

continuously trickle charged from the electric mains.

3.4.7.3 Suitable arrangements shall be made by installing double throw switches to ensure that the lighting installed in the staircase and the corridor does not get connected to two sources of supply simultaneously. Double throw switch shall be installed in the service room for terminating the stand-by supply.

The emergency lighting system shall be well maintained by periodical inspections and tests so as to ensure their perfect serviceability at all times.

3.4.7.4 Exit signage Where exit access is provided through corridors / paths, the occupants shall be able to easily identify the way to exits. Exit signs shall be provided such that no point in an exit access is more than 30 m from a visible exit directional sign. An exit sign indicating the direction to an exit shall be provided at all changes in direction.

Exits shall be clearly visible and the route to reach the exits shall be clearly marked and signs posted to guide the occupants of the floor concerned. Signs shall be illuminated and wired to an independent electrical circuit on an alternative source of supply. The sizes

and colours of the exit signs shall be in accordance with good practice [4(7)]. The colour of the exit signs shall be green.

*NOTE.* This provision shall not apply to A-2 and A-4 occupancies less than 15 m in height. The exit sign with arrow indicating the way to the escape route shall be provided at a suitable height from the floor level on the wall and shall be illuminated by

electric light connected to corridor circuits. All exit way marking signs should be so installed that no mechanical damage shall occur to them due to moving of furniture or other heavy equipment. Further, all landings of floor shall have floor indicating boards prominently indicating the number of the floor. Photo luminescent markings shall be pasted at internal hydrant boxes.

D. The builder should arrange for the following fire fighting and evacuation measures:-

Electric Power Supply

*NBC 2016, Part-4 Fire and Life Safety*

3.4.6.2 Emergency power for fire and life safety systems  
Emergency power supplying distribution system for critical requirement for functioning of fire and life safety system and equipment shall be planned for efficient and reliable power and control supply to the following systems and equipment where provided:

- a) Fire pumps.
- b) Pressurization and smoke venting, including its ancillary systems such as dampers and actuators.

- c) Fireman's lifts (including all lifts).
- d) Exit signage lighting.
- e) Emergency lighting.
- f) Fire alarm system.
- g) Public address (PA) system (relating to Emergency voice evacuation and announcement).
- h) Magnetic door hold open devices.
- j) Lighting in fire command centre and security room. Power supply to these systems and equipment shall be from normal and emergency (standby generator) power sources with changeover facility. If power supply is from HV source and HV generation, the transformer should be planned in standby capacity to ensure continuity of power to such systems. Wherever and backup DG sets are of higher voltage rating, then dual redundant cables shall be taken to all transformers. The generator shall be capable of taking starting current of all the fire and life safety systems and equipment as above. Where parallel HV/LV supply from a separate substation fed from different grid is provided with appropriate transformer for emergency, the provision of generator may be waived in consultation with the Authority.

#### 3.4.6.4 Standby supply

*Diesel generator set(s) shall not be installed at any floor other than ground/first basement.* If the same are installed indoors, proper ventilation and exhaust shall be planned. The DG set room shall be separated by 120 mm fire resistance rated walls and doors. The oil tank for the DG sets (if not in the base of the DG) shall be provided with a dyked enclosure having a volumetric capacity of at least 10 percent more than the volume of the oil tank. The enclosure shall be filled with sand for a height of 300 mm. For detailed information regarding fire safety requirements for hazardous petroleum products, reference may be made to The Petroleum Act, 1934 and the Rules framed there under.

#### Down comer system

##### *Down comer system. 47*

NBC-2016, Part-4, Fire & Life Safety, Down-comer — An arrangement of fire fighting within the building by means of down-comer pipe connected to terrace tank through terrace pump, gate valve and non-return valve and having minis not less than 100 mm internal diameter with landing valves on each floor/landing. It is also fitted with inlet connections at ground level for charging with water by pumping from fire service appliances and air release valve at roof level to release trapped air inside.

Proposed to provide one generator of 250 KVA capacity on the open space available on the southern side, after leaving 6.00 mtrs. wide driveway from the Building line to provide service to all the emergency provisions in the Buildings.

Not required.

NBC 2016, Part-4, Fire & Life Safety Table 7 (6) down comer shall be provided for every 1000 sq.mtrs.

**Apartment Houses (A-4)**

1. For 35 m and above but not exceeding 35 m in height

The down corner should be of 100 mm internal diameter and G.1 'C' class pipe. From each down corner single hydrant outlet should be provided

**Wet riser system**

NBC 2016 Part-4, Fire & Life Safety, Clause 2.65

**Wet Riser** — An arrangement for fire fighting within the building by means of vertical rising risers not less than 100 mm nominal diameter with landing valves on each floor/landing for fire fighting purposes and permanently charged with water from a pressurized supply.

*NBC -2016, Part-4 Fire & Life Safety, Table 7 (5) wet riser shall be provided for every 1000 sq.mtrs. built up area.*

**Apartment Houses (A-4)**

1. For 35 m and above in height

The riser should be of 100 mm internal diameter and G.1 'C' class pipe. From each riser single hydrant outlet should be provided at each landing

**Hose reel hose system.**

NBC-2016, Part-4, Fire and Life Safety, Table 7 (4)

*First Aid Hose reel shall be provided for,*

**Apartment Houses (A-4)**

1. Should be provided in all the

buildings, irrespective of height and irrespective of occupancy.

- 4 Rubber lined Hose reel hose of size minimum 19 mm of 40 mtr length as per IS 884, with Gate valve (upstream) and shut off nozzle of 5 mm size. The hose reel hose should be connected at each landing by means of an adaptor.

Adequate BIS marked re-reinforced rubber lined delivery hoses of 63 mm size to reach the furthest point of the floor / setbacks from the system should be provided with a branch pipe near each hydrant outlet in a proper box to protect it from withering

**Yard hydrant system.**

NBC-2016, Part-4, Clause 2.64.1 : Hydrant system-

A distribution system having a network of piping installed underground / above ground around and / or through inside of a building with internal and / or external hydrants fitted with landing walls at regular interval according to the occupancy. The distribution system is connected to water supply system from fire fighting

*NBC-2016, Part-4, Table 7 (7)Yard hydrant shall be*

Proposed to provide 2 Wet Riser-cum down corner systems ( 01 in Tower-1 & 01 in Tower-2), near the staircases. Each riser will be of 100 mm internal diameter and will be of G.1 'C' class pipe. From each riser single hydrant outlet at each floor landing will be provided.

Hose reel hose of 40 mtrs. length with drum and 2 Nos. delivery hose pipes, each of 15 mtrs. length with gunmetal branch pipe will be provided inside the hose cabinet near each outlet.

3 Nos. Yard hydrants and 01 No. 04 Way & 01 No. 2 way Fire Service

provided for,

*Apartment Houses (A-4)*

1. 45 m and above in height.

At least two fire service inlets to boost the water in the riser directly from the mobile pump should also be provided. These inlets should be located at an easily accessible position, preferable near the entry point to the premises.

inlets near the entrances will be provided.

Underground static water storage tank combined capacity for wet riser, yard hydrant and sprinklers per set of pumps  
*NBC-2016, Part-4, Table 7 (II) Underground Static Water Storage Tank Combined Capacity for Wet Riser, Yard hydrant and Sprinklers per set of Pumps shall be provided for,*

*Apartment Houses (A-4)*

1. Above 35 m but not exceeding 45 m. In height – 75,000 lts.
2. Above 45 m but not exceeding 60 m. In height – 1,50,000 lts.
3. Above 60 m in height. – 2,00,000 lts.

*Note: Fire tank to be always filled with water. Over flow of fire tank to be taken to domestic tank. Arrangement should be such that any incoming water should first fill-up fire tank, then overflow to other utilizations.*

*H-4 ENCLOSED PARKING STRUCTURES*

- c) For basement car parking, compartmentation can be achieved, with fire barrier or with water curtain nozzle (K-23) or with combination thereof. Automatic deluge system comprising deluge valve, piping, nozzles, etc shall be used to zone the compartment in case of water curtain system. In case of water curtain, existing water storage shall be supplemented by water demand for water curtain nozzles for 60 min considering the largest compartment. perimeter out of all compartments of car parking in any of the basements.
- d) The water supply for the water curtain nozzles shall be through independent electric pump of adequate capacity (flow and head) with piping/riser for the water supply to the nozzles.
- e) The water curtain shall be operated by the actuation of flow switch actuating sprinkler system.
- f) For smoke ventilation requirement of car parking, see 4.6.2.
- g) All fire exit doors from the car parking to exits shall be painted green and shall display exit signage.

The Wet riser-cum-down comer systems of Tower-1 & 2 will be connected to an under ground tank of 1,25,000 liters capacity including for water curtain system.

Terrace tank

NBC-2016, Part-4 Table 7(12) Terrace Tank Over Respective Tower Terrace shall be provided for

Apartment Houses (A-4)

1. Less than 15 m in height 5000 lts. (5000 lts.)  
(Note 6 : Additional value given in parenthesis shall be added if basement area exceeds 200 m<sup>2</sup>)
2. 15 m and above but not exceeding 35 m in height 25,000 lts.
3. Above 35 m but not exceeding 45 m in height 5000 lts.
4. 45 m and above in height 10,000 lts.

Each Wet riser-cum-down comer system of Tower-1 & 2 will also be connected to an overhead tank of 10,000 liters of capacity. (total 02 overhead tanks).

Note: Over head tank to overflow to domestic tank. Arrangement should be such that any incoming water should first fill-up fire tank, then overflow to other utilizations.

Pump near underground static water storage tank (fire pump) with minimum pressure of 3.5 kg/cm<sup>2</sup> at terrace level

NBC-2016, Part-4, Table 7 (13) Pump near underground static water storage tank (Fire pump) with minimum pressure of 3.5 kg/cm<sup>2</sup> at remotest location.

Apartment Houses (A-4)

1. Above 35 m but not exceeding 45 m in height

(Note 10 : One electric and one diesel pump of capacity 2280 l/min and one electric pump of capacity 180 l/min. See also Note 22 and 23)

(Note 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.

(Note 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.)

2. Above 45 m in height but not exceeding 60 m in height

(Note 11 Provide required number of sets of pumps each consisting of two electric and one diesel pump (stand by) of capacity 2 280 litre/min and two electric pump of capacity 180 litre/min (see Fig. 12) (see also Notes 22 and 23).

(Note 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.

Note 23 Alternative to provisions of additional set of pumps, the objective can be met by providing additional

The Wet riser-cum-down comer systems of Tower-1 & 2 will be connected to one Electrically driven pump & one Diesel driven pump, each capable of delivering 2280 litres of water per minute, and one jockey pump, capable of delivering 180 litres of water per minute.

Further the Water Curtain system will

diesel pump of the same capacity and doubling the water tank capacity as required for one set of pumps.)

1. Above 60 m in height

(Note 12 Provide required number of sets of pumps each consisting of two electric and one diesel pump (stand by) of capacity 2 850 litre/min and two electric pump of capacity 180 litre/min (see Fig. 12) (see also Notes 22 and 23)

(Note 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)

(Note 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.

(Note 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.)

If Basement is compartmented using water curtains additional pump as per clause H-4 d) The water supply for the water curtain nozzles shall be through independent electric pump of adequate capacity (flow and head) with piping/riser for the water supply to the nozzles to be provided.

be connected to an separate electrically driven pump, capable of delivering 900 litres of water per minute (flow and head) with piping/riser for the water supply to the nozzles.

Pumps at the Terrace Tank level with Minimum Pressure of 2.0 kg/cm<sup>2</sup>.

NBC-2016, Part-4, Table 7 (14) pumps at the Terrace tank level with Minimum Pressure of 3.5 kg/cm<sup>2</sup> shall be provided for;

9 Apartment Houses (A-4)

1. Less than 15 m in height 450 LPM (450 LPM)

(Note 6: Additional value given in parenthesis shall be added if basement area exceeds 200 m<sup>2</sup>.)

2. 15 m and above but not exceeding 35 m in height – 900 LPM.

Not required.

Manually operated fire alarm system.

NBC-2016, Part-4, Clause 2.1 Alarm System —Fire alarm system comprising components for automatically detecting a fire, initiating an alarm of fire and initiating other actions as appropriate.

NOTE — The system may also include manual fire alarm call points.

NBC-2016, Part-4, Table 7 (9) Manually operated Electric Fire alarm system is required

Proposed to provide Manually

Apartment Houses (A-4)

10 1. 15 m and above in height.

Manually operated electrical fire alarm system should be installed with call boxes located near each staircase landing of each building. The call boxes should be of 'break glass' type, where the call is transmitted automatically to the control room when the glass of the system is broken. This system should also be connected to an alternative source of power supply (diesel generator).

The call boxes should be so installed that their location can be easily noticed from either direction and should be at a height of one meter from the floor level.

operated electrical Fire Alarm System with call point near each staircase landing at each floor of each Tower and its control panel at ground floor.

Automatic fire detection system and alarm system

NBC -2016, Part-4, Clause 2.1

Automatic Fire Detection system with smoke detectors & heat detectors is required. — Fire alarm system comprising components for automatically detecting a fire, initiating an alarm of fire and initiating other actions as appropriate.

11 1. As per Table 7(10) Automatic

Detection and Alarm System.

Apartment Houses (A-4).

Above 60 m in height (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 areas)

Proposed to provide Automatic fire detection system with one smoke detector heads at Multipurpose Hall of ground floor.

Public Address System

12 A system of two way talk back speaker with push to talk speakers to be provided at every staircase or fireman telephone to be provided at every staircase. Necessary console & amplifier with micro phone to be provided at ground floor in fire command center.

Proposed to provide Public Address System with two way communication facility near each staircase landing at each floor of each Tower and its console at ground floor.

Automatic sprinkler system

Automatic Sprinkler System — A system of water pipes fitted with sprinkler heads at suitable intervals and heights and designed to actuate automatically, control and extinguish a fire by the discharge of water

Proposed to provide automatic Sprinkler system with sprinkler heads as indicated below -

NBC-2016, Part-4, Table 7 (8) Automatic Sprinkler system

Apartment Houses (A-4).

1. Upto 35 m in height.

(Note 4: Required to be installed in basement if area of basement exceeds 200 m<sup>2</sup>)

2. Above 35 m but not exceeding 45 m in height.

Floor	Sprinkler heads	Water Curtain nozzles
<u>Tower-1 &amp; 2</u>		
Common Basement	350	23

13

(Note 4: Required to be installed in basement if area of basement exceeds 200 m<sup>2</sup> and Note 9: Sprinklers shall be fed water from both underground static water storage tank and terrace tank)

Description

Common  
Ground floor 38

45 m and above in height to be installed in entire building (Basements, ground and all upper floors)

#### NBC-2016, Part-4, Annex-E-4 HORIZONTAL EXITS/REFUGE AREA

a) 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 operable 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.

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) 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 fire fighting 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.

Refuge area is not required, as the height of the Building is within 60.00 mtrs. and proposed to provide open Balconies in each flat from 1st floor onwards.

15. Escalator shafts shall be provided with sprinklers.

16. Where there is a difference in level between connected areas the horizontal exits, ramps of slope not steeper than 1 in 2 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  $0.3 \text{ m}^2$  per person for accommodating occupants of two consecutive floors, where occupant load shall be derived on basis of  $12.5 \text{ m}^2$  of gross floor area and additionally  $0.9 \text{ m}^2$  for accommodating wheel chair requirement or shall be  $15 \text{ m}^2$ , whichever is higher

#### Fire Command Centre

*NBC-2016, Part-4 Clause 3.4.12 Fire Command Centre (FCC)*

- a) Fire command centre shall be on the entrance floor of the building having direct access. The control room shall have the main fire alarm panel with communication system (suitable public address system) to aid floors and facilities for receiving the message from different floors.
- b) Fire command centre shall be constructed with 120 min rating walls with a fire door and shall be provided with emergency lighting. Interior finishes shall not use any flammable materials. All controls and monitoring of fire alarm systems, pressurization systems, smoke management systems shall happen from this room. Monitoring of integrated building management systems, CCTVs or any other critical parameters in building may also be from the same room.
- c) Details of all floor plans along with the details of fire fighting equipment and installations (2 sets laminated and bound) shall be maintained in fire command centre.
- d) The fire staff in charge of the fire command centre shall be responsible for the maintenance of the various services and fire fighting equipment and installations in coordination with security, electrical and civil staff of the building.

Proposed to provide Fire command centre at common ground floor, as per NBC 2016.

#### NBC-2016, Part-4, Annex-D, Clause 4.11 D-5 FIRE SAFETY PLAN

*D-5.1 A format for the Fire Safety Plan shall be as given in D-9.10.*

*D-5.2* The applicable parts of the approved Fire Safety Plan shall be distributed to all tenants of the building by the building management when the Fire Safety Plan has been approved by the Fire Authority.

16 D-5.3 The applicable parts of the approved Fire Safety Plan shall then be distributed by the tenants to all their employees and by the building management to all their building employees.

D-5.4 In the event there are changes from conditions existing at the time the Fire Safety Plan for the building was approved, and the changes are such so as to require amending the Fire Safety Plan, within 30 days after such changes, an amended Fire Safety Plan shall be submitted to the fire brigade for approval.

FIRE SAFETY PLAN should be provided as per NBC 2016.

#### Fire Officer

*As per clause 4.10 of Part 4 Fire and Life Safety of NBC 2016:*

#### 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 residential building with height 60 m and above.

4.10.2 The Fire Officer shall,

a) maintain the fire fighting equipment in good working condition at all times.

17 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 fire fighting 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.

Not Required.

As proposed Fire extinguishers at following suitable places should be provided.

1) One ABC powder extinguishers of 6 kgs. And 9Litres capacity Portable Hand held "Water Mist & CAFs" fire extinguishers – Jet & spray (combination) Capacity for every 8 cars at parking areas should be provided.

1. As per IS-15683 / EN3-7 / NFPA-10 (Design & Construction)
2. Suppression Technology: NFPA 750 & NFPA 11
3. Minimum Lancing Distance : Jet – 30Feet or more.
4. Minimum Lancing Distance : Spray– 10Feet or more
5. Spraying Angle 60°

### Fire extinguishers

*NBC-2016, Part-4, Table 7 (3) Fire extinguishers shall be provided for,*

#### *Apartment Houses (A-4)*

1. One ABC powder extinguishers of 6 kgs. Capacity for every 8 cars at parking areas should be provided.
2. One CO<sub>2</sub> extinguishers of 4.5 kgs. Capacity should be provided near the entrance to the electrical room.
3. One Mechanical Foam extinguishers of 9 litres capacity & one ABC powder extinguishers of 6 kgs. Capacity should be provided near the transformer.
4. One Mechanical foam extinguishers of 9 litres capacity and one ABC powder extinguishers of 6 kgs. Capacity should be provided near the diesel generator.

6. Class – A, B, LPG Fires and Live Electrical Fire below 1000Volts (Test certificate to be submitted)
7. Fire Rating A: 21A or more
8. Fire Rating B: 144B or more
9. Foam Mist / Pressurised bubbles (Adhere to vertical and Horizontal surfaces, bubbles should retain for a minimum period of 20Minutes)
10. Foam Expansion minimum 1:10 or more
2. One CO<sub>2</sub> extinguishers of 4.5 kgs. Capacity should be provided near the entrance to the electrical room.
3. One 9 Litres capacity Portable Hand held "Water Mist & CAFs" fire extinguishers – Jet / spray type (Combination) and One ABC powder extinguishers of 6kgs. Capacity should be provided near transformer.
1. As per IS-15683 / EN3-7 / NFPA-10 (Design & Construction)
2. Suppression Technology: NFPA 750 & NFPA 11
3. Minimum Lancing Distance : Jet – 30Feet or more
4. Minimum Lancing Distance : Spray– 10Feet or more
5. Spraying Angle 60°
6. Class – A, B, LPG Fires and Live Electrical Fire below 1000Volts (Test certificate to be submitted)
7. Fire Rating A: 21A or more
8. Fire Rating B: 144B or more
9. Foam Mist / Pressurised bubbles (Adhere to vertical and Horizontal surfaces, bubbles should retain for a minimum period of 20Minutes)
10. Foam Expansion minimum 1:10 or more and one ABC powder extinguishers of 6 kgs. Capacity should be provided near the diesel generator.
4. One 9Litres capacity Portable Hand held "Water Mist & CAFs" fire extinguishers – Jet / spray type (Combination) and One ABC powder extinguishers of 6kgs. Capacity should be provided near the diesel generator.

5. One CO<sub>2</sub> extinguishers of 2 kgs. Capacity should be provided inside each lift machine room.
6. One CO<sub>2</sub> extinguishers of 2 kgs. Capacity should be provided inside each kitchen.
7. One Water Mist type extinguishers of 4 litres & 9 litres capacity should be kept near each staircase landing at each floor.

All the extinguishers suggested above should be with B.I.S. markings and should be located at an easily accessible position without obstructing the normal passage and maintained periodically.

1. As per IS-15683 / EN3-7 / NFPA-10 (Design & Construction)
2. Suppression Technology: NFPA 750 & NFPA 11
3. Minimum Lancing Distance : Jet – 30Feet or more
4. Minimum Lancing Distance : Spray– 10Feet or more
5. Spraying Angle 60°
6. Class – A, B, LPG Fires and Live Electrical Fire below 1000Volts (Test certificate to be submitted)
7. Fire Rating A: 21A or more
8. Fire Rating B: 144B or more
9. Foam Mist / Pressurised bubbles (Adhere to vertical and Horizontal surfaces, bubbles should retain for a minimum period of 20Minutes)
10. Foam Expansion minimum 1:10 or more and one ABC powder extinguishers of 6 kgs. Capacity should be provided near the diesel generator.
5. One CO<sub>2</sub> extinguishers of 2 Kgs. Capacity should be provided inside each lift machine room and inside each kitchen..
6. 9Litres capacity Portable Hand held "Water Mist & CAFs" fire extinguishers – Jet / spray type (combination) should be kept in alternative staircase landing at each floor.
1. As per IS-15683 / EN3-7 / NFPA-10 (Design & Construction)
2. Suppression Technology: NFPA 750 & NFPA 11
3. Minimum Lancing Distance : Jet – 30Feet or more
4. Minimum Lancing Distance : Spray– 10Feet or more
5. Spraying Angle 60°
6. Class – A, B, LPG Fires and Live Electrical Fire below 1000Volts (Test certificate to be submitted)
7. Fire Rating A: 21A or more
8. Fire Rating B: 144B or more
9. Foam Mist / Pressurised bubbles (Adhere to vertical and Horizontal

surfaces, bubbles should retain for a minimum period of 20Minutes)

10. Foam Expansion minimum 1:10 or more

All the extinguishers suggested above should be with B.I.S. markings and should be located at an easily accessible position without obstructing the normal passage and maintained periodically.

As per clause 3.4.3 of Part-4 Fire and Life Safety of NBC-2016: Occupation of Buildings under Construction

3.4.3.2 A high rise building during construction shall be provided with the following fire protection measures, which shall be maintained in good working condition at all the times:

- a) Dry riser of minimum 100 mm diameter pipe with hydrant outlets on the floors constructed with a fire service inlet to boost the water in the dry riser and maintenance should be accordance with good practice.
- b) Drums of 2000 litre capacity filled with water with two fire buckets on each floor.
- c) A water storage tank of minimum 20000 litre capacity, which may be used for other construction purposes also

As per clause 3.4.3 of Part-4 Fire and Life Safety of NBC-2016, the below mentioned fire precautionary measures should be taken during the time of construction of this building and should be maintained in good working condition in all the times.

- a) Dry riser of minimum 100 mm diameter pipe with hydrant outlets on the floors constructed with a fire service inlet to boost the water in the dry riser and maintenance should be in accordance with good practice [4(5)].
- b) Drums of 2000 litres capacity filled with water with two fire buckets on each floor.
- c) Water storage tank of minimum 20,000 litres capacity, which may be used for other construction.

#### CONDITIONS:-

1. All the fire prevention, fire fighting and evacuation measures suggested/ recommended in B, C and D shall be strictly adhered to adopted.
2. Hazardous materials such as petroleum products, explosives, chemicals etc. should not be stored on any floor.
3. Refuse dumps or storage should not be permitted in any of the floors.
4. Liquefied petroleum gas should not be stored in the building except the limited quantity required for each kitchen.
5. Plan and occupancy should not be changed without informing the Fire & Emergency Services and without taking clearance.
6. The occupancy certificates should not be issued without obtaining the clearance certificate from the Fire and Emergency Services department.
7. Such reasonable changes/modifications as may be found necessary, after the building is fully constructed, will have to be agreed to be done by the builder/occupants of the building.
8. All the metal fittings of down comer system and all the extinguishers suggested above should have B.I.S markings.
9. Apart from the above the Building shall be constructed by following all the rules & conditions stipulated in Part-III & IV of NBC & local zoning regulations strictly, failing which the NOC issued will not be valid.

10. The above mentioned requirements are indicative and not exhaustive. All other requirements of National Building Code not specifically mentioned above shall also be complied with mandatorily.
11. This NOC is issued from the Fire Prevention and Fire Fighting point of view Karnataka State Fire & Emergency Services Department is not responsible for the ownership of the land, its location and other disputes, which may arise in due course.

Subject to the strict adherence to the conditions laid down as above, issue of License for the construction Residential that is AT SY NO 1/1,80/2,BURGUNTE VILLAGE,SARJAPURA HOBLI,, Anekal, BANGALORE - 562125 may please be considered.

- **All other relevant and applicable requirements as per NBC-2016 will have to be compiled with mandatorily.**



Yours faithfully,  
Director General of Police and Director,  
Karnataka Fire & Emergency Services.