



## Concrete Roads Revival?

*Read more on page 4*

# WELCOME

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**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.

## Editor's Note



Despite concerns over future costs in government spending, Britpave is heartened by comments from the coalition government that economic recovery must not be jeopardised by cuts to transport infrastructure.

Britpave continues to develop the market for safety barrier both here in the UK and also in Europe where countries are under increasing pressure to implement fully EN1317, the standard for road restraint systems. I raised the question of the current unequal application of the standard with Brian Simpson, MEP and Chairman of the Transport Committee in the European Parliament (see page 16).

This edition of Britpave News highlights the great success of the grinding and grooving process in recent projects in Eastern England. The process restores skid resistance and, critically, reduces noise levels, has impeccable green credentials and is half the cost of alternative systems. The prospect of the existing stock of concrete roads being rejuvenated for another 20 year period is a tantalising one. The greater vision must be for a new generation of concrete roads which use the technique to obtain their surface textures from new.

Mindful of the demand by clients for information on the carbon footprints of materials and processes, Britpave has commissioned the University of Nottingham to develop a tool which can be used by Britpave members. This is a major step forward by Britpave to protect its members' interest. An update on progress was delivered at Seminar.

The other Britpave market areas all show prospects of growth, from high speed rail with slabtrack, through airfield expansions, to soil stabilisation with its significant environmental benefits of zero landfill and reduced lorry movements. The 'Cinderella' markets of drainage channel are being re-appraised with some resource being allocated to develop best practice drawings. Plus, to help get Britpave's messages across to a wide audience, the website is being revitalised.

All in all, this is a very active time for the Association and the retention of membership shows that companies large and small are seeing the benefits of working together under the Britpave brand to protect and grow their business.

David Jones  
Director of Britpave



## Transport Infrastructure Investment Essential for Economic Growth

**There is a direct correlation between investment in transport infrastructure and economic growth. This was recognised by the Chancellor, George Osborne, in his Budget when he stated that capital projects would be prioritised if they demonstrated “a significant economic return to the country”. He then announced the go-ahead for the upgrade of the Tyne and Wear Metro, the extension of the Manchester Metrolink, redevelopment of Birmingham New Street station and improvements to rail links to Sheffield and between Liverpool and Leeds. In addition, he also announced the establishment of a regional growth fund to finance capital projects over the next two years, although details of where the funding will come from were not given.**

Strategic investment in the UK’s transport infrastructure network would result in increased economic activity not only from the actual construction work but also from increased workforce and freight mobility and from improved national competitiveness and attractiveness as a place to do business. Without a proper functioning transport network Britain would grind to a halt.

Unfortunately due to a lack of long-term vision and real, meaningful investment, all too often parts of our transport do grind to halt.

Motorway lanes are closed off for the repair or replacement of steel barriers when there is a long-term, no maintenance concrete alternative. Rail lines are closed for unplanned maintenance as we continue to patch and mend a rail track system based on the 19th century ballast tracks. Airports are running at capacity and cannot afford to have runways out of service.

The problems of lack of investment in our transport infrastructure was highlighted by the 2009 Policy Exchange report, ‘Delivering a 21st Century Infrastructure for Britain’, that found the UK is ranked as 34th in the world in terms of infrastructure quality, behind Malaysia, despite having the 6th largest economy. Indeed, the UK spends less on transport and development as a percentage of economic output than any other OECD country. France has a 20% higher productivity level than Britain primarily due to its better infrastructure provision.

The report goes on to demonstrate that the UK has a transport deficit that requires £120 billion of new investment by 2020. Failure to address this deficit will see a continued reduction in the country’s competitive advantage and living standards.

In the light of the Comprehensive Spending Review there is a widespread recognition of the need to address the UK’s overwhelming national deficit. However, it must not be at the expense of investment in transport infrastructure. There, lies the road to economic ruin.



# ROADS

## Roads get grinding and grooving

**As budgets get squeezed, different approaches to cost-effectively extend the life of roads are being examined. One of these currently being examined by the Highways Agency is diamond grinding and grooving. Successfully used for many years in the United States, the process restores the surface performance of concrete road at less than half the cost of overlaying the concrete with asphalt.**

In addition to cost savings, the process is fast, is environmentally friendly as it has a lower carbon footprint than an asphalt overlay and provides a road surface that is noticeably quieter than untreated concrete as traffic driving over a textured surface emits less noise than when driving over a smooth surface.

Grinding and grooving involves plant equipped with closely-spaced diamond-tipped saw blades that cut drainage and traction grooves into the tired road surface. With grinding, 3mm to 10mm of the concrete pavement is treated to leave a level, high performance riding surface. The closely spaced grooves left after grinding provide a high level of texture and friction. The same technique and plant is used for diamond grooving. Whereas the purpose of grinding is to restore ride quality and texture, grooving is generally used to reduce hydroplaning by providing channels for water drainage. In terms of design, the main difference between grinding and grooving is in the distance between the grooves – about 6 times greater for grooving.

Introduced into the UK by Concrete Cutters (Sarum) Ltd, in partnership with UK abrasives company, Tyrolit, the diamond grinding technique is half the cost of overlaying concrete with asphalt, is much faster and requires considerably less investment in capital plant.

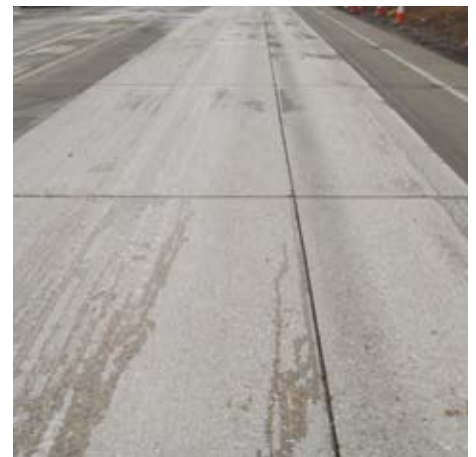
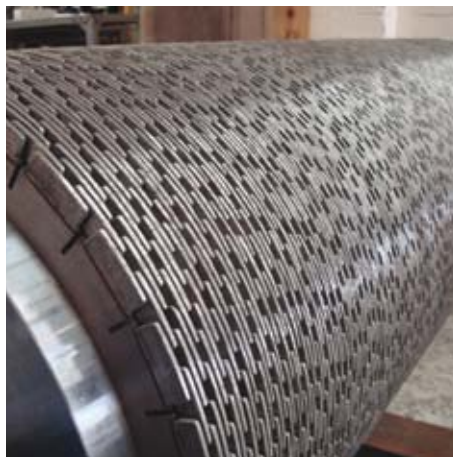
Last year, the Highways Agency has carried out a series of grind and groove trials in East Anglia at Alconbury Airfield, Cambridgeshire, between the A318 and A1114 junctions on the A13 Chelmsford Bypass, Essex, and on the A12 Chelmsford Bypass. Further trials

have been carried out on the 1.61km of the A12 Kelvedon, in both directions, 745m of the A12 Chelmsford Northbound, 1km of the A11 Ketteringham Northbound and a major maintenance project on the A14 near Ipswich has used the technique. Early indications from accelerated wear tests are that the surface is durable and will retain its skid resistance and noise attenuation characteristics for many years. There has been a significant improvement in skid resistance of 54 per cent. Reductions in noise levels compared with a smooth concrete surface with traffic flowing at 30 to 50mph range from 4 – 6dBA. TRL is monitoring all the sites and at higher vehicle speeds the noise reduction is even more apparent. It is anticipated that the results of the TRL study will be published later this year.

The first major project on the A14 involving four 6km land with a total area of 125,000 sq m was successfully completed in May. The main contractor was VolkerFitzpatrick and the scheme was carried out within Highways Area 6 and was supervised by W.S. Atkins.

Experience in California, a pioneer of the grind and groove technique, has found that whilst asphalt overlays typically last 8 to 12 years, the average life span of a diamond ground concrete surface is up to 17 years and a pavement can be diamond ground up to three times without significantly affecting its structural performance. Other benefits include that the process can be carried out during off-peak hours with short lane closures and without encroaching into adjacent lanes. Grinding one lane does not require grinding of the adjacent lane which may still have acceptable surface friction and drainage and the clearances underneath bridges are not affected.

It is estimated that there are nearly 1,350 lane kilometres of concrete roads in the UK that need attention. With its considerable potential cost savings and long term performance benefits grinding and grooving offers the enticing possibility of its being used on new build and major reconstruction road projects. This has successfully been done in the USA and, in a time of cut backs and slashed budgets, could result in concrete roads making a surprising comeback in the UK.



## N18 Gort to Crusheen Dual Carriageway

**The €100m N18 Gort to Crusheen dual carriageway project forms part of the objectives of Ireland's National Development Plan which blueprints a high quality dual carriageway corridor linking the cities of Galway and Limerick. It consists of 22km new build dual carriageway, 10km local road realignment, 12km accommodation access tracks, 14 new bridges, a grade separated junction and an at grade roundabout junction.**

The design of the scheme commenced in 1999 with Babbie Pettit undertaking route selection and preliminary investigations. The contract was awarded to Siac Wills Joint Venture Ltd. Bardon Composite Pavements won the contract to mix and place 86,000m<sup>3</sup> CBM base.



The route of the new carriageway sits on an exceptionally high water table. Sealed drainage along the side of the carriageway formed part of SWJV's solution to preventing construction rain water run-off contaminating the water table. However, this prevented the use of traditional setting out pins. BCP were asked to investigate a Paving Control System, PCS900 produced by Trimble. It is a state-of-the-art positioning system which governs longitudinal and horizontal alignments and ultimately surface tolerance and level. Parallel to a key objective for this project was to achieve a high quality surfacing product demonstrated by ride quality. SWJV had previously developed their resources and improved site control by purchasing (in 2008) a blacktop manufacturing and paving plant, closely followed by ISO 9001:2000 accreditation and complimented by an onsite INAB accredited laboratory. The next logical step was to improve the control and ride quality of the CBM base and asphalt layers through automated paving control systems.

BCP decided to invest in the purchase of PCS900, supplied by Korec. The system operates by loading the project MX pavement design model into the SCS 900 control unit. A receiving mast fitted with a tilt sensor and radio is set up on the tow arm of the paver which communicates with the control unit. Drivelines are established through the SCS controller. The System controls the height and slope of the screed in reference to the 3D design model loaded into the control unit. The Trimble One Second Total Station Units are set up at a maximum distance of 200m apart with a minimum of two control stations being required - one to guide the paver and one to provide as built checking during paver operations. The manufacturers specify system accuracies of  $\pm 5\text{mm}$  up to a screed width of 6m, however, accuracies of  $\pm 5\text{mm}$  were achieved in the field with a screed of 10.9m wide exceeding the manufacturers expectation.

To achieve good results however, a good quality CBM aggregate is required to be delivered with consistent moisture contents and good grading control. A carboniferous limestone aggregate was chosen for this project from a local quarry and BCP provided a site based mixing plant establishing good control over the quality parameters of the mixed material and close proximity to the paver.

The use of the PCS system is an innovative solution to a specific site environmental problem. However, other and perhaps greater benefits can be observed, one of which is the complete removal of setting out pins, reducing labour requirement during installation and maintenance resulting in cost and time efficiencies. The paved quality of the CBM layer is also substantially increased as changes in levels, slopes, gradients are measured and controlled at greatly reduced increments allowing for smoother transitions, improving surface tolerance, line and level, ultimately enhancing the ride quality and overall finish of the pavement. The project is due to be completed by December 2010 and is currently on target.

Bardon Composite Pavements was created in 2009 to integrate three businesses: Sitebatch Technologies; Needham and Cullen and Roller Compacted Concrete Company. The new company has relocated to Maltby – Tel +44 (0) 1709 8145



# BRITPAVE STEP BARRIER®

## Motorway sell-off benefit for concrete barrier installation

**Considerations by the coalition government of proposals to privatise the road network could accelerate the rate of concrete barrier installation.**

Phil Hammond, the Transport Minister, is understood to be considering a proposal from NM Rothschild, the investment bank, to sell motorways and trunk roads to private contractors. The contractors would operate and maintain the roads on behalf of the government under long-term contracts. The scheme – which could raise billions of pounds – echoes the private finance initiative schemes used to build schools, hospitals and railways.

Rather than motorists paying a toll to use roads already built, the government would commit to a 'shadow toll', paying the contractors a fee based on a formula linked to the number of vehicles using the route. Direct tolling of motorists has been ruled out.

Contractors would be looking for minimum maintenance and long-term performance in order for the sums to add up. Here, concrete step barriers with their minimum maintenance and design life of over 50 years offer economic long-term performance compared to the relatively short 15 year design life and ongoing maintenance needs of steel barriers. On those sections of motorways where concrete barriers have been installed there has been no need to carry out repair or maintenance despite evidence of vehicular impact.

If private contractors are to be invited to manage the UK's motorways and trunk road network, then they would want roads that offer optimum performance and concrete step barriers provide that. Proposals to privatise the national road network could see the installation programme of concrete step barrier accelerate in order to bring them up to the required standard.



## Concrete barrier exceeds performance requirements

**The June accident on the M180 between Junction 3-4, Scunthorpe in Lincolnshire, clearly demonstrated how concrete barriers can prevent that most serious of motorway accidents, the crossover.**

Despite being designed to contain 13 tonne vehicles and prevent them from crashing through the central reservation into the path of oncoming vehicles travelling on the opposite carriageway, the concrete barrier brought a 40 tonne lorry to a halt. The momentum of the impact resulted in the lorry toppling over rather than crashing through the barrier. The driver escaped without serious injury and the effect of the accident on vehicles travelling on the opposite carriageway was minimal. The barrier suffered minor spalling and was scarred with tyre marks and other signs of the impact, but it remains uncracked and fit for purpose. No repairs are planned and the reputation of concrete barrier as a virtually maintenance-free system is justified and enhanced.

This accident has demonstrated the wisdom of the Highways Agency in specifying a system that saves lives and, by being virtually maintenance-free, avoids costly repairs and the resulting congestion which road users find so frustrating.

## Area 12 Asset Renewal

The Britpave concrete barrier is fast becoming a common sight on the motorways running through the MAC Area 12 of Yorkshire and Humberside. This region has replaced by far the most life expired steel barrier with the new TD19/06 compliant high performance, zero maintenance Britpave in-situ concrete barrier.

To date Britpave member and Licensed Installer, Extrudakerb, has worked on a total of 11 separate schemes. These have spanned two separate maintaining agents tenure with A-One+ taking over the management of Area 12 MAC from CarillionWSP in October 2009, with principle works undertaken by 3 different contractors: CarillionWSP, Interserve and Balfour Beatty.

So far some 18,000 metres of in-situ concrete drainage channel and 23,000 metres of concrete barriers have been constructed principally along the central reserve of the M1 motorway between junctions 21 and 34 and on the M62 motorway between junctions 25 and 30.

Aside from utilizing Extrudakerb's fleet of 5 Gomaco Commander III 4-track slipform pavers, hundreds of metres of steel formwork were used to ensure that progress of fixed form barrier kept up with the rapid pace of the machine lay works. At its peak, the work saw 3 paving crews, 2 fixed form gangs and 4 slipform pavers all being used simultaneously.

What is believed to be a UK record for Britpave variable profile concrete step barrier was set on the M1 motorway when some 510 metres was constructed within a 7 hour paving window.



# RAIL

## Concrete slabtrack would fulfill potential of high speed rail

**The good news for the future development of a UK high speed rail network is that the coalition government has pledged to deliver such a network as part of its plans to achieve a low carbon economy. The bad news is that unless the network is built using 21st technology the patch and mend problems with our current network will continue.**

The government announced its commitment to the establishment of a high speed rail network within a programme of eco-friendly measures. The network would link London with Glasgow and Edinburgh and provide significantly reduced journey times. However, the wrong type of track could scupper these plans. Britain needs a 21st century rail network and for that we need a 21st century track system. The use of the ballast track system, which is a 19th century approach, could undermine the speed, efficiency and safety of high speed trains. The French opted for traditional ballast when the high-speed TGV network was developed. They have managed to make it work – but at a cost. On some lines the rails have to be swept clean and the ballast replaced and repacked every night. The French are now reported to be examining replacing ballast with concrete slab track.

Concrete slab track, as used by the highly successful Japanese rail network and increasingly throughout mainland Europe, is the way forward. Concrete slab track maximises operating efficiency by eliminating unplanned maintenance, provides high levels of safety and comfort and impressive long-term performance.

There are broadly five types of slack track system. These include embedded rail, booted sleepers, direct fixing and resilient baseplates, cast-in sleepers and floating slab. All reduce the need for maintenance as the track is fixed into position there is no need for regular rail realignment. This means that fewer possessions of the track are required for maintenance. In addition, many track systems require less construction depth than the equivalent ballasted system. Embedded rail systems and resilient baseplate track types require the least depth. This is an advantage in tunnels where headroom and gauge clearances are particularly important issues. The fixing of the track so that it will not move out of line has a further advantage, a reduced structure gauge can be used which means that not only can tunnel bore dimensions be reduced but running speeds can be increased.

The range of construction benefits using concrete slab track are matched by the performance benefits of reliability, speed and smoothness of the ride. Slab track can be designed to meet stringent noise and vibration criteria. A slab track system, such as booted sleepers or floating slab, can be designed to meet the requirements of locations sensitive to ground-borne vibration. For

each slab track system, the resilient components can be optimised to ensure the best balance between acoustic performance and rail stability.

Concrete slabtrack has been used in the UK for tunnels and for short stretches of the Heathrow Express, Stansted airport links and at the Eurotunnel terminal. Initial cost has always been given as the reason why slabtrack is not more widely used in the UK but this is short-sighted and a false economy and, thanks to ongoing slabtrack development, incorrect. The maintenance costs of slabtrack are dramatically less than ballasted systems and the long-term performance is significantly superior which means that over the whole life of the slabtrack its cost is considerably less than that for ballast. Furthermore, the ongoing innovation and optimisation of slabtrack means that capital cost is often less than ballasted track”.

The design life for traditional ballasted track is some 15 years compared to the 60 years for concrete slabtrack. The long design life of concrete slabtrack means that it is the best long-term sustainable option. A study carried out by Britpave together with NTEC compared the sustainability of concrete slabtrack with that of ballasted track. The study looked at an environmental life-cycle analysis through the whole life of the track including source of materials, manufacturing, construction, maintenance, decommissioning and recycling. It found that due to the long design life and low maintenance requirements of concrete slab track, it proved to be the more sustainable option over a 60 year and 120 year lifecycle.

Between 2008 and 2009, 1.27 billion rail journeys were made and rail passenger numbers are forecast to double over the next 30 years. Our outdated rail network is simply not up to the job and to continue to use a 19th century-based track system will simply exacerbate the problem. If the government is serious about delivering a 21st century high speed rail network that promotes economic growth then it must invest in a 21st century track system.





## The Railway Environmental Forum

Organised by the Environmental Scientifics Group, the main theme of the Forum held last June was climate change and the impact of adverse weather on the rail network. Britpave members Adrian Erwee and Heather Ceney presented papers at the event.

Flooding is a major disruptive and expensive problem for our rail network. Dealing with flood damage costs Network Rail between £50 to £150 million every year. In 2007, the summer floods alone caused £35 million of damage over a period of just 2 months. The risk of flooding is predicted to increase eight-fold by 2080 compared to 2000.

Despite this, the strategy from Network Rail seems to be one of reaction. Upon receipt of adverse weather warnings, sections of

track that is vulnerable is inspected and may be subsequently closed. Concrete slab track offers high levels of inherent flood resilience compared to other solutions such as glued ballast that can easily get washed away in extreme floods or flood defences that can prove prohibitively expensive to provide.



## Slab track next for fibre reinforcement?

**The Barchip range of high performance synthetic fibres represent the latest advances in the field of fibre reinforcement. Available from Elasto Plastic Concrete, the Barchip synthetic fibres have surpassed the use of steel fibres in numerous applications. These includes those where high levels of energy absorption are required over long periods of time or where high ductility is needed in highly demanding geological conditions or where there is a risk of corrosion due to water ingress or chemical attack from the prevailing ground conditions.**

Barchip fibres came onto the market in 1997 in Japan and have been used there in over 100 rail and road tunnels across the country as the primary reinforcing material in sprayed shotcrete linings. In tunnel applications, the advantages offered by Barchip fibres are evident in the ease of use of the fibres, which are added directly to the concrete mix and are then sprayed directly onto the rock face. In testing, using EFNARC panels, Barchip fibres are found to give equivalent energy absorption for 700 joules with only 4kg of fibre per cubic metre of concrete, as opposed to 25kg of steel fibres. Barchip fibres are now used worldwide as the primary ground support for sprayed concrete tunnel linings and currently are being used in rail, road and water tunnel projects in the U.K., (Hindhead) Spain (Ontigola, Oliola), Norway (Atlantic sub-sea tunnel, Halsnoy sub-sea tunnel), Australia, U.S.A. and Chile, to name but a few.

Barchip fibres are also used widely in flooring applications. The high tenacity polymers that are used to make Barchip fibres, coupled with their continually embossed profile, make the fibres ideal for controlling cracking in slab on grade concrete. Just 1 kilo of Barchip fibres totals around 39,000 individual fibres and to give equivalent performance to steel mesh in most flooring applications only requires dosages of about 2.5kg per cubic metre of concrete. Flooring contractors love using Barchip, because the reinforcement comes pre-mixed in the concrete and all they have to do is place it,

compact it and finish it, using traditional techniques and they are on their way to their next job. There is no pumping of concrete, no putting out spacers, cutting and lapping of mesh.

Precasters are another industrial user of concrete that have come to appreciate the benefits of using Barchip fibres. Based upon the calculations of equivalent flexural strength as published in TR34 and TR65 by the Concrete Society, precast producers can easily calculate the volume of fibre needed to replace a given quantity of steel, whilst matching the ability to counter flexural stresses and bending moments either during de-moulding and transportation or during usage. Precasters have also come to benefit from having a reinforcement that is present right throughout their products, thus giving additional resistance to breakages of slim elements or at corners and edges. Barchip fibres are currently being used by precasters in several countries, where they are manufacturing segmental tunnel linings, wall panels, burial vaults, water retaining tanks, cattle stands and paving slabs, to mention but a few.

Barchip fibres are renowned for their quality, performance, ease of use and for the excellent levels of technical support that accompany them to all corners of the earth. The technical performance of Barchip fibres is clearly demonstrable using international, independently verifiable test methods, ensuring confidence for users. The only question that remains to be answered is where the fibres will be used next? Producers of slab track rail systems are now fully convinced of their benefit and are examining their potential for future projects.



# AIRFIELDS

## Concrete pavements at Heathrow's T5

**The construction of the aircraft pavements for the new Terminal 5 at London Heathrow Airport presented a number of challenges not least of which was the London Clay subgrade on the site. This presented far lower strength than the adjacent gravel subgrade of the existing Heathrow airfield. The low subgrade strength together with the very high aircraft traffic loads that include the new generation go larger aircraft such as the Airbus A380 called for a significant pavement depth.**

A cost model study proved that a rigid pavement, Pavement Quality Concrete (PQC) on a cement-bound base would provide the most cost effective solution. Initial calculations indicated that a PQC depth of 800mm, however, increasing the flexural strength to F7 grade concrete by reducing the water/cement ratio of the PQC significantly reduced this depth to 600mm, allowing the pavement to be slipformed in a single layer. Production trials suggested that the concrete batching and paving processes would have to be carried out as one complete system that included a dedicated PQC batching plant and tight control of aggregate moisture content, grading and PFA chemical properties.

Using F7 concrete reduced pavement depth and the use of recycled concrete in the cement-bound base and pavement, the working platform eliminated 27,000 truck movements. This use of cement replacement meant that cement production carbon emissions were reduced by 60,000 tons.

The need to cater for the new generation of larger aircraft called for significantly higher edge stresses on transverse and longitudinal joints. A new longitudinal joint detail, referred to as a 'tapered key', was developed to increase load transfer and reduce edge stresses. The tapered key joint included a foam top section to remove the risk of compression failures. The new joint detail is performing well in operation and BAA has adopted it for all its longitudinal joints constructed at Heathrow.

The aircraft pavements were constructed using a Gomaco four-track GHP-2800 slipform paving machine. This was fully able to accommodate the variable thickness of PQC required for the areas adjacent to the terminal buildings, taxiways and aircraft stands. For example, with the aircraft stand the trafficked sections were locally deepened compared with the rest of the stand. This approach provided further savings in concrete.

Abbreviated article from Gomaco News

## Stansted clearance

**The Civil Aviation Authority has awarded Stansted Airport, the UK's third busiest airport, Code F status meaning that the airport will be able to handle the new larger aircrafts such as the Airbus A380 and the Boeing 747-8. This will allow opportunities for passenger and cargo growth. Emirates have now named Stansted as its alternative airport if they are forced to divert.**

There are significant environmental benefits of the new generation of aircraft. They are reputed to be more fuel efficient than a hybrid car and produces less noise at take-off than that experienced by a passenger inside a London Underground train.



# SOIL STABILISATION

## Regional airport expansion

The expansion plans of the UK's three main airports Heathrow, Gatwick and Stansted may have been put on hold, but those of the regional airports are taking off.

Regional airports that have had their expansion plans approved include Leeds Bradford Airport, Bristol Airport and Southend Airport. Those with proposals for runway extensions and expansion include George Best Belfast City Airport, East Midlands Airport and Birmingham International Airport.

The long maintenance-free life of concrete pavements makes them particularly well-suited to runways, taxiways and aircraft stands due their resistance to damage from fuel spillage, resistance to heat from engine blast, reduced runway water due to slipform slot drainage and high bearing capacity to cope with new and heavier aircraft.



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# SOIL STABILISATION

## Relief for Weymouth

The long-awaited Weymouth Relief Road finally got underway with a little help from the London 2012 Olympic bid, as Weymouth and Portland are the Olympic venues for the sailing events. The £88 million funding was approved on the condition that the road was open in time for the summer of 2012. Skanska won the contract to build the road and awarded McArdle Stabilisation the sub-contract to stabilise the site-one chalk foundation.

The road was designed to import as little material as possible. Soil stabilisation would decrease the quantity of imported material by strengthening the site-one chalk as a foundation layer. The chalk would be stabilised with 75Kg/m<sup>3</sup> of ground granulated blast furnace slag (GGBS) and 75Kg/m<sup>3</sup> of OPC (Ordinary Portland Cement) to increase the strength of the 280mm slab to provide a class 3 foundation.

This would enable a road construction of just 250mm of blacktop to be laid directly onto the stabilised chalk. This process was successfully pioneered by McArdle Stabilisation on the Polegate Bypass and A6 Higham Ferrers to Rushden Bypass. The process has been adopted by the Specification for Highways Works as an approved construction method and is now becoming more widely used across the UK.

The road is single carriageway with a crawler land running for over 2.5km up to the South Downs, giving a carriageway width of 12m and a stabilised construction of 13m. A spreader with a three-way splitter box spreads binder up to 2460mm in increments of 820mm. The binder was mixed with a Wirtgen 2500SK mixer that can also be used to spread and mix in one operation from its integrated spreader unit if adverse wind conditions required. Water was added at a controlled rate through a spray bar in the mixing drum from a Terragator-mounted water bowser attached to the Wirtgen.

The level tolerances were critical for the stabilisation as the depth of the blacktop was so shallow. Accordingly, McArdle trimmed the stabilised material to a 10mm window to enable the blacktop to be laid to no less than 250mm thick over the 7km road. Tolerances were achieved using a GPS grader control system that incorporates a conical laser beam to bring the trim down to millimetre accuracy.

The process was a dual operation of adding GGBS first, trimming to tolerance then adding OPC and final trimming, GGBS will not start to react until the alkaline OPC is mixed in the second operation so the 35 hours window of binder addition to final compaction was always achieved.



## Soil stabilisation best practice guidelines published

Stabilising land with the use of lime, cement or other binders offers an extremely cost effective and environmentally friendly way of making weak soil viable for infrastructure or construction use. New guidelines, 'Soil Stabilisation: Guidelines for Best Practice', from Britpave explain how the execution of a successful project can be achieved.

The guidance from Britpave provides details of the activities, standards and records needed for a successful soil stabilisation project. It outlines the responsibilities of the project designer, manager, stabilisation contractor and testing laboratory, and provides a breakdown of the process from ground investigation, laboratory trials and determination of design properties to site works, control and testing. Highlighted within the guidance are the necessary record procedures and advice comments based upon real life experience of soil stabilisation projects.

Many Britpave soil stabilisation contractors have already signed up to these Guidelines. A list of those who have may be found on [www.soilstabilisation.org.uk](http://www.soilstabilisation.org.uk)

For copies of Soil Stabilisation: Guidelines for Best Practice, visit: [www.britpave.org.uk](http://www.britpave.org.uk)

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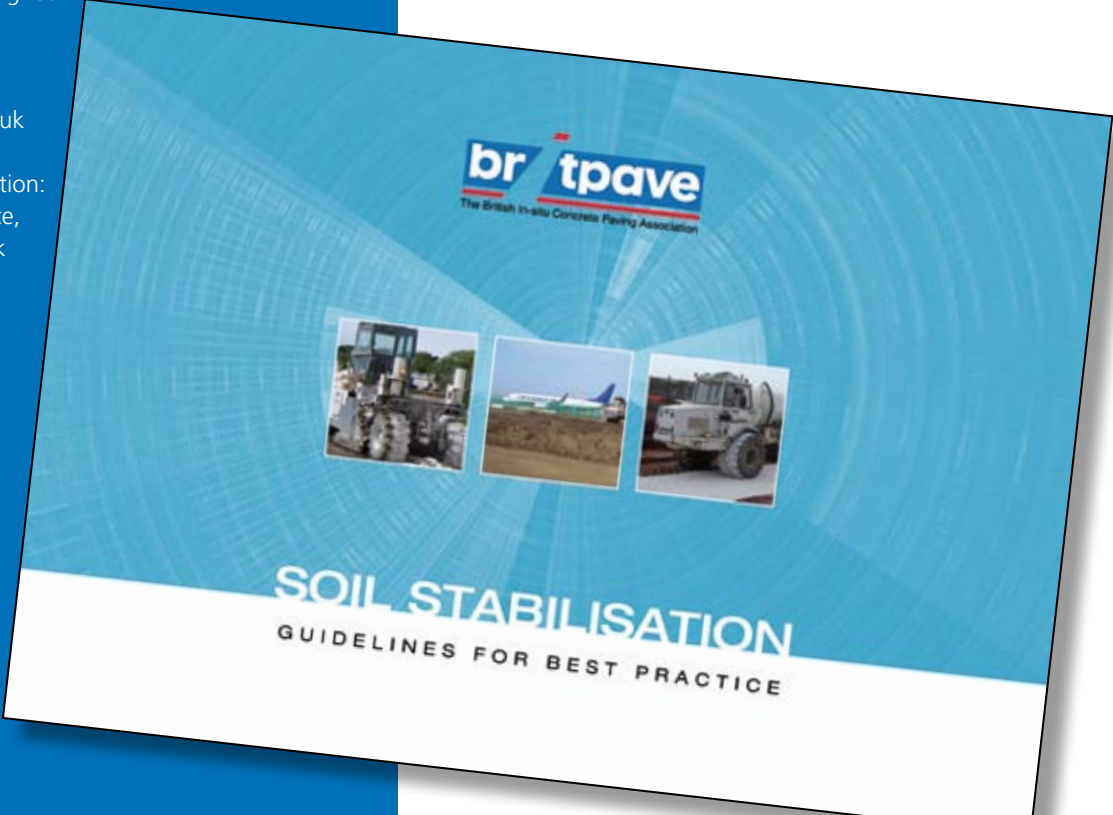
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# ENVIRONMENT

## Britpave helps safeguarding endangered species

As part of Britpave's commitment to sustainability and the environment, it has been working alongside the People's Trust for the Endangered Species (PTES) who organise the Mammals on Roads Survey each year. Since 2008 we have sponsored the survey and helped to increase the number of people taking part in the survey by 33%.

The survey takes place in July, August and September and as a direct result of the sponsorship from Britpave is now promoted within BBC Wildlife Magazine and BBC Countryfile, two very well known and popular publications. Britpave's association with PTES stems from concerns over concrete barriers and the mammals being able to cross a busy motorway, Britpave and PTES would like to prevent these animals being in danger in the first place, by stopping them being able to get onto the motorway network, this is both unsafe for the animals and road users.



Back in 2008, Britpave also made the decision to stop sending paper Christmas cards, instead we now sponsor the planting of trees each year through PTES in Briddlesford Woods, in the Isle of Wight. Briddlesford Woods is a large area of ancient semi-natural woodland and a site of Special Scientific interest. It is recognized as a special area of conservation because it is the habitat for a number of threatened species.

Leanne Cobb, Marketing Co-ordinator for Britpave was recently invited to visit Briddlesford Woods to see first hand the work PTES are doing and see the way in which Britpave sponsorship is helping this valuable project. The visit was extremely informative and Leanne helped with some of the woodland work, seeing where the trees have been planted. Bark is placed around the base of the trees to combat weeds and helping them to grow. Also one of the major projects is to encourage Dormice to nest, PTES have over 200 nesting boxes that are maintained and checked annually. Leanne also learnt about this and checked a number of boxes with PTES. All in all the visit was fantastic and a real opportunity to see the valuable work being done by PTES, making best use of Britpave support.



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## Our man in Europe

David Jones, in his capacity as Vice-Chairman of Eupave, met with MEP Brian Simpson, who is the influential Chairman of the European Parliament's Transport and Tourism Committee. Simpson was first elected to the European Parliament in 1989 but lost his seat between 2004 and 2006 before regaining it. He is the Labour representative for the North West of England. He is a member of the Chartered Institute for Logistics and Transport and has served as a County Councillor for Merseyside County Council and was Deputy Chair of Liverpool Airport. Away from work, he is interested in Wigan Warriors Rugby League club, military history, cricket, heritage railways and is President of two RSPCA branches.

The discussion between Jones and Simpson was very comprehensive and covered issues such as value for money, long-life infrastructure, reliable journeys, congestion relief, minimising maintenance, worker safety, carbon and fuel savings, conserving resources and the even application of EU standards.

Simpson was aware of concrete's long-life and minimal maintenance characteristics from his time at Liverpool Airport. He is a supporter of rail transport and was keen to hear about the slabtrack option for high speed rail systems. The safety benefits of concrete barrier for both motorists and road worker were points that he suggested should be made in comments on two forthcoming documents. Simpson also suggested some contacts in the commission whom Eupave could approach to clarify the seemingly unequal application of EU standards across the Union.

Jones made the point that both Eupave and Britpave offer a technical resource which Simpson and his researchers could readily access. The meeting was well timed in that Eupave will be able to input its views into a Road Safety Action Plan which was published in July 2010 and will be debated by Parliament and the Commission in the coming months. Next year, a Transport White Paper is also being published and Eupave will be able to add its views to that debate too.

As Chairman of the Transport Committee, Simpson is an extremely busy man but despite this he has kindly agreed to support Britpave's 20th Anniversary year by speaking at one of our events. Thanks are due to Alonso & Asociados, who are retained by Eupave, for facilitating this important meeting.



Brian Simpson, MEP (left) and David Jones, Britpave/Eupave

## Road widening in concrete

Netherlands-based Cement and Beton Centrum recently organised a symposium from dissemination of the CROW Working Group 'Road Widening in Concrete' report. 80 road specialists including principals, contractors and consultants participated in the symposium which included a presentation examining the sustainability credentials of concrete barriers when used in combination with road widening.

See [www.cementenbeton.nl](http://www.cementenbeton.nl) for further information and downloads.



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# THE LAST WORD

Hello Members,

I'd like to take this opportunity to say hello and introduce myself as the new Business Co-ordinator for Britpave. My name is Eli Sugihara.

Until very recently I have been working within project management to build and deliver a new IT Hosting Centre – complete with all the joys of CDM, onsite structural and building construction, and then the design/installation of the M & E plant. My previous background has been in business management and as well as projects like these and training part-time for a role in Law. Since this period I have developed a taste for business rather than law and chose the more interesting path of business and projects instead.

On a personal scale, I have been based in Berkshire most of my life, with an unusual upbringing of Japanese, Polish and British cultures. I spend a lot of early mornings doing the morning muck out of my horse and then the rest running around catching up with the house work, trying not to be a work-a-holic, yoga and then any mad and odd outdoor/indoor activities such as rock climbing, canoeing, being chief supporter of my partner's martial arts competitions or out hiking to find a random monument seen from a road side 5 miles away.

I am very excited to be with Britpave and hope to have an opportunity to meet many of you over the course of this year.



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# THE LAST WORD...

## Getting to Know You: James Charlesworth

### Name:

James Charlesworth

### Location:

Doncaster, jewel of the Peoples Republic of South Yorkshire and of late Gdansk, Poland our newly opened offices.

### Occupation/Job Title:

Director, with primary responsibility for the company's slipform paving division.

### Organisation:

Extrudakerb, overseeing both UK and overseas operations. Having been discouraged from joining the family firm my father reluctantly agreed to employ me some 24 years ago, he did treat me well though giving me the finest sweeping brush the company owned! During this time I have seen the company grow and been involved in many interesting developments including the first construction of concrete barrier on a UK road, the first construction of Britpave concrete barrier and recently the first construction of Britpave security barrier.

### Top of your in tray?:

Aside from my darling wife's monthly credit card bill; weekly reports from our construction sites, technical queries from our Customers and hopefully an invitation to the Monaco Grand Prix.

### Biggest Work Achievement?:

With Britpave: seeing Highways Agency change policy and specify concrete barrier for our motorway network; a change I genuinely believe improves safety, reduces cost and improves efficiency on the highway. With Extrudakerb: driving past one of our highway construction sites, seeing our liveried equipment, and workforce and I hope a quality product being installed

### Best Part of your job?:

The satisfaction of finding a new route to solve an old problem. Seeing rookie new recruits grow as employees and human beings fulfilling the potential that they perhaps did not know they had within them.



### Top Business Tip:

Gaining a Customers confidence and trust is both difficult and hard won; its is very easily lost, so we must never rest on our laurels

### Favourite Holiday Destination:

On a sunny day the English Riviera; for the other 364 days of the year Thailand, accompanied by my wife and family.

### Favourite Food:

For over 20 years I have eaten the same curry at the same Indian restaurant once a week, every week. But just in case my mother reads this it is of course her Sunday lunch with all the trimmings!

### Describe yourself in 3 words:

Involving, innovative, optimistic

### Interest/hobby or favourite sport:

I am blessed with a fantastic collection of family and friends; so spending time with them is a joy. On a selfish front I enjoy shooting – both game and competition, dining at great restaurants, watching almost any live competitive sport and sitting in front of the fire on a cold winters night with a great film and heady bottle of fine French Bordeaux

## New Members

### Betongrekkverk AS

Mr Egil Kvingedal  
Tel: +47 91704137  
[www.betongrekkverk.no](http://www.betongrekkverk.no)

### Elasto Plastic Concrete (Europe)

Mr Andrew Ridout  
Tel: 01425 629017  
[www.elastoplastic.com](http://www.elastoplastic.com)

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## Corrections and Clarifications

It is the policy of Britpave to correct significant errors as soon as possible. Readers may contact the office on: [info@britpave.org.uk](mailto:info@britpave.org.uk).

Please quote the issue number and page.

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