

Technical Data – In-situ Testing: California Bearing Ratio (CBR)

We offer a range of in-situ testing services which include CBR and Plate Bearing Tests with fast mobilisation, professional onsite testing on a nationwide basis and rapid reporting of results.



In-Situ CBR Testing

The California Bearing Ratio (CBR) test, is used to estimate the load bearing capacity and mechanical strength of highway subbases and subgrades. Originally developed by the California Department of Transportation, it is now widely used in the design of roads, pavements, car parks and similar applications.

The ground surface is scraped level at the formation layer required for the test. A cylindrical plunger with a face area of 1935mm² is then advanced into the soil at a uniform rate. A 4WD vehicle is generally used to transport the equipment and to provide the reaction load required to drive the CBR press.

Measurements of applied load and plunger penetration are made at regular intervals and plotted onto a curve. The CBR bearing value is expressed as a percentage ratio against a standard soil (California Crushed Limestone) and obtained by dividing the plunger loads at penetrations of 2.5 and 5.0 mm by the loads given at the same penetrations in the standard crushed stone.

Provided there is level access for the 4WD vehicle and assuming surfaces are prepared, on a typical site up to 6-8 tests can be carried out in a day, by a single operator, with provisional results available on site. The tabulated and plotted results can normally be made available the next working day.

Dynamic Cone Penetrometer (DCP) CBR Test

The dynamic cone CBR test uses light hand held portable equipment to rapidly assess the CBR value. The value is the result of an empirical test on soil that can be used for road design purposes.

The equipment is used to provide a continuous record of the penetration resistance of each layer in the ground for a depth of a metre from the surface. The penetration resistance provides a measure from which CBR values may be calculated using formulae published by the Transport Research Laboratory.

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