

Basement Construction Geotechnical Investigation & Design

This project comprised the construction of a basement within a sloping London Clay site in Wimbledon. The maximum basement depth was approximately 8m with the site bounded on either side by adjacent detached properties.

The main basement excavation was constructed within contiguous bored pile walls. As the rear ground floor footprint of the building extended into the slope, a second contiguous bored pile wall was constructed upslope of the main excavation to allow a level construction platform to be cut into the slope. A further bored king post wall was also constructed upslope of the second wall to create a terraced garden area.

We were instructed to carry out the ground investigation of the site, which included a series of Window Sample holes and Cable Percussive boreholes (using restricted access and conventional rigs). The investigation also included groundwater monitoring and hand excavated pits for boundary foundation details.

We carried out a detailed stability analysis of existing slope conditions together with the global stability of the bored pile walls, to determine their appropriate founding depths. The stability analysis was also extended to include the required shear capacity of the walls. The design of the bored pile walls and vertically loaded piles was carried out by our Piling Consultant.

In addition analyses were carried out of lateral ground movement of the walls and heave (short and long-term) associated with unloading of the soils due to the basement excavation.

For ground movement monitoring purposes, we also carried out measurements of inclinometers installed within and upslope of the bored piled walls during the construction stage.



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