



Sheet Piling with Press-in Methods adjacent to a live Railway Woodside Park, London

Specialist sheet piling contractor Fussey Piling Limited, was invited by HG Construction Limited, the main contractor on the new Woodside Park housing scheme, to design, supply and install a permanent sheet piled retaining wall. The project is situated on a 23m wide strip of land immediately adjacent to the busy Woodside Park Railway Station in north London UK. The sheet pile line was to be installed within 2m of the fenced boundary to the station, which is less than 7.0m from the live northbound trainline. A silent and vibration-free method of pile installation was chosen as it is well recognised in the UK as the best installation solution when working adjacent to sensitive buildings, railway infrastructure and within an urban environment.

When some of the sheet piles had been installed, the Main Contractor was able to start excavating the site to allow follow-on construction activities, whilst the installation of the rest of the sheet pile wall continued.



A sheet piled wall was chosen for this project due to the low noise and vibration installation method, speed of construction and economical cost compared to a concrete contiguous bored pile solution. The selected 600mm wide U shaped sheet piles were adopted by the piling contractor as they provide a stiffer driving member (compared to single Z pile sections) to drive the piles up to 12.0m in length, into the stiff London Clay formation at depth with a pile press.

Ground conditions

The ground conditions across the site were reasonably uniform with Made Ground, overlying Dollis Hill Gravel (medium dense gravels), on top of firm to stiff London Clay. These subsurface ground conditions are ideally suited for press-in Piling Methods.

Design

The sheet piles were designed to retain the existing earth bank supporting the live railway, whilst allowing for the temporary excavation of the site and the construction of the foundation pile caps. In the temporary condition the maximum cantilever retained height was 4.675m. In the permanent condition the retained height was 3.25m. Due to the proximity of the railway line the deflection of the sheet piles was of primary concern. It was agreed that the maximum allowable deflection of the sheet piles in any condition would be 30mm in total. A propped cantilever solution would have limited the deflections considerably, but the main contractor wanted a cantilever solution to make the buildability of the main structure more straight forward. Fussey Piling produced a design for cantilever U sheet piles with predicted deflection limits of up to 29mm.

ArcelorMittal U shaped sheet piles in lengths from 8.0m to 12.0m, in sections ranging from GU16N to GU23N, steel grade S390GP, were procured to provide an economic retaining wall solution.



Fussey Piling Limited
 Unit 2 Threshers Yard Kingham
 Oxon, OX7 6YF 01608 659595 www.fusseypiling.com

