



**SREE CHITRA TIRUNAL INSTITUTE
FORMEDICAL SCIENCES AND TECHNOLOGY,
BIOMEDICAL TECHNOLOGY WING
POOJAPPURA, THIRUVANANTHAPURAM – 695 012, KERALA**
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BMT Stores/Work Order /2021

Dated : 01.06.2021

NOTICE INVITING EXPRESSION OF INTEREST

Expression of Interest is invited (EOI) for Fatigue Test Setup with integrated Servo Motor, servo drive unit, gearbox, load cell, display panel, power supply unit, fixture with software for a Research Project at the Biomedical Technology Wing of Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), BMT Wing, Poojappura, Thiruvananthapuram. Detailed specifications are given below.

**Sd/-
DIRECTOR**

1. **About the Organization:**

The Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Trivandrum, is an Institution of National Importance under the administrative control of Department of Science and Technology, Government of India which was established by an Act of Parliament. The governance of the Institute is as per the SCTIMST Act 1980 (Act No. 52 of 1980), Rules as per notification dated 28.05.1981 and Regulations vide notification dated 23rd June 1981.

SCTIMST is one of the premier Research Institute of the country which comprises of tertiary care referral hospital, Biomedical Technology Wing and a School of Public Health. The Institute has the status of a University and offers post-doctoral courses in Cardiology, Cardiovascular and thoracic surgery, Neurology, Neurosurgery, Cardiac and neuro anesthesia, Cardiovascular imaging and interventional radiology, interventional neuro-radiology, doctoral program in Transfusion medicine, PhD in Biomaterials Science & Technology, Bioengineering, Chemical and Physical Sciences, Life Sciences, Medical Sciences and Health Sciences, M.Tech in Clinical Engineering and MPhil in Biomedical Technology and various diploma programs.

The Biomedical Technology Wing (BMT Wing) located at the Satelmond Palace at Poojappura, Trivandrum consists of culturally diverse and pluralistic team committed to medical device development, research & teaching. The broad areas of activities of the wing include :

- Medical devices
- Biomaterials
- Biocompatibility
- Tissue Engineering
- Product incubation and commercialization

The BMT Wing has been instrumental in establishing a medical device industry base in India by successfully developing and commercializing technologies of a number of devices and implants. Some of the commercialized technologies include blood bag,

membrane oxygenator, hydrocephalus shunt, artificial heart valve, dental materials, hydroxyapatite based materials and implants.

The Biomedical Technology wing has implemented a quality system meeting international standard ISO/IEC 17025 and is accredited by Le Comite Francais d'Acreditation (COFRAC), France.

The Department of Science and Technology, Government of India has identified the Biomedical Technology Wing of the Institute as Technical Research Centre for Biomedical Devices (TRC), the nodal research centre for the development of medical devices in the country. The centre is proposed with a mandate of developing medical device technologies in five identified segments, viz. Cardiovascular, Neuroprosthetics, Hard Tissue Devices, Biological & Combinational Products and In Vitro Diagnostics. A Medical Device Regulatory Compliance Facility (MDRCF) for supporting the Indian Medical Device Industry in the areas of medical device regulatory compliance, an Industry Institute Partnership Cell (IIPC) for training manpower for the industry and a Technology Business Incubator for Medical Devices and Biomaterials (TIMed) are also components of the TRC.

2. Expression of Interest (EOI):

SCTIMST invites Expression of Interest from reputed vendors for **“Fatigue Test Setup with integrated Servo Motor, servo drive unit, gearbox, load cell, display panel, power supply unit, fixture with software as part of TRC Project titled “Spinal fixation system for thoracolumbar Stabilisation”**

3. Objective of EOI:

The objective of this EOI is to engage vendors who would setup a customised Fatigue Test Setup with multiple components in a cost effective manner.

The EoI does not constitute a commitment to offer of a Contract or prospective Contract. SCTIMST shall not be liable for any cost incurred by any potential vendor in preparation and submission of information in response to this EOI.

4. **Scope of Work:**

Fatigue Test Setup

Setup with integrated Servo Motor, servo drive unit, gearbox, load cell, display panel, power supply unit, fixture with software and meeting below listed primary specification.

1. Integrated servo motor with drive unit

- IP 65 rated, 400 W, 24-60 VDC input voltage
- Incremental encoder, 16384 counts/revolution
- Modbus RTU, serial command language (SCL) communication protocols
- 5 optically isolated digital inputs:
 - First/second inputs; differential inputs; 5-24 VDC, up to 20 mA; 2MHz max. frequency; 250ns minimum pulse width
 - Third/fourth/fifth inputs; single ended inputs; 5-24 VDC, up to 20 mA; 10 kHz maximum frequency
- 2 single ended Analog inputs, 0-10 VDC each
- 4 optically isolated digital outputs: First/Second/Third/Fourth; open collector; 30 VDC, 100 mA maximum
- Over-temp, over-voltage, under-voltage, over current protected
- Class B insulation
- Working ambient temperature: 0 to 40 °C
- Winding type (VDC) 48
- Nominal voltage supply, 48 VDC
- Rated speed 3000 rpm, with continuous torque of 1.27 Nm
- Servo drive unit with option to set variable speed and torque
- Motor peak torque 3.0 Nm
- Accessory cables:
 - Power cables
 - I/O cables

- Servo motor with electromagnetic brake or an external brake mechanism for the purpose of prevention hazardous condition
- Servo drive controller with cooling mechanism

2. Gearbox

- 30,000 hours of service life
- Gear box ratio 10:1 with 98% of efficiency at full load
- Operating temperature -25 to 90 °C
- IP 54 protection class
- Standard backlash < 7(arcmin), with torsional stiffness 10.8 to 14.5 Nm/arcmin
- Steel housing- nitro carburized and post oxidized (black)
- 65 DB running noise.

3. Load cell

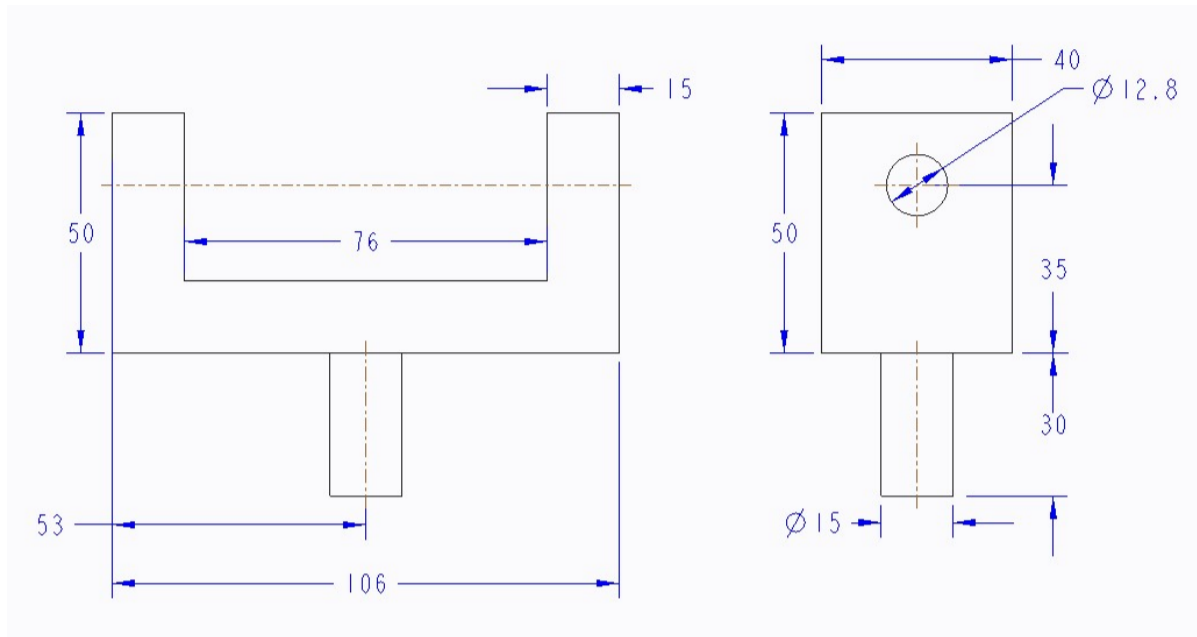
- Capacity:15 KN
- Type: Universal threaded pan cake load cell
- The accuracy better than $\pm 0.002\%$ FSO (full size output)
- Resolution better than ± 0.2 N
- Operating voltage 230V,50 Hz
- Ultimate central overload 300% FSO
- Load cell with mounting adaptor

4. Geometry

- Rigid steel frame with two plates (triangular geometry, 15 mm thickness, material: stainless steel- 309) mounted on top and bottom, which are supported by three long threaded pillars (30 mm diameter, material: stainless steel- 309)
- Top & bottom plate dimension shall be selected based on servo motor size and associated components dimensions.
- Servo motor with drive unit shall be mounted on top plate.
- Two C blocks:
 - Dimension; inner gap: 76 ± 0.5 mm, block width; 15 ± 0.5 mm, block height; 50 ± 0.5 mm, depth; 40 ± 0.5 mm

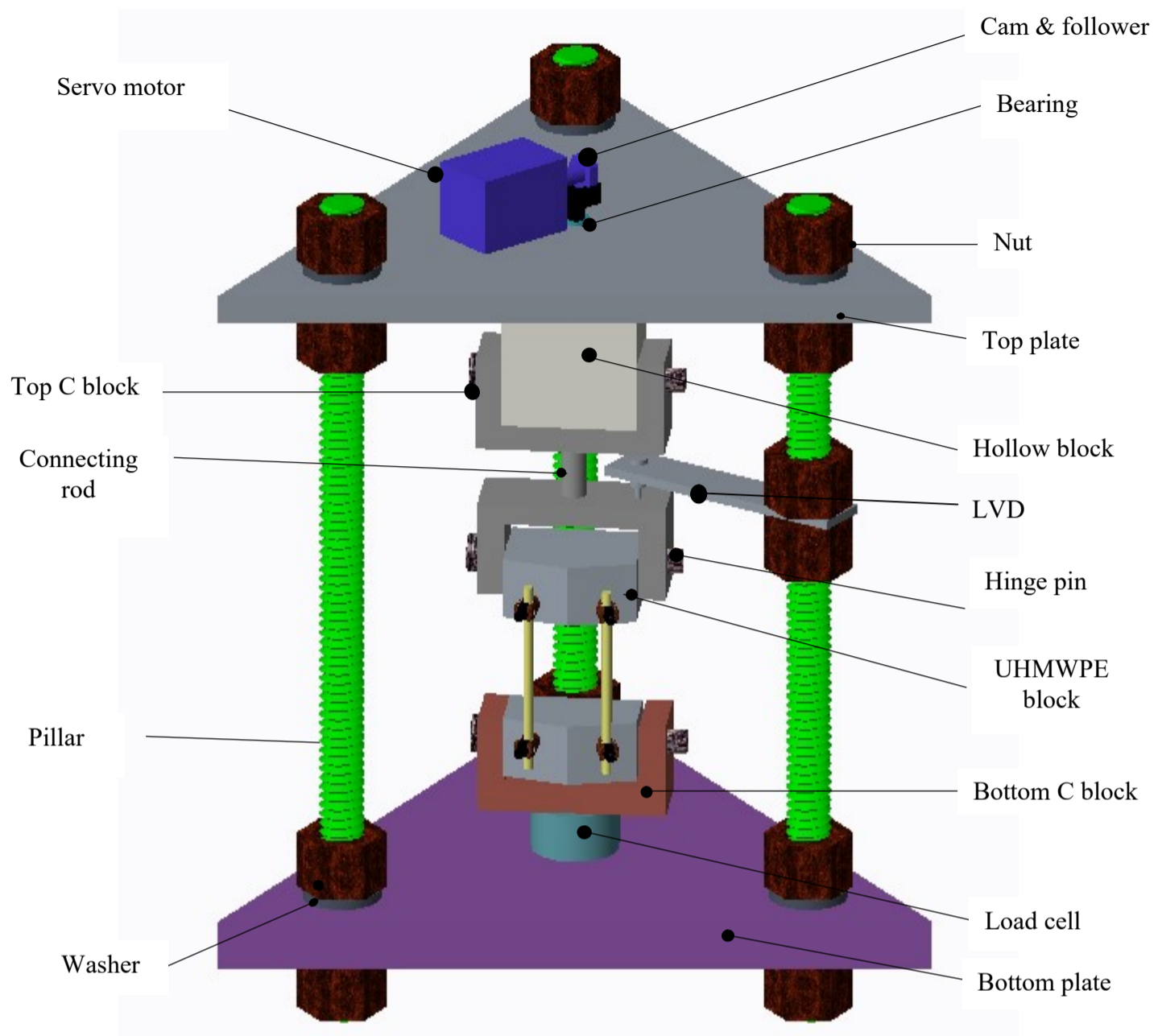
- Holes at the centre of C block (on both arms) at the height; 35 ± 0.5 mm (from bottom) with diameter; 12.8 ± 0.3 mm

Drawings

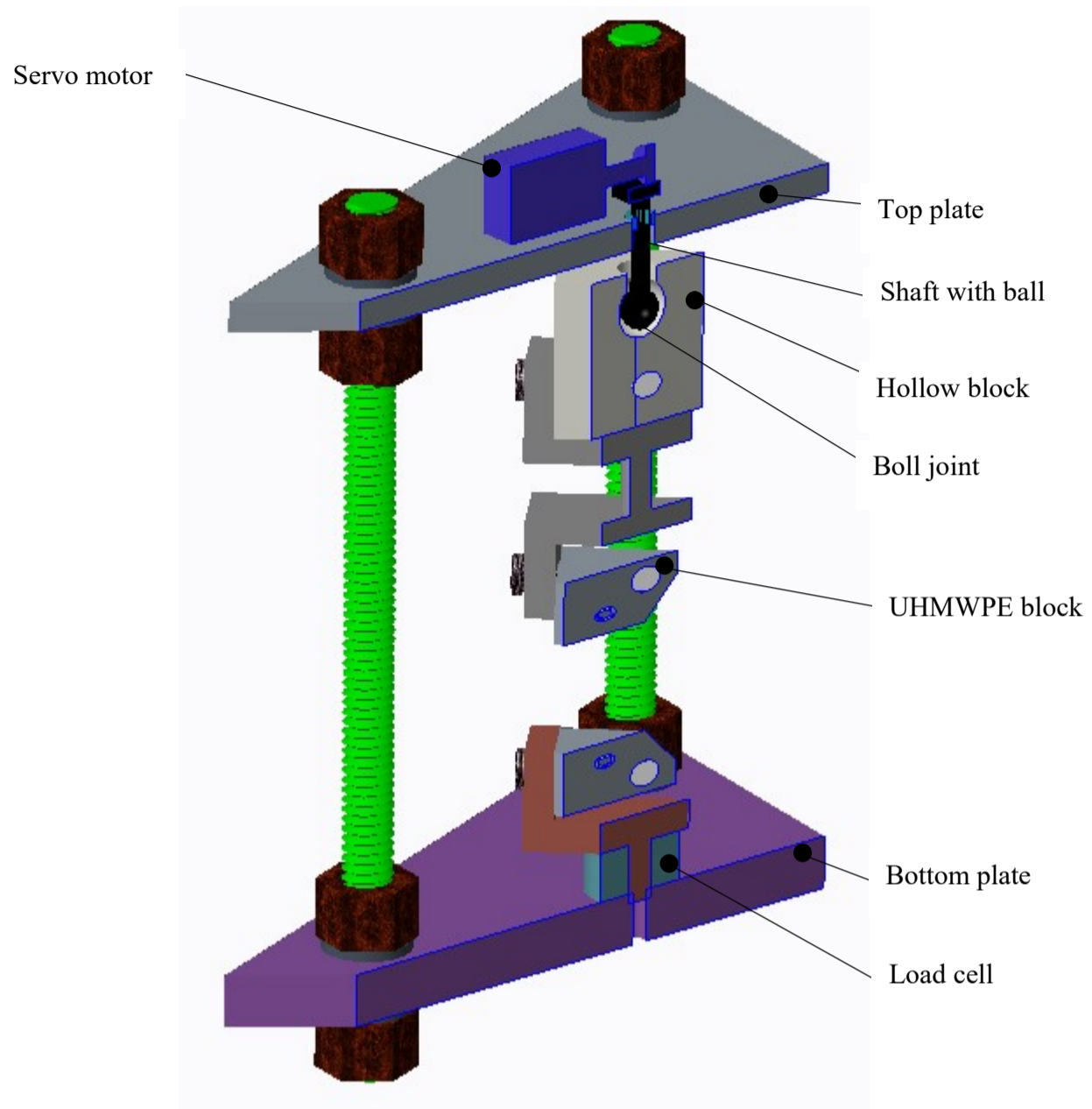


Block Dimensions (representation purpose only)

Proposed fatigue test setup (pictorial representation only)



Section view of proposed fatigue test setup (pictorial representation only)



- Bottom C block shall be assembled to load cell with adaptor and load cell must be rigidly fixed on centre of bottom plate
- Top C block (two of them) with shaft (15 mm to 20 mm diameter) shall assemble with hollow block without any play at hollow block and shaft with ball interface.
- Shaft with ball shape attachment, shall slide vertically in the hole (diameter per shaft dimension) with bearing, present on top plate. Top plate hole centre must be aligned with centre of load cell (present in bottom plate).
- Top plate shall be adjustable/ movable in the frame up to maximum height of 500 mm, measured from bottom plate, and minimum height between the plates shall be considered such that 76 ± 0.5 mm gap is maintained between the centre of holes of top lower c block in which UHMWPE block is assembled and bottom C block
- Shaft with ball shape shall be connected to servo motor shaft mounted on top plate with Cam and follower mechanism to achieve 2mm of displacement on top C block in which UHMWPE is assembled along the load axis.

5. Control Panel

- Ability to display cyclic load (from load cell) vs time and strain vs time graph, Linear displacement of LVDT.
- Ability to display Servo motor's voltage, current and temperature.
- Peak to peak load, strain, time, and temperature to be logged at 15-minute intervals.

6. Setup requirements

- The rpm ranges 200 to 300 (load end)
- Input power supply 230 V,50 Hz with power supply unit
- Anti-Vibration mounts
- Setup with alarm system to indicate component failures

7. Displacement measuring device

- Locational measurement up to ± 3 mm
- For vertical displacement measurement

- IP 54 protection class
- Shall be interfaced with motor drive unit.

General Requirement

- Setup shall have servo motor (MDXL62GN3RB000; Applied motion products or equivalent), servo drives (Applied motion products or equivalent), Gear box ratio 10:1 (60PE010 or equivalent), load cell (98001 Sensotronics or equivalent) and display panel.
- All the component specifications shall be supported by the manufacturer's catalogues /brochures.
- 3 years' warranty for the system
- Operating manuals with installation details
- Free installation and demonstration of system
- Warranty certificate from the OEM with warranty support details

5. ELIGIBILITYCRITERIA

The qualification/criteria for the bidders to submit the EOI is as given below. The qualification criteria must be met for shortlisting

1. Bidder should have been providing (Currently running as on date of publishing of the EOI) similar services to at least 3 government/ public sector undertakings.
2. Performance certificates/citations confirming the same may preferably be enclosed with name, address, contact number and email of the concerned person.
3. The Bidder will be disqualified in case of following conditions:
 - a. The Bidder should not be in litigation with any of service receiver.

- b. The Bidder should not have a record of poor performance such as abandoning of any allotted project, inability to complete any allotted project, delay in completion of any allotted project etc.
- c. The Bidder should not be black listed by any Government or its organizations.

An undertaking to this effect (points mentioned above) is enquired from the Bidder. If at a later stage it is found that any Bidder has wrongly certified, the bidder shall be liable for action under the law including blacklisting.

6. Modalities of Selection:

1. The prospective service provider will submit their proposal in hard copy within the scheduled date.
2. The financial implication of the proposal need to be furnished.
3. All the service providers submitting proposal against the EOI will give a PPT presentation, with a possible demonstration on their system, before the concerned officials at SCTIMST about their proposal as per Scope of work
4. The decision of the Competent Authority, SCTIMST will be full and final in all respect

7. Venue and Deadline for submission of proposals.

- a. Proposals must be submitted either by speed post or in person at the address specified below:

Address:

**Sr. Purchase and Stores Officer
Biomedical Technology Wing
Sree Chitra Tirunal Institute for Medical Sciences & Technology
Poojappura, Thiruvananthapuram-695012. Kerala**

Contact Number:0471-2520428,2520328,2520438

For any clarifications, please contact through email : bmtstp@sctimst.ac.in and bmtoss@sctimst.ac.in

b. SCHEDULE OF EOI PROCESS

EOI Schedule		
SINo.	Activity	Timeline
1	Date of Issuance of EOI	02.06.2021
2	Last date and time for submission of EOI	01.07.2021

8. Terms & Conditions:

- The eligible and interested service providers may send detailed response with EOI in the prescribed format by **01.07.2021**
- Any EOI received by SCTIMST after the deadline for submission of EOI will be rejected. In the event of the specified date and time of the EOI being declared a holiday for the Institute, the EOI will be received up to the appointed time on the next full working day. Extension of submission date and time will be at the sole discretion of SCTIMST
- ***Response to the EOI from the respondents should be submitted in a sealed envelope, superscribed with the words EXPRESSION OF INTEREST.***
- Any inter lineation, errors or overwriting shall be valid only if the person signing the EOI initials them. Any form of canvassing/lobbying/influencing regarding short listing, etc. will lead to disqualification
- SCTIMST reserves the right to verify any/ all of the credentials provided by the Bidder
- All information contained herein and the enclosures are confidential information. By accepting this material the recipient agrees that the information will be held in confidence and will not be reproduced, disclosed or used in whole or in part without prior permission of SCTIMST.

- During the evaluation and finalization of the EoI, SCTIMST may, at its discretion, ask the Bidders for any clarification on its EOI. The request for clarification and the response shall be through e-mail /letter in writing.
- Notwithstanding anything contained in any of the clauses in this EOI, SCTIMST reserves its right to accept or reject any EOI and to annul each or all the EOI processes and reject all the EOI at any time prior to issuing the Work order without thereby incurring any liability to the affected Bidder, or any obligation to inform the affected vendor or vendors of the grounds for action.
- The Bidder / consortium are expected to examine all instructions, forms, terms and conditions in these documents. Failure to furnish all information required or to submit EoI not substantially responsive in every aspect will be at the risk of the Bidder / consortium and may result in the rejection of its EOI.
- Any assumptions made by the Bidder / consortium in response of this request for EOI will be at their own risk and cost. SCTIMST will not be liable for any such assumptions / representations made by the Vendors.
- EOI submitted should remain valid for a period of **six months** from the scheduled date of opening.
- Enquiries for clarifications should be sent by email at the ids given above at least 3 days prior to the opening of the EOI

Proforma 1– Bidder Information

Contact details	
Name of the Bidder	
Address and other contact details of The Participant submitting the EoI	
Name, designation and address of the authorized legal representative and Signatory of the EoI	
Name , designation , address and other contact details of the Contact person to whom all correspondence is to be addressed in respect of this EoI	
Address and contact details of Head Office in India, in case of overseas vendors	
GST and PAN Details	

In case of consortium, the Bidder has to give the details of the Prime Bidder only

9. This invitation for Expression of Interest does not call for a solicitation. SCTIMST reserves the right to change or cancel the requirement at any time during the EOI and/or solicitation process. SCTIMST also reserves the right to seek for other compliance norms with additional conditions as and when the final solicitation documents are issued.

**Sd/-
DIRECTOR**