

Criteria for Fire Safety Inspections under IFE-AHPI initiative

1. SCOPE

1.1. This document includes requirements for the Fire Safety for Institutional buildings broadly categorized under the following Subdivisions

- a) Subdivision C-1 Hospitals & sanatoria
- b) Subdivision C-2 Custodial Institutions
- c) Subdivision C-3 Penal and mental institutions

1.2 The criteria follow the provisions of NBC of India 2016 listed in Part 4 on Fire and life safety and referred standards therein.

2. REQUIREMENTS

2.1 The organization shall cover the following aspects:

- i) **Fire Prevention aspects**- Comprehensive self-assessment of the building and Compliance of building structure with relevant fire safety regulations. (Table 1)
- ii) **Life Safety provisions**- Emergency preparedness covering construction and occupancy features (Table 2)
- iii) **Fire Protection**- Adequacy of Fire Safety equipment & their maintenance check based on classification and Type of building. (Table 3)
- iv) **Preparedness for fire incidences**, such as awareness, training, Fire drills, evacuation plans etc (Table 4)
- v) **Electrical, Mechanical & Instrument** provisions and their Checks (Table 4)

2.2 The organization shall identify the local fire safety regulations and integrate regulatory requirements in the various aspects given in cl 2.1 above.

TABLE 1
FIRE PREVENTION ASPECTS

Sl no	Requirement	Option	Status	Remarks
1.	Classification based on Occupancy of building: Group	Institutional *Subdivision C-1 Hospitals & sanatoria Subdivision C-2 Custodial Institutions Subdivision C-3 Penal and mental institutions		
2.	Certificate of occupancy	Single/ mixed occupancy		
3.	Fire Zone no 1/ 2/ 3			
4.	Basic Type of construction	Type 1/ 2/ 3/ 4-		
5.	No combustible material of any kind shall be stored (except as necessary to normal occupancy & use)			
	Service ducts & shafts building services like cables; wirings plumbing pipes etc Fire resistance rating of enclosure and shaft not less than 120 min			
	Refuse chutes shall open at least 1 m above roof. Enclosure wall of non-combustible material with sprinkler protection and fire rating of 120 min minimum and located at least 6 m away from exit			

TABLE 2
LIFE SAFETY REQUIREMENTS

Sl no	Requirement with Range	Remarks
1.	Exit Passageway and exit discharge shall be free of all obstructions, with no alterations	
2.	Occupant Load / Maximum occupancy to be displayed at each floor <ul style="list-style-type: none"> - Indoor patients area- 15 m2/person - OPD- 10 m2/Person 	
3.	Egress components:	
	- Exit access Free/ clustered not less than 2m in width	
	- Number of exits Travel distance Not to exceed 22.5 m (Type 3&4) & 30 m (Type 1&2)	
	- Maximum dead end of the corridor shall not exceed 6m.	
4.	Aisles, corridors, ramps etc with inpatient movement shall have minimum width of 2.4 m, in no case less than 1.5 m not intended for housing, treatment or for use of inpatients	
5.	Ramps Slope shall not exceed 1 in 12 (8%)	
6.	Compartmentation: <ul style="list-style-type: none"> - All Floors (Not to exceed 750 m2) - All compartments shall be divided with self-closing fire door with electromagnetic hold open - Compartment or refuge area shall have fire door of 120 min rating in a fire resistant wall - Ease of exit at all locations (unlocked stairs & exits) 	
	- Sprinklered Basement with subdivision <ul style="list-style-type: none"> • C-1 Hospitals & Sanatoria 1800 m2 • C-2 Custodial Institutions 1125 m2 • C-3 Penal & mental institutions 1125 m2 	
7.	Smoke Control <ul style="list-style-type: none"> - Exit corridors of guest rooms and indoor patients are provided with 60 min fire resistance wall and 20 min self-closing door with all fire stop sealing penetration - Smoke exhaust system having make-up air & exhaust system/ pressurization system with supply of air is Available/ not available 	
8.	Smoke exhaust & Pressurization below ground- Mechanical ventilation system designed to permit 12 changes/hr in case of fire or distress	
9.	Gas Supply <ul style="list-style-type: none"> - To run in external shafts/ walls away from staircase. - To run below false ceiling - For kitchen, hood to have grease filters using metallic grill (to trap oil vapours escaping into the fume hood) - Availability of outside gas shut-off valve conspicuously marked 	
10.	Fire detection and alarm	

	<ul style="list-style-type: none"> - As per minimum requirements for Fire Fighting installations - Over 30 m high buildings to provide detectors inside electric shafts & lift machine rooms besides occupancy areas, 	
11.	Storage of flammable liquids in labs or any other area shall not be more than 3lts for every 10 m2 area	
12.	Progressive Evacuation Strategy to have minimum of 2 exits accessible from all parts of floors	
13.	For non-naturally ventilated areas, fire doors with minimum 120 min fire resistance rating to be provided at entrance to lift lobby and stair well.	
14.		
15.		

TABLE 3
MINIMUM REQUIREMENTS FOR FIRE FIGHTING INSTALLATIONS

SI No.	Type of Building Occupancy	Type of Installation								Water Supply (in l)		Pump Capacity (in l/min)	
		Fire Exting-usher	First Aid Hose Reel	Wet Riser	Down Comer	Yard Hydrant	Automatic Sprinkler System	Manually Operated Electronic Fire Alarm Systems (see Note 1)	Automatic Detection and Alarm System (see Note 2)	Under-ground Static Water Storage Tank Capacity for Wet Riser, Yard Hydrant and Sprinklers per set of pumps	Terrace Tank over Respective Tower Terrace	Pump Near Underground Static Water Storage Tank (Fire Pump) with Minimum Pressure of 3.5 kg/cm ² at Remotest Location	At the Terrace Tank Level with Minimum Pressure of 3.5 kg/cm ²
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
INSTITUTIONAL BUILDINGS (C) (see Note 16)													
a)	Hospitals, Sanatoria and Nursing Homes (C-1)												
1)	Less than 15 m in height with plot area up to 1 000 m ²												
	i) Up to ground plus one storey, with no beds	R	NR	NR	NR	NR	R (see Note 4)	R	NR	NR	(5 000) (see Note 6)	NR	(450) (see Note 6)
	ii) Up to ground plus one storey with beds	R	R	NR	NR	NR	R (see Note 4)	R	NR	NR	5 000 (5 000) (see Note 6)	NR	450 (450) (see Note 6)
	iii) Ground plus two or more storeys, with no beds	R	R	NR	R	NR	R (see Note 4)	R	R	NR	10 000 (5 000) (see Note 6)	NR	900 (450) (see Note 6)
	iv) Ground plus two or more storeys, with beds	R	R	R	NR	NR	R	R	R	75 000	10 000	(see Note 14)	NR

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2)	Less than 15 m in height with plot area more than 1 000 m ²	R	R	R	NR	R	R	R	R	1 00 000	10 000	(see Note 14)	NR
3)	15 m and above but not exceeding 24 m in height	R	R	R	NR	R	R	R	R	150 000	20 000	(see Note 10)	NR
4)	Above 24 m and not exceeding 45 m in height	R	R	R	NR	R	R	R	R	200 000	20 000	(see Note 11)	NR
b)	Custodial (C-2), and Penal and Mental (C-3)												
1)	Less than 10 m in height												
	i) Up to 300 persons	R	R	NR	NR	NR	R (see Note 4)	R	NR	NR	10 000 (5 000) (see Note 6)	NR	450 (450) (see Note 6)
	ii) More than 300 persons	R	R	NR	R	NR	R (see Note 4)	R	NR	NR	15 000 (5 000) (see Note 6)	NR	900 (450) (see Note 6)
2)	10 m and above but not exceeding 15 m in height	R	R	R	NR	R	R (see Note 4)	R	R	100 000	5 000 (5 000) (see Note 6)	(see Note 10)	NR

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
3)	15 m and above but not exceeding 24 m in height	R	R	R	NR	R	R	R	R	150 000	10 000	(see Note 11)	NR
4)	24 m and above but not exceeding 30 m in height	R	R	R	NR	R	R	R	R	200 000	20 000	(see Note 11)	NR

R – Required

NR – Not Required

NOTES

- 1 MOEFA (Manually Operated electric Fire Alarm system) System shall also include talk-back system and public address system in all buildings 15 m and above in height. These shall also be provided in car parking areas more than 300 m² and in multi-level car parking irrespective of their areas.
- 2 Automatic detection and alarm system is not required to be provided in car parking area. Such detection system shall however be required in other areas of car parking such as electrical rooms, cabins and other storage areas.
- 3 Buildings above 15 m in height are not to be permitted for occupancies A-1 and A-2. (N/A for Hospitals)
- 4 Required to be installed in basement, if area of basement exceeds 200 m².
- 5 Required to be provided if basement area exceeds 200 m².
- 6 Additional value given in parenthesis shall be added if basement area exceeds 200 m².
- 7 Required to be provided for buildings with more than two storeys (Ground + One). (N/A for Hospitals)
- 8 Required to be provided for buildings with height above 15 m and above.
- 9 Sprinklers shall be fed water from both underground static water storage tank and terrace tank.
- 10 Provide required number of sets of pumps each consisting of one electric and one diesel pump (stand by) of capacity 2 280 l/min and two electric pump of capacity 180 l/min (See Fig. 11) (See also notes 22 and 23).
- 11 Provide required number of sets of pumps each consisting of two electric and one diesel pump (stand by) of capacity 2 280 l/min and two electric pump of capacity 180 l/min (See Fig. 12) (See also notes 22 and 23).
- 12 Provide required number of sets of pumps each consisting of two electric and one diesel pump (stand by) of capacity 2 850 l/min and two electric pump of capacity 180 l/min (See Fig. 12) (See also notes 22 and 23). (N/A for Hospitals)
- 13 Lower levels in high rise buildings 60 m or above in height are likely to experience high pressure and therefore, it is recommended to consider multi-stage, multi-outlet pumps (creating pressure zones) or variable frequency drive pumps or any other equivalent arrangement

TABLE 3
MINIMUM REQUIREMENTS FOR FIRE FIGHTING INSTALLATIONS

- 14 Provide required number of sets of pumps each consisting of one electric and one diesel pump (stand by) of capacity 1 620 l/min and one electric pump of capacity 180 l/min (See Fig. 11) (See also notes 22 and 23).
- 15 Required to be provided for buildings with more than one storey.
- 16 Buildings above 30 m in height not to be permitted for Group B, Group C, Group D and Group F occupancies.
- 17 The requirements given in this table for Group G Industrial Buildings are for small scale industry units. For other industries the requirements will have to be worked out on the basis of relevant Indian Standards and also in consultation with the local fire authorities
- 18 Buildings above 18 m in height not to be permitted for G-1 and G-2 occupancies.
- 19 Buildings above 15 m in height not to be permitted for G-3 occupancies.
- 20 Buildings above 15 m in height not to be permitted for Group H and Group J occupancies. However, buildings above 45 m in height shall not be permitted for multi-level car parking (MLCP) occupancy.
- 21 Pump capacity shall be based on the covered area of the building.
- 22 One set of pumps shall be provided for each 100 hydrants or part thereof, with a maximum of two sets. In case of more than one pump set installation, both pump sets shall be interconnected at their delivery headers.
- 23 Alternative to provisions of additional set of pumps, the objective can be met by providing additional diesel pump of the same capacity and doubling the water tank capacity as required for one set of pumps.
- 24 As per the requirement of local authority dry riser may be used in hilly areas, industrial areas or as required. (SI no 12-24 N/A for Hospitals)

TABLE 4
PREPAREDNESS FOR FIRE INCIDENTS
(Awareness, training, Fire drills, and evacuation plans etc)

Building Information Form

Sl no		
1.	Building address with Pin Code	
2.	Owner or person in-charge of building- Name, Address and Telephone Number	
3.	Fire Safety Director and Deputy Fire Safety Director's Name and Telephone Number.	
4.	Certificate of occupancy. Location where posted, or duplicate attached. e) Height, area, class of construction.	
5.	Number type and location of fire stairs and/ or firefighting shaft.	
6.	Number, type and location of horizontal exits or other areas of refuge.	
7.	Number, type, location and operation of lifts and escalators.	
8.	Interior fire alarms, or alarms to central stations	
9.	Communications systems and/or walkie- talkie, telephones, etc.	
10.	Standpipe system; size and location of risers, gravity or pressure tank, fire pump, location of siamese connections, name of employee with certificate of qualification and number of certificate.	
11.	Sprinkler system; name of employee with Certificate of Fitness and certificate number. Primary and secondary water supply, fire pump and areas protected.	
12.	Special extinguishing system, if any, components and operation.	
13.	Average number of persons normally employed in building (Daytime and night time). - Number of Trained persons	
14.	Average number of persons with disabilities in building and their location (Daytime and night time)	
15.	Number of persons normally visiting the building (Daytime and night time).	
16.	Service equipment such as: 1) Electric power, primary, auxiliary; 2) Lighting, normal, emergency, type and location	
17.	Heating, type, fuel, location of heating unit;	
18.	Ventilation with fixed windows, emergency means of exhausting heat and smoke	
19.	Air conditioning systems, Brief description of the system, including ducts and floors serviced;	

20.	Refuse storage and disposal;	
21.	Fire fighting equipment and appliances, other than standpipe and sprinkler system; and	
22.	Other pertinent building equipment. - Alternations and repair operations, if any, and the protective and preventive measures necessary to safeguard such operations with attention to torch operations. - Storage and use of flammable solids, liquids and/or gases. - Special occupancies in the building and the proper protection and maintenance thereof. Places of public assembly, studios, and theatrical occupancies	
23.	Fire Officer with minimum 3 years of experience, who shall <ul style="list-style-type: none"> - Maintain all fire-fighting equipment in good condition - Prepare fire orders & operational plans - Impart training to occupants - Liaison with city fire brigade - Ensure precautions at all times - Fire drills (once in 3 months for 1st 2 years, thereafter atleast once in 6 months) 	
24.	Where automatic fire alarm system is provided, the following may be monitored from fire alarm panel: <ul style="list-style-type: none"> - Water level in all tanks - Hydrant & sprinkler pressures of respective zones as provided - Pump ON/OFF status All isolation valves, wherever provided with supervisory switch (non-padlock valves)	

TABLE 5

ELECTRICAL, MECHANICAL & INSTRUMENT CHECKLIST

Sl no	Document/Checkpoint	Observation	Remarks
A. Verification of Legal documents/ Statutory/ Regulatory Approvals			
1.	Fire NoC		
2.	Licence for Business Operation		
3.	Licence for storage of any Hazardous fuels/ chemicals		
4.	Licence / Approval for Electrical Installation with approved load - DG Set - HT / LT Panel - Transformers		
5.	Consent from SPCB under Air & Water Act		
6.	Consent from SPCB under Hazardous Waste M, H & TB Rule		
7.	Permission for Bore Well with approved capacity		
B. Verification of testing / monitoring reports			
1.	Electrical Earth Pits		
2.	Thermography of Electrical Points		
3.	Testing of Electrical Relays		
4.	Testing of Transformer Oil		
5.	Testing & Verification of - Fire Extinguishers - Fire Hydrants - Jockey Pump - Smoke Detectors		
6.	Fire Load Calculation		
7.	Electrical load calculation- To check with approved load and maximum demand load at any time		
8.	Testing of Pressure Vessels		
C. Verification of emergency preparedness & response			
1.	Emergency Response Plan covering Electric shocks; Fire; hazardous chemicals etc		
2.	Total Numbers of Fire Extinguishers available in the Premises and its appropriateness		
3.	Total Numbers of Fire Hydrants available in the Premises		
4.	Capacity of Fire Jockey Pump		
5.	Capacity of Emergency Fire Safety Water Storage		

6.	Total Numbers of Fire fighters & First Aiders		
7.	First Aid Facilities & their locations		
8.	Risk Assessment and Emergency Response plan / HIRA		
9.	Fire Fighting Facilities , inspection and Emergency Control		
10	Maintenance of premises and storage facilities		
11	Access control		
12	Trainings and Mock Drills		