

Newsletter

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The British In-situ Concrete Paving Association

Early Summer 2004 | 9

Tenth Anniversary for Highways Agency

This year the Highways Agency celebrates its 10th anniversary as provider of the major roads network. This consists of 5,130 miles of motorways and trunk roads. The Agency has an annual programme budget of £1.6bn, of which some £500 million is spent on major improvements to the network.

The English strategic road network is the largest single Government asset, valued at £65bn. It carries one third of all road traffic in England and two thirds of all heavy freight traffic, with more than 170 billion vehicle kilometre journeys undertaken every year.

The current programme contains more than 70 major schemes, each over £5 million.

Schemes due to start in 2004 – 05

- A63 Melton Junction, East Yorkshire
- A5 Weeford Fazeley Improvement, Staffordshire
- A421 Great Barford Bypass, Bedfordshire
- A14 Rookery Crossroad, Suffolk
- A47 Thorney Bypass, Peterborough
- M4 Junction 18 Eastbound Diverge, Bristol/South Gloucestershire
- M5 Junction 17 – 18 Northbound Climbing Lane
- A249 Iwade-Queenborough Improvement (DBFO), Kent

Schemes due to finish 2004 – 05

- A10 Wadesmill Colliers End Bypass, Hertfordshire
- A120 Stansted-Braintree, Essex
- A21 Lamberhurst Bypass, Kent
- A34 Chieveley/M4 Junction 13 Improvement, Berkshire
- A63 Selby Bypass, North Yorkshire
- A2 Bean Cobham Phase 1, Kent
- A1 Stannington Junction, Northumberland

Schemes completed 2003 – 04

- A500 Basford, Hough, Shavington Bypass, Staffordshire
- A46 Newark-Lincoln Improvement, Lincolnshire
- A6 Rothwell-Desborough Bypass, Northamptonshire
- A6 Rushden and Higham Ferrers Bypass, Northamptonshire
- A41 Aston Clinton Bypass, Buckinghamshire
- A1033 Hedon Road Improvement, Kingston Upon Hull
- A6 Alvaston Bypass, Derbyshire
- A650 Bingley Relief Road, West Yorkshire

Partnering pays off for M1 barrier work

Refurbishment works to the M1 motorway between junctions 1 and 2 included the installation of around 2,100 m of in-situ concrete barrier, the majority of which was high containment (H4a), located in the verge.

The project, undertaken on behalf of Highways Agency and managed by Mouchel, was awarded to Tarmac National Contracting just before Christmas, with a start on site around the middle of February, and all work to be completed by end of March. The quantity and duration of the concrete barrier work meant that its construction was on the critical path of the entire project programme.

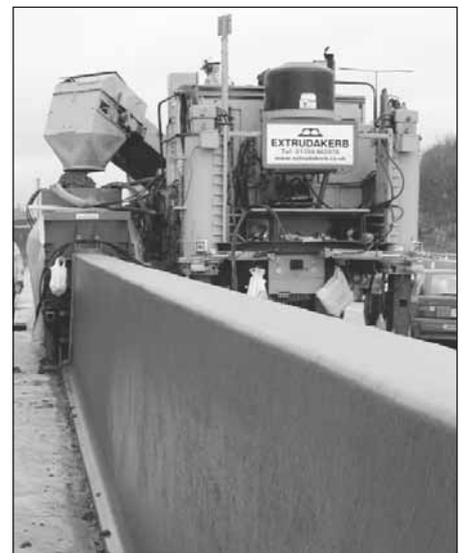
The specialist slipform paving subcontract works were awarded to Extrudakerb and detailed planning and preparation work was undertaken between subcontractor, main contractor and project manager to explore new avenues in an effort to provide rates of production never previously achieved.

Extrudakerb realised that the appointment of a concrete supplier who understood the demands of the slipform process, and specifically those associated with high barrier paving, was critical to the success of the project. RMC Readymix was awarded the contract to supply the 3,500 m³ of C28/35 air-entrained concrete required from their Wembley plant.

For the first time the concrete base and haunch, below and at the back of the barrier, was slipformed, enabling high production rates to be achieved at high tolerance and avoiding the time consuming and costly follow-on works of hand laying the verge side haunch after barrier construction. However restricted working space dictated that some lengths had to be hand laid.

Extrudakerb provided two four-track Gomaco Commander III slipform pavers to which paving moulds can be mounted to the left or right side, allowing both verge and central reservation works to progress in the same direction as adjacent traffic flow, avoiding the need to turn around concrete delivery wagons.

The careful planning and pre-start meetings paid off; record rates of production



Slipforming vertical concrete safety barrier on the M1 refurbishment work.

were consistently achieved, peaking at 134 m³ within an eight hour paving shift. All barrier was constructed within tolerance and no remedial works were required, a testimony to the success of the partnering achieved between subcontractor and concrete supplier.

In light of the projected increase in demand for concrete barrier across the road network, Highways Agency should take comfort from the fact that industry is clearly demonstrating both a desire and an ability to meet demand and deliver a quality product at high rates of production.

■ For more information contact james.charlesworth@Extrudakerb.co.uk

Diary Dates

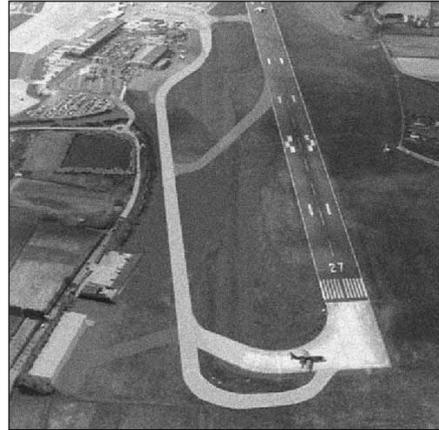
Annual General Meeting

11.30 am, 10 June
Novotel, Euston, London

Britpave Conference 2004

27 & 28 September
Belton Woods Hotel, Grantham

Local aggregates increase sustainability for Jersey Airport



Jersey Airport, before and after completion of the new taxiway

Taxiway Alpha at Jersey Airport was of inadequate strength and had become uneconomic to maintain. Additionally, it was not far enough from the runway to comply with current safety standards. To cope with future air traffic and the safety aspects, the decision was taken to realign and strengthen this taxiway.

As an island, Jersey has limited aggregate resources, and high harbour dues make the importation of materials and specialised plant expensive. Therefore optimising the pavement design and maximising the performance of locally available materials were key to achieving best value for the project.

The client, Jersey Airport, had experience of concrete taxiways utilising local aggregates and found that they provided low maintenance and long term durability, but they also had to consider the alternative of flexible pavements, taking into account whole life cost where resurfacing would be required within the pavement design life.

The contractor, Britpave members, Scott Wilson Pavement Engineering, carried out material studies to ascertain the way forward, making best use of local materials. These were carried out in the laboratory followed by field trials: They investigated:

- Capping/subgrade improvement from Mudstone (in nearby borrow pits)
- Cement bound material (CBM) using quarry screenings

- Pavement quality concrete (PQC) of higher strength than previously used
- High modulus bituminous material.

The life cycle cost analysis showed that the rigid pavement option was preferable.

Since the pavement design was based on an analytical approach the materials were specified in terms of performance rather than taking a prescribed approach

End product performance related testing was adopted to monitor and approve the pavement materials during construction. This included dynamic plate bearing tests for the subgrade and capping stiffnesses, and compressive strength for the PQC and CBM.

The development work achieved considerable improvements in the pavement's value for money and allowed the utilisation of more sustainable pavement materials with associated environmental benefits. The following cost savings were achieved:

- 10% reduction in PQC thickness due to higher flexural strength
- 30% cost saving in CBM by using secondary aggregates
- 90% reduction in capping cost by utilising site excavated Mudstone in lieu of granular materials.

■ For further details contact: Dr Bachar Hakim of Scott Wilson Pavement Engineering at bachar.hakim@swpe.co.uk

Preparing for the big bird



By the time the first A380 lands at Heathrow in spring 2006, many of its taxiways will have been widened and repositioned, both of its two runways lengthened, and entire pier redeveloped and aircraft stands modified to accommodate the larger aircraft.

The £430 million project, which will last three years, got underway with the redevelopment of two taxiways adjacent to the southern runway, when AMEC began widening and repositioning them to accommodate the new aircraft's 80 m wingspan.

Working in small sections to keep diversions to a minimum, AMEC is replacing 150,000 m² of concrete pavement with new pavement quality concrete. As the airport is built mainly on gravel, cement stabilisation is also being used. The old concrete is being recycled for use in the construction work for Terminal 5.

Following this is the redevelopment of Pier 6 of Terminal 3, which is being demolished and realigned to suit the A380 taxiway. There will also be four stands capable of accommodating the new plane.

A particular challenge is managing the interface between several projects underway at the same time, including the construction of a new tunnel between the central terminal area and the new Terminal 5. This will allow the delivery of three remote T5 stands before the opening of the new terminal building.

BAA's Managing Director, Mike Clasper, predicts moderate growth in air traffic of 3 – 5% per annum over the next 10 years, with recent traffic affected by the SARS outbreak. Despite the slowdown, he says that runway capacity in the south east has already reached capacity during the peak hours, and calls for the Government's consultation on future runways to help meet long term objectives.

BAA is already committed to investment of over £8bn over the next 10 years. Projects include the £3.9m on Terminal 5, £1bn at Gatwick to raise capacity to 40 million passengers, £800m at Stansted, £3.4bn at Heathrow and £500m at Scottish airports.



London City Airport extension finishes *four months early*

London City Airport now has the benefit of increased capacity following the completion in September 2003 of the Runway 28 Hold project that provided valuable holding space for aircraft at the eastern end of the runway.

The unique surroundings of this innovative airport provided challenges to the designers and contractors. The airport, originally built on a strip of land between the King George V and Royal Albert docks, had restricted ground manoeuvring options. This tended to tie up the runway while aircraft taxied into position, reducing the number of movements.

Now aircraft can taxi in sets of four, with the Runway 28 Hold providing an area to contain aircraft ready for takeoff in quick succession. Landing capacity is also increased by clearing aircraft to the Hold while further aircraft land.

The hold area is partially constructed over the water of the King George V dock and is connected to the runway with three new links.

A mixture of marine and traditional airport construction techniques was required to complete the project. These were:

- Marine piling to support the structure over the impounded dock, consisting of 54 piles, each 25 m long and 1m in diameter.
- Precast beams and planks totalling 1620 m³ of concrete were installed over the piles to form the principal support structure of the airfield pavement. The use of offsite casting significantly reduced working time at the site and so minimised the impact on operations.
- A reinforced in-situ concrete topping was laid over the precast units to form the pavement, totalling 700 m³. This created a constant running surface and structural continuity.
- Some 3600 m³ of Pavement Quality Concrete provided the links to the existing runway.

The project was managed by Atkins and constructed by Mowlem under the NEC design and build contract.

The height and safety restrictions imposed by working near to a live airfield meant that the work had to be carefully planned to allow continued operations through the planned 12 month construction period. The larger scale



London City airport showing the new holding area in the foreground

operations of concreting and pile placement were programmed to occur when the airport was closed during the night and in windows at weekends. Other less intrusive activities, including fixing reinforcing and saw cutting PQC, were performed during the day while the airport was operational.

Work on the airfield during operational hours was managed in two ways. A frangible security fence was erected to separate the hold area from the airfield. This resulted in the labour entering the site by boat. Any work on the airfield side beyond this fence was performed under constant radio contact with the air traffic control tower.

The project was completed four months ahead of time in line with an accelerated programme agreed with Mowlem. This enabled cost savings to be achieved for both the client and the contractor.

The airport prides itself in maintaining good relations with the local residents. It was crucial to carefully manage construction activities that may have caused nuisance, particularly dust and noise. Pile casings, which had to be placed at night, were installed using a vibration technique, greatly reducing the noise compared with driven piling. Once the casings were driven, the soil inside was augered out and concrete poured to create the reinforced concrete pile. Sound proofing was erected around stationary plant to reduce the noise further.

Daytime operations were normally performed in the precasting yard, some

distance from the operational runway. This was sited on the location of an existing warehouse, demolished at the start of the project. To limit the daytime noise one of the warehouse walls was left in place and soundproofed. This reduced visual impact, dust spread as well as noise.

Community relations were further enhanced by inviting local residents to the formal opening. The evening culminated in a spectacular fireworks display from a barge moored against the runway hold.

In addition to the aircraft hold the airport has planning permission to extend the apron area to the east of the terminal building. This will increase the number of stands at the terminal allowing the full potential of the hold point to be utilised.

■ For further information contact Rob Jenner at Atkins, Design Environment & Engineering at rob.jenner@atkinsglobal.com

The concrete

Precast concrete The precast concrete was a C50 mix, designed to give an early strength of 25 N/mm² before being lifted from the casting beds at three days.

Pile concrete A C50 mix was also used in the piles. To achieve the placement in the pile it was designed with a slump of 150 mm, and vibrated using a tremie pipe.

PQC concrete This was designed for a flexural strength of 4 N/mm² and had 6% air entrained. Plasticisers were used to improve the workability and it was all hand laid.



ALL SET FOR MORE EMBEDDED RAIL TRIALS



Ballast supply train running on the latest slab track

As reported in the Summer issue of *Britpave News*, Network Rail is to test a type of track that will not buckle in the heat and would prevent derailments such as the one that caused the Hatfield crash. The slab track rails are set in continuous reinforced concrete channel rather than being attached to railway sleepers resting on conventional ballast.

A test section has entered service on the Crewe to Kids Grove line in Cheshire. It was constructed for Balfour Beatty Rail Projects following their construction overseas of similar trial sections by conventional fixed form methods. The work involved first slipforming a foundation Grade C15 base slab 2.7 m wide and 170 mm to 270 mm thick. Starter bars were inserted into the wet concrete providing accurate and secure fixing points for the substantial continuously reinforced cage. This was fabricated on site and set to very accurate tolerances to ensure correct concrete cover.

Two paving moulds were required, one for the base layer and one for the slab track. They were designed and manufactured in house by Britpave members, Extrudakerb. The quality of both design and build was of paramount importance and in addition to Extrudakerb's normal quality control procedures, Balfour Beatty engineers visited the workshops periodically.

The slipform paving works were executed in a manner that was designed to not only satisfy contractor and client that the process could achieve the required exacting finished build tolerances, but also to demonstrate that, if larger scale works were to be undertaken, viable production rates could be achieved.

Concrete was supplied by Hanson Premix and detailed liaison between concrete supplier, slipform paving contractor and principle contractor were held to ensure that mix design and concrete production met expectations and project requirements. Even though the production was of a limited quantity, rates in excess of 12 m³

per hour were achieved and all parties agreed that on larger scale projects an average rate of progress of between 18 and 24 m³ per hour could be maintained.

Alignment tolerances of the finished slab track were within +/-3 mm with rail fixed to tolerances demonstrably better than on conventional ballast. Embedded rail is initially more expensive than conventionally ballasted track, but requires significantly

less maintenance. Supporters of slab track say that one obstacle to its wider adoption in the UK is the difficulty of abandoning contemporary maintenance practices associated with ballasted track. In mainland Europe, hundreds of kilometres of slab track are being constructed for new high speed routes.

■ For further information contact derek.emmett@bbrail.com



Starter bars provide secure fixing for reinforcement cage

Guided busways grab the cash

Guided busway schemes for Luton and Cambridge came top of a list of 20 newly approved major local transport schemes in December's LTO settlement, highlighting the Government's emphasis on bus-based investment.

Among 17 provisionally accepted major schemes, the busways accounted for more than half the £279 million earmarked for 11 public transport projects.

• *Britpave is currently preparing a Guided busway design guide that will be available soon.*



Shelved high-speed rail link 'essential'

Alistair Darling, the Secretary of State for Transport, came under intense pressure from his own advisors earlier this year to rethink his controversial decision to postpone indefinitely the construction of a high-speed rail link from London to the North.

Plans by rail chiefs for the 200 mph railway have been shelved because of ministerial anxiety over public spending, but a government-funded commission said that such projects were 'essential' because of increasing congestion on the existing network

In a report that will be seen as deeply embarrassing to Mr Darling, the advisory group said that the immediate priority was to boost existing performance, but ministers should also look to the future.

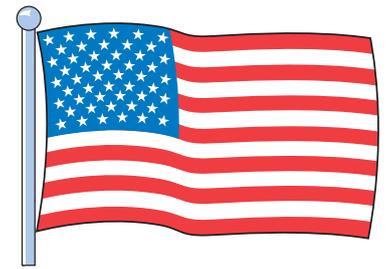
The Commission for Integrated Transport proposed a series of express routes, which would substantially cut journey times

between London and the main northern cities

In addition a new London to Scotland route could carry up to 220 trains a day, more than twice the number possible on an upgraded West Coast Main Line. The economic benefits of such projects outweigh the costs by up to three to one, said the report.

Chair of the Commission and non-executive member of the SRA's governing body, Professor David Begg, said 'This study demonstrates clearly that high-speed lines are not only desirable between main cities, but are essential if we are to deal with capacity constraints that are building up on our inter-city network'.

Separate proposals from Richard Bowker, SRA Chairman, for a £36 bn north-south line were due to be published last summer, but have been delayed.



Meanwhile, in the USA...

The US Senate recently passed legislation re authorising the Transportation and Equity Act for the 21st century, which provides \$318 billion over six years for the nation's surface transportation systems.

The bill's funding level, including \$294 billion in guaranteed funding, is the minimum amount needed to ensure that every state receives 95% return on the highway user fees collected in that state, while also ensuring that every state receives at least a 10% increase in federal funding over current levels.

In addition, this is the minimum funding level to address the growing deterioration of the nation's transportation infrastructure. These resources will create over two million job opportunities over the next six years at a time when every state's economy needs a boost.

Motoring organisations call for road improvements



RAC calls for £20bn road widening

More than 1000 miles of motorways and A-roads must be widened and dozens of bottlenecks removed over the next decade if Britain is to avoid gridlock, says the RAC in a recently published report.

The organisation has drawn up a £20bn road improvement programme, which it believes should replace the government's existing 'ad hoc and short term' roads policy.

The plan includes widening 375 miles of motorway, upgrading 277 miles of A-roads to motorway and 400 miles of single carriageway roads into dual carriageway.

In addition, the M4 should be widened into four lanes in each direction between the M25 and Reading, and the M3 widened between the M25 and Fleet.

AA calls for road tax trust fund

The £38bn paid every year by motorists in taxes should be placed into a trust fund to be used solely for road improvements, says the AA.

The organisation also said the fund should be administered without intervention from politicians in a manner similar to that in New Zealand. It also points out that in the mid 1970s, expenditure on roads broadly matched the money raised from taxing motorists, but now lags far behind.

Review of SRA announced

Earlier this year the SRA's annual report, leaked to *The Independent*, was suppressed by the Government. It said that the network was ramshackle and would fail to show any major improvement unless the industry receives billions of pounds from the taxpayer.

A week later, the government announced the most radical review of the rail network since privatisation, with the SRA undergoing a most detailed examination. Making the announcement, Alistair Darling confirmed that there would also be a fundamental examination of safety management on the network.



TIME TO START BOOKING ...

for the

2004 Britpave Dinner & Seminar



De Vere Belton Woods Hotel, Grantham



The dinner is to be held on **Monday 27 September**, followed by the Seminar on **Tuesday**. Full details can be viewed on the website, and you can also make your booking online.

The keynote speaker is Archie Robertson, Chief Executive of the HA, and there is an international flavour to the programme with presentations from Belgium and the Netherlands on their innovative

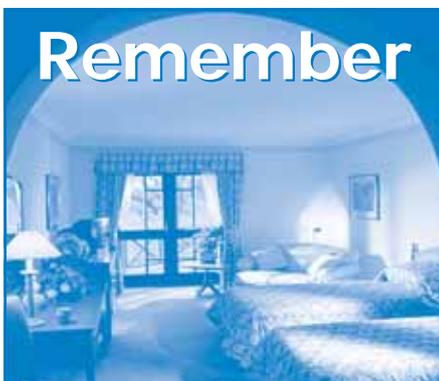
approaches to concrete paving. The Seminar will also bring news of the latest developments in airfield, rail and soils stabilisation markets.

Dinner on the Monday will be the usual lively affair. This year's speaker is Peter Brown, the ex Crown Court Prosecutor. He is guaranteed to keep us amused and entertained with his irreverent look at the law.

The hotel is set within 275 acres with excellent leisure facilities, including two championship length golf courses. As has become established over the past two years, the golfer (and hackers) will be able to play for the magnificent Britpave Cup. The current holders, Gomaco, will be very keen to hang on to their trophy.

■ Contact adrian.erwee@burksgreen.com for details of the Golf Day.

Remember



You will need to book your rooms directly with the hotel, mentioning Britpave to benefit from the reduced rate of £109.00 for bed and breakfast.

Visit www.deveeronline.co.uk or phone reservations on 01476 593 20



The magnificent Britpave Cup is the incentive for all keen golfers to arrive early on Monday 27th September.



CALLING ALL EXHIBITORS

Don't forget that there will be an opportunity to showcase your company and its services during the two days of the Britpave seminar.

At this venue space is limited, so contact the Britpave office early to find out more and to book your space.

gcampbell@britpave.org.uk



NEWS FROM THE INDUSTRY – AT HOME AND ABROAD

Owen Williams scoops award

Britpave Chairman-elect, David Gillham, Business Development Manager with Owen Williams, is currently riding high – his company has just won the NCE-sponsored Major Firm category in the Consultant of the Year Awards for 2004. The consultancy has grown by 50% in the last four years and staff members number over 800.

One-stop shop for concrete info

Concrete Information Ltd, the joint venture between the BCA and The Concrete Society, has just completed a two-year DTI-funded project to develop a one-stop online shop for cement and concrete information. The new site has been well received by the partners, including the professional institutions.

To access both the free and subscription services go to www.concretinfo.org. The site includes the Concrete Bookshop as well as many of the Concrete Society based services.

Global opportunities

The 6th International Congress of the University of Dundee's Concrete Technology Unit will be held on 5 – 7 July 2005. With the theme of 'Global construction: ultimate concrete opportunities', the congress will be split into 10 separate events lasting from 1 to 3 days.

The call for papers is out now, with submission of abstracts required soon. For details visit www.ctucongress.co.uk.

Confident about environmental legislation?

According to the Environment Agency, only 19% of businesses can name any environmental legislation that applies to them. While the figure would be significantly higher among Britpave members, there may still be some areas of uncertainty. It may help to visit NetRegs at www.environment-agency.gov.uk/netregs

Ultra-high performance

An international conference on ultra-high performance concrete is to be held on 13 to 15 September at the University of Kassel, Germany. For details, visit www.uni-kassel.de/uhpc2004/

Slipforming kerb and gutter in one pass



Slipforming the kerb and gutter in one pass with Gomaco's GT-3600. With a crew of only five or six, the contractor in Indiana virtually eliminated finishing work. And, with its extra steering features, the machine is able to cope with working around trees, and the driveway cut out attachment saves time in residential areas.

Drainage channel clarification

Following representation by Britpave, the HA has re-confirmed its requirement for the construction of road-edge surface water channels. They state clearly that 'On all HA roads, hard shoulders and hard strips should be capable of withstanding full highway loading, and all road-edge drainage features, except kerbs, should be designed to be capable of withstanding accidental loadings. Kerbs should be designed to be capable of withstanding vehicle impacts equivalent to that of full highway loading.'

This should mean that inferior products and designs will not be accepted by the Agency, even when proposed under design and build forms of contract.

• The standard requirements for concrete channels are given in the *Manual of contract documents for highway works (MCHW): Highway construction details: HCD B14*

STOP PRESS

As we went to press, the Highways Agency has told Britpave that the concrete step barrier described in the last issue of Britpave News, is acceptable for use as normal containment (N2) higher containment (H1) and also for the enhanced containment level (H2). Some further work needs to be done to allow the new barrier to be included in the *Manual of Contract Documents for Highways Works*, and the Task Group led by James Charlesworth has now provided this additional information for the HA.

The use of the step barrier will require a Departure from Standard until it can be included in the next revision to the HA's Departmental Standards

This is major achievement for Britpave, and all members of the Barriers Task Group are to be congratulated for their tremendous efforts.



Britpave Director admitted to Worshipful Company of Paviers

Britpave Director, David Jones, was recently admitted to the Worshipful Company Of Paviers. David was sponsored by Terry Rochester, who many will remember as Chief Highways Engineer.

Although it has its roots in Medieval London, the Company is a thoroughly modern livery and a high percentage of its members are directly connected with highways and construction.

The Company's Highways Engineering Education Trust has established grants and bursaries to promote both engineering and business excellence. It also sponsors an annual Paviers Lecture at Imperial College and in 1955 established the Roadmakers Museum at Amberley in West Sussex.

The Paviers also have links with HMS Argyll and 131 Commando Squadron, Royal Engineers, and supports the City of London's Freeman's School, the Guildhall School of Music. Their support includes RedR, which is closely associated with our industry.

A requirement for admission to the Livery is admission to the Freedom of the City of London. The historic Freedom ceremony takes place in the Chamberlain's Court, Guildhall. Freeman are required to read aloud, in Court, the Declaration of a Freeman and to sign the magnificent declaration Book.

■ For more information about the Company, visit www.paviers.org.uk



David Jones receiving his admittance to the Freedom of the City of London at a ceremony held in March.

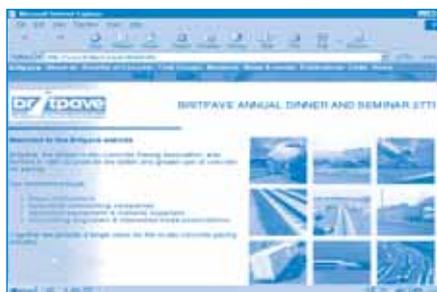
New on the Britpave Website

We are constantly improving the website, but do really need more input from members. Since the last Newsletter, we have posted all our press releases on the site to make members and the press aware of the information we have been releasing. There is now also a photo gallery from which images can be downloaded for member's own use.

Look under **News and Events** for the Press Releases and **Publications** for the Photo Gallery.

Feedback indicates that this is very popular, but you will see that we are still short of good photos in many areas. Please send any new photos, plus appropriate captions, to the Britpave office for posting on the website.

Please note that the Task Group meeting dates are now available on the site, so check these with your diaries.



Britpave on the move

Britpave has relocated to offices near Camberley, where it shares brand new premises with The Concrete Centre, BCA, The Concrete Society and Concrete Information Ltd. Our new address is given below. If you are planning to visit us, follow signs to Blackwater Station, or enter Blackwater on one of the web-based route map sites.



The British In-situ Concrete Paving Association

Britpave Newsletter 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.

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NEW LEADER FOR Stabilisation Task Group



Chris Harnan of O'Keefe Soil Stabilisation was recently elected as leader for the Soil Stabilisation Task Group. Thanks and appreciation are due to Brian Heron and Jonathan Smith for their work in

bringing this Task Group to the stage where it is actively producing output, including a new technical datasheet *Stabilised soils as subbase for roads and other pavements*.

The Task Group is also working in conjunction with The Concrete Centre on organising two half-day seminars on stabilisation to be held later this year.