Bendigo Hospital

Stage 2: Multi-level car park and conference centre

Early precaster involvement reaps rewards for hospital conference centre and car park

Speed of construction, high quality architectural finishes, a long span design, and a Class 2 to 3 fire rating were among the requirements for a state-of-the-art redevelopment of Bendigo Hospital.

At $630 million, Bendigo Hospital is Victoria's largest regional hospital. With a clever design that fuses Bendigo's natural environment and vernacular architecture with a holistic approach to healthcare, the new Hospital is morphologically divided into distinct sections, featuring healthcare facilities, retail facilities, a childcare centre, and a hotel.

The project has been delivered over two stages, with Stage 1 comprising the hotel, childcare centre, and hospital itself, and Stage 2 consisting of a multi-level car park, convention centre, helipad, and bridge link.

Precaster
Hollow Core Concrete

Client
Exemplar Health / Lendlease

Architect
Bates Smart, Silver Thomas Hanley

Builder
Lendlease

Engineer
Irwinconsult

www.nationalprecast.com.au

PRECASTER ENGAGED FROM CONCEPTION TO COMPLETION

Hollow Core Concrete's Managing Director, Peter Healy, says the numerous project requirements were addressed by opting for a precast methodology and by being involved from the project's outset.

The Melbourne-based National Precast member was engaged early in Stage 2 of the project to provide detailed 'in service' design, construction methodology, erection design, and project modelling for the multi-level car park and conference centre. Hollow Core then manufactured, transported, and erected all precast elements and completed the required connections and screeding on site.

"The resulting experience reinforced the significance of thorough planning, detailed design, and accurate modelling as critical conditions for a successful project in precast concrete construction," Mr Healy explains.

HOLLOWCORE
HOLLOW CORE CONCRETE PTY LTD

NATIONAL PRECAST
CONCRETE ASSOCIATION AUSTRALIA
making precast easy

LONG SPANS AND UNIQUE GEOMETRY

The multi-level car park and conference centre structures are both based on an efficient precast concrete system, consisting of hollowcore and solid floor planks, beams, columns, stairs, and wall panels.

The larger phase of Stage 2 – the multi-level car park – is based on a split-level car park area, with vehicle ramps at each end. It features a split-level slab on the ground, five levels of suspended floors to one half, and four levels of suspended floor to the other half. The total car park floor area is approximately 17,000m2. The conference centre comprises two large suspended floor areas and one smaller suspended floor area. With a floor area of approximately 2,000m2, the geometry of this phase was much simpler than that of the car park.

Hollowcore floor planks are the most common structural element used for the floors of both structures, and range from 205mm, to 420mm in depth. According to Mr Healy, they are ideal for long spans. "The planks are prestressed and relatively light for their structural depth. The clear, simply supported spans that are achieved by these planks are in excess of 16 metres. Solid precast planks are suitable for more complicated geometry of the floor, where small spans are required," Mr Healy details.

The precast columns feature specific geometry to suit project requirements. They include the spine wall columns that act together with the spine wall beams to create the central spine of the car park.

FUNCTION MEETS FORM

4,500m2 of precast wall panels serve the project's structural and architectural needs. Coloured concrete with a specially-designed concrete mix was used for the panels, and two types of surface finishes were applied to the face. Some areas have an acid washed surface finish, while some have been sand blasted. "The majority of wall panels were subject to a special treatment to achieve the required architectural appearance. As well as enclosing the structures, most of the wall panels are used for support of the floors and to provide lateral stability," Mr Healy says.

FIVE MONTH SCHEDULE IMPRESSES

The precast concrete system was effectively completed – from manufacture to installation – in less than five months, exceeding project requirements. "This system provided immediate access and created an instant work area on the newly-erected floors and, only a few days later, the screeding was also finished. This gave access to all the follow-up trades for installation of services," Mr Healy details.

AWARD-WINNING ARCHITECTURE

As a tribute to its excellence, Bendigo Hospital won the Sir Zelman Cowen Award for Public Architecture at the Australian Institute of Architect's 2018 National Architecture Awards. The project has been celebrated for integrating sustainable thinking into all elements of its design, construction, and systems to create a healing and therapeutic environment. It is considered a key milestone for central Victoria and will service the region well into the future. "We are certainly proud to have helped create a structure that will serve the Bendigo community for many years to come," Mr Healy says.