

TENDERFOR WORKS

*Restructuring & Reconstruction of Metal Free
Clean Laboratory at NCPOR*



NATIONAL CENTRE FOR POLAR & OCEAN RESEARCH

(Ministry of Earth Sciences, Govt. Of India)

Headland Sada, Vasco-da-Gama

GOA -403 804, INDIA.

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ESTATE- SECTION

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E-Tender Notice

PUBLIC TENDER

Director, National Centre for Polar & Ocean Research (NCPOR) invites **e-tenders** in Two-parts (Technical - Financial bid) from well-established Bidders for works of the following through only online e-procurement portal i.e.

<http://eprocure.gov.in/eprocure/app>

Sl. No.	e-Tender No.	Item Description	Type of tender	Qty.	EMD in RS.
01	NCPOR/Estate Section/ET-01/2023-24	Restructuring & Reconstruction of Metal Free Clean Laboratory at NCPOR	Two bid	01	6,50,000.00

Bidders can download complete set of bidding document from e-procurement platform [http://eprocure.gov.in/eprocure /app](http://eprocure.gov.in/eprocure/app) from **09.10.2023 09.00** Hrs onwards.

The e-tender notice is also available in our website <http://www.ncpor.gov.in>.

Bidders have to submit the bids online by uploading all the required documents through <http://eprocure.gov.in/eprocure/app>

Bid Submission End date : 07.11.2023 17.00 Hrs

Bid Opening date : 09.11.2023 10.00 Hrs

Bids for this tender will be accepted through online only. Manual bids will not be accepted under any circumstances.

The Director, NCPOR reserves the right to accept or reject any quotation in full or part thereof without assigning any reason.

Sd/-
For & on behalf of NCPOR

NATIONAL CENTRE FOR POLAR& OCEAN RESEARCH
 (Ministry of Earth Sciences, Govt. Of India),
 HEADLAND SADA, VASCO-DA-GAMA,
 GOA - 403 804

E-TENDER NO: -NCPOR/Estate Section/ET-01/2023-24
TENDER FOR RESTRUCTURING & RECONSTRUCTION OF METAL FREE
CLEAN LABORATORY AT NCPOR

e-Procurement portal i.e. <http://eprocure.gov.in/eprocure/app>
Manual bids will not be accepted under any circumstances.

1.	Restructuring & Reconstruction of Metal Free Clean Laboratory at NCPOR Scope of work:	As per Annexure-IV,V,VI,VII,VIII	
2.	General Terms and Conditions	As per Annexure I, II & III	
3.	EMD	<p>A) Indian Bidders shall submit EMD either by DD drawn in favor of NCPOR, for a sum of Rs.6,50,000/- (Rupees Six lakhs, Fifty Thousand only) payable at Vasco-da-Gama only.</p> <p style="text-align: center;">Or</p> <p>In the form of a bank guarantee for a sum of Rs.6,50,000/- (Rupees Six lakhs, Fifty Thousand only) The scanned copy of DD/BG is to be uploaded in the CPP Portal while submitting the bid.</p> <p>The Original DD/BG towards EMD should reach NCPOR within the bid submission date and time for the tender.</p> <p>Bids received without EMD will be rejected.</p>	
	Critical Dates	Date (DD/MM/YYYY)	Time (Hrs. Mins)
	Tender Publishing date	09.10.2023	09:00
	Document download start date	09.10.2023	09:00
	Document download end date	07.11.2023	10:00
	Pre Bid Meeting for site inspection date	17.10.2023	10:00
	Seek Clarification end date	30.10.2023	17:00
	Bid Submission start date	09.10.2023	09:00
	Bid Submission end date	07.11.2023	17:00
	Bid opening date	09.11.2023	10:00

Instruction 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 Instruction 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

- 1) 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.
- 2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- 3) 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.
- 4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any certifying Authority recognized by CCA India (e.g. Sify/TCS/nCode/eMudhra etc.), with their profile.
- 5) 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 to misuse.
- 6) Bidder then logs into the site through the secured long-in by entering their user ID/password and the password of the DSC/e-Token.

SEARCHING FOR TENDER DOCUMENTS

- 1) There are various search options built in 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.

- 2) Once the bidders have selected the tenders they are interested in, they may download the requirement 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/e-mail in case there is any corrigendum issued to the tender document.
- 3) 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

- 1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- 2) Please go through the tender advertisement and the tender document carefully to understand these 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.
- 3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender documents/schedule and generally, they can be in PDF/XLS/RAR/DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
- 4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" or "other Important documents" area available to them to upload such document. These documents may be directly submitted from the "My Space" area while submitting a bid, and need to be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

- 1) Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- 2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender documents.
- 3) Bidder has to select the payment option as "offline" to pay the EMD as applicable and enter details of the instrument.
- 4) Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The detail of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during the bid submission time. Otherwise then uploaded bid will be rejected.
- 5) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BOQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BOQ file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed the bidder should save it and submit it online, without changing the filename. If the BOQ file is found to be modified by the bidder, the bid will be rejected.
- 6) The server time (which is displayed in the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during the bid submission.
- 7) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is

maintained using the secured socket Layer 128 bit encryption technology, data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric keys. Further this key is subjected to asymmetric encryption using buyers/ bid openers public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

- 8) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- 9) Upon the successful and timely submission of bids (i.e. after clicking "Freeze Bid Submission in the portal), the portal will give a successful bid submission message and a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
- 10) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid and may be used as an entry pass for any bid opening meetings.

ASSITANCE TO BIDDERS

- 1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
- 2) Any queries relating to the process of the online bid submission or queries relating to CPP Portal in the general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 180030702232.

ANNEXURE – IINSTRUCTION TO THE BIDDERS

1) The Director, National Centre for Polar and Ocean Research (NCPOR) invites online e-Tender in Two-parts from the reputed firms for the **“Restructuring & Reconstruction of Metal Free Clean Laboratory at NCPOR.”** **through only online e-procurement portal** i.e. <http://eprocure.gov.in/eprocure/app> as per the specifications given in Annexure-I. **Bids for this tender will be accepted through online only. Manual bids will not be accepted under any circumstances. The Eligibility Criteria is as below:**

Eligibility Criteria: The bidder should have,

- (a) Executed at least one `Single work` of Rs.01.69 Cr or above or Two `Single Works` of Rs. 01.30Cr or above or Three `Single works` of Rs 0.85 Cr or above during last seven years ending August 2023 in any Government/PSU/Reputed Organizations . `Work` here is defined as `Establishment of Clean Room facilities`.
- (b) Minimum Average Annual Turnover of the bidder (For Last 3 Years) 01.00Cr or above ending March 2023.(Please provide audited Balance sheet/ CA Certified P/L Statement and ITR)
- (c) GST Registration
- (d) PAN/TAN number
 - The bidder should fulfill all above eligibility criteria to become eligible for participating in this tender.
 - Self attested copies of all above documents should be uploaded. The original documents should be presented for verification as & when asked.

2) Time period for completion of work in 180 days from the date of award of work order.

3) The bids should be submitted in **Two Bid** containing **Technical - Financial bid**.

I) Technical bid should contain all details, make & model and specifications of the equipment/items offered, delivery schedule, warranty, payment term, user-list, service support.

In the TECHNICAL BID, the Bidder should furnish the Name and address of the Work Completed placed on similar work with order No, date, Description and quantity, Date of Completion along with Contact person Telephone No, Fax No, and e mail address of Purchaser. The documents to be submitted with the technical bids may be verified through the check list given in tender.

II) Financial bid should contain details of the price(s) of the item(s) quoted in the technical bid.

The price bid or Bill of Quantity will be in Excel format. The bidders are requested to note that

they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are requested to download the BOQ file, open it and complete the unprotected cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. **Once the details have been completed the bidder should save it and submit it online without changing the file name.** If the BOQ file is found to be modified by the bidder, the bid will be rejected.

4) Overwriting and corrections should be attested properly. The bid should be complete in all respects and should be duly signed, the signed bid only should be uploaded. **Incomplete and unsigned bids will not be considered at all.**

5) The bid should contain all relevant technical literature pertaining to items quoted **with full specifications** (Drawing, if any), information about the products quoted, including brochures if any.

6) Any/Firm/company which is black listed from any organization&/or facing/having faced any legal/criminal action/case are not eligible for this tender & should not apply.

7) If the bidder is registered under MSME, NSIC and claiming any exemptions should submit notarized copy of valid certificates(Construction of Clean room/ HVAC works/civil / Electrical works) along with the quotes, failing which exemptions will not be considered.

8) Bid should be **valid for a period of 90 days** from the date of tender opening for the purpose of acceptance and award of work. If the Contractor fails to complete work within the agreed time, for delayed work completions NCPOR reserves the right to **levy liquidated damages** at the rate of 0.5% per week or part their of up to maximum of 10% of work order value.

9) **Technical bid should contain EMD.**

Bidders shall submit EMD either by DD drawn in favour of Director, NCPOR, on any nationalized bank for a sum of Rs. **06,50,000/- (Rupees Six lakhs, Fifty Thousand only** payable at Vasco-da-Gama or in the form of a bank guarantee for a sum **06,50,000/- (Rupees Six lakhs, Fifty Thousand only** from any reputed bank (scheduled bank) initially valid for 180 days from the date

of closing tender as per the proforma (Annexure XIII). The scanned copy of DD/BG is to be uploaded in the CPP Portal while submitting the bid.

The Original DD/BG towards EMD should reach NCPOR within the bid submission date &time for the tender.

Bids received without EMD will be rejected.

The EMD of unsuccessful bidders shall be returned within 30 days of the award of contract.

The earnest money will be liable to be forfeited, if the tenderer withdraws or amends, impairs or derogates from the tender if any respect within the period of validity of his tender.

10) NCPOR requires that the bidders suppliers and contractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy, the following are defined:

“Corrupt practice” means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution:

“fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of contract;

“collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of purchaser, designed to establish bid prices at artificial, noncompetitive levels; and

“coercive practice: means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of contract;

NCPOR will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the contract in question; The Decision of Director, NCPOR shall be final and binding.

11) A tender is liable for disqualification, if bidder is found to have mislead or furnished false

information in the forms / statements / certificates submitted in proof of qualification requirements or record of performance such as abandoning execution of the works, litigation history &/ or financial failures and or suppression of material facts and information.

14) A Committee constituted by the Director, NCPOR for the purpose reserves the right to open the bids. Technical & Financial bids will be decrypted and opened online on the date and time mentioned in the tender document.

15) A technical Committee/engineer constituted/appointed by the Director will assess the work done by supplier for their quality and their conformity to the specifications provided by the firm in their quotations. Any item(s) identified by the Committee/engineer to be not as per the specifications or are found to be of inferior quality will be rejected, and the bills towards the work will not be processed for payment till proper replacements are provided.

16) **The submission of tender** shall be deemed to be an admission on the part of the tenderer, that the contractor is fully acquainted with the specifications, drawings etc. and no claim other than what stated in the tender shall be paid in the event of award of Work Order.

17) **Acceptance of this tender** form and submission of the quote within the stipulated time would be treated as:

a) The tenderer has understood all requirements as described in our Tender document.

b) Acceptance to provide/establish all the facilities mentioned in our tender without any price escalation, if the tenderer finds it necessary to add any hardware or software or any other materials during implementation.

c) Agreeing to execute order to the satisfaction of NCPOR or its authorized representatives within the stipulated time.

18) NCPOR will not be liable for any obligation until such time NCPOR has communicated to the successful bidder of its decision to release the Work Order.

19) Bidders shall note that NCPOR will not entertain any correspondence or queries on the status of the offers received against this Tender Invitation.

20) The Director, NCPOR does not bind to accept the lowest quotation and reserves the right to himself, to reject or partly accept any or all the quotations received without assigning any reason.

21) All disputes arising in connection with executing the Work order will be subject to the Jurisdiction of the Courts in Goa only.

22) Defects Liability Period (DLP) : The DLP for the entire work is twelve months from the date of completion of the entire work as certified by the Estate In charge. If any defect is found in the work during DLP, the Contractor has to rectify the same immediately at his own cost.

24) Security Deposit (SD): It is 10% amount of the final bill value. It is an interest free deposit which will be released only after successful completion of the Defect Liability Period. EMD of the successful bidder will be converted into SD. The balance SD will be deducted from RA(Running Account) and Final bill amount of the Contractor.

25) **Payment Terms:** No advance payment shall be made. Payment to the Contractor will be made within 30 days upon submission of bill in duplicate after satisfactory completion of the entire work as per the actual quantity executed after deduction of statutory taxes. If the Contractor wishes provision of RA Bill can be followed for payment as per actual work and quantity executed at site. Measurements pertaining to the bill to be recorded jointly by representative of the contractor and Engineer incharge NCPOR. [As per the Govt. of India norms, payment to the Contractors are made online through Public Financial Management System (PFMS). The Contractor should submit his bank & other details in the prescribed format along with the bill.]

26) Comprehensive annual maintenance contract charges for a period of 03 years after expiry of DLP to be quoted in BOQ by the Contractor. This will be taken into consideration to arrive L1. In

Work order, same would be indicated and payment will be made quarterly after satisfactory services assessed by NCPOR. A 10% SD shall be deducted from the Quarterly bills and the same shall be released after satisfactory completion of CAMC of each year.

27) Before submission of tender the tenderer must inspect the site to acquaint himself about the condition in regard to accessibility of site, nature and extent of ground, working condition of site and locality including stacking of materials, installation of tools and plant (T&P) etc, conditions affecting movement of labour etc. required for the satisfactory execution of work contract, No claim whatsoever on such account shall be entertained by NCAOR under any circumstance.

28) Successful bidder should commence the work within two weeks from the date of award of work order if not the earnest money will be forfeited.

29) **Project management:** The agency to submit a detailed program chart for the execution of work, clearly indicating all the activities from start to completion of project before commencement of work. The representative drawing for major components of the project has been provided in the tender. However, the actual drawing for execution, of each of these items, should be submitted to NCPOR, for approval, before proceeding ahead with the work. The agency also to submit a tentative program chart of execution of the project, along with technical bid.

30) Tenders with conditional pricing or Conditional tender will not be considered.

31) In case of termination of contract, the Security deposit shall be forfeited.

32) Pre Bid Meeting will be held at NCPOR on 13th October 2023 at 10:00 Hrs. The Minutes of Meeting (MoM) of the Pre Bid meeting will be uploaded on CPP, and the contractor needs to sign and upload the MoM of Pre bid meeting, thereby the contractor agreeing to the MoM and abides to the decisions.

33) Samples: Samples (PPN, PPH, Vinyl Sheet, Paint, filter, etc) where asked for, shall be submitted to NCPOR or a factory visit to be provided, free of all charges. The sample should reach us and got approved before the execution of the Work. The sample must be carefully packed and

labeled clearly and with the technical specifications brochure (if any). NCPOR shall not be responsible in any way for the loss or damage of samples due to any reasons whatsoever. In the event of the non-acceptance of the sample, the contractor will have to remove the samples at his own expense.

34)PAYMENT OF SALARIES AND WAGES: The Service Provider is required to pay the Salaries/wages of contracted staff deployed at NCPOR on their own and then claim payment from NCPOR along with all statutory documents like PF, ESIC, etc. as well as the bank statement of payment done to the deployed staff.

35) Contractor shall be fully responsible for releasing payment to service providers/work force engaged by him as per provision of the Minimum Wages Act and also shall be responsible for complying with the Labour Regulations in vogue regarding the Maintenance of attendance and other registers etc. The Contractor in addition to the above is also fully responsible for complying with the EPF and ESI Act in respect of his staff members. The Contractor has to submit the proof of monthly deposition.

ANNEXURE – IISTANDARD TERMS AND CONDITIONS OF THE CONTRACT**1. INTERPRETATION:**

- a. In construing these conditions the Specifications, the Schedule of Rates, additional Conditions and Agreement, the following words shall have the meanings herein assigned to them except where the subject or context otherwise requires.
- b. The contract shall comprise of the Articles of Agreement, General Conditions of Contract, Additional Conditions, Scope of Work, the Schedule of Rates, Specifications, Drawings, Work Order, Work Order Acceptance and other documents mentioned in the tender.

WORK OR WORKS: shall mean all work or works defined in Schedule of Rates. Specifications, Scope of Work and such other work or works as the Contractor may be entrusted with for carrying out under the contract.

EMPLOYER: shall mean the Director, NCPOR (National Centre for Polar & Ocean Research) or any Officer authorized by the Director for the purpose.

ENGINEER: shall mean the NCPOR Engineer designated by the Employer to superintend and perform other duties as indicated in the contract.

CONTRACTOR: shall mean the individual or Firm or Company, whether incorporated or not, undertaking the work and shall include the legal personal representative or such individual or the persons composing such Firm or Company or the successors of such Firm or Company and the permitted assignees of such individual or Firm or Firms or Company.

SITE: shall mean the site of the contract works including any buildings and erections thereon and any other land adjoining thereto (inclusive) as aforesaid allotted by the Employer or the Engineer for the Contractor's use.

2. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY

- a. The Contractor shall provide at his own cost all materials, (except such materials, if any as may in accordance with the contract, be supplied by the Employer), Plants, tools, appliances, implements, ladders, scaffolding, temporary works etc. requisite for the proper execution of the work whether original, altered or substituted and whether included in the specifications or other documents forming part of the contract or which may be necessary for the purpose of satisfying or complying to the requirements of Engineer, as to any manner as to which under these conditions he is entitled to be satisfied together with carriage therefore to and from the work. The Contractor shall also supply without any extra cost the requisite number of persons with means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or materials. Failing his so doing, the same may be provided by the Engineer at the expense of the Contractor and the expenses may be deducted from any money due to the Contractor under the contract and /or from his Security Deposit.

- b. The Contractor should personally supervise each work till completion or may appoint a qualified Supervisor, pre-approved by the Engineer till the completion of work. No separate supervision charges will be paid.
- c. NCPOR shall provide requisite quantity of water, electricity for carrying out the work free of cost, subject to availability in the NCPOR campus.
- d. The Employer on no account shall be responsible for the expenses incurred by the Contractor for anything hired, which the Contractor needs to complete the ordered work.

3. LABOUR LAW: The contractor shall submit a valid license under the Contract Labour (R&A) Act 1970 and the Contract Labour (Regulation & Abolition) Central Rules 1971 before the commencement of work and continue to have valid license during the currency of the contract. The contractor to follow,

- a) Contract Labour (Regulation and Abolition) Act 1970
- b) Payment of Wages Act 1956
- c) Employment of Children's Act 1923
- d) Minimum Wages Act
- e) Employee Provident Fund Act 1952 and scheme made under said Act.
- f) Obtain required licenses/clearances etc. from the Assistant Labour Commissioner, Municipality, and other local agencies/bodies at his own cost, wherever necessary. And any other existing laws in this regard.

4. DUTIES & TAXES

Rates quoted by the Contractor shall include excise and all duties, octroi, toll tax, levies, royalties and all other taxes in respect of this contract. Goods and Service Tax (GST) as applicable is to be stated specifically in the prescribed columns of the price bid. In absence of any such stipulation, it will be presumed that rates quoted are inclusive GST and no claim whatsoever in this respect will be entertained later.

Bidders may quote the current GST rate in the bid document but for the bid evaluation purpose a uniform GST rate 18% will be considered for all items for all bids. But payment will be made to the Contractor as per the GST quoted by him or as per the prevailing GST rate against submission of documentary evidence.

5. MODE OF PAYMENT

Payment to the Contractor will be made within 30 days upon submission of bill in duplicate after satisfactory completion of the entire work as per the actual quantity executed after deduction of statutory taxes. If the Contractor wishes provision of RA Bill can be followed for payment as per actual work and quantity executed at site. Measurements pertaining to the bill to be recorded jointly by representative of the contractor and Engineer incharge NCPOR. [As per the Govt. of India norms, payment to the Contractors are made online through Public Financial Management System (PFMS). The Contractor should submit his bank & other details in the prescribed format along with the bill.]

6. TESTING OF MATERIALS

The Contractor shall provide assistance, instruments, materials, labour and any other

arrangement normally required for testing, checking of materials and workmanship as stipulated in the specifications and by statutory authority at his own cost. The Employer has the right to appoint the testing authorities. The Contractor shall pay for the cost of test samples, its packing, transportation including testing fees. Failing his so doing the same shall be provided by the Engineer at the expense of the Contractor and the expenses may be deducted from any money due to the Contractor under the contract and/or from the Security Deposit or proceeds thereof or of a sufficient portion thereof.

7. **SAFETY & SECURITY** : The Contractor should take utmost care while executing any such work performing at height & make proper adequate safety measures for his workers. Safety & Security of the Contractor's manpower shall be sole responsibility of the Contractor. In case of any accident occurs due to any reasons during the work, NCPOR will not be responsible in any way for it. No extra compensation shall be made to the Contractor and No claim what so ever nature will be given or paid on this account and Contractor is fully responsible for such eventualities and he should indemnify NCPOR from such happening.

The Contractor shall provide all safety gadgets to his workers like Full Body Harness, Helmets, Shock resistant Hand Gloves, Safety shoes, Goggles, Masks etc.

8. CONTRACTOR'S ENGINEERS/FOREMAN & WORKMEN

- a. The Contractor shall give all necessary personal superintendence during the execution of the work and as long thereafter as the Engineer may consider necessary until the expiration of the Defects Liability Period. The Contractor shall employ qualified, experienced & competent Site-Engineer/Foreman. Any directions, explanations, instructions or notices given by the NCPOR Engineer to the Contractor's Site-Engineer/Foreman or any other authorized person shall be held to be given to the Contractor.
- b. The Contractor shall on the intimation of the NCPOR Engineer immediately dismiss from the works any person employed thereon who may in the opinion of the Engineer be unsuitable or incompetent or behaved misconduct himself.

9. ACCESS

- a. The Engineer and the Employer or its representative shall at all reasonable time have free access to the works and /or workshops, factories or other places the materials are being prepared or constructed for the contract work and also to any place where the materials are lying or from which they are being obtained and the Contractor shall give every facility to them for inspection. Except the representatives of the Employer or Statutory Authorities, no other person shall be allowed on the works at any time without permission of the Engineer.
- b. If any work is to be done at a place other than the site of works, Contractor shall obtain written permission of the Engineer.

10. VALUATION & PRICE FOR VARIATION

The Engineer with the approval of the Employer shall have power to make any alterations/omissions/additions and /or substitutions from the original specifications, drawings, designs and written instructions and such alterations, omissions, additions,

substitutions shall not invalidate the contract and any altered , additional , or substituted work which the Contractor may be directed to do, in the manner specified above as part of the work shall be carried out by the Contractor on the same conditions in all respects on which he agreed to do the main work. The rates for such altered additional or substituted work under this clause shall be worked out in accordance with the following provisions in their respective order.

- a. If the rates for the altered, additional, or substituted work are specified in the contract for the work the Contractor is bound to carry out the altered additional, or substituted work at the same rates as are specified in the contract.
- b. If the rates for the altered, additional or substituted work are not specifically provided in the contract for the work the rates will be derived from the rates for a similar class of work as are specified in the contract for the work.
- c. Under no circumstances the Contractor shall suspend the work on the plea of non-settlement of rates of items falling under the clause.

11. FAULTY MATERIALS, WORKMANSHIP & DEFECTS AFTER COMPLETION

- a. The Engineer shall have powers to require the removal from the site of all materials and work, which in his opinion are not in accordance with specifications and in case of default , the Engineer shall be at liberty to employ other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials to be substituted thereof and in case of default the Engineer may cause the same to be supplied and all costs which may attend such removal and/or substitution are to be borne by the Contractor.
- b. If it shall appear to the Engineer or to the Estate In-charge that any work has been executed with unsound imperfect or unskilful workmanship or with materials of any inferior description or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract any defects , shrinkage or other faults which may appear within the defects liability period of Six months from the date of completion arising in the opinion of the Engineer, the Contractor shall on demand in writing which shall be made within six months of the completion of the work from the Engineer specifying the work, materials , articles defects or other faults complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify or remove and reconstruct the work so specified in whole or in part as the case may require or as the case may be removed the materials or articles so specified and provide other proper and Suitable materials or articles at his own cost. In case of any such failure, the Engineer may rectify or remove or re-execute the work or remove and replace with others, the material or articles complained of as the case may be at the risk and cost in all respects of the Contractor.
- c. In lieu of rectifying the work not done in accordance with the contract, the Employer may, allow such work to remain, and in that case make allowance for the difference in value, together with such further reduction as in his opinion may be reasonable.
- d. Provided always that nothing in this clause shall relieve the Contractor from his liability to execute the works in all respects in accordance with the terms and conditions of this contract, or from his liability to make good all defects.

12. WORKS TO BE OPEN FOR INSPECTION

- a. All work under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Engineer and the Contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer to visit the works shall have been given to the Contractor, either himself be present to receive order and instruction or have a responsible agent duly accredited in writing present for that purpose.
- b. The Contractor shall give not less than seven days' notice in writing to the Engineer before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up and place beyond the reach of measurement, any work without the consent in writing of the Engineer and the Engineer shall within the aforesaid period of seven days inspect the work , and if any work shall be covered up or placed beyond the reach of measurement without such which the same was executed.

13. INDEMNIFYING AGAINST DAMAGES TO PERSONS, PROPERTY & STATUTES

The Contractor shall take all precautions to avoid all accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused due to negligence on his part. No hindrance shall be caused to traffic during the execution of work.

- a. The Contractor shall be responsible for all injury to persons, animals or things and for all damage whether such injury or damage arises from carelessness or accident in any way connected therewith. This clause shall be held to include interalia any damage due to causes as aforesaid to work, building(whether immediately adjacent or otherwise) and to roads, streets, foot paths, bridges or ways as well as all damage caused to the buildings and works forming the subject of this contract by inclemency of weather. The Contractor indemnifies the Employer and holds him harmless in respect of all expenses arising from such injury or damages as aforesaid and also in respect of any award of compensation or damage consequent.
- b. The Contractor shall reinstate all damage of every sort mentioned in this clause so as to deliver the whole of the contracted works complete and perfect in every respect and so as to make good and otherwise satisfy all claims for damage as foresaid to the property of third Parties.
- c. The Contractor also indemnifies the Employer against all claim which may be made upon the Employer for acts during the currency of this contract by any employee or representative of an employee of the Contractor or any sub-Contractors, employed by him for any injury to or loss of life of such employees or for compensation payable under any law for the time being in force to any workmen or to the representative of any deceased or incapacitated workmen.
- d. The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages compensation costs charges and /or expenses arising or occurring from or in respect of any such claim and/or damages as aforesaid from any sum or sums due or to become due to the Contractor or security deposit.
- e. The Contractor shall indemnify the Employer against any action claim or proceedings relating to infringement or use of any patent or design or any alleged patent or design

rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under or action brought against the Employer in respect of any such matters as aforesaid the Contractor shall be immediately notified thereof and the Contractor shall be at liberty at his own expense to settle any dispute or to conduct any litigation that may arise there from provided that the Contractor shall not be liable to

indemnify the Employer if the infringement of the : patent or design of any alleged patent or design right is the direct result of an order passed by the said Employer or his authorized representative .

14. IN CASE OF DEATH OF CONTRACTOR

Without prejudice to any of the rights or remedies under this contract, if the Contractor dies the Employer shall have the option of terminating the contract without any compensation to the Contractor.

15. COMPLIANCE TO LABOUR LAWS

The Contractor shall comply with all the provisions of the Minimum Wages Act, 1948. Contract Labour (Regulation and Abolition) Act, 1970 and rules and orders framed there under and other labour laws affecting contract labour and the rules and orders framed there under that may be in force or brought into force from time to time. NCPOR will not take any responsibilities towards any injury or compensation etc.

16. EXTENSION OF TIME

- a. If the Contractor shall desire an extension of time for the completion of the work on the grounds of his having been unavoidably hindered in its execution or any other ground, he shall apply in writing to the employer within seven days of the date of hindrance on account of which he desires extension as aforesaid and the Employer shall if in his opinion (which shall be final) reasonable grounds shown therefore authorize such extension of time if any which may in his opinion be necessary or proper.
- b. In the event the value of work exceeds the value of the Bill of Quantities owing to variations the Contractor shall be entitled to ask for extension of time in proportion to the increased value of work.

17. **VALIDITY OF THE OFFERS:** The offers will have to be kept valid for a period of 90 days from the date of opening of bids. In case of finalization of the tender is likely to be delayed, the tenderer will be asked to extend the same without change in the prices or any terms and conditions of the offer. If any change is made, original or during the extended validity period, the offers will be liable for outright rejection without entering into further correspondence in this regard.

18. **STATUTORY VARIATION:** Any statutory increase or decrease in the taxes and duties subsequent to suppliers offer if it takes place within the original contractual delivery date will be to the Employers account subject to the claim being supported by documentary evidence. However, if any decrease takes place after the contractual delivery date, the advantage will have to be passed on to the Employer.

19. **REPEAT ORDERS:** NCPOR reserves the right to issue repeat orders / additional orders to the Contractor up to 25% of the total value of the original Work Order at the same rate, terms and conditions up to One Year from the date of completion of the Original Work.
20. **PENALTY & TERMINATION OF CONTRACT:** Time is the essence of the contract. If the Contractor fails to maintain the required rate of progress or to complete the work and clear the site on or before the completion date or extended date of completion, he shall without prejudice to any other right or remedy available under the law, pay compensation the amount calculated at the rates stipulated below or as the Employer may decide (whose decision in writing shall be final and binding) on the amount of the tendered value of the work for every completed day / week (as applicable) that the progress remains below or that the work remains incomplete.

In case, the work is delayed/not completed within the period stipulated in the contract, penalty shall be levied @ 0.5% per week of the total contract cost subject to maximum of 10% of the total contract cost. The Engineer may without prejudice to his any other rights or remedy against the Contractor in respect of any delay, inferior workmanship, any claims for damages and / or any other provisions of this contract or otherwise, and whether the state of completion has or has not elapsed, can take decision & inform the Contractor by notice in writing in any of the following cases.

- i. If the Contractor fails to rectify/replace the defects in spite of written notice by Engineer.
- ii. If the Contractor suspends the progress of work so that in the opinion of the Engineer he will be unable to secure completion of the work by the date of completion and do not improve performance even after written notice.
- iii. If the Contractor neglects to carry out his obligation under the contract and / or commits defaults in complying with any of the terms and conditions and does not remedy if even after written notice.

When the Contractor makes himself liable for action under any of the aforesaid cases, fails to complete the work even after six weeks after the completion period or in case the work is found not in accordance with the prescribed specification, drawings, Employer shall exercise its discretionary power either:

- a. To recover, from the Contractor as agreed by way of penalty clause above, OR
- b. To terminate the contract. Upon such termination, the full security deposit recoverable under the contract shall be forfeited/recovered and shall be absolutely at the disposal of the Employer, OR
- c. After giving notice to the Contractor to measure up the work done by him, get the balance work done by another Contractor. Any expenses which may be incurred in excess of the sum which would have been executed by the another Contractor, shall be borne and paid by the original Contractor and may be deducted from any of his dues.

Due consideration will be given for waiver / levy of penalty only for the reasons absolutely beyond Contractor's control for which documentary evidence will have to be provided. The request for extension of time in writing giving reasons for delay with supporting documents

shall have to be made immediately.

PENALTY FOR OPERATIONS AND MAINTENANCE:-

- a. For non deployment of designated manpower : 05 % of the total monthly contract amount would be levied as penalty if full strength of agreed personnel are not present for continuous 03 days in one month. The Contractor should maintain the minimum man power as mentioned in the tender. If the Contractor does not engage additional manpower of same category in case of absent of any staff, penalty will be imposed at double the rate of wages or salary for the day he remains absent.
- b. For non- Compliance of Maintenance requirement as per schedule:05 % of the total monthly contract amount would be levied as penalty, in the event of failure of the contractor to comply with the complaint, the Institute shall be at liberty to engage other agency and get the work done and expenditure so incurred shall be recovered from the Contractor. Non-compliance to any of the complaints and not done satisfactorily would be recorded and recurrence of such incidents may lead to cancellation of the contract.All repairs should be made at the NCPOR premises as much as possible. In case any part/equipment needs to be taken outside NCPOR for repair, then necessary gate pass is required to be submitted to Security office. The Contractor shall repair & bring back the same part/equipment within two working days. Any delay in conducting maintenance/repair/replacement of critical component which leads to malfunctioning/stoppage of any of the functionaries would be dealt seriously & treated as break-down of the entire system and the entire loss incurred out of such incident will be recovered from the Contractor and decision of NCPOR authorities will be final in such matters.

21. **POST TENDER CORRESPONDENCE / ENQUIRIES:** Any correspondence or enquiry subsequent to opening of the bids is not desirable, if the same is indulged into, it will be considered for disqualifying the tender. The Tenderer will be required to abstain from pursuing / canvassing the matter, directly or indirectly with any Officers of NCPOR, as otherwise the same would also amount to disqualification of the tender. However, bidder can ask their queries in writing regarding bidding conditions, bidding process prior to the bid opening and/ or rejection of its bid, reason for rejecting a tender after opening of bids.
22. **CLARIFICATIONS FROM BIDDERS:** To assist the process of examination, evaluation and comparison of bids, the Employer may ask all the bidders or any bidder individually for clarification, if any, of their bids, including breakdown of unit rates and price. The request for clarification and the response should be in writing, but no change in the price or substance of the bid will be sought, offered or permitted, except as required to confirm the correction of arithmetical errors discovered by the Employer in the course of scrutiny.
23. **GUARANTEE:** If the goods, stores and equipment's found defective due to bad design or workmanship the same should be repaired or replaced by you free of charge if reported within one year from the date of commissioning of items/equipment's whichever. The Contractor will be responsible for the proper performance of the

equipment's / materials for the respective guarantee period.

- 24. SETTLEMENT OF DISPUTES/ARBITRATION:** The decision of the Director, NCPOR shall be final and binding for any dispute whatsoever. All questions, disputes or differences whatsoever which may at any time arise between the parties to this tender contract touching the agreement or subject matter thereof, arising out of or in relation there to and whether as to construction or otherwise shall be referred to the decision of the Sole Arbitrator, appointed by the Director of NCPOR and the decision of the said Arbitrator shall be final and binding upon the parties.
- 25. RIGHT TO CANCEL TENDER/WORK ORDER/CONTRACT :** In case of strike, accident or any other unforeseen conditions causing stoppage of work, NCPOR reserves the right to cancel and/ or modify the tender / work order without any liability for any compensation and / claim or any description.
- 26. FORCE MAJEURE :** If any time, during the continuance of this contract, the performance in whole or in part by either party under obligation as per this contract is prevented or delayed by reasons of any war or hostility, act of the public enemy, civil commotion, sabotage, fire, flood, explosion, epidemic, quarantine restrictions, strike, lockout or acts of God (hereinafter referred to "eventuality"), provided notice of happening of any such eventuality is given by either party to the other within 21 days of the date of occurrence thereof, neither party shall be reason of such an "eventuality" be entitled to terminate this contract nor shall either party have any claim or damages against the other in respect of such non-performance or delay in performance and deliveries under the contract. The contract shall be resumed as soon as practicable after such "eventuality" has come to an end or ceased to exist. In case of any dispute, the decision of Director, NCPOR, shall be final and conclusive, provided further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reason of any such eventuality for a period exceeding 60 days, either party may at its option, terminate the contract. Provided also that if the contract is terminated under this clause the Employer shall be at liberty to take over from the Contractor at a price to be fixed by the Employer, which shall be final, all unused, undamaged and acceptable materials, bought out components and other stores in the course of manufacture which may be in the possession of the Contractor at the time of such termination, or such portion thereof as the Employer may deem fit except such material, as the Contractor may, with the concurrence of the Employer, elect to retain.
- 27. JURISDICTION:** All questions, disputes or differences arising under out of or in connection with the Tender / Contract if concluded shall be subject to the exclusive jurisdiction of the court under whose jurisdiction the place from which the tender / Acceptance of tender is issued, is situated i.e. Goa.
- 28. PAYMENT OF SALARIES AND WAGES:** The Service Provider is required to pay the Salaries/wages of contracted staff deployed at the buyer location first i.e. on their own and then claim payment from the Buyer along with all statutory documents like PF, ESIC, etc. as well as the bank statement of payment done to staff.

29. Samples: Samples, where asked for, shall be submitted or a factory visit to be provided, free of all charges. The sample should reach us before the execution of the Work. The sample must be carefully packed and labeled clearly and with the technical specifications brochure (if any). NCPOR shall not be responsible in any way for the loss or damage of samples due to any reasons whatsoever. In the event of the non-acceptance of the sample, the contractor will have to remove the samples at his own expense.

ANNEXURE – III**GENERAL TERMS AND CONDITIONS**

1. All materials used shall be as per specifications and ISI marked where ever applicable. ISI marking referred to latest BIS code as published by Bureau of Indian Standards.
2. All measurements shall be at actual and as per site condition. No allowances shall be permitted for rough cast surfaces or for any aesthetical paintings, design bands, etc. Joint measurement shall be recorded with the Engineer.
3. The safe custody and upkeep of various items/equipment's/tools & plants of various categories of works brought to site is the sole responsibility of the Contractor and he shall employ sufficient supervisory personnel to ensure the safety of these items.
4. While executing/ assembly of the work the Contractor shall ensure that existing cables/pipe lines/structures/fittings are not damaged and if due to his negligence, these are damaged, the same shall be set right with no extra cost to the employer.
5. The Contractor shall co-ordinate his work with other agencies employed by the employer and ensure that the works of other agencies are not hampered in any way during the duration of the contract.
6. After the work is completed, the Contractor shall clean all the external surroundings, premise etc. to the satisfaction of the Engineer In-charge.
7. Materials shall be brought as supplied by the manufacturer and got approved before being used on the work after inspected and approved by engineer.
8. The tenderer may visit the site and study the work involved vis-à-vis the quantity and specification before submission of bid. If any discrepancy is observed the same should be brought to the notice of the engineer.
9. Contractor shall provide all necessary tools and plants and safety devices etc. to the workmen as required.
10. The Contractor shall submit, at the expense of the Contractor, to the Engineer the material samples and relevant information, for pre-construction review and approval.
12. The Engineer shall make any variation of the form as specified below, be necessary and for that purpose, he shall have the authority to instruct the Contractor to do after taking necessary approval of the Employer and the Contractor shall do any of the following:
 - (a) Increase or decrease the quantity of any work included in the Contract,
 - (b) Omit any such work,
 - (c) Change the character or quality or kind of any such work,
 - (d) Change the levels, lines, position and dimensions of any part of the Works,
 - (e) Execute additional work of any kind necessary for the completion of the Works, or
 - (f) Change any specified sequence or timing of construction of any part of the Works.
13. **Corona Pandemic Precautions** : It is very important that Contractor should ensure that workers, labours deployed by him should not be sick & suffering from any illness. All your workers must use face masks, maintain social distancing, use sanitizer/wash hands & strictly follow guidelines of MoHFW, Govt. of India for COVID pandemic situation.

SCOPE OF THE WORK AND TECHNICAL SPECIFICATION

The scope of work involves design, fabrication, installation, testing and commissioning of metal-free clean laboratory (Class 10000) clean room for trace metal analysis. The work includes doors & windows, Polypropylene (PP) paneling, False Ceiling, vinyl flooring, AC and AHU, PTFE Hepa Filters, Civil, Electrical, Plumbing and any other work incidental to the project at NCPOR, Goa as per the Schematic Layout of proposed facility.

The project would involve the following:

1. Restructuring of existing Isotracers Lab area (approx 80 m²) within the Lab Block with wall cladding and false ceiling as per the planning and layout.
2. Design and fabrication of the metal-free clean laboratory of FED Class 10000 (ISO Class 07) standards under dynamic conditions as per layout with the following parameters 1) Temperature: 24±2°C, 2) Humidity: 30±10% and 3) Noise level inside the clean rooms: 55±10db. Wet-chemistry lab is excluded from clean room parameters.
3. Testing and commissioning of laboratories.

The detailed scope of work is as below :

Civil

- Dismantling and removal of existing 12mm thick plywood and PP sheet from wall and ceiling of total area 300sqm.
- Removal of existing doors from Processing Lab 1 & 2 of size 1200mm X 2000mm, 02 nos.
- Removal of existing Aluminum partition of size 2400mm X 2200mm, and PP Almirah of size 2200mm X 2000mm X 400mm from Processing Lab 2.
- Removal of existing aluminum window with frame from Digestion Lab of size 1200mm x 1200mm 01 no.
- Removal of existing partition from Digestion Lab of size 1540mm X 2100mm -01no and 3400mm X 2100mm-01 no.
- Refixing of existing false ceiling teakwood frame and suspenders at 200mm from existing ceiling including screws, clamps and any other item required to complete the work in totality as directed by the Engineer-In charge.
- Providing and fixing 1st class teakwood partition with 50mm X 50mm thick and frame section of 600mm X 600mm c/c horizontally and vertically and any other item required to complete the work in totality as directed by the Engineer-In charge.
- Providing and fixing of 10 mm thick PP sheet to be fixed over teakwood frame work with aluminum screws and PU sealant.

- False ceiling: Providing and fixing of 1mm thick glossy PVC sheet over 10mm thick PP sheet with appropriate adhesive etc. and any other item required to complete the work in totality as directed by the Engineer-In-charge.
- Door: Supply installation of 1st Class flush door laminated with 1mm thick PVC sheet in store room, fire exit, digestion lab and clean room including necessary fittings like PVC screws, PVC handle, PVC hinges, PVC screw caps, adhesive etc. And any other item required to complete the work in totality as directed by the Engineer-In charge.
- Workstation: Supply and installation of workstation with 20mm thick PP/PPH sheet and topped with 1mm thick PVC sheet with shelves and openable shutters in Processing Lab 1 & 2, Clean room and Digestion Lab, with necessary fittings like PVC handle, PVC hinges, PVC screws, PVC screw caps etc. and any other item required to complete the work in totality as directed by the Engineer-In charge.
- Acid disposable pit: Construction of acid disposal pit of size 500mmx500mmx500mm with necessary excavation, rubble packing, P.C.C, brick masonry and internal and external plaster with FRP chamber cover and fixed with necessary plumbing fittings etc. and any other item required to complete the work in totality as directed by the Engineer-In charge.
- UPVC window: Supply and installation of UPVC window with frame of size 1.2m X 1.2m and 5-6mm thick glass in Digestion lab including necessary fittings like PVC screws, PVC screw caps, joint sealant, handle etc. and any other item required to complete the work in totality as directed by the Engineer-In charge.
- Vinyl flooring: Providing and fixing 1.5 mm thick acid resistant, lead free vinyl flooring in Digestion Lab, store room, Clean room, processing Lab 1 & 2, and passage including necessary adhesives, scraping the surface, leveling and fittings etc. and any other item required to complete the work in totality as directed by the Engineer-In charge.
- Fire extinguishers: Supply, installation, testing and commissioning of fire extinguishers CO2 type 4.5 kg capacity as per IS 2878/UL 154 complete with handle, fixing bracket etc. and any other item required to complete the work in totality as directed by the Engineer-In charge.

** Note : The lab has a specific requirement of being Metal, Glass and Lead Free. Hence all the materials (Vinyl sheet, painting etc) exposed in the laboratory should be conforming to this requirement.

Plumbing:

- Providing and fixing CPVC (Chlorinated Poly Vinyl Chloride) Plastic Pipe in SDR 11 as per ASTM D 2846 with pressure rating from 28.1 to 7.03Kg/cm² at 23 to 82 deg. centigrade including all necessary fittings as required in Plastic CPVC or Brass CPVC in Tee , bend, clamps, Yellow Adhesive Solution etc; including cutting, deburring /beveling, fitting preparation, solvent cement application, assembly, set & curing times and making good the walls, Pressure Testing etc. complete (Internal/ External work).

- Providing and fixing CPVC full way valves as per ASTM D 2846 with necessary fittings and any other item required to complete the work in totality as directed by the Engineer-In charge.
- Providing and fixing SELFIT SWR PVC / RINGFIT SWR PVC PIPES (soil, waste & rain water drainage pipes, as per IS 13592) of approved make including lubricant / rubber gaskets / spacer saddles, clips / roofing nails etc. complete (single/double socketed) & as directed & or removing existing line at all heights & scaffolding etc. complete. and any other item required to complete the work in totality as directed by the Engineer-In charge
Electrical

Wiring

Wiring for switchboard/ power sockets with 2X6 sq. mm FRLS PVC insulated copper conductor single core cable in recessed medium class PVC conduit along with 1 No. 6 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.

Wiring for light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in recessed medium class PVC conduit as required.

Run of Wiring

- The type of wiring shall be as specified in the tender documents namely, recessed conduit, PVC, channel.
- When wiring cables are to pass through a wall, these shall be taken through a protection PVC pipe or porcelain tube of suitable size such that they pass through in a straight line without twist or cross in them on either porcelain, PVC or other approved material.

Cables

- Copper conductor cable only will be used for circuit/ point wiring.
- Light Wiring : 1.5 sq.mm.
- Power Wiring : 6.0 sq.mm.
- Insulation : Copper conductor cable shall be PVC insulated conforming to BIS Specification.

1. Switch Box

- Switch box should be of non-metallic material, recessed.
- Location of Switch Box
 - a. Passage – 4 module switch box [4 switches for Lights] (01 no).
 - b. Wet Chemistry Lab – 6 module switch box [3 switches for lights, 1 socket 1 switch] (01 nos) ,[2 switches 2 sockets] (02 nos) .
 - c. Digestion Lab - 4 module switch box [4 switches for lights] (01 no)
6 module switch box [2 switches 2 sockets] (01 no)

- d. Store Room - 4 module switch box [1 switch for lights, 1 switch 1 socket] (01 no).
- e. Clean Room - 4 module switch box [4 switches for lights] (01 no)
6 module switch box [2 switches 2 sockets] (02 nos)
- f. Processing Lab 1 - 4 module switch box [4 switches for lights] (01 no)
6 module switch box [2 switches 2 sockets] (04 nos)
- g. Processing Lab 2 - 4 module switch box [4 switches for lights] (01 no)
6 module switch box [2 switches 2 sockets] (04 nos).

2. Lighting

Supply, Installation, Testing, Commissioning of Polycarbonate body Eternal Full Screen Square LED Surface Panel- 24W.

Location of Square Surface Panel:

- a. Passage – 02 nos
- b. Wet Chemistry Lab - 03 nos
- c. Digestion Lab –04 nos
- d. Clean Room – 04 nos
- e. Processing Lab 1 – 04 nos
- f. Processing Lab 2 – 04 nos

Supply, Installation, Testing, Commissioning of LED Batten (4 ft) with extruded polycarbonate, environmental friendly, energy efficient 18 W

Location of Batten:

- a. Changing Room – 01 nos
- b. Store Room – 01 nos

3. Fire Alarm System

Supply, Installation, Testing & Commissioning of 1 Loop Addressable Fire Alarm Panel.

Scope:

- The panel should have integrated LCD Display.
- The panel should be wall mounted.
- The panel must be installed in the passage area replacing the existing one.
- For optimum battery life, the fire panel should only be operated at permissible operating temperatures (0°C to +40°C).
- All messages are shown on the display with a bright color. The displayed messages contain the following information: a. Message type b. Type of the triggering element c. Description of the exact location of the triggering element d. Logical zone and sub-address of the triggering element.

- Operating and display elements should be positioned at eye level.

Smoke Detector Optical with Base (FAP-425-O+MS400)

- Location of Smoke Detectors
 - a. Passage – 01 no
 - b. Change Room – 01 no
 - c. Wet Chemistry Lab – 02 nos.
 - d. Digestion Lab – 02 nos.
 - e. Store Room – 01 no
 - f. Clean Room – 02 nos.
 - g. Processing Lab 1 – 02 nos.
 - h. Processing Lab 2 – 02 nos.
 - i. FESEM, MCICPMS, Paleothermometry, EPM – 02 Each.
- Housing material should be nonmetallic.

Manual Call Point with Key

Scope:

- It should be installed at Digestion Lab & Instrument Lab.
- An installation height of 1400 mm \pm 200 mm, measured from the middle of the manual call point to the floor, must be maintained.
- Manual call points must be illuminated sufficiently with daylight or another light source (including emergency lighting, if present).
- Housing material should be non-metallic.

Sounder Surface Mounted

Scope:

- It should be installed at Digestion Lab & each of Instrument Lab.
- The sound pressure should be maximum of 112 dB(A).
- Housing material should be non-metallic.

4. Electrical Panel for AHU

- SITC of Stand mounted Electrical panel with RYB Indicators, suitable capacity of MCCB, start / stop push button, on/off/trip indicators for AHU Motors, heaters, Condensing units, etc.
- Single phase preventer and delay timer is used for power protection.
- 2 mm THICK GI sheet for body 1.6 mm for door and 3 mm gland plate with 7 tank hot process panel body with more than 80 micron coating with color code RAL - 7032 (Grey).

- Panel will be provided with arrangement of VFD starter along with bypass starter as per appropriate rating switchgear and neoprene gasket provided between door and panel contact and individual exhaust fan is considered for panel ventilation.
 - IP-65 with current breaking capacity of 16 kA.
 - Following Push Button would be provided.
 - i. For AHU on / off
 - Following Indicating Lamps are required :
 - j. For AHU on / off and trip
 - Suitable rating I/C
 - i. Outgoing feeder for ODU 1,2,3,4
 - ii. Outgoing feeder for AHU
 - iii. Outgoing feeder for Ex fan
 - iv. Outgoing feeder for Dehumidifier/Heater Bank
 - Following wirings are required:
 - I. Power cabling for AHU, Condensing Units, Exhaust motor & any other major equipment's.
 - ii. Control Cabling for control system & any other items required to complete the job.
- 5. Dismantling of Electrical Items**
- Removal of all electrical items installed in Isotrace lab which includes wires from PDB to switchboards/switchboards to lighting load, light fittings,switchboards,switchboxes,conduits from wall/teakwood,fire alarm equipment's& any other electrical items as instructed by Engineer in Charge.

AHU System

The scope includes DX type air handling system consisting of air-cooled condensing unit (Outdoor Unit), ducting work, grills, and electrical panel with cabling work with all required accessories.

A. EQUIPMENTS & OTHER SPECIFICATIONS

1. DX TYPE DOUBLE SKIN AIR HANDLING UNITS (DSAHUs):

Scope: The scope of this section comprises the supply, installation, testing and commissioning of Direct Expansion Type Air Handling unit with controls, equipment's and instruments conforming to these Specifications and in accordance with the Schedule of Quantities.

- SITC of Air Handling Unit (100% Fresh air unit) (7500 cfm).
- It should be constructed of GI, centrifugal, double skin Air Handling Unit (outer skin 24G powder coated GI, inner skin 24G plain GI) compatible with DX Condensing Units.
- AHU insulation shall be of 43mm thick PUF.
- Fan section with dynamically balanced, low noise, Centrifugal DIDW backward Curve Supply Air fan direct driven by TEFC squirrel cage induction drive motor (3 phase,415 V, 4 pole, 1440 rpm). Fan model must be selected for lowest noise level and highest efficiency.
- DX cooling Coil section with DX coil of 6 rows with aluminum fins.
- Condensate tray made out of SS 304 in 18 gauge with 19 mm closed cell nitrile rubber.

- Heater Bank of SS 316 shall be provided in heating coil section.
- The humidity should be maintained at 50% (+/-5).
- Fresh airport with (10μ)-90% Efficiency washable filter and Al damper. Filters Section consists of Back Filter (10 microns), Pre Filter (5 microns), Charcoal Filter (3 microns), Fine Filter (3 microns). All filters should be 100% free of glass fiber.
- Sandwich type insulated drain pan, drain pan shall be 18G SS 304 construction.
- Drain pan will be properly insulated by 19 mm thick nitrile rubber insulation with proper slope.
- Adequate no. of access doors & blank sections, flexible connection at fan motor, spring type vibration isolators for fan + motor assembly, internal covering, thermal break etc.
- Magnehaulic gauges shall be provided between the filters.
- Fan section shall have limit switch and marine light.
- View Glass in the Fan Section will be provided & any other items required as instructed by Engineer in Charge.
- The AHU shall be designed and installed so as to function with an additional AHU, regulated with change over, and connected to a common ducting system.

2. DX TYPE AIR COOLED CONDENSING UNITS

Scope: The scope of this section comprises the supply, installation, testing and commissioning of Direct Expansion Type Air Cooled Condensing Units with controls, equipment's and instruments conforming to these Specifications and in accordance with the Schedule of Quantities.

- SITC of DX Type Air Cooled Condensing Unit (8.5 TR). Air-cooled condensing units of specified tonnage capacity.
- The ODU coil shall have anti corrosive coating.
- All the exposed Cu piping shall be coated with anticorrosive coating to avoid rusting of Cu pipes.
- Unit shall be completely factory wired internally. Electrical characteristics of unit shall be 415+/-10% volts, 50 Hz, three phase AC.
- Scroll compressor/s with accessories.
- Copper refrigerant piping within Condensing Unit includes fittings, valves, supports, insulation, etc and any other necessary items.
- Condensing unit stand base frame, made from galvanised steel sections with epoxy/powder coating.
- Rubber vibration isolators & mounting arrangement for vibration-free operation of all equipment.
- MS Stands shall be provided for Condensing Units. Refrigerant Piping between Condensing Units & AHU fabricated out of hard drawn copper of 18 G conforming to ASTM B75 / ASTM 280 BS 2871 suitable for R-410a Refrigerant.
- Copper pipes shall be De oxidized.
- Pressure testing, flushing of pipes any other necessary work.

- Suction Gas line to be insulated with 19 mm nitrile rubber insulation backed with factory backed fire proof glass cloth.
- Liquid line to be insulated with 13 mm nitrile rubber insulation backed with factory backed fire proof glass cloth.
- UPVC Drain pipe of outer diameter 32 mm conforming to IS 4985 : 2000.
- Drain pipe shall be with 6 mm thick cross linked polyethylene insulation / nitrile rubber insulation. & any other work required as instructed by Engineer In Charge.

3. DUCTING WORK(PPH)

Scope:The scope of the section involves supply, fabrication, installation, testing & commissioning of Factorymade Polypropylene Homopolymer/Sulfide (PPH/PPS) ducting.

- The duct should be extruded from PPs material as per molding compound extruded standard.
- The duct should be supported with MS structure at outdoors & with powder coated Aluminum suspenders inside the lab.
- The duct should be covered with 19mm thick nitrile rubber insulation with Aluminum foil wrapping outside of lab.
- Supply air duct -The duct outer diameter should be 400mm with 6mm thickness with necessary bends, tees, sockets and any other joints.
- Fume hood duct - The outer diameter should be 110mm with 3mm thickness with necessary bends, tees, sockets and any other joints.
- Laminar/Evaporator box - The outer diameter should be 90 mm with 3mm thickness with necessary bends, tees, sockets and any other joints.
- Exhaust - The duct outer diameter should be 400mm with 15mm thickness with necessary reducing bends, tees, sockets and any other joints connecting the ducts of fume hood, laminar flow & evaporator box.
- Grille should be provided in PPH material (3mm thick). Grille should be equipped with PPH Volume control dampers.
- The frames/supports/members for installing grilles and diffusers shall be of PPH material, and provided by A/C contractor and not by civil/false ceiling agencies (unless otherwise specified elsewhere).
- Grilles shall have vertical and horizontal deflection louvers to adjust the air-direction as per requirement.
- All dampers shall be opposed-blade, multi-louver dampers of robust construction and tightly fitted.
- The design, operating method and hand control shall be suitable for the location and service required.
- Damper blades shall be fabricated out of PPH sheet 8mm thick and damper frame, lever, link,etc. shall be PPH material. Damper shall be provided with suitable links, levers, etc. as required for proper operation and control with ON & OFF positions clearly marked.
- Fusible like type fire dampers at the end of AHU, with auxiliary switch/contact, control wiring & interlocking for switching OFF the AHU in case of fire.

- Fire dampers shall be approved by TAC & FIA and also as per UL 555 specifications including temperature/time rating.
- Metal free Duct mounted temp & RH sensor .with display to be mounted on duct.
- Metal free Velocity sensor with display to be mounted on duct.

4. DUCTING WORK(PP)

Scope: The scope of the section involves supply, fabrication, installation, testing & commissioning of Factorymade Polypropylene round/ square ducting.

- It shall be min 3 mm thick PP cover with 3mm thick FRP coating.
- The duct should be supported with GI structure at outdoor & with powder coated with PU finish Aluminum suspenders inside the lab.
- The duct should be covered with 19mm thick nitrile rubber insulation with aluminum foil wrapping outside of lab.
- The duct should be connected with necessary bends, tees, sockets and any other joints.

5. Air Heat Exchanger&SISW Exhaust Fan Blower

Scope: The scope of the section involves Supply, Installation, and Testing& Commissioning of Air Heat Exchanger &SISW Exhaust Fan Blower.

- Air to Air Heat exchanger cum scrubber capacity of 7500 cfm which will exchange the heat energy between room exhaust air (db-25deg C, 55%RH & Room supply air 38 deg C, 88%RH).
- In this Heat exchanger the exhaust air will travel from bottom to top of heat exchanger & Supply air will travel horizontally from another side.
- Also the Alkaline water will be spray from top to bottom on exhaust air which will scrub the acidic fumes present in exhaust air and simultaneously due to adiabatic process it will cool the exhaust air up to "19 deg C". Thus there will be heat exchange happen between "19deg C" exhaust air and "38 deg C" supply air.

This Unit must have following component:

- Indirect Air to Air Heat exchanger made out of thin Poly Propylene sheet having minimum efficiency of 68%.
- Alkaline Water tank at bottom of heat exchanger of size minimum 1500mm x 600mm x 600mm, made out of 10mm PP sheet.
- Water Spraying Jet at top of Heat Exchanger which will spray the Alkaline water from top on room exhaust air
- Water circulating system, which collect the water from tank & pump it up to spraying jet , which include circulating pump(1w+1sb) with necessary isolation valve, NRV, Strainer, pipe, fittings, Drain valve, Float valve for makeup water etc.
- ire body of Heat Exchanger to be made out of Double skin sandwich type PUF GI panel of 43mm thick having inner and outer GI sheet of 0.8mm thick and infill PUFF of

40Kg/cubic meter density. With Al frame. Entire body to be laminate with 6mm thick PP sheet from inside

- SISW 7500cfm(1W+1S) 100mm Static pressure Exhaust Blower completely made out of PP impeller & PP Volute Casing & motor is out of airflow path.
- VFD of suitable capacity with VFD bypass starter panel, with DPT install in exhaust air duct. (Refer representative drawing No.06)

6. HEPA Filter with PTFE Media & PP Frame with PP Housing

Hepa Filter (H14) of dimensions – 610 mm x 610 mm x 65 mm should be installed inside the lab with suitable PP housing. The filters should be boron free (non-glass fiber).

The location of the filters are given below:

- a. Processing Lab I – 07 nos.
- b. Processing Lab II – 07 nos.
- c. Clean Room – 04 nos.
- d. Digestion Lab – 02 nos.

PTFE HEPA filters also to be installed in Laminar and evaporator unit as per details in the BOQ. No HEPA Filters required at Wet Chemistry Lab. The grill can be installed in the lab.

Lab Equipment's

The scope includes installation of Metal free PP Class 100 Laboratory Fume hood, Laminar Benches & Metal Free Evaporation Unit.

1. Metal free PP Class 100 Laboratory Fume hood

- Designed to provide highest level of protection and containment against highly corrosive acids.
- Must be made of highest quality corrosive resistant polypropylene (PP) (8 to 10 mm thickness).
- Dimensions: 1250 MM X 600 MM x 1600 MM (LXWXH)
- 450 CFM exhaust rate.
- Back wall (inner wall) should have exhaust holes of 15 inches diameter.
- There should be three rows of six hole each with the first set of holes placed six inches from the top of the working area of the hood.
- The bottom two sets should be placed within 1ft of the base of the working area.
- There should be at least six inches of distance between the centres of the exhaust holes in the bottom two rows.
- The exhaust holes of the bottom rows should be entirely covered with PP sheets of equivalent quality and thickness allowing manual control of total exhaust (Sliding regulator).

- Sash is to be made of transparent acrylic sheet (6mm to 10mm thickness to ensure smooth operation) with provision for height adjustment at every six inches interval.
- The adjustment provision should be manual types (PP pegs).
- The first Peg should be at 6cm the bottom.
- Metallic wire/ counterweight/ pulley/hinges should be avoided for automatic operation of the sash.
- A one inch thick lip at the front should be provided for efficient height adjustment of the sash.
- PVC piping should not have any 90 degree bent.
- All exhaust piping should be of PVC material of minimum 2 mm thickness.
- The exhaust ducting should have minimum number of bents with provision for tapering and back flow siphoning.
- Three sets of LED light with separate switch system appropriately insulated from acid corrosion.
- All the wiring and electrical connections should be double insulated.
- The bottom work bench should not have any perforation.
- The bottom work bench should be supported by PP ribs to avoid any sagging.
- Any gaskets should be poly urethane.

2. Metal free PP class 100 Laminar Benches

- Dimensions: 1250 MM X 600 MM x 1500 MM (LXWXH)
- Designed to provide highest level of protection and containment against highly corrosive acids.
- Must be made of highest quality corrosive resistant poly propylene (PP) (8 to 10 mm thickness).
- Must be fitted with PTFE U15 ULPA filters (610 mm x 305 mm). The filters should be boron free (non-glass fiber).
- The filter frame should be made of PVC.
- ULPA should be replaceable.
- It has to be held in place according to the design fitted with nylon screws for easy replacement of filters. The filters should not have any metal mesh.
- Sash is to be made of transparent acrylic sheet (6 mm to 10 mm thickness to ensure smooth operation) with provision for height adjustment at every six inches interval.
- The adjustment provision should be manual types (PP pegs). The first Peg should be at 6cm the bottom.
- Metallic wire/ counterweight/ pulley/hinges should be avoided for automatic operation of the sash.

- A one-inch-thick lip at the front should be provided for efficient height adjustment of the sash.
- Exhaust at 100 CFM with a manual damper.
- Fan blower above ULPA should be HALAR coated.
- Three sets of LED light with separate switch system appropriately insulated from acid corrosion.
- All the wiring and electrical connections should be double insulated.
- The bottom work bench should not have any perforation. The bottom work bench should be supported by PP ribs to avoid any sagging.
- Any gaskets should be poly urethane.

3. Metal free Evaporation Unit

- Dimensions: (900 MM X 760MM X 760MM) (WxDxH).
- To be made of transparent acrylic sheet and PP. Must be fitted with PTFE U15 ULPA filters from the side.
- It should have two shelves. It must be properly insulated.
- All the Screws and hinges should PTFE/PP. It should have exhaust connection from both chambers and individual chamber should have a taper. Any gasket should be poly urethane gasket.

4. Validation & Documentation

Scope: The scope of the section involves validation & commissioning of area "At Rest".

- HVAC Validation including DQ(Design Qualification), IQ(Installation Qualification),OQ (Operation Qualification) & PQ (Performance Qualification).
- Submission of certificates of all manufactured items.
- Duct leak test as per SMACNA & AHU test, particle counting, CFM &ACPH balancing.
- PAO Test of all HEPA filters.
- Requirements of Schematic flow diagram, ducting layout, & AHU P&ID's, GA drawing.
- All documentation in hard copy as well as soft.

5. Dismantling and Buyback- of 40'ISO container & AHUs and related accessories within the container also PP fabricated wall & false ceiling paneling ducting, laminar, fumehood &counter. This item is considered as a buy back item with cost of labour, crane, lorries for transportation & any other machinery etc required to take the material outside NCPOR and the same may be quoted accordingly.The detailed list of Buy Back items is as below:

- i) The existing AHU system is installed in 40' ISO Container and caters to the existing Isotraces Lab. The container needs to be cut by cutting machine (as lifting by crane not possible) its internal components i.e. AHU(01 nos Fresh air and 01 no Exhaust system and its motors(7.5 hp, 2.2 hp & 2 hp)), condensing units (03 nos) with copper pipes, Electrical Control Panel to be taken out and disposed by the agency.
- ii) The PP ducts from AHU to the laboratory, Supply & Return Ducts alongside necessary supports & accessories. fumehood, Laminar bench inside the lab, needs to be dismantled, cable conduits and electrical cables within, Plywood & PP wall cladding sheets, pp counter.

6. Operation and Comprehensive annual maintenance (CAM)

- The Isotraces lab shall be functional 24X7 from the date of commissioning of the laboratory.
 - This will require round the clock deployment of technical manpower for operations and maintenance of systems in place. Man power (04 junior Technicians) to be deployed -from completion date of the project- for regular and timely operation of the systems. The technicians shall operate the system and maintain registers for the same. In an event of any defect in the system may bring to the notice of NCPOR and contractor so as to rectify the defect on priority. If required they shall also shoulder other similar responsibilities within NCPOR, from time to time, as directed by the Engineer in-charge.
 - The comprehensive annual maintenance(CAM) to be carried out as per the activity chart detailed in the tender (**Annexure –VIII**). Amongst all the activities, replacement of PTFE HEPA filter is a major work to be carried out annually. The Lab to be tested every year during filter replacement, through authorized certifying agencies and certificate to be submitted to NCPOR.
- ** Note: i) CAM charges shall be applicable/payable only after expiry of defect liability period of 01 year from the work completion date.
- *** ii) The laboratory and the attached total system to be maintained as per the activity chart provided in the tender, even during the defect liability period-without any additional cost payable by NCPOR.

List of recommended makes and IS standards to be followed**I. List of recommended makes**

- **Epoxy Paint:** Asian paints-Apcolite Advance 2-pack Epoxy finish – Equivalent make as above.
- **Zinc Chromate Primer:** Asian Paints / Fosroc / Dr.fix-it / Equivalent Primer.
- **Cement:** ACC / Ultratech / Ambuja cement (OPC 43 grade cement) / any other equivalent make.
- **Laterite:** Best available local material fulfilling IS Specifications
- **Sand:** Best available local material fulfilling IS Specifications.
- **Coarse aggregate:** best available local material fulfilling IS Specification.
- **Fine aggregate:** best available local material fulfilling IS Specification.
- **Laterite Rubble:** best available local material fulfilling IS Specification.
- **PP Laboratory sink:** Premium polymers / PLF / any other equivalent make.
- **Teakwood sections:** First class teakwood frame of best available local material fulfilling IS Specification.
- **PP sheet:** Simona / Rigiwall / any other equivalent make.
- **Flush doors:** Best available local material fulfilling IS Specifications.
- **UPVC windows:** Fenesta / any other equivalent make.
- **Vinyl Flooring:** Testar / any other equivalent make.
- **Fire Extinguishers:**Safex/Kanex/Ultra fire/Relish fire /any other equivalent make.
- **Cables:** Havells/Finolex/Polycab/any other equivalent make.
- **Switchboxes:** Anchor/ any other equivalent make.
- **Switch & Sockets:** Anchor/ any other equivalent make.
- **24 W Square LED Panel:** Orient/Havells/Crompton/ any other equivalent make.

- **18 W LED Batten (4 ft):** Orient/Havells/Bajaj/ any other equivalent make.
- **Fire Alarm System:** Bosch/ any other equivalent make.
- **Controllers, Controls & Sensors in Control Panel:** Siemens/ any other equivalent make.
- **Fresh Air Unit:** Edgetech/ any other equivalent make.
- **DX Outdoor Unit:** Bluestar/Carrier/ any other equivalent make.
- **Refrigerant Piping:** best available local material fulfilling IS Specification.
- **PVC Drain Piping:** Astral/Finolex/ any other equivalent make.
- **PPH Duct:** Simona/ any other equivalent make.
- **PPH dampers/grills:** best available local material fulfilling IS Specification.
- **Duct Sensors:** Rotronic/ any other equivalent make.
- **Heat Exchanger:** H-Tech/ Viyan/ Advantech/ other equivalent make.
- **Temp & RH Meter:** Extech/ any other equivalent make.
- **Magnehaulic gauge:** Dwyer/ any other equivalent make.
- **HEPA/ULPA Filter:** Cambridge/Camfil/AAF/ any other equivalent make.
- **Fan Motor:** CG/Kirloskar/ABB/ any other equivalent make.
- **VFD:** Siemens /Honeywell/Schneider/ABB/ / any other equivalent make.
- **Digital Voltmeter/Ammeter:** Siemens /Honeywell/Schneider/ABB/ / any other equivalent make

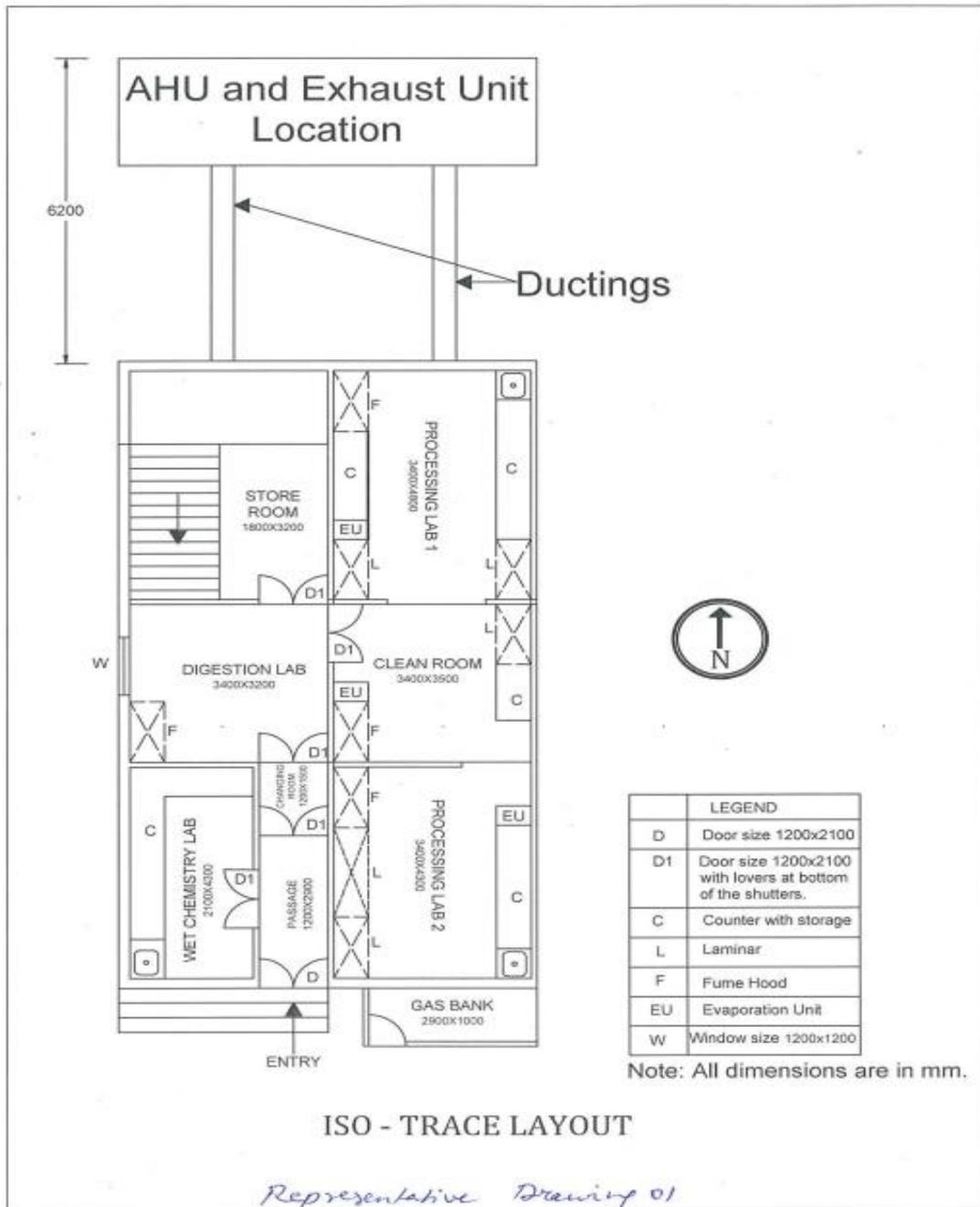
Note: If recommended make is not available then equivalent make shall be approved only by Engineer -in- charge.

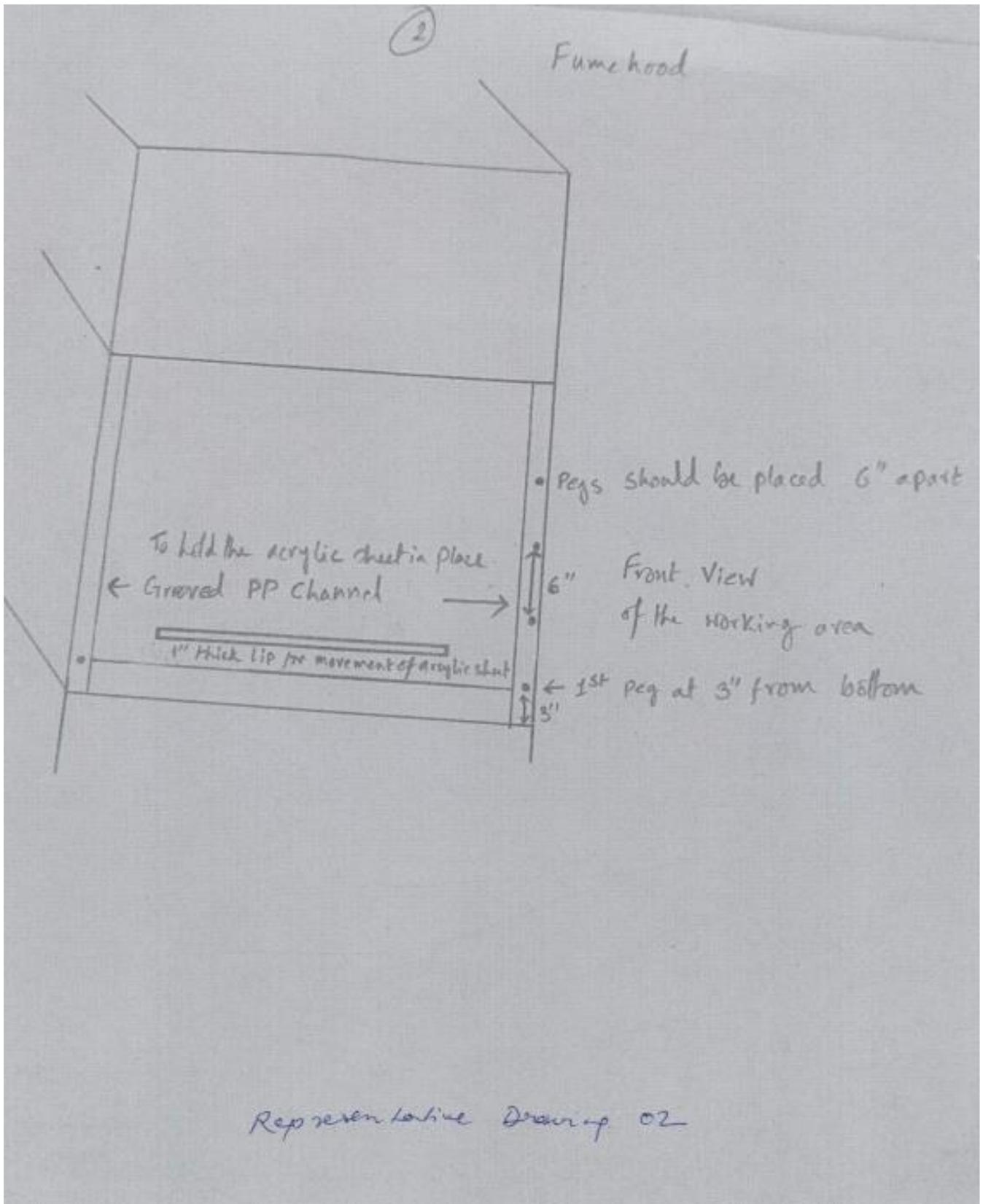
ANNEXURE – VI**LIST OF INDIAN STANDARD TO BE REFERRED TO:-**

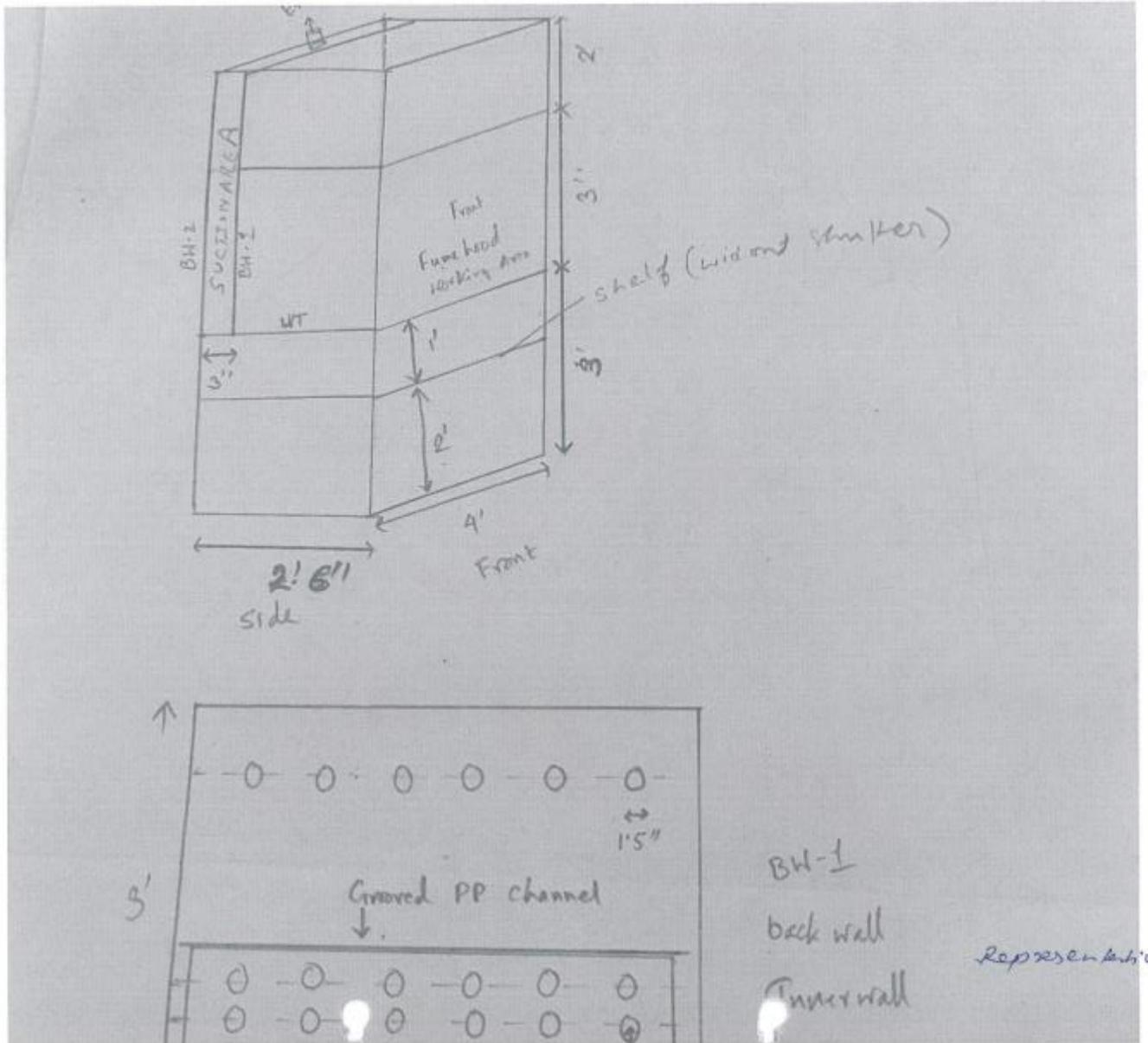
The following IS standards are to be followed while executing the project:

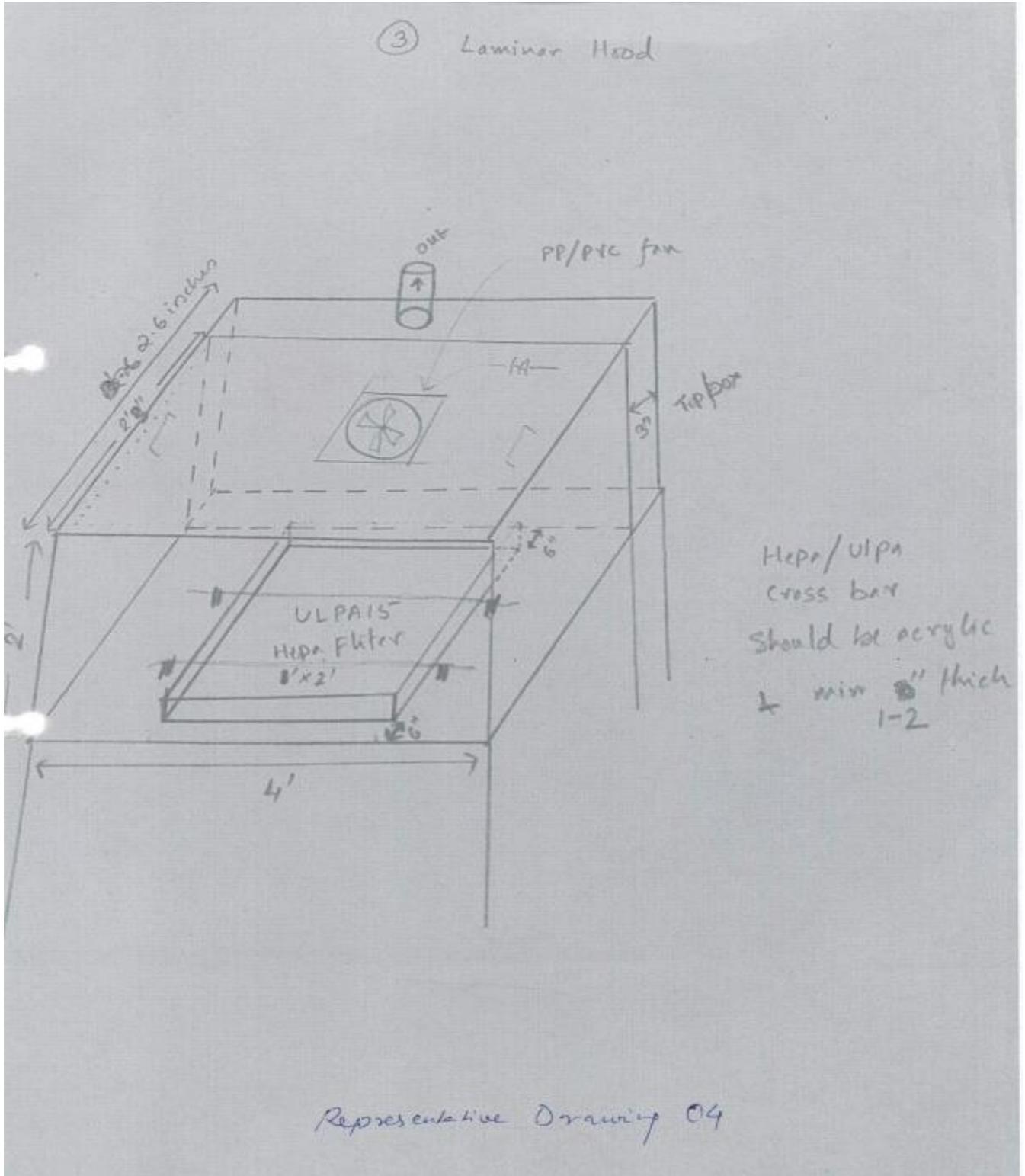
- IS 3764: Code of safety for excavation work.
- IS 1597 (Part 1) : 1992 construction of stone masonry code of practice.
- IS: 456: Plain and reinforced concrete.
- IS: 1161: Steel tube for structural purposes.
- IS: 2402-196: Code of practice for external rendered finishes.
- IS: 5411(part 1 & part 2): Paint, Plastic Emulsion.
- IS: 383: coarse and Fine aggregate for concrete.
- IS: 1239: steel tubes, tubular and other wrought steel fittings.
- IS: 816: metal arc welding for general construction in mild steel.
- IS: 3620-1979: Specification for laterite stone block for masonry.
- IS 4021 : 1995: Timber door, window and ventilator frames.
- IS 10951:2002: Polypropylene materials for molding and extrusion.
- IS 732: 1989: Code for Practice for Electrical Wiring Installations.
- IS 15908: 2011: Code for Practice for selection, installation and maintenance of control and indicating equipment's for fire detection and alarm system.
- IS : 659 :1964: Safety code for Air conditioning.
- IS : 8148: Specification for packaged air conditioning units.
- IS : 660 :1963: Safety code for Mechanical Refrigeration.
- IS : 4894: Test code for Centrifugal fan
- IS : 5111 :1969: Code of practice and measurement procedure for testing Refrigerant Compressors
- IS : 655 :1963: Ducting work

Diagrams/Drawings

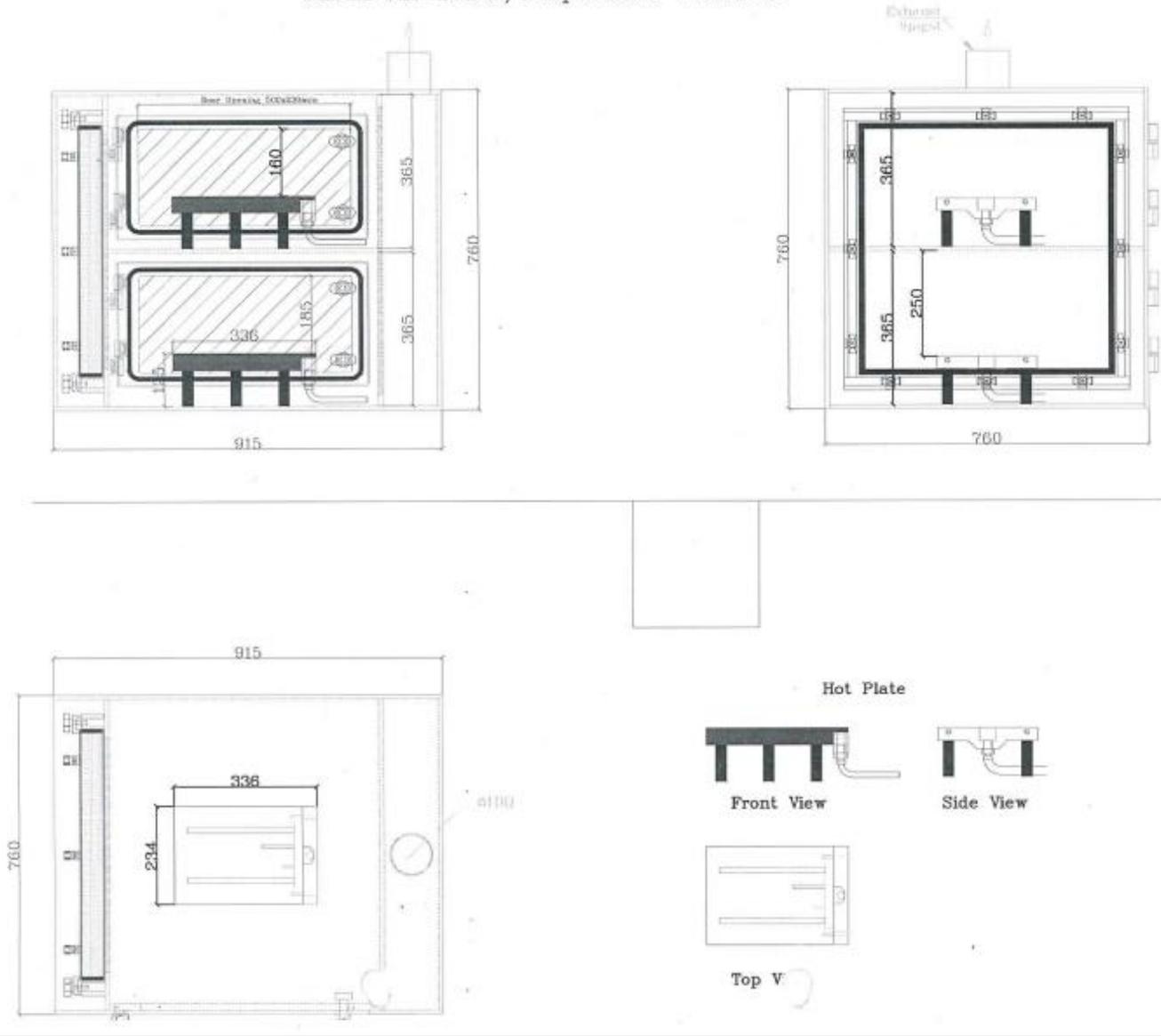


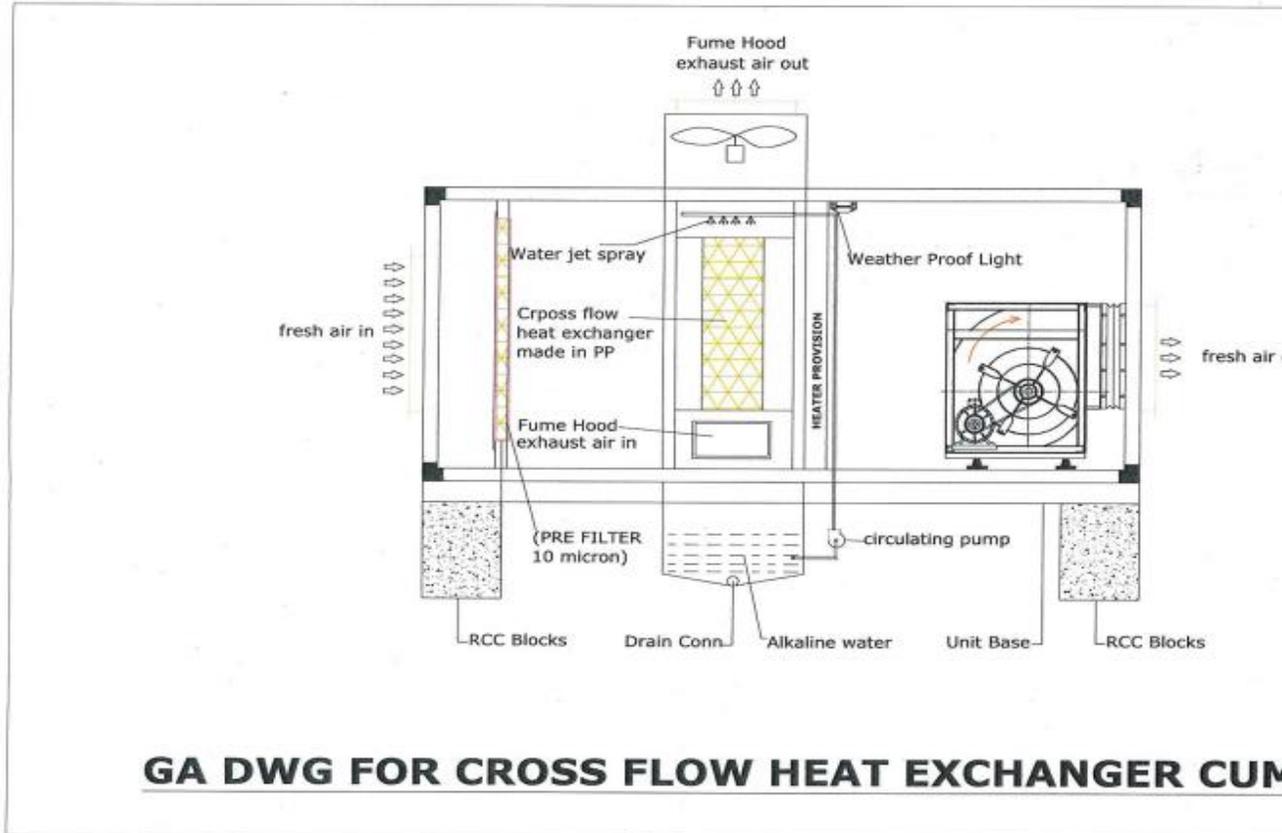




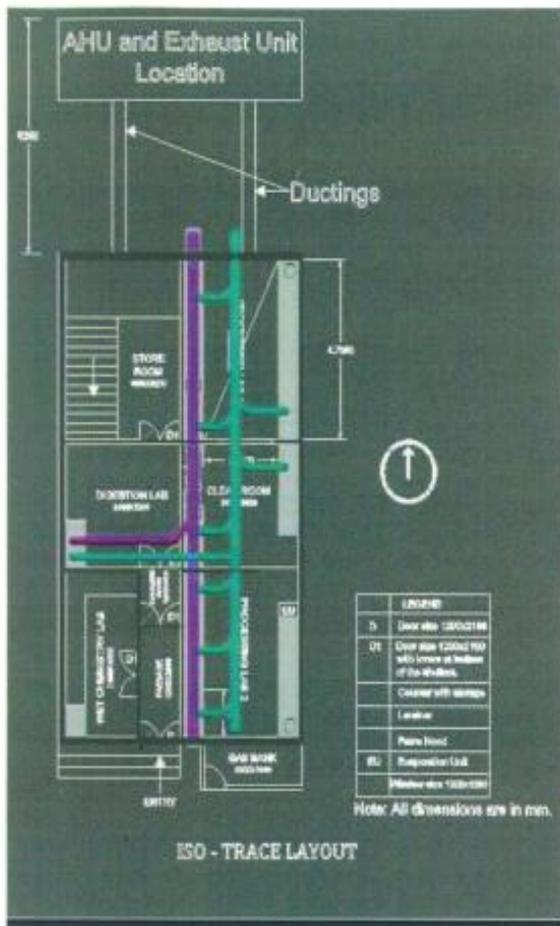


Clean Air Booth/Evaporative Chamber

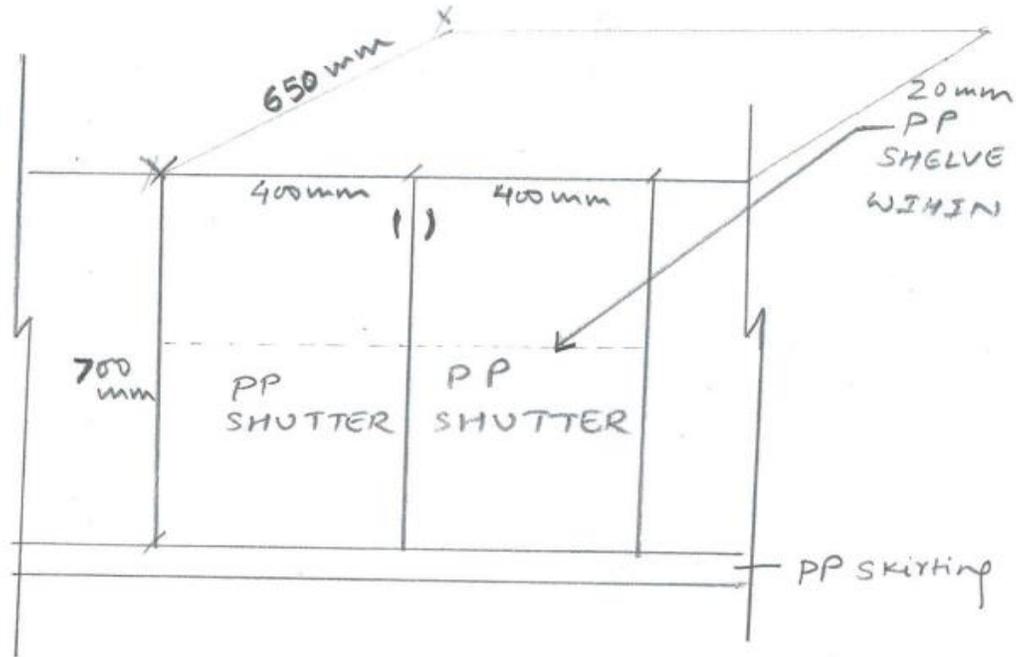




Representative Drawing 06



Representative Drawing of



Representative Drawing Na 08

Annexure-VIII

Daily Chart:-

ACTIVITY CHART FOR COMPREHENSIVE ANNUAL MAINTENANCE OF ISOTRACES LAB AT NCPOR																																	
Sl No:	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
1	Daily:																																
a.	AHU,FDU & EXU:																																
	Check filter condition																																
	Clean, wash, replace if required.																																
	Check Fan/ Motor Belt tension, adjust if required/ replace if damaged.																																
	Check condition of drains for free flow.																																
b.	Check conditions of access door hinges and lubricate if necessary.																																
	Condensing unit.																																
	Check amperage/Voltage																																
	Check LP and HP settings																																
c.	Ducting:																																
	Check for leakages at joints/ valves if any and get the leakages arrested with																																

	Check sensor and its reading.				
d.	Magnehaulic Gauges				
	Check sensor and its reading.				

Quarterly:-

TENDER NO. NCPOR/Estate Section/ET-01/2023-24

Sl. No.	Description	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
		1	2	3	4	5	6	7	8	9	10	11	12
II	Quarterly:												
a	Electrical Control Panels												
	The electrical control panels shall be checked, serviced and maintained for trouble free operation												
	Check incoming panel and terminals/contractors												
	Individual control panel for AHU - star/Delta Contactors												
	Microprocessor Control Panel - Check programming/display												
	Electrical panels for Humidifier and termination												
b	Filters:												
	Filters shall be cleaned with compressed air. In case of pre- filter water washing to be done if required												
c	Synthetic Rubber Paint Painting - All the surface of the blowers and inside the AHU, FDU and EDU(wherever metal portion exposed) to be painted with synthetic rubber paint over suitable primer base in every 3 months.												
	Synthetic Rubber Paint Painting of AHU												
	Synthetic Rubber Paint Painting of FDU												
	Synthetic Rubber Paint Painting of EDU												
d	Testing and validation of Clean Room												
	All the validation tests i.e. particle count, velocity, humidity,temperature,pressure etc as per existing lab standard to be performed												
e	Testing and calibration of all the Magnehalic gauges.												
	The pressure gauge to be monitored and recorded for verifying the lab pressure, Gauge to be calibrated as per the last Calibration date.												
f	AHU,FDU and EXU												

	Check the filter frames for proper sealing.	
	Replace synthetic media in panel filters.	
	Check the access doors for easy operations and proper locking.	
d.	Miscellaneous repairs (If/Wherever required):	
i.	All the exposed parts of aluminium frames, metal to be painted with synthetic rubber paint with proper scrapping.	
ii.	Refixing of pulled out PP sheets of cladding, ducts, etc.	
iii.	Refixing/ replacement of PP handles, hinges, screw caps, duct supports etc including PP welding wherever required.	
iv.	Application of silicon sealant.	
v.	Repair/ replacement of metal free tap and the sink fittings.	
vi.	Repairs/ replacement of the duct insulation including aluminium foil wrapping.	
vii.	Major spares of ODU to be replaced, compressor unit.	
viii.	Replacement of motors/ blowers inside AHU , FDU and EXU	
Above preventive maintenance schedule for the CAMC of Isotraces lab as been prepared for the effective maintenance, the same shall be strictly followed and duly filled and attached along with the bills for the processing of payment.		

Annexure-VIII**WORK COMPLETION PROFORMA**

Pl provide details of works executed at least one `Single work` of Rs.01.69 Cr or above or Two `Single Works` of Rs. 01.30Cr or above or Three `Single works` of Rs0.85 Cr or above during last Seven years ending August 2023 in any Government/PSU/Reputed Organizations . `Work` here is defined as `Establishment of Clean Room facilities`.

Sr.	Name of the Work	Location of site	Value of work completed (Rs)	Date of completion of work	Name & Contact details of the Organization & the Officer under whom work is done.

* Pl. enclose self attested copies of work orders & work completion certificates. Original documents will have to be submitted for verification as & when asked.

Name & signature of the tenderer with the seal :

PARTICULARS OF THE TENDERER

Name of the Contractor : _____

Name of the Firm: _____

Telephone No. (Office) : _____

Telephone No. (Residence) : _____

E-mail ID* / website : _____

(* Email ID should be provided which will be used for official correspondence)

Office Address : _____

: _____

Residential Address : _____

: _____

Mobile No : _____

*PAN /TAN No. of the Firm : _____

*GST Regn. No. : _____

*Shop Act/Trade Licence No. : _____

*Contractor Registration No: _____

(with other organizations, if any)

Have you ever black listed from any Company/Organization/Institute etc. : YES / NO

(*pl. enclose true copies)

Name, Signature of the Tenderer with seal:

NATIONAL CENTRE FOR POLAR AND OCEAN RESEARCH – ESTATE SECTION

CHECK LIST

(Documents to be enclosed with Technical Bid-Cover 1)

1. **UNPRICED TECHNICAL BID**: With detailed Technical Specifications of the products used inwork.
2. Particulars Of The Tenderer
3. Copy of registration certificate with GST numbers.
4. Permanent account number (PAN).
5. Reference of reputed Customers.
6. Scanned copies of EMD (Original to be sent by post) MSME/NSIC certificate (if any).
7. Copies of last 03 years of income tax return and CA Certified P/L statement / Audited Balance sheet.
8. Copies of Work orders as a proof of Work completed as per Performa as per Annexure VIII.
9. Technical Specifications/Literature/Brochure.
10. Tender Acceptance as per Annexure XII
11. Project Management bar chart indicating tentative planning of work initiation till completion.
12. Signed copy of Minutes of Meeting (MoM) of Pre-bid meeting.
13. Technical compliance sheet.

Annexure-XI**SPECIAL INSTRUCTIONS TO THE CONTRACTORS/BIDDERS FOR THE E-SUBMISSION OF THE BIDS ONLINE THROUGH EPROCUREMENT PORTAL**

1. Bidder should do Online Enrolment in this Portal using the option Click Here to Enroll available in the Home Page. Then the Digital Signature enrollment has to be done with the e-token, after logging into the portal. The e-token may be obtained from one of the authorized Certifying Authorities such as eMudhraCA/GNFC/IDRBT/MtnlTrustline/SafeScrpT/TCS.
2. Bidder then logs into the portal giving user id / password chosen during enrollment.
3. The e-token that is registered should be used by the bidder and should not be misused by others.
4. DSC once mapped to an account cannot be remapped to any other account. It can only be Inactivated.
5. The Bidders can update well in advance, the documents such as certificates, purchase order details etc., under **My Documents** option and these can be selected as per tender requirements and then attached along with bid documents during bid submission. This will ensure lesser upload of bid documents.
6. After downloading / getting the tender schedules, the Bidder should go through them carefully and then submit the documents as per the tender document, otherwise, the bid will be rejected.
7. The BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for that tender. Bidders are allowed to enter the Bidder Name and Values only.
8. If there are any clarifications, this may be obtained online through the eProcurement Portal, or through the contact details given in the tender document. Bidder should take into account of the corrigendum published before submitting the bids online.
9. Bidder, in advance, should prepare the bid documents to be submitted as indicated in the tender schedule and they should be in PDF/XLS/RAR/DWF formats. If there is more than one document, they can be clubbed together.
10. Bidder should arrange for the EMD as specified in the tender. The original should be posted/couriered/given in person to the Tender Inviting Authority, within the bid submission date and time for the tender.

11. The bidder reads the terms and conditions and accepts the same to proceed further to submit the bids.
12. The bidder has to submit the tender document(s) online well in advance before the prescribed time to avoid any delay or problem during the bid submission process.
13. There is no limit on the size of the file uploaded at the server end. However, the upload is decided on the Memory available at the Client System as well as the Network bandwidth available at the client side at that point of time. In order to reduce the file size, bidders are suggested to scan the documents in 75-100 DPI so that the clarity is maintained and also the size of file also gets reduced. This will help in quick uploading even at very low bandwidth speeds.
14. It is important to note that, **the bidder has to Click on the Freeze Bid Button, to ensure that he/she completes the Bid Submission Process. Bids which are not Frozen are considered as Incomplete/Invalid bids and are not considered for evaluation purposes.**
15. In case of Offline payments, the details of the Earnest Money Deposit(EMD) document submitted physically to the Department and the scanned copies furnished at the time of bid submission online should be the same otherwise the Tender will be summarily rejected
16. The **Tender Inviting Authority (TIA)** will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders due to local issues.
17. The bidder may submit the bid documents online mode only, through this portal. Offline documents will not be handled through this system.
18. At the time of freezing the bid, the eProcurement system will give a successful bid updation message after uploading all the bid documents submitted and then a bid summary will be shown with the bid no, date & time of submission of the bid with all other relevant details. The documents submitted by the bidders will be digitally signed using the e-token of the bidder and then submitted.
19. After the bid submission, the bid summary has to be printed and kept as an acknowledgement as a token of the submission of the bid. The bid summary will act as a proof of bid submission for a tender floated and will also act as an entry point to participate in the bid opening event.
20. Successful bid submission from the system means, the bids as uploaded by the bidder is received and stored in the system. System does not certify for its correctness.
21. The bidder should see that the bid documents submitted should be free from virus and if the documents could not be opened, due to virus, during tender opening, the bid is liable to be rejected.

22. The time that is displayed from the server clock at the top of the tender Portal, will be valid for all actions of requesting bid submission, bid opening etc., in the e-Procurement portal. The Time followed in this portal is as per Indian Standard Time (IST) which is GMT+5:30. The bidders should adhere to this time during bid submission.
23. All the data being entered by the bidders would be encrypted at the client end, and the software uses PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during bid submission and not viewable by any one until the time of bid opening. Overall, the submitted bid documents become readable only after the tender opening by the authorized individual.
24. During transmission of bid document, the confidentiality of the bids is maintained since the data is transferred over secured Socket Layer (SSL) with 256 bit encryption technology. Data encryption of sensitive fields is also done.
25. The bidders are requested to submit the bids through online eProcurement system to the TIA well before the bid submission end date and time (**as per Server System Clock**).

TENDER ACCEPTANCE UNDERTAKING

(To be submitted on the Bidder's Letter Head)

Offer Reference No:.....

Date:.....

To,
Director, National Centre For Polar & Ocean Research
Headland Sada,
Vasco-Da-Gama, Goa 403 804.

Dear Sir,

Sub : Submission of Offer against your Tender No:

I/We hereby offer to carry out the work detailed in your above Tender described as 'Restructuring & Reconstruction of Metal Free Clean Laboratory at NCPOR, Goa' in accordance with the terms and conditions thereof.

I/We have carefully perused the Tender documents connected with the above work and agree to abide by the same.

I/We hereby declare and confirm that I/we have visited the Work Site as referred in NCPOR Tender on (date)..... and acquired full knowledge and information about the Site conditions including geographical location, climate, wage structure, the office law & order and other conditions prevalent at and around the Site. We further confirm that we shall not raise any claim of any nature due to lack of knowledge of Site conditions.

I/We further agree to execute all the works referred to in the said Tender documents upon the terms and conditions contained or referred to therein and as detailed in the appendices annexed thereto.

I/We have submitted self-declaration in lieu of EMD & will submit the requisite Earnest Money Deposit (EMD)/Bid security as per the tender terms.

I/We, hereby certify that all the information and data furnished by me with regard to the above Tender Specification are true and complete to the best of my knowledge. I have gone through the specifications, conditions, stipulations and all other pertinent issues till date, and agree to comply with the requirements and Intent of the specification.

I further certify that I am authorized to represent on behalf of my Company/Firm for the above mentioned tender and a valid Power of Attorney to this effect is also enclosed.

I/We, hereby certify that all the documents submitted by us in support of possession of “Qualifying Requirements” are copies of the original and are fully compliant required for qualifying / applying the bid and shall produce the original of same as and when required by NCPOR.

I / We hereby further confirm that no tampering is done with documents, BoQ submitted in support of our qualification as bidder. I / We understand that at any stage (during bidding process or while executing the awarded works) if it is found that fake / false / forged bid qualifying / supporting documents / certificates were submitted, it would lead to summarily rejection of our bid / termination of contract. NCPOR shall be at liberty to initiate other appropriate actions as per the terms of the Tender / Contract.

I/We hereby confirm that we have not changed/ modified/materially altered any of the tender documents as downloaded from the website/ issued by NCPOR and in case of such observance at any stage, it shall be treated as null and void.

We also hereby confirm that we have neither set any Terms and Conditions and nor have we taken any deviation from the Tender conditions together with other references applicable for the above referred Tender Specification.

I/We hereby confirm that my/our firm was never black listed from any office/institute/organization.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

I/We hereby also declare that we will not share any details of our bid for this tender with any other person/company/firm & maintain confidentiality of document & information till the opening of bids.

Yours faithfully,

(Signature, date & seal of the Tenderer)

Annexure-XIII**BANK GUARANTEE FORMAT FOR FURNISHING EMD**

To

NATIONAL CENTRE FOR POLAR & OCEAN RESEARCH
Headland Sada, Vasco-da-Gama, GOA 403 804, INDIA

Whereas _____

(Hereinafter called the "tenderer")

has submitted their offer dated _____

for the Work of _____

(Herein after called the "tender")

WE _____ of having our registered office

At _____ are bound unto the NATIONAL

(Hereinafter called the Bank)

CENTRE FOR POLAR & OCEAN RESEARCH, Ministry of Earth Sciences, Govt. Of India having its office at Headland Sada, Vasco Goa 403 804, India (herein after called NCPOR which expression shall unless repugnant to the context or meaning thereof include all its successors, administrators, executors and assigns) in the sum of _____ for which payment will and truly to be made to. NCPOR, the Bank binds itself, its successors and assigns by these presents. Sealed with the common seal of the said Bank this _____ day of _____ 2023.

THE CONDITIONS OF THIS OBLIGATION ARE:

- 1) If the tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.
- 2) If the tenderer having been notified of the acceptance of his tender by NCPOR during the period of its validity.
 - a) If the tenderer fails to furnish the Performance security for the due performance of the contract.
 - b) Fails or refuses to execute the contract

We undertake to pay NCPOR up to the above amount upon receipt of its first written demand, without NCPOR having to substantiate its demand, provided that in its demand the NCPOR will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition or conditions.

This guarantee is valid until the _____ day of _____ 2023.

Signature of the bank

NATIONAL CENTRE FOR POLAR AND OCEAN RESEARCH – ESTATE SECTION

Annexure-XIV**Technical Compliance sheet**

Sr No	Item Description	QTY	Units	Make & Model (Please provide details of Make & Model where ever applicable)	Complied Yes/No.
1.01	Providing and fixing factory made white PP Laboratory sink of size 500mm x500mm x 240mm sink and thickness ranging from 5mm-10mm. Providing opening of required size and shape on the PVC counter necessary fittings including PVC pillar cock, PVC bottle trap, PVC waste coupling , PVC connection pipe, etc. and any other item required to complete the work in totality as directed by the Engineer-Incharge.	2	Nos		
1.02	Dismatling and removal of the following: i)Removal of existing doors from Processing Lab 1 & 2 of size 1200mm X 2000mm, 02 nos; ii) Removal of existing 12mm thick plywood and PP sheet from wall and ceiling of total area 300sqm; iii) Removal of existing wooden partition of size 2400mm X 2200mm, and PP Almirah of size 2200mm X 2000mm X 400mm from Processing Lab 2; iv) Removal of existing aluminium window with frame from Digestion Lab of size 1200mmx1200mm 01 no ; v) Removal of existing Aluminium and glass partition from from Digestion Lab of size 1540mm X 2100mm -01no and 3400mm X 2100mm-01 no.	1	Lumpsum		
1.03	Removal of existing false ceiling teakwood frame - frame size 600mm X 600mm X 50mm with 1000mm X 50mm X 50mm teakwood suspenders and refixing it at 200mm from celing including screws, clamps and any other item required to complete the work in totality as directed by the Engineer-Incharge.	85	sqm		
1.04	Providing and fixing of 1st class teakwood partition defect free, with 50mm X 50mm thick and frame section of 600mm X 600mm c/c horizontally and vertically. The frames to be treated for termite protection before installation at site. and any other item required to complete the work in totality as directed by the Engineer-Incharge.	90	sqm		
1.05	Supply and Installation of 10 mm thick PPN sheet to be fixed over existing teakwood frame work with aluminium screws and PU sealent and topped with 1mm thick glossy PVC sheet with appropriate adhesive etc.and any other item required to complete the work in totality as directed by the Engineer-Incharge	520	sqm		
1.06	Supply installation of 1st class flush door laminated with 1mm thick PVC sheet including necessary fittings like PVC screws, PVC handle, PVC hinges, PVC screw caps, adhesive etc.and any other item required to complete the work in totality as directed by the Engineer-Incharge.	18	sqm		

1.07	Supply and installation of workstation (counter) with 20mm thick PPN sheet and topped with 1mm thick PVC sheet with shelves and openable shutters with necessary fittings like PVC handle, PVC hinges, PVC screws, PVC screw caps etc. and any other item required to complete the work in totality as directed by the Engineer-Incharge (Refer representative drawing No.08) Note : Measurement shall be taken at counter top level. The final drawing of the offered design of the counter unit to be submitted for approval before commencement of work.	22	sqm		
1.08	Construction of acid disposal pit of size 500mmx500mmx500mm with necessary excavation, rubble packing, P.C.C, brick masonry and internal and external plaster with FRP chamber cover and fixed with necessary plumbing fittings etc. and any other item required to complete the work in totality as directed by the Engineer-Incharge	1	Nos		
1.09	Supply and installation of UPVC window with frame of size 1200mm X 1200mm and 5-6mm thick acrylic sheet including necessary fittings like PVC screws, PVC screw caps,PU joint sealant, handle etc.and any other item required to complete the work in totality as directed by the Engineer-Incharge.	2	sqm		
1.1	Providing and fixing 1.5 mm thick acid resistant and lead free vinyl flooring including necessary adhesives, scraping the surface and removing the existing epoxy flooring coat, levelling and fittings etc.and any other item required to complete the work in totality as directed by the Engineer-Incharge.	85	sqm		
1.11	Supply, installation, testing and commissioning of fire extinguishers CO2 type 4.5 kgs capacity as per IS 2878/UL 154 complete with handle, fixing bracket etc . and any other item required to complete the work in totality as directed by the Engineer-Incharge.	2	Nos		
1.12	Providing and fixing CPVC (Chlorinated Poly Vinyl Chloride) Plastic Pipe in SDR 11 as per ASTM D 2846 with pressure rating from 28.1 to 7.03Kg/cm ² at 23 to 82 deg. centigrade including all necessary fittings as required in Plastic CPVC or Brass CPVC in Tee , bend, clamps, Yellow Adhesive Solution etc; including cutting, deburring /beveling, fitting preparation, solvent cement application, assembly,set & curing times and making good the walls, Pressure Testing etc. complete (Internal/ External work) and any other items required to complete the work.				
1.13	20mm nominal bore	20	rmt		
1.14	25mm nominal bore	20	rmt		
1.15	Providing and fixing CPVC full way valves as per ASTM D 2846				
1.16	20mm nominal bore	2	Nos		
1.17	25mm nominal bore	2	Nos		
1.18	Providing and fixing SELFIT SWR PVC / RINGFIT SWR PVC PIPES (soil, waste & rain water drainage pipes, as per IS 13592) of approved make including lubricant / rubber gaskets / spacer saddles,clips / roofing nails etc. complete (single/double socketed) & as directed & or removing existing line at all heights & scaffolding and any other items required to complete the work.				
1.19	75mm dia.	20	rmt		

1.2	Supply & carrying out electrical wiring for switchboard/ power sockets with 2X6 sq. mm FRLS PVC insulated copper conductor single core cable in recessed medium class PVC conduit along with 1 No. 6 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required. Job includes necessary cut out in ceiling,walls, laying out conduit from Power Distribution board to Switchboard & other necessary items to complete the job and as directed by the Engineer-Incharge.	235	rmt		
1.21	Supply & carrying out electrical wiring for light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in recessed medium class PVC conduit as required. Job includes necessary cut out in ceiling,walls, laying out conduit from Switchboard to light point & other necessary items to complete the job and as directed by the Engineer-Incharge.	105	rmt		
1.22	Supplying and fixing following size/ modules, Plastic box along with modular base & cover plate for modular switches in recessed box. As directed by Engineer in charge				
1.23	4 Module (125mmX75mm)	7	Nos		
1.24	6 Module (200mmX75mm)	14	Nos		
1.25	Supplying and fixing following on the switch box/ cover including connections etc. as directed by Engineer in Charge.				
1.26	5/6 amps switch	24	Nos		
1.27	15/16 A switch	28	Nos		
1.28	6 pin 15/16 A socket outlet	28	Nos		
1.29	Socket Guard (Child Protection Cap)	28	Nos		
1.3	SITC of LED square surface panel (24W) with polycarbonate housing with 1980 lumens, 6000 K color temperature to be installed on the ceiling in the lab.	21	Nos		
1.31	SITC of LED Batten (4 ft) with extruded polycarbonate, environmental friendly, energy efficient 18 W to be installed at Change Room & Store Room each on the wall.	2	Nos		
1.32	SITC of Fire Alarm System to be installed in Isotrace Lab, Instrument Labs (MC - ICPMS Lab, EPMA Lab, SEM Lab & ICP - OES Lab) . The system should be compatible for integration with the existing Bosch Fire Alarm system present in Auditorium Building, Container Yard etc. The final drawing of the offered design of the fire alarm system to be submitted for approval before commencement of work.				
1.33	1 Loop Addressable Fire Alarm Panel to be installed at Lab Block Entrance (Avenar2000 (1 Loop Panel))	1	Nos		
1.34	Smoke Detector Optical with Base to be installed in the labs.(FAP-425-O+MS400)	21	Nos		
1.35	Manual Call Point with Key to be installed at Digestion Lab & Instrument Lab Corridor.(FMC-210-DM-GR+Key)	2	Nos		
1.36	Sounder Surface Mount Red to be installed at Digestion Lab & each of Instrument Labs (FNM-420-A-RD+FNS-420-R)	5	Nos		
1.37	Supply & wiring of 2 Core 1.5 sq.mm FRLS armoured cable for connection inside the lab	400	rmt		
1.38	SITC of metal free Temp & RH meter to be installed at Passage area.	1	Nos		

1.39	SITC of Magnehaulic gauges (0-0.25 inches WC) with PP Housing & acrylic sheet to be installed across all rooms of Iso trace Lab.	10	Nos		
1.4	Removal of all electrical items installed in Iso trace lab which includes wires from PDB to switchboards/switchboards to lighting load, light fittings,switchboards,switchboxes,conduits from wall/teakwood,fire alarm equipments & any other electrical items as instructed by Engineer in Charge.	1	Lumpsum		
1.41	SITC of Air Handling Unit (100% Fresh air unit) (7500 cfm) . It should be constructed of GI, centrifugal, double skin Air Handling Unit (outer skin 24G powder coated GI, inner skin 24G plain GI) compatible with DX Condensing Units. AHU insulation shall be of 43mm thick PUF panel. Fan section with dynamically balanced, low noise, Centrifugal DIDW backward Curve Supply Air fan direct driven by TEFC squirrel cage induction drive motor (3 phase,415 V, 4 pole, 1440 rpm). Fan model must be selected for lowest noise level and highest efficiency. DX cooling Coil section with DX coil of 6 rows with aluminum fins. Condensate tray made out of SS 304 in 18 gauge with 19 mm closed cell nitrile rubber. Heater Bank of SS 316 shall be provided in heating coil section. The humidity should be maintained at 50% (+/-5). Fresh air port with (10μ)-90% Efficiency washable filter and Al damper.Filters Section consists of Back Filter (10 microns), Pre Filter (5 microns), Charcoal Filter (3 microns), Fine Filter (3 microns). Sandwich type insulated drain pan, drain pan shall be 18G SS 304 construction.Drain pan should be properly insulated by 19 mm thick nitrile rubber insulation with proper slope.Adequate no. of access doors & blank sections, flexible connection at fan motor, spring type vibration isolators for fan + motor assembly, internal covering, thermal break etc. Magnehaulic gauges shall be provided between the filters.Fan section shall have limit switch and marine light.View Glass in the Fan Section will be provided & any other items required as instructed by Engineer in Charge. The AHU shall be designed and installed so as to function with an additional AHU(N+1), regulated with change over, and connected to a common ducting system. Also, all the cooling coils must be coated with Anti-corrosive paints. Note: The design, layout and details of the offered AHU system should be submitted for approval before commencement of work. Note : All filters should be non-metallic and glass fibre free.	2	Nos		

<p>1.42</p>	<p>SITC of Stand mounted Electrical panel with RYB Indicators, suitable capacity of MCCB, start / stop push button, on/off/trip indicators for AHU Motors, heaters, Condensing units, etc. Single phase preventor and delay timer is used for power protection. 2 mm THICK GI sheet for body 1.6 mm for door and 3 mm gland plate with 7 tank hot process panel body with more than 80 micron coating with colour code RAL - 7032 (Grey). Panel will be provided with arrangement of VFD starter along with bypass starter as per appropriate rating switchgear and neoprene gasket provided between door and panel contact and individual exhaust fan is considered for panel ventilation. IP-65 with current breaking capacity of 16 kA. Following Push Button would be provided.</p> <p>i. For AHU on / off</p> <p>Following Indicating Lamps are required :</p> <p>For AHU on / off and trip</p> <p>Suitable rating I/C</p> <p>Outgoing feeder for ODU 1,2,3,4</p> <p>Outgoing feeder for AHU</p> <p>Outgoing feeder for Ex fan</p> <p>Outgoing feeder for Dehumidifier/Heater Bank</p> <p>Following wirings are required:</p> <p>Power cabling for AHU,Condensing Units, Exhaust motor & any other major equipments.</p> <p>Control Cabling for control system:</p> <p>Maintenance free Earth pits should be provided for earthing of AHU,Electrical Panel,Blowers,Condensing Unit & any other major equipments present in HVAC system. The earth strip should be 25 mm x 5mm Cu along with 3m long 15 mm diameter Cu electrode with copper bonding thickness of 100 - 250 microns.</p> <p>Hot-Dip GI Cable tray for cable & copper pipe & any other items required to complete the job. The final drawing of the offered design of the Electrical panel to be submitted for approval before commencement of work.</p>	<p>1</p>	<p>Lumpsum</p>		
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<p>1.43</p>	<p>SITC of DX Type Air Cooled Condensing Unit (8.5 TR) . Air-cooled condensing units of specified tonnage capacity. The ODU coil shall have anti corrosive coating. All the exposed Cu piping shall be coated with anti corrosive coating to avoid rusting of Cu pipes. Unit shall be completely factory wired internally. Electrical characteristics of unit shall be 415+/-10% volts, 50 Hz, three phase AC. Scroll compressor/s with accessories. Copper refrigerant piping within Condensing Unit includes fittings, valves, supports, insulation, etc and any other necessary items. Condensing unit stand base frame, made from galvanised steel sections with epoxy/powder coating. Rubber vibration isolators & mounting arrangement for vibration-free operation of all equipment. MS Stands shall be provided for Condensing Units. Refrigerant Piping between Condensing Units & AHU fabricated out of hard drawn copper of 18 G conforming to ASTM B75 / ASTM 280 BS 2871 suitable for R-410a Refrigerant. The copper pipes to be tested for any leakages by following N2 pressurised filling and testing procedure. Copper pipes shall be De oxidised. Pressure testing, flushing of pipes any other necessary work. After completing testing, the same needs to be charged with R410a gas. Suction Gas line to be insulated with 19 mm nitrile rubber insulation backed with factory backed fire proof glass cloth. Liquid line to be insulated with 13 mm nitrile rubber insulation backed with factory backed fire proof glass cloth. UPVC Drain pipe of outer diameter 32 mm conforming to IS 4985 : 2000. Drain pipe shall be with 6 mm thick cross linked polyethylene insulation / nitrile rubber insulation. & any other work required as instructed by Engineer In Charge. The final drawing of the offered design of the Condensing unit to be submitted for approval before commencement of work.</p>	<p>4</p>	<p>Nos</p>		
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1.44	<p>SITC of Factorymade Polypropylene Homopolymer/Sulfide (PPH/PPS) ducting for supply and exhaust air etc. The duct should be extruded from PPs material as per moulding compound extruded standard. The duct should be supported with MS structure at outdoors & with powder coated Aluminium suspenders inside the lab. The duct should be covered with 19mm thick nitrile rubber insulation with Aluminium foil wrapping outside of lab. The duct should be connected with necessary bends, tees, sockets and any other joints. The Exhaust duct needs to be connected to the ducts of fumehood, laminar flow & evaporator box with necessary dampers provided. Grille should be equipped with PPH Volume control dampers. Dampers (8mm thick) to be installed at Supply Air duct. Damper shall be provided with suitable links, levers, etc. as required for proper operation and control with ON & OFF positions clearly marked. SITC of fusable like type fire dampers at the end of AHU, with auxiliary switch/contacter, control wiring & interlocking for switching OFF the AHU in case of fire. Fire dampers shall be approved by TAC & FIA and also as per UL 555 specifications including temperature/time rating. Metal free Duct mounted temp & RH sensor with display to be mounted on duct. Metal free Velocity sensor with display to be mounted on duct & any other job, to complete the technical functioning of the system, as instructed by Engineer in Charge. The above work includes provision of requisite Damper, Grillers, Support structure for Ducting & any other work related to ducting system. (Refer representative drawing No.07) Note: The final drawing of the offered design of the ducting to be submitted for approval before commencement of work.</p>				
1.45	<p>PPH/PPS pipes (06 mm thickness) as per above - with necessary bends, tees, reducers, socket, dampers etc.</p>	130	SQM		
1.46	<p>PPH/PPS pipes (03 mm thickness) as per above - with necessary bends, tees, reducers, socket, dampers etc.</p>	20	SQM		
1.47	<p>SITC of Polypropelene round/Square ducting, factory fabrictaed for return air. It shall be min 3 mm thick PP cover with 3mm thick FRP coating. The duct should be supported with GI structure at outdoor & with powder coated with PU finish Aluminium suspenders inside the lab. The duct should be covered with 19mm thick nitrile rubber insulation with aluminium foil wrapping outside of lab. Return Air duct should be provided with dampers wherever required for proper functioning of the system. The return air duct should be connected with air risers placed at bottom of rooms. The duct should be connected with necessary bends, tees, sockets and any other joints. Damper shall be provided with suitable links, levers, etc. as required for proper operation and control with ON & OFF positions clearly marked. The above work includes provision of requisite Damper, Grillers, Support structure for Ducting & any other work related to ducting system and any other job, to complete the technical functioning of the system, as instructed by Engineer in Charge.</p>	100	Sqm		

1.48	<p>SITC of Air to Air Heat exchanger cum scrubber capacity of 7500 cfm which will exchange the heat energy between room exhaust air (db-25deg C, 55%RH & Room supply air 38 deg C, 88%RH).. In this Heat exchanger the exhaust air will travell from bottom to top of heat exchanger & Supply air will travell horizontally from another side. Also the Alkaline water will be spray form top to bottom on exhaust air which will scrub the acidic fumes present in exhaust air and simmultaneously due to adiabitic process it will cool the exhaust air up to "19 deg C". Thus there will be heat exchange happen between "19deg C" exhaust air and "38 deg C" supply air.</p> <p>This Unit will have following component</p> <ol style="list-style-type: none"> 1. Indirect Air To Air Heat exchanger made out of thin Poly Propylene sheet having minium efficiency of 68% 2. Alkaline Water tank at bottom of heat exchanger of size minimum 1500mm x 600mm x 600mm, made out of 10mm PP sheet. 3. Water Spraying Jet at top of Heat Exchanger which will spray the Alkaline water from top on room exhaust air 4. Water circulating system, which collect the water from tank & pump it up to spraying jet , which include circulating pump(1w+1sb) with necessary isolation valve, NRV, Strainer, pipe, fittings, Drain valve, Flot valve for make up water etc. 5. Entire body of Heat Exchnger to be made out of Double skin sandwich type PUF GI panel of 43mm thick having inner and outer GI sheet of 0.8mm thick and infil PUFF of 40Kg/cubic meter density. with Al frame. Entrrire body to be laminate with 6mm thick PP sheet from inside 6. SISW 7500cfm(1W+1S) 100mm Static pressure Exhaust Blower completely made out of PP impeller & PP Volute Casing & motor is out of airflow path . 7. VFD of suitable capacity with VFD bypass starter panel, with DPT install in exhaust air duct. (Refer representative drawing No.06) The final drawing of the offered design of the heat exchanger to be submitted for approval before comencement of work. 	1	Nos		
1.49	<p>SITC of H-14 Hepa filter with PVC frame of size 610 x 610 x 65 mm with PTFE media. The filter should be housed with PPH housing with necessary damper to regulate the flow at terminal end. The filters should be 100% glass fibre free (boron and silica free).</p>	20	Nos		

<p>1.5</p>	<p>SITC of Metal free PP Class 100 Laboratory Fume hood (1200 MM x 600 MM x 1600 MM) (WxDxH) Must be made of highest quality corrosive resistant poly propylene (PP) (10 mm thickness). Its exhaust should be 450 CFM. Back wall (inner wall) should have exhaust holes of 15 inches diameter. There should be three rows of six hole each with the first set of holes placed six inches from the top of the working area of the hood. There should be at least six inches of distance between the centre of the exhaust holes in the bottom two rows. The exhaust holes of the bottom rows should be entirely covered with PP sheets of equivalent quality and thickness allowing manual control of total exhaust. Sash is to be made of transparent acrylic sheet(6mm to 10mm thickness to ensure smooth operation) with provision for hight adjustment at every six inches interval. The adjustment provision should be manual types (PP pegs). The first Peg should be at 6cm the bottom. Metallic wire/ counterweight/ pulley/hinches should be avoided for automatic operation of the sash. A one inch thick lip at the front should be provided for efficient height adjustment of the sash. PVC piping should not have any 90 degree bent. All exhaust piping should be of PVC material of minimum 2 mm thickness. The exhaust ducting should have minimum number of bents with provision for tapering and back flow siphoning.Three sets of LED light with separate switch system appropriately insulated from acid corrosion.All the wiring and electrical connections should be double insulated.The bottom work bench should not have any perforation. The bottom work bench should be supported by PP ribs to avoid any sagging. Any gaskets should be poly urethane.Refer representative drawing No.02 & 03. Note: The final drawing of the offered design of the fumehood to be submitted for approval before comencement of work.</p>	<p>4</p>	<p>Nos</p>		
<p>1.51</p>	<p>SITC of Metal free PP class 100 Laminar Benches (1200 MM x 600 MM x 1500 MM) (WxDxH)Must be made of highest quality corrosive resistantpoly propylene (PP) (10 mm thickness).• Must be fitted with PTFE U15 ULPA filters(1X 2 ft) preferably Cambridge or Camfil filters).The filter frame should be made of PVC. ULPA should be replaceable. It has to be held in place according to the design fitted with nylon screws for easy replacement of filters.The filters should not have any metal mesh.• Sash is to be made of transparent acrylic sheet (6 mm to 10 mm thickness to ensure smooth operation) with provision for hight adjustment at every six inches interval. The adjustment provision should be manual types (PP pegs). The first Peg should be at 6cm the bottom. Metallic wire/ counterweight/ pulley/hinches should be avoided for automatic operation of the sash. A one-inch-thick lip at the front should be provided for efficient height adjustment of the sash.Exhaust at 100 CFM with a manual damper. Fan blowerabove ULPA should be HALAR coated. Three sets of LED light with separate switch system appropriately insulated from acid corrosion. All the wiring and electrical connections should be double insulated. The bottom work bench should not have any perforation. The bottom work bench should be supported by PP ribs to avoid any sagging. Any gaskets should be poly urethane.Its exhaust should be 100 CFM.Refer representative drawing No.04.Note: The final drawing of the offered design of the laminar benches to be submitted for approval before comencement of work.</p>	<p>5</p>	<p>Nos</p>		

1.52	SITC of Metal free Evaporation Unit (900 MM X 760MM X 760MM) (WxDxH)To be made of transparent acrylic sheet and PP.Must be fitted with PTFE U15 U1pa filters from the side. It should have two shelves. It must be properly insulated. All the Screws and hinges should PTFE/PP. It should have exhaust connection from both chambers and individual chamber should have a taper. Any gasket should be poly urethane gasket. Its exhaust should be 450 CFM. Refer representative drawing No.05.Note: The final drawing of the offered design of the Evaporation unit to be submitted for approval before commencement of work.	3	Nos		
1.53	Validation & commissioning of area "At Rest". HVAC Validation including DQ(Design Qualification),IQ (Installation Qualification),OQ (Operation Qualification) & PQ (Performance Qualification) certificates of all manufactured items, duct leak test as per SMACNA & AHU test, particle counting, CFM &ACPH balancing. PAO Test of all HEPA filters. Requirements of Schematic flow diagram, ducting layout, & AHU P&ID's, GA drawing, all documentation in hard copy as well as soft.	1	Lumpsum		
1.54	Buyback & disposal of 40' ISO container & AHUs within it ,including Condensing Units, Electrical Panel, Supply & Return Ducts alongside necessary supports & accessories, Fumehood & Laminar Cabinets present inside the lab including cost of labour, crane, lorries for transportation & any other machinery required etc. inclusive of all. Note: the detailed list of the buy back items has been elaborated in scope of work.	1	Lumpsum		

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