



Pullman Hotel integrates precast walls and floors for fast construction

Construction work on the new \$45M five-star Pullman Hotel (originally called the Sofitel) located on Olympic Boulevard in the Sydney Olympic Park was completed late last year. The hotel includes 212 hotel rooms on levels 3 to 16, located above a four-level podium.

Builder, St Hilliers, undertook a significant design review process to ensure that the selection of the building's facade and structure was the best choice from a range of alternatives to ensure the demanding level of quality and buildability required. An equally important requirement of the selection was to provide a stunning visual appearance, in keeping with the vibrant surrounds of the Hotel.

A load-bearing precast solution with fully precast floors for the tower was selected to meet these requirements and to reduce the need for in-situ concrete construction and its attendant formwork requirements. Particularly important in this decision was the choice of an Ultrafloor precast flooring system which minimised the construction time and site crew requirements. Fast construction was delivered by the combination of the flooring system, integrated with load-bearing solid precast wall panels from Sasso Precast that achieved a remarkable six-day floor to floor cycle.

Precast manufacturer

Ultrafloor (Aust)

Architect

RCG/PTW

Structural Engineer

Hyder Consulting

Builder

St Hilliers Contracting

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The Hotel achieves a striking visual impact with its imposing tower of painted precast concrete, with sunshades on the north and west faces and a southern four-storey wing constructed from a glass and panelled façade. The precast façade is moulded with changes in planes and over-sailing corner treatments that enhance the regular joint pattern and window modulation.

The façade comprises a total of 564 precast walling elements, the majority being 200mm thick for load-bearing capacity, with a total area of 8,600 square metres. From Level 7 up, there are 29 similar panels per floor. Concrete strengths of these panels varied from 80 MPa for Levels 2 and 3 internal walls to 60 MPa for the levels 4 and 6 internal walls, with 40MPa for the remainder of the superstructure. The panels, cast in steel moulds, were butt jointed at vertical joints, being caulked from both sides. The precast wall panels were tower craned by St Hilliers Installation with post-installation crews provided by Sasso.

The Ultrafloor precast flooring system spanned 8.6 metres between the load-bearing precast walls over the 650 square metre tower footprint and provided a safe and ready working platform. The flooring was temporarily propped off-centre to allow immediate access for following trades while providing the thinnest overall structural solution and satisfying the fire rating requirements. The available space between the beams was used to advantage for hydraulic and sprinkler services to minimise ceiling space. Prefabricated stair elements removed the need for any conventional formwork. The need for perimeter scaffolding edge at the of the floor was avoided as fall protection was provided by a temporary handrail system fixed to the wall panels prior to lifting into place. This was bolted on to the inside face of a 300mm wall upstand projecting above floor level.

As a company that delivers environmentally sustainable work, St Hilliers incorporated ESD principles for the Pullman including energy consumption reductions in relation to a comparable luxury hotel, water efficiency and the use of specific material selections. Being of 5-star standard, the hotel required a very high level of acoustic performance. The precast flooring system provided a significant air gap between the suspended ceiling and the structural slab soffit which obviated any requirement for additional acoustic insulation. The precast walls had an insulated wall lining to deliver an excellent acoustic and thermal performance. Internal transverse walls were of light-weight construction to optimise the construction program and to minimise costs.