



Basement Design

- **WALLING SYSTEMS**
Secant or contiguous piling, gravity walls, diaphragm walls.
- **SUPPORT TYPE**
Embedded walls - cantilever, propped or anchored.
- **PARTY WALL ISSUES**
Underpinning, building movement assessments, construction vibration.

Basement Ground Movement

A detailed ground heave/settlement assessment was required for a 6 storey building with 3 basement levels below ground. The proposed development occupies a plan area of about 70m by 70m with a 13m deep excavation for the basement. The ground conditions comprise a very thin mantle of made ground overlying London Clay. To complicate matters a large diameter sewer ran under the proposed development area and a preliminary study was requested to assess the ground movement that could affect the sewer, initially due to excavation and then the imposition of the building foundation loads.

With our expertise in modelling soil structure interaction Remedy Geotechnics was able to carry out a preliminary analysis, quickly and cost-effectively, to assess the ground heave due to the excavation. Then the compression settlement of the ground due to the foundation loads from the supported building were computed. The analysis method allowed the heave contours over the whole building footprint to be calculated. Then the movement profile along the line of the sewer was plotted. A maximum short term heave of 35mm was calculated, although much of this heave was shown to be reversed when the building foundation load was applied.