

INFLUENCE OF GEOMETRIC PARAMETERS ON THE RESULTS OF SHEAR TESTS PERFORMED WITH THE PHICOMETER DEVICE

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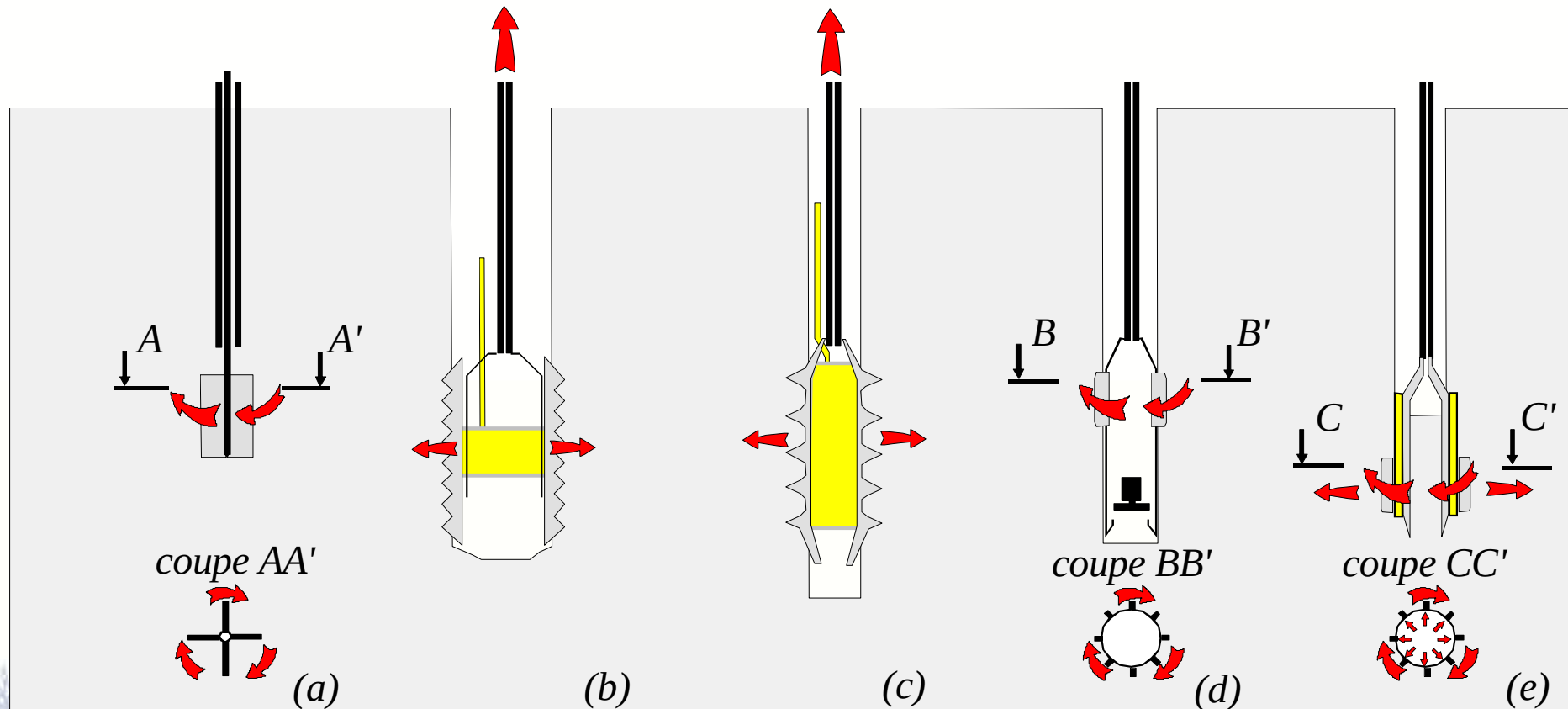
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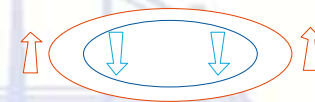
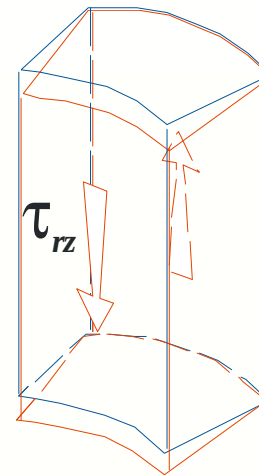
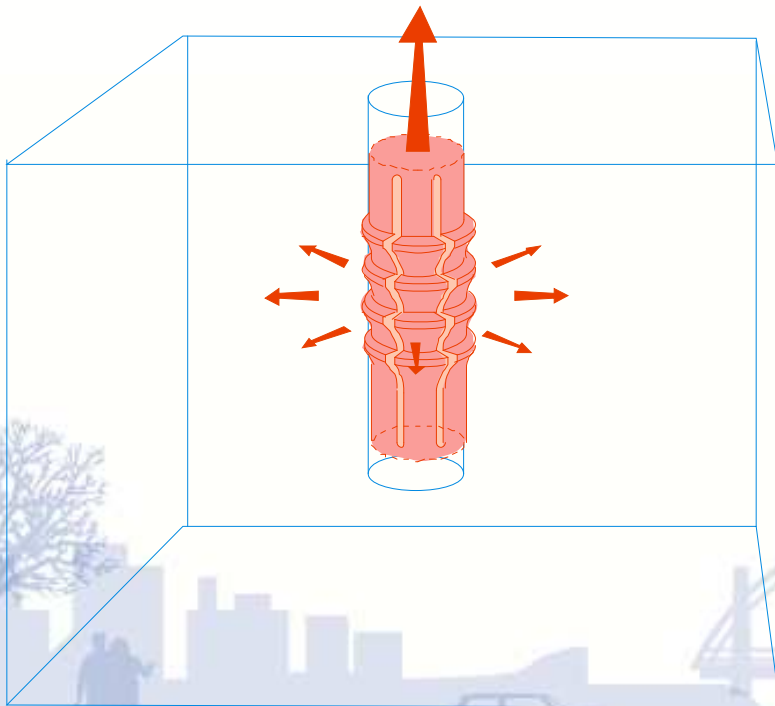
Borehole shear test



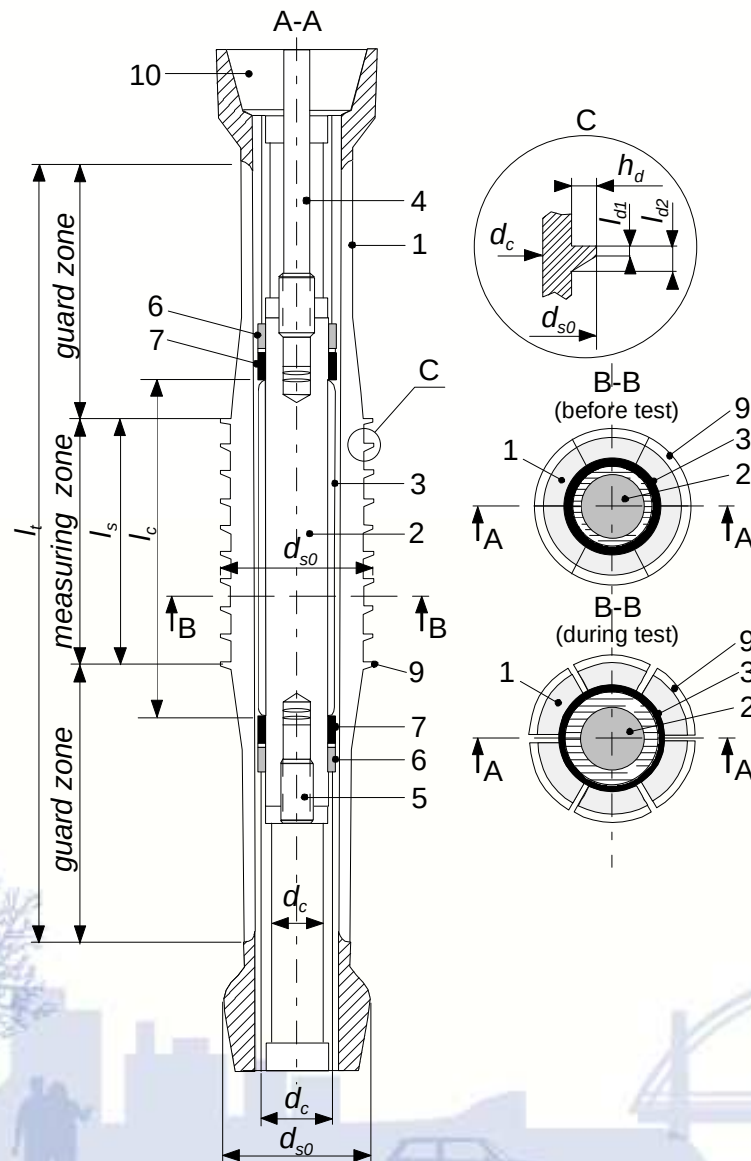
(a) Vane test, (b) borehole shear test, (c) Phicometer, (d) self-boring shearmeter, (e) Rhéotest

Borehole shear test

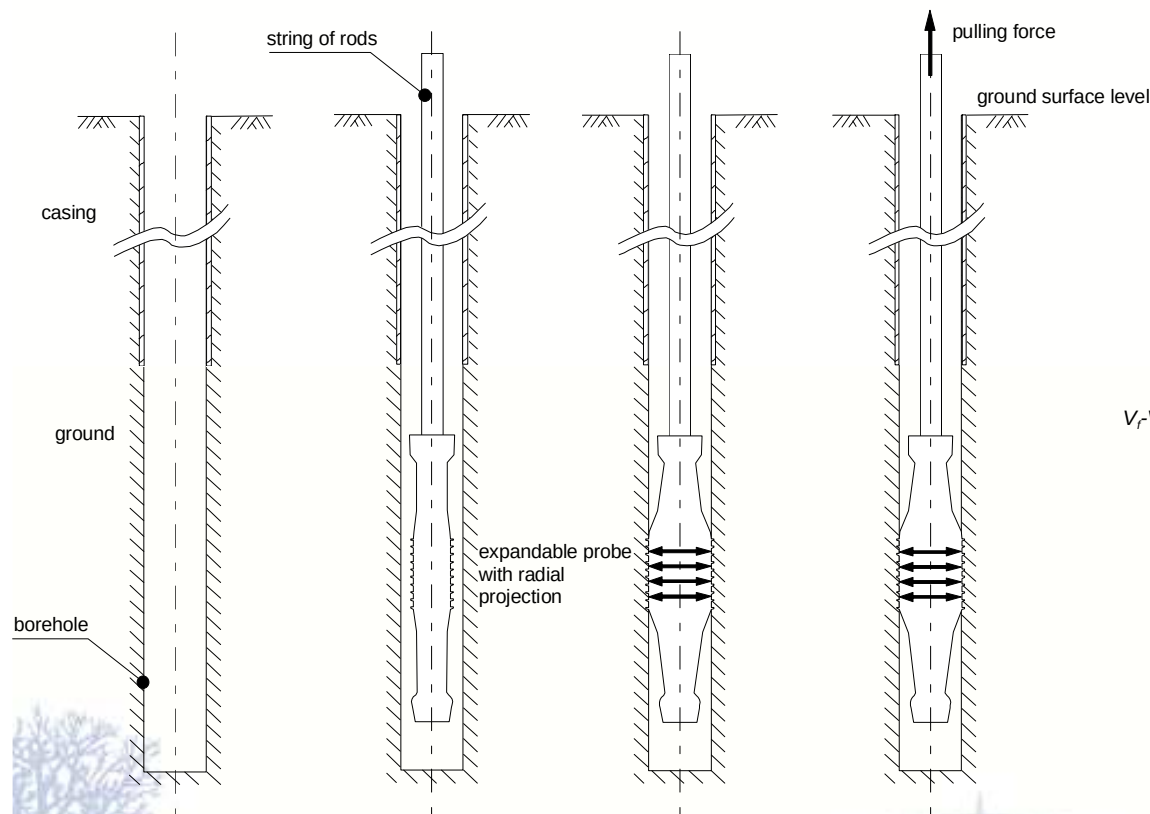
- Shear strength



Phicomètre

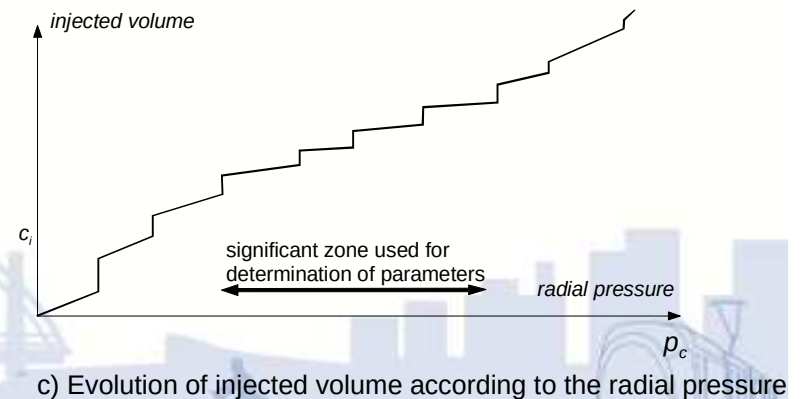
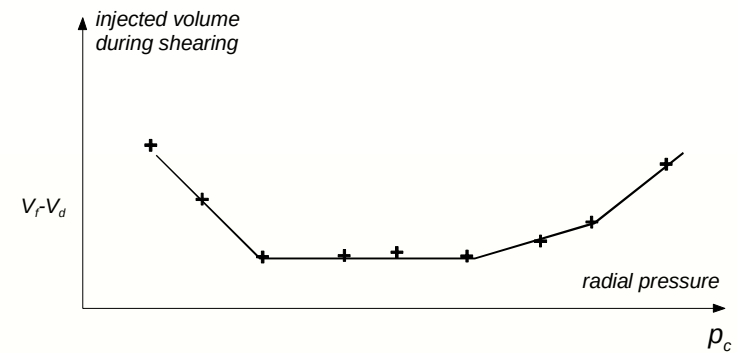
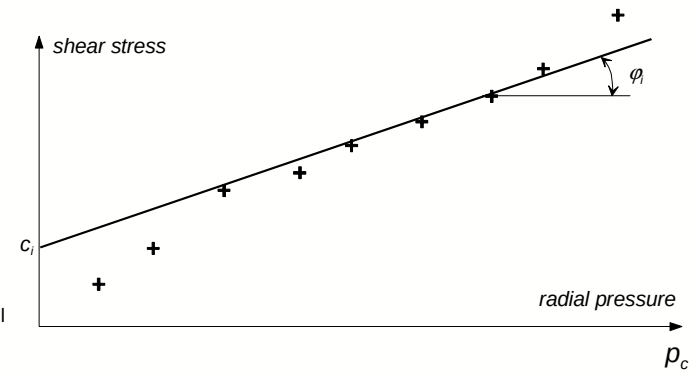


Phicomètre

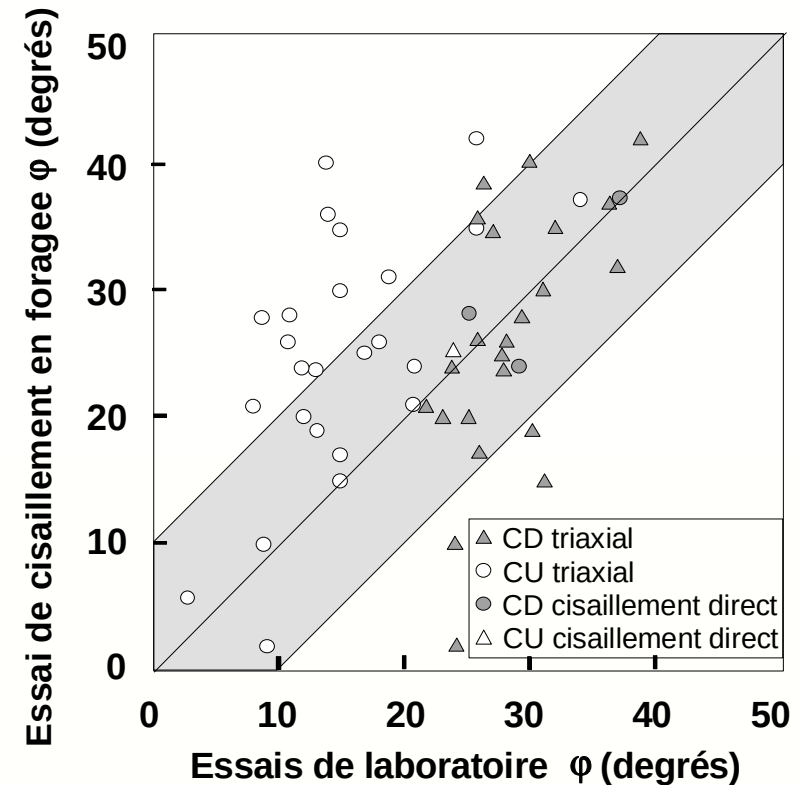
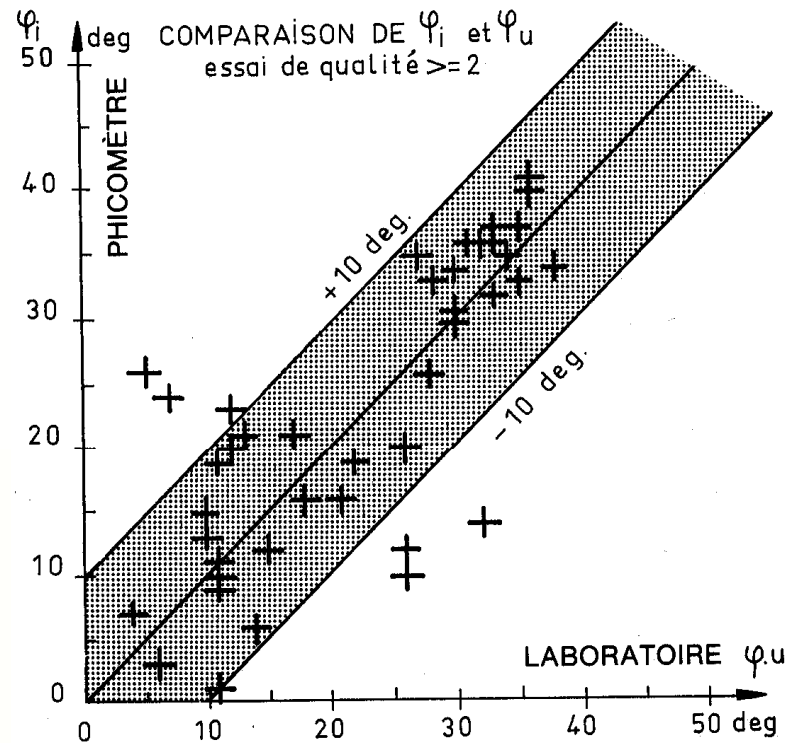


Derived parameters:

Failure parameters c_{phico} et φ_{phico}



Comparison with lab tests

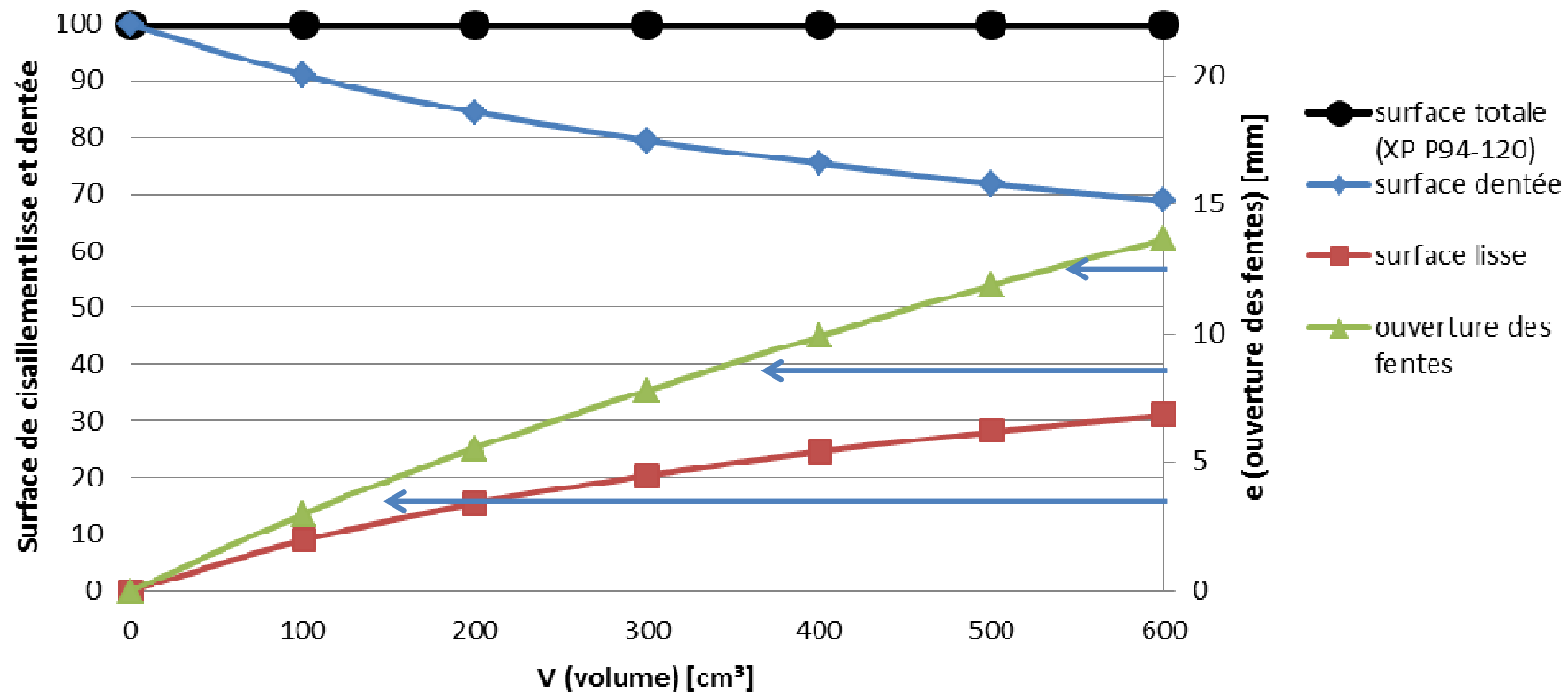


(a) Phicometer and shear box (Philipponnat, 1987)

(b) Borehole shear test and triaxial and shear box tests (Lutenegger et al., 1980)

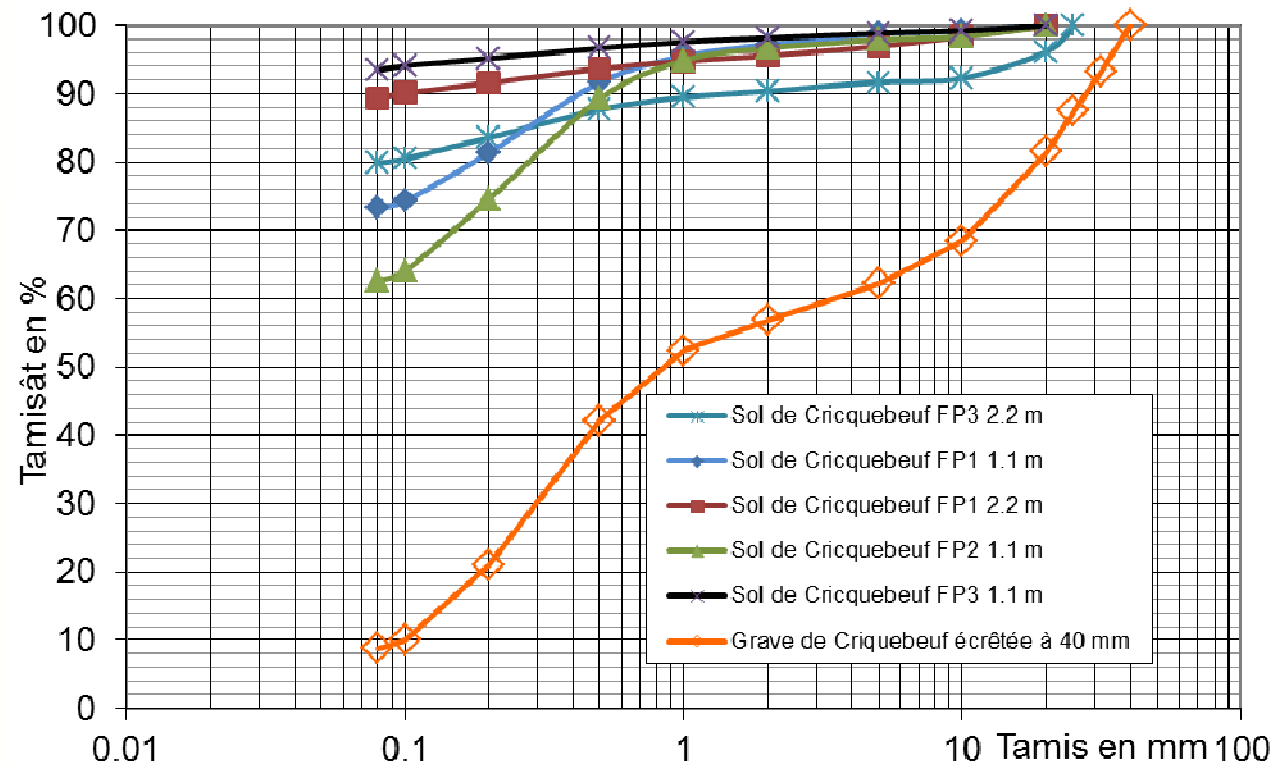
Possible explanation

- Evolution of groove size during expansion



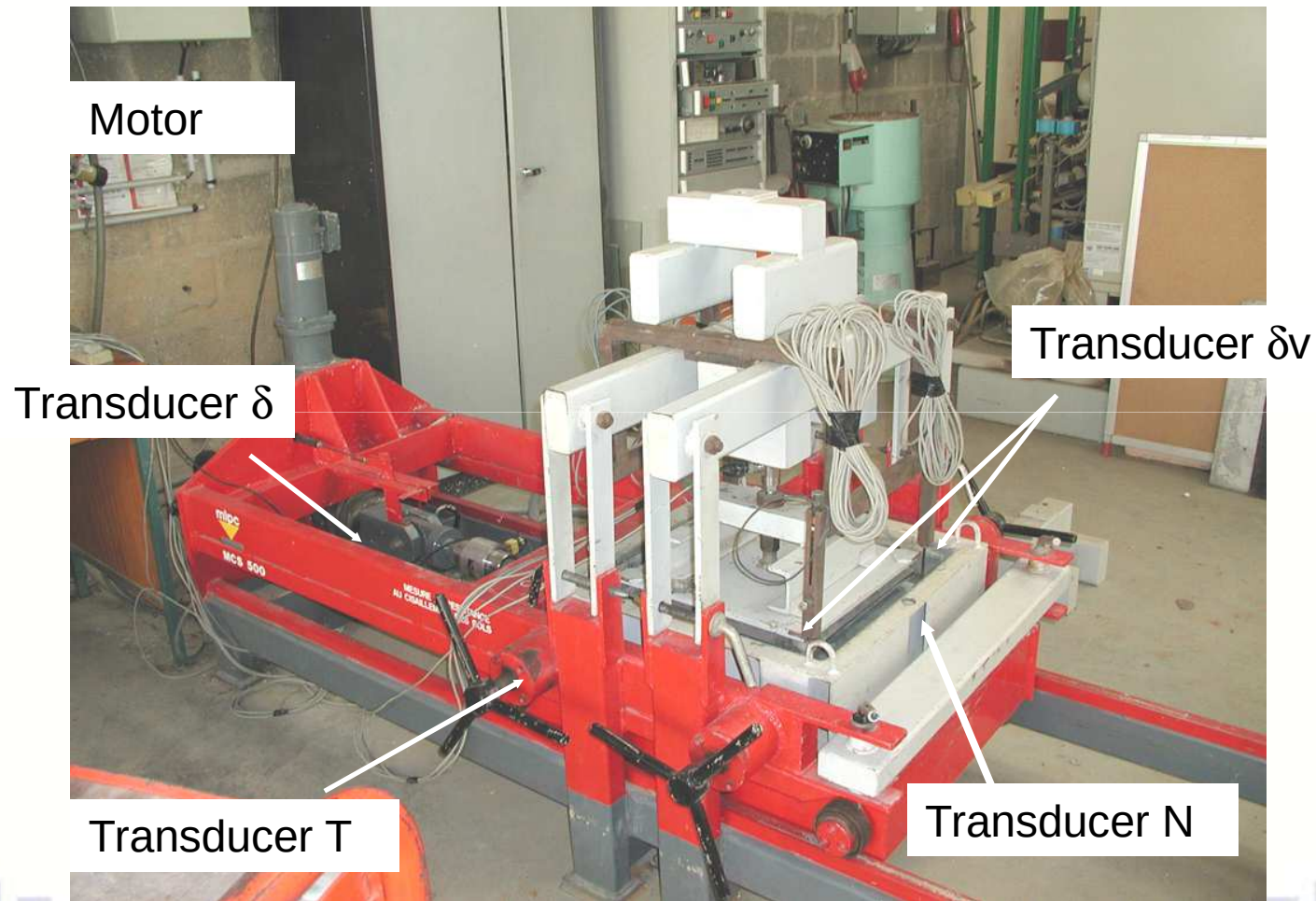
Test program

- Reference coarse soil
- Lab test
- In situ test

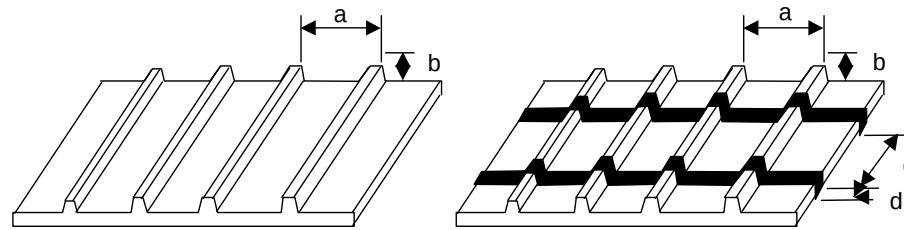


Lab tests

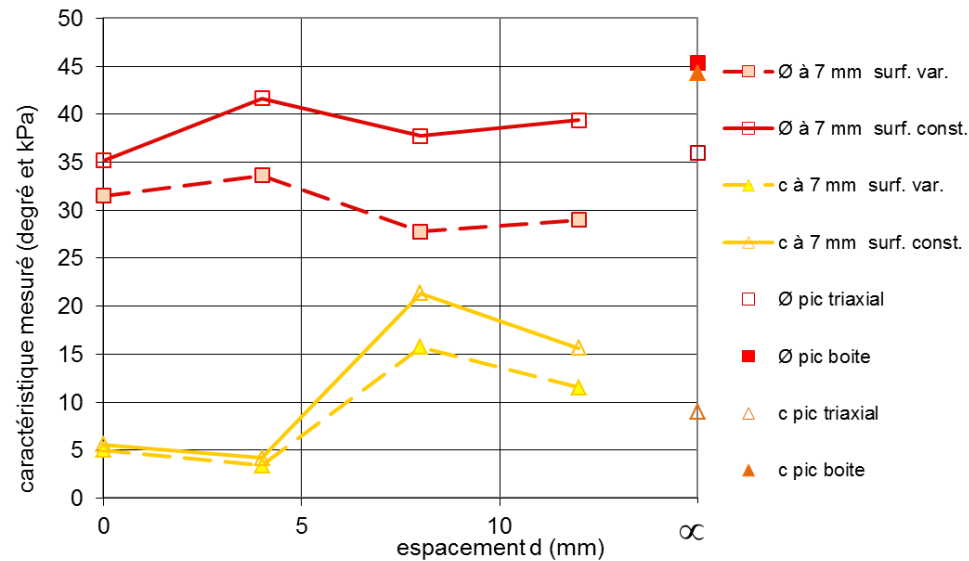
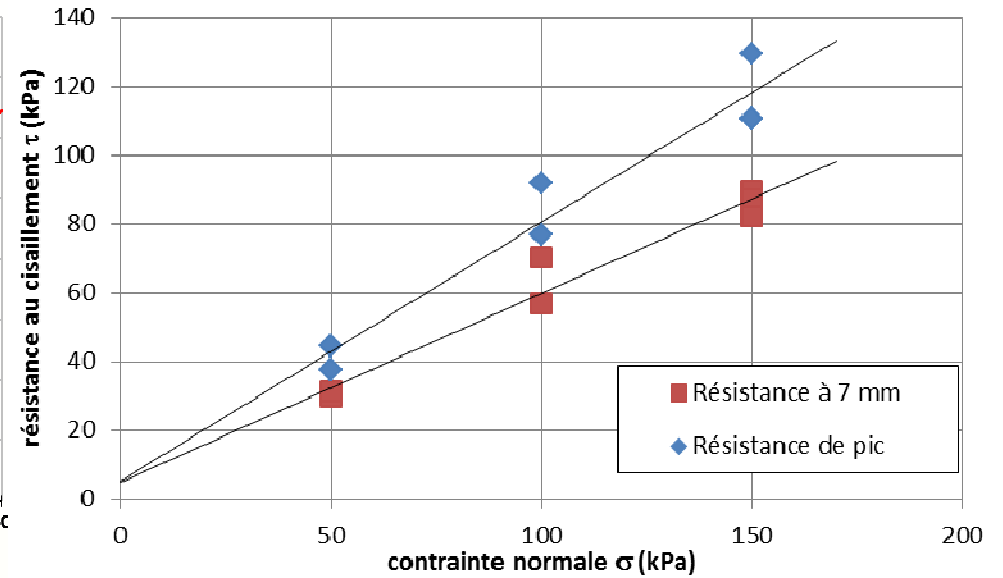
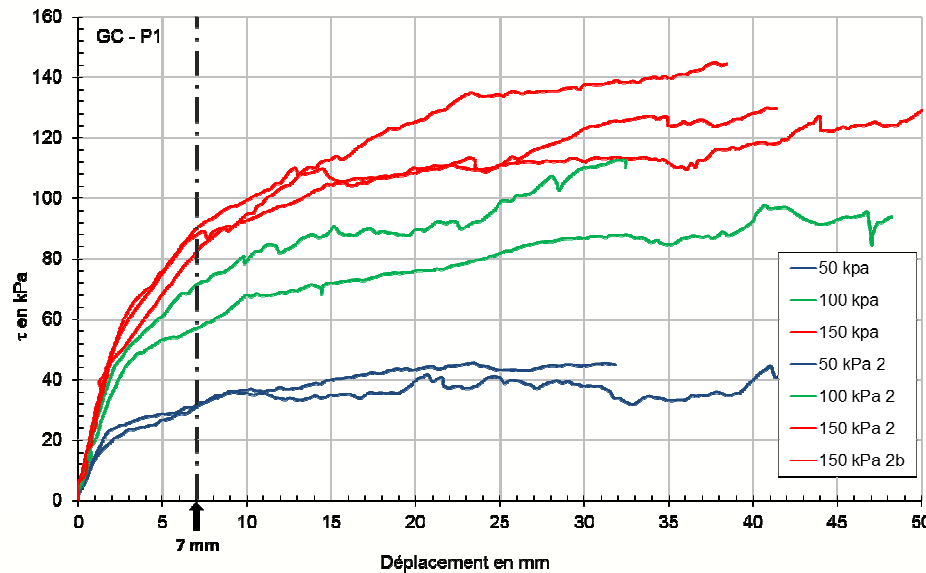
Direct shear box 500x500 mm



Model plates

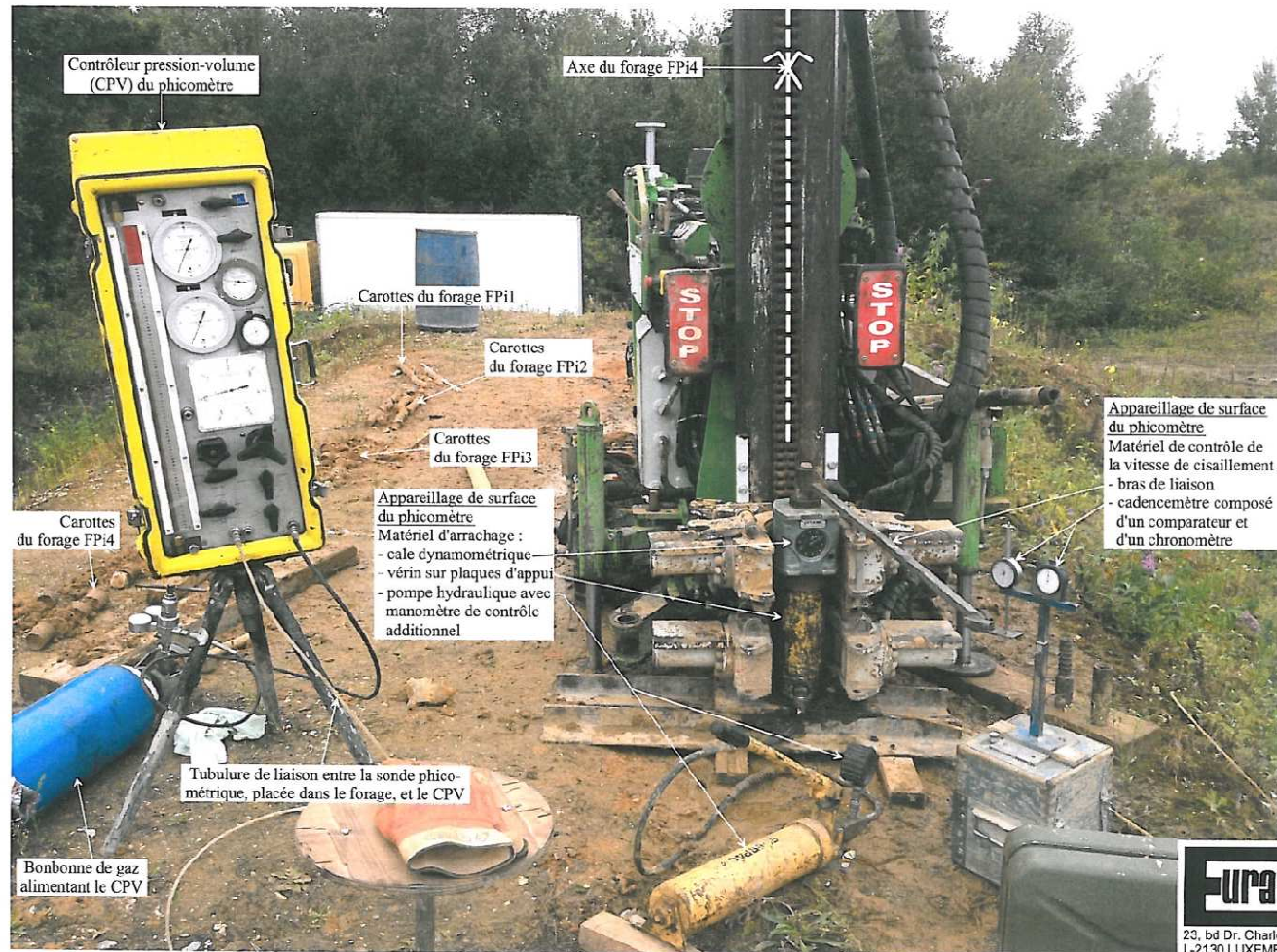


Test program

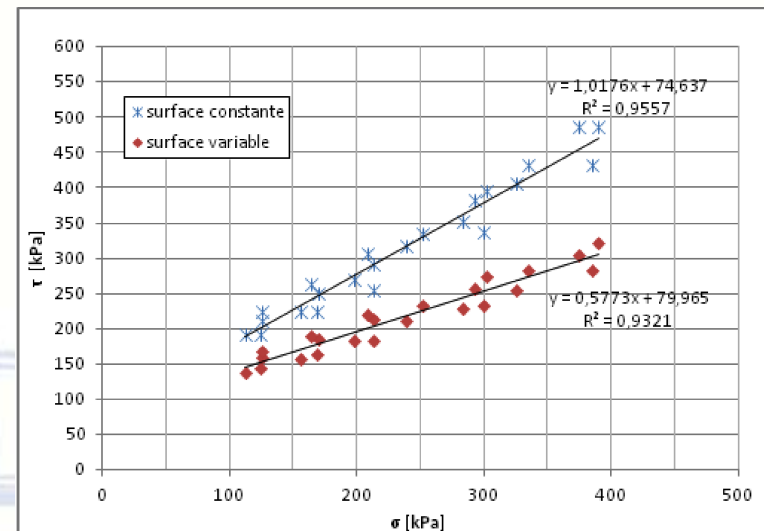
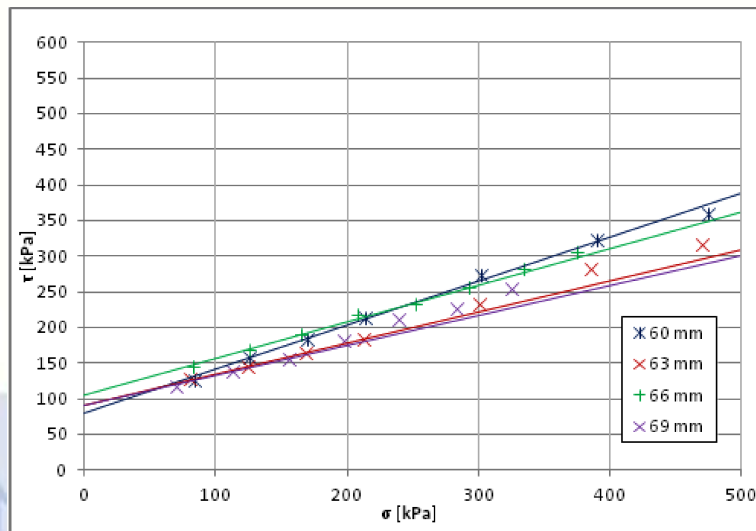
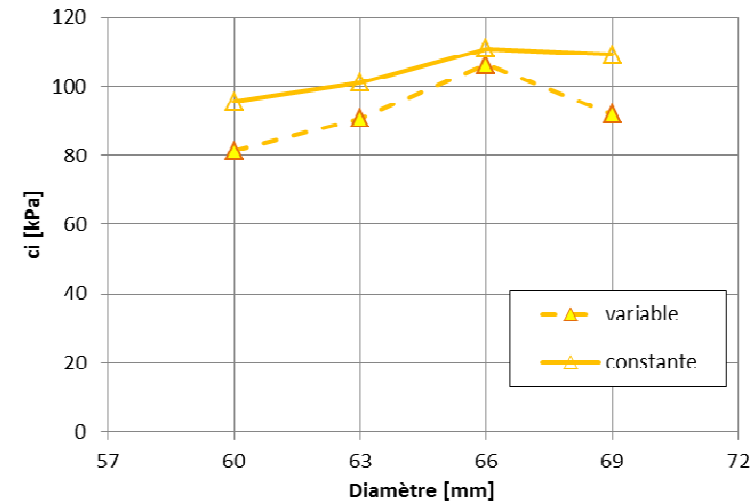
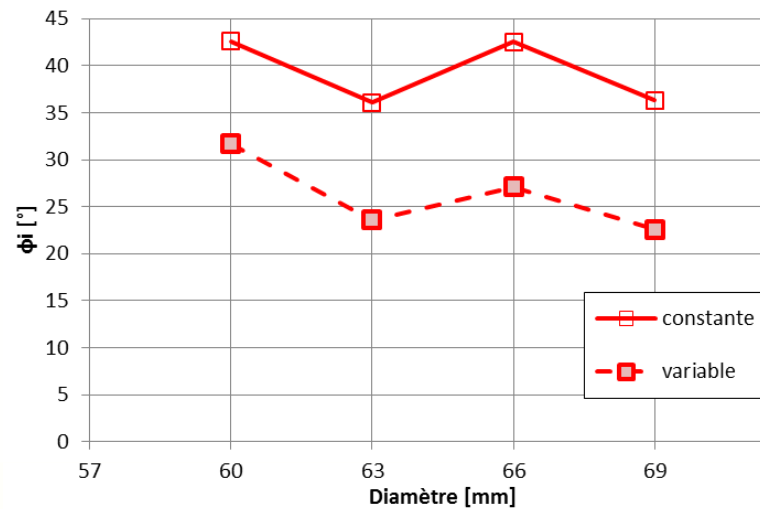


In situ tests

- Embankment of reference coarse soil



Test program



Summary

- laboratory tests and in situ on reconstituted soil, more or less uniform in lithology and compactness show some dispersion of shear characteristics.
- Dispersion seems related to the choice of the method of interpretation, in this case the choice of the linear portion of the phicometer curve that determines the slope of shear envelop (Figure 6a).
- Superimposing the set of points of shear plateau (couples $[\sigma; \tau]$) of the 4 tests shows a low dispersion which shows a negligible influence of the opening slots on the interpretation of tests .
- There are significant differences depending on whether one considers a constant or variable shear surface.



Thank you for your attention

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