



The Core Centre, Torquay

The Core Centre Torquay is a structure that incorporates two suspended concrete floors, primarily used for carparking, retail and office space. A full precast solution was offered by Hollow Core Concrete in-lieu of the originally documented in-situ scheme, to overcome a number of challenges and complexities including:

- The building was to have cantilevered beams and floors to allow large glass windows to maximise the shop front exposure.
- The ground floor consisted of the office ground floor and an external car park with a varying set-down from 1m to 1.2m over the basement.
- Irregular floor-to-floor heights, ramps and set downs were all required for achieving the complex architectural requirements of the project.
- An irregular geometry for each level resulted in a number of complicated connection details and transfer beams to allow for upper load-bearing support.
- Central stair void that was to provide a feature for the structure.

Upon review of the structure it was apparent that the proposed alternative precast structure would not only cater for the inherent complexities within the structure, but would also provide other benefits that were not possible with an in-situ concept, including:

- Over 16m spans throughout the building, allowing significantly more flexibility within the car-parking areas, office space and retail tenancies. The originally documented 18 columns within the car park was reduced to just four columns with the alternative scheme.

Precast manufacturer

Hollow Core Concrete

Builder

Max Findlay & Associates

Architect

Gary Puksand

Engineer

T.D & C

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- A significantly reduced on-site crew, reducing the occupational health and safety risks on the site.
- A six week saving in the construction program as a result of the full precast solution. The speed of construction was dramatically improved with the entire precast structure being constructed within eight working days (over a total of just two months). This provided a significant benefit to the tenants as this allowed the retail areas to be operational for the busy Christmas period.
- The high quality finish of both the precast components and the structural screeds led the tenants to leave much of the structure exposed.
- An estimated cost saving of 10% of the structure costs was achieved by using the precast alternative. This did not include the cost benefit of having tenancies occupied six weeks earlier and the benefit of the tenants fully operational during the busy Christmas period.
- The cantilevered beams and floors allowed large glass windows and maximised the shop front exposure.
- Irregular floor-to-floor heights, ramps and set downs were all achieved allowing for architectural freedom within the project. Precast transfer beams and associated connections were used to support the load-bearing components.
- The central stair void was created within the structure to achieve the architectural feature.
- The architectural scheme also offered very few walls within the structure so the lateral stability was a critical design requirement. The use of diaphragm action of the precast floor system, in combination with specially designed floor beams, allowed the required stability to be achieved.
- The need for significant formwork and scaffolding systems required for the in-situ system were eliminated with the alternative precast system.

One of the major benefits of precast on the project was the reduced risk on site. Due to the significantly reduced on-site crew, the project was not only constructed much faster than the in-situ scheme, saving some six weeks on the construction program, but was completed safely and with no on-site incidents.

This project illustrates how a complicated in-situ structure can be successfully re-designed as a total precast solution resulting in both cost and time savings to the overall project. Architectural freedom is not restricted by the use of a precast solution; in fact, it is enhanced. Challenging designs and lack of repetition are benefited by a system that allows for flexibility. The use of easy to produce component profiles, simple connections, standard products and careful detailing allow the most irregular projects to be constructed with the same benefits of other more widely accepted precast structures.