



GEOLABS Limited

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Geotechnical Soils & Rocks Testing Facilities

Geolabs Limited is one of the largest independent geotechnical soils, rocks and associated materials testing facilities in the United Kingdom with laboratories in Watford and Birmingham. We have in-house facilities for performing a wide range of test procedures to British Standards and other National and International Standards.

We perform geotechnical tests for a variety of building, civil engineering and construction projects. Examples include exploration and testing for mineral resources, all types of testing relating to the development of energy resources (offshore and land-based), tunnelling and pipeline projects and major construction projects requiring advanced testing etc. We regularly undertake testing commissions from clients and projects from all over the world as well as providing essential technical support when required.

Staff

Our staff have a combined geotechnical laboratory testing experience in excess of 300 years. They have set-up and run laboratories on sites in the UK and overseas, on marine vessels, and have worked in difficult conditions in order to meet tight deadlines to clients' requirements.

Our staff serve on numerous National and International Standards committees, working groups and technical panels, often in the capacity of Chairmen or Working Group Coordinators. They have also lectured and given technical papers throughout the world.



Resonant Column

Our resonant column allows elastic moduli to be determined over a wide range of strains. In addition, the damping properties of the soil can be determined from the speed at which the vibrations diminish after exciting the column.



Advanced and Standard Triaxial

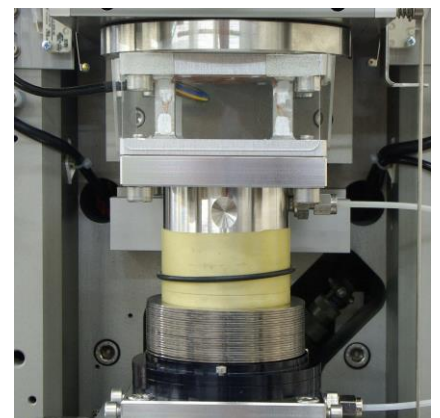
Our Advanced testing facility comprises eight stress path stations each with their own dedicated stepless, computer controlled compression frames. We routinely test both 70mm and 100mm diameter specimens. Each cell is capable of being equipped with three pairs of bender elements to determine shearwave

velocities in up to three directions and local axial and radial strain measurements in compression and extension. Three of the stress path cells can perform tests to greater than 10% axial strain on 100mm diameter specimens.

We can run concurrently up to 60 standard effective stress tests from 38 mm to 150 mm diameter using thirty seven compression machines from 1 tonne to 10 tonne capacity dedicated to effective stress testing. Twelve high pressure cells and high pressure maintainers allow tests to be undertaken with effective pressures in excess of 1000kPa and confining pressures of up to 3500kPa.

Direct Simple Shear

Our state-of-the-art Direct Simple Shear (DSS) apparatus uses its dedicated high-speed closed-loop computer control to enable both static and dynamic (cyclic) measurements to be made. We use low friction PTFE coated precision ground stainless steel rings to confine the 66mm diameter specimen.



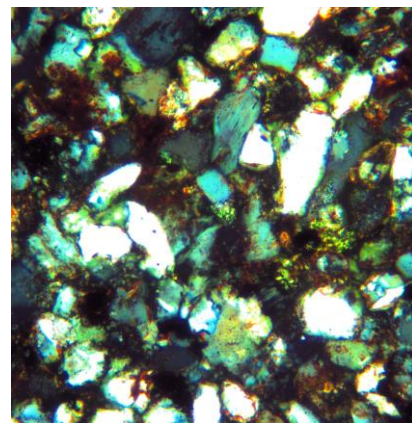
'Routine' Testing

Our extensive equipment resources enable us to perform a wide range of testing of a routine nature (all BS1377 tests including classification, durability, compactions, CBR's, MCV's and total stress shear strength). We also perform the Fall Cone and other tests to other specifications and National Standards. We have an in-house method for determining maximum density which gives high densities with minimal grain crushing.

Rock Testing



Our facilities allow us to perform: Unconfined Compressive Strength tests (which can include Young's Modulus and Poisson's Ratio determinations with load/unload cycles); Triaxial Compression Tests on rock cores; Swelling Strain and Swelling Index; Point Load; Slake Durability; Shore Schleroscope; Shearbox tests (on specimens up to 150mm diameter); Ultrasonic wave velocity; 10% Fines; and Aggregate Crushing Value, Mohs' Hardness values, Petrographic analysis etc.



Consolidation Testing

We have thirty data logged one-dimensional consolidation stations capable of performing tests on samples from 38mm to 150mm diameter. We also have six 76mm, one 100mm and six 250mm diameter hydraulic consolidation (Rowe) cells; these cells can also be used for Permeability tests. In addition, we have Floating Ring and three Continuous Rate of Strain Consolidation apparatuses.

Permeability Tests

We have the capacity to perform in excess of fifty triaxial permeability tests simultaneously, to BS1377 and Environment Agency Procedures. We have the resources to perform constant head permeability tests in 76mm and 112mm diameter cells, Falling Head permeability tests and Highways Agency permeability tests for graded aggregates. We also have six dedicated triaxial permeability cells allowing permeability tests to be performed on contaminated material with contaminated fluids as the permeant. We also have apparatus to perform permeability tests on one-dimensional consolidation tests at each stage of incremental loading.



Direct Shear and Ringshear

We have ten 60mm x 60mm shearbox apparatus (*two capable of also performing 100mm x 100mm specimens and one capable of testing at higher normal stresses*); two 300mm x 300mm shearboxes (*one capable of also performing 150mm x 150mm specimens and both capable of performing soil v Geofabric, Geomembrane, Geotextiles, Geosynthetic etc. tests to BS and ASTM Standards*); three Ringshear apparatus (*for performing both BS1377 and custom interface tests*); one Hoek shearbox apparatus (*for rock testing*). These extensive resources enable us to provide many combinations of direct shear testing.

Quality

Geolabs Limited is accredited in accordance with ISO/IEC 17025:2005 General Requirements for the competence of testing and calibration laboratories. We are annually audited by third-party accreditation expert auditors to ensure that we comply with the ISO/IEC 17025:2005 Standard as

well as complying with the National Testing Standards and/or Documented Technical Procedures that we hold accreditation for.



Our accreditation demonstrates that we are technically competent and have the necessary technical expertise and experience to perform our large scope of accredited tests.

Our accreditation and annual surveillance and monitoring is certificated by the United Kingdom Accreditation Service (UKAS) which is the recognised national body in the United Kingdom responsible for assessing the competence of organisations in the fields of calibration, testing, inspection and certification of systems, products or services.

We have been a UKAS Accredited laboratory since 1999 and have held accreditation for effective stress testing since 2000.