West Lakes Re-Development

STEEL'S VERSATILITY ALLOWS ECONOMICAL RE-DEVELOPMENT TODAY AND THE FLEXIBILITY TO MAKE FURTHER CHANGES TOMORROW.

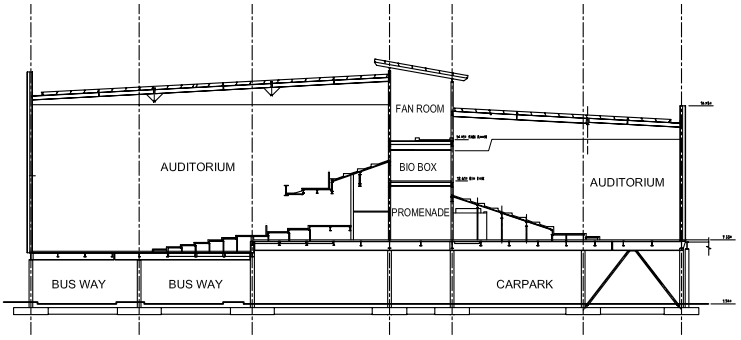
FIRE SAFE

THE DESIGNERS USED THE VERSATILITY OFFERED BY THE SUPERIOR STRENGTH TO WEIGHT RATIO OF STEEL FRAMING TO MAKE SUBSTANTIAL CHANGES TO THE EXISTING SHOPPING MALL.

They did so with the knowledge that any future changes are relatively easy to make as a steel frame can be readily strengthened, and modified by welding or bolting new members to it.

The redevelopment of the West Lakes shopping mall involved the addition of a ground level carpark below a cinema complex and adjacent mall and food court areas. The entire building extension was framed in structural steel including the cinemas with columns being placed within the walls between cinemas and trusses supporting the roof spanning the full width of each cinema. It is important to note that the acoustic requirements for the cinema walls were achieved by multiple layers of plasterboard and this, by default, provided very substantial thermal protection for the **300PLUS®** steel columns located within the walls.

The floor construction consisted of composite slabs supported by **300PLUS®** steel beams. It was found that it was only necessary to fire protect certain elements within the building, principally some of the primary beams and columns within the promenade area adjacent to and providing direct support to the cinemas. A cross-section showing the promenade in relation to the seating tiers is shown above.



Egress from the upper seating tiers is via two alternative exits and the cinemas can be evacuated in several minutes. The space below the seating tiers is used primarily for storage. These areas as well as all other areas within the construction are sprinklered.

As far as the cinemas were concerned, evacuation of an upper tier was found to be able to be achieved within a few minutes, as was evacuation of the lower tiers. Evacuation can occur well before any supporting structural steelwork would feel the temperature effects of a significant unsprinklered fire. However, it is very unlikely that such a fire would develop given the presence of sprinklers.
Even a shielded sprinklered fire would not generate sufficient heat to detrimentally effect the supporting structural steel members.

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WESTLAKES RE-DEVELOPMENT – FIRE RESISTANCE REQUIREMENTS SUMMARY

BUILDING ELEMENT	ELEMENT REQUIREMENT	
	DTS	**Alternative Solution**
type of construction	type B	
columns - carpark	$k_{sm} \leq 26m^2$/tonne	
beams - carpark	$k_{sm} \leq 30m^2$/tonne	
columns - cinemas	120/-/-	60/-/- for some columns in promenade; remainder $k_{sm} \leq 26m^2$/tonne
beams - cinemas	- /-/-*	certain beams in promenade 60/-/-; remainder $k_{sm} \leq 30m^2$/tonne
sprinklers	YES	YES

* support of another part may require 120/-/-