e:Pave

News from Interpave

July 2011

Inside:

Interpave

THE PRECAST CONCRETE PAVING AND KERB ASSOCIATION

www.paving.org.uk

the digital magazine from Interpave

Interpave
THE PRECAST CONCRETE PAVING AND KERB ASSOCIATION

local hero

precast concrete sustainable paving

Precast concrete products from Interpave manufacturer members are produced locally on modern, automated manufacturing plant working as an essential part of the local economy and community, while giving effective national coverage. And they also satisfy the broadest sustainability criteria including:

- Low environmental impact endorsed by the BRE Green Guide, generally with A or A+ ratings
- Predictable and consistent characteristics for safe surfaces, accessibility for all and long-term durability
- Permeable paving options to take care of rainwater and meet Government obligations for SUDS
- An extensive palette of styles, scales, textures and colours for paving blocks, flags, kerbs and related products

Update your view of precast concrete paving and kerbs. For the full story visit: www.paving.org.uk/sustainability.php

e:Pave

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Welcome

e:Pave is the digital magazine from Interpave for all those involved with the development and construction process – particularly designers, developers, planners and contractors. e:Pave takes over from Interpave's popular hard-copy magazine Pave-It and covers a wide range of current topical issues affecting the paved environment.

To make sure you receive future issues of e:Pave via email, register now on www.paving.org.uk. If you are viewing e:Pave on-line, look out for the live links within the text to take you straight to articles, related documents and web pages. And, of course, back-issues of Pave-It can still be viewed via the website with a summary of articles in each issue.

Cover – main image:

Enhanced surface precast concrete paving at The Rock, Bury (page 15)

Cover – top left image:

Extensive heavy duty concrete block pavements at the Port of Felixstowe (page 14)

About Interpave: Interpave – the Precast Concrete Paving & Kerb Association – represents the leading manufacturers of concrete block paving, flags and kerbs. Its main objective is to expand the use of these materials through education, technical and marketing campaigns. Interpave is a product association of the British Precast Concrete Federation.

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Manual For Streets 2

The recently published 'Manual for Streets 2 – Wider Application of the Principles' (MfS2) is set to have a major impact on the design of new and upgraded roads and other public spaces. It also opens up new opportunities for precast concrete paving in realising its key principles.

In essence, MfS2 endorses the aims of the original Manual for Streets and widens their scope. Intended as guidelines for all those involved in any aspect of designing streets, the original 2007 'Manual for Streets' (MfS) replaced the 30-year old Design Bulletin 32 and focused on residential and other lightly trafficked streets. Its central aim is to create attractive, safe and well-designed residential environments. It sets out a *"manifesto for better design, streets and communities"* – not detailed design guidance – and local authorities are strongly recommended to review their standards and guidance to embrace the principles of MfS.

A similar policy statement for Scotland – 'Designing Streets' – is also now in place.

Essential requirements for paving materials, from Manual for Streets and other guidelines, can be summarised as follows:

- **visually attractive and able to deliver distinctive local character**
- **capability for visual or tactile differentiation between distinct areas**
- **durable and maintainable with reliable product supply**
- **accessible to all with consistent slip and skid resistance**
- **well drained to avoid standing water and compatible with SUDS**
- **sustainable – in the widest sense.**

Pedestrian Priority

The guidelines prioritise pedestrians over cars, with more emphasis on urban design than traffic engineering. There is a clear move away from the previous traffic engineering based hierarchy of roads. There is also a trend towards using narrower roads to slow traffic, although speed is certainly not the only determining factor on road width in MfS. Streets are now regarded as places for people and the heart of neighbourhoods, not just arteries for the flow of vehicles. MfS promotes a traditional grid of streets defined by buildings to give a 'permeable' network, particularly for pedestrians and cyclists. There is also a general assumption that neighbourhoods will be made up of 'public fronts and private backs' to homes.

MfS is now being applied to residential developments – particularly new-build. Now, MfS2 takes these principles forward as a companion guide to the original MfS. It explores how and where the principles of MfS can be applied to busier streets and other non-trunk roads wherever these form part of urban areas or, indeed, rural settlements. MfS2 examines various street types in terms of 'movement' and 'place ' functions and argues for a re-balancing of these functions to improve the street environment.

Demonstrable Benefits

Research into 'Mixed Priority Route' (busy high streets) demonstration schemes carried out under a DfT project also informs MfS2 guidance. Here, streets with a high level of traffic, fronted with a mix of different building types and accessed by different users were enhanced and monitored. These schemes achieved a substantial rate of casualty reduction, noise and air quality improvements, increased pedestrian and cyclist activity, and more vibrant local economies, after enhancement.

MfS2 recommends that, for any scheme affecting non-trunk roads, designers should start with MfS rather than other guidance such as the 'Design Manual for Roads and Bridges'. It confirms that most MfS advice can be applied regardless of speed limit and that key MfS principles can be applied widely to highways: they are not limited to low speed, lightly trafficked or residential roads.

Cheltenham's High Street now incorporates shared surfaces for pedestrians and cyclists, alongside buses and service vehicles following concrete block paved routes, demarcated by level 'kerbs'.

Home Zones, such as this example in Bristol, make extensive use of precast concrete paving for shared surfaces and features such as gateways. Interpave has published a guide on paving Home Zones.

Limited Palette of Materials

Although it does not prescribe materials and detailing, MfS expects local authorities to be *"encouraging innovation with a flexible approach to... the use of locally distinctive, durable and maintainable materials..."*. It encourages use of local materials for both aesthetic and sustainability reasons and highlights the importance of predictable long-term performance for problem-free adoption. It acknowledges that the choice of surface materials has a large part to play in achieving a real sense of place, encouraging planning and highway authorities to develop a limited palette of materials within design codes or other local design guidance to simplify maintenance and adoption issues, as well as give local character.

Another important MfS approach is generally to clear away the visual 'clutter' of excessive signage, using instead other design features to encourage better road user behaviour, such as variation in surface materials, colour or texture. This approach helps make the environment legible to all users. MfS2 highlights that *"street designs should be as self-explanatory as possible"* and encourages use of appropriate paving styles and removal of some road markings and signs, with consequent long-term savings.

"Although Manual for Streets 1 and 2 do not go into detail about paving surfaces, they do set out important criteria for material selection, which include durability, ease of maintenance, and being sympathetic to their context. The ability of precast concrete blocks, flags and kerbs to deliver a substantial choice of styles, sizes colours and textures - together with predictable performance and sustainability - makes them particularly useful in realising designs . Permeable paving will also form an important component in many projects to satisfy the need for sustainable drainage."

Phil Jones,
Managing Editor of 'Manual for Streets 2'.

Sustainable Drainage

Sustainable Drainage Systems (SUDS) are also encouraged by MfS for use wherever practicable and seen as one of the key features to be addressed in master-planning, as well as in local design codes. Sustainability generally is also considered important for choice of materials, including consideration of manufacturing processes and energy use.

Precast concrete paving is uniquely placed to satisfy all the requirements of MfS. Concrete paving blocks, flags and kerbs all exhibit the same slip resistance and many other characteristics, ensuring consistency, safety and accessibility for all users across the whole surface whichever combinations of products are used.

Interpave manufacturers have completely transformed precast concrete paving and kerb products with a palette of designs, colours and textures offering a visual richness and huge design choice atypical of mass production. They can help create distinctive local character – whether traditional or modern – and make the environment self-explanatory to all users.

Sustainable Paving

In addition, precast concrete paving from Interpave manufacturers is demonstrably sustainable – in every sense. As well as having a low environmental impact, generally with BRE 'Green Guide' A+ or A ratings, products are locally manufactured, making a vital contribution to local employment, economy and community. In addition, concrete block permeable paving is the most adaptable sustainable drainage systems (SUDS) technique to help in the fight against flooding and meet the requirements of the new Flood and Water Management Act, while offering a similar diversity of styles as other precast concrete paving.

MfS also highlights its own research demonstrating that block paving significantly reduces traffic speed compared with asphalt, particularly on shared surfaces. MfS2 identifies a number of key issues, identified in ongoing research of shared spaces, where precast concrete paving can play an essential role, including:

- Drainage of level surfaces where there are no cross-falls and kerbs – ideally suited to permeable paving
- Contrasting colours and tones to help partially-sighted pedestrians to orientate themselves and to highlight crossings or traffic-free areas
- Differentiation of specific areas such as parking
- Design of transition zones and 'gateways'
- Tactile features for blind and partially-sighted pedestrians.
- Bus stops with specially designed raised kerbs for access.

Without doubt, both Manual for Streets guides herald exciting opportunities to create distinctive, 'liveable' and safe street environments, where precast concrete paving will play an important role alongside other quality paving materials.
A new approach is called for from highway authorities and, as the precast concrete paving and kerb association, Interpave is keen to provide the information needed to meet these new challenges through its information resource **www.paving.org.uk**

This new social housing development in Southminster, Essex, is based around a narrow access road of machine-laid concrete block paving with a level kerb to give an integrated, shared surface.

Accordia, Cambridge

The award winning Accordia housing project in Cambridge uses a limited palette of sustainable materials – including precast concrete paving – to develop a distinctive streetscape and a real sense of place. It shows how a considered selection of paving materials, uncomplicated layout design, good detailing and careful execution on site can deliver the same quality for the external environment as for the buildings themselves. Despite being designed before publication of 'Manual for Streets', Accordia demonstrates many of its principles. The project received the RIBA Stirling Prize in 2008 after completion of its earlier phases, the first housing project to do so.

Interpave has published a Case Study document on this project.

e:Pave **Case Studies**

Maid Marian Way, Nottingham

Previously, the main crossing on Maid Marian Way in Nottingham, with its forbidding, dank underpasses, was named as the fourth worst 'street of shame' by CABE. Its comprehensive regeneration is characterised by concrete paving flags and is featured as a case study in MfS2, which concludes that this project: *"remains perhaps the best UK example of a ring road that has been transformed despite retaining its strategic traffic function. Maid Marian Way shows how – with a strong, shared commitment to change – soulless traffic conduits can be made into lively city streets."*

This project was also the winner of Interpave's 2005 Awards and featured in Pave-It, November 2005.

Craigmillar, Edinburgh

The PARC Craigmillar development in Edinburgh makes extensive use of precast concrete paving in various styles, including permeable paving. It is featured as a case study in the Scottish 'Designing Streets' policy statement which follows similar principles to MfS. At Craigmillar a language of surfacing materials was developed to delineate different areas such as parking bays without the need for road paint. The designer commented that: *"the wide range of concrete block paving products available today proved invaluable for different textures and scales by varying unit sizes, shapes and patterns."* Concrete block permeable paving is used extensively in areas of car parking and carriageways for sustainable drainage.

Interpave has published a Case Study document on this project.

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green giant

precast concrete sustainable paving

Precast concrete products from Interpave manufacturer members have low environmental impact endorsed by the BRE Green Guide, generally with A or A+ ratings, with a firm commitment for continuing improvements transparent to stakeholders. And they also satisfy the broadest sustainability criteria including:

- Predictable and consistent characteristics for safe surfaces, accessibility for all and long-term durability
- Permeable paving options to take care of rainwater and meet Government obligations for SUDS
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Interpave News

Handling Guidance Published

Interpave has published an important new guidance document for contractors and specifiers: 'Handling Kerbs and Flags'. Although there has been continuing growth in the use of mechanical lifting devices in the UK over recent years, some contractors and designers may not be aware of their responsibilities and how to minimise risk by using them. In addition to health and safety considerations, mechanical installation regimes offer greater efficiency than manual handling, saving time and money.

The new document combines and updates two previous, separate publications. It provides guidance on safe handling of kerbs and flags, and illustrates examples of available equipment. As with all Interpave guidance, this document is available as a free download from www.paving.org.uk and is open for consultation: any comments should be sent to info@paving.org.uk.

A recent example of mechanical installation is the Newport Southern Distributor Road where some 16km of concrete drainage kerbs from an Interpave member were installed.

International Resource Updated

SEPT (Small Element Pavement Technologists) – the international body for development of concrete block pavement technology – has launched its new wesbite www.sept.org. SEPT is an international organisation made up of individual academics, consultants and practitioners, generally representing national trade associations – including Interpave.

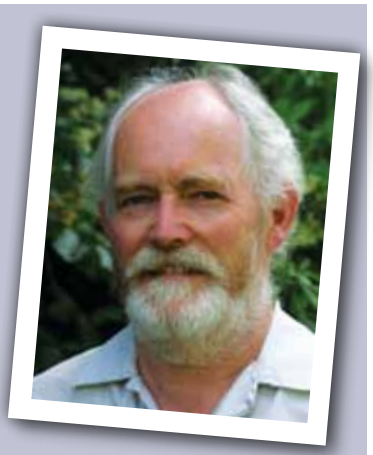
SEPT plays a pivotal role in taking the technology forward on a worldwide basis, principally through major international conferences, which it instigates. Since the first International Conference held in Newcastle, UK in 1980, these important events have been held regularly – and currently every 3 years – in locations around the world selected by SEPT members to ensure the widest dissemination of current thinking.

The new website's Technical Papers resource contains all the papers from previous International Conferences in pdf file form, which can be downloaded free of charge. The website is an important resource for a wide range of professionals including researchers, engineers, urban designers, municipal authorities, developers and contractors. Its international perspective complements more locally based guidance for the UK from Interpave. The website will also include updates on the next International Conference planned in Shanghai, China, during October 2012.

More Action on Drives

We have reported before on the implementation of 2008 planning rules in England, requiring permeable paving or on-site drainage to permeable areas for paving in front gardens. Interpave has previously published important guidance 'Paving for Rain' and a more detailed Design Guide, both specifically referred to in government guidelines.

Similar provisions are set to apply in Scotland shortly with The Town and Country Planning (General Permitted Development) (Scotland) Amendment Order 2011, following extensive consultation. Work has just started on appropriate governmental and supporting guidance and Interpave is already in contact with the Scottish Governement Directorate for the Built Environment about citing the Interpave guidance.



Bob Bray is principal of Robert Bray Associates – Sustainable Drainage Consultants and Landscape Architects. He has been closely involved with sustainable drainage for 15 years designing schemes, lecturing and training, and writing on the subject. He has provided in-house training for Local Authorities, Regulators and Consultancies, undertaking National SUDS Training with CIRIA since 2004. He is the author of 'Promoting Sustainable Drainage Systems – Design Guidance for Islington' and a co-author of The SUDS Manual C697 2007 and a recent design guide for Cambridge City.

Positively Permeable

e:Pave has discussed permeable paving and sustainable drainage systems (SUDS) in several previous issues, of course, usually in the context of compliance with planning requirements and legislation to help prevent flooding. On this occasion, however, we explore some of the other benefits of the technology through the work of SUDS specialist Bob Bray. He has developed an environmental approach to SUDS which delivers sound, cost effective drainage solutions that also exploit the potential for amenity and habitat enhancement.

It is important to remember that there are three 'pillars' of SUDS:

- Quantity – reducing and controlling runoff
- Quality – improving water quality by removing pollutants
- Amenity – enhancing the environment.

The first of these is well-understood with engineering based solutions, guidance documents and, shortly, National Standards. But there are real opportunities – often missed – to make the most of improved quality water to add to the amenity of a scheme. Here, concrete block permeable paving offers the important facility of a gradual supply of treated water for a wide variety of uses – something that Bob Bray has seized upon in his projects.

Hazeley School, Milton Keynes

At this pioneering school, concrete block permeable pavements used for car parking are arranged in a terraced sequence down the hill to provide a retention time enabling effective pollutant removal. This substantially improves the quality of water serving two ponds intended to encourage long-term population by wildlife – notably the 'protected' great crested newts indigenous to the site.

Wildlife is also protected with an absence of traditional drainage gulleys and other traps – an important benefit of concrete block permeable paving. The ponds themselves are highly vegetated and designed to filter the water, particularly during times of low flow, effectively acting as a 'polishing' feature or a second stage in the SUDS 'management train'. In addition to providing wildlife habitats, the ponds and related areas offer a valuable teaching and learning resource for the school.

Other sections of concrete block permeable paving, on level areas used for play, collect rainfall, runoff from adjacent hard games surfaces and roofs. Below the paving, geocellular storage boxes and a geomembrane form an open tank. This arrangement filters and treats the water before it passes into storage or overflows to the SUDS system. Cleaned rainwater is delivered, via a pump chamber, from the storage box to a header tank for toilet flushing in the school buildings.

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Case Studies **Permeable Paving**

Riverside Court, Stamford

The idea of SUDS becoming an integral part of urban design is developed at Riverside Court in Stamford – a high-density (106 units/hectare) town-centre housing scheme. Most public areas between the buildings are concrete block permeable paving which also accepts runoff from other hard areas and roofs.

The (System B) permeable paving does enable some infiltration to the ground but stored, treated water also passes from the paving directly into planted rills and canals, which add interest and much-needed greenery to the courtyard environment. Finally, the treated water can flow out into the adjacent River Welland.

"After 5 years at Riverside Court, Stamford, there have been no puddles, no maintenance and no costs."

Bob Bray

Springhill Co-Housing, Stroud

This innovative Co-Housing Project of 34 homes and communal facilities is laid out along a central pedestrian street.

The drainage design had to deal with runoff on a steeply sloping site and explored the opportunities of integrating 'rainwater harvesting' with SUDS. Here, SUDS is considered as an integral part of landscape design and urban space.

Vehicle access and car parking is limited to the top of the site where concrete block permeable paving gathers up runoff, treats it and stores it. Discharge from the tanked (System C) permeable paving is directly to a 'waterfall' flowing onto a densely planted swale below. From here, water makes its way naturally through the site alongside the pedestrian street via rills planted by individual house occupants and a wildlife pond augmented by below-ground storage, eventually meeting up with an established stream.

> *"Permeable paving is the perfect source control for urban developments – with no additional land-take – to provide a controlled flow of clean water for environmental enhancement."*
>
> **Bob Bray**

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raining champion

precast concrete sustainable paving

Precast concrete permeable paving is a unique SUDS technique used, with no additional land-take, to minimise, slow down and clean up rainwater runoff – an essential part of the fight against flooding. And products from Interpave manufacturer members also satisfy the broadest sustainability criteria including:

- Low environmental impact endorsed by the BRE Green Guide, generally with A or A+ ratings
- Localised material sourcing, manufacture and product supply without shipping, benefiting the local economy
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Paving Ports

Apart from enriching the urban environment with numerous styles, colours and textures, there is another side to precast paving as a structural pavement delivering long-term performance for the heaviest duty applications, such as ports.

Felixstowe

Port of Felixstowe – a member of the Hutchison Port Holdings Group (HPH) – is already the largest container port in the UK and one of the largest ports in Europe. Concrete block pavements have been used there extensively for the last 20 years and continue to be installed. Felixstowe South is the UK's newest Deep Water Container Facility reconfiguring the existing Ferry Terminal, Dock Basin and Landguard Terminals through a major transformation which included significant dredging, piling, reclamation and pavement works. This challenging project required pavement installation compressed into just one year – which equates to placement of more than 540 m² of sub-base aggregate, cement-bound road base and concrete block paving every day.

Mechanised block laying techniques were central to achieving this. Pre-manufactured by an Interpave member in their laid formation, packs of blocks were delivered to site and installed in layers of 1.64m² (64 blocks) by two installation machines installing on average 1,200m²/day. Mechanised installation automates all of the installation processes including screeding the sand laying course, installation of the blocks, compaction and sand joint filling. These processes combine to provide greater speed and efficiency while avoiding manual installation. In total, 270,000m² of concrete block paving was installed in just 12 months.

Great Yarmouth

Another Interpave member has recently manufactured 24,000m² of block paving for machine installation at the new Outer Harbour at Great Yarmouth. The finished areas now provide working yard space for heavy-duty usage including container storage.

When fully operational, the Port of Great Yarmouth will be a modern, multi-purpose facility integrating a new deep water outer harbour with the well established river port. The port will become a key container terminal for lorry freight traffic between continental Europe and the UK, particularly the Midlands.

Comprehensive Guidance

Interpave's manual 'Heavy Duty Pavements – The Structural Design of Heavy Duty Pavements for Ports and Other Industries' offers the very latest detailed design information for consulting engineers on heavy-duty pavements. Written by a leading expert on pavement design, it is based on experience of current equipment and operating practices. The manual can be downloaded from **www.paving.org.uk**

Shop at the Rock

The Rock is a prestigious new £350m development adjacent to the town centre in Bury, which has added 600,000 sq ft of retail floor space to the town and extended the existing high street significantly. The development includes a new 100,000 ft² leisure quarter with cinemas, bowling, entertainment centre and new restaurants, and will also contain 408 one and two-bedroom apartments when fully complete.

Designed by BDP, the masterplan for The Rock took into account the historical street pattern and public realm context to give the scheme its own identity, and make visual connections to local landmarks. New pedestrian streets rejuvenate and improve connections to adjacent areas, stitching the town back together. The hard landscaping design involved creation of distinctive zones for legibility and ease of navigation, as well as demarcation of specific areas such as occasional service vehicle access. In addition to aesthetic considerations, the paving also needed to meet various strict criteria for durability and loading.

An Interpave manufacturer member worked closely with the designers, local authority and a local disability group in selecting a palette of contrasting paving colours, styles and textures. This combined both traditional and contemporary paving types, as well as natural and bolder colours in the precast concrete paving. Various concrete products with enhanced finishes were used, including a polished texture that is similar in appearance and properties to granite. In some areas, precast concrete paving is used in combination with dark grey solid granite.

The Rock is now one of the UK's largest shopping centres – attracting over 170,000 visitors in its first week of business.

Formpave

Marshalls

TOWNSCAPE
Products Limited

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