
hereby declare and confirm that we have visited the project site(s) for which we have submitted our offer and acquired full knowledge and information about the site conditions.

We further confirm that the above information is true and correct and we shall not be eligible for any additional payment of any nature due to lack of knowledge or non-familiarization of site conditions.

BIDDER'S NAME AND ADDRESS:

SIGNATURE & OFFICIAL SEAL OF BIDDER'S
AUTHORISED SIGNATORY

PLACE:

DATE:

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BHARAT HEAVY ELECTRICALS LIMITED

POWER SECTOR-WESTERN REGION

'Shreemohini' Complex, 5th floor

345-Kingsway Nagpur 440001

Phone: 0712-3048600-604 Fax: 0712-3048 605, 698, 699

Dear Sir/Madam

Sub : NOTICE INVITING TENDER

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

1.0 Salient Features of NIT

SL NO	ISSUE	DESCRIPTION
i	TENDER NUMBER	BHE/PW/PUR/VNT-CRH/1121/OJ
ii	Broad Scope of job	SERVICES OF HLHR CRAWLER CRANE ON MONTHLY HIRING BASIS FOR CONSTRUCTION WORK IN THERMAL POWER PROJECT FOR 1X500 MW NTPC VINDHYACHAL PROJECT DISTRICT SINGRAULI STATE MADHYA PRADESH
iii	DETAILS OF TENDER DOCUMENT	
<i>PART-I(Special Conditions of Contract)</i>		
Sectio n-A	<u>SCC</u> consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc	<i>Applicable</i>
Sectio n-B	General Conditions of Contract (GCC)	<i>Applicable</i>
<i>PART-II</i>		
Sectio n-C	Price Schedule (Absolute value).	<i>Applicable</i>
iv	Issue of Tender Documents	04/03/2013 <i>Applicable</i>
v	DUE DATE & TIME OF OFFER SUBMISSION	Date : 25/03/2012 Time :15.00Hrs Place : BHEL-PSWR, Nagpur Tenders being submitted through representative shall be handed over to any of the following BHEL officials after making entry/registration at the reception: Ranade/ Sr.Manager (Purchase) Abhijeet / Engineer (Purchase) <i>Applicable</i>
vi	OPENING OF TENDER	1 hours after the latest due date and time of Offer submission Notes: (1) In case the due date of opening of tender becomes a non-working day, tenders shall be opened on next working day at the same time. (2) Bidder may depute representative to witness the opening of tender <i>Applicable</i>
vii	EMD AMOUNT	Rs 2,00,000/- (Rupees Two Lakhs Only) <i>Applicable</i>

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viii	COST OF TENDER	Rs. 2000/-	Applicable
ix	LAST DATE FOR SEEKING CLARIFICATION	<i>Date: Atleast 3 days before the due date of offer submission Along with soft version also, addressing to undersigned & to others as per contact address given below Mr R K RANADE (rkranade@bhhelpswr.co.in) Mr. ABHIJEET KUMAR (kabhi@bhhelpswr.co.in)</i>	<i>Applicable</i>
x	Latest updates	NA	

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

Sl no	Description	Remarks
	Part-I A	
	ENVELOPE – I superscribed as : PART-I (TECHNO COMMERCIAL BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:	
	CONTAINING THE FOLLOWING:-	
i.	Covering letter/Offer forwarding letter of Tenderer.	
ii.	Duly filled-in 'No Deviation Certificate' as per prescribed format to be placed after document under sl no (i) above.	

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	<p>Note:</p> <p>a. In case of any deviation, the same should be submitted separately for technical & commercial parts, indicating respective clauses of tender against which deviation is taken by bidder. The list of such deviation shall be placed after document under sl no (i) above. It shall be specifically noted that deviation recorded elsewhere shall not be entertained.</p> <p>b. BHEL reserves the right to accept/reject the deviations without assigning any reasons, and BHEL decision is final and binding.</p> <p style="padding-left: 20px;">i). In case of acceptance of the deviations, appropriate loading shall be done by BHEL</p> <p style="padding-left: 20px;">ii). In case of unacceptable deviations, BHEL reserves the right to reject the tender</p>	
iii.	<p>Supporting documents/ annexure/ schedules/ drawing etc as required in line with Pre-Qualification criteria.</p> <p>It shall be specifically noted that all documents as per above shall be indexed properly and credential certificates issued by clients shall distinctly bear the name of organization, contact ph no, FAX no, etc.</p>	
iv.	All Amendments/Correspondences/Corrigenda/Clarifications/Changes/ Errata etc pertinent to this NIT.	
v.	Integrity Pact Agreement (Duly signed by the authorized signatory)	If applicable
vi.	Duly filled-in annexures, formats etc as required under this Tender Specification/NIT	
vii.	Notice inviting Tender (NIT)	
viii.	Volume – I A : <u>Technical</u> Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc	
ix.	Volume – I B : Special Conditions of Contract (SCC)	
x.	Volume – I C : General Conditions of Contract (GCC)	
xi.	Volume – I D : Forms & Procedures	
xii.	Volume – II (UNPRICED – without disclosing rates/price, but mentioning only 'QUOTED' or 'UNQUOTED' against each item	
xiii.	Any other details preferred by bidder with proper indexing.	

	PART-I B	
	<p>ENVELOPE – II superscribed as:</p> <p>PART-I (EMD/COST of TENDER)</p> <p>TENDER NO :</p> <p>NAME OF WORK :</p> <p>PROJECT:</p> <p>DUE DATE OF SUBMISSION:</p> <p>CONTAINING THE FOLLOWING:-</p>	
i.	<p>1. Earnest Money Deposit (EMD) in the form as indicated in this Tender</p> <p style="text-align: center;">OR</p> <p style="padding-left: 40px;">Documentary evidence for 'One Time EMD' with the Power Sector Region of BHEL floating the Tender</p> <p>2. Cost of Tender (Demand Draft or copy of Cash Receipt as the case</p>	

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

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

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

- 7.0 No Deviation with respect to tender clauses and no additional clauses/ suggestions/ in Techno-commercial bid/ Price bid shall normally be considered by BHEL. Bidders are requested to positively comply with the same.
- 8.0 BHEL reserves the right to accept or reject any or all Offers without assigning any reasons thereof. BHEL also reserves the right to cancel the Tender wholly or partly without assigning any reason thereof. Also BHEL shall not entertain any correspondence from bidders in this matter (except for the refund of EMD).
- 9.0 Since the job shall be executed at site, bidders must visit site/ work area and study the job content, facilities available, availability of materials, prevailing site conditions including law & order situation etc before quoting for this tender. They may also consult this office before submitting their offers, for any clarifications regarding scope of work, facilities available at sites or on terms and conditions. No additional claim shall be entertained by BHEL in future, on account of non-acquaintance of above.

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- 10.0 For any clarification on the tender document, the bidder may seek the same in writing or through e-mail, as per specified format, within the scheduled date for seeking clarification, from the office of the undersigned. BHEL shall not be responsible for receipt of queries after due date of seeking clarification due to postal delay or any other delays. Any clarification / query received after last date for seeking clarification may not be normally entertained by BHEL and no time extension will be given.
- 11.0 In the event of any conflict between requirement of any clause of this specification/ documents/drawings/data sheets etc or requirements of different codes/standards specified, the same to be brought to the knowledge of BHEL in writing for clarification before due date of seeking clarification (whichever is applicable), otherwise, interpretation by BHEL shall prevail. Any typing error/missing pages/ other clerical errors in the tender documents, noticed must be pointed out before pre-bid meeting/submission of offer, else BHEL's interpretation shall prevail.
- 12.0 Unless specifically mentioned otherwise, bidder's quoted price shall deemed to be in compliance with tender.
- 13.0 The Bidder has to satisfy the Pre-Qualifying Requirements stipulated for this Tender in order to be qualified. The Price Bids of only those bidders will be opened who will be qualified for the subject job on the basis of pre-qualification evaluation/ techno-commercial bids, etc. and date of opening of price bids shall be intimated to only such bidders.
- 14.0 In case BHEL decides on a 'Public Opening', the date & time of opening of the sealed PRICE BID shall be intimated to the qualified bidders and in such a case, bidder may depute one authorised representative to witness the price bid opening. BHEL reserves the right to open 'in-camera' the 'PRICE BID' of any or all Unsuccessful/Disqualified bidders under intimation to the respective bidders.
- 15.0 Validity of the offer shall be for **six months** from the latest due date of offer submission (including extension, if any) or specified otherwise in SCC of tender.
- 16.0 BHEL reserves the right to decide the successful bidder on the basis of Reverse Auction process. In such case all qualified bidders will be intimated regarding procedure/ modality for Reverse Auction process prior to Reverse Auction and price will be decided as per the rules for Reverse Auction.
- However, if reverse auction process is unsuccessful as defined in the RA rules/procedures, or for whatsoever reason, then the sealed 'PRICE BIDS' will be opened for deciding the successful bidder. BHEL's decision in this regard will be final and binding on bidder.
- 17.0 On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.
- 18.0 The bidder shall submit documents in support of possession of 'Qualifying Requirements" duly self certified and stamped by the authorized signatory, indexed and properly linked in the format for PQR. In case BHEL requires any other documents/proofs, these shall be submitted immediately.
- 19.0 The bidder may have to produce original document for verification if so decided by BHEL.
- 20.0 BHEL reserves the right to reject any tender on the basis of unsatisfactory performance of the bidder in any ongoing job or any similar job in the last seven years or for furnishing false information/declaration in the offer.

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- 21.0 **Liquidated Damages/Penalty:** BHEL will impose Liquidated Damages and Penalty as per suitable clauses in the respective Tender Specifications on account of delay, violation of contract conditions and non-performance attributable to the contractor.
- 22.0 **LATE TENDER:** Tender received after the specified date and time of submission shall not be considered in any circumstances.
- 23.0 A bidder must satisfy **all the Qualifying Requirements** stipulated under 'C', 'D' etc of this tender concurrently in order to get qualified.
- 24.0 Order of Precedence
In the event of any ambiguity or conflict between the Tender Documents, the order of precedence shall be in the order below:
- a. Amendments/Clarifications/Corrigenda/Errata etc issued in respect of the tender documents by BHEL
 - b. Notice Inviting Tender (NIT)
 - c. Price Bid (Part-II)
 - d. Technical Bid (Part-I)
 - e. General Conditions of Contract (GCC)

for BHARAT HEAVY ELECTRICALS LTD
(SCT)

Enclosure

01. Annexure-1: Pre Qualifying criteria.
02. Annexure-2: Check List.
03. Annexure-3: Important Information.

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ANNEXURE - 1

PRE QUALIFYING CRITERIA

JOB	SERVICES OF HLHR CRAWLER CRANE ON MONTHLY HIRING BASIS FOR CONSTRUCTION WORK IN THERMAL POWER PROJECT FOR 1X500 MW NTPC VINDHYACHAL PROJECT DISTRICT SINGRAULI STATE MADHYA PRADESH
TENDER NO	BHE/PW/PUR/VNT-CRH/1121/OJ

SL NO	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria	
		Name and Description of qualifying criteria	Page no of supporting document
A	Submission of Integrity Pact duly signed	NOT APPLICABLE	
B	Assessment of Capacity of Bidder to execute the work as per sl no 9 of NIT	NOT Applicable	
C	<p><u>Technical</u></p> <p>C.1) <u>Bidder must have, achieved/Executed any one of the following in last seven years as on the latest date of offer Submission</u></p> <p style="text-align: center;">AND</p> <p>C.2) The crane offered by the bidder must meet the technical requirements of BHEL.</p>	APPLICABLE	
D1	<p><u>Financial TURNOVER</u></p> <p>Bidders must have achieved an average annual financial turnover (Audited) of Rs 75.00 Lakh or more over last three Financial Years (FY) i.e. 2009-2010, 2010-2011, 2011-12 .</p>	APPLICABLE	
2	<p><u>NETWORTH (only in case of Companies)</u></p> <p>Net worth of the Bidder based on the latest Audited Accounts as furnished for 'D1' above should be positive</p>		
3	<p>PROFIT</p> <p>Bidder must have earned cash profit in any one of the three Financial Years as</p>		

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	applicable in the last three years defined in 'D1' above based on latest Audited Accounts.		
E	Approval of Customer Note: Names of bidders who stand qualified after compliance of criteria A to D shall be forwarded to customer for their approval. Price bid of only those bidders shall be opened who are approved by customer.	NOT Applicable	
F	Consortium criteria	Not Applicable	
	<p>Explanatory Notes for QR</p> <ol style="list-style-type: none"> 1. The word 'executed' means the bidder should have achieved the criteria specified in the QR even if the total contract has not been completed or closed 2. Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as given above along with all annexures <p>B) Explanatory Notes for PQR 'D'- 'Financial'</p> <ol style="list-style-type: none"> 1. Net Worth = Paid up share capital* + Reserves (* : Share Capital OR Partnership Capital OR Proprietor Capital as the case may be) 2. Profit shall be NET Profit (PAT + Non Cash Expenditure viz depreciation). 3. In case audited financial statement have not been submitted for all the three years as indicated in 'D1' above, then applicable audited statement submitted by the bidder against the requisite three year, will be averaged for three years. 		

BIDDER SHALL SUBMIT ABOVE PRE-QUALIFICATION CRITERIA FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.

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PROJECT INFORMATION

1.0	Project Information
1.1	<p style="text-align: center;"><u>PROJECT INFORMATION</u></p> <p>INTROUCTION</p> <p>VINDHYACHAL SUPER THERMAL POWER PROJECT IS PIT-HEAD COAL BASED PROJECT OWNED BY NATIONAL THERMAL POWER CORPORATION. 6X210 MW & 6X500 MW UNITS ARE PRESENTLY OPERATIONAL. THE CAPACITY OF PLANT IS BEING AUGMENTED BY INSTALLATION OF ADDITIONAL 1X500 MW SET -13 STAGE -V.</p> <p>THE PROPOSED POWER STATION IS LOCATED IN SINGRAULI DISTRICT OF MADHYA PRADESH HAVING LATITUDE AND LONGITUDE OF 240 6'N AND 82 40'E RESPECTIVELY. THE SITE IS SITUATED ON NORTH -WESTERN BANK OF RIHAND RESERVOIR.</p> <p>NEAREST TOWN IS RENUKUT AT A DISTANCE OF 50 KM FROM THE PROJECT. THE NEAREST BROADGAUGE RAIL HEAD SHAKTINAGAR RAILWAY STATION, IS APPROXIMATELY 2.0 KM AWAY FROM PROJECT SITE. MIRJAPUR STATION IS APPROXIMATELY 200 KM AWAY FROM THE PROJECT. PROJECT IS ACCESSIBLE BY ALL SEASON ROAD FROM VARANASI - RABERTSGANG - RENUKUT OR SINGRAULI - WAIDHAN ROAD. THE NEAREST AIR PORT IS VARANASI.</p> <p>OTHER IMPORTANT DATA</p> <p>HIGHEST AMBIENT TEMPERATURE : 44° C</p> <p>LOWEST AMBIENT TEMPERATURE : 10° C</p>

The bidder is advised to visit and examine the site of WORKS and its surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into the CONTRACT. All costs for and associated with site visits shall be borne by the bidder.

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1.0 **BROAD SCOPE OF WORK**

Service of HLHR Crawler Crane with operation & maintenance crew **on monthly hiring basis** for 1X500 MW NTPC VINDHYACHAL Project District Singrauli in Chhattisgarh state.

The crane shall be engaged in the project construction work of thermal power plant consisting of Boiler, Electrostatic Precipitator, Various Structures, Tanks, Vessels and other equipments of these plants as per instructions of the BHEL Engineer-in-Charge.

The intent of this tender specification is to hire the service of following listed crawler crane on monthly lease basis to suit the specified requirements.

1.1) **HLHR Crane**

Heavy-Lift, High-Reach (HLHR) Crane (1 No.), required at 1X500 MW NTPC Vindhyachal Project, Distt – Singrauli , Madhya Pradesh.

1.1.1) **Technical Requirements & Duration of Deployment**

The offered crane shall meet the following requirements:

SN	Description of Parameter/Feature	Details/Requirement
01	<u>Critical Lift Requirement-</u> Ceiling Girder	Weight: 115 MT
02	<u>Elevation after installation</u> Ceiling Girder	91.11 m (Top of Girder)
03	<u>Dimensions of Consignment</u> Ceiling Girder	Built-up I beam Length : 31.7 m Depth : 3.8 m Width of Flange: 1.4 m

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SN	Description of Parameter/Feature	Details/Requirement
04	Overall dimension of crane with HLA, Counterweight, Guy Rope, Boom, Jib etc. vis-à-vis critical space restriction for crane movement.	<p>The Crane should accordingly be capable of lifting the above critical loads to their respective positions.</p> <p>The overall dimension of offered crane with all necessary assemblies shall be suitable for this.</p> <p>Bidder in his offer (Technical Bid) shall furnish complete dimensional details of crane assembly with sketch in this regard.</p>
05	Boom & Jib Lengths	<p>Boom Length: To suit aforesaid lift requirements.</p> <p>Jib Length: As per crane manufacturer's standard set-up.</p>
06	Crawler to Crawler outer dimension	Maximum 10.5 Meter
07	Heavy Lift Attachment (HLA)	Crane may have HLA for lifting higher loads and/or higher elevations. In addition, it shall be capable to lift loads without HLA as well.
08	Model	<i>Crane shall not be more than 10 years old as on date of offer submission. The manufacturer's certificate, invoice or relevant documentary proof shall be furnished to the site in-charge before deployment.</i>
09	Deployment tentatively by	May-2013 However, mobilization of the crane will be intimated approximately 30 days in advance of actual requirement.
10	Duration of Hiring	Regular Duration: 5 (Five) months, Extendable by another 1(One) month under the contractually agreed terms & conditions.
11	Crane Model	The cranes models offered must be in the possession of bidder at the time of submission of offer.

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1.2 GENERAL REQUIREMENTS (Applicable to all cranes)

1. The offered cranes should have **boom travel limit alarm/stop** and **hoist travel alarm/ stop** safety features as minimum requirement. Other additional safety features, if any, should be made available to user without any additional cost.
2. Bidder shall submit along with technical bid a **copy of load chart** and technical details of crane offered as per Annexure I.
3. **Deployment of Cranes & Commencement of Services**
The deployment schedule of the crane indicated earlier here is tentative. Notwithstanding such indications, **you shall deploy and make the crane operational at site within Thirty (30) days from the written intimation for deployment of crane.** A separate written notice asking to deploy the crane shall be issued for crane by BHEL.
4. Bidder shall make available the complete set of Main Boom & Jib attachment with offset angle adjustment facility as specified for the crane in one go, that is at the time of mobilization. However the crane shall be initially and subsequently assembled as per the site requirement to be specified by BHEL site engineer. Bidder shall furnish the details of Main Boom & Jib configuration offered for respective crane in their technical bid.
5. **Offered Cranes shall have separate drums for main hook as well as auxiliary hook (jib hook) so that both these are operated independent of each other and should not require any changes from one to another.**

1.2 SPECIFIC REQUIREMENTS FOR HEAVY LIFT - HIGH REACH CRAWLER CRANE

1. **Bidder shall submit sketch/drawings/manual of the crane with boom length and working radius and other constructional dimensional details of crane for meeting the lift requirement as given in this tender specification and indicating clearance under the hook from the top elevation of top piece and other aspects (such as slinging/ hook block weight and clearance under the hook) shall be taken into account to meet the above lift requirement.**
2. Bidders may offer alternative models for the lift requirements of the Heavy Lift – High Reach crawler crane. Bidder shall submit load capacity chart with and without HLA for all such options.
3. Bidder shall furnish the details like self-weights of Hook Block & Wire Rope (Kg per metre) and number of falls necessary for the specified load requirement. Such details regarding the crane must be substantiated by crane manufacturer's manual/data sheet.
4. The offered crane should have adequate **safety margin** taking into consideration the specific lift requirement, weight of lifting sling, hook, wire rope and other accessories.

1.3 HEAVY LIFT ATTACHMENT (HLA)

Heavy Lift - High Reach (HLHR) Crawler Crane will be accepted with or without HLA. However, the crane shall essentially meet the specified lift requirements with or without HLA. The crane shall be capable to lift loads in the regular operating range without HLA. Necessity of HLA shall

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be limited to enhancing the lift capacity (higher loads or higher reach or both) and not as a permanent feature.

2.0 OPERATION, MAINTENANCE AND OPERATING CREW CHARGES

- 2.1 The price quoted shall be inclusive of operation (**excluding fuel**) and preventive as well as breakdown maintenance of the crane. The bidder shall deploy Operator-cum-Mechanic, Helper and Maintenance Crew to ensure smooth operation and maintenance of the crane without affecting work. No extra payment shall be made towards engagement of crew in overtime working hours. The crane shall be available for service on all days of the month. Bidder shall carry out preventive maintenance beyond normal working hours or as per schedule agreed with BHEL engineer.
- 2.2 Bidder shall provide all lubricants, spare parts, filters and other necessary consumables (**except fuel**) that are necessary to fulfil the scope of services under this specification within the quoted rates. BHEL/erection contractors of BHEL will provide fuel commensurate with utilization time and agreed consumption rate.

3.0 COMMENCEMENT OF CONTRACT, REGULAR CONTRACT PERIOD, TERMINATION & FORECLOSING

The contract period shall commence from the successful load testing of crane with mutually agreed boom length at project site location and its written acceptance by BHEL. The Contract Period (duration of hiring) will generally be as indicated under 'Regular Duration' in tabular form earlier here. Contract Period may be extended depending upon the requirement of BHEL as specified therein.

If the performance/services of the contractor or the deployed crane are not to the satisfaction of BHEL, the contract is liable for termination without prior notice.

BHEL reserves the right of foreclosing the contract within the contract period with 30 days advance written notice without assigning reason and no payments will be made for the period after foreclosure.

4.0 REGULAR WORKING HOURS

The services of crane with operating crew shall be made available for duration of Twelve **(12) hours per day** including total one-hour break (30 minutes for lunch and 2 tea intervals of 15 minute each). However, this shall be adjusted to suit the working hours of the project site from time to time.

5.0 RATE SCHEDULE, QUOTED RATES/PRICE & CONTRACT VALUE

- 5.01 Bidders shall quote their price in the Rate Schedule furnished in "Price Bid Specification" issued as Part-II of this tender specification.

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- 5.02 **Total amount payable** towards **mobilization and de-mobilization** of crane shall be as in the table below.

SN	Description of Crane	Total Amount for Mobilization and Demobilization
1	HLHR Crane	Rs. 30,00,000/- (Rupees Thirty Lakhs)

An amount is also indicated in the Rate Schedule for the above crane. Bidder shall neither quote any amount towards mobilization and de-mobilization separately nor make any alteration in these amounts specified by BHEL. Offers with any deviation in this regard will be rejected.

- 5.03 Bidder shall quote only monthly hire charges rate and indicate the corresponding amount for the duration indicated in the Rate Schedule. Bidder shall also indicate the total amount comprising of total monthly hire charges and mobilization & de-mobilization charges for the crane. In case of any discrepancy between the rates and amounts, the monthly hire charges rate quoted by the bidder shall be considered as correct and the grand total amount for the crane shall be re-calculated for the purpose of offer evaluation.
- 5.04 Agreed monthly hire charges rates shall remain **firm** throughout the **Regular Duration** indicated against respective crane. Applicable monthly hire charges for **Extension Periods** as proposed in this Tender Specification shall be **90%** of the rates agreed for the regular contract/hiring period. No other revision of the rates shall be admitted during these periods.
- 5.05 Road permits, Octroi, VAT, CST and Declaration Forms etc. required for deployment of the cranes at the destination sites shall be arranged by the bidder within the agreed price/ rates. BHEL will neither issue any Road Permit or VAT/CST declaration forms for this purpose nor pay any taxes in this regard.

5.06 STAUTORY/MANDATORY REQUIREMENTS & TAXES (PREVAILING)

All statutory/mandatory requirements in respect of entry permits, taxes & levies as applicable shall be in the scope of contractor.

5.07 Contract Value for Offer Evaluation & Work Order (Award Value):

- (i) Total amount payable towards mobilization and de-mobilization.
- (ii) Total hire charges of Crane for the Regular Duration of the crane as per Tender Specification.

5.08 Contract Value for Security Deposit (SD):

At the beginning of contract, the Security Deposit shall be calculated according to the awarded Contract Value. Subsequently amount of SD shall be regulated based on the Contract Value that is arrived at after taking care of time extensions, short closure etc. Accordingly contractor shall pay additional amount of SD or BHEL will adjust/refund excess SD if any.

6.0 EARNEST MONEY DEPOSIT, SECURITY DEPOSIT & BANK GUARANTEE

- 06.1 Earnest Money Deposit:** EMD for this tender is Rs. 2, 00,000/- (Rupees Two lakhs only). For remittance of EMD and other details pertaining to EMD, please **refer GCC**.

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06.2 Security Deposit: Please refer GCC.

06.3. Guidelines for acceptance of Bank Guarantees are as follows:

- Vendors are advised to obtain BG from any of the following BHEL consortium banks

State Bank of India	The Hongkong and Shanghai banking Corporation Ltd.
ICICI Bank Ltd	ABN Amro Bank N.V
Bank of Baroda	IDBI Ltd
Canara Bank	Punjab National Bank
Citi bank N.A	Standard Chartered Bank
Corporation Bank	State Bank of Travancore
Deutsche Bank	State Bank of Hyderabad
HDFC Bank Ltd	Syndicate Bank

- The Bank Guarantees of all Public sector banks shall be accepted (Other than consortium banks also).
- The Bank Guarantees of Co-operative banks shall not be accepted.
- Bank Guarantees of other banks (banks other than consortium bank, public sector bank, & Co-operative banks) can be accepted subject to an overall exposure limit (at BHEL, PSWR, Nagpur) of RS. 10 crores for banks with net worth of more than Rs. 500 crores as on last balance sheet date and Rs 5 crores for banks with net worth between Rs. 350 to Rs 500 crores (A certificate and copy of latest Balance Sheet to be given at the time of submission of bank guarantees .

In case Bank Guarantees given by non consortium banks (Private sector or Public sector), the bank Guarantees shall be enforceable at Nagpur, Maharashtra.

7.0 PAYMENT TERMS

7.1

The contractor shall submit his Running Account (RA) Bills towards mobilization, monthly charges, de-mobilization charges and Service Tax etc with all the details required by BHEL on or before the specified date every month. Payment of Monthly Hire Charges as certified by the BHEL Engineer-in-Charge will be made once in a calendar month at BHEL Site. Billing cycle may be as per mutually agreed cut-off dates.

7.2

Payment for RA Bills will normally be released in around 30 days of submission of the bill with measurement/log sheets. Contractor shall make his own arrangement for making payment of impending labour wages and other dues in the meanwhile.

7.3

Monthly hiring period shall be considered for payment purpose from the date of successful load testing of the crane and till the crane withdrawn for de-mobilization.

7.4

No advance payments shall be made by BHEL for this contract.

7.5

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Payment towards mobilization and de-mobilisation of crane shall be made in the manner as specified below.

1. First 50% of the specified amount for mobilization and demobilization will be paid after deployment of the crane complete in all respects including all assemblies, sub-assemblies, accessories & components, assembly of crane as required by BHEL and BHEL's acceptance of load test of assembled crane at site.
2. Remaining 50% of the specified amount for mobilization and demobilization will be paid after removing the crane from the project site and clearing the site premises in all respect.

7.6 PRO RATA DAILY & HOURLY HIRE CHARGES

In case services are availed for part of a calendar month, pro-rata payment of Hire Charges for the utilized number of days shall be made by BHEL. Pro-rata daily hire charges shall be calculated as follows.

- 6.6.1 Pro Rata Daily Hire Charges = Monthly Hire Charges divided by 30.
6.6.2 Pro Rata Hourly Hire Charges = Monthly Hire Charges divided by 360.

7.7 **Hourly Overtime Charges**

If the crane is required beyond the normal working hours as stipulated in this tender specification, overtime payment shall be made as following.

Hourly Overtime Charges = 15% of Pro Rata Hourly Hire Charges.

7.8 **SERVICES IN EXTENDED HOURS**

Services of the crane with crew may be needed by BHEL beyond the specified regular working hours. Prior consent from BHEL's Construction Manager shall be obtained by the contractor for rendering such services. Payment for the same shall be made along with the concerned month's Hire Charges bill on **pro-rata basis as per clause 7.0 earlier here**

8.0 TAXES, DUTIES, LEVIES (Consolidated Rev 01 dated 04/08/2012)

8.1. For All types of works excepting works covered under sl no 8.2

8.1.1

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

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

8.1.2 Service Tax & Cess on Service Tax

Contractor's price/rates shall be exclusive of Service Tax and Cess on Services. In case, it becomes mandatory for the contractor under provisions of relevant act/law to collect the Service

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Tax & Cess from BHEL and pay the same to the concerned tax authorities, such applicable amount will be paid by BHEL at the prevailing Service Tax Rate (presently 12.36 %) on the admitted bill value.

Contractor shall submit to BHEL documentary evidence of Service Tax registration certificate specifying name of services covered under this contract. Contractor shall submit serially numbered Service Tax and Cess Invoice, signed by him or a person authorized by him in respect of taxable service provided, and shall contain the following, namely,

- 1. The name, address and the registration number of the contractor,**
- 2. The name and address of the party receiving taxable service,**
- 3. Description, classification and value of taxable service provided and,**
- 4. The service tax payable thereon.**

All the Four conditions shall be fulfilled in the invoice before release of service tax payment.

Wherever, more than one route/option are available for discharge of service tax liability under a particular service, (e.g. "works contract Service"), contractor shall obtain prior written consent from BHEL site before billing the amount towards Service Tax.

8.1.3 VAT (Sales Tax /WCT)

As regards Value Added Tax (VAT)/CST on transfer of property in goods involved in Works Contract (previously known as Works Contract Tax) applicable as per local laws, the price quoted by the contractor shall be inclusive of the same and in no case input or output VAT/CST will be reimbursed extra.

In any case the Contractor shall register himself with the respective Sales Tax authorities of the state and submit proof of such registration to BHEL along with the first RA bill. Contractor will submit all the details of VAT/CST paid for the contract in the prescribed format of the respective state VAT laws. Also, the contractor will issue the tax Invoices to BHEL as per the Tax laws of respective state on monthly basis. Contractor shall also be required to furnish to BHEL necessary proof of VAT remittance on monthly basis.

Deduction of tax at source shall be made as per the provisions of law and is to be construed as an advance tax paid by the contractor and no reimbursement thereof will be made.

Further, if BHEL, at the instance of customer or otherwise adopts the specific route for discharging output VAT liability itself, benefit of the reduction in liability of the contractor will be passed on to BHEL.

In case, BHEL is forced to pay any VAT liability on behalf of contractor, the same will be recovered from contractor's bill or otherwise as deemed fit

8.2 ~~'Enabling Works'~~

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

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~~recover the same from his bills or otherwise as deemed fit. (i.e. rates quoted by bidder shall be inclusive of Service Tax, VAT/WCT and all other taxes and duties)~~

8.3 New Taxes/Levies

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

In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer, the Bidder/Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of Price Bid. Claim for any such impact after opening the Price Bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

No reimbursement/recovery on account of increase/reduction in the rate of taxes, levies, duties etc. on input goods/services/work shall be made. Such impact shall be taken care of by the Price Variation/Adjustment Clause (PVC) if any. In case PVC is not applicable for the contract, Bidder has to make his own assessment of the impact of future variation if any, in rates of taxes/duties/ levies etc. in his price bid.

8.4 BUILDING & OTHER CONSTRUCTION WORKERS (REGULATION OF EMPLOYMENT AND CONDITIONS OF SERVICE) ACT, 1996 (BOCW Act) AND RULES OF 1998 READ WITH BUILDING & OTHER CONSTRUCTION WORKERS CESS Act, 1996 & CESS RULES, 1998.

In case any portion of work involves execution through building or construction workers, then compliance to the above titled Acts shall be ensured by the contractor and contractor shall obtain license and deposit the cess under the Act. In the circumstances it may be ensured as under:-

- i. It shall be the sole responsibility of the contractor in the capacity of employer to forthwith (within a period of 15 days from the award of work) apply for a licence to the Competent Authority under the BOCW Act and obtain proper certificate thereof by specifying the scope of its work. It shall also be responsibility of the contractor to furnish a copy of such certificate of licence / permission to BHEL within a period of one month from the date of award of contract.
- ii. It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under these act and rules including that of payment / deposit of 1% cess on the extant of work involving building or construction workers engaged by the contractor within a period of one month from the receipt of payment.
- iii. It shall be the responsibility of the sub-contractor to furnish the receipts / challans towards deposit of the cess together with the number, name and other details of beneficiaries (building workers) engaged by the sub-contractor during the preceding month.
- iv. It shall be the absolute responsibility of the sub-contractor to make payment of all statutory payments & compensations to its workers including that is provided under the Workmen's Compensation Act, 1923.

Safety, Occupational Health and Environmental Management

BHEL PSWR has been certified for Environmental Management under ISO 14001:1996 standard and Occupational Health & Safety under OHSAS 18001 by DNV. In order to comply with the above standards, it shall be the endeavour of BHEL and all its subcontractors to meet and implement the requirements by following the

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guidelines issued under Environmental, Occupational Health and Safety Management (EHS) manual a copy of which will be available with the BHEL Site-in-charge.

Contractor shall also enter into a "Memorandum of Understanding" as given in clause 9.9 in case of award of contract.

9.0 Responsibility of the Contractor in Respect of Safety of Men, Equipment, Material and Environment.

9.1 The Contractor shall:

9.1.1

Abide by the Safety Regulations applicable for the Site/Project and in particular as mentioned in the booklet "Safe Work Practices" issued by BHEL. Contractors are also to ensure that their employees and workmen use safety equipments as stipulated in the Factories Act (Latest Revision) during the execution of the work. Failure to use safety equipment as required by BHEL Engineer will be a sufficient reason for issuance of memo, which shall become part of Safety evaluation of the contractor at the end of the Project. Also all site work may be suspended if it is found that the workmen are employing unsafe working practice and all the costs/losses incurred due to suspension of work shall be borne by contractor. A comprehensive list of National Standards from which the contractor can draw references for complying with various requirements under this section is given under 9.10

9.1.2

Hold BHEL harmless and indemnified from and against all claims, cost and charges under Workmen's Compensation Act 1923 and 1933 and any amendment thereof and the contractor shall be solely responsible for the same.

9.1.3

Abide by the Procedure governing entry/exit of the contractor's personnel within the Customer/Client premises. All the contractors' employees shall be permitted to enter only on displaying of authorized Photo passes or any other documents as authorized by the Customer/Client.

9.1.4

Be fully responsible for the identity, conduct and integrity of the personnel/workers engaged by them for carrying out the contract work and ensure that none of them are ever engaged in any anti national activity

9.1.5

Prepare a signboard giving the following information and display it near work site:

- i) Name of Contractor
- ii) Name of Contractor Site-in-charge & Telephone number
- iii) Job Description in short
- iv) Date of start of job
- v) Date of expected completion
- vi) Name of BHEL Site-in-charge.

9.1.6

Abide by the rules and regulations existing during the contract period as applicable for the contractors at the Project premises.

9.1.7

Observe the timings of work as advised by BHEL Engineer-in-charge for carrying out the contract work.

9.2 SPECIAL CONDITIONS

9.2.1 Safety

Bharat Heavy Electricals Limited: PSWR: Nagpur

Tender Specs. No **BHE/PW/PUR/VNT-CRH/1121/OJ**

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9.2.1.1 **Safety Plan**

Before commencing the work, contractor shall submit a "safety plan" to the authorized BHEL official. The safety plan shall indicate in detail the measures that would be taken by the contractor to ensure safety to men, equipment, material and environment during execution of the work. The plan shall take care to satisfy all requirements specified hereunder.

The contractor shall submit "safety plan" before start of work. During negotiations, before placing of work order and during execution of the contract, BHEL shall have right to review and suggest modifications in the safety plan. Contractor shall abide by BHEL's decision in this respect.

9.2.1.2

The contractor shall take all necessary safety precautions and arrange for appropriate appliances and/or as per direction of BHEL or its authorized person to prevent loss of human lives, injuries to men engaged and damage to property and environment.

9.2.1.3

The contractor shall provide to his work force and also ensure the use of Personnel Protection Equipment (PPE) as found necessary and/or as directed and advised by BHEL officials without which permission is liable to be denied.

- Safety helmets conforming to IS 2925/1984 (1990)
- Safety belts conforming to IS 3521/1989
- Safety shoes conforming to IS 1989 part-II /1986(1992)
- Eye and face protection devices conforming to IS 2573/1986(1991), IS 6994 (1973), part-I (1991), IS 8807/1978 (1991), IS 8519/1977(1991).
- Other job specific PPEs of standard ISI make as may be prescribed

9.2.1.4

All tools, tackles, lifting appliances, material handling equipment, scaffolds, cradles, cages, safety nets, ladders, equipment, etc used by the contractor shall be of safe design and construction. These shall be tested and certificate of fitness 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 found to be unsafe.

9.2.1.5

All electrical equipment, connections and wiring for construction power, its 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 carryout all types of electrical works. All electrical appliances including portable electric tools used by the contractor shall have safe plugging system to source of power and be appropriately earthed.

9.2.1.6

The contractor shall not use any hand lamp energized 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.

9.2.1.7

The contractor shall adopt all fire safety measures as per relevant Indian Standards

9.2.1.8

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 provisions and/or storage in accordance with the rules and regulations laid down by the

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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 authorized BHEL official at the site.

9.2.1.9

Proper means of access must be used e.g. ladders, scaffolds, platforms etc. No makeshift access such as oil drums or pallets shall be used. Design of these will be in accordance with relevant standards and certified by competent persons before use.

9.2.1.10

Temporary arrangements made at Site for lifting, platforms, approach access etc should be properly designed and approved before being put to use.

9.2.1.11

All excavations and openings must be securely and adequately fenced/barricaded and warning signs erected when considered necessary as per relevant code of practice.

9.2.1.12

No persons shall remove guardrails, covers or protective devices unless authorized by a responsible supervisor and alternative precautions have been taken

9.2.1.13

Access ways, means of escape and fire exits shall be clearly marked, kept clear and unobstructed at all times

9.2.1.14

Only authorized persons holding relevant license will drive and operate site plant and equipments e.g. cranes, dumpers, excavators, transport vehicles etc

9.2.1.15

Only authorized personnel are allowed to repair, commission electrical equipments.

9.2.1.16

Gas Cylinders shall be handled and stored as per Gas Cylinders Rules and relevant safe working practices

9.2.1.17

All wastes generated at Site shall be segregated and collected in a designated place so as to prevent spillage/contamination/scattering at Site, until the waste is lifted for disposal to designated disposal area as advised by BHEL official.

9.2.1.18

The contractor shall arrange at his cost (wherever not specified) appropriate illumination at all work spots for safe working when natural day light is not adequate for clear visibility.

9.2.1.19

The contractor shall train adequate number of workers/supervisors for administering "FIRST AID". List of competent first aid administrators should be prominently displayed.

9.2.1.20

The contractor shall display at strategic places and in adequate numbers the following in fluorescent markings

➤Emergency telephone numbers

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- Exit, Walkways
- Safe working load charts for wire ropes, slings, D shackles etc
- Warning signs

9.2.1.21

The contractor shall be held responsible for any violation of statutory regulations (local, state or central) and BHEL instructions that may endanger safety of men, equipment, material and environment in his scope of work or other contractors or agencies. Cost of damage, if any, to life and property arising out of such violation of statutory regulations and BHEL instructions shall be borne by the contractor.

9.2.1.22

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.

9.2.1.23

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

9.2.1.24

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 payments due to the contractor after notifying the contractor suitably and giving him opportunity to present his case.

9.2.1.25

If the contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given a 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 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.

9.2.1.26

Emergency Response

BHEL will have an Emergency Response Plan for each Project Site in consultation with the Owner as the case may be, detailing the procedure for mobilization of personnel and equipment, and defining the responsibilities of the personnel indicated, in order to prepare for any emergency that may arise in order to ensure the priorities of

- Safeguard of life
- Protect assets under construction or neighbouring
- Protect environment
- Resumption of normal operations as soon as the emergency condition is called off

All Contractors shall also be part of the Emergency response Plan and the personnel so nominated shall be aware of their duties and responsibilities in an emergency response situation.

9.2.1.27

At least 5% Contractors supervisors and workmen shall undergo training in administering 'First Aid'. The trained persons should represent for all categories of work and for all areas of work. Adequate number of

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trained persons should be available for each shift. These first aides shall be included in the emergency response team. Contractor employees and workmen are encouraged to participate in first aid training programmes whenever organized by BHEL.

9.2.2 OCCUPATIONAL HEALTH

9.2.2.1

Specific occupational health hazards will be identified through the hazard evaluation processes in consultation with BHEL engineers and the necessary prevention/reduction/elimination methods implemented.

9.2.2.2

All personnel working in an activity with a potential risk to health shall be made aware of all those risks and the actions they must take to reduce/control/eliminate the risk

9.2.2.3

Safety coordinator shall conduct periodic checks to ensure that every group of workers engaged in similar activities are aware of potential risks to health and the actions required to be taken to mitigate the risk

9.2.2.4

In order to protect personnel from associated health hazards, the following main areas will be focused

- Issue of approved Personnel Protective Equipment
- Verification that the PPE are adequate/maintained and worn by all staff involved in operations that are potentially hazardous to their health
- Ensure that the personnel deployed are physically fit for the operation/work concerned
- Provide hygienic and sanitary working conditions

9.2.2.5

Contractor workers employees engaged in noise risk areas shall be issued with hearing protection aids and the use of the same will be enforced. Further, these workers will be educated on the hazards of noise

9.2.2.6

Contractor workers engaged in dust environment shall be issued with necessary dust protection aids and the use of the same shall be enforced

9.2.2.7

Workers engaged in exposure to bright light/rays as in welding or radiation shall be issued with eye protection devices and the use of the same shall be enforced

9.2.2.8

Adequate arrangements shall be made to provide safe drinking water

9.2.2.9

Health monitoring records on at least sample basis for contractor employees & workmen shall be maintained for persons engaged in specified categories of work. These shall include

- Noise induced hearing loss
- Lung Function test
- Ergonomic Test
- Eye Test for Welders, Grinders, Drivers etc

9.2.3.0 HYGIENE and HOUSEKEEPING

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9.2.3.1

Good house keeping and proper hygiene is one of the key requirements of Occupational Health Safety and Environment management. Towards this the contractor shall encourage his workers and supervisors to maintain cleanliness in their area of work.

9.2.3.2

The Contractor shall arrange to place waste bins/chutes at convenient locations for the collection of scrap and other wastes. The bins shall be clearly marked and segregated for metal, non-metal, hazardous and non hazardous wastes.

9.2.3.3

BHEL may take up appropriate remedial measures at the cost of the contractors if the contractors fail in good house keeping and if there is an imminent risk of pollution

9.2.4 ENVIRONMENT MANAGEMENT

9.2.4.1

BHEL has a sound environmental management system, which is to be maintained and implemented by all the contractors. The system allows for project specific objectives to be set and developed sensitive to client requirements, applicable environmental legislation and BHEL's own objectives and policy. BHEL engineers will assess and monitor the environmental impact of their work and lay out objectives for their minimization. The contractors shall implement the objectives for continual improvement of environmental performance. BHEL shall regularly audit environmental impacts and their improvements.

9.2.4.2 WASTE MANAGEMENT

9.2.4.3.1

The objective of waste management is to ensure the safe and responsible disposal of waste, ensuring that it is correctly disposed of and being able to audit the process to ensure compliance.

9.2.4.3.2

Chemical wastes if any shall be collected separately and disposed of to BHEL designated refuse yard as per BHEL advice.

9.2.4.3.3

No dangerous chemicals, noxious waste products or materials will be disposed off on or off site without approval obtained through BHEL.

9.2.4.3.4

All disposal of wastes generated during construction shall be in accordance with all relevant legislation.

9.2.4.3.5

Acid and alkali cleaning wastes shall be neutralized to acceptable norms before disposal to the designated area.

9.2.4.3.6

All necessary measures shall be taken to ensure safe collection and disposal of waste oils. In particular to ensure the prevention of their discharge into surface waters, ground waters, coastal waters or drainages

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9.3 SUPERVISION

9.3.1

Contractor must provide at least one full time on site safety coordinator when the manpower engaged is in excess of 50 for the contract activities in the premises. If the manpower is less than 50, the on site safety coordination responsibilities shall be assumed by any one of the contractor's other supervisory staff; however in both the cases, the contractor must specify in writing the name of such persons to the BHEL Engineer in Charge.

9.3.2

Contractor's safety coordinator or his supervisor responsible for safety as the case may be shall conduct at his work site, and document formal safety inspection and audits at least once in a week. Such documents are to be submitted to BHEL Engineer in Charge for his review and record.

Contractor, supervisor must attend all schedule safety meetings as would be intimated to him by the BHEL Engineer in Charge.

9.3.3

Before starting work under any contract, the contractor must ensure that a job specific safety procedures/field practices as required over and above the safety permit conditions are prepared and followed. He should also ensure that all supervisors and workers involved understand and follow this procedures /field practices.

9.3.4

Contractor must ensure that in his work site appropriate display boards are put displaying signs for site safety, potential hazards and precautions required.

9.4.0 TRAINING & AWARENESS

9.4.1

Contractor shall deploy experienced supervisors and other manpower who are well conversant with the safety and environment regulations of the Project. The electricians to be deployed on the job should have wireman license.

9.4.2

All Supervisors & Workmen of the Contractor shall undergo Fire safety training/ demonstration whenever arranged by BHEL with the help of either Customer's Fire and Safety department or outside faculty so as to acquire knowledge of fire prevention and also to be able to make use of appropriate fire extinguishers.

9.4.3

Contractor must familiarize himself from BHEL Engineer in Charge about all known potential fire, explosion or toxic release hazards related to the contract. He in turn will ensure that same information has been passed to the supervisors and workmen

9.4.4

Contractor must ensure that all his supervisors are properly trained and each employee has received and understood from his supervisor necessary training and briefing about the safety requirement. Necessary document as a means to verify that employees have understood the training is to be maintained.

9.4.5

The contractor supervisors shall also give a small safety briefing to all the workmen under his charge before undertaking any new work and specially understand the safety requirements that are mandatory.

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9.5.0 REPORTING

9.5.1

The contractor shall submit report of all accidents, fires and property damage, dangerous occurrences to the authorized BHEL official immediately after such occurrence but in any case not later than twelve hours of the occurrence. Such report shall be furnished in the manner prescribed by BHEL and also to meet statutory requirement.

9.5.2

Any injury sustained by any of the contractor's employees within the Project premises must be reported to BHEL supervisor and FIRST AID should be immediately administered. The Contractor shall be responsible for keeping and maintaining proper records of Accidents to his personnel.

9.5.3

Contractor must arrange to immediately investigate, properly document and report any injury, accident or near miss involving any of his employees and take appropriate follow up action. He must furnish within 12 hours of the incident a written report to BHEL Engineer in charge and the Safety Section.

9.5.4

According to the Factory Act and the Employees state Insurance Act & regulation, any person sustaining any injury within the project premises and absenting himself from work for more than 46 hours, his accident report has to be sent to the respective Government Authorities. Therefore contractor shall inform the owner's representative such matter immediately for their needful action.

9.5.5

In addition, contractor shall submit periodic reports on safety to the authorised BHEL official from time to time as prescribed.

9.5.6

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.

9.6 AUDIT REVIEW AND INSPECTION

9.6.1

BHEL shall conduct audit on the contractor performance and compliance with the project specific requirements of the Environment and Occupational Health & Safety Management systems. The programme of audit shall cover all activities under the contract but will focus particularly on high-risk activities. The Construction Manager shall decide the schedule of audit. The audit findings shall be communicated to the contractors and necessary remedial action as advised by BHEL Engineers shall be under taken within the stipulated time.

9.6.2

Inspections shall be carried out regularly by the contractors and by BHEL Engineers on activities, facilities, equipment, documentation, to cover the following aspects.

- Compliance with procedures and systems
- Availability, condition and use of PPE
- Condition of maintenance tools, equipments, facilities
- Availability of fire fighting equipments and its condition

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- Use of fire fighting equipments and first aid kit
- Awareness of occupational health hazard
- Awareness of safe working practices
- Presence of quality supervision
- Housekeeping

The Safety coordinator shall visit and inspect work sites daily. All unsafe acts, unsafe conditions that have imminent potential for causing harm/injury/damage will be immediately corrected. He shall maintain a daily logbook giving details of unsafe acts or conditions observed and the corrective action taken and recommendations for preventing recurrence. Adequacy of corrective actions will be verified

The contractor shall take remedial measures as per the findings of each inspection
Besides the above, the contractor shall be required to carry out the following inspections

Sl no	Equipment	Scope of inspection	Inspection by	Schedule
1	Hand tools	To identify unsafe/defective tool	User	Daily
2	Power tools	To identify unsafe/defective tool	User	Daily
3	Fire Extinguishers	To check pressure and any defect	User / Safety Coordinator	Daily Every month
4	Lifting equipment/tackles	To check for defects and efficacy of brakes	User Third party	Daily Every Year
5	PPE	To check for defects	User	Daily

9.7 NON COMPLIANCE:-

9.7.1

NONCONFORMITY OF SAFETY RULES AND SAFETY APPLIANCES WILL BE VIEWED SERIOUSLY AND THE BHEL HAS RIGHT TO IMPOSE FINES ON THE CONTRACTOR AS UNDER **for every instance of violation noticed:**

Sl. No.	Instance of Violation	Fine (in Rs)
01	Not Wearing Safety Helmet	50/-
02.	Not wearing Safety Belt	100/-
03.	Grinding Without Goggles	50/-
04.	Not using 24 V Supply For Internal Work	500/-
05.	Electrical Plugs Not used for hand Machine	100/-
06.	Not Slings property	200/-
07.	Using Damaged Sling	200/-
08.	Lifting Cylinders Without Cage	500/-
09.	Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.	200/-
10.	Not Removing Small Scrap From Platforms	200/-
11.	Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting	200/-

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Sl. No.	Instance of Violation	Fine (in Rs)
12.	Not Maintaining Electric Winches Which are Operated Dangerously	500/-
13.	Improper Earthing Of Electrical T&P	500/-
	Major Accident or Accidents causing partial loss of earning to the victim	50,000/- per victim
14	Fatal Accident or Accidents causing permanent loss of earning to the victim	1,00,000/- per victim

Any other non-conformity noticed not listed above will also be fined as deemed fit by BHEL. The decision of BHEL engineer is final on the above. The amount will be deducted from running bills of the contractor. The amount collected above will be utilised for giving award to the employees who could avoid accident by following safety rules. Also the amount will be spent for purchasing the safety appliances and supporting the safety activity at site.

9.8

CITATION:-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

9.9

Memorandum of Understanding

After Award Of Work, Contractors Are Required To Enter Into A Memorandum Of Understanding As Given Below:

Memorandum of Understanding

BHEL, PSWR is committed to Health, Safety and Environment Policy (EHS Policy) as given in the booklet titled "Safe Working Practices" issued to all contractors.

M/s _____ do hereby also commit to the same EHS Policy while executing the Contract Number _____

M/s _____ shall ensure that safe work practices not limited to the above booklet are followed by all construction workers and supervisors. Spirit and content therein shall be reached to all workers and supervisors for compliance.

BHEL will be carrying out EHS audits twice a year and M/s _____ shall ensure to close any non-conformity observed/reported within fifteen days.

Signed by authorized representative of M/s-----

Name :

Place & Date:

9.10

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Comprehensive list of National Standards for reference and use wherever applicable in the execution of Civil, Erection and Commissioning Contracts.

IS No	YEAR	Amd upto	DESCRIPTION
IS 10204	1982		PORTABLE FIRE EXTINGUISHERS MECHANICAL FOAM TYPE
IS 10245	1994		SPECIFICATION FOR BREATHING APPARATUS
IS 10291	1982		SAFETY CODE FOR DRESS DRIVERS IN CIVIL ENGINEERING WORKS
IS 10658	1983		HIGHER CAPACITY DRY POWDER FIRE EXTINGUISHERS (TROLLEY MOUNTED)
IS 10662	1992		COLOUR TELEVISION
IS 10667	1983		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF FOOT AND LEG
IS 11037	1984		ELECTRONIC FAN REGULATORS
IS 11057	1984		INDUSTRIAL SAFETY NETS
IS 11451	1998		RECOMMENDATION FOR SAFETY AND HEALTH REQUIREMENT RELATING TO OCCUPATION EXPOSURE TO ASBESTOS
IS 1169	1967		PEDESTAL FANS
IS 1179	1967		SPECIFICATION FOR EQUIPMENT FOR EYE AND FACE PROTECTION DURING WELDING
IS 11833	1986		DRY POWDER FIRE EXTINGUISHERS FOR METAL FIRES
IS 11972	1987		CODE OF PRACTICE FOR SAFETY PRECAUTION TO BE TAKEN WHEN ENTERING A SEWAGE SYSTEM
IS 1287	1986		ELECTRIC TOASTER
IS 13063	1991		STRUCTURAL SAFETY OF BUILDINGS ON SHALLOW FOUNDATIONS ON ROCKS
IS 13385	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE WHEEL MOUNTED WATER TYPE (GAS CARTRIDGES)
IS 13386	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE MECHANICAL FOAM TYPE
IS 13415	1992		CODE OF SAFETY FOR PROTECTIVE BARRIERS IN AND AROUND BUILDINGS
IS 13416	1992		RECOMMENDATIONS FOR PREVENTIVE MEASURES AGAINST HAZARDS AT WORKING PLACE PART 1 TO PART 5
IS 13430	1992		CODE OF PRACTICE FOR SAFETY DURING ADDITIONAL CONSTRUCTION AND ALTERATION TO EXISTING BUILDINGS
IS 13849	1993		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CONSTANT PRESSURE)
IS 1446	1985		CLASSIFICATION OF DANGEROUS GOODS (FIRST REVISION)
IS 1476	1979		REFRIGERATORS
IS 1641	1988		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): GENERAL PRINCIPLES OF FIRE GRADING AND CLASSIFICATION
IS 1642	1989		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS- DETAILS OF CONSTRUCTION
IS 1643	1988		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): EXPOSURE HAZARD
IS 1646	1997		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): ELECTRICAL INSTALLATIONS
IS 1904	1986		CODE OF PRACTICE FOR DESIGN AND CONSTRUCTION OF FOUNDATIONS IN SOIL
IS 1905	1987		STRUCTURAL SAFETY OF BUILDINGS MASONARY WALLS
IS 2082	1985		ELECTRICAL GEYSERS

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IS No	YEAR	Amd upto	DESCRIPTION
IS 2171	1985		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CARTRIDGE)
IS 2309	1989		PRACTICE FOR THE PROTECTION OF BUILDINGS AND ALLIED BUILDINGS AGAINST LIGHTENING
IS 2312	1967		EXHAUST FANS
IS 2361	1994		SPECIFICATION FOR BUILDING GRIPS - FIRST REVISION
IS 2418	1977		TUBULAR FLUORSCENT LAMPS IS 2418 (FT-1)
IS 2750	1964		STEEL SCAFFOLDINGS
IS 2762	1964		SAFE WORKING LOADS IN KGS FOR WIRE ROPE SLINGS
IS 2878	1986		FIRE EXTINGUISHERS CARBON DIOXIDE TYPE (PORTABLE AND TROLLEY MOUNTED)
IS 2925	1984		SPECIFICATION FOR INDUSTRIAL SAFETY HELMETS
IS 3016	1982		CODE OF PRACTICE FOR FIRE PRECAUTIONS IN WELDING AND CUTTING OPERATIONS- FIRST REVISION
IS 3315	1974		DESERT COOLERS
IS 3521	1989		INDUSTRIAL SAFETY BELTS AND HARNESS
IS 368	1983		IMMERSION WATER HEATERS
IS 3696	1991		SAFETY CODE OF SCAFFOLDS AND LADDERS PART 1 TO 2
IS 3737	1996		LEATHER SAFETY BOOTS FOR WORKERS IN HEAVY METAL INDUSTRIES
IS 374	1979		CEILING FANS INCLUDING REGULATORS
IS 3764	1992		EXCAVATION WORK - CODE OF SAFETY
IS 3786	1983		METHOD FOR COMPUTATION OF FREQUENCY AND SEVERITY RATES FOR INDUSTRIAL INJURIES AND CLASSIFICATION OF INDUSTRIAL ACCIDENTS
IS 3935	1966		CODE OF PRACTICE FOR COMPOSITE CONSTRUCTION
IS 4014	1967		CODE OF PRACTICE FOR STEEL TUBULAR SCAFFOLDING
IS 4081	1986		SAFETY CODE FOR BLASTING AND RELATED DRILLING OPERATIONS
IS 4082	1977	1996	STACKING AND STORAGE OF CONSTRUCTION MATERIALS AND COMPONENTS AT SITE
IS 4130	1991		DEMOLITION OF BUILDINGS - CODE OF SAFETY PART 1 TO 2
IS 4138	1977		SAFETY CODE FOR WORKING IN COMPRESSED AIR (FIRST REVISION)
IS 4155	1966		GLOSSARY OF TERMS RELATING TO CHEMICAL AND RADIATION HAZARDS AND HAZARDOUS CHEMICALS
IS 4209	1967		CODE OF SAFETY FOR CHEMICAL LABORATORY
IS 4250	1980		FOOD MIXERS
IS 4262	1967		CODE OF SAFETY FOR SULFURIC ACID
IS 4756	1978		SAFETY CODE FOR TUNNELING WORK
IS 4912	1978		SAFETY REQUIREMENTS FOR FLOOR AND WALL OPENINGS, RAILINGS AND TOE BOARDS
IS 5121	1969		SAFETY CODE FOR PILING AND OTHER DEEP FOUNDATIONS
IS 5182	1969	1982	METHODS FOR MEASUREMENT OF AIR POLLUTION
IS 5184	1969		CODE OF SAFETY FOR HYDROFLUORIC ACID
IS 5216	1982	2000	RECOMMENDATIONS ON SAFETY PROCEDURES AND PRACTICE IN ELECTRICAL WORK PART I AND II
IS 555	1979		TABLE FANS

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IS No	YEAR	Amd upto	DESCRIPTION
IS 5557	1995		INDUSTRIAL AND SAFETY LINED RUBBER BOOTS (SECOND REVISION)
IS 5916	1970		SAFETY CODE FOR CONSTRUCTION INVOLVING USE OF HOR BITUMINOUS MATERIALS
IS 5983	1980		SPECIFICATION FOR EYE PROTECTORS - FIRST REVISION
IS 6234	1986		PORTABLE FIRE EXTINGUISHERS WATER TYPE (STORED PRESSURE)
IS 692	1994		CRITERIA FOR SAFETY AND DESIGN OF STRUCTURES SUBJECTED TO UNDERGROUND BLASTS
IS 6994	1973		SPECIFICATION FOR SAFETY GLOVES
IS 7155	1986		CODE OF RECOMMENDED PRACTICE FOR CONVEYOR SAFETY (PART 1 TO 8)
IS 7205	1974		SAFETY CODE FOR ERECTION OF STRUCTURAL STEEL WORK
IS 7293	1974		SAFETY CODE FOR WORKING WITH CONSTRUCTION MACHINERY
IS 7323	1994		GUIDELINES FOR OPERATIONS OF RESERVOIRS
IS 7812	1975		CODE OF SAFETY FOR MERCURY
IS 7969	1975		SAFETY CODE FOR HANDLING AND STORAGE OF BUILDING MATERIALS
IS 8089	1976		CODE OF SAFE PRACTICE FOR LAYOUT OF OUTSIDE FACILITIES IN AN INDUSTRIAL PLANT
IS 8091	1976		CODE OF PRACTICE FOR INDUSTRIAL PLANT LAYOUT
IS 8095	1976		ACCIDENTS PREVENTION TAGS
IS 818	1968	1997	CODE OF PRACTICE FOR SAFETY AND HEALTH REQUIREMENTS IN ELECTRIC AND GAS WELDING, AND CUTTING OPERATIONS
IS 8448	1989		AUTOMATIC LINE VOLTAGE CORRECTOR (STABILISER)
IS 8519	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR BODY PROTECTION
IS 8520	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR EYE, FACE AND EAR PROTECTION
IS 875	1987		STRUCTURAL SAFETY OF BUILDING: LOADING STANDARD PART 1 TO 5
IS 8807	1978		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF ARMS AND HANDS
IS 8978	1985		INSTANTANEOUS WATER HEATERS
IS 8989	1978		SAFETY CODE FOR ERECTION OF CONCRETE FRAMED STRUCTURES
IS 940	1989		PORTABLE FIRE EXTINGUISHERS WATER TYPE (GAS CARTRIDGE)
IS 9457	1980		SAFETY COLOURS AND SIGNS
IS 9679	1980		CODE OF SAFETY FOR WORK ENVIRONMENTAL MONITORING
IS 9706	1997		CODE OF PRACTICE FOR THE CONSTRUCTION OF AERIAL RPEWAYS FOR THE TRANSPORTATION OF MATERIAL
IS 9759	1981		GUIDELINES FOR DEWATERING DURING CONSTRUCTION
IS 9815	1989		SERVO MOTOR OPERATED LINE VOLTAGE CORRECTOR (SERVO STABILISER)
IS 9944	1992		RECOMMENDATIONS ON SAFE WORKING LOAD FOR NATURAL AND MAN-MADE FIBRE ROPE SLINGS
IS 996	1979		SINGLE PHASE ELECTRIC MOTORS
ISO 3873	1977		SAFETY HELMET

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10.0 : BREAK IN SERVICES DUE TO BREAKDOWN, ABSENCE OF OPERATING CREW ETC. : DISALLOWANCE OF RENTAL/ OFFSETTING OF LOST HOURS

10.1

The contractor shall ensure 100% availability of the services of crane. If however there is any breakdown of the crane, the services shall be restored at the earliest so as not to affect the work at project site. **Disallowance in monthly rental charges** shall be made towards non-availability of services of crane for any reasons whatsoever as under:

10.1.1 Individual Incidences of Breakdown

- a) **Up to 4 (Four) hours in a single incidence:** Single pro-rata basis.
- b) **Single Incidence stretching more than Four hours:** Single pro-rata basis up to 4 hours, followed by double pro-rata basis for duration exceeding four hours.

10.1.2 Cumulative Breakdown Duration in a Month

- a) **Up to 36 Hours in a Complete Calendar Month:** Single Pro-Rata basis.*
- b) **Exceeding 36 Hours in a Complete Calendar Month:** Single Pro-Rata basis up to 36 hours, followed by double pro-rata basis for duration exceeding 36 hours. *

*** In both the cases (10.1.2.a and 10.1.2.b) as above, the conditions regarding disallowance due to individual incidence of breakdown (10.1.1.a and 10.1.1.b) shall essentially be applicable irrespective of the Cumulative Duration in the month.**

10.1.3 For billing period less than one calendar month, the limit of 36 hours shall be pro-rated as 10% of the Hire Period in number of hours (e.g. Hire Period in hours = utilized number of days in the calendar month x 12 hours per day).

10.2

BHEL may also choose to utilize the services of the crane in extended hours or on holidays to offset the lost hours due to breakdown in lieu of disallowance as stipulated above. Construction Manager BHEL shall permit offsetting of lost hours only after the incidence of such breakdown and usually within the remaining period of the concerned calendar month of breakdown. Carrying forward to subsequent months shall be at the sole discretion of BHEL construction manager.

Offsetting shall be done with express prior permission of BHEL Construction Manager by availing the services in extended hours or on holiday's maximum up to the same number of hours lost due to breakdown irrespective of the total duration or single instance duration mentioned in earlier paragraphs. Depending on the actual project requirement, BHEL may opt to offset the lost hours due to breakdown either partly or fully. In the event of partial offsetting, disallowance as in relevant clause shall be applicable for the remaining lost hours.

10.3

In case there is a major breakdown of the crane, the contractor shall repair it or substitute with similar or higher capacity crane with BHEL's prior consent (regarding acceptability of the substitute) within 15 days. Failure to do so, shall entitle BHEL to arrange alternative at the risk and cost of contractor. Disallowance of rental charges shall be applicable in accordance with relevant clause.

11.0 MOBILISATION PERIOD

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Crane with crew complete in all respect shall reach project site & made available for BHEL's work after load test within **30 (Thirty)** days from BHEL's written deployment notice for respective crane.

12.0 SCOPE FOR MOBILISATION & DEMOBILISATION

Contractor shall arrange suitable capacity assist cranes and Tools & Tackles at the respective project site for unloading of crane sub-assemblies, components, assembly, dismantling/loading of the crane during mobilization & de-mobilization of crane. Contractor shall also arrange to and fro transportation, skilled manpower and consumables at his own cost.

13.0 DAILY LOG BOOK

The contractor shall maintain a logbook in duplicate giving full operation details, preventive maintenance and Breakdown records and obtain counter signature of BHEL Engineer in Charge on a daily basis. Original log sheets shall be submitted to BHEL at regular intervals as directed by BHEL and before submission of monthly bills.

14.0 REPAIR & MAINTENANCE COST

The cost of repairs arising during the operation should be borne by the contractor. Necessary manpower, fuel, lubricants, tools & tackles, assist cranes and spare parts shall be made available by the contractor as a normal scope to attend the breakdowns.

15.0 RELIEVERS FOR OPERATING CREW

In case any member of the operating crew proceeds on leave/ is absent, the contractor shall arrange alternative beforehand for continuation of work to meet BHEL's time-bound erection programme.

16.0 BOOM EXTENSION & REDUCTION

First assembly of the entire crane including required boom length, as decided by Construction Manager BHEL and dismantling for demobilization are in regular scope of these services.

For any in-between requirement of boom extension or reduction of the cranes at site, the manpower, tools and tackles required shall be provided by BHEL's erection agency free of charges. However the Contractor shall extend supervisory services of the operating crew for all such instances as necessary for BHEL. This duration shall be treated as services utilized and considered for payment of hire charges.

17.0 INSURANCE COVER FOR MEN & MATERIALS

The Contractor shall arrange necessary CPM Insurance cover with appropriate Third Party Liability cover for the cranes and WC/Personal Accident Policy as applicable for the O&M crew. If any accident/injury/loss occurs due to the operation of the crane/cranes, to any other persons/ public and the properties of BHEL/client/other agencies/third party, the contractor shall have to pay necessary compensation and other expense, so decided by the appropriate authorities.

BHEL/Client has obtained comprehensive Marine cum Erection All Risks Insurance Policy for the plant under installation and other assets of BHEL. Accidental loss/damage to these materials will be covered under this policy. Contractor shall arrange for necessary insurance cover for the assets owned by him.

18.0 ACCOMODATION & LOCAL CONVEYANCE

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Contractor has to make their own arrangement for accommodation, local transport and other amenities for their crew at project site.

19.0 FITNESS OF CRANE AS HEAVY LIFTING EQUIPMENT

Contractor shall arrange and submit fitness certificate of the assembled crane at site from the statutory authority as applicable.

20.0 LOAD TESTING AT SITE

BHEL will provide suitable load for carrying out the load test on assembled crane, however contractor shall arrange to & fro transportation of such test load within plant premises and return the same after completion of load test at their own cost. Depending upon the availability of load, the load test shall be conducted at the appropriate radius as applicable for a particular boom length as per crane load capacity chart.

21.0 GATE PASS FOR MEN & MATERIALS

Contractor shall arrange the entry/out gate pass for their crew and materials for which necessary documents will be forwarded by BHEL to the client. Contractor shall maintain duly endorsed records of all incoming equipments to facilitate grant of outward gate pass.

22.0 LIQUIDATED DAMAGES : As per GCC

23.0 FUEL, LUBE AND HYDRAULIC OIL ETC.

Fuel oil (HSD) for normal operation of the crane shall be provided by BHEL/ BHEL's erection contractor after the services of the crane is accepted by BHEL after first load test till the services are being utilized by BHEL. Consumption of fuel shall be as indicated by the bidder in this offer (Technical Bid). Excess consumption, if any, due to inefficient engine performance, leakage, theft and other reasons attributable to the bidder/crane shall be on the bidders account. The bidder at his own cost shall arrange and meet the HSD required during breakdown maintenance.

Hydraulic oil, Engine Oil, Grease and all other lubricants and associated consumables e.g. filter elements etc have to be arranged by the contractor/bidder at his own cost. In case such or any consumables are arranged by BHEL, recovery at actual procurement cost plus overhead charges (Currently @30%) shall be recovered by BHEL.

24.0 HOLIDAYS AND OTHER BENEFITS:

Three national holidays shall be treated as holidays for the operation of this contract. In case services are availed on these days, the same will be treated as overtime.

Being an important power project construction work, erection activities are likely to be carried out on Sundays and other holidays as well. No extra payments are envisaged other than the rentals for such holidays as specified elsewhere herein. The rates quoted by bidders shall be inclusive of such considerations.

25.0 STATUTORY REQUIREMENTS

ESI & EPF as applicable shall be obtained by the Contractor within the quoted rates.

26.0 GENERAL

In case of any contradiction between "General Condition of Contract" & "Special Conditions of Contract" of this Tender Specification, the provisions of Special Condition of Contract shall prevail.

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In case of contradictions between Quoted Unit Rate and Total Amount, the quoted Unit Rate shall be taken as correct and total amount recalculated for the intended order quantity.

In case of contradictions between Rates in Figures and Rates Words, the lesser of the two shall be considered as correct.

Bidders are free to quote separate rates/prices in case alternative models/make of crane offered for a specific requirement. In case more than one such option is found technically acceptable for the same requirement, BHEL's choice for order will be based on the lowest (L-1) price of all such options. However, Contractor will be permitted to deploy other technically acceptable models within the ordered (L-1) price for the same requirement.

In case BHEL finds that any bidder has furnished incorrect information, the offer is liable for rejection.

26.0 SUSPENSION OF BUSINESS DEALING WITH CONTRACTORS

A bidder may be put on HOLD for a period of 6 months, for future tenders for specific works on the basis of one or more of the following reasons:

- I. Bidder does not honour his own offer or any of its conditions within the validity period.
- II. Bidder fails to respond against three consecutive enquires of BHEL.
- III. After placement of order, Bidder fails to execute a contract.
- IV. Bidder fails to settle sundry debt account, for which he is legitimately liable, within one year of its occurrence.
- V. Bidder's performance rating falls below 60% in specific category.
- VI. Bidder works are under strike/ lockout for a long period.

A Bidder may be de-listed from the list of registered Bidders of the region for a period of 1 year on the basis of one or more of the following reasons:-

- VII. Bidder tampers with tendering procedure affecting ordering process or commits any misconduct which is contrary to business ethics.
- VIII. Bidder has substituted, damaged, failed to return, short returned or unauthorizedly disposed off materials/ documents/ drawings/ tools etc of BHEL.
- IX. Bidder no longer has the technical staff, equipment, financial resources etc. required to execute the orders/ contracts.

A Bidder can be banned from doing any business with all Units of BHEL for a period of 3 years on the basis of one or more of the following reasons:

- X. Bidder is found to be responsible for submitting fake/ false/ forged documents, certificates, or information prejudicial to BHEL's interest.
- XI. In spite of warnings, the Bidder persistently violates or circumvents the provisions of labour laws/ regulations/ rules and other statutory requirements.
- XII. Bidder is found to be involved in cartel formation.
- XIII. The Bidder has indulged in malpractices or misconduct such as bribery, corruption and fraud, pilferage etc which are contrary to business ethics.
- XIV. The Bidder is found guilty by any court of law for criminal activity/ offences involving moral turpitude in relation to business dealings.

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- XV. The Bidder is declared bankrupt, insolvent, has wound up or been dissolved; i.e ceases to exist for all practical purposes.
- XVI. Bidder is found to have obtained Official Company information/ documentation by questionable means.
- XVII. Communication is received from the administrative Ministry of BHEL to ban the Bidder from business dealings.

INSTRUCTION FOR FILLING UP APPENDICES

Please note the following while filling up the Appendices.

- 1. Blank Formats for technical and other essential details of offered Crane/s are furnished in these Appendices. Bidder must fill up all the details and submit as part of Technical cum Commercial Bid. These details shall not be furnished with Price Bid.**
- 2. In case the Bidder offers alternative models for a particular requirement, they shall use copy of the relevant Appendix for furnishing these details for each alternative/option.**
- 3. Options must be clearly assigned identification numbers and indicated in the relevant space in the Appendix.**
- 4. Bidders shall furnish appropriate supporting documents duly furnishing cross-reference in the Appendices.**
- 5. In case of insufficient space in the Appendix, bidder shall use additional sheets in order to furnish complete information.**

APPENDIX-1

TECHNICAL DETAILS OF OFFERED HLHR CRAWLER CRANE REQUIRED FOR 1x500 MW NTPC VINDHYACHAL			
HLHR Crane:			
Option No. of (please indicate in 'X of Y' format)			
SN	DESCRIPTION	AS BEING OFFERED BY BIDDER	SUPPORTING DOCUMENT REFERENCE
1	NAME OF CRANE MANUFACTURER		
2	CRANE MODEL NO. <i>Crane shall not be more than 10 years old as on date of offer submission</i>		
3	MFG SL. NO. OF CRANE		
4	MAXIMUM RATED CAPACITY IN METRIC TONNES		
	WORKING RADIUS FOR MAX RATING		
5	FURNISH TECHNICAL/ TYPE OF BOOM CONFIGURATION & LOAD CHART SPECIFIC TO BOOM, WHICH SHALL BE PROVIDED. SPECIFY , WHETHER OFFERED CRANE IS WITH OR WITHOUT HEAVY LIFT ATTACHMENT WHAT IS THE MAXIMUM CAPACITY OF CRANE WITHOUT HLA		
6	TYPE OF MAIN & JIB BOOM OFFERED		
7	OFFERED LENGTH OF MAIN BOOM		
8	OFFERED LENGTH OF JIB		
9	LIFTING CAPACITY OF MAIN HOOK BLOCK IN MT		
10	LIFTING CAPACITY OF JIB (AUXILIARY) HOOK BLOCK IN MT		
11	WIDTH OF EACH CRAWLER ASSEMBLY		
12	COPY OF LATEST TEST CERTIFICATE		
13	CRANE LOAD CAPACITY CHART ENCLOSED		

Bharat Heavy Electricals Limited: PSWR: Nagpur

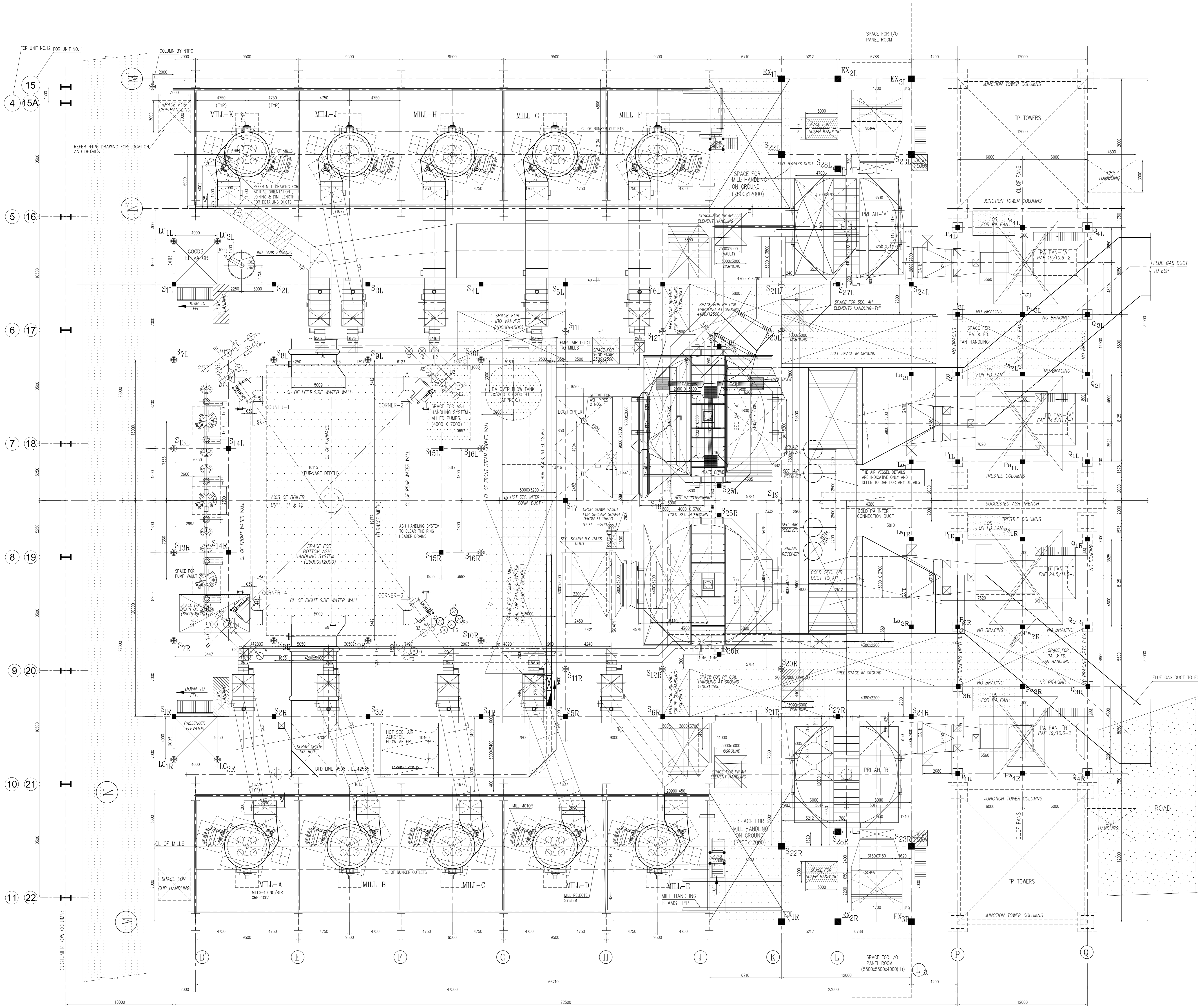
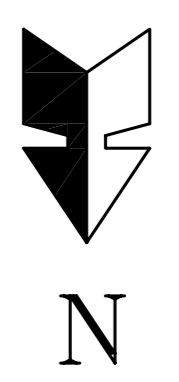
Tender Specs. No **BHE/PW/PUR/VNT-CRH/1121/OJ**

TECHNICAL DETAILS OF OFFERED HLHR CRAWLER CRANE REQUIRED FOR 1x500 MW NTPC VINDHYACHAL			
HLHR Crane: Option No. of (please indicate in 'X of Y' format)			
SN	DESCRIPTION	AS BEING OFFERED BY BIDDER	SUPPORTING DOCUMENT REFERENCE
14	CRANE PRODUCT CATALOGUE ENCLOSED		
15	DETAILS OF SAFETY FEATURES IN THE OFFERED CRANE		
16	CERTIFICATION OF "SAFE CONSTRUCTION EQUIPMENT" OF THE OFFERED CRANE FROM ANY REGULATORY AUTHORITY		
17	DIMENSION OF CRANE IN OPERABLE CONDITION (WITH SKETCH/DRAWING/PHOTOGRAPH)		
18	PRESENT LOCATION OF ENGAGEMENT OF THE OFFERED CRANE WITH CONTACT TELEPHONE NUMBERS AND ADDRESS		
19	SCHEDULE FOR DEPLOYMENT AT BHEL PROJECT SITE AS PER TENDER SPECIFICATION		
20	DEPLOYMENT HISTORY OF OFFERED CRANE IN LAST FIVE YEARS (INDICATING NAMES OF THE CUSTOMERS IN NEXT COLUMN, AND ENCLOSE COPY OF ORDERS AND COMPLETION CERTIFICATE AS REF DOCUMENTS	07-08 08-09 09-10 10-11 11-12	A) B) C) D) E)

SIGNATURE OF BIDDER WITH SEAL

Bharat Heavy Electricals Limited: PSWR: Nagpur

Tender Specs. No **BHE/PW/PUR/VNT-CRH/1121/OJ**

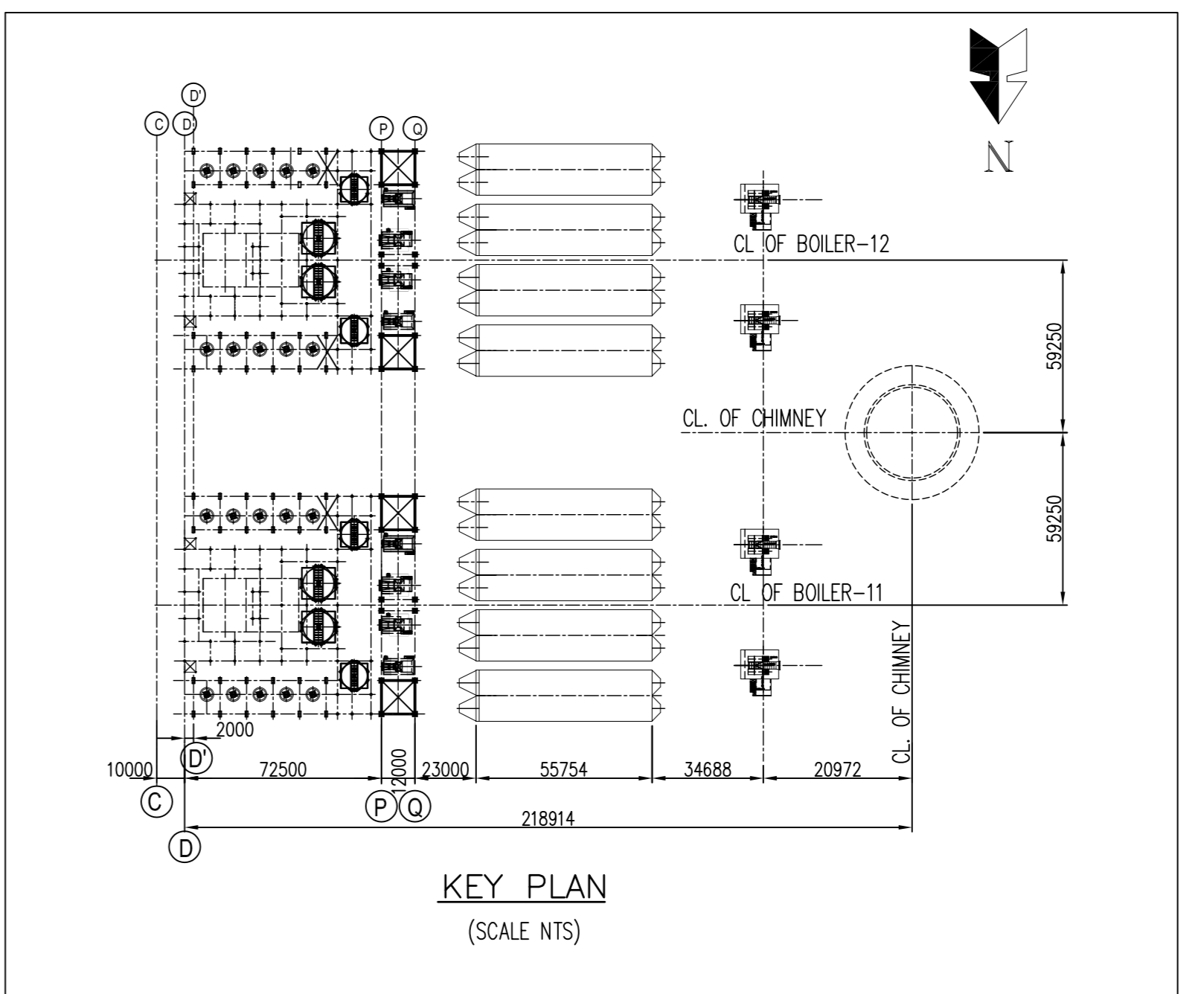
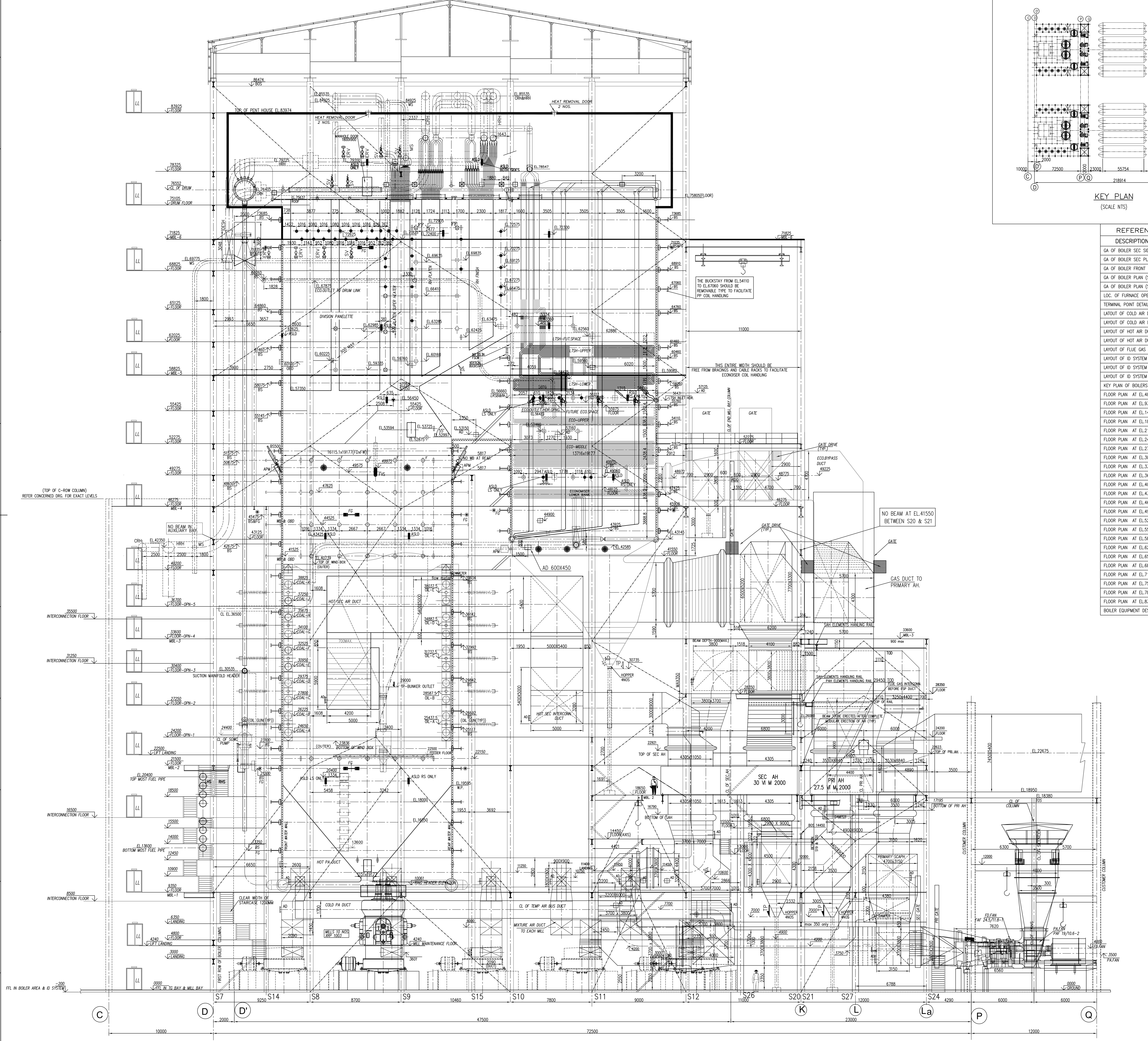


NOTES:-

1. THE CABLE RACK, PIPE RACKS AND ASH PIPES SHOULD NOT ENCRoACH IN TO THE HANDLING AREAS. THIS IS VALID FOR BOTH HORIZONTAL & VERTICAL HANDLING VAULTS. ERECTION AGENCY SHOULD INFORM THEIR SUB ERECTOR AND ALL OTHER ALLIANCE BODIES NOT TO ERECT ANY OTHER ELEMENTS IN HANDLING VAULTS OF PP COIL HANDLING, FD,PA,D FAN HANDLING, AH ELEMENTS HANDLING, MILL HANDLING AND ALL OTHER HANDLING SHOWN IN BOILER AREA. EVEN UNKNOWNLY ERECTED, THEN THOSE DEBRIS SHOULD BE REMOVED AT THEIR OWN COST AFTERWARDS.
2. THE FAN FOUNDATION AND CONFIGURATIONS ARE ONLY INDICATIVE & FOR EXACT SHAPE & SIZE REFER FAN FOUNDATION DRAWINGS.
3. ALL FAN ACTUATORS AND FOUNDATION SIZES SHALL BE TAKEN FROM CONCERNED FAN DRAWINGS AND SIDE OF LOCATION SHALL BE AS SHOWN IN THIS DRAWING.
4. THE SPACE FOR ASH HANDLING SYSTEM HAVE BEEN SHOWN. THE ACTUAL SYSTEM SHOULD NOT EXCEED THE VALUES INDICATED.
5. FOR THE DETAILS BEYOND LAST ROW OF COLUMNS, THE INDUCED DRAFT SYSTEM DRAWING MAY BE REFERRED. THIS IS VALID FOR ALL UNITS & IN BETWEEN CHIMNEY & BOILER.
6. REFER THE GA OF BOILER SEC.SIDE ELEVATION DRG. NO. 0-00-022-75006 FOR BOILER PARAMETERS, LEGEND, NOTES, REFERENCE DRGS. & UNIT DESCRIPTION.

NTPC No. 2250-101-02-TR-PVM-B-001		CUSTOMER No. 0671,0672													
CUSTOMER NTPC LIMITED															
PROJECT VINDHYACHAL STPP STAGE - IV (2 X 500MW)															
STEAM GENERATOR WITH ELECTROSTATIC PRECIPITATOR PACKAGE															
BHARAT HEAVY ELECTRICALS LTD BOILER PLANT UNIT TIRUCHIRAPPALLI-620014		<table border="1"> <thead> <tr> <th>NAME</th> <th>SIGN</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DRN</td> <td></td> <td>15-04-09</td> </tr> <tr> <td>CHD</td> <td></td> <td>15-04-09</td> </tr> <tr> <td>APFD</td> <td></td> <td>15-04-09</td> </tr> </tbody> </table>		NAME	SIGN	DATE	DRN		15-04-09	CHD		15-04-09	APFD		15-04-09
NAME	SIGN	DATE													
DRN		15-04-09													
CHD		15-04-09													
APFD		15-04-09													
TITLE GENERAL ARRANGEMENT OF BOILER SECTIONAL PLAN (SECTION - AA)															
DRAWING No. _____	SCALE 1:125	DRAWING No. _____	REV _____												
SHEET 01 of 03	PROJECTION	0-00-022-75007 00													

CAUTION: THE DRAWING IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. NO PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LTD. EXCEPT WHERE PROVIDED FOR AGREEMENT WITH SAID COMPANY.



KEY PLAN
(SCALE NTS)

DESCRIPTION	DRAWING NO
GA OF BOILER SEC SIDE ELEVATION	0-00-022-75006
GA OF BOILER SEC PLAN (SEC AH)	0-00-022-75007
GA OF BOILER FRONT ELEVATION	0-00-022-75008
GA OF BOILER PLAN (SEC BB&CC)	0-00-022-75009
GA OF BOILER PLAN (SEC DD)	0-00-022-75010
LOC. OF FURNACE OPENINGS & BUCKSTAYS	0-00-020-75036
TERMINAL POINT DETAILS OF MS, CRH, JHR, & F/W PIPING	0-00-020-75034
LAYOUT OF COLD AIR DUCTING - ELEVATION	0-00-020-75030
LAYOUT OF COLD AIR DUCTING - PLAN	0-00-020-75031
LAYOUT OF HOT AIR DUCTING - ELEVATION	0-00-020-75032
LAYOUT OF HOT AIR DUCTING - PLAN	0-00-020-75033
LAYOUT OF FLUE GAS DUCTING	0-00-020-75037
LAYOUT OF ID SYSTEM - ELEVATION	0-00-020-75027
LAYOUT OF ID SYSTEM - PLAN (UNIT-11)	0-00-020-75028
LAYOUT OF ID SYSTEM - PLAN (UNIT-12)	0-00-020-75029
KEY PLAN OF BOILERS	0-00-020-75026
FLOOR PLAN AT EL.4800	0-00-021-75011
FLOOR PLAN AT EL.9350 (MBL - 1)	0-00-021-75012
FLOOR PLAN AT EL.14450	0-00-021-75013
FLOOR PLAN AT EL.18650 (MBL - 2)	0-00-021-75014
FLOOR PLAN AT EL.21500 (MBL - 2)	0-00-021-75015
FLOOR PLAN AT EL.24200	0-00-021-75016
FLOOR PLAN AT EL.27250	0-00-021-75017
FLOOR PLAN AT EL.30400	0-00-021-75018
FLOOR PLAN AT EL.33600 (MBL-3)	0-00-021-75019
FLOOR PLAN AT EL.36700	0-00-021-75020
FLOOR PLAN AT EL.40125	0-00-021-75021
FLOOR PLAN AT EL.43125	0-00-021-75022
FLOOR PLAN AT EL.46275 (MBL - 4)	0-00-021-75023
FLOOR PLAN AT EL.49275	0-00-021-75024
FLOOR PLAN AT EL.52275	0-00-021-75025
FLOOR PLAN AT EL.55425	0-00-021-75025
FLOOR PLAN AT EL.58825 (MBL - 5)	0-00-021-75026
FLOOR PLAN AT EL.62025	0-00-021-75027
FLOOR PLAN AT EL.65125	0-00-021-75028
FLOOR PLAN AT EL.68825	0-00-021-75029
FLOOR PLAN AT EL.71825 (MBL - 6)	0-00-021-75030
FLOOR PLAN AT EL.75105	0-00-021-75031
FLOOR PLAN AT EL.78325	0-00-021-75032
FLOOR PLAN AT EL.83925	0-00-021-75033
BOILER EQUIPMENT DESIGNATION	3-00-020-70142

- NOTES**
- THE CABLE RECK, PIPE RACKS AND ASH PIPES SHOULD NOT ENDOACH IN TO THE HANDLING AREAS. THIS IS VALID FOR BOTH HORIZONTAL & VERTICAL HANDLING VAULTS. SITE ERECTION AGENCY SHOULD INFORM THEIR SUB ERECTOR AND ALL OTHER ALLIANCE BODIES NOT TO ERECT ANY OTHER ELEMENTS IN HANDLING VAULTS OF PP COIL HANDLING, FD, P/D FAN HANDLING, AH ELEMENTS HANDLING, MILL HANDLING AND ALL OTHER HANDLING SHOWN IN BOILER AREA.
 - THE FAN FOUNDATION AND CONFIGURATIONS ARE ONLY INDICATIVE & FOR EXACT SHAPE & SIZE REFER FAN FOUNDATION DRAWINGS OF FANS/BAP.
 - ALL FAN ACTUATORS AND FOUNDATION SIZES SHALL BE TAKEN FROM CONCERNED FAN DRAWINGS AND SIDE OF LOCATION SHALL BE AS SHOWN IN THIS DRAWING.
 - FOR THE DETAILS BEYOND LAST ROW OF COLUMNS, LAYOUT OF SYSTEM DRAWING TO BE REFERRED. THIS IS VALID FOR ALL UNITS & IN BETWEEN CHIMNEY & BOILER.
 - ALL FURNACE OPENINGS ARE TO BE PROVIDED ON BOTH SIDES, OTHERWISE STATED.
 - ALL DUCT DIMENSIONS ARE INSIDE SIZES ONLY.
 - ALL INNER CORNERS OF DUCT TURNING ARE 300' CORNER ONLY, UNLESS OTHERWISE SPECIFIED.
 - THE GA SECTIONS ARE NAMED AS 'A', 'B', 'C' & 'D'. SECTION 'A' IS COMPOSITE WHICH SHOWS MILLS, AH, FANS & ALLIED DUCTING ABOVE AH AND CRITICAL PIPING. SECTION 'D' COVERS PIPING AND OTHER DETAILS ABOVE EL.42 M.

BOILER PARAMETERS:

MAXIMUM CONTINUOUS RATING	- 1590.0 t/h
PRESSURE OF SUPER HEATED STEAM	- 178 kg./SQ.cm(g)
TEMPERATURE OF SUPERHEATED STEAM	- 540°C
STEAM FLOW AT REHEATER OUTLET	- 1358.0 t/h
ENTRY PRESSURE OF REHEATED STEAM	- 45.02 kg./SQ.cm(g)
ENTRY TEMPERATURE OF REHEATED STEAM	- 337.5°C
EXIT PRESSURE OF REHEATED STEAM	- 42.37 kg./SQ.cm(g)
EXIT TEMPERATURE OF REHEATED STEAM	- 568°C
FEED WATER INLET TEMPERATURE	- 254.5°C

DESCRIPTION OF UNIT

SUB-CRITICAL, CONTROLLED CIRCULATION, SINGLE DRUM, RADIANT, DRY BOTTOM, SINGLE REHEAT, PULVERIZED COAL FIRED OUT DOOR, UTILITY UNIT, BALANCED DRAUGHT, CUT CORNER, 51 mm O.D. TUBES AT 63.5 mm CENTERS, WRAP AROUND BUCKSTAY SYSTEM.

TWO NOS OF EACH 500MW CAPACITY.

LEGEND

ALL THE OPENINGS SHOWN ARE APPLICABLE FOR BOTH THE SIDES UNLESS IT IS SPECIFICALLY WRITTEN.

	LRSB	LONG RETRACTABLE SOOT BLOWER
	FF	FUTURE LRSB WITH FLOOR IN ORIGINAL DESIGN
	WB	WALL BLOWER
	F	FUTURE WALL BLOWER
	TP	TEMPERATURE PROBE
	AD	ACCESS DOOR
	OBD	OBSERVATION DOOR
	TP	TERMINAL POINT UNDER SCOPE
	MBL	MAIN BRACE LEVEL
	WP	WORK POINT
	BS	BUCK STAY
	FG	FURNACE GUIDE AT AXIS OF BOILER
	FG	FURNACE GUIDE
	APM	ACOUSTIC PYRO METER OPENINGS
	WCAD	WATER COOLED ACCESS DOOR
	IN	INSTRUMENT INSERT
	FVS	FLAME VIEWING SYSTEM OPNG.
	ASLD	ACOUSTIC STEAM LEAK DETECTION SYSTEM OPNG.

JOB NO:	NTPC No. 2250-101-02-TR-PVM-B-002	CUSTOMER No. 0671&0672
STATUS:	CUSTOMER NTPC LIMITED	
DISTRIBUTION TO:	PROJECT STEAM GENERATOR WITH ELECTROSTATIC PRECIPITATOR PACKAGE	
No. OF SHEETS:	01	
DATE:	ALT:	CHD:
APPD:		

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DRN	NAME	SIGN	DATE
CHD	S. K. SINGH		11-04-09
APPD	S. K. SINGH		15-04-09
APPR	S. K. SINGH		15-04-09

BHARAT HEAVY ELECTRICALS LTD
BOILER PLANT UNIT
TIRUCHIRAPPALLI-620014

GENERAL ARRANGEMENT OF BOILER SECTIONAL SIDE ELEVATION

DRAWING No. 0-00-022-75006
SCALE 1:125
PROJECTION
SHEET 01 OF 01