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

Sl No	Tender Specification Number	Unit Number & Project
1	**BHE/PW/PUR/SKT-CWP/945**	2X270 MW CW Piping Sikka

FOR

COLLECTION OF MATERIALS FROM BHEL/CLIENT'S STORES/STORAGE YARD; TRANSPORTATION TO SITE OF WORK; ERECTION; TESTING; ASSISTANCES FOR COMMISSIONING & TRIAL OPERATION; HANDING OVER AND ASSISTANCE FOR PERFORMANCE GUARANTEE TEST FOR CW & ACW PIPING AND AUX. WORKS OF 2x270 MW TPS (UNIT Nos. 3 & 4)

AT

SIKKA THERMAL POWER STATION
GUJARAT STATE ELECTRICITY CORPORATION LIMITED
DISTT- JAMNAGAR
GUJARAT

VOLUME – I

CONSISTING OF:

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

Bharat Heavy Electricals Limited

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AT

SIKKA THERMAL POWER STATION
GUJARAT STATE ELECTRICITY CORPORATION LIMITED
DISTT- JAMNAGAR
GUJARAT

EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR TENDER SUBMISSION : Refer Notice Inviting Tender

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

M/s. ……

……

945

NOTICE INVITING TENDER

Bharat Heavy Electricals Limited

Ref: /PW/PUR/SKT-CWP/945 Date: 26/12/2011

NOTICE INVITING TENDER (NIT)

NOTE: BIDDER MAY DOWNLOAD FROM WEB SITES OR PURCHASE TENDERS FROM THIS OFFICE ALSO

==========

To

Dear Sir/Madam

Sub : NOTICE INVITING TENDER

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

1.0 Salient Features of NIT

SL NO	ISSUE	DESCRIPTION	
i	TENDER NUMBER	BHE/PW/PUR/SKT-CWP/945	
ii	Broad Scope of job	COLLECTION OF MATERIALS FROM BHEL/CLIENT'S STORES/STORAGE YARD; TRANSPORTATION TO SITE OF WORK; ERECTION; TESTING; ASSISTANCES FOR COMMISSIONING & TRIAL OPERATION; HANDING OVER AND ASSISTANCE FOR PERFORMANCE GUARANTEE TEST FOR CW & ACW PIPING AND AUX. WORKS OF 2x270 MW TPS (UNIT Nos. 3 & 4)ATSIKKA THERMAL POWER STATIONGUJARAT STATE ELECTRICITY CORPORATION LIMITEDDISTT- JAMNAGAR, GUJARAT	
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*	*Applicable*
e	Volume-II	*Price Schedule (Absolute value).*	*Applicable*
iv	SAles of Tender Documents	1. ***Sale from BHEL PS Regional office at :*** ***Start :26/12/2011*** ***Closes: 16 /01/2012 , Time :16.00 Hrs*** 2. **From BHEL website (www.bhel.com)** Tender documents can however be downloaded	*Applicable*

		from website till due date of submission	
v	**DUE DATE & TIME OF OFFER SUBMISSION**	***Date : 17/01/2012 , Time :15.00Hrs*** ***Place : BHEL PS Regional office at :Nagpur*** Tenders being submitted through representative shall be handed over to any of the following BHEL officials after making entry/registration at the reception: SM Borkar/ Sr Manager (Purchase) RK Ranade/ Manager (Purchase) Pratish Gee Varghese / Engineer(Purchase)	*Applicable*
vi	**OPENING OF TENDER**	***1 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/- (Rupees Two Lakhs Only)*	*Applicable*
viii	**COST OF TENDER**	*Rs 2000/-.*	*Applicable*
ix	**LAST DATE FOR SEEKING CLARIFICATION**	*Date: Atleast 5 days before the due date of offer submission* *Along with soft version also, addressing to undersigned & to others as per contact address given below*	*Applicable*
x	**SCHEDULE OF Pre Bid Discussion (PBD)**	*Date : Not applicable.*	*Not applicable.*
xi	**INTEGRITY PACT & DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)**		*Not Applicable*
xii	**Latest updates**		***A****pplicable*

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

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

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

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

- PART-I consisting of 'PART-I A (Techno Commercial Bid)' & 'PART-I B (EMD/COST of TENDER)' in two separate sealed and 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)	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	○ Envelopes I ○ Envelopes II ○ Envelopes III	

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

7.0 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:

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 'R**e**r' = ($X_1 + X_2 + .. + X_n$) divided by n
b) PS WR's Rating 'R**w**r' = ($X_1 + X_2 + .. + X_n$) divided by n
c) PS SR's Rating 'R**s**r' = ($X_1 + X_2 + .. + X_n$) 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}'= (R**e**r+ R**w**r+ R**s**r+ R**n**r) 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

AGM/Purchase

Enclosure

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

ANNEXURE - 1

PRE QUALIFYING CRITERIA

JOB	**COLLECTION OF MATERIALS FROM BHEL/CLIENT'S STORES/STORAGE YARD; TRANSPORTATION TO SITE OF WORK; ERECTION; TESTING; ASSISTANCES FOR COMMISSIONING & TRIAL OPERATION; HANDING OVER AND ASSISTANCE FOR PERFORMANCE GUARANTEE TEST FOR CW & ACW PIPING AND AUX. WORKS OF 2x270 MW TPS (UNIT Nos. 3 & 4)ATSIKKA THERMAL POWER STATIONGUJARAT STATE ELECTRICITY CORPORATION LIMITEDDISTT- JAMNAGAR, GUJARAT**
TENDER NO	**BHE/PW/PUR/SKT-CWP/945**

SL NO	**PRE QUALIFICATION CRITERIA**	**Bidders claim in respect of fulfilling the PQR Criteria**	
		Name and Description of qualifying criteria	Page no of supporting document
A	Submission of Integrity Pact duly signed	**APPLICABLE (Bidders shall submit duly filled & Signed Annexure III of NIT)**	
B	Assessment of Capacity of Bidder to execute the work as per sl no 9 of NIT	**APPLICABLE**	
C	**Technical** **C) Bidder must have, achieved any one of the following:** **C.1)** Bidder must have, in last seven years as on 30/11/2011, executed any one of the following:- **c.1.1)** One job of 197MT or above of LP /HP/CW piping in any industry/Power Plant. OR **c.1.2)** One PF Boiler/Power Cycle piping/ LP /HP/CW piping of one unit of 100MW or above.		
D 1	**Financial** **TURNOVER** Bidders must have achieved an average annual financial turnover (Audited) of **51 lakhs** or more over last three Financial Years (FY) i.e. 2008-2009, 2009-2010, 2010-2011.		
2	NETWORTH Net worth of the Bidder based on the latest Audited Accounts as furnished for 'D1' above should be positive		
3	PROFIT Bidder must have earned cash profit in any one of the three Financial Years as applicable in the last three years defined in 'D1 above based on latest Audited		

	Accounts.		
E	Approval of Customer Note: Names of bidders who stand qualified after compliance of criteria A to D shall be forwarded to customer for their approval. Price bid of only those bidders shall be opened who are approved by customer.	**APPLICABLE**	
F	Consortium criteria	**NOT APPLICABLE**	
	Explanatory Notes for QR 1. The word 'executed' means the bidder should have achieved the criteria specified in the QR even if the total contract has not been completed or closed 2. Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as given above along with all annexures B) Explanatory Notes for PQR 'D'- 'Financial' 1. Net Worth = Paid up share capital* + Reserves (* : Share Capital OR Partnership Capital OR Proprietor Capital as the case may be) 2. Profit shall be NET Profit (PAT + Non Cash Expenditure viz depreciation). In case audited financial statement have not been submitted for all the three years as indicated in 'D1' above, then applicable audited statement submitted by the bidder against the requisite three year, will be averaged for three years.		

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

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)**

ANNEXURE 3:
IMPORTANT INFORMATION

1 PRICE VARIATION COMPENSATION

Refer Clause 2.17 of Volume I C 'General Conditions of Contract' (Price Variation Compensation): For the purpose of calculating PVC, following 'Commodities shall be reckoned for the respective categories:

Category	Commodity to be Used for PVC Calculation
Electrode	**Welding Rod**(Individual Commodity)
High Speed Diesel	**High Speed Diesel** (Individual Commodity)
Cement	**Grey cement** (Individual Commodity)
Structural & Reinforcement Steel	**a1. Iron & semis** (Group Item)
Materials (Other than Cement & Steel)	**All Commodities**(Group Item)

2. INTEREST BEARING RECOVERABLE ADVANCE

Refer Clause 2.13 of Volume I C 'General Conditions of Contract' (Interest Bearing Recoverable Advance): Following additional points shall be noted:

- **Bank Guarantee towards 'Interest Bearing Advance' shall be atleast 110% of the advance so as to enable recovery of not only principle amount but also the interest portion, if so required.**
- **'Interest Bearing Recoverable Advance' shall not be paid in less than two installments. Contractor shall establish the utilization of advance drawn before the release of next installment.**

3. **The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site (www.bhel.com ---> Tender Notification -→ List of Banned Firms)**

Sl No	DESCRIPTION	Chapter	No. OF PAGES
Volume-IA	**Part-I: Contract specific details**		
1	Project Information	Chapter-I	2

2	Scope of Works	Chapter-II	1
3	Facilities in the scope of Contractor/BHEL (Scope Matrix)	Chapter-III	7
4	T&Ps and MMEs to be deployed by Contractor	Chapter-IV	5
5	T&Ps and MMEs to be deployed by BHEL on sharing basis	Chapter-V	1
6	Time Schedule	Chapter-VI	2
7	Terms of Payment	Chapter-VII	6
8	Taxes and other Duties	Chapter-VIII	2
9	Drawing	Chapter-IX	1
10	Specific Exclusion	Chapter-X	1
11	Annexures		
	Estimated Weights of Various Systems in Scope of Work	Annexure I	32
Volume-IA	**Part-II : Technical Specifications**		
1	General	Chapter-I	7
2	Erection of CW Piping	Chapter-II	10
3	Welding, Radiography, NDT, PWHT	Chapter-IV	5
4	Painting	Chapter-V	3
5	Testing, Pre-Commissioning, Commissioning	Chapter-VI	4
6	Preservation & Protection of Components	Chapter-VII	1

	Project Information
1.1	**INTROUCTION** Sikka Thermal Power Station is presently having two sets (units) of 120 MW units in operating condition. The plant owner M/s Gujarat State Electricity Corporation Limited (GSECL) has undertaken expansion of this power plant by installing two units of 250 MW each (name plate rating) in the same premises. Though both the new units are of

	250 MW name plate rating, they are guaranteed to produce an output of 270 MW each. The Bidder shall acquaint himself by a visit to the site, if felt necessary, with the conditions prevailing at site before submission of the bid. The information given here in under is for general guidance and shall not be contractually binding on BHEL/ Owner. All relevant site data/information as may be necessary shall have to be obtained /collected by the Bidder.
1.2	**LOCATION AND APPROACH** In Sikka, Jamnagar district, Latitude 22^{O} 26' N & Longitude 69^{O} 49' E. The site is surrounded by villages Mungai, Sikka, Gagva & Nanikkhavri of Jamnagar district of Gujarat state. **Access by Road:** It is connected to State Highway (SH-25) by a 5 km long road through Sikka village. **Access by Railways:** Jamnagar – Okha broad-gauge section is passing at a distance of 12 km form Sikka. **Nearest Airport**: Jamnagar **Nearest Seaport:** Okha & Navalakhinare located 140 Km & 130 Km respectively from the site.
1.3	**Other Salient Information:** 1. Owner — M/s GSECL 2. Owner's Consultant — M/s TCE, Bangalore 3. Project Title — 2x250 MW Sikka TPS Extension Units # 3 & 4 4. Location — 12 km from Sikka, District – Jamnagar, Gujarat 5. Nearest Railway Stn. — Jamnagar
1.4	**CLIMATIC CONDITIONS** 1.Ambient Air Temperature a. Maximum — 42 Deg. C b. Minimum — 8 Deg. C 2. Relative Humidity c. Maximum — 100% d. Minimum — 21%

	3.Rainfall		
	e. Average annual	650 mm	
	f. Maximum	900 mm	
	g. Minimum	400 mm	
	4.Wind Data		
	h. Basic wind speed at 10m height		50 m/sec
	i. Wind pressure		As per IS: 875 Part III
	5.Seismic Zone		Zone IV as per IS: 1893-2002

2.0 SCOPE OF WORK

The scope of work covers the complete work of collection of materials from BHEL/client's stores/storage yard including loading; transportation to site; pre-assembly, erection, testing and assistance for commissioning, reliability run, trial operation etc and handing over of :

1. Main cooling water piping, ACW piping etc (IS:2062 Gr.B PL (R &W) as per IS :3589, ERW IS 1239 C.S (HEAVY GRADE) and GRP (GLASS RE-INFORCED PLASTIC) , over ground and buried) all with associated valves, fittings, hangers & supports, and tanks and vessels etc.

2. Misc cranes, hoists, chemicals, and workshop equipments, various bought out items and other non-listed misc equipments including skid mounted equipments etc.
3. CW Make up pipeline.
4. Any other pipeline contingent to completion of the aforesaid systems.
5. Final painting.

2.1 DETAILED SCOPE

1. Collection & loading of materials from BHEL's & client's stores/storage yard
2. Transportation to site of work including to pre-assembly yard and unloading
3. Pre-assembly, if any; pre-erection check of components
4. Loading, transportation from pre-assembly area to site of work & unloading
5. Erection, alignment, welding / bolting / fastening of pipes, butterfly valves, air release valves, and other valves, Duplex strainer, manhole doors, ladders etc.
6. Fabrication and erection of supports..
7. Non-destructive examination of joints welded at site
8. Hydraulic test of piping
9. Pre-commissioning checks / tests and assistance for commissioning
10. Handing Over

The work shall conform to dimensions and tolerances specified in the various drawings/ documents that will be provided during various stage of erection. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations due to contractor's fault, the contractor shall dismantle and re-do the work duly replacing the defective materials at his cost, failing which the work will be got done by engaging other agencies and recoveries will be effected from the contractor's bills towards expenditure incurred including departmental overheads of BHEL.

Sl.No	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
3.1	**ESTABLISHMENT**			
3.1.1	**FOR CONSTRUCTION PURPOSE**:			
a	Open space for office (as per availability)	Yes		Location will be finalized after joint survey with owner
b	Open space for storage (as per availability)	Yes		Location will be finalized after joint survey with owner
c	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipments, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
f	Fire fighting equipments like buckets, extinguishers etc		Yes	
g	Fencing of storage area, office, canteen etc of the bidder		Yes	
3.1.2	**FOR LIVING PURPOSES OF THE BIDDER**			
a	Open space for labour colony (as per availability)		Yes	Electricity, Water etc for Labour colony is also in the scope of Contractor
b	Labour Colony with internal roads, sanitation, complying with statutory requirements		Yes	

Sl.No	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
3.2.0	**ELECTRICITY**			
3.2.1	**Electricity For construction purposes 3 Phase** of Voltage 415/440 V			FREE
a	Single point source	Yes		at one point near the erection site
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.2	**Electricity for the office, stores, canteen etc of the bidder**			FREE
a	Single point source	Yes		
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.3	**Electricity for living accommodation of the bidder's staff, engineers, supervisors etc**		Yes	Bidder to make his own arrangement
a	Single point source		Yes	

Sl.No	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.3.0	**WATER SUPPLY**			
3.3.1	**For construction purposes: (to be specified whether chargeable or free)**			FREE
a	Making the water available at single point	Yes		.
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.2	**Water supply for bidder's office, stores, canteen etc**			FREE
a	Making the water available at single point	Yes		
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.3	**Water supply for Living Purpose**		**yes**	Bidder to make his own arrangement

Sl.No	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
a	Making the water available at single point		Yes	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.4.0	**LIGHTING**			
a	For construction work (supply of all the necessary materials) 1. At office/storage area 2. At the preassembly area 3. At the construction site /area		Yes	
b	For construction work (execution of the lighting work/ arrangements) 1. At office/storage area 2. At the preassembly area 3 At the construction site /area		Yes	
c	Providing the necessary consumables like bulbs, switches, etc during the course of project work		Yes	
d	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
3.5.0	**COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER**			
a	Telephone, fax, internet, intranet, e-mail etc		Yes	

Sl.No	Description PART I	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
3.6.0	**COMPRESSED AIR wherever required for the work**		Yes	
3.7.0	**Demobilization of all the above facilities**		**YES**	
3.8.0	**TRANSPORTATION**			
a	For site personnel of the bidder		Yes	
B	For bidder's equipments and consumables (T&P, Consumables etc)		Yes	

Sl.No	Description **PART II** **3.9.0 ERECTION FACILITIES**	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
3.9.1	Engineering works for construction:			
a	Providing the erection/constructions drawings for all the equipments covered under this scope	Yes		**For Details Pl refer Chapter-II-**
b	Drawings for construction methods	Yes	Yes	In consultation with BHEL
c	As-built drawings – where ever deviations observed and executed and also based on the decisions taken at site- example – routing of small bore pipes	Yes		
d	Shipping lists etc for reference and planning the activities	Yes		
e	Preparation of site erection schedules and other input requirements		Yes	In consultation with BHEL
f	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
g	Weekly erection schedules based on Sl No. e		Yes	In consultation with BHEL

Sl.No	Description **PART II** **3.9.0 ERECTION FACILITIES**	Scope / to be taken care by		*Remarks*
		BHEL	**Bidder**	
h	Daily erection / work plan based on Sl No. g		Yes	In consultation with BHEL
i	Periodic visit of the senior official of the 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 months.		Yes	
j	Preparation of preassembly bay		Yes	
k	Laying of racks for gantry crane if provided by BHEL or brought by the contractor/bidder himself		Yes	
L	Arranging the materials required for preassembly		Yes	

4.0 : TOOLS & PLANTS TO BE DEPLOYED BY CONTRACTOR

SL	DESCRIPTION OF EQUIPMENTS	CAPACITY	MIN. QTY
01	CRAWLER CRANE	75 MT	01 NO. - THIS HAS TO BE DEPLOYED FROM THE BEGINNING
02	MOBILE CRAWLER CRANE	15 T	01 NO. - THIS HAS TO BE DEPLOYED FROM THE BEGINNING
03	TRAILER WITH PRIME MOVER	20 MT	1 NO. - THIS HAS TO BE DEPLOYED FROM THE BEGINNING NO.
04	DEWATERING PUMP –VACUUM SUCTION, COMPLETE WITH MOTOR, STARTER, CABLES, SWITCHES ETC.	5 to 10 HP	AS PER REQUI'MENT
05	CENTRIFUGAL PUMP WITH MOTOR, STARTER PANEL, CABLES BETWEEN STARTER PANEL AND MOTORS, INLET AND OUTLET VALVES FOR THE PUMPS FOR FILLING AND HYDRAULIC TESTING OF CW, ACW SYSTEMS	150-200TPH	2 SETS
06	HYDRAULIC TEST PUMPS, COMPLETE WITH MOTOR, STARTER, CABLES, SWITCHES ETC - HIGH DISCHARGE CAP. – ABOVE 15 LIT/MIN	AS PER REQUI'MENT	2 NOS
07	DISHED ENDS FOR HYD. TESTING OF PIPES/ ASSEMBLIES .	AS PER REQUI'MENT	AS PER REQUI'MENT
08	24 V TRANSFORMERS	24 V OUTPUT	4 NOS
09	ELECTRIC WINCH	3 TON / 2 TON	AS PER REQMNT
10	HAND WINCH	1 TON	-DO-
11	3 PH DISTRIBUTION BOARD WITH COMPLETE	600 AMP	2 NOS.

	SET UP FOR DRAWL OF CONSTRUCTION POWER		
12	ELECTRIC CABLE FOR DRAWL & DISTRIBUTION OF CONSTRUCTION POWER	-	AS PER SITE REQMNT
13	RADIOGRAPHY ARRANGEMENT INCLUDING SOURCE	IR 192	2 SET
14	AIR COMPRESSOR (ELECTRIC)	140 CFM	AS REQUIRED
15	TIG WELDING SET	-	AS PER REQUIREMENT
16	PRE HEATING / STRESS RELIEVING SET (HEATING CONTROL PANEL, CABLES, HEATING ELEMENTS ETC.)	AS PER REQUIREMENT	AS PER REQUIREMENT
17	ELECTRO-HYDRAULIC PIPE BENDING MACHINE	FOR UP TO 100 mm Nb PIPES	AS PER REQUIREMENT
18	WELDING GENERATOR (ELECTRIC & DIESEL)	300 AMPS	AS REQUIRED
19	RADIOGRAPHY FILM VIEWER	AS PER REQMT	1 NO.
20	PIPE BENDING MACHINE – HAND OPERATED	UP TO 50 mm Nb PIPES	AS PER REQUIREMENT
21	BAKING OVEN AND HOLDING OVEN WITH THERMOSTAT AND TEMPERATURE GAUGE FOR BAKING COATED WELDING ELECTRODES	AS PER REQUIREMENT	01 EACH
22	PORTABLE OVEN FOR COATED WELDING ELECTRODES	AS PER REQUIREMENT	AS PER REQUIREMENT
23	MIXER FOR GROUTING OF EQUIPMENT FOUNDATIONS	AS PER REQUIREMENT	AS PER REQUIREMENT
24	VACUUM CLEANER (INDUSTRIAL)	AS PER REQUIREMENT	AS PER REQUIREMENT
25	CONDENSER TUBE EXPANDER SET	AS PER REQUIREMENT	AS PER REQUIREMENT

26	JACKING BOLTS / PRESS OUT BOLTS OF ALL SIZES	AS PER REQUIREMENT	AS PER REQUIREMENT
27	GANG OPERATED AND HAND OPERATED HYDRAULIC JACKS WITH SUFFICIENT LONG HOSES OF VARIOUS CAPACITIES FOR GT, STEAM TURBINE AND GTG & ST GENERATOR	50 MT, 100 MT ADEQUATE NOS.	AS PER REQUIREMENT
28	TORQUE WRENCH 0 TO 200 N-M CAP	AS PER REQUIREMENT	AS PER REQUIREMENT
29	SLINGS OF VAROIUS CAPACITY AND QUANTITIES FOR HANDLING OF EQUIPMENTS	AS PER REQUIREMENT	AS PER REQUIREMENT
30	BOLT STRETCHING DEVICE	AS PER REQUIREMENT	AS PER REQUIREMENT
31	FEELER GAUGES OF VARIUOS SIZES	AS PER REQUIREMENT	AS PER REQUIREMENT
32	SPANNERS / EYE BOLTS (OF ALL SIZES)	AS PER REQUIREMENT	AS PER REQUIREMENT
33	SURFACE PLATES	1 M X 1M	AS PER REQUIREMENT
34	ANY OTHER MAJOR T&P REQUIRED FOR SATISFACTORY COMPLETION OF THE WORKS.	AS PER REQUIREMENT	AS PER REQUIREMENT

B: **MMD:**

AS PER SITE REQUIREMENT TO FULFILL FIELD QUALITY PLAN CHECKS.
NOTE:

1) THE ABOVE LIST IS NOT INTENDED TO BE EXHAUSTIVE. CONTRACTOR SHALL ARRANGE ALL THE T&P REQUIRED THOUGH NOT LISTED SPECIICALLY EXCEPTING THOSE PROVIDED BY BHEL.

2) ALL THE SMALL TOOLS & PLANTS ETC. HAVE TO BE PROVIDED BY THE CONTRACTOR.

5.0 :

SPECIAL T&Ps SHALL BE PROVIDED BY BHEL/AGENCY (GRP PIPE SUPPLY) FOR GRP PIPING WORKS ONLY.

6.1 TIME SCHEDULE & MOBILIZATION

Contractor shall reach site, make his site establishment and be ready to commence the work within **four weeks** from the date of fax letter of intent (LOI) or as per directions of construction manager of BHEL.

6.1.2 MOBILIZATION FOR ERECTION, TESTING, ASSISTANCE FOR COMMISSIONING ETC.

The activities for erection, testing etc. shall be started as per directions of Construction Manager of BHEL. Contractor shall mobilize further resources (in addition to those required for activities under chapter IV) as per requirement to commence the work of erection, testing etc. of CW & ACW piping and aux. works and progressively augment the resources to match schedule of the project.

6.1.3 COMMENCEMENT OF CONTRACT PERIOD AND TENTATIVE SCHEDULE

Erection/placement on it's designated foundation / location, of the first major permanent equipment / component / column covered in the scope of these specifications shall be recognized as "start of contract period". Smaller items like packer plates, shims, anchors, inserts etc. will not be considered as start of contract period.

The Contractor has to subsequently augment his resources in such a manner that following major milestones of erection & commissioning are achieved on specified schedules:

SN	ACTIVITY/MILESTONE	TENTATIVE SCHEDULED COMPLN	
		UNIT#1	UNIT#2
01	BOILER LIGHT UP	25-Jan-13	25-Apr-13
02	SYNCHRONIZATION	31-March-13	30-June-13
03	COAL FIRING	15-May-13	15-Aug-13
04	COMPLETION OF FACILITIES	13-July-13	13-Oct-13

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.

6.1.4 CONTRACT PERIOD

The contract period for completion of entire work under scope shall be **16 (Sixteen) months** from the "start of contract period as specified earlier.

The period from the commencement of preparatory work for erection till the actual "start of contract period" shall not be reckoned for the above purpose.

7.1 :

The progressive payment for erection, testing and commissioning on accepted price of contract value will be released as per the break up given hereinafter: for **E & C OF CW & ACW PIPING AND AUX. ETC.**

TERMS OF PAYMENT FOR CW PIPING

SL NO	Contract (Main Package) Identitification ---->	CW PIPING
	Rate schedule Identification -------->	**1) Piping 2) Wrapping & Coating**
I	**PRO RATA PAYMENTS (85%)**	
1.1	ON PRE-ASSEMBLY WHEREVER APPLICABLE (IF NOT APPLICABLE, THIS PORTION SHALL BE CLUBBED WITH PLACEMENT IN POSITION)	15
1.2	PLACEMENT IN POSITION	20
1.3	ALIGNMENT	15
1.4	WELDING/BOLTING/FIXING	15
1.5	COMPLETION OF NON DESTRUCTIVE EXAMINATION & STRESS RELIEVING/ HEAT TREATMENT (if not applicable, then this portion to be paid along with welding)	10
1.6	HANGERS & SUPPORTS ETC WHEREVER NECESSARY AS PER DRG	5
1.7	HYDRAULIC TEST OR PNEUMATIC TEST	5
	TOTAL FOR PRO RATA PAYMENTS (TOTAL 85%)	**85**
II	**STAGE/MILESTONE PAYMENTS (15%)**	
2.1	Boiler Light Up	1

2.2	ABO	1
2.3	Steam Blowing	1
2.4	SVF	1
2.5	Rolling and Synchronisation	2
2.6	Full Load	2
2.7	Trial Operation of Unit	2
2.8	Completion of all drains and vents to respective locations and placement of instrument sensors after steam blowing	
2.9	Painting	1
2.10	Area cleaning, temporary structures cutting/removal and return of scrap	1
2.11	Punch List points/pending points liquidation	1
2.12	Submission of 'As Built Drawings'	
2.13	Material Reconciliation	1
2.14	Completion of Contractual Obligation	1
	TOTAL FOR STAGE/MILESTONE PAYMENTS (15%)	**15**
	TOTAL I + II	**100**
	*INCLUDING NDE AND SR/HT WHERE EVER APPLICABLE (IF APPLICABLE, WEIGHTAGE OF 10%)	

NOTES:

1. Besides product groups indicated herein, there is likelihood of addition of new product groups by BHEL' s unit for release of some items, integral to this work. Tenderers' quoted unit rates shall be applicable for such product groups also.

2. BHEL' s decision with regard to classification of a particular product group for applicable rate category shall be final & binding on the Contractor.

8.0 TAXES, DUTIES, LEVIES

8.1.1

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

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

8.1.2 Service Tax & Cess on Service Tax

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. In case, it becomes mandatory for the contractor under provisions of relevant act/law to collect the Service Tax & Cess from BHEL and deposit the same with the concerned tax authorities, such applicable amount will be paid by BHEL.

Contractor shall submit to BHEL documentary evidence of Service Tax registration certificate specifying name of services covered under this contract. **Contractor has to mention in their RA Bill service tax registration number and remittance record of such tax immediately after depositing the tax with concerned authorities Contractor shall submit serially numbered Service Tax and Cess Invoice, signed by him or a person authorized by him in respect of taxable service provided, and shall contain the following, namely,**

I. **The name, address and the registration number of the contractor,**
II. **The name and address of the party receiving taxable service,**
III. **Description, classification and value of taxable service provided and,**
IV. **The service tax payable thereon.**

All the four conditions shall be fulfilled in the invoice before release of service tax payment.
Contractor shall obtain prior written consent from BHEL before billing the amount towards such taxes.

With introduction of Cenvat Credit Rules 2004, which came into force w.e.f. 10.09.2004, Excise Duty paid on Input Goods including Capital Goods and Service Tax paid on Input Services that are used for providing the output services can be taken credit of against the Service Tax payable on output services. However BHEL may opt for availing the abatement provision in which case cenvat credit may not be available on input duty.

8.1.3 VAT (Sales Tax /WCT)

As regards Value Added Tax (VAT) on transfer of property in goods involved in Works Contract (previously known as Works Contract Tax) applicable as per local laws, the price quoted by the contractor shall be **exclusive** of the same. Where such taxes are required to be paid by the contractor, this will be reimbursed on production of proof of payment made to the authorities by the Contractor. In any case the Contractor shall register himself with the respective Sales Tax authorities of the state and submit proof of such registration to BHEL along with the first RA bill. The contractor has to take all necessary steps to **minimize tax on input goods** by purchasing the materials from any registered dealer of the concerned state only. In case contractor opts for composition, it will be with the prior express consent of BHEL. 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.

8.1.4 Modalities of Tax Incidence on BHEL

Wherever the relevant tax laws permit more than one option or methodology for discharging the liability of tax/levy/duty, BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Contractor.

8.1.5 New Taxes/Levies

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

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

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

8.1.6 Submission of Periodical Reports

Contractor shall submit periodical reports in respect of following aspects of operation:

1) Consumption of welding electrodes and gases
2) Consumption of construction power
3) Manpower reports
4) Daily and Monthly Progress reports
5) Field calibration reports

BHEL at site will inform formats for these reports.

8.1.7 It is the responsibility of the contractor to arrange gate pass for all his employees, T&P etc. Necessary coordination with customer officials is the responsibility of the contractor. Contractor to follow all the procedures laid down by the customer for making gate passes. Where permitted, by customer/ BHEL, to work beyond normal working hours, the contractor shall arrange necessary work permit for working beyond normal working hours

DRAWINGS:

9.0 Following drawings are attached at the end of Vol IA

:

1. CW Piping layout (Within TG Hall) : (PE-DG-281-165-M001)
2. P & ID :CW &ACW System : (PE-DG-281-165-N001)
3. PLOT PLAN (PE-DG-281-100-M001/REV5)
4. Layout of CW piping from "A" Row to C.T. (PE-DG-281-165-M002)
5. Layout Piping of CW piping re-circulation & supply to Chlorination building (PE-DG-281-165-M003)
6. Layout Piping of CW make up & CW Blow down system (PE –DG-281 – 165 –M004)

10.0 Exclusions

The following are specific exclusions from this work.

1. Attachment welding of thermocouple pads for boiler tube metal temperature measurement and fixing of thermowells in the pipelines.
2. Erection of flow nozzles.
3. Erection of valves, actuators along with valves, damper actuators along with dampers, burner tilt power cylinder, seal air dampers and scanner air emergency dampers and control valves. *(However, SADC power cylinder installation will be in the scope of the contractor)*
4. Erection of electro hydraulic actuators.

Note:

The aforesaid exclusions should not be construed as exhaustive. They are meant for general guideline. BHEL reserves the right to include or exclude any item which is required for completing the job as per rates indicated in rate schedule. Contractor should carry out all such jobs as per the instructions of BHEL engineer.

10.0 : Detailed Bill of Quantities applicable are:

S.NO	DESCRIPTION	DESIGN		PIPE MATERIAL	PIPE			ELBOWS				REDUCERS		TEES		FLANGES			MISCELLANEOUS		WEIGHT (MT)	
		PRESS Kg/sq. cm (g)	TEMP (deg. Centrigrade)	SPECIFICATION	OD (mm)	THK (mm)	LEN (M)	SIZE NB (mm)	R	(deg. Centrigrade)	No	SIZE NB (mm)	No	SIZE NB (mm)	No	SIZE NB (mm)	Rating	No	SIZE NB (mm)	No	PIPE	FITTINGS
1	CW SYSTEM INSIDE TG HALL (DRG NO -PE-DG-281-165-N001) FOR UNIT #3																					
1.1	CW INLET FROM TERMINAL POINT OUTSIDE A-ROW TO CONDENSER	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	11	1800	MITRE 0.75D	45	2								600 NB MAN HOLE ASSY.SET	2	6.974	0.924

1.2	CW OUTLET FROM CONDENSER TO TERMINAL POINT OUTSIDE A-ROW	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	26	1800	MITRE 0.75 D	90	4							600 NB MAN HOLE ASSY.SET	2	16.48	2.976
1.3	CW INLET & OUTLET PIPE DRAIN (INSIDE TG HALL)	5	50	ERW IS 1239 C.S (HEAVY GRADE)	167	5.4	60	150	1.5D	90	16					150 NB	ANSI CL 150	8			1.32	0.214
																150 NB	PN 10 SOF F	2				0.036
1.4	CONDENSER WATER BOX DRAIN & VENTS	5	50	ERW IS 1239 C.S (HEAVY GRADE)	115	5.4	80	100	1.5D	90	16					100 NB	ANSI CL 150	12			1.2	0.177
SUB -TOTAL(1)																					**25.98**	**4.327**
2	**CW SYSTEM INSIDE TG HALL (DRG NO -PE-DG-281-165-N001) FOR UNIT #4**																					

2.1	CW INLET FROM TERMINAL POINT OUTSIDE A-ROW TO CONDENSER	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	11	1800	MITRE 0.75D	45	2								600 NB MAN HOLE ASSY.SET	2	6.974	0.924
2.2	CW OUTLET FROM CONDENSER TO TERMINAL POINT OUTSIDE A-ROW	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	26	1800	MITRE 0.75D	90	4								600 NB MAN HOLE ASSY.SET	2	16.48	2.976
2.3	CW INLET & OUTLET PIPE DRAIN (INSIDE TG HALL)	5	50	ERW IS 1239 C.S (HEAVY GRADE)	167	5.4	60	150	1.5D	90	16					150 NB	ANSI CL 150	8			1.32	0.214
																150 NB	PN 10 SOF F	2				0.036

2.4	CONDENSER WATER BOX DRAIN & VENTS	5	50	ERW IS 1239 C.S (HEAVY GRADE)	115	5.4	80	100	1.5D	90	16					100 NB	ANSI CL 150	12			1.2	0.177
SUB -TOTAL(2)																					**25.98**	**4.327**
3	**CW & ACW SYSTEM OUTSIDE T.G HALL (DRG NO -PE-DG-281-165-N001) FOR UNIT #3**																					
3.1	CW PUMP DISCHARGE TO MAIN INLET HEADER UPTO GRP (BURIED PIPE)	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	20	1800	1.0D	90	2	1800X1600	2								12.68	2.4
					2235	18	3							2200X1800, 2200X2200	3, 1	2200	#150 (FF)	1	2200 END CAP	2	2.985	13.784
3.2	CW MAIN INLET HEADER FROM TERMINAL POINT NEAR "A" ROW TO GRP TP NEAR COOLING TOWER (BURIED PIPE)	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	12	1800	1.0D	45	2										7.608	0.896
					2235	18	8	2200	0.75D	90	1			2200 X 1800	2	2200	#150 (FF)	3	2200 END CAP	1	5.97	8.858

3.3	CW INLET & OUTLET PIPE DRAIN (INSIDE TG HALL)	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	15	1800	1.0D	45	2			1800 X 1800	1				1800 END CAP	1	9.51	2.984
					2235	18	7	2200	0.75 D	90	1	2200X1800	1	2200 X1800	1	2200	#150 (FF)	1			6.965	6.353
SUB -TOTAL(3)																				**45.72**	**35.275**
4	**CW & ACW SYSTEM OUTSIDE T.G HALL (DRG NO -PE-DG-281-165-N001) FOR UNIT #4**																				
4.1	CW PUMP DISCHARGE TO MAIN INLET HEADER UPTO GRP (BURIED PIPE)	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	20	1800	1.0 D	90	2	1800X1600	2								12.68	2.4
					2235	18	3							2200X1800, 2200X2200	3, 1	2200	#150 (FF)	1	2200 END CAP	2	2.985	13.784
4.2	CW MAIN INLET HEADER FROM TERMINAL POINT NEAR "A"	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	12	1800	1.0 D	45	2										7.608	0.896

	ROW TO GRP TP NEAR COOLING TOWER (BURIED PIPE)				2235	18	8	2200	0.75D	90	1			2200 X 1800	2	2200	#150 (FF)	3	2200 END CAP	1	5.97	8.858
4.3	CW INLET & OUTLET PIPE DRAIN (INSIDE TG HALL)	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	15	1800	1.0D	45	2			1800 X 1800	1				1800 END CAP	1	9.51	2.984
					2235	18	7	2200	0.75D	90	1	2200X1800	1	2200 X1800	1	2200	#150 (FF)	1			6.965	6.353
SUB -TOTAL(4)																					**45.72**	**35.275**
MATERIAL COMMON FOR BOTH UNITS																						
5	CW COMMON PUMP DISCHARGE TO INLET HEADER UPTO GRP (BURIED PIPE)	5	50	IS:2062 Gr.B PL (R &W) AS PER IS :3589	1829	14	23	1800	1.0D	90	2	1800 X1600	1	1800 X 1800 , 1800 X 1200	1, 2	1800	#150 (FF)	2	1800 PUDDLE FLANGE 600 NB MAN HOLE ASSEMBLY	1, 1	14.58	7.8
SUB -TOTAL(5)																					**14.58**	**7.8**

6	**MATERIAL FOR GRP PIPE FOR UNIT -3(PE-DG-281-165-N001)**																				
6.1	FROM GRP TP NEAR CW PUMP HOUSE UPTO GRP TP NEAR A - ROW OF TG BUILDING	5	50	GRP	2235		315	2200	1.5D	30 60 90	1 1 1					2200	#150 (FF)	4	600 NB MAN HOLE ASSY.SET	4		
6.2	FROM GRP TP NEAR A- ROW OF TG BUILDING UPTO GRP TP NEAR COOLING TOWER	5	50	GRP	2235		380	2200	1.5D	30 45 60 90	1 4 1 1					2200	#150 (FF)	1	600 NB MAN HOLE ASSY.SET	1		
7	**MATERIAL FOR GRP PIPE FOR UNIT -4(PE-DG-281-165-N001)**																				

7.1	FROM GRP TP NEAR CW PUMP HOUSE UPTO GRP TP NEAR A - ROW OF TG BUILDING	5	50	GRP	2235		155	2200	1.5D	30 60 90	111					2200	#150 (FF)	4	600 NB MAN HOLE ASSY.SET	4		
7.2	FROM GRP TP NEAR A- ROW OF TG BUILDING UPTO GRP TP NEAR COOLING TOWER	5	50	GRP	2235		585	2200	1.5D	30 60 90	111					2200	#150 (FF)	1	600 NB MAN HOLE ASSY.SET	1		
Note :-																						
1	MAN HOLE ASSEMBLY SHALL BE COMPLETE WITH ONE NO. THROUGH FLANGE, ONE NO. BLANK FLANGE WITH LIFTING LUGS, GASKET, FASTNERS ETC.																					
2	QUANTITY OF ROLLED AND WELDED PIPE REQUIRED FOR FABRICATION OF MITER BEND AND REDUCER ARE NOT COVERED IN STRAIGHT LENGTH OF PIPE INDICATED ABOVE.																					
3	PUDDLE FLANGE ASSEMBLY SHALL BE COMPLETE WITH REINFORCEMENT PIPE COLLER ETC.																					

GRP MATERIAL BOQ:

S. NO.	ITEM DESCRIPTION	MATERIAL SPECIFICATION	UOM	QUANTITY METERS/NOS
1	PIPE NB 2200 - **(Bare pipe)**	GRP	Mtrs	1435.0
2	MITRE BEND 2200NB(1.0D) 90DEG	GRP	Nos	4
3	MITRE BEND 2200(1.0D) 45DEG	GRP	Nos	0
4	MITRE BEND 2200 NB (1.0D) 30DEG	GRP	Nos	4
5	MITRE BEND 2200NB(1.0D) 60 DEG	GRP	Nos	4
6	TEE 2200X600	GRP	Nos	2
7	TEE 2200X600**	GRP	Nos	16
8	FLANGE NB 2200 (#150 FF)	GRP	Nos	14
9	FLANGE NB 600 (#150 FF)	GRP	Nos	0
10	PUDDLE FLANGE NB 2200	GRP	Nos	0
11	COUPLINGS	GRP	Lot	
12	LAMINATION JOINT MATERIAL	GRP	Lot	

SUMMARY BOQ FOR CW PIPING

SL.NO	DESCRIPTION	DESIGN WT.(MT)			
		PIPE		FITTINGS	
		UNIT#3	UNIT#4	UNIT#3	UNIT#4
1	CW SYSTEM INSIDE TG HAL	25.98	25.98	4.327	4.327
2	CW & ACW SYSTEM OUTSIDE T.G HALL	45.72	45.72	35.28	35.28
3	MATERIAL COMMON FOR BOTH UNITS	14.58		7.8	
	TOTAL PIPE & FITTING (MT)	**244.994**			
		APPROXIMATE LENGTH (M)			
		UNIT#3		**UNIT#4**	
4	MATERIAL FOR GRP PIPE	695		740	
	TOTAL GRP PIPE LENGTH (Mtrs)	**1435**			

NOTE :1)CW PIPING – STAINLESS STEEL - OF ALL SIZES WITH ASSOCIATED VALVES INCLUDING BUTTERFLY VALVES, TRAPS, SPECIALITIES, STRAINERS AND SUCH OTHER EQUIPMENTS/ COMPONENTS, INCLUDING ROOT / VENT VALVES, DRAINS, BLOW DOWNS, BYPASS, INSTRUMENT TAPPINGS FOR MEASURING INSTUMENTS ETC. **IS ABOUT 4 MT (APPROX).**

NOTE :2). FABRICATION, PRE-ASSEMBLY, ERECTION AND WELDING OF AUXILIARY STRUCTURES FOR HANGERS & SUPPORTS, ERECTION/ FIXING, ALIGNMENT AND LOADING OF HANGERS AND SUPPORTS OF ALL PIPINGS AND LADDERS ETC **IS ABOUT 10 MT (APPROX)**

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Annexure-I
ESTIMATED WEIGHT FOR VARIOUS SYSTEMS IN SCOPE OF WORK

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Annexure-I
ESTIMATED WEIGHT FOR VARIOUS SYSTEMS IN SCOPE OF WORK

11.0 GENERAL REQUIREMENTS – COMMON TO ALL WORK

11.1
The intent of specification is to provide services according to the most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for proper and efficient execution of this work shall not relieve the Contractor of the responsibility of providing such facilities to complete the work without any extra compensation.

11.2
The terminal points decided by BHEL shall be final and binding on the Contractor for deciding the scope of work and effecting payment for the work done.

11.3
The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site. The Contractor and his personnel shall cooperate with personnel of BHEL, BHEL'S Customer, Customer's consultants and other Contractors, coordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work of the project as a whole.

11.4
The work covered under this specification is of highly sophisticated nature, requiring the best quality workmanship, supervision, engineering and construction management. The Contractor should ensure proper planning and successful & timely completion of the work to meet the overall project schedule. The Contractor must deploy adequate quantity of tools & plants, modern / latest construction aids etc. He must also deploy adequate trained, qualified and experienced supervisory staff and skilled personnel.

11.5
Contractor shall erect and commission all the equipments and auxiliaries as per the sequence & methodology prescribed by BHEL depending upon the technical requirements. Availability of materials and fronts will decide this. BHEL Engineer's decision regarding correctness of the work and method of working shall be final and binding on the Contractor. No claims for extra payment from the Contractor will be entertained on the ground of deviation from the methods / sequence adopted in erection of similar sets elsewhere.

11.6
All necessary certificates and licenses, permits & clearances required to carry out this work from the respective statutory/ local authorities are to be arranged by the Contractor at his cost in time to ensure smooth progress of work.

11.7
The CW & ACW piping shall be erected as per relevant provisions of latest amendments/addendums thereof, if any.

11.8
The work shall conform to dimensions and tolerances specified in the various drawings / documents that will be provided during various stages of erection. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations due to Contractor's fault, the Contractor shall dismantle and re-do the work duly replacing the defective materials at his cost, failing which the work will be got done by BHEL and recoveries will be

effected from the Contractor's bills towards expenditure incurred including cost of materials and departmental overheads of BHEL.

11.9
The Contractor shall perform any services, tests etc, which may not be specified but nevertheless, required for the completion of work within quoted rates.

11.10
All necessary certificates and licenses required for carrying out this work are to be arranged by the Contractor expeditiously.

11.11
The Contractor shall execute the work in the most substantial and workman like manner. The stores shall be handled with care and diligence.

11.12
BHEL reserves right to recover from the Contractor any loss which arises out of undue delay / discrepancy / shortage / damage or any other causes due to Contractor's lapse during any stage of work. Any loss to BHEL due to Contractor's lapse shall have to be made good by the Contractor.

11.13
All cranes, transport equipment, handling equipment, tools, tackles, fixtures, equipment, manpower, supervisors/engineers, consumables etc, except otherwise specified as BHEL scope of free issue, required for this scope of work shall be provided by the Contractor. All expenditure including taxes and incidentals in this connection will have to be borne by Contractor unless otherwise specified in the relevant clauses. The Contractor's quoted rates should be inclusive of all such contingencies.

11.14
During the course of erection, testing and commissioning certain rework / modification / rectification / repair / fabrication etc may become necessary on account of feed back / revision of drawing etc. This will also include modifications / re-works suggested by BHEL / customer / other inspection group. Contractor shall carry out such rework / modification / rectification / fabrication / repair etc promptly and expeditiously. Daily log sheets signed by BHEL engineer and indicating the details of work carried out, man-hours etc shall be maintained by the Contractor for such reworks. Claim of Contractor if any, for such works will be governed by relevant clauses of 'General Conditions of Contract'.

11.15
All works such as cleaning, leveling, aligning, trial assembly, dismantling of certain equipments / components for checking and cleaning, surface preparation, fabrication of structures, tubes and pipes as per general engineering practice and as per BHEL Engineer's instructions at site, cutting, gouging, weld depositing, grinding, straightening, chamfering, filing, chipping, drilling, reaming, scrapping, lapping, fitting up etc as may be applicable in such erection works and which are treated incidental to the erection works and necessary to complete the work satisfactorily, shall be carried out by the Contractor as part of the work within the quoted rates.

11.16
The Contractor shall make all fixtures, temporary supports, steel structures required for jigs & fixtures, anchors for load and guide pulleys required for the work. Contractor shall arrange necessary steel for such usage. Only the steel for making temporary structure (cat head) for drum lifting will be provided by BHEL in random sizes materials available at site.

11.17
The Contractor shall take delivery of the components, equipments, chemicals, and lubricants etc from the BHEL stores/ storage area after getting the approval of BHEL Engineer on standard indent forms of BHEL. Complete and detailed account of the materials and equipments after usage shall be submitted to the BHEL and reconciled periodically.

11.18
Contractor shall plan and transport equipments, components from storage to erection site and erect them in such a manner and sequence that material accumulation at site does not lead to congestion at site of work. Materials shall be stacked neatly, preserved and stored in the Contractor's shed and at work areas in an orderly manner. In case it is necessary to shift and re-stack the materials kept at work areas/ site to enable other agencies to carry out their work or for any other reason, same shall be done by Contractor most expeditiously as incidental to work.

11.19
Plant materials should not be used for any temporary supports / scaffolding/ preparing pre-assembly bed etc.

11.20
The details of equipments to be erected under this contract is generally as per the schedule given in relevant clauses. These details are approximate and meant only to give a general idea to the tenderer about the magnitude of the work involved. Actual quantum and type of equipments will be based on the relevant erection documents which will be furnished to the Contractor in due course of erection and the weight and quantity as per the relevant engineering documents will only be admissible for the billing purpose.

11.21
Contractor shall lay/install the field-routed/small-bore pipelines to suit site condition/ requirement. Before laying/installing such pipelines, the contractor shall prepare necessary sketch for routing these pipe lines and get the same approved by BHEL. Contractor must take care of the location/layout of other systems and equipment before preparing such sketch to avoid interference. There is a possibility of minor change in routing such pipelines even after completion of erection; contractor shall carry out the same without any extra cost to BHEL.

11.22
Welding of necessary instrumentation to be provided for piping are covered within the scope of this specification. The installation of all the above items will be Contractor's responsibility even if:

a) Items are not specifically indicated under the BOQ given in the technical specifications.
b) Items are supplied by an agency other than BHEL.

Pre-heating, NDE, and Post weld heat treatment for above shall be done as per the specifications as part of work.

11.23
All electrical motors have to be tested for IR & PI values prior to the trial run. Where required, dry out may have to be carried out by using external heating source. Contractor shall make all arrangements in this regard and complete the work as instructed. BHEL will provide the motorized insulation testers.

11.24
The work shall be carried out strictly in accordance to the "Field Quality Plan" approved by BHEL/client. Contractor, jointly with BHEL, shall prepare all necessary records of measurements/readings/ protocols etc.

11.25
All works such as cleaning, levelling, aligning, trial assembly, dismantling of certain equipments / components for checking and cleaning, surface preparation, fabrication of sheets, tubes and pipes as per the general engineering practice and as per BHEL engineers instructions at site, cutting, weld desposing, grinding, straightening, chamfering, filing, chipping, drilling, reaming, scraping, lapping, fitting up etc as may be applicable in such erection works and which are treated incidental to the erection work and necessary to complete the work satisfactorily shall be carried out by the Contractor as part of the work.

11.26
Interconnection/ hookup, if any, with the existing system shall form part of work. Such interconnections, hookups may require shut down of running plant and the relevant work have to be completed within such planned shutdowns. This may call for working with enhanced resources and on extended hours. Contractor's offer shall cover all such contingencies.

11.27 **Handling of materials from new storage yard.**

Customer has allotted new storage area (outside plant boundary) about 2.4 km from main gate and the transportation distance involved upto erection site will be approx. 4.0 km. Some of the heavy consignments related to CW & ACW piping shall be unloaded in this yard also. Contractor has to arrange required capacity crane/trailer and all associated arrangement for loading/transportation of these material upto erection site. No additional claims shall be entertained for this work.

11.28
Contractor shall regulate flow of material to and from site in such a manner and sequence that material accumulation at site does not lead to congestion at site. in case it is necessary to shift and restack the materials kept at work areas / site to enable other agencies to carry out their

work or further any other reason, it shall be done by the Contractor most expeditiously. No claim for extra payment for such work will be entertained.

11.29
The Contractor shall have total responsibility for all equipment and materials in his custody at Contractor's stores, loose, semi-assembled, assembled or erected by him at site. He shall effectively protect the finished works from action of weather and from damages or defacement and shall also cover the finished parts immediately on completion of work as per BHEL engineer's instructions. The machine surfaces/finished surfaces should be greased and covered.

11.30

BHEL is operating web based computerized site operation management system (SOMS) that includes, inter-alia, issue of materials, daily progress reporting, Contractor's running monthly billing and material reconciliation through a computerized data management system. Contractor shall install necessary hardware to hook-up with the BHEL's system and use the same for his scope of work.

In the event the computerized SOMS is inoperative for any reasons, the Contractor shall take delivery of materials from the storage area/sheds of BHEL/customer after getting the approval of the engineer/customer on standard indent forms to be specified by BHEL/customer. All these records however shall be updated in the SOMS as and when the soms is reactivated/normalized.

11.40 MEASUREMENT OF THE WORK COMPLETED

A) Where payment is to be made on the basis of weight, the weight per unit given in the BHEL document only shall be taken in to consideration. In case such an information is not available in BHEL documents, then the latest relevant indian standards in this regard may be applied.

B) Spares, surplus quantity, erection contingency materials will not be paid for unless the same has been consumed in place of regular item of measurable work as per the rate schedule.

C) Where the payment is made on the basis of item rate, actual executed quantity measured jointly shall only be paid for.

D) It is clarified that as far as weight constituted by welding consumables and other consumables supplied by BHEL as well as by the Contractor, shall not be considered for payment.

E) BHEL engineer's decision regarding stage of payment corresponding to progress of work, calculation of weight etc will be final and binding on the Contractor.

F) No separate payment shall be made for grouting of equipments, structures etc specified elsewhere in these specifications.

G) No separate payment will be made for the weight/volume of lubricant, oils, chemicals, gases, water, preservatives etc.

12.0 CW PIPING & OTHER PIPING INSTALLATION

In general following systems of piping are to be executed under these specifications for unit#3 &4:

1. CW system inside TG hall (DRG NO -PE-DG-281-165-N001) - as per annexure -i indications

(i) CW inlet from terminal point outside A-row to condenser
(ii) CW outlet from condenser to terminal point outside A-row
(iii) CW inlet & outlet pipe drain (inside TG hall).
(iv) Condenser water box drain & vents

2. CW & ACW system outside T.G hall (DRG NO -PE-DG-281-165-N001) - as per annexure -i indications

(i) CW pump discharge to main inlet header upto GRP (buried pipe).
(ii) CW main inlet header from terminal point near "A" row to GRP TP near cooling tower (buried pipe).
(iii) CW inlet & outlet pipe drain (inside TG hall).
(iv) CW common pump discharge to inlet header upto GRP (buried pipe).
(v) From GRP TP near CW pump house upto GRP TP near A -row of TG building.
(vi)From GRP TP near A-row of TG building upto GRP TP near cooling tower.

12.1 Contractor shall specifically note:

12.1.1. There may be sub-systems under the above systems, though not listed here will also form part of work. Similar, any other system though not listed here but is/are required for total work completion shall form part of work. Such works shall also be paid as per relevant terms of payment at applicable item rate for above piping.

12.1.2. Some cooling water piping schemes are presently planned to be of CS material. However, during final engineering whole or part of it may be changed to GRP material. In such a case, relevant specifications herein shall be applicable to installation of such pipelines too. Payment will be made based on actual measurement and applicable item rate corresponding to material of pipes.

12.1.3. Generally civil works for installation of buried piping are specifically excluded from the scope of contractor. However, work pits required in the pipe trenches for making in-situ joints etc shall be made by the contractor. Similarly, to carry out his work, any shoring of trench walls to prevent cave-ins and/ or de-watering of trenches if

required shall be done by the contractor as scope of work. All materials and T & P shall be arranged by him.

12.2
The scope of work in piping system (Air, Gas, water, oil, steam, governing oil/control oil etc.) will include cutting to required length, edge preparation, laying, fixing and welding of the elbows/fittings/valves of all types and sizes/ strainers (e.g. self cleaning strainers etc)/ duplex filter and any other equipment shown in the drawings/documents etc coming in the pipelines, fixing supports/hangers/shock absorbers/ guides and restraints etc. and carrying out all other activities/works to complete the erection and also carrying out all pre-commissioning/ commissioning operations mentioned in these specifications as per engineer's instructions and/or as per approved drawings.

12.3
Carrying out of piping as per the specifications between equipments constituting terminal points, whether the terminal equipments fall within the scope of this work/specification or not, is within the scope of the work/ specification. The contractor shall complete terminal joints at either ends, with due NDE & PWHT if applicable, for all the piping schemes covered in the scope of work.

12.4
Fit up and welding/bolting/fastening of piping to the terminal points (such as stubs, valves, flanges on terminal points/equipments, stubs on headers, battery limits etc) forming part of the scope of work/specification and stress relieving and radiography of joints so made are also within the scope of work. Permanent fasteners and gaskets will be supplied by bhel.

12.5
Interconnection/ hook-up, if any, with the existing system shall form part of work. Such interconnections, hook-ups may require shut down of running plant and the relevant work has to be completed within such planned shutdowns. This may call for working with enhanced resources and on extended hours. Contractor’s offer shall cover all such contingencies.

12.6
All drains / vents / relief / escapes / safety valve piping to various tanks/ sewage / drain canal / flash box / condenser / sump / atmosphere etc, from the stubs on the piping and equipments etc are covered in the scope of this tender specification.

12.7
The following items of work shall be incidental and forming part of piping fabrication and erection:

(1) To locate cause of vibrations in equipments/auxiliaries/ pipelines and carrying out necessary corrections. it shall be done free of charge to bhel in case the same is attributed to the contractor.
(2) Fabrication and erection & welding of racks, steel supports, guides, restraints for all the piping. steel for this purpose will be supplied by bhel free of charge in random and running lengths.
(3) Pre-assembly of spring suspension/hangers and shock absorber as per requirement.
(4) Erection of all types of valves, air &/or steam traps, filters, flow nozzles/ flow indicators/ flow orifices other measuring elements in the piping. these may have been supplied either by bhel or their customer. this may involve cutting of pipelines, fresh edge preparation and welding with stress relieving wherever applicable.
(5) Fabrication / making of bends for pipes and tubes of diameter up to 65 mm.
(6) Matching of all fittings like tees, bends, flanges, reducers valves, socket fittings, etc with pipes for welding.
(7) Servicing of valves, power cylinders and actuators etc.
(8) Cleaning of all pipes by wire brushing / blowing by compressed air.
(9) Welding of root valves with small length of piping to the pressure, flow and level tapping points on piping and/or flow nozzles/ orifices/ metering/ measuring elements fixed on piping.
(10) Welding of blanks with stress relieving if required on a temporary basis.

12.8
Pipelines will be field routed as per schemes/ suggestive layout or as per the instructions of bhel engineer. Pipes & tubes will be supplied in random lengths and running lengths. The contractor shall have to lay the piping after carrying out the necessary fabrication, edge preparation, routing etc to suit site requirement in best professional manner.

12.9
As far as possible pre-assembly of piping shall be done on ground. The pipe laying shall be carried out from the available terminal point/points or any other area between the terminal points. The erection can be carried out on temporary supports to obtain proper alignment and welding. After fixing the permanent supports, all the temporary supports shall be removed. The alignment, distances and loading of the supports shall be checked and the required settings to be ensured as per requirement.

12.10
Fittings like bends tees, elbows, miter bends, reducers, flanges etc, will be supplied as loose items. Bends of tubes up to OD 65 mm will have to be formed at site as incidental to the work.

12.11
Certain adjustments in length may be necessary while erecting pipelines. The contractor should remove the extra lengths/add extra lengths to suit the final layout after preparing edges afresh at no extra cost.

12.12
Minor adjustment like removal of ovality in pipes is in the scope of work.

12.13
Normally the butt welded valves will have prepared edges for welding. But, if it becomes necessary, the contractor shall prepare new edges or recondition the edges by grinding or chamfering to match the corresponding tubes and pipes. All fittings like "T" pieces, bends, weld neck flanges, reducers, etc., shall be suitably matched with pipes for welding (this is applicable to piping work also).

12.14
Welding of all attachments on casing, non-pressure parts, pressure parts/ piping, equipments, tanks, vessels etc. including those required for insulation work is in the scope of work.

12.15
It should be ensured that all the terminal point connections are done without transferring any undue load or strain to the other equipments. Necessary protocols have to be prepared for such fit-up along with bhel /customer representative before connecting. All NDE including radiography of joints so made, post weld heat treatment if any, are also within the scope of work / specification.

12.16
Where pipes are sent as plain pipes the attachments for tapping points and / or supports will be sent as loose items. Site work will involve fabrication, drilling, fitting, pre-heating, welding, NDE & PWHT as per applicable bhel documents. Rate quoted shall take account of all these work as no separate payment is envisaged for such work.

12.17
TG auxiliaries cooling water may also be extended to some of the auxiliaries/equipments of TG area and other equipments. Contractor shall carry out erection, testing, NDE requirements and commissioning of entire system.

12.18 GRP PIPING - MAIN COOLING WATER PIPING & ACW PIPING

a) Majority of GRP piping will be laid underground and buried.

b) While handling these pipes proper soft packing between the sling rope and the pipe shall be provided.

c) Manufacturer's recommendation in respect of laying of pipes, site joints and all other aspects shall be adhered to.

d) Any fixtures and other arrangement required to be made for installation shall be part of & incidental to work.

e) All field quality requirements as per recommendations of manufacture shall be complied with.

f) Field hydraulic test of piping as per recommendations shall be conducted. All pumps etc are to be arranged by the contractor. In case of hydraulic testing is to be conducted in stages, 1 set of end caps in each size of pipe shall be provided by bhel on free returnable basis. Contractor shall use these properly and return to bhel in proper condition.

g) In case bhel avails the supervision services of the manufacture of pipe for installation, the work shall be executed by the contractor as per their instructions.

h) Drains, vents and access doors/ manholes should be provided as per drawing/ schemes etc.

i) Torque wrenches, if required, for fastening of clamps, flanges etc shall be provided by the contractor.

j) Item rate for complete work of GRP piping is invited based on Inch Dia – M concept. This rate shall include price for all works laying, coupling, testing, supporting and clamping etc.

(i) Payment will be made based on the linear measurement for respective dia of pipes. All valves, fittings etc coming along the line and will be measured linearly like pipes.

(ii) There is no other separate rate envisaged and payment shall be made based only on this rate for all activities of this work.

(iii) Measurement will be taken on OD of the pipes.

(iv) Refer chapter -viii for terms of payment.

12.19 PROTECTION OF PIPELINES

A) Buried steel pipes have to be protected from outside by wrapping and coating with protective coat/ anticorrosive tape totaling 4mm thick after due surface preparation, as per specification/ documents. Contractor shall provide all materials, consumables, T & P etc required for this work. The coating shall be subjected to tests as specified and all arrangements are to be made by the contractor for such tests.

b) Main cooling water – CS pipes of dia 1000mm and above will be supplied with internal coating as per client's specification. An area of approx 150 mm width near site weld joints on each pipe will be uncoated. This area shall be painted with specified paint and to required film thickness after due surface preparation after the site welds are completed and cleared for further application. Contractor shall provide the paints etc as per specification.

12.20

While conducting hydraulic test of various pipelines either individually or grouping a few lines or in parts; blanks/spools may have to be put up at terminal points, strainers, walls, flanges etc. after conducting the tests, the blanks shall be removed and the lines restored. Contractor shall carry out all such incidental work to satisfactorily conduct the hydro test. wherever work is involved in the terminal points, contractor shall carryout the same as per instruction of bhel engineer. The decision of BHEL engineer is final and the same is binding on the contractor.

12.20.1 **OTHER IMPORTANT POINTS**

12.20.2

Suspensions/supports for tubes/piping will be supplied in running/random lengths/ sizes, which shall be fabricated as per drawing and erected as required. Similarly ladders for approaching manhole doors shall also be fabricated from random sized materials provided by BHEL as free issue.

12.20.3

Layout of small-bore piping shall be done as per site requirement. Necessary sketch for routing these lines should be prepared by the contractor and got approved from BHEL. There is a possibility of slight change in routing the above pipelines even after completion of erection; contractor's scope includes such re-routing within the quoted rates.

12.20.4

Welding of necessary instrumentation tapping points, root valves, flow metering & measurement devices, and control valves to be provided on pipe lines covered

within the scope of this specification, will also be the responsibility of the contractor and will be done as per the instructions of BHEL site engineer. It may be necessary to cut and remove parts of already erected pipeline for introducing such items. All necessary activities like edge preparation, fit-up, welding, NDE etc. For installation/introduction of all the above items will be contractor's responsibility even if the:

i) Items are not specifically indicated under the respective product groups as given in the technical specifications.

II) Items are supplied by an agency other than BHEL.

NDE for above shall be done as per the specifications as part of work.

12.20.5

Actuators/drives of valves, gates, etc may have to be serviced, lubricated, before erection, during pre-commissioning & commissioning, including carrying out minor adjustments required as incidental to the work.

12.20.6

All electrical motors have to be tested for IR & PI values prior to the trial run. Where required, dry out may have to be carried out by using external heating source. Contractor shall make all arrangements in this regard and complete the work as instructed. Contractor shall provide the requisite Meggar for this purpose.

13.1.0 WELDING, RADIOGRAPHY AND NDE

A) Installation of equipment involves good quality welding, NDE checks, etc contractor's personnel engaged should have adequate knowledge on the above works.

B) The method of welding (viz.) will be arc welding and details will be indicated in the drawing / documents. BHEL engineer will have the option of changing the method of welding as per site requirement. Welding of weld joints, including root, will have to be done with specified welding electrodes. The root welding has to be back gouged from inside the pipe by grinding and welded. That is welding has to be done both from inside as well as from outside the pipes as per the relevant engineering document.

C) Welding of all attachments to piping shall be done only by the qualified and approved welders.

F) All the welders (structural and piping) shall be tested and approved by BHEL engineer before they are actually engaged on work though they may possess the IBR/other certificate. BHEL reserves the right to reject any welder without assigning any reason.

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

H) 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 welding electrodes have to be carried in portable ovens.

I) Unsatisfactory and continuous poor performance may result in discontinuation of concerned welder.

J) The external welded surface shall be cleaned of slag, rust etc; ground finished to obtain smooth surface free of excess undulations, wrinkles etc and painted over a band width suitably covering the entire Heat Affected Zone for each site weld joint. Refer clause 4.8 hereinafter for further details.

K) The contractor shall maintain welding records in the form as prescribed by BHEL containing all necessary details, and submit the same to the BHEL engineer as required. Interpretation of BHEL engineer regarding acceptability of the welds shall be final.

L) NDE (radiography & LPI/DPT) shall be done as per approved field quality plan/ other BHEL documents.

M) 100% radiography may have to be taken in respect of certain in-situ weld joints.

N) Contractor shall make complete arrangement for radiography test of welds connected with this work. It may be noted that invariably the radiography work will be carried out only after the close of other site activities.

O) Radiography inspection of welds shall be performed in accordance with requirements and recommendation of BHEL engineer. The quantum of radiographic inspection shall be as per provision of BHEL's erection documents/ FQP. They may, however be increased depending upon the performance of the individual welder at the discretion of BHEL engineer.

P) All radiography films and records of weld joints shall be preserved properly and be handed over to BHEL. These shall become the property of BHEL.

Q) **For the radiography test of weld joints cleared and accepted by BHEL/client, payment @ Rs.10 per centimeter of accepted film length (of standard width applicable for these joints)**. No payment shall be made for film lengths not accepted by BHEL and reasons for which are attributable to the contractor such as retakes on account of bad shot, poor joint quality etc. Please refer section-12 special conditions of contract (Terms of Payment) for release of payment.

14.0 PAINTING / PROTECTION -PIPES :

14.1.1 INTERNAL SURFACE (FOR PIPES DIA ABOVE 1000 mm)

BHEL will supply pipes with internal surfaces coal tar epoxy painted with approx dry film thickness of 400-500 microns. A band of approx 150 mm at each end of the straight pipes, where site welding is to be done with next pipe, will be left unpainted by the supplier of the pipes. After the weld joint completion at site, these areas have to be cleaned thoroughly by mechanical wire brushing, followed by application of adequate number of **Coal Tar Epoxy Paint** coats with appropriate interval between coats so as to achieve a final dry film thickness of 400-500 microns. There will be no separate payment for this and the activity shall be done as part of work. Contractor shall supply all primer, paints and consumables etc (conforming to BHEL specification) for this application.

14.1.2 EXTERNAL SURFACE OVERGROUND PIPING

The pipes will be supplied by with external surface duly painted to required DFT, color and shade. However, the same would have got damaged during handling, storage, transportation for erection and erection etc. Similarly, during welding at site these paints will get damaged. These area have to be cleaned, coated with two coats – 30 microns each - of red oxide zinc phosphate primer (Alkyd base to IS 12744) followed by 3 coats – 30 microns each - of synthetic enamel long oil alkyd to IS:2932, of specified shade, so as to achieve dry film thickness of 150 microns. This shall be done as incidental to work and not to be paid for separately. Primers, paints and all consumables etc (conforming to BHEL specification) is in contractor's scope.

14.1.3 EXTERNAL SURFACE – CW PIPE ENCASED IN CONCRETE

The Main CW pipes will be supplied with one coat of coal tar primer of 30 micron coat thickness on external surface. The area where the primer coating has got damaged during various stages of handling and erection and also the area adjoining site weld joints, shall be, as incidental to work, applied with one coat of coal tar primer after due cleaning with final DFT being not less than 30 microns. This will not be paid for separately. Contractor shall provide the primer and other consumables (conforming to BHEL specification) etc for this application.

14.1.4
All the specifications detailed herein above shall be applicable, mutatis-mutandis, to all the piping covered under this scope of work.

15.1.0

TESTING, PRE-COMMISSIONING AND ASSISTANCE FOR COMMISSIONING

15.1.1

Hydraulic testing of the piping shall be conducted in segments after laying.

15.1.2

Testing, pre-commissioning, & commissioning will involve, flushing of the lines by water as informed by BHEL from time to time shall be completed.

15.1.3

All the tests should be repeated till all the equipments satisfy the requirement/ obligations of BHEL to their client and also the relevant statutory authority.

15.1.4

Contractor shall lay/install necessary temporary piping, pumps, valves, gauges, cables, switches etc, for conduct of hydraulic test, this may involve cutting of some portion of existing piping/valves, placing of rubber wedges / blanks in the valves and other openings where required, bends have to be fabricated at site from running length of pipe. Temporary installation itself has to be tested, tried, and subject to non-destructive examinations as per the instructions of BHEL as part of work.

15.1.5

Contractor shall arrange all the materials, equipments such as pumps with drive motors, starters, cables & switches etc, pipes and fittings, valves, and supports, pressure gauges etc for water filling, pressure testing and de-watering of pipes and pits.

15.1.6

Providing blanking plates, dished ends, fabrication, fit-up, welding, of requisite blanks for conduct of hydraulic test is part of work. Contractor shall arrange dished ends – at least 2 sets for each size of pipes suitably. Removal of blanks and restoration of the concerned system/line is to be done as part of work. No separate payment will be made for these activities.

15.1.7
Overhauling, cleaning, servicing of valves, during erection and commissioning stages are in the scope of work.

15.1.8

During pre-commissioning / commissioning, a replacing / changing mechanical/ other seal of equipments is within the scope of work.

15.1.9

In case any defect is noticed during tests, trial runs such as loose components, undue noise or vibration, strain on connected equipment etc, the contractor shall immediately attend to these defects and take necessary corrective measures. If any readjustment and realignment are necessary, the same shall be done as per BHEL engineer's instructions. No Claims, for these works shall be attributable to BHEL.

15.1.10
Contractor shall cut/open work, if needed, as per BHEL engineer's instructions during commissioning for inspection, checking and make good the works after inspection is over.

Similarly, during the course of erection, if certain portion of equipment's erected by the contractor has to be undone for enabling other contractors/agencies of BHEL/customer to carry out their work, contractor shall carry out such jobs expeditiously and promptly and make good the job after completion of work by other contractor's/ agencies of BHEL/customer as per BHEL engineer's/agencies of BHEL/customers instructions. No Claims, for these works shall be attributable to BHEL.

15.1.11

During this period, though BHEL/ client's staff will also be associated in the work, the contractor's responsibility will be to arrange for complete requirement of men and required tools and plants, consumables, scaffolding and approaches etc, till such time the commissioned unit is taken over by BHEL's client.

15.1.12

It shall be specifically noted that the contractor may have to work round the clock during the pre-commissioning and commissioning period along with BHEL engineers and hence considerable overtime payment is involved. The contractor's quoted rates shall be inclusive of all these factors.

15.1.13

The contractor shall carry out any other tests as desired by BHEL engineer on erected equipment covered under the scope of this contract during testing, pre-commissioning and commissioning, to demonstrate the completion of any part or whole of work performed by the contractor.

16.1.0 PRESERVATION & PROTECTION OF COMPONENTS

16.1.1

The contractor shall have total responsibility for all equipments and materials in his custody at his stores, loose, semi-assembled, assembled or erected by him at site. He shall effectively protect the finished works from action of weather and from damages or defacement and shall also cover the finished parts immediately on completion of work as per BHEL engineer's instructions. The machine surfaces/ finished surfaces should be greased and covered.

16.1.2

At all stages of work, equipments/materials in the custody of contractor, including those erected, will have to be preserved as per the instructions of BHEL.

16.1.3

The contractor shall make suitable security arrangements including employment of security personnel and ensure protection of all materials/equipment in their custody and installed equipments from theft/fire/pilferage and any other damages and losses.

16.1.4

Contractor shall collect all scrap materials periodically from various area of work site and pre- assembly area, deposit the same at the place earmarked at site or shift the same to a place earmarked in BHEL / client's stores. In case of failure of contractor in compliance of this requirement, BHEL will make suitable arrangement at contractor's risk and cost.

16.1.5

The entire surplus, damaged, scrap, unused materials, package materials / boxes / containers, special transporting frames, gunny bags, etc, shall be returned to BHEL stores by the contractor with proper records**.**

16.1.6

The contractor shall not waste any materials issued to him. In case it is observed at any stage that the wastage/excess utilization of materials is not within the permissible limits, recovery for the excess quantity used or wasted will be affected with departmental charges from the contractor. Decision of BHEL on this will be final and binding on the contractor**.**

16.1.7

For any class of work for which no specifications have been laid down in these specifications, work shall be executed as per the instructions of BHEL.