



A construction system that keeps up with Sydney's growth

Gregory Hills has become one of Sydney's fastest growing towns, and as a key region within the NSW Government's South West growth corridor, its development is only set to continue. As a designated growth hub, Gregory Hills is experiencing significant economic activity—and positioned at the epicentre of this hub is the Gregory Hills Health & Business Centre.

The Gregory Hills Health & Business Centre is a mix-use development that features a medical centre, commercial suites, retail stores, food and beverage stores, and bulky goods retailers. Here, the construction of a three-storey building and underground car park – with provision for 164 cars – boasts an efficient off-site building method.

TOTAL PRECAST CONCRETE METHOD

The designs for the building and car park were based on a full precast concrete system, which included wall panels, floors, columns, and beams. All precast elements were manufactured by National Precast member, Alpha Precast.

The internal walls and façade comprise 619 wall panels, all of which adopted a smooth Class 2 finish, as per AS 3610 Formwork for concrete. The panels have served the project's structural and aesthetic ambitions.

As well, 58 reinforced concrete columns and 79 horizontal prestressed beams were supplied by the precaster. The beams sit atop the columns, which allowed for 5,200 square metres of prestressed Vee Slab flooring to be installed. The flooring consisted of a flat base slab, with concrete ribs and void formers on top.

Precaster

Alpha Precast

Client

Icon Building & Construction

Architect

A & N Design

Builder

Icon Building & Design

Engineer

Valaire & Associates

www.nationalprecast.com.au



FULLY SELF-SUPPORTING STRUCTURE

The project was built using the Valaire Vee Slab Framing System—a system that is fully self-supporting throughout construction, with only column alignment props required. The system is based on the Valaire Vee Slab, which is a long-span precast floor panel.

Director of Valaire and Associates and Inventor of the system, Trevor Valaire, says this involved a unique methodology.

“The beams are joined at the structural inflection point, approximately 20 per cent of the span length from the columns. Beams constructed in this manner behave very much like continuous beams, which has resulted in a stiff structure with shallow beam depths,” Mr Valaire explains.

“The precast columns have been fully fixed to the Vee Spines, which provided strength and stability during construction, and then sway resistance in service. The slabs are supported by load bearing precast walls around the perimeter.”

Alpha Precast’s General Manager, Daniel Nassar, says the system also provided on-site construction efficiencies.

“The system is able to span long distances under construction loading, without the need for propping. This means as soon as a slab was installed, it served as an instant working platform,” Mr Nassar details.

BUILDER SEES BENEFITS

Opting for a full precast concrete solution transformed the project’s building process by moving work off site and into a controlled factory environment. Unaffected by varying site conditions, the precaster’s factory environment allowed for the manufacturing process to be concurrent with site works.

According to Icon Building & Construction’s General Manager, Ralph Iorfino, this process had significant time and safety benefits.

“We chose precast for speed of construction and ease of installation. This also meant the worksite was less cluttered and much safer,” Mr Iorfino says.

The floor of the building was constructed over the car park with provisions for truck access, which necessitated long spans combined with high live loads. All columns, beams, and Vee Slabs were erected by mobile crane in just six days.

“The installation on site went perfectly, with no modification required to the precast components,” Mr Valaire reveals.

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