

TENDER DOCUMENT

SUB.: CAMC of Central Air-conditioning plant including package units ceiling mounted ductable units, AHU's, FCU's and all associated accessories installed at NIPGR Campus, New Delhi, during the year 2016-17.

Sub-head: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR, New Delhi.

CLIENT: DIRECTOR NIPGR,
NEW DELHI

COST OF TENDER DOCUMENT:- Rs. 500/-

TENDER DOCUMENTS

SUB.: CAMC of Central Air-conditioning plant including package units ceiling mounted ductable units, AHU's. FCU's and all associated accessories installed at NIPGR Campus, New Delhi, during the year 2016-17.

Sub-head: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR, New Delhi.

Owner : Director, NIPGR Campus, New Delhi

Tender issued to :

**Place for submission/
Place opening of tender document:**

**NIPGR Campus,
Aruna Asaf Ali Marg,
New Delhi-110067**

**Consultant Engineer
NIPGR Campus,
New Delhi**

**Last date for sale of tenders: 25.01.2017 before 16.00hrs.
Date/Time of submission : 27.01.2017 before 14.30hrs.
Date/Time of opening : 27.01.2017 at 15.00hrs.**

**Consultant Engineer
NIPGR Campus,
New Delhi.**

TENDER FORM

To

The Director
NIPGR CAMPUS,
New Delhi.

Dear Sir,

I/We have read and examined the following Tender Documents relating to the "SUB.: CAMC of Central Air-conditioning plant including package units ceiling mounted ductable units, AHU's. FCU's and all associated accessories installed at NIPGR Campus, New Delhi, during the year 2016-17."

Sub-head: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR, New Delhi.

Tender Form

- Tender Notice
- General Conditions
- Instruction to bidders
- General Information
- Special terms and conditions of contract
- Annexure-I (Undertaking on a Non-Judicial Stamp Paper worth Rs. 100/- duly notarized)
- Annexure-II (Certificate for Site Inspection)
- Annexure-III (Check List for Pre-qualification Bid)
- Terms & Conditions
- Schedule of Quantity
- Technical Specifications

I/We hereby offer to execute the work complete in all respects specified in the under written Memorandum within the time specified therein or during the allowed extended time at the rates specified in the bill of Quantities and in accordance, with the specifications, designs, drawings and instructions in writing referred to in the conditions of tender.

(Seal & Signature of Contractor)

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Department of Biotechnology, Ministry of Science and Technology, Govt. of India)
Aruna Asaf Ali Marg, New Delhi-110067
Phone: 011-26735161, 26735138 Fax: 011-26741658

TENDER NOTICE

File No.: NIPGR/Engg./5/6/2016-17

Dated: 03.01.2017

Sealed item rate Tenders (in two bid system) are invited on behalf of the Director, NIPGR, New Delhi from the eligible contractors who have experience in Repairing / replacement of valves for Air-conditioning system or similar nature works in Govt. organizations, Govt. Autonomous organizations/ PSUs and other reputed organizations so as to reach this office up to 2.30 P.M. on or before 27.01.2017 for the following work:

Name of Work: CAMC of Central Air-conditioning plant including package units ceiling mounted ductable units, AHU's, FCU's and all associated accessories installed at NIPGR Campus, New Delhi, during the year 2016-17.

Sub-head: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR, New Delhi.

Sl. No.	Estimated Cost	EMD (In ₹)	Time for Completion	Last date & time for sale of Tender Documents	Last date & Time of receipt of Tender	Date & time of opening of tenders
1.	2.	3.	4.	5.	6.	7.
1.	₹ 5,55,000.00	₹ 11,100.00	30 days	25.01.2017 16.00 Hrs.	27.01.2017 14.30 Hrs.	27.01.2017 15.00 Hrs.

Tender document can be obtained up to 16.00 Hrs. on all working days on payment of ₹ 500.00 (₹ Five hundred only) in cash (Non-refundable) towards the cost of tender. The earnest money shall be in the form of Demand Draft of a Scheduled Bank issued in favour of the **Director, NIPGR, New Delhi**.

The tender document can also be downloaded from our website www.nipgr.ac.in and Govt. CPP Portal <https://eprocure.gov.in/cppp/>. The tender document downloaded from website must be accompanied with ₹ 500.00 (₹ Five hundred only) in the form of Demand draft in favour of the "**Director, NIPGR, New Delhi**" towards the cost of tender document, otherwise the tender will not be considered.

The bids will be accepted in respect of eligible agencies having successfully completed at least three similar works each costing not less than ₹ 2.3 lakhs or two similar works each costing not less than ₹ 2.80 lakhs or single similar work of costing not less than ₹ 4.5 lakhs during the last three years ending Nov. 30, 2016. Similar work means "Repairing / replacement of valves for Air-conditioning system or similar nature works in Govt. organizations, Govt. Autonomous organizations/ PSUs and other reputed organizations. Copies of the completion certificate of satisfactory completion of work to be enclosed.

Agencies must have annual financial turnover of ₹ 6.00 lakhs, during the last three financial years ending on March 31, 2016.

The Director, NIPGR, reserves the right to accept or reject all or any of the tender without assigning any reasons thereof.

Consultant Engineer
NIPGR, New Delhi

GENERAL CONDITIONS

1. Sealed tenders on item rate basis are hereby invited from pre-qualified contractors for the work of "SUB.: CAMC of Central Air-conditioning plant including package units ceiling mounted ductable units, AHU's. FCU's and all associated accessories installed at NIPGR Campus, New Delhi, during the year 2016-17.

Sub-head: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR, New Delhi.

The tender document consists of Tender form, Tender Notice, Instructions to bidders, General Information, Schedule of quantity, General Conditions, etc. which can be had at a cost of ₹ 500.00 (₹ Five hundred only) from the office of NIPGR, NIPGR, Aruna Asaf Ali Marg, New Delhi. Purchase of tender document is obligatory on the part of the tenderers & bid in no other form will be accepted.

2. The tender documents shall be placed in sealed cover as mentioned in Procedure of Submission of tender and addressed to the Director, NIPGR Campus, New Delhi. The tender shall be received by the Director, NIPGR Campus, New Delhi before 14.30 hrs. on 27.01.2017 and shall be opened on the same day at 15.00 hrs. in presence of the tenderers or their authorized representatives who may like to be present. Any envelope received after the said date and time shall not be entertained under any circumstances and no consideration what so-ever shall be given to anything that might be contained in any such envelope.
3. The time allowed for the completion of work is **30 days** to be reckoned from the 10th day after the date of written order to commence the work.
4. Every tender shall be accompanied by earnest money for ₹ 11,100.00 (₹ Eleven Thousand One Hundred Only) in the form of demand draft drawn in favour of the **Director, NIPGR payable at New Delhi**. Any tender not accompanied by such earnest money will be rejected straight away.
5. The contractor will submit his tender after examining the tender documents, scope of work, specifications, clauses, additional terms of contract agreement, special terms & conditions, bill of quantities etc.
6. The offer shall remain valid for 180 days from the date of opening of Tender. The value of tender can be increased or decreased and any item can be added, deleted, withdrawn or substituted without any notice as per the requirements of NIPGR without assigning any reason.
7. If a tenderer whose tender is accepted fails to undertake the work as per terms of the contract within 10 days to be reckoned from the date of issue of allotment letter, the earnest Money deposited will be forfeited.
8. NIPGR does not bind itself to accept the lowest or any tender and reserves the right to reject any or all tenders without assigning any reason.
9. NIPGR will not pay any expense, whatsoever incurred by tenderer for the preparation and submission of tenders.
10. This notice inviting tender, will form part of the contract agreement to be executed by the successful tenderer with the NIPGR
11. The successful tenderer shall have to sign the contract agreement within 10 days of the allotment of work.

**Consultant Engineer
NIPGR, New Delhi**

Seal & Signature of Contractor

INSTRUCTIONS TO BIDDERS

1. GENERAL INSTRUCTIONS:

The works referred here-in shall cover the entire scope of the proposal. The "Owner" where appearing in these documents shall mean Director, NIPGR,

2. PROCEDURE FOR SUBMISSION OF TENDERS:

The following procedure shall be adopted for submission and opening of tenders. The sealed envelope SUPERSCRIBED Tender for: "SUB.: CAMC of Central Air-conditioning plant including package units ceiling mounted ductable units, AHU's. FCU's and all associated accessories installed at NIPGR Campus, New Delhi, during the year 2016-17."

Sub-head: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR, New Delhi.

ENVELOPE NO.- 1

This envelope shall contain only the earnest money deposit & technical bid as well as site visit certificate enclosed with tender and will be opened first.

ENVELOPE NO.- 2

This sealed envelope shall contain the financial bid of the contractor as per bill of quantities. This envelope shall be opened only after the EMD contained in envelope No.1 & technical bid is found in order as per the requirements of NIPGR. The date of opening of price bid shall be intimated later on. The sealed cover containing envelope 1 & 2 shall be opened on the prescribed date and time in the presence of tenderers or their authorized representatives who may wish to be present.

3. TENDERERS TO STUDY ENTIRE TENDER DOCUMENT CAREFULLY:

Submission of a tender by a tenderer implies that he has read all the stipulations contained in this tender document and has acquainted himself of the nature, scope and specifications of the works to be followed.

4. TENDERER TO SUBMIT THE ENTIRE TENDER DOCUMENT:

The tenderer shall submit all documents issued to him for the purpose of this tender after duly filling the same in all respects. Tenders which are found to be vague or incomplete shall be rejected summarily.

5. TENDERERS TO QUOTE FOR ALL ITEMS:

The tenderer shall quote his rates in words and figures with reference to each item and must enter for all the items shown in the attached Bill of quantities. Incomplete offer shall be liable for rejection. In case there is a discrepancy in "words" and "figures", the rate in words will be taken as correct for evaluation of tender. All quantities should be calculated as per percentage given by the contractor and total should be given of every sub head and grand total should also be given of all heads.

6. VALIDITY PERIOD OF OFFERS:

The rates quoted in the tender shall hold good for 180 days from the date of opening of the tender. The validity period shall be extendable with the mutual consent of both the parties. No tenderer can withdraw/or modify his tender or revoke the same within the said period of 180 days. If a tenderer on his own withdraws or revokes the tender or revises or alters or modifies the tender for any item or condition within a period of aforesaid 180 days his earnest money deposit shall stand forfeited.

7. TENDERER TO SIGN ALL PAGES:

The tenderer shall stamp and sign at the bottom right hand corner of every page of the tender documents in token of acceptance of tender conditions and for the purpose of identification.

8. ERASURES AND ALTERATIONS:

Tenders containing erasures and alterations of the tender documents are liable to be rejected unless these are authenticated by the person signing the Tender Documents.

9. TENDERER TO SATISFY HIMSELF OF SITE CONDITIONS:

Tenderers are advised to inspect and examine the site and its surroundings and also signed a certificate of site visit enclosed as per Annexure 'II' and satisfy themselves before submitting their tender regarding nature of the site conditions, the means of access of the site, the accommodation they may require and in general obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender in any manner. A tenderer shall be deemed to have full knowledge of the site, whether he inspects it or not and no compensation or otherwise of any charges incurred or to be incurred consequent on any misunderstanding or otherwise shall be admissible.

10. EARNEST MONEY:

The tender shall be accompanied by earnest money of ₹ 11,100.00 (₹ Eleven Thousand One Hundred Only) in the form of Demand Draft only drawn in favour of the **Director, NIPGR payable at New Delhi**. Earnest money of the unsuccessful bidder(s) shall be refunded after expiry of the validity period of the tenders/allotment of works whichever is earlier.

11. TENDERER TO QUOTE BOTH IN FIGURES AND WORDS:

All tenderers shall quote the rate in figures as well as in words, the amount of each item shall be worked out and the requisite total given. The total amount shall be written both in figures and in words.

12. TENDER LIABLE TO REJECTION:

Tenders which do not fulfill all or any of the conditions laid down in this notice, or contain conditions not covered and / or not contemplated by the Conditions of contract and/or expressly prohibited therein or stipulate additional/alternative conditions shall be liable to be rejected and his earnest money will be forfeited.

Tenders shall also be liable for rejection on any of the following grounds :-

- i) Tenders submitted late
- ii) Tenders containing remarks uncalled for.
- iii) Conditional tenders
- iv) Tenders not submitted on prescribed Performa.
- v) Telegraphic tenders.
- vi) Not submitted the physical inspection of site certificate Annexure 'II'.

13. CORRESPONDENCE:

Tenderers must mention their postal address and telephone number(s) of the Chief Executive/authorized agent or attorney in the tender. The tender submitted by the tenderer will be rejected if he or his agent cannot be contacted on the last known address or on the intimated telephone number(s) after reasonable search in which event earnest money may be forfeited by the NIPGR.

14. NIPGR NOT TO ASSIGN ANY REASON FOR REJECTION OF TENDER:

NIPGR hold absolute discretion to accept or reject the lowest or any other tender without assigning any reason. No claim on this account shall be entertained.

15. AMENDMENT IN TENDER DOCUMENTS:

NIPGR reserves the right to revise or amend the Bid Documents upto the date prior to the date notified for opening of the tenders and also the right to postpone the date of submission and opening of tenders without assigning any reason, whatsoever.

16. REFERENCE IN TENDER DOCUMENTS:

Director, NIPGR, shall be referred as "Owner" in all the documents of Tender documents/contract agreement.

**Consultant Engineer
NIPGR, New Delhi**

Seal & Sign of Contractor

GENERAL INFORMATION

- 1 Accepting Authority Director,
NIPGR, New Delhi.
- 2 Earnest money ₹ 11,100.00 (₹ Eleven Thousand One Hundred Only) to be furnished with the tender in the form of the demand draft (No interest is payable on security deposit)
- 3 Security deposit The security deposit will be collected by deductions from the running bills of the contractors at the rate mentioned below and the earnest money, if deposited at the time of tender, will be treated as part of security deposit. Performance security may be accepted as Bank Guarantee/DD of Scheduled Banks and State Bank of India. A sum @ 10% of the gross amount of the bill shall be deducted from each running bill of the contractor till the sum along with the sum already deposited as earnest money, will amount to Security Deposit of 5% of the tendered value of the work. In addition, the contractor shall be required to deposit an amount equal to 5% of the tendered value of the contract as Performance Security within the period prescribed for commencement of work in the letter of award issued to him.
- 4 Authority competent to grant extension of time Director, NIPGR or authorized person by Director, NIPGR
- 5 Tools & plants To be arranged by contractor
- 6 Authority competent to reduce the compensation amount Director, NIPGR
- 7 Defect Liability Period Twelve months from the date of acceptance of completion by the NIPGR.
- 8 Release Security Deposit The performance security shall be refunded to the contractor on completion of the work and recording of completion certificate by Institute and the security deposit of 5% of work done shall be released after defect liability period. In case the agency fails to complete / carryout the work to the satisfaction of the Consultant Engineer, or violates any condition of the work order / tender, the security deposit / BG / performance security will be forfeited / revoked.
- 9 Periodicity of submission of Bills After completion of work.

Seal & Signature of Contractor

Consultant Engineer
NIPGR, New Delhi

SPECIAL TERMS AND CONDITIONS OF CONTRACT

1. SPECIFICATIONS:

If specifications for an item of work are not covered by B.I.S. Specifications prevailing as on date of tender, the same shall be decided by the NIPGR and shall be binding on the contractor.

The Director shall have the power to insist upon the contractor to purchase and use such materials of particular approved make which may in his opinion be necessary for proper and reasonable compliance with the specifications and execution of work.

2. WORK AND WORKMANSHIP:

To determine the acceptable standard or workmanship, the NIPGR may order the contractor to execute certain portions of works and services and the like under the close supervision of Engineer, NIPGR/Consultant. On approval, these items shall be labeled as guiding samples and works executed to conform to these samples.

3. CONTRACTOR TO BE LIABLE FOR ALL TAXES ETC.

The rates specified in the tender shall be inclusive of VAT, sales taxes, service tax, toll, Customs fees, octroi, royalty etc. or any other taxes. However if any fresh taxes are imposed by State/Central/Statuary bodies during the currency of contract, the same shall be borne by NIPGR.

4. FORCE MAJEURE:

The right of the contractor to proceed with the work shall not be terminated because of any delay in the completion of the work due to unforeseeable causes beyond the control and without the fault or negligence of the contractor, including not limited to acts of God, or of the public enemy, restraints of a sovereign state, firms, floods, unusually severe weather.

5. JURISDICTION:

Not with standing any other courts having jurisdiction to decide the questions forming subject matter of a suit any and all actions and proceedings arising out of or relative to this contract (including any arbitration in terms thereof) shall lie only in the court of competent Civil jurisdiction in this behalf at New Delhi., where this contract is to be signed on behalf of Director NIPGR and only the said court shall have jurisdiction to try any such actions and/or proceedings to the exclusion of all other courts.

6. SCOPE OF WORK:

The scope of work is as per enclosed schedule of quantity.

7. CONTRACTOR'S RESPONSIBILITY FOR THE MANNER OF EXECUTION OF WORKS

The contractor shall be solely responsible for the manner and the method of executing the work. The work shall be subject to the approval of NIPGR from time to time for purposes of determination of the question whether the work is executed by the contractor in accordance with the contract.

8. SUBMISSION OF BILLS:

Contractor is to submit the bill and record of measurements in approved Performa of the NIPGR for works executed by him. The Bill shall be submitted **after completion of work.**

9. The works shall be inspected by Engineers & Consultants of NIPGR. The contractor shall extend full co-operation and render all necessary facilities for inspection of the work to the inspecting authority without any additional cost to NIPGR. It must be noted that any observations/ comments/ recommendations of the said Technical personals shall be binding on the contractor

10. It shall always prevail, unless otherwise specifically stated, that the entire provisions of Tender document been opened upon and accepted for compliance by the contractor without any reservation.

**Consultant Engineer
NIPGR**

Seal & Signature of Contractor

(Undertaking on a Non-Judicial Stamp Paper worth Rs. 100/- duly notarized)

I / We (bidder) hereby give an undertaking that:

- a) I/We have not been blacklisted during last three years by any Govt. Department/Govt. Autonomous Body/Institution, etc.;
- b) I/We do not have any dispute with any of the Govt. Departments/Govt. Autonomous Bodies/Institutions, etc.;
- c) I/We have never been certified as 'Unsatisfactory Performer' for the said services provided to the Govt. Departments/Govt. Autonomous Bodies/Institutions;
- d) I/We have not submitted any fake/forged certificates/documents and later, if any such 'Certificates/Documents' found to be fake/forged or contains willful wrong/incorrect information, suitable legal action may be initiated against me/us/agency besides 'forfeiture of Earnest Money Deposit' and 'Blacklisting' etc.
- e) I/We shall not withdraw my/our bid after opening of Technical Bid and if done so, the NIPGR shall be authorized to forfeit the EMD submitted by me/us.

Seal and Signature of the Authorized
Person of the Agency

Name and designation of the
Authorized Person of the Agency

Place:

Date:

'CERTIFICATE FOR SITE INSPECTION'
Pre-qualification criteria of NIT

Certificate that we have visited the site on and assessed the nature and amount of work involved before submitting our offer. We will be able to complete the works within the stipulated time and also that we will be able to execute the work suit to the site conditions.

(Signature of Bidder with Seal)

Name:

Address:

Date:

Consultant Engineer

CHECK-LIST FOR PRE-QUALIFICATION BID FOR NAME OF WORK: CAMC OF CENTRAL AIR-CONDITIONING PLANT INCLUDING PACKAGE UNITS CEILING MOUNTED DUCTABLE UNITS, AHU'S, FCU'S AND ALL ASSOCIATED ACCESSORIES INSTALLED AT NIPGR CAMPUS, NEW DELHI, DURING THE YEAR 2016-17.

SUB-HEAD: REPLACEMENT OF VALVES FOR CENTRAL AC PLANT INSTALLED AT PLANT GROWTH FACILITY AT NIPGR, NEW DELHI.

Sl. No.	Documents asked for	Page number at which document is placed
1.	Tender Cost	
2.	Earnest Money	
3.	Name of authorized person of the firm/agency, designation, address and office telephone numbers. If the bidder is a partnership firm/private or limited company, name designation, address and office telephone numbers of partners/ Directors also.	
4.	Undertaking on a Non-judicial Stamp Paper of ₹ 100/- (as per format prescribed in Annexure-I) after award of work.	
5.	Self-attested copy of the PAN card, issued by the Income Tax Department.	
6.	Self attested copy of Service Tax Registration No. & TIN	
7.	Proof of experiences of last three years ending Nov. 30, 2016 as specified in the NIT along with satisfactory performance certificates and work order copy from the concerned employers.	
8.	Annual turnover of last three financial years ending March 31, 2016 duly certified by the Statutory Auditors.	
9.	Any other documents, if required.	

**Signature of the Bidder
(Name and Address of the Bidder)
Telephone No.**

TERMS & CONDITIONS

Name of work: CAMC of Central Air-conditioning plant including package units ceiling mounted ductable units, AHU's. FCU's and all associated accessories installed at NIPGR Campus, New Delhi, during the year 2016-17.

Sub-head: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR, New Delhi.

1. The site of work is at NIPGR Campus, Aruna Asaf Ali Marg, New Delhi – 110067 and agency must visit the site before quoting the rates.
2. The rates are inclusive of Transportation, loading, unloading & handling charges and nothing extra will be paid.
3. The rates are inclusive of VAT, Service Tax, other taxes, octroi, etc., and nothing extra will be paid.
4. The contractor shall make his own arrangement for the security of material at site.
5. The contractor shall arrange all T&P and nothing extra will be paid.
6. No advance payment will be made.
7. The EMD of unsuccessful bidders shall be returned after the issue of work order to the lowest agency.
8. In case, the agency fails to comply with terms & conditions the E.M.D. / Security Deposit of the agency shall be forfeited.
9. The work shall be completed within 30 days after the date of issue of work order, if not recovery @ 1% per day subject to maximum of 10% of quoted amount if the work is not completed within stipulated time of completion.
10. The Institute also reserves the right to reduce / increase the scope of work.
11. The quoted rates shall be valid for 6 months from the date of issue of work order.
12. The material supplied shall be got approved by the Engineer-in-charge before installation and carrying out the work.
13. Any damage to any existing installations during the execution of work shall be the responsibility of the contractor and will be made good to the satisfaction of the engineer-in-Charge and nothing extra shall be paid.
14. Any kind of accident / electrocution caused due to negligence or during the course of normal work etc., shall be responsibility of the contractor. The contractor shall be responsible for all the compensation to the staff engaged by him.
15. All safety precautions shall be taken so as to avoid any accident or inconvenience to the members of the staff.
16. All equipments shall be guaranteed for 12 months from the date of completion & handover to the department. Against unsatisfactory performance and/or breakdown the equipment or component or any other part of the installation so found defective in guarantee period shall be replaced/repared by the contractor free of cost to the satisfaction of Engineer-in-Charge.
17. In case the site clearance and damages are not attended, a recovery amounting to ₹ 10,000.00 (₹ Ten thousand only) shall be made.
16. The work shall be completed within 30 days after the date of issue of work order.

17. The quotation must be accompanied with E.M.D. amounting to ₹ 11,100.00 (₹ Eleven Thousand One Hundred Only) by way of Demand Draft drawn in favour of "DIRECTOR, NIPGR", New Delhi.
18. Quotation not accompanied with E.M.D. will not be considered.
19. E.M.D. must be submitted in a separate envelope which will be opened first.
20. A security deposit @ 10% (percent) will be deducted from bill. The EMD will however be adjusted in the security deposit. The same will be released after defect liability period of one year.
21. The material supplied shall be got approved by the Engineer-in-charge before installation and carrying out the work.
22. The agency shall make necessary arrangements in advance of all the material required as shut down shall only be provided for maximum of seven days.
23. The electric & water supply shall be provided free of cost on request of agency. However, agency shall make necessary arrangements such as MCB, MCCB, etc., for safety to provide the electric supply.
24. NIPGR reserves the right to reduce / increase the quantity of items as per site condition and also any item of work can be deleted in whole at any stage of work.
25. Factory test reports of the machines shall be submitted before installation.

PAN: _____

TIN: _____

Seal & Signature of Contractor

**Consultant Engineer
NIPGR, New Delhi**

FINANCIAL BID

Name of work: CAMC of Central Air-conditioning plant including package units ceiling mounted ductable units, AHU's. FCU's and all associated accessories installed at NIPGR Campus, New Delhi, during the year 2016-17.

Sub-head: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR, New Delhi.

**CLIENT : DIRECTOR NIPGR
NEW DELHI**

SCHEDULE OF QUANTITY

Sub: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR Campus New Delhi

S.No	Description	Unit	Qty	Rate	Amount
1	Providing and fixing in position the following MS medium class chilled water piping, cut to required length and insulated with welded joints including all necessary fittings such as elbows, tees, etc and confirming to the specifications as detailed in specifications. Pipes will be accepted in order of preference (Factory fabricated / fabricated out of 6mm thick plate duly rolled in a workshop and welded for pipes beyond 350 mm dia				
	80mm dia	RMT	30		
	125 mm dia	RMT	15		
2	Chilled water pipes shall be insulated 75mm thick (100 mm and beyond 100mm dia pipe) and 50 mm thick (below 100mm dia pipe) TF quality expanded polystyrene insulation and cement plastering in pipe sections for chilled / hot water piping as per specifications. The pipes shall be painted blue after insulation work is completed				
	80mm dia	RMT	50		
	125 mm dia	RMT	35		
3	Supply, installation, testing and commissioning of Butterfly valves duly insulated complete with companion flanges, nuts, bolts, gaskets etc				
	80 mm dia	No.	12		
4	Providing & Fixing in position industrial type pressure gauges with ball/globe valves for isolation and necessary fittings for the ease of maintenance and operation	No.	12		
5	Providing and fixing in position stem alcohol filled industrial thermometers	No.	10		
6	Supply, installation, testing and commissioning of Balancing valves duly insulated complete with companion flanges, nuts, bolts, gaskets etc				
	80 mm dia	No.	6		
7	Supply, installation, testing and commissioning of Automatic Air-vent in brass construction complete with nipples, unions etc as required at all high points in the pipe lines. The valves shall be such as to have non-return valve as integral part of the vent.	No.	6		
8	Supply, installation, testing and commissioning of Check valves duly insulated complete with companion flanges, nuts, bolts, gaskets etc				
	80mm dia	No.	6		

SCHEDULE OF QUANTITY

Sub: Replacement of valves for Central AC plant installed at Plant Growth Facility at NIPGR Campus New Delhi

S.No	Description	Unit	Qty	Rate	Amount
9	Providing and fixing of approved make flow switch complete with copper control wiring at chiller outlets of each machine	No.	3		
10	Providing & laying perforated MS slotted angle cable tray duly painted as required				
	200mm	RMT	25		
	150 mm	RMT	20		
11	Dismantling of existing plastering, thermocoal etc as per directions of Engineer In Charge	Lot	1		
12	Redressing of electrical cable with labeling/numbering of cable on cable tray.	Lot	1		
	Total				

Seal & Signature of Agency

Consulting Engineer

TECHNICAL SPECIFICATIONS

PUMPS:

Pumps of a particular category shall be identical and shall be suitable for parallel operations with equal load divisions. Components of identical pumps shall be interchangeable. Impeller shall be made in one piece and securely keyed to the shaft. Measures to prevent loosening during the operation including rotation in the reverse direction shall be provided. Replaceable shaft shall be provided to protect the shaft where it passes through the stuffing box. The critical speed of the pump shall be provided to protect the shaft shall be at least 30 % above the rated speed. All the pumps shall be provided with factory fitted mechanical seals.

Common base plate shall be provided for pump and motor. Suitable holes shall be provided for grouting and these shall be located that the base can be grouted in place without disturbing the pump and the motor. Adequate space shall be provided between pump drain connections and base plate for installation of minimum 15mm drain piping. Foundation bolts shall be complete with nuts and washers.

Pump shall be installed as per manufacturer's recommendations. Pump-sets shall be mounted on isolation pads or any other equivalent vibration isolation fittings. Concrete floating foundation shall be provided as per directions of the Institute. The isolation pads between foundation and floor (as mentioned in schedule of quantities), foundation bolts etc, shall be supplied by the contractor. Contractor shall ensure that the foundation bolts are correctly embedded. Insulation of pump shall be applied so that the split casing is not affected.

PIPING

1. All the piping shall be black steel unless otherwise stated. Pipes shall be given one primary coat of red oxide paint before being installed. Pipes shall be slopping towards drain points.
2. Fittings shall be new and from reputed manufacturers, fittings shall be of malleable casting of pressure rating suitable for the piping system.
3. All equipment and valve connections shall be through flanges.
4. Piping shall be properly supported on or suspended from stands, clamps, hangers etc as specified and as required. Pipe supports shall be of MS adjustable for height and primer coated with rust preventive paint and finish coated black.

BUTTERFLY VALVES

Butterfly valves shall comprise of standard one-piece body casted out of graded cast iron disc, shall be of ductile iron, seat made of nitrile rubber with bakelite / SS hard back, tight shut off, PN 16 rated as per IS : 13095 coating on disc shall either be epoxy or PTFE material. Valves up to NB 200mm shall have hand level with locking arrangement for every 10 degree and valve NB 250mm & above shall be gear operated.

NON RETURN VALVES

Dual plate non return valve shall comprise of standard one piece body casted out of graded cast iron disc shall be either graded cast iron, ductile iron or SS seat made of nitrile rubber, internals of SS coating on disc other than SS shall either be epoxy or PTFE material. Valves shall be tested as per API 598 class 123 or higher rating.

BALANCING VALVES

Balancing valves up to NB 50mm shall be screwed ends, body & bonnet shall comprise of standard one piece casted out of graded cast iron or ductile iron, spindle, disc & other internals shall be of either gun metal or SS seat made of nitrile rubber.

Balancing valves shall have two pressure ports for connections to mercury manometer to measure pressure drop with non-rising spindle.

Y-STRAINERS

Strainers shall be preferably of approved Y type with CI or fabricated steel bodies designed to the test pressures specified for the gate valves. Strainers shall have removable bronze screws with 3.0 mm perforations and a permanent magnet. Strainers shall be provided with flanges or threaded sockets as required. They shall be designed so as to enable blowing out accumulated dirt and facilitate removal and replacement of screen without disconnection of the main pipe.

PRESSURE GAUGE

Pressure gauge shall be not less than 100mm dial end of appropriate range and be complete with shut off gauge cocks etc. duly calibrated before installation.

- a. Pressure gauge shall have micro meter type zero adjuster.
- b. Scale of gauge shall be white with black letters(printed)
- c. Pressure gauges shall be as per IS-3624
- d. Scale shall be so selected that normal process pressure is approx. 75% of full scale.

THERMOMETER

Thermometers shall be either 100mm dia dial or direct reading industrial type of appropriate range duly calibrated before installation.

- a. Temperature gauges shall be mercury in steel type with thermowell suitable for application.
- b. Temperature gauges shall have 100mm dia dial with die cast aluminum stove enamel black finish case, aluminum screwed ring and shatter proof glass.
- c. Accuracy shall be +1.0 % of full scale or better.
- d. Minimum over range protection shall be 25 % of full scale range.
- e. Thermometers shall be installed in separate wells.

INSULATION

Chilled water piping and all chilled water equipment's shall be insulated in the manner as specified.

Chilled water pipes shall be insulated with rigid preformed sections of expanded polysterene or equal approved insulation with density not less than 24kg/Cum of the thickness specified in BOQ.

- a. Pipes shall be thoroughly cleaned with wire brush and rendered free from all foreign matter and grease.
- b. One coat of zinc chromate premier and two coats of CPRX compound shall be applied on the pipe.
- c. Expanded polysterene rigid section shall be fixed tightly to the surface. All joints to be sealed properly with CPRX compound. Covered with a layer of polythene vapor barrier.
- d. Insulated surface shall be finished with sand cement & plaster in a workman manner.

All valves, fittings, strainers etc. in chilled water piping shall be insulated to the same thickness as per for the main run of piping and applied generally in the manner specified above, valve bonnets, yokes and spindles shall be insulated in such a manner as not in cause damage to insulation when the valve is used or serviced.

Chilled water pump shall be insulated to the same thickness as the pipe to which they are connected and applied generally in the manner specified above.

LIST OF APPROVED MAKES

1. MS PIPES	:	JINDAL / TATA / VIJAY / SURYA
2. Y-strainers	:	D.S / SANT
3. PIPES	:	GST / JINDAL / INTER VALVE
4. BUTTERFLY VALVES	:	AUDCO / CASTLE / INTERVALVE / LEADER
5. CHECK VALVE	:	CASTLE / ADVANCE
6. BALL VALVE	:	CIMM / RAPID COOL
7. BALANCING VALVES	:	CASTLE / ADVANCE
8. PRESSURE GAUGES	:	FEIBIG / H.GURU
9. FLEXIBLE CONNECTION	:	KANWALS / RESISTOFLEX
10. EXPANDED POLYESTERERNE (TF QUALITY)	:	TOSIBA / LLOYD/METTUR-BEARDSELL
11. MCB	:	INDO KOPP / MDS / HAVELLS / ESC
12. MCCB/ACB	:	L & T / EE / ESC
13. STARTERS / CONTACTORS PUSH BUTTONS / OVERLOAD RELAYS	:	L & T / SEIMENS / BCH / ESC
14. THERMOMETERS / PRESSURE GAUGE :	:	FEIBIG / H.GURU
15. SINGLE PHASE PREVENTER	:	L & T / SEIMENS
16. TOGGLE SWITCHES	:	KAYCEE
17. INDICATING LAMPS	:	L & T / SEIMENS / BCH
18. AMMETER / VOLTMETER	:	AE
19. POWER CABLE & ACCESSRIES	:	FORT GLOSTER / NATIONAL / SKYTONE
20. AIR VENT	:	RAPID COOL / ISI
21. FLOW SWITCH	:	DANFOSS / RAPID COOL / JOHNSON CONTROL
22. PAINT	:	ISI / BERGER
23. CABLE TRAY	:	DOWESS / MEM / SUPER CABLE TRAY / ISI