

**in situ  
modulus  
measurement**

# IGS Technical Note

## Measurement of Soil & Rock Modulus

It's "horses for courses" at IGS - we offer the following:

- Constrained Modulus of soils by DMT, including the new automated Medusa DMT.
- Initial & Reload Elastic Modulus of:
  - soils, by Pencil pressuremeter.
  - soil and weak rock, by Texam<sup>®</sup> pressuremeter.
  - weak to strong rock, by Probex<sup>®</sup> pressuremeter.

**and it's all IGS's everyday business**

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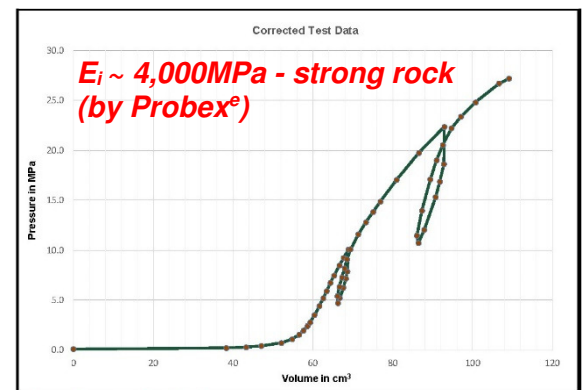
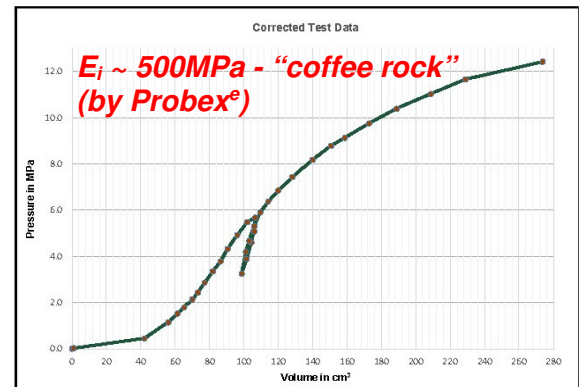
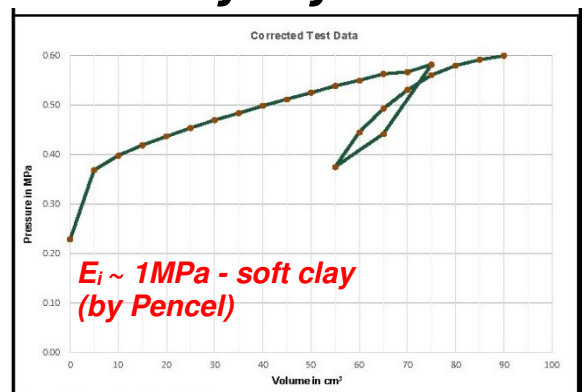
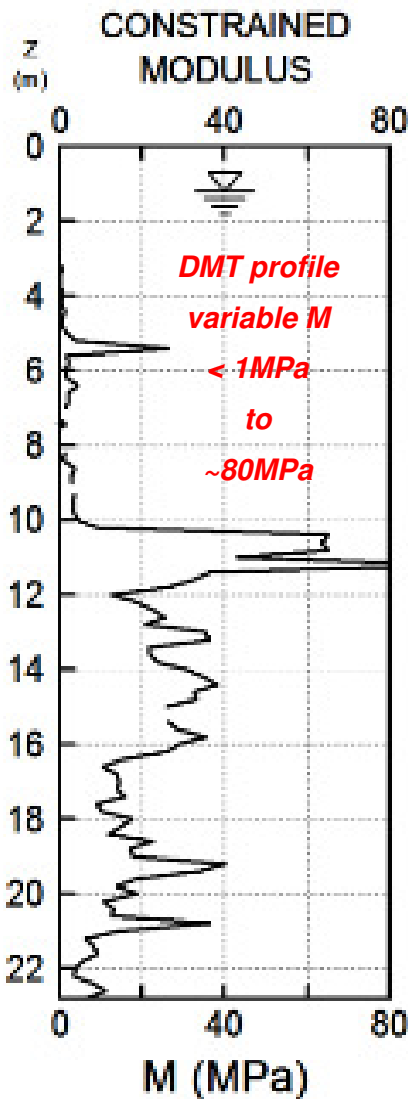
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high quality in situ testing  
high quality sampling



> three orders of magnitude

**reducing geotechnical uncertainty**



## MENU

## IN SITU TESTS BY IGS

23 February 2021

**CPT & CPTu**

We offer a range of Test Categories, from routine CPT & CPTu to special-type and quasi-research. We claim the most sensitive, accurate and defensible testing available.

**DMT**

**Medusa DMT**

- batteries
- electronic board
- engine
- syringe
- pressure transducer
- DMT

Our most popular test type after CPTu. Quantitative modulus & strength profiling. The Medusa is cutting edge technology.

**Seismic S-Wave & P-Wave Profiling**

Shear wave velocity by the SCPTu method, and both shear wave and compression wave by high-tech Marchetti modules.

$V_s = (S_2 - S_1) / \Delta t$   
 $G_0 = \rho \cdot V_s^2$

**Direct-Push Vane Shear**

General Principles of IGS's APV Vane Shear System.  
 The torque motor and torque sensing are immediately above the rotating vane - hence no rod friction corrections are needed. The rods do not turn.

Direct-push Vane Shear Testing is "everyday stuff" for IGS. We typically use vane sizes ranging from 50x100mm but occasionally we use 100x200mm vanes.

**Full Flow Penetrometers Tee-Bar and Ball-Cone**

A penetrometer developed specifically for shear strength testing of soft to very soft clay. Can be "cycled" to test for residual shear strength.

**Pressuremeter Testing**

- Pencil – 35mm – 2,500kPa
- Texam® – 74mm – 10,000kPa
- Probex® – 74mm 30,000kPa

With these three pressuremeters we can test materials ranging from soft clays to medium strength rock, in boreholes and (with the Pencil) also by direct-push.

In addition to the testing outlined above, we also install standpipes and piezometers, and we offer several different direct-push sampling techniques. Sampling methods are summarised on a separate Menu Sheet.