

Dilatometer

GreggDrilling & Testing, Inc. uses a flat plate in situ dilatometer to obtain common soil parameters such as compressibility and soil behaviour classification. From a corrected first reading (p_0) and a corrected second reading (p_1) one can calculate soil parameters such as:

- Coefficient of earth pressure in situ (K_0)
- Overconsolidation Ratio (OCR)
- Undrained Shear Strength (c_u)
- Friction Angle (Φ)
- Coefficient of Consolidation (c_h)
- Coefficient of Permeability (k_h)
- Unit Weight and Description (γ)
- Vertical Drained Constrained Modulus (M)
- Equilibrium Pore Pressure (u_0)

The flat dilatometer shown below consists of a stainless steel blade having a flat, circular steel membrane mounted flush on one side (*figure DMT*). The blade is connected to a control unit on the ground surface by a pneumatic-electrical tube to transmit gas pressure and electrical signals. The tubes are contained inside steel push rods that can be pushed into the ground by common field equipment such as a CPT rig or a drill rig.

The test is accomplished by advancing the dilatometer to a specified depth and increasing the nitrogen gas pressure until the membrane is flush with the blade. This pressure is noted as the A-pressure, the pressure required to begin to move the membrane against the soil. The membrane is then inflated further until the center of the membrane is displaced 1.1mm into the soil. This pressure is noted as the B-pressure. The blade is then advanced into the ground to the next depth increment and the procedure is repeated. The A and B pressure readings can be corrected by calibration factors (ΔA , ΔB) to obtain p_0 and p_1 .

For a detailed reference on dilatometer testing, refer to Marchetti et. al., 2001.

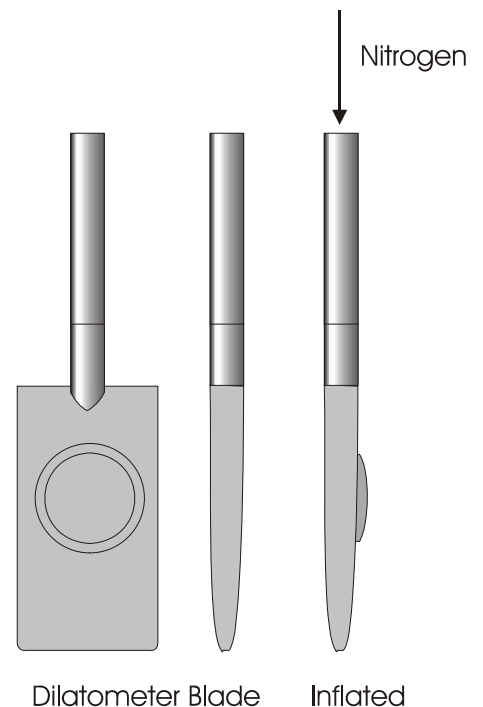


Figure DMT

