

## CHAIRMAN MIKE DOWNING WELCOMES NEW MEMBERS

*I am delighted to welcome not one but two new members, Milbank Floors Ltd. and Roger Bullivant Concrete Products, each of whom brings an added focus on the growth of pre-fabrication in the housing sector. In the light of the shortage of site skills and the increasing acknowledgement that the future of construction lies in factory-controlled production, both companies have invested heavily in the latest automated*

*systems. With in-house design facilities and acknowledged flair for innovation, they are highlighting the advantages of factory-controlled quality and guaranteed just-in-time delivery. At the same time, they are helping to beat two SPA drums, namely the environmental benefit of reduced waste and the improved site safety. With two new members on our team, the future of structural precast concrete has never looked better."*

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## Green Car Park

*As part of the ongoing development at its Alderley Park site, pharmaceutical engineering group AstraZeneca has employed specialist design build contractor S.C.C Limited to provide additional car parking under its alliance contracting scheme.*

Due to its sensitive rural location the car park, which will have 610 spaces on four levels, has been tiered into the existing landscape and surrounding buildings. In



keeping with its parkland aspect the elevations are provided with a continuous concrete planter system, which on completion will feature mature plants to blend in with the external planted areas.

The planters have been produced using a mixture of C40 grey concrete and for the

outer architectural face a reconstituted stone mix with a light acid etched finish.

The etched finish has been achieved with Pieri UK's Decagel (scouring gel for concrete), Further life cycle protection has been provided with the use of Hydroxi 2000, a surface water repellent

protecting the product from atmospheric pollution.

**Design Build Contractor:**

SCC Ltd

**Consulting Engineer:**

Hill Cannon



# FLAT PACK PRISONS

**W**ith the current rising prison population, demand for new buildings is high. Over the past seven years, Buchan's flat-pack system for multi-unit accommodation has been used extensively for such construction — including house-blocks, segregation units and associated buildings — at 12 different sites. The latest project was at Marchington, Staffordshire, an 800-cell prison, where the company's contract for design, supply and erection of the various buildings was worth £12 million.

The onsite erection period was some eight months, during which as many as nine crawler cranes were in operation at any one time. The success of the project was due to the use of a proven team, with all design done by C V Buchan and erection carried out by PCE, a company that has worked with Buchan for over 20 years.

A major advantage of the system is that door frames,

window grills, electric conduits and boxes are all cast within the concrete wall and floor units. The speed of construction and the provision of a dry envelope allow all follow-on trades to start work almost simultaneously, thus taking them off the critical path. Roof cladding, window, brickwork, services, decoration and fit-out sub-contractors all work together to drastically reduce programme time.

## A Sound Investment

**I**t is an established fact that to limit sound transmission through a structure, high density construction is required. To this end the design of the roof to the rehearsal room for Cambridge University Faculty of Music was designed as a 200mm thick in-situ concrete slab.

When Marriott Construction was appointed as main contractor, John Crawford the contracts manager was confronted with casting an in-situ roof at 20° pitch and with environmental problems of noise and disruption to the University activities.

In consultation with Tarmac Precast Concrete and WS Atkins Consulting Engineers, a precast concrete roof solution was proposed which resolved the construction problems and reduced site activity by 85%.

The 200mm thick precast concrete roof panels were

designed and manufactured to incorporate a downstand edge beam and service voids at Tarmac's works at Tallington. The original in-situ roof construction was anticipated to be 6 to 7 weeks, while the precast concrete units were installed in 4 days.

## Sea Wall Replacement

**T**he Minehead – Blue Anchor scheme comprises of 76 units each approx 3000mm long to replace existing parapets. The 76 units are further split into 66 standard units and 10 special seating units.

WS Atkins acting on the behalf of Somerset County Council did the initial unit cross-sections and design, with further improvements and alteration to detail suggested and implemented by Hanson Concrete Products. The units of grey concrete with exposed aggregate limestone finish on both vertical and horizontal faces are finished off with handrails installed on site.

Delivery of the units commenced in May with the site works and installation being carried out by Hanson Construction Projects. This is the initial phase of the overall replacement scheme, with further works to follow later in the year.

## On the Right Track

**I**n recent months Bell and Webster has had considerable success in the burgeoning railway market.

During this period Kier/Nuttall has ordered 134 standard retaining walls for use at Kings Cross, which is part of the Channel Tunnel Rail Link project. An order for special "L" walls for use on the Nottingham City Tramway has been placed

by Carillion Major Projects. Galliford Rail awarded a contract for the supply of 470 platform walls for renewal projects at Narborough and Hinckley stations in Leicestershire, and Birse Construction is taking delivery of 218 special retaining walls for the Oxley project.

John Dalton, who is responsible for rail projects at Bell and

Webster said "In addition to satisfying the increasing demand for our retaining walls for use on railway projects we are also involved at the design stage for five stations on the Felixstowe to Bristol line, and maintenance facilities in the South East. Design proposals have also been submitted for new stations in Lincolnshire, Essex and Wales."

# AN OVERWHELMING CASE

By Peter Kelly, Technical Director Bison Concrete Products

**B**ison Concrete Products Limited was awarded the £1.67 million contract for the supply only of the precast concrete package to the Leicester City F.C. Stadium.

The criteria for the use of precast concrete included off-site production, control of quality, speed of erection, the provision of an immediate working platform, minimum propping and minimum wet trades.

A project of this size resulted in a vast number of components some 5,171 totalling 3840m<sup>3</sup> including terrace units, step units, vomitories, deck units, perimeter walls, stairs and 12098 m<sup>2</sup> of hollowcore flooring.

The design and detailing was a complex undertaking and the necessity to have a close and on going relationship with main contractor Birse's designers WSP was recognised at an early stage.

All the precast components have been designed to BS 8110 Part 1 1997.

Terrace units are based upon a simple reinforced concrete design with a minimum beam section of 150 mm which is increased in width only to accommodate reinforcement. The terrace units are designed to optimise the concrete section/reinforcement relationship together with maintaining the rigidity of the unit for dynamic purposes.

The vomitory units, which consist of walls supporting the terrace units and stairs, are seated onto the floors and steelwork at the concourse level. Cast in sockets together with stainless steel fittings provide both for location of the walls and support for the terrace units.

Stairs, which account for approximately 10% of the precast concrete for the scheme have been designed to allow for the use of stair flights with angles supported by intermediate landings.

Hollowcore slabs were designed generally with spans of 7.30m using a 200mm deep unit and a 75mm structural topping for further efficiency to act compositely with the topping and the steelwork. Spans up to 9.0 m were also provided.

The terrace units were manufactured using Bison's standard terrace mould and were cast with the tread part vertical and the beam part horizontal. This enables all faces of the terrace to be cast against steel mould faces except for the rear of the beam which is a float finish. The units provided have a fall to the front of 1:100 to facilitate the removal of water.

The vomitory walls were cast in vertical steel battery moulds. Components to allow fixing of the walls to form a completed unit were cast in where required.

In summary the case for the use of precast concrete is overwhelming. A well defined design brief and carefully thought out details are essential on a fastrack programme.

Remember keep it simple and the benefits of precast will contribute to a successful and economic stadium.

**Architect;** The Miller Partnership.

**Engineer;** WSP

**Contractor;** Birse Construction Ltd.

**Precaster;** Bison Concrete Products Ltd



## Weekend Deliveries Ease Congestion

*The £500 million Bullring project, part of a phased development of 40 acres in Birmingham's city centre, is currently Europe's largest city centre regeneration scheme. The new Bullring will open in September 2003 offering 110,000m<sup>2</sup> of prime retail space. In addition to Selfridges, Debenhams, Gap, Next and Benetton, there will be room for over 100 other retail outlets as well as cafes and restaurants.*

Said John Milner Ebor Concretes' managing director, "Because of its city centre location, most deliveries of our stairflights and landings were made on Sundays and our requirements had to be co-ordinated within an overall delivery schedule to the site. In addition special craneage was necessary to lift the heavier stairflights, which ranged from 1 tonne to 12 tonnes. In all some 388 flights were designed, manufactured and supplied together with 116 landing slabs between September 2001 and April 2002."

**Main contractor:** Sir Robert McAlpine

**Engineer:** Ove Arup

**Precaster:** Ebor Concretes Ltd





# DESIGN MAXIMISES USE OF PRECAST CONCRETE

*For the new £7 million North Stand being erected for Ipswich Town Football Club by main contractor Jackson Building Ltd, architects H. O. K Sport and consulting engineers J Bobrowski and Partners have developed a design that maximises the use of precast concrete.*

**Main contractor:** Jackson Building Ltd

**Architects:** H.O.K Sport

**Consulting Engineers:** J Bobrowski & Partners

**Frame Sub-contractor:** ABC Structures

**Precaster:** Trent Concrete Ltd

Trent Concrete Ltd provided some 1200m<sup>3</sup> — 823 units weighing up to 25 tonnes — in five different structural concretes. High standard, architectural quality finishes were specified for the units, which vary in mix and finish from plain grey ex-mould to sparkling white acid-etched. The upper tier terrace L-shaped units were cast in a special lightweight aggregate

grey concrete; the lower tier terrace units were cast in both grey and white concrete; the rear spine walls feature distinctive white concrete incorporating Spanish dolomite for extra sparkle; the vomitory and rear access stairflights are in a light coloured concrete using Creetown course aggregate with Leemoor fines. Concrete mixes were either 50N/mm<sup>2</sup> or 60N/mm<sup>2</sup> and for the light

weight concrete 40N/mm<sup>2</sup>.

Procurement and erection of the precast concrete and steelwork components that form the main structure and roof of the new North Stand development are the responsibility of ABC Structures.



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## Roger Bullivant Concrete Products

The Special Concrete Products division of Roger Bullivant was formed in early 1999. With strategically placed manufacturing plants at Bridgwater, in Newcastle on Tyne and at Drakelow HQ, products have easy access to all parts of the UK.

The division offers a complete design service with state-of-the-art CAD facilities and all manufacturing is carried out to

BS: EN ISO 9002:1994. Of the company's wide range of products, the Dock Leveller Pits and Quickwall were joint winners of the innovation award at the Millennium Interbuild exhibition.

## Milbank Floors Ltd

Formed in 1947 Milbank Floors head office is a six-acre site in Earls Colne, Essex, where PS beams and hollowcore planks are manufactured together with

stairs and landings. In 2001, a new factory at Brandon, Norfolk was opened on a ten-acre site where reinforced concrete plank floors are manufactured on a highly automated carousel plant, with an annual output exceeding 1,000,000m<sup>2</sup>. All products are designed and detailed in-house, with installation carried out by over 20 fixing teams covering all products, including Milbank's Safety Mattresses.



## MEMBERS

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A product association of the British Precast Concrete Federation Limited

**Website:**

[www.britishprecast.org/spa](http://www.britishprecast.org/spa)