



BIG DEVELOPERS COMBINE IN STEEL TO CONNECT FLINDERS LINK

In the heart of Adelaide three developers have combined to create Flinders Link. The new development is an exciting mix of office, retail and residential-use development. A complex of multistorey office buildings, residential and carparking is being built in five stages and is set to invigorate the inner city.

PT Building Services is a one-third partner developer with Kambitsis Group and Hindmarsh Group. The joint project at 58–80 Flinders and Wyatt Streets will replace the former Nolan Shannon Building, the rundown YMCA Building and the former BEA Motors site. A pedestrian walkway links Flinders and Pirie Streets and joins onto Freemasons Lane (stage 1); a multistorey public carpark, with 700 spaces (stage 2); the construction of a nine-storey apartment building fronting Wyatt Street with 36 two-bedroom apartments – to be known as “Dakota on Wyatt” (stage 3); multi-storey office building (stage 4); and an eight-storey office building for one tenant (stage 5).

The first three stages currently being built are the 700-space multilevel carpark

(stage 2) and IAG Building (stage 5) and the Santos Building (stage 4). Although described as stage 2 and 5 the carpark and IAG Building integrate, with the top two levels of the office building extending over the carpark.



▲ Stage 2 and 5 during construction

IAG has leased 100% of the building and taken naming rights while the oil and gas giant, Santos, has locked in a ten-year lease taking 100% of the

second new office building. These three stages of the project were planned for completion before March 2007 but were completed in July 2006.

The IAG Building has achieved a Five Star Green Energy Rating under the Green Building Council of Australia system. High performance double glazing cuts down heat penetration and loss while the air system monitors CO₂ emissions, cutting in and out as required. Low-use water appliances have been installed and all the fittings and fixtures have low volatile organic compounds (VOC). Ample bicycle parking has been provided.

Designed by architects HASSELL and engineered by Wallbridge & Gilbert, the façade of the new IAG office building is



a double glazed curtain wall on a steel-framed structure with composite metal decks and a central concrete core.



▲ Square hollow section columns support OneSteel primary beams.

Steel was perceived as the preferred material for several reasons. Greg Zafiridis, Walbridge & Gilbert's Project Engineer, said that as the carpark was designed to be built in steel it became the most logical choice for the adjoining building. "We saw that there was market

capability to deliver and erect the steel to meet the tight construction schedule imposed by the tenant's need to occupy the building within a tight timeframe." The Samaras Group detailed and fabricated the steelwork off site, delivering the structural steel to the site where they carried out the steel erection.

Chris Watkins, project architect for HASSELL said that: "The site covers an area of 6600 square metres to deliver a building with 12,000 square metres of office space over eight levels. To level six the grid is 8.4 x 8.4 metres but changes at level eight to 16.8 x 16.8. These top two levels extend over the carpark below to deliver large floor plates of 3000 square metres each."

To level six the building is supported on 508 x 10 circular hollow sections (CHS) filled with reinforced concrete. The column design was based on Corus Tubes Design Guide for Concrete Filled Columns. These columns have a fire resistance level (FRL) of 120 minutes.

Typical primary beams in the office and carpark are OneSteel **300PLUS**® 530UB92 primary beams and 410UB54 secondary beams. All internal beams of the office and the secondary beams of the carpark are composite with web side plate connections. The primary carpark beams and all edge beams and minor trimmers are non-composite and erected without propping.



▲ The structural steel decking is predominantly at spans of 2.8 metres.

Lateral resistance is provided via the combination of the central concrete lift and stair core, precast northern shear walls and K-bracing in the carpark.

OneSteel worked with the project team to provide information on the key benefits of structural steel, in particular the fire engineering design. This assistance ensured the most economical solution for the owner. More than 1600 tonnes of steelwork has gone into the project with most of the steel supplied by OneSteel Steel & Tube.

The structural steel decking has spans of 2.8 metres unpropped with a slab thickness of 140 millimetres. The floor to ceiling heights are 2.7 metres.

Fire engineering

The structural steel solution was adopted following a Fire Engineering assessment by The Centre for Environmental Safety and Risk Engineering (CESARE at University of Victoria. As the carpark module was limited to 25 metres in height with ample cross-flow ventilation, no sprinklers or mechanical ventilation were necessary. However, the additional two levels of office space over the carpark was required to include sprinklers.

Fire engineering evaluation demonstrated that concrete-filled 400x300x12.5 RHS and 300x300x10 SHS carpark columns provided an FRL of 60 minutes. OneSteel's Fire Design Note 3, Sept 2002 was the basis for these designs. These composite design columns also supports the two floors of office space located above the nine-storey carpark.

Using the Cardington UK test as a reference only, selected office floor beams required FRL 60 minimum. These beams were all primary with grid line secondary beams. Assessment dictated that they be painted with one coat of intumescent paint. The painting was undertaken after erection and included connections.

Greg Zafiridis of Wallbridge & Gilbert said that: "The fire engineering assessment resulted in a cost-effective, versatile structural steel solution which was simple to fabricate."

Thanks to steel the first stages of this exciting complex are now complete ahead of schedule and work has commenced on the next planned stages.

DEVELOPER

PT Building Services,
Kambitsis Group and
Hindmarsh Group

ARCHITECT

HASSELL

STRUCTURAL ENGINEER

Wallbridge & Gilbert

CIVIL ENGINEER

Wallbridge & Gilbert

STEELWORK CONTRACTOR

Samaras Group

STEEL DETAILER

Samaras Group

QUANTITY SURVEYOR

Currie & Brown

STEEL DISTRIBUTOR

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