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## 9. Multi-Storey Car Park at the Domestic Air Terminal, Sydney Airport (Australia)

*Owner: Security Parking Pty. Ltd.*

*Engineer: Wargon Chapman & Associates Pty. Ltd.*

*Contractor: Graham Evans & Co. Pty. Ltd.*

### *Dimensions and Arrangement:*

*Total surface, including ramps and stairs: 13'755 m<sup>2</sup>*

*Floor surface: 4'795 m<sup>2</sup>*

*Number of floors: 3*

*Total number of parking units: 598 inside structure;  
23.00 m<sup>2</sup>/parking unit*

*Space built: 29'834 m<sup>3</sup>; 47.7 m<sup>3</sup>/parking unit*

*Column spacing: 16.54 m x 4.88 m*

*Clear ceiling height: 2.40 m*

*Floor thickness: 0.140 m*

*Ramp Grade: 7.86 o/o; Ramp width: 33.08 m*

*Parking arrangement: upright on both sides*

*Lane's width: 6.10 m*

*Parking units dimensions: 5.22 x 2.44 m*

*Live Load excluding permanent load: 3 kN/m<sup>2</sup>*

### *Materials used:*

*Concrete: 3.18 m<sup>3</sup>/parking unit*

*Steel for Concrete: 307 kg/parking unit*

*Structural Steel: 301 kg/parking unit*

*Work's duration: 4 months*

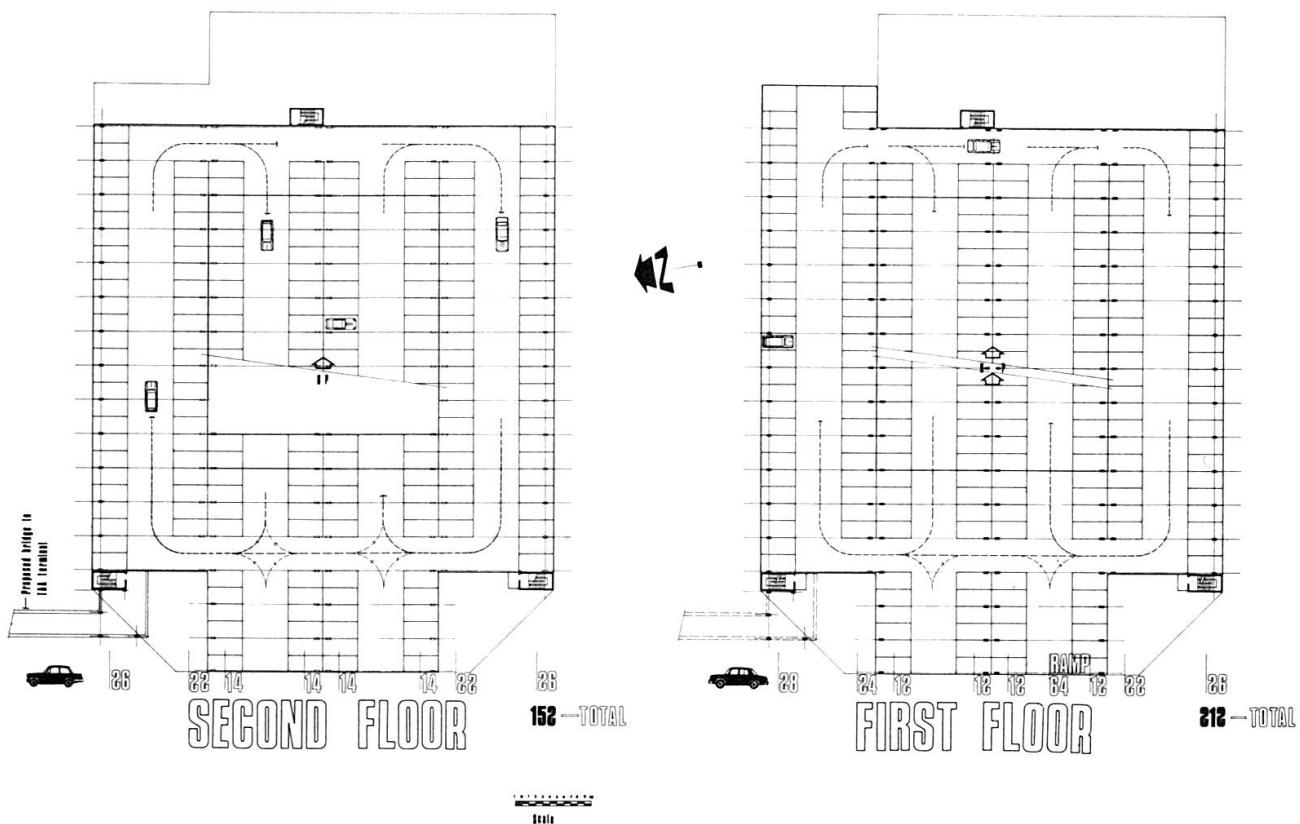
*Service date: January 1977*

The structure comprises a 140 mm thick reinforced concrete deck acting compositely with Grade 350 high tensile steel beams spaced at 7.5 metre centres and continuously spanning distances of 16.2 metres over reinforced concrete columns on piled foundations. It is a continuous ramp type (cars parking on the ramp) and comprises a ground floor with two suspended levels superimposed above. There is capacity in the foundations and columns for a future two extra suspended floors. Present accommodation is for a total of 638 vehicles (including 40 on surrounding ground) with an ultimate capacity of 1100. This carpark, which was built at a cost of \$ 1'800 per vehicle, has been modelled on a neighbouring carpark in the area which was completed in 1970 at a cost of \$ 640 per vehicle by the same contractor with the same firm of Engineers, thus illustrating the extent to which costs in the Australian building industry have risen over the past seven years. It may be of interest also to note that both structures were only decided upon after comparative costing of such alternatives as pre-stressed concrete slabs and precast pre-stressed concrete beams acting compositely with insitu concrete decks. The system permits of a great saving in cost and in time of construction and the long span steel beams are relatively light and easy to handle.

(R.F. Chapman)



SCHEME I



SCHEME I

