SPANEWS

STRUCTURAL PRECAST ASSOCIATION

WINTER 2010

Dover Esplanade

See story page 3

SPANEWS
STRUCTURAL PRECAST ASSOCIATION

Contents

The Chairman's View

by Gerry Feenan

At a time of recession, value for money and sustainability are the keys to success. But whatever the state of the construction market, precast concrete will continue to grow in popularity and dominance. Among the many reasons for this are faster erection time, higher quality, and the intrinsic lifetime energy reductions from concrete's thermal mass. Techniques such as crosswall construction, modular construction and flatpack construction – all making use of precast concrete – are being adopted for a whole range of projects as illustrated in this and previous issues of SPANEWS. To further emphasise the numerous advantages of precast concrete we are devoting part of the technical section to a case study, the John Perryn School in Ealing, London. To highlight the versatility of precast concrete structures we feature Dover's Esplanade, designed by Tonkin Liu on the front cover and page 3.

Filigree device avoids fall hazards

With falls from height still a problem in the construction industry, Combisafe has introduced a new cast-in support socket, the Filigree Attachment.

Designed to be fitted before the concrete is poured, the circular and three-legged self-levelling device needs no careful positioning, being lightly tied to rebar to prevent displacement. Once the concrete has hardened, it will accept the guard rail support loads in any direction, satisfying the performance requirements of edge protection standard, EN 13374 Class A.

The attachment is particularly suitable for precast 'biscuit' slabs, used as permanent soffit shuttering and then completed with an in-situ structural topping. Here it is placed at the precast yard and contained within the initial pour (minimum 45mm of C25 concrete). Its low height allows precast units to be readily stacked for transport. Once on site, pre-cut plastic sleeves set to the finished slab thickness are inserted, and the edge protection is installed before the units are lifted into place. This avoids the need for the edge protection to be installed at height, and ensures that even the lifting chains can be disconnected from a position of safety.

The Filigree Attachment is designed to work with the Combisafe Steel Mesh Barrier system. When used with the adjustable Safety Post, the edge protection also can be lifted or lowered to ease the placement of the topping from within the protected area. Once incorporated, the device avoids the fall hazard associated with the installation of edge protection and prevents falls during any following work.

Three waves on Dover's Esplanade

A £2 million project to create a new 3,500m^2 promenade – known as the Esplanade – connecting the eastern and western docks at Dover has been completed with the help of Thorp Precast. To the west of the Esplanade is a new Sea Sports Centre and, to the east, a crossing linked to a tunnel that connects the seafront to the central town square.

Designed by architect Tonkin Liu, the project, which was officially opened on 4 November, is in the form of three waves:

• The Lifting Wave, a series of sculptural ramps and stairs that rise and fall to connect the beach to the Esplanade;

• the Resting Wave, a sculptural retaining wall providing sheltered spaces along the length of the Esplanade with weathered oak benches; and

• the Light Wave, a line of white columns to improve lighting and safety. The lighting can be controlled to create a wave movement.

The design won a competition organised by the Landscape Institute on behalf of Dover Harbour Board, Dover District Council, Kent County Council, SEEDA and English Heritage in Spring 2009, and the project has been partly funded by Sea Change, a DCMS programme managed by CABE (Commission for Architecture and the Built Environment) to drive cultural creative regeneration in England's seaside resorts.

> *"the architect was encouraged to get totally involved with the whole process of mould and concrete unit manufacture"*

Construction on site was managed by Ringway and the three artworks were brought to life by a team of specialists. From the start, the architect was encouraged to get totally involved with the whole process of mould and concrete unit manufacture, observing, and spending time with the Thorp production teams and working closely together to resolve complex detailing issues.

The units supplied by Thorp were manufactured with fibres instead of conventional rebar – a distinct advantage in a marine environment. Moulds and units were achieved using a 3D computer program that produced some unusual geometrical shapes, profiles and surfaces. In addition, some units combined different colours: for example, the walkways were predominantly white concrete with integral buff concrete copings.

A major challenge was the need to plan and control the sequencing and correct alignment to ensure seamless and flowing transitions between individual units. Here, as in the rest of the project, a consistent highly energetic and enthusiastic approach was maintained by Thorp.

Accommodation for Addenbrookes staff

Precast Concrete Structures Ltd (PCS) was selected for the design, supply and erection of four identical six-storey buildings to provide 100 apartments and 292 beds for hospital staff at Addenbrookes Hospital, Cambridge. The main contractor for the £28 million development is SDC Building Ltd. The original scheme was as an in-situ design but PCS worked with the design team and SDC to develop a precast solution, so gaining considerable programme advantages and the associated benefits of factory-manufactured products while complying with the demands of architects MMC.

The PCS design comprises a combination of twin-wall panels, lightweight steel external wall panels and external brick-clad precast panels. These are used to the balcony edges to maintain the brickwork aesthetic to the external facade treatment and improve the construction programme. Although a precast scheme, the buildings include a range of materials such as precast twin-wall, in-situ cantilevers, structural steelwork, precast brickwork and steel infill cassettes.

The development is a mix of en-suite rooms and flats with a range of features including brise soleil and balconies, as well as bicycle storage areas – essential for a development in a city where bicycles are the principal mode of transport. The project was finished in August 2010, with PCS completing the four blocks in a 26-week programme.

David Peacock, project director for SDC Building Ltd, said that "Precast Structures approached the project in a professional manner, were responsive and open to discussion on all matters and the support we received from them demonstrated their understanding of the seriousness with which we treated the project."

Sustainable reinforcing steel scheme

by Lee Brankley operations manager UK CARES

Carbon is becoming a central design question in reinforced concrete construction. Environmental performance of structures, and therefore of the materials that go into them, is becoming as important as functional performance. This is because the carbon footprint has implications for the life-cycle assessment of the structure in determining whether it is sustainable. Clients, designers, contractors and material producers and suppliers must therefore take this issue seriously. To do this effectively there is an urgent need for accurate, complete and consistent environmental data to enable these parties to make informed decisions.

In response to this challenge for credible and reliable environmental data, CARES have developed a sustainable reinforcing steel scheme that quantifies the environmental impact of the reinforcing steel supply chain. One such quantitative measure is the carbon footprint. In the absence of a National or International standard, CARES has developed a methodology that will enable firms in the reinforcing steel supply chain to establish their carbon footprint data in a consistent and transparent way. In so doing CARES-approved firms, from steel makers through to processors and those delivering steel to site, will not only assure consistent compliance with the functional performance requirements but also, via a similar audit process throughout the supply chain, ensure that environmental data recorded by approved firms is both accurate and verifiable. All reinforcing steels produced by CARES-approved firms are uniquely identified. When steel arrives on site, no testing is required, so avoiding unnecessary and costly delays.

Combining in-situ and precast concrete

When combining in-situ and precast concrete, the effect of differential shrinkage is a subject that is often of concern to structural designers. However, checking it is not an insurmountable problem as the following demonstrates.

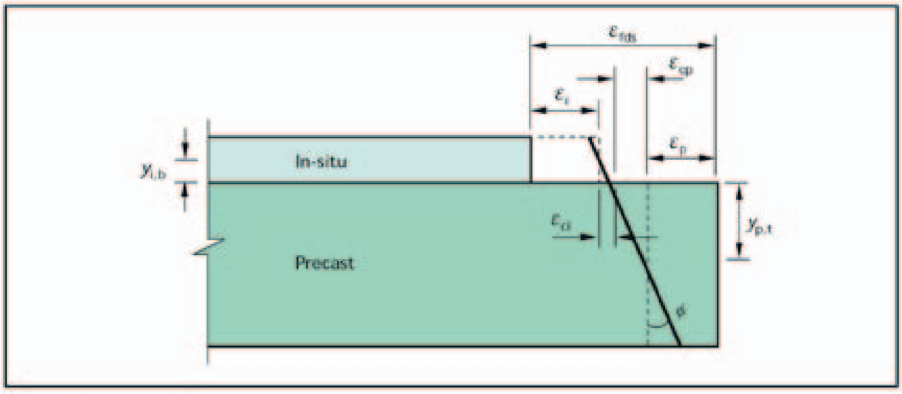
This self-explanatory extract is being published with permission, from The Concrete Centre's publication *Design of hybrid concrete buildings: a guide to the design of buildings combining in-situ and precast concrete* by R. Whittle and Dr H. Taylor. The figure and paragraph numbering have been left as in the original to help those readers wishing to refer back.

3.10 Differential shrinkage

When an in-situ screed is added on to a first stage cast floor of either reinforced or prestressed construction, the shrinkage of the screed after its initial hydration will develop a compressive strain in the top of the first stage cast and will induce a downwards deflection in the span of the composite unit and, if the floor is of continuous construction, a hogging moment at the supports. Note that these effects are of importance at the serviceability limit state only, as at the ultimate limit state these imposed strains will have little effect.

Figure 3.12 shows how the strains are built up through the height of the composite section for a given free differential shrinkage strain, ε_{fds}. The final curvature, φ, is constant across the section. Design equations can be developed as shown:

Figure 3.12
The effect of differential shrinkage across a section.



Force equilibrium:

$$\varepsilon_i E_i A_i = \varepsilon_p E_p A_p \qquad (1)$$

$$\varepsilon_p = \varepsilon_i E_i A_i / E_p A_p$$

Section equilibrium ($\varphi EI = M$):

$$\phi (E_i I_i + E_p I_p) = \varepsilon_i E_i A_i (y_{i,b} + y_{p,t}) \qquad (2)$$

Strain equilibrium:

$$\varepsilon_{fds} = \varepsilon_i + \varepsilon_c + \varepsilon_{cp} + \varepsilon_p = \varepsilon_i + \phi y_{i,b} + \phi y_{p,t} + \varepsilon_p$$

$$\phi = (\varepsilon_{fds} - (\varepsilon_i + \varepsilon_p))/(y_{i,b} + y_{p,t})$$

$$\phi = (\varepsilon_{fds} - (\varepsilon_i + \varepsilon_i E_i A_i / E_p A_p))/(y_{i,b} + y_{p,t}) \qquad (3)$$

Combining (2) and (3):

$$\phi\{y_{i,b} + y_{p,t} + (\varepsilon_{fds} - (E_i I_i + E_p I_p)) (1/E_i A_i + 1/E_p A_p)/(y_{i,b} + y_{p,t})\} = \varepsilon_{fds}$$

$$\phi = \varepsilon_{fds} / \{y_{i,b} + y_{p,t} + (E_i I_i + E_p I_p) (1/Ei A_i + 1/E_p A_p)/(y_{i,b} + y_{p,t})\} \qquad (4)$$

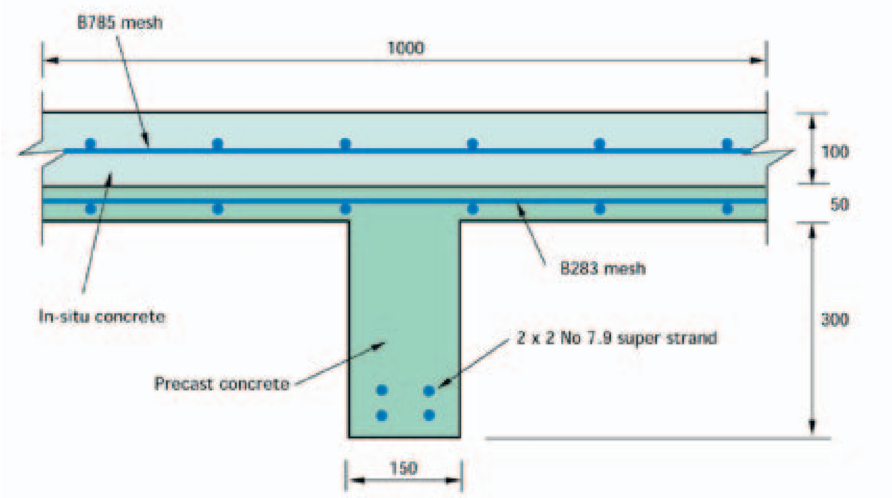
$$\varepsilon_i = \varepsilon_{fds} / \{1 + E_i A_i / E_p A_p + (y_{i,b} + y_{p,t})^2 E_i A_i / (E_i I_i + E_p I_p)\} \qquad (5)$$

$$\varepsilon_p = \varepsilon_{fds} / \{1 + E_p A_p / E_i A_i + (y_{i,b} + y_{p,t})^2 E_i A_i / (E_i I_i + E_p I_p)\} \qquad (6)$$

From equations (4) to (6) all the strains, stresses and forces can be determined.

Worked example 4 describes the method for determining the effect of differential shrinkage where in-situ concrete is placed on a precast concrete T section.

Worked Example 4



Calculate the effect of differential shrinkage in a beam constructed in two stages as shown below. The element is simply supported and 20 m span. The free differential shrinkage strain is 0.0002.

- B785 fabric in in-situ concrete
- B283 fabric in precast concrete flange
- 2 x 2 No. 7.9 mm super strand in precast rib

In-situ concrete (Eurocode 2, Table 3.1 and Cl.3.1.4)

$f_{ck,in}$ = 25 MPa, $f_{cm,in}$ = 33 MPa, creep coefficient, φ = 1.5

$E_{c,in,long}$ = $22\,[f_{cm,in}/10]^{0.3}/(1+\varphi)$

= $22 \times (33/10)^{0.3}/(1+1.5)$

= 12.59 GPa

Section properties, including the reinforcement, are as follows:

A_{in} = 112×10^3 mm²

I_{in} = $bd^3/12 = 1000 \times 100^3/12$

= 87.5×10^6 mm⁴

$y_{inbar,b}$ = 52.1 mm

$Z_{in,b}$ = 1680×10^3 mm³

Precast concrete (Eurocode 2, Table 3.1 and Cl.3.1.4)

$f_{ck,p}$ = 50 MPa, $f_{cm,p}$ = 58 MPa, Creep coeficient, φ = 1

$E_{c,p,long}$ = $22 \times (58/10)^{0.3}/(1+1)$

= 18.64 GPa

Section properties, including the tendons and reinforcement, are as follows:

A_p = 101.5×10^3 mm²

I_p = 1220×10^6 mm⁴

$y_{pbar,b}$ = 237.4 mm

$y_{pbar,t}$ = 112.6 mm

$Z_{p,t}$ = 10900×10^3 mm³

Curvature

Using expression (4) above:

Curvature:

$$\phi = \frac{1000 \times 0.0002}{52.1 + 112.6 + \left(\dfrac{(12.59 \times 87.5 \times 10^6 + 18.64 \times 1.22 \times 10^9) \times (1/(12.6 \times 112 \times 10^3) + 1/(18.6 \times 101.5 \times 10^3))}{50 + 112.6}\right)}$$

= 0.00058/m

Deflection

Deflection from differential shrinkage

δ = $\phi\, l^2/8$

= $0.00058 \times 20^2/8$

= 29 mm

For copies of the Concrete Centre's publication *Design of hybrid concrete buildings: a guide to the design of buildings combining in-situ and precast concrete* by R. Whittle and Dr H. Taylor go to **www.concretecentre.com**

Working in partnership

For this issue, the technical section highlights the role of structural precast concrete in meeting and exceeding the requirements for 21st century projects. These requirements include maximising the benefits of offsite construction, working in partnership, improving sustainability, reducing energy use and CO_2 emissions, and achieving a BREEAM Very Good rating. A particularly good example of applying these in practice is seen in the new John Perryn School in Ealing, west London.

The John Perryn School – which replaces a Victorian building on the same site – is a Pathfinder scheme for the Department for Children, Schools and Families (DCSF) Primary Capital Programme to improve the standard of primary schools throughout the country. Based on a vision for a landmark community building fit for 21st century learning, the building was designed by architects Penoyre & Prasad to meet high educational, environmental and design targets. Accommodation includes a 420-place primary school and a 25-place nursery, while a fully integrated children's centre provides shared accommodation for a variety of community uses including a vulnerable children's unit, daycare provision and facilities for visiting healthcare professionals. John Perryn's Board of Governors expressed the school's vision with the following statement – "We want John Perryn School to be a welcoming, friendly, safe environment, which serves as a great place to learn and offers the best to our community, especially our children".

A combination of a partnering approach, offsite construction and intrinsic low-energy design resulted in a welcoming scheme with strong civic presence. In the words of Steve Harnett of main contractor Wilmott Dixon "There is a better chance of success if everyone is in from the beginning". Whole life costs were considered at every stage of the project and one of the key drivers for the project was the reduction in energy use. Willmott Dixon opted for precast concrete because of factors such as fire resistance, flexibility, high quality, and instant working platform.

With an integrated, low-energy strategy, the design achieves a 51.9% reduction in CO_2 over current building regulations and scores BREEAM Very Good. The precast concrete panel wall and slab system allowed for rapid construction which was carefully phased to ensure the school remained fully functional throughout.

As a Pathfinder project, there was always potential for the £8.4 million scheme to be a flagship for the programme, and by any standards the school is a success – constructed on time (over a fast-track two-year programme), on budget, and lauded by its users and the London Borough of Ealing whose high aspirations for the project have been met and exceeded.

Materials and construction

Some 90% of the demolished school building was recycled or used as piling mat materials. An integrated, low-energy design strategy incorporates thermal mass, night-time cooling, cross-ventilation and high levels of daylighting, while a ground-source heat pump provides 43% of the total heating load of the building using renewable energy to heat water for the under-floor heating system. In addition, a sustainable drainage system (SUDS) was constructed and natural ventilation to all classrooms was made possible by using stack ventilation chimneys working in conjunction with a large proportion of openable windows.

In order to meet the ambitious sustainability targets of 10% of on-site renewables – the actual figure achieved was 15% – and 40% carbon reductions above current building regulations, the design team worked with the precast concrete supplier Buchan Concrete to develop an innovative precast panel system. This robust solution offered thermal mass, natural ventilation, exceptional acoustics, and enabled other parts of the programme to be run alongside the concrete manufacture with considerable time savings. The building received an air-tightness rating below Passivhaus standards and unique in Britain.

A brief summary of the precast contribution

- Precast concrete portal frames 6.5m long and 3.6m high
- Precast concrete panels 190mm thick and 4m high were up to 14 tonnes each. The panels were made in a range of lengths
- Precast concrete crosswalls 180mm thick carrying hollowcore floor units
- Panels lowered into position and laser-aligned before holding-down bolts tightened
- Achieved 1.98 $m^3/m^2/h$ airtightness well below current target figure of $10m^3/m^2/h$
- Total of 479 units erected at a rate of 16 per day (equivalent to $125m^2$), by using a 10 man erection team cut a week off programme
- Units included external and internal walls, stairs, landings and beams plus hollowcore floor slabs
- All building materials were obtained from sustainable sources

Precast rooms for Guildford hotel

Working on behalf of Galliford Try, Bell & Webster Concrete is supplying precast rooms for a £30 million Guildford development, which consists of a 185-bedroom four-star Deluxe Radisson Edwardian Hotel and 38 residential apartments.

The rooms are constructed using factory-engineered precast concrete components, each individually designed and manufactured. Being precast concrete, they have excellent acoustic properties and high thermal mass: they are also robust, virtually maintenance-free and quick to erect, so offering the client earlier occupancy. The prestressed wide-span floor slabs for the apartments are being produced in the Hoveringham factory, party walls having a cast-in conduit for electrical services.

Due to the limited site access on Guildford High Street, the Bell & Webster rooms are being erected with a combination of crawler and tower cranes. Units are tied together by a series of reinforced hidden joints that are grouted as the works progress. The building has more than five storeys of residential construction and so a series of vertical ties are incorporated to meet Building Regulations' progressive collapse criteria.

Room components include party walls, floors, ceilings, lift shafts, stairs and ducted risers, all manufactured to tolerances well within BS8110. Quality production methods produce a type 'C' standard of BS 8110 and are delivered to site ready for final minimal preparation allowing direct decoration.

The company is also installing bathroom pods using its specialist precast erectors as part of the concrete supply-and-erect package. The precast construction element of the project will take 18 weeks with completion expected by July 2011.

On-site parking for new police HQ

As part of its plan for Greater Manchester police force's move to new state-of-the-art headquarters at Newton Heath, project architects Aedas had to consider the ever-increasing need for on-site parking.

The problem was solved by using a piece of land sandwiched between the new headquarters and the Metro-link line to Ashton-under-Lyne, shortly to be completed. The architectural aspirations for the design of the car park were to clad the external facade with a mixture of white acid-etched concrete panels, similar to those on the main building, and Eyetech expanded mesh, both items being fixed back to a single-storey concrete frame.

For the superstructure and associated finishes, project contractor Carillion chose local design-build specialist SCC Limited for the build. This involved the manufacture of some 695 precast concrete units, tailored to suit the architectural requirements. By using standard moulds from SCC's existing stock, the overall cost to the client was reduced. All components were manufactured in-house at SCC's Reddish facility to meet just-in-time delivery dates and reduce congestion on site.

The 21-bay structural frame is oblong on plan with the exception of two cut-back areas along one elevation where the structure abuts the new Metro-link line. The structure is fully enclosed with either precast concrete cladding panels or Eyetech mesh; in certain areas, security has been further increased using louvre screens directly behind the mesh.

Hospital selects precast for car park

Ebor Concretes and design-and-build contractor Composite are working in partnership with Kier Northern on a new precast concrete multi-storey visitor car park at York Hospital.

The 465-space car park, which is being built for the York Hospitals NHS Foundation Trust, will improve visitor parking and open up a site for potential future development. Work on the site started in August and is due for completion before the end of the year. The design allows a 2.52m clear height for most of the car park, providing the Trust with a safe and visually light and airy facility, which will help it obtain the Park Mark Safer Parking standards.

The ramped deck design will provide an unrestricted interior by incorporating a single internal ramp. This efficient solution, which was suggested by Composite, provides the Trust with its required number of spaces within the available footprint of 87m × 48m.

> *"The rapid construction schedule possible with precast concrete…"*

The structural precast concrete frame for the two-storey car park was manufactured by Ripon-based Ebor Concretes. Precast concrete spandrels also form the 550mm integral vehicular upstand around the car park perimeter, removing the need for additional protection and maintenance. In addition to the structural frame, the work includes precast concrete floors, structural screeds, a precast concrete staircase and supports, asphalt waterproofing, gullies and downpipes and handrailing. Ebor supplied 68 columns, 152 beams and spandrels and 18 walls. Manufacture started in late June and was completed in September with final deliveries in early October. This is the third car park frame Ebor has supplied to Composite.

The rapid construction schedule possible with precast concrete is particularly useful in health sector projects such as the York Hospital car park, which is adjacent to the 'blue light' route into the hospital's A&E department, making careful construction management essential.

Composite's managing director Roy Nield-Dumper commented: "This latest car park is the fourth we have completed in the past year for hospital trusts across the country, making it a successful specialisation for us and underlining the suitability of precast concrete for projects in this sector."

Ebor managing director, Paul Whitham adds: "This project exemplifies the excellent fit of the two companies, with our expertise in precast concrete dovetailing with the design and installation expertise of Composite."

The car park – which provides parking for approximately 450 vehicles – contains a number of service rooms, one of which has a standby generator. Access to the upper deck is via a concrete ramp, access and egress being controlled by traffic lights.

> *"By using standard moulds from SCC's existing stock the overall cost to the client was reduced"*

Meeting a sporting challenge

Buchan Special Projects has been involved in the construction of a number of sports halls, the latest being two for Derbyshire County Council who had been suitably impressed with the style and finish of one already built by Buchan.

Nearing completion now is a precast concrete sports hall facility at Kirk Hallam Community Technology College, Ilkeston, Derbyshire. With a floor area of some 1400 m^2, the building has a four badminton court sports hall constructed to Sport England specifications with a fully sprung floor. Associated facilities consist of four sets of changing rooms and showers to include ambulant disabled facilities, four separate w.c. and changing areas, a large fitness room, medical room, offices, staff changing and showers, storage areas, and a spacious main reception with feature ceilings and glazed screens giving visitors and users a clear view of the sports hall and fitness room.

> *"The panels are a structural element of the building, so removing the need for a steel frame…"*

The building is constructed using precast fully insulated sandwich panels with a maximum height of 10m at the gable. The panels are a structural element of the building, so removing the need for a steel frame and at the same time speeding erection. Additional benefits include an extremely robust, flat wall finish both internally and externally. Internally, wall lines are clean and tidy with none of the ledges or obtrusions usually associated with more traditional sports hall structures.

Construction has also begun on the second sports hall, this for Aldercar Community Language College, Langley Mill, Derbyshire. Unlike Kirk Hallam, the hall is to be built on the existing school playground which is surrounded by school buildings and steep grass banks. Because of this, a 60m roadway has had to be laid to allow construction vehicles access to the site and to give a safe secure construction zone that can be fenced off while allowing pupils to continue to use the full range of school facilities. The building area is of poor quality built-up ground and so ground improvement works comprising piles and hardrock ground stabilisation are being undertaken by Roger Bullivant Ltd before work begins on foundations, drainage and the floor slab. Concrete wall panel erection is due to start in early January 2011.

Facilities will be the same as the Kirk Hallam project but with a smaller fitness room to allow a classroom to be built alongside as well as two small classrooms in a quiet area towards the back of the building. These will be used for pupils requiring specialist needs. The project is scheduled for completion in July 2011 and construction for both projects is 28–30 weeks from ground works to full fit-out including external works.

Concrete sandwich panels show the way

With the increasing trend to use concrete sandwich panels for the complete external envelope of buildings, attention has focussed on ways of making them more affordable, simpler and more accessible. Among these modern approaches are the Thermomass insulation system and the Versaliner brick placement system.

Thermomass has been used worldwide on over 80,000,000m^2 of sandwich walling and in the UK more extensively since 1999. Extremely easy and fast to use, the system's major technical advantage is the absence of thermal bridges. As a result, heat loss is significantly reduced, which reduces the risk of both interstitial and surface condensation and offers a clear advantage over any system where metal penetrates the insulation layer.

> *"The system's major technical advantage is the absence of thermal bridges"*

In addition, the Versaliner brick placement system – a form-liner from innovative Brick Systems – enables bricks, tiles or terracotta to be quickly and easily placed into the mould before the concrete is poured. What is more, when the concrete is poured, a 10mm mortar joint with vertical strike points is automatically formed, giving maintenance-free joints that are not porous.

Using these two systems, certainty of programme and cost are guaranteed during the construction phase with lower maintenance and operating costs for the life of the building – something that has for example, transformed prison construction.

Product Reference

Products	Bell & Webster Concrete	Buchan Concrete Solutions	Ebor Concretes	Hanson Building Products	Roger Bullivant	S.C.C.	Tarmac Building Products	Thorp Precast
Foundation Units and Piles					●			
Composite and Double Tee Floors	●			●		●	●	
Staircase and Stair Units		●	●	●	●	●	●	●
Structural Wall Units	●	●	●	●	●	●	●	●
Beams and Columns		●	●	●	●	●	●	●
Frames		●	●			●	●	●
Multi-Storey Car Parks	●		●			●	●	●
Grandstands and Terracing	●	●	●	●			●	●
Specialised Building Systems	●	●	●	●		●	●	●

SPA Members

Bell & Webster Concrete Limited
Alma Park Road, Grantham NG31 9SE
Contact: Roy Spurgeon
Tel: 01476 562277
Fax: 01476 562944
Email: roy.spurgeon@eleco.com
Web: www.eleco.com/bellandwebster

Buchan Concrete Solutions Limited
King's Lane, Byley, Middlewich CW10 9NB
Contact: Neil Gibbons
Tel: 01606 843500
Fax: 01606 842215
Email: neil.gibbons@buchanconcrete.co.uk
Web: www.buchanconcrete.co.uk

Ebor Concretes Limited
PO Box 4, Ure Bank Top, Ripon HG4 1JE
Contact: Paul Whitham
Tel: 01765 604351
Fax: 01765 690065
Mobile: 07872 901339
Email: paul.whitham@eborconcrete.co.uk
Web: www.eborconcrete.co.uk

Hanson Building Products
(Floors and Precast Division)
Birchwood Way, Cotes Park Industrial Estate,
Somercotes DE55 4NH
Contact: David Chamberlain
Tel: 01773 600247
Fax: 01773 600290 Office
Email: David.Chamberlain@Hanson.com
Web: www.hanson.co.uk

Roger Bullivant Limited
Walton Road, Drakelow, Burton-on-Trent
DE15 9UA
Contact: Steve Parker
Tel: 01283 525045
Fax: 01283 512233
Email: marketing@roger-bullivant.co.uk
Web: www.roger-bullivant.co.uk

S.C.C. Limited
Kenwood Road, Off Station Road,
Reddish, Stockport SK5 6PH
Contact: Peter Crofts
Tel: 0161 432 7700
Fax: 0161 432 4847
Email: reddish@sccltd.co.uk
Web: www.sccltd.co.uk

Tarmac Building Products Limited
Tallington, Stamford PE9 4RL
Contact: Kevin Bourne
Tel: 01778 381000
Fax: 01778 348041
Email: kevin.bourne@tarmac.co.uk
Web: www.tarmacbuildingproducts.co.uk

Thorp Precast Limited
Apedale Road, Chesterton,
Newcastle-Under-Lyme ST5 6BN
Contact: Harvey Thorp
Tel: 01782 561155
Fax: 01782 561156
Email: Harvey@thorpprecast.co.uk
Web: www.thorpprecast.co.uk

Contributing Associates

Construction Systems Marketing (UK) Ltd
Astwith House, Astwith,
Chesterfield, Derbyshire,
S45 8AN
Contact: Scott Green
Tel: 01246 853528
Email: scottgreen@csm-uk.co.uk
www.thermomass.co.uk

Combisafe International Ltd
Group Head Office, Safety Centre, Cheaney Drive,
Grange Park, Northampton,
NN4 5FB
Contact: Steve Coshall
Tel: 01604 660600
Email: steve.coshall@combisafe.co.uk
www.combisafe.com

Composite Ltd
Eastleigh House
Upper Market Street
Eastleigh
Hampshire
SO50 9FD
Contact: Roy Nield-Dumper
Tel: 023 8064 5700
Email: Roy.Nield-Dumper@compositeltd.co.uk
www.compositeltd.co.uk

Precast Concrete Structures Ltd
Building 101, The Waterfront
Stonehouse Business Park
Sperry Way, Stonehouse
Gloucestershire, GL10 3UT
Contact: Steve Lightfoot
Tel: 01453 820960
Email: stevelightfoot@precaststructures.co.uk
www.precaststructures.com

UK CARES
Pembrook house
21 Pembrook Road
Sevenoaks, Kent, TN13 1XR
Contact: Lee Brankley
Tel: 01732 450000
Email: leebrankley@ukcares.com
www.ukcares.com