Your Ref : **Our Ref:** CD/04/05/01/01

Date : 1 Sep 2025

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 2023 – 4th BATCH OF AMENDMENTS

SCDF would like to issue the 4th batch of amendments to the Code of Practice for Fire Precautions in Buildings 2023 (Fire Code 2023). The amendments, which were deliberated and accepted by the Fire Code Review Committee, are attached as Annexes A, B & C of this circular.

2. Amendments stipulated in Annexes A, B & C shall take effect from the date specified therein (i.e. 6-month from date of circular). Qualified Persons who wish to comply with the requirements in this Circular for any proposed plans of fire safety works for new buildings or existing buildings to be submitted during the 6-month grace period (i.e. 1 Sep 2025 to 1 Mar 2026) can do so and are not required to apply for waivers.

3. This circular applies to all projects except those that submitted their Planning Permission application to URA before 1 Mar 2026 and subsequently received Provisional Permission (PP) or Design Gateway (DG) clearance. For projects that do not require URA's

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Planning Permission, this circular applies if plans of fire safety works are submitted to SCDF for approval on or after 1 Mar 2026.

4. Qualified Persons shall provide URA's Provisional Permission (PP) or Design Gateway (DG) clearance letter in their applications submitted to SCDF for approval. Where such documentation is not provided, the submission date of the first approved submission to SCDF will be used for reference instead.

5. 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.

6. For general queries, you may contact Mr Randy Tan at DID: 68481461 or Mr Tan Yi Yang at DID: 68481734. However, for specific queries relating to edits for:

a. Solar PV amendments, please contact MAJ Muhammad Izwan Bin Ibrahim/ MAJ Daven Tan at 68481413/ 68481408, or email: Muhd_Izwan_IBRAHIM@scdf.gov.sg/ Daven_TAN@scdf.gov.sg.

b. Booths/ pods for work/ recreational purposes only, please contact CPT Alvin Su at 68481419, or email: Alvin_SU@scdf.gov.sg.

c. Mezzanine floor and locations of landing valves, please contact CPT Lim Hoong Ta at 68481403, or email: LIM_Hoong_Ta@scdf.gov.sg.

d. Aboveground ESS installation, please contact CPT Amin/ CPT Adam at 68483236/ 68481425, or email: Muhammad_Amin_Isa@scdf.gov.sg/ Adam_IDRIS@scdf.gov.sg.

Yours faithfully

(transmitted via email)

LTC Tan Chung Yee
for Commissioner
Singapore Civil Defence Force

Distribution list

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SCDF Fire Safety Standing Committee
Fire Code Review Committee

Annex A

`S/N	Amendment Date	Effective Date	Clause Status	Clause Before Amendment	Clause After Amendment
1	1 Sep 2025	1 Mar 2026	Revised	1.1.3 Fire safety requirement for road tunnel Fire safety requirements for road tunnels shall be in compliance with *NFPA 502*.	1.1.3 Fire safety requirement for road tunnels Fire safety requirements for road tunnels shall be in compliance with ~~*NFPA 502*~~ Code of Practice for Fire Precautions in Road Tunnels.
2	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	2.2.13c.(1)(d) On M&E floor of headroom not exceeding 1.5m.	2.2.13c.(1)(d) On M&E floor of headroom not exceeding ~~1.5m~~ 1.8m.
3	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	2.3.9h. Door located in a path of travel (1) …….. (2) Manually operable sliding doors/ roller shutters (a) …… (b) …… (c) …… (d) ……. (e) Power operated sliding doors/ roller shutters …….. (i) Fail-safe type …….. (ii) Manual override …….. Exception: Powered sliding doors, roller shutters and swing doors that belong to the	2.3.9h. Door located in a path of travel (1) …….. (2) Manually operable sliding doors/ roller shutters (a) …… (b) …… (c) …… (d) ……. ~~(e) Power operated sliding doors/ roller shutters~~ …….. ~~(i) Fail-safe type~~ …….. ~~(ii) Manual override~~ ……. ~~Exception: Powered sliding doors, roller shutters and swing doors that belong to the~~

				unit owners or tenants are not required to be linked to the building fire alarm system, provided they are designed as fail-safe type, installed with manual override, and do not form part of the building's fire protection system, e.g. smoke control system.	~~unit owners or tenants are not required to be linked to the building fire alarm system, provided they are designed as fail-safe type, installed with manual override, and do not form part of the building's fire protection system, e.g. smoke control system.~~ (3) Power operated sliding doors/ roller shutters ……. (a) Fail-safe type …….. (b) Manual override …….. (c) Exception Powered sliding doors, roller shutters and swing doors as listed below are not required to be linked to the building fire alarm system, provided they are designed as fail-safe type, installed with manual override, and do not form part of the building's fire protection system, e.g. smoke control system. (i) Those belonging to the unit owners or tenants; or (ii) Those serving individual washrooms, family washrooms, or nursing rooms,

					where all points within the space are visible from the entrance.
4	1 Sep 2025	1 Mar 2026	Clarification/ Revised	4.2.2k. Ancillary usage of fire engine accessway/ fire engine access road Fire engine accessway/ fire engine access road shall not be turned into other usages such as pond, water features, car parking lots (including loading & unloading), etc. Turfing of fire engine accessway/ fire engine access road is only permitted on the straight stretch of the fire engine accessway/ fire engine access road with gradient not exceeding 1:15.	4.2.2k. Ancillary usage of fire engine accessway/ fire engine access road Fire engine accessway/ fire engine access road shall not be turned into other usages such as pond, water features, car parking lots (including loading & unloading), etc. Turfing of fire engine accessway/ fire engine access road is only permitted on the straight stretch of the fire engine accessway/ fire engine access road with gradient not exceeding 1:15. For such turfing, the depth of the soil/ earth above the grass cell pavers shall not exceed 50mm in height. The grass cell pavers shall be designed to withstand both stationary and axle loading capacity of firefighting appliances in accordance with *Cl.4.2.2j*.
5	1 Sep 2025	1 Mar 2026	Clarification/ Revised	4.4.2c. Water supply and storage requirement Where more than one private fire hydrant is located above reduced level 125m within the same plot, storage and pumping arrangements of water supply to these specified fire hydrants shall comply with those for wet rising mains stipulated in *SS 575* and *Table 4.4A* Water Supply & Storage Requirements for Private Fire Hydrant.	4.4.2c. Water supply and storage requirement (1) Where more than one private fire hydrant is located above reduced level 125m within the same plot, storage and pumping arrangements of water supply to these specified fire hydrants shall comply with those for wet rising mains stipulated in *SS 575* and *Table 4.4A* Water Supply & Storage Requirements for Private Fire Hydrant. (2) For development with fire hydrant storage and pumping arrangements, breeching inlet to fire hydrant tank is required. This breeching inlet shall be within 18m from any

					fire engine accessway/ fire engine access road and within 50m from any wet fire hydrant, private or public. (3) The requirements and provisions for breeching inlet for the pumped fire hydrant system shall be in accordance with the *SS 575*.
6	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	6.2.2b. Locations of landing valves Rising mains and the associated landing valves shall be kept free of physical and visual obstruction, and be located: (1) within a fire lift lobby, smoke-free lobby or external corridor immediately outside the door of the exit staircase, or (2) in the case where there is no fire lift lobby, smoke-free lobby and external corridor, it shall be located inside an exit staircase, or in the common area and within a protected shaft, immediately outside the door of the exit staircase. Note: Where there are provisions of fire lift lobby and smoke-free lobby within the building, the position of rising mains and landing valves shall first be located inside fire lift lobby. c. Provision for landing valves and standby fire hoses	6.2.2b. Locations of landing valves (1) Rising mains and the associated landing valves shall be kept free of physical and visual obstruction, and be located in the following order of priority: ~~(1) within a fire lift lobby, smoke-free lobby or external corridor immediately outside the door of the exit staircase, or~~ ~~(2) in the case where there is no fire lift lobby, smoke-free lobby and external corridor, it shall be located inside an exit staircase, or in the common area and within a protected shaft, immediately outside the door of the exit staircase.~~ ~~Note: Where there are provisions of fire lift lobby and smoke-free lobby within the building, the position of rising mains and landing valves shall first be located inside fire lift lobby.~~ (a) Fire lift lobby.

				(1) The location and provision for landing valves shall comply with *SS 575*…. (2) …..	(b) Smoke-free lobby, or external corridor with landing valves not more than 5m from the exit staircase. (c) Exit staircase, or common area and within a protected shaft not more than 5m from the exit staircase. (2) Exception In the case of a PG II residential floor where the fire lift lobby is connected to the smoke-free lobby or external corridor, the rising mains and landing valves can be located inside the smoke-free lobby or external corridor. The line-of-sight distance between the landing valves and the fire lift lobby shall not exceed 5m. c. Provision for landing valves and standby fire hoses (1) The ~~location and~~ provision for landing valves shall comply with *SS 575*…. (2) …. (3) Exemption Landing valve is not required under the following situation: (a) Mezzanine floor of factory or warehouse unit, subject to compliance with *Cl.9.6.1a.(2)* or

					Cl.9.8.1a.(2), respectively. The coverage distance of the nearest landing valve at the main floor to the most remote point of the mezzanine floor shall not exceed 38m (30m hose line length and a jet throw of 8m). Otherwise, *Cl.6.2.2c.(2)* shall be complied with.
7	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	6.2.8a.(3)(d) Mezzanine floor of factory unit, subject to compliance with *Cl.9.6.1a.(2)*, and provided the coverage distance of the nearest hose reel at the main floor to the most remote point of the mezzanine floor does not exceed 36m (30m hose path and 6m throw).	6.2.8a.(3)(d) Mezzanine floor of factory or warehouse unit, subject to compliance with *Cl.9.6.1a.(2)* or *Cl.9.8.1a.(2)*, respectively. ~~and provided the~~ The coverage distance of the nearest hose reel at the main floor to the most remote point of the mezzanine floor ~~does~~ shall not exceed 36m (30m hose path and 6m throw).
8	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	6.3.3d. Exemption Manual call points can be omitted for the following: (1) … (2) … (3) mezzanine floor of factory unit, subject to compliance with *Cl.9.6.1a.(2)* and provided no person on the mezzanine floor need to travel more than 30m to activate the nearest manual call point located on the main floor.	6.3.3d. Exemption Manual call points can be omitted for the following: (1) … (2) … (3) mezzanine floor of factory or warehouse unit, subject to compliance with *Cl.9.6.1a.(2)* or *Cl.9.8.1a.(2)*, respectively. ~~and provided no~~ No person on the mezzanine floor shall need to travel more than 30m to activate the nearest manual call point located on the main floor.

9	1 Sep 2025	1 Mar 2026	Clarification/ Revised	6.4.1e. Atrium space A fire sprinkler system shall be provided for an atrium space not exceeding 18m in height. For an atrium with ceiling height exceeding 18m (in whole or in part), water monitor, deluge and/ or extended-throw sprinkler systems shall be provided to cover the entire atrium space	6.4.1e. Atrium space A fire sprinkler system shall be provided for an atrium space not exceeding 18m in height. ~~For an atrium with ceiling height exceeding 18m (in whole or in part),~~ Water monitor, deluge and/or extended-throw sprinkler systems shall be provided to cover the ~~entire~~ portion of atrium space that exceeds 18m.
10	1 Sep 2025	1 Mar 2026	New/ Relaxation	Nil	6.4.1f.(1)(d) Booths/ pods Booths/ pods shall be for use in a work environment and comply with all the following requirements: (i) The booth/ pod shall not extend to the soffit of the ceiling or roof. (ii) The area of each group of booths/ pods placed together shall not exceed $3m^2$. (iii) A separation distance of at least 3m shall be provided between each group of booths/ pods. (iv) Each booth/ pod shall be equipped with an automatic smoke detector that is directly connected to the building's fire alarm system, either through a wired or wireless connection. The detector shall be capable of activating the building's fire alarm system upon fire detection. Wireless transmission systems shall be equipped with appropriate transmitters/ receivers to ensure reliable

					connectivity in accordance with international standard and shall comply with the prevailing IMDA frequency bandwidth requirements. (v) The booths/ pods shall not be used for storage purposes.
11	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	6.6.4a.(3) The fire lift shall be continuous throughout the building and serve every storey except a non-habitable roof.	6.6.4a.(3) The fire lift shall be continuous throughout the building and serve every storey ~~except a non-habitable roof~~. (a) Exemption (i) Non-habitable roof. (ii) Mezzanine floor of factory or warehouse unit, subject to compliance with *Cl.9.6.1a.(2)* or *Cl.9.8.1a.(2)*, respectively.
12	1 Sep 2025	1 Sep 2025	Clarification/ Revised	7.1.7 Locations of intakes and return air openings a. Openings for the intakes of outdoor air to all air handling systems, mechanical ventilation systems, pressurisation systems of exit staircases and internal corridors, and smoke control systems shall be no less than 5m from any exhaust discharge openings. b. All return air openings and outdoor air intakes shall be located and arranged such that sources of ignition, such as lighted matches and cigarette butts, which accidentally enter the	7.1.7 Locations of intakes and return air openings/ exhaust air discharge outlet/ openings a. Openings for the intakes of outdoor air to all air handling systems, mechanical ventilation systems, pressurisation systems of exit staircases and internal corridors, and smoke control systems shall be no less than 5m from any exhaust discharge openings. b. All return air openings and outdoor air intakes shall be located and arranged such that sources of ignition, such as lighted matches and cigarette butts, which accidentally enter the

				openings and intakes cannot be deposited onto the filter media.	openings and intakes cannot be deposited onto the filter media. c. The exhaust air discharge outlets/ openings for ventilation system under this Code shall directly discharge to the external space.
13	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	8.1.3b.(2) Open-sided single storey building, with floor area not exceeding 200m^2 and openings that constitute at least 80% of the perimeter wall area (measured along the roof eaves).	8.1.3b.(2) Open-sided single storey building~~,~~ with ~~floor area not exceeding 200m^2 and~~ openings that constitute at least 80% of the perimeter wall area (measured along the roof eaves)~~.~~ and complying with any of the following: (a) AFA not exceeding 200m^2, or (b) For PG III field training usages without any storage and with AFA not exceeding 300m^2.
14	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	8.1.7a.(4)(d) Open-sided single storey building, with floor area not exceeding 200m^2 and openings that constitute at least 80% of the perimeter wall area (measured along the roof eaves).	8.1.7a.(4)(d) Open-sided single storey building~~,~~ with ~~floor area not exceeding 200m^2 and~~ openings that constitute at least 80% of the perimeter wall area (measured along the roof eaves)~~.~~ and complying with any of the following: (i) AFA not exceeding 200m^2, or (ii) For PG III field training usages without any storage and with AFA not exceeding 300m^2.
15	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	8.1.7b.(3)(c) Open-sided single storey building, with floor area not exceeding 200m^2 and openings that constitute at least 80% of the perimeter wall area (measured along the roof eaves).	8.1.7b.(3)(c) Open-sided single storey building~~,~~ with ~~floor area not exceeding 200m^2 and~~ openings that constitute at least 80% of the perimeter wall area (measured along the roof eaves)~~.~~ and complying with any of the following:

					(i) AFA not exceeding 200m^2, or (ii) For PG III field training usages without any storage and with AFA not exceeding 300m^2.
16	1 Sep 2025	1 Mar 2026	Revised/ Clarification	11.8.2c. Requirements for digital locksets (1) Digital locksets shall their own CoCs.	11.8.2c. Requirements for digital locksets (1) Digital locksets shall either be certified together with the door or individually certified with their own CoCs.
17	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	Existing *Table 1.4B: Occupant Load Factors*	See *Annex C*
18	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	Existing *Table 3.3A*	See *Annex C*
19	1 Sep 2025	1 Mar 2026	Relaxation/ Revised	Existing *Diagram 10.2.1d.*	See *Annex C*

Annex B

S/N	Amendment Date	Effective Date	Clause Status	Clause Before Amendment	Clause After Amendment
1	1 Sep 2025	1 Mar 2026	Revised	6.1.2 Provision a. Fire extinguishers shall be provided in all buildings except the following: (1) ….. (2) ….. (3) car parking areas in standalone car parks or mixed-use residential buildings; (4) roof level of single storey buildings with roof height not more than 12m or inaccessible pitched roof up to 24m from grade level used solely for roof-mounted PV installations in accordance with *Cl.10.2.1b.(1)*; and (5) roof level of an external/ open-sided overhead bridge/ shed/ linkway/ walkway with clear width less than 6m, roof height not more than 12m and used solely for roof-mounted PV installations in accordance with *Cl.10.2.1b.(1)*. (6) green roofs which are accessible for maintenance purposes only and which comply with *Cl.10.2.1b.(1)(a)*.	6.1.2 Provision a. Fire extinguishers shall be provided in all buildings except the following: (1) ….. (2) ….. ~~(3) car parking areas in standalone car parks or mixed-use residential buildings;~~ (3) roof ~~level~~ of single storey buildings with roof height not more than 12m or roof of any buildings with inaccessible pitched roof up to 24m from grade level used solely for roof-mounted PV installations in accordance with *Cl.10.2.1b.(1)*; ~~and~~ (4) roof ~~level~~ of an external/ open-sided overhead bridge/ shed/ linkway/ walkway with clear width less than 6m, roof height not more than 12m and used solely for roof-mounted PV installations in accordance with *Cl.10.2.1b.(1)*~~.~~; and (5) green roofs which are accessible for maintenance purposes only and which comply with *Cl.10.2.1b.(1)(a)*.

2	1 Sep 2025	1 Mar 2026	Revised	6.2.8a.(3)(c) Other standalone buildings as follows: (i) … (ii) … (iii) … (iv) ... (v) … (vi) Roof level of single storey buildings with roof height not more than 12m or inaccessible pitched roof up to 24m from grade level used solely for roof-mounted PV installations in accordance with *Cl.10.2.1b.(1)*. (vii) …	6.2.8a.(3)(c) Other standalone buildings as follows: (i) … (ii) … (iii) … (iv) … (v) … (vi) Roof ~~level~~ of single storey buildings with roof height not more than 12m or roof of any buildings with inaccessible pitched roof up to 24m from grade level used solely for roof-mounted PV installations in accordance with *Cl.10.2.1b.(1)*. (vii) …
3	1 Sep 2025	1 Mar 2026	Revised	6.3.1d. The following are not required to be provided with electrical fire alarm system: (1) Roof level of single storey buildings with roof height not more than 12m or inaccessible pitched roof up to 24m from grade level used solely for roof-mounted PV installations in accordance with *Cl.10.2.1b.(1)*. (2) …	6.3.1d. The following are not required to be provided with electrical fire alarm system: (1) Roof ~~level~~ of single storey buildings with roof height not more than 12m or roof of any buildings with inaccessible pitched roof up to 24m from grade level used solely for roof-mounted PV installations in accordance with *Cl.10.2.1b.(1)*. (2) …
4	1 Sep 2025	1 Mar 2026	Revised	10.2.1b.(1)(a) Single storey buildings with roof height not more than 12m or inaccessible pitched roof up to 24m from grade level are required to provide a portable sturdy ladder or cat/ ship ladder. If there is a fire engine access road serving roof height not more than 12m or fire engine accessway serving inaccessible pitched roof	10.2.1b.(1)(a) Single storey buildings with roof height not more than 12m or any buildings with inaccessible pitched roof up to 24m from grade level are required to provide a portable sturdy ladder or cat/ ship ladder. If there is a fire engine access road serving roof height not more than 12m or fire engine accessway serving inaccessible

				exceeding 12m and up to 24m is provided, access to PV installation is not required.	pitched roof exceeding 12m and up to 24m is provided, access to PV installation is not required.
5	1 Sep 2025	1 Mar 2026	Revised	10.2.1d.(3) Access aisles of minimum clear width of 1.5m shall be provided such that no part of any PV array is more than 20m from any of them. Where the access aisle abuts the edge of the roof, the clear width of the access aisle shall be at least 2.5m unless a perimeter parapet/ railing is provided to prevent fall from height by the authority having jurisdiction.	10.2.1d.(3) Access aisles of minimum clear width of 1.5m shall be provided such that no part of any PV array is more than 20m from any of them. PV arrays may extend to the roof edge, provided that all portions of the array are within 20m of an access aisle. Where the access aisle abuts the edge of the roof, the clear width of the access aisle shall be at least 2.5m unless a perimeter parapet/ railing is provided to prevent fall from height by the authority having jurisdiction. For buildings with roof height not exceeding 24m, access aisles along the roof perimeter may be omitted where the perimeter faces a fire engine accessway.
6	1 Sep 2025	1 Mar 2026	Revised	10.3.1 Aboveground ESS installation a. This set of fire safety requirements applies to ESS which supply electrical energy at a future time to the local power loads, to the utility grid, or for grid support. It shall apply to ESS installations where the total stored energy exceeds the Threshold Stored Energy listed in *Table 10.3.1* below b. All Energy Storage System installations shall be located at the same storey as the fire engine accessway/ fire engine access road. c. The allowable Maximum Stored Energy for the various battery technologies in each compartment shall be as listed in *Table 10.3.1*.	10.3.1 Aboveground ESS installation a. This set of fire safety requirements applies to ESS which supply electrical energy at a future time to the local power loads, to the utility grid, or for grid support. It shall apply to ESS installations where the total stored energy exceeds the Threshold Stored Energy listed in *Table 10.3.1* below b. All Energy Storage System installations shall be located at the same storey as the fire engine accessway/ fire engine access road. Exception: (1) Where the compartmented ESS room is located above the fire engine accessway/

				TABLE 10.3.1: STORED ENERGY CAPACITY OF ENERGY STORAGE SYSTEM **Type** | **Threshold Stored Energy [a] (kWh)** | **Maximum Stored Energy [a] (kWh)** Lead-acid batteries, all types | 70 | 600 Nickel batteries [b] | 70 | 600 Lithium-ion batteries, all types | 20 | 600 Sodium nickel chloride batteries | 20 | 600 Flow batteries [c] | 20 | 600 Other batteries technologies | 10 | 200 Note: a. It shall refer to an aggregated stored energy capacity per compartment. For battery rating in Amp Hours, kWh is equal to maximum rated voltage multiplied by amp-hr rating divided by 1000. b. Nickel battery technologies include nickel cadmium (Ni-Cad), nickel metal hydride (Ni-MH), and nickel zinc (Ni-Zn). c. Includes vanadium, zinc-bromine, polysulfide-bromide, and other flowing electrolyte-type technologies.	fire engine access road level, prior approval from the SCDF is required. In such cases, the following shall also be met: (a) ESS units shall be subjected to the fire and explosion testing specified under *UL 9540A*. (b) *NFPA 855* Hazard Mitigation analysis report shall be submitted to SCDF for approval. c. Each compartmented ESS room shall not exceed 100m^2. d. The allowable Maximum Stored Energy for the various battery technologies in each compartment shall be as listed in *Table 10.3.1*. Exception: (1) Where the compartmented ESS room exceeded the maximum stored energy as stipulated in *Table 10.3.1*, prior approval from the SCDF is required. Requirements shall comply with *Cl.10.3.1b.(1)(a) & (b)*.

TABLE 10.3.1: STORED ENERGY CAPACITY OF ENERGY STORAGE SYSTEM

Type	Threshold Stored Energy [a] (kWh)	Maximum Stored Energy [a] (kWh)
Lead-acid batteries, all types	70	600
Nickel batteries [b]	70	600
Lithium-ion batteries, all types	20	600
Sodium nickel chloride batteries	20	600
Flow batteries [c]	20	600
Other batteries technologies	10	200

Note:

a. It shall refer to an aggregated stored energy capacity per compartment. For battery rating in Amp Hours, kWh is equal to maximum rated voltage multiplied by amp-hr rating divided by 1000.

b. Nickel battery technologies include nickel cadmium (Ni-Cad), nickel metal hydride (Ni-MH), and nickel zinc (Ni-Zn).

c. Includes vanadium, zinc-bromine, polysulfide-bromide, and other flowing electrolyte-type technologies.

e. Fire protection system

(1) Each compartmented ESS room shall be protected by a sprinkler system classified under high hazard occupancy with a minimum discharge density of 12.2mm/min and area of operation of up to 230m^2 in accordance with the *SS CP 52*.

(2) Each ESS unit shall be housed in open rack under direct and full coverage of sprinklers.

f. Detection and ventilation system

(1) A smoke purging system with air circulation of at least 9 air changes per hour or higher shall be provided for each compartmented ESS room based on the worst-case scenario.

(2) Each compartmented ESS room shall be provided with smoke detectors in

					accordance with *SS 645* and smoke purging system shall be activated upon detection. (3) A dedicated flammable gas detection system shall be provided for each compartmented ESS room to continuously monitor and limit the maximum flammable gases concentration to below 25% of Lower Explosive Limit (LEL) by activation of the smoke purging system. g. A display panel showing the location and temperature reading status of the affected ESS unit shall be located at the main entrance of each compartmented ESS room. Thermocouple reading for each compartmented ESS room shall be provided as a means for firefighters to identify if the fire has been effectively extinguished. No point in the compartmented ESS room shall exceed 10m from a thermocouple. h. Pressure relief provision Each compartmented ESS room shall be designed with adequate ventilation or pressure relief vent to avoid any excessive built-up of pressure due to the spontaneous ignition of combustible gases. Either one of the following shall be provided:

					(1) Explosion prevention systems designed, installed, operated, maintained, and tested in accordance with *NFPA 69*. (2) Deflagration venting installed and maintained in accordance with *NFPA 68*. i. Battery management system Battery management system (BMS) shall be provided for monitoring operating conditions and maintaining voltages, currents, and temperatures within the manufacturer's specifications. The BMS shall remotely isolate the ESS or affected components of the ESS or place the system in a safe condition if potentially hazardous conditions are detected. BMS shall be evaluated for functional safety performance according to relevant internationally recognized standards such as *UL 1973* or equivalent standards approved by the SCDF. j. Emergency main isolation switch (1) A clearly identified and easily accessible switch or circuit breaker (isolation shut-off switch) shall be provided to cut-off the power supply of individual ESS unit. (2) An emergency main isolation shut-off switch shall be provided outside the entrance of the compartmented ESS room, to cut-off power supply of all the

					ESS units of the affected compartmented ESS room. k. Firefighting access (1) To facilitate the deployment of unmanned firefighting equipment, the minimum clear path of at least 1.2m in width shall be provided for exit access door, exit door, exit staircase and corridor serving the compartmented ESS room. (2) An access path of minimum width of 1.2m to every ESS unit shall be provided and the maximum distance measured from the door to the most remote ESS unit shall not exceed 8m.
7	1 Sep 2025	1 Sep 2025	Clarification	10.3.3 Basement ESS installation Basement ESS installation shall be subdivided into two categories as follows: a. Category 1: Small underground ESS installation having the following requirements: (1) *Cl.10.3.1a.* on capacity shall not be applicable. (2) *Cl.10.3.1b.* on location shall not be applicable. ESS units is permitted to be located in basement not exceeding a	10.3.3 Basement ESS installation Basement ESS installation shall be subdivided into two categories as follows: a. Category 1: Small underground ESS installation having the following requirements: (1) *Cl.10.3.1a.* on ~~capacity shall not be applicable~~ maximum stored energy capacity shall be in accordance with *Cl.10.3.3.a.(5) & Cl.10.3.3.b.(4),* respectively.

				depth of 9m below the fire engine accessway/ fire engine access road level. (3) The requirements of compartmentation shall apply to any room that is designated as a battery room or of Threshold Stored Energy exceeding the limits stated in *Cl.10.3.1d*. (4) …..	(2) *Cl.10.3.1b.* on location shall not be applicable. ESS units is permitted to be located in basement not exceeding a depth of 9m below the fire engine accessway/ fire engine access road level. (3) The requirements of compartmentation shall be applicable as specified in *Cl.10.3.1c.* ~~apply as specified in Cl.10.3.1c. to any room that is designated as a battery room or of Threshold Stored Energy that exceeding the limits stated in *Cl.10.3.1d.*~~ (4) …..

Annex C

TABLE 1.4B: OCCUPANCY LOAD FACTORS		
FUNCTIONAL SPACES	**OCCUPANCY LOAD FACTOR (m^2/person)**	**REMARKS**
Guestroom/ accommodation unit *Dormitory*	4.2	or occupant load factor between 3.6m^2/person and 4.2m^2/person if permitted by the authority having jurisdiction (sleeping area & living area only, excluding toilet, etc.)
Backpacker hotel/ hostel	3	max. 20 persons per room (including living area and excluding toilet, etc.)
Hotel, Boarding house, Serviced apartment, Student hostel, Staff hostel/ quarter	15	min. 2 persons per room or 15m^2/person, whichever OL is higher
Capsule hotel	3	maximum AFA of not exceeding 60m^2; and occupant load not exceeding 20 persons per guestroom
~~Backpacker hotel~~	~~3~~	~~Max. 20 persons per room (including living area, toilet, etc.)~~
~~Dormitory~~	~~4.2~~	~~bedroom area only, excluding living area, toilet, etc.~~
~~Serviced apartment~~	~~15~~	~~per unit~~
~~Staff quarters~~	~~15~~	~~min. 2 persons per room or 15m^2/person, whichever is higher~~
~~Student bedroom~~	~~15~~	~~min. 2 persons per room or 15m^2/person, whichever is higher~~

PART 1: BUILDINGS OTHER THAN SINGLE STOREY BUILDINGS					
Purpose Group (1)	**Maximum Dimensions**			**Maximum period of fire resistance for elements for structure (*)/ external wall/ compartment wall forming part of:**	
	Height ** (m) (2)	**Floor Area (m^2) (3)**	**Cubical Extent (m^3) (4)**	**Aboveground Storey (hrs) (5)**	**Basement Storey (hrs) (6)**
PG VIII - Storage ~~and General~~	15	NR	1700	1	1
	15	NR	3500	1	2
	28	NR	7000	2	4(b)
	NL	NL	NL	4(a)	4(b)

Note for Part 1:

For the purpose of *Cl.3.3.2* 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.

(**) - Height for elements of structure referred to building height including basement. In the case of compartment wall/ external wall, the height shall be based on the height of the wall between compartment floors.

(+) - The expression "part" means a part which is separated as described in *Cl.3.3.1b.*.

(a) - ~~This period is reduced to 2-hrs for:~~

~~(1) non-sprinkler-protected, open-sided standalone car park buildings~~

~~(2) sprinkler-protected, aboveground car park floors in standalone car park building or sprinkler-protected mixed-use building~~
For car parks that are sprinkler-protected and/ or ventilated in accordance with *Cl.3.2.8*, the minimum period of fire resistance for the element of structure is reduced to 2-hrs.

(b) - ~~Single basement car park storey, which is sprinkler-protected, the element of structure can be reduced to half the minimum period of fire resistance~~
For single basement car parks that are sprinkler-protected, the minimum period of fire resistance for the element of structure is reduced to 2-hrs.

PART 2: SINGLE STOREY BUILDINGS		
Purpose Group (1)	**Maximum Floor Area (m^2) (2)**	**Minimum period of fire resistance for elements of structure, external wall/ compartment wall (hrs) (3)**
PG VIII: Storage ~~and General~~	1000	1
	3000	2
	NL	4(a)

Note to Part 2:

For the purpose of *Cl.3.3.2* the period of fire resistance to be taken as being relevant to an element of structure is the period included in column (3) 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) = ~~This period is reduced to 2-hr for open-sided buildings which are used solely for car parking~~
For car parks that are sprinkler-protected and/ or ventilated in accordance with *Cl.3.2.8*, the minimum period of fire resistance for the element of structure is reduced to 2-hrs.

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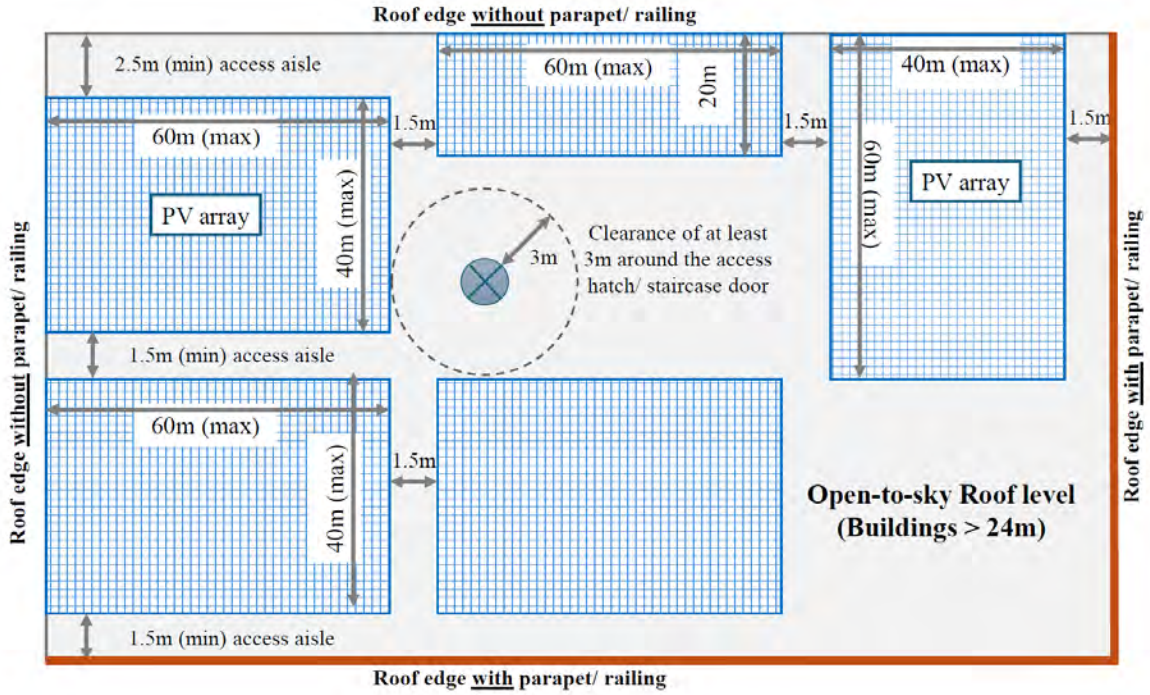
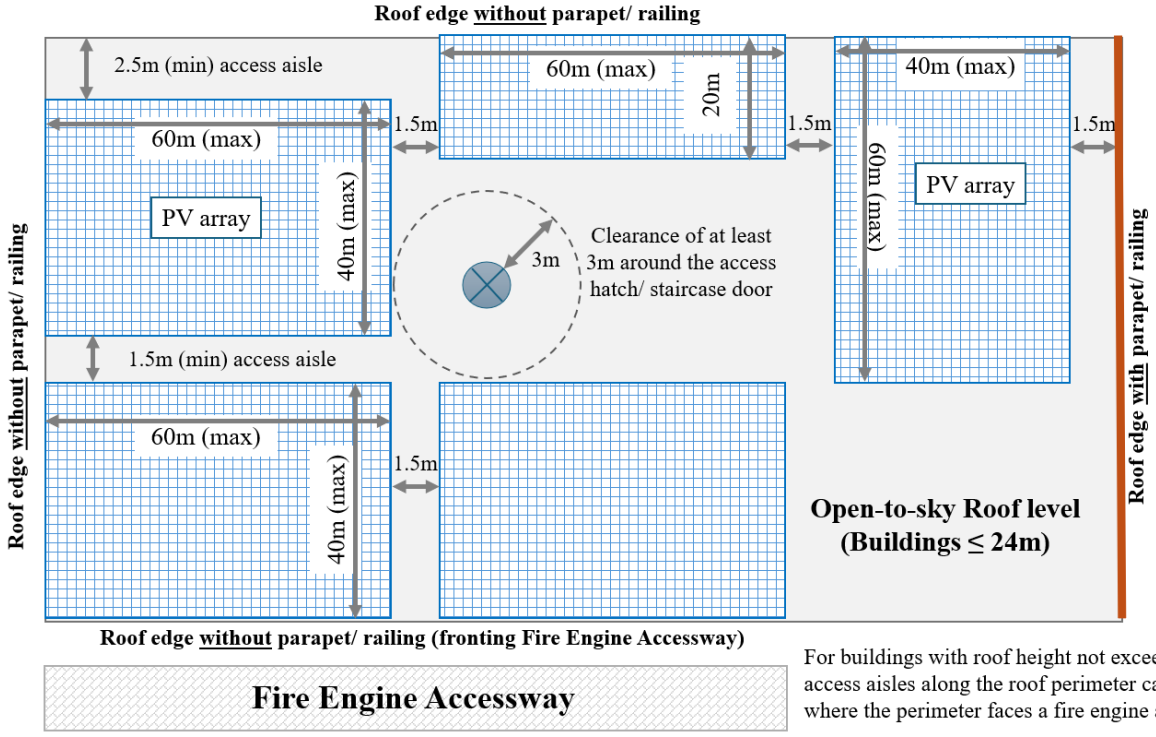
Revised Diagram 10.2.1d.: Roof-mounted PV Installations Criteria





For buildings with roof height not exceeding 24m, access aisles along the roof perimeter can be omitted where the perimeter faces a fire engine accessway.