

Elite Concrete technical specifications

Further design guidance on shear resistance between Legato blocks

The guide for designing retaining walls states that the interface shear is a function of the total vertical load acting at each block interface level.

The value depends on the number of blocks above the level considered. As this interface is considered to be frictional, the coefficient of friction between the concrete surfaces should be used to calculate the shear resistance.

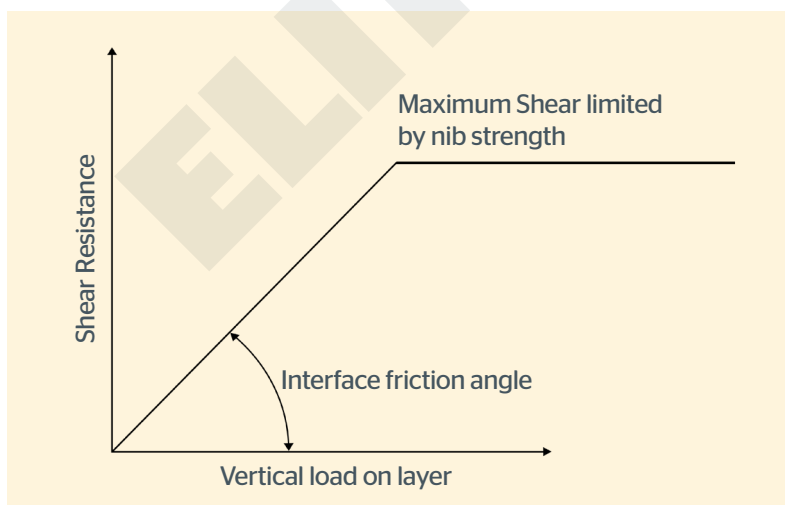
The friction coefficient for concrete-concrete interfaces is usually taken as 0.5 (although some publications suggest a higher value may be appropriate). However, the effect of the sloping nib profiles is to increase the shear resistance as the blocks above need to overcome the slope angle of the nibs (like a sawtooth motion).

This is the enhanced friction angle referred to in the design guide. The value of the enhanced friction angle needs to take account of the shape of the nibs and the concrete-concrete friction coefficient. For the Legato blocks, the nib slope angle is approximately 45° which is equivalent to a coefficient of friction of 1.0.

The LimitState GEO software used in the modelling system can simulate the enhanced friction caused by the nibs and concrete-concrete coefficient of friction. The shear resistance has a limiting value based upon the strength of the concrete nibs.

The strength of the nibs is shown in the datasheet entitled **Shear Force - Legato and Duo block nibs** - see under Safety downloads. The designer needs to consider how many nibs are in direct contact with the block above to determine the maximum shear resistance at any one layer.

The sketch below graphically depicts the interface shear resistance versus vertical load.



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