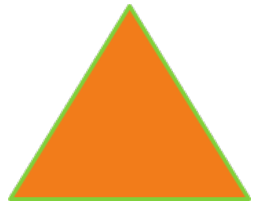
EXTERNAL ACCESS TO SITE AND BUILDING

FLS	EXTERNAL ACCESS TO SITE AND BUILDING	
A3	Fire and Life Safety (FLS) Requirements Annex_3	Revisions_2021
Item	**Provisions**	**Notes**
1.0	**Access Road/Fire Engine Hardstanding (FEH)**	
1.1	4m-width firefighting appliance access or access road to the building shall be provided and the gradient shall not exceed 1: 8.3. The angle of approach and departure for any means of access road shall not exceed 1 m drop in 20 m.	
	No curve on any portion of the access road shall have an inside radius of less than 7 m and an outside radius of less than 12 m. No portion of the access road shall be built with any wall, fence or any structure to prevent obstruction to the manuevering of the fire appliance.	
	The access road shall able to sustain the stationary load of a 24-ton fire appliance.	
1.2	In addition to access road, fire engine hardstanding of 6 m x 15 m (minimum), with longer side parallel to the façade of the building shall be provided in buildings with habitable height exceeding 10 m. The hardstanding shall be able to withstand the stationary load of a 60-ton fire appliance.	
1.2.1	Access opening shall be provided along the external wall of building fronting the fire engine hardstanding to provide access to the building for firefighting and rescue operations.	
1.3	Hardstanding is not required for residential building such as bungalow, semi-detach and terrace houses regardless of building height.	
1.4	For landed residential development with shared communal facilities, there is a need of firefighting appliance access road. The maximum travel distance from the fire engine pump appliance to every point on the project plan area of any building shall be 60 m.	
1.5	For residential building that exceed the habitable height of 10 m, the required fire engine hardstanding shall be within 18 m of the breeching inlet. The breeching inlets shall be located on the external wall above ground level nearest to the vertical run of the riser stack.	
1.6	For building of institution, office, shop and places of public resort with habitable height not exceeding 10 m, fire engine hardstanding shall not be required provided, the fire engine access road shall be within a travel distance of 45 m from every point on projected plan area of any building.	

Item	Provisions	Notes
1.7	Length of fire engine hardstanding shall be provided based on the gross floor area (including toilets, stores, circulation areas, etc.) of the largest floor in the building for institution, office, shop and places of public resort with habitable height exceeding 10m.	
	Please refer to Figure A-Table A1.7, for required length which is in term of the building perimeter length. Different building types have different requirements.	
1.8	Factory (industrial) and storage (warehouse) shall not require firefighting appliance access or access road within the site. And regardless of habitable height, fire engine hardstanding shall be provided. Length of fire engine hardstanding shall be provided based on the gross cubic volume (including toilets, stores, circulation areas, etc.) of the largest floor in the building.	
1.9	Every part of the fire engine hardstanding and/or access road shall be within an unobstructed distance of 50 m away from a fire hydrant.	
1.10	Fire engine hardstanding shall be positioned so that the nearer edge shall not less than 2 m or not more than 10 m from the centre position of the access opening, measured horizontally.	
1.11	Fire engine hardstanding shall be laid on the level and paved platform or if on an incline, the gradient shall not exceed 1:15.	
1.12	Fire engine hardstanding and access roads shall have an unobstructed vertical clearance of not less than 4.5 m.	
1.13	Public road can serve as fire engine hardstanding provided the location of such public roads is in compliance with the requirements of distance from the fireman›s access opening.	
1.14	Fire engine hardstanding and access road shall be kept clear of obstructions and other parts of the building, plants, trees or other fixtures shall not obstruct the path between the fire engine hardstanding and access opening.	
1.15	The inner radius of turning facility for the fire engine hardstanding and access road shall be minimum 7.0 m.	
1.16	Dead-end fire department access roads shall be within 46 m in length; otherwise, provisions for another site access (gate or entrance/exit) remotely located from the main site entrance in villa compound, or approved provisions for the fire apparatus to turn around (turning facility) in all other landed development, will be required.	
1.17	All corners of fire engine hardstanding shall be marked.	
1.18	Marking of corners shall be in contrasting color to the ground surfaces or finishes.	

Item	Provisions	Notes
1.19	Fire engine hardstanding provided on turfed area must be marked with contrasting object (preferably reflective) that is visible at night. The markings are to be at an interval not more than 2 m apart and shall be provided on both sides of the fire engine hardstanding	
1.20	Side post displaying the wordings 'Fire Engine Access – Keep Clear' shall be provided at the entrance of the fire engine hardstanding. Size of wordings shall not be less than 50 mm.	
2.0	**Access Opening/Fireman›s Access Panels (FAP).**	
2.1	Access opening shall be spaced not more than 20m apart measured along the external wall from centre to centre of all access openings.	Firefighting Access Do Not Obstruct 
2.2	Access shall include unobstructed external wall openings, windows, balcony doors, glazed wall panels or access panels. Windows, doors, wall panels or access panels must be readily operable from the inside and outside, unless fitted with breakable glazing. Inside and outside of access openings shall be unobstructed at all times during the occupancy of the building.	
2.3	An external wall which face the fire engine hardstanding and is windowless or a blank wall shall be provided with access opening at each storey.	
2.4	Access opening shall be not less than 850 mm wide by 1000 mm high with sill height of not more than 1100 mm and height not less than 1800 mm above the inside floor level.	
2.5	Panels to access openings shall be posted with either a red or orange triangle of equal sides (minimum 150 mm on each side), which can be upright or inverted, on the external side of the wall and with wordings "Fire Fighting Access – Do Not Obstruct" of at least 25 mm height on the internal side.	
2.6	Buildings and construction regardless of occupancy except factories (industrial occupancy) and warhouses (storage occupancies), having a habitable height of 10m or less, shall be exempted from the requirement to provide access opening.	

Building Type – Institutional, Office, Shop and Place of Public Resort

Gross floor area of largest floor

Minimum	*1/6 perimeter (min 15m)*
2000m2 to 4000m2	*¼ perimeter*
>4000m2 to 8000m2	*½ perimeter*
>8000m2 to 16000m2	*¾ perimeter*
>16000m2	*Island site access*

Building protected throughout by automatic sprinkler system

Minimum	*1/6 perimeter (min 15m)*
4000m2 to 8000m2	*¼ perimeter*
>8000m2 to 16000m2	*½ perimeter*
>16000m2 to 32000m2	*¾ perimeter*
>32000m2	*Island site access*

Building Type – Factory and Storage

Gross cubicle extend of the building

Minimum	*1/6 perimeter (min 15m)*
>28400m3	*¼ perimeter*
>56800m3	*½ perimeter*
>85200m3	*¾ perimeter*
>113600m3	*Island site access*

Building protected throughout by automatic sprinkler system

Minimum	*1/6 perimeter (min 15m)*
>56800m3	*¼ perimeter*
>113600m3	*½ perimeter*
>170400m3	*¾ perimeter*
>227200m3	*Island site access*

Figure A-Table A1.7

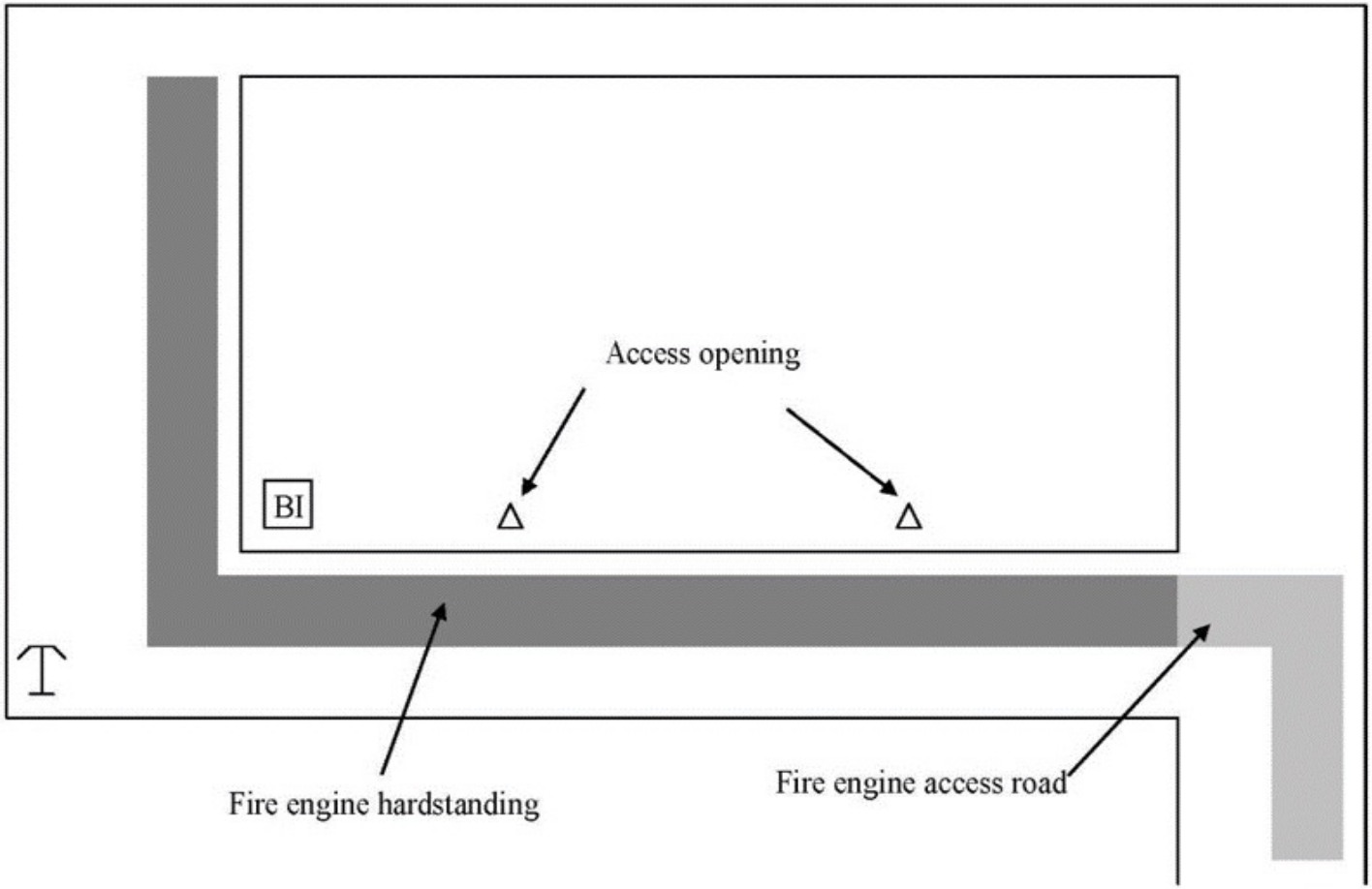

Access opening
BI
Fire engine hardstanding
Fire engine access road

Figure B

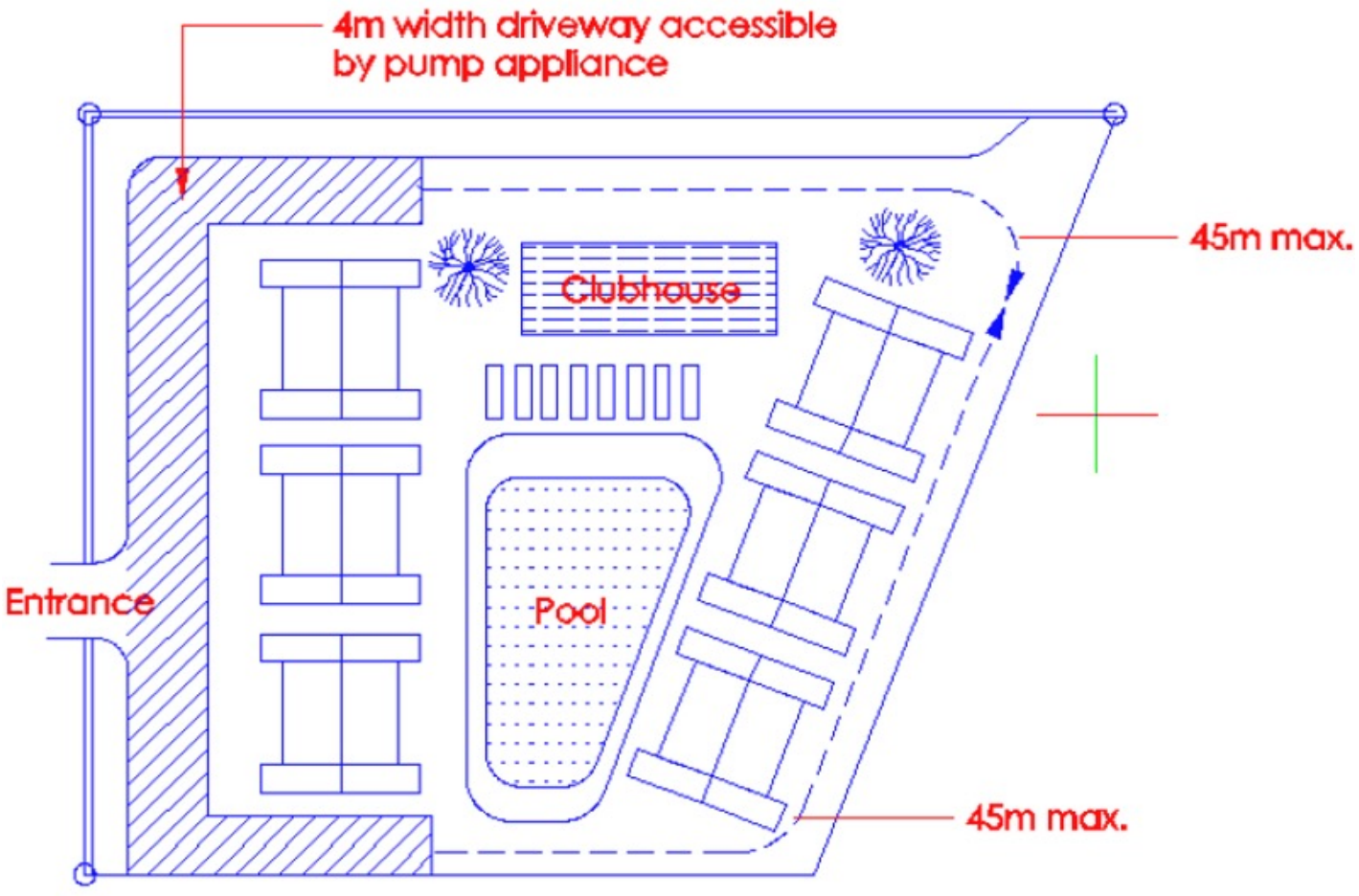

4m width driveway accessible
by pump appliance
45m max.
Clubhouse
Entrance
Pool
45m max.

Figure C

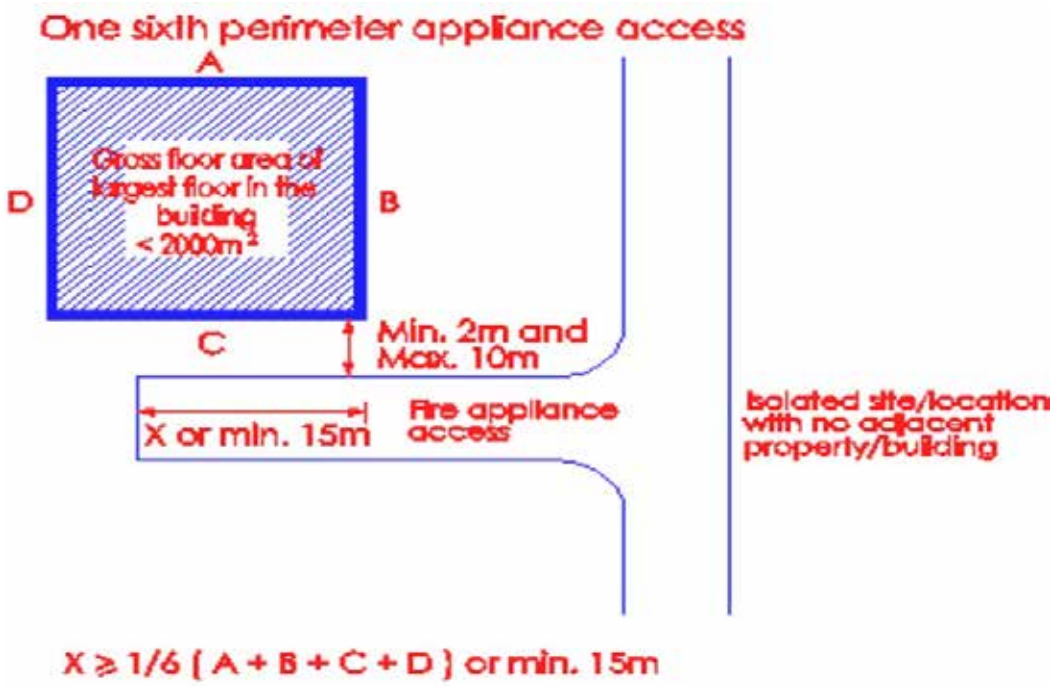
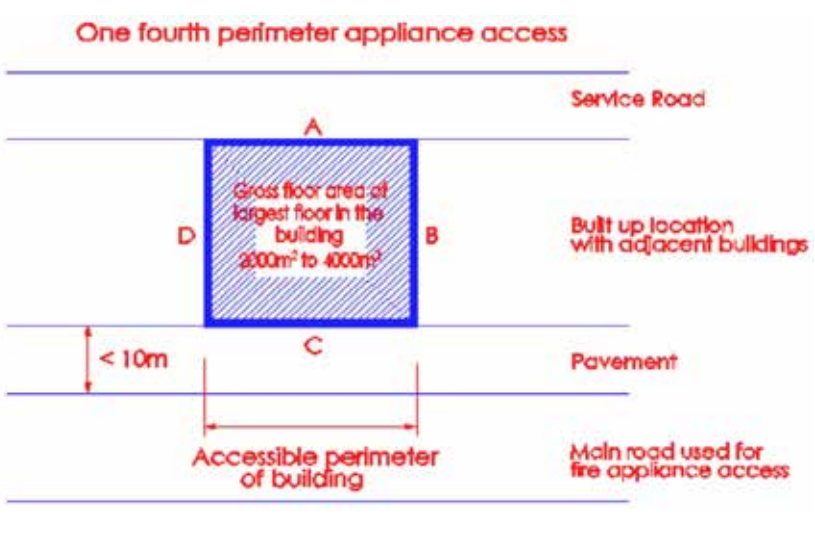

One sixth perimeter appliance access
A
D
Gross floor area of largest floor in the building < 2000m²
B
C
Min. 2m and Max. 10m
X or min. 15m
Fire appliance access
Isolated site/location with no adjacent property/building
X ≥ 1/6 (A + B + C + D) or min. 15m

Figure D


One fourth perimeter appliance access
Service Road
A
Gross floor area of largest floor in the building 2000m² to 4000m²
D
B
Built up location with adjacent buildings
< 10m
C
Pavement
Accessible perimeter of building
Main road used for fire appliance access

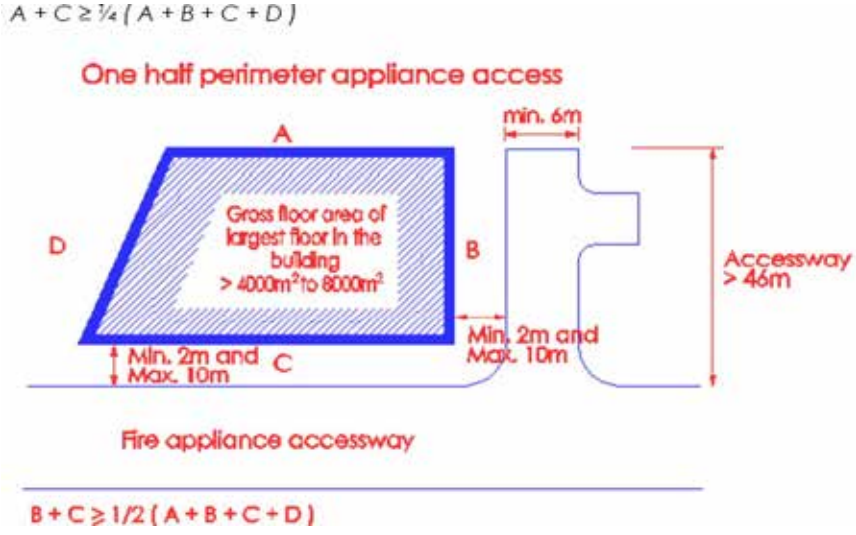

A + C ≥ ¼ (A + B + C + D)
One half perimeter appliance access
min. 6m
A
Gross floor area of largest floor in the building > 4000m² to 8000m²
D
B
Accessway > 46m
Min. 2m and Max. 10m
Min. 2m and Max. 10m
C
Fire appliance accessway
B + C ≥ 1/2 (A + B + C + D)

Figure E

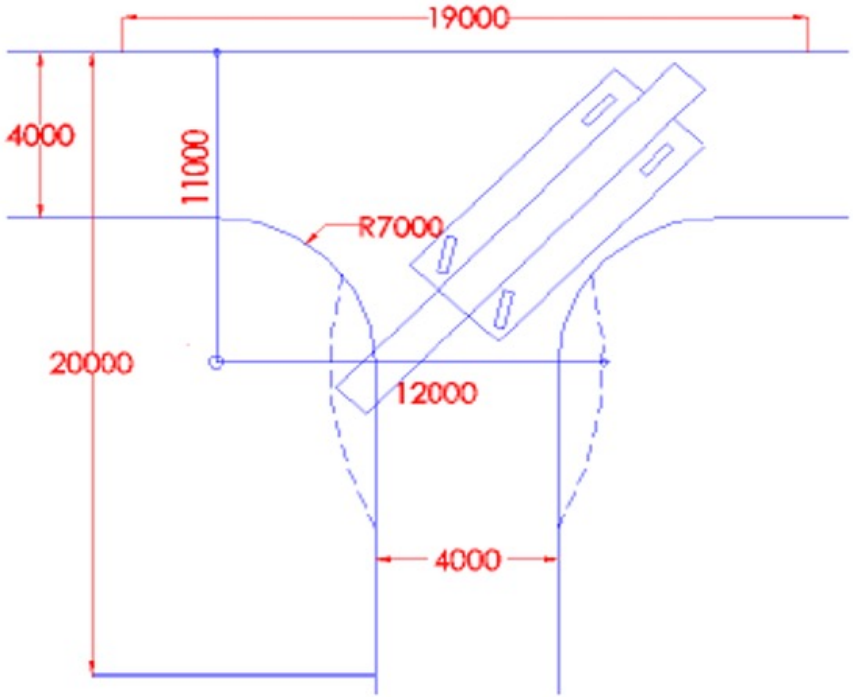


Figure G

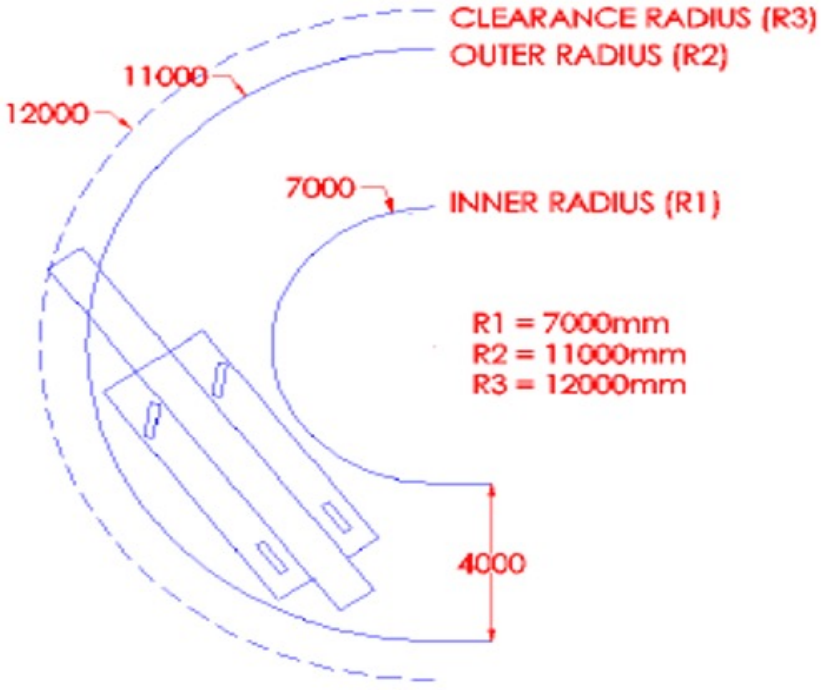

CLEARANCE RADIUS (R3)
OUTER RADIUS (R2)
11000
12000
7000
INNER RADIUS (R1)
R1 = 7000mm
R2 = 11000mm
R3 = 12000mm
4000

Figure H

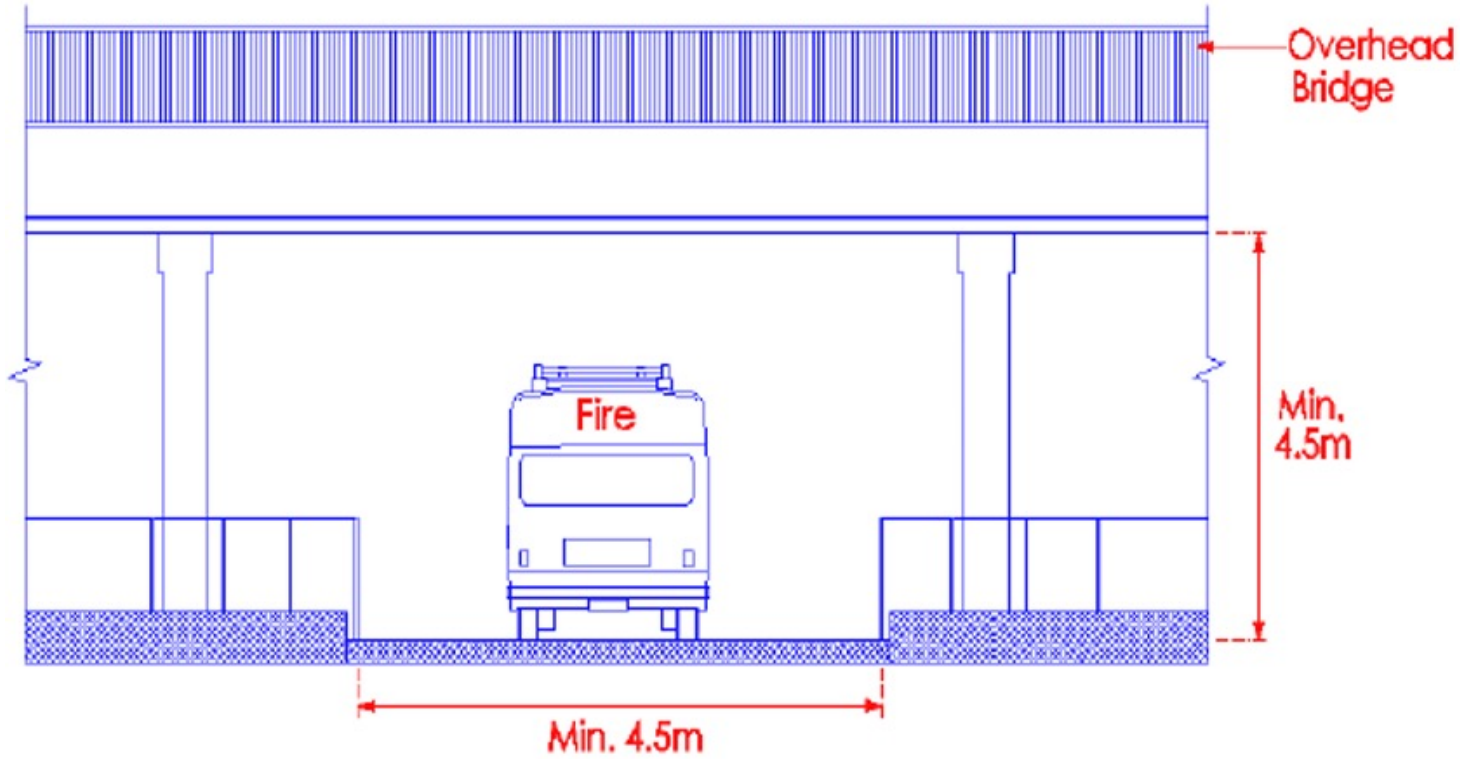


Figure I

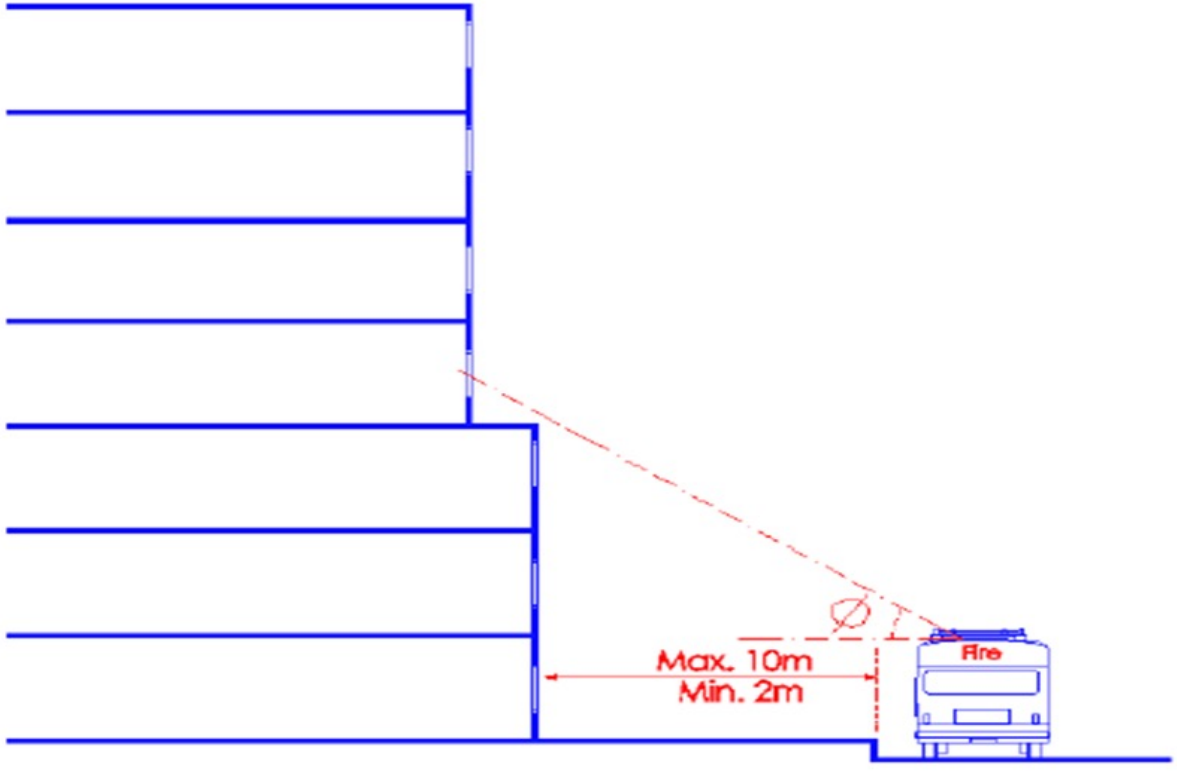


Figure J

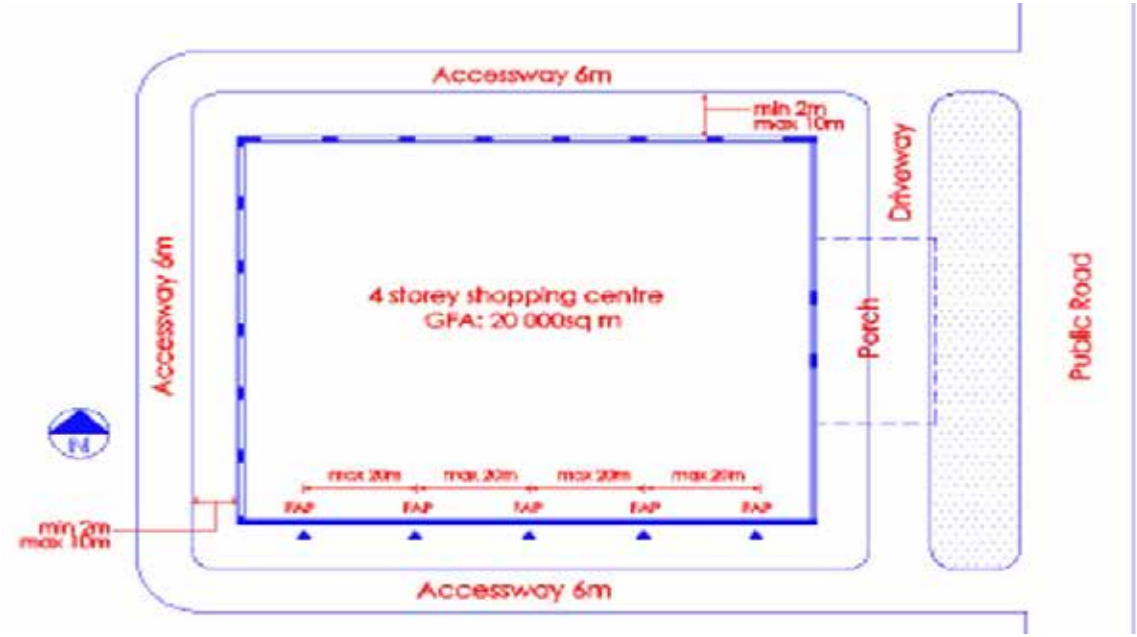
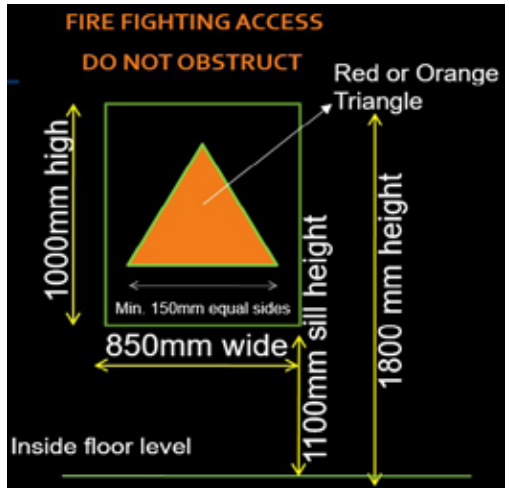


Figure K



FAP - Fireman›s Access Panel
AO - Access Opening (eg. Window)

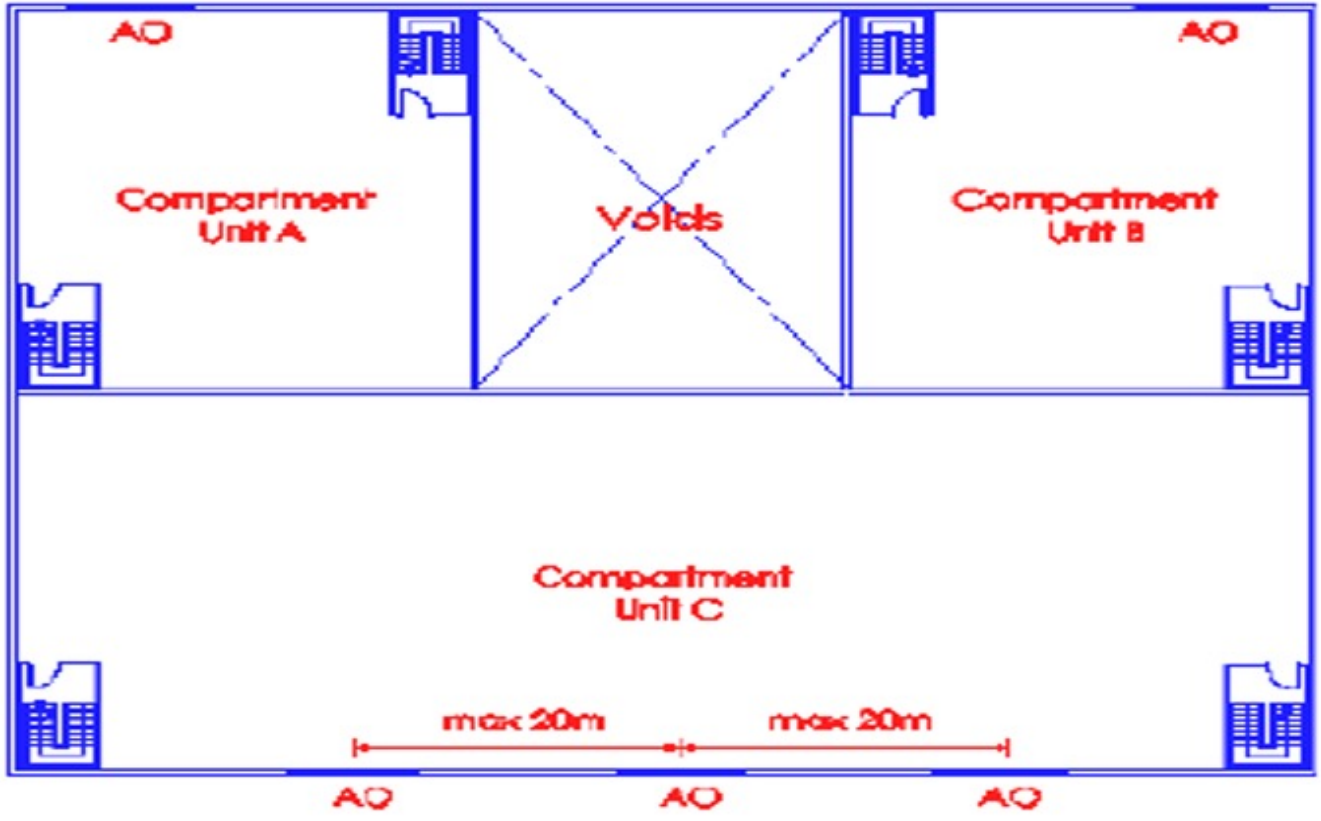

AO
AO
Compartment
Unit A
Voids
Compartment
Unit B
Compartment
Unit C
max 20m
max 20m
AO
AO
AO

Figure L