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No. CE/GTE/NRP/2018/3  
Dated: 19/06/ 2018

Subject: Enquiry for the purchase of Hydraulic jack, Load cells, strain indicator with strain gauges and displacement sensors.

Dear Sirs,

We intend purchasing under listed equipments for our Geotechnical Engineering laboratory. Kindly arrange to submit your lowest offer with complete technical details of the same so as to reach to the undersigned latest by **11 July 2018**.

A.) Hydraulic Jack for Field Tests with following details:

1.) Hydraulic Jack with pumping unit.

- i) Capacity : 400T
- ii) Stroke : 150mm
- iii) Close height : 400mm
- iv) Extended height : 450mm
- v) Working pressure: 500 bars

2.) Power Packs: Hydraulic power pack to run all the four jacks independently or simultaneously.

- i) Capacity of the tank: 75 Litre
  - ii) Flow of pump : 5 LPM (adjustable)
  - iii) Maximum Pressure: 550 bars
  - iv) HP of motor : 10 HP
- The pump is fitted with
- i) Flow control valve
  - ii) Release valve
  - iii) Load gauge
  - iv) Oil Level
  - v) Oil Inlet cum breather
  - vi) Drain
  - vii) Tyres for mobility
  - viii) Directional Control Valve
  - ix) DOL Starter

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3.) Manifold: Manifold is provided to connect the jacks and the power pack. It has six out let points with isolating valves. Outlet connection – ½” BSP.

4.) Pipe Line

- i) High pressure pipe line with quick couplings 3 meter length – 4 nos.
- ii) High pressure pipe with couplings 6 meter length x2 nos.

**B.) Load cell for field Pile load tests (without read out Unit)**

**i) LOAD CELL**

<b>Capacity</b>	:	<b>50T</b>
Excitation Voltage	:	20VDC
Nominal Output	:	2.0mV/V
Non-Linearity	:	< ± 0.025% FSO
Hysteresis	:	< ± 0.03% FSO
Non-Repeatability	:	< ± 0.02% FSO
Creep (30 Minutes)	:	< ± 0.03% FSO
Zero Balance	:	± 1.0% FSO
Input Resistance	:	450 ± 2.0 Ohms
Output Resistance	:	480 ± 3.0 Ohms
Insulation Resistance	:	>1000 MOhms at 50VDC
Safe Over Load	:	150% of rated capacity
Ultimate Over Load	:	300% of rated capacity
Temp. Range	:	0° C to 60°C.
<b>Temp. Effect on output</b>	:	<b>&lt;0.0015% FSO/°C</b>
<b>Temp. Effect on zero</b>	:	<b>&lt;0.0020% FSO/°C</b>
Protection Class	:	IP68

ii) **LOAD CELL Capacity 60T with same specifications as mentioned above (i).**

iii) **LOAD CELL Capacity 70T with same specifications as mentioned above (i).**

iv) **LOAD CELL Capacity 80T with same specifications as mentioned above (i).**

v) **4 Channel Electronic Data Acquisition System for Load cells**

The four-channel micro processor based data acquisition system is suitable for acquiring data from 4 independent sensors consisting 4 Load cells. All these channels are being measured directly in their respective engineering units. The system receives the output signals of the all channels as its input and amplifies the same to be displayed on the touch panel display at the front panel. The data of all channels can be transferred to computer through Ethernet/RS-232 and can also be online monitored in the software.

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The electronic unit will be operated on 220VAC, 50Hz.

Broadly the following facilities will be incorporated in the system:-

- ❖ 4 independent channels for Load cells
- ❖ Programming keys are provided on the front panel to perform various operations such as TARE, PROGRAMMING, START, STOP etc.
- ❖ Print interval / data transfer interval is programmable (between 1 second to 1 hour)
- ❖ Automatic data saving on stop button.
- ❖ Online date and time of test will be stored along with the data.
- ❖ On line (while the test is in progress) data transfer to the computer through Ethernet/RS-232 which will be stored in the computer with a particular file name.

#### C.) Strain Gauges for Field Testing of Piles and Rafts

- 1 For cast in situ bored piles  
Strain gauges with lead wire  
Type - Foil  
Resistance - 350 Ohms  
Gauge Length - 5 mm  
Size of lead wire - 25 mm (Standard)  
Gauge Factor : 2.1
- 2 For RCC Rafts (Cast in situ)  
Strain gauges with lead wire  
Type - Foil  
Resistance - 350 Ohms  
Gauge Length - 5 mm  
Size of lead wire - 25 mm (Standard)  
Gauge Factor : 2.1

#### D.) 20 Channel Strain Indicator

20 channel for strain measurement and Data acquisition system is suitable to measure strain from the strain gauges mounted on the specimen. A front display is provided to display the reading of each channel with Auto scanning facility, selection facility to display selected channel with RS 232/Ethernet output for computer interface.

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## Application Software

- Windows based user friendly software
- Data transfer interval is programmable
- Independent Taring/Offset zeroing of each channel
- Independent calibration of each channels
- Start & Stop operation for acquiring data from the Electronic unit
- Online monitoring of the data of all channels simultaneously
- Online plotting of data of selected channels
- Storing of data of each channel in user defined file/directory
- Offline Graphical plotting of data from each channels both X-T as well as X-Y basis
- Facility to print the data and all the graphs
- Saving of the data and results in the file

## E. Displacement Sensor 0-100mm & 0-200mm and Magnetic Base with four channel data logger facility:

### Performance specifications:

Characteristic:	Measure
Non-linearity (max.):	$\pm 0.25$ %
Full scale Non-linearity (max.):	$\pm 0.5$ %
Output load (min.) :	2000 ohm
Output impedance :	2 ohm
Output sensitivity :	$\pm 2$ Vdc (nominal)
Isolation :	1000 V input to output
Least count on data logger box:	0.01mm

### Environmental specifications:

Temperature, operating: 0 °C to 82 °C

### Electrical specifications:

Element Type:	DC-DC Displacement Transducer
Supply voltage:	5 or 12 VDC
Cable:	As per requirement.
Electrical termination:	Multiconductor shielded cable
Reverse polarity protection:	Yes

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The four-channel based data acquisition system is suitable for acquiring data from 4 independent sensors consisting 4 displacement sensors/LVDT. All these channels are being measured directly in their respective engineering units. The system receives the output signals of the all channels as its input and amplifies the same to be displayed on the touch panel display at the front panel. The data of all channels can be transferred to computer through Ethernet/RS-232 and can also be online monitored in the software.

The electronic unit will be operated on 220VAC, 50Hz.

Broadly the following facilities will be incorporated in the system:-

- ❖ 4 independent channels for lvdt
- ❖ Programming keys are provided on the front panel to perform various operations such as TARE, PROGRAMMING, START, STOP etc.
- ❖ Print interval / data transfer interval is programmable (between 1 second to 1 hour)
- ❖ Automatic data saving on stop button.
- ❖ Online date and time of test will be stored along with the data.
- ❖ On line (while the test is in progress) data transfer to the computer through Ethernet/ RS-232 which will be stored in the computer with a particular file name.

Please send your offer for the above mentioning the following:

1. Cost of the software/Hardware including 1 year warranty with all calibration charts and complete installation, demonstration at IIT Kanpur.
2. Validity of the quotation should be at least 90 days.
3. Technical specifications in detail with operating manuals.
4. Delivery time.
5. Educational discount applicable.
6. Payment terms.
7. Proprietary Certificate, if applicable.
8. Any other relevant details.

Kindly arrange to send the quotation(s) with detailed specifications of the item in a sealed envelope to the given address, cited above, so as to reach us on or before the **closing date 11 July 2018**.

The undersigned reserves the right to accept the offer in part or full or reject without assigning any reason.

Thanking you

Sincerely,

*Nihar Anil Patra*

(N.R Patra)

*Nihar Anil Patra*