PRESSUREMETER

Model TRI-MOD-S

APPLICATIONS

The TRI-MOD-S pressuremeter is a reliable and effective tool used to measure in-situ the strength and stress-strain properties of all types of soils and soft rocks. It quickly and economically provides a large volume of data encompassing the variability of the geotechnical conditions on a site.

A well-proven method used to analyze the pressure-meter test data gives realistic values of:

- Bearing capacity of shallow or deep foundations
- Settlement of all types of foundations
- Deformation of laterally loaded piles or sheet piles
- At-rest pressure coefficient (Ko)

DESCRIPTION

The TRI-MOD-S pressuremeter is a device used to run in situ loading tests in boreholes at various depths. It is comprised of the following components:

- The probe: a single cylindrical cell hydraulically inflated with 6 strain gauges and cantilevered arms, and fitted with an inflatable metallic sheath
- Hydraulic manual pumps
- Pneumatical pump or cylinder for deflating the probe
- The datalogger
- The tubing and electrical cable
- Two calibration tubes

FEATURES

- **Inflated hydraulically up to 20 000 kPa**
- **Direct reading of diametric changes with six electrical strain followers**
- **Test in "N" size borehole**
- **Very simple to operate**
- **Readout displays diametrical expansion in hundredth of mm**

TEST PROCEDURE AND RESULTS

The probe is placed at the test depth in a pre-drilled borehole obtained by a method adapted to the soil conditions: augering, rotation with drag bit and bentonite slurry, shelby tube driving, etc.

Stress-control is used to run the test. Equal increments of pressure are applied to the probe and held constant for one minute. The diametric changes are logged 30 and 60 seconds after each pressure step is rea ched.

In situ stress-strain curves are obtained by plotting the changes in each of the 3 instrumented diameters or their average against pressure.

The limit pressure P_L is the pressure corresponding to the doubling of the volume of the initial cavity and is a direct refl ection of the soil's bearing capacity:

$Q_a = (C/F)\ P_L$

where: Q_a = Allowable bearing capacity

C = Shape factor

F = Safety factor

The modulus of deformation E used to calculate settlement is given by:

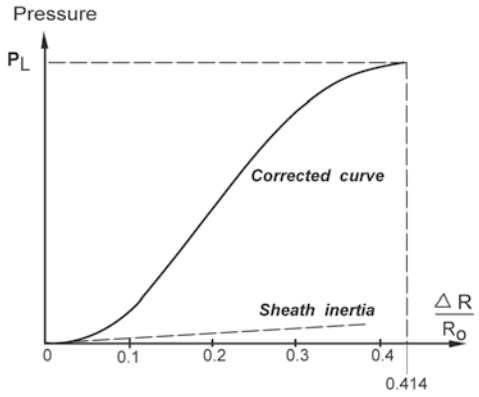
$E = (1 + \nu)\ (\Delta P/\Delta R)\ R$

where: ν = Poisson's ratio

ΔP = Increase in pressure

$\Delta R / R$ = Relative change of radius

With special limitations, the "at rest" pressure of the soil can be estimated along with the reaction factor used in the design of laterally loaded foundations.



Example of pressuremeter test results

SPECIFICATIONS

PROBE	
Diameter (min.)	73 mm
Diameter (max.)	76.2 mm at 20 000 kPa 82.0 mm at 10 000 kPa
Working pressure (max.)	20 000 kPa (3000 psi)
Length of infl atable sheath	460 mm
Typical sheath inertia	75 kPa
PRESSURE GAUGE	
Range	20 000 kPa
Accuracy	1% F.S.
DIGITAL READOUT	
P-3 Vishay strain indicator with selector switch	
Resolution of diametrical change	0.01 mm