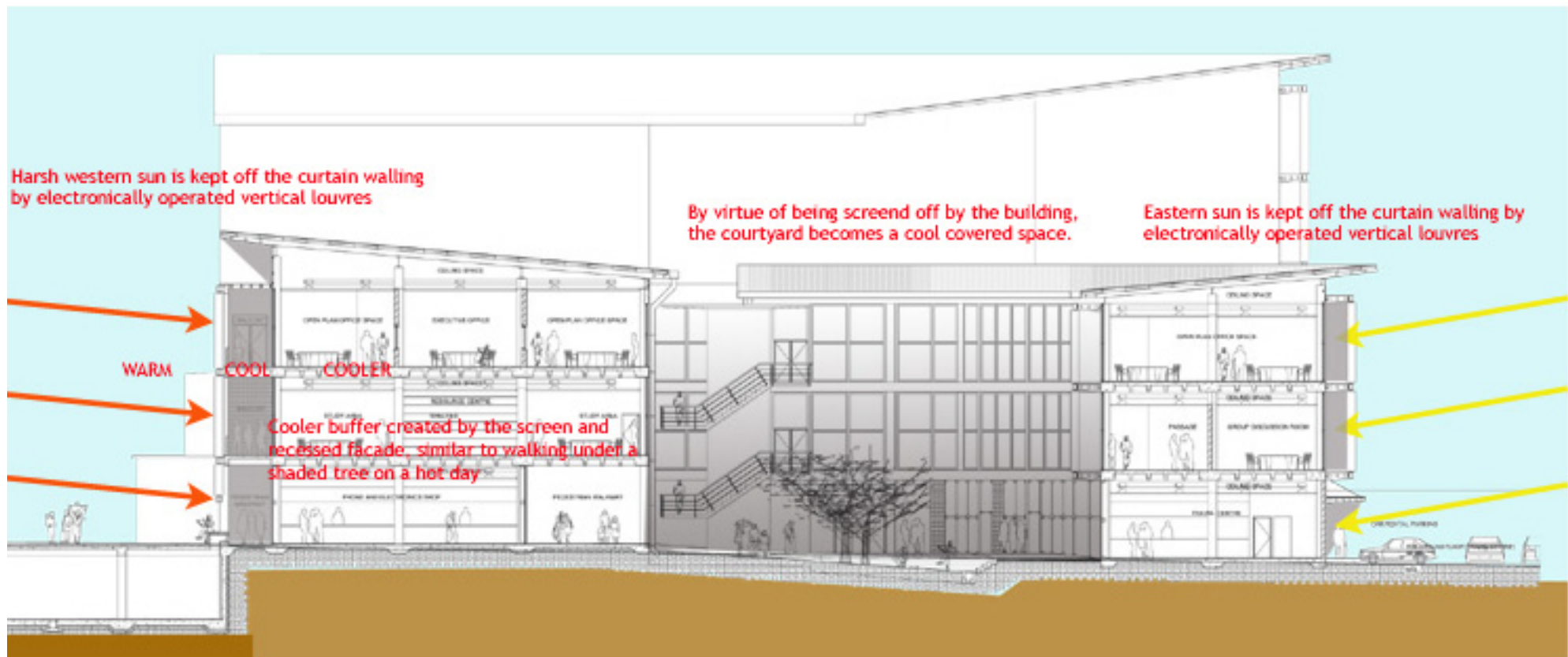


CLIMATE CONTROL

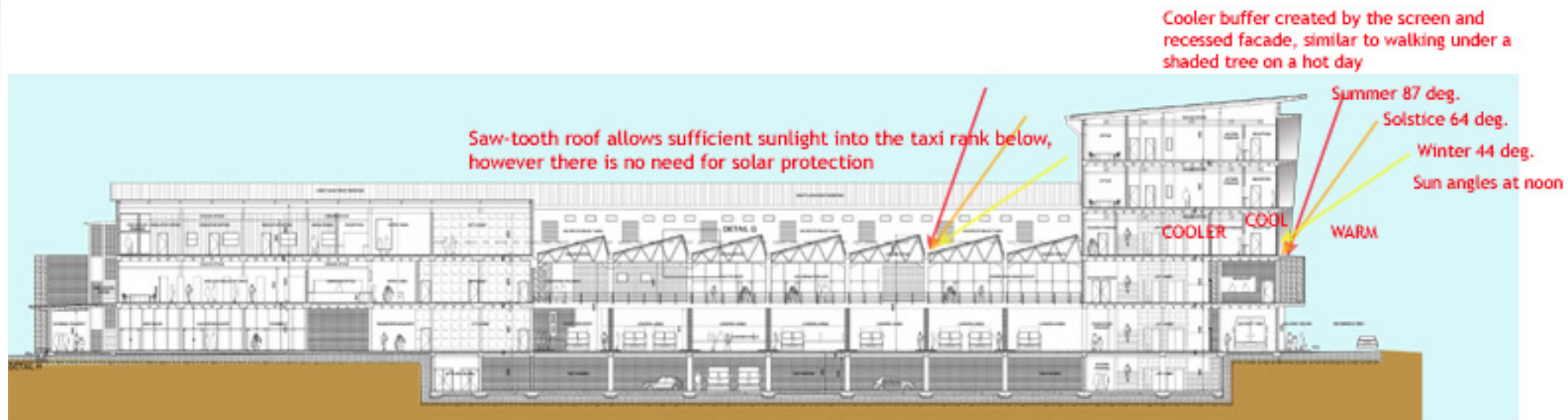
SOLAR PROTECTION



Section illustrating east and west sun conditions.

CLIMATE CONTROL

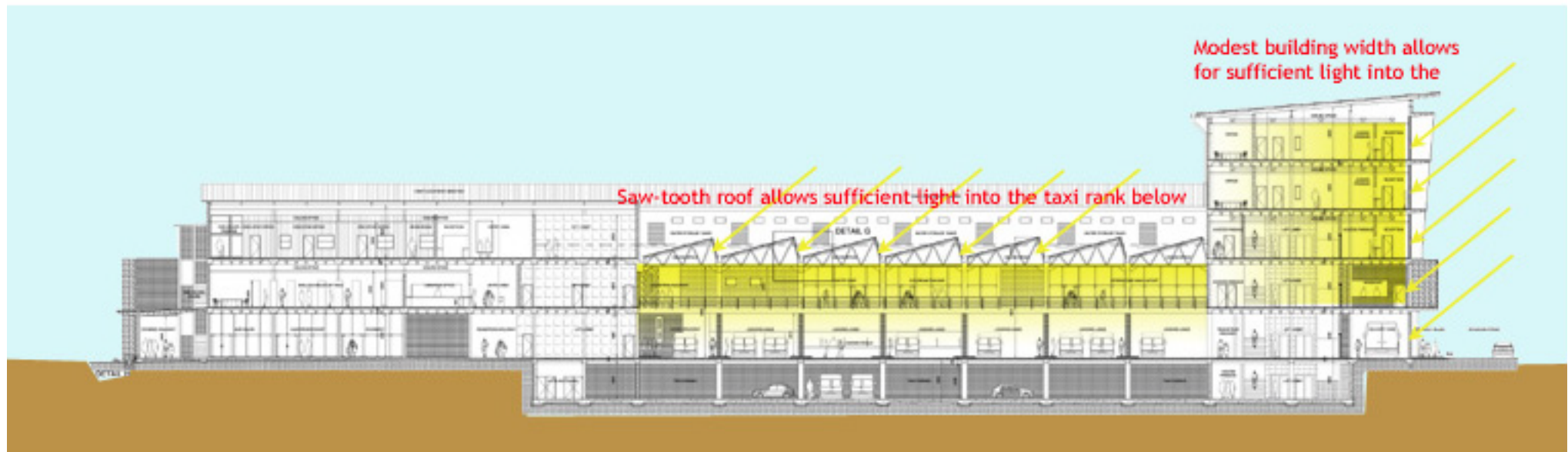
SOLAR PROTECTION



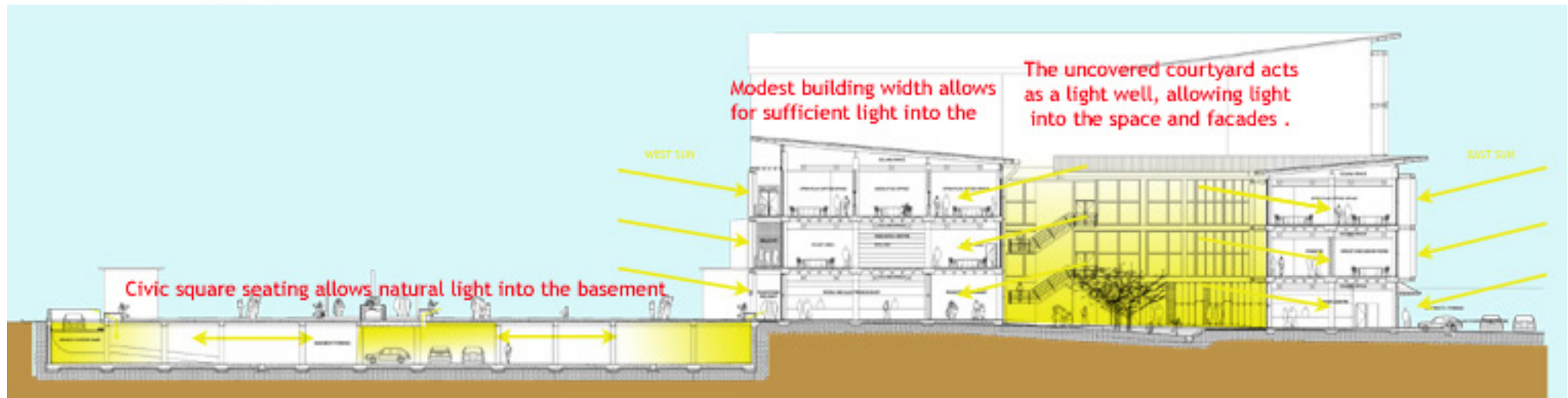
Section illustrating north sun conditions.

CLIMATE CONTROL

LIGHT PENETRATION



Section illustrating light penetration from the north.



Section illustrating light penetration from the east and west.

CLIMATE CONTROL

HEATING AND VENTILATION

The design of the structure seeks to reduce the reliance on mechanical ventilation by exploring means of passive cooling. The inclusion of screens and louvres helps keep the heat load low, thus alleviating the need for mechanical ventilation. Glazing used in the office space, restaurants and resource centre has opening sections that induce cross ventilation.

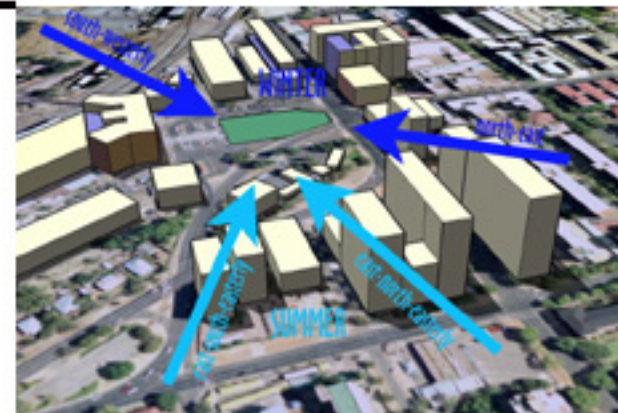
The site experiences east-south-easterly and east-north-easterly summer winds, and south westerly and north easterly winter winds. The wind direction in both seasons offers possibilities of cross ventilation.

In addition to passive means, two aircon plant rooms are located at opposite ends in the basement of the structure. Each with its own feeder duct throughout the entire height of the structure, that feeds airconditioned air to each of the floors.

The Capital Project Application (CPA) air handling unit (AHU) system is employed to distribute the airconditioned air.

The basement parking is ventilated by means of air intakes and vehicle entrance that are positioned on one side, and extractor fans that expel the air on the opposite end of the basement.

Heating is provided throughout the structure when necessary by adjusting the temperature of the airconditioning the system.



Wind directions for the site



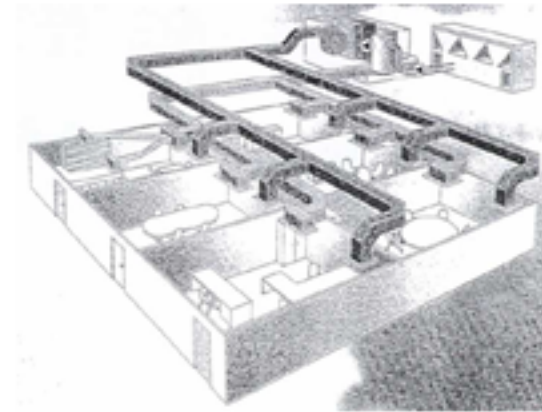
Basement plan illustration the aircon plant rooms

CLIMATE CONTROL

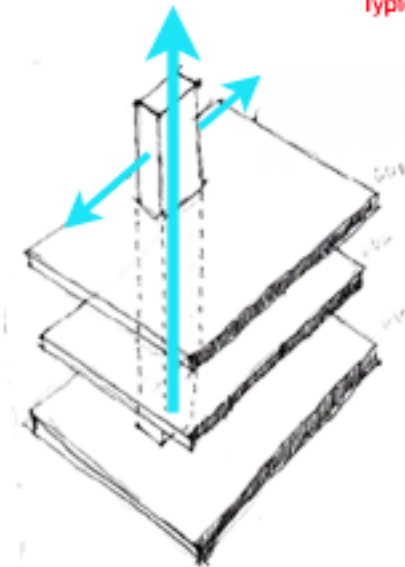
HEATING AND VENTILATION



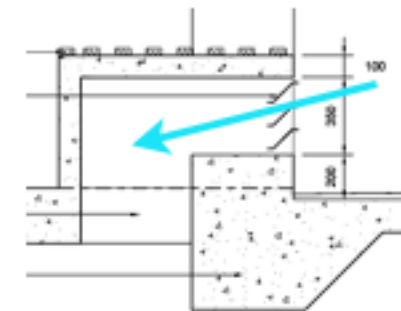
Positioning of Aircon ducts in subsequent floor levels



Typical Daikin AH unit (Daikin Manual)



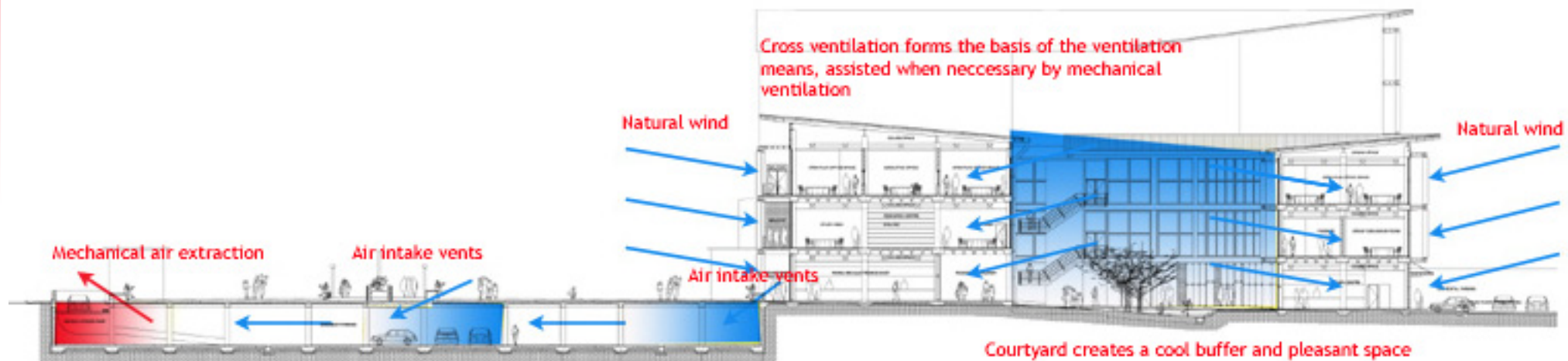
Duct penetration extract and air supply



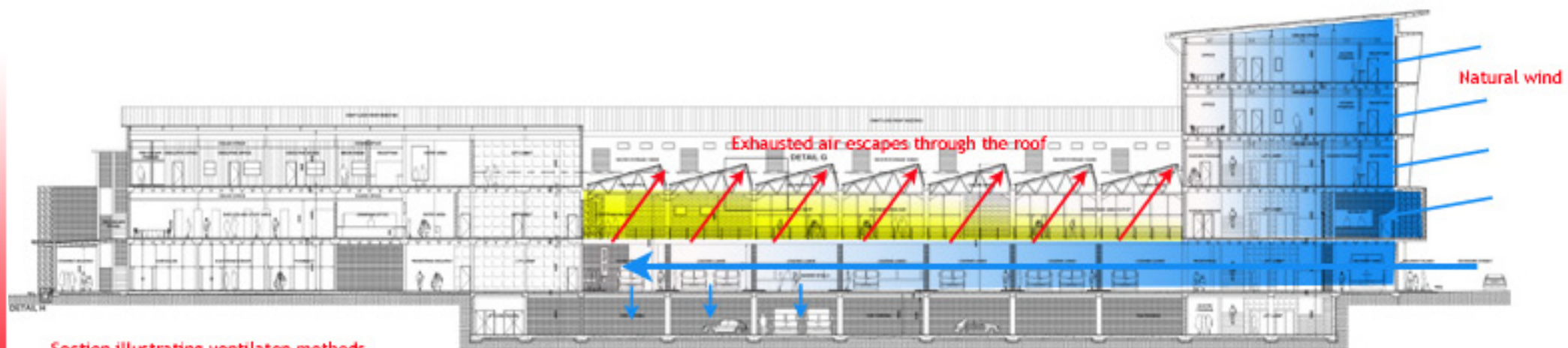
Basement air inlet detail

CLIMATE CONTROL

HEATING AND VENTILATION



Section illustrating ventilation methods



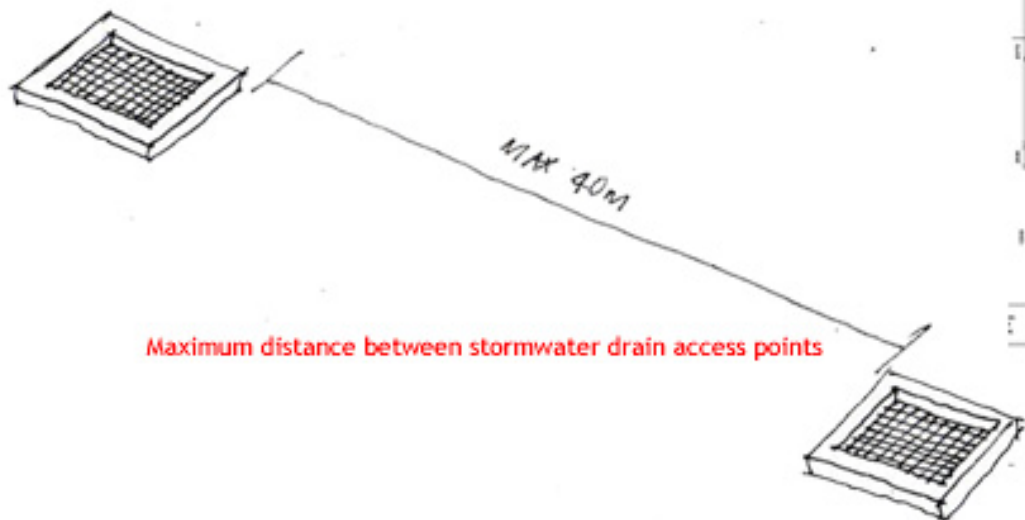
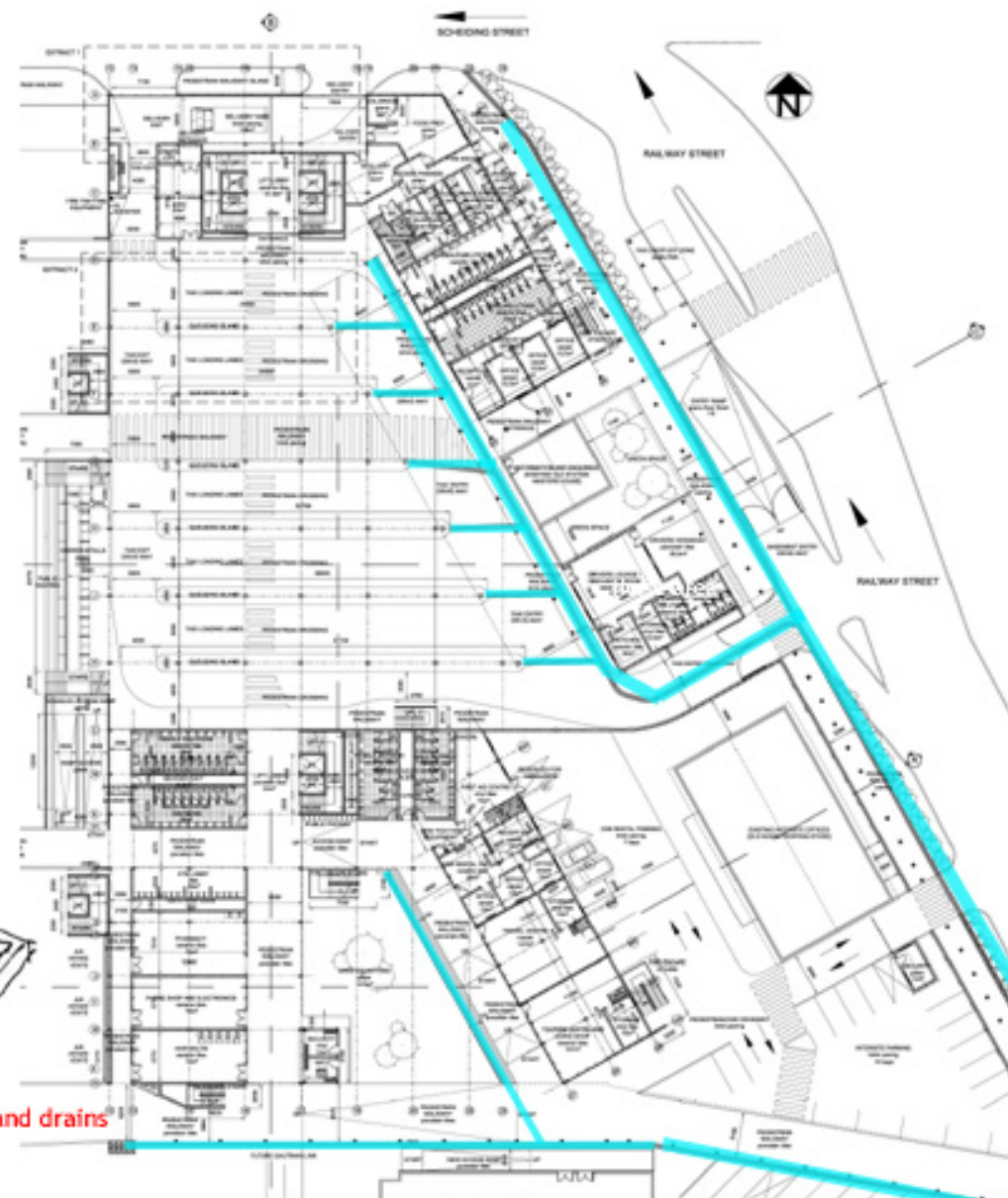
Section illustrating ventilaton methods

STORMWATER DISPOSAL

RAINWATER TREATMENT

All eaves on the run-off side of the roof are fitted with gutters and downpipes to channel water either into the stormwater drains, or storage tanks for taxi washing. Diameter 150mm uPVC downpipes are fitted inside the RHS columns and discharge into stormwater drains where there is covered walkways. The street walkway along Railway street allows the water to drip from the gutter into a stormwater drain below, without a downpipe.

The stormwater drains have access point along its length at intervals not exceeding 40m, in compliance with SABS 0400 (1990) Part R.

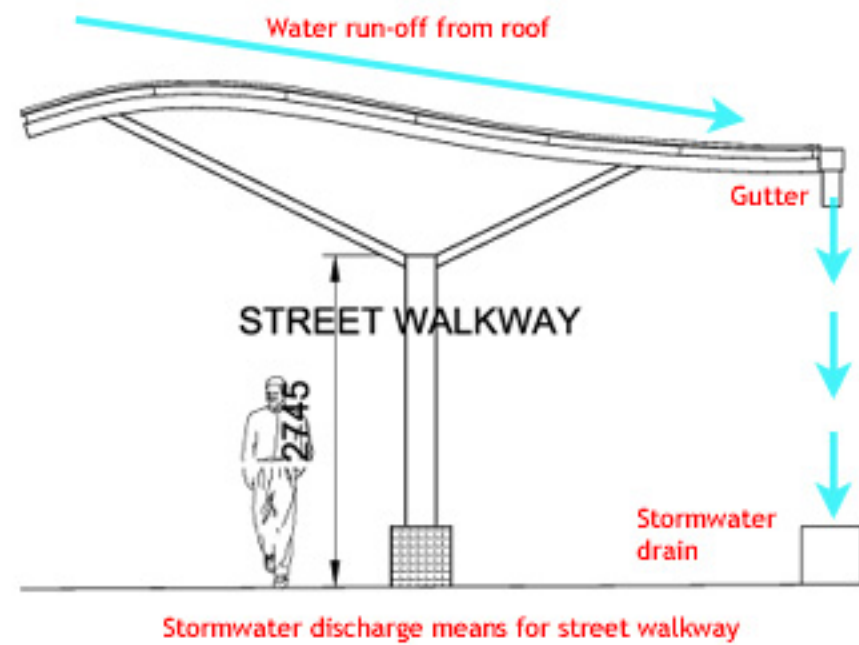
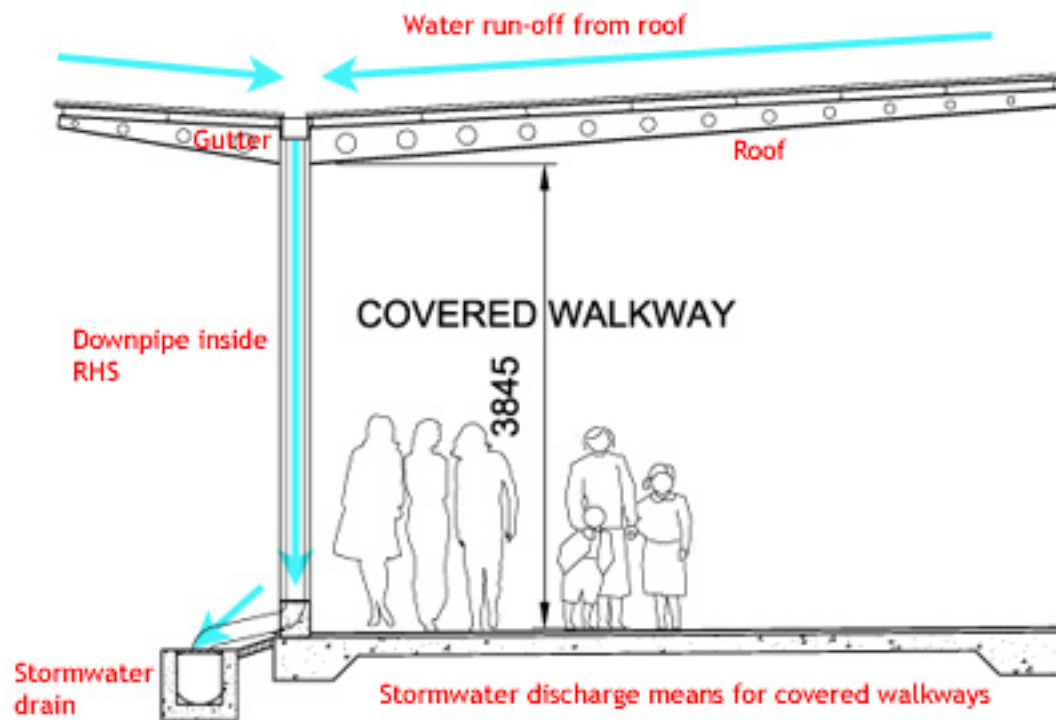


Maximum distance between stormwater drain access points

Location of stormwater channels and drains

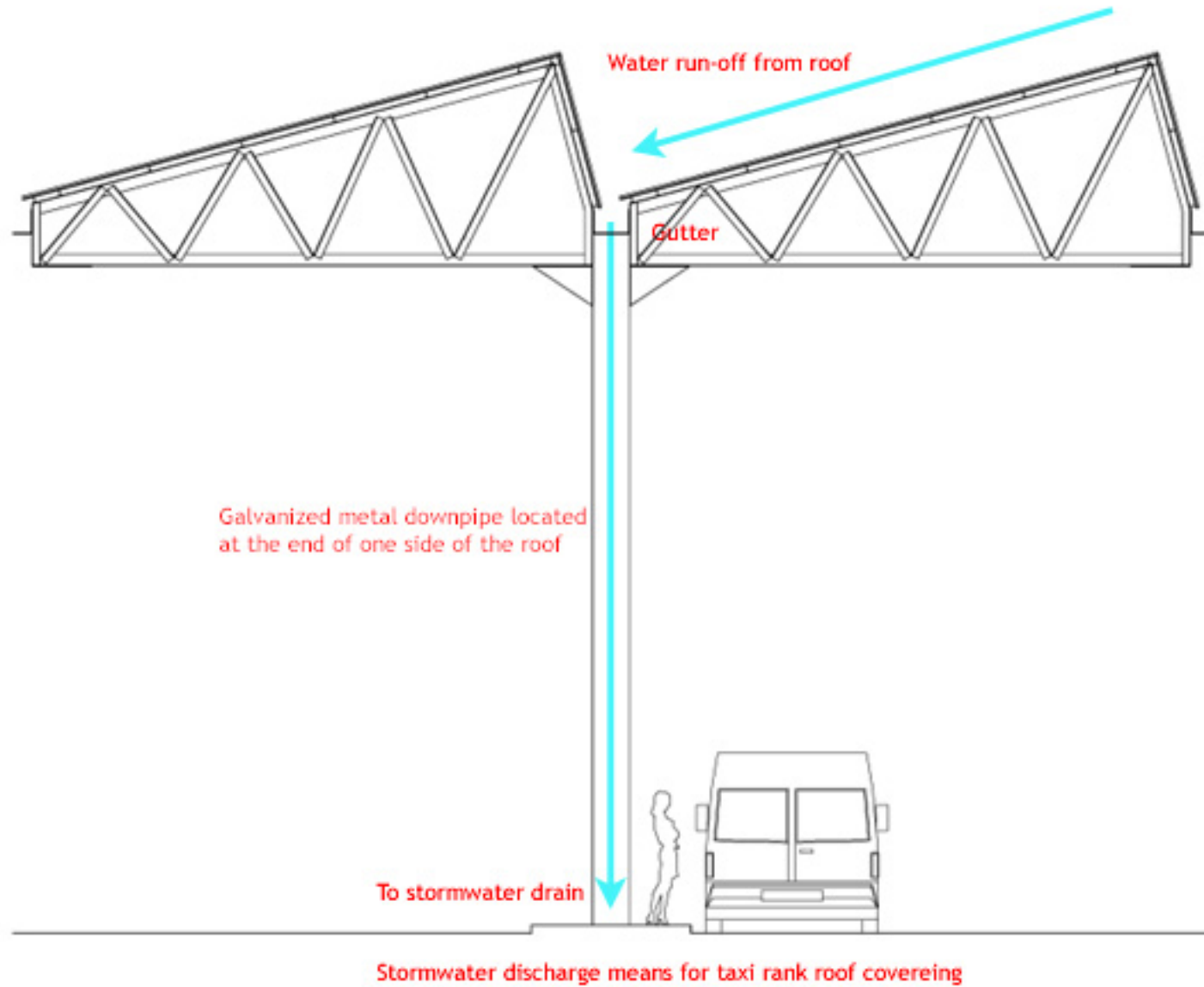
STORMWATER DISPOSAL

RAINWATER TREATMENT



STORMWATER DISPOSAL

RAINWATER TREATMENT

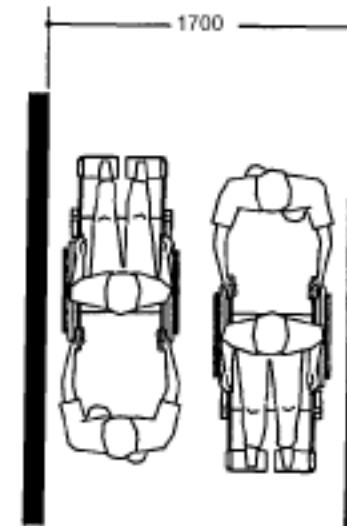


VERTICAL CIRCULATION

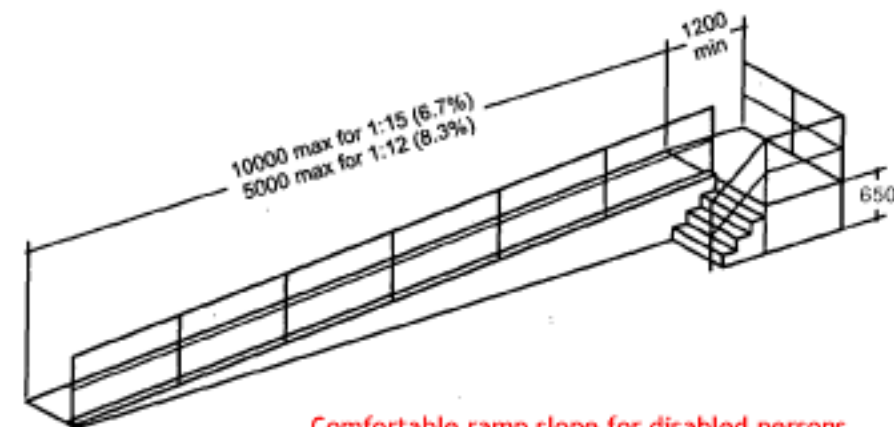
LIFTS, STAIRS AND RAMPS

The structure is designed such that the ground and first floor are the main public spaces. The levels above those are semi-private. Vertical circulation between the ground and first floor is by means of lifts, stairs and ramps. However, from the first floor to the top floor, only lifts and stairs service people. For the convenience of the employees, two express lifts run non-stop from the basement up to the first level of offices.

Disabled people are provide for through a ramp with a slope of 1:12 and a width of 2m to allow two people to pass in opposite directions.



Dimensions for two disable people passing alongside
(Metric handbook planning and design data)



Comfortable ramp slope for disabled persons
(Metric handbook planning and design data)

VERTICAL CIRCULATION

LIFTS, STAIRS AND RAMPS

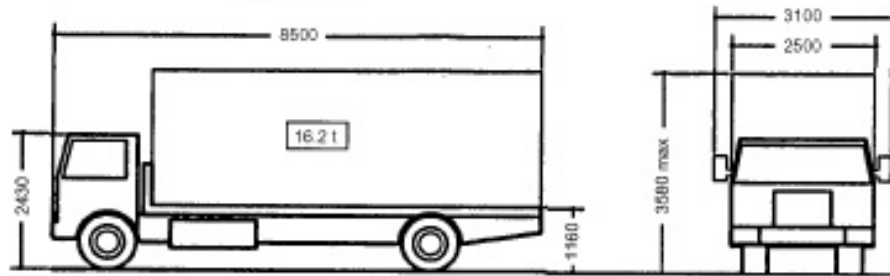


Positioning of vertical circulation on plan
(Metric handbook planning and design data)

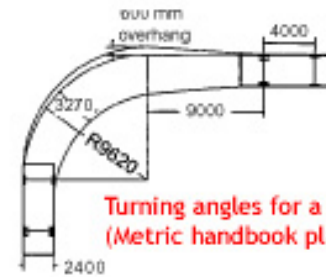
VEHICLE ANALYSIS

DIMENSIONS AND TURNING ANGLES

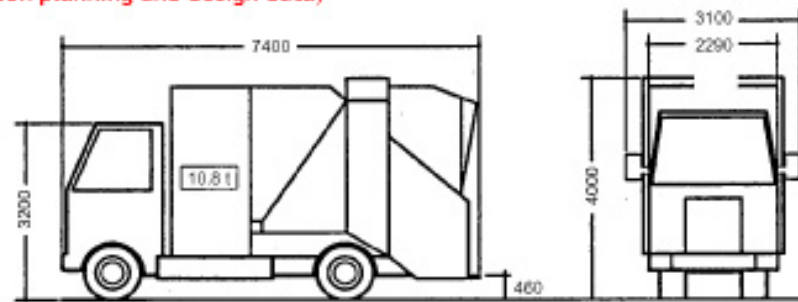
A thorough understanding of the dimension and turning angles for taxis, delivery vehicles and refuse collection vehicle is necessary in order to design for the spaces accordingly.



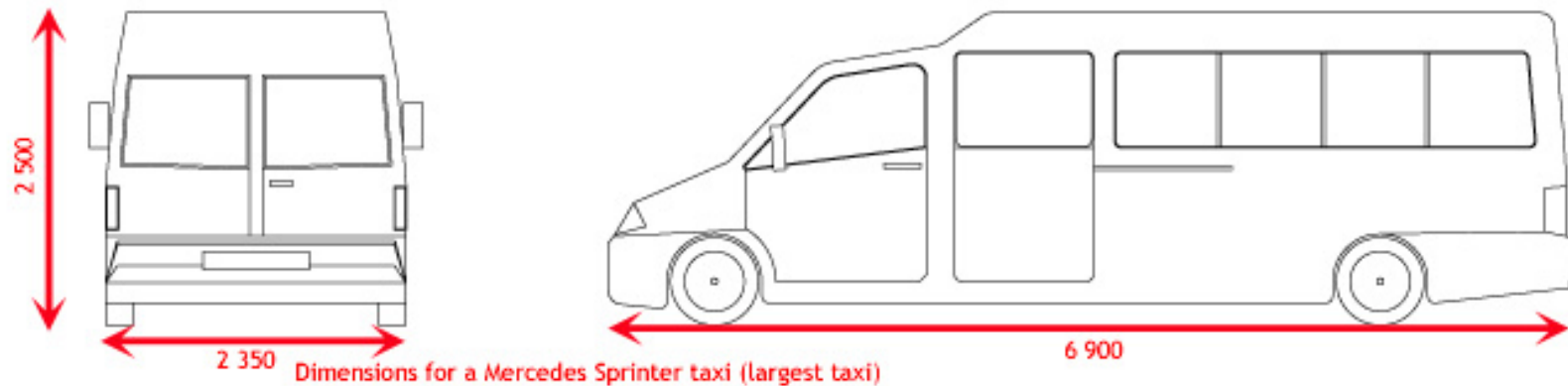
Dimensions for a delivery truck
(Metric handbook planning and design data)



Turning angles for a delivery truck
(Metric handbook planning and design data)



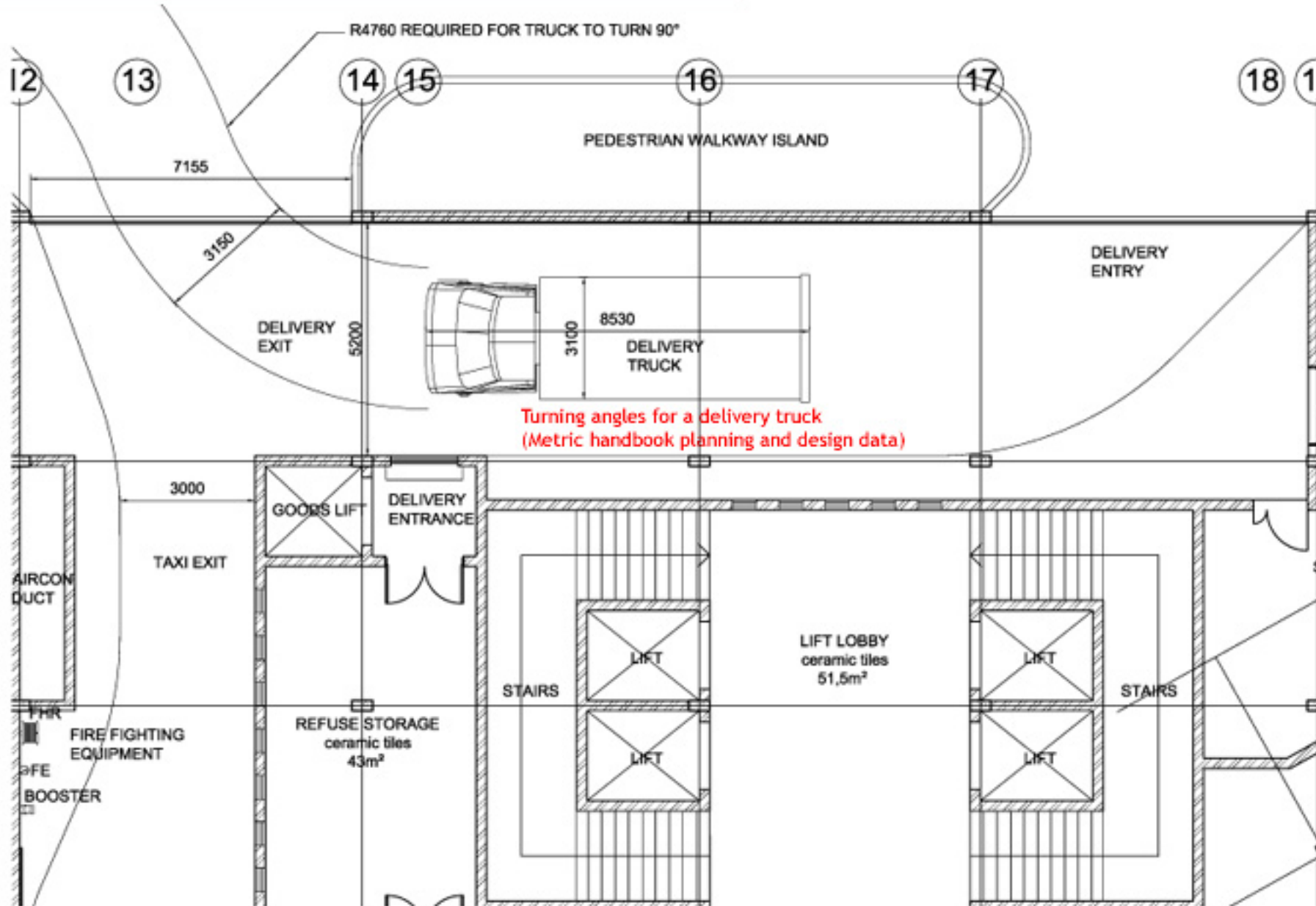
Refuse truck (Metric handbook planning and design data)



Dimensions for a Mercedes Sprinter taxi (largest taxi)

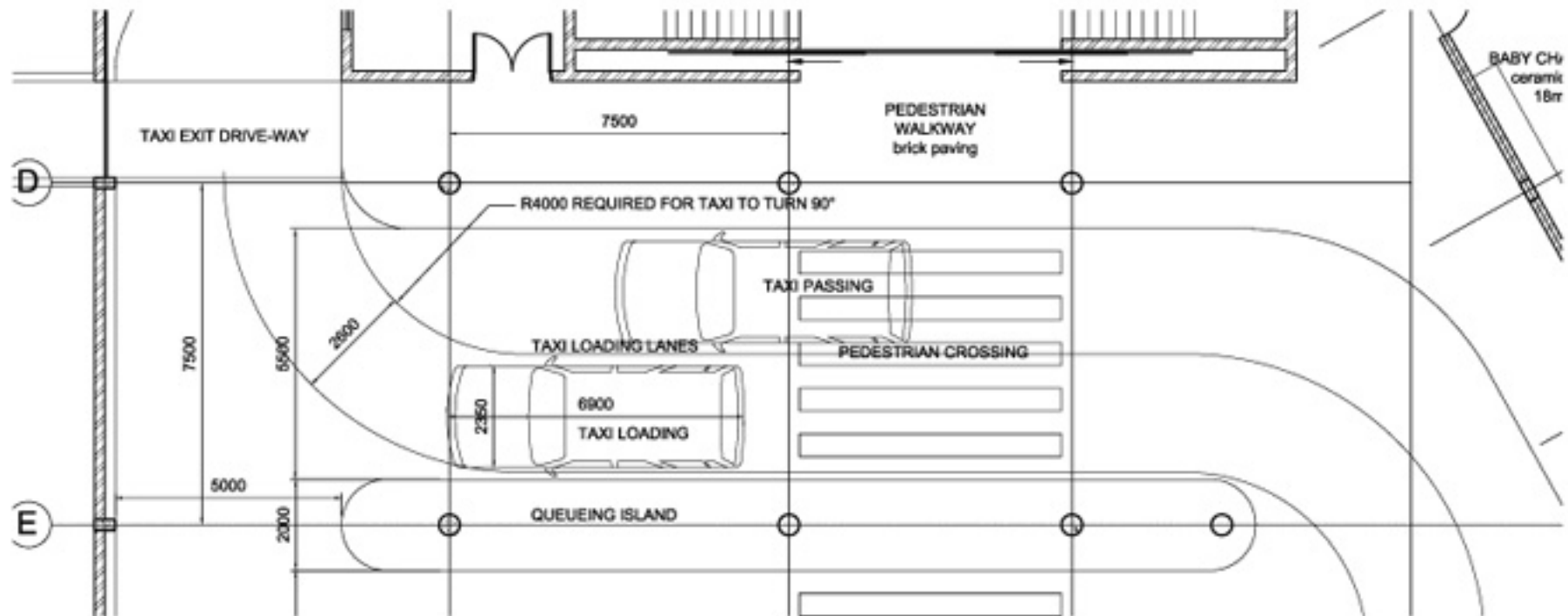
VEHICLE ANALYSIS

DIMENSIONS AND TURNING ANGLES



VEHICLE ANALYSIS

DIMENSIONS AND TURNING ANGLES



Turning angles for the largest taxi (Sprinter)
 (Metric handbook planning and design data)

ABLUTION SERVICES

MALE AND FEMALE ABLUTION SERVICES

The mixed-use structure can be classified under the following occupancy classes:

- A3-Resource centre
- C1 & C2-Exhibition hall and Museum
- D4-Plant room
- F2-Small shop
- G1-Offices
- J4-Parking garage

SABS 0400 (1990) table 4 and 6 outline the provision of sanitary fixtures for the classes in question.

The location of the ablutment points in plan is dictated ease of by accessibility, the idea is to have the ablutments as centrally placed as possible. The design is such that the male and female ablutments are back to back with a duct in between to conceal the service pipes, and also to afford maintenance access.

1	2	3	4	5	6
For a population of up to —	Number of sanitary fixtures to be installed relative to the population given in Column 1				
	Males			Females	
	WC pans	Urinals	Washbasins	WC pans	Washbasins
15	1	1	1	2	1
30	1	2	2	3	2
60	2	3	3	5	3
90	3	5	4	7	4
120	3	6	5	9	5
	For a population in excess of 120 add 1 WC pan, 1 urinal and 1 washbasin for every 100 persons			For a population in excess of 120 add 1 WC pan for every 50 persons	For a population in excess of 120 add a washbasin for every 100 persons

Table 6 [SABS 0400 (1990)]

ABLUTION SERVICES

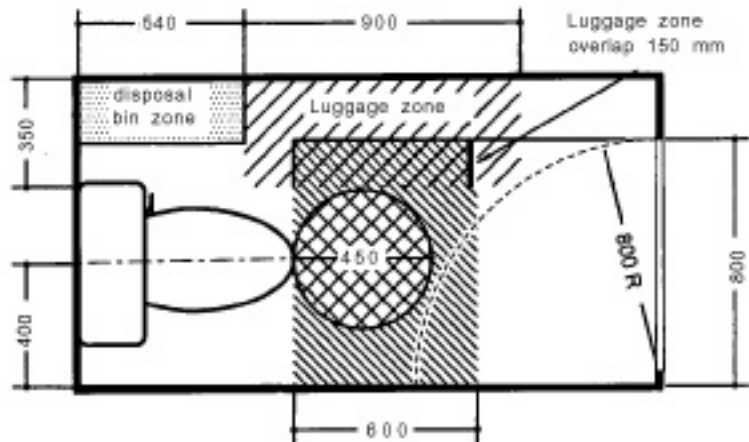
MALE AND FEMALE ABLUTION SERVICES

1 Type of occupancy and population	2 Fixture	3 Exceptions
A1: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	<p>a) In any building where facilities in accordance with Table 5 are available to both personnel and the public or visitors, no separate facilities shall be required for the public or visitors.</p> <p>b) No separate facilities for the public or visitors shall be required within any shop having a floor area of less than 50 m².</p> <p>c) In any group of shops under one ownership or in any shopping complex on a single site –</p> <p>i) facilities for personnel may be situated at convenient locations and not necessarily in any particular shop or shops;</p> <p>ii) facilities for personnel may be grouped or combined with those provided for the use of the public or visitors.</p> <p>d) In any occupancy where personnel are exposed to high risk substances, dirt, sm, dust, soot, oil, grease or any similar substance, exposure to which is such that showers are necessary, at least 1 shower per 15 persons shall be provided separately for each sex and such showers shall be located in, or have direct access to, a change room.</p>
A2: Personnel Public and visitors Peak demand No peak demand Participants in sports	Table 6 Table 7 (part a) Table 7 (part b) Table 8	
A3	Table 6	
A4: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	
A5: Public and visitors Peak demand No peak demand Participants in sport	Table 7 (part a) Table 7 (part b) Table 8	
B1, B2 and B3 Personnel Public and visitors	Table 6 1 WC pan 1 washbasin	
C1 and C2 Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	
D1, D2 and D3 Personnel Public and visitors	Table 6 No separate provision required No provision required	
D4	Table 6	
F1: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	
F2 and F3 Personnel Public and visitors	Table 6 1 WC pan 1 washbasin	
G1: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	

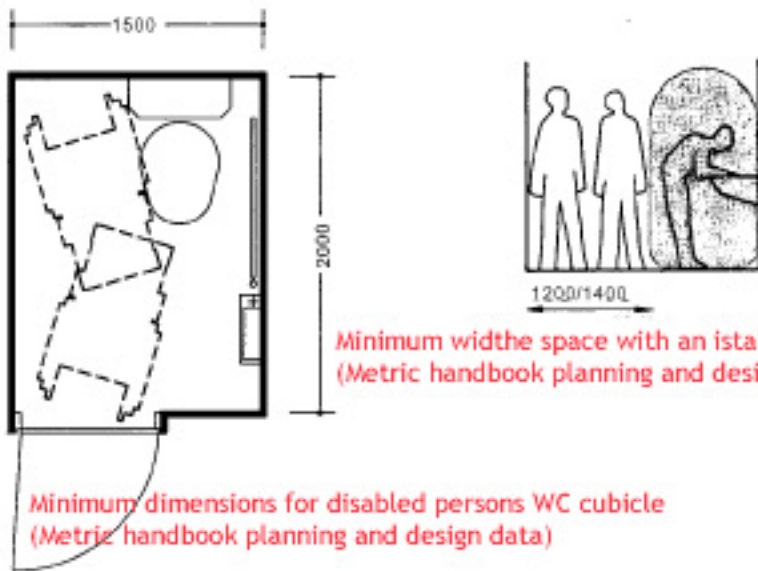
Table 4 [SABS 0400 (1990)]

ABLUTION SERVICES

MALE AND FEMALE ABLUTION SERVICES



Typical size of WC cubicle with an inward opening door
(Metric handbook planning and design data)



Minimum width space with an installation on one side
(Metric handbook planning and design data)

Minimum dimensions for disabled persons WC cubicle
(Metric handbook planning and design data)



Positioning of ablutions on plan

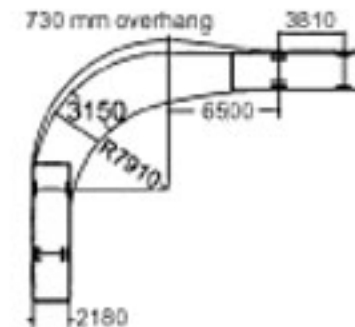
FIRE PROVISION

FIRE EQUIPMENT AND ESCAPE ROUTES

The building is designed to have two firefighting points with fire extinguishers, fire hose reel and fire hydrant. Main covered walkways have a clearance height of 5m and a width of 5m to allow emergency vehicles access.

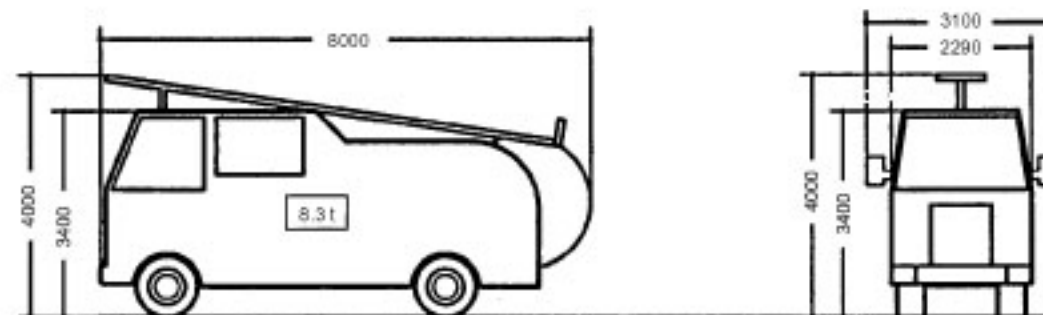
Inside the structure, fire escape exits are located within a distance less than 30m from the furthest point along the escape route, in accordance to the SABS 0400 (1990) Part T.

Fire escape doors are provided for and the materials on the fire escape routes have a minimum fire resistance of 120 minutes.



e fire appliance

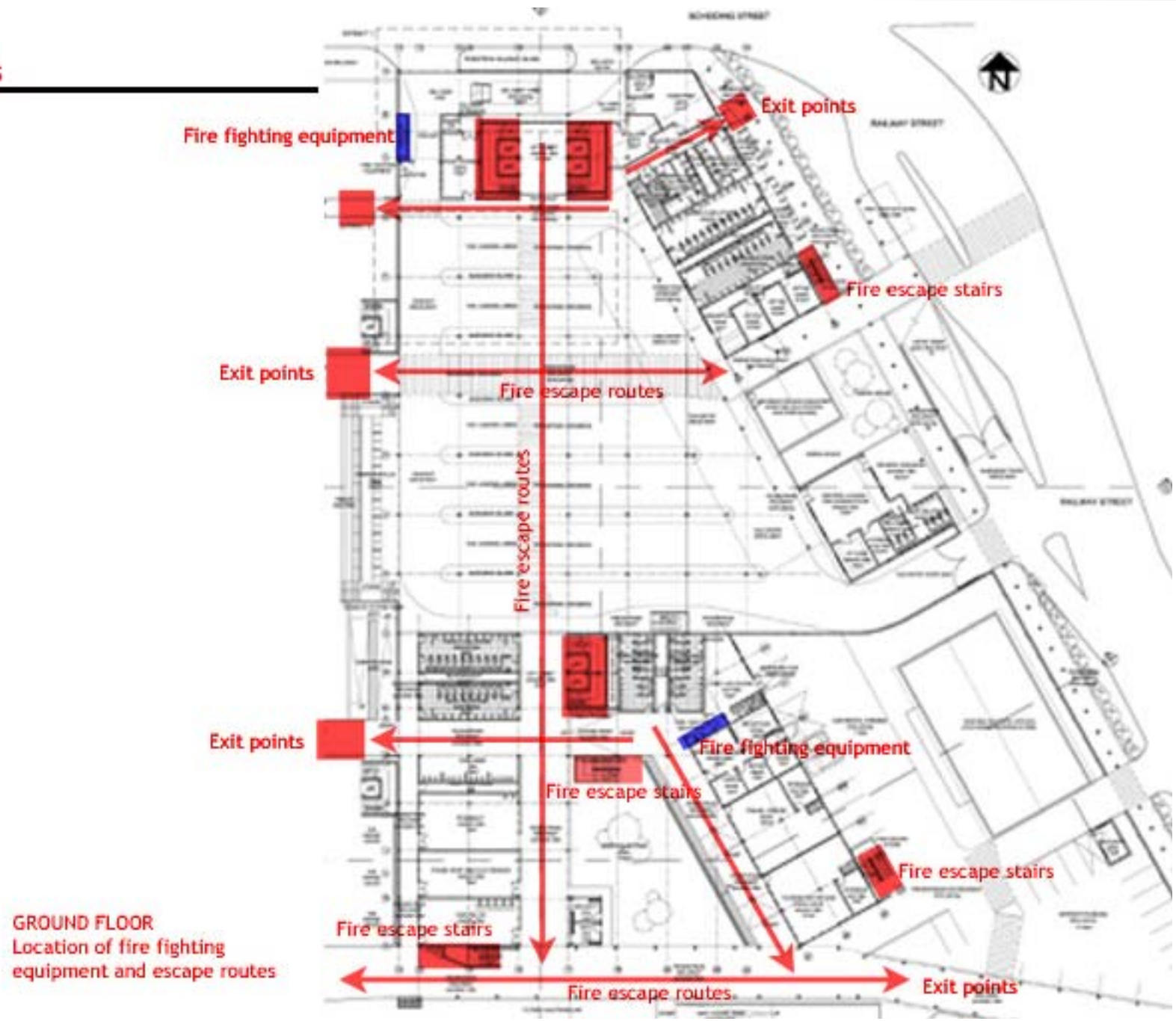
Turning radius for a fire appliance (Metric handbook planning and design data)



Dimensions for a medium size fire appliance (Metric handbook planning and design data)

FIRE PROVISION

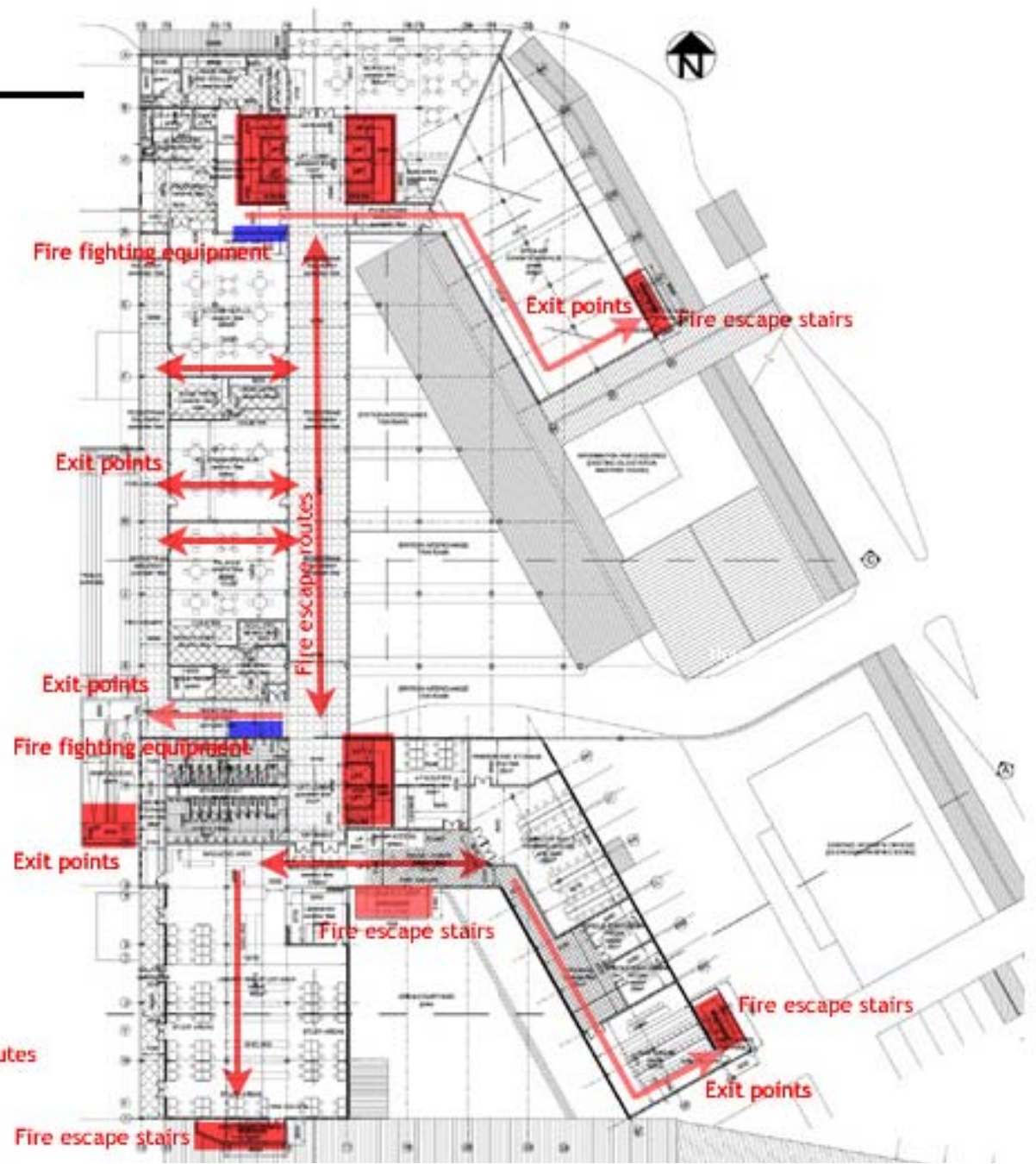
FIRE EQUIPMENT AND ESCAPE ROUTES



GROUND FLOOR
Location of fire fighting
equipment and escape routes

FIRE PROVISION

FIRE EQUIPMENT AND ESCAPE ROUTES



FIRST FLOOR
Location of fire fighting
equipment and escape routes