



PRECASTER

ACN 051 987 181 • ISSN 1037-9908

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Principal's glory

The Kerrie Murphy Building, a new five level primary school building commissioned by International Grammar School in Ultimo Sydney, is a classic example of the beauty, practicality and efficiency of a total precast structure. Named after former principal Kerrie Murphy, the building houses a primary school library, a ground floor covered outdoor learning area, languages faculty offices and a multipurpose space. The fully accessible roof can be converted to an outdoor play area shaded by an array of photovoltaic cells.

Michael Heenan, Principal of Allen Jack+Cottier Architects (AJ+C), had previously used Hanson Precast on the international award-winning Sport and Recreation Hall in Berry NSW, and wished to explore more possibilities in this building using the techniques previously developed for Berry. The brief this time was to deliver an energy efficient, modern building which harmonised with its vibrant surrounds.

AJ+C's design incorporates a number of environmentally sustainable principles. The building is a thermodynamic space with highly thermally-efficient walls and windows, together with intelligent cross ventilation to minimise the need for artificial heating and cooling and sensor-automated lighting. The concrete mixes and steel reinforcement for the precast elements contain a percentage of recycled material, and together with the use of insulated precast sandwich panels which feature high thermal mass on the inside of the insulation envelope, contributed 3 Green Star points to the project. Its strong design has already won the project the 2011 Viridian Vision Award for Commercial Energy Efficiency.

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The AJ+C design team gave special consideration to the colour and texture for the exterior walling to ensure it would complement Ultimo's historical brick warehouses. The designers chose a burnt terracotta finish with a replicated scattered iron spot that added a metallic lustre to the panels.

Precast concrete was used for external walls, lift shaft walls and the curved walls of the stairwell. Precast was also used for the floors with 300 thick hollowcore floor planks spanning almost 13 metres onto the external load bearing precast walls. In all, 128 precast elements were manufactured for the project.

Careful planning and co-ordination using a 3D model during the shop drawing process allowed for the accurate engineering of the precast structure. Of greatest challenge, was the manufacture of the 12 large sandwich panels (each with fourteen amorphous holes) for the two street elevations. Working in association with AJ+C, Hanson achieved the random shapes by using rubber liners that had been cast from timber patterns. Detailing included a rebate to allow external glazing to be fitted. The insulating layer was profiled around the holes

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Photography: Michael Nicholson

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prior to casting the two layers of concrete. Each panel was produced with an off-form finish and then Nawkaw-stained in three stages inside the precast factory.

The curved off-form off-white stairwell panels were cast from purpose-built moulds, which were fabricated from full seamless sheets of rolled steel.

Erection in two stages

Erection of the precast elements required careful planning as all the usual site conditions of an inner city development applied. The building was erected over only 8 days in 2 stages, with each floor being constructed in only 3.5 hours. The rear section of the building that included the lift, curved stairwell, rear walls and a small section of the flooring, was erected first. A 130 tonne mobile crane located within the site was used for the 4 separate visits for this first stage. Temporary bracing of the precast was critical during this stage, as there was no insitu structure to brace the panels. This was kept in place until after the second stage elements were erected and the concrete topping to the planks was poured.

The second stage required a 300 tonne mobile crane to place the huge 16 tonne amorphous stained wall panels, the positioning of which was almost 20 metres from the crane. The rear wall panels and the floor planks in stage 2 were also erected with the same crane. The street was closed to traffic with police and traffic controllers controlling local traffic and pedestrians.

Whilst the Kerrie Murphy Building looks highly intricate and expensive, it was actually more cost effective per square metre than the average BER school hall. The new structure was built to budget and on schedule by Baseline Constructions, with \$3 million in funding from the BER programme. In Kerrie Murphy's own words, "As well as being beautiful, the spaces are light and joyful and will inspire play and learning".

- Architect:** Allen Jack+Cottier Architects
- Engineer:** Taylor Thomson Whitting
- Builder:** Baseline Constructions
- Precast manufacturer:** Hanson Precast



Photography: Michael Nicholson

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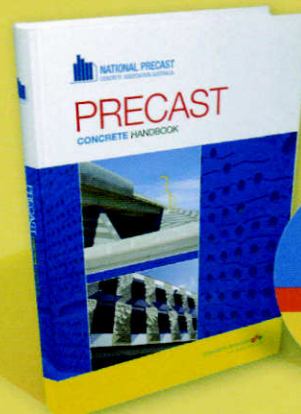
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