

Site Investigation

Geotechnical Laboratory Testing

Timeliness, accuracy and control are at the heart of Soil Mechanics geotechnical laboratories ensuring an end product of recognised quality. Today we possess the most extensive facilities in the UK providing a full spectrum of administrative expertise, technical know-how, project management, sample preparation, analysis and reporting to suit the needs of any ground investigation.

Underlying all aspects of Soil Mechanics' operations is a firm and on-going commitment to quality encompassing BSI and UKAS standards which guarantee competency training of staff and calibration of all measurement equipment to national standards. It is a quality commitment which enables our laboratories to be run efficiently by experienced people with the ability to develop and interpret new techniques.

Soil Mechanics' ground investigation services are backed by a fully documented chain of custody system and controlled storage for over 15,000 undisturbed and more than 80,000 disturbed samples.

Soil and Rock Classification

Soil Mechanics provides full classifications in accordance with the European standards on the "identification and classification" of soil and rock BS EN ISO 14688-1 Soil - Identification and description; BS EN ISO 14688-2 Soil - Principles for a classification; BS EN ISO 14689-1 Rock - Identification and description.

Index Testing

Our soil index tests are used extensively to determine a wide range of engineering properties including Moisture Content, Atterberg Limits and Particle Distribution.

Strength Testing

These include a range of triaxial, vane and shear tests including:

- Unconsolidated Undrained Triaxial (UU)
- Consolidated Undrained Triaxial (CU)/Consolidated Drained Triaxial (CD)
- Laboratory Vane to BS1377
- Small and large Standard Direct Shearbox up to 300mm square
- Bromhead Ring Shear apparatus.

Compaction Related Testing

Standard in ground investigation/earthworks projects these encompass:

- Light/Heavy/Vibrating Hammer Compaction Tests
- California Bearing Ratio (CBR)
- Maximum and Minimum Densities



- Moisture Condition Value (MCV).

Earthworks

A wide range of in situ tests completes our earthworks capability including Cone Penetration Testing (CPT), Nuclear Gauge and Pressuremeter testing.

Consolidation Testing

Consolidation characteristics of undisturbed and recompacted soils are determined using the following techniques:

- Semi-automated standard oedometers and high load oedometers
- Hydraulic cell (Rowe) to measure pore water pressure during consolidation
- Isotropic consolidation in a triaxial cell
- Constant Rate of Strain (CRS) consolidation.

Permeability Testing

To determine the volume of water passing through a soil sample against time, our permeability tests include:

- Constant Head for granular soils and Falling Head for 'intermediate' soils
- Triaxial Permeability to BS1377 Part 6 method or accelerated method to Environment Agency specification for materials of low to very low permeability.

Testing of Chalk

In addition to conventional tests, we provide chalk testing and analysis to ascertain Chalk Crushing Value (CCV), carbonate content and saturation moisture content

Rock Testing

A complete rock testing service to ISRM standards is available encompassing core logging, sample preparation and determination of a range of rock properties.

Ground Source Heat

Our laboratory-based ground source heat cell measures the thermal conductivity/resistivity of mass materials providing greater confidence in the interpretation of results when compared to traditional needle probe methods.

Chemical Testing

To evaluate the chemical content of soils, aggregates, peats, organic and other materials we provide a range of tests to BS1377 standard. These are complemented by a wider scope of environmental and micro-biological testing provided by ESG's Laboratories and Analytical Services.

Advanced Testing

On-going developments in advanced testing reinforces our position at the forefront of the ground investigation industry. Resonant column for testing Shear Modulus and Direct Simple Shear testing for modelling cyclic stress rotations are commonly used on many projects affected by earthquakes, ground movement, vibration and resonance.

