



CODES OF PRACTICE
FOR
MINIMUM FIRE SERVICE INSTALLATIONS
AND EQUIPMENT
AND
INSPECTION, TESTING AND MAINTENANCE OF
INSTALLATIONS AND EQUIPMENT

September 2022

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CONTENTS

CODE OF PRACTICE FOR MINIMUM FIRE SERVICE INSTALLATIONS AND EQUIPMENT

PART I	—	GENERAL	1–3
PART II	—	TABLE AND DEFINITIONS OF SYSTEMS/INSTALLATIONS/ EQUIPMENT	4–7
PART III	—	CLASSIFICATION OF PREMISES AND DEFINITIONS	8–10
PART IV	—	REQUIREMENTS FOR PREMISES	11–50
PART V	—	SPECIFICATION	51–83

CODE OF PRACTICE FOR INSPECTION, TESTING AND MAINTENANCE OF INSTALLATIONS AND EQUIPMENT

PRELIMINARY NOTE			1
PART I	—	GENERAL	1–3
PART II	—	INSPECTION, TESTING AND MAINTENANCE	3–16
PART III	—	MISCELLANEOUS	16
LIST OF APPENDICES			17
APPENDIX 1		Testing and Commissioning Checklist for Actuating Devices and Operation of Fire Shutter	18–20
APPENDIX 2		Testing and Commissioning Checklist for CO ₂ /Clean Agent Extinguishing System	21–25
APPENDIX 3		Testing and Commissioning Checklist for Emergency Generator	26–30
APPENDIX 4		Testing and Commissioning Checklist for Fire Detection and Fire Alarm Systems	31–43
APPENDIX 5		Testing and Commissioning Checklist for Fire Hydrant and Hose Reel System	44–59
APPENDIX 6		Testing and Commissioning Checklist for Staircase Pressurization System	60–67
APPENDIX 7		Testing and Commissioning Checklist for Street Fire Hydrant System	68–73
APPENDIX 8		Minimum Fire Resisting Cable Requirements for Fire Service Installations	74–77
APPENDIX 9		Shutdown of Fire Service Installations for Inspection, Maintenance, Modification or Repair	78–86
APPENDIX 10		Statutory Requirements for Maintenance, Inspection and Repair of FSI and Examination, Testing and Certification of Gas Cylinders Used as FSI	87
APPENDIX 11		Notes on Fire Extinguishers, Fire Blankets and Sand Buckets (Suitability and Maintenance)	88–100

CODE OF PRACTICE
FOR
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AND EQUIPMENT

PART I

GENERAL

1.1 Title

This Code of Practice shall be titled “Minimum Fire Service Installations and Equipment” hereinafter referred to as “The Code”.

1.2 Definitions

“Building” means

As defined in Buildings Ordinance Cap. 123.

“Car Parking Area” includes

Driveways but excludes loading/unloading area.

“Cubical Extent” means

The space contained within the external surfaces of the walls and roof of a building and the upper surface of the floor of its lowest storey, excluding any space within any enclosure on the roof used exclusively for accommodating a water tank or lift gear or any other services, and, if any side of the building is not enclosed by a wall, that side shall be deemed to be enclosed by a wall extending downwards from the outer edge of the roof.

“Fail-safe” means

Systems or equipment revert to the status serving the intended purpose in condition of loss of any form of electric power.

“Fire Compartment” means

An enclosed space in a building that is separated from all other parts of the building by enclosing construction providing a fire separation that may be required to have a fire-resisting rating.

“Fire Load” means

The theoretical amount of heat that may be released during the burning of combustibles in the building under fire conditions and is computed by the formula:

$$\frac{\text{Calorific value of contents in MJ/kg} \times \text{weight of contents in kg}}{\text{Floor area in square metres}}$$

“Fire Service Installations or Equipment” means

Any installation or equipment manufactured, used or designed to be used for the purpose of:

- (a) extinguishing, attacking, preventing or limiting a fire;
- (b) giving warning of a fire;
- (c) providing access to any premises or place for the purpose of extinguishing, attacking, preventing or limiting a fire;
- (d) facilitating the evacuation from any premises in case of fire;
- (e) providing a stand-by power supply to an installation or equipment the purposes of which are mentioned in paragraphs (a) to (d) in the event of the loss of normal power supply.

“Natural Venting of Staircases” means

An alternative to pressurization of staircase by provision of venting of smoke from staircase adjacent to external wall in accordance with Section 2 of British Standard 5588: Part 5: 1991 under which vent opening into light well, atrium, etc. is unacceptable. Special attention shall be drawn to clauses 8.4(a), (b) and (h) of the standard.

“Place” means

Any area, lot or site on which buildings are located.

“Premises” means

Any building works or structure which is subject to the formal approval or consent of Government for its construction, alteration, change of use or demolition.

“Protected Means of Escape” means

Protected corridors, protected lobbies (including lobbies protecting fireman’s lifts) and protected staircases as defined in the Code of Practice for Fire Safety in Buildings published by the Buildings Department.

“Sleeping Risk” means

Increased life risk when the occupants, being asleep and with their consciousness nearly suspended, required additional assistance in the event of a fire either due to:

- their physical conditions, such as the old, the infirm and the children, or
- their transient presence in a strange building, and are unable to identify the means of escape.

Definitions of systems and classification of premises are at Parts II & III respectively.

1.3 Discretionary powers of the Director of Fire Services

Compliance with the prescriptive provisions in this Code may be regarded as a reliable way to satisfy the requirements for fire service installations or equipment. However, the Director of Fire Services may, in the case of any particular building, vary any of the requirements of the Code (whether by requiring the provision of any fire service installations or equipment not indicated in the Code either in addition to or in substitution for any fire service installations or equipment so indicated or by relaxing any of the requirements in the Code or otherwise) where, in his opinion, such a variation is required in order to ensure the provision of all such fire service installations and equipment, as, having regard to the purpose for which the building is intended to be put, comprise the minimum fire service installations and equipment necessary for that building/premises, or as the case may be, where such a variation is not inconsistent with the provision for the building of all such fire service installations and equipment as aforesaid.

For buildings of special designs or hazards which necessitate special considerations, the Director of Fire Services may accept, on a case by case basis, fire engineering approach as an alternative to the prescriptive provisions provided that the fire engineering approach shall not provide a level of safety inferior to that provided by prescriptive requirements. Methodology for application of the fire engineering approach should outline a structured fire engineering principle(s) to the assessment of total building fire safety effectiveness and to the achievement of pre-identified design objective(s) having taken into consideration of the objectives of fire service installations and equipment for the protection of life and property of the occupants within the premises and the firefighting personnel in the event of emergency.

1.4 Approval of plans for building works

The Building Authority may, under Section 16(1)(b) of the Buildings Ordinance, refuse to give his approval of any plans of building works where:

“the plans are not endorsed with or accompanied by a certificate from the Director of Fire Services certifying either:

- (i) that, having regard to the purpose to which the building is intended to be put (which purpose shall be stated in the certificate), no fire service installation or equipment is necessary in connection with the building that will result from the carrying out of the building works shown on the plans; or
- (ii) that the plans have been examined and are approved by him as showing all such fire service installations and equipment as in his opinion, having regard to the purpose to which the building is intended to be put (which purpose shall be stated in the certificate), comprise the minimum fire service installations and equipment necessary for the building in accordance with the Code of Practice published from time to time by the Director of Fire Services”.

1.5 Provision of street fire hydrants

When designing their projects, the Authorized Person should take into account the provision of street fire hydrants for the development in addition to the fire service installations and equipment in the building(s). Accessible street fire hydrant(s) shall be located or provided at a distance not greater than 100m from the building.

1.6 Design of fireman’s lift, firefighting and rescue stairway and emergency vehicular access

The fireman’s lift, firefighting and rescue stairway and emergency vehicular access shall be provided to every building in accordance with Reg. 41B, 41C and 41D of the Building (Planning) Regulations. Whilst the requirements for fireman’s lift and fire fighting and rescue stairway are included in this Code, they should not be considered as fire service installations within the meaning of paragraph 1.2 above.

1.7 Provision of closed circuit television system, emergency power points, fireman's communication system, fireman's emergency switch and pedestrian cross over facility

Whilst the captioned requirements are included in this Code, they should not be considered as fire service installations within the meaning of paragraph 1.2 above.

1.8 Source of Electrical Supply

Where an electrical installation is required to comply with this Code, a primary and secondary source of supply shall be provided to the satisfaction of the Director of Fire Services and all such installations shall be fed from both the primary and secondary source of supply.

All primary power supply to fire service installations should be originated from the load side of the main isolating device for the building and should be independent of other non-fire service circuits from the main supply switchboard.

1.9 Standards

The standards, specifications, rules, statutory requirements, etc. quoted in this Code shall be the current version at the time of building plans submission for approval.

For any non-standard provision of fire service installations or equipment, the standards and specifications shall conform to the prescribed requirements as specified by the Director of Fire Services.

PART II**TABLE AND DEFINITIONS OF SYSTEMS/INSTALLATIONS/EQUIPMENT****2.1 Table**

The following systems/installations/equipment may be required to be installed in various premises under this Code:

Audio/visual advisory system
Automatic actuating devices
Automatic fixed installation other than water
Automatic fixed installation using water
Closed circuit television system
Deluge system
Drencher system
Dust detection system
Dynamic smoke extraction system
Emergency generator
Emergency lighting
Emergency power points
Exit sign
Fire alarm system
Fire control centre
Fire detection system
Fire hydrant/hose reel system
Fireman's communication system
Fireman's emergency switch
Fireman's lift
Firefighting and rescue stairway
Fixed automatically operated approved appliance
Fixed foam system
Gas detection system
Gas extraction system
Pedestrian cross over facilities
Portable hand-operated approved appliance
Pressurization of staircase
Ring main system with fixed pump(s)
Sprinkler system
Static smoke extraction system
Street fire hydrant system
Supply tank
Ventilation/air conditioning control system
Water mist system
Water spray system
Water supply

2.2 Definitions

“Audio/visual advisory system” means

Equipment which is supplementary to exit signs and fire alarm warning devices which, when operated in the event of a fire, provides audio/visual indication of safe direction of egress from the area.

“Automatic actuating devices” means

Devices that are capable of providing signals, in the event of fire, to initiate the operation of other fire service installations or building components such as doors, shutters, dampers, fire curtains, roof vents, etc.

“Automatic fixed installation other than water” means

A system of cylinders/containers, pipes, valves, and delivery points so designed as to automatically detect and instantaneously attack a fire with an inert medium and sound an alarm (e.g. CO₂/clean agent gaseous protection of electrical equipment).

“Automatic fixed installation using water” means

A system of water supplies, pumps, pipes, valves and delivery points so arranged as to automatically detect and instantaneously attack a fire with water and sound an alarm. Such requirements for this item may include sprinkler, drencher, deluge, water mist or water spray system as required and appropriate.

“Closed circuit television system” means

A system of video cameras and display units designed for surveillance from remote locations.

“Deluge system” means

A system requiring a discharge of water over a considerable area in rapid and certain response to a fire.

“Drencher system” means

A system which provides a curtain of water for protection against internal and/or external “exposure” to fire, and/or the protection of large openings.

“Dust detection system” means

Equipment designed to give warning of a potentially explosive concentration of dust.

“Dynamic smoke extraction system” means

A mechanical ventilating system capable of removing smoke and products of combustion from a designated fire compartment, and also supplying make-up air in such a manner as to maintain a specified smoke free zone below the smoke layer.

“Emergency generator” means

An independently powered electrical generator of sufficient electrical capacity to meet the fire service installations and fireman’s lifts it is required to provide.

“Emergency lighting” means

A system of artificial lighting designed to provide adequate illumination and indication of exit routes within a building under emergency conditions.

“Emergency power point” means

A source of electricity to be used by firemen in operating fire fighting/rescue equipment.

“Exit sign” means

A fixed illuminated sign indicating an approved exit route.

“Fire alarm system” means

Any manually operated system designed to give warning of fire.

“Fire control centre” means

A compartment (situated at street level having direct access to open air and vehicular approach) containing annunciator boards, controls, terminals, etc. of the fire protection and life safety systems within that building/complex.

“Fire detection system” means

Any system designed to detect automatically the presence of smoke, heat, combustion products or flame

and give warning of same.

“Fire hydrant/hose reel system” means

An installation of pipes, water tanks, pumps, hydrant outlets and/or hose reels in a building to provide a ready means by which a jet of water can be delivered in any part of the building for the purpose of fire fighting.

“Fireman’s communication system” means

A system designed to enable Fire Services personnel to use direct telephone and/or their mobile/portable radio equipment for maintaining voice and/or data communications with the Fire Services Communication Centre, other Fire Services personnel at the premises, and/or the fire control centre of the premises, as required.

“Fireman’s emergency switch” means

A switch designed and installed to be used by firemen to cut off electric power supply to circuit concerned in the event of a fire/emergency.

“Fireman’s lift” means

A lift designed and installed to be used by firemen in the event of a fire.

“Firefighting and rescue stairway” means

A stairway accommodating an access staircase and a fireman’s lift.

“Fixed automatically operated approved appliance” means

Any fire service equipment which is manufactured, used or designed to be used as an independent unit for the purpose of extinguishing, attacking, preventing or limiting a fire, but automatic in operation and fixed in position, e.g. a sprayer unit in a Dangerous Goods store.

“Fixed foam system” means

Any combination of generators; pipework; valves; nozzles and pourers designed to deliver finished foam to the seat of a fire which may be automatic in operation.

“Gas detection system” means

Equipment designed to give warning of the presence of a noxious, toxic, irritant or inflammable vapour in potentially dangerous concentration.

“Gas extraction system” means

An electrically/mechanically operated system capable of removing flammable vapours/gases from the part of the building where such vapours/gases may be generated through normal operation of the plants or work processes.

“Pedestrian cross over facility” means

Cross passage designed to enable users inside a tube of a twin-tube tunnel to travel to another tube of the tunnel for escape purposes.

“Portable hand-operated approved appliance” means

Any fire service equipment which is manufactured, used or designed to be used as an independent unit for the purpose of extinguishing, attacking, preventing or limiting a fire, e.g. water type, foam, inert gas, any chemical extinguishers, fire blankets and sand buckets.

“Pressurization of staircase” means

A system designed to protect staircases against the ingress of smoke by maintaining the air within staircases at pressures higher than those in adjacent parts of the building. The number of staircase(s) requiring pressurization shall be determined by the cubical extent of the basement, or building as the case may be, according to the following table provided that the number of pressurized staircases required shall not exceed the total number of staircases required by the Code of Practice for Fire Safety in Buildings:

<i>Cubical Extent (cubic metres)</i>	<i>No. of Staircase(s)</i>
(For basements of three or more levels)	
Exceeding 7 000 but not exceeding 56 000	1
Exceeding 56 000 but not exceeding 112 000	2
Exceeding 112 000 but not exceeding 168 000	3
Exceeding 168 000	4
(For buildings other than hotels, hospitals and sanatoria)	
Exceeding 28 000 but not exceeding 56 000	1
Exceeding 56 000 but not exceeding 112 000	2
Exceeding 112 000 but not exceeding 168 000	3
Exceeding 168 000	4
(For hotels, hospitals and sanatoria)	
Not exceeding 56 000	1
Exceeding 56 000 but not exceeding 112 000	2
Exceeding 112 000 but not exceeding 168 000	3
Exceeding 168 000	4

“Ring main system with fixed pump(s)” means

A fixed system of piping fitted with hydrant outlets with/without hose reels at fixed intervals and permanently primed pump(s) set for imparting pressure and flow to the water.

“Sprinkler system” means

A system designed to discharge water under pressure from sprinkler heads (detecting devices) at/or near the point of origin of the fire and to sound an alarm.

“Static smoke extraction system” means

A smoke extraction system utilizing smoke reservoirs; localised ducting; and permanent openings and/or automatic opening of windows, panels or external louvres; to remove, on the principles of natural ventilation, smoke and products of combustion from a designated fire compartment.

“Street fire hydrant system” means

A system of water mains and fire hydrants supplied by a government water main, or a static water supply with pumping facilities.

“Supply tank” means

A water tank containing a specified quantity of water reserved solely for fire fighting.

“Ventilation/air conditioning control system” means

An automatic control system, designed to stop mechanically induced air movement within a designated fire compartment, actuated by smoke detectors/the building fire alarm system and provided with a central, manually operated back up facility.

“Water mist system” means

A system connected to a water supply or water and atomizing media supplies and equipped with nozzles capable of delivering water mist to control, suppress, or extinguish fires.

“Water spray system” means

A system designed for extinguishing or controlling fires involving flammable liquids by emulsification, cooling and smothering.

“Water supply” means

A supply acceptable to the Water Authority and the Director of Fire Services.

PART III**CLASSIFICATION OF PREMISES AND DEFINITIONS****3.1 Definitions**

“Audio/Visual Production Facilities” means

Premises used for audio/visual production such as film and television studios.

“Basement Storeys” means

Any storey of a building below the ground storey and from which all required exit routes are in an upward direction to the ground storey.

“Car Parking Facilities” means

See “Car Port” and “Garage”.

“Car Port” means

A covered parking area open for its entire length or width on at least two sides.

“Cold Storage Area” means

Any area incorporating a unit of specific volume which is entirely given over to storage in an atmosphere of less than 10 °C.

“Commercial Building” means

A building, or that part of the building, constructed or intended to be used for business, trade or entertainment.

“Composite Building” means

Any building which is constructed or intended to be used for a combination of any two or more of the following purposes, and in respect of each of these purposes, separate paragraphs of this Code shall apply:

- (a) Domestic
- (b) Commercial
- (c) Institutional
- (d) Hotel

“Curtain Walled Building” means

A building which has curtain walls. A curtain wall is a non-load bearing wall primarily fixed in front of the structural frame with its own dead weight and wind loads transferred to the structural frame through anchorages.

“Domestic Building” means

A building constructed or intended to be used for habitation.

“Garage” means

A covered parking area enclosed by walls, with or without windows, on more than two sides.

“Godown” means

A warehouse or any building used wholly or in part for the storage of goods or raw material of any kind.

“Group I” means

A designated area of special hazard normally within a building.

“Group II” means

A building, group of buildings or complex considered to present special hazard.

“High Rise Building” means

Any building of which the floor of the uppermost storey exceeds 30 m above the point of staircase discharge at ground floor level.

“Hotel” means

Any building used wholly or in part primarily for the purposes of accommodation on a commercial basis.

“Industrial Building” means

Any building used wholly or in part in any process for or incidental to any of the following purposes, namely:

- (a) the making of any article or of part of any article; or
- (b) the altering, repairing, ornamenting, finishing, cleaning or washing or breaking up or demolition of any article; or
- (c) the adapting for sale of any article being a building in which work is carried out by way of trade or for purposes of gain.

“Institutional Building” means

Any building used wholly or in part for the purposes of the following:

- (a) Government, institution and community facilities, including those directly related to or in support of the work of the government, organizations providing social services to meet community needs, and other institutional establishments
- (b) Club premises
- (c) Educational establishments
- (d) Hostels
- (e) Hospitals including mental institutions and clinics
- (f) Prisons and similar corrective institutions
- (g) Sanatoria

“Low Rise Building” means

Any building of which the floor of the uppermost storey does not exceed 30 m above the point of staircase discharge at ground floor level.

“Mechanical Plant Room” means,

“Room accommodating mechanical plants such as air handling unit (AHU), fan, air conditioning (A/C), chiller, compressor, water pump, fire pump and the like.”

“Passenger Terminals/Station” means

Any building and/or place used wholly or in part for the purposes of embarking/disembarking passengers to/from any mode of transport.

“Refuge Floor” means

A protected floor that serves as a refuge for the occupants of the building to assemble in case of fire, for a short period of time, before reaching an ultimate place of safety.

3.2 Special and other risks

Group I: A designated area of special hazard normally within a building i.e.:

- Audio/visual production facilities
- Battery rooms and electrical charging facilities
- Boiler rooms
- Bowling alleys
- Cold storage areas
- Dangerous goods stores
- Consumer electrical equipment, incorporating transformers, switchgears, generators/alternators, requiring separate installation
- Kitchens (other than kitchens in domestic premises)
- Lift motor rooms
- Lifts not discharging to protected means of escape

Mechanical plant rooms

Telephone distribution equipment, computer installation and similar installations

Group II: A building, group of buildings or complex considered to present special hazard(s) i.e.:

Aircraft maintenance and repair facilities

Audio/visual production facilities (Building(s) devoted to this purpose)

Bulk fuel storages

Chemical manufacturing/processing plants

Cold storage areas (Building(s) devoted to this purpose)

Container terminals, yards and freight stations

Curtain walled buildings

Dangerous goods stores (Range of DG stores in an area devoted to this purpose)

Explosive production and/or storages

Mechanical plant rooms (Building(s) devoted to this purpose)

Open sites of public assembly

Petro-chemical complexes

Railway marshalling yards

Road tunnels

Shipyards

Substation/switchgear buildings

Note: “Audio/visual production facilities”, “cold storage areas” “dangerous goods stores” and “mechanical plant rooms” are included in both groups.

PART IV**REQUIREMENTS FOR PREMISES****General**

Attention is drawn to Part I of this Code, under which the Director of Fire Services has discretionary powers to vary any requirements of this Code.

Where the requirements are not detailed hereunder for particular premises, the Director of Fire Services will determine the requirements.

CLASSIFICATION OF PREMISES AND AREAS OF SPECIAL RISKS

- 4.1 Aircraft Maintenance and Repair Facilities
- 4.2 Audio/Visual Production Facilities
- 4.3 Basements with total floor area not exceeding 230 m²
- 4.4 Basements with total floor area exceeding 230 m²
- 4.5 Battery Rooms and Electrical Charging Facilities
- 4.6 Boiler Rooms
- 4.7 Bowling Alleys
- 4.8 Bulk Fuel Storage
- 4.9 Car Ports
- 4.10 Chemical Manufacturing/Processing Plants
- 4.11 Cold Storage Areas (Group I) Minor (Under 140 m³ capacity)
- 4.12 Cold Storage Areas (Group I) Major (of and over 140 m³ capacity)
- 4.13 Cold Storage Areas (Group II)
- 4.14 Commercial Buildings—Low Rise
- 4.15 Commercial Buildings—High Rise
- 4.16 Composite Buildings
- 4.17 Container Terminal Yards and Freight Stations
- 4.18 Curtain Walled Buildings below six storeys in height
- 4.19 Curtain Walled Buildings of and above six storeys in height
- 4.20 Dangerous Goods Stores
- 4.21 Domestic Buildings—Low Rise (up to and including 3 storeys in height)
- 4.22 Domestic Buildings—Low Rise (over 3 storeys in height)
- 4.23 Domestic Buildings—High Rise
- 4.24 Consumer Electrical Equipment: incorporating transformers, switchgear, generators/alternators requiring separate installations
- 4.25 Explosive Production and/or storages
- 4.26 Garages
- 4.27 Hotels—Low Rise
- 4.28 Hotels—High Rise
- 4.29 Industrial/Godown Buildings—Low Rise
- 4.30 Industrial/Godown Buildings—High Rise
- 4.31 Institutional Buildings—Low Rise
- 4.32 Institutional Buildings—High Rise
- 4.33 Kitchens (other than kitchens in domestic premises)

- 4.34 Lift Motor Rooms
- 4.35 Lifts not Discharging to Protected Means of Escape
- 4.36 Mechanical Plant Rooms (Group I)
- 4.37 Mechanical Plant Rooms (Group II)
- 4.38 Passenger Terminals/Stations
- 4.39 Petro-chemical Complexes
- 4.40 Railway Marshalling Yards
- 4.41 Refuge Floors
- 4.42 Road Tunnels
- 4.43 Shipyards
- 4.44 Substation/Switchgear Buildings
- 4.45 Telephone distribution equipment, computer installation and similar installations

4.1 Aircraft maintenance and repair facilities

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Automatic fixed installation using water
- (iv) Dust detection system
- (v) Emergency generator
- (vi) Emergency lighting
- (vii) Exit sign
- (viii) Fire alarm system
- (ix) Fire control centre
- (x) Fire detection system
- (xi) Fire hydrant/hose reel system
- (xii) Fireman's lift or firefighting and rescue stairway
- (xiii) Fixed automatically operated approved appliance
- (xiv) Fixed foam system
- (xv) Gas extraction system
- (xvi) Portable hand-operated approved appliance
- (xvii) Ring main system with fixed pump(s)
- (xviii) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided to areas where the use of water is incompatible with the occupancy or trade.
- (iii) In all areas excepting where covered by (ii) above, including staircases.
- (iv) To be provided in all areas where there is a potential dust explosion hazard.
- (v) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (vi) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (vii) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (viii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (ix) Minimum of one, additional to be provided according to the complexity of the buildings.
- (x) To be provided in areas not covered by automatic fixed installations.
- (xi) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.
- (xii) As required by the Code of Practice for Fire Safety in Buildings
- (xiii) As required by occupancy.
- (xiv) To be provided as an alternative to other fixed automatic systems, when required by the Director of Fire Services.

- (xv) Approved type for the part of building where flammable vapours may be generated, and to reduce the concentration below its lower explosive limit.
- (xvi) As required by occupancy.
- (xvii) To be required to cover those areas of such complexes where public water mains are inadequate.
- (xviii) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

Note: Buildings within such complexes shall conform to the requirements specified for similar premises in accordance with this Code.

4.2 Audio/visual production facilities

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Audio/visual advisory system
- (ii) Automatic actuating devices
- (iii) Automatic fixed installation other than water
- (iv) Automatic fixed installation using water
- (v) Emergency generator
- (vi) Emergency lighting
- (vii) Exit sign
- (viii) Fire alarm system
- (ix) Fire control centre
- (x) Fire detection system
- (xi) Fire hydrant/hose reel system
- (xii) Portable hand-operated approved appliance
- (xiii) Static or dynamic smoke extraction system
- (xiv) Ventilation/air conditioning control system

EXTENT

- (i) As required by the risk.
- (ii) As required by that equipment which needs to be automatically actuated.
- (iii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iv) As required by the risk.
- (v) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (vi) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (vii) Sufficient directional and exit signs to ensure that all exit routes from the premises within the buildings are clearly indicated as required by the configuration of staircases serving the building.
- (viii) One actuating point and one audio warning device to be located at each hose reel point. Visual

alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.

- (ix) As required by the risk.
- (x) To be provided in areas not covered by automatic fixed installations.
- (xi) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.
- (xii) As required by the risk.
- (xiii) Required for any fire compartment exceeding 7 000 cubic metres where:
 - (a) the aggregate area of openable windows of the compartment does not exceed 6.25% of the floor area of that compartment, and
 - (b) the designed fire load of that compartment is likely to exceed 1 135 MJ/square metre.
 The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —
 - (i) with headroom of 12 m or more; or
 - (ii) with irregular geometrical dimensions or extraordinary large size.
- (xiv) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.3 Basements with total floor area not exceeding 230 m²

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic fixed installation other than water
- (ii) Emergency lighting
- (iii) Exit sign
- (iv) Fire alarm system
- (v) Fire detection system
- (vi) Fire hydrant/hose reel system
- (vii) Fireman's lift or firefighting and rescue stairway
- (viii) Portable hand-operated approved appliance
- (ix) Ventilation/air conditioning control system

EXTENT

- (i) To be provided in areas of special risk.
- (ii) Emergency lighting shall be provided throughout the entire basement area and all exit routes leading to ground level.
- (iii) Sufficient directional and exit signs to ensure that all exit routes from the basement are clearly

indicated as required by the configuration of staircases serving the basement.

- (iv) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (v) The entire basement area shall be covered by a fire detection system, excepting car parking areas, strong rooms and safe deposit vaults.
- (vi) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For basement not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the basement with the exception of strong rooms and safe deposit vaults can be reached by a length of not more than 30 m of hose reel tubing.
- (vii) As required by the Code of Practice for Fire Safety in Buildings.
- (viii) As required by occupancy.
- (ix) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

Note: Buildings within such complexes shall conform to the requirements specified for similar premises in accordance with this Code.

4.4 Basements with total floor area exceeding 230 m²

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Audio/visual advisory system
- (ii) Automatic fixed installation other than water
- (iii) Emergency lighting
- (iv) Exit sign
- (v) Fire alarm system
- (vi) Fire detection system
- (vii) Fire hydrant/hose reel system
- (viii) Firefighting and rescue stairway
- (ix) Portable hand-operated approved appliance
- (x) Pressurization of staircase
- (xi) Sprinkler system
- (xii) Static or dynamic smoke extraction system
- (xiii) Ventilation/air conditioning control system

EXTENT

- (i) Required for any part or parts of building where the area occupied by any one single occupancy on any one floor exceeds 2 000 square metres AND where the occupants, due to their transient presence either as shoppers, audience or guests, are exposed to risks to require additional advice

through such systems.

- (ii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iii) Emergency lighting shall be provided throughout the entire basement area and all exit routes leading to ground level.
- (iv) Sufficient directional and exit signs to ensure that all exit routes from the basement are clearly indicated as required by the configuration of staircases serving the basement.
- (v) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (vi) The entire basement area shall be covered by a fire detection system, excepting car parking areas, strong rooms and safe deposit vaults.
- (vii) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For basement not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the basement with the exception of strong rooms and safe deposit vaults can be reached by a length of not more than 30 m of hose reel tubing.
- (viii) Required for basements of three or more levels, or as required by the Code of Practice for Fire Safety in Buildings.
- (ix) As required by occupancy.
- (x) Required for basements of three or more levels where:
 - (a) no open air access routes for firemen are provided;
 - (b) the cubical extent of the basement exceeds 7 000 cubic metres; and
 - (c) the designed fire load of the basement is likely to exceed 1 135 MJ/square metre.

The number of pressurized staircases to be provided shall be determined by the table stipulated under the definition of pressurization of staircase in Part II provided that the number of pressurized staircases required shall not exceed the total number of staircases required by the Code of Practice for Fire Safety in Buildings.
- (xi) In all parts of the basements, fast response type sprinkler heads shall be used with the exception of areas where covered by (ii), or strong rooms and safe deposit vaults covered by (vi).
- (xii) Required for:
 - (a) any fire compartment exceeding 7 000 cubic metres where the designed fire load is likely to exceed 1135 MJ/m^2 , or
 - (b) industrial basements, or
 - (c) basements of three or more levels except areas solely for car parking purposes.

The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —

 - (i) with headroom of 12 m or more; or
 - (ii) with irregular geometrical dimensions or extraordinary large size.
- (xiii) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7

or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.

- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

Note: Buildings within such complexes shall conform to the requirements specified for similar premises in accordance with this Code.

4.5 Battery rooms and electrical charging facilities

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic fixed installation other than water
- (ii) Exit sign
- (iii) Fire alarm system
- (iv) Fire detection system
- (v) Gas extraction system
- (vi) Portable hand-operated approved appliance
- (vii) Ventilation/air conditioning control system

EXTENT

- (i) To be provided to areas where the use of water is undesirable for the risk.
- (ii) Sufficient directional and exit signs to ensure that all exit routes from any floor within the premises are clearly indicated as required by the configuration of staircase serving the building.
- (iii) One actuating point and one audio warning device to be located at all exit doorways. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for audio/visual warning device initiation.
- (iv) To be provided in areas not covered by automatic fixed installations.
- (v) Approved type for the part of building where flammable vapours may be generated, and to reduce the concentration below its lower explosive limit.
- (vi) As required by occupancy.
- (vii) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.6 Boiler rooms

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Automatic fixed installation using water
- (iv) Emergency lighting
- (v) Exit sign
- (vi) Fire detection system
- (vii) Fixed foam system
- (viii) Portable hand-operated approved appliance

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided in gas/oil boiler rooms.
- (iii) To be provided in gas/oil boiler rooms where automatic fixed installation other than water are not installed.

- (iv) Emergency lighting shall be provided throughout the entire area and all exit routes leading to ground level.
- (v) Sufficient directional and exit signs to ensure that all exit routes from the area within the buildings are clearly indicated as required by the configuration of staircases serving the buildings.
- (vi) To be provided in areas not covered by automatic fixed installations.
- (vii) To be provided in oil boiler rooms located in basements in lieu of the automatic fixed installations at (ii) & (iii) above.
- (viii) As required by the risk.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.7 Bowling alleys

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Audio/visual advisory system
- (ii) Automatic actuating devices
- (iii) Automatic fixed installation other than water
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Exit sign
- (vii) Fire alarm system
- (viii) Fire detection system
- (ix) Fire hydrant/hose reel system
- (x) Portable hand-operated approved appliance
- (xi) Sprinkler system
- (xii) Ventilation/air conditioning control systems

EXTENT

- (i) Required for any part or parts of building where the area used for bowling alley on any one floor exceeds 2 000 square metres AND where bowlers and spectators, due to their transient presence, are exposed to risks to require additional advice through such systems.
- (ii) As required by that equipment which needs to be automatically actuated.
- (iii) To be provided to areas where the use of water is undesirable for the risk.
- (iv) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (v) Emergency lighting shall be provided throughout the entire premises and all exit routes leading to ground level.
- (vi) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (viii) To be provided in areas not covered by automatic fixed installations.
- (ix) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.
- (x) As required by occupancy.

- (xi) In all parts of the alleys and associated areas including staircases, common corridors and toilets.
- (xii) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.8 Bulk fuel storage

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Appropriate requirements of Model Code of Safe Practice published by the Energy Institute
- (ii) Automatic actuating devices
- (iii) Automatic fixed installation other than water
- (iv) Automatic fixed installation using water
- (v) Emergency generator
- (vi) Emergency lighting
- (vii) Exit sign
- (viii) Fire alarm system
- (ix) Fire control centre
- (x) Fire detection system
- (xi) Fire hydrant/hose reel system
- (xii) Fixed automatically operated approved appliance
- (xiii) Fixed foam system
- (xiv) Portable hand-operated approved appliance
- (xv) Ring main system with fixed pump(s)

EXTENT

- (i) As considered necessary by the Director of Fire Services.
- (ii) As required by that equipment which needs to be automatically actuated.
- (iii) To be provided to areas of special risk where the use of water is undesirable for the risk.
- (iv) To be provided for the cooling and protection of products tanks, product pipelines and jetties.
- (v) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (vi) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level. In addition, such lighting shall also be provided to ensure adequate illumination to permit safe evacuation to the outside of the site boundary.
- (vii) Sufficient directional and exit signs to ensure that all exit routes from any floor within the buildings are clearly indicated as required by the configuration of staircases serving the buildings.
- (viii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.

- (ix) Minimum of one, additional to be provided according to the complexity of the area.
- (x) To be provided in areas not covered by automatic fixed installations.
- (xi) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.
- (xii) As required by occupancy.
- (xiii) To be provided as an alternative to other fixed automatic systems, when required by the Director of Fire Services.
- (xiv) As required by occupancy.
- (xv) To be provided to cover those areas of such complexes where public water mains are inadequate.

Note: Buildings within such complexes shall conform to the requirements specified for similar premises in accordance with this Code.

4.9 Car ports

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Emergency lighting
- (ii) Exit sign
- (iii) Fire alarm system
- (iv) Fire detection system
- (v) Fire hydrant/hose reel system
- (vi) Fireman's emergency switch
- (vii) Fireman's lift
- (viii) Portable hand-operated approved appliance

EXTENT

- (i) Emergency lighting shall be provided throughout all public areas and exit routes leading to ground level.
- (ii) Sufficient directional and exit signs to ensure that all exit routes from premises within the building are clearly indicated as required by the configuration of staircases serving the building.
- (iii) As required by the risk. If required, one actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (iv) Heat detectors or multi-sensor detectors shall be provided:
 - (a) in entire car ports with a total floor area not exceeding 230m² installed with electric vehicle charging facilities but not covered by sprinkler system; or
 - (b) in car parking areas installed with electric vehicle charging facilities of car ports with a total floor area exceeding 230m² but not covered by sprinkler system.

A direct line connection to the Fire Services Communications Centre is not required if the car ports are situated in domestic buildings where the provision of direct line connection is not mandatorily required.

- (v) As required by the risk.
- (vi) To be provided for car ports installed with electric vehicle charging facilities. The switch shall be provided at vehicle entrances, fire control centre or other locations as considered acceptable by the Director of Fire Services.
- (vii) As required by the Code of Practice for Fire Safety in Buildings.
- (viii) As required by the risk. For car ports installed with electric vehicle charging facilities, additional dry powder or carbon dioxide type fire extinguisher shall be provided at each hose reel point on

the floors with electric vehicle charging facilities.

Note: (i) Carports within buildings shall conform to the requirements specified for those buildings in accordance with this Code.

(ii) The additional requirements for car ports installed with electric vehicle charging facilities as stipulated in para. (iv, vi & viii) above shall not be applicable to the car port of a single-family domestic building up to and including three storeys in height.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.10 Chemical manufacturing/processing plants

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Automatic fixed installation using water
- (iv) Dust detection system
- (v) Emergency generator
- (vi) Emergency lighting
- (vii) Exit sign
- (viii) Fire alarm system
- (ix) Fire control centre
- (x) Fire detection system
- (xi) Fixed automatically operated approved appliance
- (xii) Fixed foam system
- (xiii) Gas detection system
- (xiv) Gas extraction system
- (xv) Portable hand-operated approved appliance
- (xvi) Ring main system with fixed pump(s)
- (xvii) Special equipment/requirements
- (xviii) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided to areas where the use of water is undesirable for the risk.
- (iii) In all areas excepting where covered by (ii) above, including staircases.
- (iv) To be provided in all areas where there is a potential dust explosion hazard.
- (v) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (vi) Emergency lighting shall be provided to all buildings within the premises and in addition, such lighting shall also be provided to ensure adequate illumination to permit safe evacuation to the outside of the site boundary.
- (vii) Sufficient directional and exit signs to ensure that all exit routes from any floor within the buildings are clearly indicated as required by the configuration of the staircases serving the buildings.
- (viii) One actuating point and one audio warning device to be located at each hose reel point within the buildings. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation, and in addition, one actuating point and audio/visual warning device to be provided at each hydrant outlet on the ring main system.
- (ix) Minimum of one, additional to be provided according to the layout of the complex.

- (x) To be provided in areas not covered by automatic fixed installations.
- (xi) As required by the risk.
- (xii) As required by the risk.
- (xiii) To be provided in all areas of risk.
- (xiv) Approved types for the part of building where flammable vapours may be generated, and to reduce the concentration below its lower explosive limit.
- (xv) As required by the risk.
- (xvi) To be provided to cover those areas of such complexes where public water mains are inadequate.
- (xvii) As required by the Director of Fire Services.
- (xviii) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

Note: Buildings within such complexes shall conform to the requirements specified for similar premises in accordance with this Code.

4.11 Cold storage areas (Group I) minor (under 140 m³ capacity)

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Portable hand-operated approved appliance.

EXTENT

- (i) As appropriate to the plant and construction.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.12 Cold storage areas (Group I) major (of and over 140 m³ capacity)

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic fixed installation using water
- (ii) Fire alarm system
- (iii) Portable hand-operated approved appliance

EXTENT

- (i) Dry sprinklers or sprinkler installation operating in dry mode as defined by the Loss Prevention Council Rules to be provided where the cold storage room is entirely given over to storage in an atmosphere of less than 4°C.
- (ii) The system provided to the building to be extended to cover the cold storage area. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access.
- (iii) As appropriate to the plant and construction.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its

international equivalent, or be brought up to that standard by use of an approved fire retardant product.

- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.13 Cold storage areas (Group II)

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation using water
- (iii) Emergency generator
- (iv) Emergency lighting
- (v) Exit sign
- (vi) Fire alarm system
- (vii) Fire hydrant/hose reel system
- (viii) Fireman's lift or firefighting and rescue stairway
- (ix) Gas detection system
- (x) Portable hand-operated approved appliance

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) In all areas including staircases and cold storage room. For a cold storage room which is entirely given over to storage in an atmosphere of less than 4°C, dry sprinklers or sprinkler installation operating in dry mode in accordance with the Loss Prevention Council Rules to be provided.
- (iii) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (iv) Emergency lighting shall be provided throughout the entire area.
- (v) Sufficient directional and exit signs to ensure that all exit routes from any floor within the area are clearly indicated as required by the configuration of staircases serving the area.
- (vi) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (vii) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.
- (viii) As required by the Code of Practice for Fire Safety in Buildings.
- (ix) To be provided in those areas as required by the risk.
- (x) As required by occupancy.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7

or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.

- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.14 Commercial buildings—low rise

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Audio/visual advisory system
- (ii) Automatic actuating devices
- (iii) Automatic fixed installation other than water
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Exit sign
- (vii) Fire alarm system
- (viii) Fire detection system
- (ix) Fire hydrant/hose reel system
- (x) Fireman's lift
- (xi) Portable hand-operated approved appliance
- (xii) Sprinkler system
- (xiii) Static or dynamic smoke extraction system
- (xiv) Ventilation/air conditioning control system

EXTENT

- (i) Required for any part or parts of building where the area occupied by any one single occupancy on any one floor exceeds 2 000 square metres AND where the occupants, due to their transient presence either as shoppers, audience or guests, are exposed to risks to require additional advice through such systems.
- (ii) As required by that equipment which needs to be automatically actuated.
- (iii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iv) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (v) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (vi) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (viii) To be provided in areas not covered by automatic fixed installations.
- (ix) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For buildings not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the building can be reached by a length of not more than 30 m of hose reel tubing.
- (x) As required by the Code of Practice for Fire Safety in Buildings.
- (xi) As required by occupancy.
- (xii) Required for buildings with total floor areas exceeding 230 square metres and to cover all parts of the buildings including staircases, common corridors and toilets.
- (xiii) Required for:

- (a) atrium of the building, if the compartment of the atrium exceeds 28 000 cubic metres, or any basement level or floor of building forming part of that compartment which exceeds 7 000 cubic metres, or
- (b) any fire compartment exceeding 7 000 cubic metres in that building where:
 - (i) the aggregate area of openable windows of the compartment does not exceed 6.25% of the floor area of that compartment, and
 - (ii) the designed fire load is likely to exceed 1 135 MJ/square metre.

The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —

- (i) with headroom of 12 m or more; or
 - (ii) with irregular geometrical dimensions or extraordinary large size.
- (xiv) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.15 Commercial buildings—high rise

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Audio/visual advisory system
- (ii) Automatic actuating devices
- (iii) Automatic fixed installation other than water
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Exit sign
- (vii) Fire alarm system
- (viii) Fire control centre
- (ix) Fire detection system
- (x) Fire hydrant/hose reel system
- (xi) Fireman's lift
- (xii) Portable hand-operated approved appliance
- (xiii) Pressurization of staircase
- (xiv) Sprinkler system
- (xv) Static or dynamic smoke extraction system
- (xvi) Ventilation/air conditioning control system

EXTENT

- (i) Required for any part or parts of building where the area occupied by any one single occupancy on any one floor exceeds 2 000 square metres AND where the occupants, due to their transient presence either as shoppers, audience or guests, are exposed to risks to require additional advice through such systems.

- (ii) As required by that equipment which needs to be automatically actuated.
- (iii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iv) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (v) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (vi) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (viii) Minimum of one, additional to be provided according to the complexity of the building.
- (ix) To be provided in areas not covered by automatic fixed installations.
- (x) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For buildings not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the building can be reached by a length of not more than 30 m of hose reel tubing.
- (xi) As required by the Code of Practice for Fire Safety in Buildings.
- (xii) As required by occupancy.
- (xiii) Required where:
 - (a) natural venting of staircase is not provided;
 - (b) the aggregate area of openable windows of the rooms/units of the building does not exceed 6.25% of the floor area of those rooms/units, calculated on a floor by floor basis;
 - (c) the cubical extent of the building exceeds 28 000 cubic metres; and
 - (d) the designed fire load of the building is likely to exceed 1 135 MJ/square metre.

The number of pressurized staircases to be provided shall be determined by the table stipulated under the definition of pressurization of staircase in Part II provided that the number of pressurized staircases required shall not exceed the total number of staircases required by the Code of Practice for Fire Safety in Buildings.
- (xiv) Required to cover all parts of the buildings including staircases, common corridors and toilets.
- (xv) Required for:
 - (a) atrium of the building, if the compartment of the atrium exceeds 28 000 cubic metres, or any basement level or floor of building forming part of that compartment which exceeds 7 000 cubic metres, or
 - (b) any fire compartment exceeding 7 000 cubic metres in that building where:
 - (i) the aggregate area of openable windows of the compartment does not exceed 6.25% of the floor area of that compartment, and
 - (ii) the designed fire load is likely to exceed 1 135 MJ/square metre.

The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —

 - (i) with headroom of 12 m or more; or
 - (ii) with irregular geometrical dimensions or extraordinary large size.
- (xvi) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its

international equivalent, or be brought up to that standard by use of an approved fire retardant product.

- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.16 Composite buildings

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

&

EXTENT FOR:

- (i) The fire service installations and equipment required for each of the various usages of a composite building shall conform to the relevant paragraph of this Code.
- (ii) For composite building with sprinkler system in non-domestic portion, the sprinklers in staircase (only those communicate with the domestic portion) should be extended to 2 more floors above or below the non-domestic portion and the sprinkler head should be of fast response type.

4.17 Container terminal yards and freight stations

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Automatic fixed installation using water
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Exit sign
- (vii) Fire alarm system
- (viii) Fire control centre
- (ix) Fire hydrant/hose reel system
- (x) Fixed automatically operated approved appliance
- (xi) Portable hand-operated approved appliance
- (xii) Pressurization of staircase
- (xiii) Ring main systems with fixed pump(s)
- (xiv) Special equipment/requirements
- (xv) Static or dynamic smoke extraction system
- (xvi) Ventilation/Air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iii) In all areas including staircases, common corridors and toilets excepting where covered by (ii) above.
- (iv) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (v) Emergency lighting shall be provided throughout the entire buildings and all exit routes leading to ground level.
- (vi) Sufficient directional and exit signs to ensure that all exit routes from any floor within the buildings are clearly indicated as required by the configuration of staircases serving the buildings.
- (vii) One actuating point and one audio warning device to be located at each hose reel point. Visual

alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.

- (viii) Minimum of one, additional to be provided according to the complexity of the building.
- (ix) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.
- (x) As required by occupancy.
- (xi) As required by occupancy.
- (xii) Required where:
 - (a) natural venting of staircase is not provided; and
 - (b) the aggregate area of openable windows of the rooms/units of the building does not exceed 6.25% of the floor area of those rooms/units, calculated on a floor by floor basis.

The number of pressurized staircases to be provided shall be determined by the table stipulated under the definition of pressurization of staircase in Part II provided that the number of pressurized staircases required shall not exceed the total number of staircases required by the Code of Practice for Fire Safety in Buildings.
- (xiii) To be provided to cover those areas of such complexes where public water mains are inadequate.
- (xiv) As required by Director of Fire Services.
- (xv) Required for any fire compartment exceeding 7 000 cubic meters where
 - (a) the aggregate area of openable windows of the compartment does not exceed 6.25% of the floor area of that compartment, and
 - (b) the designed fire load of that compartment is likely to exceed 1 135 MJ/m².

The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —

 - (i) with headroom of 12 m or more; or
 - (ii) with irregular geometrical dimensions or extraordinary large size.
- (xvi) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

Note: Buildings within such complexes shall conform to the requirements specified for similar premises in accordance with this Code.

4.18 Curtain walled buildings below six storeys in height

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

Normal requirements according to occupancy.

4.19 Curtain walled buildings of and above six storeys in height

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

Normal requirements according to occupancy. Where a sprinkler system is required, this shall be one grade in excess of that normally required for the accepted risk category, except for those buildings constructed to the standard stipulated in the current Code of Practice for Fire Safety in Buildings.

e.g. LH (light hazard) becomes OH 1 (ordinary hazard group 1); OH 4 (ordinary hazard group 4) becomes HH (high hazard).

4.20 Dangerous goods stores

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Automatic fixed installation using water
- (iv) Exit sign
- (v) Fire alarm system
- (vi) Fixed automatically operated approved appliance
- (vii) Fixed foam system
- (viii) Gas detection system
- (ix) Portable hand-operated approved appliance
- (x) Special equipment/requirements

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) As required by the risk of the dangerous goods and the volume of the store.
- (iii) As required by the risk of the dangerous goods and the volume of the store.
- (iv) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (v) One actuating point and one audio warning device to be located at each exit from the store where automatic fixed installation is provided. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point should include facilities for audio warning device initiation.
- (vi) As required by the risk of the dangerous goods and the volume of the store.
- (vii) As required by the risk.
- (viii) As required by the risk.
- (ix) As required by the Director of Fire Services.
- (x) As required by the Director of Fire Services.

4.21 Domestic buildings—low rise (up to and including three storeys in height)

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

Portable hand-operated approved appliance.

EXTENT

One per floor plus additional for car ports.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.22 Domestic buildings—low rise (over 3 storeys in height)

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Fire alarm system
- (ii) Fire hydrant/hose reel system
- (iii) Portable hand-operated approved appliance

EXTENT

- (i) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (ii) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For buildings not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the building can be reached by a length of not more than 30 m of hose reel tubing.
- (iii) As required by occupancy.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.23 Domestic buildings—high rise*REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:*

- (i) Emergency generator
- (ii) Emergency lighting
- (iii) Exit sign
- (iv) Fire alarm system
- (v) Fire hydrant/hose reel system
- (vi) Fireman's lift
- (vii) Portable hand-operated approved appliance

EXTENT

- (i) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (ii) Emergency lighting shall be provided to all staircases, passages, plant rooms and public areas including lift lobbies on all floors and refuge areas.
- (iii) Sufficient directional and exit signs to ensure that all exit routes from public areas to staircases are clearly indicated.
- (iv) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (v) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For buildings not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the building can be reached by a length of not more than 30 m of hose reel tubing.
- (vi) As required by the Code of Practice for Fire Safety in Buildings.
- (vii) As required by occupancy.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.24 Consumer electrical equipment: incorporating transformers, switchgear, generators/alternators requiring separate installations

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Fire detection system
- (iv) Portable hand-operated approved appliance

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided in oil filled transformer rooms with capacity in excess of 1 500 kVA.
- (iii) To be provided in areas not covered by automatic fixed installations and where the portion of the building is required to be provided with fire detection system.
- (iv) As required by the Director of Fire Services.

4.25 Explosive production and/or storages

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

Managements shall direct their enquiries to respective licensing authorities, viz. Commissioner of Mines and Commissioner of Police in conjunction with the Building Authority.

4.26 Garages

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Emergency lighting
- (iii) Exit sign
- (iv) Fire alarm system
- (v) Fire detection system
- (vi) Fire hydrant/hose reel system
- (vii) Fireman's emergency switch
- (viii) Fireman's lift
- (ix) Portable hand-operated approved appliance
- (x) Sprinkler system
- (xi) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) Emergency lighting shall be provided throughout the premises and all exit routes.
- (iii) Sufficient directional and exit signs to ensure that all exit routes from the premises within the building are clearly indicated as required by the configuration of staircases serving the building.
- (iv) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier

Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation within the premises.

- (v) Heat detectors or multi-sensor detectors shall be provided in entire garage with a total floor area not exceeding 230m² installed with electric vehicle charging facilities but not covered by sprinkler system. A direct line connection to the Fire Services Communications Centre is not required if the garages are situated in domestic buildings where the provision of direct line connection is not mandatorily required.
- (vi) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.
- (vii) To be provided for garages installed with electric vehicle charging facilities. The switch shall be provided at vehicle entrances, fire control centre or other locations as considered acceptable by the Director of Fire Services.
- (viii) As required by the Code of Practice for Fire Safety in Buildings.
- (ix) As required by the risk. For garages installed with electric vehicle charging facilities, additional dry powder or carbon dioxide type fire extinguisher shall be provided at each hose reel point on the floors with electric vehicle charging facilities.
- (x) Required for garages with total floor areas exceeding 230 square metres and to cover all parts of the garages including the staircases leading to these garages.
- (xi) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

Note: The additional requirements for garage installed with electric vehicle charging facilities as stipulated in para. (v, vii & ix) above shall not be applicable to the garage of a single-family domestic building up to and including three storeys in height, except a garage situated in basement.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.27 Hotels—low rise

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Audio/visual advisory system
- (ii) Automatic actuating devices
- (iii) Automatic fixed installation other than water
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Exit sign
- (vii) Fire alarm system
- (viii) Fire control centre
- (ix) Fire detection system
- (x) Fire hydrant/hose reel system
- (xi) Fireman's lift
- (xii) Portable hand-operated approved appliance
- (xiii) Pressurization of staircase
- (xiv) Sprinkler system
- (xv) Static or dynamic smoke extraction system
- (xvi) Ventilation/air conditioning control system

EXTENT

- (i) Required for any part or parts of building where the area occupied by any one single occupancy on any one floor exceeds 2 000 square metres AND where the occupants, due to their transient presence either as shoppers, audience or guests, are exposed to risks to require additional advice through such systems.
- (ii) As required by that equipment which requires to be automatically actuated.
- (iii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iv) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (v) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (vi) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (viii) Minimum of one, additional to be provided according to the complexity of the building.
- (ix) (a) To be provided in areas not covered by automatic fixed installations;
 - (b) smoke detectors or multi-sensor detectors to be provided for the entire floor excluding toilets, bathrooms, staircases and open-sided corridors/balconies which are covered by sprinkler system, if any part of that floor is used for sleeping accommodation. Heat detectors would be acceptable in electrical/mechanical rooms and kitchens; and
 - (c) all smoke detectors or multi-sensor detectors provided in guestrooms shall be integrated with proprietary made sounder bases.

Note: (i) Other installations for the purpose of smoke detection as approved by the Director of Fire Services are acceptable.

(ii) Open-sided corridors/balconies shall have open side above safe parapet height on at least 50% of the wall/side facing external air.

(x) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.

(xi) As required by the Code of Practice for Fire Safety in Buildings.

(xii) As required by occupancy.

(xiii) Required where:

(a) natural venting of staircase is not provided; and

(b) the aggregate area of openable windows of the rooms/units of the building does not exceed 6.25% of the floor area of those rooms/units, calculated on a floor by floor basis.

The number of pressurized staircases to be provided shall be determined by the table stipulated under the definition of pressurization of staircase in Part II provided that the number of pressurized staircases required shall not exceed the total number of staircases required by the Code of Practice for Fire Safety in Buildings.

(xiv) In all parts of the hotels including staircases, common corridors, toilets and bathrooms.

(xv) Required for:

(a) all internal means of escape serving all guest rooms irrespective of the cubical extent of the building or the volume of the fire compartment on any floor. "Internal means of escape" for this purpose, means the route leading from the outside of all guest rooms to a pressurized or naturally ventilated staircase; a protected lobby or open air, unless the route itself is provided with openable windows communicating to the open air and the aggregate area of such windows exceeds 6.25% of the floor area of that route, or

- (b) atrium of the hotel building, if the compartment of the atrium exceeds 28 000 cubic metres, or any basement level or floor of building forming part of that compartment which exceeds 7 000 cubic metres, or
- (c) any fire compartment exceeding 7 000 cubic metres in that hotel building where:
 - (i) the aggregate area of openable windows of the compartment does not exceed 6.25% of the floor area of that compartment, and
 - (ii) the designed fire load is likely to exceed 1 135 MJ/square metre.

The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —

- (i) with headroom of 12 m or more; or
 - (ii) with irregular geometrical dimensions or extraordinary large size.
- (xvi) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.28 Hotels—high rise

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Audio/visual advisory system
- (ii) Automatic actuating devices
- (iii) Automatic fixed installation other than water
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Exit sign
- (vii) Fire alarm system
- (viii) Fire control centre
- (ix) Fire detection system
- (x) Fire hydrant/hose reel system
- (xi) Fireman's lift
- (xii) Portable hand-operated approved appliance
- (xiii) Pressurization of staircase
- (xiv) Sprinkler system
- (xv) Static or dynamic smoke extraction system
- (xvi) Ventilation/air conditioning control system

EXTENT

- (i) Required for any part or parts of building where the area occupied by any one single occupancy on any one floor exceeds 2 000 square metres AND where the occupants, due to their transient presence either as shoppers, audience or guests, are exposed to risks to require additional advice through such systems.

- (ii) As required by that equipment which requires to be automatically actuated.
- (iii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iv) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (v) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (vi) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (viii) Minimum of one, additional to be provided according to the complexity of the building.
- (ix) (a) To be provided in areas not covered by automatic fixed installations;
- (b) smoke detectors or multi-sensor detectors to be provided for the entire floor excluding toilets, bathrooms, staircases and open-sided corridors/balconies which are covered by sprinkler system, if any part of that floor is used for sleeping accommodation. Heat detectors would be acceptable in electrical/mechanical rooms and kitchens; and
- (c) all smoke detectors or multi-sensor detectors provided in guestrooms shall be integrated with proprietary made sounder bases.

Note: (i) Other installations for the purpose of smoke detection as approved by the Director of Fire Services are acceptable.

(ii) Open-sided corridors/balconies shall have open side above safe parapet height on at least 50% of the wall/side facing external air.

- (x) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.
- (xi) As required by the Code of Practice for Fire Safety in Buildings.
- (xii) As required by occupancy.
- (xiii) Required where:
 - (a) natural venting of staircase is not provided; and
 - (b) the aggregate area of openable windows of the rooms/units of the building does not exceed 6.25% of the floor area of those rooms/units, calculated on a floor by floor basis.

The number of pressurized staircases to be provided shall be determined by the table stipulated under the definition of pressurization of staircase in Part II provided that the number of pressurized staircases required shall not exceed the total number of staircases required by the Code of Practice for Fire Safety in Buildings.

- (xiv) In all parts of the hotels including staircases, common corridors, toilets and bathrooms.
- (xv) Required for:
 - (a) all internal means of escape serving all guest rooms irrespective of the cubical extent of the building or the volume of the fire compartment on any floor. "Internal means of escape" for this purpose, means the route leading from the outside of all guest rooms to a pressurized or naturally ventilated staircase; a protected lobby or open air, unless the route itself is provided with openable windows communicating to the open air and the aggregate area of such windows exceeds 6.25% of the floor area of that route, or
 - (b) atrium of the hotel building, if the compartment of the atrium exceeds 28 000 cubic metres; or any basement level or floor of building forming part of that compartment which exceeds 7 000 cubic metres, or

- (c) any fire compartment exceeding 7 000 cubic metres in that hotel building where:
 - (i) the aggregate area of openable windows of the compartment does not exceed 6.25 % of the floor area of that compartment, and
 - (ii) the designed fire load is likely to exceed 1 135 MJ/square metre.

The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —

- (i) with headroom of 12 m or more; or
 - (ii) with irregular geometrical dimensions or extraordinary large size.
- (xvi) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.29 Industrial/godown buildings—low rise

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Emergency generator
- (iv) Emergency lighting
- (v) Exit sign
- (vi) Fire alarm system
- (vii) Fire control centre
- (viii) Fire detection system
- (ix) Fire hydrant/hose reel system
- (x) Fireman's lift or firefighting and rescue stairway
- (xi) Portable hand-operated approved appliance
- (xii) Sprinkler system
- (xiii) Static or dynamic smoke extraction system
- (xiv) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iii) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (iv) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (v) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vi) One actuating point and one audio warning device to be located at each hose reel point. Visual

alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.

- (vii) Minimum of one, additional to be provided according to the complexity of the building.
- (viii) To be provided in areas not covered by automatic fixed installations.
- (ix) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For buildings not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the building can be reached by a length of not more than 30 m of hose reel tubing.
- (x) As required by the Code of Practice for Fire Safety in Buildings.
- (xi) As required by occupancy.
- (xii) Required for buildings with total floor areas exceeding 230 square metres and to cover all parts of the buildings including staircases, common corridors and toilets.
- (xiii) Required for any fire compartment exceeding 7 000 cubic metres where:
 - (a) the aggregate area of openable windows of the compartment does not exceed 6.25% of the floor area of that compartment, and
 - (b) the designed fire load is likely to exceed 1 135 MJ/square metre.

The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —

 - (i) with headroom of 12 m or more; or
 - (ii) with irregular geometrical dimensions or extraordinary large size.
- (xiv) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.30 Industrial/godown buildings—high rise

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Emergency generator
- (iv) Emergency lighting
- (v) Exit sign
- (vi) Fire alarm system
- (vii) Fire control centre
- (viii) Fire detection system
- (ix) Fire hydrant/hose reel system
- (x) Firefighting and rescue stairway
- (xi) Portable hand-operated approved appliance
- (xii) Pressurization of staircase
- (xiii) Sprinkler system
- (xiv) Static or dynamic smoke extraction system
- (xv) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.

- (ii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iii) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (iv) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (v) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vi) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (vii) Minimum of one, additional to be provided according to the complexity of the building.
- (viii) To be provided in areas not covered by automatic fixed installations.
- (ix) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For buildings not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the building can be reached by a length of not more than 30 m of hose reel tubing.
- (x) As required by the Code of Practice for Fire Safety in Buildings.
- (xi) As required by occupancy.
- (xii) Required where:
 - (a) natural venting of staircase is not provided;
 - (b) the aggregate area of openable windows of the rooms/units of the building does not exceed 6.25% of the floor area of those rooms/units, calculated on a floor by floor basis;
 - (c) the cubical extent of the building exceeds 28 000 cubic metres; and
 - (d) the designed fire load of the building is likely to exceed 1 135 MJ/square metre.

The number of pressurized staircases to be provided shall be determined by the table stipulated under the definition of pressurization of staircase in Part II provided that the number of pressurized staircases required shall not exceed the total number of staircases required by the Code of Practice for Fire Safety in Buildings.
- (xiii) In all parts of the buildings including staircases, common corridors and toilets.
- (xiv) Required for any fire compartment exceeding 7 000 cubic metres where:
 - (a) the aggregate area of openable windows of the compartment does not exceed 6.25% of the floor area of that compartment, and
 - (b) the designed fire load is likely to exceed 1 135 MJ/square metre.

The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —

 - (i) with headroom of 12 m or more; or
 - (ii) with irregular geometrical dimensions or extraordinary large size.
- (xv) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.31 Institutional buildings—low rise

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Audio/visual advisory system
- (ii) Automatic actuating devices

- (iii) Automatic fixed installation other than water
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Exit sign
- (vii) Fire alarm system
- (viii) Fire detection system
- (ix) Fire hydrant/hose reel system
- (x) Fireman's lift
- (xi) Portable hand-operated approved appliance
- (xii) Sprinkler system
- (xiii) Ventilation/air conditioning control system

EXTENT

- (i) Required for any part or parts of building where the area occupied for institutional purposes on any one floor exceeds 2 000 square metres AND where the occupants, due to their transient presence either as guests or visitors, are exposed to risks to require additional advice through such systems.
- (ii) As required by that equipment which needs to be automatically actuated.
- (iii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iv) To be provided to hospitals, sanatoria, prisons or as required by the risks. The independently powered generator shall have sufficient electrical capacity to meet the fire service installations and fireman's lifts.
- (v) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (vi) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (viii) (a) To be provided in areas not covered by automatic fixed installations;
 (b) smoke detectors or multi-sensor detectors to be provided for the entire floor excluding toilets, bathrooms, staircases and open-sided corridors/balconies which are covered by sprinkler system, if any part of that floor is used for sleeping accommodation. Heat detectors would be acceptable in electrical/mechanical rooms and kitchens; and
 (c) all smoke detectors or multi-sensor detectors provided in bedrooms of student hostels shall be integrated with proprietary made sounder bases.

- Note:*
- (i) Other installations for the purpose of smoke detection as approved by the Director of Fire Services are acceptable.
 - (ii) Open-sided corridors/balconies shall have open side above safe parapet height on at least 50% of the wall/side facing external air.
 - (ix) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For buildings not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the building can be reached by a length of not more than 30 m of hose reel tubing.
 - (x) As required by the Code of Practice for Fire Safety in Buildings.
 - (xi) As required by occupancy.
 - (xii) Required for all parts of buildings including staircases, common corridors, toilets and bathrooms with total floor area exceeding 230 m².
 - (xiii) When a ventilation/air conditioning control system to a building is provided, it shall stop

mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.
- (iv) Protection for hospital and sanatorium lifts which are designated for evacuation purpose shall satisfy every condition for a fireman's lift with the exception of the internal floor area of car, and the minimum rated load factors.

4.32 Institutional buildings—high rise

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Audio/visual advisory system
- (ii) Automatic actuating devices
- (iii) Automatic fixed installation other than water
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Exit sign
- (vii) Fire alarm system
- (viii) Fire control centre
- (ix) Fire detection system
- (x) Fire hydrant/hose reel system
- (xi) Fireman's lift
- (xii) Portable hand-operated approved appliance
- (xiii) Pressurization of staircase
- (xiv) Sprinkler system
- (xv) Ventilation/air conditioning control system

EXTENT

- (i) Required for any part or parts of building where the area occupied for institutional purposes on any one floor exceeds 2 000 square metres AND where the occupants, due to their transient presence either as guests or visitors, are exposed to risks to require additional advice through such systems.
- (ii) As required by that equipment which needs to be automatically actuated.
- (iii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iv) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (v) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (vi) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.

- (viii) Minimum of one, additional to be provided according to the complexity of the building.
- (ix) (a) To be provided in areas not covered by automatic fixed installations;
- (b) smoke detectors or multi-sensor detectors to be provided for the entire floor excluding toilets, bathrooms, staircases and open-sided corridors/balconies which are covered by sprinkler system, if any part of that floor is used for sleeping accommodation. Heat detectors would be acceptable in electrical/mechanical rooms and kitchens; and
- (c) all smoke detectors or multi-sensor detectors provided in bedrooms of student hostels shall be integrated with proprietary made sounder bases.

Note: (i) Other installations for the purpose of smoke detection as approved by the Director of Fire Services are acceptable.

(ii) Open-sided corridors/balconies shall have open side above safe parapet height on at least 50% of the wall/side facing external air.

- (x) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For buildings not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the building can be reached by a length of not more than 30 m of hose reel tubing.
- (xi) As required by the Code of Practice for Fire Safety in Buildings.
- (xii) As required by occupancy.
- (xiii) Required for hospitals and sanatoria where:
 - (a) natural venting of staircase is not provided; and
 - (b) the aggregate area of openable windows of the rooms/units of the building does not exceed 6.25% of the floor area of those rooms/units, calculated on a floor by floor basis.

The number of pressurized staircases to be provided shall be determined by the table stipulated under the definition of pressurization of staircase in Part II provided that the number of pressurized staircases required shall not exceed the total number of staircases required by the Code of Practice for Fire Safety in Buildings.

- (xiv) Required for all parts of buildings including staircases, common corridors, toilets and bathrooms.
- (xv) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.
- (iv) Protection for hospital and sanatorium lifts which are designated for evacuation purpose shall satisfy every condition for a fireman's lift with the exception of the internal floor area of car, and the minimum rated load factors.

4.33 Kitchens (other than kitchens in domestic premises)

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT

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EXTENT FOR:

- (i) Kitchens shall normally be required to incorporate the fire protection and life safety systems in the building in which they are located with the addition of any special equipment/requirements as may

be required by the Director of Fire Services;

- (ii) Portable hand-operated approved appliances are to be provided as required by risk.

4.34 Lift motor rooms

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Fire detection system.
- (ii) Portable hand-operated approved appliance.

EXTENT

- (i) To be provided in all lift motor rooms where the portion of building is required to be provided with fire detection system.
- (ii) As required by occupancy.

4.35 Lifts not Discharging to Protected Means of Escape

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic Actuating Devices.

EXTENT

- (i) (a) Smoke detectors or multi-sensor detectors as automatic actuation devices shall be installed outside all lift door openings not discharging to protected means of escape as defined in paragraph 1.2 of this Code;
- (b) To be provided to buildings except:-
 - (i) Sprinkler protected buildings; or
 - (ii) Domestic buildings up to and including three storeys in height.

4.36 Mechanical Plant rooms (Group I)

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

Note: Plant Rooms to exclude open gas fired appliances

- (i) Automatic actuating devices
- (ii) Emergency lighting
- (iii) Exit sign
- (iv) Fire detection system
- (v) Gas detection system
- (vi) Gas extraction system
- (vii) Portable hand-operated approved appliance
- (viii) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) Emergency lighting shall be provided within the mechanical plant rooms and all exit routes.
- (iii) Sufficient directional and exit signs to ensure that all exit routes from any mechanical plant room within the buildings are clearly indicated as required by the configuration of staircases serving the building.
- (iv) To be provided in areas not covered by automatic fixed installations and where the portion of the building is required to be provided with fire detection system.
- (v) To be provided where flammable vapours may be generated.
- (vi) Approved type for the part of building where flammable vapours may be generated, and to reduce the concentration below its lower explosive limit.
- (vii) As required by the risk.
- (viii) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.37 Mechanical Plant rooms (Group II)

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

Note: Plant Rooms to exclude open gas fired appliances

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Emergency generator
- (iv) Emergency lighting
- (v) Exit sign
- (vi) Fire detection system
- (vii) Fixed automatically operated approved appliance
- (viii) Gas detection system
- (ix) Gas extraction system
- (x) Portable hand-operated approved appliance
- (xi) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iii) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (iv) Emergency lighting shall be provided throughout the entire building and all exit routes.
- (v) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vi) To be provided in areas not covered by automatic fixed installations.
- (vii) As required by the risk.
- (viii) To be provided where flammable vapours may be generated.
- (ix) Approved type for the part of building where flammable vapours may be generated, and to reduce the concentration below its lower explosive limit.
- (x) As required by the risk.
- (xi) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.38 Passenger terminals/stations

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

Such terminals/stations to be the subject of individual consideration by the Director of Fire Services, taking into account their size and complexity. Requirements will be based generally on the various usages of the terminals/stations in accordance with the relevant paragraphs of this Code for similar usages, with additional requirements for other areas as considered necessary e.g. passenger movement areas.

4.39 Petro-chemical complexes

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Automatic fixed installation using water

- (iv) Dust detection system
- (v) Emergency generator
- (vi) Emergency lighting
- (vii) Exit sign
- (viii) Fire alarm system
- (ix) Fire control centre
- (x) Fire detection system
- (xi) Fixed automatically operated approved appliance
- (xii) Fixed foam system
- (xiii) Gas detection system
- (xiv) Gas extraction system
- (xv) Portable hand-operated approved appliance
- (xvi) Ring main system with fixed pump(s)
- (xvii) Special equipment/requirements
- (xviii) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided to areas where the use of water is undesirable for the risk.
- (iii) In all areas including staircases, common corridors and toilets excepting where covered by (ii) above.
- (iv) To be provided in all areas where there is a potential dust explosion hazard.
- (v) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (vi) Emergency lighting shall be provided to all buildings within the complex. In addition, such lighting shall also be provided to ensure adequate illumination to permit safe evacuation to the outside of the site boundary.
- (vii) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (viii) One actuating point and one audio warning device to be located at each hose reel point within the buildings. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation, and in addition, one actuating point and one audio/visual warning device to be provided at each hydrant outlet on the ring main system.
- (ix) Minimum of one, additional to be provided according to the layout of the complex.
- (x) To be provided in areas not covered by automatic fixed installations.
- (xi) As required by the risk.
- (xii) As required by the risk.
- (xiii) To be provided in all areas of risk.
- (xiv) Approved type for the part of building where flammable vapours may be generated, and to reduce the concentration below its lower explosive limit.
- (xv) As required by the risk.
- (xvi) To be provided to cover those areas of such complexes where public water mains are inadequate.
- (xvii) As required by the Director of Fire Services.
- (xviii) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

Note: Buildings within such complexes shall conform to the requirements specified for similar premises in accordance with this Code.

4.40 Railway marshalling yards

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic fixed installation other than water
- (ii) Automatic fixed installation using water
- (iii) Emergency generator
- (iv) Emergency lighting
- (v) Fire alarm system
- (vi) Fire control centre
- (vii) Fire hydrant/hose reel system
- (viii) Portable hand-operated approved appliance
- (ix) Ring main system with fixed pump(s)
- (x) Special equipment/requirements
- (xi) Static or dynamic smoke extraction system

EXTENT

- (i) To be provided to areas where the use of water is undesirable for the risk.
- (ii) In all areas including staircases, common corridors and toilets excepting where covered by (i) above.
- (iii) An independently powered generator of sufficient electrical capacity to meet the fire service installations it is required to provide.
- (iv) Emergency lighting shall be provided to all buildings within the yard, and in addition, such lighting shall also be provided to ensure adequate illumination to permit safe evacuation to the outside of the site boundary.
- (v) One actuating point and one audio warning device to be located at each hydrant point on the ring main systems. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (vi) Minimum of one, additional to be provided according to the layout of the yard.
- (vii) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For building/premises not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the premises can be reached by a length of not more than 30 m of hose reel tubing.
- (viii) As required by occupancy.
- (ix) To be provided to cover those areas of the yard where public water mains are inadequate.
- (x) As required by the Director of Fire Services.
- (xi) Required for any fire compartment exceeding 7 000 cubic metres where
 - (a) the aggregate area of openable windows of the compartment does not exceed 6.25% of the floor area of that compartment, and
 - (b) the designed fire load of that compartment is likely to exceed 1 135 MJ/square metre.

The requirement of hot smoke test will be stipulated if considered necessary by the Director of Fire Services in the building plans involving compartments: —

- (i) with headroom of 12 m or more; or
- (ii) with irregular geometrical dimensions or extraordinary large size.

Note: Buildings within the yard shall conform to the requirements specified for similar premises in accordance with this Code.

4.41 Refuge floors

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

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EXTENT FOR:

- (i) The fire service installations and equipment that are required to be provided in the building in accordance with relevant paragraphs of this Code shall also be extended to the refuge floors as appropriate; and
- (ii) an external drencher system with an independent water supply shall be provided to protect all external wall openings. The system shall be automatically operated by a quick opening valve or deluge valve which is operated by a system of approved heat detectors or sprinklers installed in the same areas as the drencher system, together with manual control.
- (iii) Sprinkler or drencher system is not required on open roof even though it is designed as refuge floor.

4.42 Road tunnels

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic fixed installation other than water
- (ii) Closed circuit television system
- (iii) Dynamic smoke extraction system
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Emergency power points
- (vii) Exit sign
- (viii) Fire alarm system
- (ix) Fire control centre
- (x) Fire hydrant/hose reel system
- (xi) Fireman's communication system
- (xii) Fixed foam system
- (xiii) Gas detection system
- (xiv) Pedestrian cross over facilities
- (xv) Portable hand-operated approved appliance

EXTENT

- (i) To be provided to areas where the use of water is undesirable for the risk.
- (ii) To be provided to enable clear visual observation throughout the length of the tunnel.
- (iii) To be provided where the tunnel exceeds 230 m and may be incorporated into the ventilating system of the tunnel.
- (iv) An independently powered generator of sufficient electrical capacity to meet the fire service installations it is required to provide.
- (v) Emergency lighting shall be provided throughout the entire tunnel.
- (vi) To be provided at 100 m intervals on both sides of the tunnel.
- (vii) To be provided to indicate the locations of pedestrian cross over facilities and passageways for evacuation.
- (viii) One actuating point and one visual warning device to be located at each hose reel point. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation within the tunnel control centre.
- (ix) A fire control centre to be provided. This may be part of the tunnel control centre.
- (x) For twin-tube tunnels, there shall be sufficient hose reels to ensure that every part of the tunnel can

be reached by a length of not more than 30 m of hose reel tubing. Hose reels shall be provided at 50 m intervals. Fire hydrants shall be provided at 100 m intervals. At each hydrant point, one twin-outlet hydrant or two single-outlet hydrants shall be provided. The hydrants shall be fitted with instantaneous couplings capable of delivering not less than 4 000 litres per minute (66.7 litres per second) at a minimum running pressure of 170 kPa with two outlets operating simultaneously.

For single-tube tunnels, there shall be sufficient hydrants and hose reels to ensure that every part of the tunnel can be reached by a length of not more than 30 m of Fire Services hose and hose reel tubing. Hydrants and hose reels shall be provided at 50 m intervals.

- (xi) As required by the Director of Fire Services.
- (xii) To be provided for nadir sump at middle portion of tunnel, especially in an immersed tunnel.
- (xiii) Gas detection systems to include carbon monoxide indication and alarm.
- (xiv) Cross over facilities shall be provided in twin-tube tunnels at 100 m intervals. In respect of single-tube tunnels, a small pedestrian tunnel is to be provided for escape purposes.
- (xv) As required by the risk.

ADDITIONAL REQUIREMENT

All tunnel wall lining/finishes shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7.

4.43 Shipyards

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Emergency generator
- (iii) Emergency lighting
- (iv) Fire alarm system
- (v) Fire control centre
- (vi) Portable hand-operated approved appliance
- (vii) Ring main system with fixed pump(s)
- (viii) Special equipment/requirements

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) An independently powered generator of sufficient electrical capacity to meet the fire service installations it is required to provide.
- (iii) Emergency lighting shall be provided to all buildings within the yard. In addition, such lighting shall also be provided to ensure adequate illumination to permit safe evacuation to the outside of the site boundary.
- (iv) One actuating point and one audio warning device to be located at each hydrant point on the ring main systems. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (v) Minimum of one, additional to be provided according to the layout of the yard.
- (vi) As required by occupancy.
- (vii) To be provided to cover those areas of the yard not adequately served by public water mains.
- (viii) As required by the Director of Fire Services.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

Note: Buildings within the yard shall conform to the requirements specified for similar premises in accordance with this Code.

4.44 Substation/switchgear buildings

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Automatic fixed installation using water
- (iv) Emergency generator
- (v) Emergency lighting
- (vi) Exit sign
- (vii) Fire alarm system
- (viii) Fire control centre
- (ix) Fire detection system
- (x) Fire hydrant/hose reel system
- (xi) Fireman's lift or firefighting and rescue stairway
- (xii) Portable hand-operated approved appliance
- (xiii) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided to areas where the use of water is undesirable for the occupancy or trade.
- (iii) As required by the risk.
- (iv) An independently powered generator of sufficient electrical capacity to meet the fire service installations and fireman's lifts it is required to provide.
- (v) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (vi) Sufficient directional and exit signs to ensure that all exit routes from any floor within the building are clearly indicated as required by the configuration of staircases serving the building.
- (vii) One actuating point and one audio warning device to be located at each hose reel point. Visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access. This actuating point shall include facilities for fire pump start and audio/visual warning device initiation.
- (viii) Minimum of one, additional to be provided according to the complexity of the building.
- (ix) To be provided in areas not covered by automatic fixed installations.
- (x) There shall be sufficient hydrants and hose reels on each floor. Fire hydrants shall be provided in all approach lobbies to required staircases or required staircase enclosures. For buildings not having the required staircase, fire hydrants shall be provided to the satisfaction of the Director of Fire Services. Hose reels shall be provided to ensure that every part of the building can be reached by a length of not more than 30 m of hose reel tubing.
- (xi) As required by the Code of Practice for Fire Safety in Buildings.
- (xii) As required by occupancy.
- (xiii) When a Ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENT

Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

4.45 Telephone distribution equipment, computer installation and similar installations

REQUIREMENTS—SYSTEMS/INSTALLATIONS/EQUIPMENT FOR:

- (i) Automatic actuating devices
- (ii) Automatic fixed installation other than water
- (iii) Automatic fixed installation using water
- (iv) Emergency lighting
- (v) Exit sign
- (vi) Fire alarm system
- (vii) Fire detection system
- (viii) Fixed automatically operated approved appliance
- (ix) Portable hand-operated approved appliance
- (x) Ventilation/air conditioning control system

EXTENT

- (i) As required by that equipment which needs to be automatically actuated.
- (ii) To be provided if not otherwise protected by automatic fixed installation using water.
- (iii) To be provided if not otherwise protected by automatic fixed installation other than water.
- (iv) Emergency lighting shall be provided throughout the entire building and all exit routes leading to ground level.
- (v) Sufficient directional and exit signs to ensure that all exit routes from the premises within the buildings are clearly indicated as required by the configuration of staircases serving the building.
- (vi) As required by the risk. If required, visual alarm signals shall be provided where necessary in accordance with current Design Manual: Barrier Free Access.
- (vii) To be provided in areas not covered by automatic fixed installations.
- (viii) As required by the equipment at risk.
- (ix) As required by the risk.
- (x) When a ventilation/air conditioning control system to a building is provided, it shall stop mechanically induced air movement within a designated fire compartment.

ADDITIONAL REQUIREMENTS

- (i) All linings for acoustic and thermal insulation purposes in ductings and concealed locations shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of Class 1 or 2 Rate of Surface Spread of Flame as per British Standard 476: Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
- (iii) Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

PART V**SPECIFICATION**

- 5.1 Audio/visual advisory system
- 5.2 Automatic actuating devices
- 5.3 Automatic fixed installation other than water
- 5.4 Automatic fixed installation using water
- 5.5 Deluge system
- 5.6 Drencher system
- 5.7 Dust detection system
- 5.8 Emergency generator
- 5.9 Emergency lighting
- 5.10 Exit sign
- 5.11 Fire alarm system
- 5.12 Fire control centre
- 5.13 Fire detection system
- 5.14 Fire hydrant/hose reel system
- 5.15 Fire resisting cable for fire service installations
- 5.16 Fireman's lift and firefighting and rescue stairway
- 5.17 Fixed automatically operated approved appliance
- 5.18 Fixed foam system
- 5.19 Gas detection system
- 5.20 Portable hand-operated approved appliance
- 5.21 Pressurization of staircase
- 5.22 Ring main system with fixed pump(s)
- 5.23 Smoke extraction system
- 5.24 Sprinkler system
- 5.25 Street fire hydrant system
- 5.26 Supply tank
- 5.27 Ventilation/air conditioning control system
- 5.28 Water mist system
- 5.29 Water spray system
- 5.30 Water supply

5.1 Audio/visual advisory system

SPECIFICATION

Fire alarm bells, klaxons, sirens, etc. which are integral parts of an automatic or a manual fire alarm system are not included in this paragraph.

The audio/visual advice shall be provided throughout the required floors and/or areas leading to staircase only.

AUDIO

A system of records/signals either verbal or musical or direct transmission over a public address system to advise staff and other occupants of emergency conditions and the action to be followed.

In special occupancy premises e.g. hospitals, sanatoria, cinemas, an agreed sound signal may be broadcast to give early warning to staff of emergency conditions which may or may not necessitate action by them at that time.

The power supply to the sound system should be backed up by emergency power supply.

VISUAL

A system of flashing directional signs and flashing exit signs as required under paragraph 5.10 and supplemented by low level directional signs to indicate:

- (a) the floors and/or areas to be evacuated by operating the flashing directional signs and flashing exit signs at the corresponding floors and/or areas and exits,
- (b) the evacuation routes by following the low level directional signs.

High level flashing directional signs shall be positioned between 2 m and 2.5 m above finished floor level measured to the base of the directional signs. Low level directional signs shall be installed with the lower edges not higher than 200 mm from the finished floor level.

Low level directional signs shall be of internally illuminated types conforming to British Standard 5499: Part 4 or, self-luminous signs to British Standard 5499: Part 4 or other standards acceptable to the Director of Fire Services.

Synchronization of flashing directional signs and flashing exit signs shall be required in each compartment/unit.

5.2 Automatic actuating devices

SPECIFICATION

(a) AUTOMATIC ACTUATING DEVICES FOR PROVIDING COMPARTMENTATION/FIRE SEPARATION

Components under this paragraph will include fire stop doors, fire dampers, fire curtains and other means of providing compartmentation/fire separation automatically in the event of fire. Automatic fire detection and fire suppression systems are not included in this paragraph.

They shall be constructed and installed in accordance with the standards acceptable to the Director of Fire Services and/or the Director of Buildings as appropriate.

Pursuant to the Code of Practice for Fire Safety in Buildings issued by the Building Authority, fire shutter shall be constructed, installed and assembled to the satisfaction of the Building Authority. The operation of fire shutters shall be designed, installed, tested and maintained to the satisfaction of the Director of Fire Services.

Unless otherwise agreed by the Director of Fire Services, all fire shutters shall be provided with smoke detectors and manual control devices on both sides of wall openings for automatic and manual operation respectively. The detectors shall be installed as far as practicable to the provisions of British Standard 5839: Part 1 – Fire Detection and Fire Alarm Systems for Buildings.

The descending time of a vertical shutter shall be within 15 to 60 seconds for openings in excess of 2.5 m in height. For openings of height within 2.5 m, the descending time shall not be faster than 8 seconds and that the bottom rail of the shutter shall reach the mid-height in not less than half the total descending time of the shutter.

For opening which is protected by horizontal travelling fire shutter, the shutter shall be able to close off the opening within 60 seconds and under no circumstances its travelling speed shall be greater than

0.2 m/s or the safety limit specified by the equipment manufacturer. If the opening is of such a size that the travelling time of the horizontal fire shutter is longer than 60 seconds, approval shall be obtained from the Director of Fire Services. Under such circumstances, other means for automatic actuation of the horizontal fire shutter at early stage of fire may be required.

(b) AUTOMATIC ACTUATING DEVICES FOR LIFTS NOT DISCHARGING TO PROTECTED MEANS OF ESCAPE

Smoke detectors shall be installed within 1.5m outside every lift door opening not discharging to protected means of escape AND as far as practicable conforming to the provisions of British Standard 5839: Part 1 – Fire Detection and Fire Alarm Systems for Buildings.

The actuation of any one of the smoke detectors on any floor shall initiate “Home Landing Operation” of the respective lift car as specified in the Code of Practice on the Design and Construction of Lifts and Escalators (Lift Code) published by the Electrical and Mechanical Services Department.

Alarm signal of the automatic actuation devices shall be transmitted to a standalone alarm annunciation panel at locations such as building management office, caretakers counter and/of Fire Control Centre. The automatic actuation devices shall neither actuate the building’s fire alarm system, nor link to the Fire Services Communications Centre.

The automatic actuation shall not override the fireman’s lift switch or the manually operated switch for lift homing as provided under the Lift Code.

(c) AUTOMATIC ACTUATING DEVICES FOR OTHER INSTALLATIONS

The specifications of such devices shall conform to the relevant requirement of such installation as specified in this Code or other standards acceptable by the Director of Fire Services.

5.3 Automatic fixed installation other than water

SPECIFICATION

Carbon dioxide, clean agent, dry chemical or similar extinguishing system, shall be installed in accordance with standards acceptable to the Director of Fire Services.

When installed the system may be combined manual/automatic with or without remote operation.

Such systems in their simplest form consist of one or more storage containers with discharge valves, detection heads, piping and discharge nozzles.

If the system is intended for total flooding of the premises/compartments, then automatic actuating devices (paragraph 5.2) may be necessary, in addition, to ensure complete compartmentation.

5.4 Automatic fixed installation using water

These may include:

Deluge system

Drencher system

Sprinkler system

Water mist system

Water spray system

Specifications for the above are in the respective paragraphs.

5.5 Deluge system

SPECIFICATION

A deluge system may be required in a risk area where fire may be expected to spread quicker than the progressive operation of normal sprinkler heads.

The design of such system will be the subject of consultation with the Fire Services Department.

5.6 Drencher system

SPECIFICATION

General

- (i) Such system shall be installed in accordance with standards acceptable to the Director of Fire Services.

Drencher system for refuge floors (other than refuge floor on roof / flat roof)

- (ii) Drencher system shall be installed on all refuge floors to cover all external wall openings. The flow rate of the water curtain shall be maintained not less than 10 litres per minute per square metre of the opening to be covered. The spacing of drencher heads shall be not more than 2.4m. The flow rate and pressure of the water supply shall be sufficient to achieve the discharge density and the discharge pressure at all drencher heads shall be not less than 0.35 bars. The water supply shall be sufficient for 30 minutes operation.
- (iii) A deluge valve set shall be installed close to the inlet for the drencher system. Manual operating device(s) with operation instruction displayed nearby shall be provided on refuge floor at location(s) acceptable to the Director of Fire Services.
- (iv) Independent water tank shall be provided for the drencher system of each building block with the capacity to operate for at least 30 minutes. If there are two refuge floors in a building block, the capacity of the water tank shall be calculated in accordance with the refuge floor with the larger external wall opening area. For a building block with 3 or more refuge floors, the water tank capacity will be considered on a case by case basis.
- (v) The water supply for the drencher system may be fed by static pressure directly from an elevated drencher tank without drencher pump if such pressure and flow are sufficient to give the required performance.

Operation

- (vi) The system shall be automatically and manually operated as approved by the Director of Fire Services.
- (vii) Automatically operated system shall normally be actuated by pilot sprinkler or heat detector as approved by the Director or Fire Services. Manual operating devices with operating instruction shall be provided at the control valve and each exit door of the area served by the system.

Drencher Pump

- (viii) The drencher pump shall preferably be electrically driven. The electric motor shall have a power output not less than 120% of the hydraulic power needed to drive the pump at the rated flow and pressure. Once started, the pump must run continuously until stopped manually at the pump control panel installed near the pump. In addition to the start and stop buttons at the pump control panel, a lock-off button may be installed adjacent to each pump.
- (ix) The drencher pump shall be duplicated for duty and standby use. Should the duty pump electrically or mechanically fail to operate within 15 seconds, the standby pump shall be energized to become the duty pump. The drencher pumps shall be permanently primed and with non-return valves installed at the discharge side of the pumps. Where necessary, non-return valve(s) shall also be installed in other locations to prevent water backflow into the water tank.
- (x) The status of each drencher pump comprising "Power supply on", "Pump running" and "Pump failed" and the status of the supply tank comprising "Normal Level" and "Low Level" shall be monitored and displayed at the pump control panel and repeated to the fire control centre or a status panel at the main entrance of the building and the transfer pump control panel (for system equipped with transfer system only). The "Low Level" alarm shall be given before the water storage level drops more than 10% below its normal fill level.
- (xi) The pumps shall be housed in a suitable enclosure designed solely for occupation of fire services equipment. Such pump enclosure shall lie clear of any exit or normal communication routes through the premises and suitably locked to prevent unauthorized tampering of the pumps. Such enclosures shall be clearly marked in English and Chinese characters "DRENCHER PUMP" (水簾泵), of at least 50mm high.

Drencher Intermediate Booster Pump

- (xii) In installation where the height between the topmost drencher head and the lowest drencher inlet serving that installation is in excess of 60 m, the flow and pressure, where necessary, shall be maintained by drencher intermediate booster pump. With the fire engines boosting water into the drencher inlet at a constant pressure of 800 kPa upstream of the inlet, the drencher intermediate booster pump shall be capable to provide adequate flow and pressure for the installation. Provision must be made for the water supplied to the inlet to by-pass the intermediate booster

pumps in the event of failure of the pumps.

- (xiii) The drencher intermediate booster pumps may also be utilized as the drencher pump if they are arranged to perform both functions as stipulated.
- (xiv) The drencher intermediate booster pump shall preferably be electrically driven. The electric motor shall have a power output not less than 120% of the hydraulic power needed to drive the pump at the rated flow and pressure. Drencher intermediate booster pump shall be duplicated for duty and standby use. Should the duty pump fail to operate, the standby pump shall be energized to become the duty pump within 15 seconds. Suitable start/stop push buttons together with pump running indicator lights and alarm buzzer shall be provided adjacent to the corresponding drencher inlet(s) to enable Fire Services personnel to exercise control of the drencher intermediate booster pumps. Clear indications in English and Chinese characters "DRENCHER INTERMEDIATE BOOSTER PUMP CONTROL" (水簾中途泵開關) of at least 5mm high shall be provided.
- (xv) The pumps shall be housed in a suitable enclosure designed solely for occupation of fire services equipment. Such pump enclosure shall lie clear of any exit or normal communication routes through the premises and suitably locked to prevent unauthorized tampering of the pumps. Such enclosure shall be clearly marked in English and Chinese characters "DRENCHER INTERMEDIATE BOOSTER PUMP" (水簾中途泵) of at least 50mm high.
- (xvi) The status of each drencher intermediate booster pump (where provided), comprising "Power supply on", "Pump running" and "Pump failed" shall be monitored and displayed at the pump control panel and repeated to the fire control centre or a status panel at the main entrance of the building.

Drencher Inlet

- (xvii) The drencher inlet(s) shall be in a prominent position on the exterior of the corresponding building block. The drencher inlet(s) must be suitably identified, enclosed and protected against corrosion and abuse. There shall be an all-round clearance of not less than 100 mm between any part of the drencher inlet and the inlet enclosure. The inlet(s) shall be readily accessible by Fire Services personnel.
- (xviii) The centre of inlet couplings shall be not less than 600 mm nor more than 1 000 mm above the ground level and shall be of a standard pattern approved by the Director of Fire Services. There shall be a non-return valve behind each inlet. A pressure gauge shall be installed within the drencher inlet enclosure and shall be connected to the downstream side of the inlet and the upstream side of the non-return valve.
- (xix) Each inlet shall be affixed with a metal identification plate raised or engraved with English and Chinese characters. The frontage of each inlet enclosure shall be clearly and permanently indicated in English and Chinese characters "DRENCHER INLET" (水簾入水掣) of at least 50 mm high.

Pipework, Valves and Equipment

- (xx) All stop valves which may cut off the water supply to the drencher nozzles shall be secured with padlock to ensure the valves are in the correct operation position.

The specification of drencher system for compartmentation shall make reference to the specification of the drencher system for refuge floor except the water supply shall be sufficient for operation same as the required fire resistance rating.

5.7 Dust detection system

SPECIFICATION

Very few types of premises will require such a system and the type will depend on the industry/trade/usage of the premises.

Each required system shall be designed in consultation with and to the approval of the Fire Services Department.

Each system shall:

- (a) be automatic in action;
- (b) close down the affected process;

- (c) operate pressure relief vent if appropriate;
- (d) be connected to the fire alarm system for the premises.

5.8 Emergency generator

SPECIFICATION

(a) *GENERAL*

The emergency generator set shall be designed for cold starting and be capable of supplying power for the full rated essential load in not more than 15 seconds from initiation of the starting procedure.

The emergency generator set shall be capable of continuously operating under the appropriate site conditions which shall normally be a temperature range of 5 °C to 40 °C, relative humidity 100% and the altitude of the actual site.

Each essential item of equipment incorporated in the emergency generator set shall be to the latest edition of the relevant British Standard or alternative equivalent national or international standard. Full compliance with the current edition of the Institution of Engineering and Technology Wiring Regulations (British Standard 7671) shall also be necessary.

The emergency generator set shall be completely assembled and tested at the manufacturer's works and delivered to site as a complete unit.

The prime mover may be of any form provided that the start-up time of 15 seconds is not exceeded and reliability is ensured.

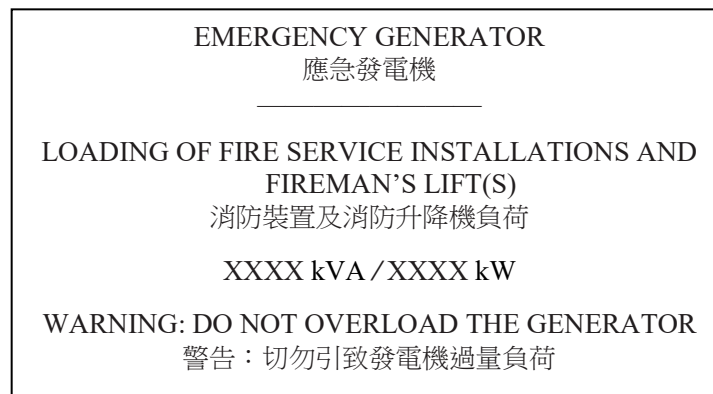
Petrol, kerosene and similar highly volatile liquid fuels are not acceptable.

The emergency generator set shall have a minimum continuous full load rating of not less than the consumption of all fire service installations and fireman's lifts connected thereto, running simultaneously. Under all load conditions the output voltage and frequency shall be maintained for satisfactory operation of all fire service installations devices.

The emergency generator set shall be housed in an emergency generator room.

Notices in English and Chinese "EMERGENCY GENERATOR" (應急發電機) and "NO SMOKING" (不准吸煙) shall be provided at the entrance to the emergency generator room. The characters of the notices shall be at least 120 mm high.

A sign shall be provided for each generator set and affixed in a prominent position inside emergency generator room and main switch room to indicate the essential loading of fire service installations and fireman's lifts connected to the generator. The English and Chinese characters of the sign shall be at least 8 mm and 15 mm high respectively and the details are as follows:—



Each building shall have an independent emergency generator when required to have such provision. In developments with multiple domestic blocks on top of podium, the aforesaid requirement may be specially considered. In this circumstance, the emergency generator shall have sufficient capacity to serve the following essential loading simultaneously:—

- (i) All fire service installations and fireman's lifts of the entire podium and one tower block;

and

- (ii) All fireman's lifts, exit signs and emergency lighting of another three tower blocks.

In all cases, one emergency generator shall cover a maximum of four tower blocks and one podium only.

If any non-FSI load is required to be connected to the emergency generator, approval should be obtained from the Director of Fire Services

(b) *FUEL STORAGE*

The unit shall be complete with a fuel storage system capable of sustaining full load operation for a period of not less than 6 hours.

(c) *INSTALLATION*

Adequate (not less than 600 mm) space around units shall be provided for maintenance and cleaning.

Adequate ventilation shall be provided for both combustion and cooling air. If fans are necessary to provide this air they shall operate at all times while the emergency generator set is running.

The air supply and discharge shall be direct to outside air without any possible obstructions i.e. no fire, smoke or regulating dampers shall be fitted. Where the air supply and/or exhaust ductwork is not fully contained within the generator room but passes through adjacent compartments or units the ductwork shall be so constructed as to have the same fire resistance rating as that required for either the generator room or the compartment through which it passes, whichever is the greater.

Exhaust discharge of combustion products shall not cause a public nuisance and shall be in accordance with the guidelines and requirements of the Director of Environmental Protection.

(d) *OPERATION*

Failure of one or more phases of the mains supply, or a reduction of voltage to less than 70% of normal, for a duration exceeding 1 second, shall initiate automatic starting of the emergency generator set. Full load transfer shall take place automatically. Should the prime mover fail to start, a further attempt to start shall then be made.

If it again fails to start, the starting sequence shall be locked out, an audible and visual alarm shall be given locally, and at the fire control panel, and it shall remain in this locked out condition until manually reset.

The starting system shall have a capacity to ensure four starting operations.

Restoration of the mains supply during the starting period shall not interrupt the starting sequence but shall prevent operation of the load transfer.

Subsequent failure of the mains supply for a duration exceeding 0.5 second, while the unit is running, shall cause the load transfer to take place.

An audio device and an indicator light on the fire control panel, or if no fire control panel, an indicator light outside the emergency generator room, shall indicate that the generator is running.

An audible and visual alarm for common generator fault and manual mode shall be indicated on the fire control panel.

5.9 Emergency lighting

SPECIFICATION

Emergency lighting for all premises shall comply with British Standard 5266: Part 1 and BS EN 1838 (with suitable modification pertinent to Hong Kong) except that exit sign shall be as at paragraph 5.10 hereof.

Emergency lighting shall be backed up by emergency power supply. The emergency power supply shall be either fed from an emergency generator OR from self-contained secondary battery.

During power supply failure, any emergency lighting for the means of escape shall be switched on automatically without interruption by lighting switches or other control devices.

Connections between the secondary battery and the source of charging current should be such that in no circumstances should the battery discharge other than to the secondary lighting circuits.

A rectifier for battery charging should be for that purpose only and should be so regulated that the battery cannot discharge appreciably under normal conditions.

In the event of power failure, the emergency lighting shall be activated within 5 seconds for all bowling alleys, commercial buildings, hotel buildings and institutional buildings.

Any accommodations regardless of its size should be provided with emergency lighting with horizontal illuminance of not less than 2 lx at the floor level of the area. For accommodations exceeding 8 m² gross area, at least two emergency luminaries shall be provided.

CINEMAS, THEATRES, ETC.

Emergency lighting for cinemas/theatres and other specified premises used for entertainment shall, additionally, comply with the following:—

- (a) Battery emergency lighting systems shall be designed and installed in accordance with BS 5266-1 Emergency Lighting- Part 1: Code of practice for emergency lighting of premises and BS EN 1838 Lighting applications – Emergency lighting (with suitable modification pertinent to Hong Kong) or other standards acceptable to the Director of Fire Services.
- (b) Batteries used shall be heavy duty of rechargeable (secondary) type; batteries of primary cells of any type whatsoever will not be acceptable.
- (c) Batteries shall be installed in a room approved for this purpose by the licensing authority and the building authority, unless otherwise agreed by the Director of Fire Services.
- (d) Batteries in celluloid containers shall not be installed, stored or used.
- (e) A margin allowance of 12½ % of the total required battery capacity (amperehour rating not voltage) shall be provided, i.e. 100% + 12½ % = 112 ½ %.
- (f) All batteries for the emergency lighting circuits shall be kept fully charged at all times and shall be capable of maintaining the stipulated lighting levels for a period of not less than 2 hours.
- (g) An automatic trickle charger with mains input and suitable output, fitted with meters, regulators and pilot lights, shall be provided for the batteries. The charger shall be capable of fully re-charging the batteries in not more than 12 hours, if the emergency lighting is not also backed up by emergency generator.
- (h) Upon failure of the main lighting system the emergency lighting system shall automatically light up.
- (i) In the event of failure of the main lighting the public shall, unless the capacity of the battery is sufficient to maintain specified conditions for not less than four hours, within one hour be required to leave the building and they shall not be re-admitted until the general lighting has been fully restored and the emergency system recharged.
- (j) The supply from the batteries shall feed a main distribution fuse board and thence be subdivided to four subdistribution fuse boards, as follows:—
 - Exit lighting
 - Stair lighting
 - Auditorium lighting
 - Stage lighting
- (k) Outgoing circuits shall be suitably protected by fuses or miniature circuit breakers in compliance with the Code of Practice for the Electricity (Wiring) Regulations published by the Electrical and Mechanical Services Department.
- (l) A diagram showing details of the distribution system and the circuit wiring of the emergency lighting system shall be erected at the main distribution board.
- (m) The emergency lighting system shall be wired with fire resisting cables conforming to BS 5266-1 Emergency Lighting -Part 1: Code of practice for emergency lighting of premises and BS EN 1838 Lighting applications – Emergency lighting (with suitable modification pertinent to Hong Kong) or other standards acceptable to the Director of Fire Services.
- (n) The minimum illumination provided at floor level by the emergency lighting system shall be:—

Staircase	not less than 2 Lux.
Nightclub, restaurant, dance hall, or premises where people have freedom of movement and there are loose fixtures and fittings	not less than 1 Lux.
Cinemas and theatres	not less than 0.5 Lux.

measured at the mid-point between any two emergency lighting fittings. A discretionary tolerance of minus 10% is permitted and all readings shall be taken by an illuminance meter.

- (o) All points shall have equal lumen output and distribution characteristics giving equal intensity of light in all material directions. Each point shall be so sited as to avoid impairment of vision from glare. Points, except where so specified and approved, shall be mounted at a height of not less than 2 metres.
- (p) The maximum permissible period for visual adaptation shall not exceed 5 seconds at any point on the premises.
- (q) The minimum number of fittings permissible in any installation shall not be less than two (N.B. if only one fitting were provided and a lamp filament failure occurred, a hazardous situation would result.)
- (r) All lighting fittings in the emergency lighting system shall be of flame retardant construction, shall comply with BS EN 60598-2-22 and be permanently fixed in position.

5.10 Exit sign

SPECIFICATION

INTERNALLY ILLUMINATED SIGNS

Internally illuminated signs to British Standard 5499: Part 10 are approved for general use as both exit and directional signs. These signs shall be connected to both mains and emergency power supply. If the building is not equipped with an emergency generator, the signs shall be provided with secondary battery in accordance with British Standard 5266: Part 1.

SELF LUMINOUS SIGNS

Self luminous signs to British Standard 5499: Part 2 or other standards acceptable to the Director of Fire Services are approved for use as both exit and directional signs only in premises which are under single ownership or central management such as: —

- (a) Premises requiring the provision of audio/visual advisory system according to paragraph 5.1
- (b) Government buildings
- (c) Gymnasiums and stadiums
- (d) Hotels and service apartments
- (e) Institutional buildings as defined in paragraph 3.1
- (f) Museums, exhibition halls, libraries and places of worship
- (g) Office buildings
- (h) Parking garages
- (i) Passenger and cargo terminals
- (j) Tunnels
- (k) Temporary show flats
- (l) Other premises or buildings as approved by the Director of Fire Services from time to time.

A self-luminous sign illuminated by tritium or other radioactive source shall be indelibly marked at its lower corner to indicate the radiation hazard and the expiration date (month/year) of the sign for easy identification purposes and shall have a label at its back giving instruction or warning to users on the proper method of disposal as required by the Radiation Board.

The requirements of the Radiation Board shall be observed for any installation of self luminous signs in any premises.

EXIT SIGN REQUIREMENT

Sufficient exit signs shall be provided to ensure that all exit routes from any floor within the buildings are clearly indicated as required by the configuration of staircases serving the buildings. Characters exit signs, combined graphical symbol and characters exit signs, and graphical symbol exit signs are acceptable. For new buildings, single type of exit signs shall be installed within the same development in order to maintain uniformity.

Characters exit signs

The signs shall bear the words in English and Chinese of not less than 125 mm high as shown in Figure 1. The letter style shall be in 'Helvetica' or 'Marigold' or 'Modified Garamond' as indicated on the samples while the Chinese characters shall be with width of vertical strokes not less than 15 mm and with width of horizontal strokes not less than 10 mm.



FIGURE 1

Combined graphical symbol and characters exit signs (Figure 2)

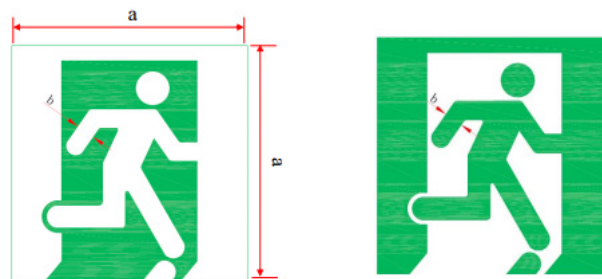
All requirements of characters exit signs shall be met. In addition, a graphical symbol with dimensions of not less than 125mm x 125mm shall be incorporated between the Chinese and English characters. Detailed scale of symbol is illustrated in Figure 3.



FIGURE 2

Graphical symbol exit signs

The signs shall bear a graphical symbol with dimension of not less than 125mm x 125mm. Detailed scale of symbol is illustrated in Figure 3.



(Dimension: $a \geq 125\text{mm}$ and $b \geq 10\text{mm}$)

FIGURE 3

DIRECTIONAL SIGN REQUIREMENT

If a sign is not installed immediately above an exit or if an exit is not clearly visible from normally occupied parts of the premises, directional signs shall be erected to ensure that all exit routes from any

floor within the buildings are clearly indicated as required by the configuration of staircases serving the buildings. The graphics of directional signs shall be as shown in Figure 4. Signs having substantial compliance with Figure 4 shall also be acceptable.



FIGURE 4

COLOURS

Colour contrast for translucent surrounds to lettering shall be as follows:

<i>Colour</i>	<i>Contrasting Colour</i>
Green	White
White	Green

White figure or lettering is preferred for internally-illuminated and self-luminous signs. The colour combination selected shall preferably be consistent throughout the same building.

Exit and directional signs shall be positioned between 2 m and 2.5 m above floor level measured to the base of the sign and exit signs shall be positioned directly above the doorway of the exit. If this is not practicable, the Director of Fire Services should be consulted.

5.11 Fire alarm system

SPECIFICATION

Note: This paragraph deals only with manually operated alarm points of a system.

Manual fire alarm system shall comply with relevant sections of British Standard 5839: Part 1 (with suitable modification pertinent to Hong Kong).

Pure manual systems such as hand bells, whistles, rotary gongs, etc. are not within the scope of this Code, however, subject to the approval of the Director of Fire Services, an existing sound signal system within a premises may be utilized as a manual fire alarm system (e.g. school premises) subject to the specific signal being used solely to notify occupants of a fire situation.

Manual actuating points of a pattern conforming with standards acceptable to the Director of Fire Services may be interconnected with an automatic fire detection system. Such manual actuating points shall be installed in compliance with the appropriate standard, in such locations within the premises, as set out elsewhere in this Code for the individual types of premises. They shall be fixed at a height of 0.9 m to 1.2 m above finished floor level, at easily accessible, well-illuminated and conspicuous positions free from potential obstruction. In addition, manual actuating points shall be provided at each hose reel point and, in particular, adjacent to all storey exits (or the entrance lobby in lieu if such lobby leads only to the storey exits) within a distance of not more than 2 m and adjacent to all staircase exits to open air on ground storey or ultimate place of safety. Where the building is provided with a caretaker's or management office, one actuating point and the repeater panel for showing a common fire alarm signal and a common fault signal of the main panel shall be provided therein.

The manual fire alarm system shall be linked to the fire detection system and the Fire Services Communication Centre by direct line where a fire detection system is provided for the building.

Visual alarm signals in addition to audio warning devices shall be provided to form part of the fire alarm system in accordance with the current Design Manual: Barrier Free Access. The visual alarm signals shall be in the form of flashing red lights, labelled "FIRE ALARM" (火警) (height of English letters and Chinese characters shall not be less than 10 mm & 15 mm respectively). They can be

indicated on separate plate affixed nearby or engraved on the light cover). Design of the visual alarm signals shall conform to NFPA 72 with red flashing lights or British Standard 5839: Part 1 (with suitable modification pertinent to Hong Kong).

In addition to DC supply and back-up power from battery, all visual fire alarm (VFA) systems may alternatively be powered by AC supply with secondary supply from emergency generator or electricity obtained before the main switch.

For VFA systems installed according to British Standard 5839, the visual alarm signal shall be in form of red flashing light and the minimum rating of a VFA shall be 15 cd. For spacing, the basic requirement is that the flashing light should be visible to normal eyesight in all areas required to be protected. A broad guideline for the installation is that one VFA point shall be located near every hose reel and alarm point. Each compartment shall be provided with at least one VFA point and the maximum distance between two VFA points shall not exceed 60 m.

5.12 Fire control centre

SPECIFICATION

A room/compartment normally at ground floor level on the main face of a building, preferably adjacent to main entrance.

The room shall be separated from the remainder of the building by walls having a minimum fire resistance rating of one hour, and shall be large enough to house equipment, recorders, annunciators, etc. ancillary to the fire protection system installed in the building.

It shall be continuously manned by trained personnel / promptly attended by trained personnel in case of emergency.

Local termination/repeaters of fire protection and life safety systems will be installed together with test facilities of the systems as appropriate.

Electrical supply will be from the essential supplies circuit (both normal and emergency).

It may be called into use as Fire Services Department Command Unit during an incident involving the premises.

5.13 Fire detection system

SPECIFICATION

Systems shall be installed in accordance with British Standard 5839: Part 1 (with suitable modification pertinent to Hong Kong) or other standards acceptable to the Director of Fire Services. A direct line connection shall be provided to the Fire Services Communication Centre or such other premises as may be agreed with the Director of Fire Services.

Detection heads may be of heat detecting type or smoke detecting type and heads of both types may be installed within the same system. The choice of type of head will in most instances be dictated by the circumstances, however, liaison with the Fire Services Department in the planning stage is essential.

Monitoring of the system in the early stages of building operation will be necessary to “locate” any head that, for any reason, is originating false/unwanted alarms.

5.14 Fire hydrant/hose reel system

SPECIFICATION

(a) *HYDRANT*

Each hydrant assembly shall conform to British Standard 5041: Part 1 as appropriate. The hydrant body shall be painted in red.

The hydrant shall be of non-corrosive metal. Each outlet of all hydrants shall be of female instantaneous type conforming to British Standard 336 and be individually controlled by a wheel-operated screw valve designed to open by counterclockwise rotation. The direction of opening of the valve shall be clearly engraved in both English and Chinese on the wheel of the valve.

The centre of hydrant outlet couplings shall be not less than 800 mm nor more than 1 200 mm above finished floor level.

The hydrant shall be prominently sited in an approach lobby to a required staircase or required staircase enclosure but shall not be at the central core of the staircase enclosure. When recessed

there shall be an all round clearance between any part of the hydrant outlet and valve and the enclosing walls and any enclosure door frame sufficient to permit the free use of the hydrant and the fitting of an adaptor. When not recessed the hydrant shall be adequately protected against damage. As an optional safe guard against tampering or pilfering, the hydrant whether or not installed in recessed position, may be protected by cabinets fitted with non-lockable pull-open handle, and that it shall be of such size and design as would not cause any obstruction to the free use of the hydrant. If the hydrant is located in a recess to which a door is fitted, the door shall bear the words – FIRE HYDRANT (消防柱), lettering of which shall be of at least 50 mm high.

The hydrant shall not obstruct wholly, partly or indirectly any door opening, or the required width of any exit route.

The hydrant shall be so sited as not to be concealed by the leaves of an adjacent door when that door is opened.

Water supply for hydrant system may be fed by static pressure directly from the elevated water tank without fixed fire pump if such pressure and flow are sufficient to give the required performance as that specified with fixed fire pump provided.

(b) *HOSE REEL*

The design of the hose reel shall be such that the tubing is permanently connected, via pipes in the drum of the hose reel and such stuffing boxes as may be necessary, to the supply main or the hydrant supply main.

The internal bore of the hose reel tubing shall be not less than 19 mm, such tubing shall have a bursting pressure of not less than 2 700 kPa and shall not be porous nor exhibit any sign of percolation under pressure up to 2 000 kPa.

The tubing of every hose reel shall not exceed 30 metres in length and be capable of being wound round a drum of not less than 150 mm in diameter and led around sharp obstructions without kinking. When fitted with hose reel nozzle, the tubing shall be capable of projecting a jet not less than 6 metres in length. The water supply pressure available at each hose reel shall not exceed 1 200 kPa and the rated working pressure of the hose reel.

The hose reel nozzle shall have a not less than 4.5 mm orifice and be fitted with a simple two-way valve to open or shut off the jet. The valve shall not be spring-loaded.

The hose reel control valve shall be of gate valve type approved by the Hong Kong Water Authority. Such valve shall be closed by turning the hand-wheel in a clockwise direction. A simple two-way ball valve approved by the Hong Kong Water Authority may be used as an alternative to a gate valve.

Hose reel drums shall be painted in red. The hose reel assembly shall be robust in construction and be capable of withstanding normal impact and stress during operation.

Rising mains and associated pipework used for the hose reels shall be not less than 40 mm nominal bore and pipes feeding individual hose reel shall not be less than 25 mm nominal bore.

A hose reel shall be so installed that its control valve and nozzle, which should be situated adjacent to each other, are at a position above and not more than 1 350 mm from the finished floor level. The nozzle of hose reel shall reach any parts of premises unless otherwise specified. For a recessed type hose reel, such control valve and nozzle may be recessed to a discernible and accessible position of not more than 500 mm from the surface of the wall. Fire hose reel nozzles should be housed in a glass-fronted cabinet secured under lock and key. The glass panel shall be of frangible type and shall not exceed 1.5 mm in thickness, and that it shall be of such size and design as would not cause any undue obstruction to the free use of the hose reel. Furthermore, a metal or plastic striker about 300 mm long shall be provided in the vicinity of the cabinet for the purpose of breaking the glass panel in case of emergency.

The hose reel should normally be located in occupied units/areas to enable the occupants of the building to attack a fire. However, in case of a building having a number of small units, hose reels may be located in common areas immediately outside the occupied units/areas on that floor to provide coverage as specified in respective paragraphs of Part IV.

Any hose reel sited on any escape route may be of fixed type or swinging cradle type and recessed into the wall. If the hose reel is carried on a swinging cradle, it should be constructed in such a

way that when not in use the outer face of the reel is flush with the wall and when required for use the cradle may swing out freely into the corridor or passage. If the hose reel is of a fixed type, suitable guide ring(s) shall be installed to permit easy withdrawal of the hose reel tubing.

If hose reels are located in recesses to which doors are fitted, such doors shall be fitted with a pull-open handle and the doors shall be hinged so that when they are opened, they shall not cause obstruction to any means of escape nor to the operation of the hose reels nor to the hose being run out in either directions. The doors shall bear the words "FIRE HOSE REEL" (消防喉轆), lettering of which shall be of at least 50 mm high. Door locks shall not be fitted to such doors. Such recesses shall be of such size and design as would not cause any undue obstruction to the free use of the hose reel.

An operation instruction notice of the hose reel shall be provided and affixed to the wall in a prominent position adjacent to the hose reel. If the hose reel is located in a recess to which a door is fitted, such notice shall be affixed immediately below the words "FIRE HOSE REEL" on the outer surface of the door. They shall be finished in such a way that they would not be subject to undue weathering. The notice shall be clearly marked with the following standard wordings in English and Chinese characters of at least 5 mm high in red lettering on white background or white lettering on red background. Pictorial instructions showing the components and operation of the hose reel set may be provided in addition to the standard notice.

TO OPERATE FIRE HOSE REEL

使用消防喉轆

- (1) BREAK GLASS OF THE FIRE ALARM CALL POINT. (or)

打爛火警鐘玻璃

ACTUATE FIRE ALARM CALL POINT.

按動火警鐘掣

- (2) OPEN CONTROL VALVE BEFORE RUNNING OUT HOSE.

先開啟來水掣，再拉出膠喉

- (3) TURN ON WATER AT NOZZLE AND DIRECT JET AT BASE OF FIRE.

將喉咀掣開啟，然後射向火之底部

(NOT SUITABLE FOR ELECTRICAL FIRES)

不適用於電火

The centre of manual call points shall be positioned at prominent and accessible locations near the hose reels within 900 mm to 1 200 mm above finished floor level.

Upon actuation of any manual fire call point in the building, the fixed fire pump(s) shall come into operation regardless of the zoning of the manual fire alarm call point. For podium having shared staircase(s) linking one or more building blocks above, upon actuation of any manual fire call point in any of such building block, both the fixed fire pump serving the corresponding building block and the fire pump serving the podium shall come into operation. Upon actuation of any manual fire call point in the podium, the fixed fire pump serving the podium shall come into operation. An independent indication shall be provided at the fire control centre or at the main entrance of the building to indicate the floor upon which the manual fire alarm call point has been actuated.

Water supply for hose reel system or part of the system may be fed by static pressure directly from an elevated water tank if such pressure is sufficient for its designed operation.

(c) *SUPPLY TANK*

The reserve water supply for fire fighting shall be contained in a supply tank. (See paragraph 5.26)

(d) *FIXED FIRE PUMP*

The fixed fire pump shall preferably be electrically driven. Where the motive power for the pump is not electricity, alternative means for starting the pump manually in addition to manual call points, shall be provided adjacent to the pump together with starting instructions prominently displayed. Once started, the fixed fire pump must run continuously until stopped manually at the

pump control panel installed near the pump. In addition, a lock-off button may be installed adjacent to each pump. Whenever the fire pump has been stopped by means of the lock-off button or other control switch where provided at the pump control panel, a status signal shall be indicated on the pump control panel and a common fault signal shall be repeated to main fire control panel until resume of the button/switch.

The fixed fire pumps shall be capable to provide adequate flow in the case of:—

(1) Industrial/godown buildings, for

any 3 hydrant outlets (i.e. each with a flow of 450 l/min at a running pressure of not less than 350 kPa) operating simultaneously with an aggregate flow of not less than 1350 l/min.

(2) Buildings other than industrial/godown buildings, for

any 2 hydrant outlets (i.e. each with a flow of 450 l/min at a running pressure of not less than 350 kPa) operating simultaneously with an aggregate flow of not less than 900 l/min.

The pressure at any fire hydrant outlet shall in no case exceed 850 kPa. The running pressure at any hydrant outlet when delivering 450 l/min shall be not less than 350 kPa.

The fixed fire pump shall be duplicated for duty and standby use. The fire pump starting control shall be wired through a selector switch for duty and standby pump selection. Should the duty pump electrically or mechanically fail to operate within 15 seconds the standby pump shall be energized to take over the role of the duty pump.

The pump in duty shall be maintained in operation in case of power changeover.

The motor/engine driving the fixed fire pump shall be rated to give 20% more power in addition to the hydraulic power required for the rated flow of the system.

Each pump shall be permanently primed with water and shall be fitted with gate valve at the suction side and a stop valve and a non-return valve at the discharge side. Where necessary, non-return valves shall also be installed in other locations to prevent water backflow into the water tank.

The status of each fixed fire pump comprising “Power Supply On”, “Pump Running” and “Pump Failed” and the status of the supply tank comprising “Normal Level” and “Low Level” shall be monitored and displayed at the pump control panel and repeated at the fire control centre or to a status panel at the main entrance of the building. The “Low Level” alarm shall be given before the water storage level drops more than 10% below its normal fill level.

All fixed fire pumps shall be housed in pump room used for no other purpose than housing fire protection water supplies and equipment. The access to the pump room shall be via an exit, exit route and/or required staircase in compliance with the Means of Escape requirements in the Code of Practice for Fire Safety in Buildings. Access via a cat ladder is not acceptable. Such pump room shall be clearly marked in English and Chinese characters “FIXED FIRE PUMP” (消防泵) of at least 50 mm high and suitably locked to prevent unauthorized tampering of the pumps. The door opening shall be of sufficient dimensions to permit easy access of personnel and the removal and replacement of equipment within the pump room.

There shall be sufficient internal clear space and headroom (not less than 2 m floor to ceiling clear height) for carrying out inspection, servicing and maintenance safely. A clear space of not less than 450 mm shall be maintained on two sides of each set of fixed fire pump and driver (excluding transfer pump and jockey pump where provided), i.e. one of the longer sides of the pump and driver, and the side facing the end of driver. If two nos. of fixed fire pumps had been installed closely, the clear space of not less than 450 mm between two fixed fire pumps can be shared.

A clear space of not less than 600 mm shall be maintained in front of the pump control panel. The switches, buttons and indicators at the pump control panel shall be installed at a level between 300 mm and 2000 mm above the finished floor level. The pump panel and associated power supply facilities are preferable to be located near the entry.

A by-pass consisting of a non-return valve and two stop valves shall be provided for the fixed fire pumps if the supply tank is located above the lowest fire hydrant or hose reel. The installation of by-pass shall facilitate the by-pass function. The size of the by-pass shall be the same as the discharge line of the fixed fire pumps.

(e) *INTERMEDIATE BOOSTER PUMP*

In all buildings where the height between the topmost hydrant and the lowest Fire Service inlet is in excess of 60 m, the flow and pressure, where necessary, shall be maintained by intermediate booster pumps incorporated in the rising main system.

With the fire engines boosting water into the Fire Service inlet at a constant pressure of 800 kPa upstream of the inlet, the intermediate booster pumps shall be capable to provide adequate flow for:—

(1) Industrial/godown buildings

— if only 1 rising main is installed in the building, the aggregate flow shall be not less than 1 350 l/min. (i.e. any 3 hydrant outlets each with a flow of 450 l/min at a running pressure of not less than 350 kPa)

— if 2 or more rising mains are installed in the building, the aggregate flow shall be not less than 2 700 l/min. (i.e. any 6 hydrant outlets each with a flow of 450 l/min at a running pressure of not less than 350 kPa, with not more than 3 hydrant outlets operating in one rising main)

(2) Domestic buildings

— the aggregate flow shall be not less than 900 l/min. (i.e. any 2 hydrant outlets each with a flow of 450 l/min at a running pressure of not less than 350 kPa)

(3) Other buildings

— if only 1 rising main is installed in the building, the aggregate flow shall be not less than 900 l/min. (i.e. any 2 hydrant outlets each with a flow of 450 l/min at a running pressure of not less than 350 kPa)

— if 2 or more rising mains are installed in the building, the aggregate flow shall be not less than 1 800 l/min. (i.e. any 4 hydrant outlets each with a flow of 450 l/min at a running pressure of not less than 350 kPa, with not more than 2 hydrant outlets operating in one rising main)

The pressure at any fire hydrant outlet shall in no case exceed 850 kPa. The running pressure at any hydrant outlet when delivering 450 l/min shall be not less than 350 kPa.

Intermediate booster pumps shall be duplicated for duty and standby use. One set of intermediate booster pumps (duty and standby) may feed all risers in the same system to supply the required flow and pressure. Should the duty pump failed to operate, the standby pump shall be energized to take over the duty pump within 15 seconds.

Two or three pumps of same capacity arranged in parallel using sequential starting may be employed as the duty intermediate booster pumps to achieve the required pressure and flow within 30 seconds. Under this arrangement, only one standby pump is required and shall be arranged in parallel to the above duty pumps. This standby pump shall be identical to a duty pump and capable to come into operation automatically upon failure of any duty pump.

The motor/engine driving the intermediate booster pump shall be rated to give 20% more power in addition to the hydraulic power required for the rated flow of the system.

All intermediate booster pumps shall be permanently primed and electrically driven. Once started, the pump must run continuously until stopped manually. Suitable start/stop push buttons together with pump status indicator lights (comprising “power supply on”, “pump running” and “pump failed” indicators for each pump) and alarm buzzers shall be provided adjacent to the Fire Service inlets to enable Fire Services personnel to exercise control of the intermediate booster pumps. For building with tower(s) on podium, such start/stop buttons shall be provided adjacent to the Fire Service inlet nearest to the staircase serving the tower. Clear indications in English and Chinese characters “INTERMEDIATE BOOSTER PUMP CONTROL” (中途泵開關掣) of at least 5 mm high shall be provided.

The status of each intermediate booster pump comprising “Power supply on”, “Pump running” and “Pump failed” shall be monitored and displayed at the pump control panel and repeated to the fire control centre or to a status panel at the main entrance of the building.

All intermediate booster pumps shall be housed in pump room used for no other purpose than housing fire protection water supplies and equipment and the room shall be suitably locked to prevent unauthorized tampering of the pump(s). The access to the pump room shall be via an exit, exit route and/or required staircase in compliance with the Means of Escape requirements in the Code of Practice for Fire Safety in Buildings. Access via a cat ladder is not acceptable. Such pump room shall be clearly marked in English and Chinese characters “INTERMEDIATE BOOSTER FIRE PUMP” (中途泵) of at least 50 mm high. The door opening shall be of sufficient dimensions to permit easy access of personnel and the removal and replacement of equipment within the pump room.

There shall be sufficient internal clear space and headroom (not less than 2 m floor to ceiling clear height) for carrying out installation, servicing and maintenance safely. A clear space of not less than 450 mm shall be maintained on two sides of each set of pump and driver, i.e. one of the longer sides of the pump and driver, and the side facing the end of the driver. If two nos. of intermediate booster pump had been installed closely, the clear space of not less than 450 mm between two intermediate booster pumps can be shared.

A clear space of not less than 600 mm shall be maintained in front of the pump control panel. The switches, buttons and indicators at the pump control panel shall be installed at a level between 300 mm and 2,000 mm above the finished floor level. The pump panel and associated power supply facilities are preferable to be located near the entry.

The intermediate booster pumps may also be utilized as the fixed fire pump if they are arranged to perform both functions as stipulated.

Provision shall be made for testing the intermediate booster pumps flow and pressure performance during future inspection and/or maintenance.

(f) RISING MAIN, PIPES AND VALVES

The nominal bore of the rising main, in industrial/godown buildings shall be not less than 100 mm. Each rising main shall supply 2 hydrant outlets per floor.

The nominal bore of the rising main in other types of buildings shall be not less than 80 mm. Each rising main shall supply one hydrant outlet per floor.

Each rising main shall be provided with a standard Fire Service inlet at ground floor level. Where the intermediate booster pump is interposed between the Fire Service inlet and the hydrant outlets, provision must be made for the water supplied to the inlet to by-pass this pump in the event of failure of the pump.

Each rising and down coming main shall be permanently primed with water and fitted with air relief valves of not less than 25 mm nominal size at suitable locations to prevent air lock in the installation.

Each rising main shall be connected to an independent Fire Service inlet. Where there are more than one rising mains in the system, such inlets shall be interconnected. Header pipe(s) may be provided to connect the Fire Service inlets to the rising mains. The header pipe shall be positioned close to Fire Service inlet(s) wherever practicable, with a maximum height of 30 m above ground level. The diameter of the header pipe shall be not less than 150 mm nominal bore for industrial/godown buildings and 100 mm nominal bore for other buildings.

In the case of an industrial/godown building, a rising main shall be provided for each staircase, with independent Fire Service inlet and inter-connection as described above.

Where pressure reducing valve(s) (PRV) are installed, a bypass arrangement shall be incorporated to enable isolation of any defective PRV for necessary repair or replacement. Under no circumstances shall the bypass be used as a permanent means of water supply. Each PRV shall be equipped with a stop valve, a strainer and a pressure gauge on the upstream side and a stop valve and a pressure gauge on the downstream side.

The Director of Fire Services may require additional rising mains dependent upon the layout of the building.

Other than the control valve at each hose reel, all stop valves which may cut off the water supply to the fire hydrant(s) and/or hose reel(s) shall be secured with padlock to ensure the valves are in the correct operation position.

(g) FIRE SERVICE INLET

Each Fire Service inlet shall be in a prominent position on the exterior of the building and preferably near the staircase where its rising main situated. Each Fire Service inlet must be suitably identified, enclosed and protected against corrosion and abuse. There shall be an all round clearance of not less than 100 mm between any part of the fire service inlet and the inlet enclosure. The inlet shall be readily accessible by Fire Services personnel.

The centre of inlet couplings shall be not less than 600 mm nor more than 1 000 mm above the ground level and shall be of a standard pattern approved by the Director of Fire Services. There shall be a non-return valve behind each inlet. A pressure gauge shall be provided within the inlet enclosure and shall be connected between the downstream side of the inlet and the upstream side of the non-return valve.

Each inlet shall be affixed with a metal identification plate raised or engraved with English and Chinese characters. A durable label in English letters and Chinese characters of not less than 10 mm and 15 mm respectively for indicating the floor level of the fixed fire pumps and intermediate booster pumps, where applicable, shall be provided at each inlet cabinet. The wordings in the label shall be red in colour on white background or in white colour on red background. The frontage of each inlet enclosure shall be clearly and permanently indicated in English and Chinese characters "FS INLET" (消防入水掣) of at least 50 mm high.

5.15 Fire resisting cable for fire service installations*SPECIFICATION*

The requirements of fire resisting cables for fire service installations shall comply with Appendix 8 of Code of Practice for Inspection, Testing and Maintenance of Installations and Equipment.

5.16 Fireman's lift and firefighting and rescue stairway

The design and construction of fireman's lift and firefighting and rescue stairway shall comply with the requirements stipulated in

- (a) the Code of Practice on the Design and Construction of Lifts and Escalators issued by the Director of Electrical and Mechanical Services; and
- (b) the Code of Practice for Fire Safety in Buildings issued by the Building Authority.

5.17 Fixed automatically operated approved appliance*SPECIFICATION*

Such appliances designed to operate as independent units are included in this paragraph.

Nevertheless, subject to the agreement of the Director of Fire Services a number of units, may be installed within a compartment such that operation of any one unit will automatically cause all units within the compartment to operate.

All appliances shall be approved by the Director of Fire Services.

5.18 Fixed foam system*SPECIFICATION*

Systems shall be installed in compliance with NFPA 11 or other equivalent standards acceptable to the Director of Fire Services.

Attention is drawn to British Standard 5041: Part 5.

Consultation with the Fire Services Department is strongly recommended in the design stage of any system. Particular attention to be placed on compatibility of various foam compounds, and integration of Fire Services equipment into the system.

A comprehensive ongoing training programme is necessary if the system is intended to be brought into use by employees.

5.19 Gas detection system*SPECIFICATION*

Very few types of premises will require such a system. Each system must be designed to detect the escape or excessive concentration of the specific gases appropriate to the area of risk.

The system shall be designed in consultation with the Fire Services Department.

Each system shall:

- (a) monitor the area of risk continuously;
- (b) be automatic in operation;
- (c) close down affected process if circumstances permit;
- (d) operate/shutdown ventilation/exhaust system if appropriate;
- (e) be connected to the fire alarm system for the premises.

5.20 Portable hand-operated approved appliance

SPECIFICATION

Sand buckets shall:

- (a) be made of durable materials;
- (b) be completed with cover;
- (c) have capacity of not less than 9 litres;
- (d) be red in colour on exterior surfaces, with suitable label in English and Chinese characters to indicate that the sand inside is used as fire extinguishing agent;
- (e) contain dry sand only; and
- (f) be filled to at least 80% by volume.

Other portable hand-operated appliances shall have received the approval from the Director of Fire Services. Attention is drawn to Fire Service (Installations and Equipment) Regulations, Chapter 95B.

5.21 Pressurization of staircase

A. *DESIGN AND SUBMISSIONS*

- A. 1 The installation shall be designed by a registered professional engineer under Cap. 409 in the discipline of building services, fire or mechanical engineering.
- A. 2 All submissions to the Fire Services Department shall be certified on each drawing and calculation sheet by a registered professional engineer, that comply fully with the requirements of this Code.
- A. 3 All testing and commissioning reports shall be witnessed and certified by a registered professional engineer.
- A. 4 All drawing submissions shall be in the form set out in the FSD Circular Letters issued by the Fire Services Department. Two sets of submission shall include all design details, such as approved FS notes and fire compartmentation plans, design calculations, schematic drawings, layout plans, sectional and elevation views, mode tables, supervisory control panel layout, etc.
- A. 5 All submissions shall include all necessary schematic diagrams required to fully explain the operation of the installations including not less than “normal”, “fire”, and “no power” modes.
- A. 6 System design shall be based on the requirements of British Standard 5588 “Fire Precautions in the Design, Construction and Use of Buildings”: Part 4:1998 (with suitable modification pertinent to Hong Kong) and with the following specific requirements:—
 - (a) The minimum fire resistance rating for the enclosure of the pressurization plant detailed in clause 11.2 of British Standard 5588: Part 4:1998 should be the same as that of the staircase served or to the same fire resisting period as the serviced compartment or the containing compartment whichever is higher.
 - (b) The staircase pressurization system shall be designed either as a single or multiple injection system based on the following criteria:—
 - (i) For buildings with an overall height less than 11 m, a single injection or multiple injection system shall be acceptable.
 - (ii) For buildings with an overall height of 11 m or more, only a multiple injection system with air supplies at no greater than 12 m apart shall be acceptable.
 - (iii) For buildings with refuge floors the criteria in (i) and (ii) shall apply, but the height shall be measured from the floor level of the lower refuge floor to the floor level of the next refuge floor.

- A. 7 All associated air release point and actuating devices shall be located at a common area or a non-fireman's lift lobby.
- B. *BASIC CONSIDERATIONS*
- B. 1 One system for each pressurized staircase shall be provided.
- B. 2 Fire compartmentation shall be ensured at all times.
- B. 3 Duct construction shall be, as a minimum requirement, to not less a standard than Heating and Ventilating Contractors' Association specification DW 144 or subsequent amendments. Flat oval ducts wider than 1 m shall not be used. Aluminium sheets shall NOT be used.
- B. 4 All ductwork, including builder's work, ducts, shafts or other construction, in these systems shall be pressure tested to Heating and Ventilating Contractors' Association specification DW 143 or subsequent amendments. Retest as necessary after correcting any excessive losses. All results obtained shall be recorded and the record shall be signed by both the person carrying out the test and an independent witness. (see also Section 2.21(ii) of the Code of Practice for Inspection, Testing and Maintenance of Installations and Equipment).
- B. 5 Generally there shall be no fire or smoke dampers nor other restrictions in the ductwork or shafts.
- B. 6 Generally all systems shall be automatically activated whenever *any* fire service installation in the building is activated. (see section "E. ACTUATION AND CONTROL")
- B. 7 All systems shall be provided with remote on/off override control at the fire control panel. (see section "E. ACTUATION AND CONTROL")
- B. 8 The air intake arrangements should be in accordance with Clause 6.2 of British Standard 5588: Part 4.
- B. 9 In order to prevent "over pressure" within the staircase the designer shall provide a pressure relief system. This shall be provided by any one or combination of the following:—
- (i) automatic opening of the external exit doors on operation of the fan.
Note: For single injection system this method of "over pressure" relief cannot be utilized if the system is designed with the supply air point at the same level as the exit door.
 - (ii) barometric pressure relief vents to open automatically when the pressure exceeds the highest designed pressure. The location and arrangement of these valves shall be selected to maintain both the integrity of the fire rating of the staircases and the minimum design pressure.
 - (iii) an exhaust fan actuated by differential pressure sensors so that it will not operate when the pressure falls below a specified level.
 - (iv) a supply fan bypass which will vary the amount of air entering the staircase by actuating modulating bypass dampers controlled by differential pressure sensors sensing the pressure differences between the staircases and the building.
- B. 10 At every floor served by the pressurized staircase, a low resistance air flow path shall be provided to allow the designed air flow rate through the door, to be vented to the open air.
- C. *ARCHITECTURAL AND CONSTRUCTION CONSIDERATIONS*
- C. 1 The stair enclosure shall be constructed in such a manner as to reduce the number and size of air leakage paths to a minimum.
- C. 2 Notice plates shall be provided to show the availability and operational status of SPS(s) in the building with specifications as follows:—
- (a) The notice plates shall be bilingual bearing the words "Staircase Pressurization Class A/B**" and "樓梯增壓A/B類**" with letter height not less than 50 mm as shown in Figure 5. The characters shall be painted in red on a white or stainless steel background.

* *Specify Class A or B according to the type of SPS installed.*
 - (b) The notice plates shall bear a red indicator light (as shown in Figure 5) which shall be on while the supply fan of the SPS protecting the staircase is in operation.

- (c) The notice plates shall be either illuminated by emergency lighting or internally illuminated, backed up by emergency power supply.
- (d) The notice plates shall be provided at every staircase protected by SPS and shall be firmly affixed at a conspicuous position at the following locations:—
 - i) Outside the final exit; and
 - ii) Both inside and outside the exit on the top floor.
- (e) For buildings installed with SPSs and refuge floors, notice plates shall also be firmly affixed at a conspicuous position both inside and outside the exit/entrance of the staircase on the refuge floor.

Specifications of Notice Plate

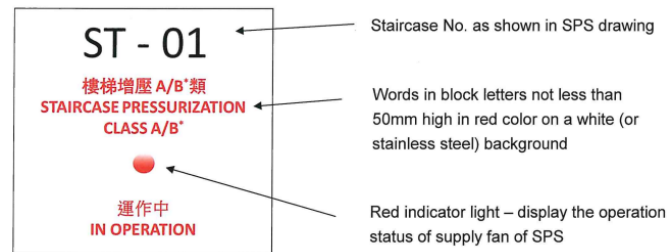


Figure 5 – Sample of Notice Plate

- D. *DOOR SETS*
- D. 1 All doors sets (i.e. doors, frames and hardware) providing access to or from any pressurized staircase shall be to the satisfaction of the Building Authority.
- D. 2 The provision of supplementary gaskets to assist in preventing smoke leakage will not be permitted.
- D. 3 All doors, closers, hardware, etc. shall be suitable for continual use in an atmosphere of 35 °C and 100% relative humidity.
- D. 4 Door sets shall be installed in such a manner as to be smoke-resistant and all joints between frames and building structure shall be provided with sealants complying with British Standard 476: Part 23.
- D. 5 Self closers shall be provided for all doors to ensure integrity of the enclosure. The closers shall have been part of a “door, door frame and ironmongery” test assembly which has successfully passed the test in accordance with British Standard 476: Part 22. The closers shall be of such a design that they cannot be defeated i.e. no removable pins or bolts, etc.
- D. 6 Door closers shall be adjusted such that the force necessary to open the door shall comply with that allowed in the design calculations.
- D. 7 Care shall be taken that the finished sill under the closed doors shall be wear resistant i.e. of terrazzo or similar finish.
- D. 8 Inspection and testing of all door sets, closers, releases, etc. shall form part of the acceptance tests conducted under Section 2.21(i) of the Code of Practice for Inspection, Testing and Maintenance of Installations and Equipment.
- D. 9 Further inspection and testing of these components shall take place as part of the annual maintenance certificate inspection detailed under paragraph 4 of Section 2.21(ii) of the Code of Practice for Inspection, Testing and Maintenance of Installations and Equipment.
- E. *ACTUATION AND CONTROL*
- E. 1 All systems shall be automatically actuated and remain in operation. It shall be able for manually reset and monitored by audio and visual indication. Actuation of all systems shall be direct from the local automatic fire alarm panel whenever that panel transmits a “fire” signal to the Fire Services Communication Centre.
- E. 2 Where any building or that portion of a building immediately adjacent to a designated pressurized staircase is not provided with a smoke detection system, smoke detectors shall be

installed at a distance not exceeding 1 m from and outside the access doors to the staircase or its approach lobbies to actuate the system.

- E. 3 When in “fire” mode no system connected therewith shall be controlled or under the influence of any building management or automation system nor shall failure or close down of such building management or automation system prevent its operation. However, such building management or automation system may monitor the operations if desired.
- E. 4 No transmission of actuating signals for the staircase pressurization system shall be effected by multiplex or similar devices unless such devices have the approval or certification of one of the Testing Authorities recognised by the Fire Services Department.
- E. 5 Control panel shall be provided for all staircase pressurization systems and located adjacent to fire control panel with the following facilities provided:—
 - (a) Switches for all staircase pressurization systems shall be grouped in one area of the panel together with those for smoke extraction systems or the like. On/Off switches for each fan shall be provided.
 - (b) All switches shall have the same method/direction of operation.
 - (c) The indicator light shall be actuated by a device that senses effective operation, such as an air-flow switch or an air pressure switch, of the relevant pressurization system. The indicating lights shall indicate the system operation status of all system components including motorized dampers and motorized fire smoke dampers.
 - (d) Manual override facility shall be of manually reset type. Audio and visual indications shall also be provided to monitor the status of the manual override device. These indications shall be installed in public area, if the location of the staircase pressurization control panel is not normally manned. After actuating the manual override device, all staircase pressurization systems shall be individually operated via the staircase pressurization control panel.
 - (e) All switches and indicators shall be clearly labelled (red letters on white background, not less than 3 mm high) to show the operating positions and systems served.
 - (f) A further label shall be provided with letters not less than 6 mm high stating that the controls shall be operated by authorized personnel.
 - (g) All labels shall be permanent, legible and firmly secured (adhesive is not satisfactory) and shall be lettered in both English and Chinese by engraving or similar.
 - (h) Simplified schematic diagram for all staircase pressurization systems shall be provided adjacent to the staircase pressurization control panel.
- E. 6 In each staircase pressurization fan intake duct, a probe type smoke detector shall be installed in each intake duct. When sensing the passage of smoke in the system, the staircase pressurization system shall be shut down. An override switch to resume the staircase pressurization system shall be provided.

F. *ELECTRICAL & AUTOMATIC CONTROLS*

- F. 1 All equipment serving staircase pressurization systems shall be provided with an electrical supply from essential source.
- F. 2 Cable routes shall be selected in such a way as to protect them from a fire anywhere in the building and to reduce likelihood of failure due to external effects—mechanical, electrical or physical.
- F. 3 All controls, starters, relays, etc., shall be suitable for continuous operation at 250 °C for not less than 1 hour. All electrical power cable used shall be of fire resistant cable, and for those control cables NOT of fire resistant type shall be enclosed in metal conduit systems.

However the following situations are acceptable:—

- (a) Provided the main switchboard is of a type tested cubicle form constructed to BS EN 61439 from not less than 2 mm panel steel and is installed in a room having a fire resistance rating (including self-closing doors) of not less than 2 hours and containing no other equipment, no further protection will be required. Also no further protection will be required for wiring, cables, or other electrical equipment.

- (b) Sub-distribution boards and/or motor control centres constructed and installed as in (a) are similarly acceptable.
 - (c) The plant room housing the staircase pressurization fans shall contain no other services.
 - (d) Pressure sensors in the pressurized space shall be suitable for normal ambient conditions only i.e. not less than 37 °C and 100% relative humidity.
- F.4 Pressure sensors and associated equipment shall be of industrial process grade to BS EN 60654-1. Commercial quality heating, ventilation and air-conditioning controls are not acceptable.
- G. *STANDBY OR DUPLICATE EQUIPMENT*
- G.1 For sleeping risk premises, i.e. hotels, hospitals, sanatoria, and where designated by the Director of Fire Services, with a single pressurized staircase, duplicate fans and motors shall be provided.
 - G.2 For buildings with more than one pressurized staircase, single fans with duplicate motors fully belted and/or connected up shall be provided.
 - G.3 If, however, except for sleeping risk premises, the total air requirement for each pressurized staircase is made up from two or more separate supplies acting together (e.g. top and bottom plants), then no further duplication of equipment is necessary.
 - G.4 These requirements are based on Clause 6.4 of British Standard 5588: Part 4.

5.22 Ring main system with fixed pump(s)

SPECIFICATION

Attention is drawn to British Standards 5041, 5306: Part 1 and 5908. The system shall be specifically for fire fighting purposes, however if the water supply is adequate there is some merit in using the system for cleaning purposes, thereby effectively testing the system.

The mains may be installed above ground or underground but must be protected against physical damage.

The system shall be fed from at least 2 water supplies to the satisfaction of the Director of Fire Services and the Water Authority. (See paragraph 5.30)

Pumps will be fixed and capable of automatic and manual start. Fire pumps shall be permanently primed and duplicated for duty and stand-by use. In respect of any particular project the Director of Fire Services may permit fire pumps serving other systems to be utilized for stand-by purposes.

Hydrant outlets will be to standard Fire Services Department pattern.

Hose reels may be installed at selected, or all, hydrant outlets as required by the Director of Fire Services.

Water piping used shall be of approved type in accordance with the standard requirements for fire service mains issued by the Water Supplies Department.

5.23 Smoke extraction system

(i) DYNAMIC SYSTEM

A. *DESIGN AND SUBMISSIONS*

- A. 1 The designer shall be a registered professional engineer under Cap. 409 in the discipline of building services, fire or mechanical engineering.
- A. 2 The designer shall be responsible for all submissions to the Fire Services Department and each drawing and all calculations shall be signed by the designer, on behalf of the design company/organization, as having been checked by him.
- A. 3 All drawing submissions shall be in the form set out in the FSD Circular Letters issued by the Fire Services Department.
- A. 4 All submissions shall include all necessary schematic diagrams required to fully explain the operation of the installations including not less than “normal”, “fire”, and “no power” modes as well as a full written description thereof.
- A. 5 Submissions shall include all details; certificates, etc. concerning temperature rating of equipment handling smoke, as required in paragraph B.20. The details can either be submitted

on an item-by-item basis or on a complete system basis.

- B. *BASIC CONSIDERATIONS*
- B. 1 All systems shall be as simple as practicable in all aspects and each shall comprise extraction and supply/make-up air installations.
- B. 2 Fire compartmentation shall be ensured at all times.
- B. 3 All systems shall be “fail safe” to ensure a free passage of smoke.
- B. 4 Systems shall be arranged such that the travel of the smoke is generally counter-flow to that of the egress/escape route.
- B. 5 Egress/escape routes shall be kept as free as possible of smoke i.e. smoke flow shall be away from these routes.
- B. 6 Air/smoke flow paths shall be such that a “scouring” or “cross-flow” effect occurs in all areas within a fire compartment.
- B. 7 Smoke shall not travel more than 30 m before entering the nearest point of inlet to the extract system and at least one extract point shall be provided within each 500 square metres unit of floor area. The exceptions are atria and tunnels which shall be agreed on an individual project basis, and hotels where requirements shall comply with paragraph G.2(2) hereof.
- B. 8 Point(s) of smoke extraction shall be from high level in the space concerned and shall be reasonably distributed.
- B. 9 Makeup air, where not mechanically propelled, shall have as direct and short a route as possible.
- B. 10 Make-up air shall enter at a low level and/or in such a manner as to avoid premature mixing with the hot gases.
- B. 11 Maximum velocities, based on free area of the grille, shall be:—
- (a) At make-up air inlets where not mechanically propelled—3 m/s.
 - (b) At make-up air inlets where mechanically propelled—6 m/s.
 - (c) At extract grilles or outlets—6 m/s.
- B. 12 Generally, the minimum supply or make-up air rate shall be 80% of the extraction rate. When supply or make-up air is provided by mechanical means this shall be supplied by a separate independent system or by the normal air conditioning system changing over to full outside air subject to paragraph B.10. i.e. positive ducted system, special air inlets, low level air supply points. As stated in paragraph B.2, fire compartmentation shall be ensured at all times.
- B. 13 Separate systems shall be provided for each atria or basement compartment and/or as otherwise designated by the Fire Services Department. (see also section “D. BASEMENTS”)
- B. 14 Duct construction shall be, as a minimum requirement, to not less a standard than Heating and Ventilating Contractors’ Association specification DW 144 or subsequent amendments. Flat oval ducts wider than 1 m shall not be used. Aluminium sheets shall not be used. Care shall be taken to ensure that no failure of ductwork will be caused by any pressure changes due to the sudden closure of fire or smoke dampers.
- B. 15 As a general principle there shall be no fire and smoke dampers nor other restrictions in the ductwork of smoke control systems. The exceptions shall be where one extraction/supply system serves several compartments where motorised fire and smoke dampers shall be required, and at the main exhaust outlet louvre and main supply intake louvre, where motorised fire and smoke dampers may be required. The entire assembly of the fire and smoke damper shall be tested to maintain efficient operation at 250 °C for not less than one hour.
- B. 16 If smoke extract system ductwork passes through compartments, any part of the ductwork within the serviced compartment beyond the fire and smoke dampers provided in accordance with paragraph B.15, and any part outside the serviced compartment shall be covered with insulation of minimum insulating period of 30 minutes in compliance with the Code of Practice for Fire Safety in Buildings issued by the Buildings Department, such part shall be fire resisting to British Standard 476: Part 24, or be totally enclosed by fire resisting construction to British Standard 476: Part 20, to the same fire resisting period as the serviced

compartment or the containing compartment whichever is the higher. This fire resisting ductwork shall be constructed from material which, apart from its fire resisting quality, shall be capable of resisting accidental mechanical damage. To this end, the ductwork shall pass the hard body impact test in accordance with BS EN 1128 with the weight being dropped through not less than one metre. Alternatively the exterior surface of the fire resisting ductwork shall require to be totally protected from accidental mechanical damage. If smoke extract/make-up air fans are installed within the serviced compartment, the system including fans, motors, drives, electrical works, ductwork linking fans and the boundary of compartment etc. should be protected by a fire resisting material of rating not less than one hour.

- B. 17 All ductwork including builders work ducts or shafts and other construction, in these systems shall, where outside the serviced fire compartment, be pressure tested to Heating and Ventilating Contractors' Association specification DW 143 or subsequent amendments. No pressure sensitive tapes shall be used for sealing. The ductwork system shall be retested as necessary after remedial action has been taken to reduce any excessive losses until satisfactory results are obtained.
- B. 18 Shafts used for smoke extraction purposes shall contain no other services.
- B. 19 All smoke extraction fans shall be connected directly to outside by non-combustible ductwork including flexible connection, if installed.
- B. 20 Equipment handling smoke shall be suitable for continuous operation at 250 °C for not less than 1 hour. This includes fans, motors, drives, damper operators, ductwork, flexible ducts (preferably not to be used at all), etc.
- B. 21 To prevent recirculation of smoke as far as possible, discharge outlets for smoke shall be separated by not less than 5 m in any direction from all air inlets or other openings into any building. They shall not discharge into any means of escape nor a free air fireman's staircase. No discharges shall be at a height above the surrounding horizontal surface of less than 3 m to the bottom of the outlet and where below 6 m shall not discharge downwards. No discharges shall be under any canopy or overhang.
- B. 22 Systems used for "normal" purposes may be utilised for smoke extraction purposes provided that under smoke extraction mode the construction and operation of the system complies with the requirements herein.
- B. 23 All systems to be automatically activated. (see section "K. CONTROL AND ACTUATION")
- B. 24 All systems shall be provided with remote on/off override control at the fire control panel. (see section "K. CONTROL AND ACTUATION")
- B. 25 Actuation of systems shall be by a smoke detector installation serving the area unless otherwise detailed. Where considered appropriate and to reduce false alarms it is preferable that cross zoned smoke detector systems be utilised. Where a sprinkler system is provided, a flow switch on the main sprinkler feed pipe serving the area shall activate the system. In addition the system shall be operated by the operation of any other detection/protection system excluding the manual fire alarm system in the area/floor served.
- B. 26 Smoke curtains systems used for separating different smoke compartments shall comply with BS EN 12101: Part 1 and the curtain material shall comply with British Standard 476: Part 20.
- B. 27 In case that smoke extraction rate is designed by using a fire engineering approach, the maximum area of the smoke reservoir should not be larger than 2 000 square metres and the methodology should be approved by the Director of Fire Services.

C. *ATRIA*

- C. 1 To be detailed as required.

D. *BASEMENTS*

- D. 1 Comply with all requirements as detailed under:—
 - (i) B. BASIC CONSIDERATIONS
 - (ii) K. CONTROL AND ACTUATION
 - (iii) L. ELECTRICAL AND AUTOMATIC CONTROLS
 - (iv) M. STANDBY OR DUPLICATE EQUIPMENT

- D. 2 Separate systems shall be provided for each compartment and each system shall comprise at least two independent plants and ductwork i.e. for a proportion of the area and extract/supply volumes.
- D. 3 Where small separated areas which are normally not occupied occur within larger compartments, such as pump rooms, these areas may be connected to the extract system and be provided with fire dampers in all ducts serving the area at the separation wall. This does not apply to fire service installation rooms which are to have independent systems.
- D. 4 The minimum extraction rate shall be equivalent to not less than eight air changes per hour of the total compartment volume. The design volume shall be considered to be 7 000 cubic metres for any compartment of 7 000 cubic metres or less.
- D. 5 Emergency electrical supplies shall be capable of operating simultaneously all systems relevant to smoke extraction systems in the two adjacent compartments having the highest total electrical load. "Adjacent" shall be in any direction.
- E. *BATTERY ROOMS AND ELECTRICAL CHARGING FACILITIES*
- E. 1 Details of smoke extraction systems are as set out in separate requirements for these particular facilities.
- F. *COMMERCIAL BUILDINGS*
- F. 1 Comply with all requirements as detailed under:—
 - (i) B. BASIC CONSIDERATIONS
 - (ii) K. CONTROL AND ACTUATION
 - (iii) L. ELECTRICAL AND AUTOMATIC CONTROLS
 - (iv) M. STANDBY OR DUPLICATE EQUIPMENT
- F. 2 Any basements shall comply with section "D. BASEMENTS" hereof.
- F. 3 The minimum extraction rate shall be equivalent to not less than eight air changes per hour of the total compartment volume. The design volume shall be considered to be 7 000 cubic metres for any compartment of 7 000 cubic metres or less.
- F. 4 Multi-zone smoke extraction/make-up air system may serve up to ten separate 'above ground' fire compartments but shall be capable of fully operating any one smoke extraction zone.
- F. 5 Emergency electrical supplies shall be capable of operating simultaneously all systems relevant to smoke extraction system in any one "above ground" fire compartment in addition to any requirements for basements and atria.
- G. *HOTELS*
- G. 1 General
 - 1. Comply with all requirements as detailed under:—
 - (i) B. BASIC CONSIDERATIONS
 - (ii) K. CONTROL AND ACTUATION
 - (iii) L. ELECTRICAL AND AUTOMATIC CONTROLS
 - (iv) M. STANDBY OR DUPLICATE EQUIPMENT
 - 2. Any basements shall comply with section "D. BASEMENTS" hereof.
 - 3. Any atria, commercial or shopping areas shall comply with the relevant sectional requirements detailed herein.
- G. 2 Internal means of escape shall comply with the following:—
 - (1) The minimum extraction rate shall be not less than 10 air changes per hour of the total compartment "internal means of escape" volume.
 - (2) The supply and extraction points shall be distributed along the corridor in such a manner that the distance between any supply and extraction point shall not exceed 10 m.
 - (3) Any one smoke extraction/make-up air system may serve the Internal Means of Escape of up to ten separate above ground fire compartments but shall be capable of fully operating any two such compartments simultaneously. Fire separation shall be maintained

at all times.

H. *INDUSTRIAL/GODOWN BUILDINGS*

H. 1 Comply with all requirements as detailed under:—

(i) B. BASIC CONSIDERATIONS

(ii) K. CONTROL AND ACTUATION

(iii) L. ELECTRICAL AND AUTOMATIC CONTROLS

(iv) M. STANDBY OR DUPLICATE EQUIPMENT

H. 2 Any basements shall comply with section “D. BASEMENTS” hereof.

H. 3 The minimum extraction rate shall be equivalent to not less than eight air changes per hour of the total compartment volume. The design volume shall be considered to be 7 000 cubic metres for any compartment of 7 000 cubic metres or less.

H. 4 In industrial processes where the hazard of fire is higher than normal, appropriate smoke hoods, boards or barriers should be provided to prevent spread of smoke.

H. 5 Any one smoke extraction/make-up air system may serve up to ten separate above ground fire compartments but shall be capable of fully operating any one such compartment. Fire separation shall be maintained at all times.

I. *PLACES OF PUBLIC ENTERTAINMENT*

I. 1 To be detailed as required.

J. *TUNNELS*

To be detailed as required.

K. *CONTROL AND ACTUATION*

K. 1 All systems shall be automatically actuated and remain in operation. It shall be able for manually reset and monitored by audio and visual indication. Actuation of all systems shall be direct from the local automatic fire alarm panel whenever that panel transmits a ‘Fire’ signal to the Fire Services Communication Centre.

K. 2 When in “fire” mode no system connected therewith shall be controlled or under the influence of any building management or automation system. However, such building management or automation system may monitor the operations if desired.

K. 3 No transmission of actuating signals from the automatic fire alarm panel for the operation of the smoke extraction systems shall be effected by multiplex or similar devices unless such devices have the approval or certification of one of the testing organisations recognised by the Fire Services Department.

K. 4 Control panel shall be provided for all smoke extraction systems and located adjacent to fire control panel with the following facilities provided:—

(a) Switches for all smoke extraction systems shall be grouped in one area of the panel together with those for staircase pressurization systems or the like. Where the smoke extraction system is served by both supply and extract fans, on/off switches for each fan shall be provided.

(b) All switches shall have the same method/direction of operation.

(c) The indicator light shall be actuated by a device that senses effective operation, such as an air-flow switch or an air pressure switch, of the relevant smoke extraction/air handling system. The indicating lights shall indicate the system operation status of all system components including motorized dampers and motorized fire smoke dampers.

(d) Manual override facility shall be of manually reset type. Audio and visual indications shall also be provided to monitor the status of the manual override device. These indications shall be installed in public area, if the location of the smoke extraction control panel is not normally manned. After actuating the manual override device, all smoke extraction systems shall be individually operated via the smoke extraction control panel.

(e) All switches and indicators shall be clearly labelled (red letters on white background, not less than 3 mm high) to show operating positions and systems served.

- (f) A further label shall be provided with letters not less than 6 mm high stating that the controls shall be operated by authorised personnel.
- (g) All labels shall be permanent, legible and firmly secured (adhesive is not satisfactory) and shall be lettered in both English and Chinese by engraving or similar.
- (h) Simplified schematic diagram for all smoke extraction systems shall be provided adjacent to the smoke extraction control panel.

L. *ELECTRICAL AND AUTOMATIC CONTROLS*

- L. 1 All systems shall be as simple as possible. Complex and untried electronic devices shall not be used.
- L. 2 All equipment serving smoke extraction and complementary air make-up systems shall be provided with an electrical supply from essential source.
- L. 3 Cable routes shall be selected in such a way as to protect them from a fire anywhere in the building and to reduce likelihood of failure due to external mechanical, electrical, or physical, effects.
- L. 4 All electrical wiring, controls, starters, relays, etc. shall be suitable for continuous operation at 250 °C for 1 hour. Where pneumatic controls are used these shall be similarly rated. All wiring from the building primary and secondary source of supply for these systems shall comply with these requirements.

However, the following situations are acceptable:—

- (a) Provided the main switchboard is of a type tested, cubicle form, constructed to BS EN 61439 from not less than 2 mm panel steel and is installed in a room having a fire resistance rating (including self-closing doors) of not less than 2 hours and containing no other equipment, no further protection will be required for this switchboard. Also no further protection will be required for wiring, cables, or other electrical equipment.
 - (b) Sub-distribution boards and/or motor control centres constructed and installed as in (a) are similarly acceptable.
- L. 5 PVC or similar materials shall not be used for pneumatic system tubing or components.
 - L. 6 All controls and equipment utilised shall be of industrial grade—controls of normal commercial heating, ventilation and air-conditioning quality shall not be acceptable.

M. *STANDBY OR DUPLICATE EQUIPMENT*

- M. 1 In all premises where sleeping normally occurs all fans, motors, drives, starters, etc., shall be installed in duplicate with automatic changeover facilities, should one unit fail to operate for any reason. Each fan/motor/drive set shall be capable of operation on essential electrical supplies (as required for paragraph L.2). This shall be achieved by the two electrical supplies being routed separately into the fan room and then connected into the switchboard, which serves the fan/motor/drive sets. This switchboard must also be located in the fan room.
- M. 2 In premises where dual purpose systems are utilised, duplicate plants as detailed in paragraph M.1 above shall be provided.

(ii) *STATIC SYSTEM*

A. *SMOKE BARRIER*

- (a) The smoke barrier may be permanently fixed or operate when actuated.
- (b) The smoke barrier shall be constructed of substantial non-combustible materials that will resist the passage of smoke and have a fire resistance rating of not less than 1 hour when tested to British Standard 476: Parts 20 to 23 inclusive.
- (c) Where a smoke barrier consists of a number of separate units, care shall be taken to ensure smoke resistant junctions or joints. This is particularly necessary when using flexible materials.
- (d) For “below ground” compartments the smoke barrier shall extend to a depth of 800 mm below the lowest beam, obstruction, window head or top of vent opening situated in the compartment.

For “above ground” compartments the smoke barrier shall extend to a depth of 500 mm

below the lowest beam, obstruction, window head or top of vent opening.

- (e) The lowest portion of the smoke barrier, when in the fire position, shall be not less than 2 000 mm above the finished floor.
- (f) If not permanently fixed, the moving parts and any operating mechanism shall be suitable for atmospheric conditions of 35 °C and 100% relative humidity unless the space is permanently air conditioned. If the space is to be used for any particular process the parts and mechanisms shall be suitable for the most adverse conditions likely to be encountered.
- (g) All movable smoke barriers shall be arranged to be “fail safe”. That is to move to the “barrier down” position on power failure or any other fault.
- (h) Fire/smoke stopping shall be provided for services passing through the smoke barrier.
- (i) Smoke curtain systems used shall comply with the BS EN 12101: Part 1 and British Standard 476: Part 20.
- (j) The smoke zone should not exceed 2 000 square metres in area. Each smoke reservoir shall not exceed 500 square metres in area under the ceiling.
- (k) The horizontal distance between the perimeter of any smoke reservoir and the external wall of the building where windows, panels or external louvres functioning as smoke outlets are installed, does not exceed 30 metres and that one side of the reservoir shall abut the external wall.

B. *SMOKE DISCHARGE*

- (a) The smoke discharge shall be permanently open or automatically open when the system actuated.
- (b) The aggregate aerodynamic free area of the smoke discharge outlets is required to be not less than 2% of the floor area served by the system. Of this not less than half shall be operable by automatic actuating devices.
- (c) If permanent openings are provided, signs shall be permanently displayed on or adjacent to the openings on the inside of the building with the following wording in both English and Chinese:—

THIS OPENING IS A SMOKE DISCHARGE.

DO NOT COVER OR CLOSE

此乃排煙口

不得遮蓋或關閉

- (d) The lettering shall be not less than 25 mm high, red on a white background. One notice shall be provided for every 3 square metres of opening or at not more than 4 m spacings, whichever is the less.
- (e) Openable smoke discharges may open by gravity after a release is actuated or opened by a suitable mechanical or electrical device (operating devices).
- (f) Openable smoke discharges shall be provided with high quality mechanisms and operating devices to suit, at least, the environmental conditions given under paragraph A. (f) hereof.
- (g) The operating devices for openable smoke discharges shall be manufactured by a recognised reputable manufacturer with not less than two years experience in the production of such devices.
- (h) The smoke discharge and operating devices shall comply with BS EN 12101: Part 2.
- (i) All smoke discharges shall be arranged to be “fail safe”.
- (j) If considered necessary by the designer, quick release operating devices may be provided for automatically openable discharges. Such devices shall be installed at a height above floor not exceeding 1 800 mm at the access to the serviced compartment. Audio and visual indication shall be provided at the supervisory control panel for monitoring.
- (k) All smoke discharges shall be provided with signs as described under paragraph (c) hereof

except the wording shall be:—

THIS OPENING IS A SMOKE DISCHARGE.

DO NOT COVER OR OBSTRUCT

此乃排煙口

不得遮蓋或阻塞

C. *ACTUATION AND OPERATION*

- (a) Systems with permanently fixed smoke barriers and permanently open discharges require no actuation.
- (b) All other systems shall be actuated by smoke detectors installed in accordance with the requirements of the Fire Services Department.
- (c) It is recommended that a cross-zoned system be utilised for the smoke detectors to reduce false alarms, especially under industrial conditions.
- (d) The smoke detector installation may be zoned, at the discretion of the designer, to serve only one smoke compartment or several smoke compartments.

D. *ELECTRICAL AND AUTOMATIC CONTROLS*

- (a) Electrical supplies for the automatic operating devices/actuators where necessary for operation and for the detector installation shall be provided with an approved secondary source i.e. batteries or emergency generator where electrically operated or a pressure receiver having a capacity double that required to operate all units once, if air actuated.

5.24 Sprinkler system

SPECIFICATION

Such systems shall be designed and installed in accordance with the Loss Prevention Council Rules for Automatic Sprinkler Installations incorporating BS EN 12845 (with suitable modification pertinent to Hong Kong) or other standards acceptable to the Director of Fire Services.

For the avoidance of doubt, a system is deemed to commence at the point of entry, to the building, of the pipework.

(See water supply—paragraph 5.30)

5.25 Street fire hydrant system

SPECIFICATION

All hydrants should be installed in accordance with the Water Supplies Department Standard Mainlaying Practice or other standards acceptable to the Director of Fire Services.

Spacing between fire hydrants should be 100 metres staggered on alternative sides of the roadway wherever applicable.

Wherever possible, there should be at least two street fire hydrants within the site of the building concerned and they should be fixed not less than 6 metres from the building they are intended to protect.

The hydrant shall be of an accepted standard pattern and, with one 65 mm outlet working, shall be capable of delivering not less than 2 000 litres per minute (33.3 litre/second) with a minimum running pressure of 170 kPa at the outlet. The minimum output should be made available from two 65 mm outlets of a system delivering at the same time, i.e. a total output of not less than 4 000 litres per minute (66.7 litre/second). The minimum delivery time shall be of at least 60 minutes.

Where the minimum standards are not possible the water supply may have to be augmented by other means – e.g. sump tank and pumps. This will depend on the size and nature of the property to be protected, together with total available supply.

5.26 Supply tank

SPECIFICATION

For any system having a water supply in the form of supply tank(s), the supply tank(s) of adequate

capacity shall be provided.

The tank shall be fed from such source of supply approved by the Water Authority and the Director of Fire Services.

For fire hydrant/hose reel system, the minimum effective quantity of water required to be available, having regard to the floor area factor of the largest floor is as follows:

Floor area (gross)	Water storage required
Not exceeding 230 m ²	9 000 l (9 m ³)
Over 230 m ² but not exceeding 460 m ²	18 000 l (18 m ³)
Over 460 m ² but not exceeding 920 m ²	27 000 l (27 m ³)
Over 920 m ²	36 000 l (36 m ³)

For the measurement of the effective water quantity of supply tank serving fire service installations, e.g. fire hydrant/hose reel system, sprinkler system and drencher system etc., the method of measurement is enclosed at Appendix 12 of the Code of Practice for Inspection, Testing and Maintenance of Installations and Equipment.

For other systems having a water supply in the form of a supply tank, the minimum effective capacity of the supply tank, shall be capable of supplying the required operating duration for the required flow rate.

A non-ferrous non-return valve to be provided between the downcoming main and the fixed fire pump.

5.27 Ventilation/air conditioning control system

SPECIFICATION

“Ventilation/air conditioning system” refers to a mechanical ventilating system defined as follows:—

Any air moving system, with the exceptions as listed hereunder, utilizing both a fan and duct, to mechanically force air into, around, or out of, any building or part thereof and includes systems which contain devices for reducing or increasing the temperature and/or humidity of the air inside any building, or part thereof, below or above the temperature of the external air for the purpose of environmental control.

The following mechanical ventilating systems shall be exempted from these requirements:—

- (a) Any mechanical ventilating system forming part of the fire service installations and installed solely for fire protection or fire fighting purposes i.e. staircase pressurization system and smoke extraction system.
- (b) Individual, self contained or split type, direct expansion room cooling units not connected to ductwork systems.
- (c) Minor mechanical ventilating systems which comply with ALL of the following criteria:—
 - (1) all air distribution ductwork systems are contained within the same compartment.
 - (2) the air flow rate handled by each air distribution ductwork system does not exceed 1 000 litres per second.
- (d) Mechanical ventilating systems handling toxic gas or grease/air mixtures i.e. fume cupboard ventilation, kitchen ventilation, systems handling toxic gases/explosive gases, etc.
- (e) Mechanical ventilating systems where all air is supplied at low level and/or extracted (not recirculated) at high level.
- (f) Individual plant rooms, and individual toilets which are mechanically ventilated directly (i.e. ventilating system not serving other areas) to outside.

The objective of this requirement is, in the event of fire, to reduce air movement within the affected compartment i.e. to allow smoke to rise and form a layer at ceiling level which will not be disturbed by the introduction of air into that smoke layer.

Any one of the following methods of override control shall be used:—

Method “A” — If the compartment/unit is provided with a smoke detector automatic fire alarm system or automatic sprinkler system, on activation of that system all fans serving the compartment shall be shut down.

Method “B” — Smoke detectors of a type suitable for use in air ducts, shall be installed in the exhaust and/or recirculation ductwork serving the compartment/unit, which on sensing smoke, will automatically shut down all fans in the mechanical ventilating system serving the compartment/unit.

Method “C” — The override control can be arranged to completely shut down all the fans in the building instead of isolated compartments/units, but this could lead to inconvenience for the building users. The actuation shall be provided by the building fire alarm system.

Method “D” — Smoke detector(s) shall be installed at suitable position(s) under slab/false ceiling at a space of 250 m² of net floor area for each detector, which on actuation will shut down all the fans in the affected compartment.

In addition to Method “A”, Method “B”, Method “C” or Method “D”, manual override switches shall be provided at the central fire control panel to allow the engineering staff of the building operator, or the Fire Services personnel, to switch off the fans for all the mechanical ventilating systems serving the building in the event of an emergency.

Notes: (a) For buildings where central mechanical fresh air supply and/or exhaust systems are installed, either

- (1) the central fresh air supply and/or exhaust system shall be shut down, or
- (2) the central fresh air supply and/or exhaust system shall not require to be shut down but the fresh air and/or exhaust to the affected compartment/unit shall be closed off from the central system by actuation of a local motorised smoke damper.

- (b) Shut down of the mechanical ventilating systems utilizing a multiplex automatic fire alarm or building automation system shall be permitted so long as the multiplex system is on the Fire Services Department list for this type of equipment/system.

5.28 Water mist system

SPECIFICATION

Such systems shall be installed in accordance with the standards acceptable to the Director of Fire Services. Reference is made to NFPA 750.

Prior approval for the use of such system shall be obtained from the Director of Fire Services, and the water mist system must have been listed.

The protection objectives and installation design shall be endorsed by a qualified person, who should be a Registered Professional Engineer under Cap. 409 in the discipline of building services, fire or mechanical engineering, or one with qualifications acceptable to the Director of Fire Services, e.g. the system manufacturer.

The acceptance of water mist system is on project basis, and initially its application is limited to protection of mechanical plant rooms.

5.29 Water spray system

SPECIFICATION

Such systems shall be installed in accordance with the standards acceptable to the Director of Fire Services. Independent water tank shall be provided for the water spray system with the capacity to operate for at least 30 minutes.

5.30 Water supply

SPECIFICATION

All fixed systems using water will be served by water from at least two supplies to the satisfaction of the Director of Fire Services and the Water Authority.

The types of supply as listed in Loss Prevention Council Rules are acceptable EXCEPT

- (a) Town main with either a pressure tank, gravity tank or elevated private reservoir;

(b) Town mains with automatic pump.

However, due to possible disruption of water supplies from town mains during water restriction periods, unless the town main is on 24 hour supply, provision must be made to guarantee 30 minutes stored supply, the town main feeding the storage tank.

Means shall be provided to refill the supply tank automatically. If the tank is situated at upper level of building and transfer pumps in duplicate for duty and standby are required to relay water to the tank, the pumps capacity shall be able to refill the tank to its full capacity within 6 hours. The transfer pumps shall be powered by essential power supply.

CODE OF PRACTICE

FOR

INSPECTION, TESTING AND MAINTENANCE

OF INSTALLATIONS AND EQUIPMENT

CODE OF PRACTICE FOR INSPECTION, TESTING AND MAINTENANCE OF INSTALLATIONS AND EQUIPMENT

PRELIMINARY NOTE

Pursuant to Section 21(6)(d) of the Buildings Ordinance, the Building Authority may refuse to issue a temporary occupation permit or an occupation permit where in the case of a building the plans whereof were certified by the Director of Fire Services in the terms indicated in Section 16(1)(b)(ii) of the Buildings Ordinance, the applicant for the permit fails to produce to the Building Authority a certificate from the Director of Fire Services in such form as may be prescribed certifying that he is satisfied that the fire service installations and equipment shown on the plans aforesaid have been provided and are in efficient working order and satisfactory condition.

This Code of Practice for Inspection, Testing and Maintenance of Installations and Equipment is published in accordance with Regulation 10 of the Fire Service (Installations and Equipment) Regulations of the Fire Services Ordinance, Cap. 95 to indicate the type and nature of inspections and tests which installations and equipment must normally pass in order to satisfy the Director of Fire Services and to give guidance as to the conduct of inspections and tests. It does not lay down any hard and fast rules. Special factors and circumstances may require variations in respect of any particular building, and in particular case the Director may require additional inspections or tests before he is so satisfied.

Part I GENERAL

- 1.1 Inspection and acceptance testing shall be carried out by a Fire Services Inspecting Officer by arrangement with the Authorized Person and the registered fire service installation contractor (RFSIC).
- 1.2 Applications for initial inspection and testing should be made on the prescribed forms to the Director of Fire Services. The forms must be signed by both the RFSIC and the Authorized Person / Registered Professional Engineer under Cap. 409 in the discipline of building services, fire or mechanical engineering (if applicable) respectively.
- 1.3 An application should only be submitted by the Authorized Person when the installation and equipment has been installed, completed and certified as being in efficient working order by the RFSIC. The form signed by the RFSIC under the application serves as a certificate under Reg. 9 of the Fire Service (Installations and Equipment) Regulations, Cap 95B. The RFSIC issuing the form which is false or misleading in the material particulars is liable to the offence under Reg. 9 of Cap 95B.
- 1.4 FSIs included in APPENDIX 1 to APPENDIX 7 shall be checked and tested in accordance with the testing and commissioning checklists as laid down at the above appendixes. Besides, RFSIC shall also submit all necessary supporting documents to FSD together with the prescribed form.
- 1.5 Fire service installations and equipment which is not included in this Code shall be inspected, tested and maintained in accordance with the manufacturer's recommendations or other acceptable international standards as agreed by the Director of Fire Services.
- 1.6 Upon receipt of an application the Fire Services Inspecting Officer will contact the Authorized Person (not the RFSIC) at the telephone number shown on the prescribed form, and arrange a mutually convenient inspection date. The Authorized Person, as the co-ordinator of the project, should attend the inspection and it is also his responsibility to contact and inform the RFSIC of the arrangements made.
- 1.7 A further prescribed form will be used to record the result of the inspection and will be completed and signed on site by the Fire Services Inspecting Officer. The Authorized Person and the RFSIC

will also be required to sign this form confirming that the results of the inspection have been brought to their attention.

- 1.8 In respect of minor items requiring a further inspection the Authorized Person will, after the defects have been rectified, arrange a re-inspection date with the Senior Building Services Inspector, Fire Service Installations Division. A further formal application for inspection on the prescribed form will only be required when a refusal letter has been issued subsequent to an inspection.
- 1.9 Re-inspections will be carried out as convenient, subject only to the availability of Inspecting Officer and provided that previous confirmed appointments are not affected.
- 1.10 Subsequent to a satisfactory inspection, the Authorized Person will be notified by telephone as soon as the Fire Services Certificate (F.S. 172) is ready for collection. If unable to be contacted by telephone a "ready for collection" letter will be despatched.
- 1.11 The Certification of Completion by the Water Authority in respect of fire service installations (FSI) requiring Government water mains connection will be sent direct to the Building Authority by the Water Authority, copied to the applicant, after the installation has been inspected and approved by the Water Authority and the fire service connection completed.
- 1.12 The FSI for a building for which a temporary occupation permit or occupation permit has been issued must be maintained, inspected and certified by a RFSIC at least once in every 12 months. Whenever a RFSIC maintains or inspects any FSI in any premises, he shall forward a certificate (Certificate of Fire Service Installations and Equipment (F.S. 251)) to the Director of Fire Services. A summary of statutory requirements for maintenance, inspection and repair of FSI and examination, testing and certification of gas cylinders used as FSI to be observed by RFSIC is enclosed at APPENDIX 10.
- 1.13 For acceptance inspection:-
 - (i) Legible as-built system schematic diagram(s) of FSIs (where Audio/visual advisory systems, fixed installations, water-based systems, detection systems, fire alarm systems, smoke control systems, etc. as applicable is/are installed) shall be kept in a conspicuous location inside the fire control centre/F.S. control room or near a status panel at the main entrance/caretaker's counter as applicable of the building when there is no fire control centre/F.S. control room and the diagram(s) shall be laminated or framed. The as-built system schematic diagram(s) shall also be displayed at the corresponding pump room(s) where applicable;
 - (ii) On floors having more than one sprinkler subsidiary stop valves where applicable, a zoning plan shall be fitted adjacent to each sprinkler subsidiary stop valve to indicate the demarcation of sprinkler zones on the same floor;
 - (iii) In fixed installations using water and other water-based systems where applicable, those normally-open stop valves the turning off of which will interrupt water supply for proper functioning of the systems, shall be fitted with padlock and durable warning labels to prevent tampering; and
 - (iv) All pumps shall be fitted with a name plate showing the designed flow rate(s) and pressure(s).
- 1.14 RFSIC should bear the ultimate responsibility in certifying the FSIs are in efficient working order. The provision and specification of FSIs shall follow:-
 - (i) the appropriate version of Code of Practice for Minimum Fire Service Installations and Equipment applicable to the FSIs installed in the buildings/premises; and
 - (ii) relevant requirements and/or Circular Letters promulgated by the Director of Fire Services applicable to the FSIs installed in the buildings/premises.

All inspection, testing and maintenance of FSIs (other than acceptance inspection) shall be conducted in accordance with:-

 - (i) the Code of Practice for Inspection, Testing and Maintenance of Installations and Equipment;
 - (ii) relevant Circular Letters promulgated from time to time by the Director of Fire Services; and
 - (iii) relevant requirements in Annual Inspection Checklist(s) promulgated by the Director of Fire Services irrespective of the time of the building plans submission for approval. All appropriate items in the checklist(s), where applicable, shall be inspected/tested/maintained as required.

For inspection, testing and maintenance other than acceptance inspection and annual inspection, the same standard of annual inspection shall be followed. All appropriate items in relevant Annual Inspection Checklist(s), where applicable, promulgated by the Director of Fire Services shall be

- inspected/tested/maintained as required.
- 1.15 The certificate for annual inspection of fire service installations together with a list of the fire service installations and equipment should be displayed in a prominent area of the building by the RFSIC in consultation with the owner or building management.
 - 1.16 For any shut-down of building FSI, including FH/HR system, sprinkler system, fire alarm system, street fire hydrant system, water spray system, smoke extraction system, staircase pressurization system, dry riser system and fire detection system with sleeping risk, overnight or more than 24 hours continuously, RFSIC shall notify Fire Services Department in accordance with the laid down reporting procedures. RFSIC shall advise the residents/occupants/property management company to take preventative measures to mitigate the risk during the works period when any FSI is defective or shut down for inspection, maintenance, modification or repair. A set of procedures and measures to be observed by RFSIC is enclosed at APPENDIX 9.
 - 1.17 The Authorized Person, Registered Professional Engineer under Cap. 409 in the discipline of building services, fire or mechanical engineering (if applicable) and RFSIC should advise the owner of the installations, or his agent that any fire service installation or equipment (such as the pressurization of staircase etc.), which would normally be left in idle or standby conditions except in case of fire, should be actuated and checked by the owner or his agent at an interval of not more than three months to ensure that the installation or equipment are functioning and sequencing correctly.

Part II INSPECTION, TESTING AND MAINTENANCE

2.1 Audio/visual advisory system

(i) Acceptance Testing

The system shall be tested in a simulated alarm condition to verify the proper operation and functioning of the audio and visual alarm signals and alarm directives to the satisfaction of the Director of Fire Services.

(ii) Inspection, Testing and Maintenance

The system shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

A weekly visual and audio check of all signals should be carried out by the owner or his agent. The system should also be checked in any fire drill.

2.2 Automatic actuating devices

(i) Acceptance Testing

For fire shutters, roof vents or similar installations, the actuating devices shall be tested to confirm that the designed complete closure or compartment separation of the driven shutters/equipment can be achieved within the time specified.

The testing of automatic actuating devices for fire shutters shall be carried out in accordance with the checklist as laid down at APPENDIX 1. The testing for other similar installations shall be in accordance with the manufacturer's recommendations and other standards as may be prescribed by the Director of Fire Services on account of specific features of the installations.

(ii) Inspection, Testing and Maintenance

The components and devices shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

The automatic operation and manual controls shall be inspected, tested and maintained as far as practicable to ensure they operate properly.

The operation of building components, other installations or lifts not discharging to protected means of escape shall be tested to confirm the intended purpose can be achieved.

The fire shutters or roof vents should be regularly checked by the owner or his agent for proper operation in both manual and automatic modes.

2.3 Automatic fixed installation other than water

(i) Acceptance Testing

CO₂ and other clean agent extinguishing system shall be checked and tested in accordance with the testing and commissioning checklist as laid down at APPENDIX 2 and the test procedures as laid down in the NFPA 12, NFPA 2001 or other acceptable international standard as agreed by the Director of Fire Services.

(ii) Inspection, Testing and Maintenance

The system shall be maintained in efficient working order at all times and be inspected by a registered fire service installation contractor at least once in every 12 months.

2.4 Automatic fixed installation using water

These may include:

Deluge system

Drencher system

Sprinkler system

Water mist system

Water spray system

Acceptance testing and maintenance for the above are described in the respective sections.

2.5 Deluge system

(i) Acceptance Testing

The system shall be tested in accordance with the manufacturer's recommendations and other requirements as may be prescribed by the Director of Fire Services on account of specific features of the system.

(ii) Inspection, Testing and Maintenance

The system shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

2.6 Drencher system

(i) Acceptance Testing

The system shall be tested to demonstrate the satisfactory performance including water flow rate, working pressure, water spraying pattern, means of actuation and other requirements as may be prescribed by the Director of Fire Services on account of specific features of the system.

(ii) Inspection, Testing and Maintenance

The system shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

2.7 Dust detection system

(i) Acceptance Testing

The system shall be tested in accordance with the manufacturer's recommendations and other requirements as may be prescribed by the Director of Fire Services on account of specific features of the system.

(ii) Inspection, Testing and Maintenance

The system shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

Tests appropriate to the system should be carried out by the owner or his agent at intervals as recommended by the equipment manufacturer and agreed with the Director of Fire Services. If the system is capable of being actuated manually, such manual actuation should be tested to

confirm subsequent operations.

2.8 Emergency generator

(i) Acceptance Testing

On completion of the installation a full test of the fire service installations in a building or premises shall be carried out, with all systems connected to the 'normal' electricity supply.

Upon satisfactory testing of the fire service installations on 'normal' electricity supply, the 'normal' electricity supply shall be switched off, and the emergency generator shall start automatically.

When the emergency generator has gained its capacity and is ready to accept the fire service installations load, each fire service installation shall be switched on until all installations are in operating conditions. A 'simultaneous running' test shall then take place and shall last for a continuous period of one hour. During this period the performance of each fire service installation shall be monitored.

After one hour of testing, the emergency generator set shall be examined and all instruments, safety devices, etc. shall indicate 'normal' running of the generator.

A checklist for testing of emergency generator installation is enclosed at APPENDIX 3.

(ii) Inspection, Testing and Maintenance

The emergency generator shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

The adequacy of air supply for combustion, cooling and ventilation, and the exhaust air duct shall be checked to ensure no obstruction. The condition of batteries shall be verified and the emergency generator room shall be securely kept closed and locked.

Moreover, all units should be run once per month under load conditions for a period of not less than 30 minutes by the owner or his agent. During this running period all operating conditions should be checked. Following this running period functional tests should be carried out on all automatic and manual starting devices and safety controls.

A log book should be provided, and retained in the plant room, management office or building supervisor office, and should be kept up to date by the owner or his agent. The record should be made at the time of occurrence and should include details of all operations; faults and corrective actions taken, routine servicing, maintenance and periodic operation etc.; including dates, times, hour meter readings, workers/supervisors names and signatures, etc. for the unit, batteries, compressors, etc.

Further routine testing and maintenance for a particular installation may be required by the Director of Fire Services.

Fuel tanks shall be refilled to full after testing.

2.9 Emergency lighting

(i) Acceptance Testing

Tests shall be carried out in accordance with British Standard 5266 : Part 1 and BS EN 1838 or in such manner as may be prescribed by the Director of Fire Services on account of specific features of the equipment.

(ii) Inspection, Testing and Maintenance

All emergency lighting shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months. The following maintenance procedures should be arranged by the owner or his agent:

Emergency Lighting with Central Power Supply System:

- a. Once every month a functional test in accordance with BS EN 50172 not longer than 10% of rated duration should be carried out.
- b. Once every month a discharge test, for 1 minute at the 10-hour discharge rate, should be carried out on the battery of the emergency lighting, and the results should be entered in a register. The on-load voltage of each cell after this test should be not less than 2.01 volts for lead acid and

- 1.25 volts for nickel cadmium battery.
- c. Once every twelve months a full rated duration test, should be carried out and the results should be entered in a register.
- d. The luminaire should be functioning properly to maintain the stipulated lighting level and the normal power supply should be restored after the test.
- e. If automatic testing devices are used, the above item a – d should be complied with.

Emergency Lighting with Self-contained Batteries:

- a. Once every month a functional test in accordance with BS EN 50172 not longer than 10% of rated duration should be carried out.
- b. Once every twelve months a full rated duration test, should be carried out and the results should be entered in a register.
- c. The luminaire should be functioning properly to maintain the stipulated lighting level and the normal power supply should be restored after the test.
- d. If automatic testing devices are used, the above item a – c should be complied with.”

2.10 Exit sign

(i) Acceptance Testing

Tests shall be carried out in accordance with British Standard 5266: Part 1 or in such manner as may be prescribed by the Director of Fire Services on account of specific features of the equipment.

(ii) Inspection, Testing and Maintenance

All exit sign shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months. All exit signs shall be inspected and tested to ensure that they operate properly when the primary power supply is cut off and to ensure the batteries, where provided, are in acceptable condition.

Moreover, exit sign should be tested whenever an emergency lighting system is tested.

2.11 Fire alarm system

(i) Acceptance Testing

Manual call points shall be tested together with automatic fire alarm when the whole system is required to be tested in accordance with the appropriate standards as required by the Director of Fire Services. Upon actuation of the manual call points, alarm bells in all or designated zones, other audible/visual alarm signals, direct line connection, and hydrant/sprinkler water pumps etc. shall be activated. Audibility of alarm bell sound shall be checked at hindered locations of the building/premises. A testing and commissioning checklist for testing of fire alarm system is enclosed at APPENDIX 4.

(ii) Inspection, Testing and Maintenance

The system shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

Manual call points should be tested when the whole system is required to be tested in accordance with the appropriate standard.

Attention is drawn to Regulation 38 of the Education Regulations, Chapter 279 in respect of fire alarm testing and fire drills in schools.

2.12 Fire control centre

(i) Acceptance Testing

Testing of the fire control panels shall be carried out as part of the testing for various fire service systems in accordance with the appropriate standards or codes as outlined elsewhere in this Code.

Visual check on the integrity of room enclosures for compartmentation with respect to fire resistance rating shall be required. Confirmation by the Authorized Person for the fire resistance rating of the materials/structure should be provided during inspection. Check shall be made on the ready visibility and accessibility of the fire control panels with regards to the room layout and security fixtures.

(ii) Inspection, Testing and Maintenance

Routine check of the provisions such as power supply, lighting and tidiness inside the fire control centre should be carried out by the owner or his agent.

2.13 Fire detection system**(i) Acceptance Testing**

The testing of fire detection system shall be carried out in accordance with British Standard 5839-1 – Fire Detection and Fire Alarm Systems for Buildings (with suitable modifications pertinent to Hong Kong). A testing and commissioning checklist for fire detection system is enclosed at APPENDIX 4.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

The direct line connection should be tested once every 2 weeks or at such time and interval as agreed by the Director of Fire Services.

2.14 Fire hydrant/hose reel system**(i) Acceptance Testing**

The system shall be tested in accordance with the checklist laid down at APPENDIX 5.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

The owner or his agent should carry out regular checks to ensure the hydrant/hose reel nozzles, valves, fittings etc. remain intact at all times and are not damaged or misused for other purposes.

2.15 Fire resisting cables for fire service installations**(i) Acceptance Testing**

The cables will be accepted as part of the fire service installation. Certificate of compliance of relevant standards may be required upon request.

(ii) Inspection, Testing and Maintenance

The fire resisting cables are considered as integral part of the fire service installation and shall be inspected and maintained in safe and satisfactory condition by a registered fire service installation contractor when inspection to the relevant fire service installation is carried out.

2.16 Fireman's lift**(i) Acceptance Testing**

Fireman's lift shall be tested by a registered lift engineer in accordance with the requirements stipulated in the Code of Practice for Lift Works and Escalator Works and Code of Practice on the Design and Construction of Lifts and Escalators issued by the Director of Electrical and Mechanical Services.

(ii) Inspection, Testing and Maintenance

Fireman's lift shall be maintained in efficient working order at all times and in accordance with the requirements stipulated in the Code of Practice for Lift Works and Escalator Works and Code of Practice on the Design and Construction of Lifts and Escalators issued by the Director of Electrical and Mechanical Services.

2.17 Fixed automatically operated approved appliance**(i) Acceptance Testing**

These types of fire extinguishing appliances, either of self-contained operating type or of alarm signal actuating type, shall be tested in accordance with the manufacturer's recommendations or other requirements as may be prescribed by the Director of Fire Services on account of specific features of the appliances.

A check on the content weight shall be made either by weighing or by reference to a pressure gauge or other gauge which may be installed as part of the appliances.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

2.18 Fixed foam system

(i) Acceptance Testing

The testing procedures shall be in accordance with the manufacturer's recommendations for various items/equipment of the system, and shall be in accordance with the appropriate international standard or other requirements as may be prescribed by the Director of Fire Services on account of specific features of the system.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

2.19 Gas detection system

(i) Acceptance Testing

The system shall be tested by allowing sufficient amount of the gas to be released across the detection point and to confirm the proper activation of the detector and efficient operation of all ancillary alarm procedures. Testing shall be carried out in accordance with the manufacturer's recommendations and the appropriate international standard or as required by the Director of Fire Services on account of specific feature of the system.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

2.20 Portable hand-operated approved appliance

(i) Acceptance Testing

Apart from visual inspection, no specific testing is required. The appliances shall be inspected and certified in efficient working order by a Class 3 registered fire service installation contractor.

(ii) Inspection, Testing and Maintenance

The appliances shall be maintained in efficient working order at all times and shall be inspected by a Class 3 registered fire service installation contractor at least once in every 12 months.

The tests for portable hand-operated approved appliances shall be carried out periodically in accordance with the appropriate standard and the manufacturer's recommendations.

The guidelines on portable hand-operated approved appliances maintenance is enclosed at APPENDIX 11.

These guidelines are also published in the Fire Protection Notice No. 11 "Notes on Fire Extinguishers (Suitability and Maintenance)".

(iii) Maintenance Label

All portable hand-operated approved appliances shall be provided or stuck with a label after maintenance as per the sample in APPENDIX 11. The purpose of this maintenance label is to provide and update all relevant information on the appliances after maintenance.

The label shall not be affixed over the original manufacturer's label on the appliances' body, thus covering the name, model and reference number of that appliance.

Indelible and permanent ink shall be used to fill in the label.

Registered fire service installation contractors are reminded that only portable hand-operated approved appliances approved by the Fire Services Department and listed in the The Government of the Hong Kong Special Administrative Region Gazette may be installed, and unless the appliances can be readily identified as being approved and listed, the Fire Services Certificate (F.S.

172) shall not be issued.

Notes on Portable Equipment Maintenance Label

(Including fire extinguisher, fire blanket, sand bucket and fixed type extinguisher)

1. Company Name

Either the name of the company or the company chop should be printed on the space provided. If company name is not applicable, "NA" should be entered and should not be left blank.

2. Registration No.

The registration number of the Class 3 fire service installation contractor responsible for the maintenance of the portable equipment should be filled in.

3. F.S. 251 No.

The number of the relevant Certificate of Fire Service Installations and Equipment (F.S. 251) should be filled in.

4. Maintenance Date

This date means the date when the maintenance of the portable equipment is completed. It should be the same date as shown on the Certificate (F.S. 251).

5. Next Maintenance

This date means 12 months later and should be counted from the date of the last maintenance. If within 12 months period, the portable equipment is required to have pressure test, then the date of pressure test should be filled in.

Example: Maintenance Date : 5.9.2003
 Last Pressure Test : 10.7.1999 (pressure test is required for
 every 5 years intervals)
 Next Maintenance : 10.7.2004 (not 5.9.2004)

6. Last Pressure Test

The date shown on the last year's label should be filled in the new label. If last year's label becomes dilapidated or the date cannot be seen when carrying out the maintenance works, the condition of the extinguisher body should be checked to ascertain whether a pressure test is required. If the year of manufacture shown on the extinguisher body exceeds 5 years with no record of pressure test, pressure test should be carried out instead of merely replacing the parts or extinguishing medium.

(For fire blankets and sand buckets, "NA" should be filled in.)

7. Year of Manufacture

According to all standards accepted by the Fire Services Department from different countries, the year of manufacture must be permanently marked or stamped on the extinguisher body. So the year of manufacture can be checked out from the body. If there are only 2 digits, it means the last 2 digits of the year of manufacture, e.g. 99 means manufactured in 1999. For those non-high pressure extinguishers (25 bars below) manufactured according to Malaysian Standard MS1179:1990, it only requires the year of manufacture be clearly marked on the body, but for those Malaysian products manufactured according to BS EN-3, permanent marking or stamp for year of manufacture is shown on the extinguisher body.

(For fire blankets and sand buckets, "NA" should be filled in.)

8. Maintenance Result

If the maintenance procedures for this inspection cannot be fully completed in accordance with the guidelines in this Code and attained a satisfactory result, it should not be treated as "PASS". A cross by using two straight lines to join the opposite corners in the square for "FAIL" should be marked, e.g. means fail. Particulars of defects must be listed in Part 3 of the relevant Certificate of Fire Service Installations and Equipment (F.S. 251).

Remarks:

Other than Fire Services licensing requirement or Fire Services requirement for new buildings, if the portable equipment is a new one, which can be readily used without assembly or filling of extinguishing media, and its year of manufacture shown on the body does not exceed one year, a Certificate of Fire Service Installations and Equipment (F.S. 251) is not required. The relevant purchase receipt should be retained for future identification. In case the year of manufacture of the portable equipment exceeds 12 months (i.e. 1 year) or the extinguisher requires assembly or refilling, then the portable equipment should be inspected by a registered fire service installation contractor and a Certificate of Fire Service Installations and Equipment (F.S. 251) be issued to prove its function.

2.21 Pressurization of staircase

(i) Acceptance Testing

1. Where interaction with other systems is part of the designed operational mode, all such systems shall be correctly functioning before acceptance inspection takes place.
2. 'Completion' shall include all necessary permanent labels, instruction plaques, fully detailed operating and maintenance manuals and diagrams, record 'as-built' drawings, etc.
3. Ensure tests required under sub-paragraph B.4 of paragraph 5.21 of the Code of Practice for Minimum Fire Service Installations and Equipment are carried out, recorded and record certified.
4. All systems are to be completed and tested and the registered professional engineer under Cap. 409 in the discipline of building services, fire or mechanical engineering is to satisfy himself that they are functioning correctly before the final full test and demonstration takes place with the Fire Services Inspecting Officers in attendance. A full set of completed testing and commissioning checklists according to APPENDIX 6 and test and functional operation check records (see para. 7 hereof) shall be submitted. All testing and commissioning checklists and reports shall be witnessed and certified by the registered professional engineer to verify the installations are operating in accordance with the requirements of the Fire Services Department.
5. Acceptance tests shall be carried out in accordance with British Standard 5588: Part 4 and the testing and commissioning checklist. It is necessary for the registered professional engineer to be present at the tests.
6. Except for simple devices such as pitot-static tubes, inclined manometers, U gauges and the like all instruments, meters, etc. used for testing purposes shall:—
 - a. be provided in duplicate;
 - b. have a valid calibration certificate for each calibrated test instrument verifying the accuracy of not more than plus or minus five percent of range;
 - c. be manufactured to an appropriate British Standard or recognized equivalent international or national standard where appropriate and available; and
 - d. have been calibrated by a recognized testing or calibration laboratory not more than 3 months prior to the date of test. The calibration certificate provided by the laboratory shall be available during the test.
7. Full and complete records are to be taken of all the tests and the results thereof including not less than:—
 - a. records of pressure testing during construction—see sub-paragraph B.4 of paragraph 5.21 of the Code of Practice for Minimum Fire Service Installations and Equipment;
 - b. make, serial no., type and owner of all instruments used, with a copy of the calibration certificates;
 - c. actual measurements taken;
 - d. corrected measurement from (c) above;
 - e. resulting air flows;
 - f. make, serial no., type and use of every device checked;

- g.* date and time of test;
- h.* signature of operator/tester or supervisor and any witness for each test; and
- i.* signature of acceptance of and by the registered professional engineer.

(ii) Inspection, Testing and Maintenance

1. For dedicated systems that only operate in emergency, they should be actuated by the owner or his agent at an interval of not more than three months, and checked to ensure that all functions and sequences are operating correctly. (See para. 3 below)
2. For dual purpose systems that operate continuously at a low level and at an increased level in emergency, they should be actuated into emergency mode by the owner or his agent at not more than six monthly intervals and checked to ensure that all emergency functions sequence and operate correctly. (See para. 3 below)
3. Periodic actuation should include, at least, the following actions: —
 - a.* activate system by manual switch;
 - b.* check that indicator lights give correct signals;
 - c.* inspect staircase to ensure all doors are closed especially if magnetically held doors are utilized;
 - d.* full inspection of fan rooms including:—
 - (i) fresh air inlet to be clear of debris and area in front to be free of obstruction;
 - (ii) filters (if provided) correctly in place and not at end of useful life;
 - (iii) to check any flexible connections for deterioration;
 - (iv) motor operating satisfactorily (not overheating, etc.);
 - (v) belt drive with correct belt tension and alignment or other type of drive functioning correctly;
 - (vi) fan bearings satisfactory;
 - (vii) electrical equipment satisfactory (no contactor hum, etc.);
 - (viii) record motor currents on each phase;
 - (ix) no significant air leaks;
 - (x) to check operation of pressure relief or fan by-pass dampers (and indirectly, pressure sensor) by opening and closing staircase entry door(s);
 - (xi) to check plant room for free of debris, stored materials, etc.; and
 - (xii) to check fan room entry door self closers;
 - e.* throughout the staircase, a check should be conducted to ensure that air is discharging from all outlets and that pressure sensor is clean and free from obstruction;
 - f.* to deactivate the manual switch and restore automatic mode;
 - g.* to record actions progressively, and to complete and sign record logs.
4. In addition to the foregoing, at intervals not exceeding 12 months, the system shall be actuated and a full test shall be carried out as described under Section 2.21(i) hereof, by a registered fire service installation contractor and a Certificate of Fire Service Installations and Equipment (F.S. 251) shall be sent to the Director of Fire Services; and
5. A record log should be maintained by the owner or his agent for each and all systems providing a complete record of the actions carried out under para 1 to 4 hereof and the results thereof under signature of the supervisor and witness. Records should be retained for a period of at least seven years and shall be made available at any reasonable time at the request of the Director of Fire Services.

2.22 Ring main system with fixed pump(s)

(i) Acceptance Testing

The system shall be tested to demonstrate its satisfactory performance including tests on the operation of the pumps, and on the water flow rate and working pressure of the street hydrants etc., and such other tests and inspections as may be prescribed by the Director of Fire Services on account of specific features of the system.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

The fixed pump should be tested by the owner or his agent monthly on both the automatic and manual start.

The system should be examined to ensure that pipework and hydrant outlets are in good order.

2.23 Smoke extraction systems

Where hot smoke test is required, the followings shall be observed: —

- a. Salient points for the test: —
 - (i) The temperature of simulated hot air plume should be maintained at about 10°C below the temperature rating of the ceiling sprinklers to avoid any unwanted actuation of sprinklers or damage to building structures and finishes;
 - (ii) The size of the test fire should be at least 1 MW or of such size as agreed by the Director of Fire Services;
 - (iii) Non-contaminating industrial grade methylated spirit may be used subject to the agreement of the Director of Fire Services;
 - (iv) Non-toxic oil based smoke produced by smoke generator may be used subject to the agreement of the Director of Fire Services;
 - (v) The test will be conducted with reference to the Australian Standard AS 4391-1999 or other equivalent international standards.
- b. Safety measures to be observed during the Hot Smoke Test: —
 - (i) Adequate safety measures should be provided to prevent any possible spread of fire during the test;
 - (ii) Adequate fire extinguishers should be provided at scene;
 - (iii) The standing-by of a fire appliance may be required if considered necessary.
- c. The smoke extraction system will be considered acceptable if the following points are complied with during the hot smoke test:—
 - (i) The designed smoke clear height should be maintained;
 - (ii) The low level fresh air make-up and the high level air extract should be formed in such a pattern that the smoke flow paths shall have a “scouring” effect in all areas within the smoke compartment. The make-up fresh air should not have any impact on the stability of the smoke layer;
 - (iii) The smoke extraction system should actuate promptly in response to a fire alarm signal;
 - (iv) No significant disperse of smoke should occur at adjoining smoke compartment(s);
 - (v) No deflection exceeding the design limit should be observed at hanging smoke curtains;
 - (vi) No significant smoke should be built up in ‘stagnant corners’ beneath the smoke layer;
 - (vii) No smoke should re-enter into the building through building openings or fresh air intake louvres.
- d. The method statement of the hot smoke test shall be agreed with Fire Services Department.

A. Dynamic smoke extraction system

(i) Acceptance Testing

1. Where interaction with other systems is part of the designed operational mode, all such systems shall be correctly functioning before a final Fire Services inspection takes place.
2. 'Completion' shall include all necessary permanent labels, instruction plaques, fully detailed operating and maintenance manuals and diagrams, record 'as-built' drawings, etc.
3. Ensure tests required under sub-paragraph B.17 of paragraph 5.23 of the Code of Practice for Minimum Fire Service Installations and Equipment are carried out, recorded and record certified.
4. All systems are to be completed and tested and the registered professional engineer under Cap. 409 in the discipline of building services, fire or mechanical engineering is to satisfy himself that they are functioning correctly before the final full test and demonstration takes place with the Fire Services Inspecting Officers in attendance. A full set of test and functional operation check records (see para. 6 hereof) shall be submitted. All testing and commissioning reports shall be witnessed and certified by the registered professional engineer to verify that the installations are operating in accordance with the requirements of the Fire Services Department.
5. Except for simple devices such as pitot-static tubes, inclined manometers, U gauges and the like, all instruments, meters, etc. used for testing purposes shall:—
 - a. be provided in duplicate;
 - b. have a valid calibration certificate for each calibrated test instrument verifying the accuracy of not more than plus or minus five percent of range;
 - c. be manufactured to an appropriate British Standard or recognized equivalent international or national standard where appropriate and available; and
 - d. have been calibrated by a recognized testing or calibration laboratory not more than 3 months prior to the date of test. The calibration certificate provided by the laboratory shall be available during the test.
6. Full and complete records are to be taken of all tests and the results thereof including not less than:—
 - a. records of pressure testing during construction— see sub-paragraph B.17 of paragraph 5.23 of the Code of Practice for Minimum Fire Service Installations and Equipment;
 - b. make, serial no., type and owner of all instruments used, with a copy of the calibration certificates;
 - c. actual measurements taken;
 - d. corrected measurement from (c) above;
 - e. resulting air flows;
 - f. make, serial no., type and use of every device checked;
 - g. date and time of test;
 - h. signature of operator/tester or supervisor and any witness for each test; and
 - i. signature of acceptance of and by registered professional engineer.

(ii) Inspection, Testing and Maintenance

1. For dedicated systems that only operate in emergency, they should be actuated by the owner or his agent at an interval of not more than three months, and checked to ensure that all functions and sequences are operating correctly.
2. For dual purpose systems that operate continuously at a low level and at an increased level in emergency, they should be actuated into smoke extraction mode by the owner or his agent at an interval of not more than six months, and checked as in para. 1 above.
3. Where systems are mixed types the shorter intervals should apply.

4. In addition to the foregoing, at intervals not exceeding 12 months the systems shall be actuated and a full test shall be carried out as described in Section 2.23 (A) (i) hereof, by a registered fire service installation contractor and a Certificate of Fire Service Installations and Equipment (F.S. 251) shall be sent to the Director of Fire Services.
5. The owner or his agent should ensure that all routine oiling, greasing, etc. is carried out from time to time to ensure reliable operation.
6. Any fire/smoke dampers installed should be maintained regularly by the owner or his agent.
7. A record log should be maintained by the owner or his agent for all systems, providing a complete record of the actions carried out under para. 1 to 6 hereof and the results thereof under signature of the supervisor and witness.

B. Static smoke extraction system

(i) Acceptance Testing

1. On completion of the installation the whole system shall be inspected by a registered fire service installation contractor. For installations with permanent barriers and/or exhaust openings, it shall be ensured that all barriers and openings are properly provided and all labels are supplied and fixed.
2. For systems without permanent fixed barriers and openings, all devices shall be checked in the non-operated positions; the actuation system shall then be operated and all devices checked to ensure they have operated correctly.
3. All components shall be reset to the non-operated position and then with the electrical power source removed. All devices shall again be checked to ensure that they have all correctly performed the 'fail safe' function, i.e. all in their fire positions.
4. Ensure all labels and instructions are provided.

(ii) Inspection, Testing and Maintenance

1. The system shall be inspected annually by a registered fire service installation contractor to ensure that they are in efficient working order.
2. The inspections shall include all actuation, checking of notices, etc. as described under Section 2.23 (B)(i) hereof.

2.24 Sprinkler system

(i) Acceptance Testing

The system should be tested in accordance with the Loss Prevention Council Rules for Automatic Sprinkler Installations (with suitable modifications pertinent to Hong Kong), or other standards and requirements as may be prescribed by the Director of Fire Services on account of the specific features of the system.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

2.25 Street fire hydrant system

(i) Acceptance Testing

The hydrant shall be of an accepted standard pattern and, when tested in accordance with provision of British Standard 1042 with one 65 mm outlet working, shall be capable of delivering not less than 2 000 litres per minute (33.3 l/sec.) with a minimum running pressure of 170 kPa at the outlet.

The minimum output and pressure at above paragraph should be made available from two 65 mm outlets of a system delivering at the same time, i.e. a total output of not less than 4 000

litres per minute (66.7 l/sec.).

The system shall be tested in accordance with the checklist laid down at APPENDIX 7.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

2.26 Supply tanks

(i) Acceptance Testing

No specific test is required other than visual inspection for the supply tank and measurement of its effective storage capacity for compliance with the requirements of the Director of Fire Services.

(ii) Inspection, Testing and Maintenance

The supply tank should be maintained in full storage capacity by the owner or his agent at all times and be checked for leakage periodically.

2.27 Ventilation/air conditioning control system

(i) Acceptance Testing

The override control of the ventilation/air conditioning control system shall be tested to ensure satisfactory operation at alarm condition to the satisfaction of the Director of Fire Services.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

The operation of this override control system should be tested at least once every six months, and the results entered in a log book by the owner or his agent. This log book should be kept in the premises and be available for inspection by the Director of Fire Services as and when required.

2.28 Water mist system

(i) Acceptance Testing

The system shall be tested in accordance with all the technical requirements as stipulated in NFPA 750 on Water Mist Fire Protection Systems, and other requirements as may be prescribed by the Director of Fire Services on account of the specific features of the system.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

Any alteration to, repair or maintenance on the water mist system after initial installation shall also be endorsed by a qualified person, who should be a registered professional engineer under Cap. 409 in the discipline of building services, fire or mechanical engineering, or one with qualifications acceptable to the Director of Fire Services, e.g. the system manufacturer.

All installation, repair and maintenance work shall be carried out and certified by a registered fire service installation contractor.

2.29 Water spray system

(i) Acceptance Testing

The system shall be tested in accordance with all the technical requirements as stipulated in NFPA 15 for Water Spray Fixed Systems for Fire Protection, and other requirements as may be prescribed by the Director of Fire Services on account of the specific features of the system.

(ii) Inspection, Testing and Maintenance

The installation shall be maintained in efficient working order at all times and shall be inspected by a registered fire service installation contractor at least once in every 12 months.

2.30 Water supply**(i) Acceptance Testing**

The water supply for fire service systems shall be checked for permanent connection at single or dual end feed. Transfer pump, if installed, shall be tested for efficient operation.

(ii) Inspection, Testing and Maintenance

The water supply piping system should be checked for leakage by the owner or his agent periodically. The transfer pump shall be maintained in efficient working order at all times and be inspected by a registered fire service installation contractor at least once in every 12 months.

Part III MISCELLANEOUS

- 3.1 This Code deals only with the inspection, testing and maintenance of fire service installations and equipment after the same have been provided for a building. The general requirements as to what installations and equipment are to be provided in buildings are dealt with in another Code called the Code of Practice for Minimum Fire Service Installations and Equipment published by the Director of Fire Services.
- 3.2 For the avoidance of doubt it is hereby declared that the Director of Fire Services, in his absolute discretion, may, in any particular case, vary any of the requirements of this Code and in particular may require different inspections or tests in regard to any installation or equipment other than the inspections or tests indicated in this Code, either in addition to or in substitution of the inspections and tests so indicated.

LIST OF APPENDICES

APPENDIX 1	Testing and Commissioning Checklist for Actuating Devices and Operation of Fire Shutter	18–20
APPENDIX 2	Testing and Commissioning Checklist for CO ₂ /Clean Agent Extinguishing System	21–25
APPENDIX 3	Testing and Commissioning Checklist for Emergency Generator	26–30
APPENDIX 4	Testing and Commissioning Checklist for Fire Detection and Fire Alarm Systems	31–43
APPENDIX 5	Testing and Commissioning Checklist for Fire Hydrant and Hose Reel System	44–59
APPENDIX 6	Testing and Commissioning Checklist for Staircase Pressurization System	60–67
APPENDIX 7	Testing and Commissioning Checklist for Street Fire Hydrant System	68–73
APPENDIX 8	Minimum Fire Resisting Cable Requirements for Fire Service Installations	74–77
APPENDIX 9	Shutdown of Fire Service Installations for Inspection, Maintenance, Modification or Repair	78–86
APPENDIX 10	Statutory Requirements for Maintenance, Inspection and Repair of FSI and Examination, Testing and Certification of Gas Cylinders Used as FSI	87
APPENDIX 11	Notes on Fire Extinguishers, Fire Blankets and Sand Buckets (Suitability and Maintenance)	88–100
APPENDIX 12	Method of Measurement of the Effective Water Quantity of Supply Tank serving Fire Service Installations	101

Testing and Commissioning Checklist for Actuating Devices and Operation of Fire Shutter

I. REFERENCE

Project FSD Ref.
 Address Location

 Maker's Name

II. TYPE

Single Steel Rolling Shutter []
 Double Steel Rolling Shutter []
 Push-up Type with Lifting Handle []
 Sliding Shutter []
 With Mechanical Gearing []

III. INSTALLATION

	Yes	No	Remarks
3.1 Where automatic self-closing devices are fitted, do they cause no interference to the manual opening and closing of the shutter?	[]	[]
3.2 Where smoke detectors are provided for the actuation of the shutter, are they fitted to both sides of the wall opening?	[]	[]
3.3 Are smoke detectors installed as far as practicable to the provisions of the BS 5839-1 (with suitable modification pertinent to Hong Kong)?	[]	[]
3.4 Is permanent nameplate with adequate information provided?	[]	[]
3.5 Are manual controls provided to both sides of the wall opening?	[]	[]

IV. SHUTTER OPERATION

4.1 Does the automatic actuation device function satisfactorily according to Annex I?	[ ]	[ ]	.....
4.2 Is secondary source of electricity supply provided?	[ ]	[ ]	.....
4.3 Is the descending speed* of the shutter acceptable?	[ ]	[ ]	.....

* Descending time shall be within 15-60 seconds for shutters in openings in excess of 2.5 m in height; not faster than 8 seconds for other shutters in openings of height within 2.5 m and that the bottom rail of the shutter shall reach the mid-height in not less than half the total descending time of the shutter.

V. *GENERAL COMMENTS & REMARKS*

Test conducted by:

..... (Signature)

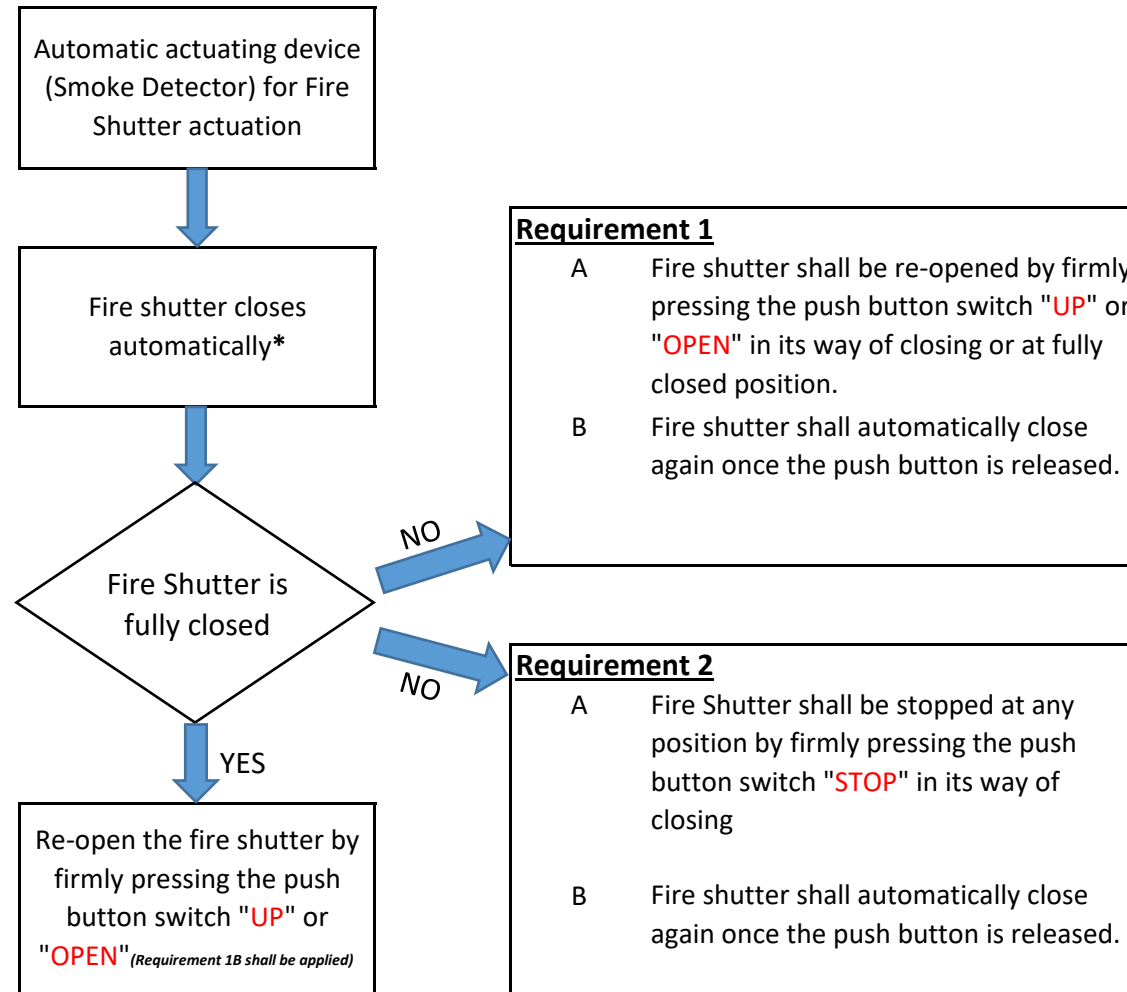
.....
Name of FSI Contractor's Representative (in block letters)

.....
Company Chop

..... (RC /)
Name of FSI Contractor (FSI Contractor Registration Number)

Date

OPERATION PROCEDURE OF FIRE SHUTTER (ALL TYPES) UNDER FIRE ALARM MODE



Remarks :

- 1 Push button switch "UP" is for vertical type shutters.
 - 2 Push button switch "OPEN" is for lateral and horizontal type shutters.
 - 3 Under the fire alarm mode, fire shutter shall be always automatically re-closed when it is fully opened until the fire signal is totally reset.
 - 4 For any horizontal travelling fire shutter over 12m in width, if the above procedures cannot be adopted, project-based approval shall be sought from FSD for alternative.
 - 5 Actuation of any automatic actuating device (Smoke Detector) for fire shutter(s) forming compartment shall operate all fire shutters for that fire compartment openings.
- * a. Vertical fire shutter for opening of height $\leq 2.5\text{m}$, the descending time shall not be faster than 8 s, and that the bottom rail of the shutter shall reach the mid-height in not less than $\frac{1}{2}$ the total descending time of the shutter.
- b. Vertical fire shutter for opening of height $> 2.5\text{m}$, the descending time shall be within 15 s to 60 s.
- c. Horizontal fire shutter shall be able to close off the opening within 60 s at travelling speed $\leq 0.2\text{ m/s}$, or the safety limit specified by the equipment manufacturer.

Testing and Commissioning Checklist for CO₂/Clean Agent Extinguishing System

I. REFERENCE

Project..... FSD Ref.
 Address Location/Room

Working/Design Drawing Ref. Yes No N/A
 Is drawing enclosed? [] [] []
 Approved Computer Program Ref.
 Is program enclosed? [] [] []
 Is catalogue enclosed? [] [] []
 Is certification for pneumatic test to pipings enclosed? [] [] []

II. TYPE OF SYSTEM

				CO ₂	FM200	Others*
				[]	[]	[]
Total Flooding	[]	Local Application	[]			<i>*Please specify</i>
Modular	[]	Cylinder	[]			
Pre-engineered	[]	Engineered	[ ]			.....
High Pressure	[]	Low Pressure	[]			
Single Hazard	[]	Multiple Hazard	[]			
Primary Bank Only	[]	With Reserve Bank	[]			

III. PROTECTED AREA

		Yes	No	Remarks
3.1	Does occupancy tally with approved building plans?	[ ]	[ ]	.....
3.2	Does compartmentation of protected premises tally with approved building plans?	[ ]	[ ]	.....
3.3	Does general layout tally with FSI drawings?	[ ]	[ ]	.....
3.4	Are openings properly sealed or closable automatically during/before agent discharge?	[ ]	[ ]	.....
3.5	Are warning/instruction signs provided at entrance to; and in the case of normally occupied premises, inside the protected area?	[ ]	[ ]	.....
3.6	Does the following components:—			
		Tally with drawings?		If not, whether the as-fitted location/position acceptable?
		Yes	No	Yes No Remarks
3.6.1	Audio Alarm—Bell/Buzzer etc.	[]	[]	[] []
3.6.2	Visual Alarm—Light/Strobe etc.	[]	[]	[] []
3.6.3	Detector	[]	[]	[] []
3.6.4	Manual Release	[]	[]	[] []

	Tally with drawings?		If not, whether the as-fitted location/position acceptable?		Remarks
	Yes	No	Yes	No	
3.6.5 Piping	[]	[]	[]	[]
3.6.6 Nozzles	[]	[]	[]	[]
3.6.7 Agent Container	[]	[]	[]	[]
3.6.8 Control/Indication Panel	[]	[]	[]	[]
3.6.9 Ignition/Fuel Source Shut Down Device	[]	[]	[]	[]
3.6.10 Other Mechanical/Electrical/Pneumatic Operating Device	[]	[]	[]	[]

IV. THE SYSTEM (STATIC CHECK)

	Yes	No	Remarks
4.1 Are system components approved/listed?	[]	[]
4.1.1 Actuating Solenoid	[]	[]
4.1.2 Cylinder Valve Assembly	[]	[]
4.1.3 Cylinder/Agent Container	[]	[]
4.1.4 Flexible Hose	[]	[]
4.1.5 Distributor/Selector Valve	[]	[]
4.1.6 Pilot Cylinder	[]	[]
4.1.7 Alarm Bell (for Normal Application)	[]	[]
4.1.8 Siren/Yodalarm	[]	[]
4.1.9 Control/Indication Panel	[]	[]
4.1.10 Remote Manual Release Unit	[]	[]
4.1.11 Detector	[]	[]
4.1.12 Discharge Nozzle	[]	[]
4.2 Is permanent nameplate with adequate information provided to:—			
4.2.1 CO ₂ Container?	[]	[]
4.2.2 FM200 Container?	[]	[]
4.2.3 NAFSIII Container?	[]	[]
4.3 Is reliable means of indication provided for the determination of pressure in FM200/NAFSIII container?	[]	[]
4.4 Does the means of indication account for variation of container pressure with temperature?	[]	[]
4.5 Is agent of sufficient quantity provided?	[]	[]
4.6 Is cylinder/container properly mounted/secured?	[]	[]
4.7 Are markings on nozzles showing make, type and orifice size readily discernible?	[]	[]
4.8 Are pipings properly installed and secured in accordance with approved guide?	[]	[]

		Yes	No	Remarks
4.9	Are pipings properly earthed?	[ ]	[ ]	.....
4.10	Are pipings suitably protected against mechanical, chemical, vibration or other damage?	[ ]	[ ]	.....
4.11	Are pipings of the approved type provided? (Please indicate the type used):—	[ ]	[ ]	.....
4.11.1	For 25-bar or 42-bar system:—			
4.11.1.1	BS 3601 Seamless Schedule 80	[]		
4.11.1.2	ASTM A53	[]		
4.11.1.3	ASTM A106	[]		
4.11.1.4	JIS 3454	[]		
4.11.2	For 25-bar system only:—			
4.11.2.1	BS 1387 Heavy Grade Butt Welded (Up to and including 50 mm nominal pipe size)	[]		
4.11.2.2	BS 3601 Seamless Schedule 40 (Up to and including 100 mm nominal pipe size)	[]		
4.12	Are jointings of approved type provided? (Please indicate the type employed):—	[ ]	[ ]	.....
	Screwed Joints	[]		
	Welded Joints	[]		
	Others (Please state)	[]		
			
			
4.13	Is electrical apparatus intrinsically safe or of flame-proof type? (For application in explosive atmosphere only)			
4.13.1	Detector	[ ]	[ ]	.....
4.13.2	Fire Alarm Bell/Sounder	[ ]	[ ]	.....
4.13.3	Opening/Closing device will not generate sparks	[ ]	[ ]	.....
4.13.4	Ventilation shut down device will not generate sparks	[ ]	[ ]	.....
V. DETECTION, ACTUATION & CONTROL SYSTEM (STATIC CHECK)				
5.1	Is the correct type of detector provided? (Please indicate the type employed):—	[ ]	[ ]	.....
	Heat [] Smoke []			
5.2	Is operating alarm/indicator provided? (Please indicate the type provided):—	[ ]	[ ]	.....
	Alarm [] Indication []			
	Both [] Audio []			
	Visual [] Olfactory []			
5.3	Do electrical sources i.e. AC & DC provide adequate source of energy for:—			
5.3.1	Detection?	[ ]	[ ]	.....
5.3.2	Operating device?	[ ]	[ ]	.....

		Yes	No	Remarks
5.4	Is manual control suitably protected against mechanical, weather or environmental damage?	[ ]	[ ]	.....
5.5	Is manual control for actuation easily accessible at all times?	[ ]	[ ]	.....
VI. <i>FUNCTIONAL TEST (DYNAMIC TEST)</i>				
6.1	Does detector operate satisfactorily?	[ ]	[ ]	.....
6.2	If cross-zoning employed, is the zoning of detectors satisfactorily arranged?	[ ]	[ ]	.....
6.3	Does operating alarm/indication function properly?	[ ]	[ ]	.....
6.4	Does actuating solenoid operate satisfactorily?	[ ]	[ ]	.....
6.5	Does selector/distributor valve operate properly?	[ ]	[ ]	.....
6.6	Does the manual control require a force of not more than 178 newtons to secure operation?	[ ]	[ ]	.....
6.7	Does the manual control require a movement of not more than 356 mm to secure operation?	[ ]	[ ]	.....
6.8	Is the shut-down of ventilation system satisfactorily accomplished?	[ ]	[ ]	.....
6.9	If time delay of not more than 30 seconds is incorporated, does it function properly?	[ ]	[ ]	.....
VII. <i>PRACTICAL DISCHARGE TEST (DYNAMIC TEST) (IF REQUIRED)</i>				
	By Designed Agent	[]		
	By Approved Substitute	[]		
7.1	Does agent discharge time within the limit specified by FSD?	[ ]	[ ]	.....
7.2	Are pipings securely installed to prevent pipe displacement or hazardous movement during discharge?	[ ]	[ ]	.....
7.3	Is mechanical tightness of pipings and associated equipment in order?	[ ]	[ ]	.....
VIII. <i>REINSTATEMENT OF SYSTEM AFTER DISCHARGE (STATIC CHECK)</i>				
8.1	Is replacement cylinder/container of the correct type with sufficient pressure and content provided?	[ ]	[ ]	.....
8.2	Is cylinder/container properly mounted?	[ ]	[ ]	.....
8.3	Is cylinder/container properly connected?	[ ]	[ ]	.....
8.4	Is control/indication panel properly reset?	[ ]	[ ]	.....
8.5	Is ETL properly replaced/reinstated?	[ ]	[ ]	.....
8.6	Is actuating solenoid properly linked/connected?	[ ]	[ ]	.....

IX. *GENERAL COMMENTS & REMARKS*

Test conducted by:—

..... (Signature)

.....
(Name of FSI Contractor's Representative (in block letters))

.....
Company Chop

..... (RC /)
Name of FSI Contractor (FSI Contractor Registration Number)

Date

Testing and Commissioning Checklist for Emergency Generator

I. Reference

Project: FSD Ref.:

Address:

II. Installations and Equipment Connected (for record purpose)

Name of buildings being protected:

	Peak Starting Current (I _L)	Rated Input Power	Starting Method
(A) Fire service installation			Remarks: D.O.L. Star-delta Auto-tx. or others
i. Fixed fire pump	No. × A	No. × kW	
ii. Intermediate booster pump	No. × A	No. × kW	
iii. Sprinkler pump	No. × A	No. × kW	
iv. Fireman’s lift	No. × A	No. × kW	
v. Fire alarm & detection systems	No. × A	No. × kW	
vi. Smoke extraction system	No. × A	No. × kW	
vii. Pressurization of Staircase	No. × A	No. × kW	
viii. Exit sign/emergency lighting	No. × A	No. × kW	
ix. Others:			
(B) Other equipment (please specify)			Remarks: D.O.L. Star-delta Auto-tx. or others
.....	A	kW	
.....	A	kW	
.....	A	kW	
.....	A	kW	
.....	A	kW	
Estimated maximum simultaneous starting and running load		kW/ kVA	

III. Emergency Generator Set Details

	<u>Alternator</u>	<u>Prime Mover</u>
3.1 Make	.....	.....
3.2 Model	.....	.....
3.3 Serial No.	.....	.....
3.4 Rated Capacity	Power kVA Voltage: 380/220	Power kW Speed: rpm
	Current A Power factor	Frequency Hz

IV.

Fuel

- 4.1 Type: Diesel Other (please specify)
- 4.2 Type of tank: Built-in Separate
- 4.3 Separate fuel tank room is provided Yes No
- 4.4 Capacity of service tank: litres Capacity of main fuel tank:..... litres
- 4.5 a. Fuel consumption litres/hour rate at full load:
- b. Fuel consumption curve of generator is attached Yes No
- c. Time allowed for max. fuel consumption at full load hours
- d. Fuel storage is sufficient for 6 hrs. generator running to support fire service installations Yes No

	Yes	No	N/A	Remarks
4.6 Fuel tank room has been inspected and approved by Dangerous Goods Division. (N.B.: Supporting document is attached)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.7 Surveyor report for fuel tank has been obtained as required by Dangerous Goods Division.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.8 DG license for fuel tank room holding more than 2 500 litres diesel has been obtained. (N.B.: Supporting document is attached)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

V. Visual Inspection

5.1 Adequate space (not less than 600 mm) is provided all round emergency generator for maintenance/cleaning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.2 Air supply and discharge ductworks (if any) are provided free from obstruction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.3 Air supply and discharge ductworks running in compartment other than emergency generator room are enclosed with proper fire resisting material.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.4 Service fuel tank in generator room is made of 3 mm steel construction and of capacity less than 500 litres.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No	N/A	Remarks
5.5 Generator built-in fuel tank is not greater than 500 litres.	[]	[]	[]
5.6 Fuel tank is electrically earthed.	[]	[]	[]
5.7 A baffle wall of brick-work construction or of 9 mm metal sheet is provided between the side of service tank (if installed) and generator, serving as a screen wall between the two.	[]	[]	[]
5.8 Fuel refilling pump is connected to essential power supply.	[]	[]	[]
5.9 A shut off valve is provided on the supply pipe from fuel tank to the service tank of generator.	[]	[]	[]
5.10 Capacity of battery is capable of starting the generator 4 times consecutively and calculation sheet is enclosed. (Capacity: Ah)	[]	[]	[]
5.11 The batteries are kept in fully charged condition and the trickle charge is operating.	[]	[]	[]
5.12 The emergency generator set shall be housed in an emergency generator room.	[]	[]	[]
5.12.1 door sill of sufficient height is provided to contain the total fuel contents of the service tank (if installed), fuel tank and sump of the generator;	[]	[]	[]
5.12.2 detailed operation instructions are displayed; and	[]	[]	[]
5.12.3 a log book is provided.	[]	[]	[]
5.13 Integrity of the fire resisting construction of generator room and the door is intact.	[]	[]	[]
5.14 The notices “EMERGENCY GENERATOR” (應急發電機) and “NO SMOKING” (不准吸煙) in 120 mm English and Chinese characters are provided at the entrance to the emergency generator room.	[]	[]	[]

VI. Functional Testing

6.1 All testing are carried out with the generator room doors kept closed.	[ ]	[ ]	[ ]	.....
6.2 The manual starting facilities of the emergency generator can operate satisfactorily.	[ ]	[ ]	[ ]	.....
6.3 Upon failure of normal electricity supply, emergency generator:—	[ ]	[ ]	[ ]	.....
6.3.1 automatically starts when the duration of power failure exceeds 1 second; and	[ ]	[ ]	[ ]	.....

	Yes	No	N/A	Remarks
6.3.2 transfers to FS loads within 15 seconds.	[]	[]	[]
6.4 Emergency generator is capable of restarting upon failure of first attempt in starting.	[]	[]	[]
6.5 Audible and visual alarms are given locally, and at fire control panel when the generator starting sequence is locked out due to starting failure.	[]	[]	[]
6.6 An audible and visual alarm for common generator fault and manual mode shall be indicated on the fire control panel.	[]	[]	[]
6.7 After one hour of running test, all instruments, safety devices, etc. indicate "normal" condition.	[]	[]	[]
6.8 The generator set will continue to run after a pre-determined time recommended by manufacturer unless it is stopped manually if the normal power supply has resumed.	[]	[]	[]
6.9 Warning signal is given locally and at fire control panel when manual/auto selector switch turn to manual position.	[]	[]	[]
6.10 Remote control valve on supply pipe to the service tank is in good working order.	[]	[]	[]
6.11 All moving parts are effectively and rigidly guarded for safety.	[]	[]	[]
6.12 All hot parts are properly insulated.	[]	[]	[]
6.13 No exhaust leak is noted inside generator room while the generator is running.	[]	[]	[]

VII. On Load Test

- 7.1 All loadings as listed in item 2 were connected [] Yes [] No
- 7.2 Frequency (Hz)
- 7.3 Maximum starting current (I_{LMAX})
 L1: A L2: A L3: A
- 7.4 Voltage dip: % Voltage recovery time:seconds
- 7.5 Running current (I_L)
 L1: A L2: A L3: A

7.6 Voltage (Volts)

L1 – L2: L2 – L3: L3 – L1:.....
L1 -N: L2 -N: L3 -N:

7.7 Engine speed (rpm)

7.8 Duration of on-load test (hr.)

VIII. General Comments & Remarks

Name of
Works *Specialist/ Agent
(in block letters):

Company Chop:

Date:

* delete as appropriate

Test conducted by:

..... (Signature)

.....
Name of FSI Contractor’s Representative (in block letters)

.....
Company Chop

..... (RC /)
Name of FSI Contractor (FSI Contractor Registration Number)

Date

Testing and Commissioning Checklist for Fire Detection and Fire Alarm Systems

I. Reference

Project: FSD Ref.:
 Address:
 Type of Building:
 *Domestic/Industrial/Institutional/Godown/Commercial/Office/Composite/Hotel/Hospital/Others
 and with/without basement.

*delete as appropriate

II. Type of Equipment

2.1 Alarm Annunciation Panel

2.1.1 Manufacturer/Model No.: (Main panel)
 (Sub-panel/repeater panel, if any)

2.1.2 Type: Conventional type []
 Addressable type []

2.2 Detectors

2.2.1 Heat detector Manufacturer/Model No.:
 Type: Fixed temperature []
 Rate-of-rise temperature []
 Combination []
 Linear cable []
 Others

2.2.2 Smoke detector Manufacturer/Model No.:
 Type: Ionization []
 Optical []
 Beam []
 Aspirating []
 Others

2.2.3 Flame detector Manufacturer/Model No.:
 Type: Infrared []
 Ultra-violet []
 Combination []
 Others

2.2.4 Others Manufacturer/Model No.:
 Type:

2.3 Manual Call Point

Manufacturer/Model No.:
 Type : Break glass type []
 Actuation type []
 Others

2.4 Fire Alarm Sounder

Manufacturer/Model No.:

Type: Bell []
 Yodalarm []
 Horn []
 Siren []
 Electronic sounder []
 Others

2.5 Visual Fire Alarm Unit

Manufacturer/Model No.:

2.6 Smoke Detector with Sounder Base

Manufacturer/Model No.:

2.7 Power Supplies

Primary: Supply voltage/Phase/Hz:

Secondary: Type: Secondary (rechargeable) Battery []
 Rating: Voltage Amp-hour
 (Maintain at least hrs System Operation)

Connected with:-

Emergency generator []
 Feed before main switch []
 N/A []

Others

Fire Resisting Cables

Manufacturer/Model No.:

III. Visual Inspection

	Yes	No	N/A	Remarks
--	-----	----	-----	---------

3.1 General

3.1.1 The initial building plans submission is received by FSD on or after ___/___/____ (DD/MM/YYYY). [] [] []

3.1.2 All individual components of the fire alarm system including detectors and the control panel are mutually compatible. [] [] []

3.1.3 An as-fitted zoning schedule is provided on or adjacent to the alarm annunciation panel. [] [] []

3.1.4 A log book is provided adjacent to the alarm annunciation panel. [] [] []

	Yes	No	N/A	Remarks
3.1.5 The building plans submission for extensions and additions involving major alterations and additions to the building is in excess of 50% by volume and is received by FSD on or after ____ / ____ / ____ (DD/MM/YYYY).	[]	[]	[]
3.2 <u>Detector</u>				
3.2.1 The detection zonings are properly labelled at the alarm annunciation panel.	[]	[]	[]
3.2.2 Detectors are provided in areas as indicated on approved building plans.	[]	[]	[]
Point type heat detector: .....nos. Linear heat detection cable: .....sets Point type smoke detector: .....nos. Beam smoke detector: .....sets Aspirating smoke detector: .....sets Flame detector: .....nos. Others: .....nos.				
3.2.3 On the floor(s) where sleeping risk exists (e.g. hotel, hospital, hostel, etc.):				
(a) heat detector is used in kitchen and E/M plant room.	[]	[]	[]
(b) smoke detector or multi-sensor detectors is used in other areas except toilet, bathroom and staircase where sprinkler is provided.	[]	[]	[]
3.2.4 In guestrooms of hotels / guesthouses / bedrooms of student hostels:-				
Sounder base is provided for smoke detector except detector(s) inside concealed space.	[]	[]	[]
3.2.5 In residential flat with open kitchen:-				
(a) Smoke detector(s) fitted with sounder base is provided inside the flat.	[]	[]	[]
(b) Smoke detector(s) is provided at the common area outside the flat.	[]	[]	[]
3.2.6 Detectors are provided to basement according to the approved building plans.	[]	[]	[]
3.2.7 Intrinsically safe or flameproof device is used within potentially hazardous areas.	[]	[]	[]
3.2.8 External remote indicating lamp is provided outside the doors of rooms where travel distance of the detectors inside the rooms exceeds 30 m of reach within a zone.	[]	[]	[]
3.2.9 Remote indicating lamp are provided for ceiling void or floor void detectors, if addressable text display in conjunction with layout plans are NOT provided adjacent to the control and indicating equipment.	[]	[]	[]
3.2.10 Detectors are provided for horizontal ceiling void \geq 800 mm high.	[]	[]	[]

	Yes	No	N/A	Remarks
3.2.11 Clearance below detector is ≥ 500 mm. (Not applicable for ceiling voids, floor voids, and area having no horizontal dimension greater than 1 m.)	[]	[]	[]
3.2.12 Point smoke detector is installed within ceiling height limit (General) of 10.5 m. (Note: $\leq 10\%$ of ceiling area may exceed this limit and ≤ 12.5 m).	[]	[]	[]
3.2.13 Heat detector is installed within ceiling height limit (General) of 9 m for Class A1 to BS EN 54-5 and 7.5 m for other Classes. (Note: $\leq 10\%$ of ceiling area may exceed this limit and ≤ 10.5 m).	[]	[]	[]
3.2.14 Under flat ceiling, horizontal distance between any point and the nearest heat detector is ≤ 5.3 m.	[]	[]	[]
3.2.15 Under flat ceiling, horizontal distance between any point and the nearest smoke detector is ≤ 7.5 m.	[]	[]	[]
3.2.16 In corridors ≤ 2 m wide, heat detectors are sited at intervals of ≤ 10.6 m and ≤ 5.3 m from end wall.	[]	[]	[]
3.2.17 In corridors ≤ 2 m wide, smoke detectors are sited at intervals of ≤ 15 m and ≤ 7.5 m from end wall.	[]	[]	[]
3.2.18 In detector installation, ceiling obstructions $> 10\%$ overall ceiling height are treated as wall. (Note: Within horizontal voids, obstructions $> 10\%$ of the height between structural floor and structural ceiling are treated as wall regardless of the void location.)	[]	[]	[]
3.2.19 In detector installation, partitions or storage racks reaching within 300 mm of the ceiling are treated as wall.	[]	[]	[]
3.2.20 Detectors are mounted ≥ 1 m from any air supply point of a ventilation system.	[]	[]	[]
3.2.21 Horizontal Ceiling comprises:				
(a) a series of small cells (honeycomb ceiling), detector spacing is in accordance with Figure 11 & Table 1 of BS 5839-1;	[]	[]	[]
(b) a number of closely spaced structural beams, detector spacing is in accordance with Figure 11 & Table 2 of BS 5839-1.	[]	[]	[]
3.2.22 Detector(s) is provided under intermediate horizontal surfaces such as ducts, loading platforms and storage racks in excess of 3.5 m in width and whose undersurface is in excess of 800 mm above the floor (other than when the side of the duct or structure is in excess of 800 mm from the wall or other ducts or structure).	[]	[]	[]

	Yes	No	N/A	Remarks
3.2.23				
Other than point type smoke and heat detectors, the following detectors are installed within ceiling height limit as specified in Technical Guidance or according to manufacturer’s standard and specification.				
(a) Carbon monoxide detectors	[]	[]	[]
(b) Optical beam detectors	[]	[]	[]
(c) Aspirating smoke detectors	[]	[]	[]
(d) Flame detectors	[]	[]	[]
(e) Conventional type linear heat detectors	[]	[]	[]
(f) Optical fibres linear heat detectors	[]	[]	[]
(g) Video fire detectors	[]	[]	[]
(h) Others, please specify:	[]	[]	[]
3.3				<u>Fire Alarm Sounder</u>
3.3.1				The fire alarm sounder is provided in areas as indicated on FSI layout plans.
(a)				Fire alarm sounder.....Nos. [] [] []
(b)				External fire alarm sounder.....Nos. [] [] []
3.3.2				External fire alarm sounders is provided at following locations:-
(a)	[]	[]	[]	“Fire Services Access Point”; or
(b)	[]	[]	[]	Building entrance if “Fire Services Access Point” is not provided; and
(c)	[]	[]	[]	Control and indicating equipment.
				The fire alarm sounder is clearly marked with the words “FIRE ALARM” (火警). [] [] []
3.3.3				One fire alarm sounder is provided within 2 m of each hose reel point. [] [] []
3.3.4				Each system incorporates at least two fire alarm sounders. At least one sounder is provided in each fire compartment. [] [] []
				(Note: Meaning of fire compartment shall be as defined Code of Practice for Fire Safety in Buildings)
3.4				<u>Manual Call Point (MCP)</u>
3.4.1				The MCP is provided in areas as indicated on FSI layout plans.
				MCP: nos. [] [] []
3.4.2				The zoning is at least one zone per floor if the total floor area of the building > 300 m ² calculated on those portions of the premises installed with fire detectors. [] [] []

	Yes	No	N/A	Remarks			
3.4.3	One MCP is located:						
	(a)	at hose reel point;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	(b)	adjacent to & within 2 m from storey exit (or its entrance lobby if it leads only to the storey exit);	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	(c)	adjacent to staircase final exit to open air on G/F or ultimate place of safety.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.4.4	For exit opening ≥ 12 m in width, two MCPs are provided, one at each end of the openings before exit (or before the entrance lobby in lieu of such lobby leads only to the exit) and within a distance of not more than 2 m from each end of the opening.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4.5	MCP is fixed at a height of 0.9 m to 1.2 m above finished floor level.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4.6	MCPs are surface mounted or semi-recessed mounted as per manufacturer's design.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5	<u>Visual Fire Alarm (VFA)</u>						
3.5.1	The VFA is provided in areas as indicated on FSI layout plans and Fire Service Notes in the approved general building plan.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.2	VFA alarm signal is in form of flashing red light.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.3	Flashing light of VFA is readily visible from all normally accessible locations, throughout the area in which they are provided, under normal ambient lighting levels.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.4	One VFA is provided for each compartment and the distance between two VFA points ≤ 60 m.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.5	The mounting height of VFA is not less than 2.1 m.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.6	Design of VFA system conforms to Code of Practice, current Design Manual: Barrier Free Access and						
	(a)	NFPA 72 or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	(b)	BS 5839-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.5.7	One VFA point is located near every hose reel.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.8	The power supply of the VFA system is from:						
	(a)	D.C. supply source with back-up supply by battery; or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	(b)	A.C. supply source with secondary supply from emergency generator; or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	(c)	A.C. supply source with secondary supply feed before main switch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Yes	No	N/A	Remarks		
3.6	<u>Cables, Wiring and Other Interconnections</u>					
3.6.1	Cables used for:					
	(a) Critical signal path (panel to all field devices);					
	(b) extra low voltage (ELV) supply from external power supply unit (charger / battery) to the system;					
	(c) final circuit providing primary power supply to the system; and					
	(d) primary power supply to the system (primary power supply to panel / charger).					
	shall be either one or in combination of the following (1), (2) or (3):					
	(1) For standard cables or cable systems as defined in BS 5839-1, they shall comply with:					
	(i)	BS 5839-1; or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(ii)	BS EN 50200 (PH30) and Annex E of BS EN 50200 (a duration of survival time of 30 minutes); or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(iii)	BS EN 60702; or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(iv)	BS 7629-1 (Cat. Standard 30); or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(v)	BS 7846 (Cat.F2 for cables of overall diameter not exceeding 20mm or Cat. F30 for cables of overall diameter exceeding 20mm); or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(vi)	BS 6387 Cat. CWZ; or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(vii)	Fire resisting cables to other international standard accepted to the Director of Fire Services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(2) For enhanced cables or cable systems as defined in BS 5839-1, they shall comply with:					
	(i)	BS EN 50200 (PH120) and 8434-2 (a duration of survival time of 120 minutes); or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(ii)	BS EN 60702; or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(iii)	BS 7629-1 (Cat. Enhanced 120); or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(iv)	BS 7846 (Cat.F2 for cables of overall diameter not exceeding 20mm or Cat. F120 for cables of overall diameter exceeding 20mm); or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(v)	BS 6387 Cat. CWZ; or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(vi)	Fire resisting cables to other international standard accepted to the Director of Fire Services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(3) Cables as per Remarks Section in Appendix 8 of this Code being exempted from the requirement.					
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.6.2	Conductors are having a cross-sectional area of ≥ 1 mm ² .					
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.6.3	Cables and conductors are separated from cables of other services.					
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.6.4	Cables carrying power in excess of extra low voltage (ELV) are segregated from extra low voltage (ELV) fire alarm circuits.					
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

	Yes	No	N/A	Remarks
3.7	<u>Control and Indicating Equipment</u>			
3.7.1	The alarm annunciation panel is located near the main entrance without fire control centre or in fire control centre.			
	[]	[]	[]
3.7.2	Manual call point zone indications are given at the control and indicating panel even if addressable text information is available.			
	[]	[]	[]
3.7.3	Manual call point zone and detection zone indications are given at the control and indicating panel even if addressable text information is available, by one or a combination of the following:			
(a)	[ ]	[ ]	[ ]	.....
(b)	[ ]	[ ]	[ ]	.....
(c)	Other suitable means (Please specify			
	[]	[]	[]
3.7.4	The wirings are compatible with the type of control panel as recommended by the panel manufacturer. (2-wire system/4-wire system/twisted pair/.....)			
	[]	[]	[]
3.7.5	Operation of alarm silent facility should:			
(a)	require manual operation;			
(b)	not cancel any visual signal;			
(c)	if a new zone goes into alarm, sound any fire alarm sounders belonging to that alarm zone;			
(d)	not prevent correct operation of any control; and			
(e)	not prevent transmission of alarm to alarm receiving centre.			
	[]	[]	[]
3.8	<u>Power Supplies</u>			
3.8.1	Connections to the primary power supply is via an independent isolating protective device.			
	[]	[]	[]
3.8.2	Every isolator, switch and protective device is situated in a position inaccessible to unauthorized persons or protected against unauthorized operation and is properly labelled as appropriate:			
(a)	“FIRE ALARM” (火警警報); or			
(b)	“FIRE ALARM. DO NOT SWITCH OFF” (火警警報，切勿切斷電源); or			
(c)	“WARNING. THIS SWITCH ALSO CONTROLS THE SUPPLY TO THE FIRE ALARM SYSTEM” (警告，此電掣同時控制火警警報系統電源).			
	All labels are engraved in white letter/character with a red background. The words “FIRE ALARM” (火警) with height of English and Chinese wordings ≥ 10 mm and 15 mm respectively.			
	[]	[]	[]

	Yes	No	N/A	Remarks
3.8.3	Circuit supplying fire detection and fire alarm system is not protected by a residual current device. (unless necessary to comply with EECopP)			.....
	[]	[]	[]	
3.8.4	The primary power supply and the standby battery are each capable of supplying the maximum alarm load of the system.			.....
	[]	[]	[]	
3.8.5	Battery power supply is provided. (Input Voltage: A.C./D.C. Output Voltage: A.C./D.C. Capacity: .....Ah)			.....
	[]	[]	[]	
3.8.6	Secondary (rechargeable) battery supplies should: (a) be with an automatic charger; (b) have a life of at least 4 years; (c) have date of installation labelled; (d) have battery charger capable of recharging the battery from fully discharged to fully charged within 24 hours; and (e) have capacity sufficient to maintain the system operation.			.....
	[]	[]	[]	

IV. Testing

4.1 Detectors

4.1.1	Upon actuation of any detector in the building, the correct audio/visual warning device is initiated.			.....
	[]	[]	[]	
4.1.2	The sensitivity of all heat/smoke/flame detectors are correctly set in full accordance with the manufacturer's recommendations.			.....
	[]	[]	[]	
4.1.3	The zoning of detectors is correct.			.....
	[]	[]	[]	

4.2 Manual Call Point, Alarm Sounder and Visual Fire Alarm Installations

4.2.1	Upon actuation of the detector or manual call point, alarm is given by external fire alarm sounder installed at the following locations:- (a) "Fire Services Access Point"; or (b) Building entrance if "Fire Services Access Point" is not provided; and (c) Control and indicating equipment.			.....
	[]	[]	[]	
	[]	[]	[]	
	[]	[]	[]	
4.2.2	Background noise (N) likely to persist for a period longer than 30 seconds.			At .....dB(A)
	[]	[]	[]	
4.2.3	For domestic building, the minimum sound level of alarm sounders is measured at 3 m from the inside of the main entrance door with all doors shut off & all windows open at all flats and the result is dB(A), which is: (a) ≥ 60 dB(A); and (b) ≥ 5 dB(A) + (background noise, N) =dB(A).			.....
	[]	[]	[]	

	Yes	No	N/A	Remarks
4.2.4				
For non-domestic building, the minimum sound level of alarm sounders is measured at 3 m from the inside of the main entrance door with all doors shut off & all windows open at all flats and the result is dB(A), which is:				
(a) ≥ 65 dB(A); and				
(b) ≥ 5 dB(A) + (background noise, N) =dB(A).	[]	[]	[]
4.2.5				
The sound level measured right below the sounder base(s) of smoke detector and 1 m above floor level with all the guestroom/bedroom windows fully opened and doors closed is dB(A), which is:				
(a) ≥ 65 dB(A); and				
(b) ≥ 5 dB(A) + (background noise, N) =dB(A).	[]	[]	[]
4.2.6				
The zoning of manual call points is correct.	[]	[]	[]
4.2.7				
Upon actuation of any manual call point in the building, the fixed fire pump serving the corresponding block comes into operation regardless of the zoning of the manual call point.	[]	[]	[]
4.2.8				
Upon actuation of any manual call point in the building, the correct audio/visual warning device for the fire alarm and detection system is initiated.	[]	[]	[]
4.2.9				
The delay between operation of a manual call point and the giving of an “evacuate” signal in the alarm zone does not exceed 3 seconds.	[]	[]	[]
4.2.10				
All VFA flashing light is visible from all normally accessible locations, throughout the required protected areas when the fire alarm system is actuated.	[]	[]	[]
4.2.11				
VFA signal is clearly distinguishable from any other non-fire service visual signals.	[]	[]	[]
4.3				
<u>Power Supplies</u>				
4.3.1				
The capacity of standby batteries: -				
(a) For occupied premises, the capacity of standby battery is sufficient to maintain the system in operation for at least 24 hours, plus at least 30 min. for an “evacuate” signal in all alarm zones;	[]	[]	[]
(b) For unoccupied premises, the standby battery is sufficient to maintain the system in operation for at least 24 hours longer than maximum period likely to be unoccupied or for 72 hours in total, whichever is the less, after which to operate all fire alarm devices for at least 30 min; or	[]	[]	[]
(c) In building with emergency generator that serves fire alarm system, battery capacity is sufficient to maintain the system in operation for at least six hours, plus at least 30 min. for an “evacuate” signal in all alarm zones.	[]	[]	[]

	Yes	No	N/A	Remarks
4.3.2 The primary or secondary power supplies are indicated by a green indicator at main indicating equipment.	[]	[]	[]
4.3.3 Each of the primary and the secondary power supply is capable of supplying the largest load under normal, fire and fault conditions.	[]	[]	[]
4.4 <u>Control and Indicating Equipment</u>				
4.4.1 Alarm is given from the external fire alarm sounder at the following locations:				
(a) "Fire Services Access Point"; or	[]	[]	[]
(b) Building entrance if "Fire Services Access Point" is not provided; and	[]	[]	[]
(c) Control and indicating equipment.	[]	[]	[]
4.4.2 Direct telephone link (DTL) to service provider's Computerized Fire Alarm Transmission System (CFATS) is connected. (Please state DTL no.:)	[]	[]	[]
4.4.3 Other panel function works properly:				
(a) Alarm silence/reset.	[]	[]	[]
(b) Battery supply on. (if applicable)	[]	[]	[]
(c) Power on/failure indicator.	[]	[]	[]
(d) Direct link failure indicator. (if applicable)	[]	[]	[]
(e) Zone alarm/fault indicator.	[]	[]	[]
4.4.4 Detector solely using as automatic actuating devices for fire service systems such as fire shutter, V/AC control, fixed installations other than water, fixed installation using water, pressurization system, and smoke control systems are linked to the Computerized Fire Alarm Transmission System (CFATS) via DTL. (Remark: This linking is <u>NOT</u> mandatory)	[]	[]	[]

	Yes	No	N/A	Remarks
4.4.5 System integrity				
(a) Fire detection circuit A fault on one circuit should not affect any other circuit; a single short circuit or open circuit fault should neither disable protection with aggregate floor area of more than 2 000 m ² nor more than one floor of a building; and two simultaneous faults on one circuit should not disable protection within a gross floor area of more than 10 000 m ² .	[]	[]	[]
(b) Linear heat detectors				
(i) Protection area ≤ 2 000 m ² , a single short circuit or open circuit fault on the linear heat detection cable should not disable protection.	[]	[]	[]
(ii) Protection area > 2 000 m ² , duplicate linear heat detection cables with its associated control panels, should be provided.	[]	[]	[]
(c) Fire alarm sounders and/or visual alarm device where applicable:- A single open circuit or short circuit fault on any circuit on any floor that serves fire alarm sounders and/or visual alarm device where applicable should not disable operation of fire alarm sounders and visual alarm device where applicable on the adjacent floor below and the adjacent floor above.	[]	[]	[]

V. Documentation

5.1 FSD approval/listing by product certification bodies are provided for the following equipment:				
(a) Fire Alarm Control Panel;	[ ]	[ ]	[ ]	.....
(b) Heat Detector;	[ ]	[ ]	[ ]	.....
(c) Smoke Detector;	[ ]	[ ]	[ ]	.....
(d) Beam Detector;	[ ]	[ ]	[ ]	.....
(e) Smoke Detector with Integration Devices;	[ ]	[ ]	[ ]	.....
(f) Flame Detector;	[ ]	[ ]	[ ]	.....
(g) Intrinsically Safe / Explosion Proof Detector;	[ ]	[ ]	[ ]	.....
(h) Alarm/Sounder Integrated with Strobe Light;	[ ]	[ ]	[ ]	.....
(i) Manual Call Point;	[ ]	[ ]	[ ]	.....
(j) Alarm bell;	[ ]	[ ]	[ ]	.....
5.2 FSD approval/listing by product certification bodies are provided for the fire resisting cables.	[ ]	[ ]	[ ]	.....
5.3 Sound level measurement (including background noise) report for alarm sounders is provided.	[ ]	[ ]	[ ]	.....
5.4 Calculation showing the required battery capacity is provided.	[ ]	[ ]	[ ]	.....
5.5 Letter certifying the completion of the DTL to the FSCC / authorized service provider is provided.	[ ]	[ ]	[ ]	.....
5.6 Confirmation or certification from panel manufacturer on the compatibility between the fire alarm control panel(s) and detectors is provided.	[ ]	[ ]	[ ]	.....

Test conducted by:

..... (Signature)

.....
Name of FSI Contractor's Representative (in block letters)

.....
Company Chop

..... (RC /)
Name of FSI Contractor (FSI Contractor Registration Number)

Date

Testing and Commissioning Checklist for Fire Hydrant and Hose Reel System

I. REFERENCE

Project: FSD Ref.:
 Type of Building: *Domestic/Industrial/Godown/Others
 Address:
 FSI Drawing Ref.:
 The date of initial building plan submission to Building Authority:
 *Delete whichever not applicable

	Yes	No	N/A	Remarks
II. FSI DRAWINGS AGAINST BUILDING PLANS				
FSD File Ref.				
2.1 Check nos. and locations of:				
2.1.1 Fire service inlets	[]	[]	[]
2.1.2 Fire hydrants and hose reels	[]	[]	[]
2.1.3 Fixed fire pumps	[]	[]	[]
2.1.4 Intermediate booster pumps	[]	[]	[]
2.1.5 Water tank and capacity	[]	[]	[]
III. PLUMBING LINE DIAGRAM				
3.1 CHECK:				
3.1.1 Pippings are suitably connected to the fire pumps, fire hydrants, hose reels and fire service inlets.	[]	[]	[]
3.1.2 Size of the rising mains are correct.	[]	[]	[]
3.1.3 Size of the inter-connection header pipe(s) for fire service inlets is correct.	[]	[]	[]
3.1.4 By-pass pippings for intermediate booster pumps.	[]	[]	[]
3.1.5 FS appliance to be provided by FSD to test the system. (to be confirmed by FSD)	[]	[]	[]
IV. ON SITE INSPECTION				
4.1 FIRE HYDRANT				
4.1.1 Outlets are of female instantaneous type.	[]	[]	[]
4.1.2 Adaptable to FSD equipment.	[]	[]	[]
4.1.3 Hydrant body is painted in red.	[]	[]	[]
4.1.4 Individually controlled by wheel operated screw valve designed to open by counter-clockwise rotation.	[]	[]	[]

	Yes	No	N/A	Remarks
4.1.5 The direction of opening engraved in both English and Chinese on the wheel of the valve.	[]	[]	[]
4.1.6 Centre of coupling not less than 800 mm nor more than 1 200 mm above finished floor level.	[]	[]	[]
4.1.7 Prominently sited [] or Recessed []				
4.1.8 All round clearance to permit free use.	[]	[]	[]
4.1.9 Not obstructing any door opening, or any exit route.	[]	[]	[]
4.1.10 Not to be concealed by the leaves of an adjacent door when that door is opened.	[]	[]	[]
4.1.11 If the hydrant is located in a recess to which a door is fitted, such door is fitted with non-lockable pull-open handle and bear the words "FIRE HYDRANT (消防栓), lettering of which shall be of at least 50 mm high.	[]	[]	[]
4.1.12 Water supply is fed:				
By gravity []			
From fixed fire pump []			
4.2 HOSE REEL				
4.2.1 Hose reel drum is painted in red.	[]	[]	[]
4.2.2 The drum is not less than 150 mm in diameter.	[]	[]	[]
4.2.3 Internal bore of tubing is not less than 19 mm diameter.	[]	[]	[]
4.2.4 Length of hose reel is not exceeding 30 metres in length.	[]	[]	[]
4.2.5 Every part of the building can be reached by a nozzle.	[]	[]	[]
4.2.6 Capable of projecting a 6-metre jet.	[]	[]	[]
4.2.7 The water supply pressure at each hose reel does not exceed 1 200 kPa and the rated working pressure of the hose reel.	[]	[]	[]
4.2.8 Orifice of nozzle is not less than 4.5 mm.	[]	[]	[]
4.2.9 Nozzle is fitted with simple two-way on/off valve and the valve is not spring loaded.	[]	[]	[]
4.2.10 Control valves are of gate type or of simple two-way ball type.	[]	[]	[]
4.2.11 Gate valves are closed by clockwise rotation.	[]	[]	[]
4.2.12 Rising mains and associated pipework are not less than 40 mm nominal bore.	[]	[]	[]
4.2.13 Pipes feeding individual hose reel are not less than 25 mm nominal bore.	[]	[]	[]
4.2.14 Control valves are adjacent to the nozzles.	[]	[]	[]

	Yes	No	N/A	Remarks
4.2.15 Nozzle and control valves are not more than 1 350 mm from the finished floor level.	[]	[]	[]
4.2.16 Nozzle is housed in a glass-fronted cabinet secured under lock and key.	[]	[]	[]
4.2.17 Striker is provided in the vicinity of the cabinet.	[]	[]	[]
4.2.18 For fixed type hose reel, suitable guide ring is provided to permit easy withdrawal of the hose reel tubing.	[]	[]	[]
4.2.19 An operation instruction is affixed prominently adjacent to each hose reel.	[]	[]	[]
4.2.20 The notice is clearly marked with the standard wordings in English and Chinese characters of at least 5 mm high in red letters on white background or vice versa.	[]	[]	[]
4.2.21 Manual call points are sited at a prominent position near the hose reels.	[]	[]	[]
4.2.22 The centre of manual call points are positioned at height within 900 mm to 1 200 mm above the finished floor level.	[]	[]	[]
4.2.23 Upon actuation of any manual call point in the building, the fixed fire pump shall come into operation regardless of the zoning of the fire alarm call point.	[]	[]	[]
4.2.24 Door fitted to the hose reel cabinet.	[]	[]	[]
4.2.24.1 Such doors cause no undue obstruction and no interference with any exit point when in open position.	[]	[]	[]
4.2.24.2 Such doors cause no obstruction to the hose being run out in either directions.	[]	[]	[]
4.2.24.3 Such doors are fitted with a pull-open handle and bear the words "FIRE HOSE REEL" (消防喉輓) of at least 50 mm high.	[]	[]	[]
4.2.24.4 No locking device is fitted to such doors.	[]	[]	[]
4.2.24.5 Control valves and nozzles are sited in a discernible and accessible position of not more than 500 mm from the surface of the doors.	[]	[]	[]
4.2.24.6 Operation instruction notice is affixed immediately below the words "FIRE HOSE REEL" on the outer surface of the door.	[]	[]	[]
4.2.25 Hose reel of swinging cradle type.	[]	[]	[]

	Yes	No	N/A	Remarks
4.2.25.1 When not in use the outer face of the reel is flush with the wall.	[]	[]	[]
4.2.25.2 When required for use the cradle can be swung freely into the corridor or passage.	[]	[]	[]
4.3 SUPPLY TANK				
4.3.1 Correct location and adequate capacity of water tank.	[]	[]	[]
4.3.2 Refilling system is in efficient working order.	[]	[]	[]
4.3.3 Fire Service Completion Advice	[]	[]	[]
4.4 FIXED FIRE PUMP				
4.4.1 Mode of power for driving the pump is:				
4.4.1.1 Electricity [] or				
4.4.2 Secondary power supply provided.	[]	[]	[]
4.4.2.1 If no, diesel engine driven standby pump provided.	[]	[]	[]
4.4.3 Where the motive power for any pump is not electricity, alternative means of starting the pump manually, in addition to manual call points, are provided.	[]	[]	[]
4.4.4 Starting instructions for diesel driven pump is prominently displayed in the pump room.	[]	[]	[]
4.4.5 No automatic means of stopping the pump, other than by switching off at the pump control installed near the pump.	[]	[]	[]
4.4.6 Manual call points are wired for starting the pump.	[]	[]	[]
4.4.7 The pumps are duplicated for duty and standby use.	[]	[]	[]
4.4.8 The fire pump starters are wired through a selector switch for duty and standby pump selection.	[]	[]	[]
4.4.9 The standby pump is energized within 15 seconds upon failure of the duty pump and take over the role of the duty pump.	[]	[]	[]
4.4.10 The pump in duty is maintained in operation in case of power changeover.	[]	[]	[]
4.4.11 When the fire pump is stopped by the lock-off button or other control switch at the pump control panel, a status signal is indicated on the pump control panel and a common fault signal is repeated to main fire control panel.	[]	[]	[]

	Yes	No	N/A	Remarks
4.4.12 The motor/engine for the pump is rated to give 20% more power in addition to the hydraulic power required for the rated flow of the system.	[]	[]	[]
4.4.13 Pumps are permanently primed with water and fitted with gate valve at the suction side and a stop valve and a non-return valve at the discharge side.	[]	[]	[]
4.4.14 Non-return valve(s) are provided to prevent water backflow into the water tank.	[]	[]	[]
4.4.15 By-pass pipe with non-return valve and two stop valves are provided for fixed fire pump if F.S. tank is located above the lowest fire hydrant or hose reel. The size of the by-pass is same as discharge line of the fixed fire pumps.	[]	[]	[]
4.4.16 The status of each fire pump comprising "Power Supply On", "Pump Running" and "Pump Failed" and the status of the supply tank comprising "Normal Level" and "Low Level" are monitored and displayed at the pump control panel in the pump room.	[]	[]	[]
4.4.17 "Low Level" alarm is given if the water storage level drops more than 10% below its normal fill level.	[]	[]	[]
4.4.18 Such signals are repeated to: Fire control centre [] or A status panel at the main entrance of the building []	[]	[]	[]
4.4.19 All fire pumps are housed in pump room used for no other purpose than housing fire protection water supplies and equipment.	[]	[]	[]
4.4.20 The access to the pump room is via an exit, exit route and/or required staircase in compliance with Means of Escape requirements in the Code of Practice for Fire Safety in Buildings.	[]	[]	[]
4.4.21 Such pump room is not accessed by a cat ladder.	[]	[]	[]

	Yes	No	N/A	Remarks
4.4.22 Pump room is clearly marked in English and Chinese characters “FIXED FIRE PUMP” (消防泵) of at least 50 mm high.	[]	[]	[]
4.4.23 Pump room is suitably locked to prevent unauthorized tampering of the pumps.	[]	[]	[]
4.4.24 The door opening have sufficient dimensions to permit easy access of personnel and the removal and replacement of equipment within the pump room.	[]	[]	[]
4.4.25 Sufficient internal clear space and headroom (not less than 2 m floor to ceiling clear height) are maintained for carrying out inspection, servicing and maintenance safely. A clear space of not less than <u>450 mm</u> is maintained on two sides of each set of fixed fire pump and driver (excluding transfer pump and jockey pump), i.e. one of the longer sides of the pump and driver, and the side facing the end of driver. If two nos. of fixed fire pumps are installed closely, the clear space of not less than <u>450 mm</u> between two pumps can be shared.	[]	[]	[]
4.4.26 A clear space of not less than <u>600 mm</u> is maintained in front of the pump control panel. The switches, buttons and indicators at the pump control panel are installed at a level between <u>300 mm and 2 000 mm</u> above the finished floor level. The pump panel and associated power supply facilities are preferable to be located near the entry.	[]	[]	[]
4.4.27 Flow rate and pressure tested in accordance with Figure No. in ANNEX I. Floor level of Tested hydrant Flow(1/min): Pressure (kPa):	[]	[]	[]
4.4.28 Running and static pressure at any hydrant outlet not exceeding 850 kPa.	[]	[]	[]

	Yes	No	N/A	Remarks
4.5 INTERMEDIATE BOOSTER PUMP				
4.5.1 Height between the topmost hydrant and the lowest F.S. inlet (m):				
4.5.2 No. of rising main:				
4.5.3 Required aggregate flow (l/min):.....				
4.5.4 The pumps are duplicated for duty and standby use.	[]	[]	[]
4.5.5 The standby pump is energized to take over the duty pump within 15 seconds upon failure of the duty pump.	[]	[]	[]
4.5.6 Intermediate booster pump arrangements:—				
4.5.6.1 One set consisting of duty and standby to feed all rising mains in the same system.	[]	[]	[]
4.5.6.2 Two/three pumps of same capacity using sequential starting as duty pumps with one standby to achieve required flow and pressure within 30 seconds.	[]	[]	[]
4.5.7 The motors driving the pumps are rated to give 20% more power in addition to the hydraulic power required for the rated flow.	[]	[]	[]
4.5.8 All pumps are permanently primed and electrically driven.	[]	[]	[]
4.5.9 Pump continues to run irrespective of power interruption when start button is activated.	[]	[]	[]
4.5.10 Start/stop push buttons with pump status indicator lights (comprising “power supply on”, “pump running” and “pump failed” indicators for each pump) and alarm buzzer are provided adjacent to the fire service inlets.	[]	[]	[]
4.5.11 The status of each fire pump comprising “Power Supply On”, “Pump Running” and “Pump Failed” are monitored and displayed at the pump control panels in the pump room.	[]	[]	[]
4.5.12 Such signals are repeated to:				
Fire control centre	[]	or		
A status panel at the main entrance of the building	[]			

	Yes	No	N/A	Remarks
4.5.13 All fire pumps are housed in pump room used for no other purpose than housing fire protection water supplies and equipment.	[]	[]	[]
4.5.14 The access to the pump room is via an exit, exit route and/or required staircase in compliance with the Means of Escape requirements in the pump Code of Practice for Fire Safety in Buildings.	[]	[]	[]
4.5.15 Such pump room is not accessed by cat ladder.	[]	[]	[]
4.5.16 Pump room is clearly marked in English and Chinese characters “INTERMEDIATE BOOSTER FIRE PUMP” (中途泵) of at least 50 mm high and suitably locked to prevent unauthorized tampering of the pump(s).	[]	[]	[]
4.5.17 The door opening shall be sufficient dimensions to permit easy access of personnel and the removal and replacement of equipment within the pump room.	[]	[]	[]
4.5.18 Sufficient internal clear space and headroom (not less than 2 m floor to ceiling clear height) are maintained for carrying out inspection, servicing and maintenance safely. A clear space of not less than <u>450 mm</u> is maintained on two sides of each set of intermediate booster pump and driver, i.e. one of the longer sides of the pump and driver, and the side facing the end of driver. If two nos. of intermediate booster fire pumps are installed closely, the clear space of not less than <u>450 mm</u> between two pumps can be shared.	[]	[]	[]
4.5.19 A clear space of not less than <u>600 mm</u> is maintained in front of the pump control panel. The switches, buttons and indicators at the pump control panel are installed at a level between <u>300 mm and 2 000 mm</u> above the finished floor level. The pump panel and associated power supply facilities are preferable to be located near the entry.	[]	[]	[]

	Yes	No	N/A	Remarks
4.5.20 The intermediate booster pump utilized as the fixed fire pump. Provision is made for testing the intermediate booster pumps flow and pressure performance during future inspection and/or maintenance.	[]	[]	[]
4.5.21 Flow rate and pressure tested in accordance with Figure No. in ANNEX I. Floor level of tested hydrant: Flow (l/min):..... Pressure (kPa):	[]	[]	[]
4.5.22 Running and static pressure at any hydrant outlet not exceeding 850 kPa.	[]	[]	[]
4.6 RISING MAIN, PIPES AND VALVES				
4.6.1 The nominal bore of the rising main, in the case of industrial/godown buildings: Not less than 100 mm	[]	[]	[]
Each rising main supplies two hydrant outlets per floor	[]	[]	[]
4.6.2 The nominal bore of the rising main in other types of buildings: Not less than 80 mm	[]	[]	[]
Each rising main supplies one hydrant outlet per floor	[]	[]	[]
4.6.3 Provision of by-pass for intermediate booster pump.	[]	[]	[]
4.6.4 Each rising and down-coming main is permanently primed.	[]	[]	[]
4.6.5 Suitable air relief valves of not less than 25 mm nominal size is provided.	[]	[]	[]
4.6.6 Each rising main is connected to a fire service inlet.	[]	[]	[]
4.6.7 Header pipe(s) provided to connect the fire service inlets to the rising mains if more than one rising main in the system, with a maximum height of 30 m above ground level.	[]	[]	[]
4.6.8 The diameter of the header pipe is: For industrial/godown buildings not less than 150 mm nominal bore	[]	[]	[]
For other buildings not less than 100 mm nominal bore	[]	[]	[]

	Yes	No	N/A	Remarks
4.6.9 For godown/industrial buildings, a rising main provided for each staircase with a fire service inlet.	[]	[]	[]
4.6.10 Where Pressure Reducing Valve (PRV) is installed, By-pass arrangement is incorporated. Each PRV is equipped with a stop valve, a strainer and a pressure gauge on the upstream side and a stop valve and a pressure gauge on the downstream side.	[]	[]	[]
4.6.11 Other than the control valve at each hose reel, all stop valves which may cut off the water supply to the fire hydrant(s) and/or hose reel(s) is secured with padlock to ensure the valves are in the correct operation position.	[]	[]	[]
4.6.12 Number and location of fire service inlets are conforming to the latest approved building plans.	[]	[]	[]

	Yes	No	N/A	Remarks
4.7 FIRE SERVICE INLET				
4.7.1 Suitably identified, enclosed and protected against corrosion and abuse.	[]	[]	[]
4.7.2 All round clearance of not less 100 mm between any part of the fire service inlet and the inlet enclosure is provided.	[]	[]	[]
4.7.3 Readily accessible by Fire Services personnel.	[]	[]	[]
4.7.4 Centre of coupling not less than 600 mm nor more than 1 000 mm above ground level.	[]	[]	[]
4.7.5 A non-return valve provided for each inlet.	[]	[]	[]
4.7.6 Pressure gauge is installed within the inlet enclosure and is connected between the downstream side of the inlet and the upstream side of the non-return valve.	[]	[]	[]
4.7.7 Each inlet is affixed with a metal identification plate raised or engraved with English and Chinese characters.	[]	[]	[]
4.7.8 Each inlet cabinet is provided with a durable label in English letters and Chinese characters of not less than 10 mm and 15 mm respectively for indicating the floor level of the fixed fire pumps and intermediate booster pumps, where applicable. The wordings in the label is red in colour on white background or in white colour on red background.	[]	[]	[]
4.7.9 The frontage of each inlet enclosure is clearly and permanently indicated in English and Chinese characters “FS INLET” (消防入水掣) of not less than 50 mm high.	[]	[]	[]

V. GENERAL COMMENTS & REMARKS

Test conducted by:

..... (Signature)

.....
Name of FSI Contractor's Representative (in block letters)

.....
Company Chop

..... (RC /)
Name of FSI Contractor (FSI Contractor Registration Number)

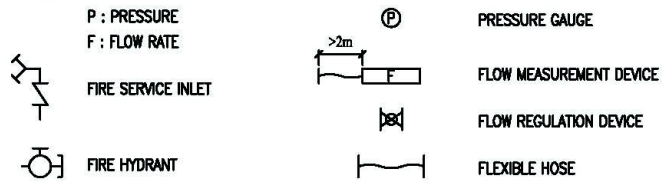
Date

ANNEX I – FIGURES FOR EQUIPMENT ARRANGEMENT FOR TESTING OF FIRE PUMPS

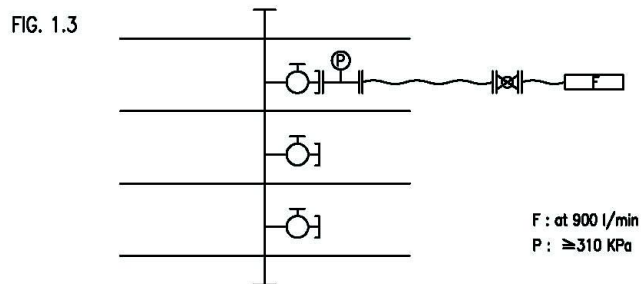
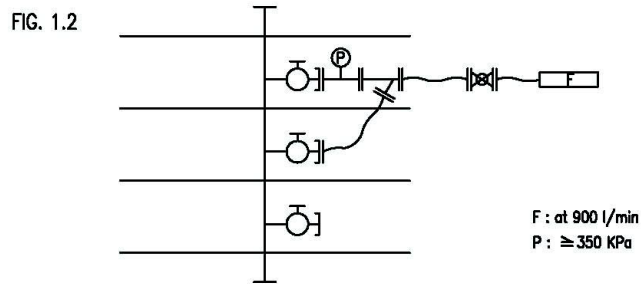
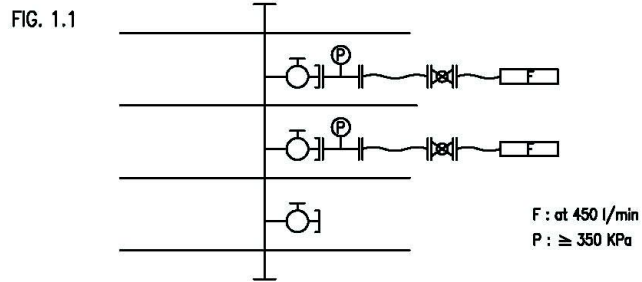
GENERAL NOTES : -

- (i) THE FLOW MEASURING DEVICE(S) MAY BE PLACED AT ROOF LEVEL FOR CONVENIENT DISCHARGE OF WATER.
- (ii) ALL HYDRANTS UNDER TEST SHALL BE FULLY OPENED.
- (iii) THE PRESSURE GAUGE SHALL BE SITUATED ADJACENT TO THE HYDRANT OUTLET UNDER TEST.

LEGEND :

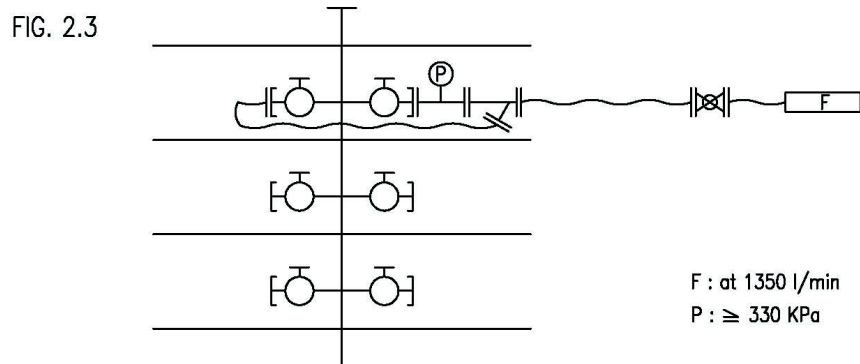
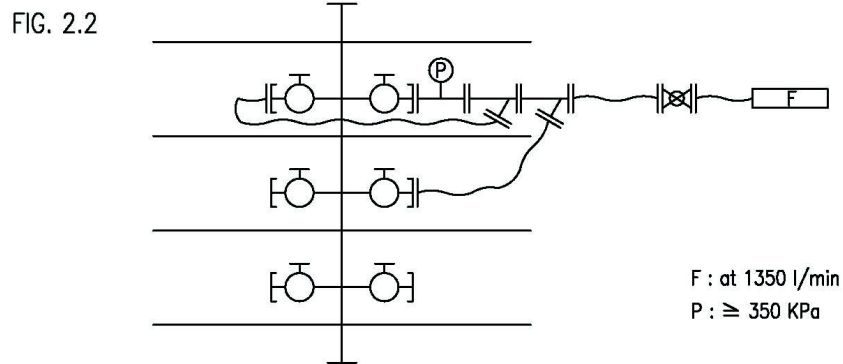
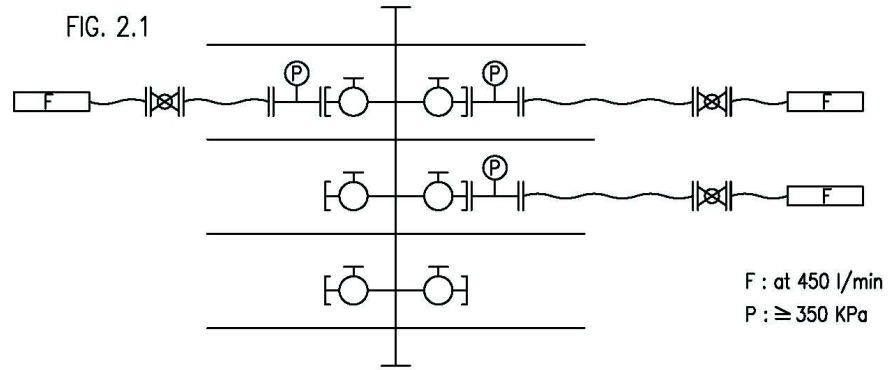


1. FIXED FIRE PUMP (BUILDINGS OTHER THAN INDUSTRIAL/ GODOWN – i.e. 900 l/min) (ANY OF THE FOLLOWING ARRANGEMENTS SHALL BE FOLLOWED)



2. FIXED FIRE PUMP (INDUSTRIAL / GODOWN BUILDINGS)

(ANY OF THE FOLLOWING ARRANGEMENTS SHALL BE FOLLOWED)



3. INTERMEDIATE BOOSTER PUMP (BUILDINGS OTHER THAN INDUSTRIAL/ GODOWN)

FIG. 3.1 DOMESTIC AND OTHER BUILDINGS WITH SINGLE RISING MAIN (900 l/min)
TESTING EQUIPMENT TO BE ARRANGED IN ACCORDANCE WITH (1)

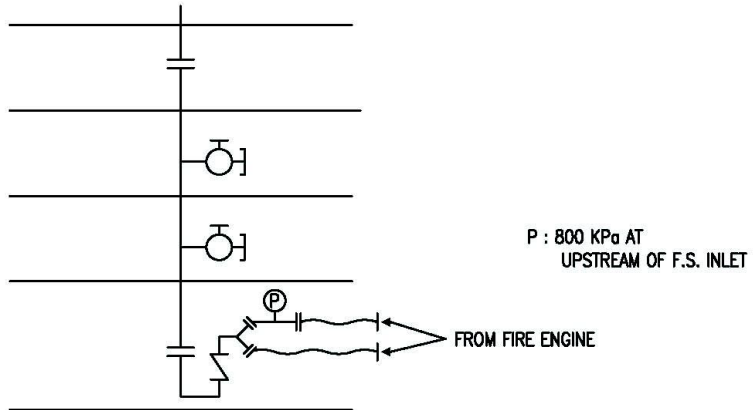
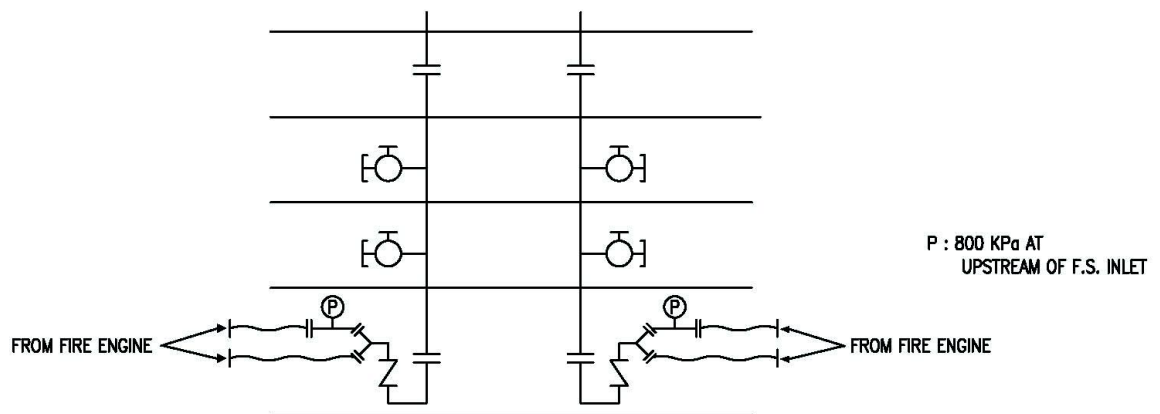


FIG. 3.2 OTHER BUILDINGS WITH TWO OR MORE RISING MAINS (1800 l/min)

TWO SETS OF RISING MAIN SHALL BE TESTED SIMULTANEOUSLY IN ACCORDANCE WITH (1)



4. INTERMEDIATE BOOSTER PUMP (INDUSTRIAL / GODOWN BUILDINGS)

FIG. 4.1 SINGLE RISING MAIN (1350 l/min)
TESTING EQUIPMENT TO BE ARRANGED IN ACCORDANCE WITH (2)

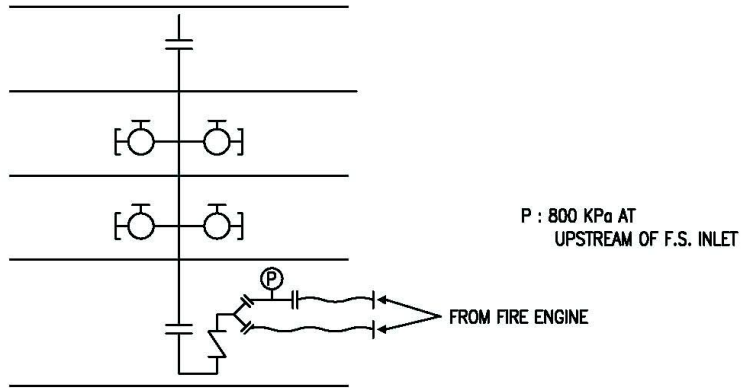
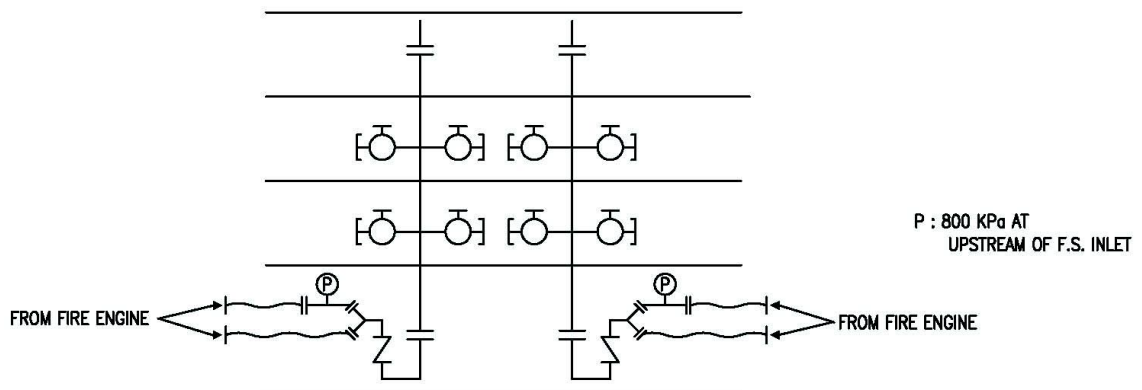


FIG. 4.2 TWO OR MORE RISING MAINS (2700 l/min)
TWO SETS OF RISING MAIN SHALL BE
TESTED SIMULTANEOUSLY IN ACCORDANCE WITH (2)



Testing and Commissioning Checklist for Staircase Pressurization System

Reference

Address: FSD Ref.:
 FP 19/20/43/47/78*.....
 FSD Acceptance Letter/Approval Date:
 FSI Working Drawing Ref. :
 Approved Building Plan Ref.: Dated:

Section I – General items for all staircase pressurization systems installed in the building

1.1 Measuring and testing instrument / equipment calibration

Measuring instrument used for testing purpose shall be provided in duplicate and calibrated in the past 3 months.

	<u>Type</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Calibration Cert. No.</u>	<u>Remarks</u>
a.
b.
c.
d.
e.
f.
g.
h.
i.
j.

1.2 Documentation

	Yes	No	Remarks
a. Equipment list of staircase pressurization system .	[]	[]
b. Confirmation of the builder’s work (such as doorset, door closer & etc.) is fully complied with the requirement of FSD .	[]	[]
c. Certifying the building air tightness condition during the testing is equivalent to the occupation condition.	[]	[]

1.3 Staircase pressurization working drawings against the approved building plans

	Yes	No	N/A	Remarks
a. Classifications of the staircase pressurization system tally with specification in the approved building plans.	[]	[]	[]
b. Designations of staircase number and fireman’s lift number, fire fighting access number tally with the approved building plans.	[]	[]	[]
c. Locations of staircase pressurization plant rooms tally with the approved building plans.	[]	[]	[]
d. Fire resistance rating of plant rooms is same as the pressurized space.	[]	[]	[]
e. Air intake positions tally with the approved building plans.	[]	[]	[]
f. Discharge positions of over pressure relief tally with the approved building plans.	[]	[]	[]

* *Delete as appropriate*

Section II – For each staircase pressurization system only
(Separate copy of Section II should be attached to respective pressurization system)

2.1 Description

- a. Designation of pressurized staircase
 (The designation should be the same as the approved building plan & FSI drawing & test report.)
- b. System Classification :- (Please tick as appropriate)
 - Class A; or []
 - Class B. []
- c. Equipment to be provided :-
 - Single fan with duplicate motors; or []
 - Duplicate fans complete with motors; []
- d. Design air velocity passes through the door between pressurized space and accommodation area m/s
- e. Design differential pressure between the pressurized staircase and accommodation Pa
- f. Design differential pressure between the pressurized lobby and accommodation (For Class B) Pa
- g. Design door opening force N ($\leq 100N$)

2.2 Test report

(All systems should be witnessed and certified by registered professional engineer before final test with Inspecting Officer of this department.)

	Appendix	Remarks
a. Pressure test report of all ductwork (including builder's work, ducts, shafts or other construction)	-----	-----
b. Air velocity measurement report	-----	-----
c. Door opening force measurement report	-----	-----
d. Differential pressure measurement report	-----	-----
e. System performance test report	-----	-----

2.3 Acceptance inspection

	Yes	No	N/A	Remarks
a. <u>Air intake</u> (Item a.1 to a.5 for air intake not located at roof floor)				
a.1 Notice in English & Chinese characters "Staircase pressurization intake for (pressurized space)" ((增壓空間)的樓梯增壓入風口) is provided.	[]	[]	[]
a.2 Position of air intake is located away from any potential fire hazards (such as basement smoke vent).	[]	[]	[]
a.3 Air duct is provided from the intake to the fan when air intake is distant from the fan.	[]	[]	[]
a.4 A probe type smoke detector in air intake duct / plenum is installed.	[]	[]	[]
a.5 Pressurization system can be shut down when the duct type smoke detector is activated.	[]	[]	[]

(Items a.6 to a.13 for air intake located at roof floor)

	Yes	No	N/A	Remarks
a.6 Two air intakes, which spaced apart and facing different directions, are provided.	[]	[]	[]
a.7 Each intake is capable of providing the full air requirements of the system.	[]	[]	[]
a.8 Independently operated fire and smoke damper with probe type smoke detector is provided at each intake.	[]	[]	[]
a.9 An override switch to resume the staircase pressurization system.	[]	[]	[]
a.10 No smoke discharge or air release within 5 m of any direction of air intake or other openings into any building.	[]	[]	[]
a.11 Notice in Chinese & English characters "Staircase pressurization intake for (pressurization space)" (樓梯增壓入風口) is provided.	[]	[]	[]
a.12 Air duct is provided from the intake to the fan when air intake is distant from the fan.	[]	[]	[]
a.13 Smoke control damper properly actuated when duct type smoke detector activated.	[]	[]	[]
b. <u>Plant room</u>				
b.1 No other service inside the plant room.	[]	[]	[]
b.2 Minimum fire resistance rating for the enclosure of the pressurization plant is equal to or greater than the pressurized staircase served or to the same fire resisting period as the serviced compartment or the containing compartment whichever is higher. (FRR of enclosure is X/Y/Z hrs.)	[]	[]	[]
b.3 When plant room served more than one pressurization system, separate fire resisting enclosure is provided to each pressurization system in order to maintain fire compartmentation between different pressurized spaces.	[]	[]	[]
b.4 When fan room is used as an air plenum, all control panels should be located outside the fan room, or protected by fire resisting enclosure(s).	[]	[]	[]
c. <u>Air injection point & associated ductwork</u>				
c.1 Multiple injection points are provided when the pressurized staircase exceeds 11m.	[]	[]	[]
c.2 Vertical distance between injection points is not greater than 12 m or three storeys.	[]	[]	[]
c.3 Volume control dampers of air injection points are properly secured.	[]	[]	[]
c.4 Injection duct work passing through other fire compartment is constructed to have the same FRR required for either the pressurized space or the compartment through it passes, whichever is the greater.	[]	[]	[]
c.5 An injection point of a single injection point system is away from the final exit door.	[]	[]	[]
c.6 Ductwork construction is complied with or not less than DW144 standard or its subsequent amendments.	[]	[]	[]
c.7 Aluminium sheet and aluminium pop rivet shall not be provided in flat oval duct wider than 1 m.	[]	[]	[]
c.8 All ductwork, including builder's work, ducts, shafts or other construction, in these systems are conducted the pressure tested in compliance with or not less than DW 143 standard or subsequent amendment.	[]	[]	[]

	Yes	No	N/A	Remarks
d. <u>Air release system</u>				
d.1 All associated air release points and actuating devices are located at a common area or a non-fireman's lift lobby.	[]	[]	[]
d.2 When the operation of air release system is automatic, it is actuated by the same detector / device that actuates the rest of the pressurization system.	[]	[]	[]
d.3 When the accommodation space is partitioned or compartmented into offices or similar unit, the air release vent is provided at:-				
i. Between the door into pressurized space and the start of the partitioning; or	[]	[]	[]
ii. On each offices & units, the size of each air relief vent is capable of discharging the total air flow from pressurized space.	[]	[]	[]
d.4 Air release vent is located at or immediately below ceiling level	[]	[]	[]
Type of air release system				
- Vertical shaft (go to d.5 – d.6);	[]	or		
- Special vents at the building periphery (go to d.7 – d.9);	[]	or		
- Mechanical air release (go to d.10 – d.11).	[]			
d.5 Top vent is provided at the vertical shaft.	[]	[]	[]
d.6 When the shaft is designed for dual propose, automatic control fire & smoke damper is provided at each branch duct.	[]	[]	[]
d.7 Special vents for external vent, are provided on at least two sides of the sealed building.	[]	[]	[]
d.8 Fail safe protection is provided to the ventilator.	[]	[]	[]
d.9 Components of ventilator are compliant with BS EN 12101-2.	[]	[]	[]
d.10 Extraction system including ductwork is capable of working at the appropriate temperature and period of time (250°C for 1 hour for building with sprinkler system, 600°C for 2 hours for building without sprinkler system).	[]	[]	[]
d.11 The following items should be complied with, when the central exhaust system also serves for mechanical air release:-				
i. Component & ductwork of central exhaust system is capable of working at the appropriate temperature and period of time (250°C for 1 hour for building with sprinkler system, 600°C for 2 hours for building without sprinkler system);	[]	[]	[]
and				
ii. When the related pressurization system is actuated, function of VAC control system and VAC manual override switch for shutting down the central exhaust system is ignored;	[]	[]	[]
and				
iii. The local motorized fire and smoke damper in fire floor is opened and dampers for other compartments / units are closed;	[]	[]	[]

	Yes	No	N/A	Remarks
e. <u>Over pressure relief system</u>				
Type of over pressure relief system				
- Automatic opening of the external exit doors on operation of the fan (go to e.1 – e.2);	[]	or		
- Barometric pressure relief vents / damper (go to e.3 – e.5);	[]	or		
- Mechanical exhaust (go to e.6 – e.7).	[]			
e.1 Door lock, latch, bolt, push bar & etc. are not provided at the external exit doors.	[]	[]	[]
e.2 Warning label: “Over pressure relief door. Do not obstruct” (超壓時放壓門，不要阻塞) is provided in English and Chinese characters at the external exit doors.	[]	[]	[]
e.3 Wire mesh is provided at the external opening of relief vent / damper.	[]	[]	[]
e.4 Relief vent / duct passing through other fire compartment is enclosed by fire resisting material; the FRR should be same of pressurized space or the compartment through it passes, whichever is greater.	[]	[]	[]
e.5 Free area of relief vent / damper “ $A_X \geq 0.16 \text{ m}^2 \times$ (total required airflow (m^3/s) through the open doors – air supply satisfying the pressure differential requirement (m^3/s) in pressurized space) *See equation (24) of section 14 of BS 5588: Part 4: 1998*	[]	[]	[]
e.6 Fan can be activated by differential pressure sensor	[]	[]	[]
e.7 Fan directly discharges to external or the discharge ductwork is constructed with fire resisting material when passing through other fire compartment. The FRR of ductwork should be same as that of pressurized space or fire compartment passed, whichever is greater.	[]	[]	[]
f. <u>Electrical & control</u>				
f.1 Electrical supplies for all equipment (such as fans, air relief damper, over pressure device, controller, supervisory panel & etc.) are fed from the same essential source.	[]	[]	[]
f.2 Requirement of main switchboard and/or local control panel :-				
- Construction is complied with BS EN 61439 from not less than 2 mm panel steel and is installed in a room having (X/Y/Z hrs) FRR (including self-closing doors) without other equipment installed therein.; or	[]	[]	[]
- All controls, starters, relays, etc. shall be suitable for continuous operation at 250°C for not less than 1 hour.	[]	[]	[]
f.3 Requirement of power supply and control cables for pressurized system, controller, pressure sensor & etc. to Appendix 8 of this Code.	[]	[]	[]
f.4 Separate pressure differential system is provided for each pressurized system.	[]	[]	[]
f.5 End of pressure sensing tube is properly terminated at the pressurized space and accommodation.	[]	[]	[]
f.6 End of sensing tube is mechanically protected.	[]	[]	[]
f.7 Label of “Sensing point of staircase pressurization system” (樓梯增壓系統感應點) is clearly indicated in English and Chinese characters.	[]	[]	[]
f.8 Protection is provided along the sensing tube.	[]	[]	[]
f.9 Power supplies for the differential pressure sensor, control, over pressure device, air release device are distributed from sub-circuit of staircase pressurization system.	[]	[]	[]
f.10 Manual override switch provided on local fan control panel is locked in “Automatic control” position.	[]	[]	[]

	Yes	No	N/A	Remarks
f.11 An indication signal is transmitted to supervisory control panel, when local motor control panel is in manual control mode.	[]	[]	[]
f.12 The operation of staircase pressurization system is not affected by power interruption.	[]	[]	[]
g. Construction work				
g.1 Installations of door sets providing access to or from any pressurized space satisfy Building Authority’s requirements.	[]	[]	[]
g.2 All doors, closers, hardware, etc. are capable of use in an atmosphere of 35°C & 100% R.H.	[]	[]	[]
g.3 No supplementary gasket is provided to assist in preventing smoke leakage.	[]	[]	[]
g.4 Door sets are installed in such a manner to be smoke leakage proof.	[]	[]	[]
g.5 All joints between frames & building structure are provided with sealants in compliance with BS 476: Part 23.	[]	[]	[]
g.6 Self-closing door closers are provided for all doors.	[]	[]	[]
g.7 Finished sill under the closed doors is wear resistant.	[]	[]	[]
g.8 Requirement of the notice plates for pressurized staircase(s) to show the availability the operational status of SPS(s) in the building:-				
(i) The notice is bilingual bearing the words “Staircase Pressurization Class A/B*” and “樓梯增壓 A/B 類” with letter height of not less than 50 mm in red on a white or stainless steel background;	[]	[]	[]
(ii) A red indicator on the notice plates is turned “ON” when the supply fan of the pressurized staircase(s) is in operation;	[]	[]	[]
(iii) The notice is illuminated by emergency lighting or internally illuminated and backed up by emergency power supply;	[]	[]	[]
(iv) The notice plates are firmly affixed at the conspicuous position at the following locations for every pressurized staircase;				
- Outside the final exit, and	[]	[]	[]
- Both inside and outside the exit on the top floor.	[]	[]	[]
(v) For buildings with SPS(s) and refuge floors, the notice plates are firmly affixed at a conspicuous position both inside and outside the exit/entrance of the staircase on the refuge floor.	[]	[]	[]
h. Functional test				
h.1 Performance test is carried out and the result is satisfactory.	[]	[]	[]
h.2 Measurement of door opening force is carried out and result is satisfactory.	[]	[]	[]
h.3 Measurement of differential pressure across the pressurized space and accommodation is carried out and the result is satisfactory.	[]	[]	[]
h.4 Measurement of pressurized air flow is carried out and the result is satisfactory.	[]	[]	[]
h.5 Air intake smoke control damper is closed when the duct type smoke detector is activated;	[]	[]	[]
or				
Staircase pressurization system is shut down when the duct smoke detector at air intake is activated (for air intake only facing in one direction).	[]	[]	[]

	Yes	No	N/A	Remarks
h.6 In order to prevent over pressure in pressurized space, fail safe protection for over pressure release is provided on conditions of:-				
- Failure of controller.	[]	[]	[]
- Failure of pressure switch.	[]	[]	[]
- Failure of wiring of pressure switch.	[]	[]	[]
- Failure of actuator of by-pass damper.	[]	[]	[]
- Failure of wiring of actuator (by-pass damper).	[]	[]	[]
- Failure of over pressure exhaust fan.	[]	[]	[]
h.7 Functional test of actuation				
- by building fire alarm system is in order. (Note: Manual fire alarm is not recommended for air release system which is automatically controlled in the fire zones)	[]	[]	[]
- by smoke detection system is in order.	[]	[]	[]
- by sprinkler system is in order.	[]	[]	[]
- by point type smoke detector mounted in the accommodation area adjacent to the doors (within 1 m) leading to the protected space at each storey served by the system is in order.	[]	[]	[]
- by supervisory control panel when selected in manual override mode is in order.	[]	[]	[]
h.8 Functional test of response time The system is capable of achieving between 90% & 110% of the new volumetric requirements within 5 sec. of a door being opened or closed (for the over pressure release system by using variable supply fans or dampers).	[]	[]	[]
h.9 The door opening force does not exceed 100N all the time from 5 sec. after the fire zone door is closed.	[]	[]	[]
h.10 Changeover from the duty equipment to the standby equipment is automatically operated when failure occurred in duty equipment.	[]	[]	[]

Section III –For all staircase pressurization system installed in the building

3.1 The checklist is totally pages (including attached copies of Section II for each additional staircase pressurization system).

3.2 Attached number(s) of appendix.

Test conducted by :
..... (Signature)

Test certified by :
..... (Signature)

.....
Name of Works *Specialist/Agent (in block letters)

.....
Full Name of Registered Professional Engineer (in block letters)

.....
Company Chop

.....
Register Number of Engineer

Date

.....
Company Chop

Date

*Delete as appropriate

Endorsed by:

..... (Signature)

.....
Name of FSI Contractor's Representative (in block letters)

.....
Company Chop

.....(RC /)
Name of FSI Contractor (FSI Contractor Registration Number)

Testing and Commissioning Checklist for Street Fire Hydrant System

I. REFERENCE

Project FSD Ref.
 Address Location

II. TYPE OF SYSTEM

	Yes	No	N/A	Remarks
2.1 Supplied Directly from Town Main	[]	[]	[]
2.2 Supplied from Gravity Tank	[]	[]	[]
2.3 Supplied from Pumps and Tank	[]	[]	[]
2.4 Supplied from Sea Water Pumps	[]	[]	[]

III. LAYOUT CHECKING AGAINST APPROVED BUILDING PLANS

FSD Ref. of Approved Building Plans.....

	Tally with drawings?			Remarks
	Yes	No	N/A	
3.1 Quantity of street hydrants	[]	[]	[]
3.2 Location of street hydrants	[]	[]	[]
3.3 Location of pump room/enclosure	[]	[]	[]
3.4 Location of tank	[]	[]	[]
3.5 Tank capacity	[]	[]	[]

IV. ON SITE INSPECTION

4.1 GENERAL

4.1.1 Hydrant body is painted in red for fresh water system and in yellow for sea water system (with white band when fed directly from government trunk main).	[ ]	[ ]	[ ]	.....
4.1.2 For hydrant not in service, cap for 100mm outlet is painted in blue.	[ ]	[ ]	[ ]	.....
4.1.3 Each hydrant is equipped with a control valve.	[ ]	[ ]	[ ]	.....
4.1.4 Each hydrant is equipped with an isolating valve (applicable to system fed directly/indirectly from government main).	[ ]	[ ]	[ ]	.....
4.1.5 Spindle of underground hydrant valve is within 250 mm to 500 mm below valve pit cover.	[ ]	[ ]	[ ]	.....
4.1.6 Size of underground control valve pit cover is not greater than 300 mm x 300 mm with "FH" marking engraved on the surface. (Remarks: Isolating valve pit cover shall conform to WSD standard.)	[ ]	[ ]	[ ]	.....

	Yes	No	N/A	Remarks
4.1.7 The valve pit of control valve is located between 1.5 m to 3 m from the street hydrant.	[]	[]	[]
4.1.8 The valve pit of control valve is located outside the designated emergency vehicular access.	[]	[]	[]
4.1.9 V-shaped arrow head (100 mm high and 50 mm wide) pointing toward the control valve is painted on hydrant top (yellow arrow for red hydrant and red arrow for yellow hydrant).	[]	[]	[]
4.1.10 The hydrant number with size not less than 75 mm is painted at the hydrant (in yellow for red hydrant and in red for yellow hydrant).	[]	[]	[]
4.1.11 There is no obstruction within 1.5 m in front and on two sides of the hydrant.	[]	[]	[]
4.1.12 Tank refilling system is in efficient working order (applicable to system with tank).	[]	[]	[]
4.1.13 The number assigned for the hydrant shall be painted on the body facing the roadway with size not less than 75 mm (in yellow for red hydrant and in red for yellow hydrant).	[]	[]	[]
4.2 PUMP (if provided)				
4.2.1 Duplicate pumps are provided for duty and standby use.	[]	[]	[]
4.2.2 Mode of power for driving the pump is:				
4.2.2.1 Electricity [] or				
4.2.2.2 Secondary power supply provided.	[]	[]	[]
4.2.2.3 If no, diesel engine driven standby pump provided.	[]	[]	[]
4.2.2.4 Starting instruction for diesel/engine driven pump are prominently displayed in the pump room/ enclosure.	[]	[]	[]
4.2.3 No automatic means of stopping the pump other than by switching off at the pump room/enclosure.	[]	[]	[]
4.2.4 For duplicate electric motor driven pump arrangement, the pump starters are wired through a selector switch for duty and standby pump selection.	[]	[]	[]
4.2.5 The motor/engine for the pump is rated to give 20% more power in addition to the hydraulic power required for the rated flow of the system.	[]	[]	[]
4.2.6 Pumps are permanently primed.	[]	[]	[]

	Yes	No	N/A	Remarks
4.2.7 Non-return valve(s) are provided to prevent water backflow into the water tank if provided.	[]	[]	[]
4.2.8 All pumps are housed in suitable room/enclosure designed solely for accommodating pumps or equipment for fire service installations.	[]	[]	[]
4.2.9 Pump room/enclosure are laid clear of any exit or normal communication routes through the premises.	[]	[]	[]
4.2.10 Pump room/enclosure is clearly marked in English and Chinese characters.	[]	[]	[]
4.2.11 Pump room/enclosure is suitably locked to prevent unauthorised tampering.	[]	[]	[]
4.3 SUPPLY TANK (if provided)				
4.3.1 Water tank and its capacity are clearly marked in English and Chinese characters.	[]	[]	[]
4.3.2 Fire Service Completion Advice issued.	[]	[]	[]
4.3.3 For system where the tank bottom is more than 20m above the outlet coupling of the lowest street hydrant, a bypass pipe (of the same size as the pump suction pipe) is provided at the pump suction and discharge pipe. (Please see Figure C in Annex I)	[]	[]	[]

V. SYSTEM TESTING

(applicable to system with pumps)

5.1 The pump starts automatically upon opening of any hydrant outlet.	[ ]	[ ]	[ ]	.....
5.2 Other than the jockey pump, the pump can only be stopped manually at the pump room, once started.	[ ]	[ ]	[ ]	.....
5.3 The standby pump is energized within 15 seconds upon failure of the duty pump.	[ ]	[ ]	[ ]	.....
5.4 For diesel engine driven pump, the operation of the pump starting pressure switch is not affected by mains power failure.	[ ]	[ ]	[ ]	.....
5.5 The status of each pump comprising “Power Supply On”, “Pump Running” and “Pump Failed” are monitored and displayed at the pump room.	[ ]	[ ]	[ ]	.....

	Yes	No	N/A	Remarks
5.6 The pump status signals are repeated to:				
Fire control centre	[]	or		
A status panel at the building main entrance	[]	or	.....
5.7 Tank refilling system is in efficient working order (applicable to system with tank).	[]	[]	[]

VI. FIELD MEASUREMENTS

- 6.1 Flow rate and pressure tested in accordance with Figure in Annex I.
- 6.2 When discharging at two 65mm outlets simultaneously:
 - Flow at one 65mm outlet (l/min) :
 - Running Pressure (kPa) :

VII. GENERAL COMMENTS & REMARKS

Test conducted by:

..... (Signature)

.....

Name of FSI Contractor's Representative (in block letters)

.....

Company Chop

.....(RC /)

Name of FSI Contractor (FSI Contractor Registration Number)

Date

**FIGURES FOR EQUIPMENT ARRANGEMENT FOR TESTING OF PEDESTAL STREET HYDRANT
(2 OPTIONS TO SUIT SITE CONDITIONS)**

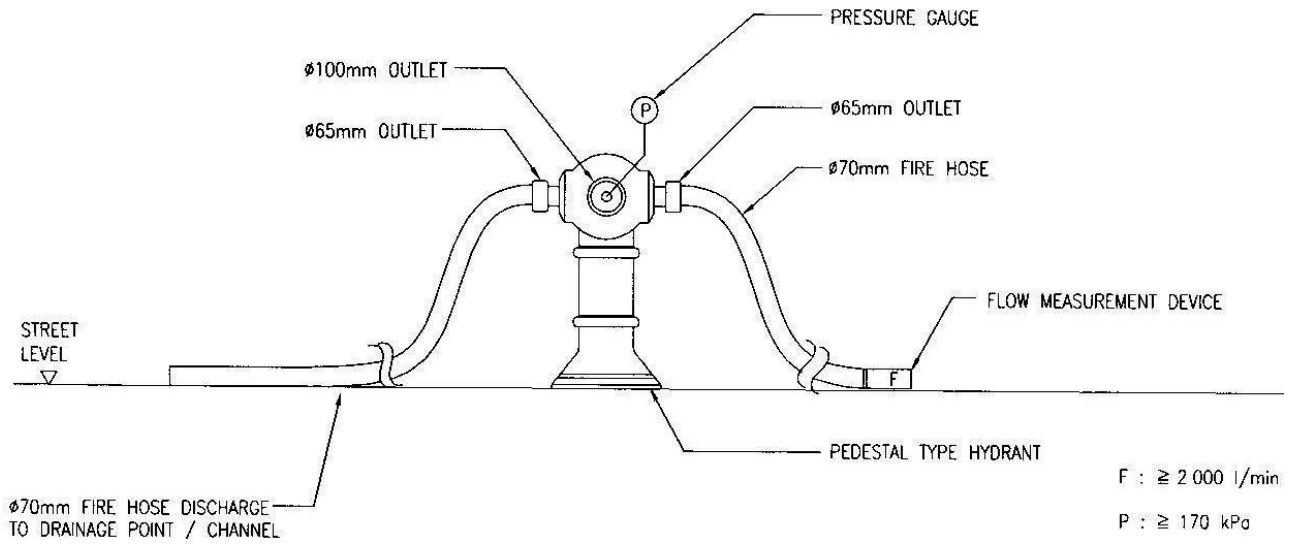


FIGURE A

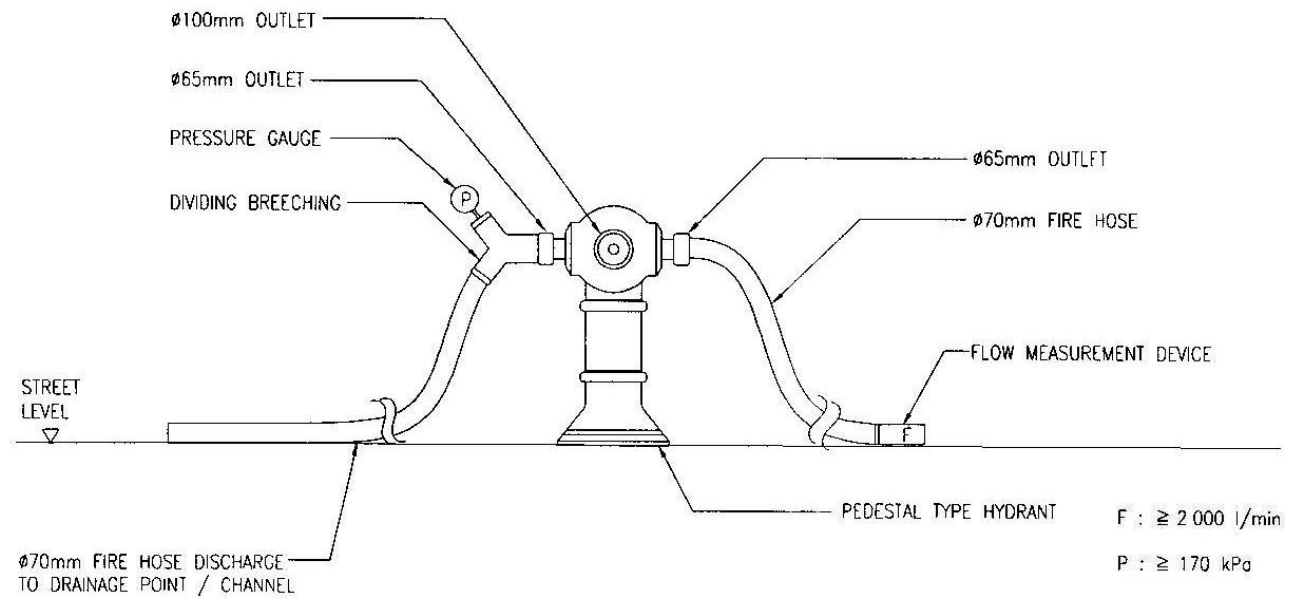


FIGURE B

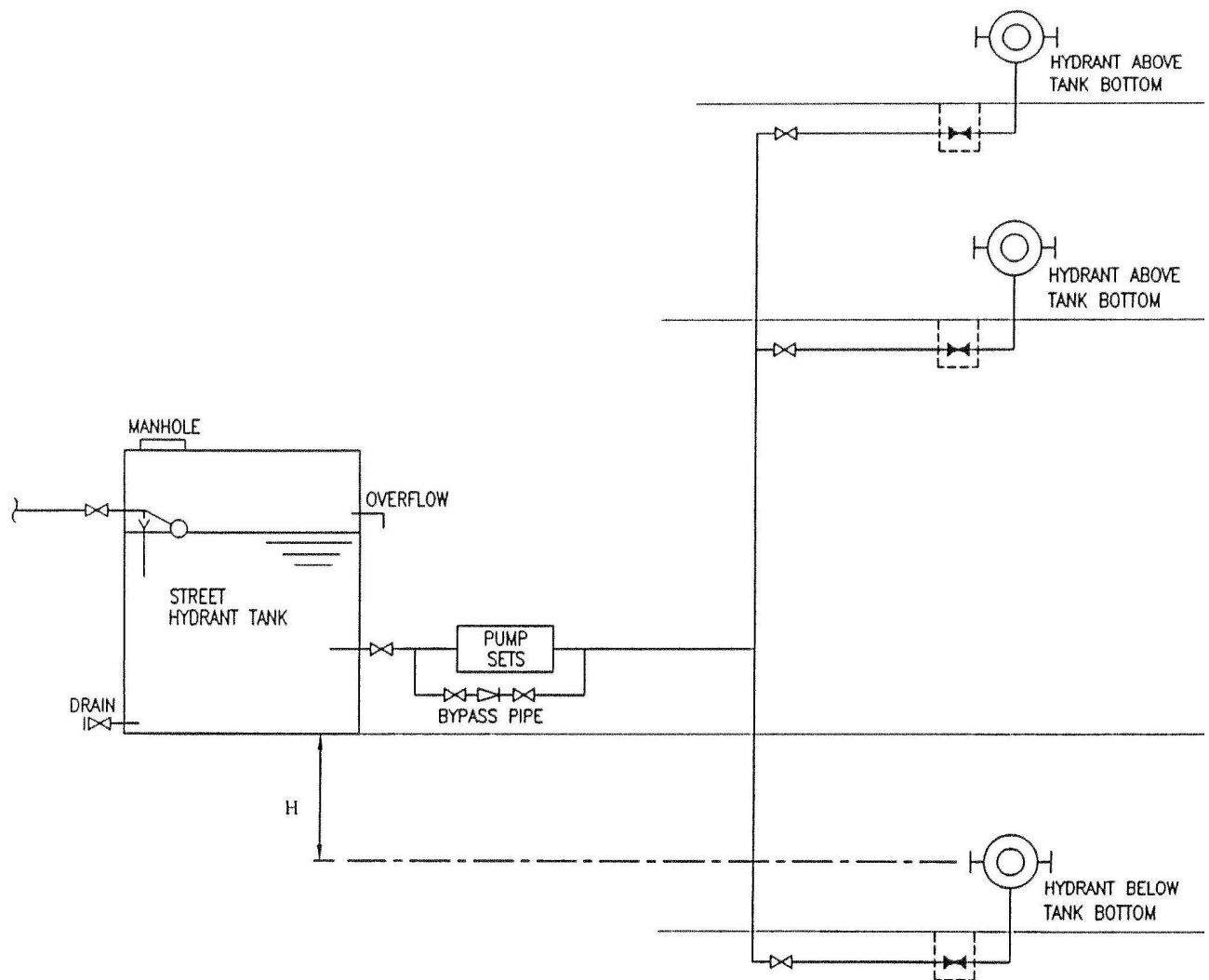


FIGURE C

(SCALE: N.T.S.)

NOTES:

- (1) "H" IS THE HEIGHT DIFFERENCE BETWEEN THE TANK BOTTOM AND THE CENTRE LINE OF THE OUTLET COUPLING OF THE LOWEST STREET HYDRANT IN THE SYSTEM.
- (2) IF $H > 20\text{m}$, THEN A BYPASS PIPE IS REQUIRED AT THE PUMP SETS.

Minimum Fire Resisting Cable Requirements for Fire Service Installations

Item	Type of Fire Service Installations	Minimum Requirements
1.	Audio/visual advisory systems	<p><u>For standard cables or cable systems as defined in BS 5839-1, they shall comply with:</u></p> <p>(a) BS EN 50200 (PH30) and Annex E of BS EN 50200 (a duration of survival time of 30 minutes); or</p> <p>(b) BS EN 60702; or</p> <p>(c) BS 7629-1 (Cat. Standard 30); or</p> <p>(d) BS 7846 (Cat. F2 for cables of overall diameter not exceeding 20mm or Cat. F30 for cables of overall diameter exceeding 20mm); or</p> <p>(e) BS 6387 Cat. CWZ; or</p> <p>(f) Other international standards acceptable to the Director of Fire Services.</p> <p><u>For enhanced cables or cable systems as defined in BS 5839-1, they shall comply with:</u></p> <p>(g) BS EN 50200 (PH120) and BS 8434-2 (a duration of survival time of 120 minutes); or</p> <p>(h) BS EN 60702; or</p> <p>(i) BS 7629-1 (Cat. Standard 120); or</p> <p>(j) BS 7846 (Cat. F2 for cables of overall diameter not exceeding 20mm or Cat. F120 for cables of overall diameter exceeding 20mm); or</p> <p>(k) BS 6387 Cat. CWZ; or</p> <p>(l) Other international standards acceptable to the Director of Fire Services.</p>
2.	Automatic actuating device	<u>Cable shall comply with:</u>
3.	Automatic fixed installations other than water	(a) BS 6387 Cat. CWZ; or (b) BS EN 60702; or
4.	Automatic fixed installation using water (other than sprinkler system)	(c) BS 8491 (minimum fire survival time of 120 minutes); or
5.	Deluge systems	(d) BS 7629-1 (Cat Enhanced 120); or
6.	Drencher systems	(e) BS 7846 (Cat. F2 for cables of overall diameter not exceeding 20 mm or Cat. F120 for cable of overall diameter exceeding 20mm); or
7.	Fire hydrant/hose reel systems	

8.	Fixed foam systems	(f) BS EN 50200 (PH120) and BS 8343-2 (a duration of survival time of 120 minutes); or (g) Other international standards acceptable to the Director of Fire Services.
9	Pressurization of staircase	
10	Ring main systems with fixed pump(s)	
11.	Smoke extraction system	
12.	Street fire hydrant system	
13.	Water mist system	
14.	Water spray system	
15.	Fire Service water supply system	
16.	Emergency generator	Cable from emergency generator to main essential switchboard(s) for fire service installations shall comply with the same requirements as those for items 2 to 15.
17.	Emergency lighting	<p><u>For standard cables or cable systems as defined in BS 5266-1, they shall comply with:</u></p> <p>(a) BS 5266-1; or</p> <p>(b) BS EN 50200 (PH60) and Annex E of BS EN 50200 (a duration of survival time of 30 minutes) and one of following standards:</p> <p>(i) BS EN 60702</p> <p>(ii) BS 7629-1 (Cat. Standard 60)</p> <p>(iii) BS 7846 (Cat. F2 for cables of overall diameter not exceeding 20mm); or</p> <p>(c) BS 6387 Cat. CWZ; or</p> <p>(d) BS 7846 (Cat. F60 for cables of overall diameter exceeding 20mm); or</p> <p>(e) Other international standards acceptable to the Director of Fire Services.</p> <p><u>For enhanced cables or cable systems as defined in BS 5266-1, they shall comply with:</u></p> <p>(f) BS 5266-1; or</p> <p>(g) BS EN 50200 (PH120) and BS 8434-2 (a duration of survival time of 120 minutes) and one of the following standards:</p> <p>(i) BS EN 60702</p> <p>(ii) BS 7846 (Cat. F2 for cables of overall diameter not exceeding 20mm); or</p> <p>(h) BS 7629-1 (Cat. Enhanced 120); or</p> <p>(i) BS 6387 Cat. CWZ; or</p> <p>(j) BS 7846 (Cat. F120 for cables of overall</p>

		diameter exceeding 20mm); or (k) Other international standards acceptable to the Director of Fire Services.
18.	Exit Sign	The same requirements as those for item 17.
19.	Fire alarm system	<p><u>For standard cables or cable systems as defined in BS 5839-1, they shall comply with:</u></p> <p>(a) BS 5839-1; or (b) BS EN 50200 (PH30) and Annex E of BS EN 50200 (a duration of survival time of 30 minutes); or (c) BS EN 60702; or (d) BS 7629-1 (Cat. Standard 30); or (e) BS 7846 (Cat. F2 for cables of overall diameter not exceeding 20mm or Cat. F30 for cables of overall diameter exceeding 20mm); or (f) BS 6387 Cat. CWZ; or (g) Other international standards acceptable to the Director of Fire Services.</p> <p><u>For enhanced cables or cable systems as defined in BS 5839-1, they shall comply with:</u></p> <p>(h) BS EN 50200 (PH120) and BS 8434-2 (a duration of survival time of 120 minutes); or (i) BS EN 60702; or (j) BS 7629-1 (Cat. Enhanced 120); or (k) BS 7846 (Cat. F2 for cables of overall diameter not exceeding 20mm or Cat. F120 for cables of overall diameter exceeding 20mm); or (l) BS 6387 Cat. CWZ; or (m) Other international standards acceptable to the Director of Fire Services.</p>
20.	Fire detection system	The same requirement as those for item 19.
21.	Fireman's lift	Cables from the main essential switchboard for fire service installations to the main switch for lift power circuit, car lighting, etc., in the lift machine room shall comply with the same requirements as those for items 2 to 15.
22.	Sprinkler system	The same requirements as those for items 2 to 15.

Remarks:

Cables for fire service installation under any of the following conditions may be exempted from the above minimum requirements:-

- (a) Cables installed inside a switch/plant room of fire control centre and finally connected to fire services equipment in that particular room;
- (b) Cables installed only within two adjoining switch/plant rooms and finally connected to fire service equipment in these two rooms with cables passing through the common compartment wall;
- (c) Cables inside concealed metal or PVC conduits which are embedded by concrete to a depth of at least 12mm;
- (d) Cables inside concealed metal or PVC conduits which are embedded by plaster to a depth of at least 12mm provided that the area is protected by a sprinkler system, other automatic fixed installation using water or an automatic fixed installation other than water;
- (e) Cable inside underground cable ducts or reinforced concrete cable trenches;
- (f) Cable embedded in the soil to a depth of at least 300mm;
- (g) Cables within fire resisting cable ducts/enclosures which are not used by other services; the Fire Resisting Ratings of those cable ducts/enclosures shall be not less than that of the building compartment;
- (h) Cables inside flexible metal conduit or surface metal conduit not exceeding 2m in total length for connection to fire service equipment/device in area protected by a sprinkler system, other automatic fixed installation using water or an automatic fixed installation other than water;
- (i) Cables inside surface metal conduit/trunking (not exceeding 3m in total length) installed and terminated within the same fire compartment for connection to a fire alarm panel/fire alarm repeater panel; or
- (j) Exposed short connection cables which form an integral part of the fire service equipment listed by a Product Certification Body or cables inside fire service equipment.

Shutdown of Fire Service Installations for Inspection, Maintenance, Modification or Repair

Types of FSI for Notification

(A) When an Registered Fire Service Installation Contractor (RFSIC) is employed to maintain/inspect/modify/repair the following FSI(s) of which the work(s) is/are expected to be carried out *overnight or for more than 24 hours continuously*, the RFSIC should notify the FSD the defect(s) as soon as possible within 24 hours after the defect(s) is/are identified literally.

1. Fire Hydrant / Hose Reel System
2. Sprinkler System
3. Fire Alarm System
4. Street Fire Hydrant System
5. Water Spray System
6. Smoke Extraction System
7. Staircase Pressurization System
8. Dry Riser System
9. Fire Detection System of premises with sleeping risk

Remarks: Only shutdown of any of the above nine types of FSI system are required to be notified by RFSIC to the FSD. Shutting down of Sprinkler System simultaneously with either Fire Hydrant / Hose Reel System or Fire Detection System in premises with sleeping risk should be avoided.

Scope of FSI Work(s)

(B) Written notification should be made if the shutdown is arisen from a situation where there are defects in the FSI system which may, in the event of fire, put the entire building or licensed/registered premises mentioned in sub-paragraph (C), in jeopardy. Examples, which are not exhaustive, are as follows:

Fire Hydrant / Hose Reel System, Sprinkler System, Street Fire Hydrant System

- (i) No water supply (e.g. water tank is empty/leaking, piping to water tank is disconnected, etc.);
- (ii) Whole set of duty AND standby pumps are defective; and

(iii) Inlet / stop valve at various tank connection is defective.

Licensed/Registered Premises

(C) Taking into consideration the building occupancy and its associated risk, the RFSIC should specify in the written notification that any of the following type(s) of licensed/registered premises are likely to be affected by the FSI shutdown:

1. Residential Care Home for the Elderly / Persons with Disabilities
2. Child Care Centres
3. Places of Public Entertainment (e.g. cinemas, theatres, theme parks, etc. where large licensed area and large number of participants are concerned)
4. Hotels, Guesthouse Accommodations
5. Dangerous Goods Stores

Fire Safety Improvement Works

(D) RFSIC should clearly specify in the written notification whether the work(s) is/are carried out for the compliance with the Fire Safety Direction(s) / Fire Safety Improvement Direction(s), where appropriate, issued under any of the following relevant Ordinance:

1. Fire Safety (Commercial Premises) Ordinance, Cap. 502;
2. Fire Safety (Buildings) Ordinance, Cap. 572; or
3. Fire Safety (Industrial Buildings) Ordinance, Cap. 636

Period of FSI Shutdown

(E) Disruption to the normal operation of the FSI caused by its shutdown should be kept to the minimum. A systematic approach should be adopted in carrying out the works. The affected FSI should be shut down by sections and be resumed normal as soon as practicable. If the affected portion of the system could not be reinstated to normal working condition by the end of a working shift, arrangements should be made for the portion to be isolated and the remainder of the system to be reinstated. In general, with the exception of the above fire safety improvement works as required by Fire Safety Direction(s) / Fire Safety Improvement Direction(s), where appropriate, under Cap. 502/572/636, which might take relatively longer time than the general FSI work(s), the period of FSI shutdown in each submission should

not be more than 14 days.

Extension of FSI Shutdown / Resumption of FSI

(F) If extension of the shutdown period is required, the RFSIC should submit a written notification of extension to the FSD before the previously scheduled date of completion. However, if there is/are change(s) in the extent of the affected FSI system(s) which warrant(s) shutdown for maintenance/inspection/modification/ repair, the RFSIC should submit a fresh written notification to the FSD following the procedures as stated in this chapter. Moreover, upon resumption of normal operation of the FSI, the RFSIC should also submit a written notification to the FSD in this regard without delay.

Termination of FSI Work(s)

(G) On the other hand, if the RFSIC is no longer employed for the work(s), a written notification to the FSD should be submitted before the previously scheduled date of completion, and the owner(s) of FSI should be informed of the details of the FSI shutdown without delay.

Signatory of Notification and Inclusion of Serial Number of Relevant FS 251

(H) Under normal circumstances, the written notification shall only be completed and signed by the Qualified Person (QP) or Authorized Signatory (AS) of the RFSIC. When staff of RFSIC is tasked to respond to carry out the work(s) and shutdown of FSI is considered necessary, the RFSIC could, in case of urgency, delegate his/her staff to submit the duly completed written notification on behalf of himself/herself. The RFSIC should also indicate the serial number of relevant FS 251, if any, which was previously issued for the inspection work(s) of the FSI system (Part I of **Annex I** refers).

(I) In respect of sub-paragraph (F), QP/AS of RFSIC should critically review the need for extension of FSI shutdown and personally confirm such need / resumption of FSI vide the written notification (Part II and III of **Annex I** refer). Serial number of relevant FS 251 which was previously issued for the work(s) must also be provided in the written notification.

Special Attention

The notification of FSI shutdown to the FSD shall ONLY be made by using the Notification Form in **Annex I** that any other types of written or verbal notification will not be accepted. All information required in the form should be duly provided by the RFSIC. The Fire Services Communications Centre (FSCC) will upon receipt of the form, stamp an unique FSD serial number on the form and send a copy of the stamped form to the RFSIC and the local fire station. The RFSIC should ensure that he/she has received the form stamped with FSD serial number from FSCC for each FSI shutdown case. A sample of stamped form is enclosed at **Annex II**.

Upon receipt of the above written notification, the local fire station will visit the affected premises and conduct on-site risk assessment. In order to mitigate the risk imposed on the premises and their occupants during the shutdown period, stand-by means such as fire extinguishers, stand-alone smoke detectors, etc. should be provided by the FSI owners according to the nature of fire risk and the area(s) being affected. Advice to be given to the owners / occupants / property management company concerned is enclosed at **Annex III**.

In addition to the notification mechanism set out in the aforesaid paragraphs, the following guidelines should also be observed by the RFSIC concerned when an FSI is expected to be shut down *overnight or for more than 24 hours continuously*:

- (a) The residents / occupants / property management company should be notified of the FSI shutdown, i.e. the date of commencement and the anticipated date of completion of the maintenance/modification/repair.
- (b) Simple and standardized graphical notices of size not smaller than A4 size detailing the FSI shutdown should be posted at prominent locations (A sample of such notice is attached in **Annex IV** for compliance).
- (c) Shutting down the whole system for a prolonged period should be avoided and the affected FSI system should be resumed as early as practicable.
- (d) Whenever practicable, either duty or standby pump of Sprinkler System and Fire Hydrant / Hose Reel System should be kept functional; and water tanks of the affected/unaffected systems should be topped up prior to the commencement of work.

- (e) Suspend any activities that generate sparks, hot molten droplets in the affected areas.

It is obvious that without the notification of the shutdown/defect(s) of any FSI promptly, the FSD would neither formulate appropriate contingency plan nor give advice to owners /occupiers / property management company concerned on additional fire safety measures to be taken during the shutdown period. In such circumstances, RFSIC should be well aware of the hazards posed by the shutdown of FSIs without any contingency measures. Against this background, the Director is of the view that ***(i) failure to follow the procedures of notification to the Director as stipulated in this Chapter or (ii) any undue, arbitrary or deliberate delay of FSI works, may amount to 'improper conduct or negligence' in the maintenance/repair of FSI, rendering the RFSIC concerned unfit to be on the register. Pursuant to regulation 10 of the Fire Service (Installation Contractors) Regulations, Cap. 95A, Laws of Hong Kong, the RFSIC concerned may be referred to the disciplinary board by the Director of Fire Services.***

致：香港消防處
消防通訊中心
傳真號碼：2311 0066
填寫日期：_____

此欄由消防處消防通訊中心填寫

消防處檔案編號：_____

樓宇所屬消防局：_____

消防裝置關閉通知書

樓宇/屋苑名稱：_____	地區：_____
門牌號數及街道名稱：_____	<input type="checkbox"/> 香港 <input type="checkbox"/> 九龍 <input type="checkbox"/> 新界
註冊消防裝置承辦商：_____	級別/編號：_____
本公司確認以下受影響的消防裝置需要 通宵或連續超過 24 小時 關閉	
<input type="checkbox"/> 消防栓/喉轆系統 <input type="checkbox"/> 花灑系統 ⁽¹⁾ <input type="checkbox"/> 乾喉系統 <input type="checkbox"/> 火警偵測系統(存在休眠風險的處所) <input type="checkbox"/> 火警警報系統 <input type="checkbox"/> 噴水系統 <input type="checkbox"/> 排煙系統 <input type="checkbox"/> 樓梯增壓系統 <input type="checkbox"/> 街道消防栓系統	
以下持牌/註冊處所將會受到影響	上述消防裝置因以下法例要求進行消防安全改善工程
<input type="checkbox"/> 安老/殘疾院舍 <input type="checkbox"/> 酒店/賓館 <input type="checkbox"/> 幼兒中心 <input type="checkbox"/> 危險品倉 <input type="checkbox"/> 公眾娛樂場所(如戲院/劇院/主題公園等)	<input type="checkbox"/> Cap. 502 消防安全(商業處所)條例 <input type="checkbox"/> Cap. 572 消防安全(建築物)條例 <input type="checkbox"/> Cap. 636 消防安全(工業建築物)條例

第一部份 - 關閉消防裝置	填寫人 ^(4,5) 簽署	承辦商蓋印	消防通訊中心蓋印/填寫
開始關閉日期：_____			CMS updated & checked
預計完成日期 ⁽²⁾ ：_____			By: _____
FS 251 ⁽³⁾ 編號(如有)：_____			Rank/No. _____
Date: _____			
填寫人 ^(4,5) 姓名：_____ 手提電話：_____ 公司電話：_____ 傳真號碼：_____			

第二部份 - 延長關閉消防裝置	填寫人 ⁽⁴⁾ 簽署	承辦商蓋印	消防通訊中心蓋印/填寫
工程需延期至 ⁽²⁾ ：_____			CMS updated & checked
FS 251 ⁽³⁾ 編號(如有)：_____			By: _____
Date: _____			
填寫人 ⁽⁴⁾ 姓名：_____ 手提電話：_____ 公司電話：_____ 傳真號碼：_____			

第三部份 - 恢復消防裝置	填寫人 ⁽⁴⁾ 簽署	承辦商蓋印	消防通訊中心蓋印/填寫
工程完成日期：_____			CMS updated & checked
FS 251 ⁽³⁾ 編號：_____			By: _____
Date: _____			
填寫人 ⁽⁴⁾ 姓名：_____ 手提電話：_____ 公司電話：_____ 傳真號碼：_____			

上述已關閉的消防系統不再由本公司負責有關工程，本公司已把該系統的狀況詳細告知委聘人

註 1：花灑系統應**避免**與消防栓/喉轆系統或火警偵測系統(存在休眠風險的處所)同時關閉。

註 2：一般而言，除了因法例要求進行的消防安全改善工程外，每次關閉/延長關閉消防裝置的時間不應超過 **14 天**。

註 3：註冊消防裝置承辦商須於完成**檢查**任何消防裝置或設備後 **14 天內**發出一份證明書。

註 4：第一、第二及第三部份填寫人必須為**合資格人士(QP)**或**獲授權簽署證書人士(AS)**。


註 5：如承辦商員工在進行工程時認為有必要關閉消防裝置，承辦商可在緊急情況下授權員工代其填寫通知書。

致：香港消防處
消防通訊中心
傳真號碼：2311 0066
填寫日期：_____

此欄由消防處消防通訊中心填寫	
消防處檔案編號：	F20210301
樓宇所屬消防局：	MKFStn

消防裝置關閉通知書

樓宇/屋苑名稱：_____	地區：_____
門牌號數及街道名稱：_____	<input type="checkbox"/> 香港 <input type="checkbox"/> 九龍 <input type="checkbox"/> 新界
註冊消防裝置承辦商：_____	級別/編號：_____
本公司確認以下受影響的消防裝置需要 通宵或連續超過 24 小時 關閉	
<input type="checkbox"/> 消防栓/喉轆系統 <input type="checkbox"/> 花灑系統 ⁽¹⁾ <input type="checkbox"/> 乾喉系統 <input type="checkbox"/> 火警偵測系統(存在休眠風險的處所) <input type="checkbox"/> 火警警報系統 <input type="checkbox"/> 噴水系統 <input type="checkbox"/> 排煙系統 <input type="checkbox"/> 樓梯增壓系統 <input type="checkbox"/> 街道消防栓系統	
以下持牌/註冊處所將會受到影響	上述消防裝置因以下法例要求進行消防安全改善工程
<input type="checkbox"/> 安老/殘疾院舍 <input type="checkbox"/> 酒店/賓館 <input type="checkbox"/> 幼兒中心 <input type="checkbox"/> 危險品倉 <input type="checkbox"/> 公眾娛樂場所(如戲院/劇院/主題公園等)	<input type="checkbox"/> Cap. 502 消防安全(商業處所)條例 <input type="checkbox"/> Cap. 572 消防安全(建築物)條例 <input type="checkbox"/> Cap. 636 消防安全(工業建築物)條例

第一部份 - 關閉消防裝置	填寫人 ^(4,5) 簽署	承辦商蓋印	消防通訊中心蓋印/填寫
開始關閉日期：_____			 CMS updated & checked By: <u>S9999</u> Rank/No. Date: <u>1/3/2021</u>
預計完成日期 ⁽²⁾ ：_____			
FS 251 ⁽³⁾ 編號(如有)：_____			
填寫人 ^(4,5) 姓名：_____ 手提電話：_____ 公司電話：_____ 傳真號碼：_____			

第二部份 - 延長關閉消防裝置	填寫人 ⁽⁴⁾ 簽署	承辦商蓋印	消防通訊中心蓋印/填寫
工程需延期至 ⁽²⁾ ：_____			CMS updated & checked By: _____ Rank/No. Date: _____
FS 251 ⁽³⁾ 編號(如有)：_____			
填寫人 ⁽⁴⁾ 姓名：_____ 手提電話：_____ 公司電話：_____ 傳真號碼：_____			

第三部份 - 恢復消防裝置	填寫人 ⁽⁴⁾ 簽署	承辦商蓋印	消防通訊中心蓋印/填寫
工程完成日期：_____			CMS updated & checked By: _____ Rank/No. Date: _____
FS 251 ⁽³⁾ 編號：_____			
填寫人 ⁽⁴⁾ 姓名：_____ 手提電話：_____ 公司電話：_____ 傳真號碼：_____			

上述已關閉的消防系統不再由本公司負責有關工程，本公司已把該系統的狀況詳細告知委聘人

註1：花灑系統應**避免**與消防栓/喉轆系統或火警偵測系統(存在休眠風險的處所)同時關閉。

註2：一般而言，除了因法例要求進行的消防安全改善工程外，每次關閉/延長關閉消防裝置的時間不應超過**14天**。

註3：註冊消防裝置承辦商須於完成**檢查**任何消防裝置或設備後**14天內**發出一份證明書。

註4：第一、第二及第三部份填寫人必須為**合資格人士(QP)**或**獲授權簽署證書人士(AS)**。

註5：如承辦商員工在進行工程時認為有必要關閉消防裝置，承辦商可在緊急情況下授權員工代其填寫通知書。

In general, the following advice, though not exhaustive subject to the on-site visit assessment, will be given by the local fire station during visit to the affected premises to the owner / occupiers / property management company concerned to:

- (i) formulate an emergency plan;
- (ii) patrol the affected areas (e.g. 24-hour manning, patrol at 15-minute intervals evidenced by making entries in a record book provided thereat);
- (iii) designate named personnel to undertake specified tasks, including monitoring the progress of repair work, report to the Police/FSD upon the discovery of a fire, etc.;
- (iv) place/install additional firefighting and/or detection equipment with an alarm sounding function such as fire extinguishers, standalone smoke detectors, temporary firefighting water supply system, etc. in the affected area(s);
- (v) arrange sufficient trained staff for operating the FSI/portable equipment and executing the emergency plan;
- (vi) inspect and review passive and active fire protection measures, including fire doors, gaseous extinguishing systems and portable fire extinguishers. Neither obstruction nor impairment of the available FSI should be allowed;
- (vii) display suitable notices at prominent locations about the shutdown of the systems;
- (viii) reduce the stock level of goods, in particular, those highly combustible ones (e.g. flimsy paper products, paints, etc.);
- (ix) suspend any unnecessary activities that generate sparks, hot molten droplets in the affected areas; and
- (x) maintain good housekeeping.

Not less than 21 cm

FSI SHUTDOWN NOTICE



Maintenance/ Inspection/ Modification/ Repair of FSI System will be conducted from _____ to _____. The following FSI System will be temporarily shut down.

Name of FSI Contractor : _____

Emergency Contact No.: _____

The following fire service installation(s) will be temporarily shut down:

Not less
than
29 cm

- Fire Hydrant / Hose Reel System (Floor(s)/area(s) involved _____)
- Sprinkler System (Floor(s)/area(s) involved _____)
- Dry Riser System (Floor(s)/area(s) involved _____)
- Fire Alarm System (Floor(s)/area(s) involved _____)
- Water Spray System (Floor(s)/area(s) involved _____)
- Smoke Extraction System (Floor(s)/area(s) involved _____)
- Staircase Pressurization System (Floor(s)/area(s) involved _____)
- Street Fire Hydrant System (Floor(s)/area(s) involved _____)
- Fire Detection System (Floor(s)/area(s) involved _____)
(Premises with sleeping risk)

In case of fire, please call 999 immediately
and inform property management staff.

Statutory Requirements for Maintenance, Inspection and Repair of FSI and Examination, Testing and Certification of Gas Cylinders Used as FSI

Installation / Equipment	Type of Maintenance Work	Person Authorized by FSD for Maintenance Work
FSI (other than portable equipment)	Annual inspection	RFSIC
	Maintenance / Repair	Class 1 <i>and/or</i> Class 2
Pressure cylinder ¹ of an FSI	Hydraulic pressure test every 5 years	Approved Person ³ for examination, testing and certification of gas cylinders
	Charging	Person holding a licence for the manufacture of relevant dangerous goods
Portable equipment ²	Annual inspection	RFSIC Class 3
	Hydraulic pressure test every 5 years	
	Refilling of extinguishing agent and/or charging of fire extinguishers <i>other than</i> CO ₂ gas and clean agent fire extinguishers	
	Charging of CO ₂ gas and clean agent fire extinguishers	Supplier of portable equipment (Person holding a licence for the manufacture of relevant dangerous goods)

Remarks:

1. Required to be approved by FSD under r.64 of the Dangerous Goods (General) Regulations, Cap. 295B
2. Required to be approved under r.3 of the Fire Service (Installations and Equipment) Regulations, Cap. 95B
3. List of Approved Persons for examination, testing and certification of gas cylinders to be referred to FSD webpage.

**Notes on Fire Extinguishers, Fire Blankets and Sand Buckets
(Suitability and Maintenance)**

I. CARBON DIOXIDE TYPE EXTINGUISHERS

Use:

On electrical fires, flammable liquids, delicate equipment, important documents, or fires in confined spaces.

Note:

Vapours will asphyxiate. Withdraw to open air after use.

Maintenance:

This type of extinguisher should be examined every 12 months and the following maintenance carried out:-

- (i) The total weight should be checked against that recorded when the extinguisher was put into service. If a loss of weight of more than 10 per cent is detected, the extinguisher should be discharged and returned to the supplier for examination, test and recharging.
- (ii) The body of the extinguisher should be examined and, if there are signs of damage or extensive external corrosion, the extinguisher should be discharged and returned to supplier for examination, test and recharging.
- (iii) The discharge horn and hose should be checked to see that it moves freely and should be replaced if damaged is detected.
- (iv) Hydraulic pressure test should be carried out every five years on the cylinder in accordance with the manufacturer's instructions. Extreme care should be exercised when preparing and conducting the test.
- (v) Unserviceable extinguisher should be discharged prior to disposal.

II. WATER TYPE EXTINGUISHERS

Use:

On fires involving woods, textiles and paper.

Never:

On fires involving electrical or flammable liquids or metals.

Maintenance:

This type of extinguisher should be examined every 12 months and the following maintenance carried out:-

(GAS-CARTRIDGE TYPE)

- (i) The vent holes in the cap should be checked for cleanliness and free from obstruction.
- (ii) Remove the headcap to check the liquid level. The liquid should be topped up as necessary.
- (iii) The nozzle, strainer and internal discharge tube should be checked for cleanliness and free from obstruction. Defective items shall be replaced.
- (iv) The gas cartridge should be weighed and the weight checked against that marked on the cartridge. The cartridge should be renewed if a loss of more than 10 per cent of the contents is recorded.
- (v) No corrosion, damage or rust should be visible either externally or internally. Special attention should be paid to the concealed parts of the container.
- (vi) Before the headcap is replaced and while the gas cartridge is unscrewed therefrom, the plunger or other operating device should be checked to see that it operates freely. The washer should be examined and replaced if necessary. The cap should then be tightly screwed to the container to form a gas-tight joint.
- (vii) Test 50 per cent of extinguishers by discharge every year in rotation so that all extinguishers are tested by discharge every two years. Should any extinguisher fail in the test, all cartridges in the remainder should be replaced. Extreme care should be exercised during preparing and conducting discharge test. Prior to discharging, the container should be ensured in good condition such as no corrosion, damage or rust should be visible externally or internally on any part of the container; otherwise hydraulic pressure test should then be carried out to confirm the container structurally sound. Should there be doubt about the condition of the container, hydraulic pressure test shall be conducted instead.
- (viii) Corroded parts should be cleaned up and refinished after the hydraulic pressure test.
- (ix) Hydraulic pressure test should be carried out every five years on the container in accordance with the manufacturer's instructions. Extreme care should be exercised when preparing and conducting the test.

- (x) Before carrying out hydraulic pressure test, remove the headcap, disconnect the gas cartridge and clear the contents. Never empty the contents by discharging the extinguisher.
- (xi) Also, before disposal of unserviceable fire extinguisher, remove the headcap, disconnect the gas cartridge and clear the contents. Never empty the contents by discharging the extinguisher.

(STORED-PRESSURE TYPE)

- (i) The pressure indicating device should be checked to see the correct pressure is being maintained within the extinguisher body.
- (ii) The nozzle or branch-pipe (if fitted) and the pressure releasing valve in the cap should be checked for cleanliness and free from obstruction. Defective items shall be replaced.
- (iii) No corrosion, damage or rust should be visible externally on any part of the container. Special attention should be paid to the concealed parts of the container.
- (iv) Test 50 per cent of extinguishers by discharge every year in rotation so that all extinguishers are tested by discharge every two years. Should any extinguisher fail in the test, all extinguishers should be overhauled and recharged.
- (v) Prior to recharging, the container should be ensured in good condition such as no corrosion, damage or rust was noted; otherwise hydraulic pressure test should be conducted to confirm the container structurally sound.
- (vi) Hydraulic pressure test should be carried out every five years on the container in accordance with the manufacturer's instructions. Extreme care should be exercised when preparing and conducting the test.
- (vii) Unserviceable extinguisher should be discharged prior to disposal.

III. DRY POWDER TYPE EXTINGUISHERS

Use:

On most fires, flammable liquids, metal fires or electrical fires.

Maintenance:

This type of extinguisher should be examined every 12 months and the following maintenance carried out:-

(GAS-CARTRIDGE TYPE)

- (i) The vent holes in the cap should be checked for cleanliness and free from obstruction.
- (ii) The extinguisher should be weighed to check that it contains the correct weight of powder. The weight when fully charged should be recorded at the time of charging. If the weight is found to have dropped by more than 10 per cent, the dry powder should be replaced by a fresh charge. Care should be taken not to mix different types of dry powder because they could react with one another.
- (iii) The powder should be agitated to ensure it is free from caking.
- (iv) Remove the headcap to check the condition of powder. The chemical should be renewed if it is not in good condition.
- (v) The nozzle and discharge control (if fitted) should be checked for cleanliness and free from obstruction. Defective items shall be replaced.
- (vi) The gas cartridge should be weighed and the weight checked against that marked on the cartridge. The cartridge should be renewed if a loss of more than 10 per cent of the contents is recorded.
- (vii) No corrosion, damage or rust should be visible either externally or internally. Special attention should be paid to the concealed parts of the container.
- (viii) Before the headcap is replaced and while the gas cartridge is unscrewed therefrom, the plunger or other operating device should be checked to see that it operates freely. The washer should be examined and replaced if necessary. The cap should then be tightly screwed to the container to form a gas-tight joint.
- (ix) Test 50 per cent of extinguishers by discharge every year in rotation so that all extinguishers are tested by discharge every two years. Should any extinguisher fail in the test, all cartridges in the remainder should be replaced. Extreme care should be exercised during preparing and conducting discharge test. Prior to discharging, the container should be ensured in good condition such as no corrosion, damage or rust should be visible externally or internally on any part of the container; otherwise hydraulic pressure test should then be carried out to confirm the container structurally sound. Should there be doubt about the condition of the container, hydraulic pressure test shall be conducted instead.
- (x) Corroded parts should be cleaned up and refinished after the hydraulic pressure test.

- (xi) Hydraulic pressure test should be carried out every five years on the container in accordance with the manufacturer's instructions. Extreme care should be exercised when preparing and conducting the test.
- (xii) Before carrying out hydraulic pressure test, remove the headcap, disconnect the gas cartridge and the dry powder should be collected for subsequent re-cycling/disposal. Never empty the contents by discharging the extinguisher.
- (xiii) Also, before disposal of unserviceable fire extinguisher, remove the headcap, disconnect the gas cartridge and the dry powder should be collected for subsequent re-cycling/disposal. Never empty the contents by discharging the extinguisher.

(STORED-PRESSURE TYPE)

- (i) The extinguisher should be weighed to check it contains the correct weight of powder. If the weight is found to have dropped by more than 10 per cent, the dry powder should be replaced by a fresh charge. Care should be taken not to mix different types of dry powder because they could react with one another.
- (ii) The pressure indicating device should be checked to see the correct pressure is being maintained within the extinguisher body.
- (iii) The nozzle or branch-pipe (if fitted) and the pressure releasing valve in the cap should be checked for cleanliness and free from obstruction. Defective items shall be replaced.
- (iv) No corrosion, damage or rust should be visible externally on any part of the container. Special attention should be paid to the concealed parts of the container.
- (v) Test 50 per cent of extinguishers by discharge every year in rotation so that all extinguishers are tested by discharge every two years. The dry powder should be discharged to an enclosure for collection and subsequent re-cycling/disposal. Should any extinguisher fail in the test, all extinguishers should be overhauled and recharged.
- (vi) Prior to recharging, the container should be ensured in good condition such as no corrosion, damage or rust was noted; otherwise hydraulic pressure test should be conducted to confirm the container structurally sound.
- (vii) Hydraulic pressure test should be carried out every five years on the container in accordance with the manufacturer's instructions. Extreme care should be exercised when preparing and conducting the test.
- (viii) Unserviceable extinguisher should be discharged prior to disposal. The dry powder should be discharged to an enclosure for collection and subsequent re-cycling/disposal.

NOTE:

- (a) Dry powder extinguishers must be thoroughly dry internally before they are recharged.
- (b) Advice should be obtained from the Fire Services Department as to the possible reaction between the powder or expellant and the material protected.

IV. CLEAN AGENT FIRE EXTINGUISHERS

Use:

On electrical fires, flammable liquids, delicate equipment, important documents.

Maintenance:

This type of extinguisher should be examined every 12 months and the following maintenance carried out:-

(PORTABLE TYPE)

- (i) The pressure indicating device should be checked to see the correct pressure is being maintained within the extinguisher body.
- (ii) The extinguisher should be weighed to check against the total weight record when it is put into service. If a loss of weight of more than 10 per cent is detected, the extinguisher should be discharged to a closed recycling system and returned to the supplier for examination, test and recharging.
- (iii) The nozzle or branch-pipe (if fitted) and the pressure releasing valve in the cap should be checked for cleanliness and free from obstruction. Defective items shall be replaced.
- (iv) No corrosion, damage or rust should be visible externally on any part of the container. Special attention should be paid to the concealed parts of the container.
- (v) If there are signs of damage or external corrosion, the extinguisher should be discharged to a closed recycling system and returned to the supplier for examination, test and recharging.
- (vi) Hydraulic pressure test should be carried out every five years on the container in accordance with the manufacturer's instructions. Extreme care should be exercised when preparing and conducting the test.
- (vii) Unserviceable extinguisher should be discharged to a closed recycling system prior to disposal.

(FIXED SPRAYER UNIT)

- (i) The pressure indicating device (if fitted) should be checked to see the correct pressure is being maintained within the extinguisher body.
- (ii) The extinguisher should be weighed to check against the total weight record when it is put into service. If a loss of weight of more than 10 per cent is detected, the extinguisher should be discharged to a closed recycling system and returned to the supplier for examination, test and recharging.
- (iii) The deflector and the sensing element should be checked and cleaned.
- (iv) No corrosion, damage or rust should be visible externally on any part of the container. Special attention should be paid to the concealed parts of the container.

- (v) If there are signs of damage or external corrosion, the extinguisher should be discharged to a closed recycling system and returned to the supplier for examination, test and recharging.
- (vi) Hydraulic pressure test should be carried out every five years on the container in accordance with the manufacturer's instructions. Extreme care should be exercised when preparing and conducting the test.
- (vii) Unserviceable extinguisher should be discharged to a closed recycling system prior to disposal.

V. FOAM (CHEMICAL) TYPE EXTINGUISHERS

Use:

On fires involving flammable liquids.

Never:

On electrical fires.

Maintenance:

This type of extinguisher should be examined every 12 months and the following maintenance carried out:-

- (i) The nozzle and the vent holes in the cap should be checked for cleanliness and free from obstruction.
- (ii) Remove the headcap to check the liquid levels in the body and in the inner container. Any slight loss may be made up with water; otherwise a new charge should be used.
- (iii) No corrosion, damage or rust should be visible either externally or internally. Special attention should be paid to the concealed parts of the container.
- (iv) Before the headcap is replaced, the plunger, the headcap lever for the sealing device or other operating device should be checked to see that it operates freely. The washer should be replaced if necessary and the cap should then be tightly screwed to the container to form a gas-tight joint.
- (v) Test 50 per cent of extinguishers by discharge every year in rotation so that all extinguishers are tested by discharge every two years. Should any extinguisher fail in the test, all should be tested by discharge. Extreme care should be exercised during preparing and conducting discharge test. Prior to discharging, the container should be ensured in good condition such as no corrosion, damage or rust should be visible externally or internally on any part of the container; otherwise hydraulic pressure test should then be carried out to confirm the container structurally sound. Should there be doubt in the condition of the container, hydraulic pressure test shall be conducted instead.
- (vi) Corroded parts should be cleaned up and refinished after the hydraulic pressure test.
- (vii) Hydraulic pressure test should be carried out every five years on the outer container in accordance with the manufacturer's instructions; the inner container should be examined to ensure it is in good condition and not leaking. Extreme care should be exercised when preparing and conducting the test.
- (viii) Before carrying out hydraulic pressure test, remove the headcap and clear the contents. Never empty the contents by discharging the extinguisher.
- (ix) Also, before disposal of unserviceable extinguisher, remove the headcap and clear the contents. Never empty the contents by discharging the extinguisher.

NOTE:

Inverted type chemical foam extinguishers have ceased production and not permitted for sale. However, products already sold may continued to be used.

VI. FOAM (MECHANICAL) TYPE EXTINGUISHERS

Use:

On fires involving flammable liquids.

Never:

On electrical fires.

Maintenance:

This type of extinguisher should be examined every 12 months and the following maintenance carried out:-

(GAS-CARTRIDGE TYPE)

- (i) The vent holes in the cap should be checked for cleanliness and free from obstruction.
- (ii) Remove the headcap to check the liquid level. If the liquid level was found to have dropped by more than 10 per cent, the foam concentrate or foam solution as appropriate should be replaced by a fresh charge.
- (iii) The branchpipe, strainer and internal discharge tube should be checked for cleanliness and free from obstruction. Defective items shall be replaced.
- (iv) The gas cartridge should be weighed and the weight checked against that marked on the cartridge. The cartridge should be renewed if a loss of more than 10 per cent of the contents is recorded.
- (v) No corrosion, damage or rust should be visible either externally or internally. Special attention should be paid to the concealed parts of the container.
- (vi) Before the headcap is replaced and while the gas cartridge is unscrewed therefrom, the plunger or other operating device should be checked to see that it operates freely. The washer should be examined and replaced if necessary. The cap should then be tightly screwed to the container to form a gas-tight joint.
- (vii) Test 50 per cent of extinguishers by discharge every year in rotation so that all extinguishers are tested by discharge every two years. Should any extinguisher fail in the test, all cartridges in the remainder should be replaced. Extreme care should be exercised during preparing and conducting discharge test. Prior to discharging, the container should be ensured in good condition such as no corrosion, damage or rust should be visible externally or internally on any part of the container; otherwise hydraulic pressure test should then be carried out to confirm the container structurally sound. Should there be doubt about the condition of the container, hydraulic pressure test shall be conducted instead.
- (viii) Corroded parts should be cleaned up and refinished after the hydraulic pressure test.
- (ix) Hydraulic pressure test should be carried out every five years on the container in accordance with the manufacturer's instructions. Extreme care should be exercised when preparing and conducting the test.

- (x) Before carrying out hydraulic pressure test, remove the headcap, disconnect the gas cartridge and clear the contents. Never empty the contents by discharging the extinguisher.
- (xi) Also, before disposal of unserviceable fire extinguisher, remove the headcap, disconnect the gas cartridge and clear the contents. Never empty the contents by discharging the extinguisher.

(STORED-PRESSURE TYPE)

- (i) The pressure indicating device should be checked to see the correct pressure is being maintained within the extinguisher body.
- (ii) The nozzle or branch-pipe (if fitted) and the pressure releasing valve in the cap should be checked for cleanliness and free from obstruction. Defective items shall be replaced.
- (iii) No corrosion, damage or rust should be visible externally on any part of the container. Special attention should be paid to the concealed parts of the container.
- (iv) Test 50 per cent of extinguishers by discharge every year in rotation so that all extinguishers are tested by discharge every two years. Should any extinguisher failed in the test, all extinguishers should be overhauled and recharged.
- (v) Prior to recharging, the container should be ensured in good condition such as no corrosion, damage or rust was noted; otherwise hydraulic pressure test should be conducted to confirm the container structurally sound.
- (vi) Hydraulic pressure test should be carried out every five years on the container in accordance with the manufacturer's instructions. Extreme care should be exercised when preparing and conducting the test.
- (vii) Unserviceable extinguisher should be discharged prior to disposal.

VII. FIRE BLANKETS

Use:

On fires involving flammable liquids, such as small fires in the kitchen and laboratory.

Method for Use:

Drape the blanket over the flames to seal off air. Switch off heat and leave in position until cool.

Maintenance:

This blanket should be examined every 12 months or after use in fire. The following maintenance should be carried out:-

- (i) Check for any deterioration.
- (ii) Cleaning in accordance with the manufacturer's instructions as when necessary.
- (iii) If manufacturer's instructions are not available, fire blanket can be washed (soak overnight in detergent, gently hand rinse in warm water). Do not machine wash or dry clean.

REMARKS:

- (i) Fire blankets are classified into two categories, namely:-
 "Heavy Duty" fire blankets (BS 7944:1999); and
 "Light Duty" fire blankets (BS EN 1869:1997)
- (ii) Only "Heavy Duty" and "reusable" fire blankets will be approved as a Fire Services standard requirement.
- (iii) "Light Duty" fire blankets may be accepted for use on a private basis and should be disposed of after use.

VIII. SAND BUCKETS

Use:

On fires involving flammable liquids.

Method for Use:

Pour the content in the bucket over spilled flammable liquids to control the flow of spilled flammable liquids.

Maintenance:

Sand bucket should be examined every 12 months or after use in fire. The following maintenance should be carried out:-

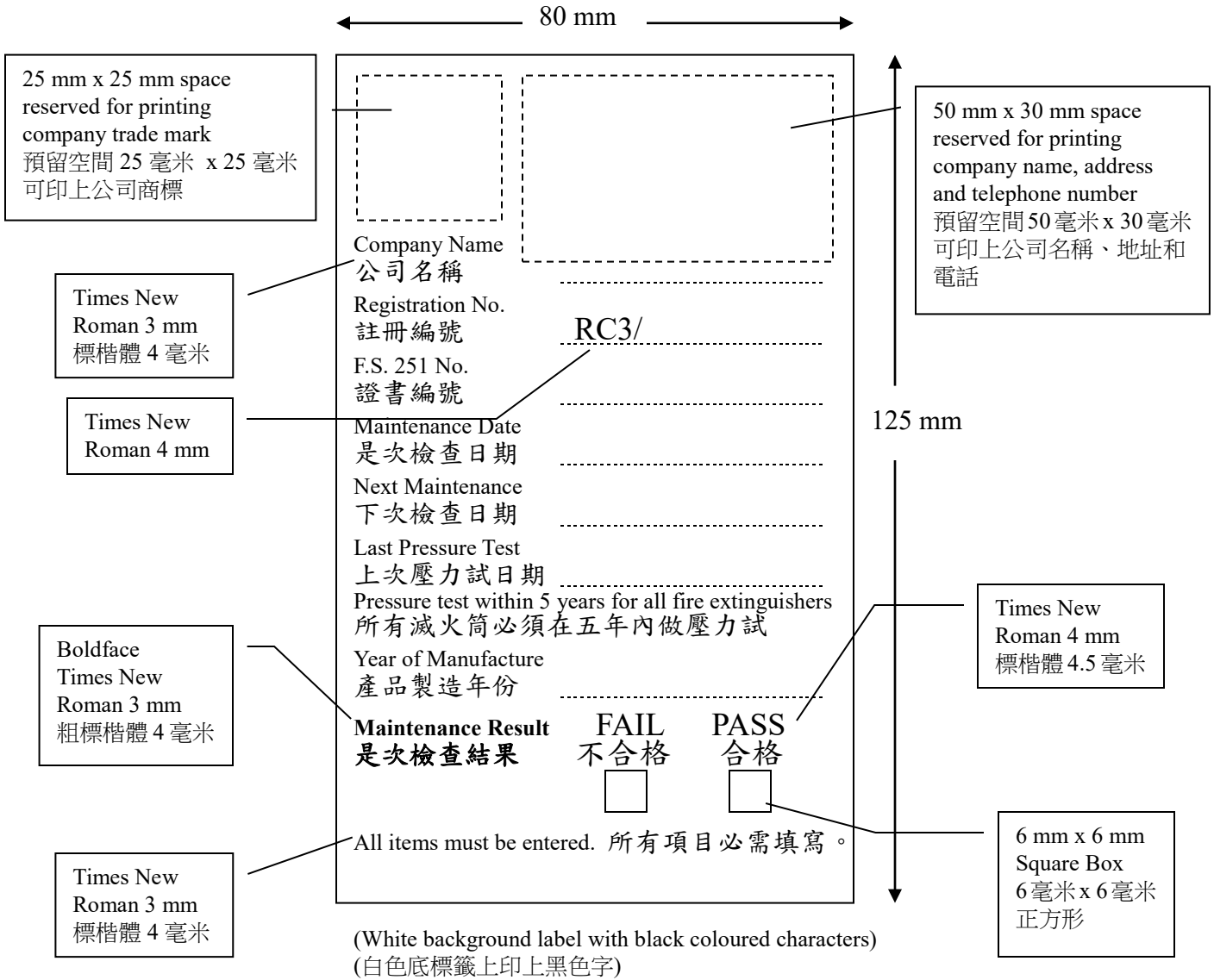
(METAL SAND BUCKET)

- (i) The condition of metal sand bucket together with its cover should be examined.
- (ii) Repaint in red colour and re-label in English and Chinese where necessary.
- (iii) Seriously corroded unit should be replaced.
- (iv) Check the sand level inside the bucket and refill the bucket where necessary.
- (v) Wet sand should be dried up.

(PLASTIC SAND BUCKET)

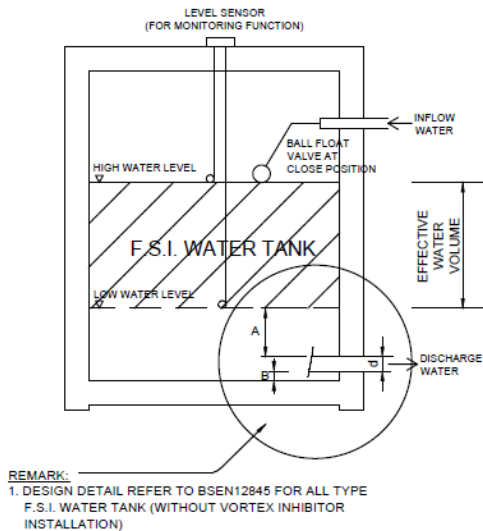
- (i) The condition of plastic sand bucket together with its cover should be examined.
- (ii) Re-label in English and Chinese where necessary.
- (iii) Deteriorated unit should be replaced.
- (iv) Check the sand level inside the bucket and refill the bucket where necessary.
- (v) Wet sand should be dried up.

IX. SAMPLE MAINTENANCE LABEL (保養標籤樣本)

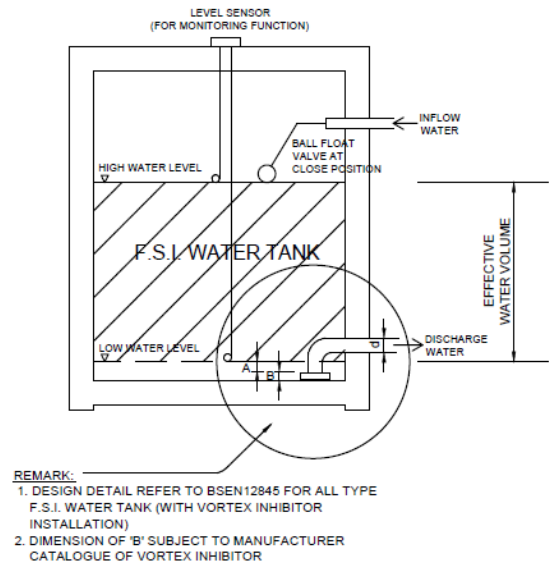


**Method of Measurement of the Effective Water Quantity of Supply Tank
serving Fire Service Installations
(e.g. fire hydrant/hose reel system, sprinkler system and drencher system, etc.)**

THE MINIMUM EFFECTIVE WATER VOLUME IN F.S.I. WATER TANK WITH DIRECT FEED WATER SUPPLY

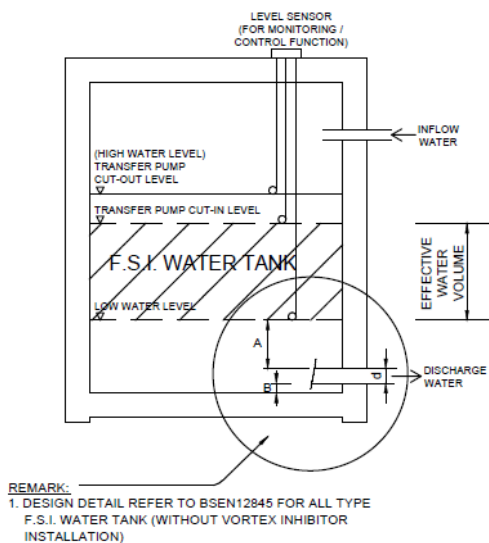


**FOR ALL TYPE F.S.I. WATER TANK
(WITHOUT VORTEX INHIBITOR INSTALLATION)**

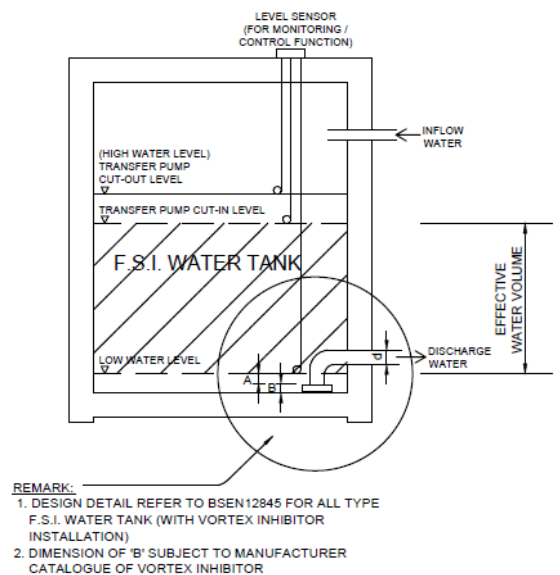


**FOR ALL TYPE F.S.I. WATER TANK
(WITH VORTEX INHIBITOR INSTALLATION)**

THE MINIMUM EFFECTIVE WATER VOLUME IN F.S.I. WATER TANK FOR SYSTEM EQUIPPED WITH TRANSFER SYSTEM



**FOR ALL TYPE F.S.I. WATER TANK
(WITHOUT VORTEX INHIBITOR INSTALLATION)**



**FOR ALL TYPE F.S.I. WATER TANK
(WITH VORTEX INHIBITOR INSTALLATION)**