

Site Investigation

In situ Testing

Soil Mechanics' in situ testing service provides information on soil types, stratigraphy and engineering properties. We have an extensive range of techniques and expertise to complement our drilling operations and because we understand all their relative strengths and limitations we know which of our resources will deliver the most appropriate project data.

As a stand alone service or as part of a wider ground investigation our in situ testing delivers an on-going commitment to quality backed by superb analytical support and technical advice to interpret the data. We provide significant operational benefits:

Speed - A fast, easy, cost effective means of data acquisition with results often available in real time

Quantity – In situ techniques can deliver a near continuous ground profile

Quality - Offers consistent, repeatable results with minimal soil disturbance

Greater flexibility - To cope with difficult access problems.

Cone Penetration Testing (CPT)

- **6WD trucks** - light and heavy crawlers/low headroom systems
- **Friction cone** - for determining soil type, stratigraphy, strength and stiffness parameters
- **Piezocone** - to enhance friction cone measurements and determine dynamic and equilibrium pore water pressure and consolidation parameters
- **Seismic cone** - for the measurement of small strain stiffness
- **Mostap** - sampling to provide undisturbed push samples
- **UXO Magnetometer** - for the detection of magnetic anomalies associated with the presence of unexploded ordnance
- **Push-in piezometers** - for groundwater and pore water pressure measurements.

Pressuremeter Testing

A range of pressuremeters can be provided for the measurement of in situ stress, strength and stiffness properties in a variety of soil and rock types:

- **Driven Pressuremeter** - A full displacement instrument deployed by pushing or driving into a wide range of soil types using boring/drilling rigs or CPT platforms
- **Self-Boring Pressuremeter** - Inserted with minimal disturbance for tests in soils ranging from very soft clays to fine running sands. It can be used to measure pore water pressure during self-boring and testing and in



conjunction with boring/drilling rigs

- **Weak Rock Self Boring Pressuremeter** - A self boring instrument for use in stronger materials
- **High Pressure Dilatometer** - For tests in pre-drilled holes, primarily in rock and over consolidated clays.
- **Flat Plate Dilatometer** - Used in fine to coarse grain soils (clays, silts and sands) to provide stress correlations.

Other In Situ Tests

Other in situ tests are available to provide parameters for specialist design applications such as foundations, earthworks, highways and groundwater control:

- **Standard Penetration Test (SPT)** - routine borehole test for indication of soil strength/relative density. We carry out in-house calibration of our hammers using an SPT analyser so that a certificate of calibration of the energy ratio (Er-value) is always available in accordance with Eurocode BS EN ISO 22476-3
- **Dynamic Probing** - rapid means of profiling and estimating ground conditions by measuring driving resistance via blow counts to depths of up to 10m
- **Dynamic Cone Penetrometer** - for rapid measurement of shallow soil strata thickness and estimation of parameters for pavement design
- **Plate Load Test** - load/displacement tests carried out at the surface or in a borehole for the assessment of load/settlement characteristics
- **In situ CBR** - performed on many of our highways projects to provide data for the design of road pavement thickness
- **In Situ Density** - Many civil engineering projects involve the use of 'fill' material placed under engineering control to achieve satisfactory engineering properties. Several methods are available to measure the in situ density to help control the compaction necessary to achieve on-budget construction
- **Zone Tests/Skip Tests** - used on made ground and engineered fill to determine the long term load/settlement characteristics
- **Falling Weight Deflectometer** - measures the dynamic properties of roads, car parks and machinery installations and is often used to monitor compaction and thickness of hydraulically bound materials
- **Borehole Vane** - simple measurement of undrained shear strengths of cohesive soils
- **Resistivity and Redox** - for determining the level of corrosion protection needed for buried structures such as pipelines
- **Permeability/Soakage Tests** - for the determination of parameters for groundwater control and soakaway design.

