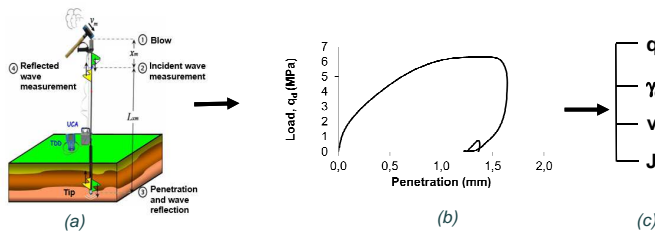


Introduction

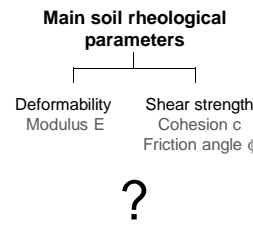
Soil characterization is an essential task to design foundations in civil engineering. Dynamic penetration test is a widely used technique due to its versatility, low cost and reliability. In the current state of knowledge, it doesn't allow to obtain directly intrinsic soil parameters.

Background

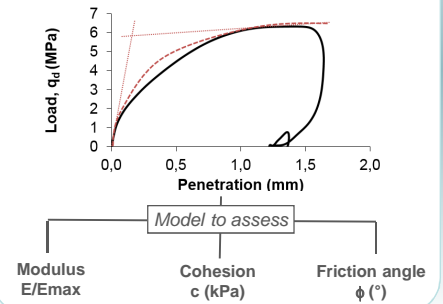


(a) Lightweight dynamic penetrometer Panda 3® and its principle (b) Load-penetration curve, (c) Soil parameters determined during penetrometer driving

Current problem

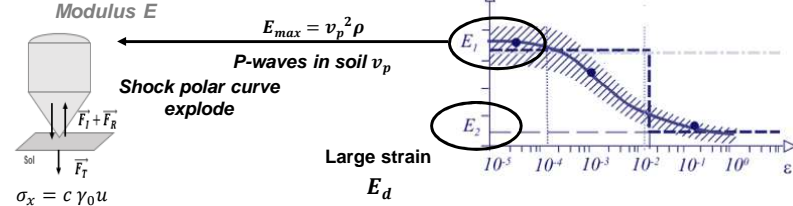


Objective

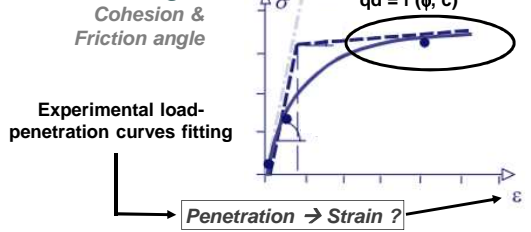


General Methodology

Deformability



Shear strength



Experimental

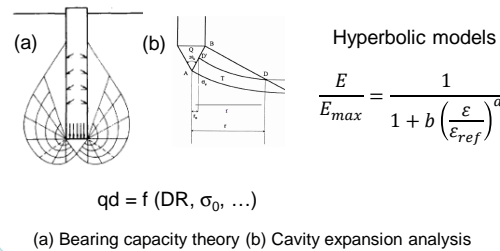
Panda 3® test
In calibration chamber

Physical characterization
Triaxial tests
Geophysical



Analytical

Penetration models and constitutive models



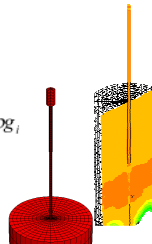
Numerical

Panda 3® test modelling in calibration chamber

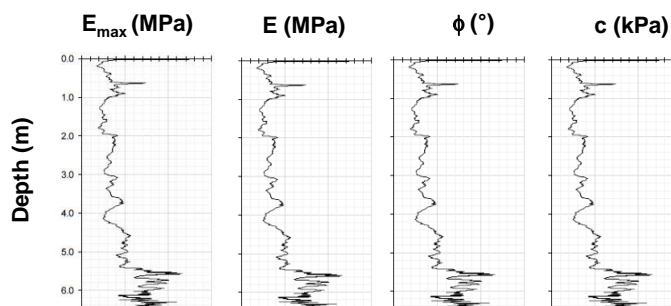
Finite Difference Method (FDM)

Equation of motion: $\rho \frac{\partial u_i}{\partial t} = \frac{\partial \sigma_{ij}}{\partial x_j} + \rho g_i$

Constitutive model: $\bar{\sigma} = f(\bar{\epsilon})$



Expected results



Bibliography

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