APAGEO

MÉNARD PRESSUREMETER

PRESSUREMETER TEST ACCORDING TO EN ISO 22476-4 AND ASTM D-4719-00 STANDARDS

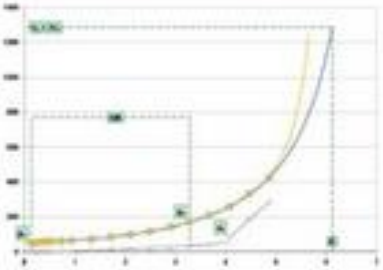
Controle Unit (C.U.), tubings and 3-cells probe to perform in situ Pressuremeter test in soils conform to the ISO 22476-4 and ASTM D-4719-00 Standards.

TEST DESCRIPTION

A Pressuremeter test is an in-situ stress controlled loading test performed on the wall of a borehole using a cylindrical probe which can expand radially.

From the test readings (volume variation based on controlled pressure), a stress-strain curve can be obtained, in the case of plane deformation, which yields :

- the Ménard Pressuremeter modulus
- the creep pressure
- the Menard limit pressure



CU technical specifications

- *Dimension : 86 x 43 x 26 cm (tripod height : 65 cm)*
- *Mass : 24.5 kg (tripod 3.5 kg)*
- *Aluminium box with protection cover*
- *Transport handle*
- *Tripod and level allowing adjustment of verticality on all sites*

Equipment

The Control Unit

Equipped with devices to precisely regulate the pressure applied to the probe and to read its volume changes with pressure increments and time. A nitrogen cylinder provides the pressure source. The box stands on a tripod.

It includes a 800 cm^3 volumeter with a sight tube, a main pressure regulator, a differential pressure regulator, pressure gauges 0-2.5 and 0-6 MPa for the measuring and the guard cells (0.06 and 10 MPa as options for soft soil and weak rock tests), and the necessary valves and couplings.

The plastic tubing

This coaxial or twin tubing, flexible, high resistance with small dilatation, connects the probe to the monitoring box.

The 3-cell probe

It includes a central measuring cell, filled with water. Its volume changes are read on the Control Unit volumeter. The probe is totally protected by a rubber cover (different types regarding soils stiffness) which is inflated by the gas to form the 2 guard cells. Pressures applied to the 3 cells are balanced through the differential pressure regulator to ensure a true cylindrical deformation along the measuring cell.

Test procedure

The borehole is drilled so as to minimize wall disturbance and keep a cavity diameter compatible with the probe size. The probe is lowered into the borehole to the required test depth and the pressure is applied by equal increments. Pressure and volume readings are taken on the Control Unit. In gravely soils and/or under water table level where the borehole would cave-in, the probe can be inserted in a specially designed slotted tube which is hammered or vibrodriven into the soil. Used without acquisition, the C.U. meets the requirements of the EN ISO 22476-4 standard part A.

Test treatment

Test Data can be processed by our software GeoVision®

GEOSPAD®

APAGEO

DATA AQUISITION SYSTEM FOR PRESSUREMETER ACCORDING TO EN ISO 22476-4 and ASTM D-4719-00 STANDARD

GEOSPAD® controls the conduct of Pressuremeter tests and automatically records the conditions and results of these tests.

GeoSPAD® is a computerized system designed for automatic data logging of Pressuremeter test readings. It is a field device, ruggedly built, compact and reliable, who benefits from the latest technological developments: Touch screen, thermal printer, recording settings to flash memory card, high-capacity, internal memory of 30 days ensuring a backup reliable tests, menu languages (French, English, German, Spanish, Portuguese, Italian).

It can be used with most of the Menard-type Pressuremeters, which keep their full performance range, whether or not they are used with the GeoSPAD®.

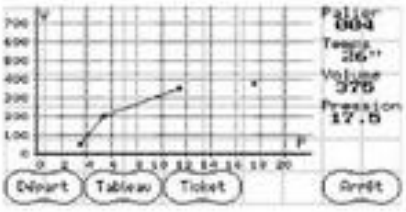
GEOSPAD® technical specifications:

- *Tripod and level allowing adjustment of verticality on all sites*
- *Waterproof box, ruggedly built and compact (33 x 27 x 20 cm)*
- *Weight : 4 kg*
- *Temperature range -20 to + 70 °C*
- *Power source 10 to 35 V*
- *LCD display with built-in keyboard*
- *Memory card recorder (30 days)*

Description

GeoSPAD® allows the operator to set a time for the pressure increments, then the test can run without operator intervention. It checks the pressure balance between measuring cell and guard cells at all time and displays its actual value, which can be compared to the required value.

Quality of reading is improved, thanks to recordings which are exactly carried out at 1, 15, 30 and 60 seconds with better accuracy: 1 cm3 on the volumes and 1 kPa on the pressures (readings at 10 kPa).
It conforms to the standards NF P 94-110-1 and ASTM D-4719-87, and provides the perfect mean to check the test conformity.



The GEOSPAD® during the test shows the curve of the rough data, allowing instant display of test.
The pressure of the central cell and differential pressure, volume, ΔV60/30 and ΔV60/60, the number of level and time are also displayed during the execution of the test.
GeoSPAD® prints all tests curves and data, and records them on a memory card, to be processed on a PC, with the GeoVision® software.

The tests performed are stored in internal memory for 30 days and can be transferred on a memory card.

The cyclic (load and re-load), or very deep test, is also available on demand through a software interface dedicated to these types of tests.

Test treatment

Transfer of data on the memory card and industrial test process on our software GeoVision®