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T E N D E R S P E C I F I C A T I O N

TENDER NO. BHEL/ NR/SCT/RAMGARH/ C&I/843

FOR

"ERECTION, TESTING, COMMISSIONING, TRIAL OPERATION AND HANDING OVER OF ALL C&I PACKAGES FOR 160 MW RAMGARH COMBINED CYCLE POWER PROJECT, RAMGARH DISTT. JAISELMER, RAJASHTHAN."

PART I – TECHNICAL BID

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northern Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301(INDIA)

ISO 9001, ISO 14001 and OHSAS 18001 certified company
SubContract and Purchase Deptt.

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northern Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301(INDIA)
Phone: 0091-0120-2416528 / 2416273 / 2416274
Fax 091-0120-2416528 / 2515467
Email:samriddhi@bhelpsnr.co.in/swapan@bhelpsnr.co.in

TENDER NO. BHEL/ NR/SCT/RAMGARH/ C&I/843

IMPORTANT NOTE

PURCHASER OF THIS TENDER DOCUMENT IS ADVISED TO CHECK AND ENSURE COMPLETION OF ALL PAGES OF TENDER DOCUMENT AND REPORT ANY DISCREPANCY TIMELY FOR CORRECTIVE ACTION, IF ANY, TO THE ISSUING AUTHORITY BEFORE THE BIDS ARE SUBMITTED. ORIGINAL COPY OF TENDER DOCUMENT COMPLETE IN ALL RESPECTS MUST BE SUBMITTED BACK AS PART OF THE BID WITHOUT WHICH THE SAME IS LIABLE TO BE REJECTED BY BHEL.

THIS TENDER SPECIFICATION ISSUED TO:

M/S----------

Rev 00
6th July 2010

NOTICE INVITING TENDER

(Document No PS: MSX: NIT)

Bharat Heavy Electricals Limited

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

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To

Dear Sir/Madam,

Sub : NOTICE INVITING TENDER

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

1.0 Salient Features of NIT

SL NO	ISSUE	DESCRIPTION	
i	TENDER NUMBER	BHEL/ NR/SCT/RAMGARH/ C&I/843	
ii	Broad Scope of job	ERECTION, TESTING, COMMISSIONING, TRIAL OPERATION AND HANDING OVER OF ALL C&I PACKAGES FOR 160 MW RAMGARH COMBINED CYCLE POWER PROJECT, RAMGARH DISTT. JAISELMER, RAJASHTHAN	
iii	DETAILS OF TENDER DOCUMENT		
a	Volume-IA	*Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc*	*Applicable*
b	Volume-IB	*Special Conditions of Contract (SCC)*	*Applicable*
c	Volume-IC	*General Conditions of Contract (GCC)*	*Applicable*
d	Volume-ID	*Forms and Procedures*	
e	Volume-II	*Price Schedule (Absolute value).*	*Applicable*
iv	Issue of Tender Documents	1. *Sale from BHEL PS Regional office at :* *Start : 07.12.2011 , Time :0900 to 1200 Hrs* *Close: 27.12.2011 , Time : 1200 Hrs* 2. From BHEL website (www.bhel.com) Tender documents can however be downloaded from website till due date of submission	*Applicable*
v	DUE DATE & TIME OF OFFER SUBMISSION	*Date : 27.12. 2011, Time : 1500Hrs* *Place :*	*Applicable*
vi	OPENING OF TENDER	*1/2 hour after the latest due date and time of Offer submission* *Notes:* *(1) In case the due date of opening of tender becomes a non-working day, tenders shall be opened on next working day at the same time.* *(2) Bidder may depute representative to witness the opening of tender*	*Applicable*
vii	EMD AMOUNT	*Rs 2,00,000/-*	*Applicable*
viii	COST OF TENDER	*Rs 2000/-.*	*Applicable/~~Not Applicable~~*
ix	LAST DATE FOR SEEKING CLARIFICATION	*Date: 27.12.2011* *Along with soft version also, addressing to undersigned & to others as per contact address given*	*Applicable*

		below	
x	SCHEDULE OF Pre Bid Discussion (PBD)	*Date : _ _ /_ _/ _ _ _ _ , Time :* *Place :*	~~*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 hosted in BHEL webpage (www.bhel.com -->Tender Notifications →View Corrigendums) and not in the newspapers. Bidders to keep themselves updated with all such information	

2.0 The offer shall be submitted as per the instructions of tender document and as detailed in this NIT. Bidders to note specifically that all pages of tender document, including these NIT pages of this particular tender together with subsequent correspondences shall be submitted by them, duly signed & stamped on each page, as part of offer. Rates/Price including discounts/rebates, if any, mentioned anywhere/in any form in the techno-commercial offer other than the Price Bid, shall not be entertained.

3.0 Unless specifically stated otherwise, bidder shall remit cost of tender and courier charges if applicable, in the form of Demand Draft drawn in favour of Bharat Heavy Electricals Ltd, payable at Power Sector Regional HQ at Noida issuing the Tender, along with techno-commercial offer. Bidder may also choose to deposit the Tender document cost by cash at the Cash Office as stated above against sl no iv of 1, on any working day; and in such case copy of Cash receipt is to be enclosed with the Techno Commercial offer. Sale of tender Documents shall not take place on National Holidays, holidays declared by Central or State Governments and BHEL PS HQ at Noida, Sundays and second/ last Saturdays

4.0 Unless specifically stated otherwise, bidder shall deposit EMD through Demand Draft/Pay Order in favour of Bharat Heavy Electricals Ltd, payable at Noida. For other details and for 'One Time EMD' please refer General Conditions of Contract.

5.0 Procedure for Submission of Tenders: The Tenderers must submit their Tenders to Officer inviting Tender, as detailed below:

- PART-I consisting of 'PART-I A (Techno Commercial Bid)' & 'PART-I B (EMD/COST of TENDER)' in two separate sealed and superscribed envelopes (ENVELOPE-I & ENVELOPE-II)
- PART-II (Price Bid) – in sealed and superscribed envelope (ENVELOPE-III)

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: 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. 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 : Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc	
ix.	Volume – I B : Special Conditions of Contract (SCC)	
x.	Volume – I C : General Conditions of Contract (GCC)	
xi.	Volume – I D : Forms & Procedures	
xii.	Volume – II (UNPRICED – without disclosing rates/price, but mentioning only 'QUOTED' or 'UNQUOTED' against each item	
xiii.	Any other details preferred by bidder with proper indexing.	

	PART-I B	
	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: CONTAINING THE FOLLOWING:	
i	o Envelopes I o Envelopes II o Envelopes III	

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

7.0 No Deviation with respect to tender clauses and no additional clauses/ suggestions/ in Techno-commercial bid/ Price bid shall normally be considered by BHEL. Bidders are requested to positively comply with the same.

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

9.0 Assessment of Capacity of Bidders: Shall be applicable for this tender

Bidders capacity for executing the job under tender shall be assessed as per the following:

I. Assigning Weightages (A) for Similar Jobs Under-Execution: Weightages shall be worked out and assigned based on the average number of Similar Works under execution including works yet to be commenced by the agency, in the following manner:

i). Number of Similar Jobs

a) No. of jobs in BHEL, PSER : Say 'J'
b) No. of jobs in BHEL, PSSR : Say 'K'
c) No. of jobs in BHEL, PSWR : Say 'L'
d) No. of jobs in BHEL, PSNR : Say 'M'
e) No. of jobs with other customers* : Say 'N' (*: Other than BHEL PSER, PSSR, PSWR & PSNR)
f) Average No. of Jobs is 'P'= (J+K+L+M+N) divided by 5

ii) Weightage "A" assigned to bidders based on Average Number of jobs "P";

a) If 'P' = 0-1, "A" will be equal to '3'
b) If 'P' = 2-3, "A" will be equal to '2'
c) If 'P' = 4-5, "A" will be equal to '1'
d) If 'P' is Above 5, "A" will be equal to '0'

II. Weightage "B" for Quarterly Performance Reports of Vendors: This shall be based on the averages of the net weighted score obtained by the bidder for the jobs under execution (excluding works not commenced) for the quarter previous to the last quarter reckoned from the date of latest due date of submission, in all four Regions i.e BHEL PSER, PSSR, PSWR & PSNR, in the following manner.

i). Ratings by Power Sector Region:

a) PS ER's Rating 'Rer' = ($X_1 + X_2 + .. + X_n$) divided by n
b) PS WR's Rating 'Rwr' = ($X_1 + X_2 + .. + X_n$) divided by n
c) PS SR's Rating 'Rsr' = ($X_1 + X_2 + .. + X_n$) divided by n
d) PS NR's Rating 'Rnr' = ($X_1 + X_2 + .. + X_n$) divided by n
e) Over all Power Sector Region Rating 'R_{BHEL}'= (Rer+ Rwr+ Rsr+ Rnr) divided by 4

(where "$X_1, X_2, X_3,...X_n$" is the net weighted score obtained by the bidder as per the "Evaluation of Contractor Performance (Quarterly)" against the various contracts 'n' under execution in the respective Region).

ii) Weightage "B" assigned to bidders based on Overall Power Sector Rating (R_{BHEL}):

a) If R_{BHEL} is 80% and above, "B" will be equal to '6'
b) If R_{BHEL} is > 70% < 80%, "B" will be equal to '5'
c) If R_{BHEL} is > 60% < 70%, "B" will be equal to '4'
d) If R_{BHEL} is = < 60%, "B" will be equal to '0'

III. Evaluation of Bidders capacity to execute the job under tender: shall be based on the sum of scores obtained in 'A' and 'B', as below:

a) 6 or above : Considered 'Qualified' for the job under tender
b) Less than 6: Considered 'NOT Qualified' for the job under tender

IV. Explanatory note:

a) Similar work means Boiler or Turbine or Civil or Electrical or CI, etc irrespective of rating of Plant
b) Quarter shall be as per the quarter defined in the "Evaluation of Contractor performance (Quarterly)". For contracts where annexed Quarterly Evaluation performance was not part of the contract, 'Quarterly Performance Reports' previous to the last quarter reckoned from the date of latest due date of submission, given by the respective project site against the contract will be the basis for evaluation.

c) Vendors who are not executing any jobs presently in the Region and first timers to the Region, may be considered subject to satisfying all other tender conditions

d) 'Under execution' shall mean works in progress upto Boiler Steam Blowing (for Boiler and Auxilliaries) or Synchronisation (for all other jobs including Civil) shall be considered.

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

of work, facilities available at sites or on terms and conditions. No additional claim shall be entertained by BHEL in future, on account of non-acquaintance of above.

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

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

13.0 In the event of any conflict between requirement of any clause of this specification/ documents/drawings/data sheets etc or requirements of different codes/standards specified, the same to be brought to the knowledge of BHEL in writing for clarification before due date of seeking clarification (whichever is applicable), otherwise, interpretation by BHEL shall prevail. Any typing error/missing pages/ other clerical errors in the tender documents, noticed must be pointed out before pre-bid meeting/submission of offer, else BHEL's interpretation shall prevail.

14.0 Unless specifically mentioned otherwise, bidder's quoted price shall deemed to be in compliance with tender including PBD.

15.0 Bidders shall submit Integrity Pact Agreement (Duly signed by authorized signatory who signs in the offer), if applicable, along with techno-commercial bid. This pact shall be considered as a preliminary qualification for further participation. The names and other details of Independent External Monitor (IEM) for the subject tender is as given at point (xi) of 1 above.

16.0 The Bidder has to satisfy the Pre Qualifying Requirements stipulated for this Tender in order to be qualified. The Price Bids of only those bidders will be opened who will be qualified for the subject job on the basis of pre-qualification evaluation/ techno-commercial bids, approval/ acceptance of customer (as applicable), etc. and date of opening of price bids shall be intimated to only such bidders.

17.0 In case BHEL decides on a `Public Opening', the date & time of opening of the sealed PRICE BID shall be intimated to the qualified bidders and in such a case, bidder may depute one authorised representative to witness the price bid opening. BHEL reserves the right to open 'in-camera' the 'PRICE BID' of any or all Unsuccessful/Disqualified bidders under intimation to the respective bidders.

18.0 Validity of the offer shall be for six months from the latest due date of offer submission (including extension, if any) or specified otherwise in SCC of tender.

19.0 BHEL reserves the right to decide the successful bidder on the basis of Reverse Auction process. In such case all qualified bidders will be intimated regarding procedure/ modality for Reverse Auction process prior to Reverse Auction and price will be decided as per the rules for Reverse Auction. .

However, if reverse auction process is unsuccessful as defined in the RA rules/procedures, or for whatsoever reason, then the sealed 'PRICE BIDs' will be opened for deciding the successful bidder. BHEL's decision in this regard will be final and binding on bidder.

20.0 On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.

21.0 In case the bidder is an "Indian Agent of Foreign Principals", 'Agency agreement has to be submitted along with Bid, detailing the role of the agent along with the terms of payment for agency commission in INR, along with supporting documents.

22.0 The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.

23.0 In case Consortium Bidding is allowed as per Pre Qualifying Requirement, then Prime Bidder and Consortium Partner shall enter into Consortium Agreement. Validity period of Consortium Agreement shall be 6 months after which the same can be re validated.

'Stand alone' bidder cannot become a 'prime bidder' or a 'consortium bidder' in a consortium bidding. Prime bidder shall neither be a consortium partner to other prime bidder nor take any other consortium partners. However, consortium partner may enter into consortium agreement with other prime bidders. In case of non compliance, consortium bids of such Prime bidders will be rejected. .

24.0 The bidder shall submit documents in support of possession of 'Qualifying Requirements" duly self certified and stamped by the authorized signatory, indexed and properly linked in the format for PQR. In case BHEL requires any other documents/proofs, these shall be submitted immediately.

25.0 The bidder may have to produce original document for verification if so decided by BHEL.

26.0 Order of Precedence

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

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

For BHARAT HEAVY ELECTRICALS LTD

(SCT)

Enclosure

01. Annexure-1: Pre Qualifying criteria.
02. Annexure-2: Check List.
03 Other Tender documents as per this NIT.

ANNEXURE - 1

PRE QUALIFYING CRITERIA

JOB: **ERECTION, TESTING, COMMISSIONING, TRIAL OPERATION AND HANDING OVER OF ALL C&I PACKAGES FOR 160 MW RAMGARH COMBINED CYCLE POWER PROJECT, RAMGARH DISTT. JAISELMER, RAJASHTHAN.**

TENDER NO.: BHEL/ NR/SCT/RAMGARH/ C&I/843

SL NO	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria Name and Description of qualifying criteria
A	Submission of Integrity Pact duly signed.	Not Applicable
B	Assessment of Capacity of Bidder to execute the work as per sl no. 9 of NIT (if applicable)	Applicable
C	FINANCIAL CRITERIA	
C1	Tenderers should have an average annual turnover of minimum of Rs 38 Lacs (Rupees Thirty Eight Lacs Only) based on the audited accounts of last three financial years (2007-08, 2008-09 & 2009-10) or (2008-09, 2009-10 & 2010-11). Bidder shall submit audited annual accounts (balance sheets and profit &loss account)	
C2	NETWORTH Net worth of the Bidder based on the latest Audited Accounts as furnished for 'C1' above should be positive	
C3	PROFIT Bidder must have earned cash profit in any one of the three Financial Years as applicable in the last three years defined in 'C1' above based on latest Audited Accounts.	
D	Technical	
D1	Bidder who wish to participate should have executed, during last 7 years as on the "latest date of Bid Submission", C & I works for BTG/GT or CI works consisting of DCS/DDC/Station C&I, in one unit of atleast 60 MW rating 'OR' Execution of atleast one contract of C&I works consisting of DCS/DDC/Station C&I in any industry	

	with its executed value of Rs. 100 Lakhs or more. (Relevant document in support of above works shall be submitted.) 'AND'	
D2	Bidder should have executed, similar work in the last 7 years of any one of the following:-	
	3.1) One single work valuing minimum Rs 100 lac 'OR' 3.2) Two works valuing each of minimum Rs 62.5 lac 'OR' 3.3) Three works valuing each of minimum Rs 50 lac	
E	**Approval of Customer (if applicable)** **Note: Names of bidders who stand qualified after compliance of criteria A to D shall be forwarded to customer for their approval. Price bid of only those bidders shall be opened who are approved by customer.**	**Not Applicable**
F	**Consortium criteria (if applicable)**	**Not Applicable**

NOTES:

1. If the Qualifying Work is completed in the seven (7) year period as specified above, even if it has been started earlier, the same will also be considered meeting the qualifying requirements.
2. Time period for achievement of Qualification Requirement is in the last 7 years ending on the 'latest date of bid submission' in case of Open tenders.
3. 'Executed' means the vendor should have achieved the criteria specified in the common QRs even if the contract has not been completed or closed.
4. 'Similar works' means C& I works.

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

NOTE : STRIKE OFF 'YES' OR 'NO', AS APPLICABLE

DATE :

AUTHORISED SIGNATORY
(With Name, Designation and Company seal)

ISO 9001, ISO 14001, OHSAS 18001 and SA-8000 certified company
SubContract and Purchase Deptt.

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301.INDIA
Phone: 0091-0120-2416273 / 2416274
Fax 091-0120-2416528
Email:swapan@bhelpsnr.co.in/samriddhi@bhelpsnr.co.in

NOTICE INVITING TENDER

Last Date of Sale:27/12/2011(12:00 Hrs) Due Date of Submission:27/12//2011(15.00 Hrs)

NIT NO. / DESCRIPTION OF WORK
TENDER NO. BHEL/ NR/SCT/RAMGARH/ C&I/843 **Sealed tenders are invited from the contractors fulfilling qualifying requirements as given in tender document for the work of "ERECTION, TESTING, COMMISSIONING, TRIAL OPERATION AND HANDING OVER OF ALL C&I PACKAGES FOR 160 MW RAMGARH COMBINED CYCLE POWER PROJECT, RAMGARH DISTT. JAISELMER, RAJASHTHAN."**

NOTES:-

1. The complete tender documents can be downloaded from BHEL Web Site, www.bhel.com
2. All corrigenda, addenda, amendments and clarifications to this Tender will be hosted in this web page and not in the newspaper

SDGM / SCT

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TECHINICAL CONDITIONS OF CONTRACT (TCC)

TENDER NO. BHEL/ NR/SCT/RAMGARH/ C&I/843

FOR

ERECTION, TESTING, COMMISSIONING, TRIAL OPERATION ANDHANDING OVER OF ALL C&I PACKAGES FOR 160 MW RAMGARH COMBINED CYCLE POWER PROJECT, RAMGARH DISTT. JAISELMER, RAJASHTHAN.

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,
Distt.GautamBudh Nagar, NOIDA – 201 301 (INDIA)

INDEX

Chapter - 1: Project Information

160 MW Ramgarh Combined Cycle Power Project

Rajasthan VidyutUtpadan Nigam Limited (RRVUNL) is setting up 160 MW CCPP at Ramgarh. RVUNL has entrusted BHEL for Design, Engineering, Manufacturing, Supply, Transportation, Storage, Installation, Testing and commissioning of 1X 110 MW GTG, 1X50 MW STG, 1X182TPH HRSG packages along with their auxiliaries, 160 MW Combined Cycle Gas Based Thermal Power Plant, Stage-III, Ramgarh, Distt- Jaisalmer, Rajasthan.

The site location is 60 KM away from Jaisalmer on Jaisalmer-Ramgarh Road. Nearest Railway siding is available at Jaisalmer. Nearest Airport & Railhead is 60 KM.

Existing Units: Stage-1 GT-1 35.5MW and Stage-II GT-2 37.5 MW & STG 37.5MW.

All dispatches are expected by road, as there is no railway siding available near the plant.

Tenderers are advised to visit and acquaint themselves with site conditions before quoting. No compensation, whatsoever, shall be entertained on this account.

Chapter - 2: SCOPE OF WORKS

2.0 SCOPE OF WORK

2.1 BHEL has been entrusted the work of– Design, Engineering, Manufacturing, Fabrication, and supply of Main plant and equipments for 160 MW RAMGARH CCPP at Combined Cycle Power Plant of M/s Rajasthan RajyaVidyutUtpadan Ltd (RRVUNL) at RAMGARH, Rajasthan comprising of 110 MW Gas Turbine Generator set, 50 MW steam generator set, Heat Recovery Steam Generator (HRSG) & associated auxiliaries and Power cycle Piping valves including C&I etc.

2.2 Scope of these specifications cover complete work of handling, transportation of materials from Project storage yard / stores to erection site / place of erection , storage at erection site, preservation, watch and ward, dressing, chipping and leveling of foundations, cleaning, checking, testing, pre-assembly, erection, calibration, alignment, grouting, welding, etc. wherever required, preservative/ touch-up painting including supply of paints etc, earthing of equipment, including other activities required for erection, testing, commissioning, post commissioning, trial operations & handing over of all C&I System and Equipments&items as indicated in TCC & in the rate schedule covered within the scope of these specifications for GTG system, HRSG package and STG System at 160 MW RAMGARH CCPP.

2.2.1 **SCOPE OF WORK FOR InstrumentationPackage IN GENERAL for 110 MW Gas turbine, 180TPH Heat recovery Steam generator, 50 MW Steam Turbine, Generator auxiliaries and other interface (BOPs).**

1. Erection and commissioning of DCS panels for HRSG, STG, GTG, Auxiliaries etc.
2. Erection and commissioning of Digital Automatic Voltage Regulator Panel
3. Erection and commissioning of MCC/Starter Panel/Marshalling Boxes etc.
4. Supply as well as installation of material for sealing and making vermin/ dust proof unused openings, if any, in panels/ JBs
5. Installation of Danger Board, First aid box
6. Supply of all consumables and hardwares required for installation
7. Functional Electrical Site testing of LTMotors
8. Erection and commissioning of All Types of Field Instruments like Temperature, Pressure and Flow instruments (local & remote) and special instruments like EWLI, SWAS System, Gas analyser, Primary sensorsfor remote monitoring etc.

9. Erection and commissioning Man Machine Interface & Data Acquisition System consists of Operator Workstations (max Station),Engineering station, Computers / PLC based Equipments,Printers, Ethernet Switches

10. Erection & Testing of all types of control/instrumentation cables etc.

11. Erection of all types of Hardware like impulse pipes, cable trays & tray supports etc.

12. Fabrication and installation of steel supports, wherever required.

13. Erection Installation of canopy for outdoor pushbutton stations/motors/panels/ instrumentation.

14. Commissioning of all Types of Electrical/ Pneumatic operated Valves/Actuators/ Controllers and Relief Valves.

15. Supply of adequate quantity of touch up paint and paints as required for items covered in scope of works

16. Erection and commissioning of UPSPanel and ACDB etc.

17. Instrumentation for CO2 Fire Protection for GT & Generator system

18. Vibration monitoring system

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Instrumentation Packages

2.3 GENERAL

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

2.3.1 Identification of equipments at storage yard, technical assistance for checking and making the shortage/damage reports, taking delivery from storage yard/ stores and calibration, erection, aligning, fastening, supporting, cleaning, checking, testing, commissioning, troubleshooting and carrying out statutory tests as required, trial operation, up to the time of completion of commissioning activities and commercial operation of the unit and handing over to customer or till completion of contract period whichever is earlier, along with the supply of all consumables, tools and tackles and testing instruments.

2.3.2 It is not the intent to specify herein all details of material. Any item related to this work not covered, but necessary to complete the system will be deemed to have been included in the scope of the work.

2.3.3 All the work shall be carried out as per instructions of BHEL engineer. BHEL engineer's decision regarding the correctness of the work and method of working shall be final and binding on the contractor.

2.3.4 Contractor shall erect all items/materials etc. as per sequence prescribed by BHEL at site. BHEL engineer depending upon the availability of materials/work fronts etc will decide the sequence of erection/commissioning methodology. No claims for extra payment from the contractor will be entertained on the grounds of deviation from the methods of erection/commissioning adopted in erection/commissioning of similar job or for any reasons whatsoever.

2.3.5 Site testing wherever required shall be carried out for all items/materials installed by the contractor to ensure proper installation and functioning in accordance with drawings, specifications and manufacturer's recommendations.

2.3.6 The contractor shall co-ordinate and provide assistance for satisfactory testing, pre-commissioning, commissioning and trial run of the connected equipment under overall guidance of BHEL and shall locate any cause of malfunction and rectify the same for proper operation. Testing shall also include any additional tests, which the Engineer feels necessary because of site conditions and also to meet system specification.

2.3.7. During the course of erection, testing and commissioning for C&I work certain rework / modification / rectification / repairs / fabrication etc. may be necessary on account of feedback from other power stations or units already commissioned and/ or units under erection and commissioning and also on account of design changes and manufacturing incompatibilities and site operation / maintenance requirements. Contractor shall carryout such rework /modification / rectification / fabrication / repairs etc, promptly and expeditiously and the same shall be deemed to be part of the scope of work.

2.3.8 The work shall be executed under the usual conditions without affecting power plant construction and in conjunction with other operations and contracting agencies at site. The contractor and his personnel shall co-operate with the personnel of other agencies, co-ordinate his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

2.3.9 All necessary certificates and licenses required to carry out this work are to be arranged by the contractor expeditiously at his cost.

2.3.10 The contractor shall take delivery of item, materials, from the storage yard / stores/ sheds of BHEL / customer which are within plant premises. He shall also make arrangements for, safe custody, watch and ward of equipment after it has been handed over to him till they are fully erected, tested and commissioned till the contract period. The contractor shall note that items/materials shall be transported to erection site / assembly yard etc. by

the prescribed route without disturbing and causing damage to other works in the most professional manner. All items, Hardware, etc. shall be stored in appropriate manner as per BHEL's instructions.

2.3.11 The contractor shall take delivery of items/materials, and consumables from the stores/ storage area / sheds of BHEL / customer after getting approval of engineer / customer in the prescribed indent forms of BHEL / customer.

2.3.12 After completing all the works, contractor shall hand over all remaining extra materials with proper identification tags in packed condition to BHEL stores. In case of any use over actual design requirements, BHEL reserves the right to recover the cost of material used in excess or misused. Decision of BHEL engineer in this regard will be final and binding on the contractor.

2.3.13 Contractor shall, transport all materials to site and unload at site / working area, or pre-assembly yard for inspection and checking. All material handling equipment required shall be arranged by the contractor.

2.3.14 Contractor shall retain all T&P/Testing instrument/Material handling instrument etc at site as per advice of BHEL engineer and same shall be taken out from site only after getting the clearances from engineer in charge.

2.3.15 Contractor shall remove all scrap materials periodically generated from his working area in and around power station and collect the same at one place earmarked for the same. Load of scraps is to be shifted to a place earmarked by BHEL. Failure to collect the scrap is likely to lead to accidents and as such BHEL reserves the right to collect and remove the scrap at contractor's risk and cost if there is any failure on the part of contractor in this respect. All the package materials, including special transporting frames, etc. shall be returned to the BHEL stores / customer's stores by the contractor.

2.3.16 If any item or equipment not covered but requires beingerected/commissioned,same shall be carried out by the contractor. Equivalent or proportional unit rateshall be considered wherever possible from the BOQ. The rates quoted by thecontractor shall be uniform as far as possible for similar items appearing in rateschedule.

2.3.17 The contractor at his cost shall arrange necessary security measures foradequate protection of his machinery, equipment, tools, materials etc. BHELshall not be responsible for any loss or damage to the contractor’s constructionequipment and materials. The contractor may consult the Engineer-in-Chargeon the arrangements made for general site security for protection of hismachinery equipment tools etc.

2.3.18 The contractor shall ensure that his premises are always kept clean and tidy tothe extent possible. Any untidiness noted on the part of the contractor shall bebrought to the attention of the contractor’s site representative who shall takeimmediate action to clean the surroundings to the satisfaction of the Engineer-in-Charge.

2.3.19 The Contractor may have to execute work in such a place and condition whereother agencies also will be under such circumstances.

2.3.20 Scope of work covered under this specification requires quality workmanship, Planning and construction management. The contractor shall ensure timelycompletion of work. The contractor shall have adequate tools, measuringinstruments, calibrating equipment etc. in his possession. He shall also haveadequate trained, qualified and experienced engineers, supervisory staff andskilled personnel. The manpower deployed by contractor shall match with abovescope of works.

2.3.21 All the surplus, damaged, unused materials, package materials, containers, Special transporting frames, etc. shall be returned to the BHEL stores /customer's stores by the contractor.

2.3.22 Any wrong erection shall be removed and re-erected promptly to comply with the design requirements to the satisfaction of Site Engineer.

2.3.23 BHEL will provide vendor's technical support for commissioning of variousproprietary type special instruments/systems like Analysers, VibrationMonitoring System, Flame Scanners etc. The contractor shall carry out the works as perinstructions of BHEL/ Vendor Engineer.

2.3 .24 Contractor shall ensure following:

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

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

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

- Male nurse (in shifts)
- Oxygen set up
- Breathing apparatus
- Eye wash facility
- Stretcher
- Trauma blanket
- Medicines.

In addition to above, BHEL (through its other contractor) has arranged ambulance at work site for emergency purpose, which can be utilized by the contractor in case of emergency. The charges for the same will be decided mutually at site. In case, under unavoidable circumstances, if the ambulance is not available / being used elsewhere, the contractor will have to arrange for the same as under clause 2.3.24 (I).

2.3.25 **The contractor shall comply with following towards Social Accountability;**

a) The contractor shall not employ any employee less than 15 years of age in pursuant to ILO convention. If any child labour were found to have been engaged, the Contractor shall be levied with expenses of bearing his education expenditure which will include stipend to substantiate appropriate education or employ any other member of family enabling to bear the child education expenditure.
b) The contractor shall not engage Forced/ Bonded Labour and shall abide by abolition of Bonded Labour System (Abolition) Act, 1976.
c) The contractor shall maintain Health & safety requirement as stipulated in the Contract and Contract Labour (Regulation & Abolition) Act, 1970.
d) The Contractor shall abide by UN convention w.r.t. Human Rights and shall be liable for Discrimation/ Corporal punishment for failure in meeting with relevant requirements.
e) The Contractor shall abide the requirement of Contract Labour (Regulation & Abolition) Act, 1970 for working hours.
f) The Contractor shall abide by the Statutory requirement of Minimum Wages Act 1948, payment of Wages Act 1936.
g) The Contractor shall arrange potable drinking water to its employees & workers.

2.3.26 In order to meet the environmental concerns it is expected that the contractor shall plant, protect and maintain at least 100 trees or equivalent in the vicinity of the project as per the available space and as per the advice of Engineers.

2.3.27 **The scope of specification covers the installation, testing and commissioning ofthe instrument, hardware along with accessories as detailed in Bill of Quantities (BOQ)**.

Note:

The quantity indicated in the BOQ/ Rate Schedule is tentative only and isliable for variation. Payment will be made as per actual quantum of jobexecuted at the unit rate.

2.4 The contractor's scope of work is further described in the clauses hereafter:

The work will comprise of, but not limited to the following:

A. INSTALLATION OF PANELS (LT MCCs/ MAX CONTROL PANEL/AVR/GEN. CONTROL PANEL etc.)

1. Different types of panels like Max control panel / DCS Panels, DAVR panels, LT MCC, Generator panels etc. are covered in the scope of work for erection and commissioning.

2. Panels are normally supplied in suite of one / two / three/ four cubicles with bottom base frame and these panels are to be mounted on separate site fabricated base frames as per site condition. The base frames to be

properly grouted to the concrete floor or to be TIG welded to the embedded insert plates.

3. Wherever the base channels are not available, the same shall be fabricated, erected and painted at site. The material for this shall be supplied by BHEL. If base frame is to be fabricated /erected, separate rate shall be paid for the executed tonnage as per the rate for fabrication and erection of structural steel. Contractor to arrange anchor bolts required if any.

4. Scope of work include erection at site / control room including chipping of floor, fabrication and fixing of base channel frame, levelling& alignment with spirit level, welding the base channel to the embedded plates / channels, grouting , fixing of anti-vibration pads, termination of inter panel connections, mounting / connections of loose instruments, inter panel bus bar connections, commissioning including loop checking, system checking, and putting necessary controls on automatics**.**

5. Terminations of cables will be by conventional screwed connections. Checking of internal wiring, rectification, testing and calibration of equipment mounted inside is in the scope of contractor. The contractor may have to change / replace items found faulty without any extra cost, however materials for this shall be provided by BHEL.

6. Mostly panels will be delivered fully wired. However wherever required termination of loose wires, bus wires is to be done. Canopy for panels will be supplied loose & shall be installed by the contractor after erection of panels. The cleaning of panels have to be done with electrical vacuum cleaner, besides conventional cleaning with brush etc.

7. The drilling of holes in the gland plates for cable entry shall be part of panel erection. All blank holes / gaps in the gland plates / boxes etc. shall be properly sealed. The base frames shall be painted suitably. The contractor shall carry out the plugging and sealing of left out holes in the gland plates and other openings at the bottom of panels at his own cost by using fire retardant mortar or good quality sealing material as advised by BHEL **.**

8. **Any minor alterations required in the bus bar arrangement, wiring in the panels/ cubicles shall also form part of the work. During testing, commissioning, some equipment / modules may need replacement / repairs. All such replacements / repairs and assistance during commissioning and running of the unit till handing over to the Customer are part of the scope as some of the test / commissioning will have to be done after the machine is running on various loads*.***

B. SCOPE OF ABOVE GROUND Electronic / Electrical Earthing

Earthing work mainly involves laying and tack welding of of conductors on columns / beams at every one meter interval and bolted connections with equipment at least at two points. Low hydrogen content electrodes shall be used for welding. All the above ground welded joints shall be coated with two coats of red oxide primer and two coats of enamel paints.

C. CABLE TRAYS/CABLE DUCTS

1. Various types of sheet metal, galvanized cable tray, i.e. perforated, ladder type,sheet metal duct, solid bottom trays, pre-fabricated structural trays etc., will besupplied in standard lengths along with accessories and hardware viz; coupler plate,tray covers and tray clamps etc.

2. **Erection of cable tray/cable duct shall include cutting, laying, jointing, fixingtee/reducers/ bends/clamps, fixing of tray covers, hardware, fabrication &welding of tray supportsas per tray route layout etc.**

3. Fabrication of bends/tee/ reducers from straight length of tray is within thescope of work and rate quoted shall be inclusive in unit rate (in runningmeter). All site welds of cable trays shall be painted with approved primer and coldgalvanizing paint, which shall be arranged by the contractor.

4. In case structural cable trays, bends, tees, reducers etc., are required to befabricated from structural steel and installed, unit rate applicable for fabrication andinstallation of structural steel shall be applicable in such instances.

5. Cable trays/duct etc may have to be routed underground in cable trench, overhead on structure, along the walls, floors etc.

Installation of tray/duct covers, wherever provided, will be done as a part of trayerection and no extra rates will be payable.

D. CABLE LAYING - (CONTROL / INSTRUMENTATION SHIELDED/ UNSHIELDEDCABLES / PLUG-IN CABLES / Coaxial / UTP / STP /DATA HIGHWAY, ARMOURED / UN-ARMOURED,SINGLE / MULTI-CORE, PVC / HR PVC / FRLS / TEFLON / XLP INSULATION, Optical fibre)

1. Cable laying includes cutting to the required length, laying in overhead Cableracks / underground cable trenches, pipes, flexible conduits, dressing/clamping intray, drilling of holes in gland plates in panels and junction box, glanding, splicing,dressing of spliced wire inside the panel and JBs, providing printed ferrules(ferrule printing machines to be provided by contractor for printingnecessary cross ferruling details) / PVC numerical / alphabetical ferrules(where printed ferrules not possible at all) machine engraved ferrules sleeve/ferrule,termination by using crimp type copper

tinned/aluminium lugs,insulated/un-insulated, crimp and soldered termination, plug-in connections withinsert type crimping, providing identification cable tags of PVC/aluminium at boththe ends and at appropriate interval (Approximately 30meters) throughout theroute length, continuity checking, insulation resistance checking. Contractor to arrange adequate numbers of his own ferrule printingmachines.

2. Entry to the panels, JB's may be at top, side or bottom. All cable are required besupported and clamped near to the panel.

3. **PVC cable ties, PVC ferrules, PVC button and tapes,cable identification tag of PVC/metal as per site requirement, clamping anddressing material such as suitable cable ties/ clamps etc with hardware, PVCsleeves etc. shall be supplied by contractor within the quoted rate for cable laying.**
Only Cable Lugs & Glands Shall Be Issued By BHEL As Free Issue Item.

4. All care should be taken to avoid abrasion, tension, twisting, kinking and stretchingof cables during installation.

5. Cable shielding – all signal cables are supplied with bare shielded copper wire/withbraided wire shield. Generally, shield wire is kept isolated at instrument/field deviceend and continuity is maintained through JBs and earthed at panel end only. Whileterminating the shield wire in either panel or JBs, PVC sleeves are to be used toavoid two-point earthing.

6. Wherever cables run through ducts, conduits, valves, etc., they shall be sealed using fire/weather proof compound. In addition to this, cable entry in panels, MCCs, instruments, electrical actuators etc., are also required to be sealed. The required material for doing so shall be included by contractor in the cabling

7. Contractor shall carefully plan the cutting schedule of each cable drum inconsultation with BHEL site engineer such that wastages are minimized. Recoverywill be made in case the wastages are exceeding the wastage allowances fixed inthis contract.

E. CABLE TERMINATION

1. The Cost Of Cable Laying As Per BOQ Cum Rate Schedule Shall Also Include The Cost Of Termination With Suitable Crimping Type Lugs & Ferrules

2. Only Cable Lugs & Glands Shall Be Issued By BHEL as Free Issue Item. Drilling of holes in gland plates of control panels, JBs etc as per requirement shall also be part of cabling at no extra cost to BHEL.

3. The contractor shall carryout insulation testing, simulation testing etc. as per the instructions of Engineer at site.

4. Screen of signal cables shall run in insulated sleeve (to be arranged by contractor at no extra cost) and shall be terminated as per the instructions of the BHEL Engineer.

F. SCOPE OF WORK FOR FIELD INSTRUMENTS

1. The type of instruments to be erected and commissioned shall be as detailed below:

    a. All types of transmitters like temperature, pressure, flow, level transmitters etc. Local mounted pressure gauges, DP gauges, thermocouples, RTDs, temperature gauges, temperature switches, pressure switches, DP switches, flow switches and limit switches and flow indicator level switches etc.

    b. Air filter regulators, Air lock off valves etc.

    c. Panels / Control desk mounted Instruments like indicators, recorder, console and electronic modules etc.

    d. I / P converters and local controllers.

    e. Pneumatic operated control valves, trip valves, solenoid valves, power cylinders, etc. and electrically operated valves.

    f. Special instruments like vibration sensors, electronic water level indicator, Gas analyser, PC based instruments, etc.

2. Prior to installation, all the local & remote Instruments, thermocouples/RTDs, I/P converters, etc. shall be calibrated. Similarly, limit switches, flow switches, level switches, solenoid valves, air filter regulator, purge meters, etc. shall be checked for proper operation.

3. The scope of work for each instrument shall include calibration, installation, loop checking, commissioning and troubleshooting until satisfactory performance as per operational and system requirement and maintenance till the end of contract period or trial operation whichever is earlier.

4. **In case any instrument requires recalibration to achieve the expected performance, the same shall be carried out at no extra cost.** If any re-calibration or replacement of instruments and rechecking of cable termination is found necessary during commissioning, the same shall be done at free of cost.

5. If any instrument is to be relocated for satisfactory performance, the same shall be carried out by the contractor.

6. Fabrication and installation of racks and supports for instruments, wherever required, shall be carried out by the contractor. Steel materials required for fabrication shall be supplied by BHEL.

7. The scope shall also include marking Tag numbers on the instruments or racks, either by paint or a separate tag plate as per BHEL Engineer's directive.

8. For field mounted instruments, pre-fabricated canopies shall be provided by BHEL. Mounting of canopies shall be done by the contractor as part of scope.

9. The scope of work for pressure/differential pressure transmitters, gauges, switches, shall include fixing the instruments on the racks / supports along with manifolds, and associated fittings and clamps.

10. The scope of work for Temperature transmitters, I/P converters, Air filter/Air lock off valves, Purge meters, Rotameters, position transmitter, probes etc shall include fixing the instruments on the racks / supports along with associated fittings and clamps.

11. The scope of work for control room mounted instruments shall cover mounting of instruments on panels / desk wiring, minor grinding on the cut out of panels for proper fixing.

12. The scope of work for erection of Casing temperature thermocouple of turbine/ metal temperature thermocouple (MTM) or any other special type of thermocouple shall cover laying, dressing andclamping, supply and fixing of tag plates, etc.

13. The scope of work for erection and checking of thermocouple, RTD etc. shall include cleaning of thermo well stubs threads using tap sets, fixing of thermo wells, seal welding of thermo well, wherever required as per BHEL directive of site engineers.

14. The scope of work for temperature switches, gauges shall include providing suitable support for capillary type temperature Gauges/switches besides the works covered above for RTD & T/C.

15. The scope of work for erection and commissioning of float type Level switches includes fixing of switches on float chambers and fixing of float chambers on stand pipe, any minor modification required to match Float chamber with tapping point, providing supports wherever required etc.

16. The scope of work for Electronic type Level switches includes fixing of Electrode standpipe, Electrodes, Electronic unit, any minor modification required to match Float chamber/ Electrode standpipe with tapping point, integration of all loose supplied items etc .

17. The scope of work for special instruments like, Electronic water level indicator, Gas analysers, SWAS Analyser, etc. shall include installation of all loose

items which are not explicitly mentioned, but comes as part of the system, integration of total system and commissioning. The quantities of loose supplied items are approximate only. No extra payment will be applicable for any variation in quantity or for any additional items supplied as part of equipments.

18. For Special Instruments like, Analysers, SWAS System, DCS/PLC vendor support shall be provided by BHEL for commissioning. The contractor shall provide necessary assistance for commissioning activities.

19. All instruments are generally covered in the BOM. However, if any instruments not covered, but requires being erected/commissioned, same shall be carried out by the contractor.

20. In case of Instruments that are mounted and supplied along with main equipment, the contractor shall carry out removal, calibration, re-fixing and commissioning of same, as per requirement.

G. RIGID & FLEXIBLE CONDUITS

1. Cables shall normally be laid on cable trays. However, in case of shorterroutes where trays are not possible, suitable GI pipe/flexible conduits shallbe used.

ii. The scope of works for flexible conduit includes drilling of the holes on theplates, fixing of the end connectors, providing suitable supports and fixingtag marks wherever specified as required by BHEL. The supply of suitableclamps, fasteners and tag plates are in contractor's scope.

iii. Fixing end connectors shall be part of scope of flexible conduit laying.

H. JUNCTION BOXES/PUSH BUTTONS

Different type of junction boxes are to erected by the contractor likejunction boxes below 48 ways and above 48 ways. The junction boxes are to belocated at the locations jointly decided at site during erection. The junction boxesare to be erected on the frames fabricated at site.

I. SCOPE OF WORK FOR IMPULSE PIPES

1. Fabrication and erection of channel / angle / slotted angle supports, cleaning impulse pipe with wire brush and compressed air, edge preparation, cold bending, laying to the required slopes, clamping, welding of isolation / drain valves and fittings by butt / socket welding / swoze lock joints. Servicing of valves, connecting with the process end and to the

instruments, NDT, Hydraulic testing the impulse lines, and painting the lines as per requirement of BHEL engineer. The impulse line may have to be cleaned chemically for removing grease / rusting. Proper tagging of valves and impulse lines on both ends shall be done for proper identification. No extra charges will be claimed by contractor for any modification carried out after laying of Impulse / draft pipe lines due to site requirement in general.

J. SCOPE OF WORK FOR COPPER/ SS TUBES

Fabrication and erection of single angle supports / tray supports for single multi run tube. Laying tubes in the angles / trays from the panel to the equipment, instrument to instrument, air supply line to drive / instrument, air line connections, clamping properly as per standard ferruling and termination at both ends. This includes all fittings and needle valves, stop valves etc. also. Proper tagging of valves and pneumatic tubes on both ends shall be done for proper identification. No extra charges will be claimed by contractor for any modification carried out after laying of pneumatic tubes / draft pipe lines due to site requirement in general.

K. SCOPE OF WORK FOR ELECTRIC & PNEUMATIC ACTUATORS

1. Pneumatic actuators shall be calibrated at site

2. For calibration of any Pneumatic Actuator at field, temporary air supply, if required, shall be arranged by the contractor.

1. All calibration instruments required for calibration of actuators shall be arrangedby the contractor.

2. For all electrical actuators of the valves, functioning, setting and performance oflimit switches/torque switches of various positions shall be checked before andafter installation of the actuators. The position transmitters for inching applicationsshall also be calibrated.

L. SCOPE OF WORK FOR THE INSTRUMENTS MOUNTED AND SUPPLIED ALONG WITH EQUIPMENT/ SKIDS

1. Scope of work covers removal, re-calibration, re-fixing, re-termination of cables,checking the continuity, replacing any defective parts or replacing the totalinstrument, if required.

2. The scope also covers collecting the replacement instruments/parts from BHEL/customer stores, stockyard etc.

M. STRUCTURAL FABRICATION AND INSTALLATION

INSTRUMENT/ JUNCTION BOX FRAME/ PANEL BASE FRAME / CABLE TRAY & MISC STRUCTURES FABRICATION

1. Structural steel material like MS angles, channels, beams, flats, plates etc. shallbe supplied in running meter and the same shall be used for misc fabrication ifrequired and the same shall be used for fabrication of panel base frame, cabletray supports, Canopies for instruments/panels/ drives/JB's/Push Buttons etc.,Instrument/Junction box frames, Impulse Pipe/Instrument Air Pipe supports andinstruments etc.

2. This shall include cutting to size, contouring of ends for connections if required,welding, grinding of excess weld deposits/burrs, drilling of holes for mounting ofdevice/instrument, installation at location, leveling, alignment, providing bracingsand painting etc. No gas cut holes will be permitted.

3. All the fabricated supports/frames for instruments, trays, pipes, electricalequipments, etc., shall be painted after thoroughly cleaned by wire brush, scrapping or any other method as per requirement of BHEL/GVK. Paints andother associated items are in the scope of the contractor.

4. Frame installation at site may involve mounting either on concrete floor bygrouting / using anchor fasteners or on steel structure by welding etc. Allconsumables including anchor fasteners shall be arranged by the contractor.Where required, as part of work, concrete floors may have to be chipped out toreinforcement depth for anchoring the frames. Wherever grouting is required,contractor shall arrange all the required material including cement / grout mix,shuttering etc., necessary labour and meet all other requirements as part ofwork.

5. In case, structural cable trays, bends, tees, reducers etc., are required to befabricated from structural steel and installed, unit rate applicable for fabricationand installation of structural steel shall be applicable in such instances.

6. In certain packages, members of frames/rack for mounting of junction boxes/ instruments may be supplied readymade. These have to be assembled prior toinstallation. The installation rate as quoted shall include assembly of the frames.

7. **Gas cutting of tray/impulse pipe support and holes in frame is notpermitted. Only hacksaw cutting/ drilled hole shall be permitted.**

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N. POWER CYLINDER ERECTION

Platforms on which Power Cylinders are to be mounted are usually provided by the Civil Contractor / other agency. However minor structure work required shall form a part of the work within the quoted rate of the the respective cylinder . Fabrication / erection of stands for mounting of the cylinders The

work also includes minor rectifications/alteration in the tubing , servicing of accessories , setting of limit switches , calibration of actuators and feedback position transmitters

2.5 SCOPE OF CIVIL WORKS

1. The scope of civil works covers minor civil works like drilling, chipping andpunching & opening in concrete floors, slabs, brick walls, base frame of panels, etc. Scope of civil worksalso covers minor civil works required for installation of push button stations,Junction Boxes.

1. Scope of civil works includes supply of grouting materials like cement, sand, etc.,and cleaning of all debris at free of cost.

2.6 WELDING,NON-DESTRUCTIVE TESTING ETC.

2.6.1 Installation of equipment involves good quality welding, NDE checks etc.

2.6.2 Welder deployed for aluminium welding shall have experienced and approved by BHEL and BHEL's Customer after due qualification process/testing.

2.6.3 Welding of all structural steel & aluminium shall be done only by the qualified and approved welders.

2.6.4 All the welders shall be tested and approved by BHEL engineer/ Customer's quality engineer before they are actually engaged on work though they may possess IBR/other certificate. BHEL reserves the right to reject any welderwithout assigning any reason.

2.6.5 The welded surface shall be cleaned of slag and painted with primer paint to prevent corrosion. For this paint will be supplied by the contractor.

2.6.6 Welding electrodes have to be stored in enclosures having temperature and humidity control arrangement. This enclosure shall meet BHEL specifications.

2.6.7 Certain types of coated welding electrodes, prior to their use, call for baking for specified period and will have to be held at specified temperature for specified period. Also, during execution, the coated welding electrodes have to be carried in portable ovens.

2.7 MEASUREMENTS& WASTAGE & CUTTING ALLOWANCES

2.7.1 For all payment purposes, measurement shall be made on the basis of the actual execution of work in line with drawings/documents/site requirements. Physical measurements shall be made by the contractor in the presence of the Engineer.

2.7.2 The measurement for cable, impulse pipes/tubes, GI pipe, conduits, flexible conduits, trays etc., shall be made on the basis of length actually laid.

2.7.3 All the surplus, scrap and serviceable materials, out of the quantity issued to the contractor shall be returned to BHEL in good condition and as directed by the engineer.

2.7.4 All materials returned to stores should carry aluminium tag indicating the size and type. Cables more than 15 meters length is termed as serviceable material and shall be returned size wise and category wise to the owner's stores/yard. Cable of serviceable length being returned to the stores in drums shall have their free ends sealed and the balance lengths on the drum(s) shall be noted and certified by the Engineer-in-charge. This shall be applicable only for the purpose of accounting the cables issued for installation.

2.7.5 While carrying out material reconciliation with contractor, all the above points will be taken into account. All serviceable material returned by the contractor shall be deducted from the quantities issued for the respective sizes and categories and the balance quantity (ies) will be taken as the net quantity (ies) issued to the contractor. Material reconciliation shall be done and allowable scrap quantity calculated as per wastage allowance percentage specified above. Any scrap/wastage generated by the contractor in excess of the allowable percentage shall be charged at the rates decided by the Engineer whose decision shall be final and binding on the contractor.

2.7.6 For all site-fabricated steel items such as supports, racks, frame, Canopy etc. physical measurement shall be made and then converted to tonnage. For steel material supplied to the contractor, all scrap shall be returned to BHEL stores with due accounting.

2.7.7 Every month the contractor shall submit an account for all the materials issued to him by BHEL in the standard Performa prescribed for this purpose by the site in charge.

2.7.8 The erection contractor shall make every effort to minimize wastage during erectionwork. Cutting and wastage allowance shall be computed on length, weight of material actually used, measured and accepted. In any case, the wastage shall not exceed the following limits;

Sl.No.	Item	% Wastage on issued Qty
01.	Each iron/steel section	2
02.	Each size of control / shielded cable	2
03.	Each size of power cables	1
04.	Impulse pipe/tubes/GI pipes/copper tube	1

2.7.9 If the actual wastage is more than the specified figure, then equivalent price of theexcess portion will be deducted from the contractor's bill.

2.7.10 The cable take off from drums shall be planned strategically such that jointing in the run of cables and wastage are avoided. For this purpose the exact route length between various equipment/panels as per the cable schedule shall be measured and the route length recorded before laying of the cables. Depending upon the route length and the type of cable required for various destinations, the cable drums shall be suitably selected for cable laying. Any jointing shall have to be approved by BHEL engineer. All the cut pieces/bits of cables, which are not used, shall be returned to the purchaser for accounting towards wastage. The cables damaged by the contractor shall have to be replaced by the contractor at his own cost.

2.8 FINAL PAINTING

2.8.1 The contractor shall provide all the primer, paint, and other consumables like brush, cleaning agents etc. All T&P, manpower, supervision is in contractor's scope. Painting shall be carried out as per colour scheme approved by BHEL/ RRVUNL.

2.8.2 All metal parts of the equipment including supports, structures, etc., as applicable shall be painted after thoroughly cleaning the surface from dust, rust, greases, oils, scales, etc, by wire brush, scrapping etc; as specified in relevant erection documents. The above parts shall then be painted with specified two coats of specified paint over the shop primer/paint.

2.8.3 Also, where the shop primer/paint has peeled off, the affected area shall be cleaned thoroughly by the specified method and then primer coat applied. Similarly, certain components may be supplied without any primer/paint coat from shop. The surface of such items shall be cleaned as per specifications, coated with suitable primer and then coated with final paint coats. The dry film thickness after final coat should be as per specification. The color, shade etc. shall be as per specification.

2.8.4 Paint and other materials so purchased shall be ISI marked and as per drawing, documents and specifications and painting should be as per colour scheme and quality approved / specified by Engineer.Painting schedule will be furnished at site. Valid Test certificate for the paint so supplied shall be made available before use of the same on work.

In order to have consistency in painting system, it is preferable that all the supplies are sourced from one single manufacturer.

2.8.5 All the fabricated frames, racks, supports, panel base frame etc. wherever applicable shall be painted with two coats of primer and followed by two coats of paint as specified earlier herein. In case of G I Structure, The cold galvanizing paint to be applied as touch up where ever needed. This is to be done as per instruction of BHEL engineer. The Paint required for this purpose is in scope of Contractor

2.8.6 The painters have to undergo test on a mock plate of size 1m*1m and only qualified painters will be allowed to work.

2.8.7 The contractor shall ensure availability of

Ford Cup-4 to measure consistency of paint,

Automatic magnetic gauge to measure the dry film thickness and

SSPC Visual standards to assess degree of cleanliness of surfaces to be painted.

2.8.7 Touch-up painting of LT MCC \ Control Panels or any other equipment /devices wherever necessary.

2.8.8 The primer shall be compatible with the final coat paint schedule.

2.8.9 Full (Spray) painting of transformers, bus ducts with two coats of paint as per Specification

2.8.10 Colour Banding, Legend and Identification Marking, Direction marking etc. shallbe in scope of the contractor.Letter writing shall be done in Hindi / English or in both languages. The painters have to undergo test and only qualified painters will be allowed to work.

2.9 TESTING, PRE-COMMISSIONING, AND POST COMMISSIONING

Pre-commissioning / commissioning and post commissioningActivities

2.9.1 The work is also inclusive of various commissioning activities of the HRSG and Gas turbine package along with its auxiliaries and Steam Turbine packages along with its auxiliaries and station C&I package. The variousactivities, tests, trial runs may have to be repeated till satisfactory results areobtained and also to satisfy the requirements of customer/consultant/ statutoryauthorities.

2.9.2 In case any malfunctioning and/or defects are found during tests, trial runs suchas loose components, undue noise or vibration, strain on connected equipmentsetc., the contractor shall immediately attend to these defects/ malfunctions andtake necessary corrective measures. If any readjustment and realignment isnecessary, the same shall be done as per BHEL engineer's instructions.

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

2.9.4 The pre-commissioning activities will start prior to light up of HRSG and varioustrials, commissioning operations shall continue till the unit is handed over tocustomer. Simultaneous commissioning activities will be in progress in

variousareas, checking of equipments erected, making ready for trial runs, etc.

All these works need specialisedgangs including electricians/instrument mechanics in each area. Contractor shallearmark separate manpower for various commissioning activities. Thismanpower shall not be disturbed or diverted.

2.9.5 The mobilisation of these commissioning gangs shall be such that plannedactivities are taken up in time and also completed as per schedule and the workundertaken round the clock if required. It is the responsibility of contractor todiscuss on day to day / weekly / monthly basis the requirement of manpower,consumables, tools and tackles with BHEL engineer and arrange for the same. Ifat any time the requisite manpower, consumables, T&P are not arranged thenBHEL shall make alternate arrangements and necessary recoveries withoverhead cost will be made from the bills of the contractor.

2.9.6 Contractor shall cut open works if needed as per BHEL engineer's instructionsduring commissioning for inspection, checking and make good the works afterinspection is over without any extra payment.

2.9.7 In case any rework / repair / rectification / modification / fabrication etc. isrequired because of contractor's faulty erection which is noticed duringcommissioning or at any stage, the same has to be rectified by the contractor athis cost**.** If any improvement /repair /rework/rectification/ fabrication/ modificationdue to design improvement/ requirement is involved, the same shall be carriedout by the contractor promptly and expeditiously.Claims if any, for such worksfrom the contractor shall be governed by Section 2.15 of General Conditions ofContract.

2.9.8 It is the responsibility of contractor to provide for necessary labour, tools andtackles and consumables till the completion of work under these specificationseven in case erection, testing and commissioning of this work is delayed due toreasons notattributable to the contractor.

2.9.9 During commissioning activities and carrying out various tests, minor items likegauges, manometers, etc., have to be temporarily erected and put in service tosuit the commissioning activities. BHEL will provide the necessary gauges andequipment. Contractor has to carry out the erection, calibration, dismantling ofthe same. After completion of activities the temporary systems have to beremoved and returned to stores. No extra charges will be payable towards these.

2.10 Commissioning

2.10.1 During pre-commissioning, commissioning, post commissioning and trialoperation stages of various systems, certain category of manpower with T&P andconsumables will have to be provided to BHEL commissioning engineersexclusively at their disposal. It shall be the responsibility of the contractor toprovide Engineers, Electricians, technicians, Helpers, Fitters etc

along withnecessary consumables, hand tools, calibration equipment etc, for the variouscommissioning activities in progress. **During peak months there could berequirements of separate commissioning gangs simultaneously in GT, HRSG, STG & auxiliaries areas. Contractor has to augment the manpower as and when required asper work demand and necessity at site. The quoted rates shall include this.**

2.10.2 It shall be specifically noted that contractor manpower may have to be engagedround the clock simultaneously at different areas and hence considerablenumber of personnel and their overtime payment may be involved. *This aspectmust be considered by the contractor while quoting their rate.* No additionalcompensation by for the same shall be payable, irrespective of number ofpersons engaged or number of working hours per day.

2.10.3 Certain systems may be supplied with portable programming units, which are tobe connected at various locations during pre-commissioning to handing over.Necessary cabling interconnecting the programming units and other connectedpanels has to be carried out by the contractor and are to be dismantled afterwork. For the purpose of testing, monitoring, commissioning, etc., theseprogramming units will have to be repeatedly connected and disconnected atvarious locations. These will be considered as part of commissioning activitiesand no separate payment will be entertained for the above.

2.11 Calibration, Testing & Commissioning

Calibration, testing & commissioning activity as specified in this technicalspecification and rate schedule against various equipments, devices, systemsetc. are broadly classified below. However, there may be some overlappingbetween the activities (erection, calibration and testing, commissioning.) Theclassification of activity is only a guideline for understanding the total volume ofwork in each activity. The contractor shall have no claim for performing orproviding manpower for such overlapping work, which is also within the scope ofthe work.

A Calibration

1. Verification after drawing of material of various types, range of the fielddevices with respect to instrument schedule, data sheet or systemdocument.
2. Codification of instruments as per system tag numbers
3. Calibration / adjustment of instrument as per system requirement / setvalues.
4. Providing head correction in case of pressure measurement as percalculated values or actual measured value for the instrument, which areused for interlock protections / monitoring. This is generally applicable forturbine / generator, lube oil systems, lube oil system of fans etc.
5. Verification of installation of instruments for range, type, tag number asper physical location of process point as per process, instrumentationdiagram.

6. Checking and ensuring the proper function of instrument.
7. All the recorders shall be made functional with proper chart movement and ink marking.
8. Preparation of computerised calibration certificates in the formatsspecified by BHEL Engineers and getting those signed by the customer isin the scope of the contractor.

B Erection

1. Taking material from store, verification, inspection as per shipping list,drawings and documents.
2. Preservation, upkeeping, safe custody of the erected equipments tillhanding over to the customer.
3. Verification of installation as per drawing and document for thecorrectness of cabling, JBs, impulse pipe, various field device, panels,instruments etc.
4. Continuity check and IR value check of cables.
5. Verification of correction of cable termination with respect to instrument,electrical hook-up diagram, panel interconnection diagram, JB schedule.
6. Checking earthing of the equipments and cable shield wire continuity.
7. Energizing the functional group control panels and field devices.
8. Flushing of impulse pipe before making the instruments processconnections through.
9. Any leakages, damages to impulse pipe, field device connections, airconnections etc. shall be fully attended by contractor.
10. All cable glands/piping/tubing to be fixed as per installation requirementbefore commissioning.

C. Testing, Commissioning & Trial Operation

1. Checking/verification of binary/analogue input and output signal from fieldand panel and upto recording/indicating instrument/HMI monitors.
2. Adjustment, testing, calibration of pneumatic drive (control valve, tripvalve, power cylinder for gate/dampers), electrical actuator operatedvalve/gate/dampers of other functional elements.
3. Checking the operating electrical/pneumatic drive through functional grouppanel, remote control desk, HMI, CRT operation and repeatability andsmooth operation to be checked.
4. Checking the interlock, protection and alarm for various process bysimulation of field devices/process changes.
5. Functional check of sub-loop control, sub group control and auto loop andfinetuning.
6. Adjustment of limit switches/feed back position transmitter checking theactuator for correct Limit switch operation for correct position indicationand repeatability shall be ensured.
7. Motor IR value measurement, bearing/winding RTD checking, drying outof motor, providing assistance for trial run of motor which includesmonitoring temperature rise winding/bearing during trial run.
8. Contractor shall prepare calibration/testing report/protocols.

9. During trial run of various systems, if the performance of any instrument isfound erratic, un-satisfactory and requires re-adjustment, re-calibrationetc., the defect shall be attended by contractor.
10. Observing and checking the performance of the various devices onload/process variation. Any deficiencies/defect noticed during the variableload conditions, the same should be attended properly.
11. Observe the proper functioning of sub-group/sub-loop control.
12. Check the operation of various controls in manual/auto mode for smoothfunctioning.
13. Clearing of all bad / invalid signals noticed during commissioning.
14. Providing necessary assistance for **Trial Operation** of the unit is in scopeof this specification. Contractor shall provide adequate numberof skilled manpower and T&P for this purpose.

16. Interruption in TrialOperation for reasons attributable to the Contractor shall result in re-startof the Trial Operation all over again, consequential extension in TimeSchedule / Contract Period shall be to the contractor's account. If any small wiring correction or minor modification in control panel wiringis noticed during the commissioning, it shall be carried out as a part ofcommissioning activity.

2.12 Post-commissioning

Contractor shall rectify the defect observed/informed by customer duringthe trial run.Contractor shall submit the as- built drawing as per guidelines andinstruction of BHEL engineer.After trial run/handing over of the equipment, if due to unforeseenreasons, certain works crop up, the contractor shall provide all theassistance.

2.13 PG Test Assistance

For PG test assistance, laying of impulse pipes, cables, etc. and installation ofinstrument tapping points shall be done by the contractor. These activities maybe carried out at any point of time before or after Completion of Facilities.Such temporary installations shall have to be dismantledand returned to BHEL Stores, after the completion of PG Test for which noseparate payment is admissible.

3.0 FACILITIES IN THE SCOPE OF CONTRACTOR/BHEL

S.No.	Description	Scope /to be taken care by		Remarks
		BHEL	CONTRACTOR	
1.1.0	ESTABLISHMENT			
1.1.1	FOR CONSTRUCTION PURPOSE			
A.	Open space for office	YES		Limited space.Free of charge. As and where made available by M/s RRVUNL
B.	Open space for storage	YES		Limited space.Free of charge. As and where made available by M/s RRVUNL
1.1.2	FOR LABOUR COLONY			
A	Open space	YES		Limited space.Free of charge. As and where made available by M/s RRVUNL
1.2.0	ELECTRICITY			

1.2.1.	Electricity for construction purposes (chargeable/free)			**Free**
1.2.1.1	Single point source	**YES**		
1.2.1.2	Further distribution for the work to be done which include supply of materials & execution		**YES**	
1.2.2	Electricity for the office, stores, canteen etc of the bidder which include:			
1.2.2.1	Distribution from single point including supply of materials & service		**YES**	
1.2.2.2	Supply, Installation & connection of material of energy meter including operation & maintenance		**YES**	
1.2.2.3	Duties & deposits including statutory clearances for above		**YES**	
1.2.2.4	Demobilization of the facilities after completion of works		**YES**	
1.2.2.5	Electricity for living accommodation of the bidder's Staff, engineers, supervisors etc. on the above lines		**YES**	
1.3.0	**WATER SUPPLY**			
1.3.1	**FOR CONSTRUCTION & LABOUR COLONY:**			
1.3.1.1	Making the water available at single point		**YES**	Contractor to make Borewellhimself
1.3.1.2	Further distribution as per the requirement of work including supply of materials & execution		**YES**	
1.4.0	**LIGHTING**			

1.4.1	For construction work (supply of all materials) 1. At office storage area 2.At preassembly area 3.At construction site/area		**YES**	
1.4.2	For construction work (execution of lighting work/arrangements) 1. At office storage area 2. At preassembly area 3. At construction site/area		**YES**	
	Providing the necessary consumables like bulbs, Switches, etc during the course of construction		**YES**	
1.5.0	**Communications facilities for site operations of the bidder**			
	Telephone, fax , internet ,intranet, email etc.		**YES**	
1.6.0	**COMPRESSED AIR SUPPLY**			
1.6.1	Supply of compressor and all other equipments required for compressor & compressed air system including pipes, valves,storage system etc.		**YES**	
1.6.2	Installation of the above system and operation & maintenance of the same		**YES**	
1.6.3	Supply of all the consumables for the above system during the contract period.		**YES**	
	ERECTION FACILITIES			
2.1.1	Providing erection drawings for all the Equipments covered under this scope	**YES**		
2.1.2	Drawings for construction method	**YES**	**YES**	In consultation with BHEL
2.1.3	As-built-drawings-where ever deviations		**YES**	**Do**

	Observed & executed and also based on Decisions taken at site			
2.1.4	Shipping lists etc for reference & planning the activities	**YES**	**YES**	**do**
2.1.5	Preparation of site erection schedules and other input requirements		**YES**	**do**
2.1.6	Review of performance & revision of site erection schedules in order to achieve the end dates & commitments	**YES**	**YES**	**do**
2.1.7	Weekly erection schedule based on Sl. No.2.1.5		**YES**	**do**
2.1.8	Daily erection/work plan based on Sl. No.2.1.7		**YES**	**do**
2.1.9	Periodic visit of senior official of bidder to site to Review the progress so that works are completed As per schedule. It is suggested this review by the senior official of the bidder should be done once in every two month		**YES**	
2.1.10	Preparation of preassembly bay		**YES**	

3.1 BHEL will not be responsible for any loss or damage to the contractor's equipment as a result of variation in voltage or frequency or interruptions in power supply.

3.2 The Contractor shall be responsible for providing all necessary facilities like residential accommodation, transport, electricity, water, medical facilities etc. at his own cost as required under various labour laws and statutory rules and regulations framed there under to the personnel employed by him.

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

3.4 The contractor while drawing construction power supply from Distribution Board should strictly adhere to following points.

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

b) All distribution Boards installed by the contractor should be constructed with fireproof materials viz. Steel frames, Bakelite sheets etc.

c) Connection for single phase should be taken from phase and neutral. Nowhere the connection should be taken with earth as neutral.

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

e) Contractor has to make their own earthing arrangement for their equipment / DB earthing.

f) All electrical equipment / tools and plants should be properly earthed. DBs to be earthed diagonally opposite at two points.

g) Contractor should use “MCCB” and“ELCB” either on incoming or outgoing connections to the DBs.

h) Contractor should ensure that all the CBs / TPNs/ Fuses/ MCCB / ELCB cables etc. should be of adequate rating/ capacity.

i) For permission of supply connections contractor has to submit a test report of their installations with a single line diagram of connected/ proposed loads.

3.5 ELCB will be tested once in a week or as directed by BHEL by actually simulating the earth leakage for all installations and the same shall be recorded in the logbook to be maintained by the contractor.

3.6 In case of power cuts / load shedding no compensation for idle labour or extension of time for completion of work will be given to contractor.

3.7 On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and levelled and debris shall be removed, as per instructions of BHEL, by the contractor at his cost. In the event of his failure to do so, the Engineer will get it done and expenses incurred shall be recovered from the contractor along with prevailing overheads. The decision of BHEL Engineer in this regard shall be final.

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

3.9Contractor should install a PC ALONG WITH MODEM to connect with our server (LAN) AT SITE.

Chapter - IV: T&Ps and MMEs to be deployed by Contractor

4.0 T&P AND MMD DEPLOYED BY CONTRACTOR

S.NO.	EQUIPMENT	CAPACITY	QTY
1.	Welding Generators & Transformers, Rectifiers & TIG Welding sets		APR
2.	Chain pulley blocks	5/10 T	APR
3.	Trailer with Pulling Unit	12 MT	APR
4.	Hydra crane	12/14 MT	1 NOS
5.	Hydraulic Jack (Low Height)	25/50T	APR
6.	Screw Jacks	5/10/25/50T	APR
7.	Oil Filtration Machine	5 to 6 kl/ hr	APR
8.	Crimping tools up to all size of cables under scope of work		Adequate nos.
9.	Hydraulic crimping tool		1 No.
10.	Vacuum Cleaner (Industrial)		1 no
11.	Pipe bending machine		APR
12.	Grinding Machine		APR
13.	Drilling Machines		APR
14.	Electric Winches		APR
15.	Phase sequence indicator		APR
16.	Digital Multimeters 3½ digit of reputed make		5 Nos.
17.	Digital,41/2 digit Motwane/HIL/Fluke		2 nos.
18.	Analog multimeter		APR
19.	250V/500V Hand operated megger		1 no.
20.	Tong Testers AC 5/10 Amp Range, of reputed make		APR
21.	Stop watch		APR
22.	Tele talk 2 wire system		2 sets
23.	Glass thermometer 0-120 deg. C, 0-200 deg.c and 0-600 deg.c		APR
24.	Tachometer non-contact type 0 to 4000 rpm		1 no.

25.	Decade resistance box		1 sets
26.	Torque wrench(12-60 Nm,50-225 Nm)		APR
27.	Ferrule Printing machine		1 no.
28.	Dead Weight Tester rated 400 Kg/cm2 with weights & test gauge facility		APR
28.	Oil temperature bath suitable to calibrate the instruments range 0-300 deg. C with standard temp. gauges & thermostatic control		2 nos.
29.	Standard gauges 12” dial size make		
30.	A) 0-1 kg/cm2 pressure gauge(vacuum gauge) B) 0 – 5 or 6 kg/cm2 pressure gauge C) 0 – 10 kg/cm2 – do – D) 0 – 25 kg/cm2 – do – E) 0 – 60 kg/cm2 – do – F) 0 – 100 kg/cm2 –do – G) 0 – 250 kg/cm2 – do – H) 0.2 to 1 kg -- do --		1 no. 1 no. 1 no. 1 no. 1 no. 1 no. 1 no. 1 no. 1 no. 1 no.
31.	Manometers (+/-) 1000 mm water column With hand bulb for lab and small manometers for field purpose.		APR
32.	Manometer (+/-) 500mm mercury column with hand bulb for lab and small manometer for field purpose.		APR
33.	Inclined manometer (+/-) 300 mm water column		1 no.
34.	Portable air compressor with drier and regulator rated for 7 to 10 kg/cm2		APR
35.	Vacuum pump		1 no.
36.	Standard milliamps / millivolts source of reputed make. Range 0to 50 ma and 0 to 100 mv		2 nos.
37.	DC power supply 0-50 VDC, 5 A make “Aplab” or equivalent (variable source)		APR
38.	Single phase variac 250 V, 8 amp		APR
39.	DC shunt 400 amp 75 mv		APR
40.	Tachometer non-contact type 0 to 4000 rpm		1 no.
41.	Decade resistance box		1 sets

***APR-As per requirement**

NOTES:

1. **The above list specifies only major T&P/MMD (may not be complete) to be deployed by the contractor. All additional/ other tools and plants which are required for satisfactory & timely completion of work shall also be deployed by the contractor within finally accepted rate/ price.**.

2. If works gets delayed due to non-availability of T&P and MMD, BHEL reserves the right to get work done at the risk &cost of contractor without prejudice to right of BHEL as in GCC

3. Contractor must re-ascertain/ recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration/ deployment.

4. Other terms and conditions regarding above items shall be as per T&P clause in SCC.

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

LIST OF T&P and MMD being provided by BHEL for use of contractor free of hire charges on sharing basis.

S.NO.	EQUIPMENT	CAPACITY	QTY
T&Ps			
1.	EOT Crane (in T.G. hall)	40T / 25T	1 No.
2.	Suitable capacity crane		APR

NOTES:

1. Any other special T&P if supplied by the manufacturer and available with the customer will also be provided to the contractor free of hire charges as and when made available. Special tools and tackles are to be used only for the purpose for which these are meant and to be returned in good condition.
2. Other terms and conditions regarding above items shall be as per T&P clause in SCC.

Chapter - VI: TIME SCHEDULE

6.0 TIME SCHEDULE

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

6.2 Entire work as detailed in the tender specifications shall be completed within 08 months from the Zero date as per programme/ milestones indicated by BHEL Engineer. Contractor has to mobilise adequate resources to meet BHEL's commitments to their customer as indicated from time to time.
In case due to reasons not attributable to the contractor, the work gets delayed and additional manpower / resources have to be mobilized so as to expedite the work to meet various milestones, same shall be done within the quoted rates as per Rate Schedule, at no extra cost to BHEL. The contractor shall not be entitled for any overrun compensation for a period of first two months after the contractual completion date. In the event the contractor fails to respond to these requirements, BHEL shall take appropriate actions to meet customer's commitments in line with the provisions of General Conditions of Contract.

6.3 The contractor has to augment his resources in such a manner that following tentative dates of major milestones of erection & commission are achieved on specified schedules:

MILE STONES	**MONTHS**
Erection Start	ZERO
GTG Synchronization	03 Months
HRSGGas In	05 months
TG Barring gear	06 months
STG Synchronization	07 months
Trial Operation	08 months

6.4 In order to meet above schedule in general, and any other intermediate targets set, to meet customer/ project schedule requirements, contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL**.**

6.5 This project is a fast track project. Customer is making all out efforts to advance the project schedule**. In case the project is to be advanced by customer, the erection work in the scope of the contractor is to**

be advanced to meet the project requirement. No extra payment whatsoever shall be paid on this account.

6.6 The contractor has to ensure that work is completed in all respects leaving no pending points. However the punch list/ pending points, which are possible to be attended at site, shall be fully liquidated within two months from successful trial operation of the unit.

6.7 The work under the scope of this contract is deemed to be complete in all respects, only when the contractor has discharged all the responsibilities laid down in the contract. The decision of BHEL on completion date shall be final and binding on the contractor.

Chapter - VII: TERMS OF PAYMENT

7.0 TERMS OF PAYMENT

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

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

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

7.3.1 Interest bearing recoverable advance: Applicable as per Clause No. 2.13 of GCC.

7.3.2. PROGESSIVE PAYMENT ON PRORATA BASIS

I. 85 % of contract value payable on fulfilment of following conditions:

(A) For Equipment / items such as Panels, Cable Trays, cable, JB, impulse pipe, tubing etc. where no calibration is required

(i) 50% of item rate shall be payable on erection \ installation /cable laying
(ii) 20% of item rate on final alignment, welding, clamping, termination etc.
(iii) 10% of item rate on testing, pre-commissioning, charging etc.
(iv) 5 % of item rate on pending point clearance

(B) For equipment/items where calibration and testing is required.

i) 20% of item rate on calibration and testing
ii) 30% of item rate on erection, installation alignment and termination wherever involved.
iii) 15% of item rate on individual device loop checking/hydro test/ charging of installation and panels.
iv) 15% of item rate on system loop checks, pre-commissioning checks by simulation/ field calibration or with actual system operation.
v) 5% of item rate on pending points clearance.

E. STAGE/MILESTONE PAYMENTS (15% of Contract value)

1.	GT Synchronisation	1%
2.	HRSGGas In	2%
3.	STG on Barring Gear	2%
4.	Rolling and Synchronisation (STG)	1%
5.	Full Load — STG-1%, GTG-1%	2%
6.	Trial Operation of Unit (STG & GTG)	2%
7.	Painting (including arrow marking, nomenclature, etc	1%
8.	Area cleaning, temporary structures cutting/removal and return of scrap	1%
9.	Punch List points/pending points liquidation	1%
10.	Material Reconciliation	1%
11.	Completion of Contractual Obligations	1%

Note:

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

2. Retention amount shall be @5% from each running bill admitted including PVC bills &Payment of retention amount and final bill shall be as per clause No. 2.22 and 2.23.2 of GCC.

Chapter - VIII: TAXES, DUTIES, LEVIES

8.0 TAXES, DUTIES, LEVIES

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 chargeswhich may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.

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

8.1 Service Tax &Cess on Service Tax

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

Contractor shall obtain prior written consent of BHEL before billing the amount towards such taxes. The Service Tax Rules permit more than one option or methodology for discharging the liability of tax/levy/duty and BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the

Contractor for discharging the obligation of BHEL in respect of the tax liability to theContractor. Contractor shall submit to BHEL documentary evidence of Service Taxregistration certificate specifying name of services covered under this contract.For the purpose of claiming any Service Tax from BHEL, the following procedure shall beadopted :

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

1. The name, address and registration number of the contractor

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

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 for payment of Service Tax by BHEL.

Where more than one nature of Service under Service Tax Rules is involved, the invoicementioned above shall contain the break up of all values for each nature of Service.

8.2 VAT (Sales Tax /WCT)

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

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

Deduction of tax at source shall be made as per the provisions of law unless otherwise found exempted.

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

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

8.2.1 Modalities of Tax Incidence on BHEL

Wherever the relevant tax laws permit more than one option or methodology for dischargingthe liability of tax/levy/duty, BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with

regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the contractor.

8.2.2 New Taxes/Levies

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

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

Chapter - IX: Others

9.0 OTHERS

9.1 For reverse auction/ for Price Bid opening, only those bidders will be considered who will be qualified for the subject job on the basis of pre-qualification evaluation/ Techno-commercial bids. BHEL reserves the right to reject the bidders with unsatisfactory past performance in the execution of a contract. BHEL's decision in this regard shall be final & binding.

9.2 Clause no. 2.17.3 of GCC on Price Variation Compensation may be read as below;

The basis for calculation of price variation in each category, their component, Base Index, shall be as under:

SL NO.	CATEGORY	BASE INDEX	COMPONENT ('K')				
			CIVIL PACKAGES (See Note A/B/C)			MECHANICAL PACKAGES	LABOUR ORIENTED PACKAGES (See Note D)
			A	B**	C		
i)	LABOUR (ALL CATEGORIES)	'MONTHLY ALL-INDIA AVERAGE CONSUMER PRICE INDEX NUMBERS FOR INDUSTRIAL WORKERS' published by Labour Bureau, Ministry of Labour and Employment, Government of India. (Website: labourbureau.nic.in)	40	25	30	65	80
ii)	HIGH SPEED DIESEL OIL	Name of Commodity : HIGH SPEED DIESEL. Type : INDIVIDUAL COMMODITY (See Note F)	5	3	5	5	5
iii)	ELECTRODE	Name of Commodity : WELDING RODS Type: INDIVIDUAL COMMODITY (See Note F)				15	
iv)	CEMENT	Name of Commodity : GREY CEMENT Type: INDIVIDUAL COMMODITY (See Note F)		20	30		
v)	STRUCTURAL AND REINFORCEMENT STEEL	Name of Commodity : a1. IRON & SEMIS Type: GROUP ITEM (See Note F)		25			
vi)	MATERIALS (Other than Cement & Steel)	Name of Commodity: ALL COMMODITIES Type: GROUP ITEM (See Note F)	40	12	20		

Note: A) Cement &Steel : Free Issue (BHEL Scope)
B) Cement &Steel : In Contractor Scope {**: unless otherwise specified in Special Conditions of Contract (SCC) }
C) Cement in Contractor Scope, and Steel is Free Issue (BHEL Scope)
D) Predominantly 'Labour Oriented' packages include Material Handling & Management, Insulation, Painting, Electrical and CI or a combination thereof, which are separately tendered and awarded
E) For Composite packages (i.e. Civil+Mechanical+Electrical/CI or Civil+Mechanical or Mechanical+Electrical/CI), the components for various categories shall be as per respective packages
F) As per the 'MONTHLY WHOLE SALE PRICE INDEX' for the respective Commodity and Type, published by Office of Economic Adviser, Ministry of Commerce and Industry, Government of India. (Website :www.eaindustry.nic.in)

Chapter - X: BOQ

Sl. No	ITEM DESCRIPTION	UNIT	QTY	RATE (RS)	TOTAL AMOUNT (Rs IN FIGURES AND WORDS
	PANELS / CONSOLES / RACKS				
1	CONTROL CABINETS FOR TG, SG, BOP PANELS,	No.	44		
2	MARK VI PANEL	SET	1		
3	MMI SYSTEM	SET	02		
4	UNIT CONTROL PANEL	SET	01		
5	AVR PACKAGE	SET	02		
6	HMI CONTROL DESK INCLUDING COMPUTER FURNITURES	SET	1		
7	SWAS PANELS	No.	4		
8	SWAS ANALYSERS	No.	42		
9	MASTER CLOCK SYSTEM	SET	1		
10	MASTER CLOCK SYSTEM	SET	1		
11	GT AUX CONTROL PANEL	No.	1		
12	GT FIRE FIGHTING PANEL	No.	1		
13	INLET AIR FILTER PANEL	No.	1		
14	EVAPORATIVE COOLING PANEL	No.	1		
15	GFD PJB	No.	1		
16	GFD CJB	No	1		
17	GFD LP	No	1		
18	GD PJB	No	1		
19	GD CJB	No	1		
20	GD LP	No.	1		

21	2X12V BATTERY AND CHARGER FOR CO2 SYSTEM	No.	1		
22	STEAM LEAK DETECTION PANEL	No	1		
23	ASSERTOR PANEL (INCLUDING PROBES)	No.	2		
24	DC EOP/JOP CONTROL PANELS & ACCESSORIES LIKE SERIES RESISTANCE	No.	2		
25	STATOR END WINDING VIB PANEL	No.	1		
26	GENERATOR CO2 PANEL	No.	1		
27	Open Type Instrument Rack	No.	22		
28	Closed Type Instrument Rack	No.	7		
	Cable tray erection including supports fabrication / erection				
29	Ladder / perforated cable trays 300 mm wide including 250 mm wide cable duct with cover	Mtr.	250		
30	Ladder / perforated cable trays150 mm wide including 180 mm wide cable duct with cover	Mtr.	300		
31	Ladder / perforated cable trays 100 mm wide	Mtr.	2500		
32	Ladder / perforated cable trays 50 mm wide including 60 mm wide cable duct with cover	Mtr.	2000		
	Junction boxes / Indication boxes / Local control stations.				
33	Junction boxes upto 12 ways / local push buttons / Hooters	No.	20		
34	Junction boxes above 12 &upto 24 ways	No.	40		
35	Junction boxes above 24 &upto 80 ways	No.	12		
36	Junction boxes with cold junction compensation (SUV -13)	No.	15		
	Power / Control / Signal cables laying, dressing, clamping & termination.				
37	2 Core / 1 Pair Cable (armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtr	2000		
38	3 Core / 1 Triad Cable (armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtr	1500		
39	4 Core / 2 Pair Cable (armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtr	3700		
40	5 Core Cable (armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtr	500		

41	7 / 8 Core / 4 Pair / 2 Triad Cable (armoured / un-armoured) size upto 2.5 Sq. mm	Mtr	3400		
42	10 - 16 Core / 8 Pair Cable (armoured / un-armoured) Core s 2.5 Sq. mm	Mtr	1000		
43	17 - 24 Core / 12 Pair Cable (armoured / un-armoured) Core upto 2.5 Sq. mm	Mtr	1000		
44	25 - 48 Core / 16-24 Pair Cable (armoured / un-armoured) C upto 2.5 Sq. mm	Mtr	1000		
45	3/3.5 C Power Cable Upto 10 sq mm	Mtr	250		
46	3/3.5 C Power Cable 16-50 sq mm	Mtr	250		
47	3/3.5 C Power Cable 70-120 sq mm	Mtr	250		
48	Pre-fabricated cable (upto 50 M length)	No.	8		
49	4P UTP E-CAT & FEP extruded Cable	Mtr	5000		
Impulse pipe / tubing					
	Upto 8 mm Cooper Tube	Mtr	100		
	6mm SS Tube	Mtr	100		
	Upto 1.0 " CS impulse Pipe	Mtr	1800		
	Upto 1.0 " AS impulse Pipe	Mtr	800		
	Upto 3/4 " SS impulse Pipe	Mtr	1200		
	GI Pilica conduit with fittings (upto 1" size)	Mtr	50		
	GI Pilica conduit with fittings (above 1" size)	Mtr	50		
	GI rigid conduit upto 1"	Mtr	50		
	GI Pipe 15 NB	Mtr	50		
Local / Field mounted Instruments / Equipment					
	UCB mounted instrument / indicator / recorder / control station	No.	30		
	Vibration racks in UCB / Local Wall Mounted Panel	No.	1		
	Temperature controller	No.	2		
	Pneumatic indicating controller	No.	3		
	Limit Switches	No.	6		
	Solenoid Valves	No.	200		

	Air Filter Regulators	No.	8		
	I / P Convertor	No.	25		
	FLOW METERS	No.	2		
	Temp. elements ie.RTDs& Thermocouples (Simplex / Duplex / Triplex, with thermowell)	No.	150		
	Metal Temperature Measuring Thermocouples (Simplex / Duplex)	No.	28		
	Analysers	No.	20		
	Pressure / diff. Pressure / temperature/ level gauge	No.	200		
	Pressure / diff. Pressure / temperature / level switch (level switch can be flange type or welded type / with or withou electronic unit)	No.	100		
	Pressure / diff. Pressure / level / position transmitter	No.	130		
	SENSORS / PICKUPS WITH CABLES				
	Vibration axial displacement & velocity probes		15		
	Speed pick up		6		
	Rotameters		5		
	Proximitors		10		
	EWLI		2		
	Printers	No	6		
	PC set with monitor / keyboard / power supply unit/furniture	No	9		
	Calibration of SOV operated pneumatic trip Valves	No	5		
	Calibration / commissioning of regulating Control Valves with positioners / LS / PFT	No	5		
	Commissioning of motorised actuators	No	5		
	Checking Calibration / commissioning of Solenoid Valves, Switches,VibrationElements,Detectors,Servo Valves, RTD/T-C etc already mounted on Skid	No	200		
	Electronic Earthing Pit with electrode	No	4		
	Fabrication / Erection of structural steel (angles, channels, Fittings etc.)	MT	6		

NOTES:

1 All dimensions are in mm unless otherwise as specified.

2 The quantities indicated above are tentative and are liable to vary depending upon the site requirement. The contractor has to handle / erect / commission all the items indicated by BHEL for achieving the milestones and completion of work.

3 Evaluation of bids shall be done on total price against this Rate Schedule / BOQ.

4 In case of any mismatch in Rate and amount on Price discrepancy, the same will be dealt as per clause No. 1.4 of GCC.

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

ANNEXURE – A

GENERAL TERMS AND CONDITIONS OF REVERSE AUCTION (RA)

Against this enquiry for the subject item / system with detailed scope of supply as per our tender specification, BHEL-PSNR, NOIDA may resort to "REVERSE AUCTION PROCEDURE" i.e. **ONLINE BIDDING on INTERNET.**

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on Internet.
3. In case BHEL decides to conduct reverse auction, BHEL's service provider shall contact the vendor directly and impart them the training.
4. Business rules like event date, time, start price, bid decrement, extensions, etc. also will be communicated through service provider for compliance.
5. Vendors have to fax the compliance form in the prescribed (provided by service provider) before start of Reverse auction. Without this the vendor will not be eligible to participate in the event.
6. **Total Price quoted shall be inclusive of all taxes except service tax in line with the NIT conditions for the subject work in Indian Rupees (INR), which is to be worked out as per the BOQ (Rate Schedule) given in tender enquiry and subsequent changes made, if any. EXCEL Sheet shall be provided, if applicable.**
7. Reverse auction will be conducted on schedule date & time.
8. At the end of reverse auction event, the lowest bidder value will be known on the network.
9. The lowest bidder has to fax the duly signed filled-in prescribed format as provided on case-to-case basis to BHEL through service provider after completion of event on the same day preferably. BHEL shall reserve the right for award of work to the lowest bidder.
10. Any variation between the on-line bid value and signed document especially if the online opening bid price is found more than the price in submitted sealed bid, it will be considered as sabotaging the tender process and may invite disqualification of vender to conduct business with BHEL as per prevailing procedure.
11. In case BHEL decides not to go for Reverse auction procedure for this tender enquiry, the price bids and price impacts, if any already submitted and available with BHEL shall be opened as per BHEL standard practice.

ANNEXURE – B

Authorization of representative who will participate in the on line Reverse Auction Process;

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