TENDER DOCUMENTS

**NIT No 10/2020**

FOR

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING**

**OF 500TR COOLING TOWER (Qty 02)**

AT

INTERNATIONAL CENTRE FOR GENETIC ENGINEERING & BIOTECHNOLOGY (ICGEB)

Aruna Asaf Ali Marg, New Delhi – 110067

Website: www.icgeb.res.in

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**TENDER NOTICE**

**INTRODUCTORY NOTE:**

ICGEB is an international organization dedicated to advanced research and training in molecular biology and biotechnology, with special regard to the need of the developing world.  ICGEB, New Delhi Component has been given privileges and immunities as for other UN Organizations in India vide Government of India’s gazette notification no. 216, SO 403(E) dated 12 April 1988.

1. ICGEB invites sealed Bids from the intending Bidders for Supply, installation, testing and

commissioning of 500 TR Cooling Tower( Qty 02) in the ICGEB Campus. Sealed Bids from the Bidders

shall be received by 4th Jan, 2021 at 3:00 pm

1. Bid Documents comprising instruction to Bidders, Bid Forms, Technical Specifications and

Terms & Conditions can be downloaded from the website of the ICGEB [www.icgeb.res.in](http://www.icgeb.res.in)

and by clicking on the link ‘announcements and notices’.

1. Bid Documents duly filled, shall be submitted in a sealed envelope bearing the words “Supply,

installation, testing and commissioning of 500 TR Cooling Tower (qty 02) at the ICGEB,

New Delhi Component".

1. Bids must be accompanied by Earnest Money Deposit (EMD) covering an amount equivalent to

Rs.100000/- (One Lacs only) and Tender Fee of Rs 1500/- (One Thousand Five hundred only) in the

form of DD issued by any Commercial Bank in favour of “International Centre for Genetic Engineering

& Biotechnology” payable at New Delhi.

1. Technical Bids shall be opened in presence of the Bidders and or their representatives at ICGEB in front

of the ‘Bid Evaluation Committee’.

1. Bids should comply in all respects with the instruction to Bidders in the Bid Document.
2. Award of the contract for providing Supply, installation, testing and commissioning of 500 TR Cooling Tower( qty 02) will be made to the Bidder whose Bid has been determined to be substantially responsive from both technical and financial consideration by the Bid Evaluation Committee.
3. ICGEB reserves all rights to reject any /all Bids received or /and accept any Bid or part of Bid or

multiple Bids without assigning any reason.

1. Any Corrigendum/Amendments in respect of above tender shall be issued on website [https://eprocure.gov.in](https://eprocure.gov.in/) only. Bidders should take into account any corrigendum published on the tender document before submitting their bids

**IMPORTANT INFORMATION**

|  |  |
| --- | --- |
| **Name of Work** | Supply, installation, testing and commissioning of 500 TR Cooling Tower (Qty 02) |
| **Tender No.** | NIT No. 10/2020 |
| **Earnest Money Deposit (EMD) & Tender Fee** | EMD of Rs. 100,000/- (Rupees One Lacs only) & Tender Fee of Rs 1500/-( One Thousand Five hundred only) in the form of separate demand draft to be drawn in favour of **International Centre for Genetic Engineering & Biotechnology payable at New Delhi**. |
| **Distribution of Tender Document** | **To be downloaded from the website of the ICGEB** [**http://www.icgeb.res.in/ndinfo.htm**](http://www.icgeb.res.in/ndinfo.htm) |
| **Pre Bid meeting** | 23rd Dec, 2020 at 3:00 pm |
| **Last Date and time for Bid Submission** | 4th Jan, 2021 and 3:00 pm |
| **Address at which**  **Bid is to be submitted** | Should be dropped in the tender box at the reception of International Centre for Genetic Engineering & Biotechnology, Aruna Asaf Ali Marg, New Delhi – 110067. |
| **Date,,Time & Place   of opening of the Technical Bid** | 4th Jan, 2021 and 4:00 pm at ICGEB |
| **Date, Time & Place  of opening of the Financial Bid** | Technically qualified bidders will be called for financial bid opening |
| **Method of selection** | Both “Technical” and “Price” bid should be in separate envelops and then put in to one common envelope, super scribing the name of the work and tender opening date etc. The Financial Proposals of the Firms/Individuals that qualify the Technical Evaluation will only be opened. Further, the Firm/Individual having the least quote (L1) in its financial proposal will be awarded the contract if the price bid is found to be in order. |

**MINIMUM ELIGIBLITY CRITERIA:**

The bidder should meet the following Eligibility Criteria and must submit documentary evidence in support of their claim for fulfilling the criteria and they should submit an undertaking on their official letterheads to the fairness of these documents while submitting the bid. The bids received without the documentary evidence will be rejected outright.

1. Earnest Money Deposit
2. The Bidder, should have an average annual turnover of not less than Rs.50,00,000/- (Rupees Fifty lakhs only) per annum for the last three audited years (FY2016-17, 2017-18, 2018-19) in similar kind of business with documentary evidence.
3. Copies of the work orders and completion certificates successfully executed for similar kind of work like SITC of cooling towers or the same along with HVAC during the last 7 years for reputed Public Ltd. Companies, Public sector, Govt. Institutions and autonomous bodies in the following manner.

A). One smilar work of value not less than Rs 40 Lakhs.

B). Two similar works, each of value not less than Rs 25 Lakhs each

C). Three Similar works each of value not less than Rs 20 Lakhs each.

1. The bidder should have valid **GST/TIN,** registration certificates from relevant authorities (provide latest receipts/challans for documentary evidence).
2. The bidder should submit PAN number with documentary evidence
3. All the bidders shall have to produce documentary evidence for the satisfactory completion of similar works as mentioned above executed by them from the concerned authorities.
4. The Company / Firm / Individual, any Partners of the firm should not be black listed by any PSU or Government departments/ UN or its agencies/ institutions/ private organisations in respect of any assignments or behaviour of any Partner/ employee. The firm / Individual will provide an undertaking that such Partner/ employee will not be involved in the said contract, directly or indirectly.
5. An undertaking should be submitted that there are no legal suits / criminal cases pending against the Firm and its Proprietor/Partners or having not been earlier convicted on grounds of moral turpitude or for violation of laws in force.
6. All entries in the Application form should be legible and filled clearly. If the space for furnishing information is insufficient, a separate sheet duly signed by the authorized signatory may be attached.
7. No deviations in respect of NIT conditions are acceptable.
8. ICGEB reserves the right to visit the working sites mentioned by bidders as proof of experience to ascertain the quality of service rendered. The bidder will have to arrange for such visit.

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**GENERAL TERMS AND CONDITIONS FOR SUBMISSION OF THE BID**

**Note: Bidders must read these conditions carefully and comply strictly while submitting their bids.**

1. **PRE-BID MEETING & QUERY:**
2. The Pre-Bid Meeting shall be hosted by ICGEB on 23rd Dec, 2020 at 3:00 pm
3. The Bidder or its official representative will be invited to attend the pre-bid meeting.
4. The purpose of the meeting is to provide Bidders information regarding the Tender, project requirements, and opportunity to seek clarifications regarding any aspect of the Tender Document and the assignment.
5. ICGEB may make modifications to the Tender Document if felt necessary as a result of the Pre-bid meeting. All such modifications made to the Tender Document by ICGEB will be issued as a corrigendum to the Tender.
6. Any such modifications resulting out of the Pre-bid meeting will be circulated to the Bidders through website [**http://www.icgeb.res.in/ndinfo.htm**](http://www.icgeb.res.in/ndinfo.htm) or by email.
7. ICGEB will not be responsible for non-receipt of corrigendum/modifications published/sent by ICGEB to the Bidder.
8. **PREPARATION AND SUBMISSION OF THE BID DOCUMENT:**

The Bidder is expected to examine all instructions, forms, terms & conditions and specifications stated in the Bid Documents. Failure to furnish all information required in the Bid Document or submission of a Bid not substantially responding to the Bid Documents in every respect will be at the Bidder’s risk and may result in the rejection of the Bid. The following sections of the Bid Documents must be completed and submitted by the Bidder:

1. **TECHNICAL BID (Part – I):**

# Technical Bid Form. (Annexure-A)

# Certificate of registration (GST ,PAN).

# Documentary evidence for minimum qualifying criteria.

# EMD DD of Rs. 1,00,000/-

1. Technical Data sheet (sheet 1, 2 & 3) Annexure B
2. Turnover certificates of last 3 years (Annexure – C).
3. Undertakings / declaration certificates (Annexure – D)
4. Details of other organisation for similar works (Annexure E)
5. Check List (Annexure F)
6. Complete Tender document (except price bid) duly sigh and stamp on each page as a token of acceptance
7. Site Visit certificate (Annexure G)
8. **FINANCIAL / PRICE BID (Part – II):**

In this bid the bidder is required to quote his items rates/prices for the works mentioned in the scope of work & technical specifications. The rates/price should be inclusive of all material cost, labour, services, charges for the plant/machinery/tools & tackles required for work, freight, Insurance, Govt. duties, Excluding GST. If the tax rates are not shown separately, it will be deemed to be included in the quoted price and dealt with, accordingly.

Quoted rates will be deemed to cover all the items & works which may be required for completeness and functioning of total system, even though they may not have been explicitly mentioned in the scope and schedule of works.

No charges towards price escalation, site difficulties shall be payable extra or separately. It is mandatory on bidder to quote all items rate as asked for in the BOQ/ PRICE schedule. Failure to adhere to this condition will lead to rejection of tender.

1. **EARNEST MONEY DEPOSIT:**

Earnest money deposit amount equivalent to Rs. 1,00,000/- (Rupees One Lacs only) & Tender Fee of Rs 1500/- (One Thousand Five hundred only) in the form of DD issued by any Commercial Bank in favour of International Centre for Genetic Engineering & Biotechnology payable at New Delhi must accompany the Technical Bid. The E.M.D. of successful bidder shall be released after submission of performance guarantee by him. Bids not accompanied by E.M.D. shall be rejected. E.M.D. of unsuccessful Bidders will be returned as early as possible. The E.M.D. shall be forfeited if a Bidder withdraws its Bid during the period of validity of the tender.

1. **PERIOD OF VALIDITY.** Bids shall remain valid for **180 days** after last date for bid submission prescribed by ICGEB which may be extended with mutually agreed terms. A bid valid for a shorter period may be rejected by ICGEB as non-responsive.
2. **SITE CONDITION**: Before quoting, the contractor must visit the site to inspect the work and shall fully acquaint himself about the conditions and scope of work with regard to accessibility of site required for the satisfactory execution of work. along with site visit certificate No compensation on account of any site difficulties will be entertained, at a later date, after award of the works.
3. **Tender Rejection:** ICGEB reserves the right to reject any or all the tenders in full or in part without assigning any reasons whatsoever, and the decision of the centre in this regard will be binding on all the bidders. Tenders not complying with any of the provisions stated in this tender document are liable to be rejected. Director, ICGEB reserves the right to accept or reject any tender without assigning any reason and does not bind himself to accept the lowest tender.
4. **FORMAT AND PREPARATION OF THE BID**:

The Bidder shall prepare the Technical Bid and Financial Bid and place them in two separate sealed covers, clearly marking each as “Technical Bid” and “Financial Bid”. Name of firm / proprietor, address & contact no. should be mentioned clearly on both the envelopes. These should further be placed in a large size envelope with the same information on it. Both Technical & Financial Bids, along with documents required to be submitted, shall be signed by the Bidder and a person duly authorized by the Bidder to, on each page. Written power of attorney accompanying the Bid shall indicate necessary authorization. Any correction in the Bid shall be initiated by the person signing the Bid.

1. **SUBMISSION OF BID:**

The Bid in two parts, one containing the Technical Bid and the other containing the Financial Bid shall be placed in two separate sealed envelopes clearly marked as below:

1. "Bid for SITC of Cooling Tower 500 TR - Technical Bid"
2. "Bid for SITC of Cooling Tower 500 TR n the ICGEB Campus - Financial Bid"

The sealed envelope having the Technical Bid shall contain the Technical Bid Form, Declaration Certificates, Demand drafts for Tender fee and E.M.D, documents establishing eligibility of offered services and a complete set of the Bid Document stamped & signed on all the pages etc.

The other sealed envelope will contain the Financial Bid which shall include Schedule of Rates.

Both the sealed envelopes containing the Technical Bid and Financial Bid separately, shall be placed in an outer envelope dully sealed, marking the outer envelope as “Supply, installation, testing and commissioning of 500 TR Cooling Tower in the ICGEB Campus”. The Bid shall be dropped in the tender box at the reception of, ICGEB, Aruna Asaf Ali Marg, New Delhi – 110 067.

If the cover containing the Bid documents is not sealed and marked as instructed above, no responsibility will be assumed for any misplacement of the Bid or beforetime opening of the envelope.

1. **IMPORTANT NOTE:**
2. Bid received through email and/or after the scheduled date and time will not be accepted.
3. ICGEB reserves the right to accept any or reject all the tenders without assigning any reason thereof.
4. Selection will be done on competitive basis. Canvassing in any manner shall lead to disqualification of the Firm / Individual.

1. **BID OPENING AND EVALUATION:**

**BID OPENING**:

All the Technical Bids shall be opened publicly in the presence of the Bidders or their representatives in front of the Bid Evaluation Committee. Bidders' name, documents with presence and absence of Bid security, period of Bid validity and such other items will be announced and recorded at the time of opening of the Technical Bid by the Bid Evaluation Committee. The Financial Bids of Technically Responsive Bidders will be opened in the presence of such responsive Bidders or their representatives on date and time to be notified later. Total Bid amount will be announced and recorded at the opening of the Financial Bid. Minutes of the Bid Opening containing summary of information with regard to each Bid shall be prepared during the opening of both Technical & Financial Bids.

1. **EVALUATION OF BIDS:**
2. For proper evaluation & comparison of Bids, the Bid Evaluation Committee, may at its discretion, ask the Bidder for any clarification of the Bid. The request for clarification and the response shall be in writing, but no changes in the price of the Bids shall be offered or permitted.
3. The technical bids will be evaluated by the Bid Evaluation Committee on the basis of experience in similar organizations, resources available with the firm/ Individual, visit of the Committee to the site where the contractor is currently handling similar work etc.
4. The Bid Evaluation Committee will first evaluate the Technical Bids to determine the substantial responsiveness of the Technical Bids. Substantial Responsive Bid is one which conforms to all the terms and conditions as indicated in the Bid Document and which also establishes Bidder’s qualification to deliver the services according to technical specifications. After the evaluation of all the Technical Bids, Financial Bids corresponding to only substantial responsive Technical Bids will be taken up for evaluation.
5. All non-substantial Technical Bids will be rejected as non-responsive and corresponding Financial Bids shall be excluded from further evaluation.
6. The Bid Evaluation Committee, may at its discretion, decide to waive off any minor non conformity in a Bid which does not constitute a material deviation with regard to services and pricing.
7. While evaluating Financial Bids, if there is any discrepancy between the unit price and the total price, unit price will prevail and total price shall be corrected. However, if the Bidder does not accept the correctness of the errors, his Bid will be rejected.
8. The Bidder must have supplied the information required in the Bid document. A Bidder not fulfilling any criteria stipulated, his Bid will be considered non responsive and may be rejected.
9. The Bidders who have duly complied with the Eligibility Criteria will be eligible for further processing.
10. The successful bidders of the Technical Bids will qualify for opening of the Financial Bids.
11. The Bids which have been established as responsive in all respects will be compared for its price competitiveness. On the basis of technical and financial evaluation, substantially responsive and most advantageous Bid will be considered for the award of contract for Supply, installation, testing and commissioning of 500 TR Cooling Tower in the ICGEB Campus.
12. THEBIDDER IS EXPECTED TO EXAMINE ALL INSTRUCTIONS, forms, terms and conditions in the bidding documents. Failure to furnish all information required in the bidding documents or submitting a Bid not substantially responsive to the bidding documents in any respect may result in the rejection of the Bid.
13. THE BIDDER SHALL BEAR ALL THE COSTS associated with the preparation and submission of its bid, and ICGEB in no case will be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.
14. PROFESSIONAL EXCELLENCE AND ETHICS: ICGEB requires that all Bidders participating in this Bid adhere to the highest ethical standards, both during the selection process and throughout the execution of the contract.
15. FAILURE OF THE SUCCESSFUL BIDDER to comply with all the requirements shall constitute sufficient grounds for the annulment of the award, in which event ICGEB may make the award to the next lowest evaluated bidder or call for new bids.
16. THE TENDERING AUTHORITY RESERVES THE RIGHT TO ACCEPT ANY BID not necessarily the lowest, reject any bid without assigning any reasons for entering into the Rate Contract.
17. **CONDITIONAL BIDS:** If a bidder imposes conditions, which is in addition to or in conflict with the conditions mentioned herein, his bid is liable to be summarily rejected.
18. The Director, ICGEB reserves the right to cancel any or all the tenders without assigning any reason.
19. Tender once submitted will remain with ICGEB and will never be returned to the bidders.

**(3)**

**Scope of work**

1. Dismantling and removal of existing 400 TR Mihir Make Fan forced cooling tower (Qty 02 Nos) and other items as per the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Sl.  No. | Description | Qty. | Remarks |
| a | Cooling Tower 400 TR ,Mihir make complete set |  |  |
| b | Centrifugal Condenser pump with 75 HP motor (including condenser pump control panel) |  |  |
| C | 400 mm pipe |  |  |
| d | 250 mm pipe |  |  |
| e | Pot strainer with housing 400 mm |  |  |
| f | Balancing valve 250 mm |  |  |
| g | Gear operated valve 400 mm |  |  |
| h | Butterfly valve 150 mm |  |  |
| i | Electric panel of Condenser pumps |  |  |
| j | Electric panel main AC plant(without main switches 800 Amp MCCB Qty 03, Switch FN 630 Amp Qty 01 and ACB L & T Make 1200 Amp Qty 01 ) |  |  |
| k | Chiller Pump 30 HP |  |  |

**2.Supply, Installation, testing and commissioning of FRP induced draft CTI Certified cooling tower of 500 TR (Qty 02) on the roof of the building including condenser water pumps and piping and all other associated items as mentioned in Schedule of Quantities.**

**3. Design and construction of RCC platform below cooling tower over the roof of the existing building.**

**(4)**

**GENERAL TERMS AND CONDITIONS RELATING TO WORK**

1. **Escalation:** No escalation over and above items rates quoted by the bidder shall be paid during the execution of contract due to whatsoever reasons.
2. **(i) Performance Guarantee @5%** shall be deposited to the department on the work order amount by the agency within a period of 15 days from the date of issue of LOI (work order) before commencement of work. Performance guaranty shall only be acceptable in the form of bank guarantee /DD and it will be returned after successful completion of work.(Date of completion certificate issued by ICGEB)

If tenderer fails to deposit the said performance security within the period as indicated, the Earnest Money deposited by the tenderer shall be forfeited automatically without any notice to the tenderer and without prejudice to any other right or remedy. Performance Bank guarantee shall be valid for entire contract period and two extra months. In case of con-tract extension with or without LD the validity of BG shall also be extended for the extended period with additional two months.

(ii) FORFEITURE: Performance Bank guarantee established under Clause 8 (i) shall contain a statement that it shall be automatically and unconditionally forfeited without recourse and payable against the presentation by ICGEB to the relevant company/ correspondent bank, as the case may be, together with a simple statement that tenderer has failed to com- ply with any term or condition set forth in the Contract.

(iii) RELEASE: Performance Bank guarantee will be released without interest on successful taking over of the project by ICGEB on receipt of written request from tenderer.

1. **Security deposit of 10 %** of the work order value will be deducted from the final bill and same will be released after successful expiry of defect liability of 12 months from date of completion of Work. Security deposit deducted from the final bill will only be released after submission of bank guarantee of CMC.
2. **Payment terms:**

(a) 60% payment will be released against supply of material at site in good condition on pro-rata basis.

(b) Balance final payment will be released after satisfactory completion of the work including testing & commissioning after deduction of 10% security deposit from the bill.

1. **Extra Items:** - During the execution of work, the contractor may require to execute certain additional/extra items in order to complete the job/works beyond the BOQ for which no rates are available. The payment for such extra/deviated items shall be paid as per rate approved on the basis of analysis. The cost component for rate analysis shall be (i) cost of material (ii) cost of direct labour (iii) Contractor over heads & profit 10%. Before execution of extra work, the rate analysis may be forwarded to ICGEB for approval of the Director, ICGEB. However, the extra items amount should not exceed 10% of the total contract value including all taxes.
2. **Completion Time:** Time limit for completion of the work is 90 days from the date of the order issued. The time shall be the essence of this contract and entire work as titled above is to be completed in all respects within the given time from the date of issue of work order. The successful bidder has to submit the time & activity chart for the completion of work.

Availability of any kind of shut down will be subject to supply of all the material at site and time frame agreed upon by ICGEB. Work may have to be carried out at night and holidays also depending on the shutdown availability and no extra compensation will be given for the delays, time extensions due to non - availability of shut down. Any delay in completing the work for reasons attributable to the contractor is liable for liquidated damages. Under the force-major conditions or delay due to reasons beyond control of the contractor, ICGEB may grant suitable time extension for which the contractor has to request along with the justification/ reasons well in advance to the Director, ICGEB for approval without any prejudice to price escalation. No time extension request shall be considered after the expiry of completion period of contract. The decision of the Director will be final and binding on the bidder/contractor.

1. **Deviations:** No deviation from the stipulated terms and conditions will be allowed. Tenders should be unconditional.
2. **Guarantee/Defect Liability Period:** The contractor should guarantee for the works / items executed / supplied by him against the manufacturing / engineering defect and bad material / workmanship for a period of one year from the date of acceptance by ICGEB. During this period if any replacement of items and/or repairs / rectification is needed, the same should be replaced / repaired free of cost to ICGEB.
3. **Liquidated Damage:** In case the work is delayed beyond the specified completion period for reasons attributed to the contractor, deductions on account of Liquidated damages @ 1 % of the contract value per week will be deducted subject to a maximum of 10% of the total contract value excluding GST. However, in case the works are delayed beyond the schedule completion/contract period, ICGEB reserves the right to get the work done by any other contractor at the risk and cost of the contractor and amount to this affect along with 10% over heads will be deductible from his bills/dues.
4. **Performance of the system:** On receipt of the work order, the contractor will submit the design, drawings and other details to carry out the job. Only after getting approval from ICGEB, the contractor should go ahead with procurement and fabrication etc. The contractor on completion of the work will amply demonstrate the system and design parameters. He should supply the manufacturer’s certificate /instructions manual along with material/equipments.
5. **Specifications:** Contractor is to follow relevant Indian standards codes for fire, electricity, safety and building rules. Where not specified will be as per the best industry practices, ISI marked or CPWD Technical Specifications whichever is superior. In case of any variation in specifications at different places in NIT, the best /richer specification will be considered. However, decision of ICGEB will be final.
6. Preparation of layout drawing including support details. The same should be got approved by ICGEB before fabrication and 2 copies of as built drawings & one soft copy both in solid works and in pdf to be submitted. Works shall be allowed only after approval of drawings.
7. Manufacturer's Material & Test certificates for all the equipment/material including Motors, Cooling Tower, Condenser pumps, Balancing Valves, Butterfly Valves MCBs, Electrical Panels etc., should be submitted to ICGEB before starting execution of works by the contractor. Without submission of test certificates and approval from our end, work will not be allowed.
8. Kindly note that payment shall be made as per the actual quantities installed and not on the basis of items supplied. The final payment will only be made on the basis of the actual work / quantities executed and for this a joint measurement by ICGEB and the contractor will have to be taken. The responsibility and the facilitation for taking the measurements will rest with the contractor. It is entirely contractor's responsibility to take dimensions, sizes from site, design the system and take ICGEB approval before actually proceeding with supply and installation of the same at site.
9. The Work shall be done as per schedule of items, specification terms and conditions and instruction of Engineer-in-charge on as and when required basis.
10. The rates shall be inclusive of cartage/ loading unloading or any other expenses. GST should be clearly shown separately. Rate must be valid and firm for a period of one year from the date of award of contract/Letter.
11. Escalation: No Extra charge or any escalation charge will be paid by ICGEB.
12. Inferior and Poor quality material shall not be accepted.
13. The contractor will have to undertake responsibility of accidents etc. for his persons working on site and same will be on stamped paper of Rs.50/100 or the appropriate value (if revised by Govt) The cost of stamp will be borne by the contractor.
14. The Contractor shall clean the site after completion of work. Any dismantled material shall be stacked in designated place as instructed by the Engineer-in-charge.
15. Charges for scaffolding or jhula if any, will be considered included in the quoted rates and no extra amount will be paid on this account.
16. Measurement shall be taken jointly by the Engineer-in-Charge or his authorized representative and by the contractor or his authorized representative.
17. All materials brought at site shall be got approved from the Engineer in charge before incorporation.
18. Contractor shall carry out the various tests as enumerated in CPWD/BIS specification at his own cost.
19. Quantities are indicative and likely to vary. Bidder will have no objection for variation in quantities thereon. Payment will be as per actual work executed. 10% ± deviation in quantities would be permitted.
20. In case the bidder resiles from the offer within the validity of tender or contractor fails to work as per specification after issue of the award letter, the earnest money and performance guarantee will be forfeited. Other suitable administrative punitive action may also have imposed as deemed fit.
21. Contractor should depute a qualified supervisor dedicated for this site, who will co-ordinate work execution activities and interact with the ICGEB representative responsible for supervision of work. Without a Supervisor, work will not be allowed. All the persons deployed at ICGEB site should carry valid gate-passes. Any negligence/offence on their part will attract immediate removal from site.
22. The contractor will provide for all necessary materials, tools, equipment, measuring instruments and working consumables etc., needed for execution of the works. Safe custody of all such material will be contractor's sole responsibility. No extra charges will be paid for the same.
23. Watch and Ward of all material till the system is taken over by ICGEB shall be the sole responsibility of the contractor and pilferage etc. shall be entirely to his account.
24. During execution of work, the contractor should follow all standard norms of safety measures / precautions to avoid accidents / damages to man, machines and buildings. On non-adherence of this clause, suitable fines as decided by the Director, ICGEB shall be imposed.
25. Challan: No material belonging to the contractor whether consumable or non-consumable should be brought inside the ICGEB campus without proper entry at the main gate nor any material should be taken out without proper gate pass issued by the ICGEB. List of all inwards / outwards challan to be maintained by the contractor with a copy mark to ICGEB.
26. ICGEB will provide free water and electricity during installation work at ICGEB at one point. The contractor has to make his own arrangements for distribution of power and water from that point as per his requirements.
27. Termination of Contract: The Director, ICGEB reserves the right to terminate the contract on account of poor workmanship, failure to mobilise the site within 30 days, non-compliance of set norms/ specifications for the works, delay in progress of work, violation of any contract provisions by the contractor. In such case the contractor is liable to pay liquidated damages @ 10% of tendered value besides performance security / EMD.

**(5)**

**SPECIAL TERMS AND CONDITION**

1. **GENERAL STANDARD**

These standards are intended to describe a quality Earthing work using all new equipment, parts, materials, components installation, and service techniques. This is a lump sum contract. Any item which is essential for the completion of the job but inadvertently not mentioned in the Schedule of Quantities shall have to be executed by the Bidder within the quoted rate and nothing extra would be paid

1. **PROJECT EXECUTION AND MANAGEMENT**

The successful bidder shall ensure that senior planning and erection personnel from its organization are assigned exclusively for this project. The successful bidder shall appoint one senior supervisor who shall be posted at the site on full time basis during execution of work.

1. **GUARANTEE AND MAINTENANCE**

3.1 Guarantee - The successful bidder shall guarantee all equipment parts, materials and workmanship furnished for the installation. The guarantee warrants replacing parts. All failed parts during guarantee period shall be replaced without any cost to ICGEB and such replacement shall be factory approved new, equal or better than original. All expenses for labour, tools, materials, transportation, insurance, etc., required in performance of guarantee work shall be at the successful bidder’s expense.

3.2 Maintenance - The successful bidder shall maintain the Earthing work in a first class and safe manner during the guarantee period. Such maintenance shall be for the entire Earthing work. Responsibility entails unlimited call back service including weekends and holidays during the period of guarantee. The successful bidder shall maintain the Earthing work and its accessories in a professional, first class manner.

**4 DRAWINGS -**

Before commencing the work, the bidder shall prepare and submit all drawings in required number necessary to show the general arrangement and details of work. (Civil mechanical and electrical etc) Manufacturer’s drawings, catalogues, pamphlets and other documents submitted for approval shall be in two sets.

1. **PAINTING**

All exposed metal work furnished under these specifications, unless otherwise specified, shall be shop and properly painted. Shop coats of paint that have become marred during shipment or erection, shall be cleaned off with mineral spirits, wire brushed and spot painted over the affected areas, then coated with enamel paint to match the finish over the adjoining shop painted surface.

1. **TOOLS AND TACKLES**

All tools, tackles, supports and staging etc. required for erection and assembly of the equipment and installation covered in the contract shall be provided by the successful bidder himself. In addition, all other materials such as foundation bolts, nuts, etc., required for the installation of the equipment shall also be provided by the successful bidder at his cost.

**7. TESTING AND HANDING OVER**

i) The contractor shall carry out test run for minimum 15 days from the date of installation in the presence of representatives of ICGEB to establish satisfactory functioning of the installation.

ii) The Installations shall be handed over to ICGEB after satisfactory testing along with Two sets of completion documents each consisting of:

a) Detailed equipments data and catalogues.

b) Manufacturer’s maintenance chart including Check chart and Lubrication chart and maintenance manual.

c) Set of “AS INSTALLED DRAWINGS” showing layouts, equipment details, electrical power & control wiring diagrams etc.

d) Test Certificates for major equipments.

e). All the necessary/statutory approvals from commencing to commissioning of the work of Earthing to be obtained from the Chief Inspector or other government authorities. It will be the sole responsibility of the bidder to arrange for the visit of the Chief Inspector, completion of all documents / formalities required for obtaining the license before commissioning and handing over, thereafter, to arrange for annual renewal of the license.

iii) Submission of the above documents shall form a pre-condition for the final acceptance of the installation and final payment.

**8. SAFETY PRECAUTIONS**

i) A competent and authorized Supervisor/Erector shall be on the site whenever the successful bidder’s men are at work. The supervisor/Erector should ensure that all plant and machinery used on the site are rendered safe for working and meets with the Indian or International safety standards applicable for the use and operation of such machinery. The supervisor/erector should also ensure that the workmen at site are made to use safety appliances such as safety belts, life lines, helmets, etc.

ii) It is entirely the responsibility of the successful bidder to practice the principles of ‘SAFETY FIRST’ during the entire tenure of work with adequate insurance covering injury or death of workmen, loss by theft or damage to materials and property and third party.

iii) The successful bidder should clear the site of all debris every day to avoid accidents. In case this is not done, the Owner may engage necessary labour to maintain the cleanliness of the premises and removal of debris and recover all or part of the expenditure so incurred from the successful bidder.

iv) The successful bidder shall, at his own cost, ensure that all of his personnel, employees, workmen and other associated persons working with him at the site are adequately insured as per labour laws and statutory provisions. The successful bidder shall be responsible for all injuries/damages to men, materials and properties etc., which may arise from the operations or negligence of himself and/or his sub- contractor and indemnify ICGEB for all such expenses, which shall be solely to successful bidder’s own account.’

1. **INSURANCE**

The successful bidder shall, at his own expense, arrange for insurance policies, such as Workmen Compensation Policy and Bidder’s All Risk Policy in the amount of the Contract effective from the date of commencement of work until final completion, against all of the following risks.

1. Injuries and damage of persons, property, animals or things, within or outside the site, arising out of his operations or of any sub-contractors, nominated or otherwise or out of any actions of his employees, agents or representatives.
2. Injuries to his or any sub-contractor’s employees.
3. Damage to or loss of property, equipment, and materials at site, of the Owner, Bidder and all sub-contractors, as a result of natural causes such as lighting, storm, flood, rain, fire, earthquake, explosion, landslide, etc.
4. Damage and injuries to persons, property and materials arising out of riot and civil commotion, theft, sabotage malicious acts, terrorist activities, etc.
5. No certificate of payment shall be issued by ICGEB if the Bidder fails to arrange for total insurance cover.
6. The bidder shall reinstate in a manner approved by the Project Manager, all damage of every sort entirely at his cost, so as to deliver up to the Owner the whole of the works complete and perfect in all respects and so certified by the ICGEB and also be made good or otherwise satisfy all clause for damage to the property of third parties.
7. The bidder shall be responsible for anything within his control and for all risks and consequences, which are not included in the purview of the insurance policies.
8. The insurance shall be extended until final completion.
9. The bidder undertakes not to cancel any insurance policy or reduce its scope without the written consent of the ICGEB.
10. **Jurisdiction –**

Any dispute arising out of this contract will be in accordance with the principle of international laws.

1. **SITE VISIT:**

Interested Bidders may visit the ICGEB Campus before submission of the bid. For site visit, please contact Mr. Naresh Chand Dabral Component In-charge, Tel: 26741358, 26742357 on any working day (Monday to Friday) between 10:00 to 17:00 hours

**(6)**

**Technical Specification**

**Split Coupled Vertical Inline Primary & Condenser water Pumps**

Supply and install as shown on plans and specifications Split Coupled Type Vertical In-Line Centrifugal pumping unit. The pumps shall be radially split, single stage centrifugal type with CI/GM casing with equal sizesuction and discharge flanges and having separate tapped flush line and pressure gauge connections, Bronze(BS1400 LG2C) dynamically balanced impeller, stainless steel shaft, lower carbon throttle bushing, Outside Balanced type mechanical seal with Resin Bonded Carbon rotating face, Sintered Silicon Carbide stationary seat and Viton secondary seal.

The pump is to be fitted with a factory installed flush line. Supply in the flush line to the mechanical seal, a 50 micron cartridge filter (alternatively, a cyclone separator when pump differential pressure exceeds 30 PSIG) and floating ball type sight flow indicator suitable for the working pressure encountered. The mechanical contractor shall change the filters after the system has been flushed and on a regular basis until the pumps are turned over to the owner. The squirrel cage induction type motor, with TEFC enclosure and shall be connected to the pump through a high tensile aluminium, split type spacer coupling to permit Servicing of the mechanical seal without disturbing pump, motor or electrical wiring. Coupling shall be protected by a guard.

**F. R. P. COOLING TOWER (INDUCED DRAFT MULTICELL TYPE)**

Cooling tower shall be induced draft type with multi cell construction, counter flow type vertical with fiberglass Reinforced plastic construction. The Cooling Tower will be CTI – approved.

The components should be as under-

# BASIN & CASING

The Basin and casing shall be supported by heavy gauge C Rolled section hot-dip galvanized steel for long life and durability.

Standard accessories shall include overflow, drain and brass make-up valve with plastic float.

The Casing and Basin shall be made out of FRP with both sides Gel coated for smoothness from inside and pigmented from outside.

**AXIAL FANS**

Fans shall be heavy duty axial type statically balanced. The fans constructed of hollow extruded FRP / aluminum alloy blades, installed in a closely fitted cowl with venturi air inlet. Fan screens shall be galvanized steel mesh and frame, bolted to the fan cowl.

**FAN MOTOR**

Suitable capacity totally enclosed fan-cooled fan motor(s), with 1.1 service factor will be furnished suitable for outdoor service on 415 volts, 50 hertz, and 3 phase AC supply.

The Fan Motor shall be high efficiency class -2, 4 pole, and shall be mounted out of moist Air stream. Suitable for VFD application.

**DRIVE**

The fan shall be mounted below the Fan bearing on a shaft, driven by a belt. The drive arrangement shall have FRP cover for protection.

**FILL**

The Cooling Tower Fill shall be of virgin PVC (polyvinyl chloride) make, of cross-fluted design for optimum heat transfer and efficiency. The cross fluted sheets shall be bonded together and the edges double folded for strength and durability. The PVC fill shall be resistant to rot, decay, or biological attack.

**WATER DISTRIBUTION SYSTEM**

The spray header and branches shall be constructed of Heavy duty, polyvinyl chloride pipe for corrosion resistance and shall have a steel connection to attach the external piping. The piping shall be removable for cleaning purposes. The water shall be distributed over the fill by precision molded ABS spray nozzles with large orifice openings to eliminate clogging.

**ELIMINATORS**

The eliminators shall be constructed entirely of inert polyvinyl chloride (PVC) in easily handled sections. The eliminator design shall incorporate two changes in air direction to assure complete removal of all entrained moisture from the discharge air stream. Maximum drift rate shall be less than 0.005% of the circulating water rate.

**LOUVERS**

The louvers shall be constructed from polyvinyl chloride (PVC). The louvers shall be mounted in easily removable frames for access to the Basin for maintenance. The louvers shall be suitable angled and spaced to prevent splash out and block direct sunlight.

**FINISH**

All Basin and casing materials will be 2 side finished in standard colour with NPG, u. v. stabilizer gel coat.

**ACCESS LADDER**

For sizes greater than 2.4 M wide a GI Ladder of formed / Rolled channels shall be provided with platform for easy access to Motor.

# SS Expansion Water Tank:

The SS expansion water tank shall be fabricated with minimum 3 mm thick stainless steel sheet SS-304.

SS angle should be used as stiffener. It should be provided with inlet, outlet, return connection for process water, vent, drain, overflow, low level limit switch, level indicator and manhole with cover for cleaning the tank.

The tank should be placed on suitable foundation RCC pillar / MS supporting structure & thermally insulated from outside with 75 mm thick TF quality expanded polystyrene sheet. Finally it should be covered with 26 Gauge Al. sheet cladding.

* **Non-Return Valves (Check Valves**): These should be ANSI 150# class rating and flanged end connections drilled to ASA B 16.1. The material of construction is as follows: Body-ASTM A 351 GR CF8, Body Seat & Disk Seat – SS 304, Bolts, studs & nuts as per ASTM A 193 GR B8/A194 GR8. Shell test 450 psig Hydro and seat test 325 psig Hydro.
* **Pressure Gauges:** It shall be SS bourdon tube type, 150 mm Dial, 3/8" BSP bottom connection, 0-16 kg. per sq.cm (0-235 psi). They shall be installed on inlet and outlet of chilled water pipes. They include and shall be connected to the pipes by welding socket, SS Nipple, S.S. Ball valve (Shenco - Make), SS U-tube, SS Socket, pressure gauge and included in the cost.

# **Technical Specifications for MS Piping:**

* 1. **MS Pipes**:

The M.S. pipes shall be ERW Black ( <=150mm shall be as per IS 1239, PTI, Heavy Class and **>=**200mm as per IS - 3589, 6 mm thick ), bevelled ends.

# **Flanges:**

The flanges forged ASTM - A105, SORF, ANSI B16.5, 150 lb, Table 15.

Flanges may be tack welded into position, but all final welding shall be done with joints dismounted. 3 mm thick gaskets shall be used with all flanged joints. The gaskets shall be fiber reinforced rubber as approved by the Engineer-In-Charge.

Counter flanges for equipment having flanged connections shall be used & provided by successful bidder.

Flanged pairs shall be used on all such equipment, which may require to be isolated or removed for service e.g. Pumps, refrigeration machines etc.

All threaded valves shall be provided with nipples and flanged pairs on both sides to permit flange connections, for removal of valves from main lines for repair/replacement.

* 1. **Fittings:** All fittings should confirm to ASTM A234, GR WPB, Sch.40, ANSI B 16.9. All integral branch off shall be stub connected. All fittings shall be tested to a pressure of 15 KSC.
  2. **Bolts:** All bolts shall be as per IS: 1367 CL 4.6 with dimensional standard as per IS:1364 and length to suit.
  3. **Nuts:** All nuts shall be as per IS: 1367 CL 4.0 with dimensional standard as per IS:1364 and Hexagonal.
  4. **Gaskets:** All gaskets shall be as per CAF IS:2712 GRW/3 with dimensional standard of ANSI B 16.21 150# and 3 mm thick Ring Type.
  5. **Welding:** Welding operations shall confirm to Chapter V of the code of Refinery piping ANSI B31.3 - latest edition.

All pipe ends shall be prepared V-end & tac welded before final welding.

The welder will be pre-qualified by us based on the 180 degree face and 180 deg root bend test of the samples to be test welded by him in our presence and in 45 degree position and the test result will be furnished by you from a Govt. approved test house. All expenditure to be incurred on the pre-qualification of the welder will be borne by you including the cost of samples and arrangements made thereof. **Welding work will be allowed only after completion of welder test and submission of test report.**

Welders and welding procedures shall be certified as per section IX of ASME Boiler and pressure vessel code - latest edition.

**The electric current for welding will be DC straight polarity** (electrode negative). All pipes shall be butt welded as per ANSI B16.25.

The welding electrode to be used will be only **Adore/Advani/ IOL.**

* 1. **Testing Piping:** In general, tests shall be applied to piping before connection of equipment and appliances. In no case shall the piping, equipment or appliances be subjected to pressures exceeding their test ratings.

The tests shall be completed and approved before any insulation is applied. Testing of segments of pipe work will be permitted, provided all open ends are first closed, by blank offs or flanges.

After tests have been completed the system shall be drained and flushed 3 to 4 times and cleaned of all dust and foreign matter. All strainers, valves and fittings shall be cleaned of all dirt, fillings and debris.

All piping shall be tested to hydraulic test pressure of at least one and half times the maximum operating pressure but not less than 10 kg/cm2 for a period of not less than 12 hours. All leaks and defects in the joints revealed during the testing shall be rectified to the satisfaction of the Engineer-In-Charge, without any extra cost.

All the piping systems shall be tested in the presence of the Engineer-In-Charge or their authorized representative. Advance notice of test dates shall be given and all equipments, labor, materials required for inspection, and repairs during the test shall be provided by the contractor. A test shall be repeated till the entire systems are found to be satisfactory to the above authority. The tests shall be carried out for a part of work if required by Engineer-In-Charge in order to avoid hindrance in the work of the insulation contractor.

Miscellaneous piping, tests with air at 10.5 kg/cm2 without drop in pressure for a minimum of 24 hours.

The contractor shall make sure that proper noiseless circulation is achieved through all piping systems. If due to poor bond, proper circulation is not achieved, the contractor shall bear all expenses for carrying out the rectification work including finishing of floors, walls and ceiling damaged in the process of rectifications.

The contractor shall provide all labour and materials to make provision for removing water and throwing it at the proper place, during the testing or/and after the testing to avoid damages to employer or other contractors' properties. Any damages caused by the contractor to the employer or other contractors properties, shall be borne by the contractor.

* 1. **Pipe Supports:** It should be made of structural steel & include G.I. clamps, anchor fasteners, wooden blocks, insulation pad. Supports will be installed at no larger than 3 meters and as per the design calculations to be furnished by you and consisting of C-channels, Angles, I section etc. of 6 mm minimum thickness. Extra support should be provided at bends & fittings like valves to avoid undue stress at pipes. The support columns have to be appropriately grouted using 1:2:4 concrete mix. The fabrication of hangers, anchors and materials shall conform to the requirements of chapter "Fabrication of pipe hangers, supports, anchors, Sway bracing and piping B31.3-latest issue.

# Butterfly Valve:

* + - Duty : Chilled Water / HOT Water / Condenser Water
    - Pressure Rating : Confirm to BS:5155 PN-10/PN–16 & API–609 ( As specified in BOQ)
    - pH Value : Between 4 and 10
    - Single body caste, Slim seal, wafer type,
    - Body construction material should be graded cast iron
    - Disc. Construction material should be Stainless steel.
    - Disc. Seat should be an integral liner made of EDPM / Nitrite rubber, tight shut–off design
    - Provide Hand Lever operated valves with locking arrangement for every 10° turn for valves up to NB200mm.

Valves more than NB 350 mm shall allow for seat replacement at site

# Balancing Valves:

* + - Duty : Chilled Water / HOT Water / Condenser Water
    - Pressure Rating : PN–10/PN–16 (As specified in B.O.Q.)
    - pH Value :Between 4 and 10

# Material Specification

* + - Hand Wheel – CI-220
    - Body / Bonnet –C.A.F. (CI 260 GG 25)
    - Body / Bonnet Bolts –A 307, GR.B
    - Gland Packing –Graphite asbestos
    - Stem Seal –EPDM
    - Stem –SS 410
    - Disc. – SS 410
    - Seat Seal –EPDM (Site replaceable)
    - Tight Shut Off Type
    - Flanges drilled to IS 6392 (PN 16) Standards
    - The spindle shall be non–rising type, and its movement should be lockable/tamper proof type.
    - Micro–meter scale in the wheel should allow fine settings up to 1/10th of a hand wheel turn. The spindle should be lockable with a lock screw, allowing the limiting maximum opening of valve, to pre–determined position, while still allowing to use as shut–off valve.
    - T.A.B. (Testing, Adjusting and Balancing)
    - Measurement of pressure drops and flow rate should be possible using the body taps and quarter turn cocks.
    - Digital measurements compatibility is a pre–requisite.
    - Published ‘K’ factor of valve for different hand wheel turns should be available.

# Painting:

All exposed metal surface of pipes, fittings and supports must be applied with one coat of red-oxide primer & two coats of synthetic enamel ICI / Nerolac paint of Approved shade. The surface to be painted shall be cleaned thoroughly before painting.

# **Electrical Systems:**

* 1. **Panel Construction**

Features:-

* Cubicle type switchboard shall be fabricated out of sheet steel not less than 2.5/2.0 mm. thick MS sheet for load bearing and non load bearing members. Wherever necessary, such sheet steel members shall be stiffened by angle iron framework.
* General construction shall employ the principle of compartmentalization and segregation for each circuit. Unless otherwise approved, incomer and bus section panels or sections shall be separate and independent and shall not be mixed with sections required for feeders. Each section of the near accessible type board shall have hinged access doors at the rear. Multi tier mounting of feeders is permissible. The general arrangement for multi-tier construction shall be such that the horizontal tiers formed present appeasing and aesthetic look. The general arrangement shall be got approved before fabrication.
* The openings between bus chamber and feeder compartments shall be properly covered with bakelite/Hylam sheets of 3mm minimum thickness. The vertical bus bar chamber shall be provided with removable bolted cover in the front and back side. All the inter connection to the feeders shall be shrouded so as to avoid accidental contact by means of bakelite barriers of at least 2 mm thickness.
* Cable entries for various feeders shall be from the top/bottom and shall be accessible from both front and rear through cable alleys located between two circuit sections. Cable alleys shall have hinged doors with rubber gaskets. All cable entries shall be through gland plates. There shall be a separate gland plate for each cable entry so that there will not be dislocation of already wired circuit when new feeders are added. Cable entry plates shall therefore be sectionlised. The construction shall include necessary cable supports for clamping the cable in the cable alley or rear cable chamber.
* Each compartment shall have its own hinged door with concealed hinges. The door shall have square section rubber gaskets fixed on the inner side.

The panels shall be of Simplex type as indicated in the Specific Requirements. The panels shall be sheet steel enclosed, dust and vermin proof with minimum degree of protection not less than IP-54 in accordance with IS:2147. The panels shall be floor mounting free standing type mounted on a supporting structure so as to form a rigid enclosure suitable for the application. The panels shall be fabricated out of CRCA sheet steel of minimum 3 mm thickness for the front and back covers, doors and load bearing members and 2 mm for the rest. All doors and openings shall be provided with neoprene gaskets. Ventilating louvers, if provided shall have screens and filters. The screen shall be made of either Brass or GI wire mesh.

The panel shall be provided with integral base frame. The integral base frame of panels shall be suitable for directly bolting with the help of foundation bolts and shall also be suitable for tack welding to the plant room floor embedded insert plate/ flat/ channel. Amply dimensioned oblong holes shall be provided at the bottom of all panels for bolting on to the embedded insert channel. The height of the panels shall be matched with the other existing panels in the plant room and the bottom of the panels shall have a 100 mm kick plate all around. Cable entry shall be from the top unless specified otherwise. A suitable removable undrilled gland plate shall be provided for cable entry. Suitable compression type cable glands as required for cable termination in the control panel shall be supplied.

The panels shall be matched with other panels in the plant room in respect of dimension, colour, appearance and arrangement of components on the front of the panel wherever specified. Simplex type panels shall be with equipment mounted on the vertical front and access to wiring from rear. Door at the rear shall be provided with handles and lock facility.

# **Component mounting**

All equipment on and in panels shall be mounted and completely wired to the terminal blocks ready for external connections. The equipment on front of panel shall be flush mounted. No equipment shall be mounted on the doors checking and removal of individual components shall be possible without disturbing the adjacent equipment. It should be possible to test all the protective relays ‘in-situ’. All components shall be neatly arranged in a matching manner. The internally mounted components, auxiliary equipment such as transducers, interposing CTs etc. shall be mounted in such a way as to be readily accessible without impeding the access to internal wiring and other components. The relay panels shall be supplied complete with channel base grouting bolts, nuts, washers etc.

# **BUS BARS**

Bus bars used in the panel shall be of Aluminium E91E grade (IS5052-1981) of adequate section suitable for 3 phase, 4 wire, 415 volt 50HZ AC supply and with short circuit current rating of 50 kA. The bus bar shall have uniform cross section through out the length. The bus bars shall be designed for carrying rated current continuously. The bus bars and links shall be designed for maximum temperature of 75 Deg C. the maximum current density of bus bars shall be 1.28 amps/ sq.mm. suitable de-rating factors shall be applied to arrive at the correct cross section of the bus bars. Bus bars shall be supported on suitable non hygroscopic, non-combustible material such as permali or Hylam at sufficiently close intervals to prevent bus bar sag. All bus bar joints shall be provided with high tensile steel bolts (Electro plated with suitable metal such as Nickel/cadmium), spring washers & nuts so as to ensure good contact. Alternatively, electroplated / tinned brass bolts shall be used. The joints shall be formed with fish plates on either side of bus bars to provide adequate contact area. Bus supports shall be provided on either side of joints (max unsupported distance from the joint shall not be more than 300 mm.) power shall be distributed to each circuit in each section by a set of vertical bus bars (phases + neutral). Individual module shall be connected from vertical connections through sleeved connections. Bus bars shall be insulated with heat shrinkable type PVC tapes with color coding (RYB-B). The bus bars and their supports shall be able to withstand thermal and dynamic stresses due to the system short circuits. The supplier shall furnish calculations along with his shop drawing establishing the adequacy of design of both for continuous duty and short circuits rating. Short circuit withstand capacity shall be one second.

# **Wiring**

The wires shall conform to IS: 694. All wiring shall be done with PVC insulated 1100V grade, single core multi-strand (minimum 3 strands) annealed copper conductors. The wires shall be flame proof and vermin proof. The minimum size for different circuits shall not be less than those as specified below:

1. Current Transformer Circuit: 1 X 2.5 sq. mm. Copper
2. Voltage Transformer Circuit: 1 X 1.5 sq. mm. Copper
3. Other Circuit including Control wires: 1 X 1.5 sq. mm. Copper for fuse rating of 10 Amps or less. Each wire shall be identified at both ends with wire numbers by means of PVC ferrules. Ferruling of wires shall be as per relevant IS. All control wiring shall be enclosed in plastic channels. The terminal blocks shall be located so as to ensure easy access. Split type terminal blocks shall be provided for all CT terminals. The terminals screws shall be of the Washer type and long enough for connecting following type conductor on each side. Each terminal block shall be capable of terminating the following no. of wires:

CT circuits 2 nos 4 mm sq. copper PT/CVT circuits 2 nos 2.5 mm sq. copper

AC/DC supply circuits 2 nos 2.5 mm sq. copper All other circuits 2 nos 2.5 mm sq. copper

Each terminal block shall be provided with a wire-marking strip and shall be shrouded by easily removable shrouds moulded of transparent dielectric material.

There shall be a minimum clearance of 250 mm between the front row of terminal block and the associated cable gland plate on panel side wall. The clearance between two rows of terminals block edges shall be a minimum of 150 mm. All inter-panel wiring within each shipping section shall be the vendor’s responsibility. Wiring between panels shall be routed through PVC sleeves. For wiring between shipping section, vendor shall provide terminal blocks on adjacent shipping sections and supply suitable jumperingres.

# Earthing

A continuous 25x5 mm Aluminium bus shall be provided along the full length of the panels. Suitable arrangement shall be provided at the two ends for connection to the plant grounding system. Each panel and the equipment mounted on each panel shall be securely connected to the grounding bus. For this purpose the ground wire shall be looped from equipment to equipment and both ends of the ground wire shall be connected to the ground bus. All doors and movable parts shall be connected to the ground bus with flexible copper connections.

# **Switches and fuse**

Each panel shall be provided with necessary arrangements for receiving, distributing and isolating of AC supply for various control, signalling, lighting and space heater circuits. The incoming and sub-circuits shall be separately provided with MCBs. Selection of the main and sub circuit MCB rating shall be such as to ensure selective clearance of sub circuit faults. MCBs shall conform to IS:13947. Each MCB shall be provided with one potential free contact and the same shall be wired for annunciation purpose. However VT circuits for relaying shall be protected by MCB's.

# **Earthing of Various Equipments**

All the equipments of the system shall be earthed at a minimum of two places by using GI earth strips & suitable connecting jumpers as required from the existing earth grid. The process water pumps shall be earthed by using 25 x 5 mm GI flat at two places drawn from the existing earth grid. The Main electrical panel shall also be connected at two places with the earthing system by using 25 x 5 mm mm GI earth flats

# Power Cable:

The XLPE armoured power cable for use on 415 volts system shall be 3 or 3.5 Core with Aluminium conductors and be of 660/1100 volts grade. The cross section of the cable shall be to suit the load and rating of the equipment. The cables shall be of Aluminium conductor, XLPE insulated, strip armoured with overall PVC sheathing.

The cables shall be laid as per IS-1255/1967, Indian standard code of practice.

# **Control Cabling/wiring:**

It shall be 1.1 kV grade, as per IS 1554, made from copper conductor of 2C / suitable cores x 1.5 Sq mm PVC insulated. strip armoured with an overall PVC sheathing.

# **Inspection & Testing:**

**Pre dispatch Inspection & Testing:**

**The bidder have to offer pre-dispatch test of all electrical items at their works. Enough time gap shall be provided by the bidder between the inspection call & the date of inspection. The bidder have to make all necessary arrangements of tests as may be felt necessary by the ICGEB as per standards.**

**PRE-COMMISSIONING TESTS AND COMMISSIONING:**

The panels shall be commissioned only after the successful completion of the following tests. The tests shall be conducted in the presence of ICGEB.

# All the main & auxiliary bus connections shall be checked and tightened. All the wiring terminations & bus bar joints shall be checked and tightened. Wiring shall be checked for correctness as per the drawings.

**All wiring shall be tested for insulation resistance by 1000 V megger & panels shall be hi-pot testing at**

**2.5 kV.**

**Phase rotation tests shall be conducted**

**Suitable injection tests shall be applied to all the measuring instruments to establish the correctness & accuracy of calibration and working order.**

**All relays and protective devices shall be tested for correctness of settings & operation by introducing a current generator & an ammeter in the circuit.**

# Documents to be furnished by Vendor After Award of Contract

* 1. Activity Bar Chart.
  2. Technical details, Make & model of all the items (BOQ) offered to supply.
  3. Drawings for Layout Plan for Pumps, Heat Exchanger, Expansion Tank, Piping, electrical panel etc.,
  4. Foundation detail drawing for Pumps, Heat Exchanger, Expansion Tank etc.,
  5. Schematic piping diagram.
  6. Piping & supports drawing.
  7. Manufacturer's material certificate, test reports & manuals should be submitted in original for equipments, pipes, fittings, insulation material, instrumentation, valves ( balancing valve, butterfly valves, check valves etc.),
  8. Performance / characteristic curves, material and test certificates, manuals for:
     1. Pumps
     2. Balancing valves
     3. For any other supplies
  9. General Arrangement Drawing, Power and Control Circuit Wiring diagram for electrical panel, APFC Panel, electrical motor starters. 2 copies of as built drawings and one soft copy both in solid works and in pdf to be submitted.
  10. Design and Fabrication Drawings of Expansion tank and support structure.
  11. Any other documents required

**(7)**

**Approved make of Materials**

|  |  |  |
| --- | --- | --- |
| **S.No** | **Description** | **Make** |
| 1 | Cooling tower of 1500000K Cal/Hour (500 TR) capacity | Mihir, Bell, Paharpur, Case |
| 2 | CONDENSER Water Pumps | Grundfoss/ Armstrong / Beacon/Kirloskar/KSB/CG) |
| 3 | Gear operated valves | Audco/ KITZ/ Advance |
| 4 | Ball valve 1.5 inch | Zoloto / Leader / Sant |
| 5 | Balancing valves 250 mm dia | Advance/ Audco |
| 6 | Bare condenser water plumbing M.S 'Heavy' Class ERW conforming to IS: 3589 complete with fittings | Jindal/ Tata |
| 7 | NRV 250mm | Audco/ KITZ/ Advance |
| 8 | Pot Strainer 300 mm | Audco/ KITZ/ Advance |
| 9 | Pressure Gauge 6” Dial | H Guru/Waree |
| 10 | Perforated pre-painted M.S. cable trays (size 150 mm x 50 mm x 1.6 mm) suspended from the ceiling with M.S. suspenders | MAA Industry/Slottco |
| 11 | MAIN MOTOR CONTROL CENTRE (FOR HVAC SYSTEM EQUIPMENT)  Push Button | Voltmeter / Ammeter Make: Conzerv/ Schneider/Meco/  Make: Cutler Hammer/Siemens |
| 12 | INCOMING SWITCHS | L&T, GE, ABB |
| 13. | OUTGOING SWITCHS | L&T, GE, ABB |
| 14. | Power Cabling | Havells, Finolex |

(8)

Annexure A

**TECHNICAL BID FORM**

To,

The Administrative Officer

International Center for Genetic Engineering & Biotechnology

Aruna Asaf Ali Marg

New Delhi – 110 067.

Subject: Tender for work of Supply, installation, testing and commissioning of 500 TR Cooling Tower in the ICGEB Campus

Dear Sir,

In response to your tender inviting notice for the above mentioned contract, I/We, a Company/Partnership/Sole Proprietor, am / are submitting the tender with the following particulars:

1. Name of the Contractor (Firm / Individual) and contact person:
2. Date of incorporation of the Firm:
3. Address of the Registered Office:

1. Telephone No./Mobile No.:
2. Fax No./E-mail ID:
3. Whether proprietary / partnership:
4. PAN No. of the Proprietor / Company:
5. Name & Address of the partner, if any:
6. Does the firm have any branches?

If so, furnish addresses:

1. Total turn-over of the firm during the last 3 years (**as per Annexure - C**):
2. Work orders and completion certificate of completed one single assignment of similar kind for Rs.40,00,000/- or Two similar work of Rs 25,00,000/- each or Three Similar work of Rs 2,00,0000/-each within the previous 7 years.
3. GST/TIN No. & Service Tax Registration No:
4. Undertaking for Site Visit has to be submitted as per Annexure D
5. Any other information, the firm may like to furnish:
6. Check List Annexure F
7. Filled technical sheet no. 1,2 and 3 (Annexure B)

**NOTE:**

* 1. Attach additional sheet, if required
  2. Attach documentary proof in respect of above information.

Having acquired the requisite information related to the subject work after visit of the site and examining the form of contract, nature, quantum of work as effecting the tender invited by on behalf of the ICGEB, New Delhi, I/We, the undersigned, hereby offer for Supply, installation, testing and commissioning of 500 TR Cooling Tower in the ICGEB Campus indicated in the Tender Document for strictly in accordance with the terms and conditions as indicated by you in the said documents.

ICGEB reserves the right to reject any or all the TENDERS or accept them in part or to reject the lowest quotations without assigning any reasons.

I/We further pay and have enclosed Earnest Money amounting to Rs. 1,00,000/- and tender fee of Rs 1500/- in the form of Demand Draft in favour of ICGEB, New Delhi along with the Technical Bid which will remain with ICGEB up to final award of contract. However, no interest shall be payable on Earnest money. Earnest money of the successful bidder shall be refunded only against the submission of performance Guaranty and Security Deposit.

Enclosures:

1.

2.

3.

4.

Authorised Signatory

Name & Address of the firm with seal

Annexure B

**Technical Data Sheets**

|  |  |  |
| --- | --- | --- |
| **TECHNICAL DATA SHEET-1**  **TO BE SUBMITTED BY BIDDER WITH TECHNICAL BID** | | |
|  | **Item (Bidder's Scope in quoted price)** | **To be filled by Bidder** |
| 1 | **Vertical inline Centrifugal Pumps** |  |
| 1.1 | Make |  |
| 1.2 | Model |  |
| 1.3 | Quantity | 2 Nos. |
| 1.4 | Type - Back pullout | confirm |
| 1.5 | Suction - End | confirm |
| 1.6 | Discharge - Top | confirm |
| 1.7 | Design Flow rate – 1600 USGPM approx / as required |  |
| 1.8 | Total Head – 32 M met. approx. or as required. |  |
| 1.9 | Shut off Head |  |
| 1.10 | Pump efficiency at duty point( > 65%) |  |
| 1.11 | Power input to pump at duty point |  |
| 1.12 | Motor, Squirrel Cage, induction motors, continuous duty, Star-Delta starter, Insulation Class-F, IP-55,  Motor rating ( 415Volts/3-Phase/50Hz ) kW |  |
| 1.13 | Speed - |  |
| 1.14 | Type of motor enclosure SPDP / IE 3 efficiency |  |
| **DATA TO BE FURNISHED BY BIDDER AFTER AWARD OF CONTRACT** | | |
| 1 | Final Overall dimensional drawings for pump set. These shall  show all the major parameters of set. |  |
| 2 | Cross sectional drawing of the pump indicating material of  construction of all the parts. |  |
| 3 | Foundation drawing indication details of fixing, grouting, total weight, plinth size, anchor bolts etc. |  |
| 4 | Performance curve |  |
| 5 | Test certificates |  |
| 6 | Operation and maintenance manual. |  |

# TECHNICAL DATA SHEET -2

**TO BE SUBMITTED BY BIDDER WITH TECHNICAL BID**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N. | Description | Required | **Bidder to confirm** |
| 1 | **SS Expansion Tank** |  |  |
| 1.1 | Number Required | 1 |  |
| 1.2 | Clear water Volume capacity | 1000Lts. |  |
| 1.3 | Make |  |  |
| 1.6 | Material | SS-304, Thickness-**3** mm minimum |  |
| 1.7 | Inlet and out let pipe size | SS/1.5 inch dia/6 inch length |  |
| 1.8 | Operating/Erection/Filled | By Vendor |  |
| 1.9 | Construction | Butt TIG Welding |  |
| 1.10 | Inspection | By ICGEB |  |
| 1.11 | Insulation | TF quality Expanded Polystrene, Density-24 kg/sqcm, thickness-75 mm, CPRX coat, 1000 gauge (250 micron) polythen**e** sheet, hessian, 19 mm mesh 24SWG GI wire, 26 G Al cladding |  |
| 1.12 | Installation | Shall be installed on CC foundation structure on the floor at a height of 1500 mm |  |
| 1.13 | Inlet line floet ball and valve | SS /1.5 inch float valve with ball valve(zoloto) |  |
|  | ***Drain system /valve*** | SS/1.5 inch dia pipe with 1.5 inch ball valve(zoloto) |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.19 | Painting | MS surfaces shall be painted with one coat of primer and two coats of synthetic enamel of approved shade after surface pr**e**paration. |  |
| 1.20 | Insulation Support | Welded SS cleats of 14 SWG SS wire x 75 long |  |
| 1.21 | Name Plate | SS |  |
| 1.27 | Over Flow line | SS/1 inch dia/1 feet length/ 1 No. |  |
| 1.28 | Manhole with Double wall, SS Sheet Cover, Handle, Hinges ,locking arrangement, leak tight gasket etc. | Suitable for cleaning purpose |  |

# TECHNICAL DATA SHEET -3

**TO BE SUBMITTED BY BIDDER WITH TECHNICAL BID**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N. | Description | Required | **Bidder to confirm** |
| 1 | **Cooling Tower 500 TR** | 02 NOS |  |
| 1.1 | MAKE | Mihir,Bell,Paharpur,Case |  |
| 1.2 | Cooling tower type | FRP |  |
| 1.3 | Certification | CTI |  |
| 1.4 | CT fan motor each unit | 2 nos |  |
| 1.5 | Warranty |  |  |
| 1.6 | Axial fans type |  |  |
| 1.7 | Water temp in peak time | 97.5 deg F |  |
| 1.8 | Water temp out peak time | 90 deg F |  |
| 1.9 | Model |  |  |
| 1.10 | Inspection | By ICGEB |  |
| 1.11 | Tower ladder and top side hand rail material | SS |  |
| 1.12 | Installation | Shall be installed on RCC foundation |  |

Annexure - C

**TURNOVER DETAILS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Last Three Years Annual Turnover of the Bidding Entity | | | | |
| (As per the Audited Financial Statement/Annual reports to be enclosed duly certified by CA, copies of Income tax returns also enclosed as proof) | | | | |
| Financial Year | Turnover of operations in similar kind of business | Turnover in Other Operations | Total Turnover | Net Profit |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. Financial Statements are Balance Sheets and Profit & Loss Statements duly certified by a CA.
2. The Audited Financial Statement etc., are for the year 2016-17, 2017-18, 2018-19 (Proof to be submitted to satisfy/meet the requirements of Eligibility criteria).

Authorised Signatory

Name & Address of the firm with seal

Annexure - D

**UNDERTAKING/DECLARATION FOR NOT BEING BLACK LISTED**

Date ...................................

To,

The Administrative Officer

International Centre for Genetic Engineering & Biotechnology

Aruna Asaf Ali Marg

New Delhi – 110 067.

Dear Sir,

I / We ................................................... hereby confirm that our firm has not been banned or Blacklisted by any government organizations/Institutions/Court/Public sector Units/Private organization. Further it is certified that there is no police case pending against our firm/partner relating to previous service contracts.

Authorised Signatory

Name & Address of the firm with seal

Annexure - E

Details of other organizations where such work were undertaken during the last 7 years

(enclose supporting documents).

Proforma containing details of other organizations where such or similar contracts were undertaken.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sl. No. | Name &  Address of  the  organization,  contact number | Period  of  contract | Whether Govt/semi  Govt/Autonomous  bodies/PSUs/Institutions/ Industries  etc. (pls. specify) | Amount  of  contract |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Authorised Signatory

Name & Address of the firm with seal

Annexure - F

**CHECK-LIST (TECHNICAL BID)**

**SUMMARY OF COMPLIANCE TO REQUIREMENT OF TENDER**

|  |  |  |  |
| --- | --- | --- | --- |
| Sl. No. | Description of requirement | Yes/No | Page No. |
| 1 | The firm is registered with the Regional Labour Commissioner (Govt. of Delhi) under the Provisions of Contract Labour Act and its validity date. is………………………. |  |  |
| 2 | Copies of the Balance Sheet and P&L A/c for the last 3 years duly certified by a CA enclosed. (Attach supportive documents: Annexure – C) |  |  |
| 3 | Registration certificate issued by the Provident Fund Commissioner enclosed. PF registration code allotted by the Regional Provident Fund Commissioner, Govt. of Delhi, enclosed. |  |  |
| 4 | Copy of the Registration certificate/allotment letter of GST number enclosed. |  |  |
| 5 | Copy of the Registration certificate/allotment letter for PAN from the Income Tax Department enclosed. |  |  |
| 6 | Registration certificate of ESI enclosed. |  |  |
| 7 | Proforma containing details of other organizations where such contracts were/are undertaken enclosed. (Attach supportive documents: Annexure – E) |  |  |
| 8 | DD of Rs.100000/- as EMD and tender fee of Rs 1500/-enclosed. |  |  |
| 9 | Price bid proforma completed & sealed in a separate envelope enclosed. |  |  |
| 10 | List of Arbitration cases (if applicable) enclosed.  Do not leave it blank. If there are no such cases, write “Not Applicable”. |  |  |
| 11 | Acceptance of terms and conditions attached. Each page of terms and conditions to be duly signed as token of acceptance and submitted as part of the tender document. |  |  |
| 12 | Copy of the last income tax return enclosed. |  |  |
| 13 | Undertaking by the bidder to the effect that there is no police case pending against the proprietor/firm/parties relating to previous service contracts enclosed. (Annexure – D) |  |  |
|  |  |  |  |

`

Declaration by the Tenderer:

This is to certify that I/We before signing this tender have read and fully understood all the terms and conditions contained herein and undertake myself/ourselves to abide by them.

Authorised Signatory

Name & Address of the firm with seal

NOTE: Submission of all the documents mentioned above along with declaration, is mandatory. Non submission of any of the information above may render the bid to be rejected.

Annexure – G

This certificate shall be furnished duly signed & stamped with Techno-commercial Bid.

**Certificate/ Undertaking**

This is to certify that we have visited the site for work of **Supply, installation, testing and commissioning of 500 TR Cooling Tower in the ICGEB Campus** on …....................... and assessed the actual situation & nature of site. We have also assessed the amount of work involved at site for tendered work before submitting our offer. We will be able to complete the above work within stipulated time as per site conditions.

We further undertake that no extra cost will be claimed by us later-on for any difficulties/ modifications involved during the execution of tendered works. We understand that work is to be executed in an already operational/ functional institute.

Authorised Signatory

Name & Address of the firm with seal

(9)

PRICE BID

**PART-II**

**PRICE BID (Schedule of Rate)**

Name of Work: Supply, installation, testing and commissioning of 500 TR Cooling Tower in the ICGEB Campus

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sl. No. | Description | Make | Unit | Qty | Rate | Amount |
| 1 | Supply, installation, testing and commissioning of FRP Induced draft CTI CERTIFIED cooling tower of 1500000 kcal/hour (500 TR) capacity, flow capacity around 1800 USGPM complete with sump, PVC fills, Louvers, Drift eliminators, FRP basin with additional sump in the bottom of the basin on every outlet point to avoid vortex formation in the condenser water pipe line , steel ladder, Float Valves and other accessories required to make it fully functional. For longer life of the product Hot dip galvanization / powder coating on the steel frame hand rail and ladder other hardware shall be with minimum G- 235 grade / Powder coated. The maximum allowable sound noise at a distance of 1 m from the fan shall be 80-85 dB. Cooling tower shall be statically and dynamically balanced axial flow type direct driven complete with 02 nos. statically and dynamically balanced axial flow type direct driven or driven through reduction gear box axial fans with weather proof motor & TEFC, IP-55 motor, suction screen, drain connection with valve, suitable inspection ladder, access arrangement for cooling tower interior, fan blades and hub assemblies, fan casing , water distribution system, water outlet S.S screen, side panels, fan guard, internal support, inlet and outlet flanges etc. complete as per specification and technical data sheet.. The cooling tower shall be as per specifications.  Entering water Temperature: 97.5 deg F(peak time)  Leaving water temperature: 90 deg F  Design Ambient WBT 82.760 F  Design Approach 39.02 0 F  CAPACITY : 500 TR  Motor HP : as per manufacturers specification. | Mihir, Bell, Paharpur, Case | No. | 2 |  |  |
| 2 | **CONDENSER Water Pumps**  Supply, installation, testing and commissioning of vertical In-line Split Coupled centrifugal pumps complete with suitable HP, TEFC induction motor with class ‘F’ insulation operating on 415 + 10% volts, 3 phase, 50 cycles AC supply for each pump. (IP-55).  Duty parameters (each pump)  Water flow rate – 1600 USGPM  Head – 32 m  Motor rating – as per design  Suction guide, Check valve to be supplied by pump manufacturer/along with pump for unit responsibility. | Grundfoss/ Armstrong) **/** Beacon/Kirloskar/KSB/CG) | Set | 2 |  |  |
| 3 | Supply, installation, testing and commissioning of gear operated valves complete with companion flanges, nuts, bolts etc. as required. | Audco/ KITZ/ Advance |  |  |  |  |
| a | 300 mm dia (Gear operated) |  | No. | 1 |  |  |
| b | 250 mm dia (Gear operated) |  | No. | 8 |  |  |
| c | 200 mm dia (Gear operated) |  | No. | 1 |  |  |
| d | Ball valve 1.5 inch | Zoloto / Leader / Sant | NO | 2 |  |  |
| 4 | Supply, installation, testing & commissioning of 250 mm dia Balancing valves with built-in pressure testing prods/ nozzles, complete with companion flanges, nuts, bolts, gaskets etc.  as required. | Advance/ Audco | No. | 2 |  |  |
|  |  |  |  |  |  |  |
| 5 | Supplying, laying/ fixing, testing & commissioning of following nominal sizes of bare condenser water plumbing M.S 'Heavy' Class ERW conforming to  IS: 3589 complete with fittings like elbows, tees, reducers, bends, MS flanges, supports, welding, painting ( Primer and Paint) etc. adequately supported on rigid support as required. | Jindal/ Tata |  |  |  |  |
| a | 300 mm dia NB, minimum 6 mm thick |  | M | 120 |  |  |
| b | 250 mm dia NB minimum 6 mm thick |  | M | 40 |  |  |
| c | 200 mm dia NB minimum 6 mm thick |  | M | 20 |  |  |
| d | GI pipe 1.5 inch dia |  | M | 30 |  |  |
| e | GI pipe 3 inch dia |  | M | 20 |  |  |
|  |  |  |  |  |  |  |
| 6 | Supply, installation, testing and commissioning of 250 MM NRV complete with companion flanges, nuts, bolts etc. as required. | Audco/ KITZ/ Advance | No. | 2 |  |  |
| 7 | Supply, installation, testing and commissioning of 300 mm Pot Strainer with housing complete with companion flanges, ball valve, nuts, bolts etc. as required. | Audco/ KITZ/ Advance) | No. | 1 |  |  |
| 8 | SITC of Pressure Gauge 6” Dial, Range 0-10 kg/sqcm, bottom connection 3/8” BSPT, brass bourdon tube with Extra Long M.S. Threaded Socket (heavy) welded on MS pipe, SS Nipple, SS Ball Valve (Shenco - make), SS U-tube (Sch 40), SS Socket (heavy) etc., of the following:  Range: 0-10 kg/cm2 | H Guru/Waree | No. | 4 |  |  |
| 9 | SS Expansion Tank 1000 Ltr with CC foundation |  | No. | 1 |  |  |
|  | Electrical |  |  |  |  |  |
| 10 | Supplying and installing following size of perforated pre-painted M.S. cable trays (size 150 mm x 50 mm x 1.6 mm )suspended from the ceiling with M.S. suspenders including bolts & nuts, painting etc as required. | MAA Industry/Slottco | M | 100 |  |  |
| 11 | MAIN MOTOR CONTROL CENTRE (FOR HVAC SYSTEM EQUIPMENT) |  |  |  |  |  |
|  | Design, fabrication, supply, installation, testing & commissioning of free standing, indoor type, dust and vermin proof, compartmentalised Motor Control Centre fabricated out of 2/1.60 mm thick steel sheet and finished in powder coat of approved shade. All steel material used in panel fabrication shall undergo seven tank process before powder coating with desired shade. A solid bus bar shall be provided at in the panel. The panels shall be suitable for 415 Volts, 50 Hz, 3 Phase, 4 wire supply system. The Panel drawing shall be approved before proceeding with the fabrication. The panel shall be compatible for integration with BMS system with required NO+NC contacts. All voltmeters and ammeters shall be digital type. The panel shall be approved before taking up fabrication and shall be BMS compatible. The main panel shall be suitable for 31 MVA fault level. All outgoing shall be provided with stop/manual/auto/selector switch to facilitate operation through BMS. Necessary internal wiring as per specifications from equipment motor to panel shall be included. | Voltmeter / Ammeter Make: Conzerv/ Schneider/Meco/  Push Button  Make: Cutler Hammer/Siemens | No | 1 |  |  |
| A | INCOMING SWITCH | L&T,GE,ABB |  |  |  |  |
|  | 1 No. 1600 Amps MCCB, 3P (50 KA),with o/c & s/c release. |  |  |  |  |  |
|  | 1 Set (R,Y,B) Phase indication Lamps with protection fuse |  |  |  |  |  |
|  | 1 Set Ammeter of suitable range with 3CT and selector switch |  |  |  |  |  |
|  | 1 No. voltmeter 0-500 V with selector switch and control fuse |  |  |  |  |  |
|  | Not control fuse should be control MCBs |  |  |  |  |  |
| B | OUTGOING SWITCH |  |  |  |  |  |
| a | Chilling unit Main switch MCCB 800Amps 3 P(50 KA) 1 Set ON/OFF/Trip indication Lamps with protection fuse 1 Set Ammeter of suitable range with 1CT Panel shall have 10 % spare space | L&T,GE,ABB | No. | 3 |  |  |
| b | Condenser Pump switch 125 Amps TPN MCCB - 25KA2 2 Set ON/OFF/Trip indication Lamps with protection fuse. star delta starters Start/stop Push Button Panel shall have 10 % spare space | L&T,GE,ABB | No. | 3 |  |  |
| c | Chiller Pump switch 125 Amps TPN MCCB - 25KA2t ON/OFF/Trip indication Lamps with protection fuse. shall have 10 % spare space | L&T,GE,ABB | No. | 3 |  |  |
| d | CT Fan switch 125 Amps TPN MCCB - 25KA ON/OFF/Trip indication Lamps with protection fuse . star delta starters Start/stop Push Button Panel shall have 10 % spare space | L&T,GE,ABB | No. | 4 |  |  |
| 12 | **Power Cabling** |  |  |  |  |  |
|  | Providing and fixing of 1.1 KV PVC insulated , PVC sheathed ,armoured cable of aluminium conductor complete with Termination glands, identification Tags, clamps etc. | Havells, Finolex |  |  |  |  |
| a | 35 sqmm x 3 core aluminium conductor armoured cable |  | RM | 150 |  |  |
| b | 25 sqmm x 3 core aluminium conductor armoured cable |  | RM | 250 |  |  |
| 13 | Earthing: Providing & Fixing of Earth Continuity : |  |  |  |  |  |
| a | 25x3mm GI Strip |  | RM | 150 |  |  |
| b | 8 SWG GI wire |  | RM | 150 |  |  |
| 14 | Removing all electrical cables(incoming and out going)from existing panel and connected to MCCB in new installed panel in main AC plant, provide thimble ,glands, Hole cutting, Clamping complete as required |  | Job | 1 |  |  |
| 15 | Dismantling and removing cost of existing cooling towers 02 nos, condenser pump 02 nos, chiller pump 03 nos, electric panels ,pipe lines, valves etc |  | Job | 1 |  |  |
| 16 | **Civil work** |  |  |  |  |  |
| a | Design and construction of RCC platform (M20 grade concrete) of suitable size as per cooling tower dimension and as per site condition below cooling tower on roof of the building. RCC platform will be at 3ft height from existing roof level and will be supported on RCC column and beams. RCC columns will rest over the existing RCC columns of the building after necessary chipping on roof. Rates will include all finishing works also e.g. cement plastering, making proper drainage arrangement and slope in the platform etc.  Note: 1. Contractor will submit design and drawing of this platform to ICGEB for approval before execution of the work.  2.Contractor can visit the site to see the exact location of the existing columns of the building |  | Lot | 1 |  |  |
| b | Necessary chipping in RCC beam for proper routing of condenser pipes. |  | Lot | 1 |  |  |
| **17** | Total(Sl.1 to 16 ) |  |  |  |  |  |
| **18** | **BUYBACK COST OF SCRAP ITEMS** |  |  |  |  |  |
| a | Cooling Tower 400 TR , Mihir make complete set |  | NO | 2 |  |  |
| b | Centrifugal Condenser pump with 75 HP motor (including condenser pump control panel) |  | NO | 2 |  |  |
| C | 400 mm pipe |  | RM | 45 |  |  |
| d | 250 mm pipe |  | RM | 25 |  |  |
| e | Pot strainer with housing 400 mm |  | NO | 2 |  |  |
| f | Balancing valve 250 mm |  | NO | 8 |  |  |
| g | Gear operated valve 400 mm |  | NO | 6 |  |  |
| h | Butterfly valve 150 mm |  | NO | 8 |  |  |
| i | Electric panel of Condenser pumps |  | NO | 1 |  |  |
| j | Electric panel main AC plant(without main switches 800 Amp MCCB Qty 03, Switch FN 630 Amp Qty 01 and ACB L & T Make 1200 Amp Qty 01 ) |  | NO | 1 |  |  |
| k | Chiller Pump 30 HP |  | No. | 3 |  |  |
| **19** | Grand Total (Sl. No.17 - Sl./ no 18) |  |  | | | |
| **20** | GST |  |  | | | |
| **21** | Final Total( Sl. No. 19 + Sl. No. 20) |  |  | | | |

Note: 1. Before quoting the rates, the Contractors should inspect the campus of ICGEB for estimation.

1. GST should be mentioned separately

Authorised Signatory

Name & Address of the firm with seal