INDIAN INSTITUTE OF TROPICAL METEOROLOGY
PASHAN, PUNE-411008

(PS/125/16/2025/EOI)

EXPRESSION OF INTEREST NOTICE

Director, Indian Institute of Tropical Meteorology (An autonomous Institute under the Ministry of Earth Science, Govt. of India), Dr. Homi Bhabha Road, Pashan, Pune- 411 008 (India) invites Expression of Interest (EoI) proposals in sealed envelopes from project management firms, organizations, institutions, manufacturers, academic/research institutions regarding ***"Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job"*.**

EoI documents with details can be obtained from Purchase & Stores Section of the Institute or can be downloaded from Institute's website.

Submission of Queries in writing	**: 07th October 2025 up to 1700 hrs**
EoI Pre-Submission meeting at IITM, Pune	**: 09th October 2025 at 1200 hrs**
Last date of Receipt of EoIs at IITM	**: 27th October 2025 up to 1200 hrs**
Date of Opening of EoI Envelopes	**: 27th October 2025 up to 1500 hrs**

The Institute reserves the right to reject any or all EoIs without assigning any reason(s) thereof. For details, please visit the **https://moes.ewizard.in** & Central Procurement Portal (CPP) http://**www.eprocure.gov.in** as well as this Institute's Website: **http://www.tropmet.res.in**

Administrative Officer (PS), for Director

Email : psu.iitm@tropmet.res.in

INVITATION FOR

EXPRESSION OF INTEREST

FOR

DESIGN, DEVELOPMENT, INSTALLATION AND COMMISSIONING OF THE CLOUD CHAMBER RESEARCH FACILITY AND ITS INFRASTRUCTURE AT THE INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE AS A TURNKEY JOB

No: PS/125/16/2025/EoI

INDIAN INSTITUTE OF TROPICAL METEOROLOGY

(AN AUTONOMOUS INSTITUTE UNDER MINISTRY OF EARTH SCIENCES, GOVT. OF INDIA)

DR. HOMI BHABHA ROAD, PASHAN,

PUNE 411 008

MAHARASHTRA, INDIA

September 2025

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CHAPTER 1

INTRODUCTION AND BACKGROUND

1. MINISTRY OF EARTH SCIENCES AND IITM, PUNE:

The **Ministry of Earth Sciences (MoES)** is entrusted with providing the nation with state-of-the-art services in forecasting monsoon and other weather and climate phenomena through observing and modelling the state of the atmosphere, oceans, land, earthquakes, tsunamis, heat waves and other phenomena associated with Earth systems through well-coordinated programs. In addition to these responsibilities, MoES is actively engaged in advancing science and technology for the exploration and understanding of atmospheric processes, convection, clouds, and weather modification research. The MoES oversees several specialized institutions such as the India Meteorological Department (IMD), the National Centre for Medium-Range Weather Forecasting (NCMRWF), and the **Indian Institute of Tropical Meteorology (IITM)** Pune, which operate within the Atmospheric and Oceanic Sciences, Meteorology, Observations and Numerical Weather Prediction, Earth System and Climate sectors. Additionally, institutions such as the National Institute of Ocean Technology (NIOT) Chennai, the National Centre for Antarctic & Ocean Research (NCAOR) Goa, the Indian National Centre for Ocean Information Services (INCOIS) Hyderabad, the Integrated Coastal and Marine Area Management (ICMAM) Chennai, and the Centre for Marine Living Resources & Ecology (CMLRE) Kochi form part of the Polar and Oceanic Science and Technology sector. MoES strives to establish a comprehensive framework to understand the intricate interactions among the key components of the Earth system—namely the ocean, atmosphere, and solid Earth—through national programs in ocean science, weather, climate, environment, and seismology.

2. MISSION MAUSAM AND CLOUD CHAMBER RESEARCH FACILITY:

Recently, MoES has launched a new comprehensive initiative - **Mission Mausam** - aimed at enhancing observational networks to improve forecast accuracy of weather and high-impact events by providing more accurate initial conditions. It is known that clouds in the atmosphere present significant modelling challenges and while there have been efforts to improve the

representation of clouds in weather and climate models, an accurate representation of the cloud microphysics and its interaction with cloud turbulence is still missing. This is because such a representation necessarily relies on the insights gained from experiments in cloud chambers or other laboratory studies; numerical approaches such as Direct Numerical Simulation (DNS) and Large Eddy Simulation (LES) also need experimental data for their own validations. Another aspect that has assumed importance in the recent times is the weather modification strategies for clouds such as rain enhancement, hail suppression etc. The science of these weather modification strategies needs careful assessment of the approaches that are required to be evaluated under controlled laboratory conditions in cloud chambers. In view of these requirements, a significant effort in Mission Mausam is directed towards understanding the fundamental microphysics and turbulence interactions occurring in clouds that would help in improving representation of clouds in weather and climate models in addition to designing and testing weather modification strategies. The Design and Development of the Cloud Chamber Research Facility at IITM, Pune is thus a major component under the Weather_Mod (weather modification) vertical of the Mission Mausam.

In the past, IITM, Pune has conducted pathbreaking field experiments under the CAIPEEX (Cloud Aerosol Interaction and Precipitation Enhancement EXperiment) program to investigate microphysics and dynamics of tropical clouds through observations and assess, in an objective manner and under appropriate conditions, the efficacy of cloud seeding towards rain enhancement. Further, the Fluid Dynamics Laboratory (FDL) at IITM, Pune - also a part of the CAIPEEX program - has been conducting controlled laboratory experiments that have advanced the fundamental understanding of turbulent flows, of interest to atmospheric and oceanic sciences, through high-quality publications and patents. In view of these prerequisite capabilities, IITM, Pune has been further entrusted by the MoES to develop the **Cloud Chamber Research Facility and its Infrastructure at IITM, Pune** under the Mission Mausam. The facility will be primarily focused on understanding the Turbulence-Aerosol-Cloud Interactions.

CHAPTER 2

PURPOSE OF INVITATING EXPRESSIONS OF INTEREST

1. INVITING DETAILED PROPOSALS:

The present purpose of inviting Expressions of Interest (EoIs) is to obtain "detailed proposals" from qualified and experienced project management firms, organizations, institutions, manufacturers, academic / research institutions etc. (henceforth called as bidders) for the project titled "**Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job**" which is the subject matter of this document.

It is understood that a single bidder, on its own, may not have the experience and expertise to execute all aspects of the project and therefore may need to tie up with other firms/companies as consultants/sub-contractors. The bidder can involve national and/or international firms / companies /experts as consultants/sub-contractors who have the requisite qualification and experience for carrying out this project. The bidder, however, must be a valid legal entity registered in India and the consultants/sub-contractors should not have any firms / companies / experts from countries that share their land borders with India. The entire project is to be executed as a "**Turnkey Job**" where a single successful bidder will be responsible for the entire project although different components of the projects may be executed by the bidder, in a cohesive manner with efficient coordination, through different subcontracting firms that have specialized skill sets to execute different components with requisite quality and specification.

The scope of the project includes design, simulations, development, delivery, installation and commissioning of a state-of-the-art "Cloud Chamber Research Facility and its Infrastructure" at IITM, Pune. The facility will serve as the state-of-the-art and one-of-its-kind experimental research facility for studying various cloud-related processes including cloud microphysics, aerosol-cloud interactions, turbulence-aerosol-cloud interactions (liquid droplets as well as ice particles), precipitation mechanisms etc. as part of the broader research objectives under the Mission Mausam. The infrastructure of the Cloud Chamber needs to be constructed around it

and along with it, since it is an integral part of the present project that needs to be designed and executed according to the design and construction of the Cloud Chamber itself.

In what follows, a 'broad' proposal of the project shall be outlined with the necessary 'broad' technical specifications, schematics and layouts. In response to this invitation for EoI, the interested bidders are expected to work out and submit detailed proposals that include detailed technical specifications, BoQs, layouts, plans, designs, drawings, certifications etc. of the complete project. It is highly desirable to provide the details, credentials, registrations etc. of the subcontracting firms, if any, that are going to be onboard for this project.

2. SCIENCE QUESTIONS:

The proposed cloud chamber will be the first major step forward for the country since globally, this will be the first operational research cloud chamber (convection type) of this scale. It will be a unique facility incorporating cutting-edge technology and innovative design enabling precise control of

(i) thermodynamic conditions such as temperature, temperature gradients, humidity etc.

(ii) aerosol conditions such as type, size and number concentration, and

(iii) statistically stationary or transient turbulent environment wherein the droplets move, grow and undergo processes that broaden the distribution of drop sizes as well as undergo phase-changes.

Some of the key scientific questions that could be addressed include:

- Nucleation: Investigating the impact of different types, sizes and concentrations of aerosol particles, including mineral dust, sea salt and anthropogenic emissions, on activation and nucleation processes under controlled steady state (statistically stationary) conditions.
- Cloud Condensation Nuclei (CCN): Exploring the role of cloud condensation nuclei (CCN) and ice nuclei particles (INP) in heterogeneous nucleation.
- Cloud Seeding Particles: Evaluating the effectiveness of various types of seeding particles in modulating cloud properties under controlled conditions.
- Turbulence-droplet/ice particle interactions: Recreating prototypical convective turbulence to study droplet dynamics, growth and collision-coalescence processes, breakup, etc.

- Cloud Dynamics and Thermodynamics: Conducting experiments to study the effects of temperature gradients and supersaturation levels on cloud development and entrainment studies for dynamics of cloud flows and effect of entrainment on the mixing in clouds.

Here, IITM seeks to engage with the project management firms, organizations, institutions, manufacturers, academic / research institutions (bidders) that have the technical expertise, infrastructure, and demonstrated experience in designing and implementing complex projects or campaigns or systems, of scientific / engineering / technological / research origin. The bidder is expected to completely handle, coordinate, execute different parts of the project in efficient manner while optimising the time without compromising on the quality of the design efforts, materials used, workmanship etc. at any stage. The coordination, inter-dependencies and timelines of different subcontracting agencies appointed by the bidder for the project needs to be carefully managed by the project management team of the bidder to ensure timely completion of the project and avoid unnecessary delays due to miscommunication of inter-dependencies of various aspects of the developmental work involved in the project.

CHAPTER 3

BROAD SCOPE OF THE PROJECT

1. BROAD SCOPE OF THE PROJECT:

As the name of the project “Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job” suggests, several aspects are involved for the successful implementation of this project, and these are outlined in this chapter. These are broadly classified into two categories, namely

(A) Broad Technical Specifications and
(B) Engineering and safety related aspects

(A) Broad Technical Specifications

The broad technical specifications of the “Cloud Chamber Research Facility and its Infrastructure” are outlined below which in turn comprise of three major components of the project -

(a) Cloud Chamber Research Facility
(b) Fabricated Structure Around the Cloud Chamber
(c) Infrastructure for housing the Cloud Chamber

The broad technical specifications of each major component are given below. These serve as a guideline to formulate the “detailed proposals” sought in the form of EoIs from the interested bidders. It is to be noted that these broad specifications may undergo minor revisions as per the technical committee decisions and the inputs, during the EoI pre-submission meeting, from the interested bidders.

(a) Cloud Chamber Research Facility

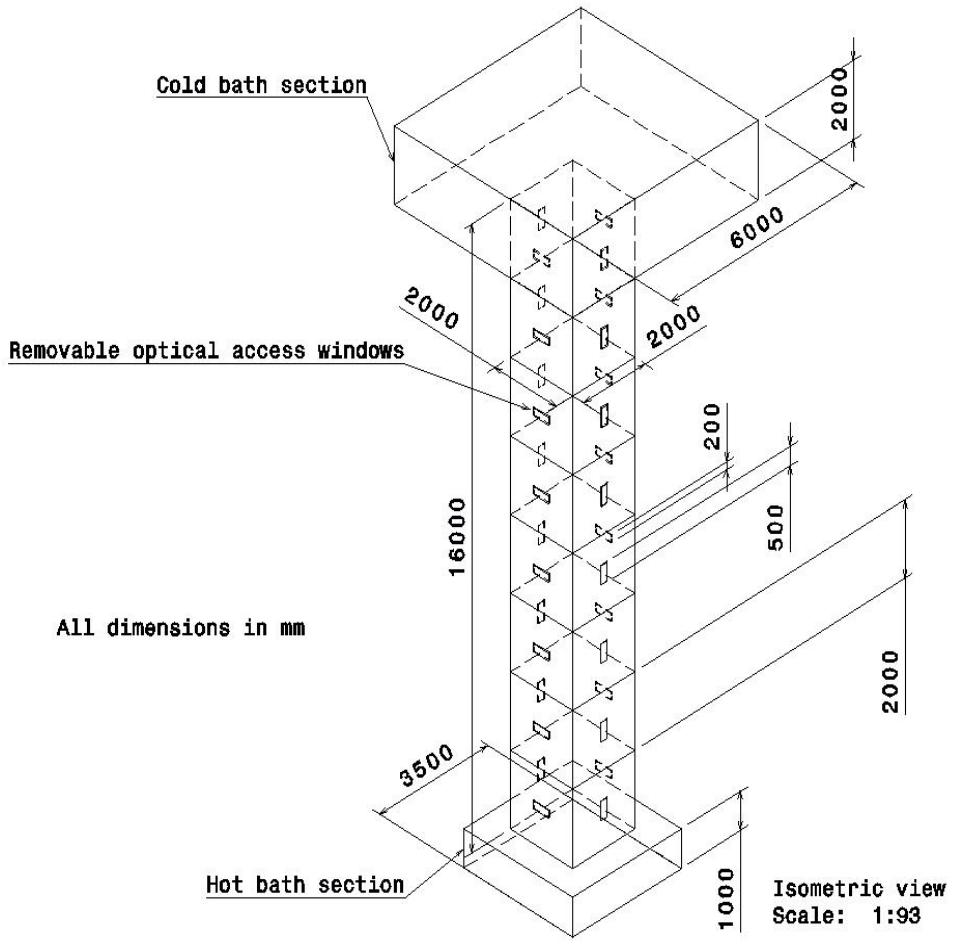


Fig. 1. Conceptual Schematic of the Cloud Chamber Research Facility

Sr. No.	Broad Technical Specification / Description
1	**(i) Parameter / Sub-component:** Cold Bath Section (Fig. 1) **(ii) Range / Requirement:** Cold bath section should be capable of cooling the moist air down to the set point value that can be as low as minus 80 degree Celsius and maintain the temperature there at the specified set point value (to within plus minus 01 degree Celsius). **(iii) Details:** The cold bath section will be installed at the top of the cloud chamber tube (to be explained later) and will be situated in the upper part of the fabricated structure

	around the Cloud Chamber. The Cloud Chamber tube shall open into the cold bath section. The refrigeration equipment, insulation, compressor etc. may be housed in an enclosure for installation in the fabricated structure. Suitable arrangements should be made so that the compressor operation does not introduce vibrations in the Cloud Chamber as well as all other floors of the fabricated structure. Cold bath section should be properly insulated to minimize the work input required to achieve the desired cooling effect.
2	**(i) Parameter / Sub-component:** Hot Bath Section (Fig. 1) **(ii) Range / Requirement:** Hot bath section should be capable of heating the water in the hot water bath to the set point value as high as plus 70 degree Celsius and maintain the temperature there at the specified set point value (to within plus minus 01 degree Celsius). **(iii) Details:** The hot bath section will be installed at the bottom of the Cloud Chamber tube (to be explained later) where water should be heated (to within plus minus 01 degree Celsius), without boiling near the heaters, up to the desired set point temperature. Hot bath section should be properly insulated to minimize the electrical consumption required to achieve the desired heating effect.
3	**(i) Parameter / Sub-component:** Relative Humidity **(ii) Range / Requirement:** 0 to 120% **(iii) Details:** Under supersaturated conditions, the maximum relative humidity in the Cloud Chamber tube, including the spaces of hot water and cold air baths, may be expected to be 120%. The materials used for the construction should be able to withstand these conditions over extended periods of time without degradation or corrosion. Efforts should be made to design the sidewalls in a manner that would keep them wet so that supersaturation is promoted within the Cloud Chamber.
4	**(i) Parameter / Sub-component:** Cloud Chamber (Fig. 1)

	(ii) Range / Requirement Tubular structure having 2m x 2m cross section (internal dimension) and 16m height (internal dimension) **(iii) Details:** The Cloud Chamber is in the form of a tall tube that connects the hot water bath below to the cold air bath above. Intense convective mixing of hot and cold humid air parcels is expected to lead to high-Rayleigh-number, high-Reynolds-number turbulence representative of tropical clouds.
5	**(i) Parameter / Sub-component:** Cloud Chamber Sections (Fig. 1) **(ii) Range / Requirement** Total height of the Cloud Chamber tube shall comprise of 08 sections. Each section will be 2m x 2m in cross section (internal dimension) and 02m in height (internal dimension). Each section shall have four sidewalls. Out of these, the two opposite sidewalls shall have doors that open outwards. These doors will be used to comprehensively access the interior of the chamber for maintenance, cleaning etc. **(iii) Details:** Flanges: There shall be flanges at ends of every section with locating bolts to connect to the adjacent sections with proper alignment. Sidewalls: Each sidewall of a section shall designed in such a way that it should be possible to operate the sidewall in either of the two Heat Transfer Boundary Condition modes, namely the “Sidewall Temperature Boundary Condition” mode (STBC mode) OR the “Adiabatic Sidewall Boundary Condition” mode (ASBC mode). In STBC mode, it should be possible to set and maintain the sidewall temperature to a value between minus 80 and plus 70 degree Celsius (to within plus minus 01 degree Celsius) uniformly over the extent of the sidewall. In ASBC mode, it should be possible to insulate the sidewall so that there is no heat transfer from the sidewall to the interior of the Cloud Chamber or vice versa. The design of the sidewall should be such that it should be possible to switch from STBC to ASBC, or vice versa, through the Cloud Chamber Control System without requiring physical removal / replacement of the sidewall panels. Further, there should be provision to keep the sidewall wet or saturated at all times (Scalar Moisture Boundary

	Condition - SMBC) during the operation of the Cloud Chamber using suitable means such as sheets of water oozing out from slots provided at different heights and flowing down each of the sidewalls. Finally, there should be provision to introduce textured roughness elements onto the sidewall (Wall Roughness Boundary Condition - WRBC) as per the requirement of the experiment. It is required to achieve these Boundary Condition capabilities by suitably designing the panels for the sidewalls and setting these BCs should be possible from the Cloud Chamber Control System. Cross-sectional heating: Provision to heat a certain cross-section should be made suitably. For example, one may use thin nichrome (or other suitable material) wires stretching across the section that could be resistively heated using high-frequency power supply. These wires should be mounted on an insulated frame that in turn should be mountable at different heights inside the chamber as per the requirement. Alternatively, a selected layer of moist air can be locally heated using a sheet of microwaves. Diagonal thermocouple rake: For each section, there should be provision to mount a rake of thermocouples along the diagonals of the cubical section along a taught nylon string. Suitable bolts or hooks to be provided in the corners. A dedicated data acquisition system of renowned make such as NI, should be provided to acquire the temperature readings of the thermocouples. Provision should be there to acquire other data such as flow rates, pressure etc. in the aerosol injection system as well.
6	**(i) Parameter / Sub-component:** Access ports (Fig. 1) **(ii) Range / Requirement** Optical and non-optical access ports. **(iii) Details:** Optical Access ports: These will be used for measurements of turbulent flow and droplets inside the Cloud Chamber. Tentative dimensions of each port are 500mm x 200mm (clear glass area). Each port will be appropriately flanged and shall use the high-transmission efficiency glass (approximately 8-10 mm thickness) for optical access. The glass shall be flush with the sidewall panel on the inside. All

	four sidewalls of each section will have these ports. The glass should be ITO type. Suitable arrangement of passing electrical current through the ITO glass should be made so that the glass is heated uniformly over its complete extent up to a temperature slightly above the temperature prevalent at that height in the chamber. This is essential to avoid condensation on the glass from the inside and keep the optical access clear of any condensate. Exact Locations of these optical access ports will be provided later, schematic positions are shown in Fig. 1. Non-optical Access ports: These are intended for aerosol injection, droplet sample collection and insertion of thermocouple rake. These will be circular ports of diameter approximately 15cm. Each port will be appropriately flanged and flush with the sidewall panel on the inside. Each port shall have appropriate holes for inserting the tubes for aerosol injection, sample collection and thermocouple rake. Provision should be made for mounting different inlets of the aerosol instruments (list of inlets, instruments shall be provided later). All sidewalls of each section will have these ports. Exact locations of non-optical access ports will be provided later.
7	**(i) Parameter / Sub-component:** Control system **(ii) Range / Requirement** Feedback type **(iii) Details:** PID or any other appropriate latest feedback control system technology should be used. The set point values for temperatures of Cold Bath and Hot Bath as well as all sidewall Boundary Condition inputs shall be provided by the user. The heating of the hot water bath and cooling in the cold bath as well as cooling/heating fluid flow rates through the sidewall panels need to be adjusted to achieve the set point conditions and continuously operate the Chamber in feedback-controlled loop to maintain the statistically stationary state conditions over extended periods of time in the Cloud Chamber. Suitable displays, computers, software, user interface etc. should be developed for user-friendly input of set points and monitoring of the status of the Chamber for start-up and shut down, and steady-state operations. The system should also produce alarms in case of emergency and should have an emergency shutdown sequence to ensure safety of the personnel.

(b) Fabricated Structure Around the Cloud Chamber

Fig. 2. Conceptual Schematic of the Fabricated Structure around the Cloud Chamber

Sr. No.	Broad Technical Specification / Description
1	**(i) Parameter / Sub-component:** Fabricated structure around the Cloud Chamber (Fig. 2) **(ii) Range / Requirement** Around the Cloud Chamber with footprint of approx. 10m x 10m. **(iii) Details:** The fabricated structure and the Cloud Chamber shall have proper foundation in the floor of the lab. The floor of the lab should be made of industrial shopfloor

	standard with epoxy coating to avoid scratches and slippage. Levels: Lateral support for each section of the Cloud Chamber shall be derived from each floor (also referred to as level or platform or landing) of the surrounding fabricated structure. This structure will be also used for accessing various sections of the Cloud Chamber tube, mounting of instruments etc. The fabricated structure shall have levels at each 04-meter distance along the height of the Cloud Chamber; the first level will be at the junction of the hot bath and the first Cloud Chamber section. Between two levels of the structure, there shall be 02 sections (each 02-meter tall) of the Cloud Chamber. The fifth level shall have the refrigeration unit and the cold bath. Flooring for each level: The flooring of each level shall be made of two layers; the bottom layer shall be of mild steel (MS) and the top layer shall be of stainless steel (SS) breadboards (similar to the optomechanical workbenches). The SS breadboards shall be firmly anchored to the MS layer below making a monolithic structure. These breadboards (typical thickness 20mm) shall have threaded holes (typically M6 or M8, to be specified later) at a specific planar pitch (typically 25mm in both perpendicular directions along the length and breadth of the breadboard). These threaded holes shall be accurately positioned and machined so that the aluminium profiles or any other mounting devices for scientific instruments / cameras / lasers / traverse systems etc. can be directly bolted to these breadboards firmly. Access: Staircase and elevator access shall be provided to all levels for movement of personnel and equipment between the levels. The motor room for the elevator can be either on the top or preferably at the bottom itself. Railing of sufficient height should be provided as per safety norms for the staircase as well as the levels. Elevator size should be sufficient to accommodate the laser trolley and chiller units for moving them between the levels. Stiffness, Strength and Design for avoiding effects of Vibrations: The entire fabricated structure should be stiff, strong and free from any movements or vibrations. Specifically, the vibrations of the compressor in the refrigeration system of the cold bath, vibrations due to the elevator operation, and the seismic vibrations due to the explosive testing activity at the adjacent defence laboratory

	must be handled properly so that the measurements in the cloud chamber and the operation of the cloud chamber are not affected. Power Connections and Earthing: Single- and three-phase power connections shall be provided at all levels for instruments along with proper earthing. Separate earthing should be there for scientific instruments and Cloud Chamber. Instruments shall be on UPS power and Cloud Chamber shall be on the raw power (with DG hook up). Material Handling Systems: Appropriate motorized material handling system shall be installed (gantry crane, pulley blocks etc.) in the ceiling and sidewalls of the infrastructure building (to be explained later) as well as on each level of the fabricated structure.

(c) Infrastructure for housing the Cloud Chamber Research Facility

Fig. 3. Conceptual Schematic of the Infrastructure for housing Cloud Chamber Research Facility

Sr. No.	Broad Technical Specification / Description
1	**(i) Parameter / Sub-component:** Infrastructure for housing the Cloud Chamber Research Facility (Fig. 3) **(ii) Range / Requirement** Around the Cloud Chamber and its surrounding Fabricated Structure **(iii) Details:** The Cloud Chamber Research Facility and its surrounding Fabricated Structure shall be installed inside an infrastructure building within an enclosed area called the Cloud Chamber Laboratory. The infrastructure shall be referred to as the 'Centre of Excellence for Weather Modification Research' which also is part of the Weather_Mod vertical of the Mission Mausam. The infrastructure shall be specially designed for housing the Cloud Chamber Laboratory and the entire monitoring and data acquisition systems wherein other experimental set ups such as rotating convection setup, a wind tunnel and calibration facility for weather sensors, fog chamber, ice microphysics chamber, working and sitting space for lab technicians and working researchers, rooms for pumps, compressors, UPS, servers, power distribution etc. Other parts of the infrastructure shall house the Fluid Dynamics Laboratory, conference hall, meeting rooms, lecture hall, sitting places for senior researchers, scientists, visiting scientists, students and administrative staff involved in Weather Modification program, ensuring integrated environment for research and academic activities. Centralized air-conditioning shall be provided separately in the Cloud Chamber Laboratory and in the remaining infrastructure building. The terrace of the infrastructure will host a suite of weather instruments in addition to the chiller units of the Centralized air-conditioning, elevator rooms and overhead water tank. The Infrastructure shall be a 07-storey building (Ground + 06) but it will be designed as a 12 storey building for future extension of the height, if required. Conceptual schematic is shown in Fig. 3 and floor plans are given in Annexure - I.
2	**(i) Parameter / Sub-component:** Power requirements **(ii) Range / Requirement** For the entire project **(iii) Details:**

	Precise power requirements of the instruments will be provided by IITM at a later stage. However, for initial estimates, a requirement of 150 kW may be assumed for scientific instruments alone. Power requirements of the Cloud Chamber (hot and cold baths) and the infrastructure (seating, lighting, air-conditioning) should be computed separately and appropriate arrangements of cabling, switchgear etc. should be made by working in consultation with IITM's electrical engineering team for the provision of power. More points about power requirements are available in Section B titled Engineering and Safety related aspects.
3	**(i) Parameter / Sub-component:** Green component **(ii) Range / Requirement** For the entire project **(iii) Details:** Environment-friendly methods should be adopted during the entire course of the work. Provisions should be made, if required, to transplant some of the existing trees at the proposed construction site to an alternate location within IITM campus, ensuring environmental conservation during the establishment of the infrastructure. The proposed site of the Cloud Chamber project contains Ashoka trees around its periphery; some of them shall be transplanted to other suitable places on IITM campus to make access available for construction on the site and to have the front entrance and back rolling shutter access of the building clear. Care should be taken, at all stages of the development, that the surrounding Ashoka trees should be preserved and no damage is to be done to them during the construction work. Natural ventilation and lighting should be used to the maximum possible extent to reduce the carbon footprint of the facility.
4	**(i) Parameter / Sub-component:** Material Selection and Manufacturing **(ii) Details:** Durable, non-corrosive materials capable of withstanding extreme environmental conditions and ensuring long-term operational stability should be used. Ensure all components meet the international safety and quality standards.

(B) Engineering and Safety Related Aspects

The aspects related to engineering and safety of the Cloud Chamber Research Facility and its Infrastructure are tabulated below.

Sr. No.	Details
1	**Mechanical and Civil Engineering Related Points:** • Adequate clearance between the chamber top and the ceiling must be ensured. This requirement should be explicitly included in the design drawings. • Ceiling-mounted or side column mounted gantry cranes or hoists should be considered for lifting heavy equipment / parts. • Since a defence laboratory explosive testing site is adjacent to IITM, the Cloud Chamber and its supporting fabricated structure should have vibration-free design with the use of vibration damping materials, pads, noise reduction methods such as acoustic panels and even active vibration control in critical areas. This is crucial to isolate the instruments mounted at different levels from the detrimental misalignment effects or sensitive instrument damage that such vibrations could cause. • The facility design must allow easy maintenance access, including vertical connectivity and space for material lifts. • There should be a complete set of essential tools (spanners, wrenches, keys, screwdrivers and pliers of various kinds, common electronics items, safety gloves, hand-held drill machines, drill bit etc.) on each level of the Cloud Chamber (including the ground floor) along with the inventory list on each level. Renowned tool kit organizer systems should be used for this purpose. • Safety engineering shall be the bidder's responsibility during both design and execution phases. This includes comprehensive safety audits during the design, construction and completion phases. Proper safety and stability certifications from authorized agencies for all mechanical, electrical and civil aspects of the turnkey solution must be provided at the time of completion of the project. Safety protocols during operations should be followed strictly. • Statutory approvals such as fire clearance, evacuation planning as well as all necessary approvals from the Pune Municipal Corporation as part of the

	construction and operations framework, commencement and completion certificates, lift/elevator certificates and any other statutory certifications shall be in the scope of the bidder. • The total water requirement of the facility (daily average and daily maximum) is required. Ground floor sump and overhead tank on the terrace should be designed and located accordingly. For use inside the Cloud Chamber, deionized water is required to prevent scaling issues. A suitable capacity DI plant may be incorporated for this purpose. Provision for proper drainage and water filtration systems must be included in the design. • Two centralized air conditioning systems are required, one for the Cloud Chamber laboratory (ground floor and its shaft at the centre of the infrastructure) and the second for various floors of the infrastructure. This is essential to protect several sensitive and costly instruments such as PDI, Tomo PIV, high speed lasers, mass spectrometers, CCN counters and other aerosol instruments. Chillers for these centralized air conditioning systems should be placed on the terrace. • Pump and compressor room may be included in the layout to house the water pumps for the chamber and the infrastructure, and a compressor for availability of compressed air for pneumatic applications, calibration facility etc. Adequate noise curtains, noise-proof design and safety protocols should be incorporated. The underground sump can be below the pump room itself. • Connecting walkways with suitable safety features may be provided from the Cloud Chamber instrument levels (levels in the fabricated structure) to the floors of the infrastructure. These would be useful for ease of material or instrument handling as well as evacuation in the case of any emergency. • Clear protocols for mechanical, electrical and civil inspection and servicing of the complete Cloud Chamber Research Facility (excluding the scientific instruments) should be designed and implemented in the warranty as well as OMC periods of the contract. • Fire hydrants, fire detection and suppression systems as per the fire safety protocols must be designed and installed.

2	**<u>Electrical Engineering Related Points:</u>** • A control room should be provisioned for operating the Cloud Chamber and housing its control system where the operating state of the Chamber can be set and monitored. • Power Distribution and UPS room should be planned for distribution of power for the Cloud Chamber and its instruments. UPS backup (estimated 150 kVA) should be provided for all scientific instruments for the Cloud Chamber including the servers. A separate power distribution and UPS for the infrastructure is to be planned and provided based on the electrical load estimates. • Given the projected peak power requirement of approximately 01 MW, a dedicated transformer will be required at the substation on IITM campus including a High Tension (HT) panel of appropriate MVA capacity. • Appropriate UG cabling runs should be laid from the transformer to the Cloud Chamber Research Facility and its Infrastructure. One cable shall cater to the Cloud Chamber (pumps, compressor, heaters for the hot bath, refrigeration system for cold bath etc.), second shall cater to the Cloud Chamber scientific instruments and the third shall cater to the electrical requirements of the infrastructure. Also, separate earthing should be there for all these three electrical requirements. • The heating system for the hot water bath of the Cloud Chamber should be designed in a way such that the heating element groups should be able to switch on or off step-by-step depending on the temperature requirement and load distribution. This should be automated and done by the PID control system as per the set point strategy with provision for manual override. • CCTV and computer networking should be planned as per the architectural layout and sitting arrangements in the infrastructure and the Cloud Chamber laboratory. • DG power hook up from the IITM DG system is to be designed and planned for instruments and computers.

CHAPTER 4

EoI Documents and Evaluation Criteria

A. EoI Documents:

Interested bidders must submit the following EoI documents (see Annexures - II, III, IV and V) that would be evaluated administratively and technically as per the criteria outlined in point B of this chapter.

(i) Documentation essential for administrative qualification through the EoI process (as per the Administrative Criteria of point B (1) of this chapter).

(ii) Documentation essential for technical qualification through the EoI process (as per the Technical Criteria of point B (2) of this chapter). This includes documents demonstrating relevant experience in addition to the following documents pertaining to the detailed proposal:

(a) "Detailed" technical specifications, design and drawings, complete BoM and BoQ, and appropriate certifications of the design of the Cloud Chamber.

(b) "Detailed" technical specifications, design and drawings, complete BoM and BoQ, and appropriate certifications of the design of the Fabricated Supporting Structure.

(c) "Detailed" technical specifications, architectural layouts, structural design and drawings, complete BoM and BoQ, and appropriate certifications of the design of the Infrastructure for housing the Cloud Chamber.

(iii) Plan of execution of the project including timelines for project and payment milestones (no price bid information should be given at this stage).

(iv) Any other documents deemed relevant for convincing demonstration of the quality assurance and competence to execute the project within the prescribed timelines.

B. Evaluation Criteria:

Bidders intending to participate in this EoI must meet the following essential eligibility criteria to qualify through the EoI process. These criteria are of two types, Administrative and Technical. Only

those bidders who qualify in both these criteria shall be considered for participation in the Request For Proposal (RFP) stage as per the procedure outlined in Chapter 5.

1. Administrative Criteria:

a) Legal Valid Entity: The bidder must be a legal valid entity registered in India and the consultants/sub-contractors to be onboarded for the present project should not have any firms/companies/experts from countries that share their land borders with India (as per the O.M. F.No 6/18/2019-PPD dated 23rd July 2020 and subsequent amendments thereof). The entity can either be in the form of a Limited Company or a Private Limited Company registered under the Companies Act, 1956 or a Sole Proprietorship or a Partnership Firm. Company profile including organizational structure with details of ownership and evidence of incorporation (attested copy of the certificate of incorporation, issued by the competent authority, as proof of being a legal valid entity) must be submitted (see Annexure - II).

b) Registration: The bidder must be registered with the Income Tax, GST etc. Valid PAN, GST registration certificates must be submitted (see Annexure - II).

c) Clearance: The bidder must have clearance from the Income Tax Department and GST Department as evidenced by clearance certificates (past three years returns) for Income Tax and GST. Financial statements (showing the company turnover) audited by a registered Chartered Accountant for the past three financial years as well as the latest Net Worth certificate issued by a Chartered Accountant must be submitted (see Annexure - II).

d) Undertaking: The bidder must submit an undertaking as per Annexure - III.

e) Non-Blacklisting: The bidder must not have been blacklisted during the last 03 years by any Central / State Government Department / Organization. A self-certificate regarding the same is to be submitted in the form as per Annexure - IV.

f) Integrity Pact: The bidder (and his sub-contractors, if any) must agree to and submit the integrity pact as per Annexure - V.

g) Previous Projects: The bidder must have successfully completed at least 02 reasonably large, multi-disciplinary projects (as mentioned in the Technical criterion 2(a) below), each worth Rs. 25 Crores or more, over the past 10 years (Jan 2015 to Dec 2024), as evidenced by the copies of work order or purchase order and completion/experience/appreciation certificates. Details and documents of the projects must be submitted as per the formats in Annexure - II.

Bidders who do not fulfil one or more of the above administrative criteria shall be rejected at the stage of administrative evaluation of the EoI responses. Only those bidders who qualify through this administrative evaluation shall be considered for the technical evaluation of their EoI responses.

2. Technical Criteria:

a) Relevant experience:

The bidder must have successfully completed at least 02 reasonably large, multi-disciplinary projects in India / abroad over the past 10 years in the areas of science and technology involving major contribution from the engineering disciplines such as mechanical / aerospace / civil / electrical / electronics / instrumentation etc. AND / OR scientific disciplines of physics / atmospheric science / oceanic science / atmospheric technology etc. AND / OR any other field relevant to the subject matter of the present EoI.

Experience of designing, undertaking and successfully executing specialized research and development projects such as large experimental setups or facilities, atmospheric / oceanic research campaigns / projects, government / private / defence / space related projects in the areas of science and technology shall be given weightage.

Relevant information (two-page project summary, work / purchase order copy, acceptance certificate, installation report, brief profile of the institute / organization where the project was carried out, contact reference from the institute, etc.) of all such projects completed over the past 10 years needs to be provided as per Annexure - II at the end of this EoI.

The technical committee shall scrutinize and evaluate the relevant experience of participating bidders considering the requirements of the present project. The evaluation for this subpoint 2(a) shall be quantified using a marking scheme on the scale of 0 to 10 (zero to ten) as per the sub-criteria given in the table below wherein the total marks (M) out of 300 shall be proportionately mapped onto the scale of 0 to 10 according to the formula

Marks on 0 to 10 scale = (M/300)*10

The qualifying marks for this Technical criterion (subpoint 2(a)) shall be at least 07 marks (on 0 to 10 scale) out of 10 marks (i.e. 70%). If a bidder scores less than 07 marks out of 10 marks (i.e. less than 70%), then the bidder shall be considered technically disqualified.

Sub-Criteria	Marks	Maximum Marks
Total Number of reasonably large projects, each worth 25 Cr. or more, completed over the past 10 years (N1)	(10*N1) OR 50 whichever is less	50
Number of projects (out of N1) belonging to Engineering disciplines of Mechanical / Aerospace / Civil / Electrical / Electronics / Instrumentation AND / OR Scientific disciplines of Physics / Atmospheric Science / Oceanic Science / Atmospheric Technology (N2)	(10*N2) OR 50 whichever is less	50
Number of projects (out of N1) having specialized research and development nature such as large experimental setups or facilities, atmospheric / oceanic research campaigns / projects, government / private / defence / space related research and development projects (N3)	(10*N3) OR 50 whichever is less	50
Technical Committee's Assessment of the "Relevance" of the experience of the bidder for the present project based on the complete set of documents of the previous projects provided by the bidder	To be decided by technical committee	150
Total Marks (M) out of 300		300

Table 4.B.2.a: Marking scheme of sub-criteria of the technical criterion 'Relevant experience' of subpoint 2(a)

b) Presentation of the “detailed proposal”:

Bidder must give a thorough presentation to the technical committee, explaining their “detailed technical proposal” for the present project titled “Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job”.

The presentation should broadly include the following points:

- Understanding of the project objectives and scope
- Proposed design methodology and timeline
- Detailed specifications of the proposed technology and components
- Operations, maintenance and support plans

Each point should be described in detail in the presentation; any other points deemed important may also be included. Detailed technical specifications, design and drawings, complete BoM and BoQ, and appropriate certifications of the design of the Cloud Chamber and its Fabricated Supporting Structure should be prepared in a comprehensive manner and presented. Detailed technical specifications, architectural layouts, structural design and drawings, complete BoM and BoQ, and appropriate certifications of the design of the Infrastructure for housing the Cloud Chamber should also be prepared in a comprehensive manner and presented. The infrastructure must be designed according to the design of the Cloud chamber itself.

The clarity and depth of the proposal shall be evaluated by the technical committee. The committee shall look for the bidder’s understanding of the project, detailed specifications of all aspects of the projects (the Cloud Chamber Research Facility, the Fabricated Structure around the Chamber, and the Infrastructure for housing the Cloud Chamber Facility). The committee shall also pay attention to the design details of aspects such as the centralized control system of the Cloud Chamber, electrical power supply, pumps, safety engineering, proposal for operations and maintenance etc. while evaluating the proposals.

Details of the manpower required to be engaged for the project should be estimated and presented. Upfront information on the subcontracting firms / professionals to be engaged for

the project is highly desirable. Bidder participating in the EoI may provide the profiles, credentials, experience details, registrations etc. of the mechanical, civil, electrical, architectural, structural and any other subcontracting firms / professionals that would be onboard for this project for the design, development, installation, commissioning, operations, warranty and post-warranty maintenance periods. This clarity of information on the team committed to be involved for the execution of the project shall be given weightage. The team could also include qualified professionals, engineers, scientists, and technicians from within India or abroad (but not from countries sharing land border with India) with requisite expertise in atmospheric sciences, fluid dynamics, convection, cloud microphysics, instrumentation, manufacturing, numerical simulations etc.

The technical committee shall scrutinize and evaluate the presentation and detailed proposal of participating bidders, considering the requirements of the present project, to assess the depth of the bidder in preparation of the proposal and their overall competence to execute the project within the prescribed timelines. The evaluation for this subpoint 2(b) shall be quantified using a marking scheme on the scale of 0 to 10 (zero to ten) as per the sub-criteria given in the table below wherein the total marks (M1) out of 300 shall be proportionately mapped onto the scale of 0 to 10 according to the formula

Marks on 0 to 10 scale = (M1/300)*10

The qualifying marks for this Technical criterion (subpoint 2(b)) shall be at least 07 marks (on 0 to 10 scale) out of 10 marks (i.e. 70%). If a bidder scores less than 07 marks out of 10 marks (i.e. less than 70%), then the bidder shall be considered technically disqualified.

Sub-Criteria	Marks	Maximum Marks
Does the Overall presentation address the following points in a comprehensive manner? • Understanding of the project objectives and scope • Proposed design methodology and timeline	To be decided by the technical committee YES – 50 marks	50

• Detailed specifications of the proposed technology and components • Operations, maintenance and support plans	PARTIALLY – between 10 to 40 marks NO – 00 marks	
Are the Detailed technical specifications, design and drawings, complete BoM and BoQ, and appropriate certifications of the design of the Cloud Chamber and its Fabricated Supporting Structure prepared in a comprehensive manner and presented?	To be decided by the technical committee YES – 50 marks PARTIALLY – between 10 to 40 marks NO – 00 marks	50
Are the Detailed technical specifications, architectural layouts, structural design and drawings, complete BoM and BoQ, and appropriate certifications of the design of the Infrastructure for housing the Cloud Chamber prepared in a comprehensive manner and presented? Is the Infrastructure designed according to the design of the Cloud Chamber itself?	To be decided by the technical committee YES – 50 marks PARTIALLY – between 10 to 40 marks NO – 00 marks	50
Are the Details of the manpower to be engaged for the project estimated and presented? Is the information on the subcontracting firms / professionals to be engaged for the project presented upfront? Is there clarity on the profiles, credentials, experience details, registrations etc. of the mechanical, civil, electrical, architectural, structural and any other subcontracting firms / professionals that would be onboard for this project for the	To be decided by the technical committee YES – 50 marks PARTIALLY – between 10 to 40 marks NO – 00 marks	50

design, development, installation, commissioning, operations, warranty and post-warranty maintenance periods? Are there any qualified professionals, engineers, scientists, and technicians from within India or abroad (but not from countries sharing land border with India) with requisite expertise in atmospheric sciences, fluid dynamics, convection, cloud microphysics, instrumentation, manufacturing, numerical simulations etc. suggested for onboarding for the project?		
Technical Committee's Assessment of the "depth of the bidder in preparation of the proposal and their overall competence to execute the project within the prescribed timelines" based on the presentation and the details of the present project provided by the bidder	To be decided by the technical committee	100
Total Marks (M1) out of 300		300

Table 4.B.2.b: Marking scheme of sub-criteria of the technical criterion 'Presentation of the detailed proposal' of subpoint 2(b)

The bidders must qualify through each of the subpoints 2(a) and 2(b) individually by scoring at least 07 marks (on 0 to 10 scale) out of 10 marks (i.e. 70%) in each one of them. Such bidders shall be considered qualified through the EoI technical evaluation process. Since such bidders would be already qualified through the EoI administrative evaluation process, they would be deemed qualified through the entire EoI evaluation process. Only those bidders that qualify through the entire EoI evaluation process shall be considered for the RFP stage as mentioned before.

CHAPTER 5

Steps to be Followed up to the Award of the Contract

The present project titled "Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job" shall be executed as a single turnkey job due to its highly specialized nature. After floating this invitation for the EoI, the broad steps that shall be followed (in accordance with section 4.16 - EoI tenders - in the Manual for Procurement of Goods, Second Edition, 2024 and Rule 164 – Two-stage bidding - of General Financial Rules 2017 updated up to 31/07/2024) are outlined below.

a. Pre-submission Meeting and Design Clarifications:

A pre-submission meeting shall be conducted to address queries from the prospective bidders. In addition, the prospective bidders may approach the concerned IITM scientists officially over email anytime, from the date of floating of the invitation for the EoI to the last date of submitting EoI, for getting any design queries clarified before submission of EoI.

b. Submission of EoI:

The interested bidders shall submit the EoI along with all the requisite documents as detailed in point A of chapter 4.

c. Administrative Evaluation of EoIs received:

EoIs received shall be evaluated administratively as per the Administrative Criteria of point B (1) of Chapter 4. Only those bidders who qualify administratively shall be considered for further technical evaluation.

d. Technical Evaluation of EoIs of the administratively qualified bidders:

Technical evaluation of EoIs of the administratively qualified bidders shall be conducted by the

technical committee as per the Technical Criteria of point B (2) of Chapter 4. The bidders must qualify through each of the subpoints B 2(a) and B 2(b) of Chapter 4 individually by scoring at least 07 marks (on 0 to 10 scale) out of 10 marks (i.e. 70%) in each one of them. Such bidders shall be considered qualified through the EoI technical evaluation process. Since such bidders would be already qualified through the EoI administrative evaluation process, they would be deemed qualified through the entire EoI evaluation process. Only those bidders that qualify through the entire EoI evaluation process shall be considered for the RFP stage.

e. Finalizing the "Detailed Technical Specifications" of the complete turnkey project:

Based on the "detailed" proposals of the "qualified" bidders, the technical committee shall finalize the "detailed technical specifications" of the entire turnkey job entitled "Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job".

f. Preparation of the RFP tender document:

Based on the "finalized detailed technical specifications", an RFP tender document shall be prepared for two-envelope bidding (technical and commercial) for the turnkey job of "Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job". This RFP tender inquiry shall be sent to only those bidders who have qualified through the entire EoI evaluation process.

g. Pre-bid meeting:

A pre-bid meeting shall be held before the bidders submit their technical and price bids in response to the RFP tender document.

h. Two-Envelope Bidding in response to the RFP tender inquiry:

The bidders shall submit their technical and commercial bids in separate sealed envelopes.

i. Technical Evaluation of the Bids:

The Technical Committee shall evaluate the technical bids for technical compliance with the tender specifications and recommend the technically qualified bids for further processing. Bids that are technically disqualified shall not be processed further.

j. Commercial Evaluation of the Technically Qualified Bids:

The Commercial Committee shall evaluate the price bids of the bidders whose bids have been technically qualified and recommend the L1 bidder for the award of the contract to execute the turnkey job of “Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job”.

k. Award of the Contract:

Upon approval of the competent authority to the recommendation of the Commercial Committee for the award of the contract to the L1 bidder, the formal purchase order shall be issued to the successful bidder.

CHAPTER 6

Instructions to the Bidders

a) The Director IITM reserves the right to cancel the EoI/tendering process at any time without assigning any reason(s) thereof. Director, IITM, Pune will not be held liable for any loss which may incur to any bidder because of this cancellation.

b) A self-certificate is to be submitted that the bidder has not been blacklisted by any Central/State Government Department/Organization (Annexure - IV).

c) Please note that all the pages of the EoI documents must be signed with the date and seal of the bidder.

d) A cover letter and the EoI documents as per Annexures - II, III, IV and V given in this document should be submitted on the bidder's company letterhead as response to this invitation for the EoI. These documents must be completed without any alterations to the formats given and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

e) Canvassing of any form would disqualify the bidder from further participation.

f) All the submitted proposals will be scrutinized based on documents and information furnished by the bidder. Each claim about a service provided or a project executed must be accompanied by the corresponding authentic documentary evidence.

g) The Director, IITM may obtain clarifications wherever required from the bidder or from the referred client list in the profile. Proposals shall be shortlisted as per the criteria stated above.

h) The RFP tender document shall be issued only to those bidders who qualify through the EoI evaluation process.

i) The bidders should fill out the information as per Annexures - II, III, IV and V, and sign and stamp on all pages. The vendor must sign and stamped the duly filled Pre-contract Integrity Pact (Annexure - V) as a part of qualification criteria.

j) To evaluate the EoIs received from the bidders, the procedures outlined above shall be followed.

k) This Institute is following and abides with the Public Procurement (Preference to Make in India), Order 2020, DIPP, MoCI Order No. P-45021/2/2017-PP (-B.E.II) dated 04th June 2020 and subsequent amendments if any to the said order. Accordingly, preference will be given to the "Make in India products" while evaluating the bids, however, it is the sole responsibility of the bidder(s) to specify the product quoted by them is a "Make in India product" along with

respective documentary evidence as stipulated in the aforesaid order in the technical bid itself.

l) **Independent Monitors:**

a) The BUYER has appointed Independent monitors (hereinafter referred to as Monitors) for this Pact in consultation with the Central Vigilance Commission. The details of Independent External Monitors are as below:

(1) Dr. Ajay Kumar Lal, IRAS (Retd.), DDA, HIG,
Block 3A/101 A.
Motia Khan (Near Jhandewalan Temple),
D.B. Gupta Road, New Delhi-110015
Email: ajayklal@yahoo.com,
Mobile No: 9560712003

(2) Shri. Pavan Kumar Jain, IDSE (Retd.)
A-402, Shree Ganesh
Apartments, Plot No. 12B, Sector-7 Dwarka,
New Delhi- 110075
Email: mespkj@gmail.com, Mobile No: 9313498388

b) The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.

c) The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.

d) Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of the meetings.

e) As soon as the Monitors notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the BUYER.

f) The BIDDER(s) accepts that the Monitors has the right to access without restriction to all Project documentation of the BUYER including that provided by the BIDDER. The BIDDER will also grant the Monitors, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor shall be under contractual obligation to treat the information and documents of the BIDDER/Subcontractor(s) with confidentiality.

g) The BUYER will provide to the Monitors sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitor the option to participate in such meetings.

h) The Monitors will submit a written report to the designated Authority of the

BUYER/Secretary in the Ministry/ within 8 to 10 weeks from the date of reference or intimation to him by the BUYER / BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

m) Response to this invitation for the EoI should be submitted in a sealed envelope clearly marked as **"Expression of Interest for Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job"** and should be addressed to

The Director
Indian Institute of Tropical Meteorology
Dr. Homi Bhabha Road, Pashan, Pune 411 008, Maharashtra, India
Phone - +91-20-2590-4200 and Fax - +91-20-2586-5142

n) Important Dates:

Submission of Queries in writing:	**07th October 2025 up to 1700 hrs**
EoI Pre-Submission meeting:	**09th October 2025 at 1200 hrs at IITM, Pune.**
Last date of Receipt of EoIs at IITM:	**27th October 2025 up to 1200 hrs**
Date of Opening of EoI Envelopes:	**27th October up to 1500 hrs**

For any clarification the bidders are advised to contact

Administrative Officer (Purchase and Stores)
Indian Institute of Tropical Meteorology
Dr. Homi Bhabha Road, Pashan, Pune-411008, Maharashtra, India
Phone - +91-20-2590-4483
email: psu.iitm@tropmet.res.in

CONCEPTUAL LAYOUTS OF THE INFRASTRUCTURE FOR HOUSING CLOUD CHAMBER RESEARCH FACILITY

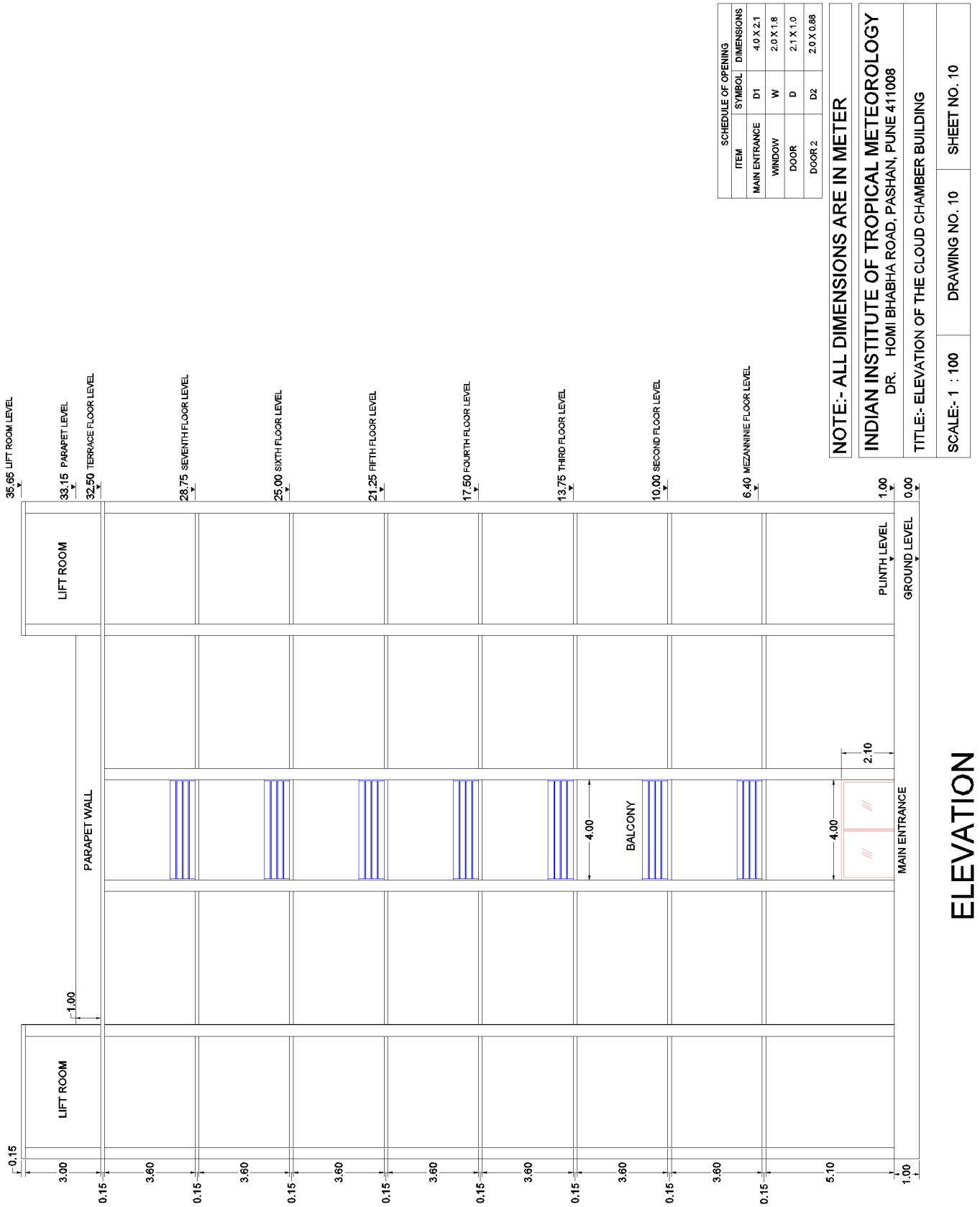


Fig. 4. Elevation of the Infrastructure for housing the Cloud Chamber Research Facility

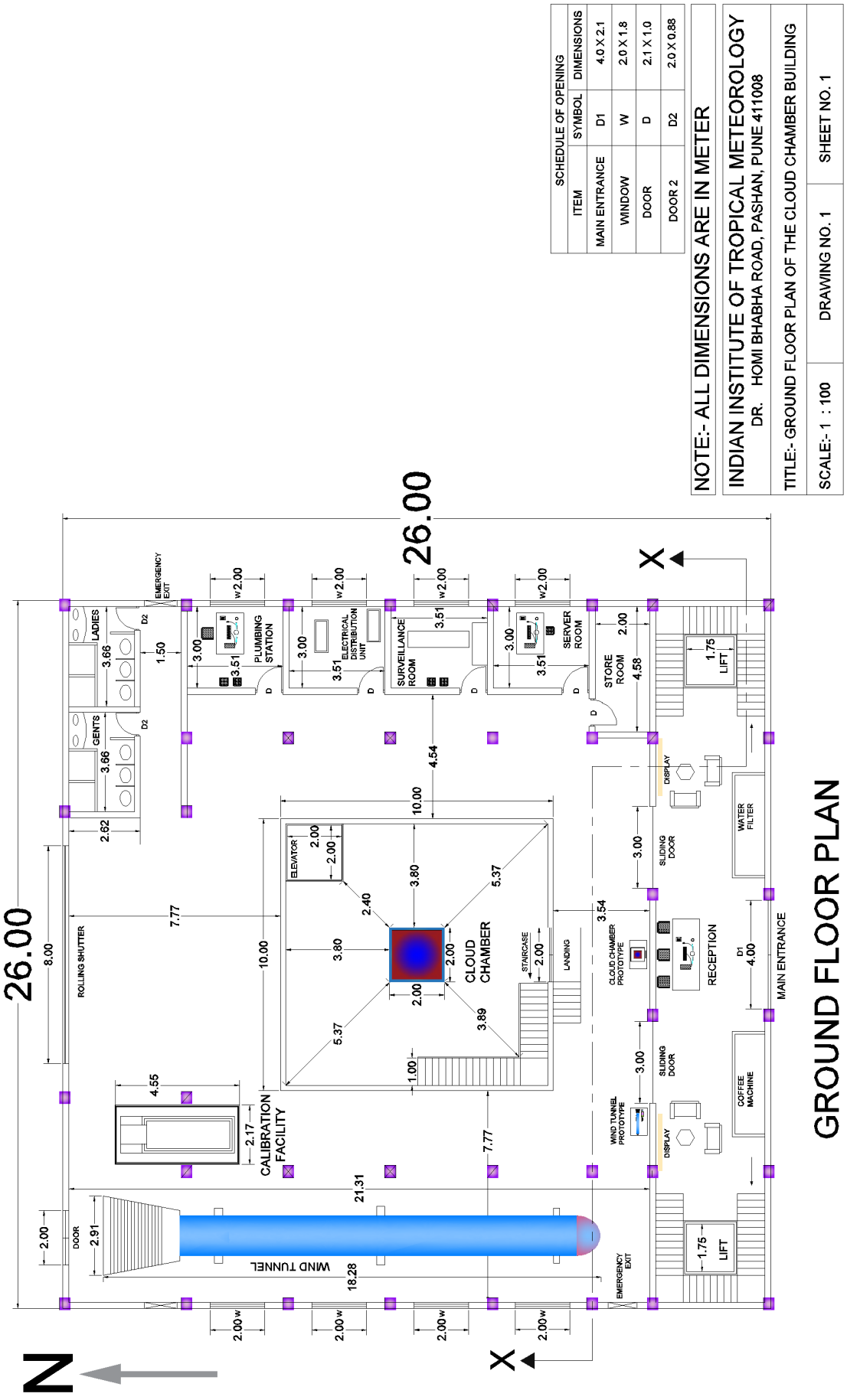


Fig. 5. Ground Floor - Plan of the Infrastructure for housing the Cloud Chamber Research Facility

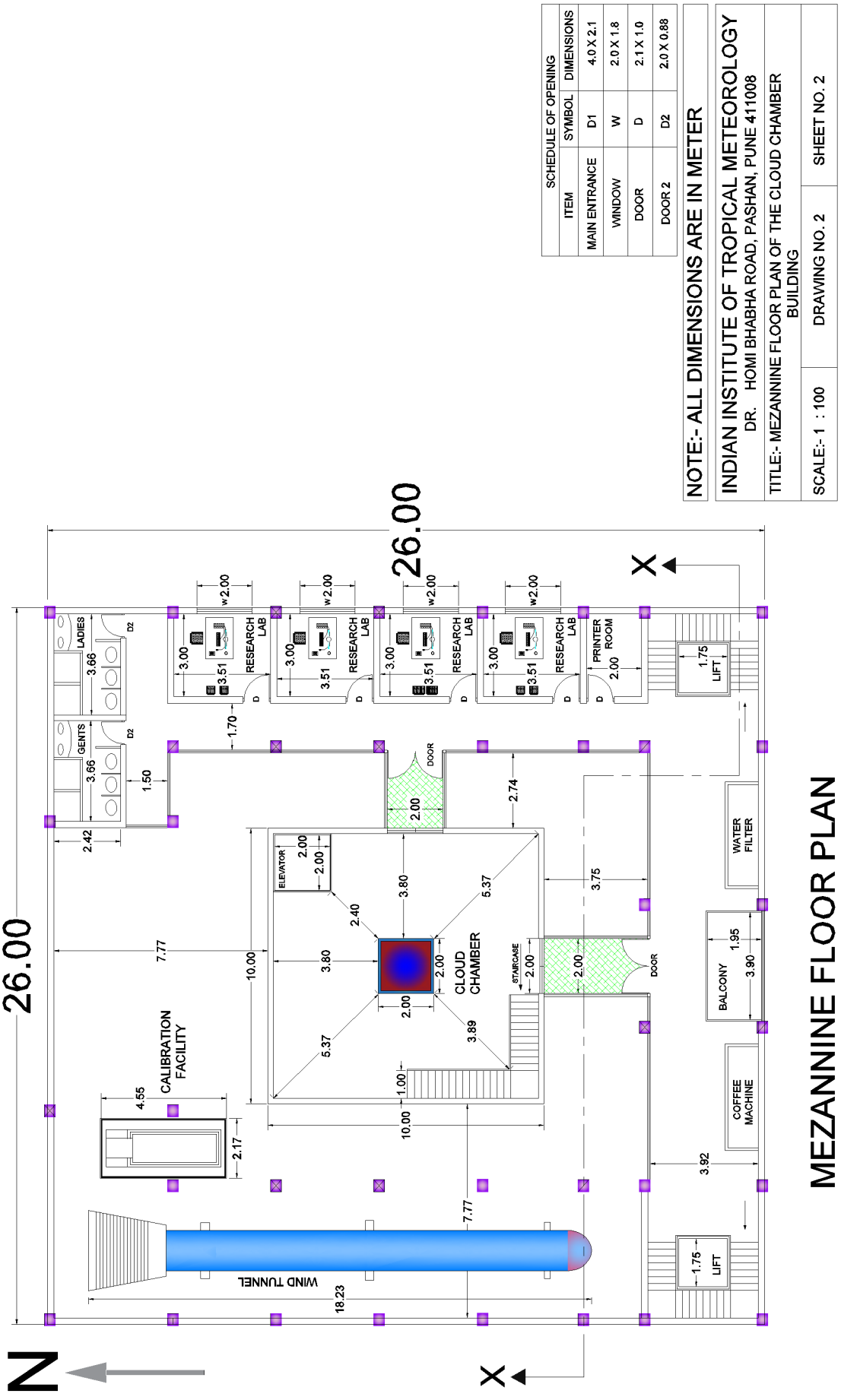


Fig. 6. Mezzannine Floor - Plan of the Infrastructure for housing the Cloud Chamber Research Facility

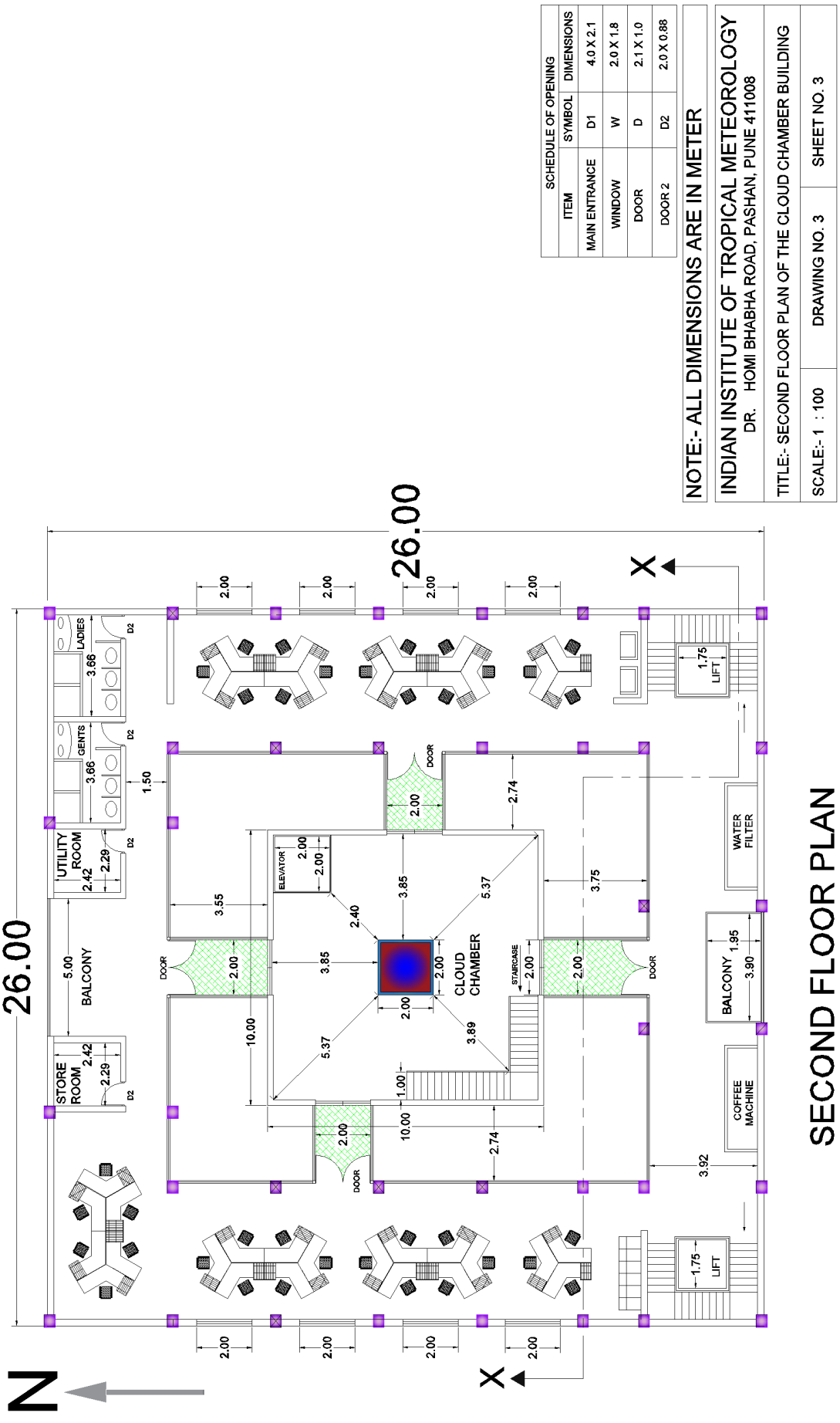
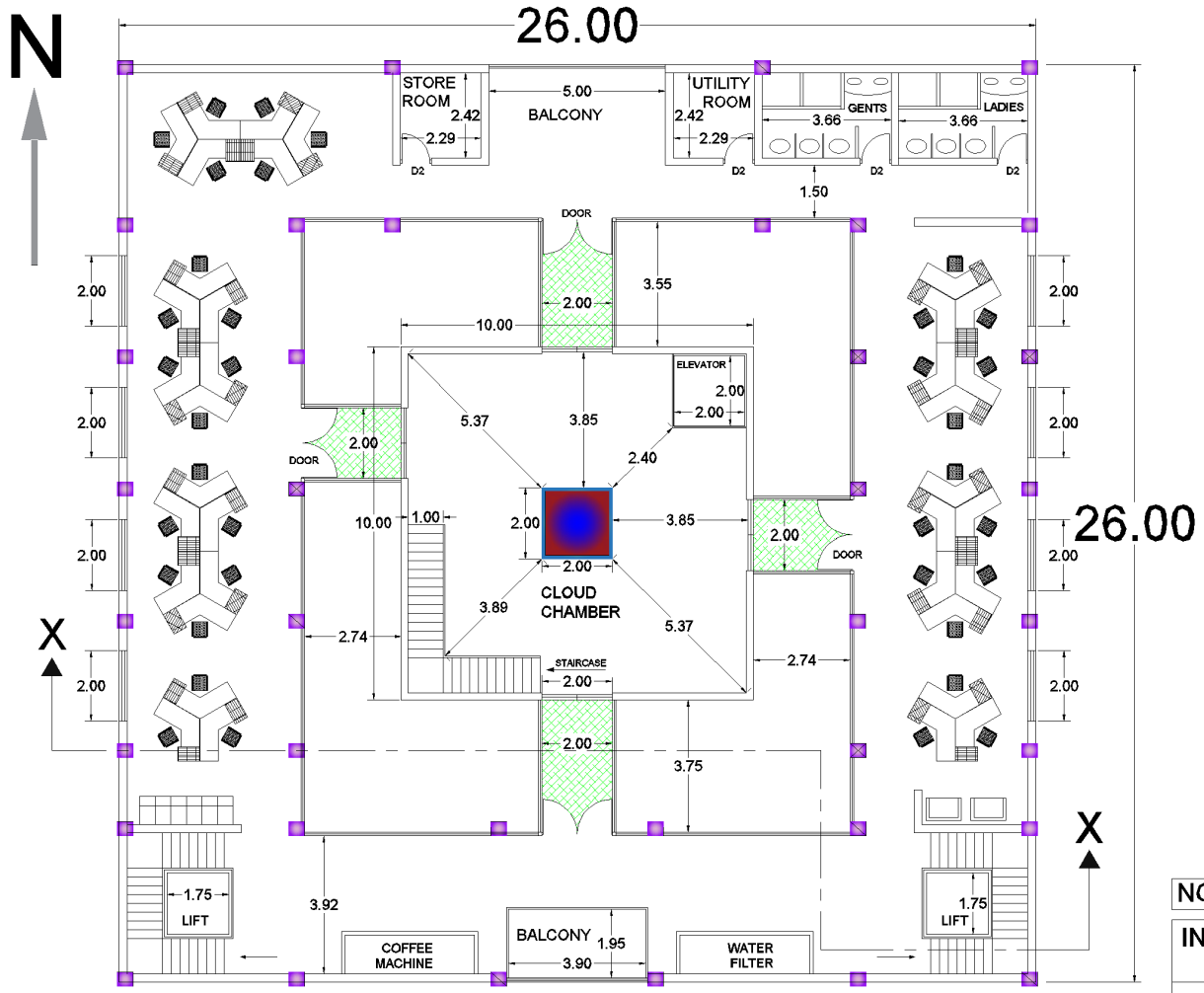


Fig. 7. Second Floor - Plan of the Infrastructure for housing the Cloud Chamber Research Facility



THIRD FLOOR PLAN

SCHEDULE OF OPENING		
ITEM	SYMBOL	DIMENSIONS
MAIN ENTRANCE	D1	4.0 X 2.1
WINDOW	W	2.0 X 1.8
DOOR	D	2.1 X 1.0
DOOR 2	D2	2.0 X 0.88

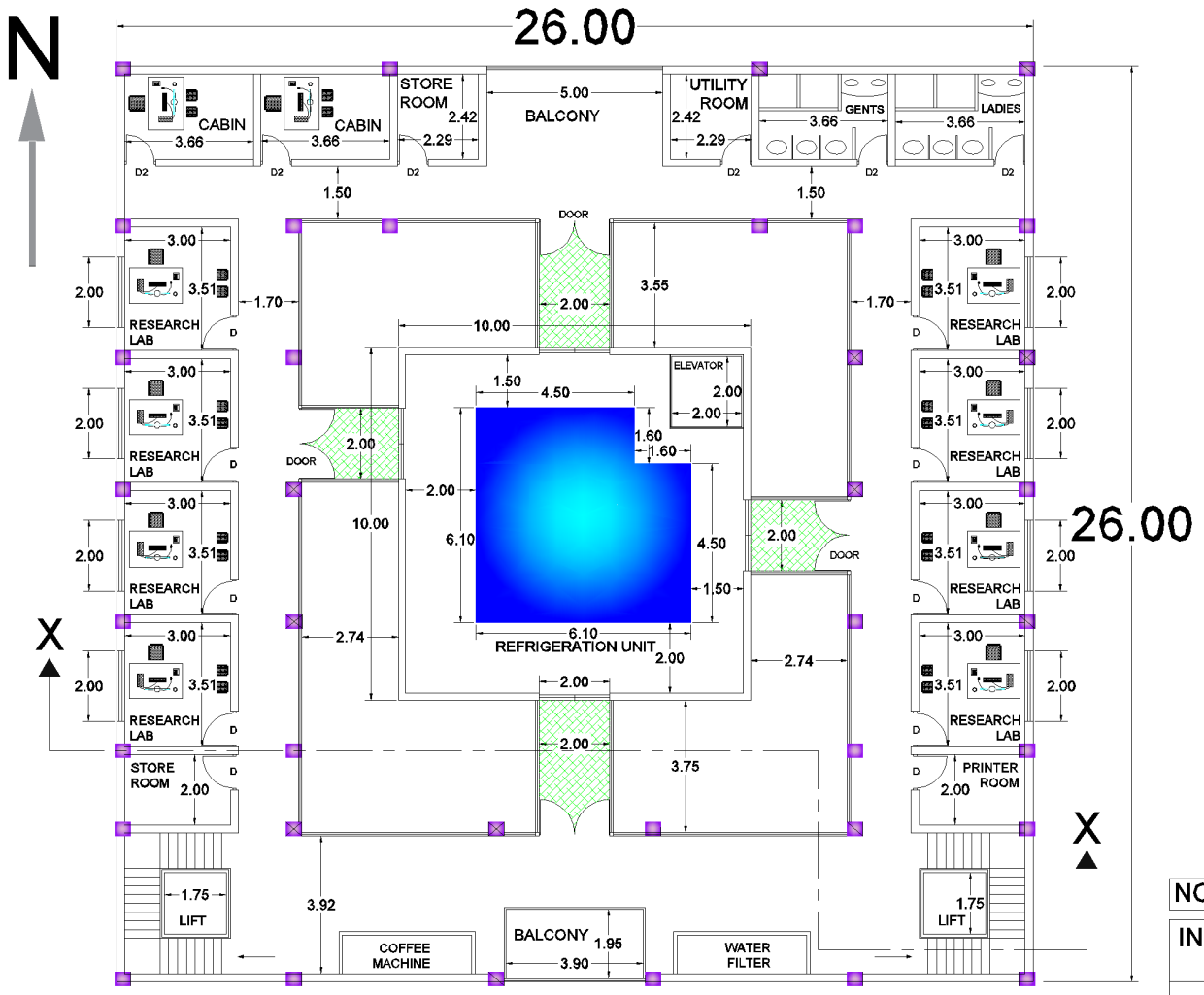
NOTE:- ALL DIMENSIONS ARE IN METER

INDIAN INSTITUTE OF TROPICAL METEOROLOGY
DR. HOMI BHABHA ROAD, PASHAN, PUNE 411008

TITLE:- THIRD FLOOR PLAN OF THE CLOUD CHAMBER BUILDING

SCALE:- 1 : 100	DRAWING NO. 4	SHEET NO. 4

Fig. 8. Third Floor - Plan of the Infrastructure for housing the Cloud Chamber Research Facility



FOURTH FLOOR PLAN

SCHEDULE OF OPENING		
ITEM	SYMBOL	DIMENSIONS
MAIN ENTRANCE	D1	4.0 X 2.1
WINDOW	W	2.0 X 1.8
DOOR	D	2.1 X 1.0
DOOR 2	D2	2.0 X 0.88

NOTE:- ALL DIMENSIONS ARE IN METER

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TITLE:- FOURTH FLOOR PLAN OF THE CLOUD CHAMBER BUILDING

SCALE:- 1 : 100	DRAWING NO. 5	SHEET NO. 5

Fig. 9. Fourth Floor - Plan of the Infrastructure for housing the Cloud Chamber Research Facility

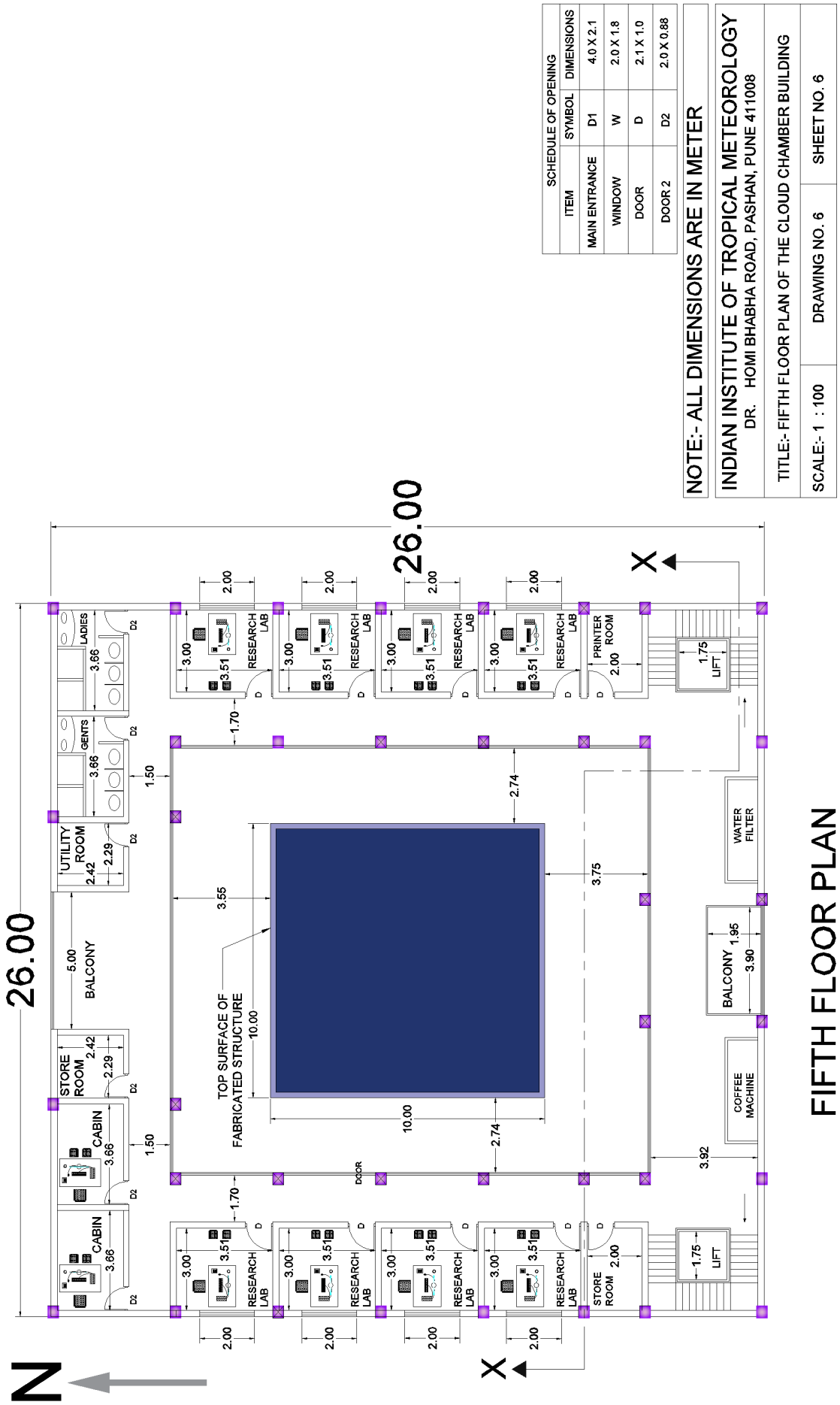
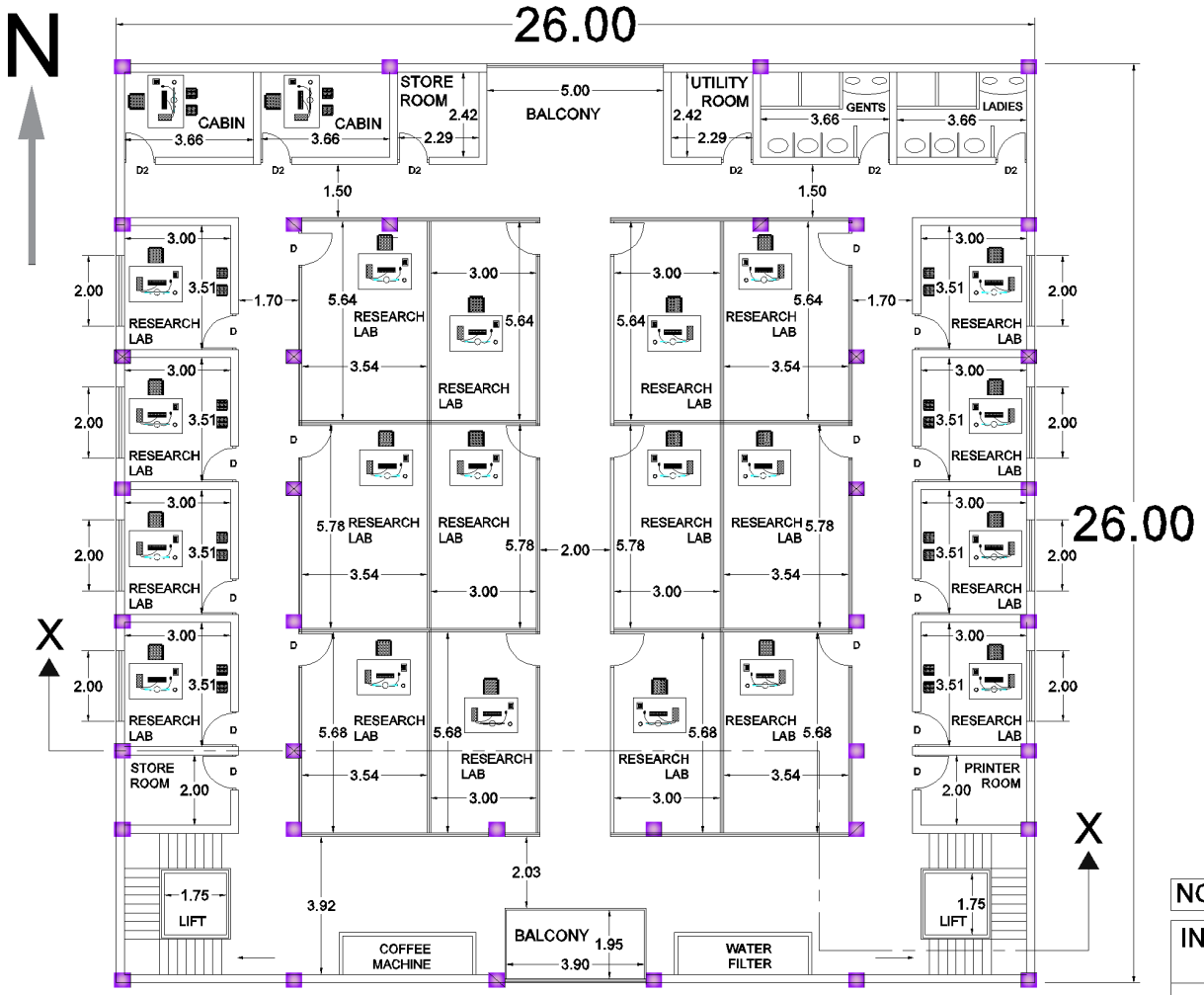


Fig. 10. Fifth Floor - Plan of the Infrastructure for housing the Cloud Chamber Research Facility



SIXTH FLOOR PLAN

SCHEDULE OF OPENING		
ITEM	SYMBOL	DIMENSIONS
MAIN ENTRANCE	D1	4.0 X 2.1
WINDOW	W	2.0 X 1.8
DOOR	D	2.1 X 1.0
DOOR 2	D2	2.0 X 0.88

NOTE:- ALL DIMENSIONS ARE IN METER

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TITLE:- SIXTH FLOOR PLAN OF THE CLOUD CHAMBER BUILDING

SCALE:- 1 : 100	DRAWING NO. 7	SHEET NO. 7

Fig. 11. Sixth Floor - Plan of the Infrastructure for housing the Cloud Chamber Research Facility

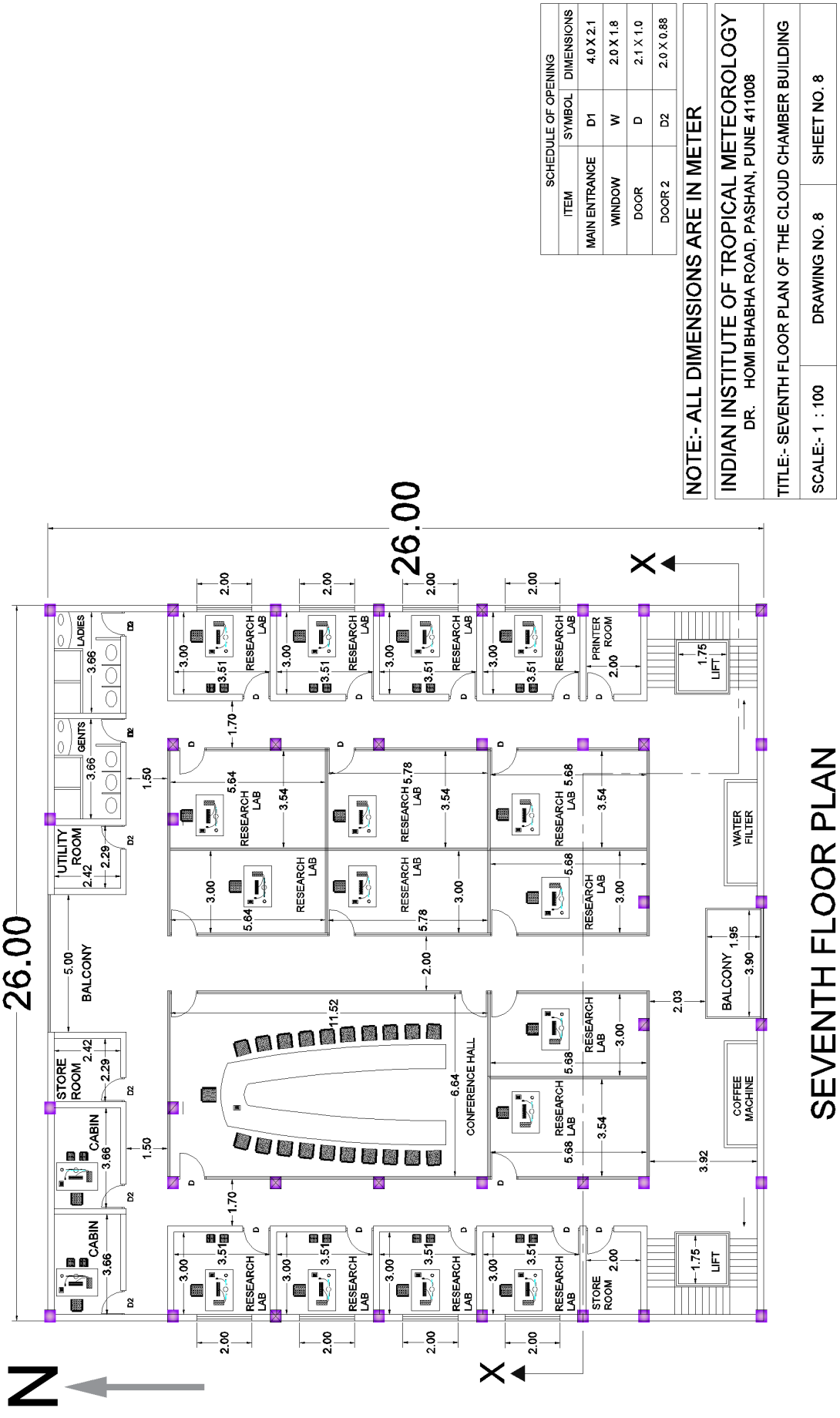
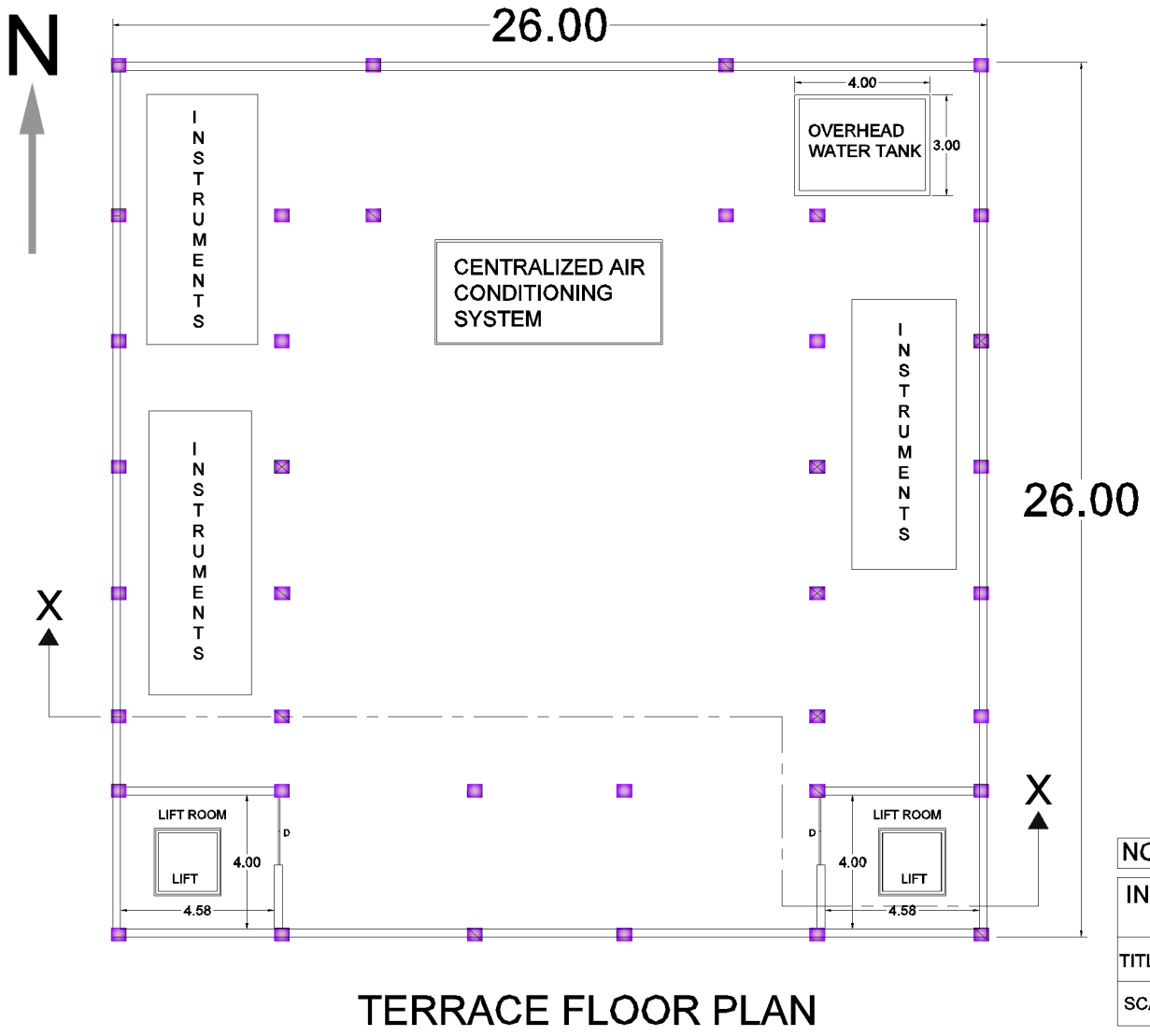


Fig. 12. Seventh Floor - Plan of the Infrastructure for housing the Cloud Chamber Research Facility



TERRACE FLOOR PLAN

SCHEDULE OF OPENING		
ITEM	SYMBOL	DIMENSIONS
MAIN ENTRANCE	D1	4.0 X 2.1
WINDOW	W	2.0 X 1.8
DOOR	D	2.1 X 1.0
DOOR 2	D2	2.0 X 0.88

NOTE:- ALL DIMENSIONS ARE IN METER

INDIAN INSTITUTE OF TROPICAL METEOROLOGY
DR. HOMI BHABHA ROAD, PASHAN, PUNE 411008

TITLE:- TERRACE FLOOR PLAN OF THE CLOUD CHAMBER BUILDING

SCALE:- 1 : 100	DRAWING NO. 9	SHEET NO. 9

Fig. 13. Terrace Floor - Plan of the Infrastructure for housing the Cloud Chamber Research Facility

Fig. 14. Sectional Elevation of the Infrastructure for housing the Cloud Chamber Research Facility

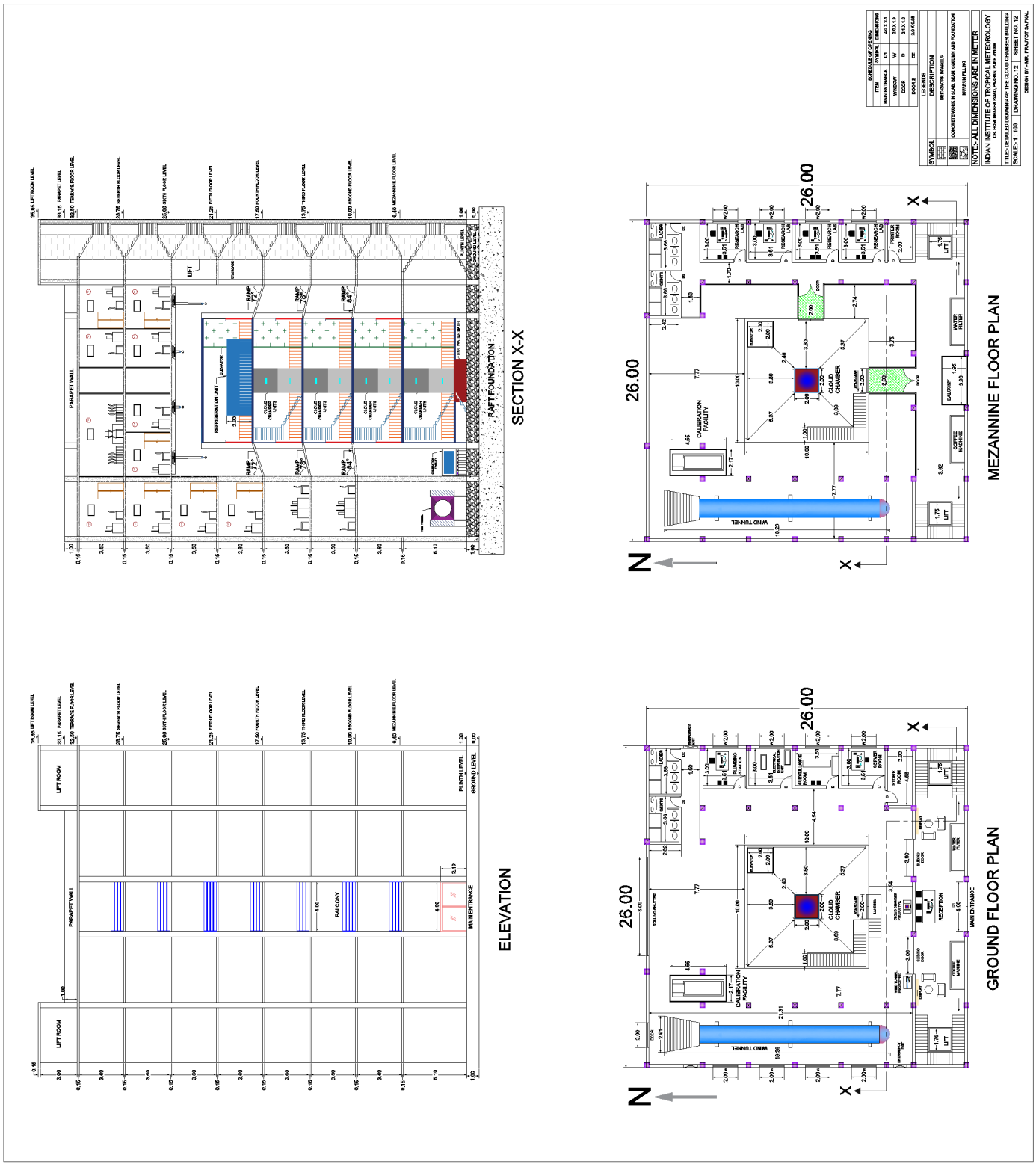


Fig. 15. Detailed Drawing of the Infrastructure for housing the Cloud Chamber Research Facility

ANNEXURE - II

INDIAN INSTITUTE OF TROPICAL METEOROLOGY

(AN AUTONOMOUS INSTITUTE UNDER MINISTRY OF EARTH SCIENCES, GOVERNMENT OF INDIA)

EoI format for

"Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job"

1. Particulars of the Bidder						
Name of the Company:						
Registration No.:						
PAN:						
GST Registration No.:						
Registered Office Address:						
City:						
State:						
Pin Code:						
Contact No. 1: (Landline with STD code)						
Contact No. 2: (Mobile Number)						
Fax No.:						
Email ID*:						
Website:						
Type of company: (Please place a tick against the appropriate option)	Government		Public Sector Undertaking		Private Limited	
	Partnership		Public Limited		Proprietorship	

* Email sent on the above-mentioned email address will be treated as valid communication.

2. Particulars of the Managing Director/CEO/Proprietor/Managing Partner	
Name:	
Designation:	
Address:	
City:	
State:	
Pin Code:	
Contact No. 1: (Landline with STD code)	
Contact No. 2: (Mobile Number)	
Fax No.:	
Email ID:	

3(a). Particulars of Contact Person 1	
Name:	
Designation:	
Address:	
City:	
State:	
Pin Code:	
Contact No. 1: (Landline with STD code)	
Contact No. 2: (Mobile Number)	
Fax No.:	
Email ID:	

3(b). Particulars of Contact Person 2	
Name:	
Designation:	
Address:	
City:	
State:	
Pin Code:	
Contact No. 1: (Landline with STD code)	
Contact No. 2: (Mobile Number)	
Fax No.:	
Email ID:	

3(c). Particulars of Contact Person 3	
Name:	
Designation:	
Address:	
City:	
State:	
Pin Code:	
Contact No. 1: (Landline with STD code)	
Contact No. 2: (Mobile Number)	
Fax No.:	
Email ID:	

Add more tables 3(d), 3(e) etc., if required.

4(a). Location of Registered Offices in India – Office No. 01	
Name of the Head:	
Address:	
City:	
State:	
Pin Code:	
Contact No. 1: (Landline with STD code)	
Contact No. 2: (Mobile Number)	
Fax No.:	
Email ID:	

4(b). Location of Registered Offices in India – Office No. 02	
Name of the Head:	
Address:	
City:	
State:	
Pin Code:	
Contact No. 1: (Landline with STD code)	
Contact No. 2: (Mobile Number)	
Fax No.:	
Email ID:	

4(c). Location of Registered Offices in India – Office No. 03	
Name of the Head:	
Address:	
City:	
State:	
Pin Code:	
Contact No. 1: (Landline with STD code)	
Contact No. 2: (Mobile Number)	
Fax No.:	
Email ID:	

Add more tables 4(d), 4(e) etc., if required.

5. Turnover of the Company for last three years (in Crores of INR, Audited by the Chartered Accountant)		
Financial Year	Total Turnover of the Company	Turnover from large projects worth 25 Cr. or more

6. Net Worth of the Company (in Crores of INR) as on date (Certified by the Chartered Accountant)

7. Certifications, if any.			
Certification	Details	Validity	
		From	Up to

Add more rows, if required.

8(a). Details of Previous Projects Completed (Only from 2015-2024) – Project No. 01	
Customer Name:	
Customer Address:	
Contact Person for Reference:	
Mobile number of the Contact Person for Reference:	
Email ID of the Contact Person for Reference:	
Total Project Cost (in Crores of INR)	
Brief Description of the Project (up to 100 words)	
Project Commencement Date	
Project Completion Date	
Attach a separate two-page project summary, work/purchase order copy, Acceptance Certificate, Installation Report and any other relevant documents.	

8(b). Details of Previous Projects Completed (Only from 2015-2024) – Project No. 02	
Customer Name:	
Customer Address:	
Contact Person for Reference:	
Mobile number of the Contact Person for Reference:	
Email ID of the Contact Person for Reference:	
Total Project Cost (in Crores of INR)	
Brief Description of the Project (up to 100 words)	
Project Commencement Date	
Project Completion Date	
Attach a separate two-page project summary, work/purchase order copy, Acceptance Certificate, Installation Report and any other relevant documents.	

Add more tables 8(c), 8(d), 8(e) etc., if required.

9. Any other relevant information that the bidder company wishes to furnish
Please use your own format to furnish this information in a clear, brief, and legible manner.

10. List of Enclosures	
Sr. No.	
1	
2	
3	

Add more rows, if required.

ANNEXURE - III

Undertaking

This is to certify that I/we have gone through all the pages of the document that is inviting EoIs for the project titled “Design, Development, Installation and Commissioning of the Cloud Chamber Research Facility and its Infrastructure at IITM, Pune as a Turnkey Job”. I/We undertake to abide by all the terms and conditions mentioned in this document. It is further certified that the information furnished in our EoI documents, submitted herewith, is true and correct.

If any of the information furnished in our EoI documents is found to be false, we understand that our EoI proposal can be rejected and not considered.

Date: Signatures:

Place: Name:

Seal: Designation:

ANNEXURE - IV

Non-Black listing Self Certificate

This is to certify that I/We M/s. _____

have not been blacklisted by any Central / State Government Department / organization in the last three years.

Authorized Signatory

Date: Signature:

Place: Name:

Seal: Designation:

ANNEXURE - V

Pre-Contract Integrity Pact

General

This pre-bid-contract Agreement (hereinafter called the Integrity Pact) is made on _____day of the month of _____ 2025, between, on one hand, the **Director IITM, Pune** acting through Shri. _____, Designation of the officer, Ministry/ Department, Government of Indian (hereinafter called the 'BUYER", which expression shall mean and include, unless the context otherwise required, his successors in office and assigns) of the First Part and M/s _____represented by Shri_____, Chief Executive Officer (hereinafter called the 'BIDDER/Seller" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the BUYER proposes to procure (Name of the Stores/Equipment/Item) and the BIDDER /Seller is willing to offer/has offered the stores and

WHEREAS the BIDER is private company/public company/Government undertaking / partnership / registered export agency, constituted in accordance with the relevant law in the matter and the BUYER is a Ministry/Department of the Government of India/PSU performing its functions on behalf of the President of India

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to :-

Enabling the BUYER to obtain the desired said stores/equipment at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERs to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and BUYER will commit to prevent corruption, in any form, by its officials by following

transparent procedures.

The parties hereto agree into this Integrity Pact and agree as follows:-

Commitments of the BUYER

1.1 The BUYERE undertakes that no official of the BUYER, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.

1.2 The BUYER will, during the pre-contract stage, treat all BIDDERS alike, and will provide to all BIDDERs the same information and will not provide and such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERs.

1.3 All the officials of the Buyer will report the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

2. In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the BUYER with full and verifiable facts and the same is prima facie found to be correct by the BUYER, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceeding, or any other action as deemed fit, including criminal proceedings may be initiated by the BUYER and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry I being conducted the BUYER the proceedings under the contract would not be stalled.

Commitments of BIDDERs

3. The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following :-

3.1 The BIDDER will not offer directly or through intermediaries, any bribe, gift, consideration, reward, favor, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER, connected directly or indirectly with the bidding process, or

to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.

3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration Reward, favor, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER or otherwise in procuring the Contract or forbearing to do so having done any act in relation to the obtaining or execution of the contract or any other contract with the Government for showing or forbearing to show favor or disfavor to any person in relation to the contract or any other contract with the Government.

3.3* BIDDERs shall disclose the name and address of agents and representatives and Indian BIDDERs shall disclose their foreign principals or associates.

3.4* BIDDERs shall disclose the payments to be made by them to agents/brokers or any other intermediary, in connection with this bid/contract.

3.5* The BIDDER further confirms and declares to the BUYER that the BIDDER is the original manufacturer/integrator/authorized government sponsored export entity of the defence stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the BUYER or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.

3.6* The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the

BUYER or their family members, agents, brokers or any other intermediaries in connection with the contract and the details if services agree upon for such payments.

3.7 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.

3.8 The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.

3.9 The BIDDERS shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the BUYER as part of the business relationship, regarding plans, technical proposals and business details, including information contains in any electronic data

carrier. The BIDDER also undertakes to exercise due and adequate care lest any such information is divulged.

3.10 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.

3.11 The BIDDER shall not instigate or cause to instigate any third person to commit any of the action mentioned above.

3.12 If BIDDER or any employee of the BIDDER or person acting on behalf of the BIDDER, either directly or indirectly, is a relative of any of the officers of the BUYER, or alternatively, if any relative of an officer of the BUYER has financially interested/stake in the BIDDER's firm, the same shall be disclosed by the BIDDER at the time of filling of tender.

The term 'relative' for this purpose would be as define in Section 6 of the Companies Act 1956.

3.13 The BIDDER shall not lend to or borrow any money from or entire into any monetary dealings or transactions, directly or indirectly, with any employee of the BUYER.

4. Previous Transgression

4.1 The BIDDER declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify BIDDER's exclusion from the tender process.

4.2 The BIDDER agrees that if it makes incorrect statement on this subject BIDDER can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Earnest Money (Security Deposit)

5.1 While submitting commercial bid, the Bidder shall deposit an amount _____ (to be specified in RFP) as Earnest Money/ Security Deposit, with the BUYER through any of the following instruments:

i) Bank Draft or a Pay Order in favor of _____

ii) A confirmed guaranteed by an Indian Nationalized Bank. Promising payment of the guaranteed sum to the BUYER on demand within three working days without any demur whatsoever and without seeking any reason whatsoever. The demand for payment by the BUYER shall be treated as conclusion proof of payment.

iii) Any other mode or through any other instruments (to be specified in the RFP).

5.2 The Earnest Money/ Security Deposit shall be valid upto a period of six months or the complete conclusion of the contractual obligation to the complete satisfaction of the both the BIDDER

and the BUYER, including warranty period, whichever is later.

5.3 In case of the successful BIDDER a clause would also be incorporated in the Article pertaining to performance Bond in the Purchase Contract that the provisions of Sanctions for Violation shall be applicable for forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

5.4 No interest shall be payable by the BUYER to the BIDDER on Earnest Money/Security Deposit for the period of its currency.

6. Sanction for Violations

6.1 Any breach of the aforesaid provisions by the BIDDER or any on employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitled the BUYER to take all or any one of the following actions, wherever required:

i) To immediately call off the pre contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceedings with the other BIDDER(s) would continue.

ii) The Earnest Money (in pre-contract stage) and/or Security Deposit/ Performance Bond (after the contract is signed) shall stand forfeited either fully or partially, as decided by the BUYER and the BUYER shall not be required to assign any reason thereof.

iii) To immediately cancel the contract. If already signed, without giving any compensation to the BIDDER.

iv) To recover all sums already paid by the BUYER, and in case of an Indian BIDDER with interest thereof at 2% higher that the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the bidder from the BUYER in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.

v) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the BUYER, along with interest.

vi) To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such cancellation/rescission and the BUYER shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.

vii) To debar the BIDDER from participating in future bidding processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the BUYER.

Viii) To recover all sums paid in violation of this Pact by BIDDER(s) to any middleman or agent or broker with a view to securing the contract.

ix) in case where irrevocable Letters of Credit have been received in respect of any contract signed by

the BUYER with the BIDDER, the same shall not be opened.

(x) Forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

6.2 The BUYER will be entitled to take all or any of the actions mentioned at para 6.1 (i) to (x) of this Pact also on the Commission by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER), of an offence as defined in Chapter IX of the Indian Penal Code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.

6.3 The decision of the BUYER to the effect that a breach of the provisions of this Pact has been committed by the BIDDER shall be final and conclusive on the BIDDER. However, the BIDDER can approach the Independent Monitor(s) appointed for the purposes of this Pact.

7. Fall Clause

7.1 The BIDDER undertakes that it has not supplied/is not supplying similar product/systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India or PSU and if it is found at any stage that similar product/systems or sub systems was supplied by the BIDDER to any other Ministry/Department of the Government or India or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in cost would be refunded by the BIDDER to the BUYER, if the contract has already been concluded.

8. Independent Monitors

8.1 The BUYER has appointed Independent monitors (hereinafter referred to as Monitors) for this Pact in consultation with the Central Vigilance Commission. The details of Independent External Monitors are as below;

(1) Dr. Ajay Kumar Lal ,IRAS (Retd.), DDA, HIG,
Block 3A/101 A.
Motia Khan (Near Jhandewalan Temple),
D.B. Gupta Road, New Delhi-110015
Email: ajayklal@yahoo.com,
Mobile No: 9560712003

(2) Shri. Pavan Kumar Jain, IDSE (Retd.)

A-402, Shree Ganesh

Apartments, Plot No. 12B, Sector-7 Dwarka,

New Delhi- 110075

Email: mespkj@gmail.com, Mobile No: 9313498388

8.2 The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.

8.3 The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.

8.4 Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of the meetings.

8.5 As soon as the Monitor notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the BUYER.

8.6 The BIDDER(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the BUYER including that provided by the BIDDER. The BIDDER will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor shall be under contractual obligation to treat the information and documents of the BIDDER/Subcontractor(s) with confidentiality.

8.7 The BUYER will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitor the option to participate in such meetings.

8.8 The Monitor will submit a written report to the designated Authority of the BUYER/Secretary in the Department/ within 8 to 10 weeks from the date of reference or intimation to him by the BUYER / BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

9. Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of commission, the BUYER or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

10. Law and Place of Jurisdiction

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the BUYER.

11. Other Legal Actions

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

12. Validity

12.1 The validity of this Integrity Pact shall be from date of its signing and extend upto 5 years or the complete execution of the contract to the satisfaction of both the BUYER and the BIDDER/Seller, including warranty period, whichever is later. In case BIDDER is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract.

12.2 Should one or several provisions of this Pact turn out to be invalid, the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

13. The parties hereby sign this Integrity Pact at _____on _____

BUYER	BIDDER
Name of the Officer	CHIEF EXECUTIVE OFFICER
Designation	
Deptt./Ministry/PSU	
Witness	Witness
1. _____	1. _____
2. _____	2. _____

*Provisions of these clauses would need to be amended/deleted in line with the policy of the BUYER in regard to involvement of Indian agents of foreign suppliers.