



CONCRETE CANVAS®

Concrete on a Roll

SHEAR INTERFACE TESTING



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Shear Interface Resistance

Concrete Canvas GCCM* (CC) is often installed on slopes to provide surface erosion protection. To understand the surface sliding stability of the CC layer, the shear interface resistance (interface friction angle) between the PVC backing of the CC and the underlying substrate must be known.

CC is a robust, versatile product and is placed upon a variety of substrates. The following interface surfaces have been investigated:

- Well graded coarse aggregate (6F5)
- Building Sand
- Stiff Clay
- Very Soft Clay
- Smooth Concrete
- Non-woven geotextile (TS70)

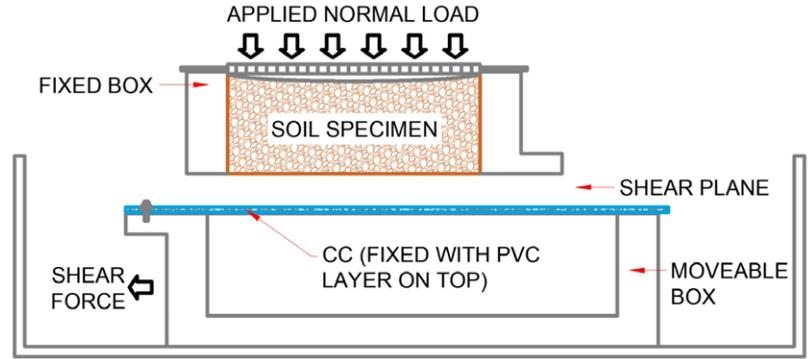
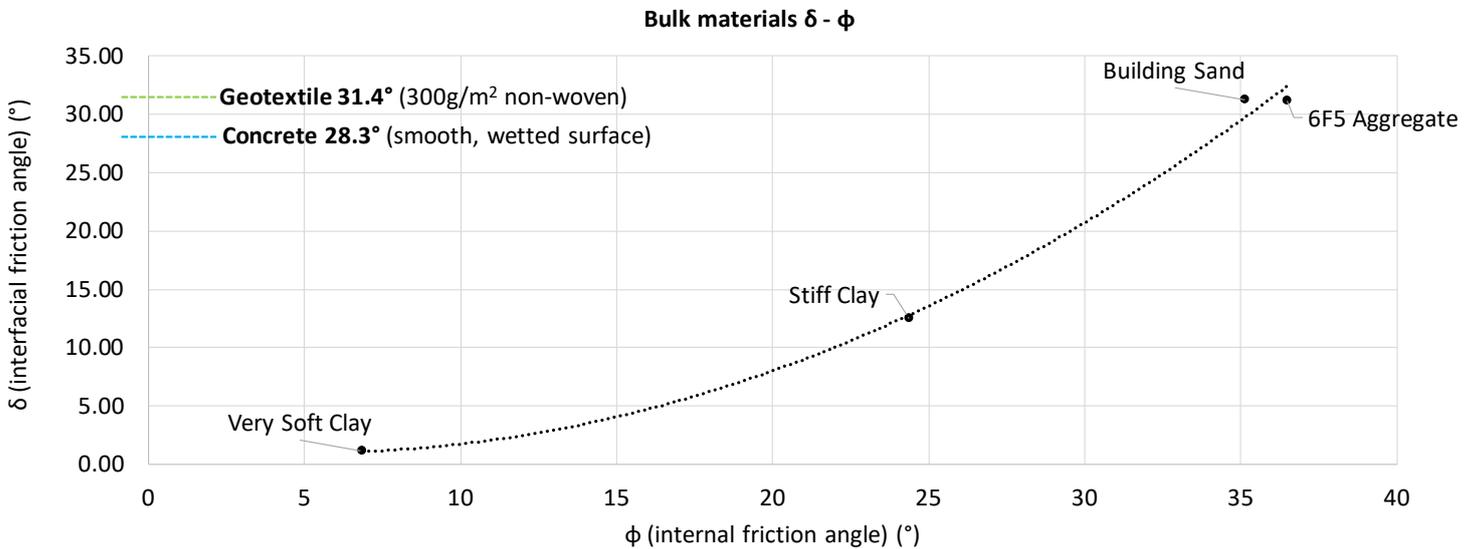


Figure 1. Typical interface shear resistance test set up

Interface Shear Resistance testing to ASTM D5321-17 was conducted by BICS Laboratories Ltd to determine the interface friction angle (δ) between the PVC underside of the CC material and the substrate surfaces. A DGSi Shear Box was used for the testing, with a 405mm x 305mm lower moving box and a 305mm x 305mm stationary upper box. For soil substrates, separate tests were conducted to determine the angle of internal friction (ϕ) of each soil. CC5 samples were prepared by hydration on a flat surface and cured for 28 days before testing commenced. All testing was conducted in submerged conditions to assess the interface between wetted surfaces and determine conservative values for δ .

Summary of Results

The results are comparable to interface data for other geosynthetics. A good correlation between ϕ and δ is observed:



The data can be used as a guide to assist Engineers when designing anchor trenches or intermediate fixings for hydraulic shear conditions. The results are unfactored so a factor of safety applicable to the relevant design methodology should be considered.

When placing CC on a geotextile surface, δ of the geotextile and underlying surface also needs to be assessed and the smaller of the two δ values should be used.

For applications where an understanding of the shear interface is critical, it is recommended to carry out shear tests on representative site surfaces.

*Geosynthetic Cementitious Composite Mat