



Key achievements

- **Safety critical deformation monitoring of a secant piled wall during basement construction**
- **Long-term manual monitoring with over 125 site visits over 2 years.**

The Project

Keller Foundations and GEO-Instruments worked together for principal contractor Sir Robert McAlpine on the £90million redevelopment of the iconic Westbury Mayfair Hotel in central London. The project will add an extension to the rear of the hotel including a new two-storey basement. Keller's foundations division is working on multiple construction elements, which are being monitored for ground movement by engineers from GEO-Instruments.

The Challenge

The new basement was excavated within an area with approximately 8m depth of granular material followed by London Clay. Any geotechnical instrumentation would also need to account for these ground conditions. Keller Foundations constructed a 32m long 600mm diameter secant piled wall and 104No 300mm restricted access bearing mini piles to support a variety of other pits and walls within the new basement. These significant excavation works would require comprehensive daily monitoring throughout construction.

The Solution

GEO-Instruments installed a system of manually monitored inclinometers within the secant wall to a depth of 16m to monitor the deformation of the wall as excavation works progressed. Settlement studs were also installed to monitor the movement of the site's extremities. Read manually using an ATS and mini prism, these points are compared to an array of reference points fixed to surrounding buildings. At key stages of construction, both systems were surveyed daily. Additional prisms were installed along the top of the wall's capping beam once completed. GEO-Instruments provided full reporting and visualisation of monitoring data via its online QuickView software.

Application

Structural monitoring

Technique

Manual Inclinometer Surveys
Manual surveying

Market

Basements
Infrastructure

Client

Keller UK
Sir Robert McAlpine

Project Duration

2 Years

Instrumentation

Manual Inclinometers
Survey Pins
Prisms

Keller companies

Keller Foundations
GEO-Instruments