

Mill Street Auto Carpark Adelaide

December 2002

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



MILL STREET Auto Carpark

The Mill Street Auto Park was built over nine months in 2001 as a commercial operation. Located in the Adelaide central business district. The eight level carpark is opposite the Supreme Court and adjacent to the Adelaide Markets.

The carpark is a composite braced steel framed building on a 55.6 x 34.5 metre footprint on pile foundations with a ground level and seven suspended levels. The structure is covered by an off white curved steel roof.

This part of heritage conscious Adelaide has a height restriction of 45 metres. Greg Zafiridis of the structural engineers Wallbridge and Gilbert who designed the project, said that "to maximise the 25 metre height limit we designed the primary beams as fixed ended composite floor beams."

"On this site the construction sequence was important as it allowed all the erection to be carried out by mobile crane and minimised construction time and cost.

The landings at each end of the ramps consisted of non-composite steel beams spaced at 2400 centres and braced in both directions. Greg Zafiridis said that "this allowed the east landing to be constructed as an individual braced

tower, followed by construction of the west landing tower. Once the landings on opposite ends of the building were constructed, work commenced on the ramps connecting the landings, southern ramp first, followed by ramps on the north side."

The steel-bracing layout, designed to accommodate wind and earthquake loads, provided stable temporary structures during construction.

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Spaced at every two car bays on the ramps, the primary beams are 530UB92 composite beams spanning 15 metres over the length of the car bays and aisle width to the inner face of the columns. The outer face stub columns were erected in two lifts (310UC118 and 250UC89) helping to fast track the erection. The structural steel sections used on the project are OneSteel 300PLUS.

The landings were erected four floors at a time and within two days the steel frame, profiled steel decking and screens were in place with the floor ready for pour.

Theo Samaras Steel Fabrication, builders and steel fabricators on the project, said that: "by the time the ramps were completed all other associated work such as the lifts, stairs and equipment were completed. Screens and balustrades were prefabricated, marked and erected whilst the steel frame was going up, eliminating

the need for temporary handrails and screens, which saved on costs.

The safety bars and expressed façade steelwork was erected in two lifts. The surface treatment to the steelwork was Dulux Durabuild Epoxy Grey on a Class 2 shot blast surface.

The carpark is an open, cross ventilated building in which the steel did not need to be fire treated. Balance and an

CLIENT

Kyren Pty Ltd

ENGINEER

Wallbridge and Gilbert

FABRICATION

Theo Samaras Steel Fabrication

aesthetic appeal are given to the building the southern boundary by a non-load bearing precast concrete wall providing a visual barrier on this face and also meeting fire regulations.

Two levels of the Auto Park could be converted in the future to retail and/or commercial use. The steel structure will enable this future conversion to be a relatively economical operation. A basement under the ramp off Mill Street has been specially designed to accommodate large trucks from the nearby Adelaide Markets.

Completed within budget the Mill Street Auto Park has the capacity to accommodate 519 vehicles. Four months after its opening on 17 October 2001 the fully operational carpark was at 85% occupancy.