

JRC REPORT

CAG'S OBSERVATIONS

Ref	Guidelines for fire and life safety measures	
Annexure-IV	The fire and life safety measures to be followed are as follows:	UNDERTAKINGS GIVEN TO DRFS & OTHER AUTHORITIES ARE NOT SUFFICIENT. PROVISION OF MEASURES AS DETAILED BY DRFS HAS TO BE EXECUTED.
1.	The minimum road width requirement as per the Annexure IIA and IIB of these guidelines have to be maintained without any obstructions for the movement of firefighting and emergency vehicles including the Aerial Ladder Platforms (sky lift) up to the frontage of the building.	TO FOLLOW NBC CODE AS APPLICABLE.
2.	The minimum setback requirements as per the Annexure IIA and IIB of these Guidelines shall be maintained, as the setback is required for the purpose of movement of firefighting personnel around the building premises; it also acts as fire breaking / barrier between the buildings; staging area for the equipment's; acts as assembly area for the occupants and also used as smoke and poisonous gases disbursement area in case of emergencies.	TO FOLLOW NBC CODE AS APPLICABLE.
3.	The setback in multi storied and public building shall be maintained free from obstructions and kept open to sky. No gas bank, diesel storage, generator sets and transformer / Ring Main Unit room are allowed in the required minimum setback area. No steep ramp less than the gradient of 1:12 are allowed so as to ensure smooth passage of emergency vehicles.	TO FOLLOW NBC CODE AS APPLICABLE.
4.	General Exit Requirements:	
4a.	Every building meant for human occupancy shall be provided with exits sufficient to permit safe escape of occupants, in case of fire or other emergency.	TO FOLLOW NBC CODE AS APPLICABLE.
4b.	General Exit requirements which requires provision of internal staircase, external staircase and corridor or passageway which have direct access to these staircases shall be maintained free of all obstructions or impediments to full use for orderly evacuation of occupants in case of emergencies and shall lead to the exterior of a building or to a street. Lifts and escalators shall not be considered as exits.	TO FOLLOW NBC CODE AS APPLICABLE.
4c.	All multistoried and all buildings used as educational, assembly, institutional, hospitals, industrial, storage and hazardous occupancies having more than floor area of 500 m ² on each floor shall have a minimum of two staircases and the staircases shall be of enclosed type; at least one of them shall be on external walls of the buildings and shall open directly to the exterior, interior open space or to an open	TO FOLLOW NBC CODE AS APPLICABLE.

4d.	The no of exits shall conform to the accepted standards on the basis of occupant load of building (Floor area in m ² required for a person) for different occupancies and the travel distance to be maintained in a building.	TO FOLLOW NBC CODE AS APPLICABLE.
4e.	In general indicative terms, the occupant load will be 12.5 for residential occupancies, 15 for institutional, 4 for educational, 10 for office buildings, 0.6 to 1 for assembly, 3 for basement shopping area and 6 for upper floor shopping areas. The travel distance to the nearest exits for all multistoried, special commercial, institutional and public buildings shall be of 30 m and for fully sprinklered building, the travel distance may be increased up to 45 m.	TO FOLLOW NBC CODE AS APPLICABLE.
4f.	The required no of exits and its citing shall be designed by the structural engineer and it shall be to the satisfaction of the Directorate of Fire and Rescue Services.	TO FOLLOW NBC CODE AS APPLICABLE.
4g.	Exit doorways from an occupied space of commercial, institutional and public buildings shall open outside into an enclosed stairway or to protected means of egress and in general it shall not be less than 1 m in width and for public buildings it shall not be less than 2m in width.	TO FOLLOW NBC CODE AS APPLICABLE.
4h.	The height clearance for the exits shall not be less than 2.4 m.	TO FOLLOW NBC CODE AS APPLICABLE.
4i.	The width of the stairways for residential buildings shall be of 1 m; for public buildings like auditorium, theaters and cinemas and institutional buildings like hospitals of 2 m and for all other buildings shall be of 1.5 m. The width of the treads, maximum height of the riser and the provision of hand rails shall be of accepted	TO FOLLOW NBC CODE AS APPLICABLE.
4j.	Internal staircases, if arranged around a lift shaft, it shall be provided with a minimum of two hours fire rated cladding; hollow combustible construction not permitted; Gas piping or electrical panels in stairways not allowed; Ducting in stairways is allowed if it is of one hour fire rating; if the ducting is used for electrical conduits, then it shall have two hours fire rating.	TO FOLLOW NBC CODE AS APPLICABLE.
4k.	The external stairs shall be directly connecting all floors to the ground; it shall be continuous, free of obstructions and the entrance to the external stairs shall be separate and remote from the internal staircase.	TO FOLLOW NBC CODE AS APPLICABLE.
4l.	Unprotected steel frame staircase shall not be accepted as means of escape. However, steel staircase in an enclosed fire rated compartment of 2 hour shall be accepted as means of escape.	TO FOLLOW NBC CODE AS APPLICABLE.

4m.	In commercial multi storied buildings, pressurization of escape routes interconnected with the fire alarm system shall be provided, thereby air is injected into the staircases, lobbies or corridors, to raise their pressure slightly above the surrounding areas so as to prevent the ingress of smoke or toxic gases in to the escape routes and thereby ensuring the safe evacuation of occupants.	TO FOLLOW NBC CODE AS APPLICABLE.
5.	In all multi storied buildings one of the lifts shall be a fire lift as per accepted standards and shall be provided with a minimum capacity for 8 passengers and fully automated with emergency switch on ground level. Training to operate these lifts to the occupants / security guards shall be given by the Lift manufacturers at periodical intervals and it shall be ensured by the Fire and Rescue Services inspecting officers.	TO FOLLOW NBC CODE AS APPLICABLE.
6.	Emergency lighting from the independent source of power for a continuous operation of minimum two hours to identify the escape routes shall be provided as per the accepted standards and to the satisfaction of the Directorate of Fire and Rescue	TO FOLLOW NBC CODE AS APPLICABLE.
7.	The Fire detection and alarm system to warn the occupants, so that they may escape and also to facilitate orderly evacuation in case of emergencies shall be provided as per the accepted standards and to the satisfaction of the Directorate of Fire and Rescue Services.	TO FOLLOW NBC CODE AS APPLICABLE.
8.	All buildings excepting the ordinary buildings shall be ensured, at least two hours of fire rating capability so as to protect the building from collapse due to fire and to evacuate the occupants from the building within the time specified.	TO FOLLOW NBC CODE AS APPLICABLE.
9.	All buildings depending upon the occupancy use and height shall be protected by fire extinguishers, wet riser, down comer, automatic sprinkler installation and the fire protection measures as per the accepted standards and to the satisfaction of the Director of Fire and Rescue Services .	TO FOLLOW NBC CODE AS APPLICABLE.
10a.	Ensure the smoke management by making openings / vent and provided with atrium and / or side wall openings at all floors as per the design approved by the empanelled structural engineer.	TO FOLLOW NBC CODE AS APPLICABLE.
10b.	Where smoke venting facilities are installed for purposes of exit safety, these shall be adequate to prevent dangerous accumulation of smoke during the period of time necessary to evacuate the area served, using available exit facilities with a margin of safety to allow for unforeseen contingencies. The smoke exhaust equipment should be installed as per the minimum standards of the National Building Code of India. Where mechanical venting is employed, it shall be fire safe.	TO FOLLOW NBC CODE AS APPLICABLE.

11.	In cases of Commercial buildings as per the Annexure IIA and IIB of these guidelines where it is not feasible to leave the required side and rear set back spaces, to evacuate the occupants more efficiently, the fire and life safety measures such as provision of external fire escape, automatic detection and alarm system, smoke ventilation system, fire protection systems like wet riser / down comer, automatic sprinklers and emergency lighting system shall be made more stringent. Further, the occupants shall be suitably alerted for real time dangers and the fire escape staircases and corridors shall be suitably protected with fast acting sprinkler system / water mist system and without any obstructions / impediments like compartments for evacuation of	TO FOLLOW NBC CODE AS APPLICABLE.
12.	Refuge area measuring to an extent of 15 sq. m as designed by the empanelled structural engineer and to the satisfaction of the Director of Fire and Rescue Services shall be provided as a staging area and secured place for effecting rescue of occupants for all Multi-storey Buildings excepting residential occupancy where balcony is provided. To ensure life safety, conditions to be made more stringent, refuge area shall also be provided in the Commercial Special Buildings where there is no sufficient rear and side setbacks even though it is less than 24 m in height.	TO FOLLOW NBC CODE AS APPLICABLE.
13.	Provisions for emergency escape chutes as per the accepted standards shall be made essential for commercial / public buildings other than ordinary buildings as decided by DFRS.	TO FOLLOW NBC CODE AS APPLICABLE.
14.	Mechanical ventilation of smoke in dual mode as per the requirements of National Building Code of India shall be provided for all usages in basements.	TO FOLLOW NBC CODE AS APPLICABLE.
15.	Special provision for vertical and horizontal natural ventilation shall be made in Multi Storied Buildings and Special Buildings in consultation with the empanelled structural engineer and to the satisfaction of DFRS.	TO FOLLOW NBC CODE AS APPLICABLE.
16.	Air-conditioning system serving public buildings and large departmental stores having more than 500 sq. m floor area and starred hotels shall be provided with effective means of preventing circulation of smoke through the system as per the accepted standards and to the satisfaction of the Directorate of Fire and Rescue Services.	TO FOLLOW NBC CODE AS APPLICABLE.
17.	Special Considerations:	
	<ul style="list-style-type: none"> As the buildings are already constructed, underground sump with required water capacity cannot be provided in some cases and in those cases on practical considerations exclusive overhead tanks with suitable enhanced pump capacity shall be suggested to meet the requirements of firefighting capability. Automatic sprinkler system with suitable pump capacity shall also be suggested for such buildings. 	TO FOLLOW NBC CODE AS APPLICABLE.
	<ul style="list-style-type: none"> CPVC pipes as per Bureau of Indian Standards may be used for sprinklers provided in the building to avoid corrosion. 	TO FOLLOW NBC CODE AS APPLICABLE.

	<ul style="list-style-type: none"> Usage of water mist technology instead of sprinklers for commercial, institutional, public assembly and high value computer institutions may be suggested to save water consumption. 	TO FOLLOW NBC CODE AS APPLICABLE.
	<ul style="list-style-type: none"> Very Early Warning Aspirating Smoke Detection system (VESDA) shall be used in heritage buildings, high value commercial, data centres and electronic equipment installations. 	TO FOLLOW NBC CODE AS APPLICABLE.
	<ul style="list-style-type: none"> Special considerations and enhanced fire and life safety measures shall be suggested for higher fire load within the building such as storage of diesel for generator purposes, storage of easily inflammable materials like textiles, cotton bales etc., internal transformers, electrical panel rooms etc., 	TO FOLLOW NBC CODE AS APPLICABLE.
18.	Enhanced fire protection measures such as segregation and compartmentation of fire risk areas and provision of additional fire protection measures in these areas, increased water storage for firefighting, increase in pump capacity, reduction in spacing of sprinklers and automatic detectors, usage of multi detectors and water mist system etc., shall be suggested on practical considerations without affecting the building stability as there will be some relaxation in the required road access abutting the buildings and thereby some restrictions can be expected for the access of the external firefighting facility. It shall be complied with to the satisfaction of the Director of Fire and Rescue Services.	TO FOLLOW NBC CODE AS APPLICABLE.
19.	The fire load on the building shall not be altered after obtaining the planning permit and building permit under sec 113 (C), for which the owner has to submit an undertaking to the DFRS.	1) TO FOLLOW NBC CODE AS APPLICABLE. 2) UNDERTAKING ALONE IS NOT SUFFICIENT. PROVISION OF MEASURES AS DETAILED BY DFRS HAS TO BE EXECUTED.
20.	Wherever possible, street hydrants with common municipal water sumps with higher pump capacity for highly congested commercial areas can be considered. The hydrant facility shall be designed and constructed by the municipal authorities and can be jointly maintained and operated by the Municipal and Fire and Rescue Services personnel. The cost of installation will be borne by the applicants.	TO FOLLOW NBC CODE AS APPLICABLE.
21.	All high rise buildings, commercial special buildings and public buildings shall compulsorily practice Fire Drill and Evacuation procedure drill every quarter internally for which records such as registers to be maintained and local fire authority shall be a part of such drills once in a year. The security staff of such buildings shall undergo basic firefighting and basic life support training being imparted by the Tamil Nadu Fire and Rescue Services Department and other designated institutions like St. Johns Ambulance etc.	TO FOLLOW NBC CODE AS APPLICABLE.
22.	Buildings as identified by DFRS, as requiring one qualified fire officer authorized by DFRS shall be appointed who will be available on the premises at all times to maintain the to impart regular training to the occupants, keep liaison with city fire brigade and to ensure that all precautionary measures are observed at all the times.	TO FOLLOW NBC CODE AS APPLICABLE.

<p>* The National Building Code hereby referred denotes the National Building Code of India 2005, Part IV Fire and Life Safety – Second Revision published by the Bureau of Indian Standards and its subsequent amendments.</p>	
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