

BIRBAL SAHNI INSTITUTE OF PALAEOBOTANY,

(An autonomous Institute under Department of Science & Technology, Ministry of Science & Technology)

53, University Road, Lucknow -226 007

**Phone No. 0522-2742983; Fax No.0522-
2740485, 2740098**

Website : www.bsip.res.in

Adv. No. : BSIP/TENDER/A.C/WORKS & BUILDING/2014-2015
Due Date : 05/ 01 / 2015
Cost of Tender : Rs. 1000 / -

Description of Item

<p>“ Supply, installation, testing & commissioning of Air Handling Unit(AHU) along with associated ducting, insulation, piping , valves etc. and all allied works as specified in the Tender Document. ... 01 Job.</p>

Pre-Bid conference : 14.00 Hours on 29/12/2014
Closing time and date : 12.00 Hours on 05/ 01 / 2015
Tender will open at : 14.00 Hours on 05/ 01 / 2015

For details please visit our Institute website www.bsip.res.in

REGISTRAR

BIRBAL SAHNI INSTITUTE OF PALAEOBOTANY,

(An autonomous Institute under Department of Science & Technology, Ministry of Science & Technology)

53, University Road, Lucknow -226 007

**Phone No. 0522-2742983; Fax No.0522-
2740485, 2740098**

Website : www.bsip.res.in

TERMS AND CONDITIONS

1. Tender must be submitted giving complete details: in particular, the offers should clearly specify applicable taxes, make offered, warranty / guarantee terms.
2. Tender Forms can be downloaded from website of the Institute.
3. The firm who wishes to download the specifications, terms and conditions may do so. While submitting the quotation, a DD of Rs. 1000/- for each tender drawn in favour of Director, Birbal Sahni Institute of Palaeobotany payable at Lucknow may please be enclosed along with Technical Bid only.
4. Tender must be valid for a period of 90 days from the date of opening of the tender.
5. Tenders shall be submitted in sealed envelope duly superscribed with the Technical Bid Tender enquiry Number and the Due date addressed to the Director, Birbal Sahni Institute of Palaeobotany, 53, University Road, Lucknow -226007 and delivered at the Institute before 1200 hrs on the due date specified. Tender will be opened in the presence of attending tenderers on the due date at 1400 hrs. on the same day.
6. Tender Document/Form is not transferable.
7. Tenders containing corrections, overwriting will not be considered.
8. Tenders which do not comply with the above conditions are liable to be rejected.
9. After Scrutiny of technical bids, Commercial Bid will be invited only from the short listed Vendors.

10. The Institute shall be under no obligation to accept the lowest or any other tender received in response to this tender notice and shall be entitled to reject any tender without assigning any reason whatsoever.
11. We reserve the right to place the order for part/reduced quantity than what is specified in the tender.

REGISTRAR

CONDITIONS OF TENDER

1. Tenders must be submitted in duplicate giving complete details; in particular, the offers should clearly specify applicable taxes, make, offered, warranty/guarantee terms, delivery period.
2. Tender should be valid for a period of 90 days from the date of opening of the tender.
3. Tenders in sealed envelopes duly superscribed with the Tender No. and due date, shall be addressed to the Director, Birbal Sahni Institute of Palaeobotany, 53, University Road, Lucknow - 226007
4. Tenders will be opened in the presence of attending tenderers on the date and time specified in the enquiry; in the event the due date declared is a holiday, the tender will be opened on the following working day.
5. This tender documents/form is not transferable.
6. Tenders containing erasures or alterations will not be considered.
7. Tenders which do not comply with the above conditions are liable to be rejected.
8. The Institute will not defray any expenses whatsoever incurred by the Bidders for the preparation of bids.
9. In case Bidder finds discrepancies or omissions from the specifications or other documents or has any doubt as to their meaning, he shall at once request in writing to the Registrar, BSIP, Lucknow, who will for interpretation/clarification issue interpretation and clarifications as he may consider necessary in writing as an addendum. Copies of such agenda, if issued, shall be signed by the Bidder and shall form a part of his bid. Verbal clarifications given shall not be binding on the Institute.
10. Before submitting the bids, the Bidders shall make themselves fully conversant with the technical specifications and other documents as attached so that no ambiguity arises at a later date in this respect.
11. The owner reserves the right to postpone the date of submission and opening of bids.
12. The bidders shall quote in English their rates/prices both in figures, as well as in words against each item of the work as detailed in the enclosed Schedule of

Quantities. In the event of any discrepancy between the quoted rates/prices in words and that quoted in figures, the rates/prices quoted in words shall govern.

13. The bidders must return the complete set of bid document. Each page of the bid document must be signed and dated by the bidder. Any bid not so signed and dated is likely to be rejected. All writing shall be in ink only. Any corrections in the entries in the Schedule of Quantities of this bid document shall be initialed and dated by the bidder before submission of the bid. No parts of the bid document shall be altered, overwritten or amended by the Bidder
14. **The Institute shall be under no obligation to accept the lowest or any tender received in response to this tender notice and shall be entitled to reject any tender without assigning any reason whatsoever.**

GENERAL CONDITIONS OF CONTRACT

- 1.0 Definition of Terms :
- 1.1 The term `Contractor`/`Supplier`/`Bidder`/`Vender` shall mean the Tenderer whose tender has been accepted by the Owner and shall include the Tenderer's heirs, successors and assignees approved by the Purchaser:
- 1.2 The term `Contractor`/`Supplier`/`Bidder`/`Vender` shall mean the Tenderer whose tender has been accepted by the Owner and shall include the Tenderer's heirs, successors and assignees approved by the Purchaser.
- 1.3 The `Purchaser` shall mean Birbal Sahni Institute of Palaeobotany, 53, University Road, Lucknow _ 226007.
- 1.4 The term `Sub-Contractor` shall mean the firm or persons named in the contract for any part of the work or any person to whom any part of the work has been sublet with the consent in writing of the Engineer-In-Charge and shall include his heirs, successors and assignees approved by the Purchaser.
- 1.5 The term `Particulars` shall mean, the following :
 - a) Specifications
 - b) Drawing
 - c) Sealed Pattern denoting a pattern sealed and signed by the Inspector.
 - d) Proprietary make denoting the produce of an individual firm.
 - e) Any other details governing the construction, manufacture and/or supply as existing for the contract.
- 1.6 The term `Specification` shall mean the specifications annexed to or issued with these Conditions of Contract.

- 1.7 The term 'Site' shall mean the place or places at which the Equipment is to be delivered or work done by the Contractor shall include where applicable the lands and buildings upon or in which the works are to be executed and shall also include the place or places at which fabrication and other work is being carried out by the Contractor.
- 1.8 The 'Contract' shall mean acceptance of the work order placed on contractor/supplier under section (2) of these conditions and shall include these conditions of Contract, Specifications, Schedule, Drawing, Letter of Intent of the Purchaser and any subsequent amendments mutually agreed upon.
- 1.9 'Tests on Completion' shall mean such tests are prescribed by the specifications or have been mutually agreed to between the Contractor/Supplier and the Purchaser to be made before the equipment is taken over by the Purchaser.
- 1.10 'Writing' shall include any manuscript, typewritten or printed statement under or over signature or seal as the case may be. Words importing 'person' shall include firms, companies, corporations and association of individuals whether incorporate or not.
- 2.0 Contract:
- 2.1 Contractor/Supplier should send their acceptance letter on receipt of work order within stipulated period. On expiry of said period or exorbitant delay in commencing or executing the work, the Purchaser shall not be liable to any claim from the Contractor/ Supplier for work entrusted to and may revoke the contract.
- 3.0 Work at Site:
- 3.1 **The contractor should ensure that his people follow safe practices at work.**
- 3.2 Access to the works shall be allowed only to the Contractor/Supplier, Sub-Contractors or his duly appointed representatives. The Contractor/ Supplier shall not object to the execution of work by other contractors or tradesman and shall afford them every facility for execution of their several works simultaneously with his own.
- 3.3 Work at the Purchaser's premises shall be carried out at such time as the Purchaser may approve but the Purchaser shall give the Contractor/ Supplier all reasonable facilities for the same. The Contractor/Supplier shall provide sufficient fencing, notice boards etc. to guard the works and warn the public.
- 3.4 **The Contractor shall obey Central, local and State regulations and enactment pertaining to workmen and labour and the Institute shall have the right to enquire into and decide all complaints on such matters.**
- 4.0 Delays:
- 4.1 The Contractor shall not be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work, whatever the cause for such delays may be, including delays in procuring Government controlled or other

materials and delay in obtaining instructions and decisions from Engineer-In-Charge. The Contractor shall, however, merit extension of time as hereinafter mentioned.

5.0 Taking Over:

The equipment when erected at site shall be deemed to have been taken over by the Purchaser when the Engineer will have certified in writing that the equipment has fulfilled the contract conditions.

6.0 Extension of Time:

- 6.1 If the Contractor is delayed in the progress of work by changes ordered in the work, or by any cause, which the Engineer shall decide to justify the delay, then the time of completion shall be extended by a reasonable time. No such extension shall be allowed unless requests for extension are made in writing by the Contractor/Supplier to the Institute within 15 days from the date of occurrence of the delay.

7.0 Other Damages:

- 7.1 The Contractor/Supplier shall be responsible for all injury to persons, animals or things and for all damage to the works, structure of, and decorative work in the property which may arise from operation or neglect of himself or any of his Sub-Contractor or of his or Sub-Contractor's employees, whether such injury or damage may arise from carelessness, accident or any other cause whatever in any way connected with the carrying out of this contract. This clause shall be held to include any damage to buildings, whether immediately adjacent or otherwise, any damage to roads, streets, foot paths, as well as all damage caused to the works forming the subject of this contract by frost or other inclemency of weather. The Contractor/Supplier shall indemnify the Purchaser and hold him harmless in respect of all and any expenses or property as aforesaid and also in respect of any claim made in respect of injury or damage under any acts of Government or otherwise and also in respect of any award of compensation or damages consequent upon such claim.
- 7.2 The Contractor/Supplier shall reinstate all damage of every sort mentioned in this clause, so as to deliver up the whole of the contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damage to the property of third parties.
- 7.3 The Contractor/Supplier shall indemnify the Purchaser against all claims which may be made against the Purchaser, by any member of the public or other party, in respect of anything which may arise in respect of the works or in consequence thereof and shall, at his own expense, effect and maintain, until the work has been 'taken over'.
- 7.4 The Contractor/Supplier shall also indemnify the Purchaser against all claims which may be made upon the Purchaser whether under the Workmen's Compensation Act or any other statute in force during the currency of this contract or at common law in respect of any employee of the Contractor/Supplier or of any of his sub-contractor and shall at his own expense effect and maintain until the work has been 'Taken Over', with an approved office.

- 7.5 The Purchaser, with the concurrence of the Engineer, shall be at liberty and is hereby empowered to deduct the amount of any damages compensation costs, charges and expenses arising or accruing from or in respect of any such claims or damages from any sums due to or become due to the Contractor/Supplier.

GENERAL INFORMATION TO BIDDERS

1. On behalf of Birbal Sahni Institute of Palaeobotany (hereinafter referred to as the Institute) bids are invited for design, supply, installation, testing & commissioning of Air- Conditioning system for Geo-chemistry Laboratory with associated ducting, Insulation, refrigerant piping, cabling etc at BSIP on 53, University Road, Lucknow _ 226007.
1. The Air-conditioning system shall be installed in Laboratory building. It is only a ground floor structure.
2. It is important that the bidder must satisfy himself before quoting that the space provided is adequate for installation of his plant along with all equipments and accessories as no extra space can be provided. The tenderers must visit the site and take the actual measurement before quoting. The bidders shall furnish a fully dimensioned layout for his Package unit, with all equipment and accessories along with quotation.
3. Bidder shall furnish the data called for in data sheets and the schedules in the standard Proforma to facilitate correct evaluation of his bid in a most expeditious manner. It is in the interest of the bidder to submit the bid in above manner with complete technical details, failing which it is likely that his bid may not be considered.
4. Bidder shall be deemed to have carefully examined the specification in its complete form and to have fully informed and satisfied himself as to the details, nature, character and quantities of the work to be carried out, site conditions, and other pertinent matters and details.
6. It is the intent of the owner/purchaser to incorporate these specification documents in the final contract order for the supply of material, equipment and services. Bidders are required to review these documents and clearly state in their proposals the acceptance of the same. *Exceptions, if any shall be clearly stipulated in appropriate bidding schedule. The final contract between purchaser and vendor shall be subjected to such changes, if any, mutually agreed upon by purchaser and vendor and included in the main text of the contract/order.*

7. Bidder shall clearly specify all the deviations with respect to this specification in the appropriate schedule.

8. SCHEDULE OF QUANTITIES TO BE FURNISHED BY VENDORS

8.1 All equipments mentioned in the enclosure should conform to the respective technical specifications. Only main items of the tender have been brought out specifically in this schedule, however all accessories as per specification or otherwise should be furnished at the time of quotation with cost of individual item.

8.2 Tenderers are required to fill in unit rates for all the items mentioned in the enclosure and any additional items quoted by them in the Financial Bid. In absence of the unit rates, the offer may be considered as invalid.

8.3 All the equipments supplied shall be as per the 'List of Approved Make' attached.

9. ITEMS TO BE FURNISHED BY THE PURCHASER:

9.1 Following shall be furnished by the purchaser:

9.1.1 Water and power for testing and commissioning.

10. SERVICES SUPPLIED BY PURCHASER DURING ERECTION:

The purchaser will provide for the contractor following services during the performance of work.

10.1 Water shall be provided free of cost for testing and commissioning.

10.2 The contractor shall make his own arrangement for supply, erection and dismantling on completion of works of his temporary distribution system, distribution panels and other equipments he may require taking the power from the purchaser's supply points.

10.3 The contractor's temporary distribution system shall be subjected in every respect to the approval of the purchaser and shall be arranged so as to avoid any interference with other operations on the site.

10.4 The purchaser will not hold himself responsible for the consequences of any interruptions to the continuity of the power supply or power system voltage and frequency fluctuations.

10.5 The electric power shall not be used for heating purposes.

10.6 Electrical power made available to the contractor, during testing and commissioning for the refrigeration unit is free of charge.

10.7 There is no EOT crane or mono rail to assist in erection work. Tenderer should provide suitable derricks & tripods for lifting heavy load.

11. SERVICE SUPPORT, SPARES & TOOLS:

11.1 **The bidder shall provide in detail the Service Support Set-up in Lucknow of the manufacturer or himself and lead time for replacement of faulty parts and for**

providing technical service. The entire system will be on comprehensive AMC with the supplier after the expiration of the guarantee period.

- 11.2 The tenderer shall furnish complete set of tools & wrenches for making adjustments, repairs & preventive maintenance including those required for erection.
- 12 COMPLETION DRAWINGS (FINAL DRGS) & MANUALS:
- 12.1 The contractor shall submit tracings in original with five prints of all installation drawings based on which equipments are installed & commissioned.
- 12.2 Contractor shall supply the following literature in four sets:
- a. Start-up, operation and maintenance instructions of Air-conditioning unit and its parts.
 - b. Installation instructions.
 - c. Field wiring diagrams.
 - d. Operation and Maintenance Manual of electrical parts used in the same.

INSTRUCTIONS TO BIDDERS & SPECIFIC NON-TECHNICAL REQUIREMENTS

1. The details in respect of Earnest Money, Security Deposit
- a) Earnest Money Deposit:
Bidder must deposit Rs. 1,00,000/- towards EMD along with the tender failing which tender will be rejected. EMD will be accepted in the form of Bank Draft only favoring Director, Birbal Sahni Institute of Palaeobotany, Lucknow.
 - b) Security Deposit:
10% (i.e. ten percent) of the gross value of the work will be deducted from the Contractor's bill towards Security Deposit.
 - c) Refund of Security Deposit:
The Security Deposit (10%) will be refunded to the contractor after the expiry of defect liability period.
 - d) Defect Liability Period:
12 (twelve) calendar months from the date of Institute's satisfactory completion certificate will be taken as defect liability period.
 - e) Bidders other than successful bidder will be refunded the EMD submitted by them within 2 months from the date of opening of the tender and no interest shall be paid against the said deposit.
 - f) In case the successful bidder fails to undertake the said work, his EMD amount will be forfeited.
 - g) The EMD paid shall be part of Security Deposit, i.e. 10% of the Contract value which will be refunded after expiry of Defects Liability period.
2. No interest will be payable on the deductions towards Security Deposit/ Earnest Money.

3. **The Bidder shall submit the copy of their PAN card.**
4. Prices and rates quoted shall include cost of all materials, labour, plant, equipment, temporary work, tools, setting out, supervision, transport, taxes, royalties, octroi and any local tax or levy payable on all transactions, insurance and everything necessary for due performance of work under this contract.
5. Prices and unit rates shall be valid even if the contract is split.
6. Contract should be fixed rate contract. No escalation in prices of the materials during the currency of the contract is permitted. However any statutory variations like change in excise duty, taxes etc. if levied after award of the work shall be paid on production of proof of such changes. .
7.
 - a) Site Visit:
The bidders may like to visit the work site before submitting their bids to get conversant with site conditions, which may affect the work.
 - b) Location of Site:

Bibal Sahni Institute of Palaeobotany, 53, University Road, Lucknow - 226007
8. The work should be completed within 1 month from the date of issue of Purchase Order.
9. Work shall commence at site from the date of issue of letter of Purchase Order.
10. The Contractor should plan and give his daily program for execution of work in advance so that no disturbance is created in the routine working of the Institute.
11. Tax/Works Contract Tax:

Tax applicable to this contract shall be mentioned clearly and included by the bidder in his bid. No claim shall be entertained by the owner thereafter.
12. Date of Taking Over:

Site shall be deemed to have been taken over by owner certifies the completion of work in all respect as per tender conditions and specification.
13. Income Tax as per the prevailing rates will be deducted from the progressive bills.
14. The contractor shall not without the consent in writing of the Owner assign or sublet the contract.
15. No labour below the age of 18 years shall be employed at site.
16. Contractor shall be liable to pay workman compensation to his labour as per prevailing rules for any accident occurring at our site.
17. The contractor shall pay wages to his workmen as per the Statutory Minimum Wages Act.
18. The Contractor shall provide all risk insurance for his men, material and machines and absolve us of all risk and liabilities whatsoever pertaining to his men, material and machines.
19. The Contractor will arrange for photo passes of his personnel and get the same endorsed by our Establishment/Security Department before beginning the work.
20. The Contractor will ensure that his workmen follow safe practices at Work.
21. The Contractor will work from 9.00 a.m. to 6.00 p.m.

22. No labour camp etc. will be allowed to be put up inside or in the vicinity of the Institute.
23. Any dispute arising from this contract will be referred to two arbitrators one to be appointed by you and one by us. The two arbitrators, in the event of their disagreement will appoint an Umpire. The decision of the Umpire shall be final and binding. The arbitration will proceed as per Indian Arbitration Act, 1940, as amended up to date.
24. **The contractor should ensure that his engineer/supervisor is present at site throughout the progress of works till completion.**
25. Terms of Payment:
Payment of pipe lines shall be made as per unit length i.e. per running mtr./feet.
- 25.1.1 Unless otherwise agreed to in writing between the Purchaser and the Contractor/Supplier, payment for the delivery of the equipment approved by the Inspector will be made as follows:
- a) 70% of the Contract value against delivery, prorata of the value of goods delivered and after checking the same at site.
 - b) 10% on completion of erection.
 - c) 10% on commissioning and final inspection and testing at site.
 - d) 10% against PBG valid for 12 months from the date of handing over or after expiry of the Defect Liability period as stated in Clause 1d) page 11.
26. The bidder should submit technical data sheet, drawings, any other technical detailed asked for in the tender with Part II i.e. Technical Bid of the Tender.
27. The schedule of quantities and rates shall be read in conjunction with the specification, tender drawings, other tender documents, relevant IS Codes, Engineering hand books, etc. the Contractor shall not rely merely on the description given in the Schedule of Quantities.
28. The quantities mentioned in "Bill of Quantities" are estimated quantities. However the payment shall be made as per actual quantities measured at site, after completion of work.
29. Contractor will be fully responsible for lifting, shifting and handling Institute's properties such as any articles and materials lying nearby to proper place as instructed by Site In-Charge.
30. All the materials used shall be used only after approval and tests of the Section-In-Charge as per specifications.
31. All the debris shall be removed by the Contractor at his cost to any nearest BMC approved dumping yard.
32. Storage and custody of material, till the time of handing over to TIFR, shall be the responsibility of contractor.
33. The contractor after award of work, should submit detailed schedules showing program and order in which contractor proposes to carryout the work with dates and estimated completion time for various parts of work. This should be submitted in the form of Bar-chart.
34. The Section can instruct the contractor to make any alteration, omission, or variation in work. The difference in cost due to instruction shall be added or deducted from

contract price as the case may be in accordance with the rate applicable in the contract.

35. **DEVIATION FROM THE SPECIFICATIONS:**

THE CONTRACTOR MUST TENDER FOR THE EQUIPMENT AS HEREIN SPECIFIED BUT MAY SUBMIT ALTERNATE PROPOSALS FOR MODIFICATIONS TO DETAILS WHERE SUCH MODIFICATIONS OFFER TECHNICAL ADVANTAGES AND WILL MAKE COST SAVINGS TO THE OWNER. THE BASIS AND DETAILS OF CALCULATIONS OF OPERATING COST AND THE NET EXPECTED FINAL SAVING SHALL BE INDICATED WHEREVER SUCH A CLAIM IS MADE. THE ACCEPTANCES OR OTHERWISE OF ALTERNATE PROPOSAL/DEVIATIONS/MODIFICATIONS ETC. WILL BE DECIDED SOLELY BY THE DIRECTOR, BSIP.

36. INSPECTION OF MATERIAL & EQUIPMENT:

Supplier shall arrange for inspection/testing of AHUs at his works. TIFR will have liberty to inspect/test the parts of AHUs during the manufacturing/assembly. No charges will be paid extra towards inspection/testing. The bidder shall make necessary arrangements for travel, boarding & lodging for 3 STAFF MEMBERS deputed for inspection & testing of the AHUs at manufacturer's premises.

BASIS OF DESIGN & SCOPE OF WORK

Specification for Installation and commissioning of Air Handling Unit (AHU) with Duct in Geochemistry and TL/OSL Laboratory

A. Total room area : 1830 sq. ft. (approx.) (Please refer attached lab design and the table below)

Sl. No.	Description	Area (sq. ft)	Volumetric flow rate Approximate (cfm)
1	Scientist Cabin – 1	15 x 8	250
2	Wet Chemistry Lab containing fume hoods (Require more exhaust to maintain the positive pressure)	15 x 8	1800
3	Corridor	22.5 x 4	200
4	TL/OSL Reader Room	15 x 8	450
5	Dose rate Laboratory	15 x 12	500
6	Sample Repository Room	14 x 5	300
7	IRMS + GCMS Laboratory	25 x 14	1000
8	Scientist Cabin – 2	14 x 26	500
9	ICP-MS Laboratory (Require more exhaust to maintain positive pressure)	16 x 26	2500

B. Specifications for AHUs –The total lab area is divided into two parts wherein Part 1 contains Sl. No. 1 – 7 and Part 2 contains Sl. No. 8 & 9 of the above table.

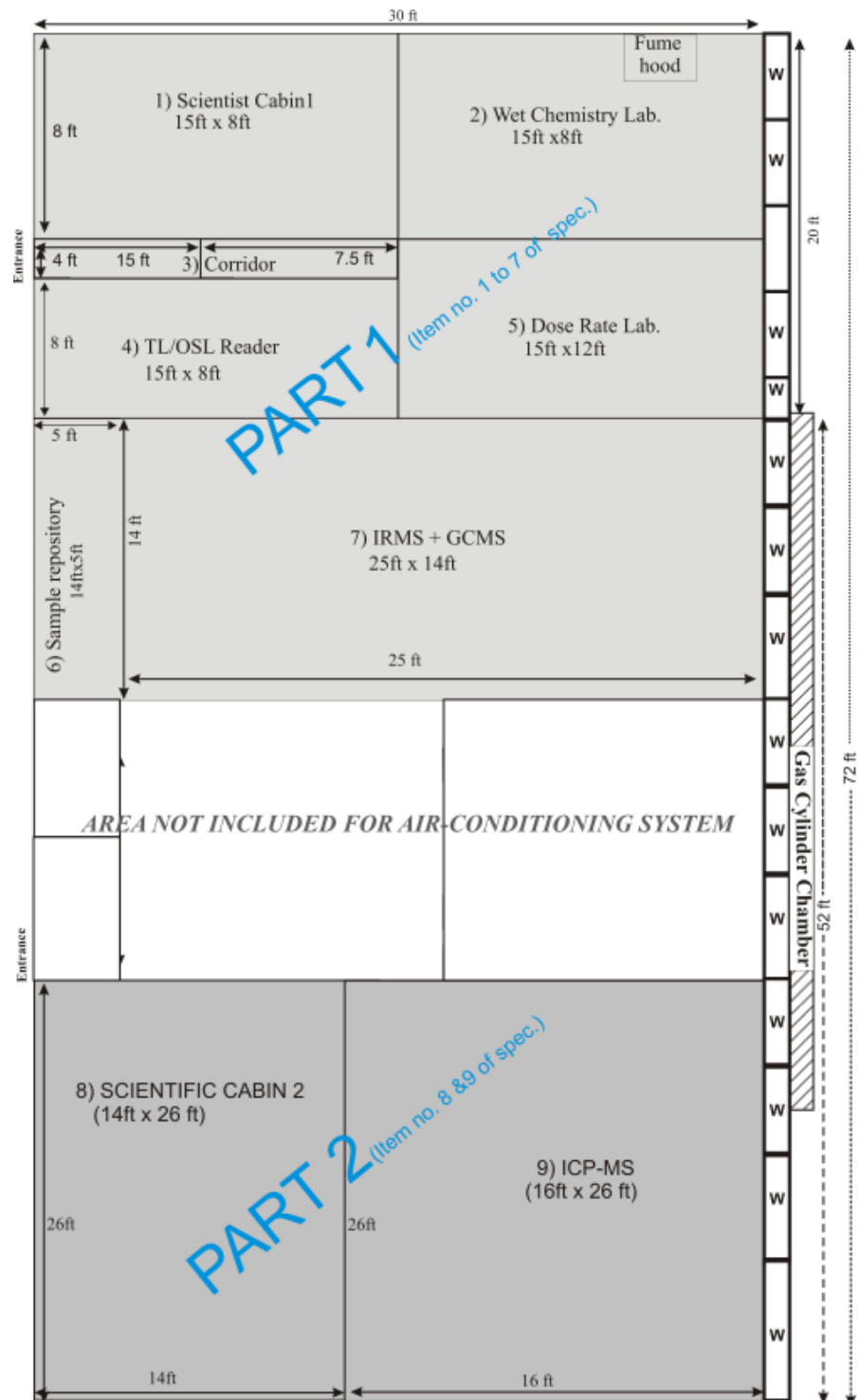
Room Temperature : 24 ± 2 °C

Room Relative Humidity : 55 ± 5 %

Air Changes : 15 – 20 air cycles per hour (ACPH)

Sl. No.	Description	Qty	Rate	Total Cost
I	Part 1			
1	<p>AHU of total volumetric air flow of 4500 cfm</p> <p>(Its contains cooling coil with 1 micron pre heap filters; 4 nos of blower Cruger Germany make and motor of ABB with change over timer, Body thickness of 40mm made up by not less than 1.2 mm thick GI sheets Jindal/Tata make and PUF insulated)</p> <p>Pan made up of 16 gauge (G) extruded aluminum alloy. Section with thermal break profile framework made up of not less than 1.2mm thick aluminum alloy sheet having PUF insulation with fire and smoke damper.</p>	02 set for alternate use		
2.	Condensing Unit (Voltas/Blue star make compressor of 8 TR capacity each with filter & piping)	02		
3	1 micron HEPA filter of 2ft x 2ft with heap box and damper unit	16 nos		
4	Duct supply and return air system (0.8mm thick GI sheet Jindal/Tata make with insulation (13mm supreme polyethylene foam with aluminum))	Approx. 3000 sq.ft		
II	Part 2			
1	<p>AHU of total volumetric air flow of 3000 cfm</p> <p>(Its contains cooling coil with pre heap filter of 1 micron ; 4 nos of blower Cruger Germany make and motor of ABB with change over timer, Body thickness of 40mm made up by not less than 1.2 mm thick GI sheets Jindal/Tata make and PUF insulated)</p> <p>Pan made up of 16 gauge (G) extruded aluminum alloy. Section with thermal break profile framework made up of not less than 1.2mm thick aluminum alloy sheet having PUF insulation with fire and smoke damper.</p>	02 for alternate use		
2.	Condensing Unit (Voltas/Blue star make compressor of 8 TR capacity each with filter & piping)	02		

3	1 micron HEPA filter of 2ft x 2ft with heap box and damper unit	12		
4	Duct supply and return air system (0.8mm thick GI sheet Jindal/Tata make with insulation (13mm supreme polyethylene foam with aluminum))	Approx. 2000 sq.ft		
III	Foundation for AHU and Condensing Unit	08		



SCHEDULE OF TECHNICAL DATA FOR EACH AIR HANDLING UNIT

(To be submitted for each AHU separately)

Technical data shall be furnished as below:

General:

- 1) Make:-
- 2) Air Discharge Direction:- Horizontal or Vertical
- 3) Overall Dimensions:-
- 4) Weight (including water):-
- 5) Type of Vibration Isolators:-
- 6) Approx. noise level (db):-
- 7) Drive belts & size (Flat, Belt, V-Belt):-
- 8) G.I. Casing Gauge:-
- 9) AHU body insulation material & thickness:-
- 10) Density of insulation material :-
- 11) Drain Tray Material :-
- 12) Drain tray insulating material & thickness:-
- 13) Whether inspection door provided for AHU body:-

I) Fan Section:

- 1) Air handling capacity (CFM):-
- 2) Total static press (mm WG):-
- 3) Fan speed (r.p.m.):-
- 4) Nos. of Fan outlet & area:-
- 5) Fan diameter:-
- 6) Balance (Static and/or Dynamic):-
- 7) Bearings:-
- 8) Make & Model of Fan.

II) Filter Section:

- 1) Type:-
- 2) Gross filter area:-
- 3) Velocity through filter (F.P.M.):-
- 4) Press drop through filter when new (mm, W.G.):-
- 5) Efficiency:-
- 6) Filter material:-
- 7) Filter Casing Material & Gauge

III) Cooling Coil:

- 1) Coil fin material & thickness:-
- 2) Copper tube diameter & thickness:-
- 3) Water through coil (F.P.M.):-
- 4) No. of fins per inch:-
- 5) Water press drop in the coil (psig):-
- 6) coil Face area :-
- 7) Nos. of coils:-

IV) Drive Motor for AHU:

- 1) Make:-
- 2) Frame size:-
- 3) Insulation Class:-
- 4) HP/KW rating:-
- 5) Type

V) VALVES

1. Butterfly Valve

- 1] Make :-
- 2] Model :-

2. Gate Valve

1] Make :-

2] Model :-

VI) Gauges

1. Pressure Gauge

1) Make:-

2) Type:-

2. Thermometers

1) Make:-

2) Type:-

VIII) Miscellaneous

1. Insulation (Duct/Piping)

1) Make:-

2) Thickness & Density:-

2. Piping

1) Make

2) Class of Pipe

3. Ducting Sheet

1) Make of Sheet

4. Anti Vibration Mounting

1) Type

2) Make

Note: Any other additional technical details may be included by the tenderer.

ACCEPTABLE/APPROVED MAKE OF MATERIALS

<u>Material</u>	<u>Make</u>
1. Galvanized Plane Sheets	Jindal/SAIL/ Tata
2. Pipes	Jindal/SAIL/ Tata
3. Butterfly Valve/Ball Valve	AUDCO
4. Gate Valve	Leader
5. Globe Valve	Leader/ AUDCO
6. 'Y'/Plot Strainer	TrishuL/Emerald
7. Non Return Valve	AUDCO/C&R
8. Gauges	H Guru/Star Scientific
9. Thermometers	H Guru/Star Scientific
10. Pipe Insulation	Beardsell/Lloyds/ Phenotherm
11. Duty Insulation	Owens Corning/Beardsell/ U P Twiga
12. Electrical Motor	Siemens/Crompton/ ABB
13. Anti Vibration Maintenance	RMS Corporation/Dunlop

