

# Two Level Basement, Broadgate, London

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**Contract No:** C876

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**Client:** Bluebutton Property Management UK Limited (Mace acting as Construction Manager)

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**Location:** Broadgate, London, EC2

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**Value:** Approximately £900,000.00

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**Summary:** Supply and Installation of steel sheet piles to allow excavation of a double underground basement, including pre-augering, water jetting and subsequent welding of clutches to form fully watertight basement retaining wall.

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Sheet Piling (UK) Ltd. were employed by Bluebutton to supply and install approximately 180 lin.m of steel sheet piles required to form the two level basement for a prestigious new development at 5 Broadgate, adjacent to Liverpool Street station in central London. Due to this location being a highly sensitive area, the installation technique adopted was using a silent vibration-free Giken pile press. Due to the prevailing ground conditions of medium-dense gravels overlying the London clay, pre-augering was needed to ensure that the piles could be driven using the Giken system through the gravel layer.

The client's Structural Engineer had provided the design for the sheet pile specifying ArcelorMittal PU31 sheet piles. The lengths of which varied, just over half of which were 13.5m long, the remaining piles varied in length up to 19.6m long being the longest piles installed by SPUK using a Giken pile press. The specification of these piles meant that bespoke rolling had to be carried out by ArcelorMittal, with reduced rolling tolerances on pile straightness being agreed prior to placement of order.

Due to the adjacent existing buildings, excavation of a lead trench was not as straightforward as usual. Sheet Piling (UK) Ltd were required to undertake the design of temporary works to ensure that no damage was caused to neighbouring assets and that works could be carried out in a safe environment. These works consisted of the installation of trench sheets which were then anchored back to the existing, saw cut, reinforced concrete slab, using anchor bolts.

After completing the temporary works and pre-augering, sheet pile installation commenced, installing the 13.5m long piles first. Once these had been installed the eastern elevation piles which varied in length were installed. As the length of the piles increased, so the co-ordination of deliveries and site lay down areas had to be closely monitored. Through liaison with both the Construction Manager and other on site contractors it was possible to get the 19.6m long piles onto site using a 'trombone wagon', and off load them to a suitable lay down area. Further co-ordination issues were raised due to a request by the Construction Manager to mobilise a second pile press to site, necessitated by a delay in Sheet Piling (UK) Ltd accessing areas of the site due to late handover. These extra challenges were dealt with admirably by Sheet Piling (UK) Ltd site management.

Following pile installation the top 600mm of each pile clutch was welded allowing the subsequent casting of the reinforced concrete capping beam which was carried out by others. Upon completion of the bulk earthworks excavation, Sheet Piling (UK) Ltd welders could then proceed with the welding of the sheet pile clutches from the underside of the capping beam down to formation, each clutch requiring upwards of 7.75m of weld. This welding would ensure that the basement wall was 100% water-tight as specified in BS8012:2009.

Due to the client's strict environmental policy, an extra level of diligence was required when allowing waste to leave site, and also the delivery distance for any materials and consumables that were needed on site had to be closely monitored and recorded.

One final environmental consideration which was developed during the project to ensure the environmental impact of the works was minimised was that Sheet Piling (UK) Ltd recycled the majority of the water required for water jetting purposes to assist with pile installation.

# Project Images

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# Downloads

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