



## CHAPTER 2

### MEANS OF ESCAPE

#### ROOT OBJECTIVES

The primary intentions of this chapter are encapsulated in the following statements:-

- R2.1 Occupants must be able to escape to a safe place, directly or through a protected exit, before untenable conditions are reached during a fire emergency.
- R2.2 Fire-fighters must be provided with adequate means of access for fire fighting and rescue operations within the building.

#### SUB-OBJECTIVES

The following criteria define the conditions necessary to fulfil the intentions of this chapter:-

- S2.1 Provisions for appropriate alternative means of escape.
- S2.2 Provisions for adequate capacity of means of escape.
- S2.3 Provisions for avoidance of fire occurrence in means of escape.
- S2.4 Provisions for adequate protection against transmission of heat and infiltration of smoke into means of escape.
- S2.5 Provisions for early warning to and communication with occupants in a fire emergency.
- S2.6 Provisions for means of escape appropriate to the occupants' profile and the building's functions and characteristics.
- S2.7 Provisions for accessibility of means of escape.
- S2.8 Provisions for visibility & illumination of means of escape.



- S2.9 Provisions for adequate ventilation for means of escape.
- S2.10 Provisions for directing occupants to means of escape.
- S2.11 Provisions for temporary refuge for healthcare occupancies.
- S2.12 Provisions for reliability of means of escape.
- S2.13 Provisions for adequate time for occupant escape from building.
- S2.14 Provisions for safe movement of people within the means of escape.



## CHAPTER 3

### STRUCTURAL FIRE PRECAUTIONS

#### ROOT OBJECTIVES

The primary intentions of this chapter are encapsulated in the following statements:-

- R3.1 Prevent the untimely collapse of buildings due to the effects of fire that would affect the safe egress of the building occupants.
- R3.2 Prevent spread of fire to adjacent properties due to the effects of a fire in the building.
- R3.3 The building shall remain structurally stable to allow adequate time for fire-fighters to conduct their fire-fighting and rescue operations.

#### SUB-OBJECTIVES

The following criteria define the conditions necessary to fulfil the intentions of this chapter:-

- S3.1 Provision of elements of structure with appropriate fire resistance with respect to :-
  - (i) the fire severity; and
  - (ii) fire fighting and rescue operations; and
  - (iii) the occupant evacuation time; and
  - (iv) enclosure characteristics and configurations; and
  - (v) the height of building; and
  - (vi) occupancy characteristics; and
  - (vii) different fire risk levels.
- S3.2 The construction and use of building materials should be



of the type and method appropriate to the intended performance.

- S3.3 Provisions for reasonable and adequate measures to limit the development of fire.
- S3.4 Provisions for prevention of spread of fire from and to high fire risk areas.
- S3.5 Provisions for the protection of building fire systems to enable their proper functioning during a fire emergency.
- S3.6 Provisions for prevention of spread of fire from storey to storey.
- S3.7 Provisions for prevention of spread of fire to adjacent buildings.
- S3.8 Provisions to minimise risk of fire initiation and limit fire and smoke spread in concealed spaces.
- S3.9 Provisions for reasonable measures to prevent premature structural collapse of the building due to fire.



## CHAPTER 4

### SITE PLANNING & EXTERNAL FIRE FIGHTING PROVISIONS

#### ROOT OBJECTIVES

The primary intentions of this chapter are encapsulated in the following statements:-

- R4.1 Provide space at the building site to enable effective mounting of fire fighting and rescue operations.
- R4.2 Provide reliable and adequate water supply to enable effective fire-fighting operations.

#### SUB-OBJECTIVES

The following criteria define the conditions necessary to fulfil the intentions of this chapter:-

- S4.1 Provision for adequate and appropriate access for effective manoeuvring of fire fighting appliances at the building site for fire-fighting purposes.
- S4.2 Provision for adequate structural provisions for accessways to sustain the operational loads of the fire appliances.
- S4.3 Provision for adequate and appropriate provision of external entry locations on the building facade for fire-fighting and rescue operations.
- S4.4 Provision for proper identification of fire fighting access at the building site and external entry locations for fire fighters on building facade.
- S4.5 Provision for appropriate siting of reliable and adequate hydrant water supplies and related facilities at the building site.



## CHAPTER 5

### ELECTRICAL POWER SUPPLIES

#### ROOT OBJECTIVES

The primary intentions of this chapter are encapsulated in the following statements:-

- R5.1 Provide automatic backup power supply for continuity of services required for life safety and fire-fighting and rescue operations during a fire emergency.

#### SUB-OBJECTIVES

There are no sub-objectives for this chapter.



## CHAPTER 6

### FIRE FIGHTING SYSTEMS

#### ROOT OBJECTIVES

The primary intentions of this chapter are encapsulated in the following statements:-

- R6.1 Provide appropriate and adequate fire-fighting facilities for occupants to perform initial fire-fighting.
- R6.2 Provide appropriate and adequate fire fighting facilities for fire-fighters to conduct their fire-fighting operations.
- R6.3 Provide appropriate and adequate means of alerting occupants and locating of the fire by fire-fighters.
- R6.4 Provide, where appropriate, adequate fire suppression systems commensurate with the level of fire safety intended for the building.

#### SUB-OBJECTIVES

The following criteria define the conditions necessary to fulfil the intentions of this chapter:-

- S6.1 Provisions for fire-fighting systems for initial fire fighting by occupants shall be installed appropriate to:-
  - (i) the nature of the fire hazard in relation to use of the building; and
  - (ii) the layout and footprint of the floor of the building.
- S6.2 Fire fighting systems, including the necessary accessories for fire-fighting operations shall be installed appropriate to:-
  - (i) the nature of the hazard; and
  - (ii) the anticipated fire severity; and



- (iii) the layout and footprint of the floor of the building; and
- (iv) the height above and depth below ground of the building; and
- (v) the use of the building; and
- (vi) the location, accessibility and availability of the systems.

S6.3 Fire suppression systems to control the spread of fire shall be installed appropriate to:-

- (i) the nature of the fire hazard; and
- (ii) the anticipated fire severity; and
- (iii) the fuel and storage configuration; and
- (iv) the height above and depth below ground of the building; and
- (v) the use of the building.

S6.4 Provisions for appropriate and adequate detection and warning systems to alert occupants, alarm monitoring agents and fire service shall be installed appropriate to:-

- (i) the occupant characteristics; and
- (ii) the nature of the hazard; and
- (iii) the anticipated fire severity; and
- (iv) the layout and footprint of the floor of the building; and
- (v) the height above and depth below ground of the building; and
- (vi) the use of the building; and



(vii) locating the fire.



## CHAPTER 7

### MECHANICAL VENTILATION AND SMOKE CONTROL SYSTEM

#### ROOT OBJECTIVES

The primary intentions of this chapter are encapsulated in the following statements:-

- R7.1 Maintain tenable conditions for evacuation of occupants and protect them from injury arising from the effects of fire.
- R7.2 Provide smoke management in the building for fire-fighting operations.

#### SUB-OBJECTIVES

The following criteria define the conditions necessary to fulfil the intentions of this chapter:-

- S7.1 Provisions for ventilation for life safety purposes such that, in the event of a fire, evacuation routes are maintained :-
  - (i) below thermal threshold for human tenability; and
  - (ii) at visibility levels adequate for occupant evacuation; and
  - (iii) below toxicity threshold for human tenabilityfor the period of time required for escape.
- S7.2 Provisions for ventilation to maintain safe conditions in the means of escape for evacuees for the period of time required for escape.
- S7.3 Provisions for adequate ventilation for the storage of flammable and explosive substances or equipment emitting flammable vapour, to prevent undesirable accumulation of such flammable vapour.



S7.4 The installation and operation of the mechanical ventilation systems shall

- (i) have minimal contribution to the spread of fire and smoke in the building; and
- (ii) have no adverse effects on the operation of other life safety or fire suppression systems.

S7.5 Provisions for appropriate and adequate ventilation to

- (i) rooms housing essential fire fighting facilities which are dependent on it for their continued operation; and
- (ii) fire command centre in which emergency personnel operate.



## CHAPTER 8

### OTHER SYSTEMS

#### ROOT OBJECTIVES

The primary intentions of this chapter are encapsulated in the following statements:-

- R8.1 Enable the safe escape of occupants from a building during a fire emergency by having adequate and appropriate
- (i) lighting; and
  - (ii) means of identifying exit routes.
- R8.2 Enable the continual use of fire fighting facilities by providing adequate and appropriate lighting for the duration of the fire emergency.
- R8.3 Early warning to occupants of impending danger posed by a fire in the building.
- R8.4 Enable effective fire-fighting by providing means of communication for fire-fighters in a building during a fire emergency.

#### SUB-OBJECTIVES

The following criteria define the conditions necessary to fulfil the intentions of this chapter:-

- S8.1 Provisions for lighting at appropriate locations to enable occupants to have adequate visibility for safe evacuation, with considerations for:-
- (i) the use of the building; and
  - (ii) the distance of travel to common escape routes
- S8.2 Provisions for adequate and appropriate means to enable occupants to



- (i) clearly identify exit locations; and
- (ii) be guided to such exit locations

during a fire emergency in the building.

S8.3 Provisions for adequate and appropriate means of relaying information and instructions to the occupants during a fire emergency in a building, with considerations for:-

- (i) the use of the building; and
- (ii) the occupant load of the building; and
- (iii) the floor area of the building; and
- (iv) the height of the building; and
- (v) basement conditions; and
- (vi) the characteristics of the occupants.

S8.4 Provisions for adequate and appropriate means of communication for fire-fighting and rescue operations in the building, with considerations for:-

- (i) the use of the building; and
- (ii) the occupant load of the building; and
- (iii) the floor area of the building; and
- (iv) the height of the building; and
- (v) basement conditions.