

FSD Connects with the Construction Industry



Experience Sharing on Acceptance Inspection of FSI and Fire Safety of Buildings



18th May 2021

WELCOMING ADDRESS



Ir LEUNG Kwun-hong, FSDSM
Assistant Director (Licensing and Certification)

Programme Rundown



| Session | Subject | Speaker |
|---------|--|--------------------|
| 1 | Experience sharing on FSI Acceptance Inspections during COVID-19 pandemic | Mr. TSANG Chiu-lok |
| 2 | Processes and Procedures on Acceptance Test and Inspection for Fire Service Installations | Mr. CHAN Hoi-chuen |
| 3 | FSD Circular Letter No. 3/2019 Implementation of FSI Acceptance Inspection in MiC Project | Ir. CHAN Wai-lam |
| 4 | Review on the Adoption of BS 5839-1 : 2017 Fire Detection and Fire Alarm Systems for Buildings | Ir. CHAN Wai-lam |
| 5a | Preview of FSD Circular Letter No. 4/2021 Specification for Emergency Lighting | Ir. LEUNG Chun-fai |
| 5b | Preview of FSD Circular Letter No. 5/2021 Fire Safety Requirements for Emergency Lighting Systems in Licensed/Registered Premises | Mr. WU Kam-wang |
| 6 | Q&A Session | |

Revised Handling Procedures of Shutdown of Fire Service Installations



➤ **Effected on 1st March 2021**

- ☒ **Failed to provide FS 251 No.**
- ☒ **Scope of shutdown (i.e. 9 types of FSI)**
- ☒ **Scale of shutdown (i.e. whole building)**
- ☒ **Period of shutdown (i.e. 14 days per notification)**

附錄 I

致：香港消防處
消防通訊中心
傳真號碼：2311 0066
填寫日期：_____

此項由消防處消防通訊中心填寫
消防處檢閱編號：_____
總字號消防處：_____

消防裝置關閉通知書

樓宇/屋苑名稱：_____ 地區：_____

門牌號碼及街道名稱：_____ 香港 九龍 新界

註冊消防裝置名稱：_____ 類別/編號：_____

本公司確認以下受影響的消防裝置需妥議實施或連續超過24小時關閉

消防栓/喉輪系統 花灑系統 乾喉系統 交警傳訊系統(存在供職設施的處所)

火警警報系統 噴水系統 排煙系統 樓梯間警報系統 附連消防喉系統

以下設施/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

安老/殘疾院舍 酒店/賓館 Cap. 502 消防安全(商業處所)條例

幼兒園 危險品倉 Cap. 572 消防安全(建築物)條例

公眾娛樂場所(如戲院/劇院/主題公園等) Cap. 636 消防安全(工商建築物)條例

| | | | |
|------------------------------------|-----------------------|------------|---|
| 第一部份 - 關閉消防裝置 | 填寫人 ⁽¹⁾ 簽署 | 承辦商蓋印 | 消防通訊中心蓋印/填寫 |
| 開始關閉日期：_____ | | | <input checked="" type="checkbox"/> updated & checked |
| 預計完成日期 ⁽²⁾ ：_____ | | | By: _____ |
| FS 251 ⁽³⁾ 編號(如有)：_____ | | | Date: _____ |
| 填寫人 ⁽⁴⁾ 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 ⁽¹⁾ 簽署 | 承辦商蓋印 | 消防通訊中心蓋印/填寫 |
| 工程需延至 ⁽²⁾ ：_____ | | | <input checked="" type="checkbox"/> updated & checked |
| FS 251 ⁽³⁾ 編號(如有)：_____ | | | By: _____ |
| 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 ⁽¹⁾ 簽署 | 承辦商蓋印 | 消防通訊中心蓋印/填寫 |
| 工程完成日期：_____ | | | <input checked="" type="checkbox"/> updated & checked |
| FS 251 ⁽³⁾ 編號：_____ | | | By: _____ |
| 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承辦人

註 1：花灑系統、喉輪系統或火警警報系統(存在供職設施的處所)同時關閉。
註 2：一般而言，除了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：消防裝置承辦商須於完成檢査任何消防裝置或設施後，提交表格的一份副印。
註 4：第一、第二及第三部份填寫人必須提供全數電話(即手提電話號碼及 FS)。
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，承辦商可先緊急情況下按員工代表填寫通知書。

| Period | No. of notification received | No. of obsoleted form received | Percentage |
|--------|------------------------------|--------------------------------|------------|
| March | 2,858 | 900 | 31% |
| April | 2,756 | 376 | 14% |

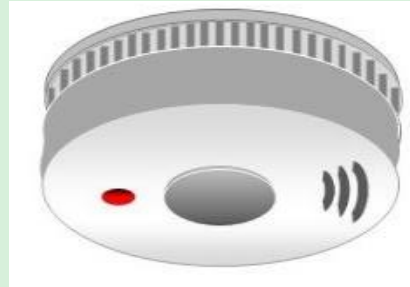
Voluntary Recognition Scheme for Fire Service Installations Technicians



- Consultation with the Trade (1 Dec 2020 – 8 Jan 2021)
- Establishment of Technical Advisory Committee (May 2021)



Promotion on Wider Use of Stand-alone Fire Detectors



**Before
Untenable
Conditions**

**Incipient
Stage of Fire**



Detection

Warning

Evacuation

- Smoke lodged
- Toxicity
- Poor visibility
- High temperature



Occupant types / Type of activities

Promotion on Wider Use of Stand-alone Fire Detectors



- 10 briefings
(Construction Industry, FSICA, HKIE, Government Departments, etc.)
- LegCo – Panel of Security
(support)
- Guideline
(purchase, install & maintain)
- Promotional activities &
Public education
- Target on the 3rd Quarter of 2021



Online Submission System for FS 251



消防裝置及設備證書(FS 251) 網上遞交系統
已於2019年4月1日投入服務

EXPERIENCE SHARING ON FSI ACCEPTANCE INSPECTION



Senior Station Officer TSANG Chiu-lok

Fire Service Installations Division

Licensing and Certification Command

TODAY'S SHARING

- ① Facilitating FSI Acceptance Inspections during COVID-19 pandemic
- ② Case Sharing on Irregularities and Observations in recent projects



P R A G M A T I C

Prioritization for conducting of FSI
Acceptance Inspection



COVID-19 combat

Temporary Quarantine Centres;
Temporary Hospital at AWE



Livelihood matter

Tuen Mun–Chek Lap Kok Link
(Northern Connection);
Public housings



First-come-first-serve

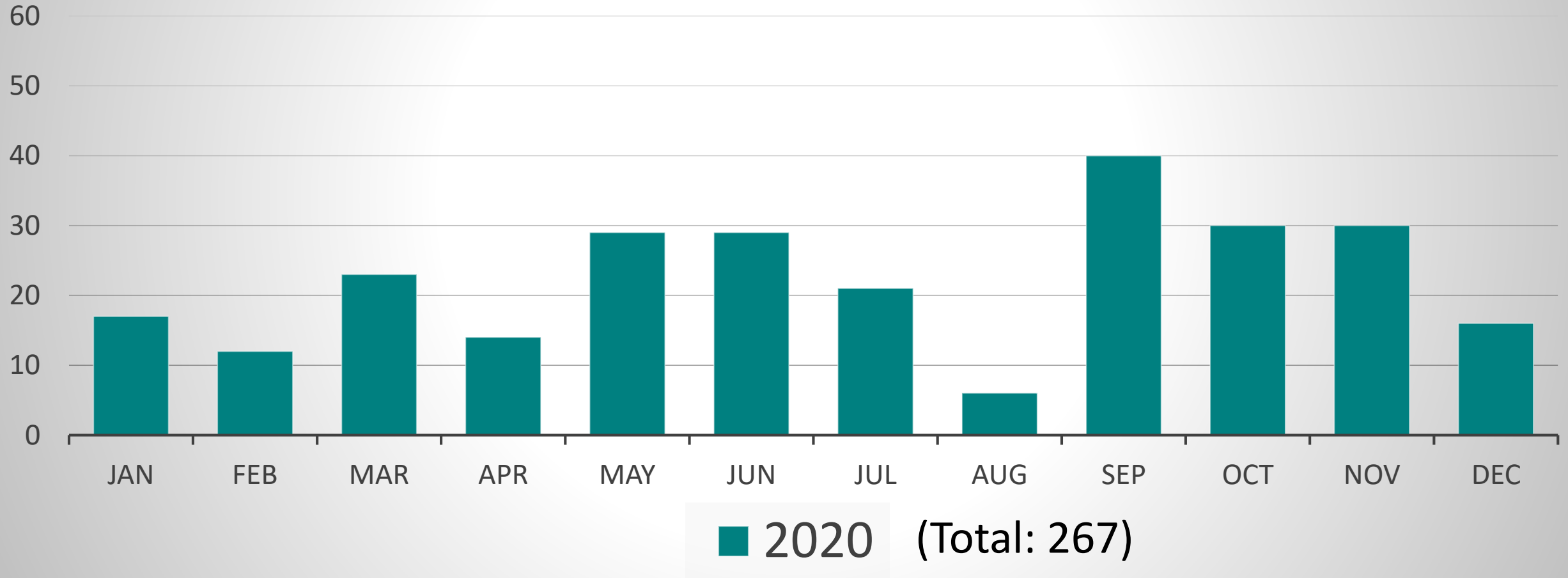
Public and Private Projects



No. of FSI/501 Application (2020)



Issuance of FS172 & Acceptance Memo/Letter (2020)



MAINTAIN ESSENTIAL

FIRE PROTECTION SERVICES



Pre-inspection meeting

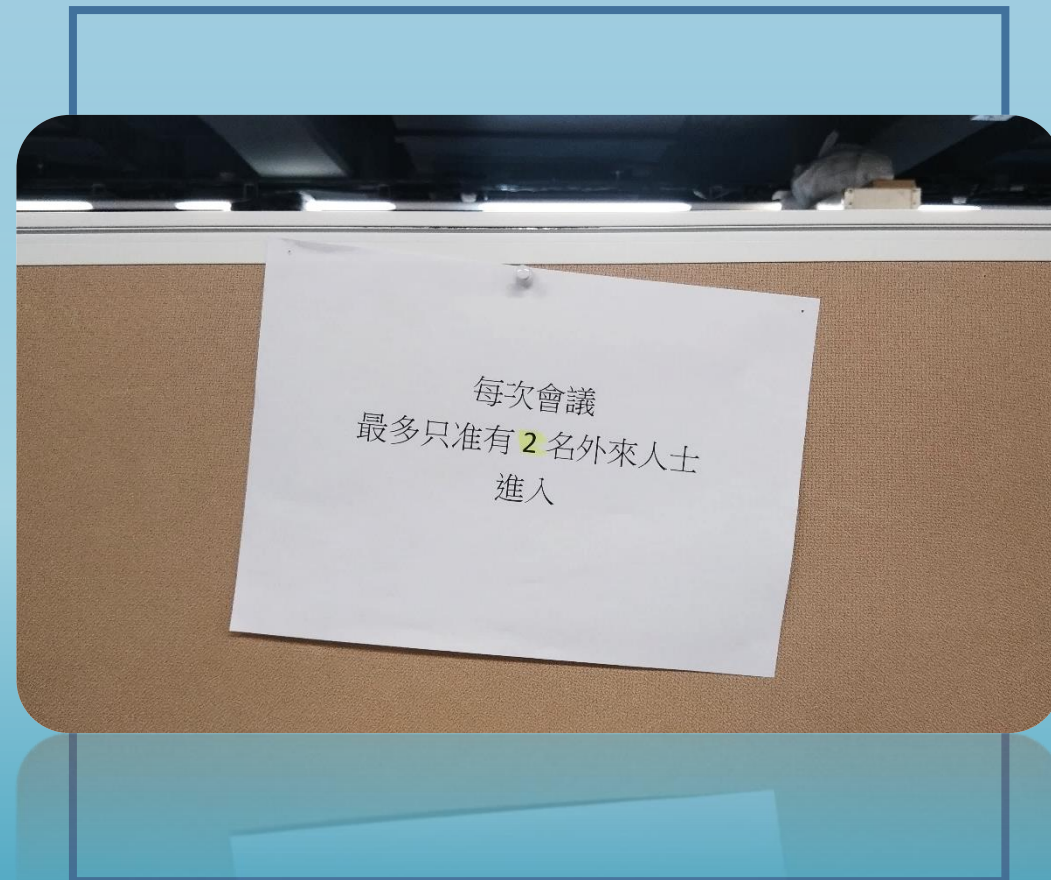


Acceptance inspection



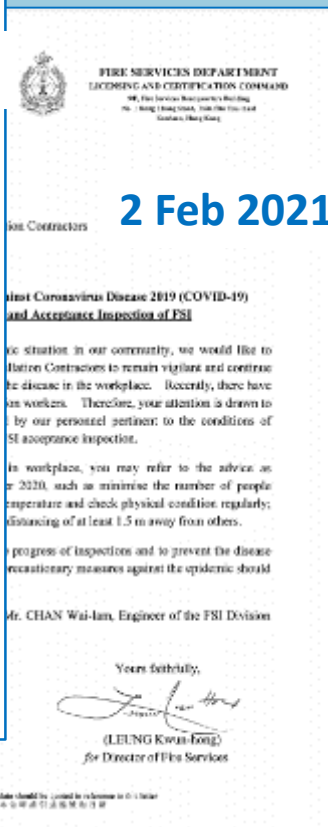
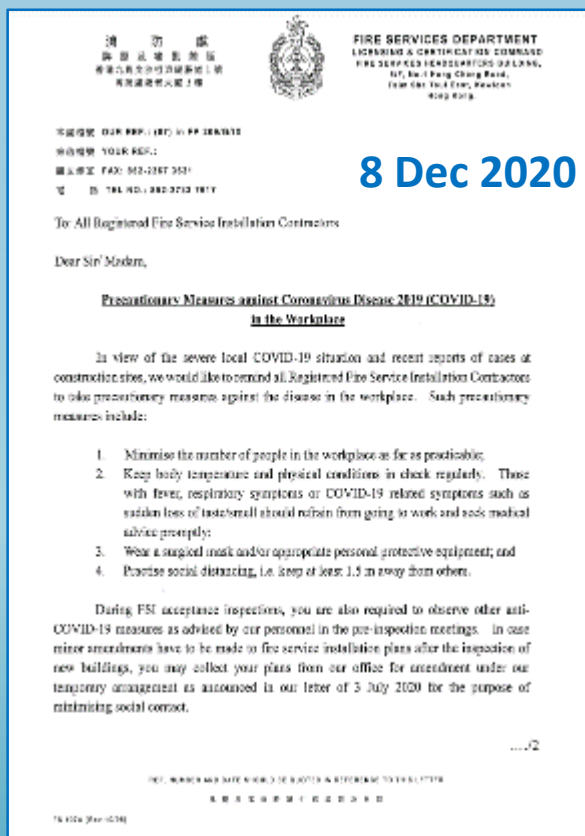
Undertaking Letter from AP

Preventive measures at
construction site



FACILITATING MEASURES AGAINST COVID-19

(1) Precautionary Measures in the Workplace and FSI Acceptance Inspection



- minimize no. of people in the workplace
- Keep body temperature and physical conditions in check regularly
- wear surgical mask and/or personal protective equipment
- practice social distancing
- Observe other anti-COVID-19 measures as advised by FSD's personnel

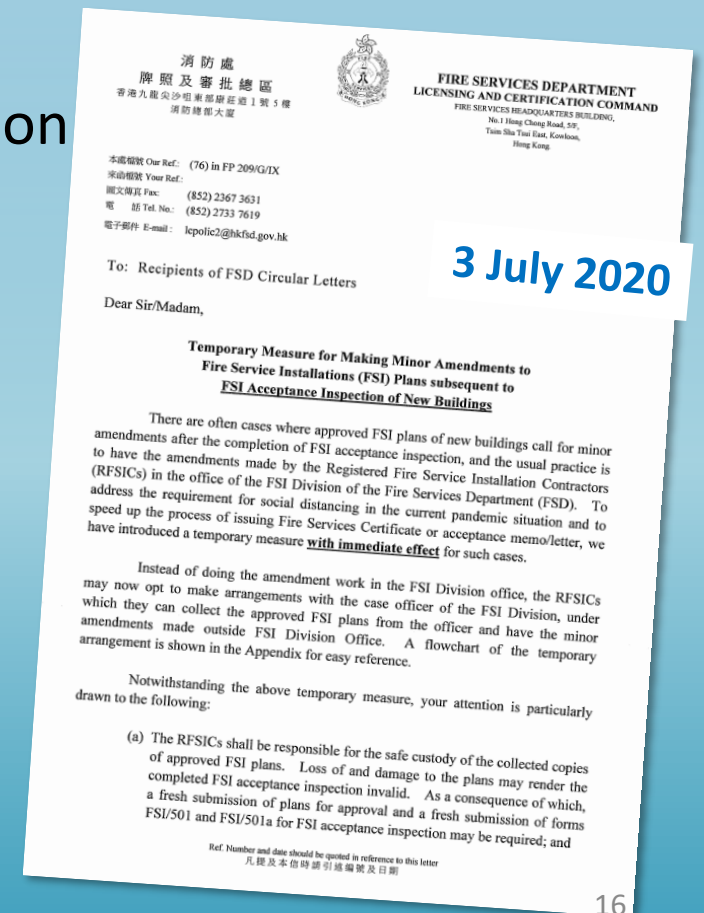
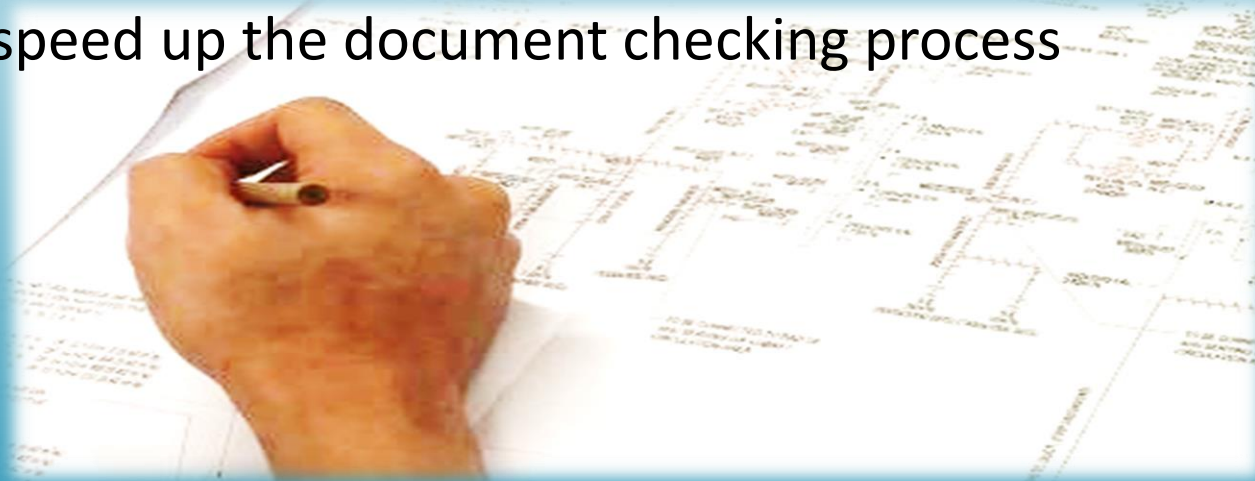


(Reminder)

FACILITATING MEASURES AGAINST COVID-19

(2) Temporary Measure for Making Minor Amendments to FSI Plans subsequent to FSI Acceptance Inspection of New Buildings:

- observe the arrangement for making minor amendment on FSI plans outside FSI Division office via letter on 3.7.2020
 - ✓ maintain social distancing
 - ✓ speed up the document checking process



THREE TRENDS

for Acceptance Inspection

123 **Facilitation Measures**

Prefabrication
MiC design
FSI installation

Resources against COVID-19
Personal Protective Equipment
Precautionary measures

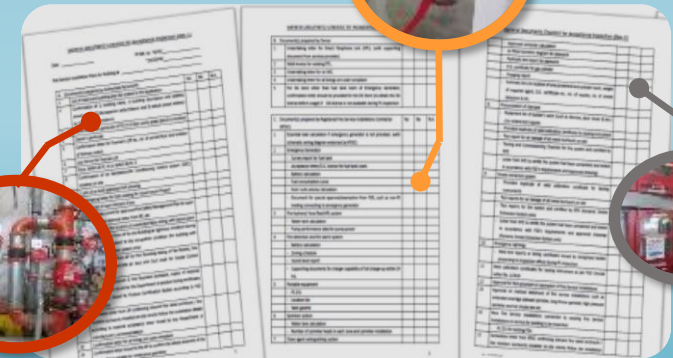


HINTS

Prior to Acceptance Inspection



Testing and
Commissioning



Documentation/
as-fitted drawings

Case Sharing on Irregularities and Observations in recent projects

Case Sharing (1)

- Proper access Street Fire Hydrant

According to FSD CoP

Street Fire Hydrant shall be **free from obstruction** within 1.5m in front and on two sides of the hydrant.



Case Sharing (2)

- Proper access to FS Inlet

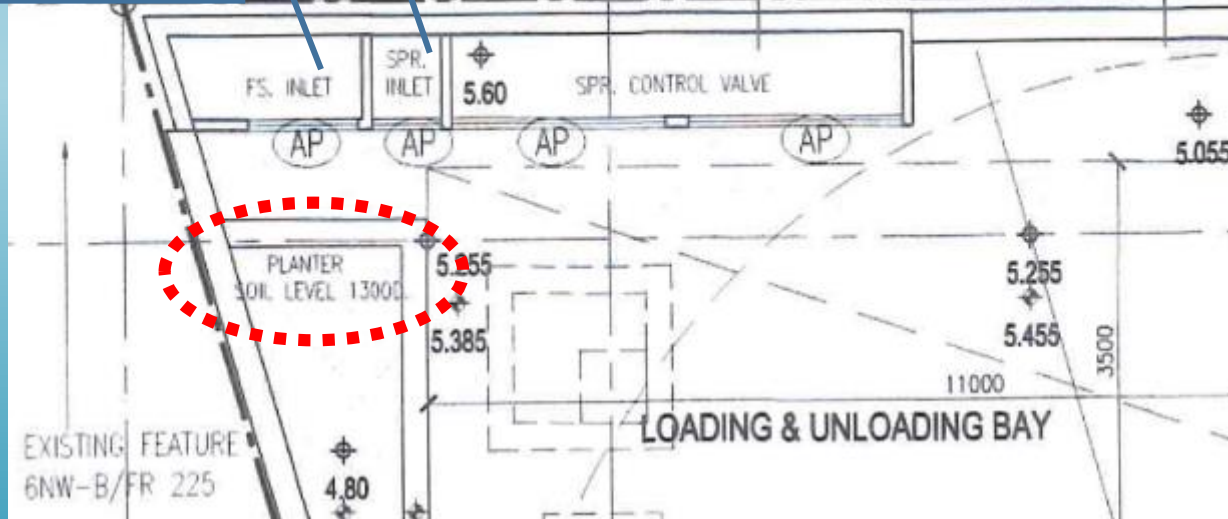
According to FSD CoP

Fire Service Inlet shall readily accessible by Fire Services personnel

Sprinkler Inlet

Fire Service Inlet

Main Street

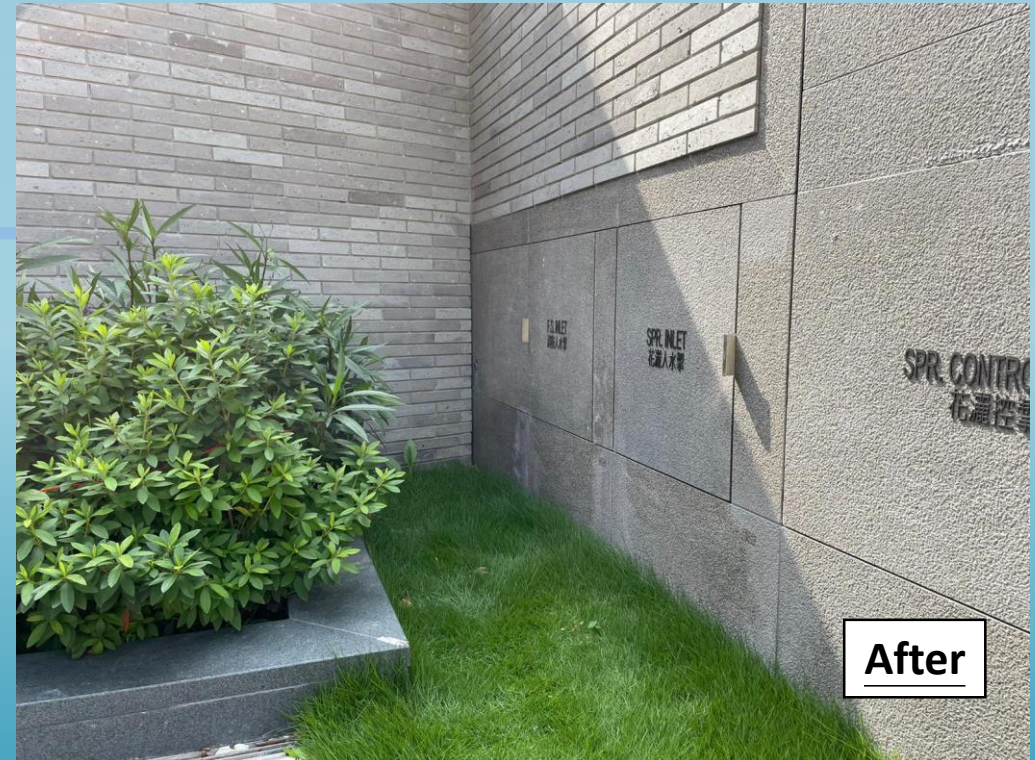
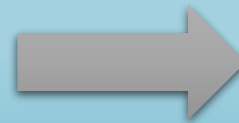


Case Sharing (2)

- Proper access to FS Inlet

According to FSD CoP

Fire Service Inlet shall *readily accessible by Fire Services personnel*



Case Sharing (3)

➤ Proper access to Fire Control Centre

According to FSD CoP 5.12

Location of Fire Control Centre

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

Point to Note:

No water pipe/valves shall pass through or installed inside the fire control centre.



Case Sharing (4)

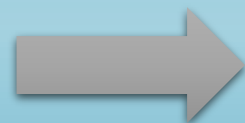
➤ Specification of Sprinkler Control Valve

According to Clause 16.1 of LPC Rules for Automatic Sprinkler Installations Incorporating BS EN 12845

Location of **Sprinkler motor gong**



Before: inside the building



After: outside the exterior wall of the building

Case Sharing (5)

- Long outstanding FSI Acceptance Inspection



Defect
rectification



- Issuance of FSI/507B
- To AP and RFSIC

- Arranged by AP
- Written request for re-inspection
- Submit request to FSID within 2 months

- If FSD haven't informed over 2 months
- Final reminder notice



Thank You !





Fire Services Department

Building Improvement Division
Mr. CHAN Hoi-chuen



Topic

Processes and Procedures on
Acceptance Test and Inspection
for Fire Service Installations under
Cap. 572



Contents

- Procedures on Acceptance Test
- Observations during compliance inspection
- Points to Note



Procedures on Acceptance Test



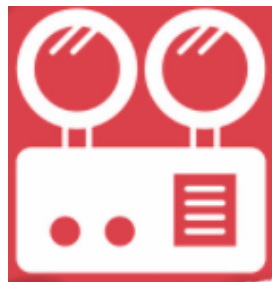
Automatic Sprinkler System



Manual Fire Alarm System



Fire Hydrant & Hose Reel System



Emergency Light



Ventilation/Air Conditioning Control System

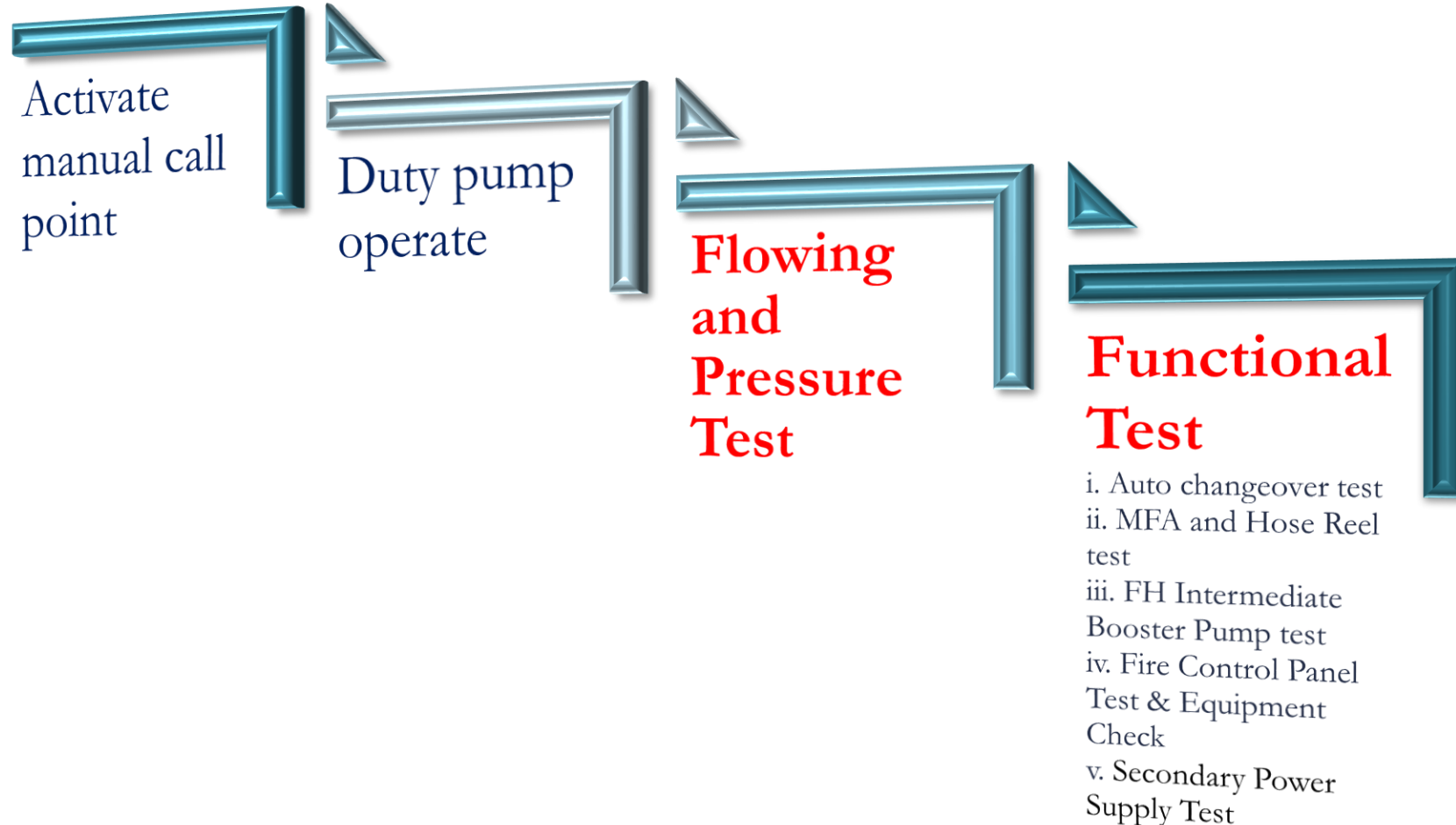


Portable F.E.



Acceptance Test – FH/HR System

Part A - Fixed Fire Pump Test

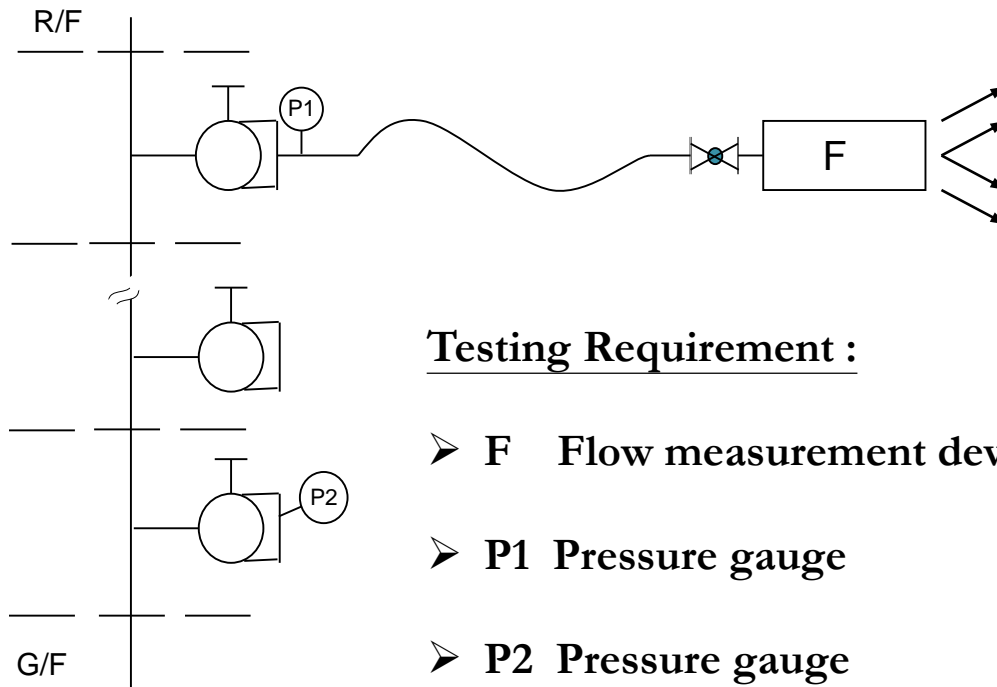




Fixed Fire Pump Test (con't)

1. Flow and pressure test

Figure for equipment arrangement for testing of fire pumps
(common method)



Testing Requirement :

- **F** Flow measurement device 900 l/m
- **P1** Pressure gauge ≥ 310 kPa
- **P2** Pressure gauge All FH pressure < 850 kPa



Fixed Fire Pump Test (con't)

2. Flow and pressure test

Setup testing equipment



Flow measurement device



P1 Pressure gauge



Part B - Fixed Fire Pump Functional Test

i. Auto changeover test



Fire Pump power supply switch
(electrically fail test)



Fire Pump pressure switch
(mechanically fail test)



Auto changeover test (con't)



Fire alarm panel

- Panel / alarm signal failure

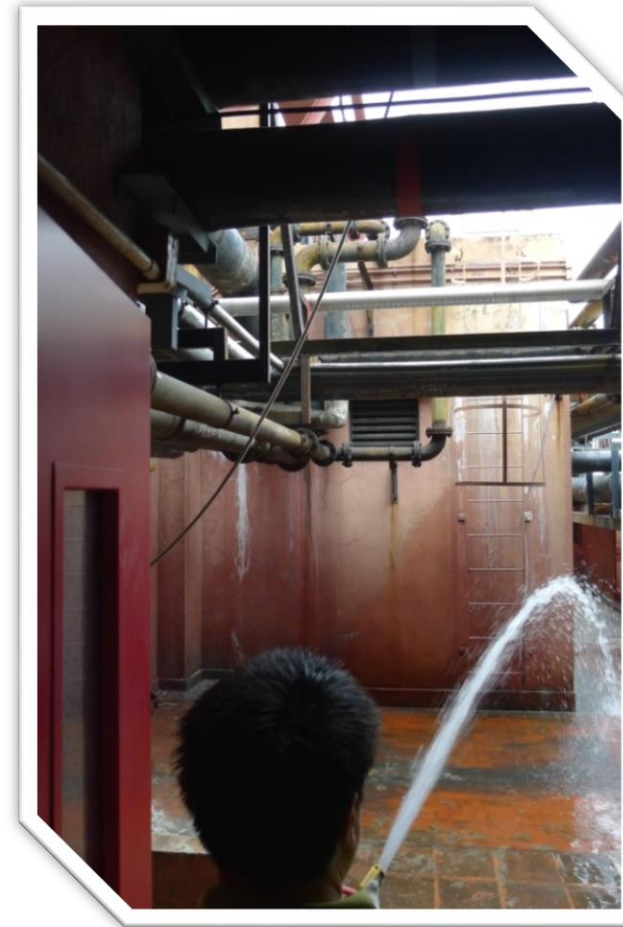


Fire pumps

- Pump run continuously



ii. MFA and Hose Reel test



- Activate the manual call point
- Capable of projecting a jet not less than 6M



iii. FH Intermediate Booster Pump test

Connect

- Connect fire engine to F.S. inlet at a pressure 8 bars

Push

- Push remote “start” button at FS inlet

Duty
Pump
Operate

Measure

- Measure the running pressure and flow rate at the highest point of riser

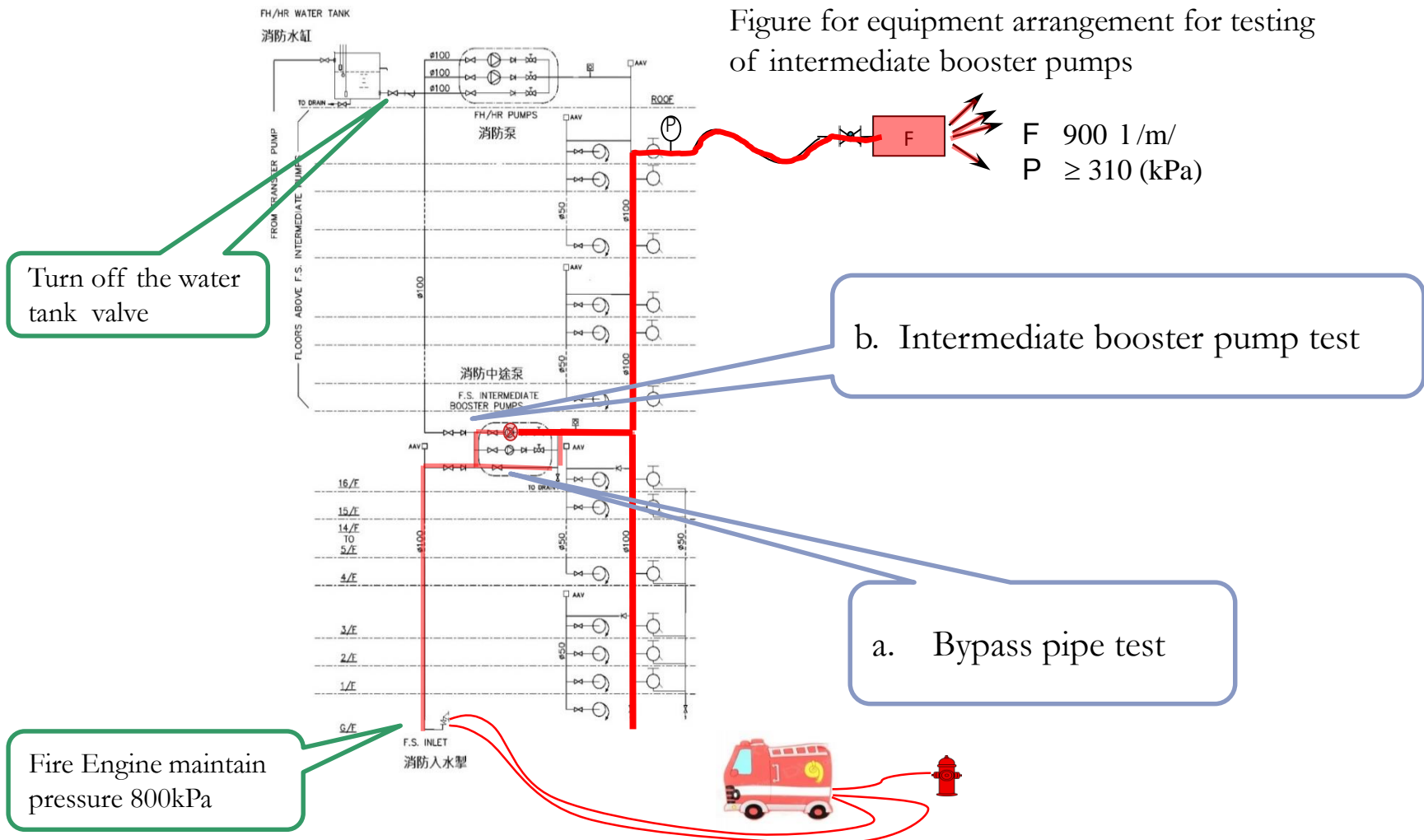
Test

- Functional test and measure static pressure at critical points



FH Intermediate Booster Pump test (con't)

Figure for equipment arrangement for testing of intermediate booster pumps



Turn off the water tank valve

Fire Engine maintain pressure 800kPa

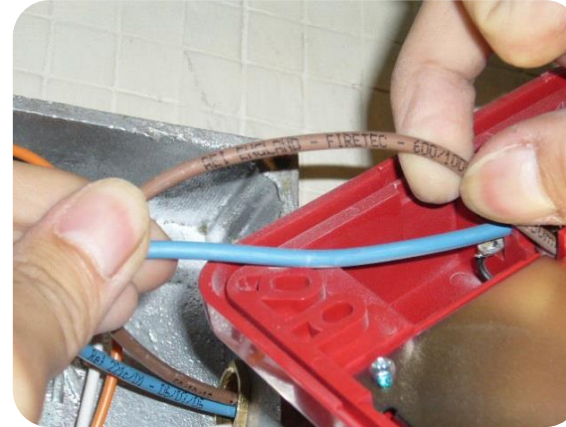
a. Bypass pipe test

b. Intermediate booster pump test

F 900 l/m/
P ≥ 310 (kPa)



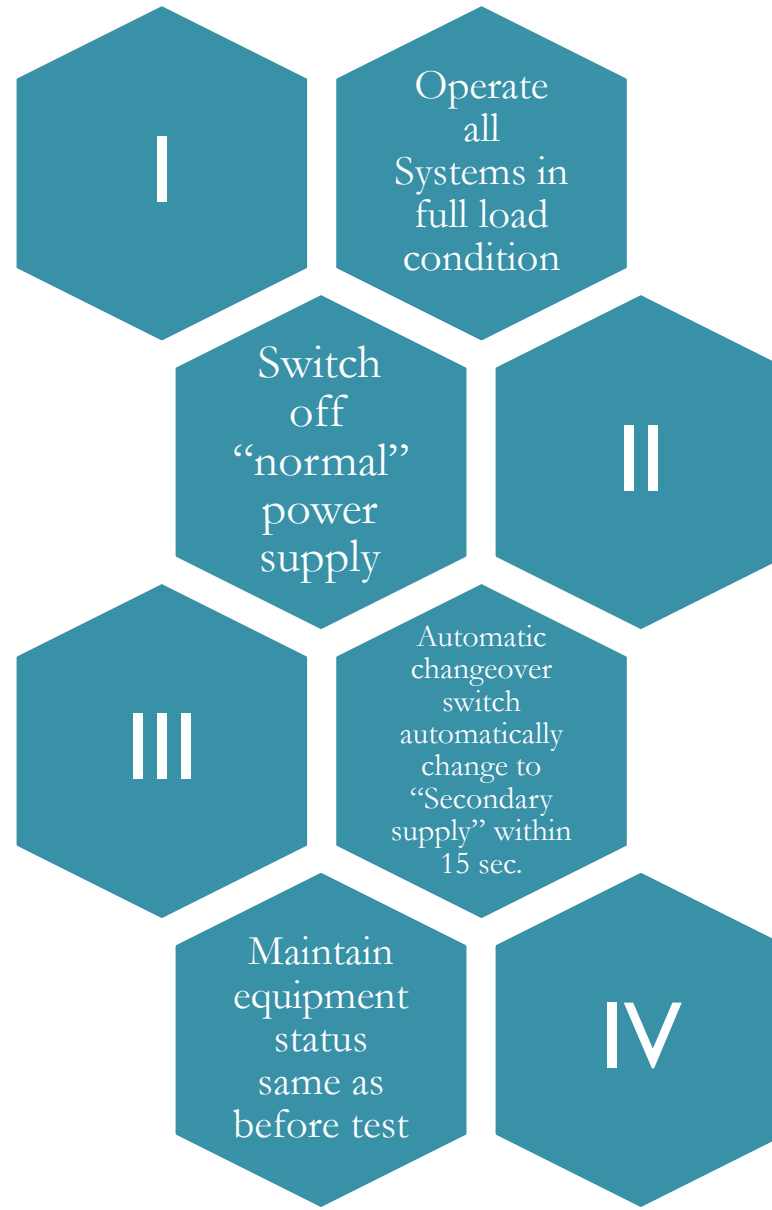
iv. Fire Control Panel Test & Equipment Check



- Test for FS control panel
- F.S. equipment check



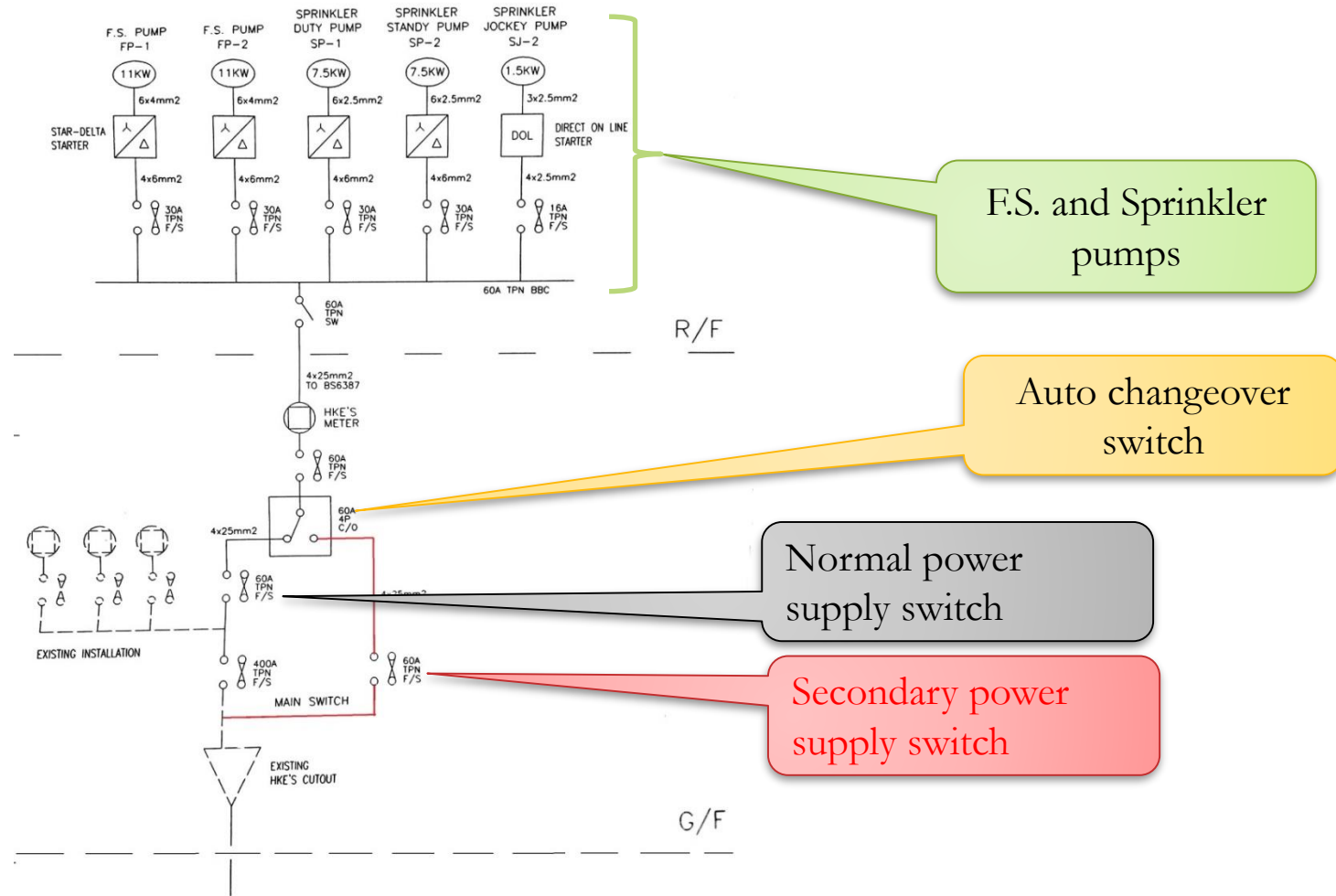
v. Secondary Power Supply Test





Secondary Power Supply Test (con't)

Electrical supply schematic for FSI





Emergency Lighting Test



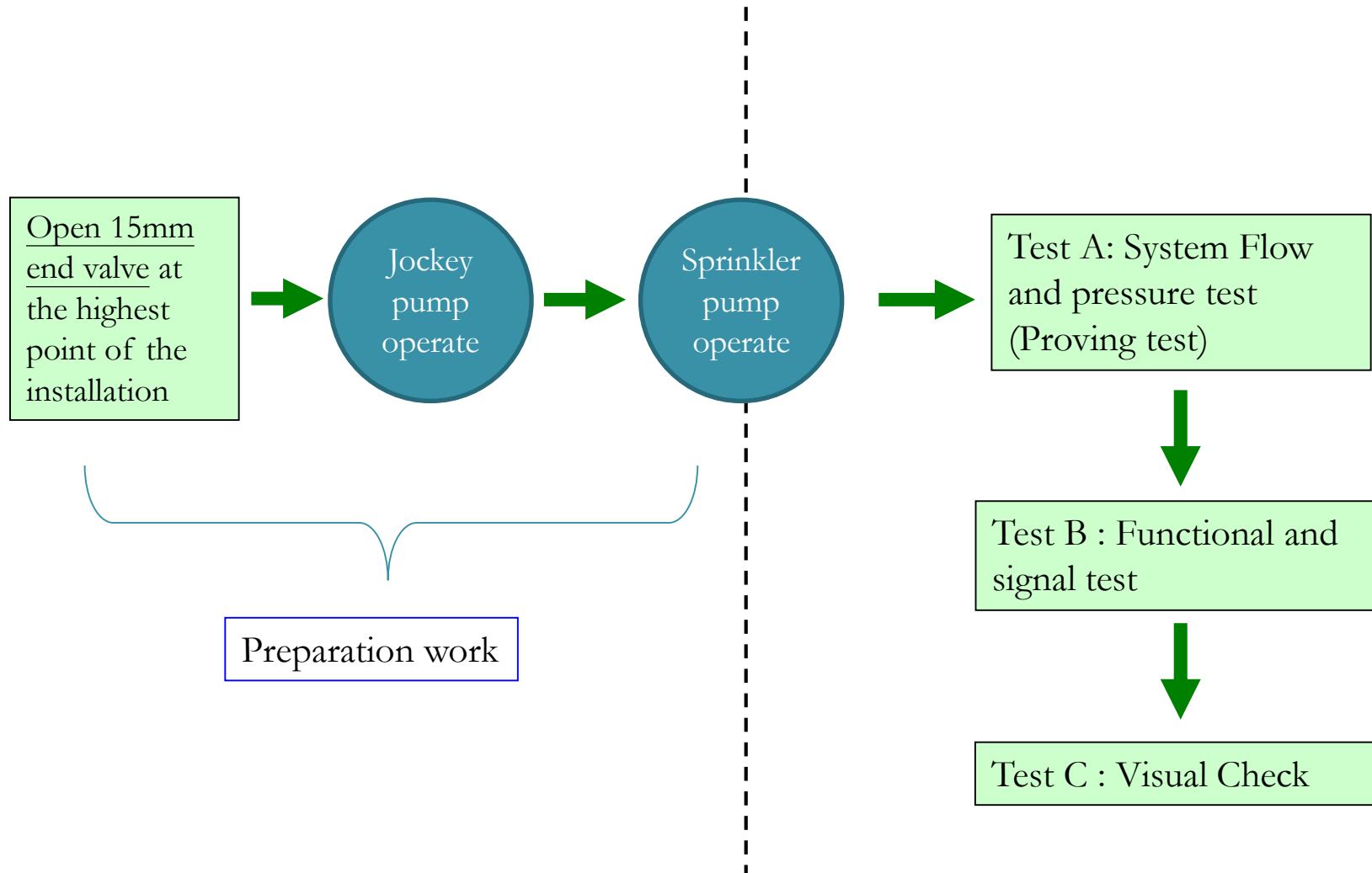
- Self-contained Emergency Luminaires





Sprinkler System Test

A. Sprinkler Pump test





Sprinkler System Test

A. Sprinkler Pump test

- System pressure & flow test (Proving test)



Pressure gauge and end valve at the highest point of sprinkler

Open the 15mm end valve slowly at the highest remote point

Until the pressure drop to 0.5 bar and trigger the alarm and signal

Further pressure drop and activate the Jockey pump



Sprinkler System Test

A. Sprinkler Pump test (con't)

➤ System pressure & flow test (Proving test)



Table 15 — Pressure and flow requirements for ordinary-hazard installations

| Hazard group | Lower flow rate | | Higher flow rate | |
|--------------|---|---|---|---|
| | Pressure at "C" gauge or section stop valve | Flow rate through installation test valve | Pressure at "C" gauge or section stop valve | Flow rate through installation test valve |
| | bar | L/min | bar | L/min |
| I | $1.0 + S^a$ | 375 | $0.7 + S^a$ | 540 |
| II | $1.4 + S^a$ | 725 | $1.0 + S^a$ | 1 000 |
| III | $1.7 + S^a$ | 1 100 | $1.4 + S^a$ | 1 350 |
| IIIS | $2.0 + S^a$ | 1 800 | $1.5 + S^a$ | 2 100 |

^a S is the static pressure difference between the "C" gauge and the highest sprinkler in the installation.

- 1) open the proving pipe drain valve at the sprinkler control valve; &
- 2) measure the pressure and flow rate (reference to LPC Table 15)



Sprinkler System Test

B1. Sprinkler Pump functional test



Pump changeover test
(electrical fault)

Pump changeover test
(mechanical fault)

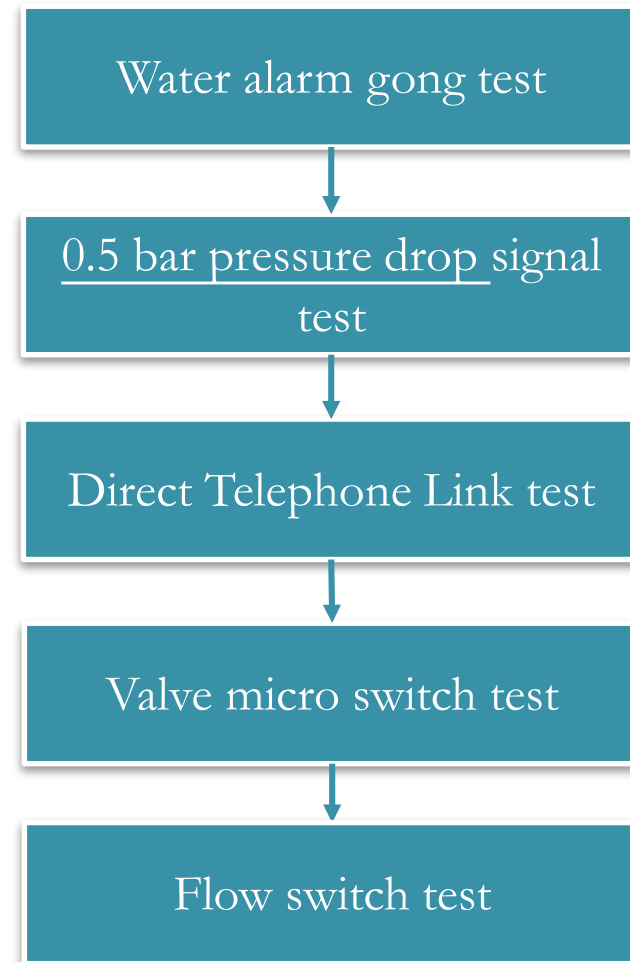
Control circuit “fail safe” test

Pump output (nominal flow) test



Sprinkler System Test

B2. Sprinkler System functional test





Sprinkler System Test

C. Sprinkler System Visual Check



1. Equipment and installations

Check whether the installations accord with the standard of FSD requirement



2. Sprinkler layout

Check whether the layout tallies with the approved plan



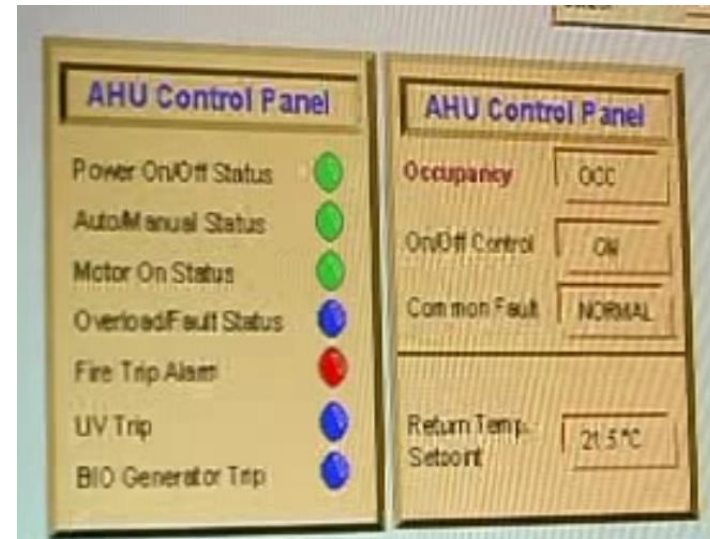
VIAC Control System Test

| Method | Activated by | Ventilating System to be shut down |
|--------|-----------------------------|------------------------------------|
| A | Smoke Detector (AFA System) | Affected Compartment |
| B | Probe Type Smoke Detector | Affected Compartment |
| C | Building Fire Alarm | Whole Building |



V/AC Control System Test

Method 'A'



➤ V/AC control system activated by Smoke Detector (AFA System)



V/AC Control System Test (con't)

Method ' B'

Sensing tube of probe type smoke detector



Probe type smoke detector



Fail-safe test

- V/AC control system activated by Probe Type Smoke Detector



V/AC Control System Test

Method 'C'



- V/AC control system activated by Building Fire Alarm System



V/AC Control System Test

Manual Override Switch



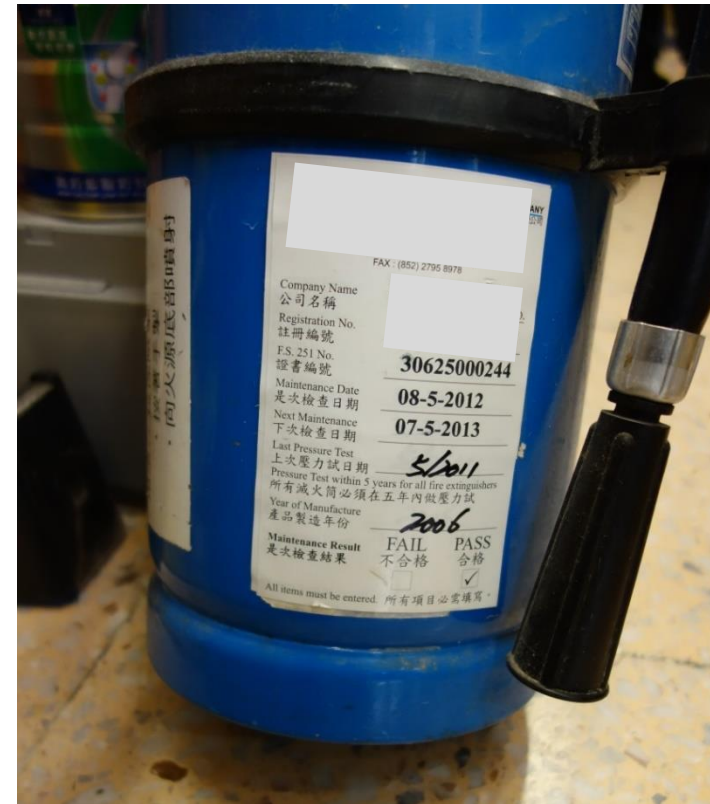
V/AC Control
System Manual
Override Switch
with label



Portable Fire Extinguisher

Labelling of Fire Extinguisher

| | | |
|---|---|-------------|
| Contractor Name 承建商名稱 | : | _____ |
| Registration No. 註冊編號 | : | <u>RC3/</u> |
| Maintenance Date 保養日期 | : | _____ |
| Valid until 有效日期至 | : | _____ |
| Date of Hydraulic Pressure test 壓力試日期 | : | _____ |
| FS251 Serial No. 保養證書編號 | : | _____ |





Observations during compliance inspection

Lettering for FS/Spr tank and capacity provided





Observations during compliance inspection

FS pump is housed in suitable enclosure





Observations during compliance inspection

Intermediate booster pump should be enclosed by FRP material





Observations during compliance inspection

Lettering of FS pumps are not provided





Observations during compliance inspection

Hand wheel of fire hydrant not easy for efficient operation





Observations during compliance inspection

Missing hose reel operation instruction plate





Observations during compliance inspection

Hose reel cabinet door obstructing MOE and combustible material of cabinet shall not be used in common area





Observations during compliance inspection

Hose reel nozzle installed higher than 1350mm





Observations during compliance inspection

Lettering of ' FIRE HOSE REEL ' is not provided





Observations during compliance inspection

FS inlet & Sprinkler Inlet with identification plates





Observations during compliance inspection

Enclosure for FS inlet is not provided





Observations during compliance inspection

FS inlet should be installed outside the Main Gate





Observations during compliance inspection

DTL not connected



DTL connected





Observations during compliance inspection

Socket outlet / plug shall not be used for emergency lighting



Proper power connection for
emergency lighting



Observations during compliance inspection

Insufficient sprinkler coverage





Observations during compliance inspection

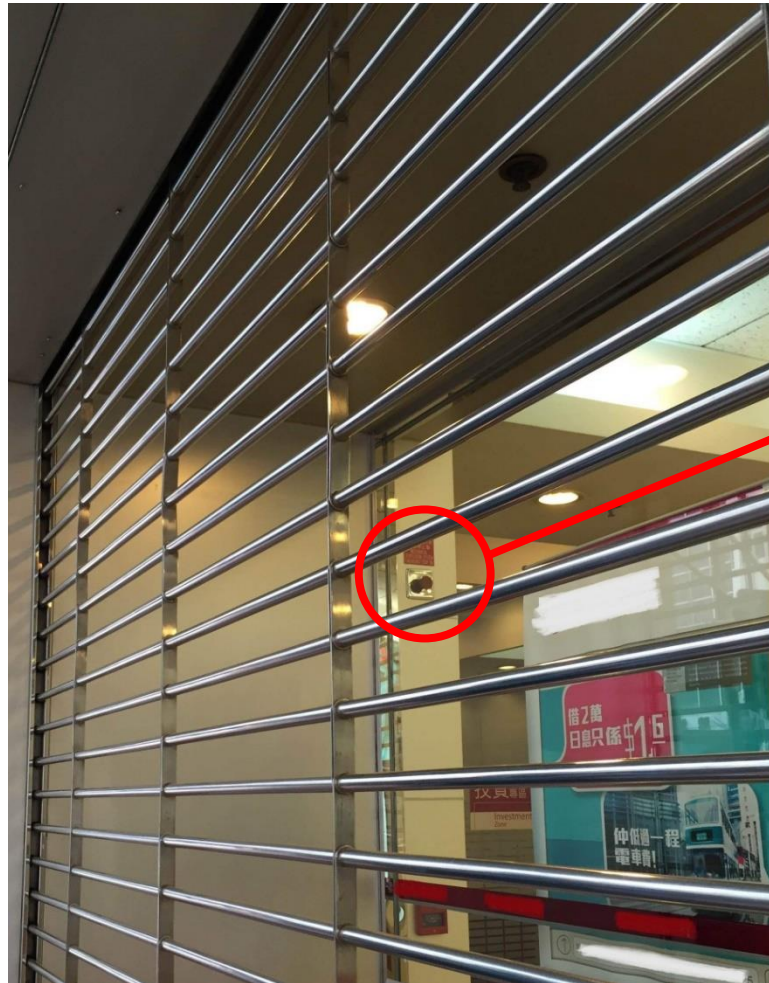
Sprinkler Inlet and control valve should be enclosed and locked to prevent unauthorized tampering





Observations during compliance inspection

VAC manual override switch should not be installed inside the Main Entrance





Points to Note

- ◆ All fire service installations and equipment under construction/incomplete stage should be stuck with blue label tape and secured with suitable notice alerting the residence not to use in case of fire – FSD Circular Letter No. 2/2018.
- ◆ Record of As-fitted Drawings and Form FS 251 shall be provided to Owner / Occupier after completion of work.



Thank You



Implementation of FSI Acceptance Inspection in MiC Project



Licensing and Certification Command
Fire Service Installations Division
Engineer
Ir. CHAN Wai-lam



Adoption of modular integrated construction (MiC) technology

- Modules are manufactured off-site of prefabricated habitable units, and transported for on-site assembly
- Shortening the construction and furnishing period
- All/partly building services installation and interior fitting-outs may be pre-fixed or installed in factory
- Reduced site constraints / wastage

On-site construction incorporating MiC units

Lifting the MiC units and fixing on site.



On-site construction incorporating MiC units



Combination of MiC units into a medical ward



On-site Concrete

MiC units



FSD Circular Letter No.3/2019

RFSIC



MiC
Building
Projects

消防處
牌照及審批組
香港九龍
德輔道中消防處牌照及審批組
消防總局大樓

FIRE SERVICES DEPARTMENT
LICENSING AND CERTIFICATION COMMAND
The Services Headquarters Building,
502, Tse I Hong, Chung Hong,
Tata Sha Tsui East, Kowloon,
Hong Kong

本處發給 OUR REF.: (H.F.F.C.) 31607 PL 3
來電編號 YOUR REF.:
英文編號 EAN: (852) 2723 2197
電子郵件 E-MAIL:
電話 TEL. NO.: (852) 2723 7744

22 March 2019

To: Recipients of FSD Circular Letters
and Authorized Persons

Dear Sir/Madam,

FSD Circular Letter No. 3/2019


Guidance Notes on Submission, Approval and Acceptance Inspection
of Fire Service Installations and Equipment in
Modular Integrated Construction Building Projects

Modular Integrated Construction (MiC) refers to a construction method whereby free-standing integrated modules are manufactured off-site and then transported for constructing buildings on sites. The concept of "factory assembly followed by on-site installation" represents a shift of traditional method from the on-site construction to the modern off-site manufacturing and assembly.

Taking into consideration that MiC is a new and innovative construction method in Hong Kong, a guidance notes aims to facilitate Authorized Persons, Registered Fire Service Installation Contractors (RFSIC) and the industry in meeting the standards and requirement of fire service installations and equipment (FSI) for projects adopting MiC method has been prepared and enclosed for observance.

Notwithstanding the above, please note that RFSIC should be ultimately responsible for assisting FSI owners in ensuring that all FSI in building projects are in efficient working order and in compliance with the requirements specified in the Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment regardless of the building method.

For enquiries, please contact the Fire Service Installations Division at 3961 5217.

Yours faithfully,

(LEUNG Kwun-hong)
for Director of Fire Services

Reference number and date should be quoted in reference to this letter.
凡提及本處時請註明發信日期

➤ Guidance Notes on **Submission, Approval and Acceptance Inspection** of Fire Service Installations and Equipment in Modular Integrated Construction Building Projects

➤ Role of RFSIC

FSD Circular Letter No. 3/2019

- *Generally the same arrangement of submission, approval, and acceptance inspection of FSI*



Submission and Approval



Owners:-

engage an **AP** and **RFSIC** at design stage

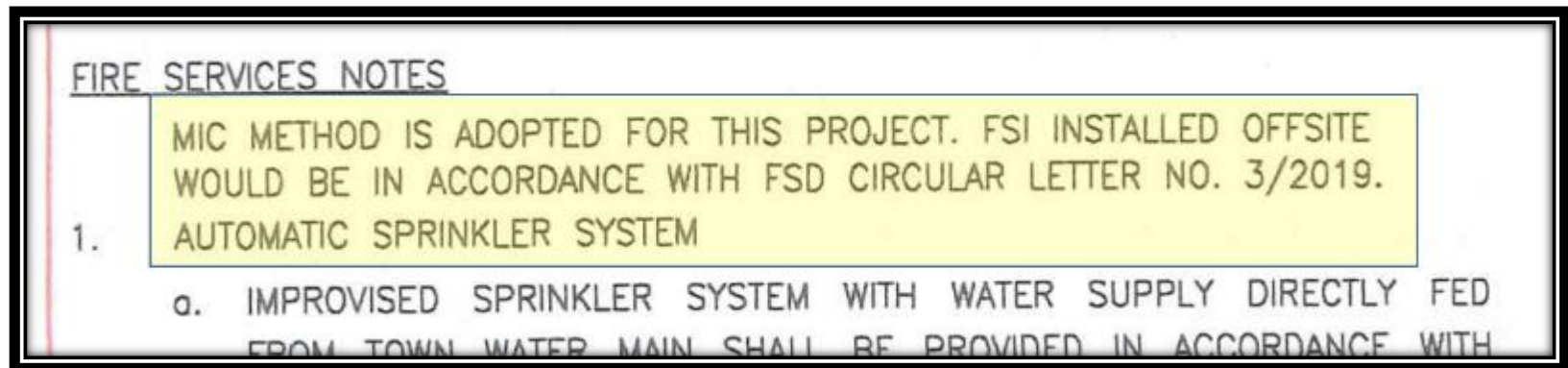


Authorized Person (AP):-

- clearly indicate in the F.S. Notes of the GBP that the building is to be constructed using MiC method; and
- also highlight the corresponding covering letters that MiC method will be adopted.



FSI Design



Submission and Approval

Salient Points for designing FSI using MiC:-

(i) Covered-up FSI

Provision of access panel to facilitate inspection and maintenance

(ii) Flexible pipe jointing

Flexible pipe jointing may be installed for services connection between integrated modules

(iii) Cabling facilities for fire service installations

Cable joints should not be used for fire resistant cables serving FSI.

(iv) FSI Equipment and Material

All material and equipment selected and installed shall comply with Circular Letter No. 3/2020



(i) Covered-up FSI



FSI Design



(ii) Flexible pipe jointing

Flexible pipe jointing between integrated modules



Component of MIC units

On-site connection



FSI Design

(iii) Cabling facilities for fire service installations



FSI Design



Cabling facilities installed in factory with AFA devices installed on site.



Completed MiC Projects in Hong Kong



Quarantine Facilities

Penny's Bay
Government Camp



Pat Heung JPC



Sai Kung Outdoor
Recreational Centre



Lei Yu Mun



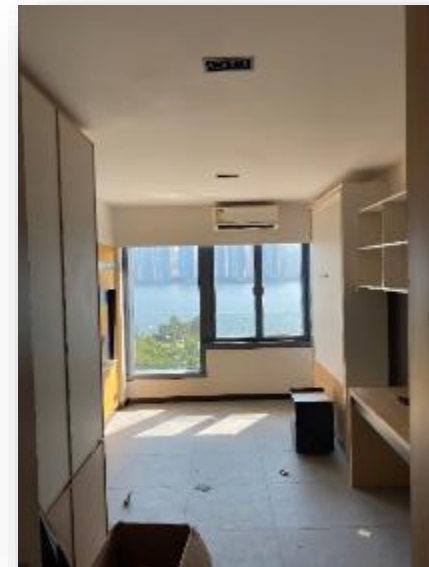
Transitional housing

- Nam Cheong Street in Sham Shui Po (4-storey)
 - 89 Units (w/open kitchen)
 - FSI installed in-situ



Institutional buildings

- Disciplined Services Quarters for the FSD at Pak Shing Kok
- HKSTP InnoCell Residential Institution



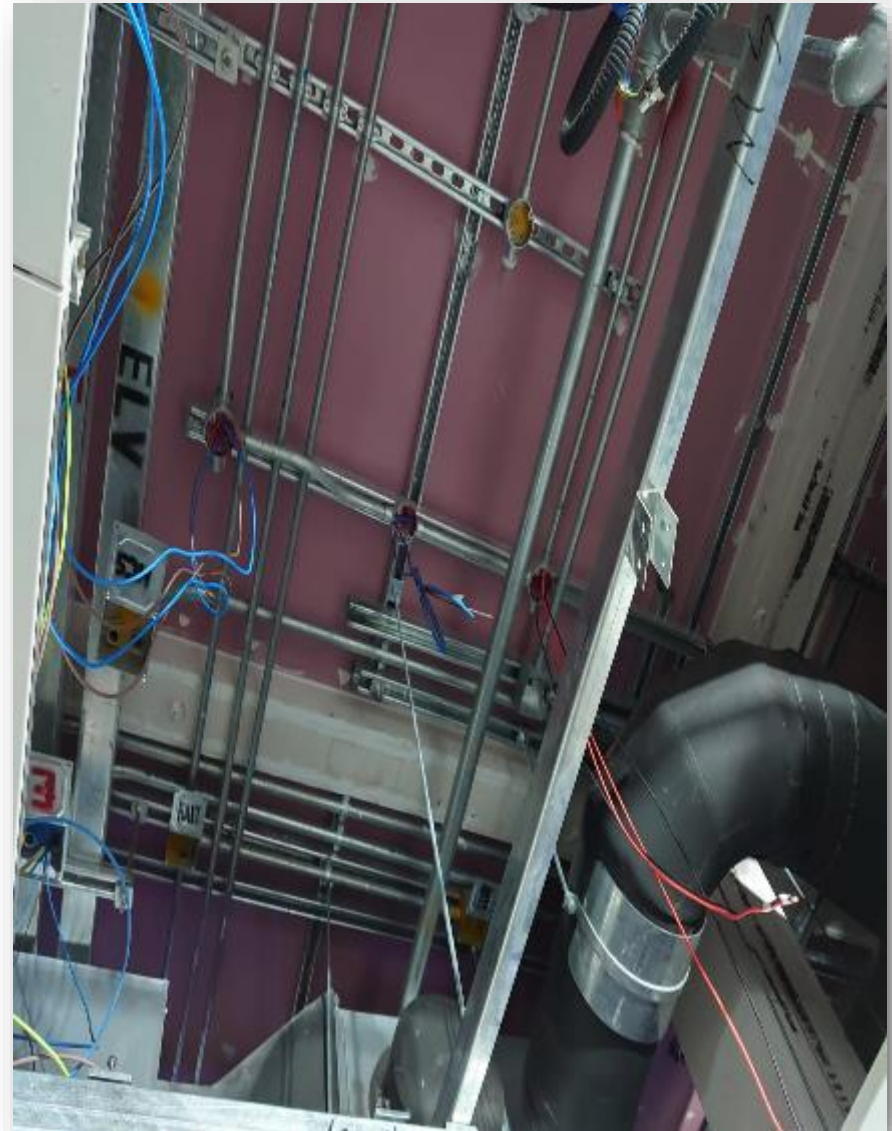
North Lantau Hospital Hong Kong Infection Control Centre



Case Study

FSI installed during off-site integrated module prefabrication process

- conduit work
- sprinkler pipework and
- sprinkler head
- The cabling facilities and AFA devices were installed in-situ.



Hydraulic Test for the sprinkler pipework for the MIC units was proceed in PRC factory before delivery to HK site.



On-site MiC construction

Connection of Sprinkler Pipework and conduit works for the MIC units and the central core.



Acceptance inspection

RFSIC



Quality Assurance



Auditing

Testing

Name/
RFSIC
No.

**Log
Book**

Off-site FSI
installation
works

Material
Acceptance

Date/Time/
Location

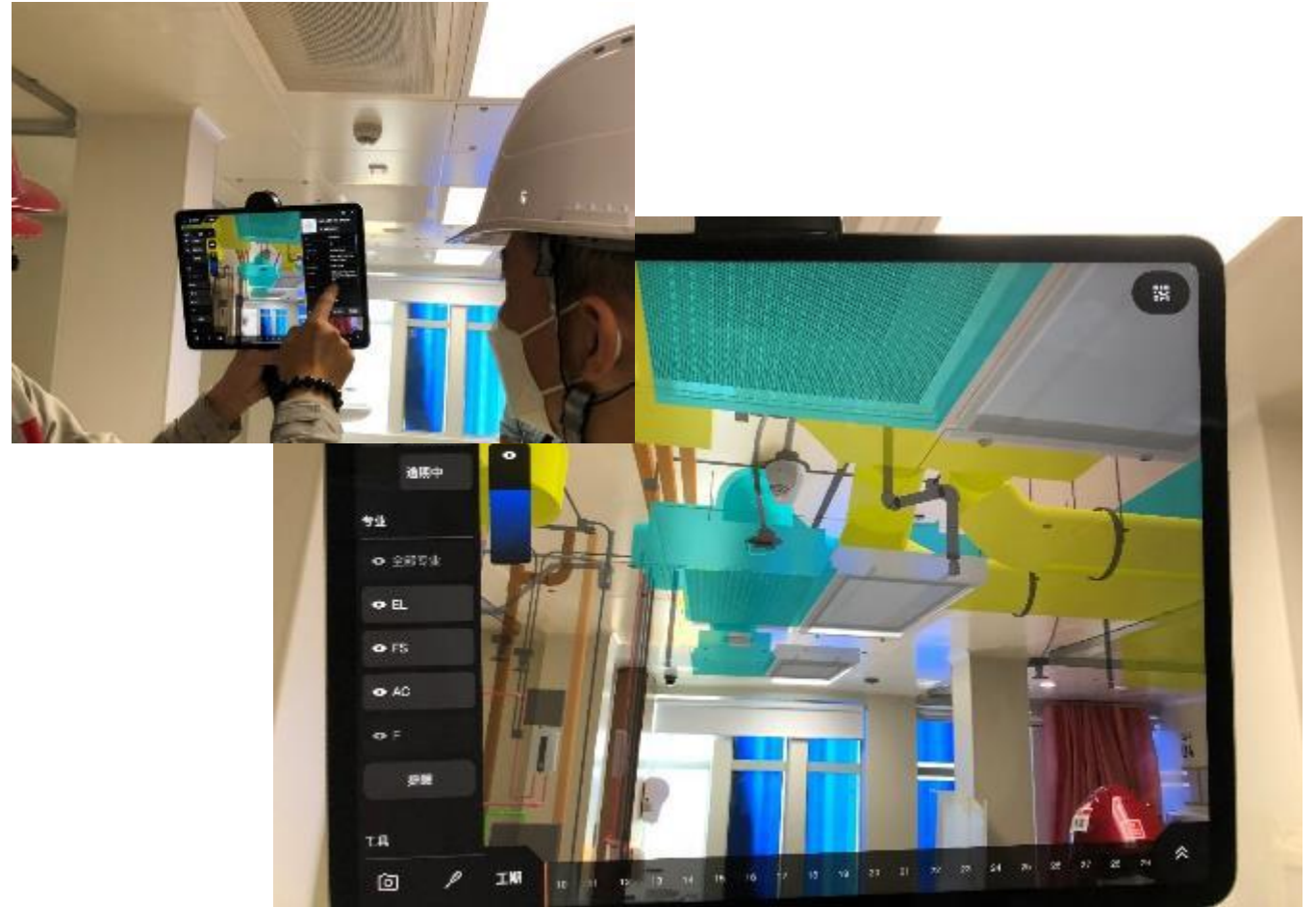
Result
of Inspection

Facilitating RFSIC
on monitoring the
integrated
modules

Added Value of **BIM** to assist FSI acceptance inspection



QR Code was equipped at Ward for access of Building Information Modelling (BIM) data



BIM Demonstration of FSI inside ceiling void

DIRECT TELEPHONE LINK



Required when:-

- Fire Detection System is installed.
- a full capacity Sprinkler tank equivalent with 2/3 of full capacity plus direct connection to Service Provider's Computerized Fire Alarm Transmission System

A written undertaking from the owner that a 24-hour "attendant" service with normal telephone link available on site.



F.S. 172 /
Acceptance
Letter / Memo

Requirement of Water Supplies for FSI Acceptance Inspection

- Improvised sprinkler system
- Improvised hose reel system

Fire Services
Completion Advice
(FSCA)

```
graph LR; A[Fire Services Completion Advice (FSCA)] --> B[F.S. 172 / Acceptance Letter / Memo];
```

F.S. 172 /
Acceptance
Letter / Memo

- Other FSI using water

Form WWO46
Part IV

```
graph LR; C[Form WWO46 Part IV] --> D[F.S. 172 / Acceptance Letter / Memo];
```

F.S. 172 /
Acceptance
Letter / Memo



THANK YOU

**Review on the Adoption of
BS 5839-1 : 2017 (Incorporating Corrigendum No.1)
Fire Detection and Fire Alarm Systems
for Buildings**



**Licensing and Certification Command
Fire Service Installations Division
Engineer
Ir. CHAN Wai-lam**

Background of Review



Specifications for Fire Detection and Fire Alarm Systems

BS 5839-1:2002 +
A2:2008

Standard

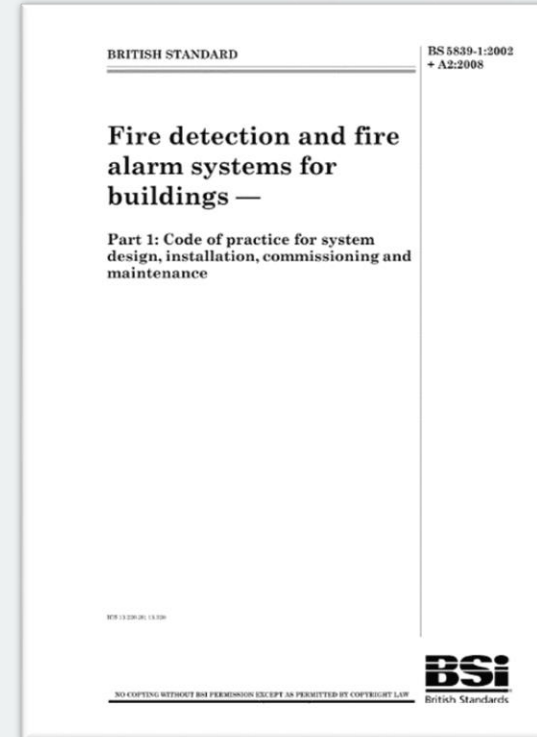
Fire
Detection
and Fire
Alarm
Systems

Local
Application

T&C
Checklist

FSD Circular Letter
No. 1/2009

FSD Circular Letter
No.1/2015





BS 5839-1 Revision History

| Standard Number | Publication Date | Withdrawn Date |
|---|--|----------------|
| BS 5839-1:2002 + A1:2009 | 15 October 2002 | 31 March 2013 |
| BS 5839-1:2013 | 31 March 2013 | 31 August 2017 |
| BS 5839-1:2017 <i>(Full Version)</i> | 31 August 2017 <i>(Corrigendum No.1 issued in March 2018)</i> | Current |



Path to Review BS 5839-1:2017

Purpose

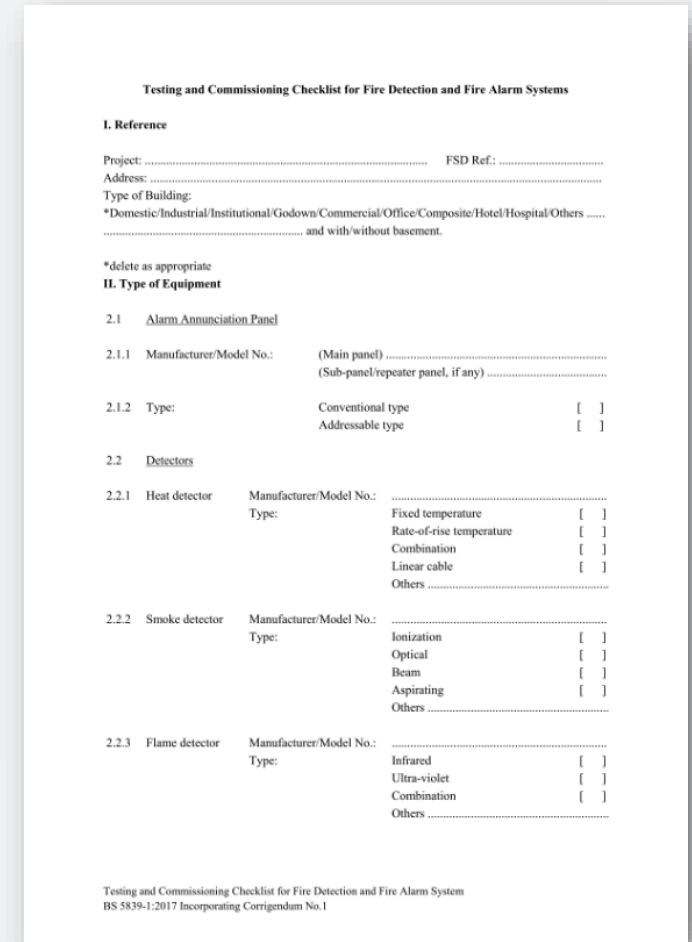
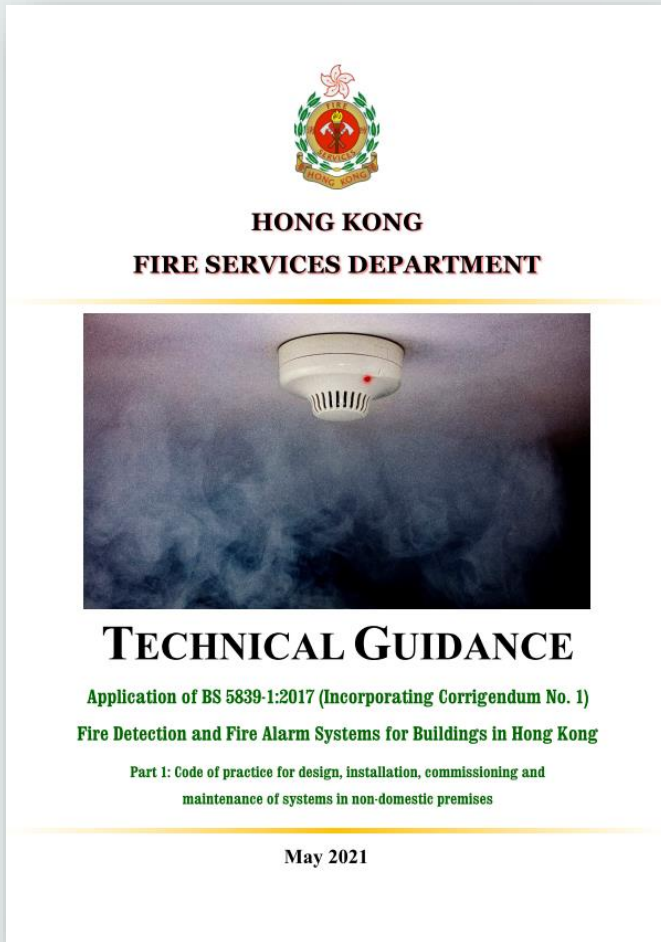
- Keep abreast of latest international standard in HK
- Facilitate industry development and community needs
- Clarify the grey/unclear area in the previous adopted version

Sub-working Group of FSSAG

- 12 nos. sub-working group meetings held since June 2018
- Contributions from the members in all concerned parties, i.e. *Government, Academic, Institution, Consultants, contractors, developers*
- Suggest Recommendations for Local Application
- Meticulously formulated a **Technical Guidance**



Updated Specifications for Fire Detection and Fire Alarm Systems



To be issued via FSD Circular Letter

How to use “Technical Guidance”

Items of amendment:

193

NA

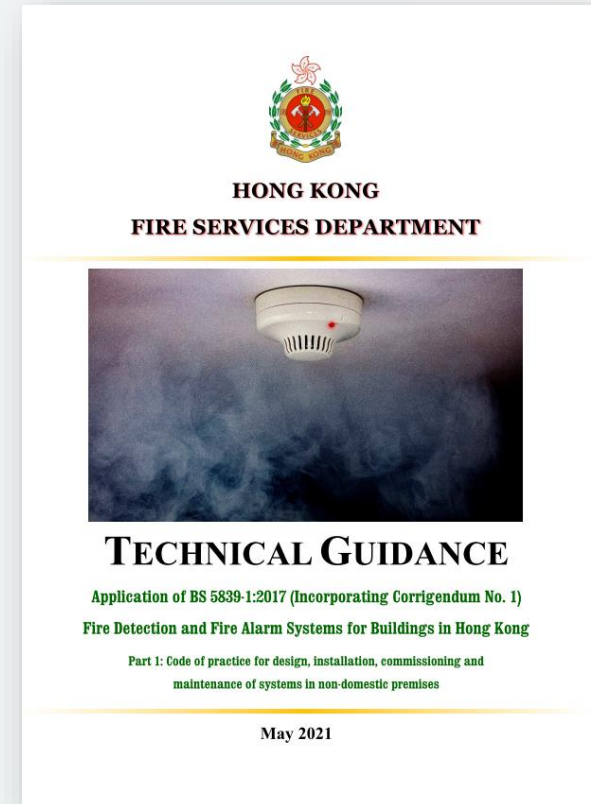
“not to be applied locally”



“to be revised”



“not mandatory and for reference only”



Remarks:

This Technical Guidance should be read in conjunction with the BS 5839-1, including the Notes and Recommendations and the relevant requirements of the Codes quoted therein.

Major Review Items

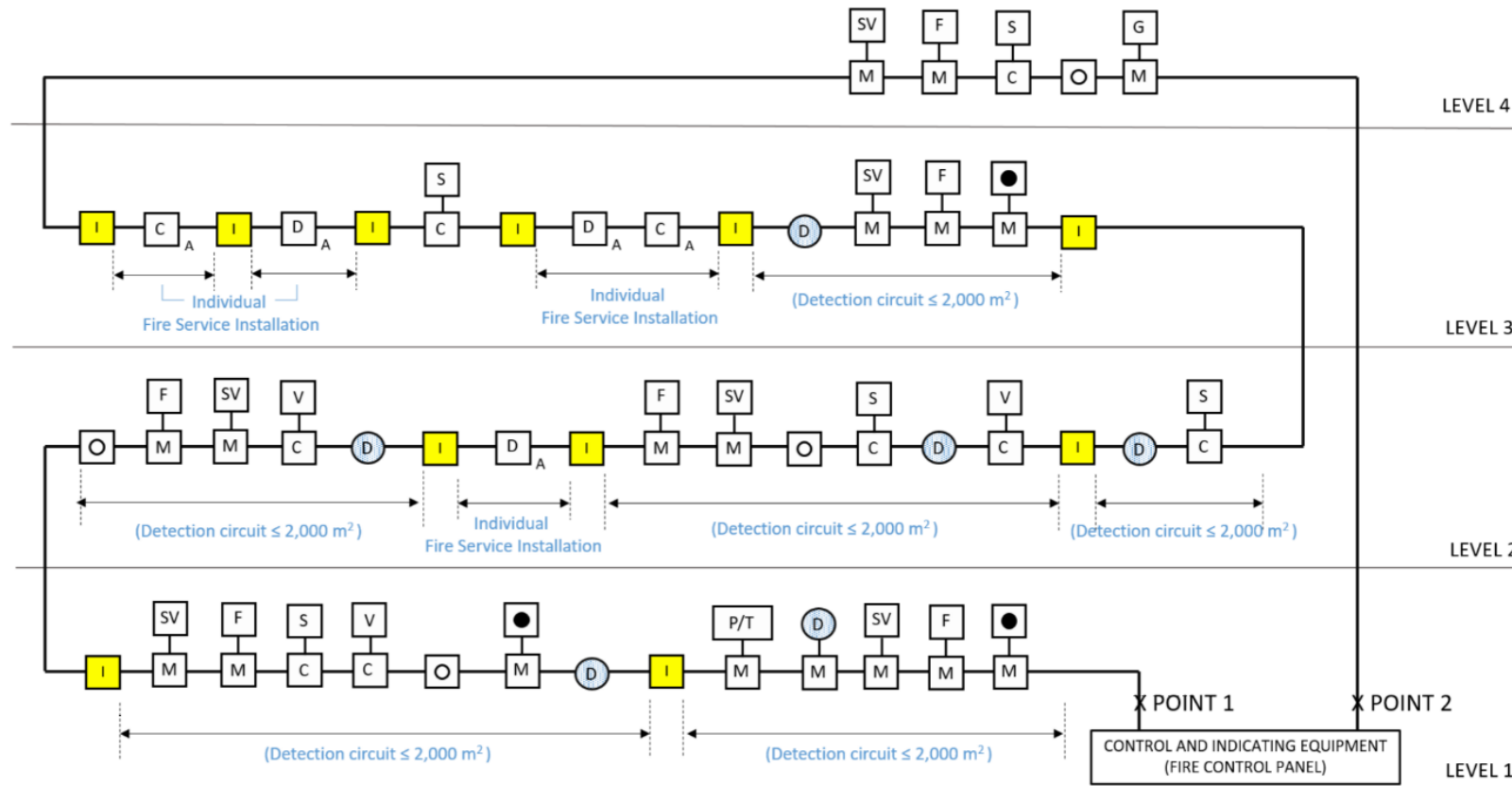


System Integrity Requirements

NEW

CIRCUIT ARRANGEMENT FOR AUTOMATIC FIRE DETECTION CIRCUIT (ADDRESSABLE SYSTEM)

Figure A



Clause
12.2.2 (b)
& (c)

SYSTEM INTEGRITY REQUIREMENTS

A SINGLE SHORT CIRCUIT OR OPEN CIRCUIT FAULT SHOULD NEITHER DISABLE PROTECTION WITHIN AN AGGREGATE FLOOR AREA* OF MORE THAN 2,000 m² NOR ON MORE THAN ONE FLOOR OF A BUILDING
 *(CALCULATED ONLY ON THOSE PORTIONS OF THE PREMISES INSTALLED WITH FIRE DETECTORS)

TWO SIMULTANEOUS FAULT (POINT 1 AND POINT 2) SHOULD NOT DISABLE PROTECTION WITHIN A GROSS FLOOR AREA GREATER THAN 10,000 m²



System Integrity Requirements for Linear Heat Detection System

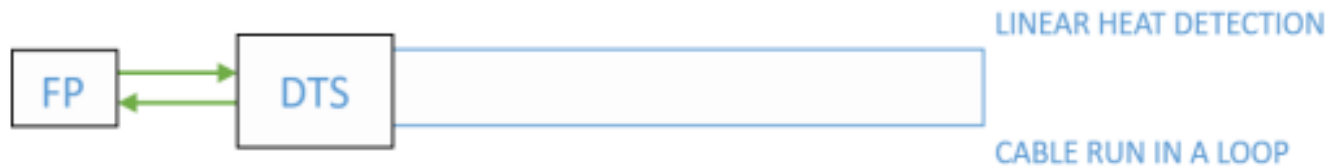
NEW

The following new Clause 12.2.2 m) should be added

“Linear Heat Detectors

- (i) For protection area not exceeding 2,000 m², a single short circuit or open circuit fault on the linear heat detection cable should not disable protection within the area of 2,000 m² by providing linear heat detection cable arrangement as shown in figure below.

Clause
12.2.2
(m)



CASE 1 – Protected Area ≤ 2,000 m²

LEGEND

FP : FIRE PANEL

DTS : DISTRIBUTED TEMPERATURE SENSING INSTRUMENT

System Integrity Requirements for Linear Heat Detection System

NEW

(ii) For protection area exceeding 2,000 m², duplicate linear heat detection cables with its associated control panels, should be provided with configuration as recommended by manufacturer, to form a complete redundancy as shown in figure below.”



Clause
12.2.2
(m)

LEGEND

FP : FIRE PANEL

DTS : DISTRIBUTED TEMPERATURE SENSING INSTRUMENT

Limits of Ceiling Height

Clause
22.9 &
Table 3

NEW

| Item | Detector Type | Column 1 Generally applicable maximum ceiling height | Column 2 Max. ceiling height for 10% of ceiling area |
|----------|--|---|---|
| 1 | Heat detectors | | |
| | Class A1 (BS EN 54-5) | 9.0 m | 10.5 m |
| | Other classes | 7.5 m | 10.5 m |
| 2 | Point smoke detectors | | |
| | General limit | 10.5 m | 12.5 m |
| 3 | Carbon monoxide detectors | | |
| | General limit | 10.5 m | 12.5 m |
| 4 | Optical beam smoke detectors | | |
| | Normal sensitivity | 25.0 m | 28.0 |
| | Enhanced sensitivity (alarm at 35% attenuation or less) | 40.0 m (see Note 1) | 43.0 m (see Note 1) |
| 5 | Aspirating smoke detection systems | | |
| | General limit | 10.5 m | 12.5 m |
| | Class C with at least 5 holes (BS EN 54-20) | 15.0 m | 18.0 m |
| | Class C with at least 15 holes (BS EN 54-20) | 25.0 m | 28.0 m |
| | Class B with at least 15 holes (BS EN 54-20) | 40.0 m (see Note 2) | 43.0 m (see Note 2) |

| | | | |
|----------|--|----------------------------------|--------|
| 6 | Flame Detector | | |
| | Class 3 | 12m (Mounting Height) | |
| | Class 2 | 17m (Mounting Height) | |
| | Class 1 | 25m (Mounting Height) | |
| | Other conditions (Higher than 25m) | As specified by the manufacturer | |
| 7 | Conventional Type Linear Heat Detector | | |
| | General limit same as heat detector and detail | 7.5 m | 10.5 m |
| | Class A1 same as heat detector (BS EN 54-22) | 9.0 m | 10.5 m |
| | Other conditions (i.e. Protect a particular item of plant or cabling at height level) BS 5839-1 Clause 22.6 e) | As specified by manufacturer | |
| 8 | Optical Fibers Type Linear Heat Detector | | |
| | General limit same as heat detector and detail | 7.5 m | 10.5 m |
| | Class A1 same as heat detector (BS EN 54-22) | 9.0 m | 10.5 m |
| | Other conditions (i.e. Protection of plant or cabling) | As specified by manufacturer | |
| 9 | Video-based Fire Detection | | |
| | Video Image Flame Detection (VIFD) | As specified by manufacturer | |

Fire Resisting Cables Requirements

Clause
26.2

NEW



Clause 26.2 d) should be revised and read as
“Standard fire resisting cable shall follow FSD Circular Letters.”

Note: This clause is to follow FSD Circular letters.

For standard cables or cable systems as defined in BS 5839-1, they shall comply with:

- (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.



Clause 26.2 e) should be revised and read as
“Enhanced fire resisting cable shall follow FSD Circular Letters.”

Note: This clause is to follow FSD Circular letters.

For enhanced cables or cable systems as defined in BS 5839-1, they shall comply with:

- (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.

Extract from FSD Circular Letter No. 2/2017



Thank You



Preview of FSD Circular Letters on Emergency Lightings

Licensing and Certification Command
Hong Kong Fire Services Department



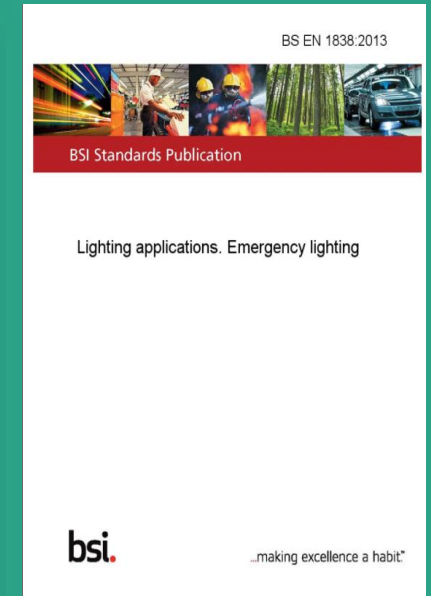
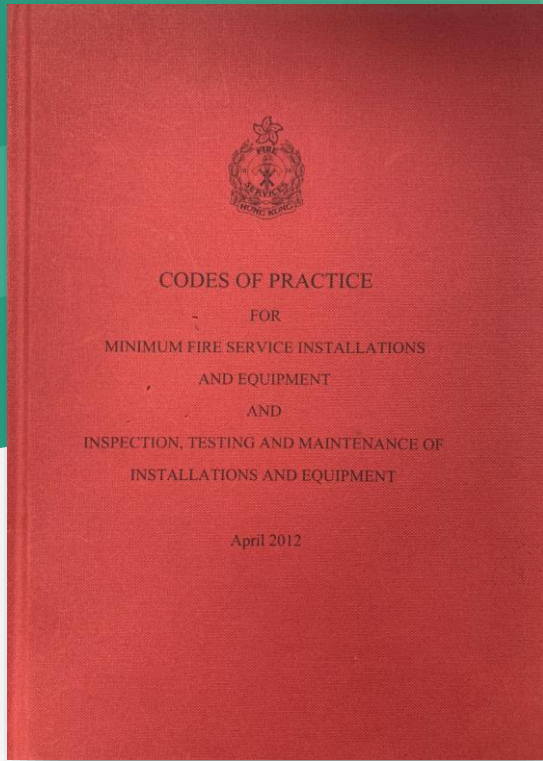
Part I

FSD Circular Letter No. 4/2021

Specification for Emergency Lighting

Fire Service Installations Division
Engineer Ir LEUNG Chun-fai





Emergency Lighting for all premises shall comply with:

- (1) BS 5266 Part 1; and
- (2) BS EN 1838.

(with suitable modification pertinent to Hong Kong)

Current practices:

BS 5266-1:2011
BS EN 1838:2013

BS 5266-1:2016

BS 5266-1:2016



BSI Standards Publication

Emergency lighting –
Part 1: Code of practice for the
emergency lighting of premises

BS EN 1838-1:2013

BS EN 1838:2013



BSI Standards Publication

Lighting applications —
Emergency lighting

Sub-working Group
under FSSAG



Extensive Consultation
(Respective trades &
parties)



HONG KONG
FIRE SERVICES DEPARTMENT



TECHNICAL GUIDANCE

Application of BS 5266-1:2016 and BS EN 1838 :2013
for Emergency Lighting in Hong Kong






May 2021

Applicable for all initial submissions
of building plans on or after
1 January 2022 (Tentative)



Use of Technical Guidance



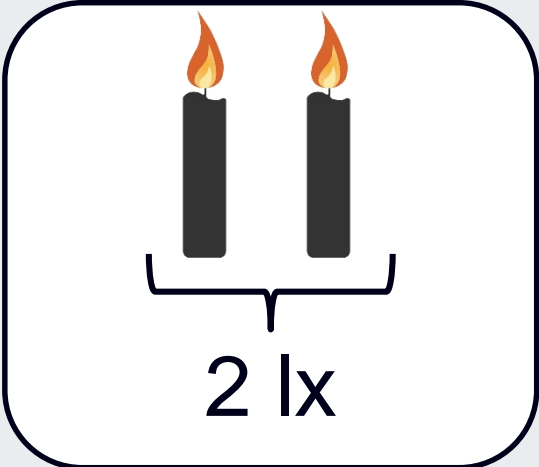

| Part | Contents |
|-------|--|
| 1 | Abbreviations |
| 2 & 3 | <p>Clauses of BS 5266-1:2016 / BS EN 1838:2013 which are either:</p> <ul style="list-style-type: none">  not to be applied locally  to be revised  not mandatory and for reference only <p><u>Example:</u></p> <ul style="list-style-type: none">  Clause 3.3 should be revised and read as “person with valid Registered Electrical Workers (REW) certificate fulfilling statutory requirement” Note: This is to define the qualification of competent person clearly according to local practice.  Clause 3.7 is not to be applied locally. Note: Emergency lighting is mainly designed for evacuation only but not for safety of people staying in a premises. |



- ① First read the standards
- ② Check the Technical Guidance



Example of major local modification

| Category | Contents |
|---------------------------------|--|
| Provision of emergency lighting | <ul style="list-style-type: none"> Any accommodations should be provided with emergency lighting with horizontal illuminance of not less than 2 lx at floor level. For accommodations > 8m², at least 2 emergency luminaires shall be provided. <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;">  <p>2 lx</p> </div> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;">  <p>Accommodations > 8m²</p> </div> </div> |

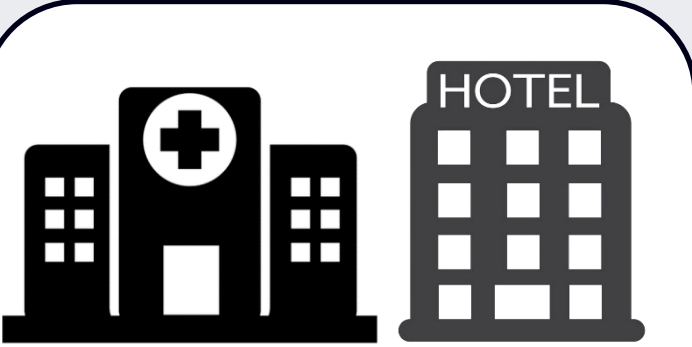






Example of major local modification

| Category | Contents |
|----------|--|
| Location | <ul style="list-style-type: none">• Emergency lighting should be for all plant and switch rooms and adjacent to main control equipment for fire service installations and equipment.• Emergency lighting should be provided near manual operated fire-fighting equipment and call point (excluding street fire hydrant). <div></div> <div></div> <div></div> <div></div> |





Example of major local modification

| Category | Contents |
|--------------|--|
| Duration | <ul style="list-style-type: none"> A minimum duration for various premises is specified. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;">  <p>Premises with sleeping risk: <u>3 Hours</u></p> </div> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;">  <p>Licensed premises: <u>2 hours</u></p> </div> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;">  <p>Other premises: <u>1 hour</u></p> </div> </div> |
| Power Supply | <ul style="list-style-type: none"> The normal power supply to the emergency lighting system should be so arranged that continuity of supply is assured. <div style="display: flex; justify-content: center; align-items: center; gap: 20px;">   </div> |



Example of major local modification

| Category | Contents |
|------------------------------------|---|
| <p>Routine inspection and test</p> | <p>Routine inspection and test for emergency lighting systems conforming to relevant requirements of BS EN 50172 : 2004.</p> <p>Examples of revision:</p> <ol style="list-style-type: none"> 1) Once every month a functional test with not longer than 10% of rated duration. 2) Once twelve-month a full rated duration test should be carried out and the result should be entered in a register. 3) Included the use of automatic testing device. <div style="text-align: right;">   </div> |

Reminder



FSI 314 Submission of Emergency Lighting As-fitted Layout Drawings

FSI/314 Print Save Clear

To : Director of Fire Services Appendix A

Fire Service Installation Plans for Building at

Part I

This is to certify that the attached fire service installation plans are identical to the building plans approved by you on _____ . Your file reference is *FP 8 / 43 / _____ File number _____ .

Signed _____ Date _____

Full Name of Authorized Person _____

Part II

This is to certify that the details and specifications of all installations shown on the attached fire service installation plans are as prescribed by the Fire Services Department and in accordance with the relevant Rules and Codes of Practice as listed below :-

- Rules of Fire Offices' Committee for :
 - Automatic Sprinkler Installations (29th Edition)
 - Automatic Fire Alarm Installations (12th Edition)
 - Installation of Drenchers (4th Edition)
- Rules of the Loss Prevention Council for
 - Automatic Sprinkler Installations (BS EN 12845) / (BS 5306 Part 2)*
 - Automatic Fire Alarm Installations (BS 5839 Part 1)

Codes of Practice for Minimum Fire Service Installations and Equipment, Fire Services Department for :

| | |
|--|---|
| <input type="checkbox"/> Fire Alarm Systems | <input type="checkbox"/> Fire Hydrant / Hose Reel Systems |
| <input type="checkbox"/> Exit Signs | <input checked="" type="checkbox"/> Emergency Lighting Installations |
| <input type="checkbox"/> Emergency Generator Installations | <input type="checkbox"/> Ventilation / Air Conditioning Control Systems |
| <input type="checkbox"/> Smoke Extraction Systems | <input type="checkbox"/> Staircase Pressurization Installations |

Signed _____ Date _____

Full Name of FSI Contractor/Consultant _____

Correspondence Address _____

_____ Tel. No.: _____

Mark "x" where applicable
* Delete where appropriate
(Rev. 01/2012)

Remind to include emergency lighting installation drawing in FSI/314 submission and Form FSI/314.

Emergency lighting location;
Schematic Wiring Diagram for Central Battery System

Part II FSD Circular Letter No. 5/2021

Fire Safety Requirements for Emergency Lighting Systems in Licensed/Registered Premises

Policy Division

Senior Station Officer WU Kam-wang



FSD Circular Letter No. 5/2021 – Fire Safety Requirements for Emergency Lighting Systems in Licensed/Registered Premises



Year

2006

- FSD Circular Letter No. 1/2006
- Requirements for Emergency Lighting Systems [PPA/104 (4th Revision)]
- Requirements for Self-contained Luminaires Emergency Lighting Systems [PPA/104(A) (4th Revision)]

2012

- Set up Sub-Working Group of FSSAG for holistic review
- Representatives: HKIE, IFE (HK Branch), HKECA, SFPE HK & FSD



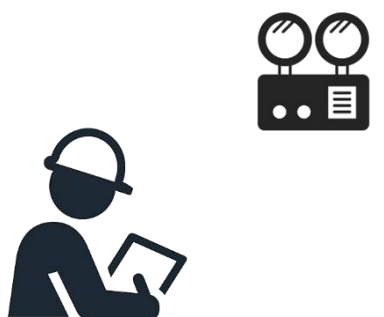
2021

- **FSD Circular Letter No. 5/2021**
- Requirements for Emergency Lighting Systems with Central Power Supply [**PPA/104 (5th Revision)**]
- Requirements for Self-contained Luminaires Emergency Lighting Systems [**PPA/104(A) (5th Revision)**]

Applicable for all submissions of licence/registration application received by respective licensing authority or FSD on or after **1 June 2022 (Tentative)**


FSD Circular Letter No. 5/2021 –
Fire Safety Requirements for Emergency Lighting Systems in
Licensed/Registered Premises

PPA / 104 (5th Revision) & PPA / 104(A) (5th Revision) Main Areas of Revision

| Category | Contents |
|-----------------------------|--|
| Fire resisting cable | Minimum fire resisting cable requirements for Fire Service Installation as specified in FSD Circular Letter No. 2/2017. |
| Routine inspection and test | <p>Routine inspection and test for emergency lighting systems conforming to relevant requirements of BS EN 50172 : 2004.</p> <p>Examples of revision:</p> <ol style="list-style-type: none">1) Once every month a functional test with not longer than 10% of rated duration.2) Once twelve-month a full rated duration test should be carried out and the result should be entered in a register.3) Included the use of automatic testing device.  |



FSD Circular Letter No. 5/2021 –
Fire Safety Requirements for Emergency Lighting Systems in
Licensed/Registered Premises

PPA / 104 (5th Revision) Main Areas of Revision

| Category | Contents |
|--------------------------|--|
| Escape Route | <p>Provision of escape lighting in facility which is part of an escape route</p> <ul style="list-style-type: none">(i) <u>Facilities exceeding 8m²</u> and (ii) <u>facilities of less than 8m² without borrowed light</u> shall be provided with escape lighting complying as if they were part of an escape route. |
| Performance verification | <p>Performance verification for emergency lighting systems with central power supply.</p> <ul style="list-style-type: none">A number of technical performances as stipulated shall be verified by a Registered Fire Service Installation Contractor / Works Specialist / Works Agent by means of manufacturer's specifications/certificates/calculations and testing & commissioning conducted on site.  |

FSD Circular Letter No. 5/2021 –
Fire Safety Requirements for Emergency Lighting Systems in
Licensed/Registered Premises

PPA / 104(A) (5th Revision) Main Area of Revision

| Category | Contents |
|------------------|--|
| Minimum Duration | <p>The self-contained luminaires emergency lighting system shall be capable of maintaining the stipulated lighting levels for a minimum period of 2 hours (rated duration).</p> <div></div> <div></div> |

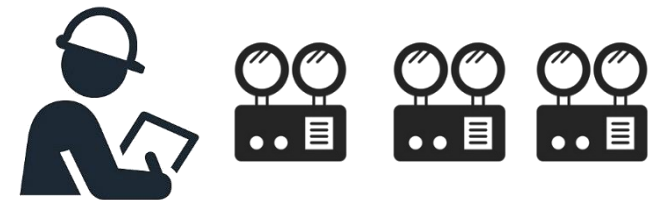
FSD Circular Letter No. 5/2021 –
Fire Safety Requirements for Emergency Lighting Systems in
Licensed/Registered Premises

Reminder

Self-contained Luminaires Emergency Lighting System conforming to **PPA/104(A)** shall be tested and certified by:

- **Testing Organization**  recognized by the FSD; or
- **Local University Laboratory**  competent to carry out the relevant tests and certification.

Relevant test report(s)/certificate shall be submitted to FSD during licence/registration application. 



Summary

| CL Number | No. 4/2021 | No. 5/2021 |
|---|--|---|
| Name of Letter | Specification for Emergency Lighting | Fire Safety Requirements for Emergency Lighting Systems in Licensed/Registered Premises |
| Applicable Area | All premises | Licensed/Registered Premises |
| Promulgation | Technical Guidance – Application of BS 5266-1:2016 and BS EN 1838:2013 for Emergency Lighting in Hong Kong | PPA/104 (5 th Revision) & PPA/104(A) (5 th Revision) |
| <u>Tentative</u> Effective Date | 1 Jan 2022 | 1 Jun 2022 |

Thank you!



FSD CONNECTS WITH THE CONSTRUCTION INDUSTRY



Thank You !
