



**Fire Services Department connects
with the Construction Industry**
**Experience Sharing on
Acceptance Inspection of FSI**

23 NOVEMBER 2018

Welcoming Address

**Assistant Director
(Licensing and Certification)**

Ir LEUNG Kwun-hong

Flow of Presentation

- **Summary of seminars on 24.11.2017 and 25.6.2018**
- **Facilitation measures taken since 24.11.2017**
- **Experience Sharing on FSI Acceptance Inspection in recent projects**
- **Analysis of FSI Acceptance Inspection**
- **Case Sharing**
- **Report Form for Open Kitchen Unit and Window-less Kitchen/Toilet**
- **Way Forward**
- **Q & A**

Summary of Seminar on 24.11.2017

1. Processing of Building Plans

a) Prioritization of Submissions

b) Case Officer System

2. Points to note in Submission of Application of FSI

Acceptance Inspection (Forms FSI/501 and FSI/314)

- 3. Experience Sharing on common mistakes/defects in**
 - a) Documentary Submission; and**
 - b) Acceptance Inspection of FSI**
- 4. Introduced Pre-inspection meeting to enhance the overall efficiency of the FSI acceptance inspection**

1. Experience Sharing in FSI Acceptance Inspection

a) Document Checklist

b) Material Acceptance

2. Overall Review


a) Analysis on Reject and Withdraw on Application of Acceptance inspection

b) Document Checking

Streamline the process of acceptance inspection

- **Pre-inspection meeting with AP and RFSIC**
- **On need basis**
- **Preliminary Document checking**
- **Coordination of inspection schedule**

Facilitation Measures taken since seminar on 24.11.2017

- **Implemented standard document checklist **
 - **e.g. FS251 for portable equipment and DG**
Approval for fuel tank of Emergency generator, etc.
 - **Launched on 8 Jan 2018, updated on 14 May 2018**
and 26 Sep 2018

Facilitation Measures taken since seminar on 24.11.2017

- **Issue FS 172 Certificate**
 - **Overall Document Checking efficiency enhanced**
 - **Minor amendments of general building plans or FSI/314 drawings**

- **Conduct Seminars to the trade, Institutions and Government Departments e.g. HD, HyD, ASD, CEDD, HKIA, FSIC, HKIS & HKIE**
 - **7 Seminars were held from Nov 2017 to Oct 2018**

Facilitation Measures taken since seminar on 24.11.2017

- **Video in FSD website**
 - **PowerPoint and Video of 2 Seminars (24.11.2017 & 25.6.2018) uploaded onto FSD website**

- **Letter to FSIC on FSD Circular Letter No.1/2015**
 - **Issued on Nov 2017 and Jun 2018 to FSIC on guidelines on Documents required for Application for Acceptance Inspection, e.g. FSI 314, FSI 501 & T&C checklist**

Facilitation Measures taken since seminar on 24.11.2017

- Enhance communication with the trade regarding to project document submission vetting (FSI/314 for Smoke Control)
- Consent Form launched and uploaded onto FSD Website on 23.9.2018
- Regularly review effectiveness of measures implemented

Among the 192 Cases without re-inspection from 1.11.2017 to 31.10.2018

Summary of Duration for Issue of FS172

Type of Project	Nov 2017 – Apr 2018 (1st 6 months of new measures implemented)	May – Oct 2018 (2nd 6 months of new measures implemented)
	Average Calendar Days	Average Calendar Days
Addition or Alteration Works (e.g. BA13)	69	47 (-32%)
Small Scale Development (Single building no more than 6 storey)	56	43 (-23%)
Medium & Large Scale Development (Single building more than 6 storey or multiple buildings)	65	57 (-12%)

Duration of document checking significantly reduced with

- **Implementation of document checklist;**
- **Preliminary checking in Pre-inspection meeting;**
- **Technical Seminar to the trade**

Average Document Checking Duration from AP/RFSIC * (Calendar days)

Nov 2017 – Apr 2018 (1st 6 months of new measures implemented)	May – Oct 2018 (2nd 6 months of new measures implemented)
31 days	26 days (-16%)

*Among the 325 Cases without and without Re-inspection from 1.11.2017 to 31.10.2018

Experience Sharing on FSI Acceptance Inspection in recent projects

- **Challenge in Fire Engineering Approach and Pre-approval of Smoke Control Systems (SCS*)**
- **Project adopted Fire Engineering Approach or Smoke Control Systems would be time-demanding**
- **Delay submission of Fire Engineering Report (FER) and FSI/314 of SCS* would affect the overall progress of FSI acceptance inspection**

* **SCS includes Smoke Extraction Systems, Ventilation/Air conditioning Control Systems and Staircase Pressurization Systems**

Experience Sharing on FSI Acceptance Inspection in recent projects

- **FSD approves only the design principle of the subject system**
- **AP and RFSIC shall ensure:**
 - **the design comply with relevant design criteria as stated in approved FER**
- **Non-compliance in the acceptance inspection may lead to refusal in the issuance of acceptance letter**

Analysis of FSI Acceptance Inspection

Engineer(FSI)

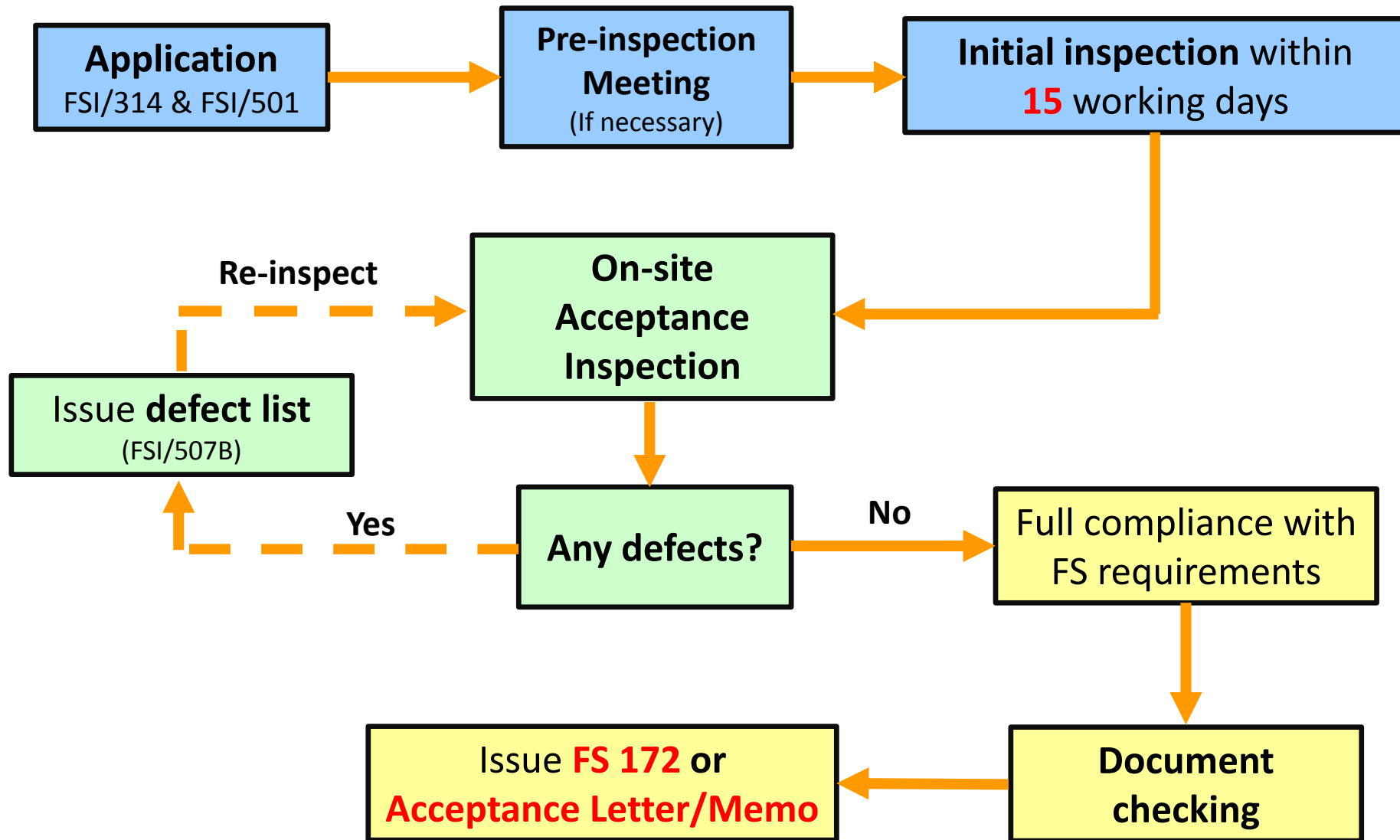
Ir Peter LAW

FSD Circular Letter No. 1/2015

- Form FSI/501 : Application Form
- Form FSI/314 with two sets of as-fitted FSI layout plans*
- Testing and Commissioning (T&C) Checklists
- FSIs Equipment List & relevant supporting documents
- Document submission for FSI Equipment

*Remarks: FSI/314 drawings for Smoke Control Systems required prior approval

Workflow for FSI Acceptance Inspections



Application for Acceptance Inspections

Years	FSI/501	No.	%
2017	received	674	-
	rejected	158	23
	withdrawn	107	16
2018*	received	537	-
	rejected	96	18
	withdrawn	65	12

* From Jan to Oct

Reasons for Application **Rejection**

Items	2017		2018*	
	No.	%	No.	%
Incomplete / Mistakenly-filled Form FSI/501	77	49	37	38
Outstanding/Incomplete T&C Checklist	60	38	30	32
Outstanding/Incomplete Equipment List or Supporting Documents	21	13	29	30
Total:	158	-	96	-

* From Jan to Oct

Outstanding / Incomplete Equipment List or supporting documents

- **Without signature on the List**
- **Missing information of systems or equipment**
- **Approval for the connection of Non-FSI load to the emergency generator**
- **DG Approval/license of fuel tank room**
- **Insufficient FSI plans**
- **Invalid/outdated approval letter or Certificate for FSI equipment**

Incomplete Input of Form FSI/501

- **FSI not listed out /specified**
- **No GBP approval date**
- **Missing AP/RFSIC Name/Signature**
- **AP signature date earlier than FSI completion date**
- **Input of the date of GBP is not tally with that of approved GBP**
- **Not an original signature**

Outstanding / Incomplete T&C Checklists

- **Actuation Devices and Operation of Fire Shutter**
- **CO₂/Clean Agent Extinguishing System**
- **Emergency Generator Installation**
- **Fire Detection and Fire Alarm System**
- **Fire Hydrant and Hose Reel System**
- **Staircase Pressurization System**
- **Street Fire Hydrant System**

FSI Acceptance Inspection – Inspection Report

Unsatisfactory inspection result :

- Issue Inspection report(FSI/507B)
 - List all the defective/ outstanding items for rectifications/clarifications
 - Explain to AP/RFSIC about the details
 - Re-inspection
- First-come, first-served ASAP

SAMPLE Inspection report (FSI/507B)

FSI/507B-1 (7/2007)

Fire Service Department / Fire Protection Command

File No. 19/XXXX

Initial / Re-inspection Report on Fire Service Installation / VAC Control System / Smoke Extraction System / Pressurization of Staircase System Inspection and Testing

Part I

1. Building Address : XXX

2. Inspection Result : (Defects noted by Inspecting Officer) :-

2.1 DFL is not completed
2.2 Construction letter of building name is not submitted.
2.3 Construction letter of Address & building Description is not submitted.
2.4 Underlying letter of VAC system (FSP 2 annex) is not submitted.
2.5 Appointment of FSI equipment list is required.
2.6 Appointment of FSI checklist is required.

Remark : AP/AP representative is confirmed that no lining material (F.S. notes 7.1 & 7.2) is installed in this project.
to be continued (Total 1 Sheets including this one)

3. A letter / memo confirming the above defects will / will not be sent

Signature :
Inspecting Officer : XXX XXX XXX
Date : XX 19/ XXXX

Part II

4. I confirm that the defects as stated above have been brought to my attention

Authorized person (or representative)	XXX XXX XXX	Installation Contractor (or representative)	XXX XXX XXX
Signature	<i>[Signature]</i>	Signature	<i>[Signature]</i>
Dated	XX 19/ XXXX	Dated	XX 19/ XXXX

Note : Appointment for re-inspection should be made by AP by telephone to the Senior Building Services Inspector (telephone no. 2733 7549) after the above defects have been remedied. Fresh application for inspection (FSI/501) is not necessary unless it is so required in a refusal letter / memo.
If you have found the inspection report unjustified or wish to appeal any points made in this report, please contact Fire Staff Officer of Licensing and Certification Command at Telephone no. 2733 7605.

Analysis of FSI Acceptance Inspection

Summary of Analysis of 325 nos FS Certificate issued from 1.11.2017 to 31.10.2018

Type of Project	No. of Case	No of Case required Re-inspection	Percentage
Addition or Alteration Works (e.g. BA13)	92	27	29%
Small Scale Development (Single building no more than 6 storey)	102	36	35%
Medium & Large Scale Development (Single building more than 6 storey or multiple buildings)	131	70	53%
Total	325	133	41%

Analysis of FSI Acceptance Inspection

Summary of Analysis of 325 nos FS Certificate issued from 1.11.2017 to 31.10.2018

Type of Project	Duration from Receipt of FSI/501 to Issue of FS172	
	Shortest duration	Longest duration
Addition or Alteration Works (e.g. BA13)	14 days <i>(Extension of 7/F for a school building)</i>	295 days <i>(A&A for an industrial building, long document submission period, Re-inspection Required)</i>
Small Scale Development (Single building no more than 6 storey)	19 days <i>(A two-storey church building)</i>	225 days <i>(A single storey guard house, long defects rectification period, Re-inspection Required)</i>
Medium & Large Scale Development (Single building more than 6 storey or multiple buildings)	28 days <i>(A 20-storey hotel building)</i>	175 days <i>(A 23-storey institutional buildings, 3 Re-inspections required)</i>

Summary of Analysis of 92 Cases of Addition or Alteration Works (e.g. BA13)

Item	Descriptions (Nos./%)	Duration between Receipt of FSI/501 and Issue of FS172	Distribution of time	
			FSD	AP/ RFSIC
		Average Calendar day	Average Calendar day (%)	Average Calendar day (%)
1	Cases WITHOUT Re-inspection [65 Cases (71%)]	59	25 (42%)	34 (58%)
2	Cases With 1 Re-inspection [23 Cases (25%)]	121	28 (23%)	93 (77%)
3	Cases With 2 Re-inspection [4 Cases (4%)]	127	29 (23%)	98 (77%)

* Blue colour – Time taken by FSD

* Red colour – Time taken by AP/RFSIC

Summary of Analysis of 102 Cases of Small Scale Development (Single building no more than 6 storey)

Item	Descriptions (Nos./%)	Duration between Receipt of FSI/501 and Issue of FS172	Distribution of time	
			FSD	AP/ RFSIC
		Average Calendar day	Average Calendar day (%)	Average Calendar day (%)
1	Cases WITHOUT Re-inspection [66 Cases (65%)]	51	25 (49%)	26 (51%)
2	Cases With 1 Re-inspection [29 Cases (28%)]	91	27 (30%)	64 (70%)
3	Cases With 2 Re-inspection [7 Cases (7%)]	135	29 (21%)	106 (79%)

* Blue colour – Time taken by FSD

* Red colour – Time taken by AP/RFSIC

Summary of Analysis of 131 Cases of Medium & Large Scale Development (Single building more than 6 storey or multiple buildings)

Item	Descriptions (Nos./%)	Duration between Receipt of FSI/501 and Issue of FS172	Distribution of time	
			FSD	AP/ RFSIC
		Average Calendar day	Average Calendar day (%)	Average Calendar day (%)
1	Cases WITHOUT Re-inspection [61 Cases (47%)]	59	28 (48%)	31 (52%)
2	Cases With 1 Re-inspection [55 Cases (42%)]	92	30 (33%)	62 (67%)
3	Cases With 2 Re-inspection [11 Cases (8%)]	108	31 (29%)	77 (71%)
4	Cases With 3 Re-inspection [4 Cases (3%)]	172	34 (20%)	138 (80%)

* Blue colour – Time taken by FSD

* Red colour – Time taken by AP/RFSIC

Summary of Analysis of FSI Acceptance Inspection

1. For cases failed in the initial inspection (i.e. Re-inspection required), additional duration from 33 to 62 days are expected.
2. The more Re-inspection requires, the longer is the overall duration.

Type of Project	<i>Average Duration between Receipt of FSI/501 and Issue of FS172</i>					
	Addition or Alteration Works (e.g. BA13)		Small Scale Development (Single building no more than 6 storey)		Medium & Large Scale Development (Single building more than 6 storey or multiple buildings)	
	Average Calendar day	Percentage (%)	Average Calendar day	Percentage (%)	Average Calendar day	Percentage (%)
Cases With 1 Re-inspection	121 (+62)	25%	91 (+40)	28%	92 (+33)	42%
Cases With 2 Re-inspection	127 (+68)	4%	135 (+84)	7%	108 (+49)	8%
Cases With 3 Re-inspection					172 (+113)	3%

Summary of Analysis of FSI Acceptance Inspection

- The issue of FS172 could be speeded up by submitting correct, valid and required documents for checking.
- The duration of overall inspection depends on AP and RFSIC more and more when the number of re-inspection increases.

Item	Descriptions (Nos./%)	Duration between Receipt of FSI/501 and Issue of FS172	Distribution of time	
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		Average Calendar day	Average Calendar day (%)	Average Calendar day (%)
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4	Cases With 3 Re-inspection (4 Cases (3%))	172	34 (20%)	138 (80%)

Review of Pre-inspection Meeting

Engineer(FSI)

Ir Peter LAW

Pre-inspection Meeting

- **Implemented since November 2017**
- **Aim to enhance the overall efficiency of acceptance inspection**
- **Conduct on **need basis**:**
 1. Review the **actual project status and site readiness**
 2. Review **Document Checklist**
 3. Coordinate **inspection schedule**

Pre-inspection Meeting

- AP/ RFSIC substantiates the **site readiness** for acceptance inspection;
- **Submit the Signed document checklist;** and
- AP/ RFSIC confirm all FSIs have **undergone proper Testing and Checking**

Documents Checklist for Acceptance Inspection

	- Charging report				
	- Summary list c/w location of area protected and cylinder room, weight of required agent, D.G. certificate no., no. of nozzles, no. of smoke detectors & etc.				
8	Pressurization of staircase				
	- Confirmation from AP for the Building air tightness condition during the testing is equivalent to the occupation condition				
	- Equipment list of builder's work (such as doorset, door closer & etc.) c/w related test reports				
	- Confirmation letter from AP for Fire Resisting Rating of Fan Rooms and Duct Shaft				
	- Provided duplicate of valid calibration certificate for testing instrument on site				
	- Test report for air leakage of all metal ductwork				
	- Test record for the system and certified by RPE				
	- Letter from RPE to certify the system had been completed and tested in accordance with FSD's requirements and approved drawings				
9	Smoke extraction system				
	- Confirmation letter from AP for Fire Resisting Rating of Fan Rooms and Duct Shaft				
	- Provided duplicate of valid calibration certificate for testing instruments on site				
	- Test report for air leakage of all metal ductwork				
	- Test reports for the system and certified by RPE				
	- Letter from RPE to certify the system had been completed and tested in accordance with FSD's requirements and approved drawings				
10	Valid calibration certificates for testing instrument as per FSD Circular Letter No. 1/2016				
11	Test reports (such as emergency lightings, exit signs, visual fire alarms and modules for automatic fire alarm system monitor) presenting to inspecting officer during FSD inspection				
12	Approval for Non-provision or exemption of Fire Service Provision				
13	Approval for method statement of fire service installations such as extended coverage sidewall sprinkler, long throw sprinkler, high pressure sprinkler and hot smoke test etc.				

Documents Checklist for Acceptance Inspection

I hereby certify that the above documents have been checked in order and FS equipment/installation in accordance with the approved FSI plans have been installed and tested in efficient working order.

Signature of A/P _____ Signature of RFSIC _____
 Name of A/P _____ Name of RFSIC _____
 Date _____ RFSIC Number _____
 _____ Date _____
 _____ Stamp of RFSIC _____

***First version of document checklist was introduced on 8.1.2018, updated on 14.5.2018 and 26.9.2018**

Review of Pre-inspection Meeting

Period		No.	%
2017 (21 Nov - 31 Dec)	No of Pre-inspection meeting held	<u>20</u>	--
	Proceed to inspection	<u>15</u>	<u>75</u>
	Reject	1	5
	Withdraw	4	20
2018 (1 Jan – 31 Oct)	No of Pre-inspection meeting held	<u>175</u>	--
	Proceed to inspection	<u>164</u>	<u>93</u>
	Reject	3	2
	Withdraw	8	5

Common observations found during Pre-inspection meeting

- Failure in defining the scope of inspection;
- Failure in compiling with FS notes;
- Failure in providing all required documents ;
- Failure in providing valid certificate or approval letter for FSI equipment/material

**Case Sharing on
Irregularities noted
during On-site Inspection**

**Engineer (FSI)
Ir Peter LAW**

Case Sharing

▶ Fire Hydrant / Hose Reel Systems



EVA area

Ground valve of Hydrant was found situated within the EVA area

Case Sharing

▶ Fire Hydrant / Hose Reel Systems



Missing of Break-glass Unit for FH/HR System

Case Sharing

▶ Fire Hydrant / Hose Reel Systems



Fire hydrant / hose reel obstructed by building structure

Case Sharing

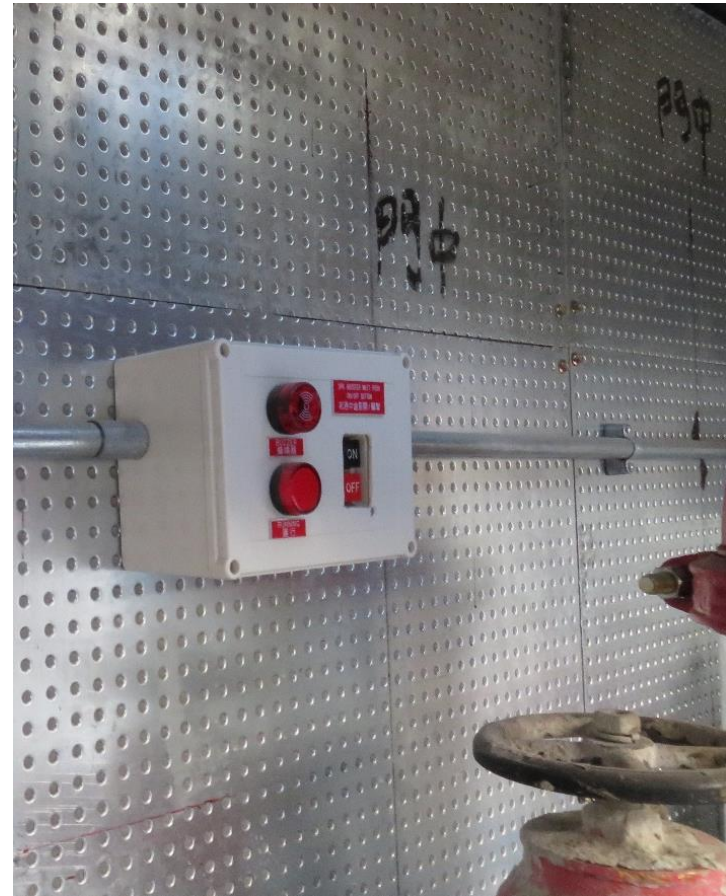
➤ Fire Hydrant / Hose Reel Systems



Missing of wheel operated screw valve for Hydrant Inlet and Outlet

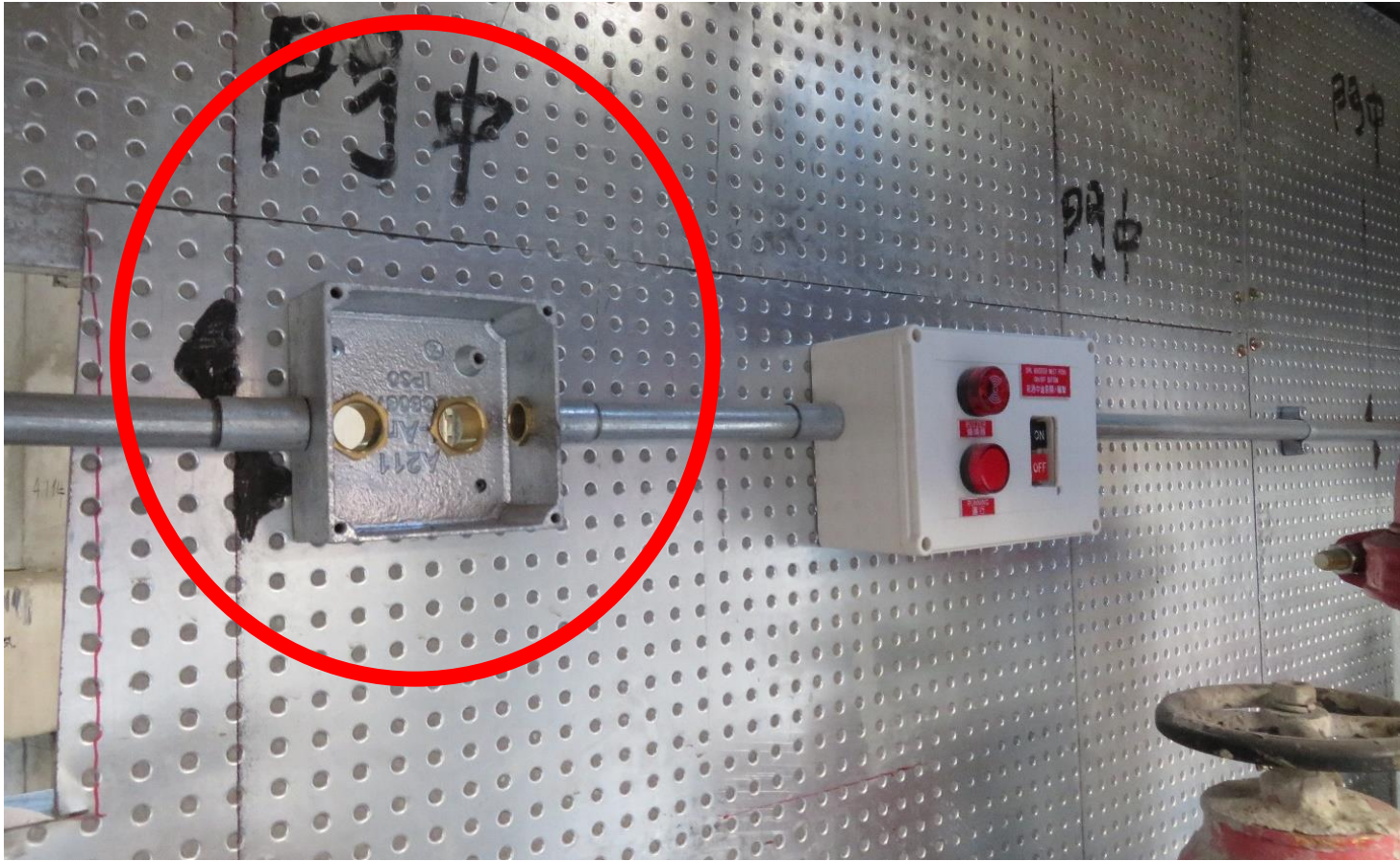
Case Sharing

▶ Fire Hydrant / Hose Reel Systems



Case Sharing

▶ Fire Hydrant / Hose Reel Systems



Incomplete installation of electrical wiring for Fixed Fire Pump

Case Sharing

➤ Poor Site Readiness for inspection



FS inlet & Hose reel were blocked

Case Sharing

- Poor Site Readiness for inspection



Construction works make layout checking impossible

Case Sharing

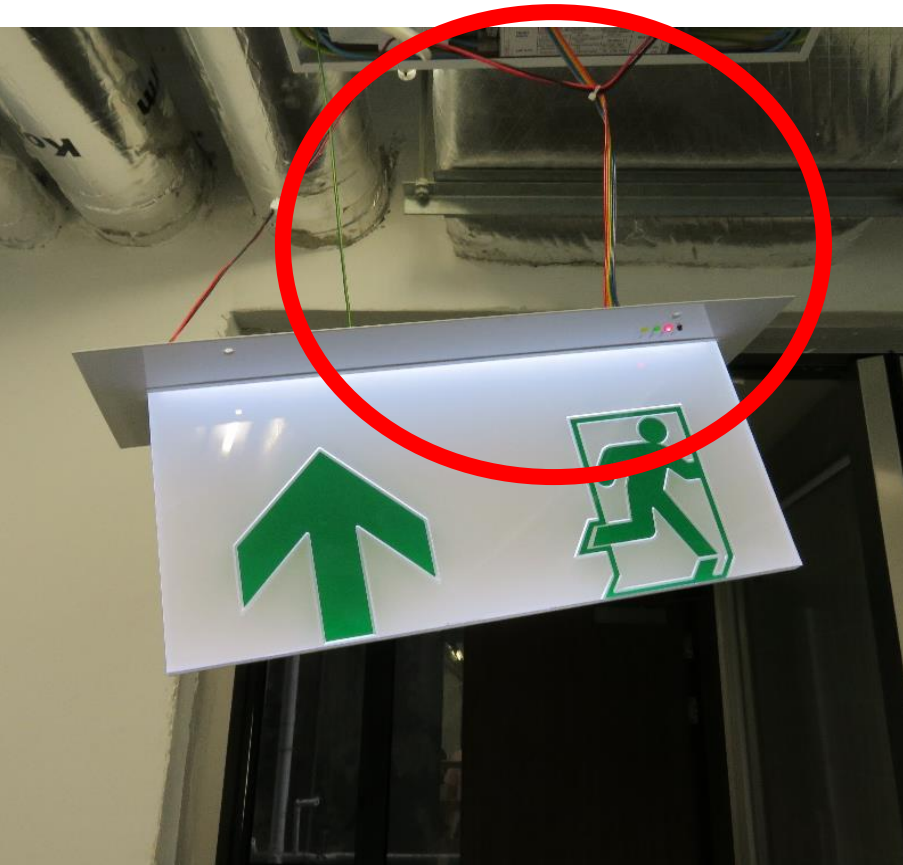
➤ Exit Sign



Exit and directional signs shall be positioned directly above the doorway of the exit

Case Sharing

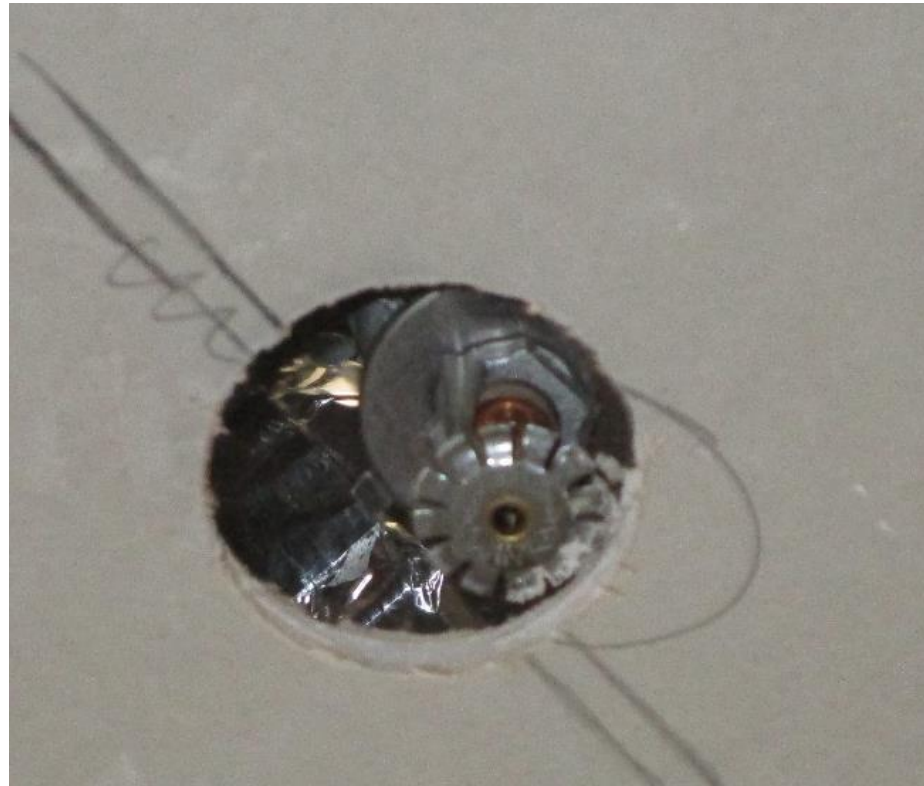
➤ Exit Sign



Improper installation of Exit signs

Case Sharing

➤ Automatic Sprinkler Installations



Sprinkler head obstruction within 500mm

Case Sharing

➤ Staircase Pressurization System



Smoke discharge (including air release of staircase pressurization system) on facade < 5000mm from other opening into the building

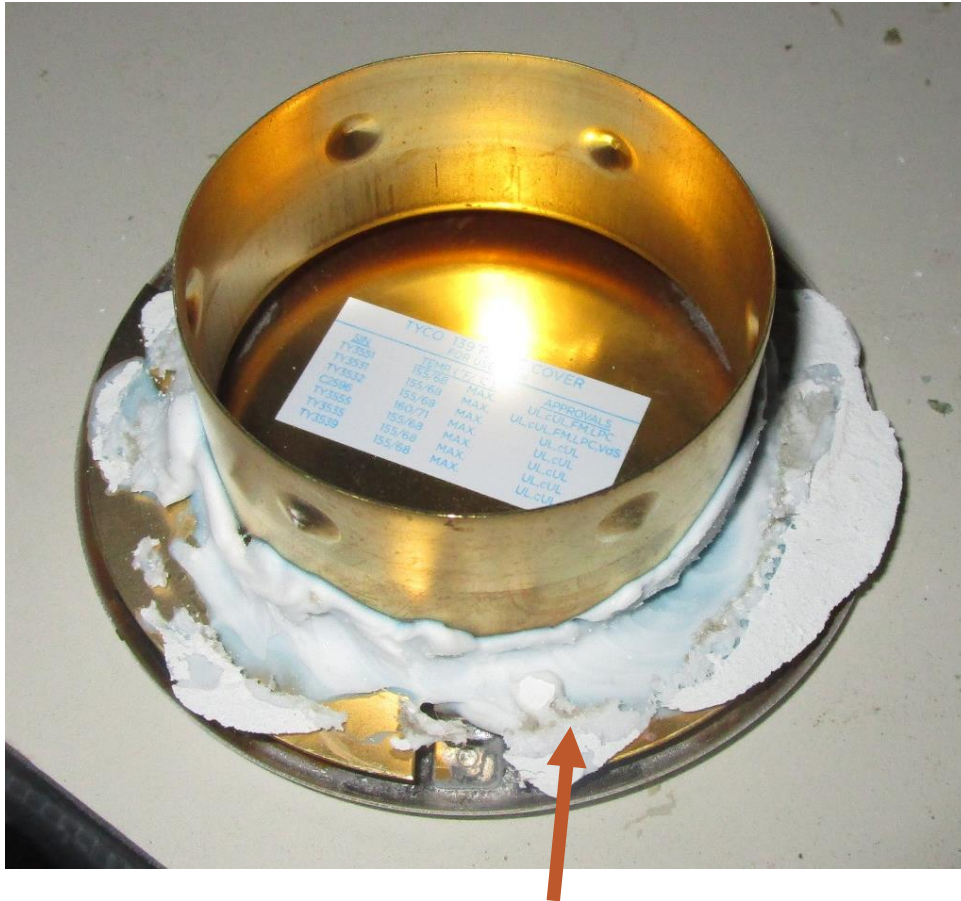
Case Sharing

➤ Poor Workmanship



Case Sharing

➤ Automatic Sprinkler Installations



Cover of Concealed type sprinkler found stick onto ceiling of open kitchen using glue

➤ **Windowless kitchens or toilets with fire dampers** should be inspected and certified annually by a **Registered Specialist Contractor (Ventilation Works Category)**.

➤ **Open Kitchens**

should be fitted with FSI as specified in the Code of Practice for Fire Safety in Buildings 2011, including:-

- **Smoke detector(s) with a sounder base; and**
- **Sprinkler head(s)**

Report Form for Open Kitchen Unit and Window-less Kitchen/Toilet


Under **Cap. 95B, Laws of Hong Kong**, the owner of any fire service installation or equipment which is installed in any premises shall-

- a) Keep such fire service installation or equipment in **efficient working order at all times**; and
- b) Have such fire service installation or equipment **inspected by a registered contractor at least once in every 12 months**.

Report Form for Open Kitchen Unit and Window-less Kitchen/Toilet

To facilitate the inspection, a new form is devised and to be submitted during the application of FSI acceptance inspection

File No.: _____



Information of Open Kitchen, Window-less Kitchen/Toilet

To: Fire Service Installations Task Force

i. Contact Information

Authorized person (or representative)		Tel	
Installation Contractor and FSD/RC No.		Tel	
Registered Specialist Contractor (ventilation works category) and Registration No.		Tel	

ii. Building Information

Building Address	
Building Name	
Total No. of Units	

iii. Information of Open Kitchen

Type of FSI inside Open Kitchen Unit	
Total No. of Open Kitchen Units	

Distribution of Open Kitchen Unit (✓ represents "unit with open kitchen") (examples below)

Floor/Flat	Flat A	Flat B	Flat C	Flat D
1/F		✓	✓	
2/F		✓	✓	
...				
30/F		✓	✓	

iv. Information of Window-less Kitchen/Toilet (if applicable)

Total No. of Window-less Kitchen	
Total No. of Window-less Toilet	
Ventilation Method (if no window is provided)	

Distribution of Window-less Kitchen/Toilet (**K** represents "unit with window-less kitchen", **T** represents "unit with window-less toilet")(examples below)

Floor/Flat	Flat A	Flat B	Flat C	Flat D
1/F		KT	KT	
2/F		K	T	
...				
30/F		KT	KT	

v. Information of Fire Damper inside Window-less Kitchen/Toilet (if applicable)

Total No. of Fire Dampers inside Window-less Kitchen/ Toilet	
--	--

Distribution of Fire Dampers inside Window-less Kitchen/Toilet (**KF** represents "unit with window-less kitchen and fire damper", **KT** represents "unit with window-less toilet and fire damper, **Number** represents quantity)(please refer to examples and remarks below)

Floor/Flat	Flat A	Flat B	Flat C	Flat D	E & M Room/other
1/F		KF1	TF2		
2/F		KF1, TF2			
...					
30/F					

Remarks:-
 e.g 1: KF1 - One number fire damper was installed in window-less kitchen
 e.g 2: TF2 - Two numbers fire dampers were installed in window-less toilet
 e.g 3: KF1, TF2 - One fire damper was installed in window-less kitchen and two fire dampers were installed in window-less toilet

Enquiry:
 If you have any enquiries, please contact us at 3961 5084.

c.c.: Ventilation Division (Fax: 2382 2495)

Way Forward

- **Continue the pre-inspection meeting**
- **Review the content of document checklist regularly**
- **Conduct briefing to the trade for better communication regularly**
- **Upload Video and PowerPoint onto FSD website**
- **Remind the Trade to assure work quality and site readiness**
- **Review and streamline the acceptance inspection process regularly**
 - **Revised FSI/501 and FSI/314 Forms**

Thank You

Q & A