

**TENDER DOCUMENTS FOR ANNUAL OPERATION AND
MAINTENANCE CONTRACT FOR AIR-CONDITIONING SYSTEM PH-
II&III
(2017-2018)**

**TENDER ENQUIRY NO: IUAC/NIT/10/AJM/2017-18
DATE OF OPENING: 02-11-2017**

**INTER UNIVERSITY ACCELERATOR CENTRE (IUAC)
ARUNA ASAF ALI MARG
POST BOX NO. 10502
NEW DELHI – 110 067
Phone: 091-11-26893955 / 26892603, Fax: 091-11-26893955**

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TENDER NOTICE

NOTICE INVITING TENDER NO. IUAC/NIT/10/AJM/2017-18

Name of the work:- Round the Clock Operation and Maintenance of Air-Conditioning System Phase-II&III (1x263.5 TR Screw type, 1x245 TR Screw type) and associated equipments etc., at Inter University Accelerator Centre Campus, New Delhi - 110 067.

Estimated Value : Rs. 38 Lakh per Annum

Earnest Money : Rs. 76,000/- in the form of D.D

Last Date and Time of Submission of Tender (Part A & B) : 02-11-2017 at 3.00 p.m.

Date & Time for opening of Tender (Technical bid - Part-A) : 02-11-2017 at 3.30 p.m.

Date & Time for Opening of Tender (Part-B). : To be intimated later on to technically qualified bidders.

**Address for submission of tender : Administrative Officer (S&P)
Inter University Accelerator Centre
Aruna Asaf Ali Marg
Post Box: 10 502
New Delhi-110067**

Place of Opening of the Tender : Committee Room, IUAC

Tender Fee : Rs. 500/- in Cash or DD

(Tender fee exempted in case of downloaded tender)

GENERAL CONDITIONS OF TENDER:

- 1. Submission of Tender:** Tenders should be submitted in sealed envelopes in two parts separately, **i.e. "Technical bid" (Part-A) and "Price bid" (Part-B)**. Both the parts should be further sealed in an envelop super-scribing NIT No & name of work, due date for opening, bidders name & address. The tender duly filled in may be sent to above mentioned address either by post or hand delivered in the tender box kept in the area near west side entrance, after ensuring that due entries are made in the register kept at the counter. It should not be handed over to any employee of the centre. No tender shall be accepted later than the time schedule specified above. Tender once submitted will remain with the centre and never be returned to the bidders.

Any clarifications/amendments/corrigenda etc., to NIT before last date of submission of bid will only be available on our website: www.iuac.res.in. Therefore bidders are advised to keep visiting our website.

- 2. Technical Bid (Part-A) :** In this bid, the bidder should submit his company profile, history and structure of firm, name of directors/partners/proprietor with technical staff, list of plant, machinery & tools in his possession, copies of work orders successfully executed during the last five years. No deviations in respect of NIT conditions are acceptable. The following specific conditions are essential for technical qualification:-

i) Earnest Money Deposit

ii) All the pages of NIT (except Price bid) duly signed & stamped by the bidder as a token of acceptance of the NIT conditions.

iii) Copy of work orders for "Round the Clock Operation and Maintenance of Central AC plant (Centrifugal / Screw type only) of at least 300 TR Capacity" successfully executed during the last 5 years for Public Sector, Govt. Institutions, Autonomous bodies and reputed Public Ltd. Companies in the following manner:

1) Three similar works, each of value not less than Rs. 15.2 lakhs per annum

OR

2) Two similar works, each of value not less than Rs. 19 lakhs per annum

OR

3) One similar work of value not less than Rs. 30.4 lakhs per annum.

iv) Satisfactory work completion certificate from at least one client with contract details. The work order and completion certificate should be for the same work.

v) Copies of EPF, ESI & GST Registration and a copy of latest annual EPF Statement of existing workers.

vi) IUAC reserves the right to visit the working sites mentioned by bidders as proof of experience to ascertain the quality of service rendered. The bidder will have to arrange for such visit.

- 3. Price Bid (Part-B):** In this bid, the bidder is required to quote his prices as per Annexure-X. The special conditions of the contract, scope of work, equipments covered and other details are

enclosed in Annexure-I to IX. The bidders should quote unconditional rates, neatly written without any overwriting / white fluid / erasing and duly signed & stamped in all pages.

4. **Earnest Money:** An earnest money of Rs. 76,000/- has to be enclosed along with the Technical bid (Part-A). The EMD shall be only in the form of Bank Draft payable to Inter University Accelerator Centre, payable at New Delhi. No Cheques / Cash shall be accepted as EMD. EMD of technically disqualified bidders will be returned within 15 days from the date of evaluation of the technical bids. The refund of EMD to the lowest 4th bidders onwards shall be made within 15 days from the date of opening of price bid. The refund of EMD of the 2nd & 3rd lowest bidders shall be made after award of work and site mobilization by the successful bidder. The EMD of the successful lowest bidder (L1) shall be held back as security deposit and will be released after completion of the works and site clearance.
5. **Exemption from EMD:** Companies registered with National Small Scale Industries Corporation (NSIC) will be given relaxation as per Govt. rules.
6. **Validity of Tender:** Tender shall be valid for our acceptance without any change in rates and NIT conditions for a period of 90 days from the date of opening of price bid.
7. **Labour Escalation:** Contractor will be given an actual reimbursement of the increased wages paid to his workers on the basis of increase in statutory minimum wages as decided by the labour department, Govt. of Delhi from time to time. Other than the above, no escalation shall be paid during the execution of contract period.
8. **Scope of Work:** Detailed special conditions of this contract, scope of work, equipment covered and other details are enclosed with this NIT as per Annexure - I to IX.
9. **Deviations:** No deviation from the stipulated terms and conditions will be allowed. Tenders should be unconditional.
10. **Site Conditions:** Contractor shall acquaint himself fully with the site conditions and the working environment of centre before quoting his rates. No compensation on account of any site difficulties will be entertained, at a later date, after award of the work. The plant & machinery will be handed over to the contractor on "As is where is basis" and **the entire liability of smooth operation & maintenance of the system will rest with the successful bidder.**
11. **Correspondence:** All the correspondence in respect of tender/contractual obligation shall be addressed to A.O (S&P), Inter-University Accelerator Centre, P.B. No. 10502, Aruna Asaf Ali Marg, New Delhi-110067.
12. **Terms of Payment** : The payment shall be made on submission of the bills (format to be approved by the Centre) by the contractor after due certification by the IUAC person responsible for supervision of the work in the following manner:
 - a) Monthly bill shall be raised by the contractor on successful completion of every month as per the schedule of prices quoted in Annexure-X. The contractor should submit the bill on 1st of every month. The payment shall be made after due certification by the IUAC Engineer-In-Charge responsible for supervision of the work, who may at his discretion effect deductions for non-performance or delayed/improper work.
 - b) Amount towards mandatory requirements such as EPF & ESI shall be paid by IUAC only on submission of the relevant authenticated documents. It is mandatory for the contractor to submit

the employees wage bill along with EPF & ESI receipts, ECR statement, paid wages sheet duly signed by employees and the attendance record.

c) Submission of bill/receipt on account of payment made to statutory bodies/authorities i.e. ESI, EPF, GST etc., need to be adhered with strict compliance. Non-compliance in regard to the above may lead to a penalty to be decided by the Director or the committee constituted by Director and that shall be full and final as far as amount of release of payment to the contractor is concerned.

d) There should not be any deductions e.g. advance etc. from the employees wages in the Wages Sheet except absentees.

13. **Security Deposit:** On award of work, the contractor shall furnish a Bank Guarantee valid for the entire contract duration equivalent to one month's contract value. In case of extension of contract after the first year, fresh bank guarantee for the extended period has to be submitted. Besides the above, the EMD of the successful lowest bidder (L1) shall also be held back with IUAC and will be released only after completion of the works and site clearance.
14. **Labour Laws:** The contractor shall abide by all the prevalent rules and regulations related to labour laws, accident, workmen compensation act, workmen insurance, ESI, EPF etc., This will be the sole responsibility of the contractor. Inter University Accelerator Centre will not be a party at any stage in any of the disputes relating to the above. In case of any liability arises due to non-conformance of labour laws by the contractor, under no circumstances IUAC will be liable for the same.
15. All the manpower deployed at site by the contractor should be given one weekly off in every 7 days or as many Sundays in any given month. If in case they are performing reliever's duty, they should be paid extra for the same by the contractor. In addition to the above, 3 National Holidays (26th Jan, 15th Aug. & 2nd Oct.) and any special mandatory holidays as declared by Govt. of India from time to time should also be given to the manpower. The amount to be incurred by the contractor towards national holidays should be taken into account in overhead & profit component.
16. **Minimum Wages:** The monthly wages to be paid to the personnel shall never be less than the minimum wages decided by the labour department of Govt. of Delhi from time to time in addition to benefits like EPF/ESI calculated on total monthly wages (not on any part of wage). In case of revision in wage by Labour Department of Govt. of Delhi from time to time, the difference shall be paid on submission of paid wage sheet. If contractor wishes to pay more than the minimum wages to his manpower, he should take this into account in his overhead & profit component.
17. **Monthly Wages:** The contractor will disburse the monthly wages to his persons on or before 10th of every month in the premises of the IUAC. The IUAC may at its discretion depute its representative to witness the payment. However, IUAC reserves the right to make payment of wages to contractor's persons directly in the event of receipt of any complaint from his person(s) regarding delayed payment or non-payment of wages and recover the amount so paid along with 10% overheads from the contractor's bill. Delay in making monthly wages to his staff working at IUAC will be considered as disqualification on contractor's part and this will lead to termination of the contract. In such a case, IUAC's decision will be final.

18. **EPF and ESI:** EPF and ESI numbers of manpower deployed at site by contractor should be furnished to IUAC along with the documentary evidence. EPF statement of all the manpower deployed by the contractor should be submitted to IUAC periodically or as and when asked for. Original ESI cards of employees should be shown to IUAC for verification and photocopies of the same to be submitted. On the expiry of contract, contractor has to submit the clearance certificate from all the manpower deployed by him indicating no dues towards wages, EPF settlement etc., Contractor has to sign the EPF settlement papers for the people who leave the organization while working at IUAC and also after completion of the contract in our presence in case of a complaint or a dispute between contractor and his workmen.
19. **Rules governing the Contractor's employees working in the Centre's premises:** The contractor's employees working inside the IUAC campus will abide by IUAC terms. Any damage to the centre's property due to mishandling, carelessness etc., on the part of contractor or his workmen will be recoverable from the contractor's bills.
20. **IUAC reserves the right** to reject any or all the tenders in full or in part without assigning any reason whatsoever and the decision of the IUAC in this regard will be binding on all the bidders. Tenders not complying with any of the provisions stated in this tender document are liable to be rejected.
21. All the persons deployed by the contractor at IUAC will have to carry valid gate-passes, which will be issued only after submission of their bio-data in desired format. Any negligence / offence on their part will attract immediate removal from site. It is mandatory for all the contractor's employees to wear badges with their company's name embossed on the same and display it.
22. All the employees will have to be covered under insurance against any personal accident and IUAC will not be liable for payment of any compensation on that account.
23. During execution of work, the contractor should follow all standard norms of safety measures/precautions to avoid accidents/damages to men, machines and buildings. On non-adherence of this clause, suitable fines, as decided by the Director, IUAC shall be imposed.
24. Manpower deployed by the contractor at our site for carrying out the contracted works is strictly prohibited to associate with any other works other than the awarded works on the campus.
25. If any contractor's person is found to be misbehaving or to be negligent in the duties assigned to him/her, IUAC reserves the right to seek his/her removal from IUAC, with suitable replacement within 24 hours.
26. No material belonging to the contractor whether consumable or non-consumable should be brought inside the IUAC campus without proper entry at the main gate nor any material should be taken out without proper gate pass issued by the centre.
27. In case of any injury to contractor's person at IUAC campus, due to any reason, the contractor shall be responsible for taking the person to the hospital/nursing home /dispensary for treatment at his own cost. If in the case of emergency IUAC vehicle is used and if IUAC incurs any expenditure on the treatment of the person, the contractor will be suitably charged for the same.
28. Under no circumstances the contractor will be permitted to sublet his work to any another contractor while working at IUAC. Likewise the Contractor's persons will not be permitted to undertake any private jobs in the IUAC Campus.

29. IUAC will provide free water and electricity at one point and contractor has to make his own arrangements from that point as per his requirements.
30. **Termination of Contract:-** The Director, IUAC reserves the right to terminate the contract immediately on account of poor workmanship, failure to mobilise the site, non-compliance of set norms/specifications for the works, delay in progress of work, violation of any contract provisions by the contractor. In such cases, the Bank Guarantee equivalent to one month's contract value held with IUAC and the EMD will be forfeited by IUAC. The contract can also be terminated at the request of either party with two months notice period or else to pay two months O&M bill value in-lieu of the notice period.
31. Any dispute arising out of this contract will be subjected to jurisdiction of New Delhi/Delhi.
32. Tender once submitted will remain with IUAC and will not be returned to the bidders.

Accepted

(Signature of Bidder)

Note:- Entire NIT (except price bid)) is to be attached with "Technical bid (Part-A)" duly signed & stamped by the bidder

SPECIAL CONDITIONS OF THIS CONTRACT

1. The contractor has to ensure the promptness in service and this is basically the essence of the contract. The contractor has to ensure 99% uptime of the system. All endeavour will be made by the contractor to restrict to preventive maintenance and unforeseen outages will be kept to the minimum.
2. While all efforts will be made to complete the maintenance activities in the normal hours. If the situations so warrant that the maintenance has to be done beyond the normal hours, the same will be done by the contractor at no extra cost to IUAC.
3. Log - Book supplied by IUAC will be maintained by the operator in- charge in each shift. The readings for the previous day will be got countersigned on the subsequent day by the Engineer - in Charge.
4. The maintenance log book will be filled each day by the concerned supervisor of the successful bidder, mentioning the details of the activities carried out during the day and the materials consumed in each maintenance activity. This maintenance logbook will also be countersigned on the subsequent day by the engineer - in charge.
5. All the spares required in A/C Plants O&M contract will be provided by IUAC.
6. The AC System is a 24 hour per day operating plant through-out and the site working has to be arranged accordingly by the contractor all the year including Sundays and Holidays. Furthermore, the maintenance gang has to be arranged by contractor to gear up/ available for breakdown maintenance work on 24 hours.
7. Inside room conditions will be maintained as per the directions of the Engineer-In-Charge, but within design parameters.
8. The contractor shall have to deploy the following minimum manpower during the period of contract

S. No.	Details	Category	Nos.	Qualification	Experience
	General Shift				
1	Supervisor	Graduate and above	1	3 years Diploma in R&A/C/Mechanical/Electrical or 2 years ITI in R&A/C / Electrician	2 years for Diploma qualified 8 years for ITI qualified in utilities or relevant

S. No.	Details	Category	Nos.	Qualification	Experience
2	R&A/C Mechanic	Skilled	1	2 years ITI in R&A/C / Electrician	3 years in utilities or relevant
	Shifts				
3	Operator	Skilled	3	2 years ITI in R&A/C/Electrician	3 years in utilities or relevant
4	Operator (Reliever)	Skilled	1	-Do-	-Do-
5	Helper	Un-skilled	3	10 th class	2 years in technical field
6	Helper (Reliever)	Un-skilled	1	-Do-	-Do-
Manpower for LHe / Cryogenic System:					
7	Operator	Skilled	3	2 years ITI in R&A/C /Electrician/Electronics	3 years in utilities or relevant

i) All the manpower should be got approved by IUAC before deployment at site. Documentary evidence of qualifications and experience to be furnished before deployment of manpower.

ii) There should be three shifts in a day equally spaced. Each shift should be manned by one operator and one helper. Relievers will relieve shift operators/helpers and will work in general shift for the remaining days of the month. General shift should be manned by minimum one Supervisor, one R&A/C Mechanic.

iii) Contractor may have to deploy additional maintenance gang depending upon the requirement, which should be geared-up for 24 hours breakdown maintenance works, in-addition to minimum manpower as mentioned above without any extra cost to IUAC.

iv) Manpower for LHe/Cryogenic system will work in general/shifts depending upon the requirement. They will work in running of liquid helium machine in shift duties as and when it operates including LINAC runs, helium gas compressor maintenance and cooling water lines related to the helium gas compressor, LN2 plant operation, maintenance and liquid nitrogen disbursal, SS piping jobs and such related activities of the cryogenic labs.

9. Deductions / Penalty:

i) Wage will be deducted for each unattended duty. If employee is absent for more than 2 days, contractor should immediately make an alternative arrangement.

ii) If the maintenance activities are not carried out as per the response time indicated in the Annexure - IX, suitable deductions on proportionate basis will be made from contractor's bills and the centre reserves the right to determine the amount in question.

- iii) If the breakdown activities are not attended to on emergency basis, deductions at our discretion will be affected from contractor's bills instead of response time indicated in the Annexure - IX.
- iv) The centre reserves the right to get the preventive/breakdown maintenance works done by some other agency if the contractor is not attending to the same. In such cases, the cost involved, overheads + penalty for the same will be debited from contractor's bills.
- v) In case of non-availability of sufficient consumables/tools/instruments, contractor's site supervisor shall be given a time of 24 hours to arrange the same. If fail to comply, IUAC shall arrange the same on its own and recover expenditure from the contractor along with 10% overheads.
10. **Consumables:** Supply of all consumable items (as per Annexure-VIII) required for day to day operation and maintenance work shall be arranged by contractor. They are deemed to be included in contractor's scope and to be quoted separately in item no.4 of Annexure – X.
11. The contractor will provide all necessary tools, equipments, measuring instruments (as per Annexure-VII) for smooth operation and maintenance work. Safe custody of all such T&P will be contractor's sole responsibility. They are deemed to be included in contractor's scope and to be quoted separately as in item no.5 of Annexure – X.
12. The contractor will provide one pair of **Safety Shoes** of Liberty make Art. No. 7198-01 (N) /Bata/Action make to each of the employee deployed at site including one pair of socks. The make/model no. of shoes should be got approved by us before procurement of the same. In the event of extension of contract after first year, fresh pair of safety shoes to be provided to each employee deployed at site. They are deemed to be included in contractor's scope and to be quoted separately as in item no.5 of Annexure – X.
13. The contractor will provide 2 pairs of uniform to each of the employee deployed at site including stitching charges. The quality/colour of the uniform should be got approved by us before procurement of the same. In the event of extension of contract after first year, fresh pair of uniform (2 pairs) to be provided to each employee deployed at site. They are deemed to be included in contractor's scope and to be quoted separately as in item no.5 of Annexure – X.
14. The work shall be carried out as per the norms set by the manufacturer of respective equipment, specification and specific instructions as may be issued by the IUAC's representative responsible for work from time to time.
15. Contractor should depute a qualified supervisor dedicated for this site, who will co-ordinate work execution activities and interact with IUAC representative responsible for supervision of work.
16. Watch and Ward of entire Air-Conditioning System Ph-II&III installation till the system is taken back by IUAC shall be the sole responsibility of the contractor and pilferage, if any, shall be entirely to his account.

17. This contract is technical in nature and not a labour supply contract. Therefore managing all the affairs of O&M of Air-Conditioning system and the associated sub-systems in a responsible and dedicated manner will be entirely the responsibility of the bidder who is awarded the works. Contractor cannot take the plea of minimum manpower deployed at site and escape from the overall responsibility. If necessary, contractor has to depute additional manpower for preventive/breakdown maintenance activities.
18. The contract will be awarded for one year period. However, contract may be renewed depending upon the performance in previous year and by mutual agreement. There is no binding on centre to renew the contract after first year.
19. The successful bidder should depute two responsible people one week before actually taking over the system to get acquainted with the system without any extra cost to centre.

Scope of Work of Air-Conditioning System Ph-II:

The following scope of work is only indicative and contractor is strongly advised to use his own judgement in evaluating the quantum of work involved in Round the Clock Operation and Maintenance of a Central Air Conditioning plant of Ph-II and other low side equipments etc., The bidder is strongly advised to understand the criticality of the application and the importance of maintaining more than 99% uptime of the systems.

1. To operate and maintain 1x263.5 TR Central AC plant with all the equipments including low side equipments as per Annexure - III, round the clock throughout the year (365 days of the year).
2. To operate / service / overhaul the Window/Split Air-Conditioners as and when necessary. To attend to the breakdown complaints of the same. To charge the window / split air conditioners with refrigerant on requirement. To arrange brazing set etc., for leak repairing/fixing.
3. To operate and maintain Electron Beam Welding & UPS rooms air-conditioning hooked onto the Phase-II AC plant.
4. To check and clean all AHU's, AHU blowers, AHU blower motors and adjust/ replace belt, belt tensions, if necessary (once in a fortnight / or as per requirement). To grease the blower motors.
5. To check the refrigerant system for leakage of refrigerant and topping up of the same after rectification of the leakage.
6. To arrange empty gas cylinders & condensing unit for removal of Refrigerant from circuits using condensing unit and filling same in the cylinders for maintenance purpose if required.
7. To check / clean with CTC / tighten all electrical controls monthly. The heated terminations, if required to be redone, will be made in proper condition by using appropriate size crimping tool.
8. To check and replace, if necessary, the performance of all operational safeties. This activity has to be done at least once in three months and if required earlier too.
9. To check and clean water strainers once in a month.
10. To check and clean AHU coils, eliminators and filters, fresh air filters etc., on monthly basis or as per requirement. Vaniclean or suitable coil cleaning chemical to be arranged by the contractor.
11. To tighten foundation bolts and adjust drive belt tensions as and when required.

12. To check and rectify rotary equipment alignment once in three months (by use of three dial gauges and to an accuracy of 0.05 mm both on the axial and radial readings).
13. To check / grease / replace bearings in all rotating machineries.
14. To attend to repairs of mechanical equipment such as pump sets, AHU blowers, motor drives, including minor and major overhauling.
15. To lubricate motor / pumps bearings as and when necessary.
16. To check electrical circuits and rectify the same as and when necessary. To clean and tighten electrical contact points once in a month. To replace electrical contacts and other items in the MCC's as and when necessary.
17. To tighten all the fasteners of the bus bars as and when necessary and not more than once in three months. Also to re-terminate the heated up contacts and replace cabling / wiring as and when necessary.
18. To de-scale condensers, chillers and valves of Ph-2 A/C Plant and 4 nos. of condensers of LHe compressors as per requirement. De-scaling chemical Scale-2 or suitable chemical to be arranged by the contractor.
19. To check and top up / replace oil of the compressor.
20. To ensure adequate water level in the water tanks.
21. To clean / flush cooling tower sump and the basin as and when required and at least once in each quarter.
22. To clean / flush expansion tanks as and when required or at least once in three months.
23. To check/ replace the heaters in the AHU's ducts and replace if necessary.
24. To properly clean all machineries daily.
25. To paint the equipments as and when required.
26. To plug the leakages in the FRP basin of the cooling tower.
27. To replace the axial fan blade assembly / motor of the cooling towers. In the process the blade angles have to be finely adjusted, using four-inch precision level.
28. To service the cooling towers including lubrication of gear box, servicing of the motors, tightening of the fans, alignment of the motor and gear box shaft using proper alignment fixtures to an accuracy of 0.06 mm both on the radial and the axial.

29. To operate and maintain canteen exhaust system including blower, ducting, baffle type filters, electrical panel etc.,
30. To arrange a well equipped first - aid box and maintain it in a healthy condition to take care of all first aid eventualities.
31. To maintain temperature and humidity as designated in the design for the different areas and as recorded in the logbook.
32. To operate the hook-up line valves as and when required.
33. To clean the micro-processor box internals daily by vacuum cleaning.
34. To clean and rectify / replace the panel capacitors for their proper functioning.
35. To get the materials issued from the IUAC stores.
36. To daily maintain the maintenance register and keep a record of the materials and consumables used for maintenance works.
37. To ensure that the plant room house-keeping is properly done and to co-ordinate with the house-keeping contractor.
38. To attend to minor leakages in the MS piping by suitable welding etc., including attending to leakages from the flanges.
39. To cut appropriate size gaskets etc.,
40. To operate and maintain the air washers as and when necessary as per the enclosed list. To service the air washers as and when necessary.
41. To operate 35meter cube per hour water softener no. 2 including back washing, salt injection, regeneration, rinsing etc., to achieve soft water of desired quality (3 PPM). To operate Raw Water Pump during softener operation.
42. To operate and maintain Beamhall#II Store Extension ductable type Split A/C Units of 3x10 TR (each with 2 Nos. of outdoor condenser units of 5 TR capacity) of Blue Star make
43. For the above scope of work IUAC will provide the following facilities free of any charges to the contractor:
 - (A) Water and electricity for operation of the plant.
 - (B) All spares required to maintain the plant and only the ones that are going permanently into the installation.

(C) IUAC will pay additional charges for machining jobs, condenser / chiller / coil repairs, motor burn-outs as and when required.

(D) IUAC will arrange for all electrical components required for maintenance of the plant. In case the contractor is to arrange for the same IUAC will pay additionally.

(E) In certain circumstances the contractor may be asked to procure spare parts not covered within the scope, which will be paid additionally by IUAC on production of copy of actual vouchers + 10 % of handling charges.

44. Bidders are informed that the RTHDC2F2F3 Model Screw Chiller is under AMC with M/s Trane India Pvt. Limited. This covers preventive maintenance and breakdown service visits by Trane authorised personnel.

ANNEXURE - III

DETAILS OF EQUIPMENT COVERED UNDER THE SCOPE OF WORK AS IN ANNEXURE - II

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. 263.5 TR Screw Chiller (R-134a),
Model No. RTHDC2F2F3, Serial No.
G14B00366, Trane make along with all accessories, local
panel, microprocessor etc., | 1 no. |
| 2. Condenser Water Pumps (Beacon make)
Type BWP 125/260, Head-20MWC, Q-190 CMH
with Kirloskar make Motor KW-15, HP-20, RPM-1460 | 2 nos |
| 3. Chilled Water Pumps (Beacon make)
Type BWP 125/400, Head-40MWC, Q-130 CMH
with Kirloskar make Motor KW-30, HP-40, RPM-1460 | 1 no. |
| 4. Chilled Water Pumps (Best & Crompton make)
Type BCP 100/400, Head-45MWC, Q-143 CMH
with ABB make Motor KW-30, HP-40, RPM-1470 | 1 no. |
| 5. Booster Pump (Beacon make) - 12.5 HP | 1 no. |
| 6. Booster Pump (Beacon make) - 7.5 HP | 1 no. |
| 7. Cryo Booster Pump (Khimline make) – 2.0 HP | 1 no. |
| 8. Condenser water piping and associated valves | Lot |
| 9. Hook-up chilled water piping no.1 and associated valves | Lot |
| 10. Hook-up chilled water piping no.2 and associated valves | Lot |
| 11. Hook-up chilled water piping no.3 and associated valves | Lot |
| 12. Chilled water piping and associated valves, balancing
valves, mixing valves, Y strainers etc., | Lot |
| 13. SS expansion tank and MS expansion tank and associated
piping and valves | 1 each/ lot |
| 14. AHU's - 39F, Carrier make | 01 no. |
| 15. AHU – Model: ZDS-120, Zeco make | 02 nos. |
| 16. AHU – Model: ZDS-150, Zeco make | 01 no. |

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 17. AHU – Model: CCTU-100, Caryaire make | 01 no. |
| 18. Associated ducting including accessories like damper
Fire dampers, grills- supply and return, diffusers, VCD's etc | Lot |
| 19. Main motor control centre housed in utility building II
including all cubicles and associated cabling, capacitor
banks, SFU's, meters, relays, contactors, bus-bars, SPP's etc | Lot |
| 20. AHU motor control centre housed in AHU room ,EBW
room & UPS room including all cubicles and associated
cabling, capacitor banks, SFU's, meters, relays, contactors,
bus-bars, SPP's etc | Lot |
| 21. Cabling and earthling connected to Phase II AC plant. | Lot |
| 22. Paharpur make cooling tower model#2230 and accessories including
control and power cables, fans, gear box, motors (15KW/20HP, frame
size KH-160L), drive shafts etc., | 02 nos. |
| 23. Cooling tower RCC basin including valves, connecting
piping, MS covers etc., | 02 nos. |
| 24. Instrumentation connected with the above like temperature
sensors, humidistat, thermostat etc | Lot |
| 25. Ductable type Split A/C Units of 10 TR (each with 2 Nos.
of Outdoor Condenser Units of 5 TR Capacity) of
Blue Star make, serving to the Beam Hall-II Store Extn. | 03 nos. |
| 26. Window Air-Conditioner of 1.5TR Capacity | 05 Nos. |
| 27. Split Air-Conditioner of 2.5 TR Capacity | 03 No. |
| 28. Split Air-Conditioner of 3.0 TR Capacity | 07 Nos. |
| 30. Ventilating Unit of 10,000 cfm installed in the liquid
helium compressor room along with all the accessories
like ducting, 25 micron filters, electricals etc. | 01 No. |
| 31. Water Softening Plant (Make - Aqua Process)
to bring down the Calcium Carbonate hardness level
of the tube well water down to 3 ppm. The softener plant
is of 1450 liters capacity | 01 No. |
| 32. Any other equipment connected with the above system | Lot |

ANNEXURE - IV

SCOPE OF WORK OF PH-III A/C PLANT

The following scope of work is only indicative and contractor is strongly advised to use his own judgement in evaluating the quantum of work involved in Round the Clock Operation and Maintenance of Central Air Conditioning plant of Ph-III and other low side equipments etc. The bidder is strongly advised to understand the criticality of the application and the importance of maintaining more than 99% uptime of the systems.

1. To operate and maintain 1x245 TR central AC plant with all the equipments including low side equipments as per Annexure III, round the clock throughout the year (365 days of the year).
2. To operate / service / overhaul the Window/Split Air-Conditioners as and when necessary. To attend to the breakdown complaints of the same. To charge the window / split air conditioners with refrigerant on requirement. To arrange brazing set etc., for leak repairing/fixing.
3. To check and clean all AHU's, AHU blowers, AHU blower motors and adjust/ replace belt, belt tensions, if necessary (once in a fortnight / or as per requirement). To grease the blower motors.
4. To check the refrigerant system for leakage of refrigerant and topping up of the same after rectification of the leakage.
5. To arrange empty gas cylinders & condensing unit for removal of Refrigerant from circuits using condensing unit and filling same in the cylinders for maintenance purpose if required.
6. To check / clean with CTC / tighten all electrical controls monthly. The heated terminations, if required to be redone, will be made in proper condition by using appropriate size crimping tool.
7. To check and replace, if necessary, the performance of all operational safeties. This activity has to be done at least once in three months and if required earlier too.
8. To check and clean water strainers once in a month.
9. To check and clean AHU coils and filters, fresh air filters etc., on monthly basis or as per requirement. Vaniclean or suitable coil cleaning chemical to be arranged by the contractor.
10. To tighten foundation bolts and adjust drive belt tensions as and when required.
11. To check and rectify rotary equipment alignment once in three months (by use of three dial gauges and to an accuracy of 0.05 mm both on the axial and radial readings).
12. To check / grease / replace bearings in all rotating machineries.
13. To attend to repairs of mechanical equipment such as pump sets, AHU blowers, motor drives, including minor and major overhauling.

14. To lubricate motor / pumps bearings as and when necessary.
15. To check electrical circuits and rectify the same as and when necessary. To clean and tighten electrical contact points once in a month. To replace electrical contacts and other items in the MCC's as and when necessary.
16. To tighten all the fasteners of the bus - bars as and when necessary and not more than once in three months. Also to re-terminate the heated up contacts and replace cabling / wiring as and when necessary.
17. To de-scale condensers and valves as per requirement. De-scaling chemical Scale-2 or suitable chemical to be arranged by the contractor.
18. To check and top up / replace oil of the compressor crankcase.
19. To ensure adequate water level in the water tanks.
20. To clean / flush cooling tower sump and the RCC basin as and when required and at least once in each quarter.
21. To clean / flush expansion tanks as and when required or at least once in three months.
22. To check/ replace the heaters in the AHU's ducts and replace if necessary.
23. To properly clean all machineries daily.
24. To paint the equipments as and when required.
25. To plug the leakages in the FRP basin of the cooling tower.
26. To replace the axial fan blade assembly / motor of the cooling towers. In the process the blade angles have to be finely adjusted, using four-inch precision level.
27. To service the cooling towers including lubrication of gear box, servicing of the motors, tightening of the fans, alignment of the motor and gear box shaft using proper alignment fixtures to an accuracy of 0.06 mm both on the radial and the axial.
28. To arrange a well equipped first - aid box and maintain it in a healthy condition to take care of all first aid eventualities.
29. To maintain temperature and humidity as designated in the design for the different areas and as recorded in the logbook.
30. To operate the hook-up line valves as and when required.
31. To clean the micro-processor box internals daily by vacuum cleaning.

32. To clean and rectify / replace the panel capacitors for their proper functioning.
33. To get the materials issued from the IUAC stores.
34. To daily maintain the maintenance register and keep a record of the materials and consumables used for maintenance works.
35. To ensure that the plant room house-keeping is properly done and to co-ordinate with the house-keeping contractor.
36. To attend to leakages in the MS piping by suitable welding etc., including attending to leakages from the flanges.
37. To cut appropriate size gaskets etc.,
38. To operate and maintain the air washers as and when necessary as per the enclosed list. To service the air washers as and when necessary.
39. To operate 50 meter cube per hour water softener including back washing, salt injection, regeneration, rinsing etc., to achieve soft water of desired quality (3 PPM). To operate Raw Water Pump during softener operation.
40. Bidders are informed that the 23XL Chiller is under AMC with M/s Carrier Air Conditioning & Refrigeration Limited. This covers preventive maintenance and breakdown service visits by Carrier authorized personnel.
41. For the above scope of work IUAC will provide the following facilities free of any charges to the contractor:
 - (A) Water and electricity for operation of the plant.
 - (B) All spares required to maintain the plant and only the ones that are going permanently into the installation.
 - (C) IUAC will pay additional charges for machining jobs, condenser / chiller / coil repairs, motor burn-outs as and when required.
 - (D) IUAC will arrange for all electrical components required for maintenance of the plant. In case the contractor is to arrange for the same IUAC will pay additionally.
 - (E) In certain circumstances the contractor may be asked to procure spare parts not covered within the scope, which will be paid additionally by IUAC on production of copy of actual vouchers + 10 % of handling charges.

ANNEXURE - V

DETAILS OF EQUIPMENT COVERED UNDER THE SCOPE OF WORK AS IN ANNEXURE – IV

1. 23XL, 245 TR Screw Chiller (R-22),
Model No. 23XL3030ED40, Sr. No. 4004Q69717
Carrier make along with all accessories, local panel,
microprocessor etc., 1 no.
2. Condenser Water Pumps (Beacon Weir make),
Type SDC 125/150, Sr.Nos. W0013504, W0013604
Head-20MWC, Q-216 CMH with Crompton make Motor
KW-18.5, HP-25, RPM-1460 2 nos.
3. Chilled Water Pumps (Beacon Weir make),
Type SDC 100/125, Sr.Nos. W0038903, W0039903
Head-30MWC, Q-135 CMH with Crompton make Motor
KW-18.5, HP-25, RPM-1460 2 nos.
4. Condenser water piping and associated valves Lot
5. Chilled water piping and associated valves, balancing
valves, mixing valves, Y strainers etc., Lot
6. Hook-up chilled water piping no.2 and associated valves Lot
7. RCC tank and MS expansion tank and associated
piping and valves Lot
8. AHU#1, Model# E 250/230, Fan Model#FDA 630
Sr. Nos. 0622G04, Blue Star make with 15 HP
Motor, RPM-1460 01 no.
9. AHU#2, Model# E 250, Fan Model#FDA 630
Sr. Nos. 0623G04, Blue Star make with 10 HP
Motor, RPM-1460 01 no.
10. AHU#3, Model# E 250, Fan Model#FDA 630
Sr. Nos. 0624G04, Blue Star make with 7.5 HP
Motor, RPM-1460 01 no.
11. AHU#4, Model# E 200, Fan Model#FDA 560
Sr. No. 0626G04, Blue Star make with 10.0 HP
Motor, RPM-1460 01 no.

12. AHU#5, Model# E 250/220, Fan Model#FDA 630
Sr. Nos. 0625G04, Blue Star make with 7.5 HP
Motor, RPM-1460 01 no.
13. Main motor control centre housed in Utility building III
including all cubicles and associated cabling, capacitor
banks, SFU's, meters, relays, contactors, bus-bars, SPP's etc Lot
14. AHU motor control centre housed in AHU rooms
including all cubicles and associated cabling, capacitor
banks, SFU's, meters, relays, contactors, bus-bars, SPP's etc Lot
15. Cabling and earthing connected to Phase III AC plant. Lot
16. Paharpur make cooling tower model#6022 of 6KF series and
accessories including control and power cables, fans, gear box,
motors, drive shafts etc., 01 no.
17. Cooling tower RCC basin including valves, connecting
piping, MS covers etc., 01 no.
18. Instrumentation connected with the above like temperature
sensors, humidistat, thermostat etc Lot
19. ZECO make 34000 CMH air washer of FRP construction and
with PVC fills along with all accessories like control
panel, water pumps, ducting etc., and serving to
IUAC welding room 01 No.
20. ZECO make 17000 CMH air washer of FRP construction and
with PVC fills along with all accessories like control panel
water pumps, ducting etc., and serving to IUAC workshop 01 No.
21. Water Softening Plant (make – Aqua Pure Technologies (P) Ltd
model Aqua Pro) to bring down the Calcium Carbonate
hardness level of the tube well water down to 3 ppm.
The softener plant capacity is 50 m³/reg. and the resin
volume is of 500 liters. 01 No.
22. Window Air-Conditioner of 1.5TR Capacity 06 Nos.
23. Window Air-Conditioner of 2.0TR Capacity 04 Nos.
24. Split Air-Conditioner of 1.5 TR Capacity 02 Nos.
25. Split Air-Conditioner of 2.5 TR Capacity 07 Nos.

26.	Split Air-Conditioner of 3.0 TR Capacity	04 Nos.
27.	Split Air-Conditioner of 3.5 TR Capacity	06 Nos.
28.	Cassette Split Air-Conditioner of 3.0 TR Capacity	03 Nos.
29.	Any other equipment connected with the above system	Lot

LIST OF BUILDINGS COVERED IN THE SCOPE OF WORK

LABORATORY/ OFFICE COMPLEX BUILDINGS

1. Utility building-II
2. Utility building-III
3. Engineering building
4. LEIBF
5. PARAS in Engineering building hall
6. LHe Compressor room
7. Beamhall#II
8. C&D room and Cryo generator room

ANNEXURE - VII

LIST OF TOOLS, EQUIPMENTS, MEASURING INSTRUMENTS

1. Ring Spanner (mm)	1 Set of 12
2. Ring Spanner (inch)	1 Set of 12
3. Box Spanner	1 Set of 19
4. Double open end Spanners (mm)	1 Set of 12
5. Double open end Spanners (inch)	1 Set of 12
6. Screw Driver Set (6" to 12")	1 Set of 6
7. Screw Driver (18")	1 No.
8. Adjustable Wrench (6", 12")	1 each
9. Pipe Wrench (12", 18")	1 each
10. Measuring tape (3met, 15 met.)	1 each
11. Allen key set (mm)	1 lot
12. Allen key set (inch)	1 lot
13. Psychrometer	2 Nos.
14. Digital Thermometer	1 No.
15. Cutting Plier (8")	1 No.
16. Hand Hammer 1kg	1 No.
17. Hand Hammer 500 Grams	1 No.
18. Mallet Hammer 500 Grams	1 No.
19. Hack Saw	2 No.
20. Multi Meter/Tong tester (standard make)	2 Nos.
21. Test Lamp	2 Nos.
22. R-22 double manifold with suction and discharge gauges	1 No.
23. Suction gauge (30 In Hg to 250 psi)	1 No.
24. Gas charging line	1 No.
25. Copper tube cutter	1 No.
26. Dial Indicator (Range 0.01-10 mm), 2" dial Mitutoyo Japan make	2 Nos.
27. Flaring tool set	1 No.
28. Swaging tool	1 set
29. Bearing puller	1 No.
30. Pulley puller	1 No.
31. Electric blower for cleaning	1 No.
32. Line Tester	2 Nos.
33. File (round, flat, half circle, triangle)	1 each
34. Chisel	1 No.
35. Electrical sleeve insulated Screw driver set	1 Lot
36. Electrical Wire Cutter	1 No.
37. Chargeable Torch	2 Nos.
38. Umbrella/ rain coat	2 Nos.
39. Brazing set including torch	1 set
40. De-scaling pump, Plastic tub, PVC pipe etc.,	1 lot (On the need basis)

41. De-scaling rods and brushes	1 lot (On the need basis)
42. R-22 empty cylinders	1 lot (On the need basis)
43. Vacuum pump	1 No. (On the need basis)
44. Condensing unit	1 No. (On the need basis)
45. Any other tools as may be required	1 Lot

Note: The tools/equipments which are required on the need basis should be made available at site in a short notice depending upon the urgency

ANNEXURE - VIII

CONSUMABLES

1. Insulation tape (R, Y, B, Black)	-	5 eachx4 Nos. (stock all the time)
2. Teflon tape	-	5 Nos. (stock all the time)
3. Hacksaw blades	-	5 Nos.
4. Thread roll	-	1 Pkt.
5. Safeda	-	½ Kg
6. M-Seal	-	1 Kg
7. Cotton dhoti	-	20 nos. (stock all the time)
8. CRC	-	2 bottles (stock all the time)
9. Emery paper (rough, fine)	-	6 eachx2 Nos.
10. Al. adhesive tape (4")	-	4 Nos.
11. Petrol/Diesel for cleaning	-	2 Lt.
12. Vaniclean	-	On demand (Approx. 50 lit./each cleaning of all AHU's)
13. De-scaling Chemical (Scale-2)	-	On demand (Approx. 200 lit./each de-scaling of chillers & condensers)
14. Attendance Register	-	1 No.
15. Maintenance/Stock Register	-	1 No.
16. Any other consumables as may be required	-	1 Lot

ANNEXURE - IX

RESPONSE TIME/TIME SCHEDULE FOR ATTENDING /COMPLETION OF PROBLEMS IN THE AC PLANT ROOM

	Time
1. Main Chilling Unit	
1.1 Minor defects Mechanical and Electrical	Same day
1.2 Major electrical parts, starter, SFU, and control circuit etc.	1 -2 days
2. Pumps	
2.1 Changing of pump glands	Same day
2.2 Changing of suction strainers	Same day
2.3 Changing of coupling	Same day
2.4 Re- alignment	Same day
2.5 Changing of bearings of pumps / motors	One day
2.6 Changing of motor	Two days
2.7 Remetallizing of shaft, sleeve etc.	Four days
3. Air Handling Units	
3.1 Changing of bearings	Same day
3.2 Replacement of V belts	Same day
3.3 Cleaning of filters / pressure cleaning or Vaniclean Cleaning of the coils	Same day
3.4 Cleaning of fresh air filters	Same day
3.5 Changing of blowers	Same day
4. Cooling Towers	
4.1 Changing of bearings, fan blades, motor etc.	Two days
4.2 Cleaning of sump etc.	Same day

4.3 Readjustment of fills / drift eliminators	Same day
4.4 Weather protection of the motor terminals	Same day
4.5 Alignment of the motor and the gear box shaft	One day
5. Electricals	
5.1 Servicing of contactor points	Three hours
5.2 Electrical fault	Three hours
5.3 Servicing of MCC's	Seven hours
5.4 Motor rewinding	Four days
6. Any breakdown complaints related to AC plant	Immediately

ANNEXURE -X

PRICE BID (PART – B)
SCHEDULE OF PRICES FOR OPERATION & MAINTENANCE (TO BE FILLED BY BIDDERS)

S. No.	Work Details	Monthly Total (in Rs.)
1	Minimum Statutory Wages for Round the Clock Operation and Maintenance of Air-Conditioning System Ph-II & III as per the manpower given below: a) Supervisor – 1 No. (Graduate and above category) b) R&A/C Mechanic – 1 No. (Skilled Category) c) Operators – 7 Nos. (Skilled category) d) Helpers – 4 Nos. (Un skilled category)	203996
2	Charges towards EPF Amount (12%+1.15% Admn. charges) on item#1	26825
3	Charges towards ESI Amount (4.75%) on item#1	9690
4	Charges towards Consumables as per clause#10 of Annexure - I	_____ (to be filled by Bidder)
5	Charges towards Tools & Tackles, Safety Shoes & Uniform etc., as per clause no.11,12&13 of Annexure - I	_____ (to be filled by Bidder)
6	Overhead and Profit	_____ (to be filled by Bidder)
7	Total Amount (1+2+3+4+5+6)	_____ (to be filled by Bidder) In Words _____

Notes:

1. The wages considered in S.No.1 of the above table (Annexure-X) are based on the prevailing minimum wages fixed by the labour department, Govt. of Delhi applicable as on 01-04-2017. Bidder is required to fill the amount only at S.N. 4,5,6 &7 in the above table.
2. If contractor wishes to pay more than the minimum wages to his manpower, he should take this into account in his overhead & profit component.
3. GST will be paid extra to contractor as per Govt. norms.

(SIGNATURE) :

NAME) :

(SEAL) :