

Construction

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Cranes and precast speed building construction

SYDNEY company Baseline Constructions is a modern style of commercial builder. It chooses composite building methods (precast concrete and structural steel) for a number of reasons.

It finds that these methods allow work to be completed quickly, with a minimum of labour, risk and weather delays.

The methods chosen have a high reliance on craneage.

A recent job building a four-floor office for Harvey World Travel at Rockdale highlighted this.

The building fronted the busy Princes Highway, meaning that site access had to be from a narrow lane at the rear.

The building had a narrow frontage that widened at the rear.

The construction method chosen involved erecting the ground floor wall panels, then seating three-storey wall panels on top of them.

Prestressed hollow core floor sections were used for all floors except the transfer slab of the first floor.

An 80t crane was brought on site to erect the 7t ground floor panels.

Once this was done, a 300t crane was set up in the lane to commence lifting the 46 3-storey wall panels (a 200t crane could have done this but a 300t crane was available).



Lifting and turning 3-storey high (9.8m long) wall panel into position

These panels were typically 9.8m long, 2.6m wide, 200mm thick and weighed 12.7t, with the largest panel weighing 14.9t.

These panels were transported on their side, and turned to the vertical as they were lifted, with the assistance of a 25t crane on site.

To reduce craneage costs an 80t crane was brought onto site once the lift radius reduced to a point where this size crane could handle the panels, and this crane in turn was replaced by a 50t crane once the radius reduced further.

Raking shores were used as temporary props until roof panels and bracing were fixed to the panels.

At the wider rear section of the second and third floors a steel spline was built in the centre, with hollow core floor panels supported by this in the centre and the precast wall panels at the perimeter.

This method was chosen as it was impractical to use floor panels to span the full width.

Two Frannas were used to erect the floor planks once the raking shores were removed.

Because Baseline Constructions saw the difficulties in coordinating craneage with panel arrivals it contracted this

to the precasters Rescrete Industries.

Project manager Peter Groenewegen noted that the bulk of the panels were erected in four weeks, with all of this work completed in six weeks.

The whole project took six months - a very good time for this type of job and well ahead schedule.

Baseline Constructions is about to start work on modernising an older building that has been damaged by termites.

A precast lift core will be lifted in through the roof, and precast panels will be used to replace areas damaged by termites.

The company will shortly commence a long-term project to build an apartment complex using composite construction methods, and these have also been used on industrial complexes.

The availability of a range of crane sizes, including large cranes that can handle panels from the perimeter of a property, is important to the success of composite building methods.

To builders such as Baseline Constructions these methods mean fast construction times, relatively low staff numbers and minimal risks in meeting demanding schedules. These benefits flow on to the developers. ■



Aerial view of wall panel erection at narrow Rockdale site.