NATIONAL BUILDINGS CONSTRUCTION CORPORATION LIMITED
(A Govt. of India Enterprise)

# CONDITIONS OF CONTRACT
# &
# TECHNICAL SPECIFICATION

NAME OF WORK: Supply of M.S. Pipes for IDCT works of Vindhyachal STPP-IV (2x500MW) Distt-Sidhi, Madhya Pradesh.

VOLUME – I

ISSUED TO M/s. _____

_____

_____

_____

NBCC PLACE, PRAGATI VIHAR, NEW DELHI-110003.
TEL: 011-24366539, 24366526, FAX: 011-24366522

National Buildings Construction Corporation Limited
(A Govt. of India Enterprise)
/ Committed to Customers' Delight/

Office of the RBG (Infra)
NBCC Place, Pragati Vihar,
Bhishma Pitamah Marg,
New Delhi -110003.
Phone No: 011- 24366539
Fax No: 011-24366522

NIT No: RBG(Infra)/NBCC/Vindhyachal–IDCT/M.S.Pipes/10 Dated :17.01.2011

Sealed tenders are invited directly from the following approved Vendors/Manufacturers of NTPC (1) M/s PSL Holdings, Daman, (2) M/s Wellspun Gujarat, Bharuch, (3) M/s Ratnamani Chattral/Kutch, (4) M/s Samshi Pipe Industries Ltd, Vadodra, (5) M/s PSL, Kutch, (6) M/s PSL International, Chennai and (7) M/s SAIL, Rourkela for Supply of M.S. Pipes for our IDCT package at Vindhyachal Super Thermal Power Project (2x500MW) Stage-IV, Distt-Sidhi, Madhya Pradesh (Clients :- NTPC).

| Sl. No | Name of Works | EMD (Rs) | Date of Sale of Tender Documents | Date of submission of sealed Tenders | Date of opening of sealed tender | Period of Completion |
|---|---|---|---|---|---|---|
| 01 | Supply of M.S. Pipes as per specifications as per IS:3589 for H.W. piping for IDCT Vindhyachal STPP-IV. | 7.0 Lacs | 18/01/2011 To 24/01/2011 | 25/01/2011 upto 3:00 PM | 25/01/2011 at 3:30 PM | 03 (Three) Months |

1. EMD shall be deposited in the shape of Demand Draft/ Pay Order/ Bank Guarantee drawn in favour of National Buildings Construction Corporation Limited, payable at New Delhi.

2. The tender documents can be obtained from the office of the under signed during office working hours upto last date of sale of tender documents on payment of Rs.1000/ (non refundable) in cash OR by Demand Draft payable in favour of NBCC Ltd. Payable at New Delhi . In case the tender papers are downloaded from NBCC's website, the cost of tender paper shall be deposited along with the tender documents by the bidder in form of Demand Draft payable at New Delhi.

3. In case the last date of submission/opening date of tenders happens to be a holidays the tenders shall be submitted/opened on the next working day.

4. NBCC reserves the right to reject any or all the tenders without assigning any reason thereof. The tender papers are not transferable.

5. NBCC also reserves the right to split up the work among more than one bidder.

6. Sealed tenders shall be submitted in the office of the H-RBG (Infra), NBCC Ltd., NBCC Place, Pragati Vihar, Bhishma Pitamah Marg, New Delhi-110003. Tel No. 011-24366539.Fax. 24366522.

7. The bid submitted by the vendor / manufacturer other than the approved manufacturer shall not be considered.

RBG (Infra)

List of Documents


| Sl. No. | Title | Page Number |
|---|---|---|
| | VOLUME –I | |
| 1 | Qualifying Requirement | 04 |
| 2 | Instructions to Tenderers & Conditions of Contract | 05-09 |
| 3 | Format for Acceptance Letter ( Annexure-I ) | 10 |
| 4 | PROFORMA OF BANK GUARANTEE IN LIEU OF E M D (BID BOND) (Annexure-II ) | 11 |
| 5 | PROFORMA OF BANK GUARANTEE (PERFORMANCE) (Annexure-III ) | 12-13 |
| 6 | Technical Specifications (Annexure-IV ) | 14-20 |
| | VOLUME -II | |
| 7 | SCHEDULE OF Quantities/ (BOQ) | 1-2 |

Qualifying Requirement:

The bidder/tenderer should be any one of the following approved Vendors/Manufacturers of NTPC (1) M/s PSL Holdings (2) M/s Wellspun Gujarat (3) M/s Ratnamani Chattral/Kutch, (4) M/s Samshi Pipe Industries Ltd, Vadodra, (5) M/s PSL, Kutch (6) M/s PSL International, Chennai and (7) M/s SAIL, Rourkela.

DEFINITIONS:

a) Engineer –in-charge: means the Project-in-Charge of NBCC unit or any other authorized representative of NBCC shall be treated as Engineer-in-Charge deputed for this work by NTPC/NBCC Ltd to operate this contract.

b) OWNER: The ultimate owner means M/s NTPC Ltd

c) National Buildings Construction Corporation Limited, hereinafter called 'NBCC" are executing the job of IDCT Package for which the said material is required, which has been awarded to them by M/s NTPC.

d) Site means the lands and other places on/under, in or through which the Supply are to be made or carried out and any other lands or places provide by NTPC or used for the purpose of the supply.

e) Approval means approved in writing including subsequent written confirmation of previous verbal approval.

f) Writing means by manuscript types written or printed statement under or over signature and/ or seal as the case may be.

g) Month means English calendar month & "Day" means calendar day of 24 Hrs. each.

h) Contract Value means the sum for which the tender is accepted as per the Letter of Intent.

i) Language for all documents and correspondence in respect of this contract shall be in English/Hindi Language.

j) Tenderer/Supplier/Manufacturer/Contractor/bidder The firm to whom the supply is awarded.

## INSTRUCTIONS TO TENDERERS & CONDITIONS OF CONTRACT

1.0 The tender documents shall be filled in accordance with the instructions set hereunder:

2.0 All pages of the tender papers shall be signed by the tenderer himself or by his authorized representative with common seal/stamp of firm/company. In case of partnership firm true copy of certificate of Partnership Deed and in the case of Limited Companies, Memorandum of Articles of Association, as the case may be, should be enclosed. The Power of Attorney with proper authentication of the signatory who is signing the documents should also be enclosed.

3.0 The tender should be accompanied with an Earnest Money Deposit (EMD) of Rs. 7,00,000/- (Rupees Seven Lacs only). The tenders without EMD are liable to be rejected. The Earnest Money should be in the shape of Demand Draft/ Pay Order/ Bank Guarantee drawn in favour of National Buildings Construction Corporation Limited, payable at New Delhi. Bank Guarantee should be issued from any Indian Nationalized Bank/Schedule Banks (as listed below). The BG should have validity of 150 days minimum from the date of opening.

List of Scheduled Banks:

| | | |
|---|---|---|
| UTI | ABNAMARO BANK | STANDARD CHARTERED BANK |
| HDFC | AMERICAN EXPRESS BANK | HONGKONG & SHANGHAI BANK |
| ICICI | BANK OF AMERICA | |
| IDBI | CITI BANK | |

NBCC reserves the right to forfeit EMD or en-cash earnest money BG in circumstances wherein the bidder does not accept/execute the order, placed under this NIT.

The firms registered with NSIC under single point registration scheme may be exempted from depositing EMD in case of satisfactory submission of documents related to registration with NSIC under single point and the credentials and list of supplies/ works executed by them etc. The firm must also produce the proof of document that they are not merely registered with NSIC and also continue to receive and execute contract with them on regular basis.

EMD shall accompany the offer and placed in the sealed envelope cover of the offer as detailed in instructions to Tenderer. Any tender not accompanied with the requisite Earnest Money Deposit alongwith Letter of Acceptance shall be rejected and such tenderer(s) will not be allowed to attend the opening of bids.

The EMD of all unsuccessful tenderers will be returned within thirty (30) days of the Award of the Contract. The EMD of successful tenderer shall be refunded after completion of supplies.

3.3 Once the tenderer has given an unconditional acceptance to the tender conditions in it's entirely, he is not permitted to put any remark(s) condition(s) (except unconditional rebate on price, if any) in/alongwith the tender.

3.4 In case the conditions 3.3 mentioned above is found violated at any time after opening of tender, the tender shall be summarily rejected and NBCC shall, without prejudice to any other right or remedy, be at liberty to forfeit the full said Earnest Money absolutely.

3.5 No interest will be payable by NBCC on the said amount covered under EMD/other Security Documents.

4.0 Before quoting the rates, the tenderers are advised to acquaint themselves with the site conditions, working environment and specifications during office hours. In case nay further clarifications are required the same may be sought from the office of the undersigned.

5.0 MODE OF SUBMISSION OF QUOTATIONS: The tender/Bid shall be submitted in two sealed

covers superscribed as under: "TENDER FOR Supply of M.S. Pipes as per specifications as per IS:3589 for H.W. piping for IDCT package at Vindhyachal Super Thermal Power Project, (2x500MW), Distt-Sidhi, Madhya Pradesh".

COVER - I : E.M.D., Unconditional Acceptance & Tender Documents
COVER - II : Only Price Bid (Bill of Quantities).

5.1 COVER NO.1 SHALL CONTAIN :

1) EMD
2) Unconditional Acceptance of Tender conditions as per format enclosed as Annexure – I.
3) Power of Attorney of signatory of Tender, duly authenticated.
4) All tender documents including Condition of Contract & Technical Specification Volume-I complete except schedule of items.
5) The tenderer's credentials duly supported by Client's certificates.
6) PAN No issued by Income Tax Department.
7) Documentary proof of being registered with Sales Tax authorities, Service Tax Registration (wherever applicable) be submitted.
8) Experience & work executed of similar nature with a Copy of award letter and satisfactory completion certificate issued by client be enclosed.

Volume -I of the Tender Documents should be signed and stamped on each page by the tenderer. Cutting & overwriting, if any, should be signed and stamped by the person signing the tender. IF TENDERER FAILS TO SUBMIT ANY OF THE ABOVE DOCUMENTS THEIR PRICE BID MAY NOT BE OPENED/CONSIDERED.

5.2 COVER NO.II SHALL CONTAIN:

- Volume-II of the Tender Documents shall contain Schedules of Quantities only with rates/ Amounts duly filled in each page and signed and stamped by the tenderer.
- All corrections must be signed and stamped by the tenderer. Any condition mentioned in Volume-II shall not be taken into account.

5.3 At the stipulated time of opening of the tender documents, "Cover No1" shall be opened first. The offers from those tenderers who are unable to unconditionally accept the NBCC's tender conditions and who fail to deposit required Earnest Money will be liable to be rejected summarily.

5.4 Tender who unconditionally accept NBCC's tender conditions and deposit the Requisite Earnest Money shall be considered.

5.5 Once the tenderer has given an unconditional acceptance to NBCC's tender conditions in its entirety, he is not permitted to put any remark(s)/condition (s) except unconditional rebate on price, if any in/ along with the tender enclosed in "Cover No.II"

5.6 In case any condition mentioned above is found violated after opening "Cover No.II" the tender shall be summarily rejected and NBCC shall without prejudice to any other right or remedy be at liberty to forfeit the full said Earnest Money absolutely.

6.0 The Project site is located in Vindhyachal Super Thermal Power Project, (2x500MW), Distt-Sidhi, Madhya Pradesh.

]

7.0 NBCC reserves the right to reject any or all the tenders in part or full without assigning any reason whatsoever thereof.

]]

8.0 The tenderers should quote in figures as well as in words the rates and amounts tendered by them. The amount for each item should be worked out and the requisite totals and page totals given.

9.0 Special care should be taken to write the rates and amounts in figures as well as in words in such a way that any alteration is not possible. The total amount should be written both in

figures and words. In case of figures, the word “Rs” should be written before the figures of Rupees and Word “P” after the decimal figure e.g. Rs. 2.5P. In case of words the word “Rupees” should proceed and the word “Paise” should be written at the end (unless the rate/amount is in whole decimal Rupees) and followed by the word ‘Only”. It should invariably be up to two decimal places. While quoting the rates in schedule of quantities, the word “only” should be written closely following the amount and it should not be written in the next line.

10.0 In case of any discrepancy between the rates quoted in figures and words, the rate on which the amount has been worked out shall be taken as correct. If the amount of an item is not worked out by the contractor or it does not correspond with the rate written either in figure or in word, then the rate quoted by the contractor in words shall be taken as correct.

11.0 The tenders for supply shall remain open for acceptance for a period of 90 days from the date of opening of the price bid. If any tenderer withdraws his tender before the said period or makes any modification in terms and conditions of the tender to his benefit which is not acceptable to NBCC, then NBCC shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money of the tenderer.

12.0 The acceptance of a tender will rest with NBCC who reserves to itself the right to reject any or all the tenders received without assigning any reason there of. All tenders in which any of the prescribed conditions are not fulfilled or found incomplete in any respect are liable to be rejected.

13.0 On acceptance of tender, the name of the accredited representative (s) of the supplier who would be responsible for taking instructions from Engineer-in-Charge or its authorized representative shall be intimated by the Supplier within 10 days of issue date of telegram/letter/telex/fax of intents by NBCC.

14.0 Benefits/Exemptions to Supplies for Mega Power Projects:

Ministry of Power (Govt. of India) has certified that Vindhyachal Super Thermal Power Project, (2x500 MW), as a Mega Power Project to M/s NTPC the client.

As such, the domestically manufactured goods supplied for this package shall be eligible for deemed export benefits as per the extent foreign trade policy of Government of India/relevant Notifications of Govt. of India for Mega Power Projects and the relevant Notifications of Govt. of India. This inter alia includes refund of Terminal Excise duty for supply of M.S Pipes. NBCC shall obtain ‘Project Authority Certificate (PAC)’ from NTPC and the same shall be provided to the successful bidder for obtaining such benefit.

The bidders shall be solely responsible for obtaining such benefits from the Govt. of India which they have considered in their bid. In case of failure of the bidders to receive the benefits partly or fully from Govt. of India or in case of any delay in receipt of such benefits, NBCC shall neither be responsible nor liable in this regard in any manner whatsoever.

15.0 Sales tax or any other tax on materials, if any, in respect of supply made shall be included in the rates quoted and NBCC will not entertain any claim whatsoever on such grounds. In the event of non payment/defaulting in payment of any octroi royalty, Cess, Sales Tax, customs, excise or any other levy/tax including labour dues and EPF etc. by supplier, NBCC reserves the right to withhold the dues/ payments of such agencies and make payment to local/state/Central Government authorities as may be applicable.

16.0 Tenderers should quote all prices, including the liability of all taxes, royalty, octroi, or any levy as applicable, loading at factory, transportation upto site and unloading at site. The rates should be firm till completion of supply. The rates shall be F.O.R. Vindhyachal Super Thermal Power Project, (2x500MW), Distt-Sidhi, Madhya Pradesh.

17.0 No escalation whatsoever on Basic rate, Transportation charges, Transit Insurance, loading & Unloading etc will be paid to the bidder. But in case of any increase or decrease in CST/VAT,

ED/Cess notified by Govt. in India after the date of submission of bid will be paid extra or reduced and accordingly billing of supply shall be done. The party shall submit notification copy issued by Govt.of India to NBCC for the claim.

18.0 The tenderers shall be deemed to have gone through the various conditions and clauses of the tender and visited the site before quoting their rates once they make an offer for this work.

19.0 The period of supply shall be as per clause No. 27. Time is the essence of the contract and the supply should be done within the stipulated period. In case the supplier fails to make the supplies within the stipulated period without satisfactory reason, their Earnest Money Deposit shall be forfeited and balance supplies shall be got executed at the risk & cost of the supplier.

20.0 The Quantity as shown in Schedule of items are approximate and may vary upto ± 25%. The decision of NBCC in this regard shall be final.

21.0 NBCC Ltd reserves to itself the right to place supply order for any of the items in the schedule appended hereto, in full or or in part and also reserves to itself the right to reject All or any of the tender without assigning any reasons thereof. NBCC Ltd also reserves to itself the right to split up the order to more than one party.

22.0 In case of termination of Contract, no payment shall be made to the supplier unless all accounts and issues connected with the said work are finalized with them.

23.0 Relationship, if any, with NBCC's Employees:

i) The tenderers shall give e a list of employees related to him in NBCC.

ii) The tenderer who is near relative of the Manager, Accounts or Engineering or Store Officers of NBCC shall not be permitted to tender for works in NBCC if his near relative is working in NBCC.A near relative may include wife, husband, parents and grand parents, children and grand children, brother and sisters, uncles, aunts and cousins and their corresponding in laws working with him in any capacity or are subsequently employed by him and who are near relative of managerial accounts or engineering or store officers of NBCC.

24.0 No Engineers, Manager, accounts official or store officer of NBCC is allowed to work as a sub contractor for a period of 2 years of his leaving NBCC without prior permission of CMD. The contract is liable to be cancelled if either the party or any of his employee is found at any time to be such a person who has not obtained the permission from NBCC before submission of the tender or engagement in the parties service.

25.0 Nuisance: The supplier shall not at any time, do cause or permit any nuisance on the site or do any thing which shall cause unnecessary disturbance or inconvenience to NBCC/NTPC tenants or occupants of other properties near the site and to the Public in general.

24.0 Insubordination: For in subordination to the NBCC/NTPC's representative entrusted with directing, supervising the works or incapability in doing their job or any fault that may disturb or compromise the progress of work, the supplier shall promptly dismiss/remove from site the concerned person upon the NBCC's request and shall replace such personnel with another suitable one at the earliest possible date at supplier's cost and expenses.

25.0 Submission of Documents: Within 10 days from the date of issue of the order the successful bidder has to submit the drawings, data sheet and MQP in accordance with the technical specifications of NTPC.

26.0 Inspection: The successful bidder has to offer the material for inspection prior to dispatch.

The material should be in accordance with the relevant IS code and NTPC technical Specifications enclosed as "Annexure-IV". The inspection shall be carried out by NTPC/NBCC's authorized representative at suppliers work site. The materials shall be dispatched only after the issue of material dispatch clearance certificate from NTPC/NBCC.

27.0 Materials to be supplied shall be of approved quality and subject to inspection/acceptance by NBCC/NTPC/Engineer-in-Charge. Material should be strictly as per Technical specifications mentioned below. If the materials supplied are found to be below the specified standard, the same shall be rejected and repurchased at the risk and cost of the supplier. The material should be arranged from any of the approved source of NTPC. The rejected materials shall be immediately removed by the supplier at his own risk & cost. NBCC shall not own any type of responsibility whatsoever in respect of materials not finally meeting with specification and rejected by NBCC/NTPC.

28.0 Completion Period: The entire material shall be supplied within a span of Three Months from date of approval of drawings, datasheet / MQP. The schedule of supply shall be finalized after award and shall be as mutually agreed.

29.0 Payment: The following shall be the payment schedule:

i) 90% of total value of material after inspection of Pipes, final clearance and issue of MDCC by NTPC/NBCC) shall be released on submission of invoice with proof of dispatch of material from factory.

ii) 10% of the total value of material shall be released within 03 Three days from receipt of material at site against submission of Bank Guarantee for equivalent amount, from any Indian nationalized / Scheduled bank valid for 12 months from the date of dispatch of material from factory.

All payments shall be released through E-transfer for which you shall intimate the details of your current A/C No., Bank details along with RTGS No. of the bank etc. Transaction charges levied, if any, shall be to your account.

30.0 Jurisdiction: Only the courts of Delhi / New Delhi shall have the jurisdiction for settlement of disputes, if any arising out of above conditions.

31.0 Consignee & Paying Authority:

The materials are to be billed and consigned to the following office who is also the paying authority:

The A.G.M. (Engg.)
NBCC Ltd.
ID Cooling Tower Package,
Vindhyachal STPP-IV (2x500MW),
Vindhyanagar, Distt. Sidhi, (Madhya Pradesh)

If any contradictory clause is noticed in the bid document by the Bidder he will highlight the same and seek clarification before submission of Bid. However no protest or objection can be raised after submission of Tender/Bid and the decision of Engineer-in-charge shall be final and binding on the Bidder.

Acceptance Letter
(To be Submitted in Cover No-I)

M/s National Buildings Construction corporation Ltd.,
H-SBG (Infra)
NBCC Limited,Bhishma Pitamah Marg,
Pragati Vihar,
New Delhi-110003

Sir,

Acceptance of NBCC's Tender Conditions:

1. The tender documents for the Supply of M.S. Pipes for IDCT package at Vindhyachal Super Thermal Power Project, (2x500MW), Distt-Sidhi, Madhya Pradesh have been purchased by me from National Buildings Construction Corporation Limited and I/We hereby unconditionally accept the tender conditions and NBCC's tender documents in its entirety for the above work.

2. It is clarified that after unconditionally accepting the tender condition in its entirety, it is not permissible to put any remark(s)/condition (s) except unconditional rebate on price, if any in the tender enclosed in "Cover No.I" and the same has been followed in the present case. In case this provision of the tender is found violated after opening "Cover No2". I/We agree that the tender shall be summarily rejected and NBCC shall, without prejudice to any other right or remedy be at liberty to forfeit the full said earnest money absolutely.

3. The required earnest money for this work is enclosed herewith.

Thanking You,

SIGNATURE OF THE TENDERER
WITH RUBBER STAMP

Date:-

## PROFORMA OF BANK GUARANTEE IN LIEU OF E M D (BID BOND)

National Buildings Construction Corporation Limited

(Address as mentioned in Notice Inviting Tender)

In consideration of National Buildings Construction Corporation Limited, having its Registered Office at NBCC, Bhawan, Lodhi Road, New Delhi -110003 (hereinafter called "NBCC" which expression shall unless repugnant to the subject or context include its successors and assigns) having issued Notice Inviting Tender No…..... and M/s…..... having its Registered Head Office at…..... (hereinafter called the "TENDERER") is to participate in the said tender for…..... Whereas NBCC, as a special case, has agreed to accept an irrevocable and unconditional Bid Bond Guarantee for an amount of Rs…..... valid upto…..... from the tenderer in lieu of Cash Deposit of Rs…..... required to be made by the tenderer, as a condition precedent for participation in the said tender. We the…..…..(hereinafter called the "BANK") having its Registered, Office at…..... and branch office at…..... do hereby unconditionally and irrevocably undertake to pay to NBCC immediately on demand in writing and without demur/protest any amount but not exceeding Rs…..... Any such demand made by NBCC shall be conclusive and binding on us irrespective of any dispute or differences that may be raised by the tenderer. Any change in the constitution of the tenderer or the Bank shall not discharge our liability under the guarantee.

We, the…..... Bank, lastly undertake not to revoke this guarantee during its currency without the prior consent of NBCC in writing and this guarantee shall remain valid upto…..... Unless a claim is made within three months from the date of expiry i.e. …..... (three months after the date of expiry), we shall be relieved of our liability under this guarantee thereafter.

FOR AND ON BEHALF OF BANK

PLACE :

DATED :

WITNESS.

1.

2.

Annexure-III

## PROFORMA OF BANK GUARANTEE (PERFORMANCE)

NATIONAL BUILDINGS CONSTRUCTION CORPORATION LIMITED

(Address as mentioned in Notice Inviting Tender)

Whereas the National Buildings Construction Corporation Limited (hereinafter called "NBCC" which expression shall include its successors and assigns) having awarded a work order/contract / supply order No. dated (hereinafter called the contract) to M/s. …..... …..... (hereinafter called the contractor / supplier) at a total price of Rs…..... subject to the terms and conditions contained in the contract.

WHEREAS, the terms and conditions of the contract require the contractor to furnish a bank guarantee for Rs…..... (Rupees…..…..) being ….....% of the total value of the contract for proper execution and due fulfillment of the terms and conditions contained in the contract.

We, the Bank, (hereinafter called the "Bank") do hereby unconditionally and irrevocably undertake to pay to NBCC immediately on demand in writing and without protest/or demur all moneys payable by the contractor/supplier to NBCC in connection with the execution/supply of and performance of the works/equipment, inclusive of any loss, damages, charges, expenses and costs caused to or suffered by or which would be caused to or suffered by NBCC by reason of any breach by the contractor/supplier of any of the terms and conditions contained in the contract as specified in the notice of demand made by NBCC to the bank. Any such demand made by NBCC on the bank shall be conclusive evidence of the amount due and payable by the bank under this guarantee. However, the Bank's liability under this guarantee, shall be limited to Rs…..…..in the aggregate and the bank hereby agrees to the following terms and conditions:-

(i) This guarantee shall be a continuing guarantee and irrevocable for all claims of NBCC as specified above and shall be valid during the period specified for the performance of the contract including the period of maintenance/warranty i.e. upto…..….

(ii) We, the said bank further agree with NBCC that NBCC shall have the fullest liberty without our consent and without affecting in any manner our obligations and liabilities hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of contract by the contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by NBCC against the contractor/supplier under the contract and forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variations or extension being granted to the contractor or for any forbearance, act or omission on the part of NBCC or any indulgence by NBCC to the contractor or by any such matter or thing whatsoever, which under the law relating to the sureties would, but for this provision, have effect of so relieving us.

(iii) This guarantee/undertaking shall be in addition to any other guarantee or security whatsoever NBCC may now or at any time have in relation to the performance of the works/equipment and the company shall have full re-course to or enforce this security in performance to any other security or guarantee which the NBCC may have or obtained and there shall be no forbearance on the part of the company in enforcing or requiring enforcement of any other security which shall have the effect of releasing the Bank from its full liability. It shall not be necessary for NBCC to proceed against the said contractor/supplier before proceeding against the Bank.

(iv) This guarantee/ undertaking shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the supplier/ contractor, but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to NBCC in terms thereof are paid by the Bank.

(v) The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the bank in terms hereof, shall not be otherwise effected or suspended by reasons of any dispute or disputes having been raised by the supplier/contractor (whether or not pending before any Arbitrator, Tribunal or Court) or any denial of liability by the supplier/ contractor stopping or preventing or purporting to stop or prevent any payment by the Bank to NBCC in terms hereof.

We, the said Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of NBCC in writing. Unless a claim is made in writing within three months from the date of expiry of this guarantee i.e…..... (three months after the date of expiry) we shall be relieved from all liabilities under this guarantee thereafter.

Signed this …..... day of …..... at…….

For and on behalf of Bank

WITNESS.

1._____

2._____

# TECHNICAL SPECIFICATIONS

# SUPPLY OF HOT WATER M.S.PIPING FOR IDCT- VINDHYACHAL STPP-IV, (2x500MW)

## SPECIFICATION FOR PIPING (COOLING TOWERS)

**1.00.00 Design criteria/ Requirements**

1.01.00 The design standard of pipes shall conform to IS:1239 (Medium grade) and IS:3589 (Fe 410 grade) as the case may be. The pipes sizes and the corresponding thickness shall be as follows:

| Diameter (OD) mm | Thickness (mm) | Diameter (OD) mm | Thickness (mm) | Diameter (OD) mm | Thickness (mm) |
|---|---|---|---|---|---|
| 168.3 | 3.2 | 610 | 6.3 | 1422 | 14.2 |
| 219.1 | 3.6 | 711 | 7.1 | 1626 | 14.2 |
| 273 | 4.0 | 813 | 8.0 | 1829 | 14.2 |
| 323.9 | 4.5 | 914 | 8.8 | 2032 | 16 |
| 355.6 | 5.0 | 1016 | 10 | 2235 | 17.5 |
| 406.4 | 5.0 | 1067 | 10 | 2540 & above | 20.0 |
| 457 | 5.0 | 1118 | 11 | | |
| 508 | 5.6 | 1219 | 12.5 | | |

The design pressure of pipe shall be as same as that of respective design pressure of valves as indicated in the Technical Data Sheet/Tender Drawings.

1.02.00 The main header shall taper off progressively depending upon the quantity of flow .

1.03.00 The velocity range in the hot water headers and riser shall be 1.2 – 1.8 m/sec for pipe sizes below 150 mm, and less than 2 m/sec for pipe sizes 200 mm and above.

1.04.00 For calculation of head loss in pipes, "Williams and Hazen" formula shall be used considering C value as 100. Ten (10%) percent margin shall be added in the friction loss component in the calculation of piping system to arrive at the total head loss.

1.05.00 Preferably all the pipes shall be supplied from the approved manufacturers from their works. However, for Pipe Sizes 600NB and above, Bidder may fabricate pipes (rolled & welded) from Plates conforming to IS:2062 Grade 410 WC or Equivalent, of thickness mentioned above at site. Bidder shall clearly brought out their proposal regarding this aspect in their bid. The site-fabricated pipe (finished product) shall meet the required quality specified in the design Standard (IS:3589) with regard to Mechanical, Chemical Properties, Tolerances etc. However, for such site fabricated pipes, the Hydrostatic Test Pressure shall be 1.5 times the working pressure or 2 times the design pressure as the case may be. Other Testing requirements for such site-fabricated pipes shall be as per relevant Table in Sub-section-III E of Part-B of this Technical Specification.

1.05.00 Pipe Hangers/supports shall be capable of carrying the sum of all concurrently occurring loads and shall be fabricated from plates/sections conforming to relevant IS. They shall be designed to provide the required supporting effects and allow pipeline movements as necessary. The arrangement of pipe supports will be

finalized during the engineering stage and will be subject to approval of the Employer.

**2.00.00** **Construction features of Piping system**

2.01.00 For pipe size upto 300 NB seamless long radius elbows shall be used unless shown otherwise in the drawing. For pipe sizes 350 NB and above mitred bends may be used for all pipes. The bend radius shall be one and half times the nominal pipe diameter. Unless shown otherwise in the drg. 90°bends shall be in a 4 pieces (3 cuts) and 45°bends shall be in 3 pieces (22.50$^0$) deflection. Fabrication of mitre bends shall conform to BS:2633 & BS:534.

2.02.00 End Preparation, Cutting etc:

For steel pipes, end preparation for butt-welding shall be done by machining/flame cutting. Socket weld and preparation shall be saw/machine cut. All welding electrodes & welding rods including special ones if any, shall be furnished by the Bidder. For tees, laterals, mitre bends and other irregular details, cutting template shall be used for accurate cutting.

2.03.00 Alignment Considerations

The pipes joined by welding shall be aligned correctly within the existing tolerances on diameters, wall thickness & out of roundness which shall be preserved during welding. All flanges facings shall be true and perpendicular to the axis of the pipe with bolt holes being off center, unless different orientations are shown in the drawing to match some equipment connections.

2.04.00 Pipe Joints

In general pipe lines above 50 mm NB are to be joined by butt welding and 50 NB and below by socket welding/screwed connection. Threaded joints shall have to be provided with Teflon sealant tapes in the threads. Sealant tapes shall be supplied by the Bidder. Flanged connections for other pipes are to be kept to a minimum and used only for connection to vessels, equipment, flanged valves for ease of Erection and maintenance etc. However, additional flange joints if required may be provided subject to approval by the Employer.

2.05.00 General Instructions for Piping Design & Construction

While erecting the field run pipes, the Contractor shall check the accessibility of valves, instrument tapping points and maintain minimum head room requirement and other necessary clearance from the adjoining work areas. Irrespective of whether mentioned in the drawings or not, all pipe lines shall be given proper slope towards the drain point.

2.06.00 Welding

a) Before welding, the ends shall be cleaned by wire-brushing, filing or grinding.

b) Welding of piping shall be done only by 'certified' welders. Welders qualification tests shall be done as required by ASME Section-IX welding qualification. Welding at any joint should be completed uniterrupted.

c) Welding under this specifications shall be done by approved process.

d) Automatic or semi-automatic welding shall be done only with the specific approval of the Employer.

e) As far as possible, welding shall be carried out in flat position. If not possible, welding shall be done in a position, as close as to flat position as possible.

f) Downward technique is not allowed in welding pipes in horizontal position, unless permitted by the Employer for particular cases not concerning process lines.

g) Combination of welding processes or usage of electrode of different classes or 'makes' in a particular joint shall be done after the welding procedure has been duly qualified and approved by the Employer. As a rule no backing ring shall be used for circumferential butt welds.

h) Welding carried out in ambient temperature of 5°C or below shall be heat treated.

2.07.00 <u>Alignment & Spacing</u>

a) Components to be welded shall be aligned and spaced.

b) Root opening shall 1.0 mm 2.0 mm for wall thickness 2.4 mm or under and for all thickness in oxy-acetylene Welding and for wall thickness over 2.4 mm, the root opening shall be 2.0 mm 3.0 mm.

c) Special care shall be taken for fitting and alignment in case of TIG. Flame heating for adjustment or ends is not permitted without the approval of the Employer.

d) A wire spacer of proper diameter may be used for the weld root opening. Bust must be removed after tack welding and before application in root pass.

e) Tack welding for the alignment of pipe joints shall be done only by qualified welders. Since tack welds form a part of final welding they shall be executed carefully and shall be free from defects. Defective welds shall be removed prior to the welding of joints,

f) Electrodes size for tack welding shall be selected depending upon the root opening.

g) Tack should be equally spaced as follows :

| | |
|---|---|
| For 65 mm NB pipe and smaller | 2 tacks |
| For 80 mm NB to 300 mm NB pipe | 4 tacks |
| For 350 mm NB & larger pipes | 6 tacks |

| CLAUSE NO. | TECHNICAL REQUIREMENTS |
|---|---|
| 2.08.00 | Welding Technique<br><br>a) Root pass shall be made with respective electrodes/filler wires. The size of the electrodes shall not be greater than 3.25 mm (10 SWG). Welding shall be done with direct current values recommended by the electrode Manufacturers.<br><br>b) Upward technique shall be adopted for welding pipes in horizontally fixed position. For pipes with wall thickness less than 3 mm, oxy-acetylene welding is recommended.<br><br>c) The route pass of butt-joints shall be as to achieve full penetration with the complete fusion of root edges. The weld projection shall not exceed 3 mm inside the pipe.<br><br>d) Each pass shall be cleared and freed of slag before the next pass is deposited.<br><br>e) In case of deviation from the welding process and electrodes as specified, the Contractor shall seek the approval of the Employer before adopting them.<br><br>f) On completion of each run, craters, weld irregularities, slag etc. shall be removed by grinding or chipping.<br><br>g) During the process of welding all movements, shocks, vibration or stresses shall be carefully avoided in order to prevent weld cracks.<br><br>h) Fillet welds shall be made by shielded metal arc process regardless of thickness and class of piping. Electrode size shall not exceed 10 SWG (3.25 MM). At least two passes shall be made on socket weld. |
| 2.09.00 | **Painting Of Above Ground-Outdoor Piping / equipments**<br><br>a) Primer coat shall consist of one coat of epoxy resin based zinc phosphate primer having minimum DFT of 100 microns.<br><br>b) Intermediate coat (or under coat) shall consist of epoxy resin based paint pigmented with Titanium dioxide with minimum DFT of 100 microns.<br><br>c) Top coat shall consist of one coat of epoxy paint suitable pigmented of approved shade and colour with glossy finish and DFT of 75 microns. Additionally finishing coat of polyurethane of minimum DFT of 25 microns shall be provided.<br><br>d) The paint may be applied in one coat, in case high built paint is used, otherwise two coats shall be applied.<br><br>Total DFT shall not be less than 300 microns. |

## COOLING TOWER- MECHANICAL

| Items / Components \ Tests/Check | | Material Test | WPS/PQR/Welder Qualification | Ultrasonic test | DPT/MPI | Balancing | Assembly Fit up | Dimension | RT | Hydraulic / Water Fill | Test as per relevant Std/ Appd. Data Sheets | Other Tests |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.** | **Gear box** | | | | | | Y[1] | Y | | | | Y[2] |
| 1.1 | Shaft and gear blanks | Y[a] | | Y | Y[b] | | | | | | | |
| **2.** | **Fan assembly** | | | | | Y | Y | Y | | | | Y[3] |
| 2.1 | Fan hub | Y[a] | Y | | Y[b] | | | | Y[4] | | | Y[3] |
| 2.2 | Fan blades | Y[a] | | | | | | Y | | | | Y[3] |
| **3.** | **Drive Shaft for Fan** | Y[a] | Y | Y | Y[b] | Y | | Y | | | | |
| **4.** | **PVC/PP Fills & PVC Drift Eliminator** | Y[5] | | | | | Y | Y | | | Y | Y[6] |
| **5.** | **Stop Log Gates** | Y[a] | Y | | Y[b] | | | Y | | | Y | Y[7] |
| **6.** | **Gate/ Globe/ Check Valves** | Y[a] | | | Y[b] | | Y | | | Y | Y | Y[8] |
| **7.** | **Butterfly Valves** | | | | Y | | Y | Y | | Y | Y | Y[9] |
| 7.1 | Body (Cast) | Y[a] | | | | | | | | | | |
| 7.2 | Disc (Cast) | Y[a] | | | | | | | | | | |
| 7.3 | Shaft | Y[a] | | Y[c] | Y[b] | | | | | | | |
| **8.** | **Rolled & Welded Pipes at shop** | Y[a] | Y | | Y[10] | | Y | Y | | Y | Y | |
| **9.** | **Pipes / pipeline fabricated at site including field weld joints** | Y[a] | Y | | Y[10] | | Y | Y | Y[13] | Y[14] | Y | |
| **9.** | **Hoists & Chain Pulley Blocks** | Y[a] | Y | | Y | | Y | Y | | | Y | Y[11] |
| **10.** | **Ventilation Fans** | Y[a] | Y | Y[c] | Y[b] | Y | Y | Y | | | Y | Y[12] |

**Notes:**

a) One per Heat/Heat Treatment batch./Lot

b) On machined surfaces only. Also 100% on Butt Welds & 10% on Fillet Welds.

c) UT shall be done for shafts with Diameter 40 mm or above

1. Backlash of the gears shall be checked.
2. No load run test for 4 hours to check noise, vibration, oil leakage and temperature rise.
3. Proof load test, moment weight test on blades, blade track variation & tip clearances shall be checked. Galvanizing tests as per relevant IS.
4. 10% RT on Butt welds of Fan Hub only.
5. PVC material shall meet the requirements of CTI Bulletin STD-136. However impact test may be done as per ASTM-D-256 and Flammability test may be done as per ASTM-D-635 with extinguishing type PVC. Density & Vicat softening temperature tests shall also be conducted.
6. For quality requirements of pre-stressed pre-cast concrete fills please refer the relevant QA-Civil works module.
7. Smooth operation and leak tightness shall be checked at site.
8. Blue matching, Wear travel for Gate valves & reduced pressure test for Check valves shall be conducted as per relevant standards.
9. Butterfly Valves shall meet the Proof of Design Test requirements of AWWA-C-504. Actuators for actuated Butterfly Valves shall also meet the Proof of Design Test requirements of AWWA-C-504. Seat Leakage Test is required to be done in both directions. All other tests shall be carried out as per design standard adopted (latest revision of AWWA–C–504 or BS EN 593). In case of fabricated construction of Butterfly Valves, UT on Plates of Thickness 20 mm or above for body and disc, RT on 100% Butt welds and 10% DPT on Fillet welds shall also be carried out. Welders and WPS shall be qualified as per ASME section -IX.
10. DPT on All Butt Welds, either on root run or after back gouging shall be conducted. DPT on Finished welds shall also be conducted.
11. Ropes shall meet relevant Code requirements. All motions & safety features shall be tested at Works. Full load & 25% overload test shall also be conducted at works. At site, Full load test shall be conducted with all motions and safety features.
12. One Fan of each type & size will be routine performance tested as per corresponding Code, for Air Flow, Static pressure, Total pressure, Speed, Efficiency, Power Consumption, Noise, and Vibration & Temp. rise. Also, all fans shall be subjected to run test of 4 hours during which Noise, Vibration, Temp. rise & current drawn shall be measured.
13. 5% RT shall be carried out on site fabricated and field butt weld joints
14. After erection, the complete Piping system shall be tested at 1.5 times the design pressure or two times the maximum working pressure. No leakage/ seepage is acceptable. Butt weld joints which could not be Hydro tested shall be subjected to 100% Radiographic Testing.