

WHITACRE STREET (TRU)

📍 Deighton, Huddersfield

Van Elle was selected to install sheet piles to form a temporary retaining wall, enabling a 3m-deep excavation at the north-eastern bridge abutment. This allowed for construction of a new pile cap as part of the extended bridge foundation. The works form part of the Transpennine Route Upgrade, a major project improving rail links across the North, connecting Manchester, Huddersfield, Leeds, and York.

PROJECT BACKGROUND

- Appointed by BAM Nuttall
- Works involved the installation of 20No. 12m long PU32 sheet piles.

CHALLENGE

Ground investigations revealed very weak mudstone at shallow depths, becoming stronger with depth. Frequent SPT refusals and rock strengths reaching up to 6MPa made traditional sheet pile installation methods unsuitable.

Standard techniques like pre-augering, vibratory hammers, and impact hammers were unlikely to achieve the required design toe levels due to the challenging ground conditions.

Additionally, the site's proximity to sensitive structures, including a rail bridge, embankment, underground services, and residential properties, raised concerns about noise and vibration.

With the project already in an advanced stage, there was insufficient time to reconsider or redesign the retaining wall solution.

SOLUTION

We proposed the utilization of the Giken Crush Pile System, a specialist technique designed to handle hard ground conditions, as the most feasible solution given the project's constraints. This low-vibration, low-noise press-in method, with directional coring technology, enabled precise sheet pile installation into tough mudstone and sandstone, achieving design toe levels without disturbing nearby infrastructure.

The installation of 20No. 12m long PU32 sheet piles via this method formed a temporary retaining wall, enabling the demolition of the existing bridge abutment and the construction of a new bridge to span the new tracks. Sheet piles were installed via access through the garden of the nearest residential property adjacent to the rail embankment, to safely retain the ground while excavation and pile cap construction progressed.

The project was delivered safely and efficiently across 26 shifts, incorporating a mix of day, midweek night, and weekend work to meet programme.

AT A GLANCE

Sector: Infrastructure/Rail

Solutions: Retaining Structures

Techniques: Sheet Piling

Client: TRU/BAM

Van Elle Division: General Piling

EQUIPMENT

- Giken SCU600M Super Crush System
- 100T LTR1100 Telescopic Crawler Crane

