



# The Expert >>

## Voids and Settlement - A major problem? >>

Voids under floors are relatively uncommon, but when they do occur, they can be a major headache. Voids occur for two principal reasons – settlement of the sub base and soil beneath or compression of the sub base alongside joints. Movement of the floor can be caused by a combination of both causes.

Settlements are a result of inadequate soils at depth. Geotechnical investigation before construction should identify these potential problems and appropriate soils remediation or perhaps a pile form of construction specified. On smaller developments, this investigation might get omitted because of cost. This is most unwise and will



come back to bite the developer. Alternatively, soils tests will be done at the surface only, often resulting in CBR test. This again is short sighted as it is could be in the soils deep down where the settlement will take place.

If you are unlucky enough to have settlement, then floor slabs are likely to sink and cracks will form as the concrete is forced to bend. You may notice that the floor is sinking away from column bases which might be founded on better ground at a suitable depth. If this is the case then remediation might be possible using a system that pumped an expanding grout under the slab. However, before any remediation takes place, the geotechnical data should be reviewed and it may be wise to cut through the floor to take soil tests if this had not been done before building commenced. Put simply, you need to know if there are reasonable prospects for stabilising the downwards movement which is caused by compression of the soils. Somewhat less commonly, there may be problems with water movements causing voiding at depth.



Expansive grouting may penetrate the upper layers of the soil, but its main effect is to push the slab upwards on top of a new layer of resin just under the slab. If settlement continues, it might have to be repeated. Therefore, once a problem has been recognised, routine condition monitoring should be put in place with levels taken and cracks charted.

Once the floor has been lifted, cracks can be repaired. A sure sign of on going settlement will be the reopening of these cracks.

Figure: Cracking caused by settlement.

Next Edition: Movement at joints - rocking floors

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