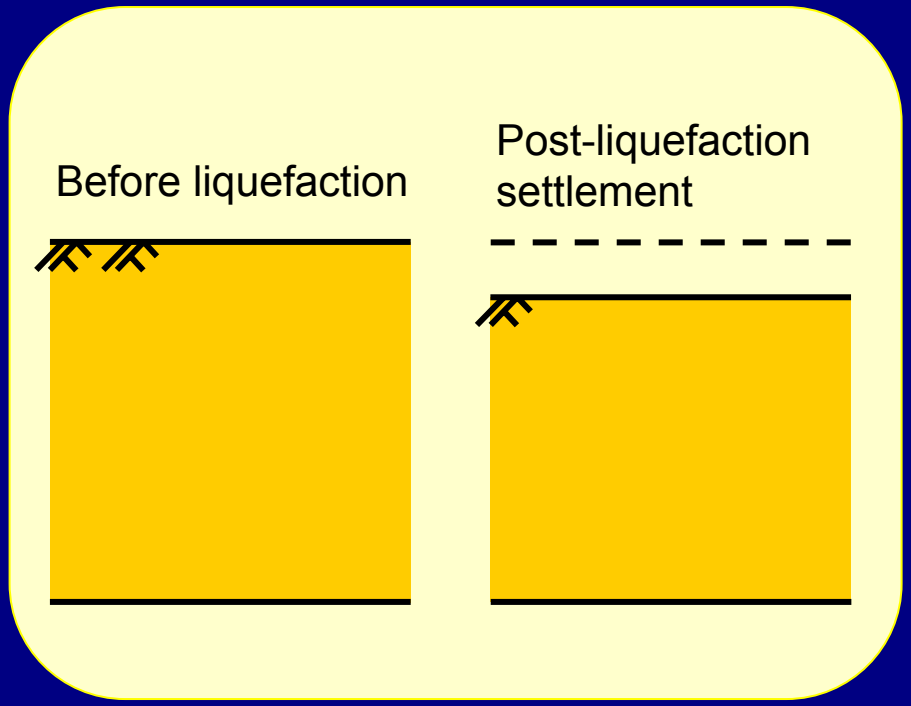
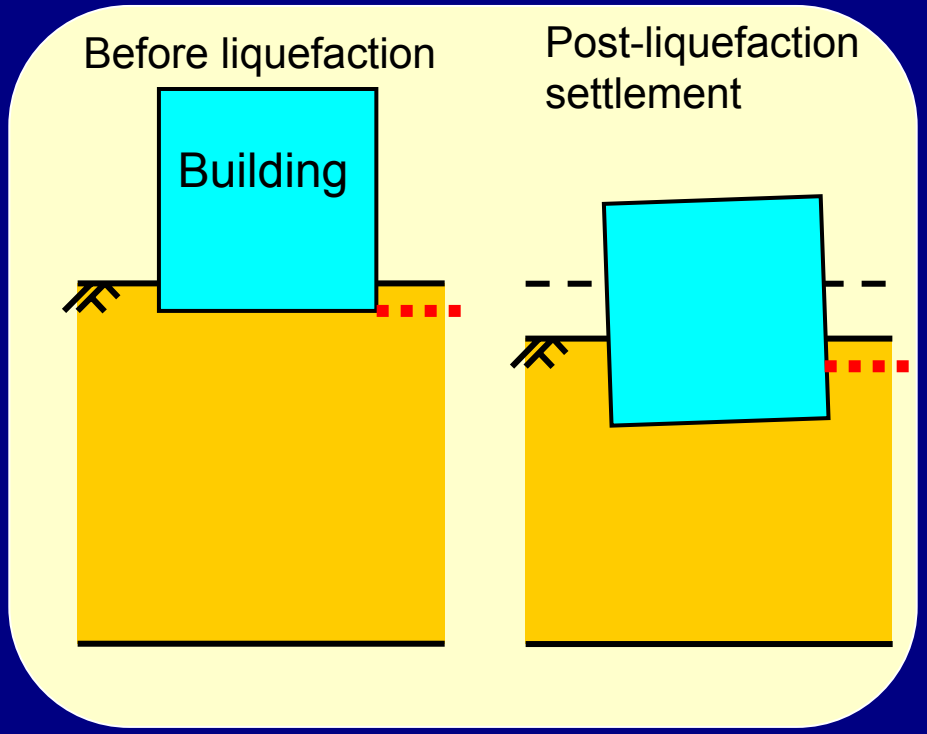
Punch-through Settlement (sinking)

In the free field

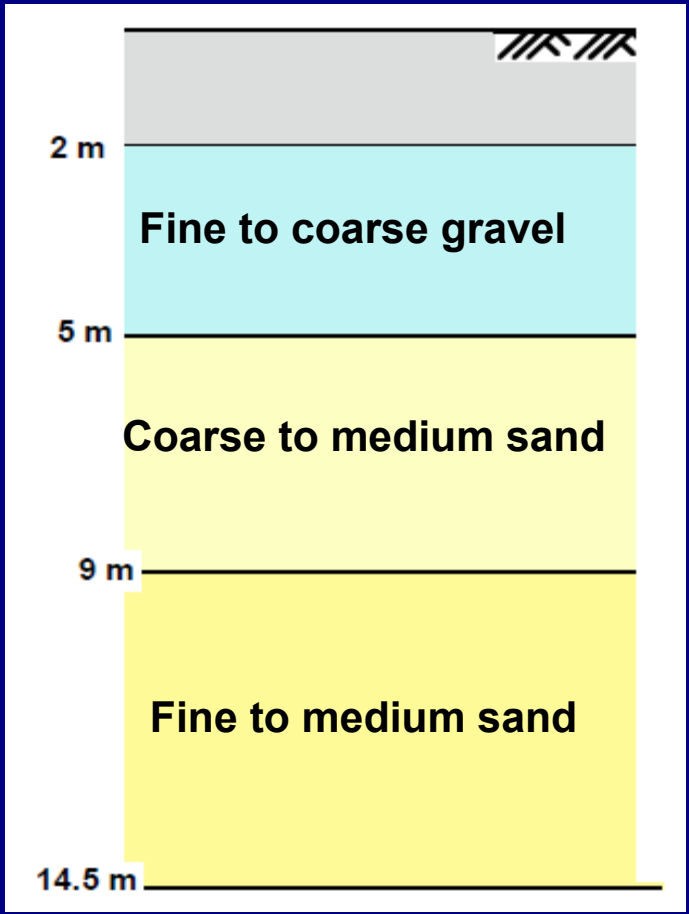


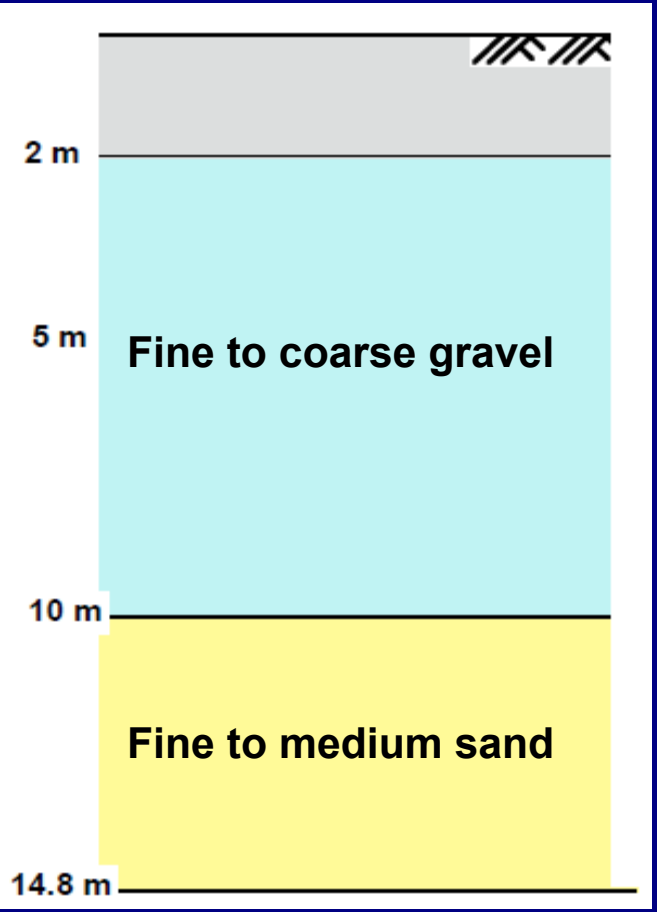
Building settlement



Adjacent Buildings

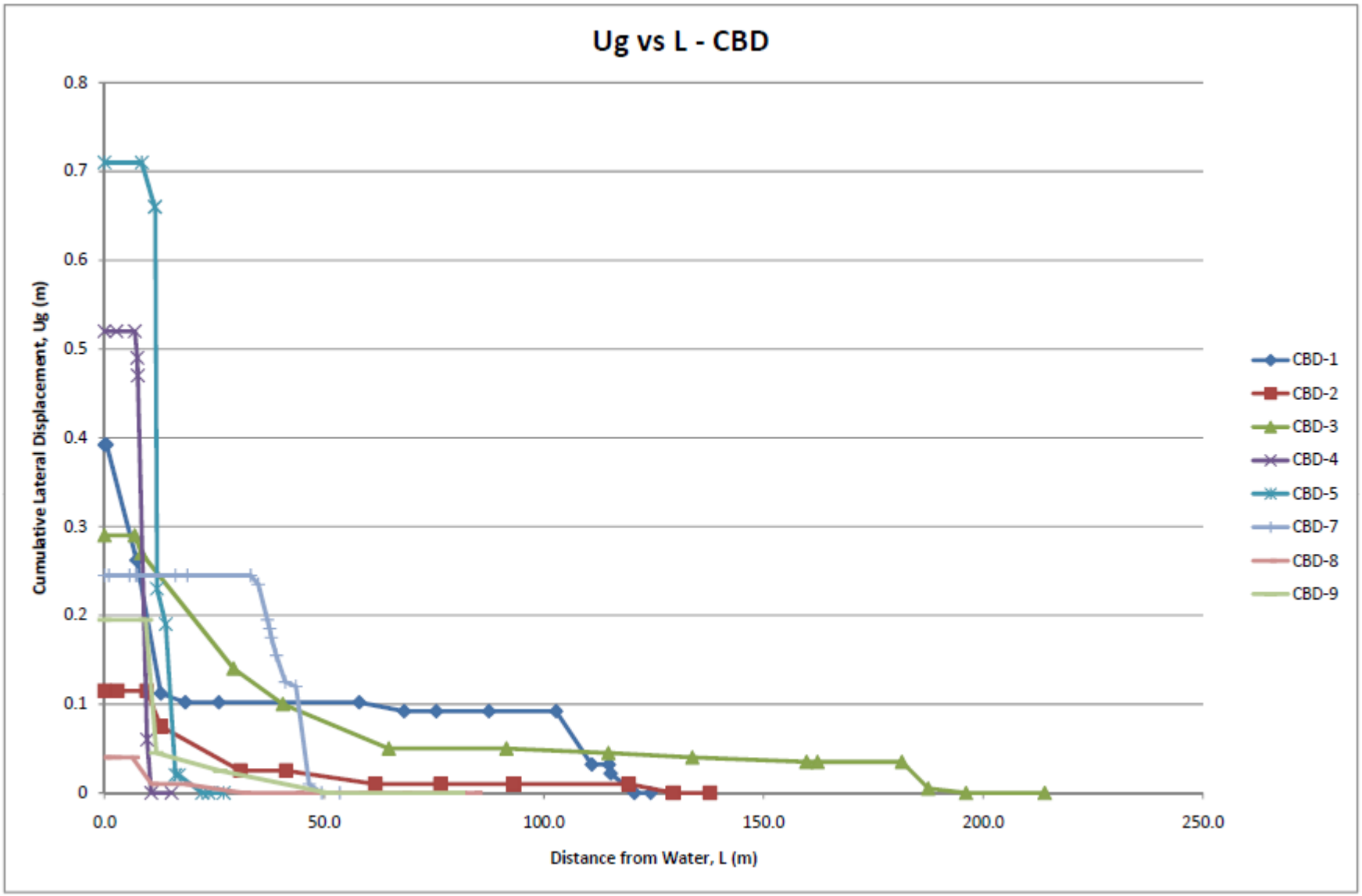
Soil Variability





Buildings on Pile Foundations

Lateral Spreading



Summary on CBD Building Foundations

- Buildings on shallow foundations, supported on loose to medium-dense sands and silty sands that liquefied, suffered differential settlements and residual tilts
- Pile supported structures, when the piles reached competent soils at depth, showed less differential and residual movements even in areas of severe liquefaction
- Multi-storey and high-rise buildings supported on shallow foundations sitting on shallow gravels showed mixed performance *(soil variability and transition zones)*
- Hybrid foundations (shallow and deep foundations or piles of different lengths) performed relatively poorly
- Zones of ground weakness with pronounced ground distortion and liquefaction adversely affected a number of buildings and their foundations
- The effects of lateral spreading within the CBD were localized but quite damaging to buildings.