Chapter 3 – Part 2

CODE OF PRACTICE FOR FIRE PRECAUTIONS IN BUILDINGS 2013

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Existing Requirements

Cl.3.2.8(c)(i) Open sided car parking decks having not less than 50% of the sides permanently open and unobstructed, and such openings being evenly distributed along the perimeter walls, excluding perimeter walls to air-well, so as to provide cross ventilation to all parts of the car parking decks;
**Rationale:**
To make it more explicit that the 50% unobstructed openings must be evenly distributed on individual floor/deck of every MSCP elevation.

**Revised Requirements**
Cl.3.2.8(c)(i)
Open sided car parking decks having not less than 50% of the sides permanently open and unobstructed, and such openings being evenly distributed along each of the perimeter walls and on every individual floor/deck, excluding perimeter walls to air-well, so as to provide cross ventilation to all parts of the car parking decks.
MSCP – Cl 3.2.8(c)(i)

50% of each perimeter walls of individual floor shall be permanent openings and be not more than 12m from any floor space.

Each external or perimeter wall (A to D) be at least 50% as permanent openings.
New clause: Cl.3.2.9 For additions and alterations to existing buildings, the areas undergoing such works must be separated from other occupied areas of the building in accordance with clause 3.15.15.

Cl. 3.15.15: For additions and alterations to existing buildings, non-combustible partitions shall be used for separation of areas undergoing A&A works from the occupied areas of the building.

Rationale: This new provision is intended to address existing unit that undergo A/A.

The area must be separated from other occupied areas.
Review of Table 3.3A

Rationale:
- Car park building exceeded
- Fire rating to elements of structure is 4-hour.
- The rating is considered stringent

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### Revised Requirements

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### Notes to Part I

For the purpose of Cl 3.3.1 the period of fire resistance to be taken as being relevant to an element of structure is the period included in columns (5) or (6) in the line of entries which specifies the floor area with which there is conformity or, if there are two or more such lines, in the topmost of those lines.

(*) A floor which is immediately over a basement storey shall be deemed to be an element of structure forming part of a basement storey.

(+) The expression “part” means a part which is separated as described in Cl 3.3.4(b).

(a) The period is half an hour for elements forming part of a basement storey which has an area not exceeding 50 m²

(b) This period is reduced to half an hour in respect of a floor which is not a compartment floor, except as to the beams which support the floor or any part of the floor which contributes to the structural support of the building as a whole.

(c) This period is reduced to 2-hours for:

1. unsprinklered, open-sided standalone car park buildings
2. sprinkler protected, above-ground car park floors in standalone car park building or mixed-use building.

(d) Single basement car park storey, which is sprinklered protected, the element of structure can be reduced to half the minimum period of fire resistance.
New clause: Cl.3.7.7 Use of fire shutter

Rationale: The code is silent on the use of fire rated shutter. To facilitate the use of fire shutter, the work group has proposed to address fire shutter used in various situations.
Cl.3.7.7 Fire shutter is permitted to be used as compartment wall except for fire compartmentation of fire command centre and means of escape which include exit staircase, smoke-stop lobby/fire-fighting lobby, internal exit passageway, etc.

Cl.3.7.8 The fire shutters, which are used to protect openings in compartment wall/floor, shall have the necessary fire resistance including thermal insulation, not less than that of the compartment wall/floor. However, fire shutters, which are installed at the edge of atria, voids such as escalator void areas and between floors and door way, need not have thermal insulation.
Roller Shutter at the atrium – Need not have insulation rating
Fire Resistance Rating:

- Integrity (112 min)
- Insulation (80 min)

⇒ Fire Rating: 60 min
Cl.3.7.9 The commonly used shutters such as vertical, horizontal and lateral fire shutters shall comply with SS 489 and the following:

(a) For vertical fire shutter operated by gravity during fire condition:

- operating mechanism of curtains/leaves of vertical fire shutter shall be released upon activation of fire alarm system or fusible link.
(b) For electrically operated vertical, lateral and horizontal fire shutter (no fusible link is required):

- electrical motor shall drive the curtains/leaves to descend upon activation by fire alarm system,
- back up by emergency power supply
- power and signal cables shall be fire-rated.
Cl.3.7.10 The mode of activation for fire shutters at different locations shall be as follow:

(a) Fire shutters as separating wall between two buildings:

(i) Two buildings separated by a common fire shutter:
- vertical fire shutter operated by gravity and electricity
- to link to fire alarm systems of both buildings
- shall be activated by fire alarm system of either building.
- activation by fusible link only is not permitted.

(ii) Two buildings separated by two separate fire shutters:
- vertical fire shutter operated by gravity and electricity
- each fire shutter shall be activated by the fire alarm system of its own building.
- activation by fusible link only is not permitted.
3.7.10 (b) Fire shutters as compartment wall/floor for
- limiting compartment area and cubical extent
- as compartment between different purpose groups,
- as compartment of special rooms; and
- as compartment of basement passenger/goods lift lobby:

(i) For vertical fire shutter operated by gravity
    - activation by fusible link is acceptable.

(ii) For electrically operated fire shutter
    - activation shall be by local smoke detectors.
3.7.10(c) Fire shutters as compartmentation at atrium/voids or between floors (being part of the engineered smoke control design):

(i) Only electrically operated fire shutter is permitted. Signal to operate the respective fire shutter shall be from dedicated smoke detector installed at the respective smoke zone.

(ii) Vertical fire shutter operated by gravity activated by fusible link is not permitted.
Existing Requirements:
Cl.3.8.7 Protected shaft containing exit staircase
A protected shaft which contains an exit staircase shall comply with the following:
(a) It shall not contain any pipe conveying gas or combustible liquid.
(b) It shall not contain any services that are not solely serving the same staircase except for:
   (i) cut-off sprinkler and pipe for that staircase; and
   (ii) UPVC or cast iron rain water downpipes serving the roof directly above the exit staircase, and not routed through anywhere outside the staircase.

Cl.3.10.2 Structure separating exit staircase
The exit staircase shall be separated from other parts of the building by a masonry structure or drywall complying with Cl.3.8.7(c) which shall have fire resistance for not less than the period required by Cl.3.3 for Elements of Structure.
**Rationale**: Exit staircase shall not have services that are not intended for the staircase shaft.

Changes:
Cl.3.8.7(a) A protected shaft which contains an exit staircase shall not contain any services e.g. pipes, cables, ducts, etc., that are not solely serving the same exit staircase (even if the services are protected with fire rated dry construction), except for:
(i) cut-off sprinkler and pipe for that staircase; and
(ii) UPVC or cast iron rain water downpipes serving the roof directly above the exit staircase, and not routed through anywhere outside the staircase.
(iii) rising mains.
**LEGEND**

SA = Supply air shaft
RC = Refuse chute
ES = Exit staircase
L  = Lift shaft
**Existing Requirements**

Cl.3.8.8(g) If it serves any basement storey and not adjoining any void connecting to upper levels or any external spaces, there shall be provided a lobby enclosed by walls having fire resistance of not less than 1 hour and fire door of not less than half an hour.

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**Plan**

- Car park lots
- Two-way drive-way
- Lift Lobby
- Lift Lobby
- Lift Lobby

FD – Fire door
**Rationale:** Need to be more specific on the requirements for lift lobby and criteria for void to exempt the provision of lift lobby

**Revised Requirements**

Cl.3.8.8(g) If it serves any basement storey it shall be protected by a smoke stop lobby with walls having 1 hour fire resistance and fire door of half-an-hour fire resistance. The protected lobby shall be mechanically ventilated.
Exception:
Where the lift landing area is adjoining an air-well or external space of minimum clear area 10m² and minimum width of 3m. The distance between the nearest edge of lift door opening to the air-well shall not exceed 3m.
Existing Requirements
Cl.3.8.8(h) Private Lift
Private lifts that are provided for the exclusive use of occupants in residential units under purpose group II buildings shall comply with the following requirements:
(i) Smoke detectors shall be provided at the lift landing area. The activation of any of the smoke detectors at the lift landing area shall cause the lift to home to the designated floor; and
(ii) Emergency power supply from a generating plant shall be provided to home the lift to the designated floor when there is a power failure in the building; and
(iii) The lift shall not be permitted to double-up as a fire lift; and
(iv) Private lifts shall comply with SS CP 2.

Rationale:
No mention of common protected private lift lobby for Purpose group II.
Revised Requirements:
Cl.3.8.8(h) Private Lift

Private lifts that are provided for the exclusive use of occupants in residential units under purpose group II buildings shall comply with the following requirements:

(i) Smoke detectors shall be provided at the lift landing area. The activation of any of the smoke detectors at the lift landing area shall cause the lift to home to the designated floor; and

(ii) Emergency power supply from a generating plant shall be provided to home the lift to the designated floor when there is a power failure in the building.

(iii) The designated floor can either be on grade level or one level below grade level. If it is the latter, the lift shall home to a protected lobby and with direct access to an exits; and

(iv) The lift shall not be permitted to double-up as a fire lift; and

(v) Private lifts shall comply with SS CP-2550.
**Existing Requirements**

Cl.3.11.8(k)

The height of concealed space measured between the top of the structural floor and underside of the raised floor decking shall not exceed 400mm and shall be fitted with automatic smoke detection system complying with requirements of SS CP 10 Code of Practice for the Installation and Servicing of Electrical Fire Alarm Systems; and in the case of sprinkler protected building, the height of concealed space may exceed 400mm if the space is fitted throughout with an automatic sprinkler system which complies with the requirements in Chapter 6.
**Rationale:** To address sprinkler protection for non-sprinklered building but with raised floor height exceeding 400mm.

**Revised Requirements**

Cl.3.11.8(k)

For a non-sprinklered protected building, if the height of the concealed space measured between the top of the structural floor and underside of the raised floor decking exceeds 400mm, it shall be fitted with automatic smoke detection system complying with requirements of SS CP 10 Code of Practice for the Installation and Servicing of Electrical Fire Alarm Systems. For a sprinkler protected building, the concealed space shall be fitted with automatic smoke detection system as above if its height is between 150mm to 400mm, and automatic sprinkler system if it exceeds 400mm, fitted throughout with an automatic sprinkler system which complies with the requirements in Chapter 6.
Thank You