

## Dissipation Tests Results

### Dissipation tests

Dissipation tests consists of stopping the piezocone penetration and observing porepressures ( $u$ ) with elapsed time ( $t$ ). The data are automatic recorded by the field computer and should take place until a minimum of 50% dissipation.

The porepressures are plotted as a function of square root of ( $t$ ). The graphical technique suggested by Robertson and Campanella (1989), yields a value for  $t_{50}$ , which corresponds to the time for 50% consolidation.

The value of the coefficient of consolidation in the radial or horizontal direction  $c_h$  was then calculated by Houlsby and Teh's (1988) theory using the following equation:

$$c_h = \frac{T \times r^2 \times I_r^{0.5}}{t_{50}}$$

where:

T: time factor given by Houlsby and Teh's (1988) theory corresponding to the porepressure position

r: piezocone radius

$I_r$ : stiffness index, equal to shear modulus G divided by the undrained strength of clay ( $S_u$ ).

$t_{50}$ : time corresponding to 50% consolidation

### Permeability estimates based on dissipation test

The dissipation of pore pressures during a CPTu dissipation test is controlled by the coefficient of consolidation in the horizontal direction ( $c_h$ ) which is influenced by a combination of the soil permeability ( $k_h$ ) and compressibility (M), as defined by the following:

$$k_h = c_h \times \gamma_w / M$$

where: M is the 1-D constrained modulus and  $\gamma_w$  is the unit weight of water, in compatible units.

### Tabular results

CPTU Borehole	Depth (m)	$(t_{50})^{0.50}$	$t_{50}$ (s)	$t_{50}$ (years)	G/ $S_u$	$c_h$ ( $m^2/s$ )	$c_h$ ( $m^2/year$ )	M (MPa)	$k_h$ (m/s)
CPT1	5.79	17.1	293	9.30E-006	162.00	3.56E-006	112	6.46	5.41E-009
CPT1	10.86	18.3	336	1.07E-005	180.00	3.28E-006	103	1.81	1.78E-008



