



209 Kings Way, South Melbourne

PERFORMANCE DESIGN – REDUCING THE COST OF CONSTRUCTION

IN ACHIEVING THE REQUIRED LEVELS OF FIRE SAFETY MANY OF THE STRUCTURAL STEEL MEMBERS DID NOT REQUIRE THE ADDED COST OF PROTECTIVE COATINGS.



mass ratio and the results of fire tests in open – deck carparks. These tests showed that the columns would not reach temperatures that would impact on their load carrying capacity required in a fire.

In achieving the required levels of fire safety many of the structural steel members did not require the added cost of protective coatings.

(See table below)

The fire safety strategy is centred on the incorporation of a commissioned and properly managed sprinkler system. The sprinkler system includes:

- fast response heads
- monitored isolation valves for each level of the building
- end-of-line taps to check the presence of water on a regular basis, or after modification of the sprinkler pipe work on the floors in the event of a tenancy upgrade
- a management protocol detailing specific requirements to be met when sprinklers are altered on a floor.

Norman Disney and Young developed the egress strategies using fire engineering principles ensuring the egress system allowed for swift evacuation in accordance with the performance requirements of the regulations.

Potential smoke hazard is managed by an exhaust system. The ability of the building to provide resistance to a rare, severe fire is due to a number of factors:

- only parts of a floor will be affected by a fire at a given time
- vertical support will be maintained by the many protected columns
- the floor slab and the beams will exhibit an enhanced ability to resist load under fire conditions through the development of membrane action.

There is more than sufficient time for evacuation of the occupants in the event of such a fire.

The fire-engineering for this 11-storey building with a total floor area of 45,000 square metres, incorporating a showroom for BMW vehicles at ground level and offices for the ANZ bank, was undertaken by Norman Disney and Young Pty Ltd with assistance from OneSteel's fire research conducted at the Victoria University of Technology (VUT).

The building is required to have a sprinkler system and was designed to satisfy the performance requirements of the Building Code of Australia (BCA) through the application of a fire-engineering methodology developed for OneSteel's structural products.

Dr Ian Bennetts from the VUT said that the beams within the open-deck carpark levels were specified in accordance with the BCA deemed-to-satisfy provisions which allowed them to be unprotected. The columns are also unprotected in the carpark levels and this was justified on the basis of their low exposed surface area to

209 KINGS WAY, SOUTH MELBOURNE – FIRE RESISTANCE REQUIREMENTS SUMMARY		
AREA	BUILDING ELEMENT	FIRE RESISTANCE – MINUTES (*ESA/M less than - m ² /tonne)
Open Deck Carpark	Beams	0/-/- or (30*)
	Columns	0/-/- or (26*)
Office	Beams (generally)	0/-/-
	Beams – Critical Columns	120/-/- Protected by Fire Spray 120/-/- Protected by Fire Spray
Vehicle Service Area	Beams – Critical	120/-/- Protected by Fire Spray
	Columns	120/-/- Protected by Fire Spray
Composite Lift & Services Shaft	Beams Columns	0/-/- or (30*) 0/-/- or (26*)

ESA/M = Exposed Surface Area to Mass Ratio

BUILDING CONTRACTOR
Multiplex

STEEL FABRICATOR
Alfasi Steel
Constructions

ARCHITECT
METIER3

STRUCTURAL ENGINEER
Bonacci Group

FIRE ENGINEERING
Norman Disney
and Young

STEEL DETAILER
Universal
Steel Detailers