King Post Wall Information

DAWSON-WAM specialise in the installation of piled retaining wall systems including steel sheet piling, concrete piled walls and king post walls. This document is our guide to king post walls, their construction, and the advantages and disadvantages of a king post wall solution compared to other piled options.

King posts are isolated steel columns or beams that are installed along the line of the proposed retaining wall typically at centres between 1 and 3m. The space between the posts is filled, over the retained height, using a variety of different solutions but most commonly a precast concrete panel.

KING POST WALL INFORMATION

Advantage and Disadvantages of King Post Walls

Advantages

- Quick to install and hand over
- Relatively cheap when compared to sheet piled and concrete piled walls
- Relatively silent and vibration Free
- Choice of type of infill panels
- Procurement of locally available materials

Disadvantages

- Expensive at higher retained heights
- Not water retaining
- Deflect more than sheet piled or concrete piled walls

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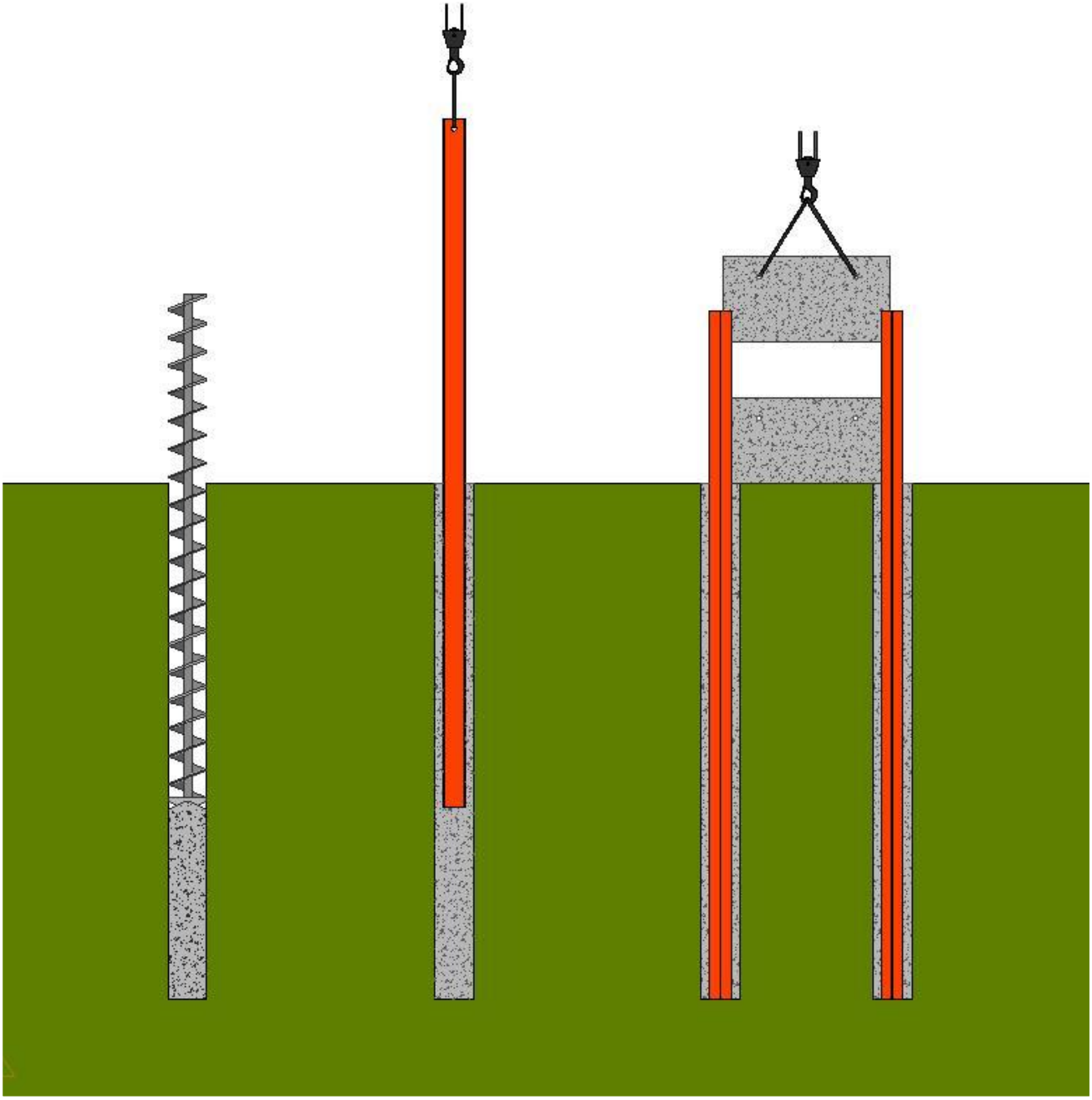
Typical King Post Wall Construction Sequence

1. A concrete pile is formed using CFA method to the toe of the king post pile
2. A steel section is inserted into the concrete and checked for verticality, alignment and level
3. Precast concrete panels or other infill systems are installed once the concrete has hardened



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King Post Wall Construction

Right: Installation of column section into recently formed concrete pile. The piling rigs winch is used to lower the section vertically into the wet concrete. Operatives continually check verticality on 2 axis, alignment to the wall position, rotation of the king post, spacing from previously installed king post and the installed level.

Left: Installation of precast concrete panels between king posts. Supports are provided to the panels by setting the concrete pile to the correct level or welding brackets to the king post. Concrete panels are supplied with lifting holes to allow the safe installation of panels.

Right: King Post Corners can be fabricated off site so that no on site hot works are required on site. This reduces risk on site as well as saving time and money.

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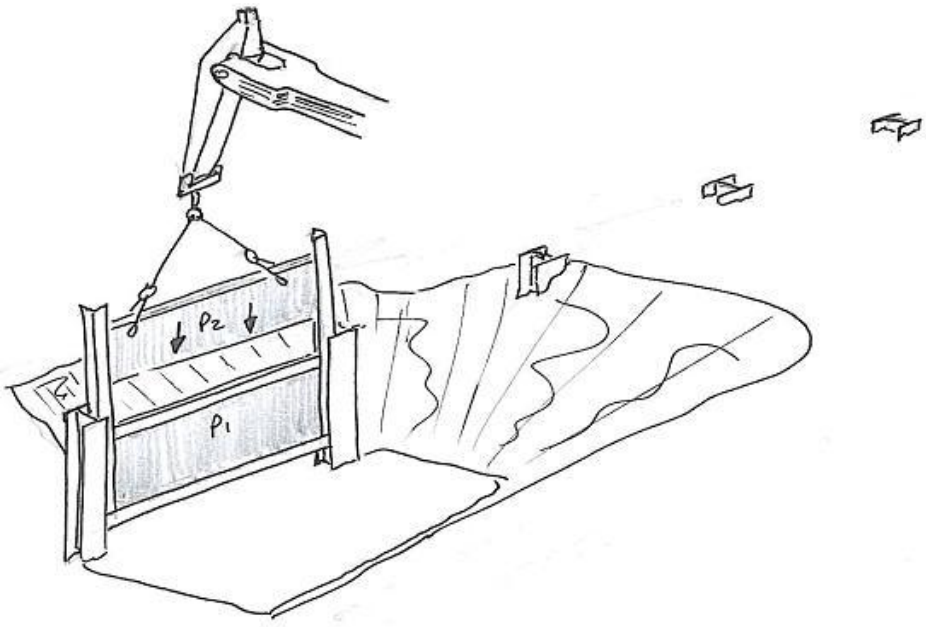
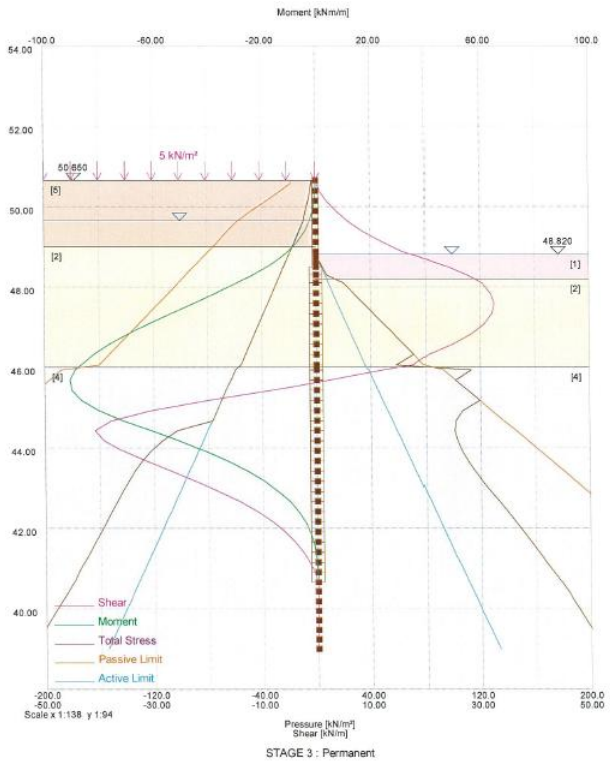
Installing infill panels below ground level

Where panels are to be installed below ground level local excavation is required to allow panels to be positioned to the correct level. If the site conditions permit excavation can be completed to the underside of the panel in one go otherwise panels are pushed to level using an excavator as excavation is completed in stages.





Design of King Post Walls

King Post Walls can be designed to Eurocode 7 or British Standards and can be analysed in the temporary or permanent conditions.

Design modelling packages such as FREW or REWARD are used to provide design outputs on bending moment, shear and deflections.

The design life of a king post wall is generally 50 years or more depending on the requirements.

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Types of Infill Panels

Precast Concrete – Made to suit exact sizes with additional features such as the storm outlet on the panel to the right.

Architectural Precast - with formed finish to meet the requirements of the client.

Sheet Piles or Sheet Steel – Generally lighter than concrete panels and can be extracted for reuse.

Timber – New wood or recycled timber can be use (such as old railway sleepers)

Cladding – Panels can be clad with a huge variety of products from stone and brick, to plastics and coloured glass.

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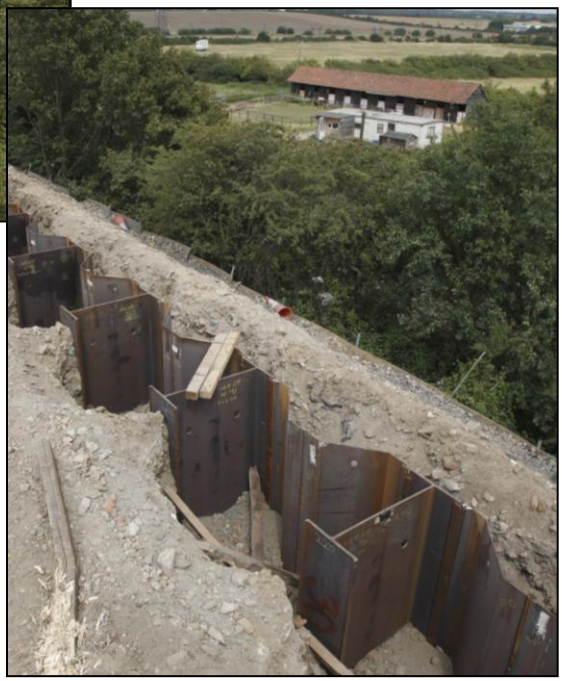
King Post Piles in Sheet Piling

DAWSON-WAM has encouraged the use of King Post Piles in for sheet piling solutions where high modulus walls are required. The king posts are very efficient due to their shape and depth, concentrating the bulk of the steel at the extremities of the wall where it is used most. Generally light modulus sheet piles are used to infill the gaps. The photographs below are from the M25 Widening Scheme



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