

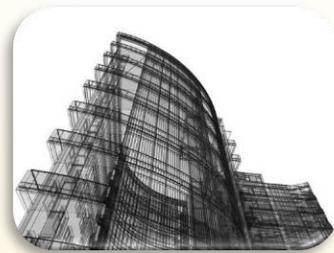
# **Practical Guide for Design, Installation, Acceptance and Maintenance of Fire Service Installations** (消防裝置及設備的設計、安裝、驗收及保養實務指南)

**Fire Services Department  
New Projects Division**



# Part 1 - Design

- **Workflow of General Building Plans (GBP) Submission**
- **GBP Submission**
- **Fire Safety Assessment Report (FSAR) Submission**
- **Fire Safety Management Plan (FSMP) Submission**



# Workflow of GBP Submission

## Approval of Building Plans

- Section 16(1)(b), Buildings Ordinance Chapter 123, Laws of HK
  - “The Building Authority may 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”



Serial No: A 206923  
Fire Services Department,  
HONG KONG

Our Ref.: \_\_\_\_\_  
Date: \_\_\_\_\_

Sir/Madam,  
Address:— \_\_\_\_\_  
Description of Building:— \_\_\_\_\_

This is to certify that the requirements of this Department have been incorporated in your plans.

One set of your plans stamped and signed by this Department on \_\_\_\_\_  
\_\_\_\_\_ is returned together with an additional copy of this certificate for submission to the \* Building Authority/Director of Housing.

Note:—Any amendments to plans after approval by this Department should be resubmitted in duplicate through the \* Buildings/Housing Department for further vetting prior to the commencement of any construction works.

Yours faithfully,  
\_\_\_\_\_

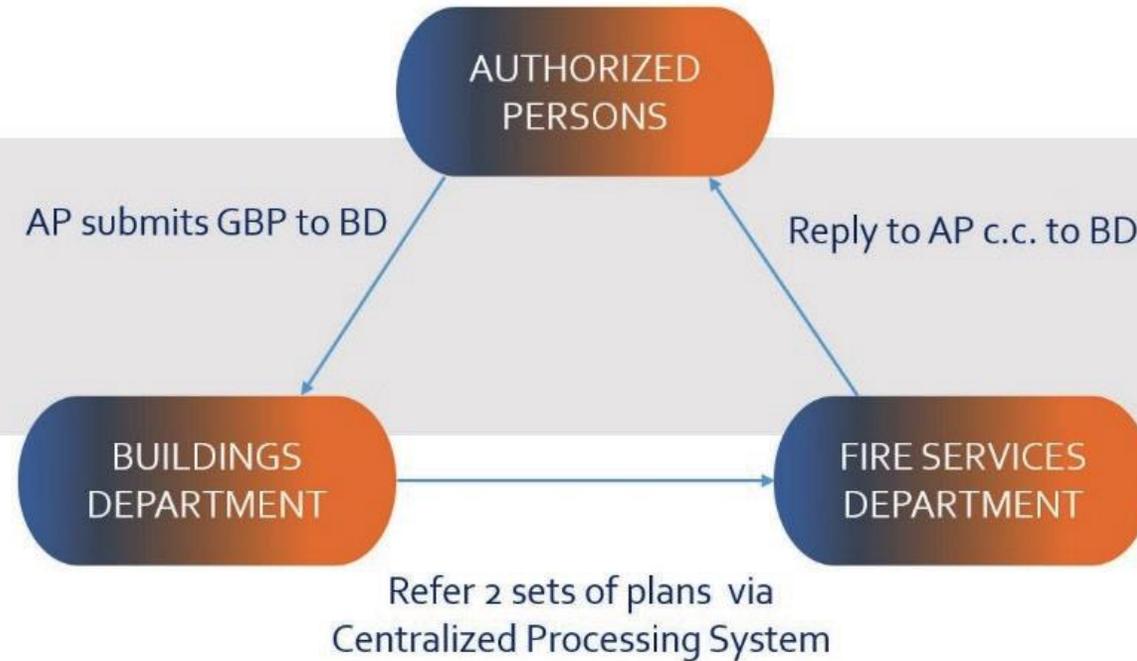
for Director of Fire Services

Issued in accordance with Sub-paragraph (ii) of Paragraph (b) of Subsection (1) of Section 16 of the Buildings Ordinance.  
\* Delete where inappropriate  
F.S. 161 (Rev. 9/99)

# Centralized Processing System

## Workflow

### For Private Projects

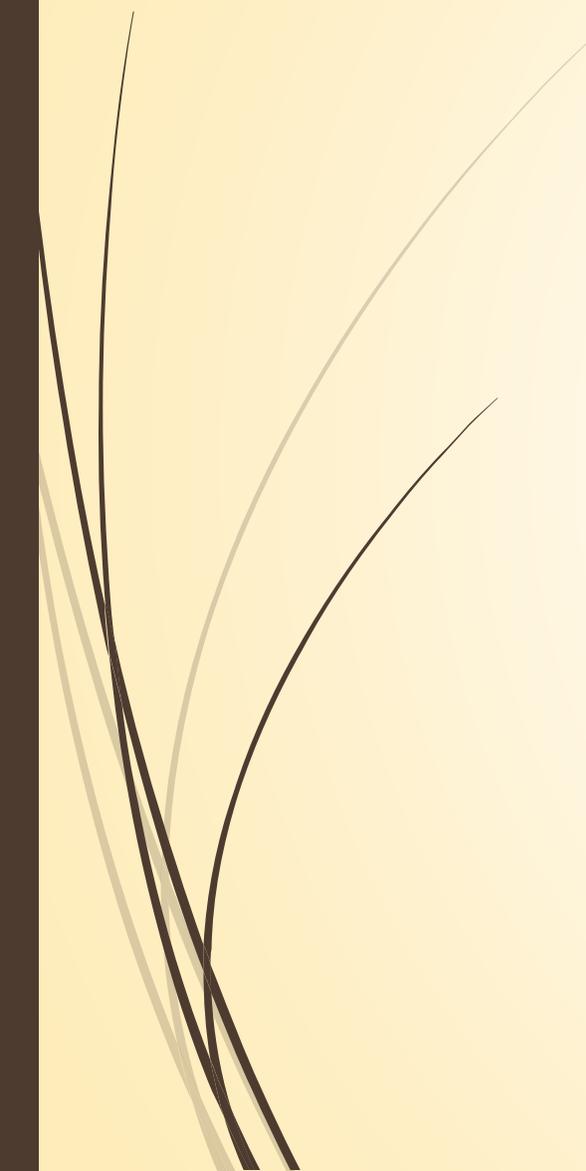


# Plan Processing Mechanism

**New Projects Division**



**Three Tiers Plan Processing Mechanism**



# **GBP Submission Samples for Sharing**

# Omission of FS Notes

## No FS notes on GBP

### GENERAL NOTES

- STRUCTURAL CALCULATION AND DETAILS OF PRECAST FREE-STANDING INTEGRATED MODULES (COMPLETED WITH FINISHES, FIXTURES AND FITTINGS) TO BE SUBMITTED SEPARATELY.
- PLUMBING AND DRAINAGE DETAIL TO BE SUBMITTED SEPARATELY.
- WATER AUTHORITY REQUIREMENTS TO BE COMPLIED WITH FOR ALL PLUMBING WORKS.
- ALL DIMENSION SHOWN ARE REFERRED TO THE STRUCTURE AND IN MILLIMETERS EXCEPT INDICATED.
- MINIMUM CLEAR HEIGHT FROM FLOOR TO SOFFIT OF CEILING FOR HABITATION SHALL BE 3.2M HIGH.
- ALL RAMPS TO BE PROVIDED WITH HANDRAILS ON BOTH SIDES.
- ALL STAIRCASES TO BE PROVIDED WITH HANDRAILS ON BOTH SIDES.
- ALL TREADS OF STAIRCASE NOT LESS THAN 225MM & RISERS NOT MORE THAN 175MM.
- FIRE SERVICE DEPARTMENT'S REQUIREMENTS TO BE COMPLIED WITH.
- PERMANENT ARTIFICIAL LIGHTING SHALL BE PROVIDED TO ALL STAIRCASES AND EXIT ROUTE WITH ESSENTIAL POWER SUPPLY AND PERMANENTLY MAINTAINED INEFFECTIVE WORKING ORDER, ALL TO THE SATISFACTION OF THE BUILDING AUTHORITY.
- ALL STAIRCASES TO HAVE CLEAR HEADROOM OF NOT LESS THAN 2M HIGH.
- DESIGN MANUAL - BARRIER FREE ACCESS (2008) TO BE COMPLIED WITH.
- NO COMPARTMENT EXCEEDS 10,500 SQ.M
- EVERY DOOR TO A REQUIRED STAIRCASE AND PROTECTED LOBBIES TO BE COMPLIED WITH CODE OF PRACTICE FOR FIRE SAFETY IN BUILDINGS 2011.
- U.F.A IS MARKED TO EACH ROOM IN THE BUILDING PLANS.
- THE EXIT ROUTE EXIT STAIRCASES LEADING TO AN OPEN AREA AT ANY UPPER FLOOR LEVEL OF THE BUILDING WILL BE ADEQUATELY DEFINED BY TACTILES & SIGNAGES.
- NO WORKS TO START UNTIL THE CONSENT FOR COMMENCEMENT OF WORKS HAS BEEN OBTAINED FROM BUILDING AUTHORITY
- ALL PARAPET WALL OR RAILING TO BE 1100mm HIGH FROM FINISHED FLOOR LEVEL.

### PARKING SPACING PROVISION

- 58 NOS CAR PARKING SPACE +
- 1 NO OF LOADING AND UNLOADING CAR PARKING SPACE+
- 2 NOS OF ACCESSIBLE PARKING SPACE

*- No FS note.*  
*- 30A width*  
*- Spalder - C.V.*  
*- 30m HR cannot covered some area*  
*- Size of FS/sp not provided.*  
*- FH not provided.*

### MIN. REQUIREMENT OF EXIT ROUTES/ DOORS

FLOOR	LOCATION / USE	U.F.A	OCCUPANCY FACTOR	CAPACITY	NO. OF EXIT DOOR (FROM ROOM)		NO. OF EXIT ROUTE (FROM STOREY)		MIN. TOTAL WIDTH OF				
					REQ'D	PRO'D	REQ'D	PRO'D	EXIT DOOR		EXIT ROUTE		
									REQ'D	PRO'D	REQ'D	PRO'D	
G/F	CARPARK		4.5	29	1	3							
	WORKSHOP (1)	126.127	4.5	28	1	1							
	WORKSHOP (2)	124.877	4.5	34	2	3			1750	4800	2100	4800	
	WORKSHOP (3)	149.947	4.5	12	1	1							
	WORKSHOP (4)	51.661	4.5	16	1	1							
	WORKSHOP (5)	69.154	4.5	41	2	2							
	WORKSHOP (6)	183.637	4.5	51	2	2			1750	3200	2100	3200	
	WORKSHOP (7)	227.712	4.5	211			2	5	2500	5400	3000	5400	
	SUB TOTAL:	933.115			15	1	1						
			127.569	9	15	1	2						
			139.447	9	38	2	2						
			139.447	9	31	2	2						
	OFFICE (8)	335.567	9	8	2	3			1750	3200	2100	3200	
OFFICE (9)	273.567	9	8	1	1			1750	4800	2100	4800		
OFFICE (10)	69.031	9	17	1	2								
OFFICE (11)	149.562	9	27	1	2			1750	3200	2100	3200		
OFFICE (12)	242.946	9	13	1	1								
OFFICE (13)	110.764	9	10	1	1								
	169.094	9	7	1	2								
			9	3	1	1							

# FS Notes not tallied with Layout Plans

*FDS* 3.0 FIRE DETECTION AND ALARM SYSTEM  
3.1 A FIRE DETECTION AND ALARM SYSTEM WILL BE PROVIDED FOR THE ENTIRE PODIUM AND BASEMENT AREA NOT COVERED BY AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE FSD CIRCULAR LETTER



**No Basement!!!**

A SECTION  
SCALE 1:200

# FS Notes not tallied with Layout Plans

THE LOCATION OF THE EMERGENCY GENERATOR ROOM IS SHOWN ON THE PLANS.

EL

## 8.0 EMERGENCY LIGHTINGS

8.1 EMERGENCY LIGHTING SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH BS5266: PART 1 + BSEN 1838 THROUGHOUT THE ENTIRE DEVELOPMENT AND ALL EXIT ROUTES LEADING TO GROUND LEVEL.

8.2 EMERGENCY LIGHTING SHALL NOT BE PROVIDED TO CABLE DUCTS, PIPE DUCTS, TELEPHONE DUCTS, SERVICE DUCTS AND TRENCHES.

8.3 FOR CINEMA, THE EMERGENCY LIGHTING SHALL BE MAINTAINED FOR A PERIOD OF NOT LESS THAN 2 HOURS WITH POWER SUPPLIED BY A CENTRAL BATTERY DC SUPPLY OR A DEDICATED VPS SYSTEM. ?

ES

## 9.0 EXIT SIGNS AND DIRECTIONAL SIGN

9.1 SUFFICIENT EXIT SIGNS AND DIRECTIONAL SIGNS SHALL BE PROVIDED AS INDICATED ON PLANS AND AS ACCORDANCE WITH THE H.K.F.S.D. REQUIREMENTS SO THAT ALL EXIT ROUTES WITHIN THE PREMISE ARE CLEARLY INDICATED.

9.2 ALL EXIT SIGNS AND DIRECTIONAL SIGNS WILL BE BACKED UP BY EMERGENCY GENERATOR POWER SUPPLY AND 2 HOURS SELF-CONTAINED BATTERY.

## 10.0 FS CONTROL CENTRE

10.1 THE FS CONTROL ROOM AT G/F AND 6/F AS INDICATED ON PLANS WILL BE APPLIED AS THE FS CONTROL CENTRE.

VAC

## 11.0 VENTILATION / AIR-CONDITIONING CONTROL (VAC) SYSTEM

11.1 THE VENTILATION / AIR CONDITIONING CONTROL SYSTEM WILL BE PROVIDED TO STOP MECHANICALLY INDUCED AIR MOVEMENT WITHIN A DESIGNATED FIRE COMPARTMENT IN ACCORDANCE WITH THE H.K.F.S.D. REQUIREMENTS.

11.2 ALL PLANT ROOM WITH LOUVERS FACING THE PRIVATE LANE, ALL RELEVANT PLANT ROOM VENTILATION SYSTEM SHALL BE SHUT DOWN UPON ACTUATION OF THE PLANT ROOM MULTI-SENSOR DETECTORS. ?

FTL

## 12.0 FIRE DIRECT LINK

12.1 FIRE ALARM SIGNALS INCLUDING DETECTORS, SPRINKLER FLOW SWITCHES AND BREAKGLASS UNTIL WILL BE LINKED TO THE FIRE SERVICES COMMUNICATION CENTRE VIA A FIRE SERVICES DIRECT TELEPHONE LINE.

## 13.0 OTHER REQUIREMENTS FOR ELECTRICAL AND MECHANICAL SYSTEM

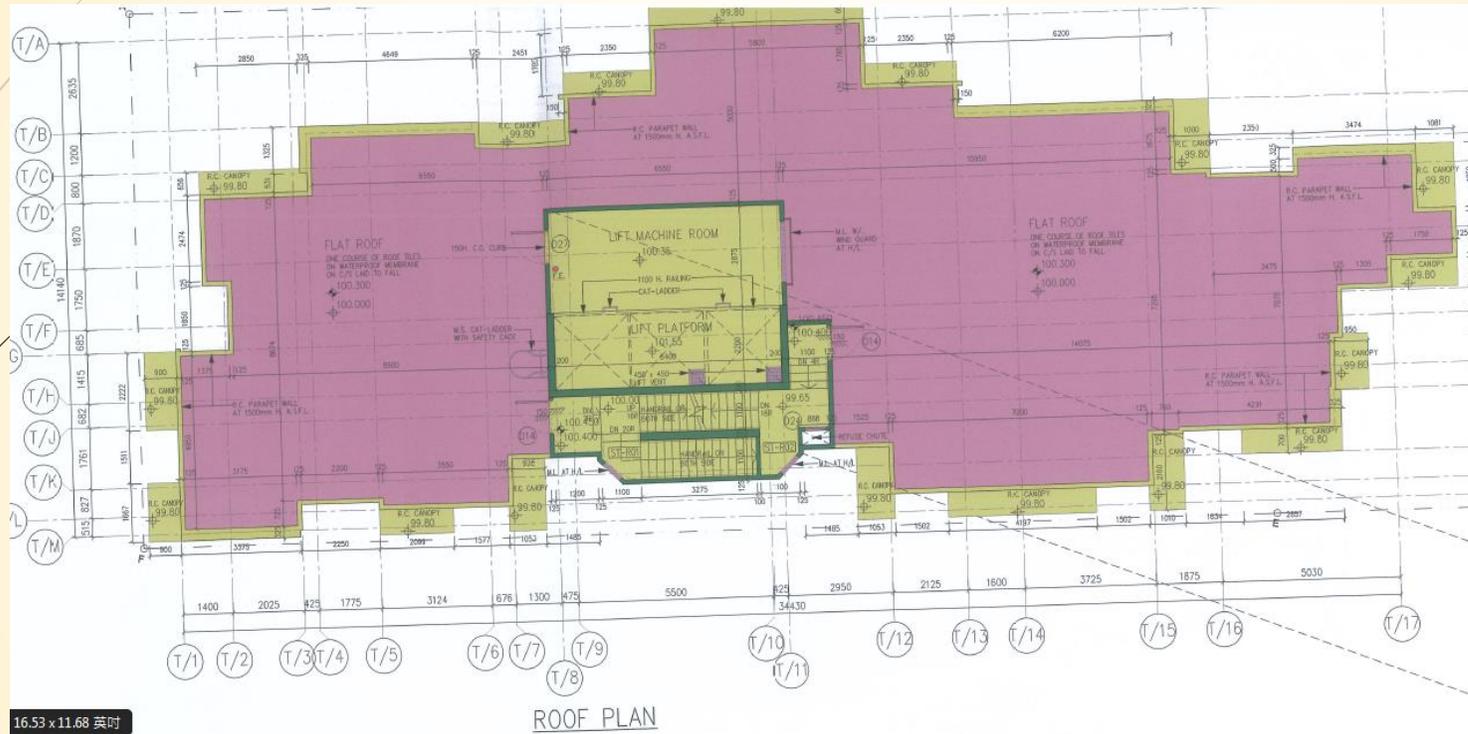
## SCHEDULE OF REQUIREMENT

STOREY	COMPARTMENT	LOCATION / USE	U.F.
TOWER (TYPICAL)	-	ALL FLAT UNITS (LARGEST TYPICAL FLOOR)	
3/F	-	MUSIC ROOM	
		COMPUTER ROOM	
		GYM	
		POOL DECK	
		SWIMMING POOL	
2/F	C	BANK OFFICE	
		ARCADE	
		BANK	
		STORE	
1/F	B	BANK	
		BANK OFFICE	
		ARCADE	
		RESTAURANT	
		KIT	
		FLAT ROOF (DINNING AREA)	
G/F	A	BANK	
		SHOP 01	
		SHOP 02	
		SHOP 03	
		SHOP 04	
		SHOP 05	
		SHOP 06	

No Cinema!!!

NOTES: (\*) DIRECT EXIT TO OPEN AIR

# FS Notes not tallied with Layout Plans



16.53 x 11.68 英寸

ROOF PLAN

4.10 A SECONDARY ELECTRICAL SUPPLY FROM EMERGENCY GENERATOR AT R/F AT LOCATION AS INDICATED ON PLANS WILL BE PROVIDED TO MAINTAIN ALL ESSENTIAL SERVICES OF PODIUM AND THE RESIDENTIAL TOWER (I.E. LIGHTING FOR ALL ESCAPE PASSAGE AND STAIRCASES, ILLUMINATION OF ALL EXIT SIGNS, OPERATION OF FIRE PROTECTION SYSTEMS, LIFT HOMING FOR ALL NON-FIREMAN'S LIFTS AND FIREMAN'S LIFTS) IN THE EVENT OF MAINS POWER FAILURE.

**FS Notes stated sprinkler pump and emergency generator are provided on roof but could not be located on the Roof plan!!!**

# Omission of Previous Amendments

The following additional/modified Fire Services requirements shall be incorporated in and clearly noted on your plans before the required certificate to be issued: -

- (i) Amendment in last submission should be incorporated;
- (ii) Fire detection system should be provided to E&M plant rooms;
- (iii) Sprinkler system should be provided with water tank of 124 cu. metre; and
- (iv) Pressurization of staircase should be provided unless the aggregate area of openable windows of the rooms/units of the building exceed 6.25% of the floor area of those rooms/units, calculated on a floor by floor basis.

I should be grateful if you would re-submit two sets of plans incorporating the above requirements through the Centralized Processing System to this Department for formal approval. Meanwhile, one set of the plans is retained for record. The other set is ready for your collection at

**Previous amendments are not incorporated in the latest submission**

# Re-submission required

The building plans in respect of the above project have been examined and Fire Services Certificate (F.S. 161) under Section 16(1)(b) of the Buildings Ordinance cannot be issued due to non-compliance with the following requirements in accordance with the current *Code of Practice for Minimum Fire Service Installations and Equipment (April 2012 Version) (the Code)*:-

- (i) Fire service installations or equipment shall be provided in accordance with paragraphs 4.15 and 4.26 of the Code;
- (ii) The designed Hazard Group of the sprinkler system shall be stated clearly in FS Notes;
- (iii) The sprinkler tank size shall be provided in accordance with the LPC Rules incorporating BS EN 12845:2003 and the FSD Circular Letter 3/2006 for the designed Hazard Group;
- (iv) The sprinkler inlets and sprinkler valve shall be indicated on plans;
- (v) The FS tank shall be indicated on plans;
- (vi) Intermediate booster pumps shall be provided for building where the height

## **A series of uncorrected irregularities**

- (vii) can be reached by a length of not more than 30m of hose reel tubing;
- (viii) The hydrant shall be prominently sited in all approach lobby to a required staircase or required staircase enclosure but shall not be at the central core of the staircase enclosure in accordance with FSD Circular Letter No. 2/2013; and
- (ix) The set of FS inlet near Hung To Road shall be relocated to a prominent position on the exterior of the building;

Please also be reminded that EVA provision shall comply with the *Code of Practice for Fire Safety in Buildings 2011* and APP-136 – Building (Planning) Regulation 41D Emergency Vehicular Access.

## Appendix I – Checklist for New & Amended Plan Submission

New Plan Submission			
	Item	Reference	✓/✗
1	Two sets of plans submitted to BD for referral to FSD (Remark: Three sets for works under Fire Safety (Commercial Premises) Ordinance or the Fire Safety (Buildings) Ordinance)	PNAP ADM-2	
2	Prescriptive FSI provided according to building occupancies	CoP	
3	Scale of plan provided	-	
4	International standards of various FSI incorporated in FS Notes	-	
5	Reference of FSD Circular Letter incorporated in FS Notes	FSD Website	
6	FS Notes shall tally with the layout plans (e.g. FS tank location/size)	-	
7	Non-code-compliance items submitted in the form of written enquiry prior to GBP submission	-	
8	Provision of Fireman's Lift	Part D, Section 4 of FS Code 2011 <sup>22</sup>	
9	Provision of EVA	Part D, Section 6 of FS Code 2011	
10	Provision of FSI for open kitchen	Clause C13.4 of FS Code 2011	
Amended Plan			
1	Amendment made in previous submission incorporated in the latest submission	-	
2	Submission area clearly indicated on plan	-	
3	Amendments highlighted/ underlined on layout plans/ FS Notes	-	

# Co-operation of AP

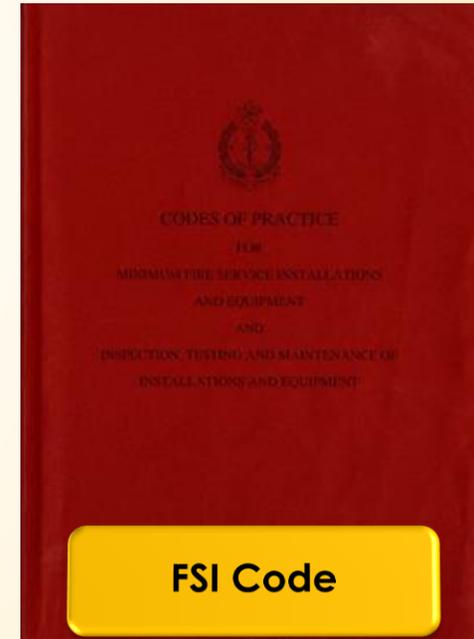
- Cross-checking of FS Notes for typos before submission;
- Submit non-code-compliant items in the form of written enquiry at early stage (Non-FSI load connected to EG, non-provision of sprinkler inside void.....)
- Be conversant with the promulgation of latest FSD Circular Letters/brief notes of meeting between AP and FSD
- Avoid piecemeal alterations which unnecessarily increase the number of amended GBP
- Effect amendment of GBP and collect certificate as soon as possible

# Fire Engineering Approach

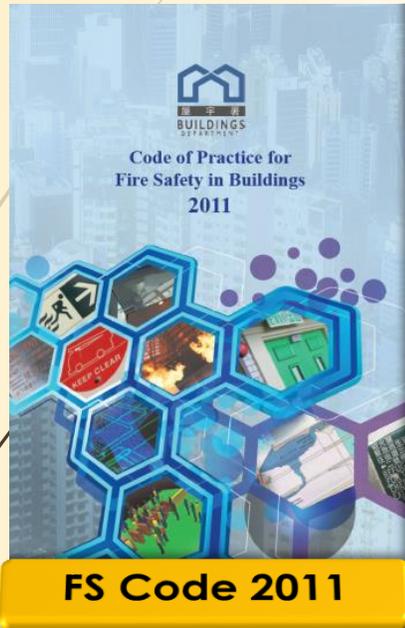
## Para 1.3

### **Discretionary powers of the Director of Fire Services**

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



# Fire Safety Assessment Report



## Part G – Guidelines on Fire Engineering

- Section 1 – Introduction
- Section 2 – Framework for Fire Engineering
- Section 3 – Introduction to Fire Engineering
- Section 4 – Methodologies of Fire Engineering
- Section 5 – Fire Safety Sub-systems
- Section 6 – Design by Fire Engineering
- Section 7 – Fire Safety Assessment Report
- Section 8 – Bounding Conditions
- Section 9 – Computer Models
- Section 10 – References

# Fire Safety Assessment Report

- Provide an alternative solution when the compliance with prescriptive standard is technically difficult
- Problems due to deviation shall be analyzed
- Fire engineering solution shall be technically justified on case-by case basis

# Useful Tips of FSAR

- Identify and organize clearly the non-code-compliant items
- State clearly alternative solutions to compensate the non-code compliant items with justification of equivalent fire safety level achieved
- Present calculations in a clear and traceable approach for easy reference
- Highlight the revised parts FER in the re-submission
- Reaffirm the pre-acceptance of FE approach could be achieved during on-site acceptance test

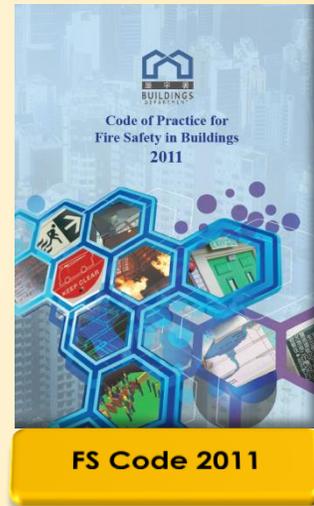
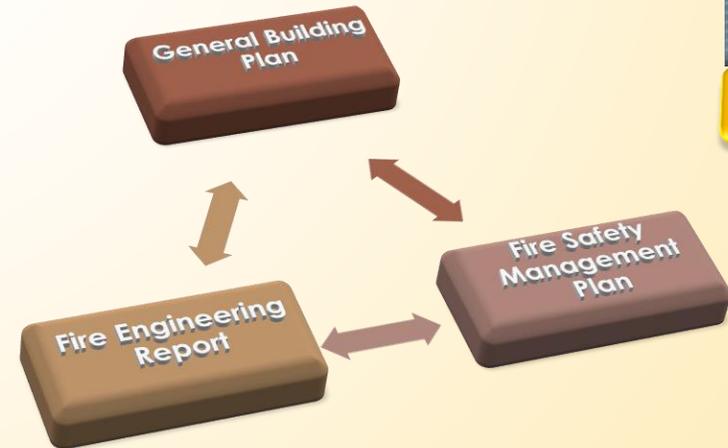
## Appendix II – Checklist for Fire Safety Assessment Report Submission

### FSAR Submission

	Item	
1	A FSAR should be prepared by fire safety consultant and submitted to the Authorities by AP of the development	✓/✗
2	The parts of building which are non-compliant to code(s) shall be identified	
3	Non-code-compliant designs and relevant technical constraints should be clearly listed	
4	The alternative solutions to compensate the non-code-compliant elements shall be clearly stated	
5	Reasonable fire size shall be estimated in mathematical approach or by software; and the growth rate according to type of development and usage shall be provided with justification	
6	Formulation of tenability criteria including smoke layer height, radiated heat transfer, converted heat transfer, toxicity, visibility and smoke temperature shall be clearly stated	
7	Proper establishment of the worst fire scenario for conducting fire safety analysis	
8	Proper evaluation of evacuees shall be provided according to use classification as defined in the FS Code 2011	
9	Detection time, alarm time, pre-movement time shall be determined by the type of fire detection system used, building management level and occupant characteristics	
10	Proper formulation of evacuation speed of evacuees by referring to international guidelines with justification	
11	Sensitivity assessments (such as the ineffectiveness of one largest exit) shall be carried out to verify the sustainability of tenable conditions and safe evacuation	
12	Actuation methodology of FSI system shall be identified with demonstration which is technically sound	
13	Proper assessment on the fire safety level of the development and occupants against the established tenable conditions	
14	Prudent formation of Bounding Conditions shall be provided	
15	Undertaking letter on implementation of FSMP and Bounding Condition from future operator / owner shall be provided	
16	CFD shall be conducted to verify the attainment of tenable conditions	

# Fire Safety Management Plan

- According to Section 2, Part F of CoP for Fire Safety in Building 2011
- **Fire engineering approach** is adopted in fire safety design of a building, the submission of a **fire safety assessment report (FSAR)** for an Alternative Solution may require the support of a **fire safety management plan (FSMP)** which will then form part of the approved **general building plans (GBP)**



# Fire Safety Management Plan

- **Fire Safety of Building**

- Passive fire protection

- Active fire protection

- *Fire safety management*

1. *Maintenance Plan*

2. *Training Plan*

3. *Action Plan*

# Useful Tips of FSMP

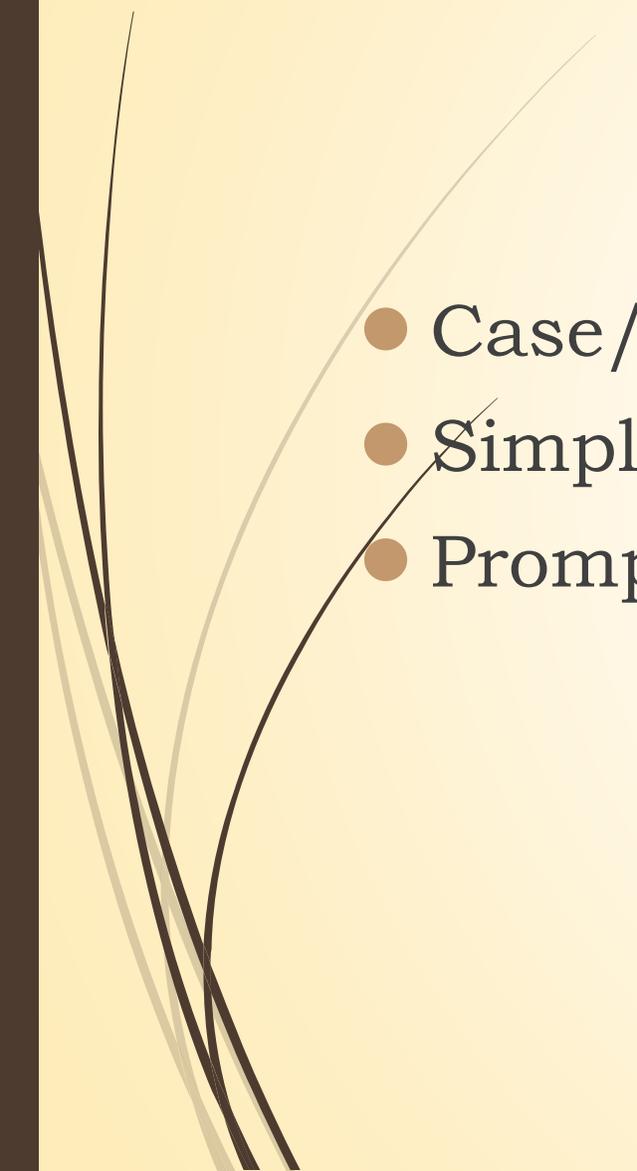
- List out full FSI provisions
- Provide details of staff training program and regular fire drill
- Reasonable maintenance interval for FSI
- Reasonable action in response to emergency or fire scenario
- Provide an Undertaking letter which shall be submitted by owner of development to declare the incorporation of FSMP to DMC

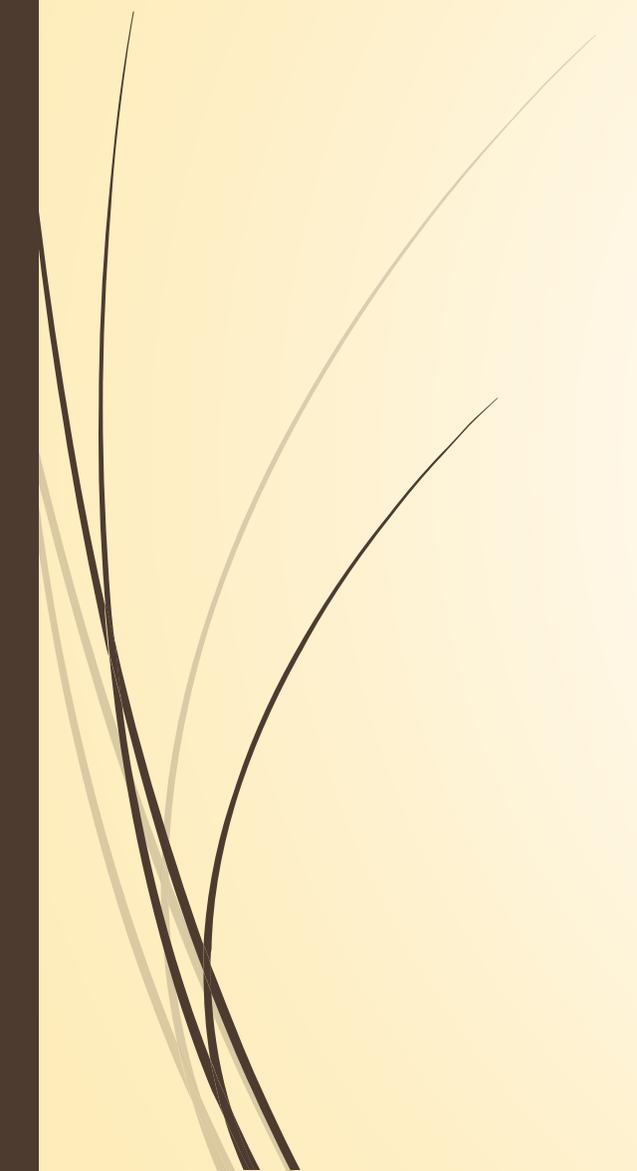
## Appendix III – Checklist for Fire Safety Management Plan Submission

FSMP Submission		
	Item	✓/✗
1	Bounding Conditions shall be included in the GBP	
2	Bounding Conditions shall be included in the DMC	
3	Undertaking letter shall be submitted by owner of development to declare the incorporation of FSMP to DMC	
4	The maintenance plan shall include comprehensive description of: <ul style="list-style-type: none"> <li>➤ FSI provisions</li> <li>➤ Maintenance interval</li> <li>➤ Maintenance methodologies</li> <li>➤ Special maintenance arrangement for relevant FSI</li> <li>➤ Relevant daily house keeping checklist incorporating the features of the premises</li> </ul>	
5	Escape routes as shown in FSMP shall tally with the ones as delineated in the latest approved GBP	
6	The training plan shall include: <ul style="list-style-type: none"> <li>➤ Facilities management team structure</li> <li>➤ Details of roles and responsibilities of each staff</li> <li>➤ Staff training program</li> <li>➤ Details of fire drills</li> </ul>	
7	The fire action plan shall include comprehensive description of the procedures to be taken by each management staff in case of fire such as: <ul style="list-style-type: none"> <li>➤ Identification of fire location</li> <li>➤ Assist in evacuation of occupant especially person with disabilities</li> <li>➤ Provide assistance and information to FSD as required</li> </ul>	
8	Evacuation plans shall tally with the zoning and operation of fire alarm system as stated in FS Notes of GBP	
9	Procedures for any shutdown of FSI for inspection, maintenance, modification or repair as laid down in FSD Circular letter No. 1/2021 shall be followed	
10	Hierarchy, force strength, relevant duties of the Fire Safety Management Team shall be explicitly elaborated	



# Conclusion

- Case/ Experience Sharing
  - Simple Guideline
  - Prompt GBP Approval
- 



**Thank you**