

Edinburgh's Royal Mile

A ScotAsh product case study

QUEEN'S AWARD FOR ENTERPRISE WINNER 2005

A modern facelift for city's historic High Street

Mortars and grouts from ScotAsh have helped preserve the unique character of Edinburgh's historic Royal Mile – while ensuring its famous natural stone sett surface benefits from the application of 21st Century technology.

The Royal Mile, in the heart of the city's Old Town, is part of a designated World Heritage Site. The street links the landmarks of Holyrood Palace and the new Scottish Parliament complex with Edinburgh Castle to the west.

Flanked by historic buildings including St Giles Cathedral, which was founded in 854, the Royal Mile is a busy commercial area and a major tourist attraction.

In 2006, City of Edinburgh Council undertook a major reconstruction of the High Street section – about 300 metres – between two major intersections passing the Cathedral, Edinburgh City Chambers and the Sheriff Court.

The £1.5 million project was aimed at preventing further damage to the road surface, avoiding any future need for unplanned emergency repairs and allowing the permanent pedestrianisation of the section, which is actively used during Edinburgh's internationally-acclaimed Festival and Fringe.

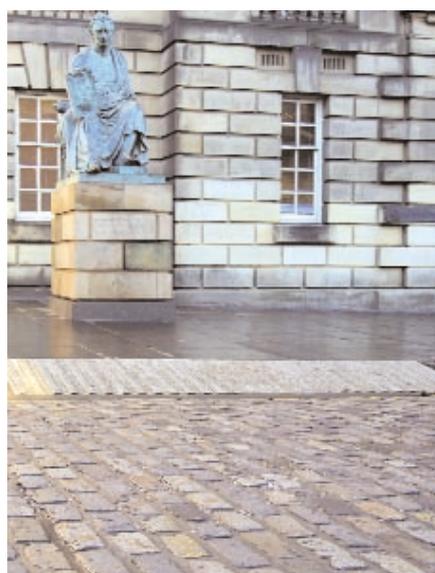
The reconstruction, which began in January 2006, required raising the existing carriageway to the level of the pavements, while ensuring the character of the street was retained through the reuse of thousands of original granite stone setts, or cobbles.

Historic Scotland, Edinburgh World Heritage Trust and Conservation Planning approved the plan. Proficio Technology were consulting engineers for the work while main contractors were Land Engineering.

A robust design was required because



The reconstructed carriageway, looking west along the Royal Mile towards the castle, and, below left, a statue of philosopher Sir David Hume inspects the relaid setts outside Edinburgh's High Court of Appeal



of maintenance issues with established methods of setted construction.

Bedding and grouting the granite setts was a critical part of the Royal Mile project – and the Sika Trojan Paving System, developed and manufactured by ScotAsh, provided an ideal solution.

Specifically developed for stone roadways and footways, the unique system has been developed through extensive research and proven in field trials. It comprises several products that incorporate technically advanced admixtures from our partners at Sika.

Sika Trojan bedding mortar bedded the setts into a cement-bound granular material (CBGM) while Sika Trojan joint filling grout was used for the joints.

To contact ScotAsh please telephone, fax or visit our website

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These materials were developed and refined as part of a partnership approach between the Council, its contractors and suppliers to provide a user-friendly system allied to the high performance required.

The design of the reconstruction required a composite action between the surface and roadbase layers to minimise the flexural stresses generated within the brittle surface layer.

The use of the Sika-Trojan system provided an ultra-low shrink, high-strength and durable solution to the bedding of the setts. The high-flow characteristics of the joint filling grout enables the material to flow readily around all the setts, filling all voids and bonding the system together.

Sika Trojan joint filling grout is usually supplied in bagged form but, due to the volume of grout required, the product was supplied to a bulk holding silo on site.

To facilitate the work, an inflatable structure was used to provide a consistent working environment and protection from adverse weather.

Continuous, stringent testing of the new mortars and grouting systems was maintained as each section of the roadway was reinstated.

City of Edinburgh Councillor Andrew Burns, Executive Member for Transport, said: "Improving the historic cobbled street will give the Royal Mile the environment that it deserves."

Councillor Donald Anderson, Leader of the City of Edinburgh Council, added: "The Royal Mile is the prestigious focal point of the city and these improvements will bring it up to its rightful world-class standard."

The Sika Trojan Paving System has been used successfully in a number of other public realm programmes, including the Laganside regeneration in Belfast, and exemplar projects such as East London Street, Edinburgh.



The George IV junction outside the famous Deacon Brodie's Tavern; right, resurfacing at one of the tourist shops; below, attention to detail around a drain cover



The use of PFA-based cements, such as the Trojan range from ScotAsh, also provides strong environmental benefits including displacing primary aggregates and saving energy and reducing CO₂ emissions that are required to crush, grind and heat raw materials.

Our cements comply with the requirements of BS EN 197-1 for CEM II A/B-V and CEMIV A/B cements. See our product sheets for more details or log on to www.scotash.com

BENEFITS OF THE SIKA TROJAN PAVING SYSTEM INCLUDE:

- Ultra low shrinkage
- High strength
- Ability to bond
- High flow grout
- Low compaction energy laying course
- Pre packed for QC benefit
- System approach.

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