

# LOW RISE LUXURY IN *Perth*

This case study was written at the time when OneSteel was part of BHP. In that context, in some instances within this case study, reference may be made to BHP.

Steel's inherent speed of construction and flexibility enabled the project team to realise their goal in building an exclusive multi-storey residential complex at 51 The Esplanade, South Perth.

Enjoying majestic city views across the foreshore, the apartment complex includes four 250 sqm units with only one unit per level, a roof deck for the Penthouse, communal facilities comprising swimming pool, gym, sauna, gazebo, full size tennis court and undercroft parking of four bays per unit.

The project, combining steel construction with four level full height external concrete tilt up panels, is one of the first of this type of construction in Australia.

Speed and ease of construction were paramount. The builder, George Ongarezos of Citiworld Equity Construction Group, said "We needed a building system that was not only going to be quick but also simple. A number of systems were considered before selecting steel beam/Bondek construction for the floors combined with the external full height tilt up panels. The construction program at design phase indicated significant time savings using this type of construction. Other systems investigated could not match steel's speed of construction. One often questions if preliminary programs will live up to expectations, however our early analysis was proved correct in that we had the whole structure up in 28 days."

Greater usable floor space is also achieved with steel construction because of the reduction in the number of internal columns



required. This offers the owners the benefits of having attractive open plan apartments and also provides flexibility for prospective buyers to tailor make room layouts to personal requirements.

The major floor members were 250UB31.4, 360UB44.7 and 360UB56.7 beams. Spans varied with the flexibility of the layout with maximum spans up to 7 metres. Column members comprised 150UC30.0 and tubular sections were typically 100x100SHS and 150x150SHS.

Off-site steel fabrication was underway while the tilt up panels were being cast on-site. Once the panels were erected and propped, the steel beams together with the Bondek steel floor deck were ready for site construction.

The simple system of steel beams supporting the composite steel decking and concrete floor slab allowed rapid construction. As each concrete floor slab was completed the next floor steel beams were erected.

George Ongarezos said "A benefit not considered in the planning stages was the cleanliness of the site. The steel beam and Bondek system is a winner in this area. Also as no formwork was required to be removed the following trades gained quicker and easier access to site".

Following trades commenced work once floors were poured. Two hour fire protection was economically achieved with an application of Monokote fire spray. An added benefit of firespraying was its acoustic qualities that deadened service sounds, in

particular the plumbing. Floor to floor heights were 3.2 metres and

ceiling heights varied throughout each unit. In some areas the ceiling was fixed to the underside of the Bondek with bulkheads constructed around the steel beams. These bulkheads rather than protruding into the ceiling area became features containing concealed lighting. The false ceilings in other areas were 2.4 metres to accommodate services.

Steel members are also featured visually in the construction of the balconies. Architect, Greg Paterson, Paterson Group, talks about steel: "In wanting to introduce a vertical emphasis into the building the use of steel was an integral part of the design solution. Concrete columns supporting balconies at the lower levels gave way to steel columns providing a slender column. This visual focus culminated in a two storey pergola frame which reinforced the visual relationship between the penthouse and its roof deck. The design of the balconies allowed the steel columns to be installed without fire protection and thus permitted the expression of the steel".

George Ongarezos, in summing up the project said "The beauty of this type of construction is that it is simple and fast".

Steel construction achieving - rapid construction, flexibility, greater usable space - was the right choice for the project.

#### Project Participants

Architect:	Paterson Group
Engineer:	Structerre Consulting Engineers
Builder:	Citiworld Equity Construction Group
Steel Fabricator:	Jasmat Steel Fabricators



Steel construction combined with external concrete tilt-up panels.