



SCDF

The Life Saving Force

... for a safer Singapore

SINGAPORE CIVIL DEFENCE FORCE



Date : 1 Dec 2020

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

Registrar, Board of Architects
Registrar, Professional Engineers Board
President, Singapore Institute of Architects
President, Institution of Engineers, Singapore
President, Association of Consulting Engineers, Singapore

Dear Sir/Mdm,

AMENDMENTS TO FIRE CODE 2018 - 7th BATCH OF AMENDMENTS

SCDF would like to issue the 7th batch of amendments to the Code of Practice for Fire Precautions in Buildings 2018 (Fire Code 2018). The amendments which were deliberated and accepted by the Fire Code Review Committee are attached as Annex A & B of this circular.

2. Amendments stipulated in these Annexes shall take effect from the dates specified therein. For those amendments that are to take effect at future dates as specified in Annex A, Qualified Persons are encouraged to comply with the requirements before the effective dates. Any proposed plans of fire safety works for new buildings or existing buildings that are submitted to SCDF for approval on or after the effective dates shall be subjected to the amendments made to the Fire Code.

3. Please convey the contents of this circular to members of your Board/ Institution/ Association. This circular is also available in CORENET's e-Info: <http://www.corenet.gov.sg/einfo>.



SCDF – A member of the Home Team

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4. For general queries, you may contact Mr Randy Tan at DID: 68481461 or Mr Tan Yi Yang at DID: 68481734. However, for specific requirements relating to the farm buildings and capsule hotels, please contact CPT Izwan at DID: 68481413 & LTC Chong Kim Yuan at DID 68481476 respectively.

Yours faithfully

(transmitted via email)

LTC Tan Chung Yee
for Commissioner
Singapore Civil Defence Force

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S/N	Clause No	Amendment Date	Effective Date	Clause Status	Clause Before Amendment	Clause After Amendment
1	1.1.4	01/12/2020	01/12/2020	Clarification	<p>Fire Safety Report and Fire Safety Instruction Manual (<i>Appendix 1 & 2</i>)</p> <p>Fire Safety Report and/or Fire Safety Instruction Manual for building projects/fire safety provisions specified by SCDF shall be submitted when making building plan submission</p>	<p>Fire Safety Report and Fire Safety Instruction Manual (<i>Appendix 1 & 2</i>)</p> <p>a. Fire Safety Report and/or Fire Safety Instruction Manual for building projects/fire safety provisions specified by SCDF shall be submitted when making building plan submission.</p> <p>Fire Safety Report for building projects/fire safety provisions specified by SCDF shall be submitted when making building plan submission.</p>
2	1.1.5	01/12/2020	01/12/2020	Clarification	Nil	<p>Fire Safety Instruction Manual (<i>Appendix 2</i>)</p> <p>a. Fire Safety Instruction Manual for building projects/fire safety provisions specified by SCDF shall be submitted when making application for Temporary Fire Permit or Fire Safety Certificate</p> <p>b. The building owner shall maintain and keep the Fire Safety Instruction Manual at all times and present to the QP upon request. Where any</p>

						<p>Addition & Alteration works are carried out to the buildings, the building owner shall ensure that changes in the management of fire safety provisions are updated in the Fire Safety Instruction Manual by the QP. The updated Fire Safety Instruction Manual shall be submitted to SCDF for record.</p>
3	1.2.3	01/12/2020	01/12/2020	Clarification	Nil	<p>Maintenance of fire protection systems</p> <p>All fire protection systems when installed/provided in a building, shall be maintained in accordance with applicable codes or standards specified in <i>Table 1.2A</i>. The QP shall list down the maintenance details in the Fire Safety Instruction Manual and handover to the building owner for compliance at the completion of the building project.</p> <p>For the purpose of this Code, “fire protection system” has the same meaning as in the Fire Safety Act (Cap. 109A).</p>
4	1.4.114	01/12/2020	01/06/2021	Revised/ Clarification	Nil	<p>Capsule hotel</p> <p>“Capsule hotel” refers to a type of hotel where the bed spaces are enclosed individually. Each bed space is considered</p>

						<p>as a capsule and not as a loose furniture or fitting. The capsule has the following characteristics:</p> <ul style="list-style-type: none"> a. access opening to the bed space can be fitted with doors, curtains or other materials or left open; and b. the bed space is provided with its individual electricity supply for amenities such as lighting, power points, TV and other amenities.
5	4.4.2	01/12/2020	01/12/2020	Clarification /Relaxation	<p>Water supply for private fire hydrant</p> <ul style="list-style-type: none"> a. Private fire hydrant at or below reduced level 125m <p>Private fire hydrants installed at reduced level 125m and below can receive direct supply from public water mains. If the flow and pressure from the public water mains cannot meet the fire hydrant requirements as shown in <u>Table 4.4A</u>, a storage tank of sufficient capacity with the requisite pumping facilities shall be provided. For premises with private fire hydrants receiving direct supply from public water mains and not able to comply with the flow requirements stipulated</p>	<p>Water supply for private fire hydrant</p> <ul style="list-style-type: none"> a. Private fire hydrant at or below reduced level 125m <p>(1) Private fire hydrants installed at reduced level 125m and below can receive direct supply from public water mains. If the flow and pressure from the public water mains cannot meet the fire hydrant requirements as shown in <u>Table 4.4A</u>, a storage tank of sufficient capacity with the requisite pumping facilities shall be provided. For premises with private fire hydrants receiving direct supply from public water mains and not able to comply</p>

					<p>in <i>Table 4.4A</i>, the following requirements shall be complied with:</p> <ol style="list-style-type: none"> (1) the compartment size shall not exceed 1000m²; (2) the nominal bore of the fire hydrant pipe and the bulk water meter shall not be less than 150mm in diameter; and (3) the running pressure/flow at the hydraulically most unfavourable fire hydrant of the private fire hydrant system shall comply with the following: <ol style="list-style-type: none"> (a) running pressure ≥ 0.9 x (running pressure of the nearest public fire hydrant – pressure drop across the bulk water metre); and (b) flow rate ≥ 0.9 x water flow of the nearest public fire hydrant or \geq total flow demand (as required in <i>Table 4.4A</i>) of the private fire hydrant system, provided the running pressure at the most remote private fire 	<p>with the flow requirements stipulated in <i>Table 4.4A</i>, the following requirements shall be complied with: provided the flow and pressure from the public water mains meet the fire hydrant requirements as shown in <i>Table 4.4A</i>, or the following requirements are complied with:</p> <ol style="list-style-type: none"> (a) the compartment size shall not exceed 1000m²; the AFA of the largest compartment shall not exceed 1000m² for PG III, IV, V & VII and not exceed 500m² for PG VI & VIII; (b) the nominal bore of the fire hydrant pipe and the bulk water meter shall not be less than 150mm in diameter; and (c) the running pressure/flow at the hydraulically most unfavourable fire hydrant of the private fire hydrant system shall comply with the following: <ol style="list-style-type: none"> (i) running pressure ≥ 0.9 x (running
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					<p>hydrant is greater than 2 bars.</p> <p><u>Note:</u></p> <p>In calculating the frictional loss for the private fire hydrant system, the design flow rates shown in <u>Table 4.4A</u> shall be used. The pressure drop across bulk water metre shall not be more than 1 bar.</p> <p>b.</p>	<p>pressure of the nearest public fire hydrant – pressure drop across the bulk water metre); and</p> <p>(ii) flow rate $\geq 0.9 \times$ water flow of the nearest public fire hydrant or \geq total flow demand (as required in <u>Table 4.4A</u>) of the private fire hydrant system, provided the running pressure at the most remote private fire hydrant is greater than 2 bars.</p> <p><u>Note:</u></p> <p>In calculating the frictional loss for the private fire hydrant system, the design flow rates shown in <u>Table 4.4A</u> shall be used. The pressure drop across bulk water metre shall not be more than 1 bar.</p>
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						<p>(2) If the requirements stipulated in <i>Cl.4.4.2a.(1)</i> cannot be met, a storage tank of sufficient capacity meeting the flow rate and duration as specified in <i>Table 4.4A</i> with the requisite pumping facilities shall be provided.</p> <p>b.</p>
6	7.1.10	01/12/2020	01/12/2020	Clarification	<p>Ventilation system for smoke-free lobby and fire lift lobby</p> <p>a. The ventilation system shall be of supply mode only of not less than 10 air changes per hour.</p> <p>b. Supply air shall be drawn directly from the external space with intake point not less than 5m from any exhaust discharge or openings for natural ventilation.</p> <p>c. Any part of the supply duct running outside the smoke-free or fire lift lobby which it serves shall either be enclosed or constructed to give a 1-hr fire resistance rating. The SCDF may, at its discretion, require a higher fire resistance rating if the</p>	<p>Ventilation system for smoke-free lobby and fire lift lobby</p> <p>a. The ventilation system shall be of supply mode only of not less than 10 air changes per hour.</p> <p>b. Supply air shall be drawn directly from the external space with intake point not less than 5m from any exhaust discharge or openings for natural ventilation.</p> <p>c. Any part of the supply duct running outside the smoke-free or fire lift lobby which it serves shall either be enclosed or constructed to give a 1-hr fire resistance rating. The SCDF may, at its discretion, require a higher fire resistance rating if the</p>

					<p>duct passes through an area of high fire risk.</p> <p>d. The mechanical ventilation system shall be automatically activated by the building fire alarm system. In addition, a remote manual start-stop switch shall be made available to firefighters at the FCC, or, where there is no FCC, at the main fire alarm panel.</p> <p>e. Visual indication of the operational status of the mechanical ventilation system shall be provided.</p>	<p>duct passes through an area of high fire risk.</p> <p>d. The mechanical ventilation system shall be automatically activated by the building fire alarm system. In addition, a remote manual start-stop switch shall be made available to firefighters at the FCC, or, where there is no FCC, at the main fire alarm panel.</p> <p>e. Visual indication of the operational status of the mechanical ventilation system shall be provided.</p> <p>f. Where air conditioning is required for daily operations, this can be provided via supply and return air duct from the FCU/AHU outside of the smoke-free/fire lift lobby. Fire dampers shall be provided in the supply and return air ducts at penetrations through the compartment walls and/or floors. The ducts shall be fire-rated if it forms part of the other services passing through the smoke-free/fire lift lobbies and/or the duct insulations are not of non-combustible type.</p>
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7	7.5.1	01/12/2020	01/12/2020	Clarification	<p>The fan and its associated controller for the following systems shall be provided with redundancy such that the system performance is not affected when one of the fans and/or controllers is out of operation due to routine maintenance or breakdown:</p> <ul style="list-style-type: none"> a. mechanical ventilation systems for: <ul style="list-style-type: none"> (1) smoke-free/fire lift lobbies; (2) exit staircases; and (3) essential rooms (e.g. sprinkler/wet riser/hydrant/hose reel pump room, standby generator room, FCC, etc.). b. engineered smoke control systems; c. car park smoke purging systems; and d. pressurisation systems for smoke-free/fire lift lobbies, exit staircase and hotel internal corridor. 	<p>a. Powered system</p> <p>A standby fan (N+1), The fan and its associated controller for the following systems shall be provided with redundancy such that the system performance is not affected when one of the fans and/or controllers is out of operation due to routine maintenance or breakdown: shall be provided for each of the following systems, such that in the event one of the duty fans fails or taken out of service, the standby fan shall be automatically activated to meet the required ventilation rate.</p> <ul style="list-style-type: none"> (1) mechanical ventilation systems for: <ul style="list-style-type: none"> (a) smoke-free/fire lift lobbies; (b) exit staircases; and (c) essential rooms (e.g. sprinkler/wet riser/hydrant/hose reel pump room, standby
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						<p>generator room, FCC, etc.).</p> <p>(2) engineered smoke control systems;</p> <p>(3) car park smoke purging systems*; and</p> <p>(4) pressurisation systems for smoke-free/fire lift lobbies, exit staircase and hotel internal guestroom corridor.</p> <p>Note * redundancy (N+1) achieved by having at least 2 zones for ductless system in operation, in which N+1 fans for each zone is not required.</p> <p>b. Non-powered system</p> <p>Where automatic smoke ventilators are used as part of the smoke control system, there shall be at least 10% redundancy on the quantities of ventilators and shall be located such that they are not affected by the wind. The quantity of the redundant ventilators shall be round up</p>
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						to whole numbers, based on the largest size of the ventilators used.
8	8.1.3c.(4)	01/12/2020	01/12/2020	Clarification	<p>c. Notwithstanding the requirements in <i>Cl.8.1.3a.</i> above, emergency lighting shall be provided in the following locations:</p> <ol style="list-style-type: none"> (1) Lift cars as stipulated in this Code; (2) Fire Command Centres; (3) Generator rooms; (4) Basement car parks; (5) 	<p>c. Notwithstanding the requirements in <i>Cl.8.1.3a.</i> above, emergency lighting shall be provided in the following locations:</p> <ol style="list-style-type: none"> (1) Lift cars as stipulated in this Code; (2) Fire Command Centres; (3) Generator rooms; (4) Basement and aboveground multi-storey car parks; (5)
9	Chapter 9	01/12/2020	01/12/2020	Clarification	<p>CHAPTER 9 ADDITIONAL REQUIREMENTS FOR EACH PURPOSE GROUP</p> <p>This chapter specifies the requirements peculiar to buildings of respective purpose groups. These requirements shall be read in conjunction with those stipulated in Chapter 1 to 8 of this Code.</p>	<p>CHAPTER 9 ADDITIONAL REQUIREMENTS FOR EACH PURPOSE GROUP</p> <p>This chapter specifies the additional requirements peculiar to buildings of respective purpose groups. These additional requirements shall be read in conjunction with other requirements relevant to the respective purpose groups stipulated in Chapter 1 to 8 of this Code. Where there are conflicting requirements</p>

						between this chapter and the preceding chapters, the requirements stipulated in this chapter shall take precedence.
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10	9.6.4	01/12/2020	01/06/2021	Revised/ Clarification	Nil	<p>Farm buildings</p> <p>a. General</p> <p>This set of fire safety requirements shall be applicable to farm buildings that meet the following criteria:</p> <ol style="list-style-type: none"> (1) the habitable height of the building shall not be more than 10m; (2) the building shall be used for the sole purpose of farming (e.g. growing of crops, fish harvesting and egg production) and not involve activities such as packaging, storage and retail; (3) other usages such as packaging, storage, retail, office and non-farming related production can be co-located within the building, provided they are compartmented and comply fully with the respective requirements stipulated in this Code; and
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						<p>(4) the total computed Fire Load Energy Density (FLED) within the compartment that is used solely for farming shall not exceed 200 MJ/m².</p> <p>b. Fire Safety Requirements</p> <p>(1) Occupant Load</p> <p>The occupant load shall be based on the accessible floor area, excluding designated farming areas, on the basis of 30m² per person.</p> <p>(2) Width of corridor</p> <p>Where the building is exempted from barrier-free accessibility compliance by the authority having jurisdiction, the clear width of corridor shall be at least 1m.</p> <p>(3) Travel distance</p> <p>The one-way and two-way travel distances shall not exceed 25m and 60m respectively.</p>
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						<p>(4) Fire engine accessibility</p> <p>A fire engine accessway is not required, however a fire engine access road for access by firefighting appliances shall be provided to within a travel distance of 60m of every point on the project plan area of the building.</p> <p>(5) Compartment size</p> <p>The compartment size limitations given in <u>Table 3.2A</u> is not applicable. The maximum AFA per compartment shall not exceed 8000m² and the maximum cubical extent per compartment shall not exceed 30000m³. The full height of the compartment shall be used for computing the cubical extent.</p> <p>(6) Sprinkler system</p>
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						<p>An automatic sprinkler system shall be provided where the AFA of any compartment that is used for farming purpose, exceeds the compartment size limit stated under <i>Cl.9.6.4b.(5)</i>.</p> <p>(7) Smoke control system</p> <p>An engineered smoke control system as specified in <i>Cl.7.4.5</i> shall be provided where the AFA of any compartment that is used for farming purpose, exceeds size limit of 8000m².</p> <p>(8) Setback distance due to unprotected openings</p> <p>The requirements on setback of unprotected openings from building/notional boundary stipulated under <i>Cl.3.5.3</i> shall be complied with and in accordance with <u><i>Table 1 of Annex 3B</i></u>. However, the height of the unprotected openings for greenhouses, used for the computation of the setback</p>
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						<p>requirement, shall be in accordance with <u>Table 9.6.4b.(8)</u>.</p> <p>(9) Emergency voice communication system and Fire Command Centre (FCC) are exempted.</p> <p>(10) External wall construction</p> <p>The requirements of <i>Cl.3.5.1a.(1)</i> for non-combustibility of external walls need not apply for greenhouse buildings. Where plastic glazing materials are used as screens or shades for a greenhouse, the material shall comply with <u>Table 3.15G</u>.</p>
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Table 9.6.4b.(8)	
Height of building	Height of unprotected openings
≤ 6m	Building's height
> 6m	6m or height of racking system (whichever is higher)

11	9.7.2	01/12/2020	01/06/2021	Revised/ Clarification	Hotel, boarding houses, serviced apartments, hostels & backpacker hotels	Hotel, boarding houses, serviced apartments, hostels, & backpacker hotels & capsule hotels
12	9.7.2f.	01/12/2020	01/06/2021	Revised/ Clarification	Nil	<p>Additional requirements for capsule hotels</p> <p>(1) Capsule designs</p> <p>(a) All capsules shall have a clear access opening of at least 800mm (width) x 600mm (height) or equivalent area of at least 0.5m² opening space. If the access opening comes with a door/hatch, it shall have an emergency access from outside of the capsule.</p> <p>(b) The number of tiers of capsules stacked on top of one another shall be limited to a maximum of 2.</p> <p>(2) Compartmentation</p> <p>The capsules shall be located within individual guestroom which complies with the following requirements:</p> <p>(a) Compartmented in accordance with <i>Cl.9.7.2</i>;</p>

						<ul style="list-style-type: none">(b) Maximum AFA of not exceeding 60m²; and(c) Occupant load not exceeding 20 persons. <p>(3) Construction materials</p> <ul style="list-style-type: none">(a) Capsules that are constructed of plastics shall comply with the acceptance criteria listed in <u>Table 3.15B</u>.(b) Capsules that are constructed of combustible materials shall comply with flame spread rating of Class 1 under BS 476 Part 7, or Class B or Class C under EN 13501-1. <p>(4) Fire protection systems</p> <ul style="list-style-type: none">(a) Sprinkler protection shall be provided in the entire building where the capsule hotel occupied in whole or in part. Inside each capsule, at least one sprinkler shall be provided and the minimum pressure and flow rate for this
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						<p>sprinkler shall be at least 50 kPa and 56 L/min respectively.</p> <p>(b) The sprinkler system for capsule hotel shall be designed to meet requirements for Ordinary Hazard Group 1 occupancy.</p> <p>(c) A minimum clearance of 500mm shall be kept between the top surface of the capsule enclosure to the deflector of the room ceiling sprinklers.</p> <p>(d) K factor for the ceiling sprinkler shall be 11.5.</p> <p>(e) Hydraulic calculation shall be performed to verify that water supply for the sprinkler system can meet the flow and pressure demands for all the ceiling sprinklers within a single compartmented guestroom plus 6 numbers of in capsule sprinklers to operate for a minimum duration of 60 mins.</p>
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						<ul style="list-style-type: none">(f) The capsule sprinkler shall be protected against tampering by occupant in the capsule.(g) As an alternative, water-mist system in compliance with NFPA 750 is acceptable. The proposed water mist system shall be type tested and listed for ordinary hazard protection and is capable to handle fire risk similar to that of a capsule fire.(h) In addition, smoke/heat detector shall be provided within each capsule and when activated fire alarm signal shall be sent to the building's main fire alarm panel to activate all fire alarm sounders and visual alarms in the building, not only to those in the capsule hotel.(i) Each capsule shall be provided with a sensor to detect the presence and motion of the occupant within the unit. This shall facilitate the
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						conduct of search and rescue operations during a fire emergency. A display panel indicating the occupancy and motion status of the occupant within each capsule shall be co-located with the main fire alarm panel.
13	Chapter 10	01/12/2020	01/12/2020	Clarification	CHAPTER 10 REQUIREMENTS FOR SPECIAL INSTALLATIONS	CHAPTER 10 REQUIREMENTS FOR SPECIAL INSTALLATIONS The requirements in this chapter shall be read in conjunction with other requirements relevant to the installations stipulated in Chapter 1 to 9 of this Code. Where there are conflicting requirements between this chapter and the preceding chapters, the requirements stipulated in this chapter shall take precedence.
14	<u>Table 1.2A</u>	01/12/2020	01/12/2020	Clarification	Existing <u>Table 1.2A</u>	See <u>Annex B</u> (affected portions of <u>Table 1.2A</u>)
15	<u>Table 4.4A</u>	01/12/2020	01/12/2020	Clarification /Relaxation	Existing <u>Table 4.4A</u>	See <u>Annex B</u> (affected portions of <u>Table 4.4A</u>)
						See <u>Annex B</u> (affected portions of <u>Table 1 of Annex 10.1A – Standards and</u>

16	<u>Table 1 of Annex 10.1A</u>	01/12/2020	01/12/2020	Clarification	Existing <u>Table 1 of Annex 10.1A – Standards and Specifications for LPG Cylinder Installations</u>	<u>Specifications for LPG Cylinder Installations)</u>
17	Appendix 2	01/12/2020	01/12/2020	Clarification	<p>FIRE SAFETY INSTRUCTION MANUAL</p> <p>1.0 GENERAL</p> <p>a. The Fire Safety Instruction Manual is a document prepared by the project QP to remind the building owner, MCST, tenant, operator and/or contractor on the management of fire safety provisions for the building. This includes maintenance regimes, evacuation procedures, and other relevant documents to be kept and maintained by the relevant parties. Any subsequent additions and alteration works shall be updated in the Fire Safety Instruction Manual by the QP carrying out the A/A works.</p> <p>b. The Fire Safety Instruction Manual, including any subsequent updates, shall be submitted by the project QP to the SCDF for record when</p>	<p>FIRE SAFETY INSTRUCTION MANUAL</p> <p>1.0 GENERAL</p> <p>a. The Fire Safety Instruction Manual is a document prepared by the project QP to remind the building owner, MCST, tenant, operator and/or contractor on the management of fire safety provisions for the building. This includes maintenance regimes, evacuation procedures, and other relevant documents to be kept and maintained by the relevant parties. Any subsequent additions and alteration works shall be updated in the Fire Safety Instruction Manual by the QP carrying out the A/A works.</p> <p>b. The Fire Safety Instruction Manual, including any subsequent updates, shall be submitted by the project QP to the SCDF for record when</p>

				<p>making building plan submission. A copy of which shall be handed officially to the relevant parties for information and safe keeping before occupation of the building.</p> <p>c. The QP can expand or modify the Fire Safety Instruction Manual to suit his presentation</p> <p>2.0 SCOPE</p> <p>The QP shall prepare a Fire Safety Instruction Manual if the project involves any of the following:</p> <p>a. Fire safety provisions for PWDs</p> <p>b. Chemical/HazMat warehouse</p> <p>c. Fully Automated Mechanised Car Park (FAMCP)</p> <p>d. Buildings using intumescent paint</p> <p>e. Liquefied Petroleum Gas (LPG) cylinder installation</p>	<p>making building plan submission. A copy of which shall be handed officially to the relevant parties for information and safe keeping before occupation of the building. The building owner shall maintain and keep the Fire Safety Instruction Manual at all times and present to the QP upon request. Where any Addition & Alteration works are carried out to the buildings, the building owner shall ensure that changes in the management of fire safety provisions are updated in the Fire Safety Instruction Manual by the QP. The updated Fire Safety Instruction Manual shall be submitted to SCDF for record.</p> <p>c. The QP can expand or modify the Fire Safety Instruction Manual to suit his presentation</p> <p>d. Maintenance of fire protection systems</p> <p>All fire protection systems when installed/provided in a building, shall be maintained in accordance</p>
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					<ul style="list-style-type: none"> f. Mega underground developments g. Use of lifts in buildings for evacuation h. Engineered timber building construction i. Hoarding & safety nets j. Temporary workers' quarters in uncompleted permanent buildings on construction sites k. Ductless jet fans system in car parks. l. Kitchen exhaust ducts m. Fire-rated dry construction 	<p>with applicable codes or standards specified in <u>Table 1.2A</u>. The QP shall list down the maintenance details in the Fire Safety Instruction Manual and handover to the building owner for compliance at the completion of the building project.</p> <p>For the purpose of this Code, "fire protection system" has the same meaning as in the Fire Safety Act (Cap. 109A).</p> <p>2.0 SCOPE</p> <p>The project QP shall prepare a Fire Safety Instruction Manual if the project involves any of the following:</p> <ul style="list-style-type: none"> a. Fire safety provisions for PWDs b. Chemical/HazMat warehouse c. Fully Automated Mechanised Car Park (FAMCP) d. Buildings using intumescent paint
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						<ul style="list-style-type: none">e. Liquefied Petroleum Gas (LPG) cylinder installationf. Mega underground developmentsg. Use of lifts in buildings for evacuationh. Engineered timber building constructioni. Hoarding & safety netsj. Temporary workers' quarters in uncompleted permanent buildings on construction sitesk. Ductless jet fans system in car parks.l. Kitchen exhaust ductsm. Fire-rated dry constructionn. Firefighting, mechanical ventilation/pressurisation, smoke control, emergency voice communication and any other fire safety related systems/equipment
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TABLE 1.2A : CODES & STANDARDS		
Name	Description	Remarks
SINGAPORE STANDARDS		
SS CP 10	CoP for the Installation and Servicing of Electrical Fire Alarm Systems	Replaced by SS 645
SS 512	CoP for the design, construction and operation of pipeline service corridors	
SS 578	CoP for the Use and Maintenance of Portable Fire Extinguishers	Formerly CP 55
SS 634	CoP for Fire Safety for Open Plant Processing Facilities in Oil, Chemical and Process Industries	
SS 641	CoP for Fire Safety for Laboratories Using Chemicals	
SS 645	CoP for the Installation and Servicing of Electrical Fire Alarm Systems	Formerly SS CP 10
TR 77	Electrical Energy Storage (EES) Systems	
Pt 1	Planning and Performance Assessment of Electrical Energy Storage Systems – General Specification	
Pt 2	Safety Considerations for Grid-integrated EES Systems – General Specification	
AMERICAN STANDARDS		
ASTM E 662	Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials	
ASTM E814	Standard Test Method for Fire Tests of Penetration Firestop Systems	
ASTM E2307	Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate – Scale, Multi-story Test Apparatus	
NFPA 253	Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant heat Energy Source	
NFPA 258	Recommended Practice for Determining Smoke Generation of Solid Material	
NFPA 285	Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components	
UL 217	Standard for Smoke Alarms	

UL 448	Standard for Safety Centrifugal Stationary Pumps for Fire Protection Service	
UL 555	Fire Dampers	
UL 924	Standard for Emergency Lighting and Power Equipment	
AUSTRALIAN STANDARDS		
AS 3786	Smoke Alarms Using Scattered Light, Transmitted Light or Ionization	
AS/NZS 2293 Pt 1	Emergency Lighting and Exit Signs for Buildings System Design, Installation and Operation	
BRITISH STANDARDS		
BS EN 54-2	Fire Detection and Alarm Systems - Control and Indicating Equipment	
BS EN 54-4	Fire Detection and Alarm Systems - Power Supply Equipment	
BS 476 Pt 3	Fire Tests on Building Materials and Structures Classification and Method of Test for External Fire Exposure to Roofs	
BS 6206	Specification for Impact Performance Requirements for Flat Safety Glass and Safety Plastics for Use in Buildings	Replaced by EN 12600
BS 6387	Test Method for Resistance to Fire of Cables Required to Maintain Circuit Integrity under Fire Conditions	
BS 7846	Electric Cables. Thermosetting Insulated, Armoured, Fire-resistant Cables of Rated Voltage 600/1000V for Fixed Installations, Having Low Emission of Smoke and Corrosive Gases when Affected by Fire. Specification	
EUROPEAN STANDARDS		
EN 3 Pt 8 Pt 9	Portable Fire Extinguishers Additional Requirements to EN 3 – 7 for the Construction, Resistance to Pressure and Mechanical Tests for extinguishers with a Maximum Allowable Pressure Equal to or Lower than 30 Bar Additional Requirements to EN 3 – 7 for Pressure Resistance of CO ₂ Extinguishers	

Annex B

EN 179	Building Hardware – Emergency Exit Devices Operated by a Lever Handle or Push Pad	
EN 520	Gypsum Plasterboards – Definitions, Requirements and Test Methods	
EN 1125	Building Hardware – Panic Exit Devices Operated by a Horizontal Bar	
EN 1154	Building Hardware – Controlled Door Closing Devices.	
EN 1155	Electrically Powered Hold Open Devices for Swing Doors	
EN 1158	Building Hardware – Door Coordinator Devices – Requirements and Test Standards	
EN 1303	Building Hardware – Cylinders for Locks	
EN 1363	Fire Resistance Tests. General Requirements.	
EN 1364	Fire Resistance Test for Non-loadbearing Elements	
Pt 1	Walls	
EN 1365	Fire Resistance Test for Loadbearing Elements. Floors and Roofs	
EN 1366	Fire Resistance Test for Service Installations	
Pt 1	Ventilation Ducts	
Pt 3	Penetration Seals	
Pt 4	Linear Joint Seals	
Pt 8	Smoke Extraction Ducts	
Pt 9	Single Compartment Smoke Extraction Ducts	
EN 1634-1	Fire Resistance and Smoke Control Tests for Door and Shutter Assemblies, Openable Windows and Elements of Building Hardware	
Pt 1	Fire Resistance Test for Door and Shutter Assemblies and Openable Window	
EN 1751	Ventilation for Buildings – Air Terminal Devices – Aerodynamic Testing of Damper and Valves	
EN 1906	Building Hardware. Lever Handles and Knob Furniture. Requirements and Test Method	
EN 1935	Building Hardware. Single-axis Hinges. Requirements and Test Methods	

EN 12051	Building Hardware. Door and Window Bolts. Requirements and Test Methods	
EN 12101 Pt 1	Smoke and Heat Control Systems Specification for Smoke Barriers	
EN 12209	Building Hardware. Mechanically Operated Locks and Locking plates. Requirements and Test Methods	
EN 12600	Glass in Building. Pendulum Test. Impact Test Method and Classification for Flat Glass	
EN 13501 Pt 5	Fire Classification of Construction Products and Building Elements Classification Using Data from External Fire Exposure to Roofs Tests	
EN 14041	Resilient, Textile and Laminate Floor Coverings. Essential Characteristics	
EN 14064	Thermal Insulation Products for Buildings. IN-situ Formed Loose-fill Mineral Wool (MW) Products. Specifications for the Loose-fill Products Before Insulation	
EN 14604	Smoke Alarm Devices	
EN 14846	Building Hardware. Locks and Latches. Electromechanically Operated Locks and Striking Plates. Requirements and Test Methods	
EN 15684	Building Hardware – Mechatronic Cylinders – Requirements and Test Methods	
EN 16623	Paints and Varnishes. Reactive Coatings for Fire Protection of Metallic Substrates. Definitions, Requirements, Characteristics and Marking	
EN 45545 Pt 2	Railway Applications – Fire protection on Railway Vehicles Requirements for Fire Behaviour of Materials and Components	
EN ISO 5659 Pt 2	Plastics - Smoke Generation Determination of Optical Density by a Single-chamber Test	

IEC STANDARDS		
IEC 60598-2-22	Luminaries – Part 2-22: Particular Requirements - Luminaries for Emergency Lighting.	
IEC 61730	Photovoltaic (PV) Module for Safety Qualification	
Pt 2	Requirements for Testing	
ISO STANDARDS		
ISO 834	Fire Resistance Test-elements of Building Construction	
Pt 1	General Requirements	
Pt 5	Specific Requirements for Loadbearing Horizontal Separating Elements.	
Pt 7	Specific Requirements for Columns	
Pt 8	Specific Requirements for Non-loadbearing Vertical Separating Elements	
Pt 9	Specific Requirements for Non-loadbearing Ceiling Elements	
ISO 30061	Emergency Lighting	
ISO 3864	Graphical Symbols – Safety Colours and Safety Signs	
Pt 1	Design Principles for Safety Signs and Safety Markings	
Pt 2	Design Principles for Product Safety Labels	
Pt 3	Design Principles for Graphical Symbols for Use in Safety Signs	
ISO 5167	Measurement of Fluid Flow by Means of Differential Pressure Devices	
ISO 7010	Graphical Symbols – Safety Colours and Safety Signs – Registered Safety Signs	
ISO 7244	Air Distribution and Air Diffusion – Aerodynamic Testing of Dampers and Valves	
FACTORY MUTUAL RESEARCH COPORATION		
FM 1311	Centrifugal Fire Pumps Spilt-close Type (Axial or Radial)	
FM 1319	Centrifugal Fire Pumps (Horizontal, END Suction Type)	

Note: SCDF shall not be held responsible for the accuracy of the standard titles shown in [Table 1.2A](#).

**TABLE 4.4A : WATER SUPPLY & STORAGE
REQUIREMENTS FOR PRIVATE FIRE HYDRANT**

Purpose Group	Accessible Floor Area* (m ²)	Minimum Flow Rate (L/s)	Minimum Running Pressure (bar)	Minimum Water Supply and Storage Duration (mins)
PG I & II	-	27	2	45
PG III, IV, V & VII	≤ 1000	38	2	45
	> 1000 and ≤ 5000	57		
	> 5000 and ≤ 10000	76		
	> 10000	95		
PG VI & VIII	≤ 500	38	2	90
	> 500 and ≤ 5000	57		
	> 5000 and ≤ 10000	76		
	> 10000 and ≤ 15000	95		
	> 15000 and ≤ 20000	114		
	> 20000	133		
Covered car park not within PG VI & VIII buildings +	NL	38	2	45

Note:

NL = No limit.

* = Based on the Accessible Floor Area (AFA) of the largest compartment in the building

+ = This requirement is only applicable to car parking facilities within PG II, III, IV, V & VII buildings, either as a standalone multi-storey car park or within a building (above ground or below ground). The hydrant requirements for the remaining parts of the buildings shall comply with Cl.4.4.2a., Cl.4.4.2b. and Cl.4.4.2c..

ANNEX 10.1A – STANDARDS AND SPECIFICATIONS FOR LPG CYLINDER INSTALLATIONS

TABLE 1 : STANDARDS FOR LPG CYLINDERS & FITTINGS			
S/N	ITEM	STANDARDS	PLS LISTING
1	Cylinder	SS 99	Yes
2	Cylinder Fittings a) Flexible Hose b) Regulator c) Cylinder valve	SS 233	Yes
		SS 281, BS 3016, UL144	Yes
		SS 294	Yes
3	Gas Leak Detector	BS EN 50054, BS EN 50057 and BS 5345 Part 1 and 3	Yes