

# Innovation CIHT/RINGWAY



## Winner



King Sheet Pile (KSP) Retaining Wall System  
Balfour Beatty Major Civil Engineering

## Judging Criteria >

This award is for innovative problem solving within the highways and transportation industry. Its purpose is to recognise and encourage imaginative concepts and excellence.

- Enterprise and ingenuity
- Design strengths (efficiency, sustainability, ease of use, user benefits, problem solving)
- Performance measures/user feedback & benefit to the user
- Quality of manufacture/construction/project delivery
- Implementation (communications, training, management)
- Best value and cost-benefit

King Sheet Piling (KSP) was sparked by the need for a cost effective and productive solution to construct hard retaining walls on the £1 billion M25 Widening Scheme.

The scheme involves the widening of 63km of the M25 between Junctions 16-23 (Section 1), Junctions 27-30 (Section 4) and the refurbishment of Hatfield Tunnel (Section 6) by the Skanska Balfour Beatty Joint Venture. The widening works are being carried out on behalf of the Highways Agency, as part of a privately funded DBFO Contract which includes the operation and maintenance of 400km of motorway, including the M25, connecting roads and the Dartford Crossing over a 30 year concession period.

Extensive value engineering at tender stage of the M25 DBFO culminated in the invention of a simple, yet radically innovative system of using Z profile sheet piles as “kings”, typically lighter sheet pile intermediates, spanning laterally between the kings.

More efficient utilisation of standard construction materials in a different configuration yields savings of 30 to 40%, guarantees dramatic productivity, environmental and sustainability benefits. The KSP retaining wall system delivered:

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

KSP offers similar benefits for a wide variety of retaining wall applications. Current intentions are to make the system available under licence.

## Judges Comments >

The judges enthused over this innovative yet simple idea. Following value engineering, this design modification resulted in large cost savings and greatly increased productivity for this fast-track project. In addition, the reduction in materials used of 30 to 40% has resulted in economic, sustainable and environmental benefits. This novel construction technique significantly reduced the construction time and minimised disruption on a long section of the M25. Judges were also impressed by the communication and consultation between all parties involved which resulted in the use of an untried system on such a major project.