F. No. VIII-110111/02 (Adv)/2020-DGCD (F)
Government of India
Ministry of Home Affairs
Directorate General FS, CD & HG
Fire Cell
****

East Block – VII, Level – 7,
R.K. Puram, New Delhi – 110 066
Dated 28th November, 2020

To

All the Chief Secretary in the States/UTs.

Subject : Fire incidents in Hospitals/Nursing Homes.

Reference :

i) **No. VIII-11011/03/2011- DGCD(F) dated 21st December, 2011**
ii) **No. VIII-11011/03/2017- DGCD(F) dated 18th April, 2017**
iii) **No. VIII-11011/02/2017- DGCD(F) dated 18th April, 2017**
iv) **No. VIII-11011/03/2017- DGCD(F) dated 31st August, 2017**
v) **No. VI-36015/03/2019- DGCD(F) dated 4th June, 2019**

Sir,

Your kind attention is invited to the advisories issued by this office vide above references (copies enclosed) to prevent the recurrence of fire incidents in Hospitals and Nursing Homes and advising the States to ensure that Hospital/ Nursing Home building have proper safety measures in place as prescribed in various Codes and Standards.

2. In Hospitals/ Nursing Homes patients along with their attendants visit/ stay as per the advice of the Doctors. Some of the patients, requiring critical care, need the support of the attendant/ hospital staff. It is therefore, essential that strict adherence to fire safety norms are implemented to prevent loss of lives and injury to patients and hospital staff. However, fire incidents at Uday Shivanand Hospital in Rajkot, Shrey Hospital in Ahmedabad, Sadguru Hospital in Cuttack have been noticed in recent past resulting in loss of human life and property.

3. As per the National Building Code of India hospitals and nursing homes come under the category of Institutional Buildings. Various fire safety measures have been mentioned according to the type, height and area at table number 7 (Part - IV- Fire and Life Safety, copy enclosed), besides a qualified Fire Officer (Part - IV- Fire and Life Safety, clause 4.10.1 copy enclosed), Fire and Life Safety Audit (Part – IV- Fire and Life Safety, Annexure-"E", para E-7), Assets and Facility Management (Part – IV- Fire and Life Safety, Part -12, Para -15) and regular Fire Drills.

4. You are, therefore, requested to issue necessary directions to the concerned authorities to ensure the followings:

i) To send the status of the implementation of the above guidelines, mentioned as reference to prevent recurrence of fire accidents in Hospitals/ Nursing Homes, to this office latest by 4th December, 2020;

ii) To send the status of the No Objection Certificates (NOCs) issued to the Hospitals/ Nursing Homes and their renewals, to this office latest by 4th December, 2020;

iii) To send the action taken report latest by 4th December, 2020 on the enquiry conducted by the States in the incidents of fires in Hospitals and Nursing Homes occurred during the last five years.

iv) Regular inspection and re-inspection of Hospitals/Nursing Homes should be carried out to ensure strict compliance on the implementation of fire safety measures as stipulated in various Act and Codes either by Fire Officers or third party Fire Safety Auditors. While carrying out inspections, it must be ensured that the Fire Safety provisions, as prescribed by the existing State Fire Service Act and National Building Code of India for Hospitals/ Nursing Home buildings have been catered for. The report of re-inspection may please be sent to this office latest by 15th December, 2020;

v) Short duration Training and Awareness programme should be organized for Hospital staff/ Doctors/ Managers/ authorities as per the enclosed training programme (Annexure - "A") and mock drills should also be conducted. The implementation report may please be sent to this office latest by 31st January, 2021.

vi) Local Building Bye-laws/ Fire Service Act may please be updated in line with the 'Model Bill on Maintenance of Fire & Emergency Services 2019' circulated by Ministry of Home Affairs on 16.09.2019, and various advisories issued by this office based on the National Building Code of India, within a period of three months.

Yours faithfully,

(Md. Jawed Akhtar)
Director General FS, CD &HG
28/11/20

Annexure – "A"

SHORT DURATION TRAINING PROGRAMME FOR THE HOSPITAL STAFF/DOCTORS/MANAGERS

Sl.No.	Topic	Time
1.	Overview of the concept of Disaster Management in India including Hospitals	30 minutes
2.	Overview of the problem in Hospitals and basic of fire	30 minutes
3.	Fire and other hazards in Hospitals and its control	30 minutes
4.	Identification of Passive Fire Protection System in Hospitals	30 minutes
5.	Identification of Active Fire Safety Systems in Hospitals	30 minutes
6.	Practical activities + VR Activities Identification of Hazards in Hospitals and hands on training of available equipment	1 Hr.
7.	Fire Evacuation Plan and role of various stakeholders	30 minutes
8.	Understanding the role in Emergency Preparedness and Response System and preparation for the Mock Drill	30 minutes
9.	Mock Drill on Emergency Escape/ Evacuation	1 Hr.
10.	Debriefing	30 minutes.

Table 7 — (*Continued*)

Sl No.	Type of Building Occupancy	Type of Installation								Water Supply (litre)		Pump Capacity (litre/min)	
		Fire Exting-uisher	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 Combined 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)
2)	15 m and above but not exceeding 30 m	R	R	R	NR	R	R	R	R	150 000	20 000	(*see* Note 11)	NR
3)	Above 30 m in height	R	R	R	NR	R	R	R	R	200 000	20 000	(*see* Note 11)	NR
e)	**Hotels (A-6)**	R	R	R	NR	R	R	R	R	250 000	20 000	(*see* Note 12)	NR
EDUCATIONAL BUILDINGS (B) (*see* Note 16)													
1)	Less than 15 m in height												
	i) Ground plus one or more storeys	R	R	NR	NR	NR	R (*see* Note 4)	NR	NR	NR	10 000 (5 000) (*see* Note 6)	NR	450 (450) (*see* Note 6)
2)	15 m and above but not exceeding 24 m in height	R	R	NR	R	NR	R (*see* Note 4)	R	NR	NR	25 000	NR	900
3)	Above 24 m but not exceeding 30 m in height	R	R	R	NR	R	R (*see* Note 4)	R	NR	50 000	(5 000) (*see* Note 6)	(*see* Note 14)	NR
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)

Table 7 — (*Continued*)

Sl No.	Type of Building Occupancy	Type of Installation								Water Supply (litre)		Pump Capacity (litre/min)	
		Fire Exting-uisher	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 Combined 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)
	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 (*see* Note 1)	R	75 000	10 000	(*see* Note 14)	NR
2)	Less than 15 m in height with plot area more than 1 000 m^2	R	R	R	NR	R	R	R (*see* Note 1)	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)

Table 7 — (*Continued*)

Sl No.	Type of Building Occupancy	Type of Installation								Water Supply (litre)		Pump Capacity (litre/min)	
		Fire Exting-uisher	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 Combined 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)
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
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
ASSEMBLY BUILDINGS (D) (*see* Note 16)													
a)	**Buildings (D-1 to D-5)**												
1)	Less than 10 m in height												
	i) Up to 300 persons	R	R	NR	R	NR	R (*see* Note 4)	R	NR	NR	20 000 (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	25 000 (5 000) (*see* Note 6)	NR	900 (450) (*see* Note 6)
2)	Above 10 m but not exceeding 15 m in height	R	R	R	NR	NR	R (*see* Note 4)	R (*see* Note 1)	R	100 000	5 000 (5 000) (*see* Note 6)	(*see* Note 10)	450 (450) (*see* Note 6)
3)	Above 15 m but not exceeding 24 m in height	R	R	R	NR	R	R	R	R	150 000	10 000	(*see* Note 10)	NR
4)	Above 24 m but not exceeding 30 m in height	R	R	R	NR	R	R	R	R	200 000	20 000	(*see* Note 11)	NR
b)	**D-6**	R	R	R	NR	R	R	R	R	200 000	20 000	(*see* Note 12)	NR
c)	**D-7**	For details *see* **6.4.4**											

Guidelines for selection of various types of fire detectors for different occupancies and their installation and maintenance shall be in accordance with good practice [4(16)] and the Part 12 'Asset and Facility Management' of the Code.

h) In buildings where automatic fire alarm system is provided, the following shall be monitored from fire alarm panel:

1) Water level in all tanks.
2) Hydrant and sprinkler pressures of respective zones as provided.
3) Pump 'ON/OFF' status.
4) All isolation valves, wherever provided with supervisory switch (non-padlock valves).
5) Other requirements to meet electro-mechanical services interface.

4.10 Fire Officer

4.10.1 A qualified Fire Officer with experience of not less than 3 years shall be appointed who will be available on the premises, for large educational complexes, business buildings with height 30 m and above, residential building with height 60 m and above, institutional buildings of 15 m and above, starred hotels and D-6 occupancy.

4.10.2 The Fire Officer shall,

a) maintain the firefighting equipment in good working condition at all times.
b) prepare fire orders and fire operational plans and get them promulgated.
c) impart regular training to the occupants of the buildings in the use of firefighting equipment provided on the premises and keep them informed about the fire emergency evacuation plan.
d) keep proper liaison with the city fire brigade.
e) ensure that all fire precautionary measures are observed at the times.

NOTE — Competent authority having jurisdiction may insist on compliance of the above rules in case of buildings having very large areas even if the height is less than 30 m.

4.11 Fire Drills and Fire Orders

Fire notices/orders shall be prepared to fulfil the requirements of firefighting and evacuation from the buildings in the event of fire and other emergency. The occupants shall be made thoroughly conversant with their action in the event of emergency, by displaying fire notices at vantage points and also through regular training. Such notices should be displayed prominently in bold lettering.

For guidelines for fire drills and evacuation procedures for high rise buildings, *see* Annex D.

5 FIRE PROTECTION

5.1 Fire Extinguishers/Fixed Firefighting Installations

5.1.1 All buildings depending upon the occupancy use and height shall be protected by fire extinguishers, hose reels, wet riser, down-comer, yard hydrants, automatic sprinkler installation, deluge system, high/medium velocity water spray, foam, water mist systems, gaseous or dry powder system, manual/automatic fire alarm system, etc, in accordance with the provisions of various clauses given below, as applicable:

a) These fire extinguishing equipment and their installation shall be in accordance with accepted standards [4(17)]. The extinguishers shall be mounted at a convenient height to enable its quick access and efficient use by all in the event of a fire incidence. The requirements of fire extinguishers/yard hydrant systems/wet riser/down-comer installation and capacity of water storage tanks and fire pumps, etc, shall be as specified in Table 7. The requirements regarding size of mains/risers shall be as given in Table 8. The typical arrangements of down-comer and wet riser installations are shown in Fig. 13. The wet riser shall be designed for zonal distribution ensuring that unduly high pressures are not developed in risers and hose-pipes.
b) First-aid firefighting appliances shall be provided and installed in accordance with good practice [4(18)]. The firefighting equipment and accessories to be installed in buildings for use in firefighting shall also be in accordance with the accepted standard [4(17)] and shall be maintained periodically so as to ensure their perfect serviceability at all times.
c) Valves in fixed firefighting installations shall have supervisory switch with its signalling to fire alarm panel or to have chain(s), pad lock(s), label and tamper-proof security tag(s) with serial number to prevent tampering/unauthorized operation. These valves shall be kept in their intended 'open' position.
d) In addition to wet riser or down-comer, first-aid hose reels shall be installed in buildings (where required under Table 7) on all the floors, in accordance with accepted standard [4(19)]. The first-aid hose reel shall be

IF YOU DISCOVER A FIRE

1) Break the glass of the nearest push button fire alarm and push the button.
2) Attack the fire with extinguishers provided on your floor. Take guidance from your Wardens.
3) Evacuate, if your Warden asks you to do so.

IF YOU HEAR EVACUATION INSTRUCTIONS

1) Leave the floor immediately by the nearest staircase as directed.
2) Report to your Warden, at your predetermined assembly point outside the building.
3) Do not try to use lifts.
4) Do not go to cloakroom.
5) Do not run or shout.
6) Do not stop to collect personal belongings.
7) Keep the lift lobby and staircase doors shut.

YOUR ASSEMBLY POINT IS .....

ANNEX E

(*Clauses* 5.1.4 *and* 6)

ADDITIONAL REQUIREMENTS FOR HIGH RISE BUILDINGS

E-1 GENERAL

High rise buildings (15 m and above in height) shall receive special attention with respect to fire and life safety particularly with regard to planning, design, execution, maintenance and training so that the intended provisions of this Code are well implemented. These get further accentuated as the buildings go taller; some of the key aspects are as follows:

a) Staging and evacuation requirements of occupants.
b) Stack effect posing challenges towards pressurization and smoke exhaust.
c) Zoning of firefighting system to meet functional requirements of hydraulic pressure and flow.
d) Challenges experienced by fire personnel in reaching the place of fire and towards evacuation.

Aspects to mitigate these challenges require innovative approach, interaction with local fire authorities and meaningful strategic planning towards maintenance and fire drills.

E-2 EGRESS AND EVACUATION STRATEGY

One firefighting shall be planned for each residential building/tower, in an educational building/ block, and for each compartment of institutional, assembly, business and mercantile occupancy types. For other occupancy types, requirement of firefighting shall shall be ascertained in consultation with the local fire authority. The firefighting shaft shall necessarily have connectivity directly to exit discharge or through exit passageway (having 120 min fire resistance walls) to exit discharge.

Staircase and fire lift lobby of a firefighting shaft shall be smoke controlled as per **4.4.2.5** and Table 6.

It is recommended that the pressurization requirement for staircase in firefighting shaft and for other fire exit staircases in buildings greater than 60 m in height be evaluated to limit the force required to operate the door assembly (in the direction of door opening) to not more than 133 N to set the door leaf in motion. The aspect of pressurization, door area/width and door closure shall be planned in consideration to the above.

E-3 FIRE SAFETY REQUIREMENTS FOR LIFTS

The provisions as given in **7.1** to **7.2.4** under fire safety requirements of lifts in high rise buildings in Part 8 'Building Services, Section 5 Installation of Lifts, Escalators and Moving Walks, Subsection 5A Lifts' of the Code shall be applicable.

E-4 HORIZONTAL EXITS/REFUGE AREA

A horizontal exit shall be through a fire door of 120 min rating in a fire resistant wall. Horizontal exit require separation with the refuge area or adjoining compartment through 120 min fire barrier. The adjoining compartment of the horizontal exit should allow unlocked and ease of egress and exits for the occupants using defend in place strategy.

Requirements of horizontal exits are as under:

a) Width of horizontal exit doorway shall be suitable to meet the occupant load factor for egress.

b) Doors in horizontal exits shall be openable at all times from both sides.

c) All doors shall swing in the direction of exit travel. For horizontal exits, if a double leaf door is used, the right hand door leaf shall swing in the direction of exit travel.

d) Refuge area shall be provided in buildings of height more than 24 m. Refuge area provided shall be planned to accommodate the occupants of two consecutive floors (this shall consider occupants of the floor where refuge is provided and occupants of floor above) by considering area of 0.3 m^2 per person for the calculated number of occupants and shall include additionally to accommodate one wheelchair space of an area of 0.9 m^2 for every 200 occupants, portion thereof, based on the occupant load served by the area of refuge or a minimum of 15 m^2, whichever is higher, shall be provided as under:

1) The refuge area shall be provided on the periphery of the floor and open to air at least on one side protected with suitable railings.

2) Refuge area(s) shall be provided at/or immediately above 24 m and thereafter at every 15 m or so.

The above refuge area requirement for D-6 occupancy requirement shall however be in accordance with **6.4.2.2.**

e) A prominent sign bearing the words 'REFUGE AREA' shall be installed at the entry of the refuge area, having height of letters of minimum 75 mm and also containing information about the location of refuge areas on the floors above and below this floor. The same signage shall also be conspicuously located within the refuge area.

f) Each refuge area shall be ventilated and provided with first aid box, fire extinguishers, public address speaker, fire man talk back, and adequate emergency lighting as well as drinking water facility.

g) Refuge areas shall be approachable from the space they serve by an accessible means of egress.

h) Refuge areas shall connect to firefighting shaft (comprising fireman's lift, lobby and staircase) without having the occupants requiring to return to the building spaces through which travel to the area of refuge occurred.

j) The refuge area shall always be kept clear. No storage of combustible products and materials, electrical and mechanical equipment, etc shall be allowed in such areas.

k) Refuge area shall be provided with adequate drainage facility to maintain efficient storm water disposal.

m) Entire refuge area shall be provided with sprinklers.

n) Where there is a difference in level between connected areas for horizontal exits, ramps of slope not steeper than 1 in 12 shall be provided (and steps should be avoided).

NOTE — Refuge area provided in excess of the requirements shall be counted towards FAR.

High rise apartment buildings with apartments having balcony, need not be provided with refuge area; however apartment buildings without balcony shall provide refuge area as given above. Refuge areas for apartment buildings of height above 60 m while having balconies shall be provided at 60 m and thereafter at every 30 m. The refuge area shall be an area equivalent to 0.3 m^2 per person for accommodating occupants of two consecutive floors, where occupant load shall be derived on basis of 12.5 m^2 of gross floor area and additionally 0.9 m^2 for accommodating wheel chair requirement or shall be 15 m^2, whichever is higher.

E-5 ELECTRICAL SERVICES

The specific requirements for electrical installations in multi-storeyed buildings given in Part 8 'Building Services, Section 2 Electrical and Allied Installations' of the Code and Section 7 of National Electrical Code 2011 shall be followed.

Wherever transformers are planned at higher floors, the HT cables shall be routed through a separate shaft having its own fire resistance rating of 120 min. Wherever HT generators are planned centrally at ground or first basement level, redundant transformers and HT cables shall be planned for buildings above 60 m in height.

E-6 FIRE PROTECTION

For residential occupancies above 120 m in height and other occupancies above 60 m in height, the sprinklers shall be fed from the main and an alternate/standby riser with suitable isolation valves. The entire sprinkler system shall be designed in accordance with good practice [4(20)].

Where the height of the building exceeds 150 m to 175 m, fire water static storage and pumps shall be required to be provided at 160 m to 180 m and thereafter at intermediate floors at higher levels enabling efficient and functional firefighting installations. The static fire

water storage tanks located at such levels shall have capacity at minimum half of the storage of underground static water storage tank prescribed in Table 7. Such tanks shall be supplemented with water supplies through one working and one standby pump of capacity 2 850 litre/min with two risers at alternate locations feeding to such fire water static storage tanks. The fire pump's requirement and capacity shall also be derived for occupancy type as per Table 7 substituting the diesel pump with electrical pump. The fire pump room at such level shall have dedicated connectivity through passageway (with 120 min integrity) from the firefighting shaft. Such fire pump room shall have 120 min fire resisting wall and provided with adequate ventilation with talk-back connectivity to the main fire pump room and Fire Command Centre.

For high rise buildings, seismic bracings shall be considered for firefighting installations depending on seismic vulnerability of the region and the type of occupancy.

E-7 FIRE AND LIFE SAFETY AUDIT

a) Fire and life safety audit shall be carried out for all buildings having a height of more than 15 m.

b) Such audits shall preferably be conducted by a third party auditor having requisite experience in fire and life safety inspections.

c) Frequency of such audits shall be once in two years.

E-8 HELIPAD

For high rise buildings above 200 m in height, provision for helipad is recommended for specific requirements like landing of fire equipment, and support facilities or other emergencies.

ANNEX F

(*Clause* 6)

ATRIUM

F-1 ATRIUM REQUIREMENTS

a) In order for an atrium to be permitted in buildings, the following shall be complied:

1) Atrium shall be permitted in buildings of Type 1 and Type 2 construction only.

2) The use of combustible furnishings and decorations on the floor of the atrium shall be limited and sparsely distributed.

b) Smoke detectors shall be provided on the underside of each floor protruding into the atrium, at the atrium roof and adjacent to each return air intake from the atrium. Within atrium space, beam type or aspirating type smoke detectors shall be used to ensure detection of smoke, considering factors such as stratification of smoke.

c) Where the ceiling of the atrium is more than 17 m above the floor, water based protection (automatic sprinklers) at the ceiling of atrium is not required.

d) Hydrants shall be available at the floor of the atrium and also at the adjoining upper spaces/floors of the atrium.

Sprinklers are required to be installed for coverage of glass areas of retail, tenant and other areas adjoining the exit access corridor and atrium. Sprinklers shall be at a distance of 450 mm to 600 mm enabling cooling of such glass and limiting the extent of fire and smoke to the atrium (*see* Fig. 16). This provision does not allow similar sprinkler installation arrangement to offset fire compartmentation requirements, in which case fire barrier is required as per relevant provisions of this Part.

e) Atrium in business occupancy shall be planned with 6 air changes per hour (ACPH) while atrium in hotels and assembly occupancy shall be planned with 8 ACPH smoke extraction system.

Such air changes shall be planned in atrium for a height of 15 m from the top.

f) Smoke exhaust fans shall be capable of operating effectively at 250°C for 120 min.

15 MAINTENANCE OF FIRE FIGHTING SYSTEMS

15.1 Maintenance of fire detection and suppression systems in any facility is a very important task for the facility manager. All owners shall arrange to deploy adequate number of trained people to man the systems and also ensure adequate budgetary support to enable proper maintenance and upkeep of the systems.

15.2 Besides properly maintaining all systems, such as fire detectors, sprinklers, first aid fire equipment, yard hydrants, fire tanks, fire pumps, etc, it is imperative that all fire exits and staircases are kept free from any form of obstruction to allow easy egress of occupants in case of any fire incident.

15.3 At the time of commissioning of any facility proper testing of all fire detection and suppression systems shall be done in accordance with relevant Indian Standards and proper record of same shall be maintained. Wherever lift lobbies, staircases, lift wells or any other such location has been designed to remain under pressure from firefighting point of view it is imperative that necessary pressure fans, etc, are kept properly maintained so that there is no failure in this regard. Security guards/lift operators shall be guided to ensure that, wherever doors have been provided to maintain differential pressures are closed to ensure proper functioning.

15.4 Similarly smoke extraction fans, fire dampers in HVAC systems shall be periodically (at least a fortnightly check is desirable) run and tested to ensure that they function properly in case of any emergency.

15.5 The facility manager shall hold regular mock firefighting drills so that people are made aware of the systems installed, the location of nearest exits, etc.

15.6 Maintenance of fire extinguishers shall be carried out in accordance with the good practice [12(6)]. Periodic inspection, testing and refilling shall be got done from competent and trained persons as per provisions given in the above mentioned good practice and as per recommendations of the manufacturers. Proper records of this activity shall be maintained. All fire detection systems shall be strictly maintained in accordance with the good practice [12(7)]. Facility manager shall ensure that during any fit out or refurbishment, no detector is subjected to any interior decoration treatment such as painting, alteration of exterior cover to conform to the environment.

15.7 A log book should be maintained for recording details, including causes of all the alarms (genuine, test or false), faults service tests and routine inspections, servicing/repairs, etc, as and when done. Period of disconnection/non-operation should also be shown.

15.8 Checks shall be made every day to ascertain that the fire panel indicates normal operation and if not, then any fault indicated should be recorded in a log book and corrective action taken and record of that should also be maintained. It shall be ensured that any fault warning recorded the previous day has received attention. The control panel shall be manned regularly so that in case of any incident, immediate action can be initiated.

15.9 Success of any firefighting system will depend upon timely and proper functioning of the fire pumps. Regular maintenance of these pumps shall be done in accordance with the good practice [12(8)]. Checking of jockey pumps shall be a daily exercise. Adequate stock of diesel shall be maintained in a safe location to ensure that pumps can be operated for design duration.

15.10 Other fire installations such as external fire hydrants, hose reels, etc, shall be checked periodically and shall be maintained. External fire hydrants shall be inspected, checked and maintained in accordance with the good practice [12(9)]. Internal fire hydrants and hose reels on premises shall be maintained in accordance with the good practice [12(10)]. Automatic sprinkler system shall be maintained in accordance with the good practice [12(11)].

15.11 Fire Water Reservoirs/Tank

It shall be ensured that fire water tank reservoirs are always full and free from any foreign materials. The water level shall be recorded weekly. Reservoirs shall be cleaned at least once in a year or more frequently depending upon quality of water and sludge formation shall be prevented.

Records of inspection, testing and maintenance operations and reports of hydraulic pressure tests of extinguishers and other equipment shall be maintained as per history sheet.

15.12 All maintenance operations shall be carried out as a well-planned exercise to ensure that the facility is not subjected to unnecessary risk.

a) *In case of planned shut down*:

1) Authorities shall be kept informed before shutting of the installation for any reason, whatsoever.
2) A thorough assessment of the risk shall be undertaken before a part or total shut down to ensure that there is no incident of fire during shut down.
3) The heads of all the departments, tenants, RWAs shall be notified in writing that the installation shall remain inoperative and they shall exercise abundant caution during the period.

b) *In case of unplanned shut down* — When the installation is rendered inoperative as a matter of urgency or by accident, the measures stated above for planned shutdown shall be implemented with least possible delay.

15.13 Fire Drills

Carrying out regular and periodic fire drills, at intervals as may be prescribed, is essential to ensure preparedness of personnel and testing of equipment to ensure that all systems function smoothly in case of any exigency.

15.14 All assets used for firefighting and fire prevention can be equipped with sensors. These sensors shall be capable of monitoring the health of the equipment. Sensors should log the status and send to the central database at monitoring station or BMS, where provided.

15.15 Staircases, fire exits, refuge areas, passages, open surroundings inside or outside the premises should be kept clear of goods.

16 ROADS AND PATHWAYS MAINTENANCE AND UPKEEP

16.1 General

Like other facilities, great care in planning and construction stage is very important for roads/ pavements/paths for their subsequent maintenance and upkeep. It is to be ensured that the roads are well planned and foot paths/pavements provided are at a standard height (usually 150 mm) above the road surface so that they do not cause obstruction to the vehicles and are easily manoeuvrable. All services required at the time of construction including those anticipated in future should be taken care of in the planning stage itself and adequate provisions shall be made for them from the very beginning. This will ensure that the roads are not required to be dug/cut time and again for laying of such services and also the laying of services will be efficient and economical once these are thought of and incorporated well in advance.

16.2 External Services

Special attention needs to be paid to the drainage of the area as storm water drains, more often than not, remain unplanned in the early stages of any project and the areas get inundated during rains causing inconvenience to the users. Proper survey and outlets for the rain water shall be ensured while taking up the work of the residential or commercial complexes. Need for rainwater harvesting systems has already been explained and emphasized (*see* **11.7**). These provisions have to be taken into account while designing roads/ pavements and paths. All external services should be planned and coordinated before execution. Care has to be taken to ensure that the sewer lines do not run above water lines and also do not cross potable water lines as far as possible.

16.2.1 *Ease of Movement*

While laying out foot paths/walk ways and cycle tracks traffic studies shall be carried out, junctions and crossings shall be well planned. It should be ensured that foot paths/walkways are easily approachable and are user-friendly especially to elderly people and persons with physical disabilities. A simple test for the same can be to make a person walk with a trolley and he should be able to move around without having to lift the trolley at any point.

Action at design stage should be taken to develop a safe and effective network of cycle paths. Footpaths and cycle paths are provided to assist the community with walking and cycling activities. Walking and cycling need to be encouraged as modes of transport as they,

a) enhance fitness, health and general life enjoyment;
b) reduce traffic congestion;
c) reduce greenhouse gas emissions; and
d) reduce public expenditure on new roads and car parking facilities.

Damage to paths mainly arise from aging infrastructure, vehicle overrun or through tree roots lifting the paths.

16.3 Maintenance Requirements

Materials used for footpaths and walkways need not be very costly but should be of good quality and durable so that the maintenance needs remain minimal. Attention needs to be paid to regular cleaning of drains and walkways for which the time schedule can be drawn up depending upon the usage and expectations.

All roads present maintenance problems in varying degrees depending upon the specifications and standard of execution at construction, change in traffic intensity/ pattern, climatic conditions natural calamities. In the case of concrete roads, the repairs to the roads are more or less as those applied to any other concrete works.

Road layouts indicating location of culverts, cross drainage and other underground services shall be prepared and kept available with the facility manager and exhibited in office. Different types of roads like gravel, bituminous, or concrete roads should be indicated along with length of the each stretch. A register of roads indicating total length of different types of roads shall be maintained. Similarly, a register of drains/culverts and cross drainage works shall also be maintained indicating type, length/span, etc.

Om Parkash
Fire Adviser

F.No. VIII-11011/03/11-DGCD(F)

Ministry of Home Affairs,
Government of India
East Block-VII, Level-VII, R. K. Puram,
New Delhi-110066
Ph. : (0) +91 11 26712832

Dated the 21th December, 2011.

Sir,

To avoid the recurrence of fire accidents like the one which occurred in AMRI Hospital, Kolkata on 9th December, 2011, it is suggested that the States ensure such Hospitals and Nursing Home buildings have proper fire safety measures in place. In this context, emphasis should be laid on the following measures:-

(a) The concerned authority responsible for issuing the No Objection Certificates for running the Hospitals and Nursing Homes be asked to put up the status of NOCs obtained by all the Hospitals and Nursing Homes in the State.

(b) It must be ensured that while issuing the NOC, the fire safety provisions as prescribed by the existing State Fire Service Act and National Building Code of India for Hospitals and Nursing Home buildings have been catered for.

(c) The concerned departments may be asked to re-inspect/re-check all such buildings from the point of view of fire protection and means of escape within a period of one month.

With Regards

Yours Sincerely

(Om Parkash)

All the Chief Secy in the States/UTs.

(14)

F. No.VIII-11011/03/2017-DGCD(F)
Ministry of Home Affairs
Directorate General FS,CD & HG
DGCD (Fire Cell)

East Block – VII, Level – VII,
R.K. Puram, New Delhi – 110 066
Dated 18th April, 2017

To

All the Chief Secretary in the States/UTs.

Subject :- Fire incidents in Hospitals/Nursing Homes.

Sir,

Fire Adviser, Directorate General Fire Service, Civil Defence and Home Guards, Ministry of Home Affairs, Government of India vide letter No. VIII-11011/03/2011-DGCD(F) dated 21st December, 2011 had issued the advisories to avoid the recurrence of fire incidents in Hospitals and Nursing Homes and suggested the States to ensure that Hospital/Nursing Home buildings have proper Fire Safety measures in place as prescribed in the various Codes and Standards (copy enclosed).

2. However, few more fire incidents have been noticed in Hospitals and Nursing Homes after 2011. As you are aware that various patients visit/stay in hospital as per the advice of the Doctors. Few of them even cannot stand/work without the support of others. It is therefore, essential that in view of such type of occupancy strict adherence to the fire and life safety norms as prescribed in the National Building Code of India, 2016 should be strictly implemented.

3. Government of India, Ministry of Consumer Affairs, Food and Public Distribution, Department of Consumer Affairs, Bureau of India Standards notifies vide Gazette Notification No. S.O. 816(E) dated 15th March, 2017 a new National Building Code of India with its updated fire safety requirements for various occupancies including Hospital/Nursing Homes. As per clause 4.10.1 of part IV "Fire & Life Safety" of NBC, 2016, " a qualified Fire Officer with experience of not less than 3 years shall be appointed who will be available on the premises for institutional buildings (Hospitals and Sanatoria, Custodial Institutions, Penal and Mental Institution) of 15 m and above height.

4. You are requested to issue the necessary direction to the concerned authorities to appoint Fire Officer for such occupancy immediately and ensure strict implementation of Fire Safety provisions as prescribed in the State Fire Service Act and NBC of India Part – IV "Fire & Life Safety" for the Hospitals and Nursing Homes to avoid the recurrence of Fire Accidents.

Yours faithfully,

19/4/2017

(Prakash Mishra)
Director General FS,CD & H
Tel. 2671 285

Copy to:-

All the Heads of Fire Services in the States/UTs for necessary action.

19/4/17

(15)

F. No.VIII-11011/02/2017-DGCD(F)
Ministry of Home Affairs
Directorate General FS,CD & HG
DGCD (Fire Cell)

East Block – VII, Level – VII,
R.K. Puram, New Delhi – 110 066

Dated 18th April, 2017

To

All the Chief Secretary in the States/UTs.

Subject :- **National Building Code of India, 2016 Part – IV "Fire & Life Safety"**

Sir,

In pursuance of Clause (b) of sub-rule (1) of Rules 7 of the Bureau of Indian Standards Rules, 1987, Government of India, Ministry of Consumer Affairs, Food and Public Distribution, Department of Consumer Affairs, Bureau of India Standards notifies vide Gazette Notification No. S.O. 816(E) dated 15th March, 2017 (copy enclosed) that SP7: 2016 National Building Code of India 2016 has been established and SP 7: 2005 National Building Code of India 2005 cancelled w.e.f. 15th March, 2017.

2. As you are aware that Government of India, Ministry of Home Affairs, Directorate General Fire Service, Civil Defence and Home Guards advising the States to incorporate the Fire Safety measures as prescribed in the National Building Code of India, Part – IV "Fire & Life Safety" in their Fire Service Act. States have already incorporated the same.

3. You are requested to issue the necessary direction to the concerned authorities to incorporate and implement the same immediately to ensure fire and life safety.

Yours faithfully,

(Prakash Mishra)
Director General FS,CD & HG
Tel. 2671 2851

RECEIVED
19/4/2017
MHA
R.K. Puram, New Delhi

रजिस्ट्री सं० डी० एल०-33004/99

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भारत का राजपत्र
The Gazette of India

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उपभोक्ता मामले, खाद्य और सार्वजनिक वितरण मंत्रालय

(उपभोक्ता मामले विभाग)

(भारतीय मानक ब्यूरो)

अधिसूचना

नई दिल्ली, 15 मार्च, 2017

का.आ. 816(अ).—भारतीय मानक ब्यूरो नियम 1987 के नियम 7 के उपनियम (1) के खंड (ख) के अनुसरण में भारतीय मानक ब्यूरो एतद्वारा अधिसूचित करता है कि जिन भारतीय मानकों के विवरण नीचे अनुसूची में दिए गए हैं वे स्थापित हो गये हैं।

अनुसूची

क्रम संख्या	स्थापित भारतीय मानक (कों) की संख्या वर्ष और शीर्षक	स्थापित तिथि	भारतीय मानक(कों) जो कि रद्द होने है, अगर है, की संख्या वर्ष और शीर्षक	रद्द होने की तिथि
(1)	(2)	(3)	(4)	(5)
1.	एस पी 7 : 2016 भारत की राष्ट्रीय भवन निर्माण संहिता 2016	15 मार्च 2017	एस पी 7 : 2005 भारत की राष्ट्रीय भवन निर्माण संहिता 2005	15 मार्च 2017

इस भारतीय मानक की प्रतियाँ भारतीय मानक ब्यूरो, मानक भवन, 9, बहादुर शाह ज़फ़र मार्ग, नई दिल्ली-110 002 क्षेत्रीय कार्यालयों :नई दिल्ली, कोलकता, चंडीगढ़, चेन्नई, मुंबई, तथा शाखा कार्यालयों: अहमदाबाद, बंगलौर, भोपाल, भुवनेश्वर, कोयंबतूर, गुवाहाटी, हैदराबाद, जयपुर, कानपुर,नागपुर, पटना, पूणे तथा कोचि में बिक्री हेतु उपलब्ध हैं। भारतीय मानकों को http://www.standardsbis.in द्वारा इंटरनैट पर खरीदा जा सकता है।

[संदर्भ: पब/3/3/2015]

सी. बी. सिंह, अपर महानिदेशक

MINISTRY OF CONSUMER AFFAIRS, FOOD AND PUBLIC DISTRIBUTION

(Department of Consumer Affairs)

(BUREAU OF INDIAN STANDARDS)

New Delhi, the 15th March, 2017

S.O. 816(E).—In pursuance of Clause (b) of sub-rule (1) of Rules 7 of the Bureau of Indian Standards Rules, 1987, the Bureau of Indian Standards hereby notifies that the Indian Standards, particulars of which are given in the second column of Schedule hereto annexed has been established on the date indicated against it in third column. The particulars of the standards, if any, which are given in the fourth column shall also remain in force concurrently till they are cancelled on the date indicated against them in the fifth column.

SCHEDULE

Sl No.	No. & Year of the Indian Standards Established	Date of Establishment	No. & Year of the Indian Standards to be cancelled, if any	Date of cancellation
(1)	(2)	(3)	(4)	(5)
1.	SP 7 : 2016 National Building Code of India 2016	15 March 2017	SP 7 : 2005 National Building Code of India 2005	15 March 2017

Copies of these standards are available for sale with the Bureau of Indian Standards, Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002 and Regional Offices : Kolkata, Chandigarh, Chennai, Mumbai and also Branch Offices: Ahmedabad, Bangalore, Bhopal, Bhubaneshwar, Coimbatore, Guwahati, Hyderabad, Jaipur, Kanpur, Nagpur, Patna, Pune, Kochi Online purchase of Indian Standards can be made at http:/www.standardbis.in.

[Ref: PUB/3/3/2015]

C. B. SINGH, Addl. Director General

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(18)

F.No.VIII-11011/03/2017-DGCD(F)
Ministry of Home Affairs
Directorate General Fire Service, Civil Defence & Home Guards
(Fire Cell)

East Block-VII, Level-VII,
R.K. Puram, New Delhi-110066
Dated : 31.08.2017

To,

All the Chief Secretaries in the States/UTs.

Subject : Fire and Life Safety Audits in the High Rise Buildings located in Urban Areas.

Sir,

Fire incidents in the high rise buildings, hospitals, hotels etc. are increasing. Recent fire incidents in Delhi (Dilshad Garden and Lok Nayak Bhawan), Mumbai. (Bank of India, Air India building, Worli High Rise, Lotus Bhawan, Kalba Devi), Kolkata(AMRI, Bara Bazar), Bhubaneswar (Sum Hospital) etc. have reported huge loss of property and life in 2015-2017 in India. These fire incidents have highlighted the need to take effective fire prevention measures in addition to protection in urban areas in accordance with the existing Building bye-laws and National Building Code of India.

2. Government of India, MHA is issuing instructions/guidelines regularly based on the recommendations of the Standing Fire Advisory Council, an apex body of Govt. of India on fire related matters, for regular inspection and re-inspection of high rise buildings, hospitals, hotels and other structures as per the local building bye-laws and National Building Code of India to reduce the recurrence of fire accidents.

3. On 15.05.2017 Government of India, Ministry of Consumer Affairs has published the National Building Code of India 2016. Part IV of the NBC is focused on "Fire and Life Safety." National Building Code (Part IV-Fire & Life Safety, Annexure E, Para E-7) has suggested for Fire & Life Safety Audit as under:-

(a) Fire and Life Safety Audit shall be carried out for all buildings having a height of more that 15 meters
(b) Such audit shall preferably be conducted by a third party auditor having requisite experience in fire and life safety inspections.
(c) Frequency of such audits shall be once in two years.

11/9/2017

NBC (Part 12-Asset and Facility Management, Para 15) has also suggested for "Maintenance of Fire Fighting System" including Fire Drill as per details given in Annexure 'A'.

4. You are requested to issue necessary directions to the concerned authorities to conduct fire and safety audit/inspection in these premises on regular basis as per the guidelines of National Building Code of India and issue instructions to the owner/ occupier of the building to maintain Fire Fighting System in addition to practice Fire Drills.

5. An Action Taken Report may be forwarded to this office within two months.

Yours faithfully,

(Prakash Mishra)
Director General (FS, CD & HG)
Tel: 26712851

Copy to :

1) All Heads of Fire Services in States/UTs for necessary action.

2) Director (OM-III), MHA w.r.t. your letter No. I-45011/17/16-CD dt 26.07.17 for information

3/15

1/8/17

15 MAINTENANCE OF FIRE FIGHTING SYSTEMS

15.1 Maintenance of fire detection and suppression systems in any facility is a very important task for the facility manager. All owners shall arrange to deploy adequate number of trained people to man the systems and also ensure adequate budgetary support to enable proper maintenance and upkeep of the systems.

15.2 Besides properly maintaining all systems, such as fire detectors, sprinklers, first aid fire equipment, yard hydrants, fire tanks, fire pumps, etc, it is imperative that all fire exits and staircases are kept free from any form of obstruction to allow easy egress of occupants in case of any fire incident.

15.3 At the time of commissioning of any facility proper testing of all fire detection and suppression systems shall be done in accordance with relevant Indian Standards and proper record of same shall be maintained. Wherever lift lobbies, staircases, lift wells or any other such location has been designed to remain under pressure from firefighting point of view it is imperative that necessary pressure fans, etc, are kept properly maintained so that there is no failure in this regard. Security guards/lift operators shall be guided to ensure that, wherever doors have been provided to maintain differential pressures are closed to ensure proper functioning.

15.4 Similarly smoke extraction fans, fire dampers in HVAC systems shall be periodically (at least a fortnightly check is desirable) run and tested to ensure that they function properly in case of any emergency.

15.5 The facility manager shall hold regular mock firefighting drills so that people are made aware of the systems installed, the location of nearest exits, etc.

15.6 Maintenance of fire extinguishers shall be carried out in accordance with the good practice [12(6)]. Periodic inspection, testing and refilling shall be got done from competent and trained persons as per provisions given in the above mentioned good practice and as per recommendations of the manufacturers. Proper records of this activity shall be maintained. All fire detection systems shall be strictly maintained in accordance with the good practice [12(7)]. Facility manager shall ensure that during any fit out or refurbishment, no detector is subjected to any interior decoration treatment such as painting, alteration of exterior cover to conform to the environment.

15.7 A log book should be maintained for recording details, including causes of all the alarms (genuine, test or false), faults service tests and routine inspections, servicing/repairs, etc, as and when done. Period of disconnection/non-operation should also be shown.

15.8 Checks shall be made every day to ascertain that the fire panel indicates normal operation and if not, then any fault indicated should be recorded in a log book and corrective action taken and record of that should also be maintained. It shall be ensured that any fault warning recorded the previous day has received attention. The control panel shall be manned regularly so that in case of any incident, immediate action can be initiated.

15.9 Success of any firefighting system will depend upon timely and proper functioning of the fire pumps. Regular maintenance of these pumps shall be done in accordance with the good practice [12(8)]. Checking of jockey pumps shall be a daily exercise. Adequate stock of diesel shall be maintained in a safe location to ensure that pumps can be operated for design duration.

15.10 Other fire installations such as external fire hydrants, hose reels, etc, shall be checked periodically and shall be maintained. External fire hydrants shall be inspected, checked and maintained in accordance with the good practice [12(9)]. Internal fire hydrants and hose reels on premises shall be maintained in accordance with the good practice [12(10)]. Automatic sprinkler system shall be maintained in accordance with the good practice [12(11)].

15.11 Fire Water Reservoirs/Tank

It shall be ensured that fire water tank reservoirs are always full and free from any foreign materials. The water level shall be recorded weekly. Reservoirs shall be cleaned at least once in a year or more frequently depending upon quality of water and sludge formation shall be prevented.

Records of inspection, testing and maintenance operations and reports of hydraulic pressure tests of extinguishers and other equipment shall be maintained as per history sheet.

15.12 All maintenance operations shall be carried out as a well-planned exercise to ensure that the facility is not subjected to unnecessary risk.

a) *In case of planned shut down*:

1) Authorities shall be kept informed before shutting of the installation for any reason, whatsoever.
2) A thorough assessment of the risk shall be undertaken before a part or total shut down to ensure that there is no incident of fire during shut down.
3) The heads of all the departments, tenants, RWAs shall be notified in writing that the installation shall remain inoperative and they shall exercise abundant caution during the period.

b) *In case of unplanned shut down* — When the installation is rendered inoperative as a matter of urgency or by accident, the measures stated above for planned shutdown shall be implemented with least possible delay.

15.13 Fire Drills

Carrying out regular and periodic fire drills, at intervals as may be prescribed, is essential to ensure preparedness of personnel and testing of equipment to ensure that all systems function smoothly in case of any exigency.

15.14 All assets used for firefighting and fire prevention can be equipped with sensors. These sensors shall be capable of monitoring the health of the equipment. Sensors should log the status and send to the central database at monitoring station or BMS, where provided.

15.15 Staircases, fire exits, refuge areas, passages, open surroundings inside or outside the premises should be kept clear of goods.

16 ROADS AND PATHWAYS MAINTENANCE AND UPKEEP

16.1 General

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16.2.1 *Ease of Movement*

While laying out foot paths/walk ways and cycle tracks traffic studies shall be carried out, junctions and crossings shall be well planned. It should be ensured that foot paths/walkways are easily approachable and are user-friendly especially to elderly people and persons with physical disabilities. A simple test for the same can be to make a person walk with a trolley and he should be able to move around without having to lift the trolley at any point.

Action at design stage should be taken to develop a safe and effective network of cycle paths. Footpaths and cycle paths are provided to assist the community with walking and cycling activities. Walking and cycling need to be encouraged as modes of transport as they,

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b) reduce traffic congestion;
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Road layouts indicating location of culverts, cross drainage and other underground services shall be prepared and kept available with the facility manager and exhibited in office. Different types of roads like gravel, bituminous, or concrete roads should be indicated along with length of the each stretch. A register of roads indicating total length of different types of roads shall be maintained. Similarly, a register of drains/culverts and cross drainage works shall also be maintained indicating type, length/span, etc.

IF YOU DISCOVER A FIRE

1) Break the glass of the nearest push button fire alarm and push the button.
2) Attack the fire with extinguishers provided on your floor. Take guidance from your Wardens.
3) Evacuate, if your Warden asks you to do so.

IF YOU HEAR EVACUATION INSTRUCTIONS

1) Leave the floor immediately by the nearest staircase as directed.
2) Report to your Warden, at your predetermined assembly point outside the building.
3) Do not try to use lifts.
4) Do not go to cloakroom.
5) Do not run or shout.
6) Do not stop to collect personal belongings.
7) Keep the lift lobby and staircase doors shut.

YOUR ASSEMBLY POINT IS .....

ANNEX E

(*Clauses* 5.1.4 *and* 6)

ADDITIONAL REQUIREMENTS FOR HIGH RISE BUILDINGS

E-1 GENERAL

High rise buildings (15 m and above in height) shall receive special attention with respect to fire and life safety particularly with regard to planning, design, execution, maintenance and training so that the intended provisions of this Code are well implemented. These get further accentuated as the buildings go taller; some of the key aspects are as follows:

a) Staging and evacuation requirements of occupants.
b) Stack effect posing challenges towards pressurization and smoke exhaust.
c) Zoning of firefighting system to meet functional requirements of hydraulic pressure and flow.
d) Challenges experienced by fire personnel in reaching the place of fire and towards evacuation.

Aspects to mitigate these challenges require innovative approach, interaction with local fire authorities and meaningful strategic planning towards maintenance and fire drills.

E-2 EGRESS AND EVACUATION STRATEGY

One firefighting shall be planned for each residential building/tower, in an educational building/ block, and for each compartment of institutional, assembly, business and mercantile occupancy types. For other occupancy types, requirement of firefighting shaft shall be ascertained in consultation with the local fire authority. The firefighting shaft shall necessarily have connectivity directly to exit discharge or through exit passageway (having 120 min fire resistance walls) to exit discharge.

Staircase and fire lift lobby of a firefighting shaft shall be smoke controlled as per **4.4.2.5** and Table 6.

It is recommended that the pressurization requirement for staircase in firefighting shaft and for other fire exit staircases in buildings greater than 60 m in height be evaluated to limit the force required to operate the door assembly (in the direction of door opening) to not more than 133 N to set the door leaf in motion. The aspect of pressurization, door area/width and door closure shall be planned in consideration to the above.

E-3 FIRE SAFETY REQUIREMENTS FOR LIFTS

The provisions as given in **7.1** to **7.2.4** under fire safety requirements of lifts in high rise buildings in Part 8 'Building Services, Section 5 Installation of Lifts, Escalators and Moving Walks, Subsection 5A Lifts' of the Code shall be applicable.

E-4 HORIZONTAL EXITS/REFUGE AREA

A horizontal exit shall be through a fire door of 120 min rating in a fire resistant wall. Horizontal exit require separation with the refuge area or adjoining compartment through 120 min fire barrier. The adjoining compartment of the horizontal exit should allow unlocked and ease of egress and exits for the occupants using defend in place strategy.

Requirements of horizontal exits are as under:

a) Width of horizontal exit doorway shall be suitable to meet the occupant load factor for egress.

b) Doors in horizontal exits shall be openable at all times from both sides.

c) All doors shall swing in the direction of exit travel. For horizontal exits, if a double leaf door is used, the right hand door leaf shall swing in the direction of exit travel.

d) Refuge area shall be provided in buildings of height more than 24 m. Refuge area provided shall be planned to accommodate the occupants of two consecutive floors (this shall consider occupants of the floor where refuge is provided and occupants of floor above) by considering area of 0.3 m^2 per person for the calculated number of occupants and shall include additionally to accommodate one wheelchair space of an area of 0.9 m^2 for every 200 occupants, portion thereof, based on the occupant load served by the area of refuge or a minimum of 15 m^2, whichever is higher, shall be provided as under:

1) The refuge area shall be provided on the periphery of the floor and open to air at least on one side protected with suitable railings.

2) Refuge area(s) shall be provided at/or immediately above 24 m and thereafter at every 15 m or so.

The above refuge area requirement for D-6 occupancy requirement shall however be in accordance with **6.4.2.2.**

e) A prominent sign bearing the words 'REFUGE AREA' shall be installed at the entry of the refuge area, having height of letters of minimum 75 mm and also containing information about the location of refuge areas on the floors above and below this floor. The same signage shall also be conspicuously located within the refuge area.

f) Each refuge area shall be ventilated and provided with first aid box, fire extinguishers, public address speaker, fire man talk back, and adequate emergency lighting as well as drinking water facility.

g) Refuge areas shall be approachable from the space they serve by an accessible means of egress.

h) Refuge areas shall connect to firefighting shaft (comprising fireman's lift, lobby and staircase) without having the occupants requiring to return to the building spaces through which travel to the area of refuge occurred.

j) The refuge area shall always be kept clear. No storage of combustible products and materials, electrical and mechanical equipment, etc shall be allowed in such areas.

k) Refuge area shall be provided with adequate drainage facility to maintain efficient storm water disposal.

m) Entire refuge area shall be provided with sprinklers.

n) Where there is a difference in level between connected areas for horizontal exits, ramps of slope not steeper than 1 in 12 shall be provided (and steps should be avoided).

NOTE — Refuge area provided in excess of the requirements shall be counted towards FAR.

High rise apartment buildings with apartments having balcony, need not be provided with refuge area; however apartment buildings without balcony shall provide refuge area as given above. Refuge areas for apartment buildings of height above 60 m while having balconies shall be provided at 60 m and thereafter at every 30 m. The refuge area shall be an area equivalent to 0.3 m^2 per person for accommodating occupants of two consecutive floors, where occupant load shall be derived on basis of 12.5 m^2 of gross floor area and additionally 0.9 m^2 for accommodating wheel chair requirement or shall be 15 m^2, whichever is higher.

E-5 ELECTRICAL SERVICES

The specific requirements for electrical installations in multi-storeyed buildings given in Part 8 'Building Services, Section 2 Electrical and Allied Installations' of the Code and Section 7 of National Electrical Code 2011 shall be followed.

Wherever transformers are planned at higher floors, the HT cables shall be routed through a separate shaft having its own fire resistance rating of 120 min. Wherever HT generators are planned centrally at ground or first basement level, redundant transformers and HT cables shall be planned for buildings above 60 m in height.

E-6 FIRE PROTECTION

For residential occupancies above 120 m in height and other occupancies above 60 m in height, the sprinklers shall be fed from the main and an alternate/standby riser with suitable isolation valves. The entire sprinkler system shall be designed in accordance with good practice [4(20)].

Where the height of the building exceeds 150 m to 175 m, fire water static storage and pumps shall be required to be provided at 160 m to 180 m and thereafter at intermediate floors at higher levels enabling efficient and functional firefighting installations. The static fire

water storage tanks located at such levels shall have capacity at minimum half of the storage of underground static water storage tank prescribed in Table 7. Such tanks shall be supplemented with water supplies through one working and one standby pump of capacity 2 850 litre/min with two risers at alternate locations feeding to such fire water static storage tanks. The fire pump's requirement and capacity shall also be derived for occupancy type as per Table 7 substituting the diesel pump with electrical pump. The fire pump room at such level shall have dedicated connectivity through passageway (with 120 min integrity) from the firefighting shaft. Such fire pump room shall have 120 min fire resisting wall and provided with adequate ventilation with talk-back connectivity to the main fire pump room and Fire Command Centre.

For high rise buildings, seismic bracings shall be considered for firefighting installations depending on seismic vulnerability of the region and the type of occupancy.

E-7 FIRE AND LIFE SAFETY AUDIT

a) Fire and life safety audit shall be carried out for all buildings having a height of more than 15 m.

b) Such audits shall preferably be conducted by a third party auditor having requisite experience in fire and life safety inspections.

c) Frequency of such audits shall be once in two years.

E-8 HELIPAD

For high rise buildings above 200 m in height, provision for helipad is recommended for specific requirements like landing of fire equipment, and support facilities or other emergencies.

ANNEX F

(*Clause* 6)

ATRIUM

F-1 ATRIUM REQUIREMENTS

a) In order for an atrium to be permitted in buildings, the following shall be complied:

1) Atrium shall be permitted in buildings of Type 1 and Type 2 construction only.

2) The use of combustible furnishings and decorations on the floor of the atrium shall be limited and sparsely distributed.

b) Smoke detectors shall be provided on the underside of each floor protruding into the atrium, at the atrium roof and adjacent to each return air intake from the atrium. Within atrium space, beam type or aspirating type smoke detectors shall be used to ensure detection of smoke, considering factors such as stratification of smoke.

c) Where the ceiling of the atrium is more than 17 m above the floor, water based protection (automatic sprinklers) at the ceiling of atrium is not required.

d) Hydrants shall be available at the floor of the atrium and also at the adjoining upper spaces/floors of the atrium.

Sprinklers are required to be installed for coverage of glass areas of retail, tenant and other areas adjoining the exit access corridor and atrium. Sprinklers shall be at a distance of 450 mm to 600 mm enabling cooling of such glass and limiting the extent of fire and smoke to the atrium (*see* Fig. 16). This provision does not allow similar sprinkler installation arrangement to offset fire compartmentation requirements, in which case fire barrier is required as per relevant provisions of this Part.

e) Atrium in business occupancy shall be planned with 6 air changes per hour (ACPH) while atrium in hotels and assembly occupancy shall be planned with 8 ACPH smoke extraction system.

Such air changes shall be planned in atrium for a height of 15 m from the top.

f) Smoke exhaust fans shall be capable of operating effectively at 250°C for 120 min.

F. No.VI-36015/03/2019-DGCD(F)
Ministry of Home Affairs
Directorate General FS,CD & HG
DGCD (Fire Cell)

East Block – VII, Level – VII,
R.K. Puram, New Delhi – 110 066
Dated 4th June, 2019

To

All the Chief Secretary in the States/UTs.

Subject :- Fire and Life Safety Audits in the High Rise/Commercial Buildings located in Urban Areas.

Sir,

Fire incidents in the high-rise buildings, commercial buildings, cracker factories, hospitals, hotels etc. are increasing. Recent fire incidents in Delhi (Bawana Industrial area, Hotel Karolbagh) Mumbai (Commercial complex), Lucknow (Hotel), Telangana (Cracker factory), Surat (Coaching Centre) etc. have reported huge loss of property and life in 2018-2019 in India. These fire incidents have highlighted the need to take effective fire prevention measures in addition to protection in urban areas in accordance with the existing Building Bye-laws and National Building Code.

2. Regular inspection of such premises and structures as per the Fire Safety norms could help us to reduce such incidences. In this regard, the National Building Code (NBC) of India, 2016, Part – IV on "Fire and Life Safety Measures" has a provision of Fire And Life Safety Audit. Para E-7 "Fire and Life Safety Audit" of Annexure "E" of the document indicates that : -

(a) Fire and Life Safety Audit shall be carried out for all buildings having a height of more than 15 metre.
(b) Such audit shall preferably be conducted by a third part auditor having requisite experience in fire and life safety inspections.
(c) Frequency of such audits shall be once in two years.

3. NBC (Part 12- Asset and Facility Management, Para 15) has also suggested the "Maintenance of Fire Fighting System" including Fire Drill.

4. It has also seen that builders are manipulating the definition of High Rise Buildings as stipulated in National Building Code and Building Bye-laws to their advantage and avoiding implementation of fire safety measures. It is therefore essential that **classes of occupancies likely to cause a risk of fire** should clearly be defined in the Fire Act/Rules (Clause 27 & 28 of Delhi Fire Service Rules, 2010 under Delhi Fire Service Act may be referred).

5. You are requested to issue the necessary directions to the concerned authorities to conduct fire-safety audits/inspections in these premises on regular basis as per the guidelines of NBC, 2016 and issue instructions to the owner/occupier of the building to maintain Fire Fighting System in addition to the practice of regular Fire Drills.

Yours faithfully,

(D.K. Shami)
Fire Adviser
Tel. 2671 2951

Copy to :-

All the Heads of Fire Services in the States/UTs for necessary action.

27. Classes of occupancies likely to cause a risk of fire: The following classes of occupancies for the purposes of sub-section (1) of section 25 of the Act shall be construed to likely cause a risk of fire, namely :-

(1) Pandal having seating capacity more than 50 persons or covered area more that 50 square meters.
(2) Residential buildings (other than hotels and guest houses) having height more than 15 meters or having ground plus four upper stories including mezzanine floor.
(3) Hotels and guest houses having height more than 12 meters having ground plus three upper stories including mezzanine floor.
(4) Educational buildings having height more than 9 meters or having ground plus two upper stories including mezzanine floor.
(5) Institutional buildings having height more than 9 meters or having ground plus two upper stories including mezzanine floor.
(6) All Assembly buildings.
(7) Business buildings having height more than 15 meters or having ground plus four upper stories including mezzanine floor.
(8) Mercantile buildings having height more than 9 meters or having ground plus two upper stories including mezzanine floor.
(9) Industrial buildings having covered area on all floors more than 250 square meters.
(10) Storage buildings having covered area on all floors more than 250 square meters.
(11) All Hazardous buildings having covered area on all floors more than 100 square meters.
(12) Underground Structures.

28. Height of building : The minimum height of the buildings for the purposes of sub-section (1) of section 33 and sub-section (1) of section 35 of the Act shall be as specified in (2) of section 25 shall be in accordance with IS8758:1993 published by Bureau of Indian Standards, New Delhi and National Building Code of India, 2005 relating to the following matters :-

(1) Access to pandal.

(2) Open space around the pandal.

(3) Distance from medium and high voltage electrical wires and hazardous installations.

(4) Means of exists.

(5) Material of construction.

(6) First-aid firefighting arrangements.

(7) Water Storage for firefighting.

(8) Electrical Wiring.

(9) Availability of trained firefighting staff.