Indian Institute of Technology Madras

I.I.T.P.O., MADRAS-600 036
DEPARTMENT OF CIVIL ENGINEERING

Form for Inviting Quotations

Ref. No. CIE/KRAG/2017/Cyclic/SPL

Date: 23.3.2017
SPEED POST

Dear Sirs,

DUE DATE: 12.4.2017

1. Quotations are invited in duplicate (two bidding covers) for the various items shown below / overleaf / **Enclosed list.**
2. **The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the Head of the Department and contain in 2 bid system i.e. Technical bid and Commercial bid in two separate envelopes should be enclosed in a single envelope only so as to reach on or before the due date stipulated above**.
3. The Quotations should be valid for 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 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.
5. 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.
6. Local Firms : Quotations should be for free delivery to this Institute. If Quotations for Ex-Godown delivery charges should be indicated separately.
7. 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.
8. The rate of sales / General Taxes and the 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 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 Certificate will be issued at the time of final settlement of the bill.
9. Goods should be supplied 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

[PROF. K. RAJAGOPAL]

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

Specifications for Cyclic/Direct Shear Testing System

An electro-hydraulic testing system with direct digital servo control on normal and shear load has to be supplied. The machine should be capable of automatic performance of conventional direct shear test, incremental shear test, cyclic (both load and deformation controlled) shear test and geosynthetic pullout test. Machine has to be equipped with optional normal load/deformation computer control to perform constant normal stiffness tests where the normal load is a function of a prescribed stiffness to simulate actual compressibility of a ground shear plane.

DIRECT SHEAR BOX APPARATUS

- Anodized Aluminum bottom and top shear boxes for different samples and sizes

Technical Specification		
Samples		Box Sizes
Soil	Geosynthetic shear & pullout test capability	300 × 300 × 75 mm (Top box) 300 × 600 × 75 mm (Bottom box)
Variable frequency range		1 – 5 HZ
Static and dynamic shear loading capacity		50 kN
Shear stroke length		± 50 mm
Vertical load range		100 kN
Vertical stroke length		50 mm
Strain rate in case of monotonic load test		0.001-10 mm/min

Water reservoir should be provided to submerge soil specimen during testing, set screws to adjust shear gap and springs to support top shear box allowing for precise measurement and control of normal stress.

SHEAR (HORIZONTAL) LOAD FRAME & ACTUATOR

Electro-hydraulic servo valve close loop controlled actuator for the application of shear loads with 50 kN load capacity and 100 mm stroke length.

NORMAL (VERTICAL) LOAD FRAME

Servo controlled pneumatic system for the application of normal loads with 100 kN load capacity and 50 mm stroke length.

LOAD CELLS

10 kN, 50 kN and 100 kN capacities (0.05% precision) for measurement of vertical and horizontal loads

DEFORMATION SENSORS

- LVDTs to measure deformations of 100 mm & 50 mm range (better than 1% precision)

COMPLETE SET OF CABLES AND SENSORS.

32/64-BIT WINDOWS XP/ 7/ 8/ 8.1/10 SOFTWARE

Displacement Transducers (LVDT): Provision should be there to measure two vertical deformations and one horizontal displacement.

Range for horizontal displacement: 100 mm (Resolution 0.01mm)

Vertical displacement: 50 mm (Resolution 0.01mm)

Universal Test Module to perform advanced tests with the following capabilities:

- User defined procedures.
- Independent and simultaneous synchronized control of up to 4 channels of digital servo control (Close or Open loop).
- Automatic "smooth or bump-less" control transfer from/to any sensor or calculated channel.
- Automated test procedures.
- Waveform library including Ramp, Ramp + Dwell, Sine, Haversine, Triangular, and Square.
- Easily created cyclic and static customized test procedures.

Direct Shear Test Module to Automatically Perform Conventional Direct Shear Tests as well as cyclic and incremental shear tests

- Includes shear stress or shear deformation control, normal stress, normal deformation, real-time graphical display of test progress and presentation ready graphical output.
- Attachments to perform pullout and direct shear tests on geosynthetic samples.

Computer & Control software

The system should be supplied along with a computer and a software to run the experiment and collect the data during the test.

Warranty

Warranty/AMC for a 4 year period for smooth operation of the machine.