**Specifications for a Cyclic Simple Shear Apparatus**

A complete cyclic simple shear apparatus with the capability of **back pressure saturation** with the following specifications,

1. Actuator for simple shear loads with following features:

1. Type: Electro-mechanical
2. Load capacity: i. Normal load ±5kN

ii. Shear load ±5kN

1. Loading frequency: 0 - 5Hz
2. Power: 240V/50Hz

2. Pressure controller and volume change device with following specifications:

1. Capacity: Minimum pressure of 1MPa (accuracy 0.15%); Minimum volume of 200cc (accuracy 0.25%)
2. Testing capability: To conduct complete saturation of the samples with proper back pressure arrangements

3. Cyclic simple shear cell with following specifications:

1. Cell size: Accommodate up to 100mm diameter samples
2. Capacity: Minimum of 1MPa
3. Provide suitable adopter and sample holder for testing 70 mm and 100mm samples
4. Provide sample formers and sample preparation kits

4. Transducers

1. Displacement transducer: Minimum travel length of 25mm (accuracy 0.1%)
2. Pore pressure transducers: Minimum capacity of 10 bar (accuracy 0.1%)
3. Load cell: Minimum capacity of ±5kN both in normal and shear load (accuracy 0.1% with resolution 0.2N)

5. Load frame of minimum 25 kN load carrying capacity

6. Software package with following features:

1. Automated test procedure
2. Saturation and consolidation module
3. Cyclic simple shear test module
4. Latest operating system
5. Data acquisition system and digital servo controller with minimum of 8 channels

7. Signal conditioning systems with following specifications:

1. Type: Servo-controlled system
2. Compatible with all the transducers
3. Minimum of 16-bit resolution

8. Back pressure saturation: The system should have the capability of back pressure saturation.

9. Provide complete installation and training program.

10. Minimum two (2) years warranty.