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Detailed Technical Specifications for Standard Triaxial System:

Required Quantity: **Triaxial Frame 1 no. With 3 Cell Configuration**

Specifications:

1. Digital Microprocessor controlled load frame: 50KN capacity with triaxial cell to accommodate 70mm dia. sample with accessories for sample preparation.
2. Digital Measurement and automatic data logging of load, displacement, Cell Pressure, Back Pressure, pore pressure, automatic volume change
3. De-airing water supply system
4. Data interpretation as per standard with graphical and numeric format after completion of test

Confirming STANDARD: BS 1377:7 | ASTM D2850 | ASTM D4767 | BS 1377:8 | BS 1377:6 | ASTM D7181 | IS 2720:11 & 12

The system shall perform different kind of triaxial tests as: UU (unconsolidated undrained), CU(Consolidated un-drained) and CD (consolidated drained) in isotropic conditions according to ASTM, BS as well as IS Standards.

I. AUTOMATIC DATA ACQUISITION/CONTROL SYSTEM WITH DIGITAL MEASUREMENTS:

1. Multipurpose data logger which works with High-Speed LAN communication with PC. Data are automatically transferred to the PC in real time for live plotting and monitoring of the tests in progress.
2. Up to 8 to 12 independent input channels.
3. Network configuration of up to 64 independent channels. (Via LAN Hub)
4. LAN / Ethernet connection to PC via dedicated software (included).
5. Compatible with load cells, pressure transducers, strain gauges, LDT/LVDT/ potentiometric displacement transducers.
6. Effective resolution: 131,000 points.
7. Sampling rate up to 500 readings per second per channel.
8. Numerical and graphical display of readings via PC software.
9. The transducers can be grouped and combined by the user for matching different applications.
10. It is possible to perform various tests (e.g., shear, consolidation, triaxial ...) in parallel, each one having independent clock, channels, and logging mode
11. Data exporting with ASCII format
12. Software allows remote calibration of the connected sensors up to 10 points with polynomial fitting curve up to eight degrees
13. Templates for analysis of the Data and Interpretation
14. Excitation (VEXC): from 1 V to 10 V for each couple of channels (up to 4)
15. Data logger input: 0-10 V; 0-20 mA
16. Power supply: 110-220V,50-60 Hz, 1ph

II. LOAD FRAME:

1. The load frame is built around a robust twin column structure, ensuring extremely high rigidity up to 50 kN
2. Large High-contrast 4 x 20-character display and 6-keys membrane keyboard. The panel and display are protected from water and dust by a waterproof membrane.
3. The load frame should be specifically designed for soil testing labs conducting UU, CU, CD triaxial tests.
4. Maximum compression capacity: 50 kN
5. Microprocessor controlled automatic Speed control
6. Speed adjustment from 0.00001 to 50.8 mm/min.
7. Maximum sample diameter (for triaxial testing): 70 mm
8. The quality of the design avoids vibrations that may affect the specimen.
9. RS 232 interface for PC remote control
10. Stepper motor drive
11. Micro switches that prevent over-travel problems and Audible over travel alarm
12. Power supply: 230V/50Hz/1ph

III. TRIAXIAL CELLS 70mm:

1. The cell essentially consists of a transparent polycarbonate chamber which has a piston assembly fit to the top and a double flange base fit to the bottom. The base of the cell has four inlet points for top drainage/back pressure, cell pressure and bottom drainage/pore water pressure.
2. Maximum working pressure of 1700 kPa
3. Light alloy construction, stainless steel ram and O-ring seal
4. Suitable for submersible and/or external load cell
5. Four on/off no-volume changes valves fitted as standard
6. For sample sizes between 35 to 70 mm dia.
7. Suitable for total and effective stress tests
8. Rapid assembly design
9. Cells are designed to accommodate a specimen with a height twice its diameter

IV. Triaxial cell accessories for 70 mm diameter sample:

Pedestal, Top cap, Pair of porous discs, Rubber membrane, O Ring, Membrane placing tool, O- Ring Placing Tool, two-part split mould, Filter Drains, Hand sampler complete of cutter, wooden dolly, and receiver.

V. PRESSURE SYSTEM:

1. Bladder air/water pressure cylinders/automatic pressure controllers with volume change
2. The Bladder air/water cylinders are used to deliver pressurized water up to 1000 kPa (Compressed air supply required) to triaxial cells by the pressure distribution panels /Automatic pressure controllers software driven to maintain pressures and record the volume change
3. High degree of accuracy
4. Extremely simple to operate
5. Future expansion of system very easy and relatively low cost
6. Bladder enables the use of de-aired water
7. Large reservoir to cope with long term tests and large samples

Note:

1. Air/Water Distribution panel with two pressure lines per triaxial cell including precision air regulators to adjust 1 kPa with digital pressure gauge, pressure outlets and quick release fittings
2. Compatible distribution panel for Software driven Automatic pressure controllers with volume change measurement.

VI. SENSORS:

a. 10 kN External/Internal load cells

1. Used to measure the axial force applied to the specimen in the triaxial cells
2. Nominal sensitivity: 2mV/V
3. Accuracy: better than 0.2%.

b. 50 mm Displacement transducer

1. Repeatability: better than 0.002 mm
2. Accuracy: better than 0.002 mm

c. 1000 kPa Pressure transducers

Pressure transducers are used for the measurement of cell pressure, back pressure, pore pressure (water or air) supplied along with De-airing block.

d. Automatic volume change apparatus

1. Basic capacity: 100 cm³
2. Transducer input: up to 12 V DC
3. Accuracy: ± 0.1 ml

The apparatus comprises a piston connected to a 25 mm travel linear transducer and sealed against a precision-machined calibration chamber so linear movement of the piston is exactly proportional to the volume of water in the calibration chamber. The apparatus includes the panel with reversing valve system to measure the water flow in both directions.

VII. DE-AIRING WATER SYSTEM:

1. Solution de-airing water system with vacuum and cavitation technology.
2. 220V, 50Hz, 1Ph
3. 20 litre volume capacity
4. vacuum pump
5. High speed magnetic stirring for creating cavitation
6. Control panel for filling

VIII. One year warranty from installation and commission.