Indian Institute of Technology, Madras,

 Chennai-600036

 Department of Civil Engineering

Ref. No. CIE/Apparatus /2016/SPLX dated 13.7.2016

 DUE DATE: 05.08.2016

Sirs,

1. Quotations are invited **in duplicate (Two bidding covers)for** the **item/s shown as per enclosed Specifications.**

2. The quotations duly sealed and superscribed on the envelope with the reference No. & due date, should be addressed to the **Head of the Department, Department of Civil Engineering, Indian Institute of Technology, Chennai-600036, India** and contain in 2 bid system i.e. Technical bid and Commercial bid in two separate envelopes and these two envelopes should be enclosed in a Single envelope so as to reach on or before the due date.

3. The quotation should be valid for (60) Sixty days from the due date and the period of delivery required should also be clearly indicated.

4. If the item is under DGS&D Rate Contract. Rate Contract Number 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. If so, please send copy of the R.C. (Please note that we are not Direct Demanding Officers)

5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the quotations, wherever applicablesamples if called for, should be submitted free of charges, and collected back at the supplier’s expenses.

6. Firms outside Chennai: Quotations should be for F.O.R. Chennai. If F.O.R. consignor station, freight charges by passenger train/lorry transport must be indicated. If-Ex-Godown, packing forwarding and freight charges must be indicated.

7. Local Firms: Quotations should be for free delivery to this Institute. If quotations are for Ex­godown, delivery charges should be indicated separately.

8. The rate of Sales/General Taxes and percentage of such 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 any Sales / General taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have Concessional Sales Tax applicable to Non-Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificates will be issued at the time of final settlement of the bill. The Price should be quoted without Excise Duty; Since IIT Madras is exempt from payment of Excise duty.

 9. Goods should be supplied by carriage paid and insured.

 10. Goods shall not be supplied without an official supply order**.**

 11. .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.

 Yours faithfully,

 For HEAD OF THE DEPARTMENT.

**Specifications for a Cyclic Triaxial Apparatus**

**1. Cyclic triaxial actuator with dynamic servo controller:**

 - Electro-mechanical system

- Dynamic load range: ±5kN

- Frequency range: 0-5Hz

 - Stroke length: 70mm

**2. Pressure Application System:**

The pressure application for cell pressure and back pressure shall be only through Automatic Pressure-Volume Controllers. Other types of pressure applications systems are not permitted.

Automatic pressure controller and volume change device for cell pressure and back pressure:

 - Minimum capacity of the controllers– 1MPa (Resolution: 1kPa; Min. accuracy: 0.15%)

 - Minimum volume capacity – 200 cc (Resolution: 0.20 mL; Min. accuracy: 0.25%)

**3. Triaxial cell:**

 - Accommodate up to 50 mm diameter samples

 - Minimum capacity – 1MPa

 - Top cap for 50 mm samples

 - Base pedestal for 50 mm samples

 - The cell shall accommodate submersible load cell

 - Suction caps

 - Cable bung holes for cables for future bender element upgradation

- Low friction linear bearing to have minimum friction on the shaft

**4. Transducers:**

 - Displacement transducer: Stroke length of 25mm

 - Pore pressure transducers: Capacity of 1MPa (Accuracy of minimum 1 kPa)

 - Load cell: Capacity: +/-5 kN, submersible type

**5. Load frame:**

- Min. capacity: 50 kN

**6. Software package with following features:**

 - Automated test procedure

 - Stress and strain-controlled cyclic triaxial testing module

**7. Minimum warranty**: one year

8. Installation and training shall be provided.