

AEI on Building



Proposal

“ASEAN Building Safety Awards, Year 2019”



Building Fire Safety Inspection Checklist (BFSIC)

Prepared by EIT (Thailand)

Contact person: Mr. Pichaya Chantranuwat

email: pichaya@fusionfiresafety.com

History

Building Disaster

**Kador Toy Factory Fire on
May 10, 1993**

**Royal Plaza Hotel Collapsed on
August 13, 1993**

**Royal Jomtien Pattaya Fire on
July 11, 1997**



Authorities

Regulators

Department of Public Works and Town & Country Planning, MOI
Building Control Act



Building
Inspection
Law

Department of Labor Protection and Welfare
Occupation Health and Safety Act

Department of Industrial Works
Factory Act

Industrial Estate Authority of Thailand
"Process Safety Management"

Building Permission

Enforcement

Environmental Impact Assessment

Construction Permit

Occupy or Use Permit

Annually O&M inspection

Required Building Inspection Certificate

Building Control Act # 3 Year 2000

- **Section 32 Bis**
- ✓ **Registered Building Inspector, on December 29, 2005**
- ✓ **Buildings are required inspection, on October 25, 2005:**
 1. High rise buildings
 2. Special large buildings
 3. Assembly buildings
 4. Theaters
 5. Residential buildings with 2,000 sq.m or more
 6. Hotels with 80 keys or more
 7. Factories with more than 1 story and more than 5,000 sqm
 8. Night clubs or pubs with 200 sq.m or more
 9. Advertising Posts with 50 sq.m or more/ 25 sq.m or more where attached to any buildings

Inspection for 4 Aspects

1. Structure Safety
2. MEP Safety
 - Electrical systems
 - Ventilation systems
 - Lift & Elevator systems
 - Sanitary systems
 - Fire Protection systems
3. Performance Testing
4. Building Management Review



Building Inspector Association

Proposal

“ASEAN Building Safety Awards, Year 2018-9”

- **Fire Safety Award**
- Electrical Safety Award
- Building Safety Management Award

Key dates:

- 1. Prepare the safety checklists and guideline “DONE”*
- 2. Each country will set up an building inspection committee and submit to AEI secretariat before the 36th CAFEO 2018 AEI meeting in Singapore*
- 3. The committee will conduct nominating and auditing process within 6 months and submit the results to AEI secretariat before or during the mid-term meeting in 2019*
- 4. The “AWARDED” Building(s) will be announced by the 37th CAFEO 2019 AEI meeting in Indonesia.*

PURPOSE

- The purpose of this Building Fire Safety Inspection Checklist (BFSIC) is to provide minimum key requirements, with due regard to function, for the inspection of buildings safety to life from fire including property, business interruption, and environment. Its provisions will also aid life safety in similar emergencies.

SCOPE

- The BFSIC addresses those construction, protection, and occupancy features necessary based upon recognized standards to minimize danger to life from the effects of fire, including smoke, heat, and toxic gases created during a fire including fire and smoke spread as the result of deteriorating tenable life conditions and fireman operation, as well as minimize property losses and its business interruption.

The BFSIC is included the following features;
Fire safety management, Material control, Exterior planning,
Exit stair, Exit way, Fire wall/floor, Fire alarm, Fire suppression,
and Smoke control

METHODOLOGY

- By “**Visual Inspection**” as an independent or third party using either or all of raw human senses such as vision, hearing, touch and smell and/or any non-specialized inspection equipment as well as **reviewing operation and maintenance logbooks** including routine inspection and testing, fire drill records, and implemented pre-fire plan.

LIMITATION

- Qualified persons with Professional Engineer license only

COMPLIANCE

- “Local building regulation” that the building being inspected must be complied to;
 - (1) Fire safety management
 - (2) Material control
 - (3) Exterior planning
 - (4) Exit stair
 - (5) Exit way
 - (6) Fire wall/floor
 - (7) Fire alarm system
 - (8) Fire suppression system
 - (9) Smoke control system

Due to different economy is expected different safety criteria, standard and code of practices, therefore the starting point on the first year (Phase I) the difference should be respected each other. The second year (Phase II) each economy will learn and share the difference and harmonize them by cross country visit the awarded buildings.

HOW TO USE - BFSIC

- Print this checklist and take it with you when you're taking a close visual inspect at a building for fire safety evaluation. Use it to record your observations and note defects. This checklist is for informational purposes only and is not a replacement for the comments of an Authority having jurisdiction.

0	1	2	3
No evident	Poor	Fair	Very good

No any evident or no document shown, give..... "0", tick "No"

Documented but unaccepted, give..... "1"

Documented and accepted, give..... "2"

Documented and accepted with over expectation, give.. "3"

BUILDING INFORMATION

Building name		Address			
Building phone number					
Building e-mail address					
Construction type		Business type		No. of people/rooms	
Land size (sq. m)		Land dimensions		Building size (sq. m)	
No. of floors		No. of basement		Building height (m)	
Law enforcement			Comments		
Building use permit		<input type="checkbox"/> Yes <input type="checkbox"/> No			
Regularly inspection		<input type="checkbox"/> Yes <input type="checkbox"/> No			
Hazardous contents		<input type="checkbox"/> Yes <input type="checkbox"/> No			

SECTION 2.1 FIRE SAFETY MANAGEMENT

A fire safety management details your arrangements to implement, control, monitor and review fire safety measures and functions, to ensure those are maintained. The effectiveness of managing fire safety is to prevent fire occurring and in the event of fire to protect people and property. The following information may give you guidance.

The management should specify the policy, planning, organization, control, monitoring and review of the fire safety measures and fire safety provisions in the premises. An emergency plan for dealing with a fire situation shall be well-prepared and recorded. The purpose of an emergency plan is to ensure that the people in your premises know what to do if there is a fire and that the premises can be safely evacuated.

The emergency plan must be clear and relevant information and appropriate instructions to staffs and the other people working in the premises, such as contractors, about how to prevent fires and what they should do if there is a fire. The emergency plan should be based on the outcome of your fire safety risk assessment and be available for all employees, their representatives (where appointed) and the enforcing authority.

SECTION 2.1 FIRE SAFETY MANAGEMENT

FIRE SAFETY MANAGEMENT				
MANAGEMENT	FEATURES		COMMENTS	SCORE
FM-01	Dedicated person	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-02	Fire safety policy	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-03	Test schedule	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-04	Inspection schedule	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-05	Maintenance program	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-06	Housing keeping	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-07	Contractor orientation	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-08	Regularly fire drill	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-09	Regularly staff training	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-10	Regularly fire risk assessment	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-11	New staff orientation	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-12	Keep updating policy	<input type="checkbox"/> Yes <input type="checkbox"/> No		

Others

SECTION 2.2 MATERIAL CONTROL

Construction materials; such as, insulations, facades, interior finishes and furnishing contents must be controlled and limited to use. Especially materials like plastics, foam, plywood, wood frame, rubber backing, textile, cotton, flammable liquid, glue, these are classified as high and moderate risk materials.

MATERIAL CONTROL	FEATURES	COMMENTS	SCORE
MC-1	Façade combustible materials	<input type="checkbox"/> Yes <input type="checkbox"/> No	
MC-2	Roof combustible materials	<input type="checkbox"/> Yes <input type="checkbox"/> No	
MC-3	Interior large amount of combustible materials	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Others		_____	_____

SECTION 2.3 EXTERIOR PLANING

In the event of emergency or fire, the building in premises must be well facilitated fire service operation and prevented the fire spread across buildings.

EXTERIOR PLANING	FEATURES	COMMENTS	SCORE
EP-01	Fire lane <input type="checkbox"/> Yes <input type="checkbox"/> No		
EP-02	Fire hard standing <input type="checkbox"/> Yes <input type="checkbox"/> No		
EP-03	Fire department connection <input type="checkbox"/> Yes <input type="checkbox"/> No		
EP-04	Outside Fire hydrants <input type="checkbox"/> Yes <input type="checkbox"/> No		
EP-05	Assembly point <input type="checkbox"/> Yes <input type="checkbox"/> No		
EP-06	Safe separation <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Others _____		

SECTION 2.4 EXIT STAIR

In the event of emergency or fire in multi-story buildings, the exit stairs are crucial to lead people downward to ground level. Stair enclosures on each level are normally defined as a point of safety. Therefore, fire doors and other opening protective equipment or assembly including fire stop systems or sealants to fill out the gap of utility penetrations must be approved or listed. The proper signages and adequate illumination to lead people to exit discharge must be evaluated.

SECTION 2.4 EXIT STAIR

EXIT STAIR					
BUILDING	FEATURES			COMMENTS	SCORE
ES-01	>2 stairways if being high-rise building	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-02	Stair enclosure is fire resisting wall/doors	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-03	Fire doors have self-closing devices	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-04	Fire doors are always keep close	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-05	Locks are always capable to retract	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-06	Door swing to exit direction	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-07	Proper guardrail & handrails	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-08	No any stores in stair enclosure	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-09	To be terminated at ground outside	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-10	Floor & stair name are indicated	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-11	Proper exit signs	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
ES-12	Proper illumination in emergency	<input type="checkbox"/> Yes	<input type="checkbox"/> No		

Others _____

SECTION 2.5 EXIT WAY

In the event of emergency or fire, the way out is crucial to lead people toward to exit stair safely with 2 independent ways. They must not be too long according to regulation stated. The obstructions must be evaluated along the way out including door locking and latching. The proper signages and adequate illumination to lead people to exits must be evaluated.

SECTION 2.5 EXIT WAY

EXIT WAY USABLE AREA	FEATURES	COMMENTS	SCORE
EW-01	>2 ways out in any spaces <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-02	1 way out in any spaces, the common path distance must be within limits <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-03	If found dead end corridor, the distance must be within limits <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-04	At most remote points, the travel distance to an exit must be within limits <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-05	Locks are always capable to retract from inside <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-06	Door swing to exit direction if required by code <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-07	Proper guardrail along open sides <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-08	Proper convenience stairs and handrails <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-09	Proper ramp slope and handrails <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-10	Protected corridors if required <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-11	Proper exit signs <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-12	Proper illumination in emergency <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-13	Slip resistance surface <input type="checkbox"/> Yes <input type="checkbox"/> No		
EW-14	No obstructions <input type="checkbox"/> Yes <input type="checkbox"/> No		

Others

SECTION 2.6 FIRE WALL AND FLOOR

In the event of emergency or fire, the fire wall and floor are crucial to prevent the fire and smoke spread beyond fire origin. As results of increasing available time for evacuation before reaching the untenable conditions on the way out and protect people and firemen from fire hazards. This can help firemen reaching the base of fire quickly.

SECTION 2.6 FIRE WALL AND FLOOR

FIRE WALL/FLOOR USABLE AREA	FEATURES	COMMENTS	SCORE
FR-01	Fire rated floor if required <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-02	Fire rated wall for hazardous rooms <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-03	Fire rated wall for fuel fired mechanical equipment <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-04	Fire rated wall for rooms containing fuel tank <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-05	Fire rated wall for mechanical workshop <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-06	Fire rated wall for laundry <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-07	Fire rated wall for trash room <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-08	Fire rated wall for electrical rooms <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-09	Protected corridors if required <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-10	Fire rated wall for utility shaft if required <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-11	Fire rated wall for large floor opening <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-12	Proper fire sealants at curtain walls <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-13	Fire stop sealing at FR floors <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-14	Fire stop sealing at FR walls <input type="checkbox"/> Yes <input type="checkbox"/> No		
FR-15	Fire damper for air ducts at FR walls and floors if required <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Others _____	_____	_____

SECTION 2.7 FIRE ALARM SYSTEM

In the event of emergency or fire, the fire alarm system both automatic and manual means are crucial to alert people for evacuation and control on-off some building equipment before the fire and smoke spread throughout the exit ways, including call emergency staffs to extinguish the fire at initial stage. This is defined as an active fire protection system which is required proper maintenance and testing regularly, to ensure that it can be operated in the event of fire at any times.

SECTION 2.7 FIRE ALARM SYSTEM

FIRE ALARM		FEATURES	COMMENTS	SCORE
FA-01	Automatic fire detectors	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-02	Manual fire call stations	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-03	Fire alarm bells or horns	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-04	Fire alarm speakers	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-05	Fire alarm strobe lights	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-06	Proper sound pressure level	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-07	Proper light intensity	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-08	Proper power backup	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-09	Proper system integrity	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-10	System is normal at FCP	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-11	Correct annunciation	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-12	Proper time & sequence	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-13	Regular testing	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-14	Regular inspection	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FA-15	Regular maintenance	<input type="checkbox"/> Yes <input type="checkbox"/> No		

Others

SECTION 2.8 FIRE SUPPRESSION SYSTEM

In the event of emergency or fire, the fire suppression system both automatic and manual means are able to use for extinguish or control the fire spread. This is defined as an active fire protection system which is required proper maintenance and testing regularly, to ensure that it can be operated in the event of fire at any times.

SECTION 2.8 FIRE SUPPRESSION SYSTEM

FIRE SUPPRESSION	FEATURES	COMMENTS	SCORE
FS-01	Automatic fire sprinklers <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-02	Sprinkler water flow switches <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-03	Valves are open to deliver the fire water <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-04	Proper pressure indicated <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-05	Water flow switches are tested every 3 months <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-06	Manual fire hose <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-07	Fire extinguishers <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-08	Proper pressure indicated <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-09	They are inspected every month <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-10	Fire pump operation is selected at automatic mode <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-11	Fire pump controller is indicated normal conditions <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-12	Fuel is filled if engine driven <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-13	Water supply is stored and reliable <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-14	Valves are open to deliver the fire water <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-15	Clean agents for computer rooms or data centers <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-16	Proper time & sequence <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-17	Regularly inspect and test <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-18	Wet chemical for kitchen hoods <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-19	Proper time & sequence <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-20	Regularly inspect and test <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-21	Regular testing <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-22	Regular inspection <input type="checkbox"/> Yes <input type="checkbox"/> No		
FS-23	Regular maintenance <input type="checkbox"/> Yes <input type="checkbox"/> No		

Others

SECTION 2.9 SMOKE CONTROL SYSTEM

In the event of emergency or fire, the smoke control system both automatic and manual, either natural or mechanical means are able to control smoke spread into exit stair enclosure. The other feature is to extract the amount of smoke at top of high ceiling spaces or atriums. As results of increasing available time for evacuation before reaching the untenable conditions on the way out. This can help firemen reaching the base of fire quickly.

This is defined as an active fire protection system which is required proper maintenance and testing regularly, to ensure that it can be operated in the event of fire at any times.

SECTION 2.9 SMOKE CONTROL SYSTEM

SMOKE CONTROL	FEATURES	COMMENTS	SCORE
SC-01	Pressurized fan for stairways <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-02	Maintain minimum required differential pressure at doors <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-03	Relief air pressure when force to open > 132 N <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-04	All doors are properly close when fans are operating <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-05	Proper system integrity <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-06	Proper power backup <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-07	System is normal at control panels <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-08	Proper time & sequence <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-09	Smoke extraction fans <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-10	Make up air is properly supplied when operated <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-11	Proper smoke reservoir <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-12	Prevent plug holing properly <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-13	Proper system integrity <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-14	Proper power backup <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-15	System is normal at control panels <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-16	Proper time & sequence <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-17	Regular testing <input type="checkbox"/> Yes <input type="checkbox"/> No		
SC-18	Regular inspection <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Regular maintenance <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Others		

SCORING

SCORING	FEATURES	FACTOR	FULL	SCORE
	FIRE SAFETY MANAGEMENT (FM)	30%	36	
	MATERIAL CONTROL (MC)	5%	9	
	EXTERIOR PLANING(EP)	5%	18	
	EXIT STAIR (ES)	20%	36	
	EXIT WAY IN USABLE AREA (EW)	10%	42	
	FIRE WALL & FLOOR IN USABLE AREA (FR)	5%	45	
	FIRE ALARM (FA)	10%	45	
	FIRE SUPPRESSION (FS)	10%	69	
	SMOKE CONTROL (SC)	5%	54	
	TOTAL	100%	354	

SCORING: SAMPLE 65%

SCORING	FEATURES	FACTOR	FULL	SCORE
	FIRE SAFETY MANAGEMENT (FM)	30%	36	24
	MATERIAL CONTROL (MC)	5%	9	6
	EXTERIOR PLANING(EP)	5%	18	12
	EXIT STAIR (ES)	20%	36	24
	EXIT WAY IN USABLE AREA (EW)	10%	42	28
	FIRE WALL & FLOOR IN USABLE AREA (FR)	5%	45	30
	FIRE ALARM (FA)	10%	45	30
	FIRE SUPPRESSION (FS)	10%	69	45
	SMOKE CONTROL (SC)	5%	54	36
	TOTAL	100%	354	235

SCORING

RESULTS

EACH FEATURE SCORE:

65 or more - "PASS"

Less than 65 or found an item 0 - "FAIL"

Inspectors' signed:

Inspectors' name:

Building signature:

Building name:

Date:
