# Indian Institute of Technology Madras

I.I.T.P.O., MADRAS-600 036

DEPARTMENT OF CIVIL ENGINEERING

**SPEED POST**

## Form for Inviting Quotations

**Ref.No.** CIE/2018/ Environmental Chamber for testing cement/concrete **Date:** 25/05 /2018

**DUE DATE: 04.06.2018**

To

**As per list enclosed**

**Dear Sirs,**

Quotations are invited for the supply of an "**Environmental Chamber for testing cement/concrete** " conforming to the specifications given in the enclosed list.

1. The quotation should be submitted under the two-bid system (i.e.) Technical Bid and Financial Bid in separate envelopes sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the **undersigned so as to reach on or before the due date stipulated above**.
2. The Quotations should be valid for (60**) Sixty days from the due date and the period of delivery** required should also be clearly indicated.
3. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
4. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples if called for, should be submitted free of charges, and collected back at the supplier's expenses.
5. Local Firms : Quotations should be for free delivery to this Institute. If Quotations for Ex-Godown delivery charges should be indicated separately.
6. Firms Outside Madras : Quotations should be for F.O.R. Madras. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If Ex-Godown, packing, farwarding and freight charges must be indicated.
7. The rates of GST and other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for GST/General Taxes will be admitted at any stage and on any ground whatsoever. IIT Madras is eligible for concessional GST. Relevant certificate will be issued. In case of import supply the price should be quoted without custom duty. I.I.T. Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on **EX-WORXS** and **CIP** basis indicating the mode of shipment.
8. Goods should be supplied carriage paid and insurred.
9. Goods shall not be supplied without an official supply order.
10. Payment : Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later

Details as per enclosed list.

Yours faithfully

(DrRadhakrishna G Pillai)

Note: (i) Quotation should be sent by SPEED POST only or to be delivered directly concerned
(ii) Firms are requested to submit the specifications of their product along with supporting technical Documentation/brochure instead of

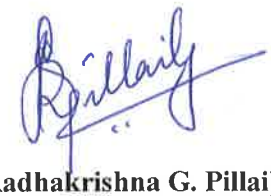
Technical specifications–cum-compliance table for

# Environmental Chamber for testing cement/concrete

*NOTE: For each specification, please enter "YES" or "NO" in the third column of this table. If a cell in the third column is left blank, then it will be assumed that the quotation does not comply with the respective specification or requirement. Provide catalogues, data sheets and/or other documentation to support the compliance of your equipment to the given specifications.*

| | | Yes / No | Remarks |
|---|---|---|---|
| **1** | **General** | | |
| 1.1 | Size of the storage area (LxDxH): 600mm X 600mm X 850mm (Test Space Volume: 300 L) | | |
| 1.2 | Two stainless steel cable access/ entry ports with closures/plugs should be provided | | |
| 1.3 | Exterior of the cabinet should be made of Powder Coated CRCS Sheets | | |
| 1.4 | Interior of the cabinet should be made of stainless steel AISI 304 Grade | | |
| 1.5 | Three stainless steel shelves with three acrylic sub-door for each shelf. The shelves should also be adjustable for various heights; The loading capacity of each shelve should be 50 kg | | |
| 1.6 | Appropriate drain should be provided from within the chamber. | | |
| 1.7 | Should withstand a wheel load of "Equipment weight + 150 kg" | | |
| 1.8 | Heavy-duty castors must be provided for carrying the "Equipment weight + 150 kg" and easy handling/transportation | | |
| **2** | **Temperature control** | | |
| 2.1 | Programmable Temperature Range: -30 °C to 30 °C | | |
| 2.2 | Heating & cooling gradient: At least 0.5°C/min | | |
| 2.3 | Temperature fluctuation: within ±1°C | | |
| 2.4 | Temperature accuracy: ±2.0°C (in space) | | |
| 2.5 | Measurement accuracy: at least ±0.1 °C | | |
| 2.6 | Control accuracy: within ±1 °C after stabilization | | |
| 2.7 | Ambient working temperature: +15 °C to 40 °C | | |
| 2.8 | Provide 2-stage refrigeration system to meet the dynamic cooling requirements at maximum heat generation from about 16 cube specimens (0.05 $m^3$ approx.) of fresh concrete | | |
| 2.9 | Condenser should be air-cooled type and refrigerants must be environment friendly and CFC free | | |
| 2.10 | Equipment should be adjustable for independence over temperature protection | | |
| 2.11 | Integrated switchable condensation protection | | |
| **3** | **Power supply requirements** | | |
| 3.1 | Single Phase of 230 Volts AC & 50 Hz | | |
| 3.2 | Power rating of 2.0 kW | | |
| **4** | **Controller and Control panel** | | |
| 4.1 | PLC with HMI 10 program data logger with digital interface RS 232/485, Ethernet and USB) for recording the measured value of temperature at different time intervals (made of Fuji/Schneider or similar quality brands) | | |
| 4.2 | Provide options for setting different temperature levels at 10 different time instances in daily cycles (to simulate the daily temperature variations) | | |
| 4.3 | Control panel should be facilitated with colour/touch digital display | | |
| 4.4 | Language for programming and display: English | | |
| **5** | **Door Assembly and viewing window** | | |
| 5.1 | Door system should be full front opening type (180 degrees), with heavy duty and long lasting hinges with suitable locking mechanism | | |
| 5.2 | Door should be provided with 300 X 300 mm viewing window (multi-pane; vacuum; without condensation) | | |
| 5.3 | A light/switch should be provided for viewing the samples through the viewing window | | |

| | | | |
|---|---|---|---|
| **6** | **Air-circulation system** | | |
| | 6.1 Two circulation fans (with SS304 blades) should be used for the uniform control of environment inside the chamber. | | |
| | 6.2 The motor should be kept outside the chamber and stainless steel 304 shaft should be used to drive the fans. | | |
| **7** | **Safety** | | |
| | 7.1 An over-heat safety system (with a maximum temperature = +50°C) and an over-cool safety system (with a minimum temperature = -35°C) should be installed. | | |
| | 7.2 Thermal overload relay for the fans and compressor are needed. | | |
| | 7.3 A separate switch/button for switching off the main power supply should be provided | | |
| | 7.4 "Caution Notices", based on international standards, should be provided on printed metallic plates and affixed onto the door | | |
| | 7.5 The entire chamber should be electrically grounded. | | |
| | 7.6 Noise Level of the chamber should be within 55 dB measured at 1 m distance (as per OSHA norms for Occupational Noise Exposure) | | |
| | 7.7 All the electrical items should meet the Standard Ingress Protection 55 (IP 55) grade suitable for environmental chambers | | |
| | 7.8 All the Switchgears and Metal Circuit Breakers used should be of proven, very high quality reputed brands | | |
| **8** | **Calibration certificate** | | |
| | 8.1 Calibration & validation certificates traceable to NABL/ERTL accredited labs for the complete system should be provided at the time of supply. Original calibration certificate of the controller/Sensors used, which has international traceability, should also be supplied along with the system. | | |
| **9** | **Experience, demonstration and training** | | |
| | 9.1 Provide the list of clients to whom chambers with similar temperature ranges have been supplied | | |
| | 9.2 The manufacturer should have at least 15 years of experience in this area | | |
| | 9.3 Provide 1-day training session on the usage of the chamber | | |
| | 9.4 Payment will be made only after demonstrating the satisfactory performance of the chamber with fresh concrete at maximum load (16 cube specimens) for 7 days. | | |
| **10** | **Warranty** | | |
| | 10.1 One-year warranty should be provided for all parts. | | |



**(Dr. Radhakrishna G. Pillai)**