

ASEAN ENGINEERING INSPECTOR (AEI)

Building Fire Safety Inspection Checklist (BFSIC)_V2.0

Prepared by EIT (Thailand)

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SECTION 1: GUIDELINE

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, Smoke control

METHODOLOGY: By visual inspection as an independent 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

DEFINITIONS:

Atrium. A large-volume space created by a floor opening or series of floor openings connecting two or more stories that is covered at the top of the series of openings and is used for purposes other than an enclosed stairway; an elevator hoistway; an escalator opening; or as a utility shaft used for plumbing, electrical, air-conditioning, or communications facilities.

Combustible Material. A material that, in the form in which it is used and under the conditions anticipated, will ignite and burn; a material that does not meet the definition of noncombustible or limited-combustible.

Common Path of Travel. The portion of exit access that must be traversed before two separate and distinct paths of travel to two exits are available.

Fire Compartment. A space within a building that is enclosed by fire barriers on all sides, including the top and bottom.

Exit. That portion of a means of egress that is separated from all other spaces of the building or structure by construction, location, or equipment as required to provide a protected way of travel to the exit discharge.

Exit Way. That portion of a means of egress that leads to an exit.

Exit Discharge. That portion of a means of egress between the termination of an exit and a public way.

Fire Barrier. A continuous membrane or a membrane with discontinuities created by protected openings with a specified fire protection rating, where such membrane is designed and constructed with a specified fire resistance rating to limit the spread of fire.

Fire Barrier Wall. A wall, other than a fire wall, that has a fire resistance rating.

Fire Resistance Rating. The time, in minutes or hours, that materials or assemblies have withstood a fire exposure as determined by the tests, or methods based on tests, prescribed by this *Code*.

Guardrail. A vertical protective barrier erected along exposed edges of stairways, balconies, and similar areas.

Handrail. A bar, pipe, or similar member designed to furnish persons with a handhold.

High-Rise Building. A building where the floor of an occupiable story is greater than 75 ft (23 m) above the lowest level of fire department vehicle access.

Means of Egress. A continuous and unobstructed way of travel from any point in a building or structure to a public way consisting of three separate and distinct parts: (1) the exit way, (2) the exit, and (3) the exit discharge

Professional Engineer. A person registered or licensed to practice engineering in a jurisdiction, subject to all laws and limitations imposed by the jurisdiction.

Public Way. A street, alley, or other similar parcel of land essentially open to the outside air deeded, dedicated, or otherwise permanently appropriated to the public for public use and having a clear width and height of not less than 10 ft (3050 mm).

Travel Distance. Distance from a most remote point in any usable spaces where has one or more ways to pass toward outside or exit enclosures

HOW TO USE:

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.

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.

SCORE:

0	1	2	3
No evident	Poor	Fair	Very good

To give a score (1, 2, 3), recorded documents or some evident should be provided by the building representatives for review.

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"

SECTION 2: BUILDING FIRE SAFETY INSPECTION CHECKLIST

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.

FIRE SAFETY 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	Performance fire pump and sprinkler testing	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-07	Performance fire alarm and detection testing	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-08	Performance smoke control testing	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-09	Certify the testing by professional engineer	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-10	Housing keeping	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-11	Contractor orientation	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-12	Regularly fire drill	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-13	Regularly staff training	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-14	Regularly fire risk assessment	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-15	New staff orientation	<input type="checkbox"/> Yes <input type="checkbox"/> No		
FM-16	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.

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.

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.

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.

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.

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.

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		

RESULTS

EACH FEATURE SCORE: **80** or more - "PASS"
 Less than **80** or found an item = **0** - "FAIL"

SCORING	FEATURES	FACTOR	FULL	SCORE
	FIRE SAFETY MANAGEMENT (FM)	25%	48	
	MATERIAL CONTROL (MC)	15%	9	
	EXTERIOR PLANING (EP)	5%	18	
	EXIT STAIR (ES)	15%	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%	336	

Inspectors' signed: _____

Inspectors' name: _____

Building signature: _____

Building name: _____

Date: _____