

SHEET PILING

RETAINING STRUCTURES

Sheet piles are used across a wide range of applications to form retaining structures, creating structurally sound and, where required, watertight walls or barriers.

They are used to construct cantilever, propped and anchored retaining structures, making them suitable for a variety of sectors and applications.

Steel sheet piles are manufactured as hot-rolled sections in U or Z profiles. Their interlocking design makes them suitable for both temporary and permanent works in land-based and marine environments.

The performance of a sheet pile section is dependent on its geometry and the characteristics of the soil in which it is installed.

We provide innovative, commercially viable solutions through our in-house design team, utilising modern installation and extraction techniques to deliver complex sheet piling packages.

UNDERSTANDING SHEET PILING



Steel sheet piles can be installed using a variety of modern and traditional methods:

- **Side-grip Movax vibratory hammers** attached to excavators or road-rail vehicles, suitable for restricted access and confined working conditions.
- **Telescopic leader rigs** with resonance-free or variable-moment vibratory hammers, which reduce vibration during installation and extraction.
- **Vibration free silent pile presses** using press-in techniques, ideal for environmentally sensitive areas, confined spaces, and hard-to-reach locations.
- **Conventional methods** using large cranes with hammers, where sheet piles are installed through temporary piling gates.

Driving assistance can also be provided where necessary through impact driving, water jetting, or pre-drilling/pre-augering.



PROJECT ADVANTAGES

- Reusable and recyclable sheet piled sections, suitable for temporary or permanent works
- Pile lengths adaptable to varying ground conditions, with design life enhanced by sacrificial thickness or protective coatings
- Capable of resisting horizontal and vertical loads, and can be anchored or propped as required
- Vibration-free press methods minimise noise and disturbance, ideal for environmentally sensitive or inner-city locations
- Suitable for restricted or confined spaces
- Telescopic leader rigs with resonance-free / variable-moment vibratory hammers which reduce vibration during installation

EXAMPLE APPLICATIONS

- Temporary works, including retaining walls and cofferdams to facilitate excavation and construction of below ground structures
- Thrust and reception pits for pipelines
- Permanent retaining walls, providing an economical basement solution capable of supporting both vertical and horizontal loads from earth and water pressures
- Highways retaining walls and bridge abutments
- Embankment retention and stabilisation, suitable for flood alleviation schemes, rail infrastructure, coastal protection, and revetment toe restraints
- Marine structures, widely used in ports and harbours for quay walls and jetties

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A40 LLANGEWAD, SOUTH WEST WALES

Sector: Infrastructure

Client: Tarmac

Van Elle delivered a 230m permanent anchored sheet pile wall was installed to protect the A40 from riverbank erosion caused by the River Towy, providing a long-term solution for this critical transport route.

The solution comprised 607 No. sheet piles (15.5m-long ArcelorMittal 19Z sections) installed using an ABI TM14/17VSL telescopic leader rig with a vibratory hammer, followed by 192 No. permanent grouted anchors to create a robust retaining structure and maintain slope stability.

Delivered within a challenging riverside environment, the works required careful management of variable ground conditions and complex anchor installation requirements, supported by extensive pre-drilling and testing. The completed solution provides robust, low-maintenance erosion protection for the A40 corridor.



PIER 1, 2 AND 3 (TRU)

Sector: Infrastructure

Client: BAM Nuttall

Van Elle supported the delivery of a temporary sheet piling solution as part of the Transpennine Route Upgrade (TRU), supporting pier strengthening works at Brighouse Viaduct.

The works included the installation of interlocking GU21N sheet piles around Pier 1 to form a cofferdam for excavation and foundation strengthening, alongside temporary sheet piling at Piers 2 and 3 to support excavation and pile cap construction.

Delivered adjacent to the Calder and Hebble Navigation Canal, the project required careful planning to overcome restricted access and low-headroom constraints. Sheet piles were installed using an RTG 16T rig with an MR150A vibratory hammer, providing safe and effective temporary earth retention throughout the works.



HS2 AYLESBURY

Sector: Infrastructure / Railway

Client: EKFB (Eiffage, Kier, Ferrovial Construction and BAM Nuttall)

Van Elle installed sheet piles to construct a 130.2m long cantilever retaining wall, facilitating the construction of two viaduct piers at the Aylesbury HS2 site. Our work contributed to the project to realign the existing Princes Risborough-Aylesbury rail line, allowing HS2 trains from Birmingham and London to pass through the viaduct over the road and railway.

