

# britpave news



Rail fastening systems for high speed lines and upgraded tracks in Germany have been considered as references and benchmarks for up-coming projects. Therefore, fastening systems with high dynamic elasticity are indispensable for achieving a low maintenance track with high availability. Further information in the next edition.

*Picture: High speed line Nürnberg / Ingoldstadt with Vossloh Fastening system 300-1*

## Diary Dates

2008 Britpave Conference:  
29 & 30 September, Stratford-upon-Avon

# news round up

## Britpave Goes Continental

The 23rd World Road Congress was held in Paris between 17 and 21 September 2007. Britpave were situated in the UK pavilion with organisations such as the Highways Agency, TRL, IHT and Transport for London, amongst others.

The week's congress was a unique opportunity for anyone involved in road infrastructure and safety to come together and share ideas, research and development. Attendees came from all around the world, whether in an exhibitor capacity, networking or information gathering.

As well as booking a well positioned stand, Britpave had an attractive display which, as expected, helped generate more visits and enquiries. The Vicki Butler-Henderson DVD was a popular feature once again, playing on a continuous loop and drawing lots of attention and interest. It was also the launch of the new promotional item, the 'concrete step barrier stress toy' which, due to the number collected, we imagine are now spread all across the world!



Britpave Stand



David Jones, Britpave and Tom Harris MP



UK Pavillion at World Road Association



Sparkling Gala Evening at the British Embassy



The Opening Ceremony

# concrete step barrier

## Installation of Concrete Step Barrier The benefits of collaborative working

The refurbishment of the catenary lighting between junctions 29 and 30 of the M5 was undertaken in early 2007 as part of the Area 2 EMAC (Enhanced Managing Agent Contract). It was the most demanding scheme, in terms of concrete extrusion, completed under the EMAC to date. By virtue of the underlying contractual ethos, the EMAC provides opportunity to improve established practice and to reduce costs by the reduction of waste.

The existing catenary lighting columns had been protected by steel barrier in the central reserve. Some of these columns were to remain and be protected by Concrete Step Barrier (CSB); others were to be relocated in the verge. There was also an over bridge, the supports of which were to be protected by Higher Vertical Concrete Barrier (HVCB).

Hanson have selected PJ Davidson (UK) Limited, (PJD), as supply chain partner for Area 2 works and it was established that 'Best Value' would be achieved if Hanson managed the interface with the client, material supply and other contractors and PJD provided the site expertise for the works processes.

By early involvement of the extended supply chain, most significantly Hanson Premix, numerous innovations and ideas were explored that ultimately benefited the project. These included options for forming the base of the wall and the provision of an extruded slot drain that provided increased capacity whilst requiring less installation space.

Key risks were identified and the following mitigation measures agreed upon:

- Traffic disruption to concrete deliveries during peak hours – The two Hanson premix plants supplying agreed to supply over a 12 hour shift; Honiton for the days, Exeter for nights and Saturdays. PJD worked similar shifts with an hour overlap to ensure continuity during handover periods.
- Acceptability of concrete – To avoid potential delays on site whilst concrete mix details were refined, an area for trials was made available off site on Hanson premises. PJD have experienced significant delays whilst concrete mix designs are refined to allow for local variations in grading of regional fine or coarse aggregates. To emphasise the importance of this issue, Hanson appointed a Technical Key Account Manager to liaise with PJD to minimise wastage.
- Access for delivery vehicles - After establishing that the concrete would be delivered from Hanson's Exeter and Honiton plants with an emergency back up from Tiverton, access points were placed to enable easy access to the works from junctions 29 and 30 and from the M5 North and Southbound. Meetings were held with all delivery drivers presenting details of routing, timing of activities, wash out procedures and access and egress details.

In total, the base and wall required 4,420m<sup>3</sup> placed over a period of twenty days.



Works on site commenced with the hand laying of the wall foundation on Saturday 17th February. Concrete was supplied at 24m<sup>3</sup> per hour which optimised production and minimised waiting time for delivery wagons. Over the next three days, 1,400m<sup>3</sup> were laid.

Over the course of twenty working days, 2,020m<sup>3</sup> of foundation and 2,400m<sup>3</sup> of wall concrete were supplied to produce 3,034 linear metres of foundation, 6,070 linear metres of CSB and 270 linear metres of HVCB. On completion of the central reserve, 62 in-situ concrete lighting column plinths were cast together with transitions, contraction joints and bifurcations, using another 176m<sup>3</sup> of concrete.

Overall, only 33m<sup>3</sup> or 0.72% of concrete was rejected from the wall works, of this only 12m<sup>3</sup> was returned to the Hanson Premix plants; the remainder was used on site. This equates to a wastage factor of only 0.24%.

Regular liaison between Hanson Premix and the site team of Hanson and PJD personnel, ensured changes to the programme or scope of the works were managed effectively to mitigate adverse influence on cost and duration.

The works were completed to time and to budget. Improvements and innovations were made to established working practices that reduced wastage and provided certainty of outcome for the project.

The standard of finished product, in terms of profile, line and level, exceeds specification and provides a good advertisement for the concrete extrusion process and the collaborative working methods adopted.

■ For more information, contact Tim Doyle at [tim.doyle@area2.interroutejv.co.uk](mailto:tim.doyle@area2.interroutejv.co.uk)



# concrete step barrier

## Special Applications Task Group

**Prior to the 2007 Britpave Seminar in September, the Britpave Special Applications Task Group concentrated in a very specific way on the development of concrete barrier. It was found that because of this, other special fields of development in in-situ concrete paving were not receiving sufficient attention.**

A separate Concrete Barrier Task Group has now been formed and Adrian Erwee has taken over the role of Task Group Leader for the Special Applications Task Group.

Following the formation of the Barrier Task Group, it has become necessary to review and consider opportunities where the in-situ concrete market can be developed. During the past few months, various possibilities have been considered for development and these are listed below:

- Drainage channels and slot drain
- Duct channels and specialised upstand plinths
- Retaining walls
- Flood defence
- Sea defence
- In-situ concrete kerbs
- Security barriers against terrorism
- 'No fines' concrete pavement – environmental pavements
- Concrete the material for slipform processes

The Task Group's plan is to interrogate each of these items with a view to preparing relevant data sheets that will assist designers in being able to utilise these products with confidence because all relevant details will be provided.

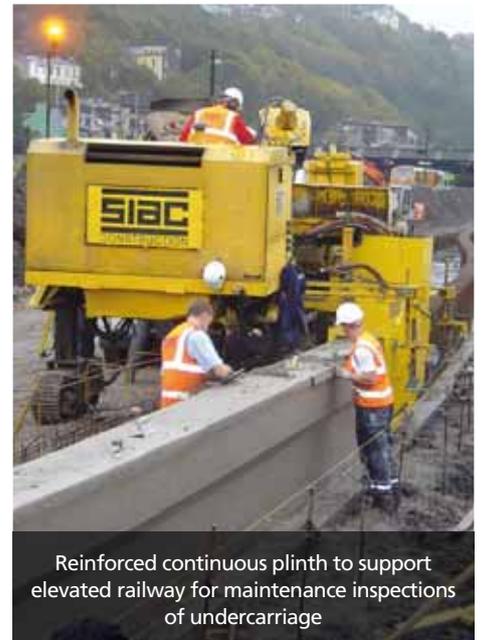
In discussion with a number of our contractor members, the development of product data sheets supported by relevant research and backed by Britpave will ensure that clients are able to specify these products with confidence. The increased limitations on insurances held by contractors furthermore make it difficult for contractors in certain instances to justify performing their own designs. This approach should therefore assist contractors in harnessing the market place in a significant way.

The broad variety of items listed above leads to a need for participation from members who are experienced and/or interested in any of the above fields and we would like to invite any who are interested to join this group either as an email recipient only or as an email recipient and active Task Group member. Please contact Sheridan at the Britpave office (+44 (0)1276 33160 or [scremerevans@britpave.org.uk](mailto:scremerevans@britpave.org.uk)) if you are interested in receiving correspondence from this Task Group. It would be much appreciated if you could mention specific fields that you would be able to assist with developing.

Our target is to develop new markets and improve on existing markets in the use of in-situ concrete which will increase the opportunities for Britpave members to provide effective in-situ concrete solutions to industry in the public and private sectors.



Combined kerb and slot drain in slipform



Reinforced continuous plinth to support elevated railway for maintenance inspections of undercarriage

## Wide Variable Troughed CSB

**Following on from the success of the first construction of Wide Variable Troughed Concrete Step Barrier (WVTCBSB) on the A2 Dartford Improvement scheme, the team, lead by principal contractor Costain Civil Engineering, Designer Jacobs and Britpave Installer Extrudakerb, faced new challenges as they moved to the next major roads project, the widening of the M25 motorway between Junctions 1b and 3.**

Here once again slipformed slot drain and WVTCBSB were required but for the first time the team were able to make use of Britpave's new technical report, "Barrier Guidance Note: The use of the concrete step barrier at bridges" and continue the barrier over major bridges.

As highlighted in the report, a cradle foundation was required and this was cast in advance of the slipform works by the principal contractor.

A slip membrane was provided between the foundation and the barrier.

Expansion joints in the structure were replicated in the barrier using the Britpave Steel Step Barrier design.

The bridges featured a raised plinth and again new guidance available from Britpave and supported by Highways Agency enable this detail to be easily accommodated.

In all, eight bridges will, for the first time, feature the concrete barrier across structures; once again solid evidence of Britpave's ability to provide marketplace with new, important and innovative designs.

Concrete to this project was supplied by Lafarge and lighting column anchors by Fixing Centre.

- For more information, contact James Charlesworth at [james@extrudakerb.co.uk](mailto:james@extrudakerb.co.uk)



## EN 1317 – The Eurocode for Road Restraint Systems

**The preparation of the EN 1317 suite of codes that specify the requirements that road restraint systems have to meet commenced in the 1990s. The need was to replace the National Standards with a uniform European Standard.**

The Eurocode committees are made up of national bodies where each national body effectively has a single vote with respect to resolving issues.

Britpave were represented by John Donegan at national level (UK) on the B509/1 group during the early stages of concrete barrier promotion by Britpave.

In 2006, it became apparent that Britpave would need to actively participate in the preparation of the EN 1317 suite of Eurocodes to ensure that concrete barrier systems were not excluded from use through their rigid behaviour, this being very much different to most other barrier systems which deform under impact.

The Eurocode committees are predominantly made up of experts from various countries, test house representatives and barrier system suppliers. Within this group all have vested interests that are sometimes blatantly demonstrated. There are only two concrete barrier system promoters/suppliers that attend these meetings, where Britpave is one and the other is a company promoting a precast concrete barrier system (the number of people attending the European committees can be as many as 50).

In terms of barrier behaviour, it is almost uniquely Britpave that are promoting the benefits of a rigid barrier that does not deform under design impact and thereby offers a zero maintenance solution.

Within the committees, specifically at European level, there is a constant push by certain barrier manufacturers to lower the ASI (Accident Severity Index) level requirements because steel barrier manufacturers cannot compete against rigid concrete barrier through any other means. By

attempting to lower the ASI level requirements, the deformable steel barrier industry is aiming to remove all rigid barrier systems from the marketplace. This is best explained through the fact that low ASI barrier systems deform substantially under impact and offer a more cushion like effect to the crash vehicle's occupants. In comparison, concrete barrier offers zero maintenance, long design life and the ability to redirect vehicles very safely under most impact conditions.

Britpave is currently represented by Adrian Erwee on these committees so that we are able to influence the way in which decisions are made at their origin. This has helped to ensure that Britpave is aware of key issues as soon as they arise and is then able to address these appropriately.

Key factors to be aware of in terms of how the committees operate are:

1. Being present at every meeting is paramount because there are no votes in absentia.
2. All decisions taken are aimed to be unanimous and majority voting only applies when the former is not possible.
3. The majority of European representatives tend to vote to maintain the status quo rather than to pursue more up-to-date ideas for fear of compromising existing work that has been accepted.

To illustrate the importance of our presence at these meetings, there was a move towards the end of 2006 to alter the achievement of H2 containment by adding a 1500kg car to this requirement (currently a 900kg car and a 13000kg bus need to crash into this barrier successfully). In principle this is a good idea but the risk for Britpave is that the 1500kg car could push the rigid concrete barrier into the highest ASI impact severity level category which is C. By being present, we were able to disagree with this approach at B509/1 level and support the creation of a new L level of containment at the European

committee meetings, while maintaining the H level of containment indefinitely.

The result is that Britpave was able to retain a viable barrier system that provides H2 containment at ASI impact severity level category B which is acceptable for use without special justification. Britpave may in the future perform a crash test with a 1500kg car against the step barrier to show that the larger car behaves acceptably against the barrier where this test could result in L2 containment being provided at ASI impact severity level category C, which currently would only be viable in special circumstances.

Of further interest is that at the most recent Eurocode committee meeting in October 2007, Arcelor Mittal tabled an article stating that ASI for each Class needed to be lowered by 0.2 because it has been found that by mounting the accelerometers straight onto the tunnel of a vehicle, a lower ASI is often achieved when compared to the German approach of using a mounting bracket. At this meeting the French test house, LIER, confirmed that, through a large number of tests (60) where they had mounted an accelerometer on the tunnel and on a bracket above the tunnel at the centre of gravity (CoG) position, there was absolutely no correlation in the results between accelerometers being positioned on the tunnel and at the CoG. This fact has put the whole argument to bed and as a result there will be no further discussion to reduce ASI levels for each impact severity level category.

Britpave will continue to actively participate in the drafting of the EN 1317 suite of Eurocodes to ensure that concrete barrier can continue to offer countries a long life, zero maintenance barrier solution that prevents cross-over accidents (the usual cause for death in barrier accidents) in almost all instances.

■ For more information contact the Britpave Office

### Britpave now have 5 Licensed Installers.

UK Licensed Installers are:

- Extrudakerb (Maltby Engineering) Ltd
- Fitzpatrick Contractors Ltd
- PJ Davidson Ltd

Republic of Ireland Licensed Installer is:

- SIAC Contractors Ltd

Israel Licensed Installer is:

- Netivey Hamifratz Ltd

All Licensed Installers receive the Licensed Installers Logo and a Certificate which confirms them as Concrete Step Barrier approved Installers.

For those wishing to become a Licensed Installer, an Information Pack is now available from the Britpave office which contains all you need to know about the steps towards becoming a Britpave Concrete Step Barrier Licensed Installer.



# concrete step barrier

## Sydenham Bypass (Northern Ireland) High Containment Safety Barrier

**Although not a Concrete Step Barrier, Sydenham Bypass High Containment Safety Barrier was a complex, high profile project, with physical constraints which had to be considered by the Contractor and incorporated through the entire Design and Construction process.**

Our innovative solution for extrusion of a high containment concrete barrier provided the quickest construction method to minimise road and rail disruption, whilst providing full containment properties. Our design permitted for lighting and security fencing to be integral with the barrier. Although the extrusion of concrete barriers is relatively common, the size requirements of a high containment barrier make the process much more difficult. In fact, Sydenham Bypass was the first barrier of its type in Ireland.

The success in this project was dependent upon all the organisations involved, with HBS (Highway Barrier Solutions), Extrudakerb and Peter Cole Consultants forming a highly collaborative design and build team.

Health and Safety was paramount on this project, with Traffic Management and Railway Safety being coordinated constantly throughout the project.

### BACKGROUND

Following the Selby railway disaster, when a car strayed off the road and onto a railway line, the Government's efforts to help prevent a repeat incident saw the Sydenham Bypass being identified as a high priority for preventative work.

The client used a performance specification for a 'High Containment H4a' restraint system, allowing HBS to propose a product and method to suit the site specific requirements.

The project required substantial site clearance, removal of contaminated material and design and construction of a new foundation and barrier incorporating full technical approval. An anti-intruder fence and integrated street lighting mounted on the barrier from concrete build outs permitted maintenance without the need to gain possession of the railway track.

Project Partnering was essential to programme and coordinate the construction work, in particular the removal of excavated material and continuous concrete supply during night closures permitting the safe operation of the road and rail network during peak periods.

### INNOVATION

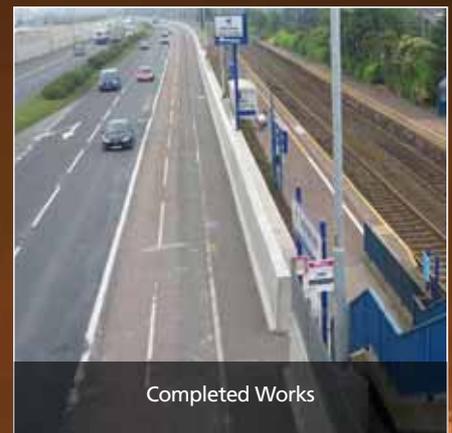
Completed within programme and below budget during October 2006, the scheme involved the construction of an extruded Concrete High Containment Safety Barrier along the length of the city-bound carriageway of the Sydenham Bypass. The slipformed concrete barrier system employed by HBS offered the only practical solution in terms of time, disruption and cost.

This type of High Containment Barrier had never been constructed in Ireland and as the concrete mix is critical, a good relationship and understanding between slipform contractor and concrete supplier was essential. The barrier required a very stable mix to permit extrusion to the required height of 1.65m with a maximum slump of 5mm. The concrete mix design, incorporating polypropylene fibres, has taken four years to develop.

An added factor was the need to keep rail and road traffic flowing. The bulk of the concrete pours took place from 8.00pm to 5.00am, allowing two lanes of traffic to remain open to carry the 50,000 vehicles a day that use the busy commuter route into and out of Belfast. HBS in-house traffic management team installed and maintained the traffic management on the scheme. As the project moved citybound, close to a densely populated residential area, specialist noise screens were employed for the extrusion machine to reduce noise emitted from the work area.



Sydenham Bypass High Vertical Concrete Barrier being slipformed



Completed Works

## THE SLIPFORM PROCESS

Through value engineering, minor modifications permitted reduced foundation depths. The dedicated, highly skilled Extrudakerb team operated the slipform pavers to ensure accurate alignment and control of concrete supply. The extrusion process saw the concrete mix poured into a hopper, constantly compacted by nine vibrating pokers, before being extruded from the rear. The process was capable of producing 18m<sup>3</sup> per hour (25 to 30 linear meters per hour). Outputs were dependent on a number of factors including: length of barrier, quality of concrete supply and ease of access for concrete supply vehicles.

At the heart of the operation is the slipform paving machine; typically a three or four tracked prime mover to which the slipform paving mould is attached. The basic mix for barrier concrete is class C28/35 with air entrainment. Concrete design was in accordance with BS EN 206-1 and BS 8500. Aggregate selection is important and the natural interlock of a crushed angular stone is very helpful. With the sensitive nature of the concrete mix, co-ordination with delivery to site and pouring into the mould was essential. Off site trials were arranged so mix designs could be refined to suit locally available aggregates and to allow the concrete supplier to fully prepare for the project.

## ACHIEVEMENTS

Waste minimisation was a principal focus as part of our Environmental Management System. To reduce the number of vehicle movements and material for disposal, substantial quantities of existing excavated granular material were recycled and reused on site. Through heavy dynamic compaction this material was capable of providing a suitable sub-grade for the barrier foundation. Other waste reduction measures included directional drilling and careful segregation of contaminated material.

The client's acceptance of a concrete barrier solution has ensured a long life zero maintenance solution making the product sustainable to a very high degree.

The project was one of four finalists nominated for the CEF Excellence Awards in the sub-category Infrastructure – Roads and one of four short listed for the overall award for Achieving Excellence.

- For more information, contact Adrian Erwee at [adrianerwee@pcoleconsult.co.uk](mailto:adrianerwee@pcoleconsult.co.uk) or James Charlesworth at [james@extrudakerb.co.uk](mailto:james@extrudakerb.co.uk)



Peter Cole  
Consultants

Excellence in Engineering



Specialists in the field of Concrete Barrier Engineering, assisting industry in the development of slipformed concrete products.

PCC is involved in projects that range from buildings to heavy duty civils. We aim to provide a complete engineering service ensuring that project targets are exceeded. For further details, please contact Adrian Erwee.

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## Fixing Centre at Civils 2007

Britpave member, Fixing Centre Ltd (FCL), attended Civils 2007 which was held at Earls Court from 18-22 November. The Fixing Centre have been instrumental in the research and development of lighting column fixings that securely attach the lighting columns to the concrete step barrier.

Fixing Centre Ltd's main exhibit at the CIVILS 2007 show was a section of the Britpave Trough Wide CSB (TWCSB) Barrier complete with a 15m lighting column and an example of the SSR-170 Britpave CSB Transition Anchor.

The lighting column was fitted with SSR-128-VDP-TI Heavy Duty Lighting Column Anchors that have been developed and approved for use with both 12 and 15 metre lighting columns for both Britpave CSB / WCSB and TWCSB barrier systems.

The SSR-128 anchor has been fatigue tested to 30,200,000 cycles.

Another feature for FCL at CIVILS was the formal launch of the SSR-SAS Approved Installer Scheme where specialist companies are trained and approved to drill, install and test the anchor. This offers the contractor the benefit that inevitably will reduce construction costs and reduces the number of sub-contractors required to complete the installation and ensure accurate anchor installation.

The barrier was supplied by Extrudakerb (Maltby Engineering) Ltd and the lighting column was supplied and erected by J McCann & Co Ltd who were both working on the M25 Project at the A2/M25 Junction.

- For more information, contact Colin Abbott at [fixingcentre@btconnect.com](mailto:fixingcentre@btconnect.com)



Lighting column on the Concrete Step Barrier

## Major CBM Project, Ireland

**It is many years since a 40km dual trunk road new build contract was let in the UK. However in the Irish Republic, contractor Roadbridge Sisk JV, have two such schemes adjacent to each other on the N8 Cork to Dublin route through Counties Cork, Limerick, Tipperary, Kilkenny and Laois.**

The first section, Mitchelstown to Cashel, has a fully flexible approach, but the second section, Cashel to Cullahill, is being constructed with a flexible composite pavement. One of the main reasons is that over the 40km length of the site, there are three sources of carboniferous limestone. These are providing much of the sites aggregate requirements, including that for the CBM 3 layer.

The pavement has a 'long life' design and in accordance with HD26, 150mm of CBM 3 roadbase on a CBM 3 sub-base was chosen. As a capping layer is deployed, the CBM 3 sub-base thickness is 150mm. The upper roadbase and surfacing total 190mm.

Roadbridge Sisk JV have employed Roller Compacted Concrete Company (RCC Co.) to mix and lay the CBM 3. RCC Co.'s Director, Richard Needham, was confident that the two 150mm layers of CBM 3 would be laid in one, 300mm thick layer whilst still achieving specification and good surface tolerance.

Meanwhile, RCC Co.'s David York, was working with Roadbridge Sisk JV on getting the aggregate production and mix design pinned down.

The JV are very professionally organised and realised that an opportunity to make impressive progress was at hand. Accordingly, by the time CBM work commenced in early August 2007, there were many kilometres of capping laid ready to receive CBM.

"The production and laying of a consistent high quality CBM material was critical to programme requirements on this major inter-urban road project", (John Duggan – Project Manager for Roadbridge-Sisk JV).

RCC Co.'s Titan paver had been manufactured to accept 40 tonne articulated dump trucks (ADTs) and a large fleet was on site so that the right amount of trucks would always be there.

RCC Co.'s MM1 mixing plant had, in previous schemes, shown an ability to produce up to 1000tph of CBM but had never been on a site where good production could be sustained.

After the initial paver set up and a successful trial, the main works carried straight on. Richard Needham can now smile as experience has confirmed that density and surface tolerance are both good.

On several days, over 6000 tonnes of CBM 3 has been mixed and laid and mean daily production is approaching 4000 tonnes.

"It is a great opportunity to demonstrate what can be achieved when all parties work together", quoted David York.

Controlled cracking of the CBM 3 is being induced at 3m intervals along the pavement. RCC Co.'s patented 'pizza cutter' is being employed to do this.

To verify the efficiency, cores were recovered from a number of controlled crack positions in the trial section. These verified that the cracks were indeed through the full 300mm of CBM.

Stanger Testing Services Ltd are employed by the JV to undertake the independent density testing and compressive strength testing of the CBM. The high productions of CBM have been very effectively dealt with by the site laboratory and results issued in a timely and easy to read format\*.

Employer's agents, Malone O'Regan Scott Wilson staff have played their part in a very positive way, encouraging the use of on-site materials and using their experienced site staff to intelligently supervise the works.

The total volume of CBM 3 for the scheme is a huge 270,000m<sup>3</sup>. Though the work is currently only about one third complete, the site team of contractor, specialist sub-contractor and laboratory is committed to continue the good work to completion and deliver the National Roads Authority a quality asset which should last many years.

■ For more information, contact David York at [davidyork@sitebatch.co.uk](mailto:davidyork@sitebatch.co.uk)



A 40 tonne ADT delivering CBM to the paver. The CBM is being laid over 11m wide and 300mm compacted thickness in one pass



Cracks are induced at 3m centres along the length of the pavement using a patented system



The plant has numerous cameras at strategic locations to assist the operator to maintain a safe operation and monitor the process

## Slipforming in Ireland

**With the rapid development of both housing and infrastructure in Ireland in the last ten years, Irish specifiers, construction companies and plant hire organisations have wholeheartedly embraced the concept of slipforming all types of concrete structures.**

The boom in the housing build market called for very large amounts of kerbing to be required on estate type housing complexes. The house-building companies immediately looked for a faster and more economical way of laying various sizes of kerb to avoid the higher cost and health and safety issues of using precast kerbstones. Slipforming was the obvious route. The machinery required had to be very versatile, compact for legal width transport and able to handle tight radius work. To accommodate these requirements some of the contracting / hire companies, such as Liffey Developments and Clonmel Enterprises, purchased Power Curber 5700 series machines.

The slipforming system became well accepted very quickly and more and more units were sold. Very soon it became apparent to the users that many other concrete laying and forming activities could be carried out by machines, saving time and money. The immediate applications were pathways, cycle tracks and drainage gulleys on roadways. In due course, as new main roads were built, it became practical to lay slot drains of various diameters using either the drag torpedo or inflatable tube method.

The Irish Government recognised the need for a motorway network and with the assistance of EU subsidy commenced on a large road building programme one. The requirement for safety very soon led to the adoption of the European standard concrete step barrier. New roads and also some existing roads, were then specified as requiring this form of barrier. The existing slipformers in the market proved ideal to lay this

barrier. The 900 or 1000mm barrier followed the UK specification very closely, requiring either twin wire or 20mm re-bar reinforcing. Using wire became the most popular method and many of the Power Curber machines with companies such as Ascon and C2K were fitted with twin wire dispensing reel holders to reduce handling problems. This proved very successful. The use of up to five vibrators ensured very good results well within tolerance levels. The total amount of concrete barrier of all designs now laid in Ireland greatly exceeds that of the UK, as does the number of slipformers in use.

Ireland has proven just how effective and versatile slipforming is. It serves as a very good example to specifiers in other countries of what can be achieved more economically and quickly with the use of the correct equipment.

■ For more information, contact Bryan Hebble-Thwaite on [bryan@powerslipformers.com](mailto:bryan@powerslipformers.com).

**Power  
Slipformers Ltd.**  
Our commitment shows

The versatile new Power Curber 5700C  
Britpave CSB, Kerbs, Slot Drains, Pathways, Gulleys, Lays Left & Right



Ascon Ltd - N6 Kilbeggan to Athlone Motorway 58km CSB

contact: [sales@powerslipformers.com](mailto:sales@powerslipformers.com) T:01524 762 762 F:01524 762 177

# roads

## Slipformed Kerb Produces Best Solution

**A programmed road renewal scheme on the B5247 near Bretherton in Lancashire was causing headaches to the client in how he could replace damaged kerbs on a narrow busy road. It was renowned for the overrunning of the kerbs by heavy goods vehicles and agricultural machinery, due to its narrow sharp bends. This also had to be coupled with off peak daytime working so as to minimise disruption to the travelling public.**

Joe Roocroft & Sons were approached and together with the client worked out a solution which was initially trialled and then approved for the works.

The scheme was carried out in a fully automated process without the need for any heavy lifting which brings with it the usual manual handling issues.

Firstly the existing kerb line was planed out with a specialist mini-planer and the resultant fine

aggregate was removed with an excavator which was then re-used for footpath low level formation. Then a slipformed kerb with a standard half battered profile but slightly wider than normal (180mm at the top and 220mm at the base with a height of 250mm) was slipformed directly into the trench. The bottom of the trench was excavated to a depth of 25mm below the bottom of the mould so that concrete would flow out to the sides of the trench and secure the kerb line in place.

Finally the existing carriageway was planed out and the road resurfaced to complete the works. This was undertaken without any movement of the slipformed kerbs even though impact did take place by rollers and site machinery. The project manager stated that if pre-cast kerbs had been used, a lot of them would have been displaced on this type of scheme especially with traffic being run past the elevated kerbs prior to the tarmac being brought up to finished level.

The single carriageway road was kept open throughout the construction works with two-way traffic management, and the compact dimensions of the Power Curber 5700C ensured the slipforming works could be carried out safely in the restricted working space available.

Outputs of 90m per hour were achieved which resulted in shortening the duration of the works and therefore minimising the disruption to the travelling public.

The slipformed works were carried out by recent new Britpave member Joe Roocroft & Sons who originally expanded into slipforming to install the concrete step barrier restraint system on the motorways. The versatility of the slipforming operation was demonstrated on this particular scheme.

■ For more information, contact David Roocroft at [david@roocroftfencing.co.uk](mailto:david@roocroftfencing.co.uk)



### SLIPFORMING SOLUTIONS

KERBING | SLOT DRAIN | DRAINAGE CHANNEL | STEPPED BARRIER

## Case of the Missing Nuts

The stainless steel nuts have been stolen from many of the bolts on a section of Rama VII bridge. The theft is being blamed on scavengers or drug addicts as the metal fetches a high price.

- The Bangkok Post, Wednesday 21 November 2007

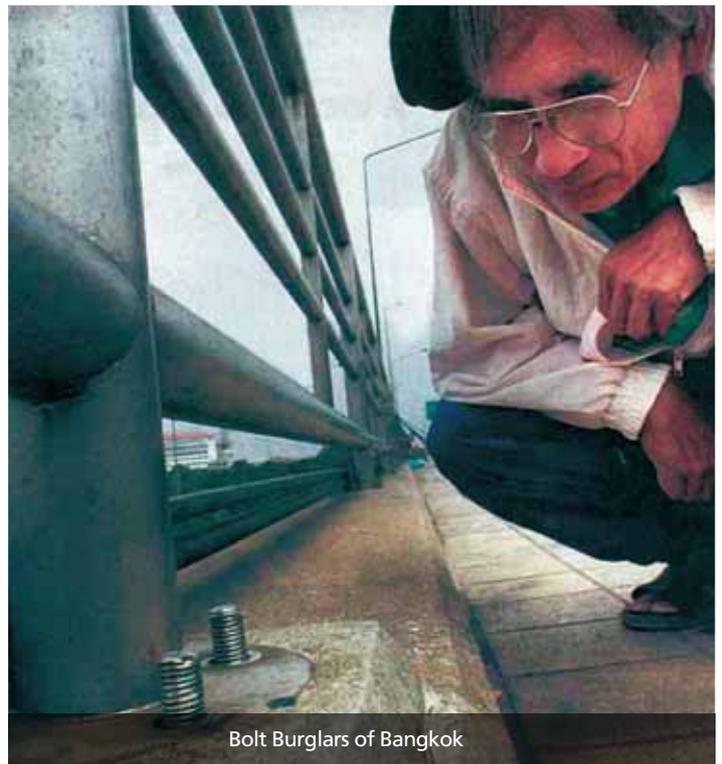


**THE UK'S FIRST SLIPFORMING MACHINE REQUIRING MINIMAL SETUP.** DUE TO ITS UNIQUE SIZE AND TURNING CIRCLE THE POWER CURBER 5700C IS CAPABLE OF LITERALLY BEING DRIVEN OFF THE BACK OF ITS TRANSPORTATION AND STARTING WORK. ALSO DUE TO ITS SIZE, IT IS CAPABLE OF CARRYING OUT WORK IN SPACE RESTRICTED AREAS, ON LIVE ROADS, LAYING TIGHT RADIUS WORK AND LAYING ON BOTH LEFT AND RIGHT SIDES.



### Joe Roocroft & Sons Ltd

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[www.roocroftfencing.co.uk](http://www.roocroftfencing.co.uk)



Bolt Burglars of Bangkok

# roads/rail

## Grooving and Grinding in Belgium

**The technique of longitudinal diamond grinding of concrete to reduce noise whilst retaining skid resistance has been used successfully for some years in the USA and elsewhere.**

John Roberts of the International Grooving and Grinding Association based in America, made a powerful presentation on this technique at the September Britpave Conference and this aroused the interest of the Highways Agency audience members.

The Belgian contractor Robuco, well known for its exposed aggregate brushing process, carries out the diamond grinding process in Europe. Britpave Director, David Jones, along with Pascal Buys of Robuco, arranged for a senior HA manager to visit a job site near Brussels where the longitudinal

grinding process was underway with the objective of noise reduction on an old transverse grooved ground surface. The powerful grinding machine drives a cylindrical metre-wide diamond grinder which longitudinally re-textures the old concrete surface and re-profiles it. The resultant noise reduction has been demonstrated to be in the region of almost 3dB(A) for trucks.

The HA is currently evaluating the possibility of a full scale UK trial of this process in 2008.

■ For more information, visit [www.igga.net](http://www.igga.net) or [www.robuco.be](http://www.robuco.be)

Close-up of the treated surface compared with the old transverse ground surface



The Grinding Process

## Crossrail gets go-ahead

**The £16 billion funding deal to secure the construction of Crossrail has been given the go-ahead by the Prime Minister. Maidenhead and Heathrow in the west will be linked with Shenfield and Abbey Wood in the east and will include new stations at key city locations including Bond Street, Farringdon and Canary Wharf. It will bring an additional one and a half million people to within 60 minutes of London's key business areas and is expected to carry 200 million passengers a year.**

Work on the project is due to commence in 2010 with the first trains expected to run in 2017. What will be Europe's largest civil engineering project will provide London with a world-class railway that will support its growth as a world-leading finance centre. It will help add at least £20 billion to the UK's economy.

The unique deal will mean that Crossrail is funded both by the Government and the businesses that are set to directly benefit from the link. The Parliamentary Bill to secure the necessary powers to begin construction of the link is expected to get Royal Assent in summer 2008.



# soil stabilisation

## Blackpool Central Coastal Defence Project

**Birse Coastal was awarded a £66m project by Blackpool County Council to build 3.5km of new coastal defence wall and promenade enhancements. The project includes the creation of five new headlands and the reconstruction of the existing promenade and tram tracks.**

The work is scheduled to be completed over a five year period and is currently midway through the project with the primary focus being the construction of the coastal defence. The promenade design has yet to be finalised and there was a concern that construction of the permanent pavement at this time could result in extensive reinstatement or sacrificial works once the development details are finalised. Areas of the promenade also have to be reopened to the public during the summer months, so a decision was made to install a temporary surface in the affected areas to mitigate the effects above.

Proposals for the temporary surfacing needed to accommodate a loading of 220 standard axles/day with a maximum vehicle weight of 25 tonnes. Design life was set at around two years and the surface would be subject to an amount of tidal effects when the sea defences are overtopped. Costs of the temporary surface were also to be kept to a minimum, so a decision was taken to incorporate any temporary works into the permanent works.

The new sea defences are constructed seaward of the existing, with five headlands projecting 50 metres out to sea, creating large areas of new promenade. The new headland areas were to be founded on approximately 4m of bulk fill material overlaid with 150mm CBGM class A with a bearing capacity of 150kn/m<sup>2</sup>. This was subsequently modified by replacing the CBGM layer through the cement stabilisation of the bulk fill material, which would then be overlaid with a flexible surface of minimal thickness to provide the temporary surface required. The temporary surface was to be constructed to the underside of the permanent concrete pavement level in order to allow the concrete to be cast at a future date directly onto the temporary surface.

Birse Coastal therefore contracted CON-FORM, the specialist ground engineering company, to carry out the stabilisation and temporary surfacing works. The temporary works had to be carried out on a very tight schedule as the areas under construction had to be made accessible to the public from the 2007 Easter Bank holiday right through the summer holiday period. CON-FORM used its in-house rolling dynamic compaction equipment to crack and seat the old sea front promenade so that both it and the new area of seafront could be overlaid/filled with imported stone, compacted and the top 200 to 250mm treated with cement to achieve the equivalent strength of a CBM 2 material. Areas of

the works had to be hand laid to avoid damage to the pre-cast concrete coastal defence wall which was protected with an anti-fungus coating.

The area of works carried out by CON-FORM covered 10,000m<sup>2</sup> with the works carried out over a seven day period. The stabilised bulk fill material was overlaid by CON-FORM with 40mm of blacktop to provide the temporary surface required until its replacement by the permanent coloured concrete pavement in approximately two years time.

■ For more information, contact Simon Harding at [simon.harding@con-form.com](mailto:simon.harding@con-form.com)



CON-FORM take the sand castle competition seriously

## All-Weather Pitch Project

**Lincolnshire based civil engineers, Smith Construction, have been awarded the Design and Build contract to construct a Sand Dressed, all-weather synthetic sports pitch at Rosebery School, Epsom.**

The project, originally planned for 2008, has been advanced following funding assistance from Smith Construction. It will totally transform a grassed area, previously used for limited games practice, into a state-of-the-art, competition Hockey and Multi-Use play facility.

The challenging project is located on a narrow strip of land with a public footpath along one side and a railway embankment on the other, with very little room for manoeuvring. This is compounded by the severe slope on the site and the very heavy clay ground conditions which result in seasonal flooding.

Managing Director, Ken Smith, is leading the construction team with a design incorporating lime and cement stabilisation to create a strong, hard base on which to construct the new sports pitch.

This technique is relatively new to the sports industry and is a proven system used by Smith's on more than 40 projects. At Rosebery School it has reduced export and import of materials by almost 50%, representing around 70 to 80 lorries on the project. Site access is through a residential area.

The company will be designing a special drainage system with a storm attenuation pond as part of the project. The design has been approved by the environment agency and will tackle heavy storms in the future.

Mr Paul Hiscutt, Bursar at Rosebery School, said "the Governors of the school are extremely grateful for the financial support provided by Smith Construction, which has enabled the work on the new pitch to start six months earlier than planned. The project is being well managed, which is a great relief to the school and we think it will be finished ahead of schedule, too".

■ For further information, contact Jeanette Munton at [jeanette@smithsportscivils.co.uk](mailto:jeanette@smithsportscivils.co.uk)



Rosebery Stabilisation in process

## BAE Chadderton, Manchester

The project at hand was to re-develop an existing building, thought to date back to the inter-war years, into a distribution/storage unit. The ability of the ground slab and the ground beneath however, in order to function in this new role, was in doubt.

The ground beneath the slab consisted of irregular deposits of firm clays; soft, wet, sandy clays; layers of mixed clay and decomposed vegetable matter; layers of very fibrous peat and Made Ground (clay, brick, gravel, plastic etc.)

### The Operation

All U1 material was to be removed from under the slab area. As an alternative to importing suitable fill it was decided to assess the possibility of processing the U1A to give an acceptable general fill (CBR~5%). Furthermore the production of a Stabilised Capping layer (CBR15%) was also to be investigated.

Trial pits were dug to enable samples of all materials to be recovered.

The U1A was tested for Sulphate content to TRL 447 and Organic Content to BS 1377. Material destined for use as general fill underwent a series of tests designed to show the optimum lime addition needed to give both (1) an MCV of ~9 to allow placing and compaction as fill to HA requirements and (2) a CBR of ~5% at seven days.

The mixture for use in the cemented surface layer was tested to establish its Moisture/Density relationship and from this the upper and lower moisture (MCV) limits for the works were chosen. CBR specimens were then prepared at dry density and moisture values equating to these limits. The specimens were tested in a soaked condition at seven and 28 days.

The works involved the excavation of all unsuitable material down to a point where existing ground properties were acceptable. The void so formed was to be re-filled with lime-modified material in layers 300mm deep. While the most efficient way to do this is in-situ, some areas were too small to allow access of the mixing rotovator because the exposed base of the excavation was very irregular in line and level. In this situation, the material was mixed ex-situ then lifted and placed as required.

The capping layer was limed and after 24 hours cemented with the addition of water, compacted, trimmed and sealed.

This project was carried out by John Jones/Norwest and Combined Stabilisation (using powder from Buxton Lime and Castle Cement).

For more information, contact Andrew Thorpe at: [sales@combined-stabilisation.co.uk](mailto:sales@combined-stabilisation.co.uk)



Excavation refilled with lime modified fill (CBR 5%)



Excavations to remove peat deposit

### THE TOTAL DESIGN & BUILD SOLUTION

- ALL WEATHER SPORTS SURFACES
- FLOODLIT SYNTHETIC PITCHES
- INDOOR TENNIS TRAINING CENTRES
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- ATHLETICS TRACKS
- NATURAL SPORTS PITCHES
- HARD SURFACED SPECTATOR AREAS
- GROUND STABILISING TECHNIQUES
- SPECIALIST SURFACE MAINTENANCE



### SPORTS FACILITY CONSTRUCTION

- SPORTS HALLS
- PAVILLIONS
- CHANGING FACILITIES
- ESTATE ROADS & PATHS



Lime/cement surface layer (CBM 15%), mixed and compacted. Surface sprayed with bitumen emulsion curing membrane

# soil stabilisation

## A66 Temple Sowersby Bypass – In-Situ Lime Conditioning and Lime/Cement Stabilisation for Capping

The A66 trunk road runs through the village of Temple Sowerby in Cumbria, which had been desperately waiting 24 years for a bypass. The main contractor, Skanska, appointed Beach Soil Stabilisation as the specialist stabilisation contractor.

The 5 kilometre route takes it through an SSSI and European SAC, which specifically related to the flood plane of The River Eden. Extreme care had to be taken when carrying out stabilisation in this area, to minimise the possible effect of lime and cement dust contaminating the Eden.

The stabilisation was twofold. Firstly, conditioning/improvement of the 'host' soils took place in the Main Line, Connector and Slip Road Embankments, as the host had an MCV below 7.5 and tests had determined 7.5 to be the minimum allowable.

The 'host' soils were in the main of sandy, gravelly clay and there were also areas of Penrith Sand. The sandy, gravelly, clay soils were treated/improved using Singleton Birch Burnt Fine Lime 2. The 'host' was dug in the cut, placed and treated in the deposition areas in 300mm layers. An MCV of 8-12 was the target value and this was achieved by adding 2% Quicklime. MCV tests were carried out continuously prior to lime addition, during the mixing process and just before the layers were

trimmed and compacted. Nuclear Density Tests were carried out after compaction on each improved layer to ensure 95% MDD was achieved.

Secondly, the specification for the Capping Layer was achieved by adding 3% cement to the lime improved 'host'. The majority of the Capping was constructed to 300mm, with some minor adjustments in depth to meet the design specification. Water was added during the mixing process at an average rate of 1%.

Testing was carried out to Appendix 1.5 of the Specification for Highways Works (SWH). In-situ CBR tests were also carried out at 24 hours, moulds were made up and seven day soaked CBR tests carried out in the laboratory. The results were well in excess of the Capping specification. Areas with Penrith Sand as the 'host' were treated using cement only at the same percentage rate of 3%.

### SUMMARY

Client - Highways Agency  
 Quantity Embankment Fill – 48,886cu.m  
 Capping Layer - 21,326sq.m  
 Contract duration - April 2006 – October 2006

■ For further information, contact Al McDermid at [al@beachstabilisation.com](mailto:al@beachstabilisation.com)



Wirtgen mixing quicklime



Mixing water into the capping layer


BEACH SOIL STABILISATION LTD

Applications	Benefits
<ul style="list-style-type: none"> <li>• Improvement of Fill Materials</li> <li>• Capping layer/Sub-base for Highways works</li> <li>• Parking, storage areas</li> <li>• Airport runways and taxiways</li> <li>• Haul roads and site improvements</li> </ul>	<ul style="list-style-type: none"> <li>• Lower landfill costs</li> <li>• Less material imports</li> <li>• Less aggregate levy</li> <li>• Reduced construction traffic</li> <li>• Fast solution for haul roads and construction compounds</li> </ul>

Beach Soil Stabilisation Ltd, The Priory Business Centre, Syresham Gardens, Haywards Heath, West Sussex RH16 3LB  
 t 01444 255114 f 01444 255129 w [www.beachstabilisation.co.uk](http://www.beachstabilisation.co.uk) e [info@beachstabilisation.com](mailto:info@beachstabilisation.com)

# sustainability

Castle Cement is proud of the fact that major investment in production facilities has enabled it to become the UK's lowest emitter of carbon dioxide per tonne of cement, at a level five per cent better than the UK industry average.

This is good news for concrete producers who, increasingly, are looking for ways to reduce the overall carbon footprint of their products.

In addition, Castle has greatly increased its use of waste material as both kiln fuel and as raw material and has reduced emissions of sulphur dioxide, oxides of nitrogen and dust.

The company is also confident that its ongoing commitment to UK manufacture will bring more environmental benefits by avoiding the potential additional carbon dioxide burden created by importing cement.

Managing Director, Mike Eberlin, stresses that Castle is increasing its overall capacity to help overcome the problems of shortfalls in national supply experienced throughout the UK cement industry in 2006 and 2007.

"This commitment will help ensure sufficient cement supplies for the future, reducing imports and their associated higher level of carbon emissions. We estimate a tonne of imported cement carries an additional CO<sub>2</sub> burden of around ten per cent when it arrives at the port of delivery, over a comparable product manufactured by Castle."

He claims, "This is because of the lower thermal energy performance and alternative fuel use by Castle as well as the additional CO<sub>2</sub> emitted in the shipping and offloading of the imported product."

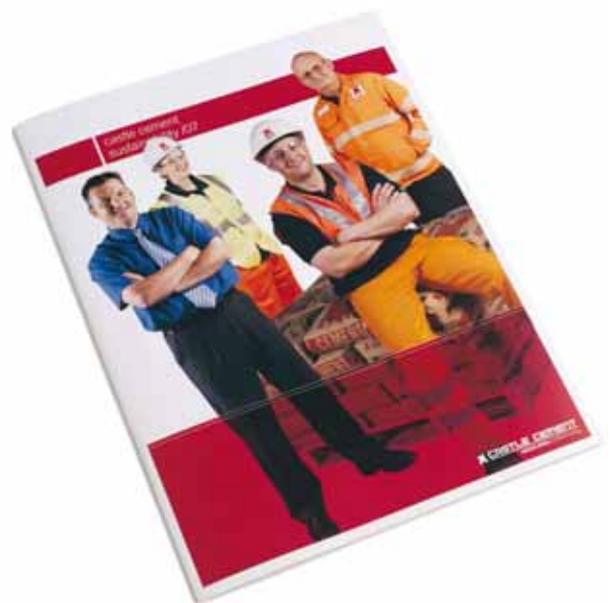
In addition, he highlights Castle's use of waste-derived fuels, saying; "Today about 40 per cent of our kiln fuel comes from that source and we expect that to increase to around 60 per cent in 2008 compared with a 15 per cent average by the industry as a whole in 2005. In total, Castle makes productive use of over 412,000 tonnes of material that would otherwise have been incinerated or buried in landfill sites which means that 130kg of waste is recovered for every tonne of cement produced by Castle."

Castle Cement first reported on its environmental performance in 1999 and has reported every two years since then. Copies of the latest report are available on the web site [www.lowcarbongement.co.uk](http://www.lowcarbongement.co.uk)



Castle Cement continues its investment programme

## This report will even turn our competitors green.



Our Sustainability Report shows how using Castle Cement can reduce your carbon footprint thanks to a combination of innovative ideas and the expansion of our production to meet increased demand in the UK. (Imported cement can add more than 10% CO<sub>2</sub> from shipping alone.)

For a copy of this booklet, which should be read by anyone interested in environmentally responsible building, go to: [www.lowcarbongement.co.uk](http://www.lowcarbongement.co.uk)

# airfields

## Apron Development Project – London City Airport

In July 2007, the construction phase of a major expansion of London City Airport was begun by main contractor Carillion, under the supervision of Atkins. The project consists of 20,000m<sup>2</sup> of piled apron to be constructed over the King George V Dock, a new taxiway link and other associated airfield infrastructure.

The result will be the creation of four new aircraft stands which will aid the airport's aim to increase the number of flight movements a year from the current level of 80,000 to 120,000 by 2010. The new deck and taxiway has been designed to cater for the current mix of aircraft operating at London City and potential new operators.



Concrete pour for marine piles



Installing airfield lighting service diversions

With the area adjacent to the terminal being occupied by the King George V dock, Atkins engineered a solution to build an apron over the water. A matrix of over 200 1m diameter concrete piles and 1,500 precast beams and planks support a 150mm in-situ concrete deck. In order to keep the airport operational, the majority of construction is being undertaken at night and on weekend possessions.

Initially, the design of the new 1,500 m<sup>2</sup> taxiway was for a 275mm PQC on a 150mm dry lean concrete base with 375mm capping material below. However, as part of a value engineering exercise by Carillion, the capping material has been removed and 200mm of dry lean concrete now supports 300mm PQC. This has reduced the required amount of ground improvement as well as the amount of excavation required in an area critical to the operation of the airport.

To join the drainage for the new apron to the existing system, all three taxiways linking the existing apron to the runway require to be crossed. High Early Strength (HES) concrete is being used as part of the process. The existing pavement is being broken out and the drainage installed in one weekend possession. The taxiway operates with road plates for a week then the HES is used the following weekend to reinstate the taxiway.

Work on the new taxiway and the crossing of the existing taxiways is already underway and the new apron is programmed to be operational May 2008.

■ For further information, contact Rob Jenner at [rob.jenner@atkinsglobal.com](mailto:rob.jenner@atkinsglobal.com)

## RAF Waddington, Lincolnshire

Gill Civil Engineering are carrying out concrete paving works at RAF Waddington, Lincolnshire, on behalf of Edmund Nuttall Limited.

The works comprise an 18m wide main taxiway strip, including tie-ins to the main runway and a complex three-way taxiway intersection, totalling over 45,000m<sup>2</sup> of new pavement.

The 360mm PQC pavement has been designed by Ove Arup and Partners.

All concrete is being produced on site through Gill's 120m<sup>3</sup>/hr batching plant, and the majority of the pavement is being slipformed by the company's Gomaco 2800 paver.

■ For further information, contact Tim Gibbs at [tim-gibbs@gillcivil.com](mailto:tim-gibbs@gillcivil.com)



Gomaco 2800 straight paving



Gomaco 2800 radial paving



### Airports and Airport Infrastructure

Atkins has a long and established history in the design and delivery of airports and airport infrastructure.

The skills of our airport designers cover the full range of airport facilities from discrete study to the design and implementation of entire airports, including:

- Master planning
- Aviation regulatory and legal advice
- Safeguarding assessment
- Movement area planning including capacity analysis
- Airfield pavement and infrastructure design
- Passenger & Cargo terminals
- Hangars, Maintenance and Operational facilities
- Fuel storage and distribution

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Plan Design Enable

ATKINS

# new from britpave



## HBM and stabilisation

- 1 Parking areas and hardstandings
- 2 Residential and commercial road pavements
- 3 Heavy-duty paving

Produced to complement the base publication, Hydraulically-bound mixtures for pavements, this suite of three Technical Guidelines is produced to help make clients, designers and contractors aware of the technical issues when using hydraulically-bound materials to produce pavements for three different situations.

Ref. BP/26, 27 & 28. Price £10. Free to Britpave Members.



## Concrete step barrier: data sheets

A new set of datasheets will soon be released which will be added to the existing set. These include:

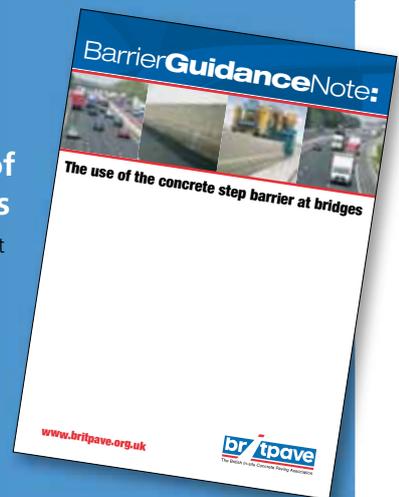
- Lighting columns
- Concrete step barrier and kerbs
- Licence scheme and Accreditation scheme
- Concrete mix

Ref: DS/CSB/500 to 530. High quality and pre-punched datasheets free of charge from Britpave office to members or £10 to non-members. Downloadable from Britpave website.

## Guidance note on use of concrete step barrier at bridges

Information to assist designers in the use of concrete step barrier at bridges. Includes information on the modifications required to CSB at underbridges and the interaction of the barrier with bridge supports at overbridges. Covers application to multi-span structures.

Ref. BP/35. 2007. 16 pages. Price £20. Free to Britpave Members

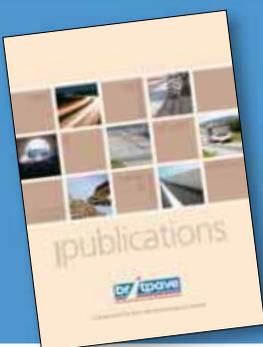


## Britpave publications catalogue

A catalogue of all Britpave publications and outputs to date, covering:

- Airfields
- Rail
- Barriers
- Soil Stabilisation
- Roads, busways and hardstandings
- Sustainability

Ref. BP/36. 2007. 10 pages.



# cheltenham 2007

## Britpave once again deliver a successful seminar

The Chase Hotel in Cheltenham was the venue for another successful Britpave Annual Conference, held on 24 and 25 September.

### Golf Day

Despite a summer of rain and floods, the 17 golfers that took to the Brickhampton Golf Course were able to enjoy the rarity of good weather in the challenging and attractive 200 acres of Gloucestershire countryside. The winners of the 2007 Britpave Cup were the Team Fitzpatrick, who were also sponsors, supplying golf balls and towels. The prize for the 'longest drive' went to Tim Eden and Richard Offord received the award for the 'shot closest to the pin'. Both Tim and Richard represent Fitzpatrick.

### Dinner

The feedback from the guests who attended the Britpave Dinner said they were 'very satisfied' and this was evident through good food, good company and networking success. Once again, a complimentary bar was situated within the exhibition area prior to the dinner and guests were entertained by Terry Crystal, doctor to the England rugby team in the 1990's.

### Seminar

Britpave Chairman, David York, again opened the seminar with his address. He welcomed all to the 2007 Seminar and introduced Aniceto Zaragoza as the morning keynote speaker. Mr Zaragoza, MD of Spanish Cement Manufacture Association and President of the European Road Federation, delivered his stimulating presentation on the use of concrete on roads entitled 'Why did we lose and why should we win?' which left delegates with many challenging thoughts.

Heather Coney of Arup and Chairperson of the Britpave Rail Task Group, delivered the morning's second session with the environmental sustainability debate surrounding concrete Slab Tracks. Tony Parry, University of Nottingham, was originally due to deliver this presentation, but was unable to attend.

Final session before coffee break was the attention-grabbing presentation on the 500kmh 'Ground Transport for Britain', delivered by Alan James of UK Ultraspeed. This futuristic presentation graphically illustrated the possibilities of ultra high speed travel with the introduction of Maglev.

Brian Barton, from the Highways Agency, presented a progress report on the Concrete Step Barrier (CSB) and their experience with it. He also discussed lessons for the future of CSB and emphasised the need for costs to be minimised.

The final session before breaking for lunch was originally scheduled to be a presentation on Terminal 5 Aircraft Pavements; however the speakers were unable to attend. In their place, Richard Sturt from Arup Vehicle Design Group updated the meeting on tests carried out on barrier and the correlation between Acceleration Severity Index (ASI) and real life injuries.

After lunch, another international speaker inspired the delegation with his session called 'Improved Pavement Performance and Customer Satisfaction Through Diamond Grinding'. The afternoon keynote speaker was John Roberts from International Grooving and Grinding Association (USA). He showed how noisy and uneven concrete roads can be made quiet and safe using high output equipment.

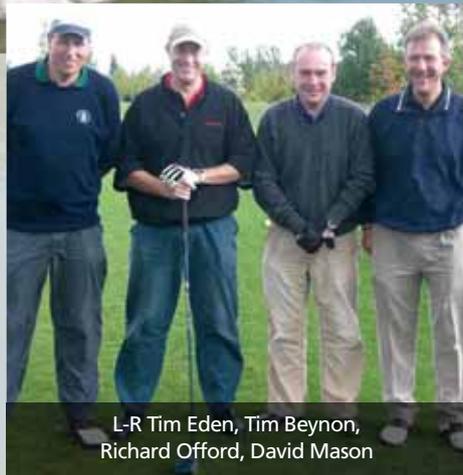


The Britpave Conference Dinner

## Fore!...



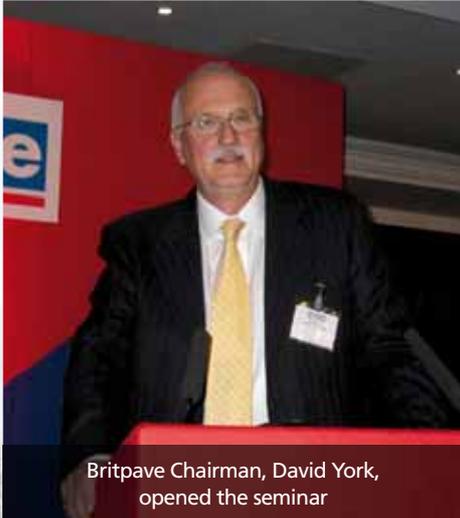
L-R David Lee, Stephen Bullock, John Finch



L-R Tim Eden, Tim Beynon, Richard Offord, David Mason



L-R Al McDermid, Adrian Erwee, Peter Cole, Alan Bromage



Britpave Chairman, David York, opened the seminar



David Jones and Aniceto Zaragoza, MD of Spanish Cement Manufacture Association



John Roberts from International Grooving and Grinding Association (USA)



Craig Notman, Mid Sussex Testing Services

Andrew Armstrong of CON-FORM gave an instructive presentation on Stabilisation and Modification of Soft Grounds to Support Structural Loads using some insightful case studies. This was followed by Craig Notman, Mid Sussex Testing Services, who delivered a complementary presentation stressing the importance of quality control and testing regimes.

John Donegan closed the seminar with a concise resumé of the activities of all the Task Groups within Britpave, demonstrating the wide-ranging scope of the organisation. All attendees were given delegate packs which included new material from Britpave and

Britpave's newly published catalogue of publications. Attendees also received a CD containing all the presentations.

The feedback from the attendees reports that Britpave once again delivered a seminar of high standard and put together a programme that appealed to the broad range of cement and concrete industries. Britpave are confident that 2008 will see the same level of success, if not higher, when it reconvenes for another two days of networking and enjoyment on 29 and 30 of September at the Holiday Inn, Stratford-upon-Avon.

## Stratford-upon-Avon for 2008

The 2008 Dinner and Seminar will be held on 29 and 30 September at the Holiday Inn, Stratford-upon-Avon

Situated on the River Avon and set in beautiful landscaped gardens, the Holiday Inn Stratford-upon-Avon is the perfect location for discovering the delights of Shakespeare's birthplace, while other local attractions and historical sites are within walking distance. Only a short drive from the amazing Warwick Castle, the hotel is within easy reach of Junction 15 of the M40 and just 20 miles from Birmingham Airport.

The dinner will be held on the Monday evening, 29 September and will once again be an excellent opportunity to invite your colleagues and/or clients along. After dinner entertainment will be provided to finish off the evening in true Britpave style.

This prestigious event rightly holds pride of place in the Britpave calendar and brings together clients, contractors, consulting engineers and suppliers in an informal and enjoyable atmosphere.

Make sure you book your space and be part of what will be another Britpave success.

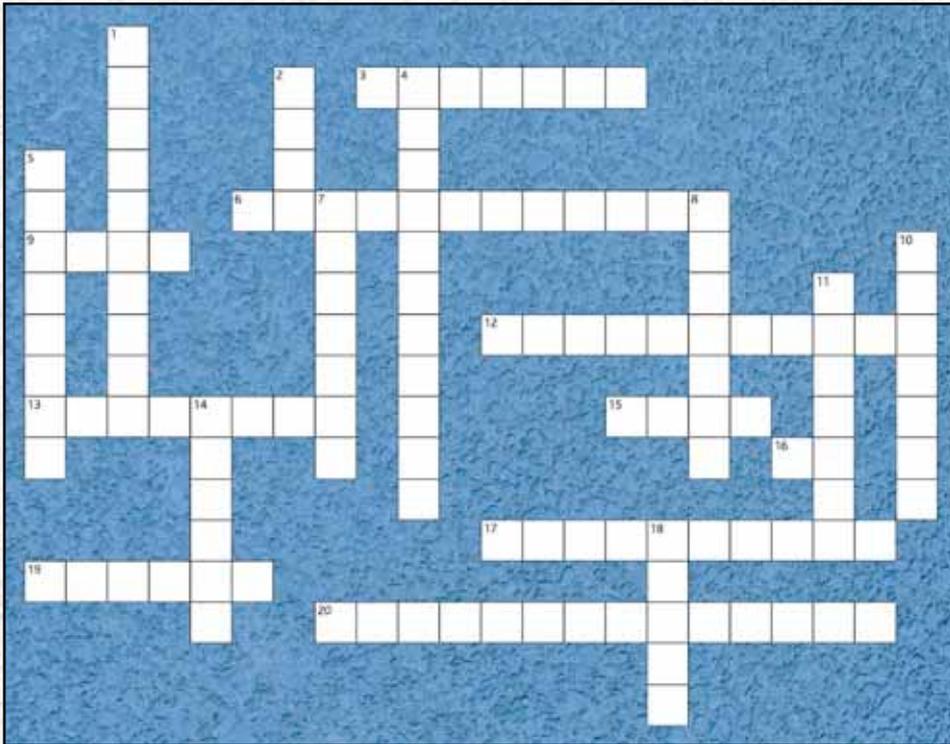


The Holiday Inn - Stratford Upon Avon

***Britpave are confident that 2008 will see the same level of success, if not higher...***

# the last word...

## The Britpave Crossword some clues may be cryptic...



Closing date for crossword is Friday 29 February 2008. The draw will take place on 3 March 2008. Prize for winning entry is 50% off advertising space in the next newsletter.

### ACROSS

- 3 Caught by an arachnid here (7)
- 6 Non-private activities one must see (12)
- 9 A turn silo for the ground (4)
- 12 A group of people joined by a common interest (11)
- 13 The unanimous vote was confirmed by this evidence (8)
- 15 Any mate will do for my club (4)
- 16 & 2 down. Not out (2,4)
- 17 An output of communicating current affairs (10)
- 19 An arm and a leg? (6)
- 20 A mix of this will suit insatiably for the long term (14)

### DOWN

- 1 It was Great in the 1800's (10)
- 2 & 16 across. Interchangeable suit (4,2)
- 4 External conditions with which an organism interacts (11)
- 5 Development doesn't happen without some of this (8)
- 7 Mac 2 without sound (7)
- 8 Meeting remains to be sorted (7)
- 10 There are 1440 today. And tomorrow. And the next day... (7)
- 11 The scheme is popular with 17 year olds (7)
- 14 Not steam driven for decorating (6)
- 18 A thick stew made in North Staffordshire, not unlike Lancashire Hotpot (5)

## Welcome to **new** members

Britpave is pleased to welcome the following new members and looks forward to their participation in the Association's activities.

### Elkem Materials Ltd

Tel: 01442 700334  
www.concrete.elkem.com  
Principal contact: John Finch

### Mesta AS

Tel: +47 915 05200  
www.mesta.no  
Principal contact: Truls Evensen

## Where in the World?

Readers are invited to submit challenging photographs for further competitions to the Britpave office. Please send them to [info@britpave.org.uk](mailto:info@britpave.org.uk). The prize for this competition will be drawn on 3 March 2008.



**Britpave News** is published regularly by Britpave with the aim of keeping members up to date on Association matters, industry developments and member company news and views. Please help keep us in the picture on all of this by sending us any relevant information that you feel may be of interest to the membership.

*Disclaimer:* All articles published in good faith. Britpave will not be held responsible for any errors, misinformation and opinions in articles submitted for this newsletter.

### Britpave

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