



pave-it

news from interpave

april 2004 issue three

inside >>

on foot

Pave-It visits the regenerated pavements of Camden

and learns how to audit streets for improvement

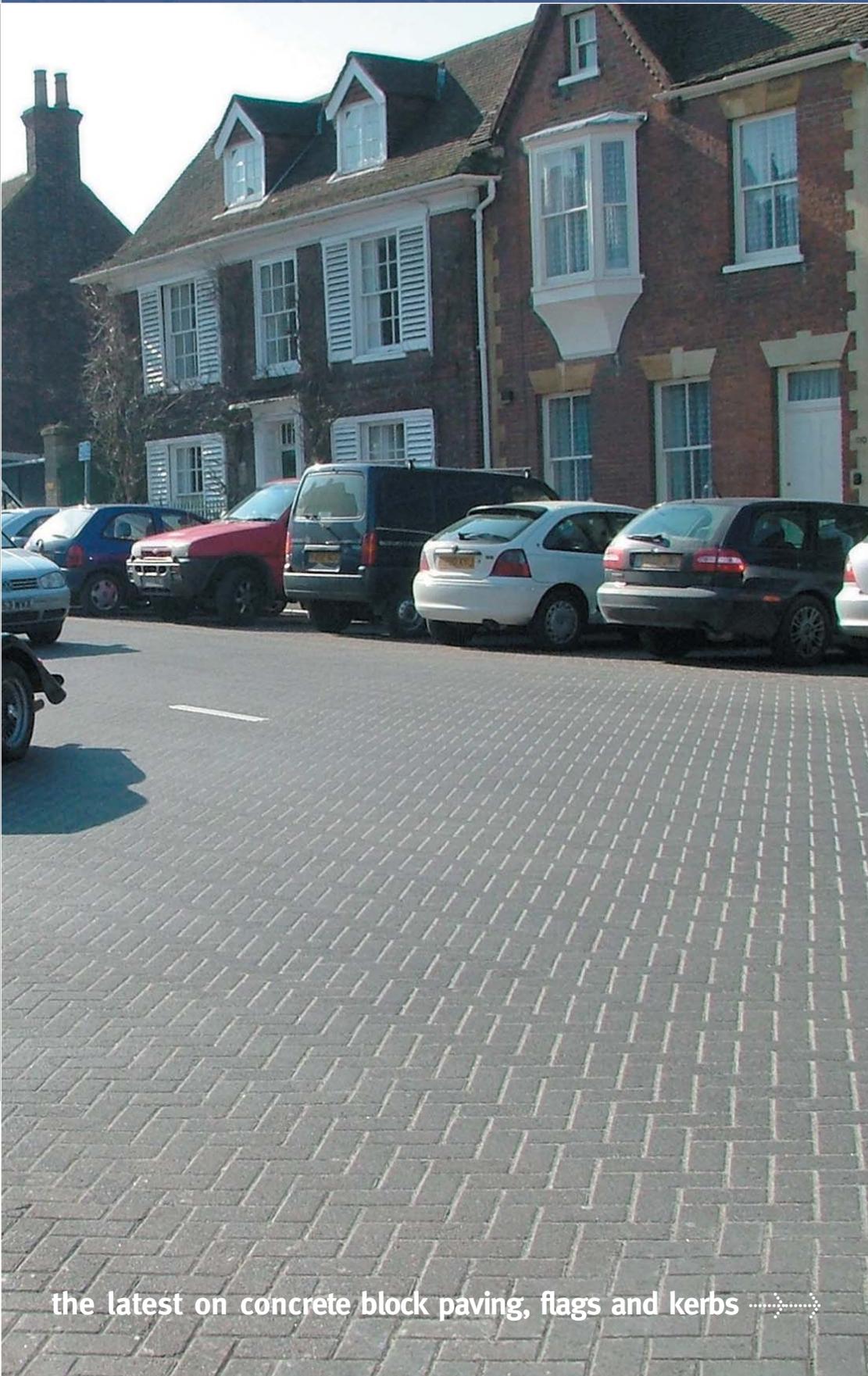
on the road

Then it's on the road with an update from Southern Africa

and looking at the block-paved A-roads of Kent

and more

As well as the latest on all aspects of concrete block paving, flags and kerbs



Interpave

THE PRECAST CONCRETE PAVING AND KERB ASSOCIATION



www.paving.org.uk

the latest on concrete block paving, flags and kerbs>>>

When it rains it's porous



Flooding and pollution are more and more common these days and the costs to everyone are soaring.

Now there's a way to reduce the risk of downstream flooding using Sustainable Urban Drainage Systems (SUDS) which imitate natural processes to moderate and filter run-off.

Concrete block permeable pavements are a key component of SUDS.

See how they work in practice. Get Interpave's fast-track design guide. It's downloadable from our website www.paving.org.uk or by post by e-mailing info@paving.org.uk

Interpave
THE PRECAST CONCRETE PAVING
AND KERB ASSOCIATION



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about Interpave

Interpave - the Precast Concrete Paving & Kerb Association - represents the leading manufacturers of concrete block pavings, 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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Signing-off this edition of *Pave-It* are...
Back Row: Interpave Development Director John Howe (left) and John Hannah of The Concrete Centre
Front row seated: Interpave Chairman Mark McColl (left) and Ian Cox, Director of The Concrete Centre

welcome...

to the information-packed third issue of *Pave-It*.

In this busy issue we cover a particularly wide range of topics, looking at the paved environment from several different perspectives. But there are also interesting links between many of the articles – and some may be a surprise to us all.

Firstly, we look at the world of the pedestrian with a visit to the Living Streets campaign to see how Community Street Audits are being used to improve the walking experience. This approach is shared by the Camden Boulevard programme that takes a fresh look at improving footways in the London Borough.

Local community input - a key component with both initiatives – is also at the core of our article from Southern Africa where concrete block paved roads are central to the regeneration of underprivileged communities. And the public popularity of precast concrete block paving, flags and kerbs is clear in all these cases.

To seek out the very best public spaces in the UK, we shall soon be holding the second Interpave/PSLG awards – and we are

introducing Interpave & Interlay

For those who want to know more about Interpave, a new document has been published explaining its structure, objectives, initiatives and services. A new information sheet on members and their products is also available from Interpave, or in interactive form on www.paving.org.uk with links to members' own websites. The block paving contractors' association Interlay has also published its own introductory brochures: see www.interlay.org.uk



news >>>

hiding the evidence

The latest guidance on reinstatement of concrete block and flag paving is now available from Interpave. This enables products to be re-used on areas that have been excavated, leaving no evidence that work has been carried out and ensuring long-term performance.

For blocks, the Interpave guide uses information from the Code of Practice, BS 7533-11: 2003, combined with 'hands-on' experience to provide practical advice for both conventional and permeable paving. The Reinstatement guides can be found on www.paving.org.uk and include animations of taking-up and laying, as well as interactive tables to simplify material and equipment selection. Both are available as 'PDF' downloads.

zone home

To upgrade older pavements, concrete block paving is often used as an overlay providing a long-term, durable surface - a technique used mostly on industrial sites. But a similar approach is also being taken with both blocks and flags in residential areas for initiatives such as 'Home Zones'. These are simply streets re-designed with pedestrians, cyclists and children in mind to encourage more social use. Here, block or flag paving can be used as an overlay to raise much of the street up to footway level. The variety of shapes, texture, colours and patterns creates a more attractive and lively local environment than with asphalt.

For trafficked areas, block paving can be used to reduce vehicle speeds, typically targeted at 10mph for Home Zones so that pedestrians are prioritised over cars.



looking for your entries now. As well as an expanded range of entry categories, we have an even more impressive panel of judges. Heading up the panel is Mike Hayes, newly elected president of the Royal Town Planning Institute, with Ian Cox from The Concrete Centre, Martin Bacon of Ashford Future, Living Street's Tom Franklin, Pete Strange from Camden Boulevard and PSLG magazine's editor Sarah Sturt.

Meanwhile, back on the road there are interesting parallels between Southern Africa and the historic towns of Kent, where block paved trunk roads have been in service for many years with heavy traffic – travelling at higher speeds than might be expected. Looking at practical issues, there is an update on development of Interlay, the block paving contractors' association, highlighting the importance of training.

The issue of handling concrete kerbs is explored with recent research from Loughborough University and we take a look at the latest kerb product developments.

Finally, don't forget to fax back the questionnaire – you could win one of our beautiful book prizes and we really do want your input to make future issues of *Pave-It* even better.

MARK MCCOLL Chairman and
JOHN HOWE Development Director



Interpave
THE PRECAST CONCRETE PAVING
AND KERB ASSOCIATION



wet wet wet

Interpave continues to be at the forefront of concrete block permeable pavements which are well established alongside other Sustainable Urban Drainage Systems ('SUDS') techniques. Interpave has joined CIRIA's drive to produce a 'one-stop-shop' reference on design and construction of SUDS projects and contributed funding.

Development Director John Howe now sits on the CIRIA Committee reviewing, updating and augmenting existing SUDS guidance. Don't forget that Interpave has published its own Guide to the Design, Construction and Maintenance of Concrete Block Permeable Pavements: details can be found on the www.paving.org.uk website.



concrete thinking

The Concrete Centre is running a series of free, CPD-certified seminars, as well as short technical courses, on all aspects of concrete throughout the year. For full details and to register on-line, go to: www.concretectre.com

pooling information

Calling all overseas readers of *Pave-It*: please send us details of your paving projects. We are keen to feature more overseas projects in future issues so that experiences from as many countries as possible can be shared by all. E-mail us at info@paving.org

help us to help you

and you could **win** these beautiful books on decorative paving from the United States! Just take a few moments to complete the questionnaire on the back of the address sheet that came with your copy of *Pave-It* to help us make the magazine even better.

Then, fax it back to +44 (0)29 2043 5803

Eight readers' names will be drawn at random and each will receive either 'Patios, Driveways and Plazas: the pattern language of concrete pavers' or 'Backyards and Boulevards: a portfolio of concrete paver products' – each worth £25.95.

Details of the lucky winners will be published in the next issue of *Pave-It*.





urban regeneration

"claims for personal accidents have reduced from £400,000 to zero"



quality streets

Anyone walking the streets of Camden, one of London's most active and famous Boroughs, can't help but notice the many changes and innovations that are going on there.

These days, Camden is a cleaner, brighter and more attractive place and much of this is due to the success of The Boulevard Project. The Boulevard Project is a unique initiative designed, as Pete Strange, the Boulevard Project Manager says, "to make the streets of Camden more attractive through better cleaning, design, enforcement and lighting - as well as to upgrade roads and pavements and keep them in a good state of repair. It is hoped that this enhanced environment will engender a new sense of pride in the Borough and reduce anti-social behaviour."

Camden Slab has a higher overall strength than specified in the British Standard and comes in two sizes - 600 x 600mm and 450 x 600mm - to enable the creation of a staggered bond.

These are laid as normal concrete paving flags, on a maximum of 25mm sand and cement bedding on a 100mm of compacted lean concrete. The flags have to be straight, flat and consistent to meet the Project's specifications and withstand the demands of the street-cleansing regime. In the words of Pete Strange: "We are currently experimenting with a range of reinforcement materials - such as nylon, needles and mesh - to make our paving slabs lighter and more shallow and also easier to lay, handle and replace."

a better public environment

The building, cleansing and maintenance of high quality pavements is central to the Boulevard Project and lies at the heart of improving the attractiveness, safety and quality of the Borough's street environment. Quality is achieved and maintained by tailoring the paving to its surroundings as well as by utilising a range of footway surfaces and materials, with superior quality techniques, such as close jointed paving laid to a high standard, to achieve visual attractiveness and strength.

Discussions between Camden and an Interpave manufacturer member led to the supply of a steel reinforced concrete paving flag able to withstand cleaning machine weights as well as unplanned vehicular loadings. The flag design was further improved with a lighter, fibre-reinforced product. The flagstone's thickness has been reduced from 75mm to 63mm and is much easier for contractors to handle, install and integrate with standard products.

An additional benefit of Camden's improved paving is the marked effect it has had on the number of claims for personal accidents in the roads that Boulevard has visited. In the three years to date of the Project's existence, claims on these roads have reduced from over 150 to 1, and in value from £400,000 to zero - a major saving of Camden's resources and finances.

The fibre reinforced paving is currently under pilot test in one of Camden's busiest thoroughfares - The Parkway, off Camden High Street - which covers an area of 100m² and is combined with a further 250m² of standard flag paving in the less heavily loaded areas. In the words of Pete Strange: "The new fibre reinforced paving shows real promise in delivering and maintaining the quality environment we are striving for in Camden."

the Camden slab

The Boulevard Project is at the forefront of innovative design, including development of a 3" thick reinforced concrete paving flag - nicknamed "the Camden Slab" - with a tapered edge for closer fitting to granite kerb-stones and public utility boxes. The

With thanks to Pete Strange and Ian Beaumont of the London Borough of Camden.





Eyes down! An audit group assesses paving

& living streets

Pave-It spends the day with the Living Streets campaign and learns about Community Street Audits.

Living Streets promotes the development of streets and public spaces that people on foot can use and enjoy. Formed in 1929 as the Pedestrians Association, it raises awareness of the importance of clean, attractive public spaces, promotes good practice in design, maintenance and management for walking, and empowers the public through advice and information. Interpave supports this approach and became the first corporate partner of Living Streets. Community Street Audits were developed to improve local conditions for people on foot by assessing the existing walking environment. Usually, local groups and individuals are directly involved in audits to provide essential detailed local knowledge, combined with the expertise of Living Streets personnel.

Street Audits provide one of the few assessment methods which do not consider pedestrians as just another 'transportation unit' trying to get from A to B. A significant

part of the pedestrian's activity is not moving – but standing, talking and looking. Audits should highlight the good points of an area as well as bad – and include solutions not just problems, identifying possibilities for improvement rather than requirements. Eight categories are considered during audits:

- Facilities and signage – toilets, benches, litterbins, lighting
- Maintenance and enforcement – litter, cleanliness, repairs, graffiti, parking
- Personal security – sightlines, lighting levels, anti-social behaviour .
- Crossing points – 'desire lines' (preferred routes), formal or informal crossings
- Space and layout – the balance of space for different uses and arrangement
- Aesthetics – beauty and interest, noise, smell and ugliness
- Traffic – speed, volume, noise, pollution
- Footway surfaces and obstructions – materials, condition, details

Concentrating on this last category, street audits consider paved surfaces from the perspective of all users including older or disabled people. Often it is the detail that makes all the difference like dropped kerbs and level pavements, as well as maintenance of footways to ensure good conditions under foot. Footway falls bring ten times as many people into Accident and

Emergency departments as are injured in road crashes. Inevitably, audits will identify many areas where the footway surface needs to be replaced. Precast concrete flags and block paving offer effective solutions particularly where colour contrast is a requirement to assist partially sighted people. Living Streets has undertaken audits for a wide range of clients including a Government agency and local authorities – such as the London Borough of Camden.

Many pedestrian pavements are just too small



The Camden Boulevard Project uses various criteria to select and prioritise streets that need attention.

One important factor is the "worst first" principle: identifying the most pressing examples of work that needs doing. Within this category, the Project will prioritise work that is needed in busy or large areas over that required in quiet areas with low footfall.

The Project listens to local communities and any requests for action are audited and given a technical evaluation. It also has a pothole 'phone line, which people can call if they have any pothole related concerns.

The Project seeks opportunities to link-up with other activity partners, including utility companies, to ensure that work on specific sites is done in conjunction with each other and at the same time. This helps to reduce costs and minimises disruption to that area.

The Project avoids overburdening a specific area with too much activity, particularly if this is going to cause disruption to the local community. For example, if there are ten proposed projects in an area, five will be addressed at a time.

"attractive streets will encourage people to stroll in our towns and cities once again"





the road to community development



Concrete block paving has been in use in Southern Africa for even longer than here in the UK but its contribution toward community development is perhaps most surprising and inspiring.



Concrete Manufacturers' Association Director **John Cairns** reports from Southern Africa

Following a political dispensation in 1994 and with the initiative of the Development Bank of Southern Africa, a number of road projects have been carried out across the country using local contractors who employed members of the surrounding communities, without the equipment or experience to cope with asphalt surfacing – so concrete block paving was the natural choice.

Local Involvement

In some cases, projects resulted from communal decisions to use government

funds earmarked for job creation projects to pave local roads. Replacement of the dusty tracks which turn to mud pools in the wet season with an attractive, permanent road surface has generated a new sense of pride amongst these less affluent communities.

Long Term Performers

In terms of performance, in Southern Africa concrete block paved roads are considered effectively maintenance-free for 10 years with overall maintenance costs at least 30% less than asphalt surfaces. By opting for this technology, about 50% of the project's value is spent employing members of the local community, compared with just 10% for asphalt. When needed, block paved roads can also be maintained by the local community using those skills learned during initial construction.

Linking Communities

An early example of this approach is the 9.5km road linking the Harrismith Golden Gate main road and several villages to Phuthadithjaba in the Eastern Free State opened in 1995. Here, a total area of 113,000m² of block paving was laid during

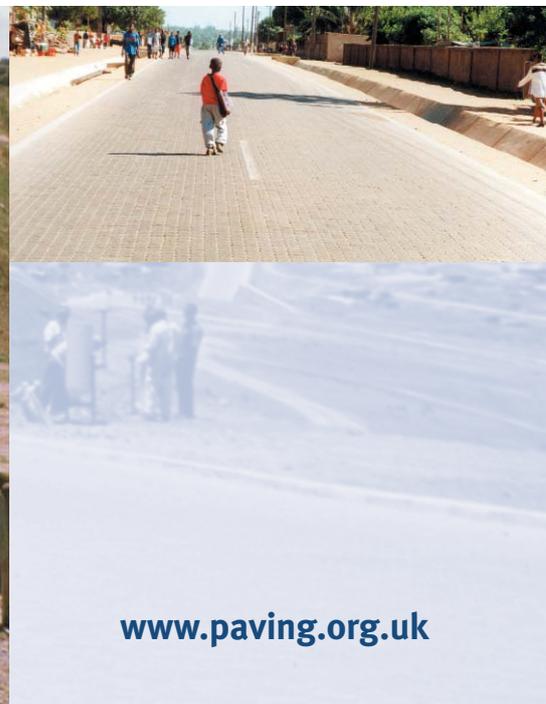
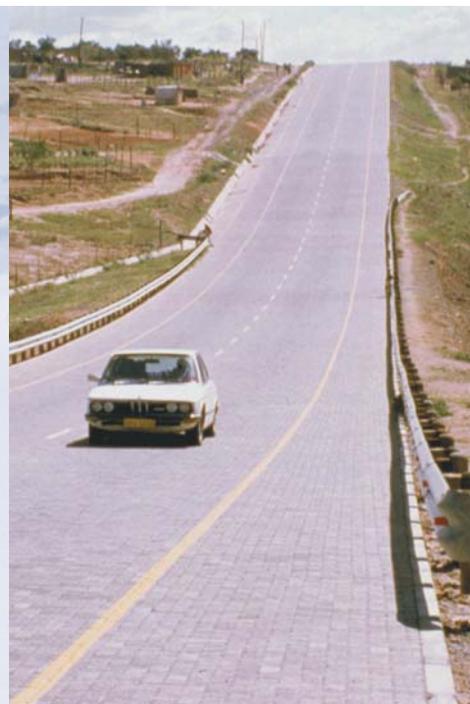
13 months by local contractors and labour. Looked at today, the road has performed extremely well under moderately heavy traffic conditions in excess of that anticipated. This is in sharp contrast to the asphalt roads laid at the same time in the same area that are now in a poor state.

Streets and Trunk Roads

One interesting aspect of the Southern African experience is the diversity of road types ranging from short residential streets to trunk roads several kilometres long and subjected to heavier trafficking and higher speeds. Cars and especially local taxis travel on these roads at speeds well in excess of 100km/hour.

Funding for these projects continues today from the Development Bank of Southern Africa, as concrete block paving is seen as the way forward for communities to have real influence over their environment and links with other communities.

With thanks to John Cairns of CMA, Southern Africa.



...and the UK

take the **A-Road** →

Readers might have been surprised to see concrete paving blocks used on high speed roads in Southern Africa (opposite) – but it might come as an even bigger surprise to learn that block paved trunk roads have been in use for over twenty years in the UK. Pave-It asks Babtie Technical Director Ian D Walsh (pictured right) about his A-road experiences in Kent.



Pave-It: When did you first become involved with concrete block paving?

IDW: As an engineer with Kent County Council Highways Department at the beginning of the 1980s I was interested in the potential for block paving – a relatively new technology in the UK at the time. I became a member and then Chair of the British Standards committee for small element paving. We installed trial areas in a busy industrial road near our offices including different shapes and patterns of block paving to see how they performed. These trial areas are still in place and working well – I drive home over them every day!

Pave-It: What sort of projects have you used block paving on?

IDW: Of course just like any county, you can see thousands of square metres throughout Kent on adopted residential roads where we require 40 years without maintenance – and concrete block paving satisfies this requirement. But during the 1980s it was the very heavily trafficked trunk roads passing through the county's town centres that were causing us problems. Here, we needed a minimal maintenance material

that was up to the job as well as attractive in our historic towns and villages, and concrete block paving seemed to fit the bill.

Pave-It: Can you give a few examples of these busy High Streets?

IDW: Take Strood town centre, where the A2 passes through the middle as a one-way system around a block of shops. This is extremely busy with perhaps 2500 HGVs and buses passing each way every day but the block paving – which was specially designed to provide a high skid-resistance finish – stands up well even though the road has been continually dug up by the utility companies repairing and upgrading their services. The village of Hadlow on the A26 has a constant stream of over 20,000 HGVs, buses and cars passing through daily. Here, the central square is completely block paved with different colours differentiating the main route from parking areas and side road junctions. One of our most attractive historic towns, Headcorn on the A274, has a block paved High Street which works well visually against the ancient buildings and copes with heavy traffic including agricultural vehicles. Some towns, such as West Malling, have been by-passed and now escape the heavy traffic but the block

paving still remains popular.

Pave-It: What about traffic speed?

IDW: Town centres generally have 30 mph limits but there are 'de-restricted' (60 mph) block paved roads in the county.

Pave-It: What are the main benefits that you have found with concrete block paving for busy High Streets?

IDW: There is no question that it does provide a durable, long-life, maintenance free pavement for the heaviest traffic – meeting Kent CC 'Best Value' criteria with good whole-of-life costs. Block paving also comes into its own with the rather too frequent excavations by statutory services contractors. With proper practices the pavement can be reconstructed and blocks re-laid leaving no evidence that work has been carried out at all, avoiding the scarring encountered with asphalt. Finally, concrete block paving really is popular with the public and meets the aesthetic demands of historic towns and villages.

With thanks to Ian Walsh of Babtie in Kent.

A2 Strood →



A274 Headcorn ↘



← **W.Malling**



A26 Hadlow →

awards



Sarah Sturt, Editor Public Sector & Local Government magazine

rewarding paving

The hunt is on for the best designs and most imaginative uses of precast concrete paving in public spaces with this year's Interpave/PSLG Awards. Sarah Sturt, Editor of Public Sector & Local Government magazine sets the scene and calls for entries.



It was a passion to both improve the urban environment and reward examples among local authorities where investment has been married to design imagination that led Public Sector & Local Government (PSLG) magazine to link up with Interpave in 2002. Together we created a biennial awards scheme that would celebrate excellence in the design and imaginative use of concrete paving in public space projects undertaken by local authorities.

searching for excellence

After a year of working together we had our finalists, and what a wonderfully varied lot they were. Worcester City Council emerged as the clear winner for its Quayhead Square development, which won the judges' unanimous approval for its 'transformation to a new, popular use of a small space, innovative use of materials and ideas, together with quality workmanship.'

But now it is time for the bigger and even better 2004 Interpave and PSLG joint local authority awards. This year, the nominations in each category will receive a certificate of commendation and the winner in each category will be awarded a prestigious trophy and winner's certificate. The awards will once again be presented at a special ceremony at the Royal Institution of Chartered Surveyors and all the nominations will be showcased in PSLG. A separate awards supplement will be published with the November edition of PSLG.

more categories

We have enlarged the categories for 2004, though the rules of eligibility remain the same: at least 50 per cent of hard surfacing materials in the entry must comprise precast paving products manufactured by an Interpave member. Only schemes that were started or completed since October 2002 can enter; previous award-winning schemes may not re-enter and each scheme can only be entered in one category, which are as follows:

- Large Urban Regeneration: includes major urban regeneration and area improvement schemes; town centre pedestrianisation; transport interchanges; urban road enhancement; guided bus routes.
- Small Urban Regeneration: includes improvements to street paving and communal areas; home zone initiatives; local traffic calming; school safety zones;

improving pedestrian and disabled access; measures to complement local walking strategies.

- Environmental: includes storm water management; reducing noise and traffic pollution, and other environmental enhancements.

The judges will want to see clear reasons why a scheme was implemented and the improvements that have been made, indication of public satisfaction with the scheme, value for money and evidence of performance measured against predictions. Entries, which may be made either by a local authority or by a service provider on behalf of a local authority, must reach the Interpave Awards Office **by 16 July 2004** and should include high-quality before and after photography, and plan drawings.

With thanks to Sarah Sturt of PSLG.



"winning last year's award really put Worcester's Quayside Square in the public eye"

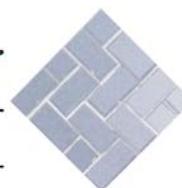
the Interlay page



Dale McRobbie,
Chairman of Interlay

Interlay

THE ASSOCIATION OF
BLOCK PAVING CONTRACTORS



getting it right on site

Following its recent amalgamation with Interpave, the Association of Block Paving Contractors INTERLAY is pushing hard to expand membership and improve installation standards with some exciting initiatives.

Interlay's principal objectives are to promote and maintain the highest standards of laying practice, develop installation techniques and influence standards, increase the pool of competent installers and maintain an up-to-date list of members. Its membership covers all areas of paving from domestic to heavy industrial, including machine installation. Members are all experienced contractors with specialist capabilities in block paving, a proven track record and the ability to meet the highest standards of workmanship and service. To ensure that these criteria are met, stringent application procedures are in place including interviews, inspection of completed projects and the taking-up of references. Applicants must also have been trading for at least two years.

reassurance for customers

Today, more than ever, long term performance is importance to satisfy the demands of 'Best Value', PFI contracts and house-builder warranty schemes. For block paving, as well as paving flags and kerbs, quality of workmanship and adherence to standards is fundamental to the long-term success of a paving project. Insisting on an Interlay member offers specifiers, clients and contractors the reassurance that the installer will have the right skills, resources and training. For this reason, the Member's List is now recognised by clients, specifiers and contractors as the essential source of specialist installers, with more and more specifications stipulating that paving

contracts must be carried out by Interlay members. And, of course, more and more contractors are seeking membership and the benefits that this brings.

real membership benefits

Interlay also works closely with its members, actively encouraging and helping their employees to achieve recognised qualifications such as National Vocational Qualification (NVQ) Level 2 and attainment of Construction Skills Certification Scheme certification (the CSCS card). The close relationship with Interpave allows a free flow of information within the industry and access to other organisations such as CITB and The Concrete Centre so that Interlay members are kept informed of the latest developments.

With thanks to Dale McRobbie of Interlay.

Full details of all current Interlay members are available on the website www.interlay.org.uk. It identifies those specialising in larger commercial projects, as well as in machine installation. But it is essential to check on the website that installers claiming Interlay membership are actually listed to avoid impostors.

A new guide to Interlay for customers, specifiers and contractors is also being published, available via the website or from Interlay.



concrete block paving

the facts

concrete block paving

(After some 30 years’ extensive use, concrete block paving is well-established here in the UK, so you might think that there is not much more to be learnt about the technology. But Pave-It has put together a few facts which may be less-well known to readers. For the whole story, extensive information on concrete block paving is available on our website www.paving.org.uk. We start with a summary of standards (including those for flags and kerbs):

	Block Paving	Flags	Kerbs
Test Requirements*: Now From Feb 2005	BS 6717: 2001 BS EN 1338:2003	BS 7263-1: 2001 BS EN 1339:2003	BS 7263-3:2001 BS EN 1340:2003
Structural Design: Light Traffic (0.5-2msa) Heavy Duty (0.5-12msa) Ports Airports	BS 7533-2:2002 BS 7533-1: 2001 BPA CAA	BS 7533-8: 2003	
Construction:	BS 7533- 3	BS 7533-4	BS 7533-6

Notes:
BPA = ‘The Structural Design of Heavy Duty Pavements for Ports and other Industries’, Third Edition: 1996 – British Ports Association and BPCF
CAA = ‘The use of pavers for aircraft pavements’, CAA Paper 96001.
 *Products are manufactured to comply with the test requirements.

Fitting in

Paving blocks are prefabricated items that do not require complex site procedures involving large scale, energy-hungry equipment. Blocks are easily handled on site and areas can be laid quickly. The recent growth in machine laying demonstrates its competitiveness with slip-formed concrete or asphalt both in terms of cost and productivity, with much lower capital investment in equipment. Because only dry construction with prefabricated components is involved, installation can take place in almost all weather conditions and finished areas are ready for immediate use, with no curing times.

Sounding off

Measurements of sound generation outside vehicles show similar levels for block paving as for asphalt and in-situ concrete during dry conditions. In wet weather, additional high frequencies are generated on standard asphalt and concrete, probably by water being squeezed out from tyre treads, which does not occur with block paving. Although a slight increase in noise over other surfaces has been measured inside vehicles on block paving, it is the different character of the noise that is most noticeable and this can be used as part of traffic calming techniques by changing surface to slow traffic.

Block paving principles

High material strength linked with limited size give each individual block considerable load-bearing capabilities while the flexible joints between blocks allow tiny movements, avoiding the cracking which can occur with rigid surfaces. However, research has clearly shown that it is the interlocking action between adjacent blocks providing an articulated surface that gives block paving its unique performance characteristics. This makes it entirely different to other paving materials such as asphalt or in-situ concrete.



Pieces of history

Using precast concrete elements for paving continues a centuries-old tradition based on stone. Following extensive use in Europe, concrete block paving technology was introduced into the UK during the 1970's. Unlike stone setts, concrete paving blocks are mass produced to give precise dimensional control, consistency and a diversity of preparatory shapes associated with improved performance. This has effectively resulted in a new technology that continues to develop internationally with on-going research, widening the scope for block paving applications into some of the most taxing situations.



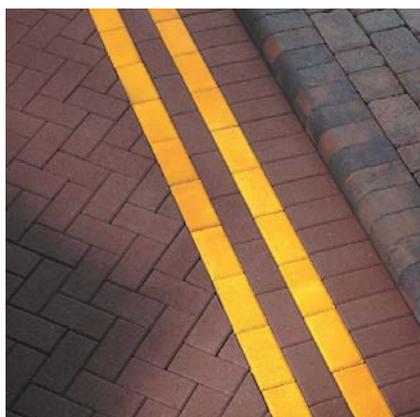
How are they made?

Paving blocks are manufactured in a controlled, factory environment to close tolerances using a relatively dry mix concrete (0.33 water cement ratio). High density and strength are achieved using vibration combined with substantial pressure applied by 'heads' descending into the mould, also defining the top surface. A wide choice of colours and blends can be achieved with high quality pigments. In some cases, a second less-dry mix – perhaps with pigments or other decorative material, provides the top surface. Various secondary treatments can be used including rumbling (to give a more random profile), bush-hammering and shot blasting.



Let there be light

Block paving differs substantially from asphalt in terms of luminance, or the amount of light reflected off the paving. For asphalt, luminance is only about 7% whereas block paving achieves between 15% and 30%. This often overlooked area has implications for street lighting design and safety in terms of contrasting pedestrians against paving at night. Blocks are also available from Interpave members with highly reflective surfaces to enhance road safety.



Where does the water go?

Joints between blocks gradually seal up with dust and other matter falling on the paving so that eventually little surface water will pass through the pavement. Preparatory sealants are available to minimise water and other liquid penetration through sand joints. So, drainage is designed as for impervious surfaces, with adequate longitudinal and cross falls to channels and gulleys. Alternatively, concrete block permeable pavements are becoming increasingly popular, allowing water to pass through the pavement: a detailed guide is available from Interpave on this technology.



Lean and Green

Apart from good looks, concrete paving blocks, and indeed flags, have impeccable 'green' credentials, with a particularly long life and recycling potential. Blocks can be lifted and re-used after below-ground work to services, leaving no evidence that reinstatement has occurred. The Building Research Establishment's 'Green Guide to Specification' credits these products with an 'A' rating for least environmental impact - compared with the lowest 'C' rating for poured concrete or asphalt.



products in practice

kerb enthusiasm

Precast concrete kerbs are an established part of our streetscape, with a range of well-known 'BS' profiles identified in the British Standards. But Interpave members have been busy developing new versions of the kerb solution to meet today's specific demands.

For example, high containment kerbs offer a simple, cost-effective system for passive traffic control, contributing towards better road safety and protecting pedestrians on footways as well as installations such as pedestrian refuges, petrol pump islands, lamp-posts, signage and toll booths. The scale and profile of the kerb provides a real visual warning to the driver as well as a two-stage physical deterrent to over-riding by vehicles. The 'ramped toe' and concave recess above, which contains the bulge of the tyre, prevent vehicle wheels from climbing the kerb, so the vehicle is redirected along a safe line dictated by the kerb. These high containment kerbs are easily visible to the driver, clearly denoting the edge of the route and warning drivers to take evasive action.

Other products have been developed to facilitate access by wheelchair users, people with prams, the ambulant disabled and others onto buses – responding to the Disability Discrimination Act. Here, special kerbs overcome the problems associated with height variance between pedestrian pavement and the various entrance levels of public transport vehicles, while minimising the gap between resulting from easier, accurate vehicle positioning. Interpave and its members are dedicated to working closely with local authorities, transport providers and others in developing new products in response to today's challenges.

case studies

High containment kerbs have been installed on one of Bristol's busiest roundabouts to protect the city's road users and pedestrians. Existing traditional kerbs were constantly being displaced by overriding vehicles with the danger that any damaged kerbs could drop onto an underpass below. In addition, installation of the usual 125mm facing kerbs was not possible due to insufficient thickness of flexible construction on the bridge deck - a problem that was eliminated by the high containment kerb. The Interpave member who manufactured the kerbs worked closely with Bristol City Council to resolve the problems with this particularly vulnerable roundabout.



The new M6 Toll – constructed by CAMBBA a joint venture consortium formed between Carillion, Alfred McAlpine, Balfour Beatty and AMEC – provides a motorway link around the northern and eastern edge of the West Midlands conurbation offering a genuine alternative to the busy M6 and relief to the local network. Over 3,000 high containment kerb units were used around 44 toll booths in four key locations to prevent vehicles from encroaching onto the toll booth 'islands' and so causing an accident, damaging the booth or interrupting the flow of traffic through the Toll.



Warrington Borough Council is a leader in the field of accessible public transport with its Passenger Transport Unit that has addressed the issue of bus access by wheelchair users and others. Following trials, an Interpave member's special access kerb was specified at bus stops to enable level access onto its new low-floor buses. Another Interpave member's special kerbs have been used at Wrexham's new Bus Station to solve similar problems. Here, the two-piece unit includes a tactile rumble-strip to help with accurate bus positioning and to minimise the gap between bus and passenger.



look no hands



Phil Bust of Loughborough University's Department of Civil and Building Engineering comments on the HSE's current concerns about manual handling and offers guidance.

Concrete kerbs have been a key element of hard landscaping works for around 70 years - and their stone equivalents for many years before. In the past, manual handling of products was considered acceptable practice throughout the manufacture, despatch, delivery, installation and lifting processes. Manual handling during production has largely been replaced with mechanical lifting devices. However, the majority of kerbs are currently installed by hand – a situation that must now change.



action called for

In the construction industry manual handling is recognised as a major risk to the health of workers. Fractures, sprains, and strains can result from products being dropped, fingers trapped or poor work organisation and technique. These incidents may be small in comparison to 'slow' injuries resulting from wear and tear on the workers musculoskeletal system over months and years of heavy work. This has resulted in the 'self-selection' of workers who are short and stocky and so capable of handling 70 – 100kg at ground level for a longer period than taller workers - but they are still at risk from long-term injury.

Over many years the Health and Safety Executive (HSE) has worked to reduce manual handling injuries in construction with initiatives such as making cement bags

smaller and using lighter concrete walling blocks. Today, there is concern over some 'concrete products' but more specifically concrete highway kerbs. Inspectors from the HSE have in the past two years been putting pressure on contractors to find alternatives to manual handling of kerbs.

Interpave initiative

Following on from earlier CHSG sponsored research, Interpave commissioned further work from Loughborough to develop installation guidelines for concrete kerbs to be made available through Interpave's website. These guidelines concentrate on the use of mechanical aids (vacuum and other lifting equipment) for the concrete products. An emphasis has been placed on correctly choosing equipment, planning the work and the use and maintenance of the equipment.

key stakeholder forum

The HSE invited key stakeholders in all aspects of concrete kerbs to attend a forum on 11 December 2003 to discuss the way forward towards elimination of manual handling of kerbs. Interpave, Loughborough University and the CHSG were among 30 representatives from organisations representing contractors, manufacturers, Highways Agency, training bodies and local authorities which agreed the programme in the table below.

In order for these objectives to be met, the industry will need help, particularly from initiatives such as Interpave's guidelines.

With thanks to Phil Bust of Loughborough University.

Summary of HSE Requirements

Deadline	Action required
NOW	long stretches of kerbs on new-build projects can no longer be installed with manual handling
end of June 2004	shorter stretches will have to be installed by mechanical means
January 2005	spot repairs or maintenance projects under term maintenance work will require alternatives to manual handling.



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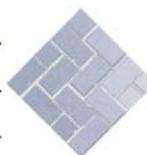


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