



## **Soil Property Testing Ltd.**

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### **Determination of the Undrained shear strength in Triaxial Compression without measurement of pore pressure (Definitive method)**

BS1377:Part7:1990 Clause 8 ( Recent BSENISO 17892-8)

This covers the method of the determination of the undrained shear strength of a specimen of **COHESIVE** soil when it is subjected to a constant confining (Cell) pressure and to strain controlled axial loading, when no change in total moisture content is allowed. (Total stress)

Tests are usually carried out on a set of three similar specimens, subjected to different confining pressures. Specimen diameters range from 38mm specimens (which are only suitable for homogeneous fine grained cohesive soils) to nominal 100mm dia, where gravel sized particles are permitted

As difficulty arises in obtaining 3 x nominal 100 mm dia specimens of 2:1 length:dia ratio from a U100 or UT100 sample of nominal 450mm length, then the above procedure can be modified to;

### **Determination of the undrained shear strength in Triaxial compression with Multi-stage loading and without measurement of Pore Pressure.**

BS1377:Part7: 1990 Clause 9

**This method provides a means of determining the relationship between undrained shear strength and confining pressure, (C- $\phi$  (phi) soils) but from a single specimen.**

It is not suitable for brittle or sensitive soils, and gravel sized particles are permitted up to one-fifth of the specimen diameter. (ie 20mm for a nominal 100mm dia specimen)

Many clients are scheduling “Single stage” tests on one specimen regardless of whether they are cohesive or have a frictional component (where Mohrs circle analysis would show that the strength of the sample is due both to “Apparent cohesion”  $C_u$  and the mechanical interlock of granular particles ie “Angle of Friction”  $\phi$  (phi)

**SPT Ltd are concerned that these single stage results may be interpreted by others as being purely Cohesion, which is not the case and could lead to design complications where Piling companies could use these values to assess skin friction.**