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Our Ref: OM-LA/009

28 March 2011

**MEMORANDUM**

To: Members of the Staff

From: Loh Fook Yuen

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**FSSD CIRCULAR**
**USE OF LIFTS FOR EVACUATION OF BUILDING OCCUPANTS**

Please find attached the circular from FSSD dated 25 March 2011 pertaining to the above-captioned for your information and attention.

LOH FOOK YUEN

cc TLS/LCT/CCG/GSH
cc Memo File

enc

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BCA ISO 14000 CERT. NO.: 2008/134 SS ISO 14001 : 2004
BCA ISO 9000 CERT. NO.: 324 SS ISO 9001 : 2000
SAC ACCREDITED CERTIFICATION BODY Cert No: QS-1997-02 Member of the IAF MLA for QMS

# SINGAPORE CIVIL DEFENCE FORCE

Our Ref. : CD/FSSD/12/02/03/01

Your Ref :

Date : 25 March 2011

HQ Singapore Civil Defence Force
91 Ubi Avenue 4
Singapore 408827
Tel : 68481407
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Registrar, Board of Architects (BOA)
Registrar, Professional Engineers Board (PEB)
President, Singapore Institute of Architects (SIA)
President, Institution of Engineers, Singapore (IES)
President, Association of Consulting Engineers, Singapore (ACES)

Dear Sir/Mdm,

**USE OF LIFTS FOR EVACUATION OF BUILDING OCCUPANTS**

The use of exit staircases to evacuate building occupants in a fire emergency has been an established practice both locally and internationally, while evacuation via lifts is prohibited. As only exit staircases are used, this results in longer evacuation time and may pose a challenge to particular segments of the building occupants such as the aged, persons with disabilities, pregnant women and young children due to their reduced mobility.

2. To address these limitations, SCDF reviewed the current evacuation strategy with inputs from the members of the FSSD Standing Committee and Fire Code Review Committee. Arising from the review, we are pleased to announce the formulation of a set of requirements involving the use of lifts to facilitate evacuation of building occupants (please see attached FSR 8:2011).

3. Notwithstanding these requirements, SCDF would like to emphasize that the use of exit staircases is still the dominant mode of occupant evacuation during an emergency. Evacuation via lifts is only permitted under the supervision of fire-fighters/company emergency response team (CERT) and their use is primarily intended for persons requiring assistance. Able-bodied occupants are therefore still expected to use the exit staircases for their evacuation.

4. This set of fire safety requirements shall be applicable to all buildings above 24m in habitable height except Purpose Group I and II buildings as defined in the Fire Code and shall take effect on 27 December 2011. Any building projects that have obtained URA's Written Permission on or after the

effective date must comply with these requirements. With this revision, please note that this set of fire safety requirements will supersede existing fire code requirements stipulated under cl.6.6.2(c) and cl.6.6.3(a). A reprint of the relevant pages of the Fire Code incorporating the changes/amendments is shown in Annex A. The changes are highlighted by a black vertical line.

5. In the interim, we also encourage existing buildings to carry out immediate retrofitting works to their existing passenger lifts so that these could be used by fire-fighters/CERT to facilitate building evacuation during an emergency (please see cl. 3.1.3 of the attached for the type of retrofitting works required).

6. Please convey the contents of this Circular to members of your Institution/Association/Board. The Circular is available in CORENET-e-Info: **http://www.corenet.gov.sg/einfo.**

7. For any inquiry or clarification, please contact: Mr. Randy Tan at Tel: 68481461 or Email: Randy_Tan@scdf.gov.sg.

Yours faithfully,

(transmitted via e-mail)
Poon Keng Soon
Secretary, FSSD Standing Committee
*for* Commissioner
Singapore Civil Defence Force

cc
All members of FSSD Standing Committee
President, REDAS
President, IFE
President, SISV
CEO, BCA
CEO, URA
CEO, HDB
CEO, PSA
CEO, JTC
CE, LTA

CE, TUV SUD PSB – (Attn: Ms Emily Mok/ Mr Lau Keong Ong)
CE, SPRING Singapore – (Attn: Mr Kenneth Lim)
President, FSMAS
Honorary Secretary, SPM




*FIRE SAFETY AND SHELTER DEPARTMENT*
SINGAPORE CIVIL DEFENCE FORCE

# REQUIREMENTS ON USING LIFTS FOR EVACUATION OF BUILDING OCCUPANTS DURING EMERGENCY

**FSR 8:2011**

**Effective Date : 27th Dec 2011**

***Released by :***

**Fire Safety Consultation Branch**
**Fire Safety & Shelter Department**

**( Total 5 pages )**

# REQUIREMENTS ON THE USE OF LIFTS FOR EVACUATION OF BUILDING OCCUPANTS DURING EMERGENCY

## 1 SCOPE

1.1 The scope of these requirements covers the provisions of lift design for evacuation of building occupants requiring assistance during emergencies. It shall be applicable to all buildings exceeding 24m except Purpose Group I and II buildings (residential developments) as defined in the Fire Code.

## 2 PRINCIPLES OF EVACUATION

2.1 Unless there are extenuating circumstances which call for total simultaneous evacuation of a building, evacuation of occupants in tall buildings is generally carried out in phases on activation of fire alarm, as these buildings are installed with sprinkler system and passive fire protection systems (e.g. compartmentation or fire-rated enclosure), which serve to prevent spread of fire.

2.2 Lifts are not used for evacuation of building occupants in the past. However, an option to use lifts for evacuation is now made available to fire-fighters and mandatory or volunteer CERT (Company Emergency Response Team) registered with the SCDF (i.e. only under supervision), if the necessary safety features are incorporated. Lifts used in combination with exit staircases is a more practical strategy to speed up building evacuation, particularly if there are occupants who may require assistance such as the aged, pregnant women and young children.

2.3 Notwithstanding this, the use of exit staircases is still the dominant mode of occupant evacuation during an emergency. Evacuation via lift is only a secondary means to complement evacuation via exit staircases. The use of lift is primarily aimed at persons requiring assistance. Able-bodied occupants are therefore still required to use the exit staircases for their evacuation.

# 3 PROVISIONS FOR LIFT EVACUATION

## 3.1 New buildings above 24m in habitable height except purpose groups I & II

### 3.1.1 Lift for evacuation

3.1.1.1 An additional fire lift shall be provided for the above building. This lift can be used for evacuation of occupants requiring assistance. Where the provision of a fire lift is already a requirement in the Fire Code, such lift is to be primarily used for fire-fighting and rescue purposes. As such, an additional fire lift would be required, which can be used by fire-fighters to conduct evacuation as well. The installation of the fire lift shall be in accordance with Singapore Standard or SS 550:2009 (Installation, operation and maintenance of electric passenger and goods lifts). All other related fire safety measures where fire lift is provided such as fire fighting lobby, location of exit staircase adjacent to the fire lift shall be designed in accordance with the Fire Code.

3.1.1.2 Where the additional fire lift is provided, it can double up as an evacuation lift for persons with disabilities (PWDs) i.e. evacuation lift for PWDs need not be separately provided. The design requirements of the fire lift shall follow that of the evacuation lift for PWDs (e.g. the fire lift shall have a platform area of minimum 1.2m by 1.4m i.e. area of 1.68m$^2$, instead of 1.45m$^2$ that is currently stipulated in clause 13.2.1.2 of SS550:2009). However, for buildings more than 40 storeys, the minimum clear platform size of the fire lift shall follow that as stipulated in SS550:2009 (i.e. 1.7m by 1.5m).

### 3.1.2 Communication

3.1.2.1 A lift monitoring system shall be provided within the Fire Command Centre (FCC). It shall monitor the floor location of the lift, direction of travel, status with respect to occupation, both the normal and emergency power supplies to the lifts, activation of a fire alarm within the lift shaft or lift motor room or lift lobby. Provision to manually override the lift shall be installed in the FCC for use by the fire-fighters/CERT if required.

3.1.2.2 Voice communication system shall be provided in the building.

3.1.2.3 An intercom system in the lift car must be provided for communication between the lift operator and the Fire Command Centre.

3.1.2.4 Close circuit television at lift lobbies to facilitate situation awareness for the authorized personnel overseeing the evacuation at the FCC or 24-hourly manned station. Alternatively, a suitable means of communication may be provided between the protected lobby and Fire Command Centre (FCC) or any 24-hourly manned station, for persons requiring assistance to call for assistance during a fire emergency. It may be in the form of a distress button or voice communication. The means of communication shall:

(a) be located between 0.8m and 1.2m above ground level;

(b) be appropriately labelled;

(c) be provided with prominently displayed clear instruction sign on its operation; and

(d) When the device for communication is activated, it shall generate a clear visual indication to indicate that the distress signal has been relayed. The purpose is to enable the person requiring assistance to alert the FCC or the manned station that they are in need of assistance and for them to be reassured that this assistance will be forthcoming

### 3.1.3 Passenger Lifts

3.1.3.1 While the use of fire lift would facilitate occupant evacuation, the increased rate of evacuation is limited by the availability of such lift. Therefore, passenger lifts shall be designed for use together with the fire lifts so as to speed up occupant evacuation.

3.1.3.2 Passenger lifts shall be designed with the following features:

(a) Fire lift switch. Where there is provision to manually override the passenger lifts at the FCC by authorized personnel or fire-fighters, fire lift switch need not be installed.

(b) Power cables which are routed through an area of negligible fire risk.

3.1.3.3 Close circuit television shall be provided at lift lobbies.

## 3.2 Existing buildings above 24m in habitable height except purpose groups I & II

3.2.1 The design requirements as stipulated under paragraph 3.1 shall also be applicable to the above existing buildings when major retrofitting works are carried out in the building. With reference to SCDF's circular to the building industry on "Extent of responsibility of QPs for A&A works" dated 5 Feb 2010, 'major retrofitting works' are those works where the QP is required to check the 'affected unit and the common area of entire building' as indicated in the circular.

# 4 MANAGEMENT OF LIFT EVACUATION

4.1 There will be no change to the current evacuation strategy as occupants will still use the exit staircases for evacuation, although fire-fighters/mandatory or volunteer CERT registered with SCDF now has the additional option to use the fire lift for evacuation. As such, evacuation via lift shall only be conducted under the supervision of fire-fighters/CERT. When SCDF arrives at the fire scene, the fire officer in charge should be briefed by the designated staff supervising the evacuation on the position and circumstances of the fire and the progress of the evacuation. SCDF will then take over the supervision of the evacuation.

## 6.6 LIFTS

A set of requirements using lifts for building evacuation during emergency is drawn up at FSR 8: 2011. This set of requirements shall be applicable to all buildings exceeding habitable height of 24m except Purpose Group I and II buildings.

**Effective date: 27th Dec 2011**

6.6.1 Lift hoistways shall be vented in accordance with the SS ~~CP 2~~ 550 Code of Practice for Installation, Operation and Maintenance of Electric Passenger and Goods Lifts.

Hoistway ventilation

6.6.2 Emergency Power Supply

(a) Emergency power supply for lighting, ventilation and alarm systems for all passenger lifts shall comply with the requirements in SS ~~CP 2~~ 550 Code of Practice for Installation, Operation and Maintenance of Electric Passenger and Goods Lifts.

Emergency power supply

(b) Buildings which require the provision of standby generating plant for special emergency operations.

Provision for special emergency operation for lifts shall comply with the requirements in SS ~~CP 2~~ 550 for the following :

(i) Public buildings;

(ii) Buildings under Purpose Group II exceeding the habitable height of 60m;

(iii) Buildings under Purpose Group II where the passenger lifts serve the upper storey residential floors and the non-residential basement;

(iv) Mixed developments where the passenger lifts serve both the residential and non-residential floors;

(v) Industrial buildings under Purpose Group VI and VIII, which are multi-storey.

(vi) All basement occupancies.

~~(c) In any public building or part thereof, in which the habitable height exceeds 60 m, the emergency power supply shall be so sized and arranged such that:~~

~~(i) at least one lift (other than the fire lift) with access to every storey, or~~

~~(ii) one lift from each vertical zone if the lifts are arranged to serve different zones in the building,~~

~~shall remain operative in the event of power failure or fire. A manual overriding switch with the same function as the FIRE SWITCH shall be provided for each of the above designated lift(s). The fire switch shall be located in a designated location such as the fire command centre.~~

6.6.3

**Fire Lift**

~~(a) In any building or part thereof, in which the habitable height exceeds 24m, or the depth of the basement is more than 9m below the average ground level, there shall be provided at least one fire lift, which shall be contained within a separate protected shaft or a common protected shaft containing other lifts subject to such other lifts being served at each storey by the fire fighting lobby, which is required by the provisions of Cl.2.2.13(b) of this Code.~~ ~~Fire lift~~

(a) With the exception of purpose group I and II buildings, all other buildings shall be provided with at least two fire lifts if the habitable height exceeds 24m. See FSR 8:2011 on the design details. Fire lift **Effective date: 27th Dec 2011**

For purpose group II buildings, at least one fire lift shall be provided if the habitable height exceeds 24m.

All buildings shall also be provided with at least one fire lift if the depth of the basement exceeds 9m below the average ground level.

The fire lift(s) shall be contained within a separate protected shaft or a common protected shaft containing other lifts subject to such other lifts being served at each storey by the fire fighting lobby, which is required by the provisions of Cl.2.2.13(b) of this Code.

(b) A fire lift shall have access to every habitable floor above or below the designated floor and shall be adjacent and accessible to an exit staircase and be approached by a fire fighting lobby at each storey.

(c) Fire lift shall be provided with an operational feature that would enable firemen to cancel first or earlier call which had been inadvertently made to the fire lift during an emergency. This operational feature could be built into the lift control system or alternatively a separate by-pass switch could be provided. If the operational feature is built into the lift control, it is not mandatory to provide a separate by-pass switch.

(d) A lift mainly intended for the transport of goods shall not be designated as a fire lift.

(e) The installation of the fire lift shall be in accordance with SS ~~CP 2~~ 550 Code of Practice for Installation, Operation and Maintenance of Electric Passenger and Goods Lifts.

(f) The power supply to the lift shall be connected to a sub-main circuit exclusive to the lift and independent of any other main or sub-main circuit. The power cables serving the lift installation shall be routed through an area of negligible fire risk.