

CASE STUDY

BELGRAVE SQUARE

allfoundations
Specialist Civil Engineering Contractors

Client:

BH Basements working for Metbase

Site:

Belgrave Square, London

Restricted Access Project.

Belgrave Square is one of the grandest and largest 19th-century squares in London. It is the centrepiece of Belgravia, and was laid out by the property contractor Thomas Cubitt for the 2nd Earl Grosvenor, later the 1st Marquess of Westminster, in the 1820s. The square takes its name from one of the Duke of Westminster's subsidiary titles, Viscount Belgrave. Today, many embassies are based in the square.



The project comprised of the construction of two levels of basement below the lower ground floor of the existing building. The basement level will include a fitness suite and the sub-basement level will accommodate an indoor swimming pool and associated plant rooms.

The challenge was to install a piled retaining wall to firstly facilitate the safe excavation of the new basement and to secondly form the permanent structure of the new basement. The presence of a high water table in the Kempton Park Gravels meant that a Contiguous Piled Wall could not be used and a Secant Piled Wall would therefore be required to keep the excavations free of ground water. In addition, bearing piles were required to act as both temporary works piles, to support the existing structure whilst the excavations were being carried out, and to act as tension piles for the permanent structure.

This was made more challenging with all of the piles needing to be installed within the constraints of a very tight site, inside the building with restricted headroom, using equipment that could be lifted in to the existing lower ground floor lightwell and tracked through a pedestrian doorway.

With the above brief, and through many discussions between AFUK, BH Basement and the project Engineer's, Michael Barclay Partnership, the solution was for AFUK to install a secant wall comprising of 350mm diameter, male and female, grout injected piles with our Super Kitten Rig.

The general ground conditions below the existing lower ground floor consisted of a moderate thickness of made ground, followed by Kempton Park Gravel overlying London Clay at depth.

The sequence of construction was as follows:

- Setting up of loading gantry, lifting hoist and conveyors.
- Installation of a guide-wall at the front of the property at existing lower ground floor level (LGF).
- Visit 1 Secant wall and temporary works piles at the front of the property at LGF.
- Underpinning, bulk excavation to basement level, temporary works and guide-wall to the rear of the property.
- Visit 2 Secant wall at new basement level to the rear of the property.

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The female piles were installed first using a weak grout mix, followed by the male piles. Grout was batched on site with daily deliveries of pre-mixed grout for the female piles, and sand and cement for the male piles. All of the materials, including the reinforcement, were loaded onto the loading gantry and hoisted to the batching area. Visit 2 was even more challenging as the rig had to be lowered two levels below ground level and the piles were installed amongst temporary works that were in place to provide lateral supported to the underpinning.

The project was completed on program, to budget and to the tight constructional tolerances required.

Patrick – Project Manager for Metbase says.....

"I was very impressed with your company's proactive attitude and diligence during the Piling Works at Belgrave Square. Metbase and All Foundations have a similar hard-working ethos in common and I have no doubt could work together efficiently in the near future."

Project Value –
Visit 1, £153,000
and Visit 2,
£112,000

Project Duration
– Visit 1, 7 weeks
and Visit 2, 4
weeks

