

Name of Work: - “Renovation of Air Conditioning and chilled water plant in IBL building, IOP campus, Bhubaneswar”

Notice Inviting E-Tender No. NIT/IOP/84/2024-25, Dtd: 10.06.2024

Estimated Cost of Tender: - **Rs. 1,67,94,692/- including GST (Rupees One Crore Sixty Seven Lakh Ninety four thousand Six hundred ninety two) only**

Completion Time: - **05 Months**

Earnest Money : - **Rs.5,03,840/-**

NOTE:

1. The details of tender notification can be downloaded from <https://eprocure.gov.in/eprocure/app> or Tender Free View Link from IOP Website <https://www.iopb.res.in/tender>.
2. Vendors should obtain the USER ID and PASSWORD from **CPP Portal** by clicking on “<https://eprocure.gov.in/eprocure/app>” link in the homepage.
3. For further details on e-Tender participation, please contact Help desk as mentioned below:-
 - Telephone: **0120-4200 462/0120-4001 002/0120-4001 005/0120-6277 787**
 - Email: support-eproc@nic.in
4. Tenders should be submitted only through **CPP portal** and obtain the Tender Acknowledgement copy as a proof of successful submission.
5. Tender documents for viewing only are also available in IOP web-site address: <https://www.iopb.res.in/tender>.
6. All corrigendum and addendum will be published on IOP website and CPP Portal.


रेजिस्ट्रार/REGISTRAR
भैतिकी संस्थान/INSTITUTE OF PHYSICS
भुवनेश्वर/BHUBANESWAR

INDEX

Sl No.	PARTICULARS	PAGE
	REFERENCE BOOK: DAE, Conditions & Clauses of Contracts-2008, CPWD Works Manuals-2019, and as per latest revision.	
1	TENDER DOCUMENTS	3
2	Part- A : Instructions for Online Bid Submission	4
3	Part-B: NIT Detail	5
4	Part-C: Requirement & Eligibility Criteria	6-8
5	Part -D: List of Document to be Scanned & Uploaded	9
6	Special Conditions of Contract	10-12
7	GENERAL TERMS AND CONDITIONS	13-18
8	Format of Undertaking	19
9	Format of Bank Guarantee Bond	20

TENDER DOCUMENTS

Notice Inviting E-Tender No. - **NIT/IOP/84/2024-25, Dtd: 10.06.2024**

Director, IOP invites online tender on two bid system (Technical Bid and Financial Bid) for the above work:-

I N D E X

Sl. No.	Particulars	Remarks
1.	Particulars of Contractor	First Part-Technical Bid
2.	Eligibility Criteria	
3.	Abstract of general terms and conditions	
4.	Checklist of documents	
5	Experience of Contractor	
6	Bill of Quantities	Second Part - Financial Bid

NOTE: Tender can be downloaded and bided from website address: <https://eprocure.gov.in/eprocure/app>. Tender documents for viewing only are also available in IOP web-site address: www.iopb.res.in


रेजिस्ट्रार/REGISTRAR
भैतिकी संस्थान/INSTITUTE OF PHYSICS
भुवनेश्वर/BHUBANESWAR

PRE-QUALIFICATION CUM NOTICE INVITING e-TENDER

Part-A: Instructions for Online Bid Submission

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at: <https://eprocure.gov.in/eprocure/app>.

REGISTRATION

Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: <https://eprocure.gov.in/eprocure/app>) by clicking on the link "Online bidder Enrollment" on the CPP Portal which is free of charge. As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal. Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.), with their profile. Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead for misuse. Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

SEARCHING FOR TENDER DOCUMENTS

There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal. Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / email in case there is any corrigendum issued to the tender document. The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

Bidder should take into account any corrigendum published on the tender document before submitting their bids. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid: Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

Part-B: NIT Detail

NIT No.	NIT/IOP/84/2024-25, Dtd: 10.06.2024
Name of work	“Renovation of Air Conditioning and chilled water plant in IBL building, IOP campus, Bhubaneswar”
Estimated cost put to tender	Rs. 1,67,94,692/- including GST (Rupees One Crore Sixty Seven Lakh Ninety four thousand Six hundred ninety two) only
EMD	Earnest Money Deposit (EMD) of Rs.5,03,840/- to be submitted in form of Fixed Deposit Receipt/Demand Draft issued by a Scheduled Bank drawn in favor of “DIRECTOR, Institute of Physics, Bhubaneswar Note: EMD in the form of cheque will not be accepted.
Completion period	05 Months
Security Deposit	2.5% of Bill Value.
Performance Guarantee	5% of tendered value.
Dates of availability of Tender Documents for download	24.06.2024 18.00 hrs website on https://eprocure.gov.in/eprocure/app
Last date to receive Pre-Bid Query	01.07.2024 upto 12.00 hrs through e-mail to ssahu@iopb.res.in
Date of Pre-bid clarification meeting	02.07.2024 15.30 hrs in the office of SO-E (EIC, AC). Prebid meeting is mandatory failing which the tender is not acceptable.
Last date and time of closing of online submission of tenders:	15.07.2024 at 18.00 hrs
Last date for submission of original EMD & relevant documents	18.07.2024 18.00 hrs at in the Institute Purchase Department Office, IOP, Bhubaneswar.
Date and time of online opening of Technical Bid.	18.07.2024 (18:00 hrs.) in the Institute Purchase Department Office, IOP, Bhubaneswar.
Date of opening of Financial Bids	Will be notified at a later date.
Note: <u>IOP reserves the right to accept or reject in part or full any application(s),without assigning any reason thereof. The applications with any condition shall be rejected forthwith.</u>	

PART-C: ELIGIBILITY CRITERIA FOR TECHNICAL BID(First part)

1.	Contractors who fulfil the following requirements shall ONLY be eligible to apply. (Joint ventures and consortium etc. are not accepted).
2.	Proof of registration with Government / Semi Government organizations like CPWD, MES, BSNL, Railways, State PWDs, MSME, GST etc. having experience in execution of similar nature of works.
3.	<p>Should have satisfactorily completed works during the last seven years ending previous day of last date of submission of tenders. For this purpose, cost of work shall mean gross value the completed work including cost of material supplied by the Government/Client but excluding those supplied free of cost. This should be certified by an officer not below the rank of Executive Engineer / Project Manager or equivalent.</p> <p>Completed three similar works each costing not less than 40% of estimated cost.</p> <p style="text-align: center;">or</p> <p>Completed two similar works each costing not less than 60% of estimated cost.</p> <p style="text-align: center;">or</p> <p>Completed one similar work costing not less than 80% of estimated cost.</p> <p>Important Notes:</p> <p>i) Similar work shall mean: “supply installation testing and commissioning of Air conditioning and chilled water plant of similar system including ducting and pipe line etc in complete package work”.</p> <p>ii) Cost of work shall mean gross value of the completed work including the cost of materials supplied by the Client, but excluding those supplied free of cost. The value of executed works shall be brought to the current costing level by enhancing the actual value of work at a simple rate of 7% per annum; calculated from the date of completion to the last date of receipt of applications for tender.</p>
4.	Should have had average annual financial turn over (gross) of Rs. 1.67 Crore during the immediate last 3 consecutive financial year ending 31st March, 2024. (Scanned copy of Certificate from CA to be uploaded). Year in which no turnover is shown would also be considered for working out the average.
5.	Should have latest solvency certificate of 74.00 lakhs from scheduled bank.
6.	List of similar works carried out by them for last 7 years indicating <ol style="list-style-type: none"> i) Agency for whom executed, ii) Value of work, iii) Completion time as stipulated and actual, or present position of the work.

7.	<p>CERTIFICATES: (Scanned copy of original certificates to be uploaded)</p> <p>Contractor shall enclose the below documents (self-attested) along with technical bid. Any conditions changed or altered bids are liable for rejection. The bidder shall put signature on all the pages of technical bid, NIT, Architectural Drawings (if any), as acceptance of terms and conditions.</p>
	i) Proof of registration with Government / Semi Government organizations like CPWD, MES, BSNL, Railways, State PWDs, MSME etc.
	ii) Performance Certificates / Completion certificates during last seven years from Govt./Semi Govt. organization not below the rank of EE.
	iii) Scanned copy of DD/FDR of the EMD Amount.
	iv) GST registration certificate.
	v) PAN (Permanent Account Number) Registration
	vi) EPFO registration certificate.
	vii) Tenderer should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) specific to the tender should be enclosed.
	viii) An undertaking from the OEM is required stating that they would facilitate the tenderer on a regular basis with technology/product updates and extend support for the warranty as well.
	ix) The contractor must have experience of completing similar nature work.
	x) Average annual financial turnover of last 3 years.
	xi) Income tax return of last 3 year.
8.	<p>The intending bidder must read the terms and conditions as per tender documents carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.</p> <p>IOP reserves the right of Non-consideration of Tender documents of the agencies who are not fulfilling the NIT stipulations and / or having adverse report on the works carried out by them in the past.</p>
9.	Information and Instructions for tenderers posted on website shall form of tender document.
10.	The tender documents consisting of specifications and the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website https://eprocure.gov.in/eprocure/app.
11.	The bid can only be submitted after uploading the mandatory scanned documents such as Demand Draft or Fixed Deposit Receipts of any Scheduled Bank as applicable in this tender towards cost of tender document and EMD in favor of “ DIRECTOR, IOP ” and other documents as specified.
12.	On opening date, the contractor can login and see the bid opening process.

13.	Certificate of Financial Turn Over: At the time of submission of bid, contractor may upload Undertaking / Certificate from CA mentioning Financial Turnover of last 3 years or for the period as specified in the bid document
14.	Contractor must ensure to quote rate of each item. The column meant for quoting rate in figures is left blank and no rate is quoted by the bidder, rate of such item shall be treated as “0”(ZERO).
15.	In the two bids system, if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.
16.	IOP reserves the right to accept / reject any prospective application without assigning any reason thereof.
17.	Short listing of the agencies shall be subject to thorough verification of their credentials and inspection of works carried out by them, through a Technical Evaluation Committee of experts, constituted by IOP.
18.	IF ANY INFORMATION FURNISHED by the applicant is found to be incorrect at a later stage, they shall be liable to be debarred from tendering / taking up works in IOP.
19.	The applicant may furnish any additional information which they think necessary to establish their capabilities to successfully complete the envisaged work. No information shall be entertained after last date of online submission of tenders unless it is called by the competent authority. If any information furnished by the applicant is found incorrect at a later stage, they shall be liable to be debarred from tendering /taking up of work in IOP. IOP reserves the right to verify the particulars furnished by the applicant independently and reject any application without assigning any reason and to restrict the list of pre-qualified agencies to any number deemed suitable in case too many applications are received satisfying the laid down Pre-qualification criteria.
20.	Since it is a Supply Installation Testing and Commissioning of Air Conditioning and Chilled Water Plant Work Package, Rate for any or part of the items will not be accepted. The rate of the total work package will ONLY be considered. The Bidder along with other documents in the Technical Bid MUST submits a declaration on the letter head of the Company to the effect that they are participating in the bid for the Total Supply Installation Testing and Commissioning of Air Conditioning and chilled water Work Package, in the IOP. In the event of non-submission of the same with the Technical Bid, the Bidder will be disqualified and the Financial Bid of such Bidder shall not be opened.
Note: Prospective agencies shall satisfy themselves of fulfilling all the NIT criteria before submission of the tender. Department reserves the right of non-consideration of tender of the agencies not fulfilling the stipulated criteria.	

PART-D: LIST OF DOCUMENTS TO BE SCANNED & UPLOADED

1	Annual Financial Turn Over certified by CA
2	Profit & Loss statement certified by CA
3	Latest Bank Solvency Certificate
4	List of similar works completed in last 7 years indicating: i) Agency for whom executed ii) Value of Work iii) Stipulated time of completion iv) Actual time of completion.
5	List of works in Hand indicating: i) Agency ii) Value of Work iii) Stipulated time of completion iv) Present position.
8	Certificates:
i)	Registration certificate, if any
ii)	Certificates of Work Experience / Performance Certificates
iii)	GST registration certificate
iv)	PAN (Permanent Account Number)
v)	EPFO registration certificate.
9	Undertaking in the format provided in the last page of Technical Bid.
10	E-payment details towards cost of Processing Fee.
11	FDR/DD of any Scheduled Bank against EMD.
12	Present a self-attested authorization letter from OEM.
13	Experience of completing similar nature work.
14	Declaration on the letter head of the Company to the effect that they are participating in the bid for the Total Supply Installation Testing and Commissioning of Water cooled Air Conditioning and chilled water plant Work Package,
	(Scanned copy of original certificates to be uploaded)

SPECIAL CONDITIONS OF CONTRACT

1. **SITE SURVEY:** Before quoting for this work, contractor is advised to visit the site location where the works are to be executed, so as to have a first-hand information regarding the quantum of the job involved. The tenderer shall have adequate skilled & unskilled manpower for such type of installation and commissioning work & shall depute a qualified supervisor/Engineer to oversee the job carried out by his workers & to coordinate with departmental officers. The Skilled Supervisor/Engineer shall report to Engineer-in-charge at the end of every day work in the evening after the completion of the day job to chalk out next day's programme & review the progress of the work etc.
2. **DEPARTMENTAL PROPERTIES:** The contractor shall take maximum care of protecting the departmental properties, such as fixture, fittings, service line, cable etc. In case any damage is done to the departmental property by the contractor or his employee, he shall make good the damage at his own cost or the cost of damage as decided by the Department will be recovered & shall be deducted from his bills. The agency shall strictly adhere to various acts and provision of statutory laws of State & Central Government regarding deployment of labour, Minimum wages, etc., which are in force during the contract period. In case of any dispute, they shall produce necessary supporting document and satisfy the department, regarding adherence/compliance of this above. The security and safe working of the staff will be the contractor's responsibility. The staff employed will be purely at the risk and responsibility of the contractor and the department will not pay any compensation whatsoever to the contractor or to their employees in case the said staff meeting with any unfortunate incidents which may cause damage of any kind. After expiry/ termination of contract, the contractor shall take out all his employees from IOP site. IOP shall not take any responsibility regarding employment of contractor's employees.
3. **DEFECT LIABILITY PERIOD** – For ducting, plumbing, copper piping and other allied work, DLP should be 12 (Twelve) months from the date of completion as certified by the EIC. During this period all the defect arising in work to be rectified by contractor. But no escalation to be made/claimed for this period.
4. **Warranty Declaration:** For all equipment and outdoor indoor unit the Bidder/Manufacturer must give an on-site WARRANTY of minimum 36 Months or OEM specified warranty whichever is later, the period will be considered from the date of handover of the system after completion of work with a declaration that work item that is supplied by them shall be free from any defects and faults in materials, workmanship and shall be of the highest quality. The equipment supplied shall be in full conformity with the specifications. If any Manufacturing, Operational defect is found during the warranty period, the Bidder shall remove/replace the defect/sub-standard material within 07 working days, after getting written intimation from concerned authority of IOP. In case of not attending the same within stipulated period of 07 days, IOP will get carry out the defects

rectification, and after Completion of Work the deduction will be made from the Pending bills/deposited Performance Security of the Agency, what so ever is applicable. Hands on Training to IOP Staff: Operational training, if required will be provided by the supplier at his cost. Training should be of 2 staff for handling of sophisticated BMS System must be given. Copy of warranty certificate of OEM should be provided.

5. **SAFETY CLAUSE:** Contractor shall be responsible for the safety of his workers. They shall provide all necessary safety gears, such as hand gloves, safety shoes, safety belts, helmet, rainy suits, umbrellas etc. to his workers. Also contractor shall make required check out & make them sure that, all the necessary precaution to prevent accident of any kind are taken. The contractor should provide uniforms along with Logo/ Name of agency displayed on uniform in proper legible manner to their employees engaged in operation & maintenance jobs.
6. **NIGHT WORK:** Any kind of work in night (20:00 hrs to 06:00 hrs) is not allowed. However necessary permission to be taken from EIC to carry out the work deemed to be urgent for night hours.
7. **COMMERCIAL CONDITIONS:** No escalation of rate will be allowed during the term of this contract. All taxes/royalty charges to be paid by contractor to respective agencies of state/central govt. In case of default, IOP has liberty to deduct the same from bill and deposit to state/central govt. agencies.
8. **PROCESSING OF BILL:** The running account bill (R.A.) for the works done by the agency shall be paid on request basis or as decided by EIC. But before processing of any bill/ claiming of bill, all corresponding test/service report should be attached wherever applicable, without which bill will not be processed. The agency needs to submit the draft bill for verification before processing.
9. **TERMINATION OF CONTRACT:** Department reserves the right to terminate this contract at any point of time without assigning any reason. However, decision of such event will primarily depend on reasons such as violation of any terms & conditions, quantity & quality wise, adherence to the time & work schedule, workmanship, security & safety measure, non-compliance of statutory law & provisions etc.
10. **PRE-BID MEETING:** A pre-bid conference shall be held on 02.07.2024 at 15.30 Hours. All bidders who have downloaded the bid document are requested to go through the entire tender document including tender specifications and list out their deviations, perceptible ambiguities, need of additional clarification etc. and send them by e-mail to (ssahu@iopb.res.in) before the “Last date of receipt of Pre-bid queries” indicated in tender notice. The bidders or their representative must attend the pre-bid meeting (it is mandatory) failing which tender of the bidder may be rejected. In the pre bid meeting the bidder may discuss and clear the doubts about the site and BOQ.

11. **PERFORMANCE GUARANTEE:** Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance is 15 days. This period can be further extended at the written request of the contractor by the Engineer-in-Charge for a maximum period ranging from 1 to 7 days with late fee @ 0.1 % per day, of performance guarantee amount. If contractor fails to furnish the prescribed performance guarantee within the prescribed period, the earnest money deposit (EMD) is absolutely forfeited to the Director, IOP automatically without any notice.
12. **MILESTONE:** All the bidders needs to submit milestone chart along with performance guarantee. This milestone charts need to be ratified by EIC. Bidders should adhere to the approved milestone and progress according failing which delay will be attributed on his part as per terms & condition of contract.
13. **COMPENSATION FOR DELAY:** If the contractor fails to maintain the required progress in terms of approved milestone chart or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the Law to the Govt. on account of such breach, pay as agreed compensation the amount calculated at the rate stipulated below as the authority specified in **Schedule “F” of GCC** (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day / month (as applicable) that the progress remains below that specified in approved milestone or that the work remains incomplete. This will also apply to items or group of items for which a separate period of completion has been specified.
 - i) **Compensation for delay of work: @ 1%(one percent) per month of delay to be computed on per day basis based on quantum of damage suffered due to stated delay on the part of contractor or as per CPWD latest revision.**

Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 10% of the tendered value of work or of the tendered value of the item or group of items of work for which a separate period of completion is originally given. The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the Government. In case, the contractor does not achieve a particular milestone, or the re-scheduled milestone(s), if any, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of Extension of Time. With-holding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone (s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.

REGISTRAR

GENERAL TERMS AND CONDITIONS

1. Please note that the quantities given in schedule of quantities are the maximum quantities to be executed by contractor. But, during execution, the variation in quantities may be differing or less depending upon the site condition at that point of time and quantities to be executed as per instruction and desired by E.I.C.

2. **MATERIALS:** All materials used for the construction shall be of the best quality, confirming to the relevant specifications. They must be the products of reliable manufactures of many years standing. All like parts of materials shall be furnished and ready to use at site for respective unit. **Samples of materials wherever required shall be submitted and approval by Engineer-In-Charge (E.I.C.) must be taken before use at site.** All materials shall be rust / weather proof or rendered rust/ weather proof by application of suitable covers be complete with accessories, fittings and mountings, as may be required for their proper performance. Also followed as mentioned in BOQ.

3. **ELECTRICITY:** The power will be supplied on request at one point within 50 meter of the building premises. The contractor shall install his own main switch, energy meter, cables, electric board/switch room etc. of adequate capacity and of suitable type to receive, control and further distribute the power involved. The exact location and further details about the supply point will on receipt of the contractor's application be decided upon by the Department, whose decision in the matter will be final and binding. The electricity charges will be deducted from the contractor's bill as per actual meter reading.

4. **WATER:** Water will be supplied on request at one point from where contractor needs to make his own arrangement for water distribution to site. Water charges @ 1% or as applicable as time to time of bill value will be deducted (non-refundable) if used.

5. **WORKMANSHIP:** Good workmanship and neat furnish/ appearances are the pre-requisites for complying with the specifications. The contractor shall employ qualified staff for carrying out servicing and repairs to the equipment listed in the schedule of quantities. The service and repair work should be done under the supervision of competent and qualified experienced person with requisite educational qualifications and considerable experience. A Qualified supervisor shall be deputed to oversee the job carried by the workers and to co-ordinate with the E.I.C. / Supervisor.

6. Technical Specification of items: -

- All technical specification should be followed as mentioned in BOQ list.
- The equipment must be supplied as per the brand quoted in the BOQ or else otherwise approved by the EIC. Material shall be used only after approval of EIC.
- The foundation of Cooling Tower should be made in such a way that it can withstand a wind speed of 200 km/h as IOP is in Cyclone prone region.
- The welding of frames and sheets shall be ground to smooth finish;
- All nuts bolts and screws shall be of concealed type suitably finished
- All equipment's shall be complete in all respects and ready to use to the entire satisfaction of the EIC, including all accessories fittings etc. Nothing extra beyond the quoted rate/s shall be paid by the IOP.

- All equipment and electrical part(s) of the equipment shall be of ISI mark Approved reputed makes.
- All connecting wires for electrical equipment's shall be ISI mark copper conductor three core cables of matching capacity
- All materials shall be supplied and Installed by the contractor from the reputed manufacturer and as per IS requirements in order to ensure proper and consistent quality. In-situ minor modifications should be done to improve functionality.

7. Sub-standard workmanship will not be accepted.

8. *Security Deposit will be released after completion of warranty of 36 months.*

9. All other materials as per specification mentioned in the BOQ/Financial Bid or as Directed by EIC.

10. Tenders with any condition including conditional rebate shall be rejected. However, Tenders with unconditional rebate will be accepted.

11. Tender will be kept valid for **90 (Ninety days)** from the Last date of closing of online submission of tenders or from the date of online submission of revised financial bids (if any) whichever is later.

12. On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the Engineer-In-charge shall be communicated to the Engineer-In-charge.

13. The rate quoted by contractor shall be inclusive of all taxes and no extra claim shall be made in this regards.

14. The rate quoted by contractor shall be including with installation as designed in the drawing which will be given at the side.

15. If any tenderer withdraws his tender within the validity period and before award of work whichever is earlier or make any modifications in the terms and conditions of the tender which are not acceptable to the department, then the IOP shall without prejudice to any right or remedy, be at liberty to forfeit 50 % (Fifty Percent) of the Earnest Money absolutely. Further, the tenderer shall not be allowed to participate in the re-tendering process of the work.

16. The items in the BOQ shall be considered to be a minimum requirement, if bidder is willing to provide a better alternative he/she may provide it with proper written communication mentioning the advantages and approval of EIC.

17. If any information furnished by the applicant is found to be incorrect at a later stage, they shall be liable to be debarred from tendering / taking up works in IOP in future forever. Also if such a violation comes to the notice of Department before start of work, the Engineer-in-charge shall be free to forfeit the entire amount of EMD and Performance Guarantee.

18. **INSURANCE:** The tenderer shall insure in his own cost, all the materials, tools, jigs, spares etc., and during transit from his factory / office to site as well as during storage at site till the contract is in force for his benefit.
19. **Intimation of Pre-qualification evaluation result:** To be uploaded in Website.
20. **Opening of Financial bid (Part B.):** The Financial bid (Part 'B') of qualified bidders shall only be opened online on the stipulated date and time and will be informed online (IOP website & CPP portal).
21. **Placement of Work order:** Financial bid shall be evaluated and approved by the competent authority before placement of work order to the successful bidder.
22. **Return of EMD to unsuccessful bidders& SD:** EMD of unsuccessful bidders shall be returned after placement of work order to successful bidder. SD will be released as per CPWD/DAE rules.
23. **Cancellation of tender by competent authority:** The competent authority reserves the right to cancel any or all tenders or to allot part of works to different agencies without incurring any liability to the Department and without assigning any reason thereof.
24. **SECURITY:** No security will be provided by the Department for the equipment, tools, jigs, spares etc., brought at site by the contractor or issued to the contractor and the contractor will be required to make his own arrangements for the security of such materials, spares, equipment etc.
25. **POWER AND WATER:** Water supply and electrical connection will be provided by the Department subject to availability and on chargeable basis.
26. **Delivery and documents:** Upon delivery of the goods, the supplier shall submit the following documents to the IOP:
 - Three copies of the supplier invoice showing Goods Description, Quantity, Unit Price and Total Amount.
 - Acknowledgement of receipt of goods from the consignee(s).
 - Installation certificate signed by the designated official of IOP.
 - Manufacturer's / supplier's warranty certificate minimum 1 year.
 - Inspection certificate issued by the nominated inspection committee of IOP, and the Supplier's factory inspection report; and Certificate of origin.
 - Photocopy of all test report of all equipment's (if any) etc. should be submitted with delivery challan
27. **Packing Instructions:** Each package will be marked on three sides with proper paint/indelible ink, the following:
 - Item Nomenclature
 - Order/Contract No.
 - Country of Origin of Goods
 - Supplier's Name and Address
 - Consignee details
 - Packing list reference number

28. **BILL:** Contractor have to submit bill which will be duly verified by EIC for further action.
29. **Clearing Site on Completion:** On completion of the works the contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and the works clean and in a workmanlike condition to the satisfaction of the IOP. The rate quoted by the contractor shall include all such contingencies.
30. **SCOPE OF WORKS:** The contract involves “Renovation of Air Conditioning and chilled water plant in IBL building, IOP campus, Bhubaneswar”
- The work proposed under this tender includes dismantling of the existing old plant and its electrical and mechanical accessories.
 - **Installation, testing and commissioning of new AC and chilled water system and its accessories.**
 - **Providing and fixing at site all main equipment associated with A.C. and chilled water system asked under these technical specifications.**
 - **To execute all incidental work at site including material supply at site associated with A.C. and chilled water system** asked in the technical specifications. Nature of such will be sheet metal duct/grill work., refrigerant piping and drain etc. foundation of equipment, making opening in walls and slabs and making them good, incidental electrical Engineering work, cables, control panels etc. erection work at site for all manufactured items at work and also items fabricated at site.
 - Routine testing, pressure testing of fabricated components, commissioning of complete system at site.
 - Performance testing of complete air-conditioning system at site as per various technical requirements as stipulated in performance testing clause.
 - The machines will be installed only after the inspection procedure has been followed and inspection note issued to accept the consignment.
 - In the event of the sample of EQUIPMENTS failing quality test and found to be not as per specification the Purchaser is at liberty to make alternative purchase of the items, of EQUIPMENTS for which the orders have been placed, from any other sources or in the open market or from any other suppliers who might have quoted higher rate at Bid and the cost of the supplier and in such cases the Purchaser has every right to recover the excess cost from supplier's performance security/pending bill.

31. **SETTLEMENTS OF DISPUTES & ARBITRATION**

In the event of any dispute or difference relating to the interpretation and application of the provisions of the contracts, such disputes or difference shall in the first instance be sought to be resolved amicably by mutual consultation with the Engineer –in- charge /Overall in charge/Registrar, Failing which they shall be referred by either party to IOP for settlement. The decisions of the committee of IOP shall be final & binding on both parties.

Any dispute arising out of this shall subject to Bhubaneswar jurisdiction only

32. Contractor to Provide Everything Necessary:

- The contractor shall provide everything necessary for the proper functioning of the work including obtaining statutory approvals/clearances by local authorities (if any) according to the intent and meaning of the drawings, schedule of quantities and specifications taken together. Whether the same may or may not be particularly shown or described therein provide that the same can reasonably be inferred there from and if the contractor finds any discrepancies therein he shall immediately and in writing, refer the same to the Employer (i.e. Director IOP), whose decision shall be final and binding.
- The Employer shall on no account be responsible for the expenses incurred by the contractor for electricity or any other item.
- The rates quoted against individual items will be inclusive of everything necessary to complete the said items of work within the contemplation of the contract, and beyond the unit price no extra payment will be allowed for incidental or contingent work,
- Labour and/ or material inclusive of all taxes and duties whatsoever except for specific items, if any, stipulated in the tender document. The contractor shall supply and install at his own cost, for the execution of any work, all tools, tackles, machinery, equipment and necessary centering, scaffolding, staging, planking, timbering, strutting, shoring, pumping, fencing, boarding, watching and lighting by night as well as by day required not only for the proper execution and protection and the said work but also for the protection of the public and safety of any adjacent roads, streets, walls, houses, buildings,
- All other erections, matters and things and the contractor shall take down and remove any or all such centering, scaffolding, planking, timbering, strutting, shoring etc., as occasion shall be required or when ordered so to do, and shall fully reinstate and make all good matters and things disturbed during the execution of works to the satisfaction of the IOP

33. PAYMENT TERMS:-70% of the work value will be released against supply, 20% against installation,10% against testing and commissioning of the equipment duly certified by the Engineer-in-Charge. Payment will be made only after submission of necessary bills, reports, drawings etc. as per the satisfaction of EIC.

34. DEDUCTION FROM BILL:

- Taxes as applicable will be deducted from every RA bill/final bill.
- Water Charge @ 1% of bill value from every RA bill/final bill if any.
- Labour Cess @ 1% of bill value from every RA bill/final bill.
- Electricity as per meter reading from every RA bill/final bill.
- Security Deposit @ 3% of bill value from every RA bill/final bill.

REGISTRAR

Testing Balancing & Commissioning

General:

The contractor must perform all inspection and tests of the system as a whole and of Components individually as required, under the supervision of the CHC/EIC, in Accordance with the provisions of the applicable ASHRAE standards or approved equal.

For Associates Works at Site:

- Inspection of raw materials to be used for fabrication and assembly and inspection of Manufacturer's certificates.

- Pressure testing of pipe fit used for the refrigerant and water services.
- Pressure testing, leak testing of complete piping network and Condenser
- Checking of electrical circuits (power & controls) and checking functioning of controls of refrigerant systems and other circuits of air conditioning system.
- Checking of calibration of controls and instrumentation.
- Checking of assemblies for instruments panels, local panels (dimensional and functional) etc.
- Inspection of complete electrical installation related to system at site.
- Installation of main equipment like compressor, condenser, evaporator.
- Performance testing of complete A.C. system as per specifications.

Balancing and Adjustment:

- Indoor unit, duct work and outlets shall be adjusted and balanced to deliver the specified air quantities as indicated, at each outlet, on the drawings and shall be recorded and submitted to the IOP. If these air quantities cannot be delivered without exceeding the speed range of the sheaves or the available horse power, the IOP shall be notified before proceeding with the balancing of air distribution system.

Performance Tests:

- The installation as a whole shall be balanced and tested upon completion, and all relevant information, including the following shall be submitted to the architects.
- Air volume passing through each unit, duct, grilles, apertures.
- Differential pressure readings across each filter, fan and coil, and through each pump, Static pressure in each air duct.
- Electrical current readings, in amperes of full and average load running, and starting, together with name plate current of each electrical motor.
- Continuous recording over a specified period, of ambient wet and dry bulb temperatures under varying degrees of internal heat loads and use and occupation, in each zone of each part of the building.
- Daily records should be maintained of hourly readings, taken under varying degrees of internal heat load and use and occupation, of wet and dry bulb temperatures, upstream & on coil of each cooling coil. Also suction temperatures and pressures for each refrigerating unit. The current and voltage drawn by each machine.
- Any other readings shall be taken which may subsequently be specified by the EIC.

Scope of Work

- a) The space must be designed and maintained at 25 +/- 2 degree Celsius at all times.
- b) The humidity in the room must be maintained at 60 % +/- 5% or similar comfort conditions at all times. The system must be designed such that there shall be no chances of condensation in the rooms.
- c) Bidders must visit the site before quoting for the tender. They has to submit a detailed Site Layout Diagram (SLD) for technical bid evaluation.
- d) The monitoring system must be made such that it is easy to understand, operate and troubleshoot by technician grade personnel. The contractor has to provide a proper training to the manpower of IOP at the site, enabling them to operate the system individually after commissioning of the whole system.
- e) The shifting of electrical items (cables, DBs, conduits, etc.) shall be in the scope of contractor wherever required.
- f) The Chiller units, Cooling towers, AHUs and pumps must be properly supported and anchored to withstand high speed winds during cyclones in the region.
- g) All test certificates of all material and equipment installed at the site must be submitted to the EIC at the time of each bill.
- h) Making wall opening for ducts, pipeline, etc. shall be in the scope of the contractor. The same shall be closed properly by the contractor after the work is completed with no additional cost.
- i) After completion of the work the repairing of the pathway, paver block, wall cutting, slab cutting and other works if any will be done by the contractor to restore the aesthetic condition to original. After finishing of the work, it is must for the contractor to handover the system and the as built drawings to EIC, without which the work shall not be considered completed.
- j) All necessary arrangements to achieve above room conditions and proper functioning of the chiller plant (all included) must be ensured by the contractor without any additional cost implications.

**UNDERTAKING TO BE SUBMITTED BY THE BIDDER ON THEIR LETTER HEAD
DULY SIGNED AND SEALED WITH DATE (To be scanned & uploaded)**

Name of Work: “Renovation of Air Conditioning and chilled water plant in IBL building, IOP campus, Bhubaneswar”

NIT No. NIT/IOP/84/2024-25, Dated: 10.06.2024

UNDERTAKING

I / We, hereby tender for the execution of the work for the Director, IOP within the time specified in Schedule “F”, viz., Schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instruction in writing referred to in DAE/CPWD MANUALS and TENDER Documents and as per the direction of Engineer-In-Charge and with such materials as are provided for, by and in respects in accordance with such conditions so far as applicable.

I / We have read and examined the e-Tender Notice for Inviting Pre-Qualification (PQ) of Contracting Agencies & other documents and rules referred to and all other contents in the tender documents for the work AND ACCORDINGLY. I / We, hereby submit credentials and other documents as are provided for, by, and in respects in accordance with, such conditions so far as applicable

I / We have read and examined the Notice Inviting Tender, General Rules & Regulations, Directions, form of tender, special conditions, Safety & Security codes for work contract, general condition of contract and all other contents in the tender documents for the subject work.

I / We have understood the entire scope of work and rates quoted accordingly. We shall carry out the work as per Schedule of Quantities, technical specifications, drawing and complete the work within stipulated time to the entire satisfaction of the Department.

I / We declare that all the materials / equipment shall be supplied from the list of preferred makes only and execute as per tender. Our offer is un-conditional.

I / We have downloaded and gone through the pre-bid clarifications issued by the Department after close of sale of tenders and submitting tender accordingly.

I / We also declare that we have not executed similar projects through another contractor on back to back basis. Further that, if such violation comes to the notice of Department, then we shall be debarred for bidding in DAE in future forever. Also if, such violation comes to the notice of the Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit / Performance Guarantee etc.

Signature with seal & date

SECTION-10 (i) : FORM OF PERFORMANCE SECURITY - BANK GUARANTEE BOND (BG)

In consideration of the President of India (hereinafter called "The Government") having agreed under the terms and conditions of Letter of Intene / Agreement No..... dated..... made between.....and (hereinafter called " the said Contractor(s)") .for the work (hereinafter called " the said Letter of Intent / Agreement") having agreed to production of a irrevocable bank Guarantee for Rs.(Rupees only), as a security / guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement, we(Indicate the name of the Bank) (hereinafter referred to as "the Bank") hereby undertake to pay to the Government an amount not exceeding Rs. (Rs.....only) on demand by the Government.

2. We (indicate the name of Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees.....only).

3. We, the said bank, further undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We..... (indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till Engineer-in-charge on behalf of the Government certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

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

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

7. We, (indicate the name of Bank) lastly undertake not to revoke this guarantee except with the previous consent of the Government in writing.

8. This guarantee shall be valid up to, unless extended on demand. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs.(Rupees only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Signed and sealed

Dated the day of for(indicate the name of Bank)

SCHEDULE OF QUANTITY

Sl. No.	Item Description	Quantity	Units	BASIC RATE PER UNIT (Rs.) In Figures To be entered by the Bidder	GST @ (%) perce ntage	TOTAL AMOUNT	TOTAL AMOUNT With Taxes	TOTAL AMOUNT In Words
1	Cat (A) -Items to be supply and installation							
1.01	<p>A) MACHINERY WATER COOLED CHILLER Design, Supply, Installation, Testing and Commissioning of Water cooled type chilling machines each having minimum 32TR (Nominal capacity) comprising of Fully enclosed vortex typetwo/multiple scroll compressor along with multiple circuits with stepless capacity control, direct driven refrigerant cooled motor, insulated Evaporator Heat exchanger should be stainless steel brazed construction plate type heat exchanger/ MS shell and tube type heat excahnge with water cooled condenser complete with star delta starter. Evaporator and condenser shall be made of copper/SS (aluminium coil will not be acceptable). The chiller shall be complete with copper piping, first charge of refrigerant (preferable 410A) and lubricant oil and system control wiring, incoming suitable electrical isolator complete with accessories as required, automatic & safety controls including electronic expansion valve, motor overheat protection. The chiller package shall be installed on a fabricated mild steel base frame factory assembled to form a compact assembly complete etc as required. All Structural, civil constrictions and civil supports required for placing the chiller units with proper vibration dampning, pumps and all necessary items will be under the contractors scope. Chilling machine described above and complete in all respects as follows for the operating parameters as given under. Cooling Capacity (Nominal) : min. 32 TR Cooling Capacity (Actual) : min. 30 TR Chilled Water In Temperature : 12 Deg C Chilled Water Out Temperature : 6 to 6.6 Deg. C (5.4 ΔT) Condenser Water In Temperature : 32 Deg C Condenser Water Out Temperature : 37 Deg. C 6.66 Deg C Evaporator water flow rate should be minimum 75 USGPM per chiller Evaporaator Fouling Factor : 0.018 m2K/kW Condenser Fouling Factor : 0.044 m2K/kW COP (KW/kw) Should be minimum 5.2 at AHRI condition and IPLV 6.85</p>							

1.0	<p>a) Compressor type: Fully Enclosed Vortex Type fixed speed Scroll compressor. Vibration isolator mounts for compressors. Compressor crankcase heaters to provide extra liquid migration protection. Compressor Motor overloads capable of monitoring compressor motor current. Provides extra protection against compressor reverse rotation, phase-loss and phase-imbalance. Compressor motor shall be direct driven, cooled by suction refrigerant and protected by discharge temperature sensors</p> <p>b)Unit shall be complete with incoming suitable electrical isolator, complete with ammeter with CT's, over load protection, under voltage protection, protection against phase reversal & independent single phase preventer etc, suitable for 50Hz, 3 phase AC power supply complete etc as required.</p> <p><i>c) Lubrication device consisting of automatic electric oil pump, oil cooler, head tank, oil strainer, and automatic pressure regulating valve, oil heater, oil heater thermal switch etc. as required.- (deleted)</i></p> <p>d) Refrigerant piping, fittings, valves and accessories to inter connect compressor, condenser, chiller and expansion valve. Refrigerant line accessories like safety valves, angle valve, liquid line indications, liquid level control complete etc as required.</p> <p>e) Microprocessor full touch screen HMI display Alpha numeric touch screen panel which can display more parameters; the multilevel user permission setup ensures the safe operation of the A/C system based colored touch screen control panel interface, display module compatible to BMS operation and with Backnet/Modbus/J Bus communication card, RS485 etc.as required.</p> <p>.f) Water flow switches at outlet of chiller, water drain, air purge valves, thermometers and pressure gauges etc as required.</p> <p>g) Matching shell & tube for screw type units of MS shell and copper tubes , duly insulated complete with UV protection etc as required. Heat exchangers are to be designed and manufactured in accordance with ASME/GB both are acceptable.</p> <p>h) Frame work for mounting the above condenser, fans, chiller compressor and motor with base plate complete with antivibration pads/springs complete etc as required.</p> <p>i) Initial / first charge of refrigerant gas, lubricating oil and compressor oil etc as required.</p>							
-----	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--	--	--

<p>1.0 3</p>	<p>f) Water flow switches at outlet of chiller, water drain, air purge valves, thermometers and pressure gauges etc as required.</p> <p>g) Matching shell & tube for screw type units of MS shell and copper tubes , duly insulated complete with UV protection etc as required. Heat exchangers are to be designed and manufactured in accordance with ASME or GB standard acceptable.</p> <p>h) Frame work for mounting the above condenser, fans, chiller compressor and motor with base plate complete with antivibration pads/springs complete etc as required.</p> <p>i)Initial / first charge of refrigerant gas, lubricating oil and compressor oil etc as required.</p>							
<p>1.0 4</p>	<p>j) Suitable RCC/Cement concrete foundations with MS angle nosing all around top and bottom of 50x50x6 mm thick for the chilling unit installation complete etc as required.</p> <p>k) Water side pressure drop in cooler shall not exceed 8 meter WC in condenser and 4 meter WC in evaporator i/c other specification etc as required.</p> <p>l) Dial type 6", SS tubing with valves thermometers and pressure gauges at inlet and outlet of chiller complete etc as required.</p> <p>m) Electrical Specifications: Power supply: 380-415/50Hz/3 Ph, Control Power 220.</p>							

<p>1.0 5</p>	<p>The nominal capacity 32TR and the actual is 28 TR,. Water chilling machine as described above and at above mentioned operating conditions.</p> <p>Preferred Make: Trane/York/Kirloskar/Voltas/Bluestar/Carrier or equivalent</p> <p>Chiller should be able to operate up to the lowest condenser water Inlet Temperature up to 16 Deg C and maximum 50 Deg C.</p> <p>Low sound kits Each compressor with acoustic sound reduction blanket. The whole unit lower section is enclosed by acoustic reduction box.</p> <p>System Safeties: Shall cause individual compressor systems to perform auto-reset shut down if high discharge pressure or low suction pressure, the auto-reset failure will occur when trigger auto-reset 3 times in 1 hour.</p> <p>Display Data should be as “ Return and leaving water temperatures, status of each unit, low leaving water temperature cutout setting, Metric data, water temperature reset via Modbus interface, compressor run status, daily start/stop times, holiday status, water pump status, high and low pressure switch status, water switch status, discharge temperature and EXV steps.”</p>	<p>3.00</p>	<p>each</p>		<p>0.00</p>	<p>0.00</p>	<p>INR Zero Only</p>
------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------	-------------	--	-------------	-------------	----------------------

2	<p><u>WATER COOLED CHILLER</u> Design, Supply, Installation, Testing and Commissioning of Water cooled type chilling machines each having minimum 20TR (Nominal capacity) comprising of Fully enclosed vortex type two/multiple scroll compressor along with multiple circuits with stepless capacity control, direct driven refrigerant cooled motor, insulated Evaporator Heat exchanger should be stainless steel brazed construction plate type heat exchanger with water cooled condenser complete with star delta starter. Evaporator and condenser shall be made of copper/SS (aluminium coil will not be acceptable). The chiller shall be complete with copper piping, first charge of refrigerant (preferable 410A) and lubricant oil and system control wiring, incoming suitable electrical isolator complete with accessories as required, automatic & safety controls including electronic expansion valve, motor overheat protection. The chiller package shall be installed on a fabricated mild steel base frame factory assembled to form a compact assembly complete etc as required. All Structural, civil constructions and civil supports required for placing the chiller units with proper vibration damping, pumps and all necessary items will be under the contractors scope.</p>							
2.0 1	<p>Chilling machine described above and complete in all respects as follows for the operating parameters as given under. Cooling Capacity (Nominal) : min. 20 TR Cooling Capacity (Actual) : min. 18 TR Chilled Water In Temperature : 12 Deg C Chilled Water Out Temperature : 6 Deg. C (6 ΔT) Condenser Water In Temperature : 32 Deg C Condenser Water Out Temperature : 37 Deg. C 5.4degree delta T, Evaporator water flow rate should be minimum 45 USGPM per chiller Evaporator Fouling Factor : 0.018 m2K/kW Condenser Fouling Factor : 0.0001 m2K/kW COP (KW/kw) Should be minimum 5.2 at AHRI condition and IPLV 6.85</p>							

<p>2.0 2</p>	<p>a) Compressor type: Fully Enclosed Vortex Type fixed speed Scroll compressor. Vibration isolator mounts for compressors. Compressor crankcase heaters to provide extra liquid migration protection. Compressor Motor overloads capable of monitoring compressor motor current. Provides extra protection against compressor reverse rotation, phase-loss and phase-imbalance. Compressor motor shall be direct driven, cooled by suction refrigerant and protected by discharge temperature sensors.</p> <p>b) Unit shall be complete with incoming suitable electrical isolator, complete with ammeter with CT's, over load protection, under voltage protection, protection against phase reversal & independent single phase preventer etc, suitable for 50Hz, 3 phase AC power supply complete etc as required.</p> <p>c) Lubrication device consisting of automatic electric oil pump, oil cooler, head tank, oil strainer, and automatic pressure regulating valve, oil heater, oil heater thermal switch etc. as required.(deleted)</p> <p>d) Refrigerant piping, fittings, valves and accessories to inter connect compressor, condenser, chiller and expansion valve. Refrigerant line accessories like safety valves, angle valve, liquid line indications, liquid level control complete etc as required.</p> <p>e) Microprocessor full touch screen HMI display Alpha numeric touch screen panel which can display more parameters; the multilevel user permission setup ensures the safe operation of the A/C system based colored touch screen control panel interface, display module compatible to BMS operation and with Backnet/Modbus/J Bus communication card, RS485 etc.as required.</p> <p>f) Water flow switches at outlet of chiller, water drain, air purge valves, thermometers and pressure gauges etc as required.</p> <p>g) Matching shell & tube for screw type units of MS shell and copper tubes , duly insulated complete with UV protection etc as required. Heat exchangers are to be designed and manufactured in accordance with ASME,</p>							
------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--	--	--

<p>2.0 3</p>	<p>f) Water flow switches at outlet of chiller, water drain, air purge valves, thermometers and pressure gauges etc as required.</p> <p>g) Matching shell & tube for screw type units of MS shell and copper tubes , duly insulated complete with UV protection etc as required. Heat exchangers are to be designed and manufactured in accordance with ASME,</p> <p>h) Frame work for mounting the above condenser, fans, chiller compressor and motor with base plate complete with antivibration pads/springs complete etc as required.</p> <p>i) Initial / first charge of refrigerant gas, lubricating oil and compressor oil etc as required.</p> <p>j) Suitable RCC/Cement concrete foundations with MS angle nosing all around top and bottom of 50x50x6 mm thick for the chilling unit installation complete etc as required.</p> <p>k) Water side pressure drop in cooler shall not exceed 8 meter water in i/c other specification etc as required.</p> <p>l) Dial type 6', SS tubing with valves thermometers and pressure gauges at inlet and outlet of chiller complete etc as required.</p> <p>m) Electrical Specifications: Power supply: 380-415/50Hz/3 Ph, Control Power 220.</p>							
------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--	--	--

<p>2.0 4</p>	<p>Min. 20TR Nominal capacity. Water chilling machine as described above and at above mentioned operating conditions. Preferred Make: Trane/York/Kirloskar/Voltas/Bluestar/Carrier/Reynold Chiller should be able to operate up to the lowest condenser water Inlet Temperature up to 16 Deg C and maximum 50 Deg C. Low sound kits Each compressor with acoustic sound reduction blanket. The whole unit lower section is enclosed by acoustic reduction box. System Safeties: Shall cause individual compressor systems to perform auto-reset shut down if high discharge pressure or low suction pressure, the auto-reset failure will occur when trigger auto-reset 3 times in 1 hour.</p> <p>Display Data should be as “ Return and leaving water temperatures, status of each unit, low leaving water temperature cutout setting, Metric data, water temperature reset via Modbus interface, compressor run status, daily start/stop times, holiday status, water pump status, high and low pressure switch status, water switch status, discharge temperature and EXV steps.”</p>	<p>2.00</p>	<p>each</p>		<p>0.00</p>	<p>0.00</p>	<p>INR Zero Only</p>
------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------	-------------	--	-------------	-------------	----------------------

3	<p>CHILLED WATER PUMP Supply, installing, testing and commissioning of factory built, tested skid mounted end suction Long Coupled Pumps for outdoor application and each pump shall be having following accessories, Butterfly valve on suction and discharge each, Two pressure gauges, Spring vibration isolators on both suction and discharge and Non return valve on discharge. Individual skid for 3 nos pumps (2 working and 1 Standby) Pipe work, accessories, pumps shall be suitable for PN-16 rating, complete with motor, drain valves and other accessories. The motor selected shall be energy efficient having efficiency above 90% at full load & minimum efficiency of pump shall be 70%. Pumps shall have mechanical seal and MS casing & Bronze Impeller, SS Shaft. The pump motor shall be 4 Pole - 1440 rpm of IE-4 class efficiency, TEFC Squirrel cage class -F insulation, suitable for 415 Volts \pm 10%, 50 cycles, 3 phase power supply. Vendor shall be provide with antivibration arrangement for pumps. It should be designed that the complete unit is balanced & free from vibrations with necessary vibration isolations wherever required. The pump be capable of delivering Water flow rate & Head adequate for 3Nos. of 30 TR chiller (2W+1S).. The scope shall include nitrile rubber insulation of requisite thickness duly clad between aluminium sheets of 0.5 mm thickness and properly clamped to pump & Antivibration pads over RCC / cement floor complete etc as required.</p> <p>Preferred Make: Kirloskar/ Crompton Greaves/ Armstrong/ Grandfoss/KSB</p>	3.00	each			0.00	0.00	INR Zero Only
---	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------	------	--	--	------	------	---------------

<p>3.0 1</p>	<p>CHILLED WATER PUMP Supply, installing, testing and commissioning of factory built, tested skid mounted end suction Long Coupled Pumps for outdoor application and each pump shall be having following accessories, Butterfly valve on suction and discharge each, Two pressure gauges, Spring vibration isolators on both suction and discharge and Non return valve on discharge. Individual skid for 2 nos pumps (1 working and 1 Standby) Pipe work, accessories, pumps shall be suitable for PN-16 rating, complete with motor, drain valves and other accessories. The motor selected shall be energy efficient having efficiency above 90% at full load & minimum efficiency of pump shall be 70%. Pumps shall have mechanical seal and MS casing & Bronze Impeller, SS Shaft. The pump motor shall be 4 Pole - 1440 rpm of IE-4 class efficiency, TEFC Squirrel cage class -F insulation, suitable for 415 Volts ± 10%, 50 cycles, 3 phase power supply. Vendor shall be provide with antivibration arrangement for pumps. It should be designed that the complete unit is balanced & free from vibrations with necessary vibration isolations wherever required. The pump be capable of delivering Water flow rate & Head adequate for 2Nos. of 20 TR chiller (1W+1S).. The scope shall include nitrile rubber insulation of requisite thickness duly cladded between aluminium sheets of 0.5 mm thickness and properly clamped to pump & Antivibration pads over RCC / cement floor complete etc as required.</p> <p>Make: Kirloskar/ Crompton Greaves/ Armstrong/ Grandfoss/KSB</p>	<p>2.00</p>	<p>each</p>			<p>0.00</p>	<p>0.00</p>	<p>INR Zero Only</p>
<p>4</p>	<p>CONDENSER PUMP</p>							

4.0 1	<p>CONDENSER PUM - 1</p> <p>Supply, installing, testing and commissioning of factory built, tested skid mounted end suction Long Coupled Pumps for outdoor application and each pump shall be having following accessories, Butterfly valve on suction and discharge each, Two pressure gauges, Spring vibration isolators on both suction and discharge and Non return valve on discharge. Individual skid for 3 nos pumps (2 working and 1 Standby) Pipe work, accessories, pumps shall be suitable for PN-16 rating, complete with motor, drain valves and other accessories. The motor selected shall be energy efficient having efficiency above 90% at full load & minimum efficiency of pump shall be 70%. Pumps shall have mechanical seal and MS casing & Bronze Impeller, SS Shaft. The pump motor shall be 4 Pole - 1440 rpm of IE-4 class efficiency, TEFC Squirrel cage class -F insulation, suitable for 415 Volts ± 10%, 50 cycles, 3 phase power supply. Vendor shall be provide with antivibration arrangement for pumps. It should be designed that the complete unit is balanced & free from vibrations with necessary vibration isolations wherever required. The pump be capable of delivering Water flow rate & Head adequate for 3Nos. of 32 TR chiller (2W+1S). The scope shall include nitrile rubber insulation of requisite thickness duly clad between aluminium sheets of 0.5 mm thickness and properly clamped to pump & Antivibration pads over RCC / cement floor complete etc as required.</p> <p>Make: Kirloskar/ Crompton Greaves/ Armstrong/ Grandfoss/KSB</p>	3.00	Nos.		0.00	0.00	INR Zero Only
----------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------	------	--	------	------	---------------

<p>4.0 2</p>	<p>CONDENSER PUMP-2 Supply, installing, testing and commissioning of factory built, tested skid mounted end suction Long Coupled Pumps for outdoor application and each pump shall be having following accessories, Butterfly valve on suction and discharge each, Two pressure gauges, Spring vibration isolators on both suction and discharge and Non return valve on discharge. Individual skid for 2 nos pumps (1 working and 1 Standby) Pipe work, accessories, pumps shall be suitable for PN-16 rating, complete with motor, drain valves and other accessories. The motor selected shall be energy efficient having efficiency above 90% at full load & minimum efficiency of pump shall be 70%. Pumps shall have mechanical seal and MS casing & Bronze Impeller, SS Shaft. The pump motor shall be 4 Pole - 1440 rpm of IE-4 class efficiency, TEFC Squirrel cage class -F insulation, suitable for 415 Volts ± 10%, 50 cycles, 3 phase power supply. Vendor shall be provide with antivibration arrangement for pumps. It should be designed that the complete unit is balanced & free from vibrations with necessary vibration isolations wherever required. The pump be capable of delivering Water flow rate & Head adequate for 2Nos. of 20 TR chiller (1W+1S).. The scope shall include nitrile rubber insulation of requisite thickness duly clad between aluminium sheets of 0.5 mm thickness and properly clamped to pump & Antivibration pads over RCC / cement floor complete etc as required. Make: Kirloskar/ Crompton Greaves/ Armstrong/ Grandfoss/KSB</p>	<p>2.00</p>	<p>Nos.</p>			<p>0.00</p>	<p>0.00</p>	<p>INR Zero Only</p>
<p>5</p>	<p>SS Circulation pump for Process water for Beam lab Head: Upto 90 metre, Material Stainless steel, capacity as per site requirements for process water and as per instructions of EIC. Note: As per site requirement.</p>	<p>2.00</p>	<p>Nos.</p>			<p>0.00</p>	<p>0.00</p>	<p>INR Zero Only</p>

6	<p>Cooling Tower (Induced draft counter flow) Supply, installing, testing and commissioning of factory built, tested Induced draft Counter flow FRP Cooling Tower 2 No. (1W + 1SB) of suitable required capacity with 30% higher of the Chiller capacity (Two nos. cooling tower are for both chiller plant) requirement. (1W+1SB)</p> <p>Each tower shall be complete with GI piping, FRP Body, FRP Basin, Fan Motor, Drive, Sprinkler, Fill Media, Distribution Basin, pipe connections, GI / Al ladder etc. complete in accordance with specifications and drawings. All motors shall be IE-3 and above and Squirrel Cage (IP55), TEAO, Premium Efficiency and current characteristics is 415+10% V / 3-Ph / 50 Hz., Cooling tower should be GI nipples, brass spray nozzles with overflow & drain facility, quick fill, float valve arrangement for makeup water supply and GI ladder</p> <p>WBT: 29.20 deg C & Working Ambient: temperature: 45 deg C, GI nipples, brass spray nozzles with overflow & drain facility, quick fill & float valve arrangement for makeup water supply. IN/OUT water temperature: 37 / 32 deg C.</p> <p>Cooling tower FRP basin should be installed on RCC-base pillars with RCC beam. GI Ladder should be provided for inspection and maintenance purpose. Each cooling tower should be make-up, quick fill, overflow connection and bottom drain point should be provided.</p> <p>Make: Paharpur / Bell / Advance</p>	2.00	each			0.00	0.00	INR Zero Only
7	<p>Air Handling units (AHUs) standard 25+-2mm thick panel or better. Note: PUF density 38kg/cm2.</p>							

7.0 1	<p>Chiller water type Air Handling Unit (AHU) with centrifugal type curve DIDW backward curve belt driven AHU, 2 Nos. (1W+1S) , each having 23500 cfm, 60 TR capacity with suitable design ESP with all accessories, floor mounted, double skin type horizontal air handling units made of minimum 25+2 mm thick panels consisting of pre plasticized G.I. casing of thickness 0.8 mm outside layer and 0.8 mm inside layer with polyurethane foam (PUF) insulation factory injected between them by injection moldings machine. Blower suitable for static pressure as required. Cooling coil with section with Cooling coil aluminum finned copper tubes (tubes thickness not less than 0.5mm) cooling coil of 4 row deep, TEFC drive motor of efficiency class IE3 and above suitable for 415 ± 10% volts, 50Hz, 3 Phase AC supply suitably designed for variable frequency drive applications, 13 mm Nitrile rubber insulated SS 18 G Drain pan connections, outlet of coil, auto purge valve wherever required, necessary vibration spring isolation arrangement for AHU blower and Air discharge control damper etc. complete as per specification and of following capacities.</p> <p>Filter section with 50 mm thick box type filter of 10 micron Tube Material : Copper, Tube Thickness : 0.5mm minimum, Outside dia. : 12.7 mm, Heater : of suitable capacity for humidity control. Header material : MS, Coil Casing – GI, Blank-off material – GI, Fin Material : Plain Aluminum, Fin spacing : 11-13 FPI, Condensing tray : 18G SS-304, Test Pressure : 21Kg/Sq.cm, AHU Blower Make – Nicotra / Kruger / Greenheck AHU Motor Make -- CG / Siemens / ABB / Bharat Bijlee Limited / G.E. Motors / Danfoss.</p> <p>Note: AHU dimension must be suitable for existing AHU room. Blower shall be of 23500CFM and the AHU to deliver 60TR. AHU Make: VTS/Citizen/Flact woods / YORK or equivalent. VFD Make – ABB / DANFOSS / ALLEN BREDLY / Honeywell / Johnson Controls / Schneider / Siemens</p> <p>Note: AHU shall be equipped with a mixing chamber bases and shall be capable to ensure temperature and RH of 25+- 2C and <= RH 60%.</p>	2.00	each			0.00	0.00	INR Zero Only
----------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------	------	--	--	------	------	---------------

8	The scope shall include : Dampers with motorized actuators complete with wiring in supply air duct and exhaust air duct connecting AHU complete with suitable size FRLS PVC insulated copper conductor cable etc as required.	15.00	sqm			0.00	0.00	INR Zero Only
9	Set of Butterfly valve for cooling coil isolation etc complete as required. Size and quantity.	18.00	Nos.			0.00	0.00	INR Zero Only
10	Y strainer in water supply to cooling coil etc complete as required size and quantity.	8.00	Nos.			0.00	0.00	INR Zero Only
11	Set of each Temperature & water pressure guage (100 mm Ø) bourdon type with brass ball valve of 3/8" Ø and SS tubing, socket.Range (0-50) etc complete as required.	12.00	Nos.			0.00	0.00	INR Zero Only
12	Double Float Auto air vent on header of coil in AHU etc complete as required.	8.00	Nos.			0.00	0.00	INR Zero Only
13	AHUs shall be with back draft dampers so that no short cycling happens when one AHU is working.	10.00	sqm			0.00	0.00	INR Zero Only
14	Three Way Modulating Valve with Actuator and Accessories as follows: Note: Quote for both sizes as per the requirement for the AHUs. The quantity which is installed on the site will only be considered for payment.							
14.01	100 mm Ø	4.00	Nos.			0.00	0.00	INR Zero Only
14.02	80 mm Ø	4.00	Nos.			0.00	0.00	INR Zero Only
15	Supply, Installation, Testing and Commissioning of VAV box with controller for variable volume supply or extract systems. Consists of casing with damper blade which when closed complies with the air leakage requirements of DIN 1946, Part 4, includes integral averaging differential pressure grid and factory pre-wired control components. Site measurement and adjustment of factory-set minimum and maximum volume flow rates can be made. Casing air flow leakage according to Class II, VDI 3803 or DIN 24194. Pressure difference range 20 to 1500 Pa, volume flow range, depending on controls used, up to 10:1. The VAV should be compatible for BMS controlling and monitoring as per site requirement.	4.00	Nos.			0.00	0.00	INR Zero Only
16	hot well & cold well tank							

16.01	<p>Hot well & Cold well Tank: Hot well/Coldwell tank for the supply of DM water from chiller unit to testing lab equipment. Hot well & Coldwell should be SS-304/316, 3 mm thick, 500 ltr each capacity along with all required accessories (like isolation valves, over flow drain line, overflow sensors, temperature sensors, SS Y-strainer, make-up DM water provision, and fabrication should be with site feasibility space availability. Tank should be properly hot insulated and 28 G Aluminum cladding. All the water circulation piping from the Chiller to Hot well/Coldwell tank to testing equipment will be of SS-304/310 fabricated with required insulation and Aluminum cladding.</p>	1.00	No.			0.00	0.00	INR Zero Only
17	<p>PLUMBING Supplying, laying/ fixings, testing and commissioning of following nominal sizes of chilled water piping plumbing outside the building burried in ground (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges etc.) duly insulated with fire retardant quality expanded polystrene moulded pipe section of density 20 kg/cum after a thick coat of cold setting adhesive (CPRX compound) wrapping with 500g polythene faced hessain and secured with 0.5 mm x 20 mm GI wire mesh and two coats of cement plaser (each layer not less than 10 mm) as per specifications including digging and refilling the trenches and providing suitable thickness 1:2:4 cement concrete pads at 3 m intervals complete as per specifications and complete in all respect etc as required.</p> <p>Note:-The Pipes of sizes 150 mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150 mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35 mm thick M.S. Sheet for pipes upto 350 mm dia. and from minimum 7mm thick MS sheet for pipes of 400 mm dia and above.</p> <p>Pre-insulated CHILLED WATER PIPING (expanded polystrene insulation) - chilled water plumbing - On / above ground, inside the building / outside the building along the wall/ roof (with necessary clamps, vibration isolators etc complete as required.</p> <p>Note: As per the requirement. Note: Both preinsulated and sight insulated pipes are acceptable subject to nitrile rubber, insulation of 32mm and 26g of alumium cladding.</p>							

17.01	150 mm Ø Piping 125 mm Ø Piping 100 mm Ø Piping 85 mm Ø Piping 65 mm Ø Piping 32 mm Ø Piping 25 mm Ø Piping Preferred Make: Jindal/TATA/Sail, quoted according to the site requirement.	1.00	LOT.			0.00	0.00	INR Zero Only
18	Supplying, laying/ fixing, testing and commissioning of following nominal sizes of chilled water piping plumbing inside the building (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges etc.) duly insulated with fire retardant quality expanded polystyrene moulded pipe section of density 20 kg/cu.m after a thick coat of cold setting adhesive (CPRX compound) wrapping with 500g polythene faced hessain and finally applying 0.63mm aluminium sheet cladding complete with type3, grade 1 roofing feltstrip(as per IS:1322 as amended up to date) at joints repairing of damage to building etc. as per specifications and complete in all respect etc as required. Note:-The Pipes of sizes 150 mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150 mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35 mm thick M.S. Sheet for pipes upto 350 mm dia. and from minimum 7mm thick MS sheet for pipes of 400 mm dia and above. pre-insulated CHILLED WATER PIPING (expanded polystyrene insulation) - chilled water plumbing - On / above ground, inside the building / outside the building along the wall/ roof (with necessary clamps, vibration isolators etc complete as required. Note: Both preinsulated and sight insulated pipes are acceptable subject to nitrile rubber, insulation of 32mm and 26g of alumium cladding.							
18.01	150 mm Ø Piping Make: Jindal/TATA/Sail	20.00	Mtr.			0.00	0.00	INR Zero Only
18.02	125 mm Ø Piping Make: Jindal/TATA/Sail	20.00	Mtr.			0.00	0.00	INR Zero Only
18.03	100mm Ø Piping Make: Jindal/TATA/Sail	70.00	Mtr.			0.00	0.00	INR Zero Only
18.04	80 mm Ø Piping Make: Jindal/TATA/Sail	20.00	Mtr.			0.00	0.00	INR Zero Only
18.05	65 mm Ø Piping Make: Jindal/TATA/Sail	20.00	Mtr.			0.00	0.00	INR Zero Only

19	Pre-INSULATED VALVES Supplying, fixing, testing and commissioning of following valves, strainers, gauges in the chilled water plumbing line, pre-insulated to the same specifications as the connected piping and adequately supported as per specifications etc complete as required.(Suitable for PN 1.6). Make: CR Valves/ Audco/ Advance/ Leader/ Inter valve/ Kirloskar Note: Both preinsulated and sight insulated pipes are acceptable subject to nitrile rubber, insulation of 32mm and 26g of aluminum cladding.							
19.01	C.I. Butterfly valve. 150 or 125 or 100, 80,65,50 mm Ø (for Header) as per requirement.	5.00	each			0.00	0.00	INR Zero Only
19.02	C.I. Butterfly valve. 150 or 125 or 100, 80,65,50 mm Ø (for Header) as per requirement.	15.00	each			0.00	0.00	INR Zero Only
19.03	C.I. Butterfly valve. 150 or 125 or 100, 80,65,50 mm Ø (for Header) as per requirement.	10.00	each			0.00	0.00	INR Zero Only
20	Motorized butterfly valve with actuator and sensor for operation on BMS in the outgoing of the chiller / header							
20.01	150 or 125 or 100, 80,65,50 mm Ø(For chiller at the outlet)	2.00	each			0.00	0.00	INR Zero Only
21	Glob Valve							
21.01	150 or 125 or 100, 80,65,50 mm Ø for chiller Outlet	1.00	each			0.00	0.00	INR Zero Only
21.02	150 or 125 or 100, 80,65,50 mm Ø for pumps discharge	2.00	each			0.00	0.00	INR Zero Only
22	SITC of water pressure gauge (100 mm Ø) bourdon type with brass ball valve of 3/8" Ø and SS tubing, socket. Range (0-50) / (0-100) as required.	10.00	each			0.00	0.00	INR Zero Only
23	Supply, installation, testing and commissioning of 32 mm Automatic Air Vent valve suitable to purge out the trapped air in the water pipe line complete as required.	6.00	each			0.00	0.00	INR Zero Only

24	Insulated Expansion tank (min 1000 lt capacity) for chilled water application complete with piping connections, safety relief valve, drain valve, pressure gauge, Float valve, automatic air purging arrangement, etc. complete as per specifications. The system shall be complete , interconnecting piping & wiring.. The tank shall be duly painted in approved colour. expansion tank.	2.00	each			0.00	0.00	INR Zero Only
25	Supply, installation , testing and commissioning of 25mm ball valve suitable to drain out the the water pipe line complete as required.	2.00	each			0.00	0.00	INR Zero Only
26	DUCTING AND GRILLS upply, Installation, Testing Balancing & Commissioning of G.S.S square/ rectangular factory/Site fabricated ducting complete included with gaskets, elbows, splitters, vanes, supports, adjustable dampers, volume control dampers, actuators, etc. all included as per drawings and as required for dehumidified air distribution of following thickness as per approved working drawings, specifications and requirement at site as required and as per the instructions of EIC							
26.01	24G	100.00	Sqm			0.00	0.00	INR Zero Only
26.02	22G	100.00	Sqm			0.00	0.00	INR Zero Only
26.03	20G	40.00	Sqm			0.00	0.00	INR Zero Only
26.04	18G	20.00	Sqm			0.00	0.00	INR Zero Only
27	Dismantling of existing ducting and putting it at a designated place in the campus as instructed by EIC.	1.00	LOT			0.00	0.00	INR Zero Only
28	Supply and fixing of external thermal insulation on ducts with 19mm-supply/ 13mm - return thick chemically cross linked closed cell (XLPE/ Nitrile rubber) fire retardant grade (Class O) XLPE insulation density should not less than 30kg per cubic meter in single layer with factory lamination of 30 micron aluminium foil as per specifications (for Supply air duct) complete as required.	300.00	Sqm.			0.00	0.00	INR Zero Only

29	Supply and fixing of external thermal insulation on ducts with 19mm-supply/ 13mm - return thick chemically cross linked open cell (XLPE/ Nitrile rubber) fire retardant grade (Class O) XLPE insulation density should not less than 30kg per cubic meter in single layer with factory lamination of 30 micron aluminium foil as per specifications (for Supply air duct) complete as required.	100.00	Sqm.			0.00	0.00	INR Zero Only
30	Double layered Flexible canvass connection made of fibreglass weave having silver grey silicon rubber coating, Flexible connection shall be air tight & water proof and withstand high temperature application, non flammable and does not support combustion. Flexible connection shall be complete with flanges made out of 22G G.S.S sheet on both sides for connection to unit and duct complete with nuts, bolts etc. as required.	45.00	Sqm.			0.00	0.00	INR Zero Only
31	FIRE DAMPERS Supply, installation, testing and commissioning of fusible link type fire control damper in GI construction. Rated for 90 minutes With Fusible link for fire damper with Limit Switch	8.00	Sqm.			0.00	0.00	INR Zero Only
32	BUILDING MANAGEMENT SYSTEM SUPPLY, INSTALLATION, TESTING, COMMISSIONING & HANDING OVER OF THE FOLLOWING: Note: IO summary is provided in technical specification							
32.01	BMS Computer System: IBM/HP/Equivalent-Central Computer System: Intel Core i7 processor , 8GB DDR3-RAM, 500 GB SATA Hard Disk, Two Quadro NVS 440 Video Cards with 2 Monitor Support, DVD Writer, Lan Card 10/100/1000 base-T, Optical Mouse, 104 Keys Keyboard, Windows 10/11 operating system licensed software along with 32" LED Monitor to meet the requirement of the BMS Software.	2.00	Set			0.00	0.00	INR Zero Only
32.02	A 4 size Laser Printer (MFP) suitable for the application, with driver software.	1.00	Set			0.00	0.00	INR Zero Only

32.03	Process Visualisation Software : Web Based Graphical interface software based on MS Windows 7/10 Latest. The system should be accessible from anywhere on LAN or WAN or Ethernet without additional licenses. The Communication protocol shall be Industry Standard BACNET Open Protocol. System should be scalable. The software shall be open system architecture type (minimum 2 consecutive users to be provided) The software should not be vendor specific software, but an universal internet browser like IP. The software should be with An Advanced Alarm System it should be capable of the sending alarmed SMS/EMail to the users. SYSTEM SHOULD BE WITH HOT REDUNDANCY REQUIRED	1.00	Set			0.00	0.00	INR Zero Only
32.04	Supervisory controller to connect DDC's , Integrators to BMS Software	1.00	Set			0.00	0.00	INR Zero Only
32.05	Stand alone intelligent BACnet Based UL Listed 32 Bit Controllers with real time clock & EEPROM as per the specifications.The controllers shall be housed in a vandal proof, lockable and secure MS Cabinets to be supplied along with the controllers. The contractor shall estimate the required quantity of controllers to suit the complete requirement / operation as per Input / Output Summary according to their system architecture and the quantity shall be mentioned in their offer. ONE CONTROLLER PER AHU .	1.00	LOT			0.00	0.00	INR Zero Only
32.06	Portable Operator terminal (POT) shall be rquired if the controllers & integration unit do not have built in keypad on the fascia) Note:(1). Max. 1 AHU should be provided with one Dedicated controller.(2) 20% of the spare I/O's must be in the each one of controllers and it should be programmed (3) System architecture must be submitted along with the tender. (4) Provision of integration with any BMS system conforming to international Protocol RTU MODBUS/Bacnet / Lonworks.	1.00	No.			0.00	0.00	INR Zero Only
33	Sensors and field devices Supply, Installation, Testing & Commissioning of necessary Input sensor transmitters/transducers comprising the following:							

33.01	Immersion temp sensor with probe length of 150 mm for chilled water pipe line (each with manufacturer calibration / Test certificate)	10.00	Nos.			0.00	0.00	INR Zero Only
33.02	Ambient/Outside humidity & Temperature sensor for measuring outside air temperature (each with manufacturer calibration/test certificate)	2.00	Nos.			0.00	0.00	INR Zero Only
33.03	Room humidity & Temperature sensor for measuring,Room temperature and Rh(each with manufacturer calibration / Test certificate) with display (PLEASE QUOTED RATE ONLY)	1.00	Nos.			0.00	0.00	INR Zero Only
33.04	Differential Pressure Switch to monitor the Fan Run / Filter status. (PLEASE QUOTED RATE ONLY)	1.00	Nos.			0.00	0.00	INR Zero Only
33.05	Room Temperature sensor for measuring Room temperature (each with manufacturer calibration / Test certificate) with display (PLEASE QUOTED RATE ONLY)	1.00	Nos.			0.00	0.00	INR Zero Only
33.06	Duct Type temperature sensor for measuring supply air temperature at the AHU after Heater (each with manufacturer calibration / Test certificate) (PLEASE QUOTED RATE ONLY)	1.00	Nos.			0.00	0.00	INR Zero Only
33.07	Duct Type Rh & Temperature sensor for measuring return air temperature & Rh at the AHU (each with manufacturer Calibration/ Test certificate) (PLEASE QUOTED RATE ONLY)	1.00	Nos.			0.00	0.00	INR Zero Only
33.08	Differential Pressure transmitter across the Room and the corridor 0-50/100 pa (PLEASE QUOTED RATE ONLY)	1.00	Nos.			0.00	0.00	INR Zero Only
33.09	Air velocity in ms/sec (each with manufacturer calibration/ Test certificate) (PLEASE QUOTED RATE ONLY)	1.00	Nos.			0.00	0.00	INR Zero Only
33.1	Air Differential Pressure Switch across the Fan for Air Flow Status (PLEASE QUOTED RATE ONLY)	1.00	Nos.			0.00	0.00	INR Zero Only
34	Software integrations :							
34.01	VFD Integration 10 point per VFD (25 nos)	1.00	Lot			0.00	0.00	INR Zero Only
34.02	Energy Meters 10 Points per Energy meter (12 No's)	1.00	Lot			0.00	0.00	INR Zero Only
34.03	VAV 5 Points per VAV (30 No's)	1.00	Lot			0.00	0.00	INR Zero Only
34.04	Chillers 25 Points per Chiller (5 No's)	1.00	Lot			0.00	0.00	INR Zero Only

35	Conduiting , Wiring and cabling Supply and fixing of M.S.Conduit on surface / in ground as required at site including saddles, bends, MS box (with laminated sheet cover), hangers as per specification and direction of Engineer-In-Charge as required at the site of following sizes:							
35.01	25mm dia	400.00	RM			0.00	0.00	INR Zero Only
35.02	20mm Dia	200.00	RM			0.00	0.00	INR Zero Only
36	Supply and fixing of PVC Conduit on surface / in ground as required at site including saddles, bends, Junction box (with laminated sheet cover), hangers as per specification and direction of Engineer-In-Charge as required at the site of following sizes:							
36.01	25mm Dia	1.00	RM			0.00	0.00	INR Zero Only
36.02	20mm Dia	1.00	RM			0.00	0.00	INR Zero Only
36.03	Supplying, Installing, Testing and Commissioning of Un-armored Signal Cables (for AI/AO)	350.00	RM			0.00	0.00	INR Zero Only
36.04	Supplying, Installing, Testing and Commissioning of Un-armored Signal Cables (for BI/BO)	400.00	RM			0.00	0.00	INR Zero Only
36.05	Supplying, Installing, Testing and commissioning of Un-armored Communication Cables	70.00	RM			0.00	0.00	INR Zero Only
36.06	Supplying, Installing, Testing and commissioning of Un-armored Integration Cables	100.00	RM			0.00	0.00	INR Zero Only
36.07	Supplying, Installing, Testing and commissioning of Un-armored power Cables	150.00	RM			0.00	0.00	INR Zero Only
36.08	5 KVA UPS along with 30 Min's battery back up with Rack & Interlink cables shall be supplied for the BMS operations.	1.00	LOT			0.00	0.00	INR Zero Only
37	the system shall be complete with necessary distribution board, wiring. Incomer : 1No. 32A SPN MCB Outgoing : 20 Nos. -10/16A SP MCB of 'D' curve	2.00	SET			0.00	0.00	INR Zero Only
38	Power sockets with wall bracket & Plug for individual DDC, BMS PC & routers	20.00	SET			0.00	0.00	INR Zero Only
39	DISMANTLING OF EXISTING SYSTEM and dumping it at a certail location in the campus as instructed by EIC.	1.00	LOT			0.00	0.00	INR Zero Only

40	Cat (B) - Buy Back Items							
40.01	Buy-Back (ie minus)BUYBACK OF EXISTING SYSTEM	1.00	Nos			0.00	0.00	INR Zero Only
Quoted Rate in Figures						0.00	0.00	Zero Only
Quoted Rate in Words	INR Zero Only							

Note:- For the low side material (without major equipment like Chiller, Pump, AHU, Cooling tower, Electrical panel, VAV etc...) BOQ / description/Qty/ material types are decided for the budget and tender participation. Every participant should visit, understand the site requirement and estimate the low side accessories qty/type according to close the project as per the IOP standard and post order engineering approvals. As it is a turnkey project, vendor need to complete the project in the bidding estimation. No price implication to be considered."

**The Minutes of the IBL AC & Process Water renovation committee meet
for pre-bid meeting held on 02.07.2024 at Director's Conference hall**

The committee constituted with following members vide office order No IOP/ACD/2021/1553, Date 08.11.23 to look after the renovation work of the IBL AC and Process Water plant.

- | | |
|--------------------------------|---------------------------------|
| 1. Prof. Tapobrata Som | Chairman |
| 2. Prof. Satyaprakash Sahoo | Member |
| 3. Mr. Sanjib Kumar Sahu | Member (Convener) |
| 4. Mr. Arun Kanta Dash | member |
| 5. Mr. Santosh Kumar Choudhury | member |
| 6. Mr. Bala Krushna Dash | member |
| 7. Mr. Ashank Vishwakarma | Member (External expert, NISER) |
| 8. Mr. Debendranath Sahoo | Member (Jr. Accounts Officer) |
| 9. Dr. Binaya Panigrahi | (Co-opted Member) |

In the pre-bid meeting of e-Tender reference NIT/IOP/84/2024-25, Dtd: 10.06.2024, the committee meet with the following bidders and discussed on their technical and commercial quarries. The committee recommendations are as follows,

Gtechgro Businesshub Pvt Ltd, Mr. Basanta Kumar Giri			
SI No	BOQ details	Quarries	IOP Response
01	BOQ details	BOQ quantity some items not specified and even the existing qty may differ as per site requirement also for which the amendment clause option needs to consider as per the site condition	The BOQ item where the sizes and qty are mentioned will be omitted as per the requirements. For instance, if only the sizes of 150 mm and 125 mm pipes are mentioned then sizes of 100mm, 80 mm, 65 mm will be added.
02	Payment terms NIT clause no(33) PAYMENT TERMS:- 90% of the work value will be released after supply, installation, testing and commissioning of the equipment duly certified by the Engineer-in-Charge. Balance 10% will be released after one month from the date of successful and satisfactory operation of the equipment	Modification in Payment terms- 70% towards Supply, 10% towards Installation, 10% towards testing and commissioning of the equipment instead of keeping 90% of the work value will be released after supply, installation, testing and commissioning of the equipment.	Payment Terms are updated to the following: 70% of Items supplied against the supply. 20 % against installation 10% against testing and commissioning. Payment will be made only after submission of necessary bills, reports, drawings, etc. as per the satisfaction of EIC.

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

JEM ENGINEERING, DAIKIN Mr. Srikanta Panda			
SI No	BOQ details	Quarries	IOP Response
01	In Schedule of Quantity – Water cooled chiller- SI.No 1)1.01 and 2)	As per the BOQ the chiller heat exchanger should be stainless steel brazed plate. We request to consider the heat exchanger as per the OEM MS shell & Tube type , which is a better design and maintenance friendly.	Both stainless steel brazed plate-type heat exchangers and MS shell & Tube-type heat exchangers are acceptable subjected to the optimum quality as verified by EIC.
02	In Schedule of Quantity – Water cooled chiller-SI.No 1)1.02 and 2.01)	As per the BOQ it has asked for the chiller COP of 5.2 at AHRI condition & IPLV 6.85. We request to consider the COP of 4.4 and IPLV of 5.9	COP of 4.4 or better and IPLV of 5.9 or better is acceptable. The remaining specifications shall remain same. Any deviations shall result in disqualification of bidder

Yukon Enterprise(P) Ltd, BLUE STAR Mr. Mirza Iqbal A.B. Mr. Anindya Basu			
SI No	BOQ details	Quarries	IOP Response
01	Payment terms NIT clause no(33) PAYMENT TERMS:- 90% of the work value will be released after supply, installation, testing and commissioning of the equipment duly certified by the Engineer-in-Charge. Balance 10% will be released after one month from the date of successful and satisfactory operation of the equipment	The payment terms required : 70% against supply of materials on a pro-rata basis within 7 days of submission of invoice 20% after erection . 10% after final testing and commissioning	Payment Terms are updated to the following: 70% of Items supplied against the supply. 20 % against installation 10% against testing and commissioning. Payment will be made only after submission of necessary challan, bills, reports, drawings, etc. as per the satisfaction of EIC.

SMS

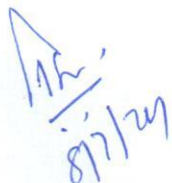
[Handwritten signature]
25/11/20

[Handwritten signature]
8/1/20

[Handwritten signature]
24/11/19
[Handwritten signature]

Johnson Control Mr. Sourabh Dash			
SI No	BOQ details	Quarries	IOP Response
01	A) MACHINERY WATER COOLED CHILLER (BOQ SI No.1.01) 1. b.....units with proper vibration 2. Chilled Water Out Temperature: 6 Deg. C (6 ΔT) 3. Condenser Water Out Temperature: 37 Deg. C 6.66 Deg C 4. Condenser Fouling Factor : 0.0001 m2K/kW COP (KW/kw)	1. Typo mistake: Brazed construction plate-type heat exchanger 2. Temperature : 6 Deg. C (6 ΔT) 6.6 Deg C (5.4Delta T) 3.(5.0 Delta T) 4. (0.044m2K/kW)	-Typo mistake rectified: Brazed construction plate-type heat exchanger. -Chilled Water Out Temperature: 6 to 6.6 Deg C - Delta T - 5.0 to 5.4 -Condenser Water Out Temperature: 37 Deg. -Condenser Fouling Factor: 0.044m2K/kW
02	BOQ 1.02 clause(c)	The point need to be deleted , This specification is for centrifugal chiller not for any scroll compressor chiller.	The point (c) may be ignored.
03	BOQ 1.02 clause(g)	ASME/GB standard. As the scroll chiller is vert less in capacity and designed accordance with different technology like ASME for American standard and GB for chanies/ Indian standard. Please add both ASME/ GB to suitable all OEM.	ASME and GB standards both will acceptable.
04	BOQ 1.03 clause(g)	ASME/ GB standard and refer above comment	ASME and GB standards both will acceptable.
05	BOQ 1.05	Min. 30TR actual duty capacity	The nominal capacity is 32 TR, the actual capacity must not to 28 TR
06	BOQ 2.01	Condenser water Out Temperature 5.0 Delta T Evaporation flow should less than 32TR machine, as per calculation it should be less than 50Usgpm per chiller	- Delta T - 5.0 to 5.4 - Flow rate for 32 TR chiller shall not be less than 45 Usgpm.
07	BOQ 2.02 clause no (c)	The point need to be deleted, This specification is for centrifugal chiller not for any scroll compressor chiller.	The point (c) may be ignored.
08	BOQ 3.01 Quantity -03	Qty need to be changed to 2 No. (1W+1SB), instead of 3 no, mention in description and for 2 no of chiller	Typo error, Qty shall be 2 Nos. (1W, 1SB)

SAS




09	BOQ 7.01	Selected AHU is mixing box chamber based (Return air chamber based) AHU suitable to existing AHU space availability, in which return air will enter directly in AHU.	AHU shall be equipped with a mixing chamber bases and shall be capable to ensure Temperature and RH of 25 +- 2 C and <=RH 60%
10	BOQ 17(PLUMBING)	Heavy class SS304/310 grade for the beam testing chiller system(chiller outlet—cold well tank Secondary CHP testing m/c inlet Testing m/c outlet Hot well tank chiller	As per site requirements.
11	BOQ 18	This is not for chiller water, this is for condenser water and hence no pre-insulation pipe will be required.	Both Preinsulated and site-insulated pipes are acceptable subject to Nitrile rubber insulation of 32 mm and 26 G of aluminum cladding.
12	<p>a. Payment terms NIT clause no(33)</p> <p>PAYMENT TERMS:- 90% of the work value will be released after supply, installation, testing and commissioning of the equipment duly certified by the Engineer-in-Charge. Balance 10% will be released after one month from the date of successful and satisfactory operation of the equipment</p> <p>b. NIT clause no 34(page 17) and NIT Part B(page no5)</p>	<p>JCI request payment term:</p> <p>a. Hence requesting to revise the payment term with" 70% part billing against material delivery. Than 20% +10% as per tender payment term</p> <p>b. Two security amount 2.5% and 3% is mentioned</p> <p>c. Request to waive the water charge @1% and consider it as free supply as customer scope.</p> <p>d. Request to waive labour cess(BOCW Cess)@1% as replacement/ retrofitting work of the central HVAC equipment is not coming under the BOCW. As it is only applicable in new projects and where building works are involved.</p>	<p>Payment Terms are updated to the following: 70% of Items supplied against the supply. 20 % against installation 10% against testing and commissioning. Payment will be made only after submission of necessary challan, bills, reports, drawings, etc. as per the satisfaction of EIC.</p> <p>- Security Deposit of 3 % is valid (2.5 % was a typo error). - Water charges of 1% is applicable as per rules. - The BOCW Act dated 19th august 1996 states that cess of % for "such other work" may be considered. Therefore 1% labour cess is applicable.</p>

sus







SHINRYO Suvidha Engineers India Pvt. Ltd. Mr. Somnath Paul			
SI No	BOQ details	Quarries	IOP Response
01	BOQ 3, 3.01, 4.01,4.02 <ul style="list-style-type: none"> The motor selected shall be energy efficient having efficiency above 90% at full load & minimum efficiency of pump shall be 70%. The pump motor shall be 4 Pole - 1440 rpm of IE-2 class efficiency, TEFC Squirrel cage class -F insulation, suitable for 415 Volts ± 10%, 50 cycles, 3 phase power supply. 	As per IE-2 motor efficiency chart, for having 90% or above efficiency with 4 pole motor, minimum motor rating should have to be 15 kW. Whereas, considering the flow & head of the pumps, motor rating shall be much lesser than 15 kw. Thus, we have to go for minimum IE-4 class efficiency to achieve the same – Kindly advice.	IE-4 class is acceptable.
02	BOQ 5 SS Circulation pump for Process water for Beam lab	Kindly provide the flow rate for Process Water Pump.	As per site requirements.
03	BOQ 7 Air Handling units (AHUs) standard >42mm thick panel	<ul style="list-style-type: none"> Description under this head asked for minimum 25±2 mm thick panels. Kindly confirm which one to be followed min. 25±2 mm thick or >42 mm thick. Kindly confirm the density of PUF. Kindly confirm whether inner skin of the AHU is required to be pre-plasticized or not. Kindly confirm mixing box is required to be considered or not 	<ul style="list-style-type: none"> AHU of 25±2 mm thick or better panels shall be considered, rest other spec remains same. Density 38 kg/cm2 Inner skin of the AHU is required to be pre-plasticized. A mixing box is required.
04	BOQ 9 Set of Butterfly valve for cooling coil isolation etc complete as required	We request you to provide the line size for the same to quote.	The BOQ item where the sizes and qty are mentioned will be omitted as per the requirements. For instance, if only the sizes of 150 mm and 125 mm pipes are mentioned then sizes of 100mm, 80

SNS

Handwritten signature

Handwritten signature

Handwritten signature

Handwritten signature

			mm, 65 mm will be added.
05	10 Y strainer in water supply to cooling coil etc complete as required.	We request you to provide the line size for the same to quote.	The BOQ item where the sizes and qty are mentioned will be omitted as per the requirements. For instance, if only the sizes of 150 mm and 125 mm pipes are mentioned then sizes of 100mm, 80 mm, 65mm will be added
06	14 Three-Way Modulating Valve with Actuator	Two different sizes of Three Way Modulating Valves have been provided in SoQ i.e., 100 mm Ø (4 Nos.) and 80 mm Ø (4 Nos.) however, we have found only 2 Nos. AHUs in SoQ. Kindly confirm whether we have to quote for both sizes or as required.	Quote for both sizes as per the requirement for the AHUs. The qty which is installed on the site will only be considered for payment.
07	15 VAV box with controller	Kindly provide the CFM of VAV box.	As per site requirements.
08	17 Pre-Insulated Chilled Water Piping	Pre-Insulated Pipes are available with PUF insulation; however, description of the Insulation has been provided for EPS insulation. Kindly confirm whether on site Insulation is acceptable with EPS insulation or not.	Both Preinsulated and site-insulated pipes are acceptable subject to Nitrile rubber insulation of 32 mm and 26 G of aluminum cladding. All as required and as per the instructions of EIC.
09	17.01	Kindly provide the quantity against each line item referred under this sr.no.	No Change. The qty of this item to be used cannot be identified at this stage. The bidder needs to plan and provide the best possible design and quote accordingly.
10	19 Pre-Insulated Valves	Pre-Insulated valves are available with PUF insulation. Since the SoQ description calls for "pre-insulated to the same specifications as the connected piping", thus insulation of the valve shall depend on the accepted pre-insulated piping insulation material. Kindly Confirm the insulation material of pipe as	Both Preinsulated and site-insulated valves are acceptable subject to Nitrile rubber insulation of 32 mm and 26 G of aluminum cladding. All as required and as per the instructions of EIC.

SMS

11/12/24
8/1/18

11/12/24
8/1/18

		queried under Sr.No.8 of this query list.	
11	19, 20 & 21 Butterfly Valve, Motorised Butterfly Valve & Globe Valves	150mm dia. valves for chiller and 125mm dia. for pumps has been considered in the SoQ. However, as per our calculation those sized valves are oversized than actual requirement for the system.	The BOQ item where the sizes and qty are mentioned will be omitted as per the requirements. For instance, if only the sizes of 150 mm and 125 mm pipes are mentioned then sizes of 100mm, 80 mm, 65 mm and 50mm will be added in the BOQ.
12	24 Insulated Expansion Tank	Since there is no mention of pressurization pump in the description of this line item in the SoQ, we presume that this tank is unpressurized expansion tank and no pressurization unit is required. – Kindly confirm. Also kindly provide the insulation material MoC and thickness.	Pressurization of the Expansion tank is not mandatory.
13	32 Building Management System	Kindly provide I/O summary for selection of DDC Controller	IO summary shall be provided with the parameters to be controlled and monitored in the BMS.
14	33 General Terms & Conditions Payment Terms : 90% of the work value will be released after supply, installation, testing and commissioning of the equipment duly certified by the Engineer-in-Charge. Balance 10% will be released after one month from the date of successful and satisfactory operation of the equipment.	We propose the below ToP for execution of the Tender 80% Against Supply of Material 10% Against Installation 10% Against successful and satisfactory operation of the equipment.	Payment Terms are updated to the following: 70% of Items supplied against the supply. 20 % against installation 10% against testing and commissioning. Payment will be made only after submission of necessary challan, bills, reports, drawings, etc. as per the satisfaction of EIC.

The BMS IO summary for the Process water and AC plant is included as Annexure-I, The committee recommends to publish the pre-bid queries and their respective response along with BMS IO summary in Annexure-I as corrigendum. The necessary correction may be carried out in the published BOQ of e-Tender reference NIT/IOP/84/2024-25, Dtd: 10.06.2024.

SRS
 [Signature] 8/7/24
 [Signature] 8/7/24
 [Signature] 8/7/24
 [Signature] 8/7/24


TAPOBRATA SOM


SATYAPRAKASH SAHOO


BINAYA PANIGRAHI

ASHANK VISHWAKARMA


SANJIB KUMAR SAHU


ARUN KANTA DASH


SONTOSH KUMAR CHOUDHURY


BALA KRUSHNA DASH


DEBENDRANATH SAHOO


DIRECTOR

IO Summary for CPM/BMS		
Water Cooled Chiller Plant	Equipment Details	QTY
	Water Cooled Scroll Chiller	5
	Cooling Tower	2
	Cooling Tower Fan per CT	2
	Primary CHW Pump without VFD	5
	Primary CHW Pump with VFD	-
	Secondary CHW Pump without VFD	2
	Condenser Pump without VFD	5
	Condenser Pump with VFD	-
	Decoupler Line	-
	Header Line	-
	Motorized butterfly outgoing of the chiller / header	2
	AHU	2
	IO Summary	
Sr.	Description	Required signal
A	Chiller Plant (Water Cooled Chiller)	
1	Chiller On/Off command	NO/NC Potential free contact to Chiller Microprocessor
2	Chiller Run status	NO/NC Potential free contact from Chiller Microprocessor
3	Chiller Fault/Alarm status	NO/NC Potential free contact from Chiller Microprocessor
4	Chiller Enable/Disable status	NO/NC Potential free contact from Chiller Microprocessor
5	Chiller CHW Temperature Reset Setpoint	Software Integration signal
6	Chiller Current Limit Setpoint	Software Integration signal
7	Leaving Chilled Water Temperature in each chiller	4-20 mA from Immersion Temp Sensor
8	Entering Chilled Water Temperature in each chiller	4-20 mA from Immersion Temp Sensor
9	Common CHW header Supply Temp	Immersion Temperature sensor-SITC of socket shall be in HVAC vendor scope
10	Condenser water header supply temp.	Immersion Temperature sensor-SITC of socket shall be in HVAC vendor scope
11	Chiller Integration	Software Integration signal
12	Leaving Condenser Water Temperature in each chiller	Software Integration signal
13	Entering Condenser Water Temperature in each chiller	Software Integration signal
14	Common CHW header Return Temp	Immersion Temperature sensor-SITC of socket shall be in HVAC vendor scope

Ad: 8/7/24

Sul

hul

Q

hul

15	Condenser water header Return temp.	Immersion Temperature sensor-SITC of socket shall be in HVAC vendor scope
16	Compressor Percent RLA	Software Integration signal
17	Current Limit Setpoint	Software Integration signal
18	Ambient Temperature/RH (Each Air-conditioning application room & AHU room)	Outside temp + Rh Sensor
19	Leaving chilled water - temperature (Individual)	Software Integration signal / Immersion Temperature sensor
20	Entering chilled water - temperature (Individual)	Software Integration signal / Immersion Temperature sensor
21	Leaving condenser water - temperature (Individual)	Software Integration signal / Immersion Temperature sensor
22	Entering condenser water - temperature (Individual)	Software Integration signal / Immersion Temperature sensor
23	Operating hours Chiller	Software Integration signal
B	Water Circulation Pumps (CHW / CDW , all 12 Nos. Pumps.)	
1	Pump Auto/Manual status	NO/NC Potential free contact from HVAC MCC Panel
2	Pump On/Off command	NO/NC Potential free contact from HVAC MCC Panel
3	Pump run status	NO/NC Potential free contact from HVAC MCC Panel
4	Pump trip status	NO/NC Potential free contact from HVAC MCC Panel
C	Cooling Tower (CT)	
1	Fan Auto/Manual status	NO/NC Potential free contact from MCC Panel/CT VFD
2	Fan On/Off Command	NO/NC Potential free contact from MCC Panel/CT VFD
3	Fan Run status	NO/NC Potential free contact from MCC Panel/CT VFD
4	Fan Trip status	NO/NC Potential free contact from MCC Panel/CT VFD
5	Common condenser water supply header temperature	4-20 mA from Immersion Temp Sensor
6	Common condenser water return header Temperature	4-20 mA from Immersion Temp Sensor
7	Entering condenser water flow to chiller main header (applicable each chiller plant)	4-20 mA from Immersion Flow Sensor
D	Hot well Cold well Tank	
1	Entering Cold well water temperture to tank from chiller	4-20 mA from Immersion Temp Sensor
2	Leaving Cold well water temperture from tank to testing equipment	4-20 mA from Immersion Temp Sensor
3	Entering Hot well water temperture to tank from testing equipment	4-20 mA from Immersion Temp Sensor
4	Leaving Hot well water temperture from tank to chiller	4-20 mA from Immersion Temp Sensor
E	Air Handling Unit	
1	Entering chilled water inlet to AHU header (each AHU)	4-20 mA from Immersion Temp Sensor
2	Leaving chilled water inlet from AHU header (each AHU)	4-20 mA from Immersion Temp Sensor
3	Leaving chilled air temperture from the AHU discharge side	4-20 mA from Immersion Temp Sensor

Abu
8/1/24

Sus

hand

hand

hand

hand

4	Entering Hot air temperture to the AHU suction side (Filter/ mixing box side)	4-20 mA from Immersion Temp Sensor
5	Entering chilled water inlet flow to AHU main header (applicable each AHU)	4-20 mA from Immersion Flow Sensor

Approved Makes for CPM System - Honeywell / ABB / Johnson Controls / Schneider / Siemens / Danfoss

Sus
shud
shud
shud
shud