

## KSP Success

### M25 Motorway Widening, UK – over £10 million was saved and the challenging programme assured

- Linear installation speed at least doubled
- Four-fold increase in productivity routinely achieved in chalk
- Average steel saved typically 35% to 40%
- Multi-million pound savings shared between Client and Contractor
- Substantial environmental savings achieved
- 25 km of KSP wall forms part of the largest land-based use of sheet piles in Europe

### A421 Marston Pumping Station, UK – circa £3.4 million saved

- KSP incorporated in pumping station redesign, replacing a secant pile wall and preventing a deep-seated slip beneath the structure
- This proved very cost-effective, saving £880k
- Faster KSP installation and simpler structure saved 10 weeks, avoiding a programme over-run and substantial associated cost

### M4/M5 Managed Motorways, UK

- A pre-contract site trial proved the benefits of KSP's minimised clutch friction
- Aided by pre-augering, KSP walls were installed in weak rock, where previously sheet piling would be discounted
- The primary objective was enhanced safety for the workforce and public

### Award winning system



Innovation Category

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Inventor – David Baker, Balfour Beatty

## Balfour Beatty

130 Wilton Road, London, SW1V 1LQ

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Email: [enquiries@ksp-piling.co.uk](mailto:enquiries@ksp-piling.co.uk)



**KSP – an invaluable addition to modern engineering practice**

For further information, visit [www.ksp-piling.co.uk](http://www.ksp-piling.co.uk)



## King Sheet Piling (KSP®)

A Revolution in 120 Years of Sheet Piling Practice

Patented System





## What Does KSP Offer?

KSP is a simple, radical innovation that revolutionises 120 years of sheet piling practice. It uses standard sheet piles more efficiently to yield typical steel savings of 35% to 40%, whilst guaranteeing dramatic productivity, environmental and sustainability benefits.

## How Does KSP Work?

Many sheet pile walls are sized for driveability, using heavier sections than required structurally for the wall. KSP harnesses the surplus structural capacity by 'thinking laterally' to use pairs of Z piles as kings with lighter, shorter Z sections spanning horizontally between them. Options are available for water cut-offs and for non-steel intermediates.

## Health and Safety

### KSP enhances safety:

- It is a simple construction process, requiring a smaller working area with a limited number of operations and interfaces
- It minimises working from height by allowing simple pitch and drive rather than panel driving

## Sustainability and Environment

### KSP helps towards a sustainable future:

- EU-sourced sheet piles are 100% recycled steel
- Embedded carbon is reduced through less steel, easier driving and reduced transport
- Installation energy is substantially reduced
- Noise of hard driving, where required, is at least halved
- Vibration is substantially reduced
- Faster installation reduces disruption
- Less steel is shipped and hauled
- Excavation, material import and waste export are less than in other walls
- Sheet piles can be re-used or re-cycled in the future

## Constructability

### KSP greatly enhances constructability for retaining walls, cofferdams and basements:

- Productivity increase two-to-fourfold
- Can be installed by simple pitch and drive instead of time-consuming panel driving
- Easy to maintain wall alignment
- Shorter, wider intermediates reduce driving time
- Clutch friction is largely eliminated, speeding drive and reducing driving effort
- The need for percussive hammer driving is minimised
- Non-weather dependent
- Accommodates service crossings easily
- No 'Departure from Standards' is required



## What is KSP's Track Record?

Over 25 km of KSP wall installed on the M25 Motorway, London, UK.

To date KSP has delivered:

- Multi-million pound savings for Contractor and Client
- De-risked critical programmes on two major projects worth a combined £1.2 billion
- Substantial sustainability, constructability and environmental benefits

## Availability?

KSP is available for use under licence. Contact: [enquiries@ksp-piling.co.uk](mailto:enquiries@ksp-piling.co.uk)

## Patents

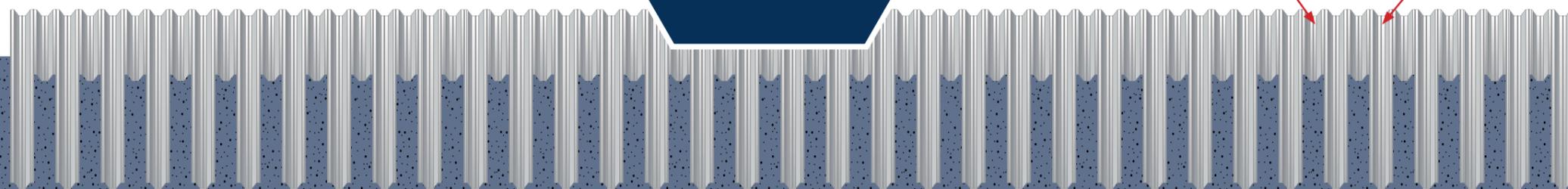
This system is covered by one or more patents or patent applications, including GB2463079. Copyright Balfour Beatty plc© 2008.

**Intermediate sheet pile sections**, typically one or more pairs of lighter section sheet piles

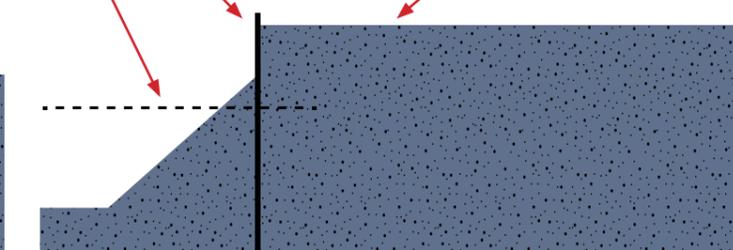
**Primary sheet pile sections** or "Kings" typically a pair of Z section piles.

**Base of intermediates**

**Retained Ground**



Sectional Elevation



Cross Section