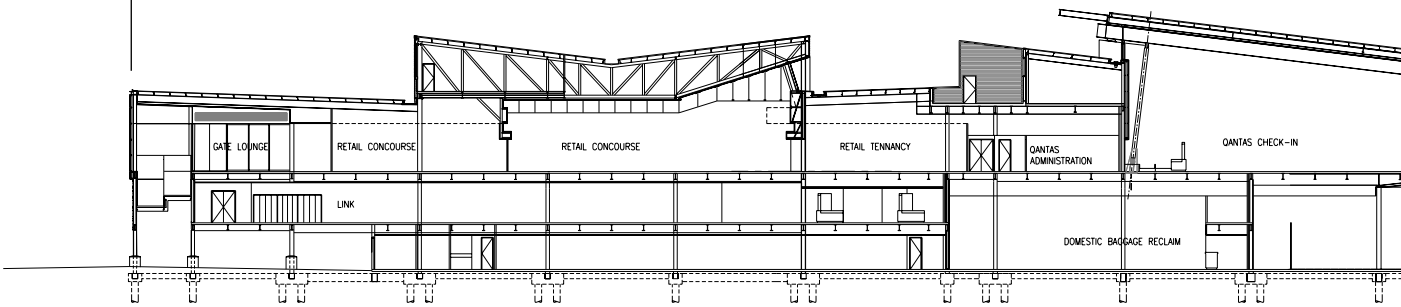
FIRE SAFE

Adelaide Airport Terminal

A SHOPPING CENTRE IN FIRE ENGINEERING TERMS.

THE $260 MILLION REDEVELOPMENT OF ADELAIDE AIRPORT IN FIRE SAFETY ENGINEERING DESIGN TERMS IS VERY SIMILAR TO A SHOPPING CENTRE – LARGE IN PLAN RELATIVE TO ITS 3 STOREY HEIGHT WITH MANY PEOPLE COMING AND GOING THROUGH ITS OPEN MALL TYPE AREAS AND RETAIL STORES.



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This building consists of three levels and includes retail outlets; a departure lounge, an arrival lounge, baggage handling, and baggage reclaim areas. There are also administration areas and gate lounges. According to the BCA, the building is a mixture of Class 9 and Class 6 and would be required to be constructed as Type A construction. A section through the building is shown below.

Steel-framed construction was chosen to allow ease of construction and to deliver the desired architectural features.

OneSteel's fire engineers Cesare VU assessed the fire safety aspects of this building relating to the structural steel. Their report indicated that the building should be designed in accordance with reference [2] (see Introduction). It was agreed by the stakeholders in the fire engineering process that the building need only be generally designed to resist the range of possible sprinklered fires. This design assumption was considered to be satisfactory on the basis that sprinkler management and maintenance procedures were developed and implemented to minimise the frequency, extent and duration of sprinkler isolations and to ensure that during such isolations, particular fire-safety measures are put into place to minimise the likelihood of a significant fire.

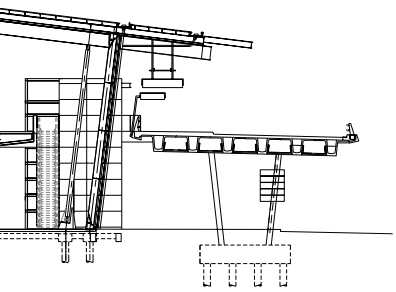
It was recognised that airport terminal buildings are highly supervised buildings where occupants are likely to detect fires relatively rapidly. Most fires will be extinguished before the sprinklers are activated and will be assisted by the availability of portable extinguishers and appropriate training of airport staff. The airport fire brigade was also noted as being close at hand. The isolation management procedure is to be aimed at managing sprinkler isolations so as to minimise the likelihood of a serious non-sprinklered fire.

On the basis of extensive sprinkler testing it was established that sprinklered fires would not result in a significant increase in temperature of exposed structural steel members. In several areas it was noted that columns pass through parts of the building with high ceilings where activation of sprinklers on the ceilings would be likely to be delayed. Parts of the building where such situations may occur include areas such as the departure and arrival areas. It was noted that the fire load in these areas was localised and given the exposed surface area-to-mass ratio of the **300PLUS®** columns passing through these areas would not result in column failure if subject to a localised fire before sprinkler activation.

ADELAIDE AIRPORT TERMINAL – FIRE RESISTANCE REQUIREMENTS SUMMARY

BUILDING ELEMENT	ELEMENT REQUIREMENT	
	DTS	**Alternative Solution**
columns	FRL 180/-/- (retail) FRL 120/-/- (other areas)	generally no requirement; in high roof areas sufficiently low k_{sm}* to survive localised fire
beams	FRL 180/-/- (retail) FRL 120/-/- (other areas)	no requirement
floors	180/180/180 (retail) 120/120/120 (other areas)	60/60/60
sprinklers	YES	YES

* k_{sm} is the exposed surface area-to-mass ratio



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