

Indian National Trust for Art and Cultural Heritage

(INTACH , 71 , KK Birla Lane , Lodhi Estate , New Delhi -110003, Ph. No. 011-49854100

TENDER NOTICE

Sealed tender in two separate bids a) Technical bids, b) Financial bid are invited from OEM (Original Equipment Manufacturer) only as mentioned in the approved agencies list for the following works/services. The tender forms containing detailed terms and conditions can be obtained from our website www.intach.org and E-mail admhicci@gmail.com. Interested companies can deposit their sealed quotation by 19th March 2018 upto 12:00 noon. The tender will be opened at 3:30 pm on the same day. One representative of the bidder can attend the tender opening.

S. No	Work Description	Completion Time
1	Supply , Installation , Testing and Commissioning of 2 Nos X 14 HP IVRF System & Low Side Works.	Two months from issuance of LOI or Purchase order.

The undersigned reserves the right of rejecting or accepting any tender without assigning any reason at any stage.

INTACH
(Director Admin)

Terms & Conditions

1. The tender will be on a two bid systems 1) Technical Bid. 2) Financial Bid. Please ensure that the Technical Bid and Financial Bid is submitted in two different sealed envelopes and these should be put in an outer envelope super scribed with tender no. date of opening and item name .
2. The validity of bid will be 60 days from the date of opening and the rates will be valid upto the end of financial year 2017-18 year from the date of opening of Agreement.

Tenderer should submit:-

- a. Affidavit that the company has not been blacklisted any time for quoting and supplying for the item in schedule by any government organization affidavit should be on non judicial stamp paper of Rs. 10 & attested by Notary Public/Oath commissioner.
- b. The copy of valid GST Registration Certificate.
- c. The document proof of similar works done in last three years i.e. one work amounting to Rs. 10 Lacs in one year or two works of more than Rs. 20 Lacs in any last three years in CPWD/MES/Autonomous body or any other Government Department. (Performance reports to be enclosed).

TECHNICAL SPECIFICATION (General)

1. The scope of this section comprises the design, supply, Installation, testing and commissioning of inverter technology based VRF type system of air conditioning conforming to these specification/ Explanatory Note and in accordance with the requirements of Drawing and Schedule of Quantities. The prices quoted shall include all the equipment ancillary material as specified and all such items whatsoever and which may be required to fulfil the intent and purpose as laid down in the specification and the approved drawings. The contractor shall calculate equipment capacity based upon design parameters specified for the system design & verify all the quantities and sizes of refrigerant pipe, fitting, cables, control cable, pipes, insulation, indoor units, and outdoor units etc. before installation to avoid any shortfall or surplus. The tenderer shall also include all necessary civil work MS frame work for installation of outdoor and indoor units in VRF based air condition system. The cost quoted by tenderer shall also include the refrigerant gas R-410A & its charging for proper & specified functioning of air conditioning system.

Civil work/ MS frame work for indoor and outdoor units related to VRF equipments, all cuttings should be properly finished as existing surrounding. The installation of outdoor unit on the terrace of building should be checked up structurally & their mounting should be structurally safe for the outdoor unit to ensure in such a way that after installation.

- a) Cutting of walls and floors/ ceiling.
- b) Making holes.
- c) Sleeves.
- d) Foundation

2. The scope in the tender schedule also covers detailed designing of complete air-conditioning system based on inverter technology based VRF air conditioner with air cooled outdoor units system capable of cooling and heating (reverse cycle) as per individual or season requirement suitable for operation on 380-420 V, 3 Phase, 50 Hz AC electric supply.

The outdoor units shall have both cooling & heat pump mode, consisting of one / multiple outdoor unit with single circuit of refrigerant piping and multiple indoor units of various types. Each indoor unit should have capability to cool or heat as per seasonal weather changes. This shall also include complete capacity calculation for indoor and outdoor units complete with CAD drawing, designing & layout of following.

- I. Outdoor units.
- II. Indoor units.
- III. Refrigerant piping
- IV. Condensate water piping & disposal.

V. Power & Control Cables between Outdoor units & Indoor units.

While designing the system care should be taken to select outdoor units of suitable capacity based on design data provided below & to economize on available floor area for installation of outdoor units as well as optimum utilization of outdoor units. The indoor units should be designed based upon the heat load calculations for individual rooms/ areas to be air-conditioned and over capacities should be avoided. The design should also specifically take care of disposal of condensate drain water so that there is no leakage of condensate water inside the room as well in the route of condensate water pipe line. The layout of refrigerant piping is to be designed in such a way so that it should not disturb the aesthetic of the building/ room, inadvertent damage in the route of pipe should not occur in future & optimum length of pipe line for efficient air conditioning. After completion of the work four sets of 'as erected/ commissioned drawing' of activities listed above shall be submitted.

Design Data

The work of air-conditioning outdoor and indoor units as specified in schedule of work is required to be carried out at Intach , Lodhi Road. It is an old building especially 21 not designed to suit central air-conditioning. There may be certain parameter like inadequate heat insulation of the building, air leakage from doors, windows or other outlets such as staircases, corridor, ventilators, shaft & including no under deck insulation of top floor of the building. Therefore the specified design parameters are only tentative in nature, however, all efforts shall be made to achieve the following specified design parameters and if at any design stage need for higher capacity outdoor HP is required, necessary approval shall be accorded based on design analysis and discussions on the subject. In case of any deviation from the parameters specified below, the technical issues involved shall be brought to the notice of Engineer-in-charge for seeking necessary approvals to achieve these parameters. Engineer-in-charge, however, reserves to right to permit any deviations from the parameters as specified. Out side summer condition : 43.3° CDB; 23.9° CWB Monsoon : 35.0° CDB° 28.3° CWB Winter : 7.2° CDB° 5.0° CWB Inside conditions summer : 23.8°C ± 1°C (Desired) & Monsoon : RH not exceeding 55% ± 5% Winter : 21°C ± 1°C **Note:** 1 HP unit = 0.8 TR (Approximately).

3. The tenderer shall quote only makes for which he has satisfactorily executed the job and shall also furnish certificate to the effect that the such equipment has performed satisfactorily under Indian weather conditions at least for a period of one year from its commissioning. The performance certificate from the end user shall also be enclosed with the tender documents.

The firm should comply with the parameters as specified in the terms & conditions.

4. The project of air-conditioning of Intach, New Delhi is required to be executed in time bound and professional manner. The equipments involved in air-conditioning are complex in nature comprising of instrumentation, control and central management system. The job, therefore calls for highest order of technical expertise and also requirement of experience of air-conditioning installation with proven performance. **The tenderer, shall, therefore obtain, before quoting/ the consent of OEM and furnish the same along with the bid document. This consent shall also covers aspects of desired assistance in the field of design, development, testing, execution, completion & maintenance/ maintenance spares of the air-conditioning system.**

5. Notwithstanding the technical details as specified in the tender, the manufacturers may offer/ indicate systems and necessary design & features applicable for the offered products at the tendering stage.

6. It is proposed to install outdoor unit at the top of the building or in open cord yard depending availability of site. The outdoor & indoor unit shall be connected through existing ventilation shaft from top to the bottom of the building.

7. OUTDOOR UNIT

i. The outdoor unit shall be factory assembled, weather proof casing (Material of construction of casing shall be vendor's standard design), constructed from heavy gauge GI sheets steel panels and coated with baked enamel finish. The outdoor unit shall be completely factory wired, tested with all necessary controls & filled with first charge of refrigerant before delivering at site.

ii. **Selected modules should have COP 3.7 at 50% load, and each module should have at two inverter compressors.**

iii. **The COP for the same may be furnished as per attached annexure A-A3 enclosed Performa & necessary price loading shall be made to decide the lowest tender & technical data as per annexure B-B1**

2. All the details pertaining to power consumption as per ARI standards should be duly filled and furnished as per the sheet enclosed. **The above COP values as indicated are required to be furnished in Original by the tenderer directly from the original equipment Manufacturer (OEM) with OEM' seal and signature on all documents.**

iv. The outdoor unit shall be factory tested and filled with first charge of refrigerant R-410A before delivering at site.

v. The machine must have a sub cool feature to use coil surface more effectively through proper circuit/ bridge so that it prevents the flushing of refrigerant from long piping due to this effect thereby achieving energy savings.

vi. The outdoor unit should be fitted with low noise level and should not be more than 63 db (A) at normal operation when measured at 1.5m distance from ground level.

vii. The outdoor unit should be fitted with low noise aero spiral design fan with aero fitting grill for spiral discharge airflow to reduce pressure loss and should be fixed with DC fan motor for better efficiency.

viii. In case of trouble occurs in an indoor units (s), the continuous operation of system should be possible.

ix. The unit shall be designed in such as way that cleaning of drain Pan should be easy & inspection/ replacement of compressor should be easy.

x. The condensing unit shall be designed to operate safely whely connected to multiple fan coil units.

7.1 Compressor

i. The inverter shall be highly efficient and the system should response efficiently in accordance to the variation in cooling or heating load requirement.

ii. All outdoor units shall have multiple steps of capacity control to meet load fluctuation and indoor unit individual control. All parts of compressor shall be sufficiently lubricated stock. Forced lubrication may also be employed.

iii. Oil heaters shall be provided in the compressor casing or as per manufacturer standard equipments.

7.2 Oil Recovery system

Unit shall be equipped with an oil recovery system to ensure stable operation with long refrigeration piping lengths. The system must be provided with oil balancing circuit to avoid poor lubrication.

7.3 **Refrigerant Circuit** The refrigerant circuit shall include liquid and gas shut-off valves and a solenoid valves at condenser end. The equipment must have inbuilt refrigerant stabilization control for proper refrigerant distribution. All necessary safety devices shall be provided to ensure the safe operation of the system.

7.4 **Heat Exchange** The heat exchanger shall be constructed with copper tubes mechanically bonded to aluminum fins to form a cross fin coil. The aluminum fins shall be covered by anti-corrosion resin film. The unit shall be provided with necessary number of direct driven low noise level propeller type fans arranged for vertical discharge. Each fan shall have a safety guard.

7.5 **Safety Devices** All necessary safety devices shall be provided to ensure safe operation of the system. 23

Following safety devices shall be part of outdoor unit:- high pressure switch, fuse, fan drive overload protector, fusible plug, crankcase heater, over load relay, overload protection for inverter.

7.6 The outdoor roof mounted units shall be provided in such a fashion that these do not affect the overall aesthetics and ambience of the building. If required these units shall be suitably camouflaged to give good aesthetic look. These provisions, however, shall be discussed, if required, at a later date and the prices for the same shall be worked out separately as extra item.

7.7 Noise levels for outdoor units shall not be more than 67 db (measured at a point 1 meter in front of the unit at a height of 1.5 meters).