

## High performance storage with precast

**Project:** YOURSTORE Storage Estate

**Location:** Belrose, NSW

**Master Precaster:** Hollow Core Concrete  
(with Alpha Precast)

**Client:** YOURSTORE

**Engineer:** Hollow Core Concrete in conjunction  
with DSC Consulting Engineers

**Architect:** Figgis + Jefferson Tapa

**Builder:** Beach Constructions (NSW)

A new total precast structure in Belrose, NSW will provide 97 space options to clients requiring secure storage. The construction of the new two level facility adds to YOURSTORE's already extensive choice of storage locations around NSW. Not only secure, the spaces will also be naturally thermally regulated by the concrete's high thermal mass and will boast a fire rating of 4 hours.

### **Fast and efficient construction favours precast concrete**

Being a total precast structure, construction of the new facility was both cost and time efficient. National Precast Master Precaster Hollow Core Concrete designed, manufactured and installed various sized elements of precast walling, flooring, columns and beams between May and October of 2019.

### **Floors with high load capacities and long spans**

Both levels of the storage facility have been designed to allow for heavy vehicle loads of up to 15kPa whilst at the same time maintaining large open floor spans of up to 13.5m. Such heavy loads and long spans



were easily achieved with Hollow Core's signature hollow core floor planks. These floor planks require no propping, are flexible in design and allow for rapid on-site construction. Additionally, they were designed to achieve the maximum level of fire rating, being four hours.

### **Floors slabs plus beams, columns and walls**

The Melbourne based precaster manufactured and installed over 8,000m<sup>2</sup> of hollow core prestressed floor planks for the project.

The hollow core floor planks feature between four and six longitudinal cores that run through the length

of each plank. These cores have the primary purpose of reducing both weight and material, while still maintaining a maximum strength to achieve the loads and spans required. 12.7mm diameter prestressed steel tendons are cast into the planks for structural integrity, and to minimise deflection.

As well as the precast flooring, 45 prestressed columns measuring 400mm by 900mm and approximately 650 metres of prestressed, precast beams measuring between 600 and 800mm deep provided structural stability.

Precast elements were also utilised for the facility's walling. Over 5700m<sup>2</sup> of precast walling panels were designed and manufactured by Sydney-based National Precast member Alpha Precast. Wall panels ranged between 150 and 175mm thick and some of these panels had an architectural finish which formed the façade for parts of the building.

### **Why Precast?**

By choosing precast concrete for the facility's design and construction, the construction programme was shortened as a result of the speedy on-site installation of the precast elements. Speedy installation as well as efficient delivery and no need to set up and remove temporary formwork, significantly expedited construction and reduced labour costs. Choosing off-site manufactured precast, also meant that site construction was much less prone to weather, safety and quality-related delays.

### **Complex geometry made easy with 3D modelling**

Complex geometry in certain areas of the building demanded high levels of co-ordination between all of the parties involved. The use of 3D modelling software allowed Hollow Core to efficiently communicate with other parties, resulting in minimal design clashes during construction.

### **Co-operation delivers successful outcome**

Given the complexity of the structure, all parties are very satisfied with the outcome on site.

The project showcases a great use of precast components, all working together to deliver a solid and robust storage solution. It also demonstrates how a structure's complex geometry can be easily addressed using well-constructed, high tech and high quality precast elements.

The project is due to be finished in mid-2020.

### **National Precast members working together**

The YOURSTORE Storage Estate highlights the collaboration of two National Precast Members who both have a strong work ethic. Hollow Core Concrete (Melbourne) designed, manufactured and installed the flooring, beams and columns, while Alpha Precast (Sydney) designed, manufactured and installed the wall panels. Despite being located in different states, the two companies were able to successfully co-ordinate their designs through the utilization of 3D models.

