

TENDER SPECIFICATION

SI No	Tender Specification Number	Unit Number & Project
1	BHE/PW/PUR/SAT-BLR/1140	Satpura TPS, MPPGCL-Sarni Unit # 8 , 210 MW

FOR

ANNUAL OVERHAULING OF BOILER PRESSURE PARTS & BOILER AUXILIARIES- FANS, BOWL MILLS, RC FEEDERS, ESP, DUCTS/DAMPERS AT U # 8 MPPGCL SATPURA TPS, MPPGCL –SARNI

VOLUME – I

CONSISTING OF:

- Notice Inviting Tender,
- Volume-IA : Technical Conditions of Contract,
- Volume-IB : Special Conditions of Contract,
- Volume-IC : General Conditions of Contract
- Volume-ID : Forms & Procedures



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

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Tender Specification Issue Details

TENDER SPECIFICATION

SI No	Tender Specification Number	Unit Number & Project
1	BHE/PW/PUR/SAT-BLR /1140	Satpura TPS, MPPGCL-Sarni. Unit # 8 210 MW

FOR

ANNUAL OVERHAULING OF BOILER PRESSURE PARTS & BOILER AUXILIARIES- FANS, BOWL MILLS, RC FEEDERS, ESP, DUCTS/DAMPERS AT U # 8 MPPGCL SATPURA TPS, MPPGCL –SARNI

EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR Refer Notice Inviting Tender

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

M/s.

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PLEASE NOTE:
THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

Bharat Heavy Electricals Limited

AGM (Purchase)

1140

NOTICE INVITING TENDER

Bharat Heavy Electricals Limited



Ref: BHE/PW/PUR/SAT-BLR/1140

Date: 24/05/2013

NOTICE INVITING TENDER (NIT)
**NOTE: BIDDER MAY DOWNLOAD FROM WEB SITES
OR
PURCHASE TENDERS FROM THIS OFFICE ALSO**

To

Dear Sir/Madam

Sub : NOTICE INVITING TENDER

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

1.0 Salient Features of NIT

S. NO	ISSUE	DESCRIPTION	
i	TENDER NUMBER	BHE/PW/PUR/SAT-BLR/1140	
ii	Broad Scope of job	ANNUAL OVERHAULING OF BOILER PRESSURE PARTS & BOILER AUXILIARIES- FANS, BOWL MILLS, RC FEEDERS, ESP, DUCTS/DAMPERS AT U # 8 MPPGCL SATPURA TPS, MPPGCL –SARNI	
iii	DETAILS OF TENDER DOCUMENT		
a	Volume-IA	<i>Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc</i>	<i>Applicable</i>
b	Volume-IB	<i>Special Conditions of Contract (SCC)</i>	<i>Applicable</i>
c	Volume-IC	<i>General Conditions of Contract (GCC)</i>	<i>Applicable</i>
d	Volume-ID	<i>Forms and Procedures</i>	<i>Applicable</i>
e	Volume-II	<i>Price Schedule (Absolute value).</i>	<i>Applicable</i>
iv	Issue of Tender Documents	24/05/2013	<i>Applicable/ Not applicable</i>
v	DUE DATE & TIME OF OFFER SUBMISSION	Date : 03/06/2013 , Time : 15.00 Hrs Place : <u>BHEL PS Regional office at :Nagpur</u> Tenders being submitted through representative shall be handed over to any of the following BHEL officials after making entry/registration at the reception:	<i>Applicable</i>

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		Pratish Gee Varghese/Engineer(Purchase) Saravana Kumar/Engineer(Purchase)	
vi	OPENING OF TENDER	Date : 03/06/2013 , Time : 16.00 Hrs Notes: (1) In case the due date of opening of tender becomes a non-working day, then the due date & time of offer submission and opening of tenders get extended to the next working day. (2) Bidder may depute representative to witness the opening of tender	Applicable
vii	EMD AMOUNT	Rs 2,00,000/- (Rupees Two Lakhs Only)	Applicable
viii	COST OF TENDER	Rs.2000/-	Applicable/Not Applicable
ix	LAST DATE FOR SEEKING CLARIFICATION	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	Applicable
x	SCHEDULE OF Pre Bid Discussion (PBD)		Applicable/Not applicable.
xi	INTEGRITY PACT & DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)	-----	Applicable/Not applicable.
xii	Latest updates	Latest updates on the important dates, Amendments, Correspondences, Corrigenda, Clarifications, Changes, Errata, Modifications, Revisions, etc to Tender Specifications will be intimated by Fax/E-mail. Bidders to keep themselves updated with all such information	<u>Applicable</u>

- 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:

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- PART-I consisting of 'PART-I A (Techno Commercial Bid)' & 'PART-I B (EMD/COST of TENDER)' in two separate sealed and superscribed envelopes (ENVELOPE-I & ENVELOPE-II)
- PART-II (Price Bid) – in sealed and superscribed envelope (ENVELOPE-III)
- One set of tender documents shall be retained by the bidder for their reference

6.0 The contents for ENVELOPES and the superscription for each sealed cover/Envelope are as given below.
(All pages to be signed and stamped)

Sl no	Description	Remarks
	Part-I A	
	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. Note: <ol style="list-style-type: none"> 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. b. BHEL reserves the right to accept/reject the deviations without assigning any reasons, and BHEL decision is final and binding. <ol style="list-style-type: none"> i). In case of acceptance of the deviations, appropriate loading shall be done by BHEL ii). In case of unacceptable deviations, BHEL reserves the right to reject the tender 	
iii.	Supporting documents/ annexure/ schedules/ drawing etc as required in line with Pre-Qualification criteria. 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.	
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)	

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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		
	ENVELOPE – II superscribed as: PART-I (EMD/COST of TENDER) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:	
	CONTAINING THE FOLLOWING:-	
i.	1. Earnest Money Deposit (EMD) in the form as indicated in this Tender OR Documentary evidence for 'One Time EMD' with the Power Sector Region of BHEL floating the Tender 2. Cost of Tender (Demand Draft or copy of Cash Receipt as the case may be)	

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

OUTER COVER		
	ENVELOPE-IV (MAIN ENVELOPE / OUTER ENVELOPE) superscribed as: TECHNO-COMMERCIAL BID, PRICE BID & EMD TENDER NO: NAME OF WORK: PROJECT: DUE DATE OF SUBMISSION:	

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CONTAINING THE FOLLOWING:	
i	<ul style="list-style-type: none">○ Envelopes I○ Envelopes II○ Envelopes III

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

- 7.0 Deviation with respect to tender clauses and additional clauses/suggestions in Techno-commercial bid / Price bid shall NOT be considered by BHEL. Bidders are requested to positively comply with the same.
- 8.0 BHEL reserves the right to accept or reject any or all Offers without assigning any reasons thereof. BHEL also reserves the right to cancel the Tender wholly or partly without assigning any reason thereof. Also BHEL shall not entertain any correspondence from bidders in this matter (except for the refund of EMD).
- 9.0 Since the job shall be executed at site, bidders must visit site/ work area and study the job content, facilities available, availability of materials, prevailing site conditions including law & order situation, applicable wage structure, wage rules, etc before quoting for this tender. They may also consult this office before submitting their offers, for any clarifications regarding scope of work, facilities available at sites or on terms and conditions.
- 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 BHEL may decide holding of pre bid discussion [PBD] with all intending bidders as per date indicated in the NIT. The bidder shall ensure participation for the same at the appointed time, date and place as may be decided by BHEL. Bidders shall plan their visit accordingly. The outcome of pre bid discussion (PBD) shall also form part of tender.~~
- 12.0 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.
- 13.0 Unless specifically mentioned otherwise, bidder's quoted price shall deemed to be in compliance with tender including PBD.
- 14.0 Bidders shall submit Integrity Pact Agreement (Duly signed by authorized signatory who signs in the offer), **if applicable**, along with techno-commercial bid. This pact shall be considered as a preliminary qualification for further participation. **The names and other details of Independent External Monitor (IEM) for the subject tender is as given at point (1) above.**
- 15.0 The Bidder has to satisfy the Pre Qualifying Requirements stipulated for this Tender in order to be qualified. The Price Bids of only those bidders will be opened who will be qualified for the subject job on the basis of satisfying the Pre Qualification Criteria specified in this NIT as per Annexure-I (as applicable), past

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performance etc. and date of opening of price bids shall be intimated to only such bidders. BHEL reserves the right not to consider offers of parties under HOLD.

- 16.0 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.
- 17.0 Validity of the offer shall be for **Six Months** from the latest due date of offer submission (including extension, if any) unless specified otherwise.
- 18.0 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.
- 19.0 On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.
- 20.0 In case the bidder is an "Indian Agent of Foreign Principals", 'Agency agreement has to be submitted along with Bid, detailing the role of the agent along with the terms of payment for agency commission in INR, along with supporting documents.
- 21.0 The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.
- 22.0 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.
- 23.0 The bidder may have to produce original document for verification if so decided by BHEL.
- 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
 - d. Technical Conditions of Contract (TCC)—Volume-1A
 - e. Special Conditions of Contract (SCC) —Volume-1B
 - f. General Conditions of Contract (GCC) —Volume-1C
 - g. Forms and Procedures —Volume-1D

for BHARAT HEAVY ELECTRICALS LTD

AGM/Purchase

Enclosure

01. Annexure-1: Pre Qualifying criteria.
02. Annexure-2: Check List .
04. Annexure-4: Important Infor
05. Other Tender documents as per this NIT.

ANNEXURE - 1

PRE QUALIFYING REQUIREMENTS

JOB	ANNUAL OVERHAULING OF BOILER PRESSURE PARTS & BOILER AUXILIARIES- FANS, BOWL MILLS, RC FEEDERS, ESP, DUCTS/DAMPERS AT U # 8 MPPGCL SATPURA TPS, MPPGCL –SARNI
TENDER NO	BHE/PW/PUR/SAT-BLR/1140

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. Bidder must fill up this column as per applicability
A	Submission of Integrity Pact duly signed (if applicable) (Note: To be submitted by Prime Bidder & Consortium/Technical Tie up partner jointly in case Consortium bidding is permitted, otherwise by the sole bidder)	NOT APPLICABLE	
B	<p><u>Technical</u></p> <p>Bidder must have executed following works {i.e. Bidder must meet (B.1.1 or B.1.2 or B.1.3)} in the last seven (7) years as on latest date of bid submission:-</p> <p>B.1.1) Executed Erection, Testing & Commissioning of atleast one Boiler (Consisting of Pressure Parts, Structures/ESP and IBR Piping of the same Unit) of rating 200TPH or above.</p> <p style="text-align: center;">OR</p> <p>B.1.2) Executed Erection, Testing & Commissioning of ESP of a unit of 100MW or above & IBR Piping of 100 MT.</p> <p style="text-align: center;">OR</p> <p>B.1.3) Executed Annual Overhauling/Capital Overhauling of atleast One Boiler and ESP of a Unit of</p>	APPLICABLE	

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	210MW or above in a maximum of two orders		
C-1	<p><u>Financial TURNOVER</u> Bidders must have achieved an average annual financial turnover (Audited) of Rs. 71 Lakhs or more over last three Financial Years (FY) i.e. 2010-2011, 2011-2012, 2012-2013 if Annual Accounts for FY 2012-13 are audited or 2009-10,2010-2011 and 2011-2012 if Annual Accounts for FY 2012-13 are not audited.</p>	APPLICABLE	
C-2	<p>NETWORTH (only in case of Companies) Net worth of bidder based on latest Audited Accounts as furnished for 'C-1' above should be positive.</p>	APPLICABLE	
C-3	<p>PROFIT Bidder must have earned cash profit in any one of the three Financial Years as applicable in the last three years defined in 'C-1' above based on latest Audited Accounts.</p>	APPLICABLE	
D	Assessment of Capacity of Bidder to execute the work as per sl no 9 of NIT (if applicable)	NOT APPLICABLE	By BHEL
E	<p>Approval of Customer (if applicable)</p> <p>Note: Names of bidders (including consortium/Technical Tie up partners in case consortium bidding is permitted) who stand qualified after compliance of criteria A to D shall be forwarded to customer for their approval.</p>	NOT APPLICABLE	BY BHEL
F	<p>Price Bid Opening</p> <p>Note: Price Bids of only those bidders shall be opened who stand qualified after compliance of criteria A to E</p>	APPLICABLE	BY BHEL
G	Technical Tie up criteria (if applicable)	NOT APPLICABLE	
<p><u>Explanatory Notes for the PQR (unless otherwise specified in the PQR):</u></p> <ol style="list-style-type: none"> 1. Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as indicated against C-1 above along with all annexures 2. In case audited Financial statements have not been submitted for all the three years as indicated against C-1 above, then the applicable audited statements submitted by the bidders against the requisite three years, will be averaged for three years i.e total divided by three. 3. C-2:-NETWORTH : Shall be calculated based on the latest Audited Accounts as furnished for C-1 above. Net worth = Paid up share capital + Reserves. (Net worth is required to be evaluated in case of companies) 4. C-3:- PROFIT : shall be NET profit (PAT + Non cash expenditure viz depreciation) earned during any one of the three financial years as in C-1 above 5. 'Additional' Criteria in respect of 'Technical' criteria of PQR (as in 'B' above) for Civil, Electrical, CI, unless otherwise specified : <ol style="list-style-type: none"> 1. Bidder should have executed similar work of any one of the following: 			

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	<p>a. One (1) work of value not less than Rs XXX OR</p> <p>b. Two (2) works of not less than Rs YYY OR</p> <p>c. Three (3) works of not less than Rs ZZZ (Value XXX, YYY, ZZZ shall be as indicated by BHEL)</p> <p>2. 'Similar' work for criteria 5 above means</p> <p>a. Civil or Structures or Civil & Structures or Chimney respectively as applicable to the tendered scope in respect of 'CIVIL' Works</p> <p>b. Electrical works in respect of 'ELECTRICAL'</p> <p>c. CI works in respect of 'CI' Works</p> <p>d. Material Handling and/or Management works in respect of 'MM' works</p> <p>6. Time period for achievement of the 'Technical' criteria of PQR (as in 'B' above) will be the last 7 years ending on the 'latest date' of Bid submission</p> <p>7. 'EXECUTED' means the Vendor should have achieved the criteria specified in the Technical criteria of PQR (as in 'B' above) even if the Contract has not been completed or closed</p> <p>8. Unless otherwise specified, for the purpose of 'Technical' criteria of PQR (as in 'B' above), the word 'EXECUTED' means:</p> <ol style="list-style-type: none">1. "BOILER LIGHT UP" in respect of Boiler & Aux and ESP2. "SYNCHRONISATION" in respect of STG/GTG and 'SPINNING' in case of HTG3. "STEAM BLOWING COMPLETION" in respect of at least Main Steam Line of Power Cycle Piping4. "HYDRAULIC TEST" of the system in respect of Structures, Pressure parts/IBR Piping5. "CHARGING" in respect of power Transformers, Bus ducts, HT/LT switchgears6. "Completion of RCC Shell and liner (steel or brick as per tendered scope) up to the HEIGHT specified using slip form" in case of RCC Chimney.7. Achievement of physical Quantities as per respective PQRs in respect of Civil & Structures and Piling Works8. "Readiness for coal Filling" in respect of Bunker Structure Work. <p>9. Boiler means HRSG or WHRB or any other types of Steam Generator</p> <p>10. Critical/Power Cycle piping means Main Steam, Hot Reheat, Cold Reheat, HP Bypass, LP Bypass lines</p> <p>11. For the purpose of evaluation of the PQR, one MW shall be considered equivalent to 3.5TPH where ever rating of HRSG/BOILER is mentioned in MW. Similarly, where ever rating of Gas Turbine is mentioned in terms of Frame size, ISO rating in terms of MW shall be considered for evaluation.</p> <p>12. In case the experience/PO/WO certificate enclosed by bidders do not have separate break up prices for the E&C portion of Electrical and CI Works, (i.e. the certificates enclosed are for composite order for supply and erection of Electrical & CI and other works if any), then value of Erection and Commissioning for the Electrical & CI portion shall be considered as 15% of the supply & erection of Electrical & CI, unless otherwise specifically indicated in the PQR.</p> <p>13. Scope for capital overhaul of STG shall cover Bearing Inspection work and overhauling of all cylinders of the Turbine unless otherwise specifically indicated in the PQR.</p> <p>In case the tendered scope is not a Pulverised Fuel Boiler, experience of Oil/Gas Fired Boilers also can be considered unless otherwise specifically indicated in the PQR.</p>
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BIDDER SHALL SUBMIT ABOVE PRE-QUALIFICATION CRITERIA FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT INCLUSIVE OF WORK ORDER AND WORK COMPLETION CERTIFICATE ETC IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.

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ANNEXURE - 2

CHECK LIST

NOTE:- Tenderers are required to fill in the following details and no column should be left blank

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

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17	Tie Ups/Consortium Agreement are submitted as per format	Not Applicable	YES/NO
18	Power of Attorney for Submission of Tender/Signing Contract Agreement	Applicable	YES/NO
19	Analysis of Unit rates	Applicable	YES/NO

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

DATE :

AUTHORISED SIGNATORY
(With Name, Designation and Company seal)

ANNEXURE 4: IMPORTANT INFORMATION

1. The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site (www.bhel.com ---> Tender Notification -> List of Banned Firms)
2. All Statutory Requirements as applicable for this project shall be complied with.
3. Please take note of following Revised Tender Clauses:
 - i. General conditions of Contract: Clause No 1.15.13 (New), Clause No 2.8.3, 2.8.4 and 2.8.5

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TECHNICAL CONDITIONS OF CONTRACT (TCC)

BHARAT HEAVY ELECTRICALS LIMITED



TECHNICAL CONDITIONS OF CONTRACT (TCC) CONTENTS

SI No	DESCRIPTION	Chapter	No. OF PAGES
Volume-IA	Part-I: Contract specific details		
1	Project Information	Chapter-I	1
2.A	Scope of Works-Boiler	Chapter-II.A	6
2.B	Scope of Works-Non pressure parts	Chapter-II.B	11
3	Time Schedule	Chapter-III	1
4	T&Ps and MMEs to be deployed by Contractor	Chapter-IV	3
5	Manpower to be deployed by Contractor	Chapter-V	2
6	Terms of Payment	Chapter-VI	3
7	Taxes and other Duties	Chapter-VII	3
8	General	Chapter-VIII	3
9	Quality Requirements	Chapter-IX	1
10	Special Terms and Other Conditions	Chapter-X	4
11	Special inputs to be Provided by Contractor	Chapter-XI	11

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - I : PROJECT INFORMATION

1.0	Project Information
	<ol style="list-style-type: none">1) Purchaser : M/s Madhya Pradesh Power Generation Company Limited2) Project Title : AOH of Boiler Pressure Parts at U # 6 MPPGCL Satpura3) Project Location: Satpura, Dist: Betul, Madhya Pradesh, India.4) Transport facilities:<ol style="list-style-type: none">A) Nearest Railway Station: Ghodadongri on Nagpur Itarsi route. Ghodadongri is 71 Kms from Itarsi on the Itarsi – Betul State Highway.B) Road: Sarni/Satpura TPS is connected to Ghodadongri by 20 Km long all-weather district road.5) Nearest Airport: Nagpur / 200 Kms, Bhopal / 200 Kms

The Bidder shall visit site and get acquainted himself with the conditions prevailing at site before submission of the bid. The information given here in under are for general guidance and shall not be contractually binding on BHEL/ Owner. All relevant site data/information as may be necessary shall have to be obtained /collected by the Bidder.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.A-Scope of works (Boiler)

SCOPE OF WORK FOR AOH OF BOILER PRESSURE PARTS UNIT NO. 8 SATPURA

BRIEF SCOPE OF WORK:

- a. Overhaul of Boiler pressure parts
- b. Overhaul of Burner system
- c. Overhaul of Valves & actuators
- d. Replacement of complete bank of LTSH Coils

PRESHUT DOWN ACTIVITIES :-

1. Mobilization of site one week before the shutdown of the unit with adequate manpower and T&P for Erection of temporary structures/platforms, arrangement of electric winches, , Hydra, cranes, lifting & transporting equipment as required for dismantling & erection activities.

1. Identification/Verification of materials to be erected.
2. Arrangement of consumables like welding electrodes, filler wire, Argon, Oxy-acetylene gases, etc.
3. To obtain gates passes for staff & workers to be deployed for the job.
4. To obtain all required statutory approvals like labor license, safety training & insurance, etc.
5. Making arrangements for the stay of staff and workers at site.

Note: Bidders are advised to make a site visit to have on hand information about the prevailing site conditions and also accommodation arrangements for his manpower. may meet concerned MPPGCL officials at site in this regard.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.A-Scope of works (Boiler)

A. OVERHAULING OF BOILER PRESSURE PARTS ETC.

1. External cleaning of Boiler by Water Washing (Floor)
2. Erection of scaffolding in stages inside furnace up to roof radiant tube, SH, RH and 2nd pass area as required to cover all pressure parts area for external surface cleaning by high pressure water jet, inspection, D-metering and tube replacement of the Boiler wherever required. The cup lock /scaffolding should be with provisions of platforms, at every three to 3.5 meter with railing supports and stair case for easy access to tube /coils. Entire quick erection scaffolding material will be arranged by contractor. S-panel scaffolding should be fully covered to prevent falling of debris into hopper & to facilitate work inside bottom hopper. All scaffolding material are will be arranged by contractor. Safety nets to be provided at three elevations.
3. High pressure water jet (more than 100 Kg/cm²) cleaning of Boiler followed by wire brush & scrubber cleaning if surface is not properly cleaned high pressure water jet pump to be arranged by contractor. Checking of pressure parts for erosion /cracks or any other abnormality & replacement /rectification.
4. Dismantling, cleaning, inspection of drum internals, replacement /repairing of damaged components, Re-fixing and re-aligning and NDT & DPT Test of welding joints and other components and repair and rectification, Through cracking /cleaning of CBD line, chemical lines, sampling lines. Collection of drum deposits for testing. Before start of activity down comers to be covered to prevent ingress of foreign materials.
5. Through cleaning of bottom ring header by cutting their drain pipes and re-welding as per IBR.
6. Through checking of Eco, Steam cool wall header stub joint and rectification as per IBR.
7. Thickness survey of pressure parts tubes by De-metering. Thickness survey will have to be carried in the following erosion prone area after cleaning the surfaces by wire brush /buffing wheel.
8. Water Walls :
Burner transaction tubes, S-panel lower & upper bends & straight tubes. Goose neck bends, side wall bends straight portion near ring header, upper corner transition tubes, bends of peep & manhole, soot blower holes, hanger tubes, rear arch wall tube bends.
9. Platen water wall:
All bends & coils including straight portion checking and rectification and replacement as per requirement
10. SH/RH/PLATEN SH/FINAL SH :
Oxide scale measurement and hardness measurement of RH, Platen & Final SH tubes – 2500 points. Through de-metering /inspection and necessary replacement inside pent house header including straight portion and offset bends and dissimilar joints. All re-heater offset bend protection Sleeves to be fixed up. All stub of inlet /outlet header to be checked and if required to be replaced.
11. SCREEN TUBES :
Through de-metting of screen tubes (WW, SH) and replacement of defective tubes and replacement of all protection sleeves. After removal of existing Protection sleeves, all tubes to be thoroughly checked and replaced.
- 12.LTSH /SUPPLY TUBES & BENDS.:
All stubs to be thoroughly checked by DPT, UT and other modern method as per IBR. Replacement of all LTSH supply tubes bends and straight tubes. Through de-metering /inspection and necessary replacement / repair of bends facing flue gas path of LTSH including straight portion and bends and through inspection and joint in between LTSH and economizer hanger tube and rectification as per requirement.
- 13.STEAM COOLED WALL /SCREEN TUBE :
All stub joints of header No. 4L 4R, 5 and 8 are to be thoroughly checked by DPT, UT and other modern method as per IBR and rectification. All bends including offset bends and straight tubes and bends of

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.A-Scope of works (Boiler)

header if found eroded are to be replaced. Proper laying of refractory are to be applied in steam cool area and LTSH supply tube area.

14. STEAM COOLED SPACERS :

Spacer tube, straight portion and bends to be replaced.

15. WALL BLOWER AREA :

Water wall tubes around wall blowers for through de-metering and rectification and replacement if necessary.

16. RANDOM DP TEST & NDT :

For platen SH, Final SH & RH, Platen water wall header.

17. ROOF RADIANT TUBES :

Sagging portion of tubes are to be removed and new inserts are to be provided as required

18. Replacement of tubes based on inspection carried out. Replacement of tubes includes,

- a) Cutting, edge preparations, Cut edges of the tubes are to be properly covered to protect ingress of foreign material in the tubes. Covers for covering cut edges are to be fabricated by the contractor. Necessary material for fabrication of covers will be provided by MPPGCL. Fitting of tubes and offer for inspection before final welding.
- b) Welding of root by TIG and subsequent SMAW – Max 1500 HP Welding joints
- c) Fitting of Tangent /fins /wear bar and welding wherever applicable – Approx. welding 2500 mtrs.
- d) 100% Radiography for tubes repair if any and stress relieving as per IBR norms.
- e) Radiography of 2000 nos. of old approachable joints to be done in first week of overhaul. i.e. immediately after completion of scaffolding & cleaning of boiler.
- f) Above welding joints includes cutting / re welding for RLA purpose also. All cutting/welding/de-insulation/insulation for RLA purpose shall be in the scope of contractor.

19. Inspection of SH desuperheater assembly by opening hand hole plug and necessary repairing if required.

20. Replacement of Reheater desuperheater assembly. Necessary preheating and stress relieving

21. Replacement of damaged / worn out platen coil seal box, tie rod, crown plate & connected support in pent house. If any assembly is not available then it should be fabricated, from material available at site. Complete repairing of Pent House as per requirement , this include through repairing of structure / trusses / Beams above pent house Roof. Replacement of damaged corrugated G.I. sheet above the pent house and at other areas like AB/CD/EF elevation after due repairing of support channel beam etc. Workshop facilities as available will be provided by MPPGCL.

- a) Fabrication of H.P. tube bends by cold bending machine as per requirement. Contractor shall arrange bending machine.
- b) Replacement of waterwall soot blower line, SH drain lines, common drain header of spray drain, RH/SH spray drain line.
- c) Replacement of RH/SH spray drain line
- d) Measurement of bowing of furnace walls and necessary correction by replacement
- e) Inspection of cassette baffle, roof shield and erosion protection shield for Superheater screen tubes, water wall screen tubes, Superheater, Reheater and fixing the same if found missing /eroded.
- f) Checking of buck stay links and corner connections (supporting pins, gussets plates etc.), Seismic guides of down comers, furnace guides, leveler guides and their rectification as required, Checking of scalloped bars, stirrup plates of buck stay channels and repairing /replacement if necessary.
- g) De-insulation and re-insulation as required facilitating tube replacements, buck stay corrections, etc..
- h) Replacement of damaged insulation of boiler 1st & 2nd pass limited to 3000 Sqm. Insulating material, cladding etc. will be supplied by MPPGCL

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.A-Scope of works (Boiler)

- i) Recasting of damaged castable refractory in the boiler including bottom hopper limited to 50 MT. De-insulation and re-insulation of critical pipes like main steam. Hot and cold reheat, cold discharge line. Lines shall be limited to 1500 Sq. M.
- j) Checking /cleaning of sampling lines of main steam, hot /cold reheat, drum and rectification /replacement of the same.
- k) Replacement of Reheater desuperheater assembly. Necessary preheating and stress relieving
- l) Fabrication of H.P. tube bends by cold bending machine as per requirement. Contractor shall arrange bending machine.
- 17) Inspection of cassette baffle, roof shield and erosion protection shield for Superheater screen tubes, water wall screen tubes, Superheater, Reheater and fixing the same if found missing /eroded.
- 18) Checking of buckstay links and corner connections (supporting pins, gussets plates etc.), Seismic guides of down comers, furnace guides, leveler guides and their rectification as required, Checking of scalloped bars, stirrup plates of buckstay channels and repairing /replacement if necessary. Removal of insulation and re-insulation after necessary correction to be done.
- 19) De-insulation and re-insulation as required facilitating tube replacement.
- 20) Replacement of damaged insulation of boiler 1st & 2nd pass limited to 3000 Sq. M. Insulating material, cladding etc. will be supplied by MPPGCL .
- 20) Recasting of damaged castable refractory in the boiler including bottom hopper limited to 50 MT. Through inspection of hanger supports of headers in pent house and adjustment and rectification as required and repair of pent house including roof to achieve Zero leakage. De-insulation and re-insulation of critical pipes like main steam. Hot and cold reheat, cold discharge line. Lines shall be limited to 1500 Sq. M.
- 21) Checking /cleaning of sampling lines of main steam, hot /cold reheat, drum and rectification /replacement of the same.
- 22) Through inspection of hanger support of all headers and connecting pipes in pent house, cat house and dead chamber and their rectification /adjustment /replacement as required.
- 23) Through inspection of hanger of all critical piping like main steam, HRH, CRH and comers, feed lines and their rectification /adjustment /replacement as required. Hot & cold readings of above hangers are to be taken and adjustment of hangers to be done based on cold reading.
- 24) Assistance during Hydro-test. Installation of test plugs for hydro test and installation of disc in place of test plug after hydro test.
- 25) Removal of scaffolding after successful hydro-test.
- 26) Box up of boiler including boxing up of all manholes and peep holes by providing new seals and packings, rectification /replacement of peep holes if required.
- 27) Facilitate boiler directorate during dry inspection, execution of boiler pressure parts work and hydro test and connection with renewal of steaming license inspection charges to be borne by MPPGCL.
- 28) Repairing /replacement of bottom ash hopper woven wire mesh including trough seal checking and rectification as required and recasting of damaged refractory.
- 29) Provision for hanging scaffolding (Four numbers) at Roof Radiant will be done by Contractor.
- 30) Through Cleaning & repairing of pent house, Cat house, Dead Chamber & Economizer hoppers, APH hopper. Replacement of corrugated G.I. sheets of Roof of Pent House after due repairing of support channel beam etc.
- 31) Cleaning and removal of ash from pent house, Cat house, Dead Chamber & transportation of the same through disposal chute.
- 32) Complete through repair and sealing work of boiler in pent house. Dogt house, Dead chamber, skin casing, Expansion joint. SH/RH crown plate, Roof support and after repairing there should not be any leakage.
- 33) Inspection of dead space for structural stability and any deformations, if any, will have to be rectified as much as possible.
- 34) During air tightness test if any leakage is found it is to be rectified as per requirement.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.A-Scope of works (Boiler)

- 35) Cleaning of economizer hoppers and APH hoppers, and complete repairing with new plates of hoppers including supports. Repairing /Replacement of economizer / air preheater flushing apparatus, associated pipe lines. Thorough repairing of economiser ash trench and its drain pipe.
- 36) External cleaning of Boiler by water washing and transportation of accumulated ash /debris from work site to ash disposal area.
- 37) Boxing up all manholes after through repairing.
- 38) Servicing /Fitting /alignment of wall deslagers and long retractable soot blowers. Wall deslagers – 48 Nos for one Unit. LRSB 4 Nos for one Unit.

B.OVERHAULING OF BURNER SYSTEM

1. Cleaning of wind box and inspection for any damage and repairing of leakage, if any including expansion joints repair.
2. Inspection, repair of SADC dampers including seals and ensuring mechanical freeness and full open /close of the dampers.
3. Making free and repairing of AA dampers and oil fuel air dampers.
4. Checking and repairing of supporting truss in wind box.
5. Dismantling of coal and air nozzle assembly.
6. Dismantling of oil burners.
7. Inspection of coal and air nozzle and oil burner components.
8. Replacement /repair of damaged /worn out parts and their reassembly. Hard facing of coal nozzle, divider plates, nozzle tips as required.
9. Assembly of coal and air nozzle assembly.
10. Servicing and assembly of all oil burners (12 Nos).
11. Oil line, oil hydro motors, steam hydra motor, air hydra motors, steam tracing lines- servicing /replacement- 12 Nos each of oil air, steam, replacement of steam tracing and steam line. Servicing /replacement within Boiler-Firing Area is included within the Scope.
12. Final satisfactory operation checking in loaded condition.
13. Adjustment of SADC dampers.
14. Adjustment of Coal /air nozzle, oil burners.
15. Partition plate and Expansion joints of wind box to be checked and repaired.
16. Rectification of wind box leakages and damaged area of wing box. Replacement of secondary air duct worn out portion from A/H to furnace.
17. Alignment of fuel inlet elbow with coal pipes.
18. De-coupling, coupling & necessary repair in Seal Air Fan, Scanner Air Fan, Ignitor Fan, Gun Cooling Fan. Replacement / Repair of cooling noses of scanner / Ignitor fans.

C. REPLACEMENT OF COMPLETE BANK OF LTSH COILS

The scope includes dismantling of complete bank of LTSH coils, inspection of header stubs, replacement if required, edge preparation, erection of new coils, alignment, fitting & HP welding, 100% radiography, heat treatment as required.

D. OVERHAULING / SERVICNG OF VALVES & ACTUATORS

LIST OF VALVES AND ACTUATORS TO BE SERVICED:

- | | | | |
|-----|---|---|--------|
| I. | MS- L & R and their bypass | : | 4nos. |
| II. | Electrical/pneumatic controller valves 40/65 NB | : | 14nos. |

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.A-Scope of works (Boiler)

III.	Electrical/pneumatic controller valves 150/300 NB	:	11nos.
IV.	Isolating valves 25 to 65 NB	:	130nos.
V.	Isolating valves 4" and above	:	08nos.
VI.	Isolating valves ½"	:	40nos.
VII.	All safety valves (drum, S/H & R/H)	:	09nos.
VIII.	Servicing of oil heating unit alongwith valves	:	01unit
IX.	Replacement of boiler drum safety valves	:	01no.
X.	Replacement of super heater safety valves	:	01no.
XI.	Replacement if valves size ½" to 4"	:	30nos.

SCOPE OF WORK

- Removal of insulation & valves.
- Edge preparation, welding, radiography of joints.
- Repair/ replacement of defective components of the valves, lapping to be continued till satisfactory result is attained as per direction of EIC. In case safety valve found damaged than replacement of valves in place of servicing.
- Seat cutting and resetting of valves if required.
- Commissioning of the valves from control panel with the help of instrumentation/electrical wing.
- Checking seat passing and bonnet leakages during hydro test and attending the defects after hydro test. Testing and setting the safety valves with help of floating kit.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

SCOPE OF WORK FOR AOH OF BOILER AUXILIARIES- FANS, BOWL MILLS, RC FEEDERS, ESP, DUCTS/DAMPERS-(I.E.NON-PRESSURE PARTS) AT U # 8, MPPGCL SATPURA

BRIEF SCOPE OF WORK:

- a. Overhauling of ID/FD/PA Fans
- b. Overhauling of Ducts, Dampers, Gates & Expansion Joints
- c. O/H of Bowl Mills
- d. O/H of Raw Coal Feeder
- e. O/H of ESP

PRESHUT DOWN ACTIVITIES:

1. Mobilization of site one week before the shutdown of the unit with adequate manpower and T&P for Erection of temporary structures/platforms, arrangement of electric winches, , Hydra, cranes, lifting & transporting equipment as required for dismantling & erection activities.
2. Identification/Verification of materials to be erected.
3. Arrangement of consumables like welding electrodes, filler wire, Argon, Oxy-acetylene gases, etc.
4. To obtain gates passes for staff & workers to be deployed for the job.
5. To obtain all required statutory approvals like labor license, safety training & insurance, etc.
6. Making arrangements for the stay of staff and workers at site.

Note: Bidders are advised to make a site visit to have on hand information about the prevailing site conditions and also accommodation arrangements for his manpower. may meet concerned MPPGCL officials at site in this regard.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

1.0 DETAILED SCOPE OF WORK:

1. OVERHAULING OF FANS:

1.1. OVERHAULING OF ID FANS: 8A & 8B (02 nos.)

1. Checking and repairing of conical cover, impeller seals (replacement if required) including hard facing of impeller & replacement of internals like exchangeable vanes etc. Checking and servicing of IGV assembly and replacement as per requirement. Internals repairing /replacement of fan casing and support.
2. Erection of scaffolding required for execution of work wherever required.
3. Replacement of ID fan shaft, impeller if required.
4. Checking of fan /motor bearings foundation and thereafter rectification.
5. Checking /replacement of fan & motor Bearings.
6. Alignment of fan with motor.
7. Correction of fans Bearing pedestal for alignment, bearing height adjustments, etc
8. Servicing and cleaning of Lube oil and replacement of lub. Oil pump, if required and water system including coolers and replacement of cooling water lines and valves.
9. Removal of scaffolding and commissioning of the fans including dynamic balancing.
10. After trial run any defect has to be rectified.
Note: All civil works such as breaking of old grouting & recasting of grouting including materials shall be exclusive of contractor's scope.

1.2. OVERHAULING OF FD FANS: 8A & 8B (02 nos.)

1. Dismantling, inspection & servicing of pitch control mechanism /servomotor.
2. Inspection of fan inner and outer bearings, replacement if required.
3. Levelling of shaft.
4. Reassembly of servomotor /replacement of servomotor.
5. Checking of radial clearance of blade tips, blade condition and replacement if necessary.
6. Replacement of fan bearing if required.
7. Alignment of fan with motor and coupling.
8. Servicing & cleaning of Lub oil & water system including coolers and replacement of cooling water lines and valves.
9. Replacement of blades.
10. Replacement of rubber expansion joint.
11. Replacement /cleaning of air element suction filter.
12. Trial run of the fan including dynamic balancing.
13. After trail run any defect has to be rectified.

1.3. OVERHAULING OF PA FANS: 8A & 8B (02 nos.)

1. Checking /replacement of impeller.
2. Checking /replacement of shafts.
3. Thorough cleaning of fan suction strainer.
4. Checking /replacement of impeller seal and rectification.
5. Checking /replacement of Bearings.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

6. Alignment of fan with motor and coupling.
7. Servicing /replacement of Lub oil system including coolers of Fan & motor side.
8. Servicing and cleaning of Lub oil & water system including coolers and replacement of cooling water lines.
9. Servicing /replacement of IGV in total and replacement of components, if required.
10. Repairing of casing as required.
11. Trial run of the fan including dynamic balancing.
12. Replacement of Guillotine isolating gates at discharge duct. All works related activities including fabrication of structure etc.to installation of gates will be in the scope of Contractor
13. Correction of fans Bearing pedestal for alignment, bearing height adjustments, etc
14. After trial run if any defect has to be rectified.

Note: All civil works such as breaking of old grouting & recasting of grouting including materials shall be exclusive of contractor's scope.

2. OVERHAULING OF DUCTS, DAMPERS, GATES & EXPANSION JOINTS

1. Removal of accumulated ash from the ducts.
2. Erection of safe and suitable scaffolding.
3. Through inspection and repairing of fuel gas duct as well as expansion joints from Eco. Outlet to APH inlet, repairing of interconnecting duct between APH & APH outlet to ESP inlet including isolating gates & dampers, ESP outlet to inlet to Chimney including duct after ID fan, Mill hot and cold air duct repairing thoroughly.
4. Through inspection and repairing of PA duct from PA fans outlet to APH inlet, From APH outlet to Hot PA Header, PA Header to Cold PA Header including Expansion joints upto coal mill.
5. Removal of insulation and re-insulation after thermo scanning to 3000 Sq. M.
6. Through inspection and repairing of SA duct from FD fans outlet to APH inlet APH outlet to wind box including Expansion joints.
7. Through inspection and repairing of wind box L & R including Expansion joints after removal of insulation and after repairing re-insulation.
8. Through inspection and replacement of all ducts supports with proper size of angle and pipe and Eroded / corroded plates to be removed by new plates and applicable to all duct.
9. All expansion joint have to be guarded with MS sheet to avoid erosion of the same as per requirement.
10. Repair /replacement of economizer flushing apparatus & hopper and associated Ash trench and pipe lines.

SERVICING OF THE FOLLOWING DAMPER /GATES

1. ID Fan suction and discharge dampers – 6 Nos.
2. FD Discharge (APH inlet, outlet, interconnecting) – 2 Nos.
3. PA Discharge (APH inlet & outlet) – 6 Nos.
4. APH outlet dampers to Mill inlet, hot & cold air damper – 12 Nos.
5. Mill hot air gate & cold air gate. – 12 Nos.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

SCOPE OF WORK

- + Removal of accumulated ash from the damper area.
- + Erection of safe and suitable scaffolding.
- + Repairing / replacement of damper blades /flappers.
- + Flappers of the dampers are to be set properly so that there is no passing.
- + Calibration of dampers for full open and full closed position with actuator.
- + In case deflector blades are totally eroded then the same have to be fabricated from 6mm / 8mm S.S. plate / M.S. plate.
- + Any other related job not specifically stated but required for successful completion of work has to done.

REPLACEMENT OF FOLLOWING DAMPERS

- i ID fan suction damper 2 Nos.
- ii ID fan discharge damper 2 Nos.
- iii FD fan discharge damper 2 Nos.

SCOPE OF WORK

- Erection of safe and suitable scaffolding.
- Properly support the inlet and outlet flange of duct.
- De-insulation and re-insulation of dampers area.
- Dismantling of old dampers
- Transportation of new dampers from store.
- Placing of new dampers
- Tightening the fasteners.
- Fixing of actuator
- Make free operation of dampers with actuator with full open and full close.
- Any other related job not specified but required for successful completion of work has to done.

REPLACEMENT / RAPAIRING OF EXPANSION JOINTS TO THE EXTENT POSSIBLE

i	W/box – SA connecting duct	:	08 nos
ii	PA/ SA APH outlet, economizer outlet, pent house expansion joints	:	24 nos
iii	ESP inlet expansion joint	:	16 nos
iv	ID fan suction and discharge expansion joint	:	24 nos
v	F.G. A/H inlet expansion joint	:	06 nos
vi	P.A. to mill inlet	:	18 nos
vii	Expansion loop between SHHB and SHH4 L&R SHH-5	:	100nos

SCOPE OF WORK

- 1 Erection of safe and suitable scaffolding.
- 1. Removal of insulation
- 2. Dismantling of old expansion joint.
- 3. Fabrication of expansion bellows using 3.15/5 mm M.S. plates as per requirement

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

4. Placement & erection of new expansion joint to the extent possible along with channel support.
5. Re- insulation
6. Any other related job not mentioned but required for successful completion of work has to be done
7. Inspection and through repairing / replacement of all duct support inside and outside of duct with new plates / channels.
8. Air tightness test to + 50 mm WCL.
9. Attending leakages during air tightness.
10. Clean air flow test and hot air traverse and dirty air flow test of coal pipes and suggestion for corrective measures as required.

3. OVERHAULING OF RAW COAL FEEDERS – 06 Nos.

- 1 Overhauling of coal feeders which includes, but not limited to checking, cleaning, repair, replacement of hinge gate system, feed pipe coupling, feed roll bush and bearing replacement both coal gate system, coal inner gate mechanism, SS liner, window and peep holes, repairing and hard facing of chute below coal feeder including gear box.
- 2 Replacement / rotation / repairing of center feed pipe and discharge chute by removing worn out centre feed pipe including welding – 06 Nos.
- 3 Repairs / Replacement of P.F. Bends and Pipes. (350 mtrs. Pipe & 100 nos bends)
 - i Replacement of P.F. bend – Removal of worn out or patched P.F. bands. Replacement and realignment of new bends. Welding of collars and / or coupling of bends as per requirement. Repairing of PF bend and straight pipe by patch welding / replacement if necessary.
 - ii Cutting of required size patches from old unserviceable coal pipes / bends and welding of patches wherever required. Making all PF pipes line leak proof during initial operation.
 - iii Reversal of coal pipe bends after due repairing.
 - a Removal of worn out / damaged bends.
 - b Lowering down it at appropriate level.
 - c Repairing of the same by patch welding as per instruction of site in charge.
 - d Installation of the same by reversing it. Welding of the same to the adjacent coal pipes by providing PF collar / coupling, suitable supports to be provided if required.
- 4 Replacement of straight pipe. This includes ceramic straight pipe of length 1 and 1.5 meter as per direction of Engineer in charge and Replacement of straight pipe. Wherever required by new pipe up to 350 Mtrs by cutting / de-coupling of old pipe welding of collars and coupling of new pipes as per requirement. Providing hanger support as per requirement. Old pipe pieces found in good condition can also be re used.
- 5 Rotation of straight coal pipes by 180 degree including welding and coupling and providing hanger support as per requirement.
- 6 Changing of coal pipes victualic coupling gasket etc. Decoupling replacement of new coupling gaskets and coupling of the same with proper gap and alignment.
- 7 Servicing of coal pipe hanger including repairing. Fabrication of clamps, from given M.S. plate/ M.S. flat by cutting and bending. Mounting of clamps, providing supporting rod (hanger) with proper alignment.

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Chapter-II.B-Scope of works (Non pressure Parts)

4. AOH OF COAL MILLS

- 1 REPLACEMENT/ REPAIRING OF MILL TOP, MDV, MPO etc. – 06 NOS.
Dismantling of MDV, MPO, Orifice, MPO plates and ventury including coal pipe up to 500 mm.
Repairing and hard facing Refitting of new prepared MDV, MPO, Orifice, MPO plates and ventury. Replacement / Repairing of inner cone and servicing of classifier.
- 2 REPAIRING / REPLACEMENT OF BOTTOM INSULATION PLATE – 04 SET
Removal of old bottom insulation plate and mill side bottom inners. Fitting of insulation plate after proper application of insulation. If the bottom insulation plate are not available , fabrication of insulation plate by cutting it from 10/12 mm M.S. sheet.
- 3 REPAIRING / REPLACEMENT OF AIR DIVERSION PLATE – 06 MILLS
Cleaning of the clinker / coal. Repairing of diversion plate or replaced the same after cutting the old diversion plate (New diversion plate should be fabricated by 16 mm M.S. plate.)
- 4 REPLACEMENT OF MILL SIDE BODY LINER – 03 MILLS
Fitting of body liner and placing of insulation pluff and fitting of vane wheel / air port assembly.
- 5 REPAIRING OF MILL BODY AND SEPARATOR LINERS – 06 MILLS
Replacing of mill separator body by insulation of 16/18 mm M.S. plate after bending after filling the cavities by 5 mm hard facing electrodes.
- 6 REPLACEMENT OF BRACKET PLATE OF GRINDING ROLLS – 06 MILLS
Cutting of plate from M.S. plate of 16 mm Welding of same with proper support.
- 7 REPLACEMENT OF LOWER AND UPPER SKIRT AND SCRAPER ASSEMBLY – 03 MILLS
Removal of damaged upper / lower skirt and scrapper assembly from the mill as per requirement.
Fitting of upper/ lower skirt and scrapper assembly.
- 8 REPLACEMENT OF VERTICAL SHAFT UPPER BEARING OF MILL XRP-763 – 01 MILL
Scope of work
 - i Putting of dummy plate inside the PA duct and draining of Gear box oil, removal of scrapers upper skirt, lower skirt, dismantling of mechanical face seal housing and duct guard etc.
 - ii Removal of all the three grinding roll assy.
 - iii Cutting and removal of air port assy.
 - iv Dismantling of mill top and classifier assy, repairing / replacement of MPO, MDV, Orifices, ventury, MPO plates.
 - v Removal of inner cone, replacement / repairing.
 - vi Removal of bowl cover, lock nut.
 - vii Lifting of bowl hub.
 - viii Removal of upper bearing cover.
 - ix Removal of upper bearing and removal of upper bearing housing and tapping of GB cover hole
Tapping and removal broken bolt of bowl holes for upper skirt fitting.
 - x Fitting of bearing.
 - xii Removal of mill bottom insulation cover plate, mill bottom and tapping of mill bottom hole in mill body.
 - xiii Hard facing and metal fitting in the cavities and welding of 16 mm .. plate in side the complete mill.
 - xiv Complete fitting of above dismantled parts including mechanical face seal work.

REPAIRING OF MILL BOTTOM AND FITTING AS GIVEN BELOW – 01 MILL

- i Dismantling of upper and lower skirt, Mill bottom cover.
- ii Removing of bottom insulation plate and mill side bottom liner and mech. Seal.

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Chapter-II.B-Scope of works (Non pressure Parts)

- iii Removal of 16 nos. bolts of mill bottom.
- iv Lift the mill bottom and cleaning the GB cover top.
- v Tapping the 16 holes M-24/M-27 as per required sizes.
- vi Refitting of all spares.

CLEANING OF OIL COOLER LINES & SERVICING OF MAIN & COOLER ISOLATING VALVES – 06 NOS.

Opening the flange of outlet and inlet valves of both the coolers and cleaning / replacing the oil cooler line and refitting as per requirement and instruction of site in charge. The line refitting of flange and valve including opening of main and return line flange at the top. Removal of main and isolating valve, repairing/ servicing / replacement of these valves.

REPLACEMENT OF OIL COOLER WITH NEW ONE – 01 MILL

- i Removal of old oil cooler with proper care.
- ii Replacement with new one providing gasket as per site requirement and checking for no leakage.

ALIGNMENT OF MILL MOTOR WITH WORM SHAFT – 06 NOS.

- i Alignment of mill motor with worm shaft , replacement of set of coupling if required.
- ii Grinding of base plate to get the alignment within limit if required.

REPLACEMENT OF ALL 5 BEARINGS OF COAL MILL (VERTICAL SHAFT AND WORM SHAFT) – 01 MILL

Scope of work

- i Putting of dummy plate inside the PA duct and draining of Gear box oil, removal of scrapers upper skirt, lower skirt, dismantling of mechanical face seal housing and duct guard etc.
- ii Removal of all the three grinding roll assy.
- lii Cutting and removal of air port assy.
- iv Dismantling of mill top and classifier assy, repairing / replacement of MPO, MDV, Orifices, ventury, MPO plates.
- v Removal of inner cone, replacement / repairing.
- vi Removal of bowl cover, lock nut.
- vii Lifting of bowl hub.
- viii removal of upper bearing cover.
- ix removal of upper bearing and removal of upper bearing housing and tapping of GB cover hole
Tapping and removal broken bolt of bowl holes for upper skirt fitting.
- x Fitting of bearing.
- xii Removal of mill bottom insulation cover plate, mill bottom and tapping of mill bottom hole in mill body.
- xiii Hard facing and metal fitting in the cavities and welding of 16 mm .. plate in side the complete mill.
- xiv Complete fitting of above dismantled parts including mechanical face seal work.

REPLACEMENT OF VERTICAL SHAFT THRUST BEARING (WHICH AUTOMATICALLY INVOLVED REPLACEMENT OF LOWER BEARING AND PUMP BUSH ETC,) – 01 NO.

- i Making proper arrangement to hold bowl, gear hub etc. in the proper position and decoupling of mill with motor and removal of worm shaft cover.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

- ii Removal of bottom cover of mill, oil pump, lower bearing pump housing along with lower radial bearing and half of the thrust bearing. Removal of upper race of thrust bearing from the adopter.
- iii Checking of the gear hub lock nut for its tightness, checking of the thrust bearing adopter and its replacement if necessary.
- iv Fixing of upper race of thrust bearing on the adopter, blue matching of KT 811 race with housing, spacer with lock nut and adopter if required up to 80 to 90%.
- v Checking of gear hub lock nut for its tightness.
- vi Fixing of lower radial bearings and pump bush in lower bearing and pump housing.
Fixing of inner race of radial bearing on the shaft.
- vii Fixing of lower bearing and pump housing in its position along with the thrust bearing , fixing of the pump hub keeper plate. Checking of tightness of Gear hub and checking of run out and face out of the gear. Replacement / realignment of worm shaft thrust bearing and replacement of radial bearing as per requirement. Lifting / fixing of worm shaft in its position and tightness of the worm shaft cover.
- viii Blue matching of worm gear with worm shaft to achieve desired contact by adjustment of shims below lower bearing and pump housing. Tightening of the oil in gear box.
- ix Filling of the oil in gear box, fitting of the gland ropes in the gland provided in the radial bearing housing.
- x Adjustment of the rollers and adjustment of the gap between journal head and journal pressure.

REPLACEMENT / REALIGNMENT OF WORM SHAFT RADIAL AND THRUST BEARING – 02 Nos.

- i Decoupling of mill with motor, removal of worm shaft cover and worm shaft removal of coupling piece from worm shaft.
- ii Removal of radial and thrust bearing housing and both the bearing from the shaft the bearing are to be removed with care to avoid any damage to the bearings.
- iii Fixing of worm shaft thrust bearing on the shaft and its alignment in the housing as per BHEL procedure and checking of run out and face out.
- iv Fixing of worm shaft radial bearing on the shaft and on radial bearing / housing.
Fixing of coupling piece of the W/shaft.
- v Lifting/ fixing of worm shaft in its position and tightening of worm shaft cover.
- vi Blue matching of worm gear with worm shaft to achieve desired contact by adjustment of the shims below lower bearing and pump housing.
- vii Filling of the oil in gear box after thorough cleaning, fitting if gland ropes in the gland provided in radial/ thrust bearing housing.
- ix Adjustment of the rollers and adjustment of the gap between journal head and journal pressure spring head.
- x Removal of dummy plate from the duct and closing of the opening the place closing of P.A. chamber door after repairing and fixing asbestos rope.
- xi Complete trail of mill.

REPLACEMENT OF BULL RING SEGMENT AND ALL THREE GINDING ROLLS (MPSP / CONVENTIONAL) – 02 MILLS

- i Putting of dummy plate in P.A. duct and discharge valve.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

- ii Removal of all three roller journal assembly and dismantle the same which automatically involved the following work i.e. R.J. shaft welding. Upper and lower housing welding if required.
- iii Fitting of bearings.
- iv Cleaning of journal head and servicing of eccentricity.
- v Assembly and alignment of roller journal assembly.
- vi Fitting of grinding rolls and journal head with new journal skirt if required.
- vii Removal of clamping ring.
- viii Removal of bull ring segment.
- ix Grinding and hard facing of bowl if required.
- x Fitting of butt ring segment.
- xi Fitting of clamping ring and hard facing.
- xii Removal of bowl extension ring and fitting the new bowl extension ring, if required cutting of bowl extension ring from 20/16 mm M.S. plate and bending the same in dept work shop and hard facing of bowl extension ring. (If bowl extension ring are not available).
- xiii Repairing of inner cone if required. Hard facing of Air port assy.
- xiv Installation of roller assy in mill.
- xv Servicing of spring door assy. Setting of spring compression with the help of compression kit.
- xvi Fitting of door assy and oil filling and roller adjustment with jacking system.

DISMANTLING, SERVICING AND REASSEMBLY OF MECHANICAL FACE SEAL – 02 MILLS

- i Cleaning of scrapper chamber.
- ii Opening of scrapper lower skirt and upper skirt assy to take out the parts of upper skirt and lower skirt from scrapper chamber.
- iii Dismantling of air seal housing, during dismantling , fitting of air seal housing to fit, seal air houses should not be damaged.
- iv Dismantling of runner, dust guards oil seals etc. and checking of upper bearing clearance and cleaning of oil collector and insure the return oil flow.
- v Assembly of mechanical face seal
 - a Fitting of upper bearing housing cover.
 - b Blue matching of runner with seal housing if required.
 - c Fitting of fixing ring.
 - d Fitting of oil seal at upper bearing.
 - e Fitting of dust guard and maintain recommended gap between dust guard and oil seal cover.
 - f Fitting of air seal housing and runner.
 - g Fitting of mill bottom cover and flexible hose pipe.
 - h Tapping of holes at bowl for fitting of upper skirt if required.
 - i Fitting of upper and lower skirt assy.
 - j Fitting of scraper assy.
 - k Rectification of mill bottom insulation plate also.

REPLACEMENT, HARD FACING AND REPAIR OF AIR PORT ASSY AND INNERE CONE – 06 NOS

SCOPE OF WORK

- i Removal and repairing of air port assy as well as bowl extension ring and its welding on mill body and on bowl and hard facing of bowl extn. Ring (removal of grinding roll, putting of dummy in pa

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

- chamber cleaning of pa chamber is in the scope of contractor and reinstalation of grinding roll assy, servicing of spring assy, jack bolt, setting the spring compression with the help of kit.
- ii Repairing of the broken pieces of vane wheel as per instruction of Engineer in charge.
 - iii Special hard facing electrodes will be provided by MPPGCL for air port assy only.
 - iv Repairing and hard facing of bowl extension ring.
 - v Removal of dummy plate from the duct and closing the opening of the place. Closing of PA chamber door.

REMOVAL, DISMANTALING , SERVICING , ALIGNMENT AND REINSTALLATION OF ROLLER JOURNAL ASSY – 03 NOS

- a Cleaning of mill.
- b Replacement / realignment of roller shaft bearings.
- c Servicing of spring assy and door assy.
- d Fitting of heads after cleaning holes and to make eccentric free.
- e Patching of inner / cone / bowl extension ring. Air Port assy if necessary.

5. OVERHAULING OF ESP

1. Removal of accumulated ash & Water jet washing of ESP field internals
2. Visual inspection of ESP internals for defect/damage. Preparation of Status report. Submission of Bar chart, showing Overhauling activities to be taken up to EIC. Execution of overhauling activities as per mutually agreed programme.
3. Check for Ingress of any foreign material, field short circuit, damage of internals ets. Causing outage/ poor performance of field and corrective measures as required.
4. Checking for possible gas or air leakages at gasket connections and stoppage of the leakages specially at both inlet & outlet duct joints and rectification thereof.
5. Checking for corrosion where heat loss is greatest or gas temperature is low and replacement/repairing of the eroded parts.
6. Cleaning of all the ESP fields, insulation to assess condition and rectification thereof.
7. Checking for possible misalignment/wear and tear of internal components, checking of gaps between collecting plates by GO GAUGE and subsequent replacement of the defective parts for effective operation of ESP (like shock bars, shock bar guides, collecting & emitting electrodes, hammers, inner arm, GD screens, baffle plates support rod etc)
8. Checking and maintenance of heaters and associated thermostat for shaft insulators/Support Insulators/ Hoppers etc and replacement of the defective ones. Functional checking of thermostats using oil bath.
9. Checking operation of all inlet & outlet dampers alongwith their motor actuators and rectification of troubles if found defective
10. Complete overhauling, servicing, maintenance replacement (if required) of all rapper gearboxes including replacement (if required) as per requirement and instruction of EIC
11. Checking operation of worm gear assembly. Rectification including replacement (if required) of the worm gear assembly

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

12. Repair of inlet & outlet funnel for any leakage/damage noticed. On inspection to prevent ingress of rain water & dust leakage
13. Stoppage of ash leakage from hoppers by removing damaged plate and insulation and re-fixing the same property.
14. Repairing of insulator housing and isolator boxes and painting (with two coats primer and two coats of synthetic enamel gray paint after scrapping & de-rusting) of the same. Paint supply shall be in Contractor Scope.
15. Cleaning and water washing of ESP starting from ESP inlet duct (funnel) to ESP outlet duct (funnel), all hoppers, gas distribution baffles, all emitting and collecting electrodes and other allied zones.
16. Inspection of collecting electrodes and rectification as required
17. Inspection and replacement of damaged emitting electrodes with new ones wherever required
18. Alignment checking of collecting/emitting electrodes and correction of healthy, collecting electrodes by light hammering and spot heating
19. Inspection of shock bars, rectification and replacement as per requirement,
20. Inspection of Collecting Electrode, Rapping mechanism (CERM) shaft, rapping hammer assembly etc. and replacement of damaged components as required
21. Inspection of Emitting electrode, Rapping mechanism (EERM) shaft, rapping hammer assembly etc and replacement of damaged components as required
22. Inspection of pin insulator/support insulator/shaft insulator and replacement as required
23. Servicing of gear boxes of CERM and EERM
24. Inspection/repair (patch repair) of gas distribution baffle plates and fabrication of deflection plates as per sample and fixing of the same as per requirement/instruction of EIC
25. Inspection and replacement of GD screen as required
26. Inspection and replacement of damaged pipe support at inlet & outlet funnel of ESP
27. Inspection and replacement of damages hopper heaters as required. Total checking of heater circuit & servicing/replacement of heater JBS
28. Assistance during commissioning
29. Any de-cabling and re-cabling
30. Servicing of CERM & EERM motors
31. Ash transportation form work site to disposal area
32. Any type of fabrication job as required for above scope of work
33. Oil filtration of transformers. Filtering machine to be arranged by contractor.
34. De-Insulation and re-insulation work (As already covered in the scope of Boiler and Aux of duct and dampers
35. G.D. Test to ensure distribution of flue gas for efficient operation of ESP.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-II.B-Scope of works (Non pressure Parts)

MAINTENANCE OF ESP T-R SET

The works include checking of the bushings, cable box, radiator, conservator, Buchholtz relay, Silica gel breather, pipe joints, Oil Leakages, Explosion vents, winding and internals of ESP transformer, decanting of oil, cleaning of sludge in the bottom, BDV of oil re-filling of oil and re-assembly with replacement/repair of defective parts. In-situ Filtration of transformer oil of all the transformers in service and under scope of the contract 12 nos. TR set transformers and 3 no spare TR set transformers shall be carried by Contractor. Arrangement/Hiring of suitable portable oil filtration machine its shifting/ replacement on ESP roof, power supply arrangement, operation & supervision during filtration, sample collection before and after filtration for testing shall be in Contractor scope. The scope shall include painting of the T-R Sets/Transformer with light gray to shade no.631 of IS-5 of semi gloss after scrapping & degusting.

Testing

The following tests will be carried by Contractor

- a) Air Drop Test
- b) Gas Tightness Test
- c) G.D. Test

Transformer/T-R set Testing: (Insulation, Resistance, Magnetizing Current Ratio & Short Circuit test of Transformer and BDV Test of Oil Sample at 60KV)

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-III- Time schedule

3.0 PERIOD OF COMPLETION:

Entire works are to be completed within a period of **50 days** from the date of start of work till completion of all activities. It is to be noted that time is essence of the contract and the job should be completed to the fullest satisfaction of BHEL within the specified time period. In the event of delay in completion of the job, action will be taken as per relevant clauses of contract.

3.1 Expected date of commencement :

The tentative shutdown of **Boiler-8** is scheduled in the **first week of JUNE' 2013** and work on all fronts to be started immediately thereafter. The entire work has to be completed within a period of **50 days** from the date of start of work.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IV- T&Ps, MMEs & Consumables to be deployed by Contractor

4.0. TOOLS AND TACKLE:

All the tools and tackles/measuring instruments shall be duly tested/calibrated and valid certificate to that effect should be submitted to our site in-charge before the start of work.

LIST OF T& P AND MEASURING INSTRUMENTS

Sl.No.	Description	Quantity
01.	Welding Generator / Rectifier	25 nos.
02.	Portable Grinding Machines of assorted sizes / types	15 nos.
03.	Welding cable	800 Mtr.
04.	Gas cutting set	18 sets
05.	Chain pulley blocks 3MT/5MT/10MT cap.	20 nos./10 nos./10 nos.
06.	Lifting tackles including slings of assorted sizes	As per requirement
07.	Pulling Machines / Hook chooks	12 nos.
08.	24V lamps with cable and plug tops	20 nos.
09.	Crane 12 MT &15 MT	02 no. each
10.	Tractor / Trailer 10 T cap.	02 no.
11.	Electric Winch 5T cap.	06 nos.
12.	Torque Wrench with Torque Multitier	01 no. each (35 kg.M/65 kg.M)
13.	Slogging spanners 52 mm & 54 mm	06 nos. each.
14.	Master Level of 0.02 mm LC	04 nos.
15.	Vernier calipers 0-150 m 0-300 M 0-600 M	02 nos. 02 nos. 01 no.
16.	Inside Micrometer upto 600 mm	02 no.
17.	Outside Micrometer upto 600 mm range	02 no.
18.	Measuring Tape upto 15 M length	06 nos.
19.	Dial Gauges	05 nos.
20.	Grinding Machine AG-7 & GQ 4	10 nos. / 5 nos.
21.	Diesel grinders	2 nos.
22.	Tap set M 39 x 3	1 set.
23.	Filler gauge (loose) 200 mm long	4 nos.
24.	Cup lock scaffolding materials	Full set
25.	High Pressure water jet pump	1 no
26.	Hydraulic jacks of 50T/ 100T capacity	As per requirement.

NOTE

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-IV- T&Ps, MMEs & Consumables to be deployed by Contractor

1. The above list is only indicative and not exhaustive. Arrangement for any other T and P required for completion of the job shall be the responsibility of the contractor and shall be arranged by him.

4.1. CONSUMABLES:

List of anticipated consumables are as indicated below.

LIST OF CONSUMABLES

Kerosene/Diesel

Rustolene

CTC

Waste cloth/Cotton

Marking cloth

Cutoff wheels / Grinding wheels

Mounted wheels/ rotary cutters

Insulation tape / Johnson tape

Sander discs and wheels

Polyethylene sheets

Electric fuse wire and cables

Cutting Electrodes

Welding Electrodes (E7018, 8018, 9018 & filler wire as per requirement)

Argon, DA and Oxygen gases

NOTE:

The above list is only indicative & not exhaustive. Arrangement for any other consumables required for completion of the job shall be the responsibility of the contractor & shall be arranged by him.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-V- Manpower to be deployed by Contractor

5.0. MAN POWER:

- a. Adequate manpower, T&P along with consumables should be deployed at site and should reach the site one week before the shutdown of the unit. All the lifting tools /measuring instruments shall be duly tested / calibrated and valid certificate to that effect should be submitted to BHEL Site In-charge before start of the work.
- b. A deployment plan along with experience and name of the Site In-charge, Engineers, Supervisors, Foreman and main technicians to be submitted on per shift basis.
- c. Successful bidder has to arrange a LAPTOP at site with latest configuration, USB Modem for Internet connectivity, DVD/CD writer, multimedia and its peripherals including printer.
- d. Two office boys in each shift are to be provided for BHEL site office and two cook for BHEL mess to be provided.
- e. **Special Man power :**

Successful bidder has to engage ex-BHEL Engineers one for each area with more than 25 years of experience in erection & overhaul of Boiler pressure parts & auxiliaries during entire overhauling period in consultation with BHEL. In case of failure of deployment of above engineers, a deduction of Rs.4,000/- per day for each engineer shall be made from the bills by BHEL. The above engineers are required three days before start of work and three days after full load operation of the machine.

LIST OF MANPOWER REQUIRED

Sl.No.	Description	Numbers
01.	Site Incharge	01
02.	Supervisor	10
03.	MW Fitters	10
04.	General Fitters	30
05.	Riggers	30
06.	Gas Cutters / Grinders	40
07.	Electricians	05
08.	LP Welders	30
09.	Storekeeper	03
10.	Insulation /refractory lager	20
11	Unskilled workers	150
12	HP Welders	12

This is an indicative list; the sub-contractor shall deploy manpower as per requirement of the site during execution.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VI- Payment Terms

6.1. RATES:

Bidders should quote lowest and most competitive lump sum price for total works (Sl. No. 1 to 9) and based on this value evaluation for L1 shall be decided. The lump sum prices for each activity shall be calculated on the Percentage mentioned keeping quoted price as 100%.

Following percentages shall be operated for various parts of work.

S.No	Description	Unit	Quantity	Price (%)
1.	Overhaul of Boiler Pressure Part	Lumpsum	1	14
2.	Overhauling of Burner System	Lumpsum	1	13
3.	Overhauling of ID/FD/PA Fans	Lumpsum	1	12
4.	Overhauling of Ducts, Dampers, Gates and Expansion Joints.	Lumpsum	1	10
5.	Overhauling of Bowl Mills	Lumpsum	1	14
6.	Overhauling of Raw Coal Feeder	Lumpsum	1	2
7.	Overhauling of Valves & Actuators	Lumpsum	1	8
8.	Overhauling of ESP	Lumpsum	1	12
9.	Replacement of complete Bank of LTSH Coils	Lumpsum	1	15

6.2. Payment Terms

Invoice may be claimed mentioning all activities and percentage allotted to the each activity as per price schedule:

- 1.0 15% after the mobilization site with adequate deployment of man power, T & P and consumables, submission of Insurance & Labour License and completion of IBR formalities.
- 2.0 30% after completion of dismantling activities
- 3.0 35% after completion of erection activities and hydraulic test.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VI- Payment Terms

- 4.0 10% after Boiler light up and clearance of site with disposal of all cut materials / scrap to the scrap yard.
- 5.0 Final 10% after commissioning of unit and on submission of all the documents like no dues certificate from Customer, EPF challan, Insurance, Labour License, Labour Payment sheets etc).

Note: While submitting invoices, Vendor should mention their Bank Account No. on each of their Invoices for making e-payment.

6.3. Retention money:

Retention money: Retention amount as indicated in Clause 2.22.1 of Vol I C 'General Conditions of Contract' shall be read as 1% of the total contract value.

Bills due for payment shall be submitted to the Engineer in-charge of BHEL at site for necessary verification and processing through proper channel. It may be noted that payment will be released from the office of the RSM/Nagpur after minimum fifteen days from the date of receipt of the duly verified bill from site.

Note:

Certain deficiencies may get revealed only after dismantling of components and may not be detailed in the scope of work of tender enquiry. Any work arising out of such site requirement and for successful completion of the work shall have to be taken up by the contractor without any extra cost subject to a maximum of 10% of the main contract value.

If any work / activity mentioned in the scope of work is not carried out due to any reason like non-availability of materials/spares, etc., appropriate deduction mentioned against that activity shall be effected from contractor's bill.

6.4 Performance Guarantee Period for Workmanship: Guarantee Period as indicated in Clause 2.24.1 of 'General Conditions of Contract' shall be 6 Months.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VII- Taxes & Duties

7.0 TAXES, DUTIES, LEVIES (Consolidated Rev 03 dated 09/04/2013)

7.1. For All types of works excepting works covered under sl no 7.2

7.1.1

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.

7.1.2 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 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.

7.1.3 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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VII- Taxes & Duties

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.

7.2 '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 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)**

~~However, Since the proposed work is in the nature of 'Works Contract service' as per Service tax law, Hence, For non-corporate contractors being Individual, HUF, Proprietary Firm, Partnership Firm or Association of Persons (AOP), BHEL shall recover the applicable Service Tax under reverse charge mechanism from the contractor and remit the same with the Government as per the provisions of Law. Necessary advice/confirmation of remittance shall be issued to the contractor. The contractor shall not be eligible for any refund/reimbursement of such service tax from BHEL. It shall be the responsibility of the contractor to submit proper invoice giving all the requisite details as per Service Tax Law for the determination of the service tax liability of BHEL under reverse charge mechanism. BHEL reserves the right to determine such liability based on the invoice submitted by the contractor or otherwise independently and remittance of the same with the Government.~~

7.3 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.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII- General

8.1. Statutory Inspection

In addition to it the scope includes getting the approvals from the statutory authorities (like IBR, smoke nuisance inspector, anti-pollution authorities, labour officials). This includes arranging for inspection visits of such authorities periodically as per requirement, submitting documents etc. and payment of fees connected with it.

8.2. GENERAL SCOPE OF WORK:

1. Transportation of materials / spares from Satpura TPS/MPPGCL stores /yard to work site and removal of ash / debris / scrap / materials from work site to ash disposal area / scrap yard / stores engaging contractors own vehicle
2. Fabrication of site store near work site.
3. Fabrication / repair / machining of components / spares.
4. Fabrication of fixtures and illumination of work zone.
5. Removal and relaying of insulation wherever applicable.
6. Cleaning of work area during and after execution of work.
7. All tools and tackles, measuring instruments including Welding Generators (20 nos. minimum) and Transformers (10 nos. minimum), Gas cutting sets- 15 Nos, Bevel Proctors, 24 Volt electrical hand lamps, lifting hoist etc., OPT kits as required are to be provided by the contractor. Contractor has to use only 24 Volt hand lamps with protective cage in the enclosed area of work to ensure safety of workmen.
8. Minimum 10 curie Radiography sources- 2 sources along with qualified personnel are to be arranged.
9. Contractor should have running IBR Registration for Pressure Parts Repair work in Madhya Pradesh and has to obtain necessary works & HP welders approvals under section 392 of IBR from the Boiler Directorate / Madhya Pradesh. Co-ordination with boiler inspector is the responsibility of the contractor.
10. Contractor has to arrange for necessary labour licence, insurance etc. for their workmen at the start of work and other necessary statutory requirements are to be fulfilled.
11. Contractor has to provide necessary skilled, semiskilled and unskilled manpower and supervision for the total job under the technical guidance of BHEL. Contractor has to provide minimum 15 nos. of HP Welders and 10 nos. of attachment Welders and 15 nos of gas cutters to complete the job in time. Contractor has to mobilize HP welders well in advance for their site test. Contractor has to provide minimum 15 nos. of experienced supervision staff for the job, excluding Site-in -charge for close supervision of work as well as providing inputs for un-interrupted progress of work.

NOTE: Lack of supervision / resource mobilization will be viewed seriously.

13. Contractor has to follow necessary safety regulations and Safety equipment/ accessories to be used and provided to the workers.
14. Illumination of working area is the responsibility of the contractor.

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15. Cleaning, housekeeping and security arrangement for the equipment, T&P and materials/ spares is the responsibility of the contractor.
16. The contractor has to sign "INDEMNITY BOND" for obtaining Form -V (required for labour licence) from the Principal Employer M/s Satpura TPS / MPPGCL on non-judicial stamp paper as per format provide by BHEL.
17. Necessary workforce, tools and tackles, welding machines, cutting accessories, grinding machines, argon gas with all accessories/cutting accessories, TIG welding kits, TIG welding wires, etc required for the job shall be arranged by the contractor at their own cost. Consumable, hacksaw blades, grinding/cutting wheels, emery paper, lapping tools with lapping compound ,marking cloth, cotton waste ,petrol, kerosene ,heating lamps rustolene, holdtite, Bectol cotton waste, wire brushes, molykote ,etc. shall be arranged by Contractor.
18. Necessary tools for dismantling of PA Fan.
19. All technological wastes generated during execution of overhauling works at various places shall be removed by Contractor to a place identified by the Engineer in charge.
20. The work details are brief & for knowledge only and Successful bidder will have to do all the related works as per requirement.

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Chapter-IX- QUALITY REQUIREMENT

9.0. QUALITY REQUIREMENT:

- 1.0 Various inspection/ quality control / quality assurance procedure/ methods at various stages will be as per BHEL/ customer quality control procedure/ codes/ IBR and other statutory provisions and as per BHEL Engineer's instructions.
- 2.0 Preparation of quality assurance log sheets and protocols with customer's engineers, welding logs, other quality control and quality assurance documentation as per BHEL Engineer's instructions, is within the scope of work/ specification.
- 3.0 A daily log book should be maintained by Area In-charge of contractor on the job incorporating erection / alignment / welding clearance/ progress of work etc. and the same shall be submitted to BHEL. Also, daily reports shall be submitted to BHEL.
- 4.0 All the important measurements like pre-assembly checking of alignment leveling/ centering work etc. shall be recorded in the daily log book with sketches based on BHEL drawings indicating readings/ measurements actually taken and signed by BHEL/ Customer/ Contractor representatives.
- 5.0 All the lifting, electrical equipment and the inspection/measuring and testing equipments should be of brand, quality and accuracy, as specified by BHEL engineer and should have valid calibration certificates traceable to national/international standards.
- 6.0 Total quality is the watchword of the work and contractor shall strive to achieve the quality standards, procedures laid down by BHEL. He will follow the instructions as per BHEL drawings and quality standards.
- 7.0 The welders' performance will be reviewed from time to time as per the BHEL/ IBR standards and any welder not performing to the standards set by BHEL/ IBR standards will be removed from working, Contractor shall arrange for the alternate welders immediately.
- 8.0 All the welders including HP welders shall carry identity cards. Only welders duly authorized by BHEL/ Boiler inspector/ customer / consultant shall be engaged on the work.
- 9.0 STAGE INSPECTION BY BHEL / CUSTOMERS ENGINEERS
Apart from day-to-day inspection/ stage inspection of equipments by BHEL engineers, the equipments may be checked at various stages by customer's engineers and quality assurance teams. Contractor shall arrange all labour, tools/tackles etc. for such inspections free of cost.

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Chapter-X- SPECIAL TERMS AND OTHER CONDITIONS

10.0.0. TERMS AND CONDITIONS:

- 10.0.1. Subcontractor should assure that the repair of the equipment covered in the scope of this offer will be conducted with the best of skills and know how available with Subcontractor and in conformance with the clearances and adjustments set forth in manufacture's drawing instruments and other information's furnished to Subcontractor.
- 10.0.2. The various setting, clearances, adjustments and benchmarks will be restored to the extent possible during rectification to the condition as per the erection and commissioning log sheets available with customer. If however we are not able to produce erection / commissioning log sheets, efforts will be made to attend the best possible parameter or the conditions as observed at the time of dismantling of the equipment in consultation with us.
- 10.0.3. Subcontractor must prepare PERT CHART/BAR CHART. Daily monitoring will be done jointly and log sheets of important activities should be noted down and signed jointly.
- 10.0.4. All the works shall be carried out as per the instructions and to the satisfaction of the Engineer In-charge.
- 10.0.5. The contractor will attend contributory to faulty and poor workmanship during commissioning and trial run of the equipment.
- 10.0.6. Round the clock working under expert supervision shall be ensured by the contractor deploying two equal parallel strength of groups in 12 hrs. Shift with equal T&P for all the jobs so as to complete the work in stipulated period or earlier.
- 10.0.7. It is the responsibility of contractor to keep the plant, equipment, machinery and surrounding area clean.
- 10.0.8. The names of working persons like Site in-charge, supervisors, foreman, main fitters to be deployed during the job with full details has to be submitted stating their area of work and experience and specialization of the work to site in-charge before the start of work. BHEL may ask to change/delete the person not found suitable for the work at any point of time during execution of job. For any addition and deletion of the working person prior permission from BHEL shall be taken.
- 10.0.9. Subcontractor has to ensure that all the key persons must continue till completion of job i.e. machine comes on load. Subcontractor manpower should remain at site for a period of **7 days** after the commissioning of boiler.
- 10.0.10. Successful bidder should mobilise the site in full strength immediately on placement of LOI to carry out site activities.
- 10.0.11. Work distribution sheet for all the workers/supervisors deployed shall be submitted to BHEL one day in advance on daily basis.
- 10.0.12. Subcontractor should mobilize additional resources such as plant, equipments, material as may be required by site in-charge to improve the progress of the work if the progress of the work is not satisfactory.
- 10.0.13. Subcontractor should get registered under relevant sales tax and or work contract Act (VAT) where the jobs are executed.

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Chapter-X- SPECIAL TERMS AND OTHER CONDITIONS

- 10.0.14. Scrap and insulation etc. is to be shifted to scrap disposal area as indicated by the Engineer-in-charge on regular basis.
- 10.0.15. One administrative personnel to control the resources and attendance of the workers to be ensured.
- 10.0.16. Adequate quantities of consumables like Argon, Oxy- Acetylene gases and welding electrodes as required along with cutting/welding set / argon welding sets shall be arranged by the contractor.
- 10.0.17. Hydraulic jacks of 50T/ 100T capacity shall be arranged by the contractor for rotating equipment works.
- 10.0.18. If the duration of work continues beyond stipulated period due to any reason, no claim for compensation will be entertained.
- 10.0.19. The work details are brief & for Subcontractor knowledge only. Subcontractor will have to do all the related works as per requirement.
- 10.0.20. The contractor will be responsible to pay the damages to the property of Board or individual caused by his worker during the course of contract. If the contractor fails to pay the same it will be recovered from his bill.
- 10.0.21. No compensation claimed for idle labor for any reason will be entertained by BHEL.
- 10.0.22. All general tools and plants for execution of the work will have to be arranged/ maintained by the contractor at his own cost & risk.
- 10.0.23. In normal course, the interpretation of the under signed on any matter or decision given by him on any disputable points will be final and binding on the contractor.
- 10.0.24. Successful bidder is to obtain necessary "No Dues" certificate before de-mobilization from site.
- 10.0.25. Successful bidder has to arrange 05 copies of overhauling reports which will include various protocols with necessary data/ MOMs / important correspondences / log sheets etc. and the book shall be spiral bound with thick acetate papers in front and back along with BHEL logo printed suitably on thick art paper at the front.
- 10.0.26. Accommodation for the sub-contractor's manpower will be provided if made available by the customer as per the applicable charges.
- 10.1. LAISION WITH ALL STATUTORY AUTHORITIES :
- a) Compliance of IBR & other statutory provisions as required at site, whether mentioned in this contract or not shall be binding on the contractor.
 - b) If there is any change in labour laws after the contract has been awarded, then the new law shall automatically be binding on the contractor.
 - c) No additional financial compensation shall be paid by BHEL to the contractor on account of increased expenditure caused by a) and b) above.

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Chapter-X- SPECIAL TERMS AND OTHER CONDITIONS

10.2. SUBMISSION OF DOCUMENTS :

The contractor shall submit following documents at appropriate time either before or during the execution of the work and as directed by Site In-Charge.

- 1.0 Test certificates of Pulling and Lifting machines / appliances.
- 2.0 Details of workers to be deployed with name, address and category.
- 3.0 Details of supervisory staff to be deployed.
- 4.0 Authorization for receipt of materials and for signing of Measurement Books etc,
- 5.0 Approval from IBR to work in MP.
- 6.0 Details of approved HP Welders with certificate copies.
- 7.0 Labour license specific to the contract.
- 8.0 List of T&P brought into plant premises along with their serial numbers and dates/years of purchase.
- 9.0 List of consumables brought into plant premises along with their serial numbers and dates/years of purchase, along with test certificates wherever applicable.
- 10.0 Insurance policy for the workers to be deployed in this contract.
- 11.0 Safety undertaking.

The contractor shall submit following documents in report form within 15 days from commissioning of unit after erection work is completed

- 1.0 Details of work executed.
- 2.0 Measurements against different schedules in compiled form.
- 3.0 Material issue details.
- 4.0 Material consumption details.
- 5.0 Material return details.
- 6.0 Copies of pay sheets to workmen.
- 7.0 Details and proof of remittance of PF to workmen (before final bill).
- 8.0 No dues clearance from MPPGCL

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-XI- SPECIAL INPUTS TO BE PROVIDED BY CONTRACTOR

SPECIAL INPUTS TO BE DEPLOYED AT SITE ALONGWITH SITE MOBILISATION BY SUCCESSFUL BIDDER AS ESSENTIAL PART OF THE CONTRACT CONDITION FULFILMENT.

1. Furnishing of quarters/ Field Hostel issued by Satpura TPS/MSPGCL at their township for temporary stay of BHEL personnel as per following details:
 - a. Wooden cots with mosquito curtain frame having normal size of 4.5'x 6.5' (costing not less than 2500/- each) and mattresses for cots of 2.5' coir topped with 1"soft foam: 10 Nos.
 - b. Bed linen (new Bombay dyeing)
 - c. (16 Nos. in use and 16 Nos. stand by) : 32 Nos.
 - d. Pillow (M foam or equivalent) standard size : 16 Nos.
 - e. Woolen blanket of Raymond make or equivalent : 16Nos.
 - f. Pillow cover for above(Bombay 16 Nos. : 32 Nos
In use and 16 Nos. in standby)
 - g. Chairs (costing not less than Rs 250/-) : 16Nos.
 - h. Wooden table (4'x3' min size) with plastic cover : 08Nos.
 - i. Glass tumblers for drinking water : 03dozens
 - j. Plastic jugs for drinking water (2 liter capacity) : 16 Nos.
 - k. Aqua guard/water filter for drinking water : 02Nos
(To be installed in mess)
 - l. Plastic buckets 2 Nos. per bathroom with suitable plastic mugs : 32Nos.
 - m. New mosquito nets to suit sl no (a) above of nylon fabric : 16Nos.
 - n. Door mats at entrance of the main door and bathroom door : 32Nos.
 - o. Messing arrangement with (tables & chairs) cook & helper, utensils including gas burner & cooking gas for 16 Nos. personnel throughout overhauling period.
 - p. Cleaning of rooms regularly including bathrooms etc. must be arranged one person to be deployed for the above.
 - q. Bed sheets, pillow covers must be changed with washed ones at least once in 4 days.
 - r. Cleaning, washing of bed sheets and pillow covers regularly.
 - s. All aforesaid furnishing items are to be removed after the work is completed at site by the contractor at his own cost.
 - t. Contractor to hand over the quarters to Sapura TPS/MPPGCL authorities with the help of BHEL representative.
 - u. Initial quantity bulbs (60w/100w) as required is to be arranged by the contractor and also subsequent replacement of fused bulbs.
 - v. Arrangement of locking the rooms if not existing and provision of suitable locking the rooms if not existing and provision of suitable locks with 2 keys min. per lock (Godrej) naval 6 levers or equivalent.
 - w. Woolen blanket (during winter)-----
 - x. Color TVs (21 inch.) with cable connection to be provided as per instructions
 - y. **NOTE: Any shortage in the above amenities may be made up from time to time.**