



## Decomo helps write the next chapter for the Bodleian Library

**H**aving opened back in 1602 and now with more than 11 million books already on its shelves, the Bodleian Library at Oxford University had been fast running out of space for many years. What's more, as it receives a copy of every published work in Britain, this means finding a home for some 1000 new books every day, equivalent to three miles of shelving a year. Known as the Bodleian Book Storage Facility at South Marston, Swindon, that new home – capable of holding 8.4 million volumes on 153 miles of shelving – is now complete.

The new book warehouse will store lower-usage items from the libraries' collections that had overwhelmed the existing bookstacks and required additional temporary storage in various locations in and outside Oxford. These collections will now be brought together at the BSF, including books, maps, manuscripts, microfilms, periodicals and newspapers primarily from the 18th century onwards. Over the next year, nearly six million books will be moved into the BSF in what will be the biggest book move in the Bodleian's history.

Decomo UK Ltd worked with main contractors Mace Plus and architects Scott Brownrigg to deliver this new large storage facility. Precast concrete sandwich panels were the chosen material for the facades, allowing fast erection on site and providing a durable finished surface both inside and out.

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## Brick-faced SIPS units

Although issues of confidentiality preclude naming this project or crediting those involved in its construction, it merits coverage in Facade because of its exemplar use of brick-faced precast concrete panels as structural elements for the external cladding of its two-storey frame.

Manufactured by The Marble Mosaic Co Ltd, the precast panels were typically 3m high and 6m long with the largest variant weighing 12 tonnes. They were produced with a 30mm cut-brick facing, an outer 70mm wythe of concrete, a 90mm core of insulation and an inner 150mm wythe backing of concrete. The wythes were connected with composite fibre ties using the Thermomass system to avoid thermal bridging. Bricks were face-pointed after each panel had been de-moulded and the internal face finished smooth to receive direct decoration. Many of the panels also included window apertures that were framed and glazed off-site.

Panels were installed by PCE, who were also responsible for the design, supply and erection of the precast concrete internal walls, floor slabs and stair cores.



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An added challenge to Decomo's package of works for the design, manufacture and installation, was that the walls needed to provide a minimum of four hours' fire protection to safeguard the valuable contents from any external fire. Because of their twin layers, concrete sandwich panels already offer good levels of fire protection but careful consideration was needed in the design of the individual concrete layer section thicknesses, and the panel-to-panel jointing system adopted, in order to meet the stringent requirement.

Architectural grade precast panels were supplied with a grit-blasted finish to the external faces. Typical dimensions were 7.5m long × 3m high, each weighing 12.5 tonnes: some were larger, the biggest closer to 18.5 tonnes. Panels to the front elevation – which houses the reception and offices – had the added feature of a relief pattern, simulating the appearance of books stored on bookshelves.

Decomo was able to accommodate the short lead-in period for this project. Design began in August 2009, with all 254 cladding panels (totalling 5200m<sup>2</sup>) manufactured by Decomo and erected on site starting in January 2010.

The installation was completed in just eight weeks, despite some of the heaviest snowfalls seen in decades in this country. All facade panels were installed using a 70-tonne crawler crane, except for the area above the reception/office block, where a 200-tonne mobile crane had to be used.

Once the building was watertight, work could begin by the following trades to install the 2200 linear metres of 11m-high racking that provides 95,000 shelf levels. Work has already begun on transferring the millions of books from the original Bodleian and other temporary storage areas to the new facility in Swindon.



# Imperial Wharf – seventh heaven

**T**he Imperial Wharf residential development is set in its own idyllic riverside park on one of the most sought-after stretches of the River Thames adjacent to fashionable Chelsea Harbour and near the King's Road and Sloane Square,

This award-winning development by St George Plc provides a range of two-, three- and four-bedroom apartments and penthouses with spectacular panoramas of the river itself and beyond. Its tree-lined boulevard also offers residents and visitors a selection of stylish shops, bars and haute-cuisine restaurants.

Designed by Broadway Maylan Architects, the Imperial Wharf development is being constructed in a number of phases. Significantly, most of its buildings feature architectural precast concrete with reconstructed stone finished and terracotta tile-faced cladding panels.

When the current phase of the development is completed shortly, The Marble Mosaic Co Ltd's run of seven precast cladding work packages at Imperial Wharf will have included the casting of more than 6000 units, totalling close to £8m in value. The first phase was completed for Bilfinger Berger Ltd on a supply-and-fix basis in 2005. The next three phases

were completed for Carillion Plc during 2005 and 2006 and included precast concrete wall cladding panels and structural balcony units. The precast cladding panels for the fifth and sixth phases were provided on a "detail design and supply only" basis for J Reddington Ltd's main contracting division. Begun in December 2009, the latest phase being built by Ardmore Ltd includes the requirement for 560 cladding panels finished in reconstructed stone and weighing up to 5 tonnes each which are being designed, manufactured, delivered and installed by The Marble Mosaic Co Ltd.

Most of the cladding panels for each phase are storey-height units that span between the floor slabs, so avoiding the need for secondary backing structure for their vertical support or lateral restraint. The other cladding panel types include spandrel units that face the edges of the structural floor slabs and balconies. All the panels were designed to avoid the need for an external scaffold.

The reconstructed stone panels are typically 150mm thick and match the appearance of Portland limestones, a colour achieved



without pigmentation by using a mix of crushed Derbyshire limestone aggregate with white cement. Their exposed surfaces have been lightly textured using a controlled technique developed to achieve a notably consistent appearance. All precast cladding panels were manufactured with carbon steel reinforcement and fixed with stainless steel fittings; joints were pointed with a two-stage silicone-based sealant. Cast from grade 45 concrete mixes the panels provide a robust and durable cladding material that is inherently non-combustible and fire-resistant with valuable sound-controlling properties. Their manufacture in a low energy, resource efficient and low waste production facility also enhances their environmental and sustainability credentials.

Following the successful working relationship established at Imperial Wharf, Ardmore Ltd has recently awarded The Marble Mosaic Co Ltd the subcontract to provide reconstructed stone finished precast concrete units, typically 7.2m high by 1.8m wide, to clad a hotel scheme at East Road in London.



## Rising to the challenge

Decomo is on course to deliver another massive high-rise building for the renowned architect Prof Hans Kollhoff. Following a previous successful partnership which saw the construction of a large development in Potsdamer Platz in Berlin, the company's expertise in architectural precast concrete has been called on to produce 20,000m<sup>2</sup> of cladding for the new Dutch Ministry of Justice Offices (JUBI) in The Hague. The typical panel consists of cast-in brick slips from manufacturer Wittmunder, incorporating a solid granite mullion and an acid-etched reconstituted stone cill.

The JUBI building is Decomo's biggest project to date, with a 'supply only' value in excess of €10 million. Erection began on site in August of this year with a target completion date of September 2011.

# Sustainable facades

– the growing role of architectural precast

**A**t the leading edge of envelope engineering the members of the Architectural Cladding Association (ACA) are playing a key role in facilitating and resolving client and designer relationships.

As the visual barrier between the outside and inside of buildings, precast cladding performs a key role in providing external protection from the elements and securing optimum internal environments for living and working.

The role is growing. Designers have moved away from glass, partly a fashion trend but mainly driven away by the experiences of summer overheating and winter chill. Worries about fire spread between floors have moved interest away from external timber cladding. The high embodied energy of curtain walling systems is of concern to many specifiers. Concrete facades are therefore lining up to take a much larger part of the apartment and non-housing market, and the inherent properties of precast are coming to the fore. A major example is the athletes village being built for the London 2012 Olympics. Sustainable design is at the forefront of the ODA programme and precast cladding is being used for the entire village – the largest ever precast cladding project in the UK.

For decades architectural cladding has been the pride of the precast sector, renowned for its high quality. Now the choice of finishes has never been wider. New techniques have incorporated graphics into the concrete itself. Lighting features and translucence can now be introduced thanks to fibre optics. Glazing is now commonly installed as part of the production process. The latest insulation innovations can be incorporated into sandwich panels. Services such as plumbing, electrical circuits and IT cabling are routinely pre-installed in panels. Externally, solar gain can be minimised by the incorporation of brise soleil, shutters and shading features. Internally, comfort and health can be improved by exploiting the thermal mass of concrete and the managed purging of stale air.



*Martin Clarke, Chief Executive, British Precast*

Although the ACA encourages a holistic life-cycle approach to the design of sustainable buildings, its members are addressing the challenge of improving the sustainability profile of architectural cladding. This is being achieved in a number of ways within the British Precast Concrete Federation of which the ACA is a key member association.

Firstly on health and safety, our Concrete Targets 2015 programme, which has been adopted by all Federation members, aspires to move the precast industry to being a zero harm sector both within the production plant and during the installation phase. Excellent progress has been made over the last 10 years but there remains some way to go to reach our target.

In May 2011 all members of British Precast will be required to sign up to the Federation's Sustainability Charter. We will become the first construction trade body to take such a stance – all part of our Raising the Bar initiative aimed at improving all aspects of the industry. The drive to reduce embodied and operational carbon is fully integrated into our programmes, and progress is reported annually with the publication of our key performance indicators.

*For further details see [www.britishprecast.org](http://www.britishprecast.org)*

## Baltimore Wharf

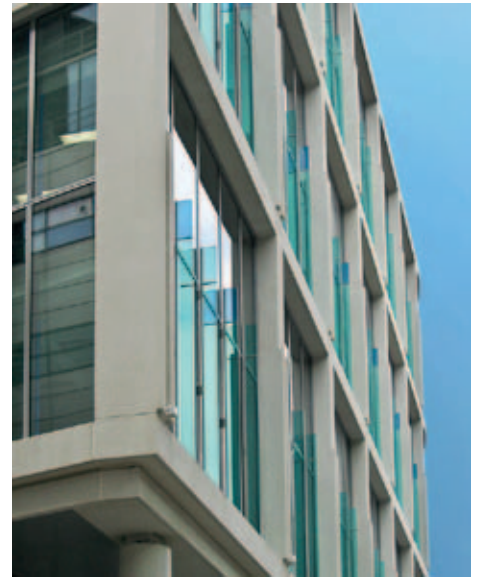
These panels are all of sand-blasted white precast concrete, a finish which is environmentally friendly as it uses stainless steel shot in a specially developed enclosure that recycles all the blast material after it has separated out the dust and waste. This exciting project in London Docklands was designed by architects SOM for Ballymore. The balcony elements are especially pleasing and have a finish on three sides in many instances. Precaster Techrete UK Ltd.



## Jermyn Street

This little gem is located in one of London's most enchanting streets, which was named after Henry Jermyn, the first Earl of St Albans. Architecture by Frederick Gibberd is fully in keeping with the surrounding buildings, the precast panels being faced with Portland stone and traditional brickwork. Above the window openings, a rough-hewn effect – obtained by the use of specially designed moulds for the concrete – matches the Portland stone. Precaster Techrete UK Ltd.





# Regent's Place, Triton Street, London

**R**egent's Place is a mixed-use development at Osnaburgh Street consisting of two office buildings, providing 366,000ft<sup>2</sup> of Grade A lettable office space over 9/10 storeys. At ground level, there are retail units, a local theatre and multi-faith centre, spread between each of the buildings. The site is particularly sensitive as it is adjacent to the Regents Park conservation area and provides a backdrop to several listed buildings, the most significant of which is Holy Trinity Church.

Construction is now complete on the 2.5-acre site. The 490,000ft<sup>2</sup> mixed-use development comprises office accommodation within 10 and 20 Triton Street, in addition to 110,000ft<sup>2</sup> of residential apartments at One Osnaburgh Street. Designed by Terry Farrell and Partners, the development has significantly extended and enhanced Regent's Place, already

recognised as a successful West End office campus extending over 13 acres.

An important part of the master plan for Regent's Place has been to increase the permeability of the estate through the creation of new or improved east-west and north-south links, and a new western entrance onto Osnaburgh Street. This has given better pedestrian access within the estate and through to the transport links of Great Portland Street and Warren Street underground stations.

This improvement to the environment has been enhanced with substantial planting and landscaping throughout the estate, including the creation of a new public square and outside courtyard, remodelling of the existing public space, and installation of various commissioned works of public art.

Techrete has clad both 10 and 20 Triton

Street, the former with a retarded finish white architectural precast, the latter with a red sandstone above ground floor and red granite at ground floor onto precast units. These are single-skin units in mullion and transom formation with rigid board insulation to the rear of the panels: a vapour barrier was incorporated at the inside face of the insulation. There is close interaction between the curtain walling and the precast units and Techrete worked with the curtain walling specialist to ensure the two systems would work together. In all, there are some 6100m<sup>2</sup> of precast units on the two buildings, which entailed a total of just under 600 panels.

In terms of sustainability, 10 Triton Street is 24% better than the Part L2A 2006 requirements, while 20 Triton Street is 33% better. Both have achieved an Excellent BREEAM rating.

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