

# Steel's Appeal for Canon

July 1999

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

# Steel's Appeal for Canon's New Office

In late 1997, Canon Australia, part of the multi-national photographic and office equipment giant, approached several development companies with a view to constructing new office facilities. The desire for single-tenant occupancy, changed accommodation configuration requirements and the end of a ten year leasing agreement, were the major motivating factors for Canon's move. Lend Lease, the chosen developer of the project, had only 48 weeks to construct the three level building in Tally Ho Business Park, East Burwood, Victoria, to dovetail with the conclusion of Canon's leasehold arrangements. The building has a total floor area of 6000 square metres, comprising office space, a basement carpark and a small warehouse area.

## Steel Wins on Cost and Speed

The plan of the building was developed from a simple rectangular floor plate cranked at both ends to create a curved building sympathetic to the land contours and orientated for views of the undulating Dandenong Ranges in the distance. A number of schemes featuring different framing and cladding materials were developed and sized by Structural Engineers, Davis Naismith and Architects, Peddle Thorp. The builder, Civil & Civic, decided to use precast concrete perimeter and lift shaft walls, with an internal frame comprising 300PLUS steel beams and columns, in

combination with some precast concrete columns where the external aesthetics dictated. The structural steel framing system was chosen both for its cost effectiveness and the availability of reliable structural steel fabricators, since construction time was of the essence. The floor system comprises steel composite beams which are designed to AS 2327.1.1996 Composite Structures Code, utilising Bondek II™ profiled steel deck, with a 140mm slab. Primary beams spanning 8.4 metres are 530UB92 with rows of 2 x 19 mm studs at an average of 300 mm centres. Secondary beams are 410UB54 with rows of 2 x 19 mm studs at 400 mm centres. Several different steel profiles (250UC73, 125x125x5 SHS & 356x6.4 CHS) were used for columns. Most connections are simple web side-plates with 8.8/S bolts.

## Fire Rating Savings with Steel

Using the Building Code of Australia (BCA), an office and warehouse classification was confirmed as being appropriate for fire safety purposes by the project building surveyors, Gardner Group. A performance compliance approach was used to satisfy BCA objectives to ensure the warehouse area, with a significant fire load, was separated from the remainder of the complex by a 120/120/120 minute fire wall. Otherwise the complex was treated as one fire

compartment with extensive use of unprotected steel beams in both the office space and the carpark. An estimate of the savings on the erected steel cost was in the order of 8%, as a result of using unprotected steel beams.

## Steel Delivers Construction Speed

Due to the reasonably severe slope of the ground on which the building was constructed, lifting of building elements was achieved by standing cranes on the levelled site inside the building plan.

Construction of the building was staged, commencing at the northern end of the floor plate. Naturally, precast perimeter panels were first to be erected and then the structural steel columns and beams were erected to the full height of the building.



A 50 tonne mobile crane and a larger than normal crew were used to erect the steelwork, to speed the construction process. The steel fabricator, Stilcon, erected structural steel, laid the Bondek II™ and applied shear studs through decking, while complying strictly to Civil & Civic's safety standards. Lend Lease Projects Construction Manager, Greg Andrew said, "With Stilcon undertaking so much of the frame construction process, Civil and Civic did not have to coordinate this work. It was like having a one-stop-shop. This helped us to meet the very short construction timetable". Canon's new handsome, functional office facility was completed for occupation in October 1998. The use of structural steel contributed to the success of the project with the building constructed on time and within budget.

Developer:	Lend Lease
Project Manager:	Civil & Civic
Architect:	Peddle Thorp
Structural Engineer:	Davis Naismith
Building Surveyor:	Gardner Group
Fabricator & Shop Detailer:	Stilcon Holdings PL

