

PRECASTER

■ Memorial signifies innovation in design, modelling and manufacture

As well as paying tribute to the thousands of men and women who have served in Australia's Emergency Services, the National Emergency Services Memorial serves as a tribute to a team of talented design and manufacturing professionals.

Gracing the gently sloping shores of Lake Burley Griffin, the Memorial contributes another layer of significance to Anzac Parade and was opened by the Right Honourable John Howard MP, the Prime Minister of Australia, in July 2004.

The design challenge

Aspect Melbourne Pty Ltd and its team created a design which sees the Memorial negotiating between the history and symmetry of Anzac Parade and its memorials, and the new open parkland for civilian memorials, in which the Memorial is located. Artist Charles Anderson has created a three-dimensional, six-panel frieze, which is a collection of images reflecting the diversity of emergency services personnel at work. It draws on many cataclysmic events such as lines of grass fire at night, lightening flashes and the shadows of one's body cast by strong sunlight or fire. Ultimately, however, the direction into and onto the 'blanket' brings the visitor to experience the sense of safety provided by the Emergency Services, in the enclosure of the Memorial space itself.

In designing the Memorial, Aspect utilised techniques which previously have not been used in Australia for a project of this type. Using precast gave the artist and designer far greater scope, enabling the creation of a memorial of a far larger scale than traditional methods would have allowed, and resulting in a memorial which is far more striking and evocative.

The manufacturing challenge

Each section of the wall measures some 10 metres long by 2.6 metres high, each of which is different in shape, often with 2 or 3 faces on each side and a different frieze and different



Using precast gave the artist greater scope in designing the six-panel frieze.



By night, the images become strikingly emotive.

finishes on all sides. This is a real marriage of art and precast concrete and is one of the most challenging and individual projects carried out by any Australian precast manufacturer.

Sculpted by Darryl Cowie, the frieze was transposed onto a plastic surface in four separate full-scale sections in Melbourne, and then coated, by DCG Designs, with a rubber latex material to form

negative moulds. Worth more than \$100,000 each and taking over three months to make, the moulds were then used by SA Precast to make the precast moulds and then to manufacture the six individual panels which form the Memorial. Due to the different shapes and angles, manufacturing the moulds was a major challenge.

200-year design life

The durability requirements for the design required a design life of 200 years for the precast panels. Great care was taken to specify a concrete mix, cover, reinforcing and curing that

would ensure maximum durability in the Canberra environment.

The erection challenge

The panels sit on insitu footings, which in turn sit on screw piles to the founding level.

Erection of the panels was carried out in May 2004 under the guidance of the precast manufacturer.

This was an exceptional precast concrete project which, appropriately, honours some exceptional Australians.

Project Team:

Primary Consultant:

Aspect, Landscape Architects & Urban Designers

Structural and Civil Engineers:

Felicetti Pty Ltd

Structural Engineer for the Precast:

J Woodside Consulting Pty Ltd

Precast Manufacturer:

SA Precast Pty Ltd

Frieze Design:

DCG Design Pty Ltd

President's Message

Matt Perrella

I am pleased to report that the precast industry is experiencing strong growth in all major states of Australia and in all product sectors.

This is partly due to a buoyant construction industry, experiencing exceptionally high demand, and partly to precast consolidating its position as a construction material of choice. With its inherent benefits of simplicity, speed, quality and economy, precast has always played a major role in Architectural Wall Cladding, bridge construction and drainage. However, over the past few years precast is making inroads into the structural frames of buildings and this is where the precast industry sees its future growth potential.

Precast flooring is easy...

To this end the Flooring Group Members of the Association have pooled their resources for a marketing campaign, designed to promote the virtues of precast flooring. The campaign will commence in early 2005 and will highlight that this method of flooring is easy, fast, safe, economical and green. The objective is to increase the market share against traditional forms of construction.

Other initiatives that the Association is introducing include:

- Implementation of minimum entry criteria for precast manufacturer members.
- Complete revamp of the National Precaster and upgrade of content quality.
- Website presentation is being improved and made more user friendly.
- Introduction of Professional Associate Membership for Engineers and Architects.
- Workshops for consulting engineers and architects, in the design and use of precast concrete. The content of the workshop will be based on the Precast Concrete Handbook.

Sadly, my term as President has come to an end and although many of my initial objectives have been accomplished over the past two years, much still remains to be done. When I accepted the position, my main focus was to raise the profile of our industry and also to promote our extensive range of products together with construction solutions.

At this point I believe we have made a good start, and hopefully this will continue into the



Incoming President Gavin Stollery with Matt Perrella

future. Our success is measurable and providing we continue to capture market share our industry will grow and benefit all stake holders.

I have enjoyed my term as President and have found it both challenging and rewarding.

I would like to take this opportunity to thank my fellow Directors for their strong support and contribution throughout my term.

It is with great pleasure that I introduce and welcome our new President Gavin Stollery, General Manager of Giroto Precast (Victoria). Gavin has been involved in our industry for the past sixteen years, with the Association for nine years and has served on the Board of Directors for the past four years.

On behalf of the Board I wish Gavin every success in his term as President, and can assure him of our full support.

I take this opportunity to wish everyone a merry Christmas and a happy and prosperous New Year.

precast flooring... easy

Go to www.npcaa.com.au

Builder chooses precast for transfer podium

Not only has precast been the number one construction choice for Sydney builder Baseline Constructions over the last eight years, but their decision to construct the podium transfer structure of Stage 3 of Metro Village in Sydney's Rosebery has demonstrated the benefits to be gained from this more sophisticated exploitation of the potential of precast.

Hollowcore spans between beamshells

The decision to use precast to construct the podium for stage 3 was influenced by the structural layout that had the transfer beams in the podium located directly under the main loadbearing walls of the structure. Beamshells, generally 2000mm wide, were used with 150mm, 200mm and 250mm thick hollowcore floor planks spanning between the beamshells. The beamshells had all the bottom reinforcing that is required by the engineer cast in them with the top steel fixed on site. The flexibility of the beamshells, propped during construction, allows for simple column to beam connection. By also varying the heights of the beamshells, the steps required in the slab by the architect were easily catered for.

"The benefits of using precast in a project like this are considerable", according to Baseline Managing Director, Nicholas Bettar.

The 100 metre long working deck was erected in only 8 days and allowed the builder to quickly come out of the ground. The ground floor slab was left behind and, with the podium complete and the building being constructed in 2 halves, the builder was then able to work on 2 major work faces at all times thus keeping the erection and concrete finishing crews on site continuously.

The 60 apartments in Stage 3 were then constructed using loadbearing walling, hollowcore flooring and Transfloor balconies supplied by Rescrete Industries. The 1315 precast elements in this stage were erected in 45 days. "Site preparations began in late May of this year and construction is planned to be completed by February 2005" says Mr Bettar.

Metro transforms inner Sydney

As part of Green Square, (the master plan for the transformation of the inner Sydney industrial area covering the suburbs of Zetland, Alexandria, Beaconsfield and Rosebery), Metro Village is a collection of seven buildings built over 3 stages.



Hollowcore planks span between 2000mm-wide beamshells to form the transfer podium.

Stage 1 was completed in December 2002. It consisted of 1200 square metres of retail space and 111 apartments in 3 buildings: two 7-storey buildings and one 5-storey building and used precast panel walling and hollowcore flooring. A turnaround time of only 12 months was achieved, which included repatriation of contamination, piling, detailed excavation and footings.

Stage 2 also used precast panel walling and hollowcore flooring. Completed in January 2004, the 14 months construction time incorporated 2300 square metres of retail space and 104 apartments again in 3 buildings: one 7-storey buildings and two 5-storey buildings, and again including repatriation of contamination, piling, detailed excavation and footings.

Precast superior to insitu

The efficiency and simplicity of precast provided the solution to the builder's search for a faster delivery of a better product. Being quality tested and manufactured under controlled conditions, precast represents a superior product to insitu, plus there is the added benefit of an overall faster construction time which brings considerable cost savings.

The 487 hectare Green Square area is believed to be Australia's largest urban renewal project. When completed in 2016, the urban renewal of the area will see more than 25,000 people living in an area where industrial buildings once stood.

Project Team:

Precast Flooring, Stage 2 & 3 Walling:
Rescrete Industries Pty Ltd

Precast Stage 1 Walling:
Giroto Precast Pty Ltd

Architect: ARC Architects

Engineer: Meinhardt (NSW) Pty Ltd

Builder: Baseline Constructions Pty Ltd

efficiency & simplicity

KFC Comes back to Precast



KFC's signature 'Cupola'.

Nothing illustrates the Precast Advantage better than a major customer returning to precast after trying something else. It would be hard to find a more major customer than KFC, which is the world's largest restaurant company, with nearly 32,500 restaurants in more than 100 countries around the world, serving eight million customers each day. KFC opens approximately two restaurants each day worldwide.

Back in the 90's, KFC in Australia embraced precast concrete walls for freestanding restaurants with the result that many of their new buildings appeared in our suburbs and towns in a phase of rapid expansion. Precast delivered on speed of construction and quality. Then along came a steel-framed walling system that was being used elsewhere, so the decision was made to switch from precast. For a few years, most new KFC restaurants went up in steel framing with external sheathing and a masonry inner skin.

Precast was always competitive and showed advantages in several areas that eventually bought KFC back to reconsidering the Precast Advantage. The advantages of precast compared to the previous steel frame design include lower cost and less time on site - both predominantly arising from

the reduction in linings and finishes to wall surfaces. Since the decision to go with precast, around 10 new freestanding restaurants have been built in NSW, plus some in other States, during the past two years.

Standard design adapted

The innovative precast design was developed and prepared by Taylor Civil and Structural. The design is a standard one, but most sites incorporate some site-specific changes, to which precast has been relatively easy to adapt.

Interesting Precast Advantage design features on the buildings to date, include the use of precast concrete columns as identification elements in KFC's signature 'Cupola.' The columns have a cast-in steel base plate for fast erection. The precast walls permit the use of a set-down concrete roof panel to support most of the air-conditioning plant, offering greater durability than a metal roof and making it much easier to support equipment. The roof panel is 150mm thick, with two layers of mesh, made waterproof by the addition of a Xypex additive, thereby needing no membrane or other roof covering.

Services cast-in to panels

The precast walls are 150 thick with one layer of mesh located centrally, plus trimmer bars at openings. The precast panels are of varying width, with recesses in the face to create architectural features. The panel design incorporates penetrations for mechanical services. The specified concrete strength for all panels is 32 MPa. Being factory-cast on steel forms, the panels require only paint for a high quality finish. Services in the kitchen area are pre-planned and cast-in to the wall panels to ensure a smooth hygienic wall surface.

A simple raft slab is typical for most sites having the advantage that only one concrete pour is required, requiring less concrete than alternative construction, and permitting the precast walls and steel framed roof to be erected more speedily.

Horizontal panels give a clean, monolithic appearance

Sasso Precast Concrete produced and erected the precast panels for the new KFC Richmond

restaurant in Sydney. The manufacturer, in early involvement, provided close consultation with the project engineers. The design team made a selection of two rows of horizontal panels rather than vertical panels. This was done both to reduce the number of panels, and because it results in less visible joints, particularly in architecturally sensitive areas. This choice has worked well in practice resulting in a clean monolithic appearance. The speed of construction achieved and the quality of finish is a testament to the skill of both Sasso Precast and the design team. The outcome of this team approach is a product that reflects the quality and cleanliness that is synonymous with the worldwide image of KFC.

Other recent KFC's with the same team, were South Nowra and Glenmore Park.

The positives of precast have been amply demonstrated, with the unique aesthetic appearance of KFC restaurants being delivered in this most effective of building methods.

KFC Richmond NSW

Client:

YUM! Restaurants International (trading as KFC)

Engineer Structural and Civil:

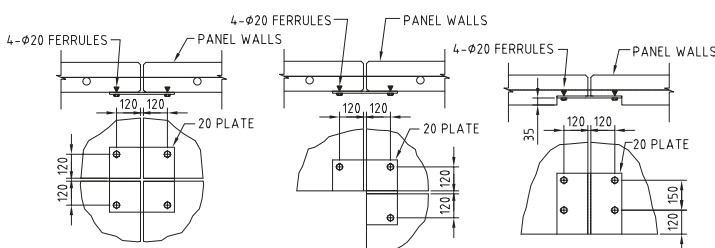
Taylor Civil and Structural

Builder: Aspect Design and Development Pty Ltd

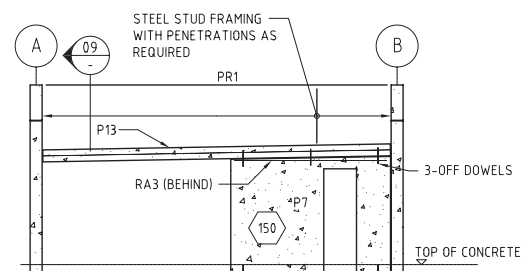
Precaster: Sasso Precast Pty Ltd



Precast walls in the new KFC Richmond include architectural recesses, penetrations for mechanical equipment, connection points for structural steel and connection points for adjoining panels.



Typical wall panel connection detail.



Typical section showing set-down roof panel.

■ Precast Flooring – Easy, Efficient, Quick, Economical.

Property group St Hilliers recently used HumeSlab® in the construction of a six storey 120 room hotel at Mascot in Sydney's Eastern Suburbs. Recognised for seeking innovative building methods, St Hilliers adopted the Humes' precast concrete flooring system, because of the product's proven ability to deliver construction efficiencies.

HumeSlab® is a precast concrete flooring formwork system, which uses a steel lattice girder truss reinforcement as an innovative component of its reinforcement.

The lattice girder truss system allows the panels to span distances up to 4.5 metres unpropped but, depending on overall slab thickness, is generally kept to 2.5m. In addition, the truss has the role of effecting a connection with the topping concrete. This design minimises the amount of insitu topping concrete required.

The contract to supply more than 3300m² of flooring to St Hilliers for the Mascot Formule One Hotel followed the successful delivery of a similar project by St Hilliers at Darlinghurst in Sydney where the system was also used. In both projects, the system was effective in reducing construction times and costs through its ability to eliminate the need for false ceilings and site space for storage and waste.

“The precast concrete soffit finish, with panel joints set, is suitable as a ceiling finish and removes the need for plasterboard or hardsetting in living areas.” according to St Hilliers Project Manager, Damien Schmidt.

“Precast flooring proved more cost effective than conventional formwork on this project, with the added benefit of reducing cycle times, reducing site labour and reducing the amount of waste normally generated by the formwork trade,” he says.

In the case of the Mascot hotel constructed by St Hilliers, more than 250 panels at 5.2m long were positioned to bear 40mm onto loadbearing precast walls. Props were generally not necessary as there were room dividing midspan loadbearing walls.

The 50MPa panels, with a class 2 soffit finish, were progressively delivered to site between August 2003 and late October 2003.

Also marketed in New South Wales as

Transfloor, the product has attracted the attention of numerous other building companies with negotiations now underway to use the product in several new major projects across the State. The beauty of this product is its flexibility, in that it can be custom-designed to project-specific needs, as penetrations and irregular shapes are easily provided for, making it suitable for complex residential and commercial building projects.

The company's commitment to meeting growing market demand for precast flooring and precast in general is reflected in the company's undercover all weather facility at its Blacktown plant, which has been purpose-built for the product's manufacture.

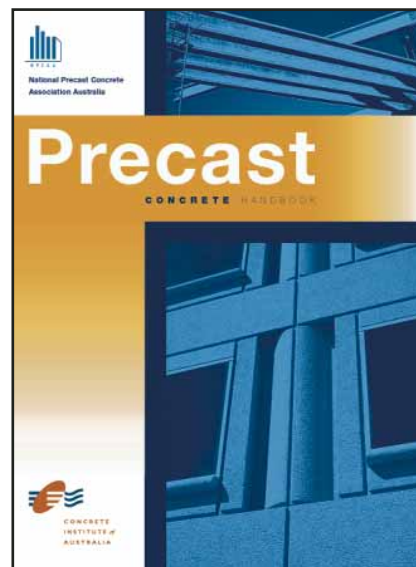
HumeSlab® is now available along the eastern seaboard of Australia with manufacturing capability from Townsville, Rockhampton, Brisbane and Sydney.

Project Team:

- Architect:** Reid Campbell (NSW) Pty Ltd
- Consulting Engineer:** Hyder Consulting Pty Ltd
- Precast Manufacturer:** Humes (NSW)



More than 3300m² of precast flooring were supplied for the Mascot Hotel.



Precast

CONCRETE HANDBOOK

CIA Z48—2002 *Precast Concrete Handbook* can be purchased from **STANDARDS AUSTRALIA's Customer Service Centre:**

- tel:** 1300 65 46 46
- fax:** 1300 65 49 49
- email:** sales@standards.com.au
- post:** Customer Service Centre
Reply Paid 5420
SYDNEY NSW 2001

www.standards.com.au

■ Precast Solutions

member profile

Since its inception in 1995 the team at Precast Solutions has worked to develop a range of propriety systems for creating horizontal platforms for floors and roofs.

- Smartfloor™ is an engineered product that consists of precast, prestressed concrete planks designed as one way construction for floors, for spans up to 8 metres.
- Shellbeam is a 2400 or 1200 wide beam for use in conjunction with Smartfloor.
- Maxitee™ flooring offers the client light, economical structural sections, with unpropped spans of up to 15 metres under most load conditions.
- Smartfloor™ requires minimal propping at construction.
- Smartbeam™, which is an off-the-shelf composite beam of up to 1 metre wide and 0.3 metre deep.
- Smartwall™ is an 80mm thick prestressed noise barrier panel in plain or decorative finishes.

This enables Precast Solutions to offer customers the following benefits of precast flooring:

- Speed of construction. Off-site casting occurs simultaneously while onsite construction proceeds.
- Substantial reduction in labour intensive formwork trades.
- Immediate solid working platform.
- Minimal reinforcing bar to tie, only mesh to place.
- Minimal propping, allowing immediate access below for sub-trades.
- Reduced site handling and cleanup costs.
- 50%-plus reduction in the amount of wet concrete to place at each floor level.

Precast Solutions is situated in a 40,000 square metre factory just off the Pacific Highway midway between Brisbane and the Gold Coast. From start-up in 1995, Precast Solutions has grown into Queensland's largest supplier of precast floors, earning a reputation for quality and service.

Precast Solutions has an ongoing commitment to research, development and innovation that has led to the development of all the registered products listed above, thus ensuring that customers are offered the latest precast technology. Customers can expect quality, flexibility, buildability and savings, from plant-manufactured precast concrete products, produced year-round under a stringent quality assurance programme.

Recent projects include a resort at Byron Bay and an office building in Brisbane. In the former case Precast Solutions' Smartfloor product was chosen for all three stages of the Byron Resort Project where more than 5000 sq m has been supplied.

According to the builder, Glenzeil Pty Ltd, Smartfloor was chosen ahead of conventional insitu options because it offered benefits in, speed of construction, reduced site labour and sub-trades along with immediate access below for fit outs.

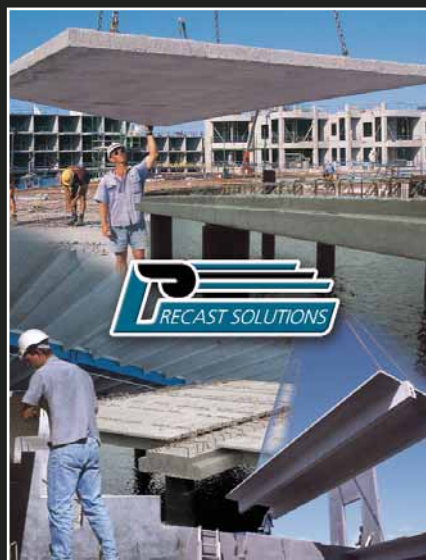
In the latter case the Maxitee flooring system combined with precast wall panels enabled the three story structure to be erected in only two days. With a site width of 12 metres, Maxitees were able to span boundary to boundary with no propping during construction. Walls were erected and Maxitees were placed and fixed off before the next level of walls was stood. Once the structure was erected, 80mm of topping over the Maxitee™ was all that was required, to tie the structure together.

Being a consulting engineer, the client had considerable experience in the design and the use of precast walls and floors, so precast was the obvious choice. There was a huge advantage in speed with all 3 levels erected in two days. Because Maxitees span up to 15 metres unpropped this gave immediate access below for fit out. The site was less congested which made it a cleaner and safer site to work on.

The design and manufacture of precast prestressed concrete requires experience knowledge and skill. Precast Solutions put all these together, to bring you a complete service from design through to installation.

For more information and to view Precast Solution's products go to:

www.precastsolutions.com.au



National Precast Concrete Association Australia

CORPORATE MEMBERS

- Asurco Contracting ■ [08] 8240 0999
- Bianco Walling Constress ■ [08] 8359 0666
- Delta Corporation ■ [08] 9296 4111
- Duggans Concrete ■ [03] 6266 3204
- Georgiou Group Precast ■ [08] 92099200
- Giroto Precast ■ [03] 9794 5185 or [02] 9608 5100
- Hicrete Precast SA ■ [08] 8260 1577
- Hollow Core Concrete ■ [03] 9369 4944
- Humes (NSW) ■ [02] 9832 5537
- Paragon Precast Industries ■ [08] 9454 9300
- Precast Concrete ■ [07] 3271 2766
- Precast Solutions ■ [07] 3807 4511
- Precast WA ■ [08] 9332 6310
- Reinforced Earth ■ [02] 9910 9910
- Rescrete Industries ■ [02] 9627 2666
- Rocla Building Products ■ [02] 9928 3552
- SA Precast ■ [08] 8346 1771
- Sasso Precast Concrete ■ [02] 9604 9444
- Structural Concrete Industries ■ [02] 9411 7764
- Telford Precast ■ [07] 3265 1999
- Ultrafloor ■ [02] 4932 4433 or [03] 9614 1787
- Westkon Precast Concrete ■ [03] 9312 3688

ASSOCIATE MEMBERS

- Ability Building Chemicals ■ [03] 9457 6488
- Actech International ■ [03] 9357 3366
- Baseline Constructions ■ [02] 9080 2222
- Blue Circle Southern Cement ■ [02] 9033 4000
- Camsons Quarry Products ■ [02] 9675 6111
- Cathay Pigments Australasia ■ [02] 8788 9088
- Cement Australia ■ [07] 3335 3096
- Grace Construction Products ■ [07] 3276 3809
- Hallweld Bennett ■ [08] 8347 0800
- Hilti (Aust) ■ [13] 12 92
- Huntsman Composites ■ [08] 8347 4666
- LW Contracting ■ [02] 4735 6716
- MBT (Australia) ■ [02] 9624 4200
- OneSteel Reinforcing ■ [02] 8424 9802
- Ramset Fasteners ■ 1300 780 063
- Reid Construction Systems ■ [03] 8792 3391
- RJB Industries ■ [03] 9794 0802
- Sika Aust ■ [02] 9725 1145
- Smorgon ARC ■ [03] 9279 5549
- Sunstate Cement ■ [07] 3895 1199
- Xypex Australia ■ [02] 6040 2444

OVERSEAS MEMBERS

- Cem-FIL International ■ [66 2] 3660240
- Golik Precast Ltd (Hong Kong) ■ 852-2634 1818
- Halfen-Deha Pte Ltd (Singapore) ■ 02 9642 8396
- Redland Precast Concrete Products ■ 852-25900328

The information provided in this publication is of a general nature and should not be regarded as specific advice. Readers are cautioned to seek appropriate professional advice pertinent to the specific nature of their interest.

Published by
National Precast Concrete Association Australia

1/184 Old Canterbury Rd
Summer Hill NSW 2130 Australia
PO Box 396 Summer Hill NSW 2130
Tel [02] 9799 3421 Fax [02] 9799 8423
Email: info@npcaa.com.au
Executive Officer - Sarah Moore
www.npcaa.com.au