Geotechnical Laboratory Testing And Engineering

Horizon's comprehensive soil and rock testing laboratory was formed in response to demands for high quality geotechnical testing on samples obtained in marine and nearshore investigations. The testing capability within the onshore laboratory enables engineering parameters to be measured for the latest design specifications for offshore structures including pipelines and cables routes, platform foundations, breakwater, jetty and port developments, reclaimed land and dredging applications.

The tests available include, but are not limited to:

Classification tests

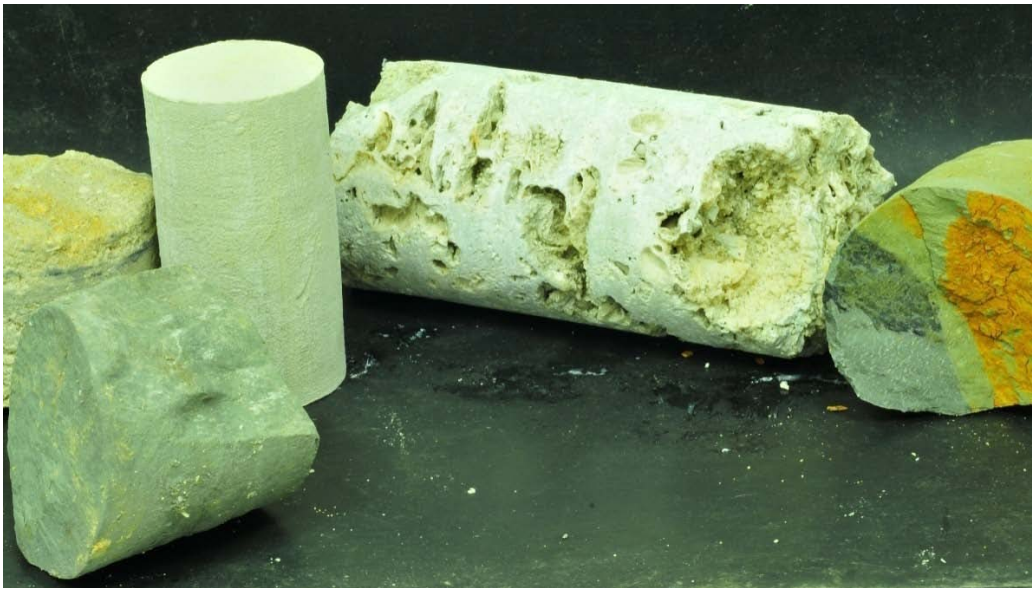
- **Moisture content**
- **Dry and bulk density**
- **Particle density**
- **Particle size distribution**
- **Atterberg limits**
- **Minimum and maximum density**

Chemical tests

- **Calcium carbonate**
- **Total sulphate by acid extraction**
- **Water soluble sulphate (2:1 water to soil ratio)**
- **Chloride content (water extract)**
- **Organic content by ignition and dichromate oxidation**
- **pH**

Undrained shear strength (soil)

- **Triaxial**
- **Unconfined compressive strength**
- **Unconsolidated undrained (UU) and remoulded (UU-R)**
- **Consolidated drained (CD)**
- **Consolidated undrained (CU)**
- **Motorised laboratory vane: peak and residual**
- **Torvane and pocket penetrometer**
- **Various other tests**



Shear box (peak and residual)

- **Direct shear**
- **Interface shear (maximum normal stress to 800kPa)**

Rock tests

- **Unconfined compressive strength (UCS)**
- **UCS with elasticity modulus and poisson ratio**
- **Indirect tensile shear (Brazillian test)**
- **Point load index**

Consolidation tests (soil)

- **Manual oedometer (loading stages to maximum 4000kPa)**
- **Measurement of swelling pressure**
- **Computer controlled rowe/barden cell for:**
  - Constant rate of strain
  - Constant load with pore pressure measurement
  - Stepped load with pore pressure measurement

Miscellaneous tests

- **Electrical resistivity**
- **Constant head permeability**

In addition to onshore testing services Horizon maintains four mobile laboratories used for onsite testing. These laboratories contain range of tests for classification and measurement of undrained shear strength and compressive strength. On site testing allows engineering design parameters to be determined during fieldwork on undisturbed samples and enables timely preliminary engineering analysis to be undertaken.