

Cimitiere House - 5 Star Green Building Stars Precast

Cimitiere House is Tasmania's first Green Building design and represents a fantastic opportunity for Launceston's business community. Committed to achieving a 5 Green Star rating design, this building is situated in the CBD, offers large tenancies and good parking, and is a wonderful environment for business owners and employees to work. The development provides four levels or around 4600m² of office space, with the ground floor housing a café, retail tenancies and a car park.

Cimitiere House will set the standard for future commercial premises in Tasmania. An integral part of achieving this outstanding result is the inclusion of a precast concrete structure by project architects Glenn Smith Associates and project engineers Pitt & Sherry to incorporate numerous passive and low energy mechanical systems to produce a green building.

The smart design and fast construction features of the building permitted savings that can be allocated to more important areas such as sustainability and energy saving performance. Developer, Enmore Enterprises, say that tenants combining the energy saving potential with strategic energy management practices can theoretically save up to 70% on their power bills.

Precast manufacturer

Hollow Core Concrete
Duggans

Builder/head contractor

Enmore Enterprises
Fairbrother

Architect

Glen Smith & Associates

Engineer

Pitt & Sherry

www.nationalprecast.com.au



Victorian precast concrete manufacturer Hollow Core Concrete supplied 4,600 square metres of hollowcore precast flooring planks to the 5-storey building. Apart from the ground floor being in in-situ concrete, all remaining floors were in hollowcore to eliminate the need for expensive and time-consuming formwork.



Energy efficient, low cost heating and cooling

The selection of hollowcore precast flooring allowed the design team to incorporate an ingenious energy efficient heating, cooling and ventilation system that uses the high thermal mass of hollowcore flooring. The system works by distributing warmed or cooled fresh air through the hollow cores at low speeds, allowing prolonged contact between the air and the slabs. This enables the concrete to behave as passive heat exchange elements that release heat to, or absorb heat from, the air in the slabs. External temperature variations are not reproduced inside the building because the maximum heat level reached during the day is delayed by the thermal mass of the building until counterbalanced by the cool of the night.

In the case of Cimitiere House, cool air from the South side of the building is channelled through the voids in the hollowcore planks. The cool air is circulated through the hollowcore and is ducted into office spaces. During the day, heat generated

within the building is absorbed directly into the exposed concrete slab. During the cooler months, solar heated external air ducts on the North side of the building provide partially warmed air that is passed over ceiling mounted hydronic radiators

which are fixed to the exposed hollowcore soffits, providing warm air without drafts, thereby reducing energy costs.

Precast walls add to thermal mass benefit

The precast flooring in effect becomes an active component of a sophisticated energy management system aided by the additional thermal mass of the precast wall panels. As well as the precast flooring absorbing the internal daytime heat, the precast walls provide added benefit, also absorbing heat during the day. At absolutely no cost, they release the heat in a thermal delay cycle during the cooler night, providing comfortable conditions for the morning arrival of staff.

A total of 199 precast loadbearing wall panels, columns and façade panels were supplied to the project by Tasmanian precast concrete manufacturer Duggans. Loadbearing wall panels comprised the West and South elevations, while the attractive façade panels facing the street comprised the East and North elevations. Façade treatment and external finishes to the precast ranged from off-form, exposed aggregate, to polished architectural panels. The finishes to the precast were achieved with exposed structural aggregate, or polished where high quality architectural finishes were required.

Wall panels incorporated 20% slag aggregate from BHP's Temco plant at Bell Bay Tasmania to enhance the environmental aspect of recycling waste material.

Wall panels of size approximately 3200mm x 2800mm ranged in thickness – with 100mm, 150mm and 200mm (with corbel) being typical. The vertical joint detail incorporated grout keys at 600mm centres. Loadbearing panel fixing at floors use cast-in inserts with a topping slab cast into rebates. The panels were cast in Duggans' factory on steel tables, and achieved an initial concrete strength at lifting of 25-32 MPa.

The end result is well summed up by the State Premier David Bartlett who said at the opening: "Developments like this one will help to reduce Tasmania's greenhouse gas emissions from the built environment. Buildings which consider environmentally sustainable design are also usually healthier homes and healthier workplaces with increased productivity."

Environmental features that make for an outstanding building

- Cimitiere House has been designed to be a healthy building with clean, fresh air, helping staff stay happy, alert and more effective at work, increasing productivity and reducing sick days and staff turnover.
- The development has been registered as a Five Star Green Star development under the Green Building Council of Australia's Green Star rating tool (Office Design).
- The Green Star assessment process evaluates building projects or existing buildings against eight environmental impact categories (management, indoor environment quality, energy, transport, water, building materials, land use and ecology, emissions). The assessment process also takes innovation into consideration.
- The atrium and a series of outdoor spaces are available to share and mingle with clients and adjacent businesses.
- The building uses natural light, recycled water, solar-generated heating and Tasmanian recyclable building materials.
- There is a low level of power usage and reduced air emissions, making use of natural cross-flow ventilation. No airconditioning is needed.

Glenn Smith, the architect behind Cimitiere House, found that building green office space can be more economical than building conventional office spaces.

"Although Cimitiere House wasn't the first environmentally aware building we have designed, it is the first opportunity we have had to design a building specifically aimed at Green Star registration and to meet all the criteria. By working with local consultants and contractors, we were able to meet the Green Star criteria at a cost equal to or better than conventional office construction here in Launceston. At around \$1600 a square metre it proves that it is affordable to build green and attract a larger number of quality tenants," Mr Smith said.