NO/FIRE/H O / VASHI/ 4596 /2023
Navi Mumbai Municipal Corporation
FIRE BRIGADE VASHI, SECTOR - 16-A,
VASHI, NAVI MUMBAI - 400 703
DT. 26/ 12 /2023

To,

The A.D.T.P.
Navi Mumbai Mahanagar Palika
Plot No. 1, Near Kille Gaonthan,
Palm Beach Junction,
Sector-15A, CBD Belapur,
NAVI MUMBAI-400614.

Sub:- Fire Brigade Provisional NOC Stipulating Fire Protection & Fire fighting requirements to the proposed construction of high rise hospital building on Plot No. 01 Sector-1A, CBD Belapur, Navi Mumbai for M/s. Mahatma Gandhi Mission.

Ref:- 1. Your letter vide No. NMMC/TPD/ADTP/20140/2023, dated 04/12/2023.
2. Proposal submitted by Architect M/s. Disha on dated 06/12/2023.
3. As per the gross built-up area as per submitted statement by an architect 2580.618 Sq. Mtrs. accordingly capitation of Rs. 3,43,600/- (Rs. Six Lakhs only) paid by vide receipt No. FVAS/31143, dated 20/12/2023.

Dear Sir,

M/s. Disha Architects of the project has submitted the proposal for proposed construction of high rise hospital building on Plot No. 01 Sector-1A, CBD Belapur, Navi Mumbai for M/s. Mahatma Gandhi Mission. The area wise details of proposed constructions are as under:

Sr. No.	Proposed Floors	Area in Sq. Mtrs.	Occupant Load
01.	Basement (existing)	--	
02.	Ground Floor (existing)	2.467	--
03.	1st Floor (existing)	2.467	--
04.	2nd Floor (existing)	2.467	--
05.	3rd Floor (existing)	2.467	--
06.	4th Floor (existing)	2.467	--
07.	5th Floor (existing)	2.467	--
08.	6th Floor (existing)	2.467	--
09.	7th Floor (existing)	2.467	--
10.	8th Floor (proposed)	645.679	43
11.	9th Floor (proposed)	634.762	42
12.	10th Floor (proposed)	645.679	43
13.	11th Floor (proposed)	634.762	42
	Total Gross Built up Area	2580.619	

The entire composite structure consists of existing basement + ground floor + 7 upper floors and proposed 8th to 11th floors at a height of 44.30 Mtrs. up to the terrace level. The floor-wise details of the proposed structure are as follows:

Sr. No.	Floors	Floor-wise occupancy
1	Ground Floor + 7th Floor	Existing floors
2	8th & 9th Floor	Proposed patients room, doctors room.
3	10th Floor	Proposed general ward female
4	11th Floor	Proposed general ward male

The submitted proposal was scrutinized by fire department from fire and life safety point of view and considered favorably taking in to account following points and facts.

- The said proposed building is approachable to fire brigade vehicles by approachable road of 24.00 Mtrs. & abutting road is 24 Mtrs.
- The Architect had proposed total 03 Nos. of staircases, 01 No. staircase from ground floor to 1st floor having width 2.00 Mtrs. and remaining 2 staircases from basement floor to terrace floor having width of 1.50 Meters each & adequately ventilated.
- 02 Nos. of exit & entrance gate are provided each of 6.00 meters width.

The open space all around the building as per statement given by Architect.

Sides	From building line to plot boundary
Front	8.958 Meters

Side-I	6.030 Meters
Side-II	6.030 Meters
Rear	8.623 Meters

- The Architect agrees to provide the wet riser system in given fire duct with all essential requirements of active fire protection system.
- The architect of the project has proposed 2,00,000 liters capacity of underground static water storage tank for firefighting & 20,000 liters over head static water storage tank, purely kept for firefighting purpose, along with required pumping arrangement for the said fire fighting installation.
- Proposed 04 No's of lifts one is visitor lift, one is patient lift, one is service lift, one is fire lift shall be provided with automatic rescue device.
- **The Architect had proposed all the essential active and passive fire protection measures in the said project such as:**
- Fire resistance door should be provided to isolate the fire escape area from the other parts of the building.
- Proper width of stair-cases
- The entire building is proposed with sprinklers, wet–riser system, Automatic smoke detection system, Fire alarm system & along with necessary signage's,
- Yard hydrant system at the periphery at every 30.00 meters and yard system to give adequate protection to the car parking's in the stilts and marginal open space.
- A separate positive suction type pump room as per IS:15301, 2003 for all necessary pumps of proper capacities i.e. hydrant main pump, sprinkler main pump, stand-by diesel pump, jockey pump for sprinkler system and hydrant system, AFS panel and peripheral accessories shall also be installed.
- During the construction stage and prior to final occupation developer/Architect shall provide additional fire fighting requirement if proposed by this department in the interest of safety of the premises.
- The edge of the refuge floor should be at the same location of the edge of the podium on the road side face of the building.
- A dedicated power supply should be provided to fire lift to easy access to fire escape staircase.

In view of above submission, subject to compliances of UDCPR, approval by your department & compliances of proposed requirement of fire brigade department, the department does not have any objection for the proposed of high rise hospital building height will be 44.30 Mtrs. up to the terrace level structure consists of existing basement + ground floor + 7 upper floors and proposed 8^{th} to 11^{th} floors on Plot No. 01 Sector-1A, CBD Belapur, Navi Mumbai for M/s. Mahatma Gandhi Mission as per details shown on enclosed plans, signed in token of approval & compliance's of following fire brigade conditions:

The work for Fire Protection & Fire Fighting shall be executed only through licensed agency and the said agency shall get all the schematic drawings / plans of all applicable fire protection & fire fighting systems checked and approved from Fire officer prior to installation of the same.

A) <u>Requirements of passive fire protection system:-</u>

1) <u>Access</u>:-

At least 02 accesses by 6.00 meters wide gates & courtyard flushed with road level

2) <u>Open Space</u>:-

The open space around the building shall be as per approved plan by your department.

3) <u>Staircase:-</u>

1. The width of staircases shall be as sanctioned by this department and shall have flight width 2.00 meters & proper ventilation for smoke management.
2. The layout of the one staircase shall be of enclosed type as shown in the enclosed plan throughout its height and shall be approached at every floor level by a self closing 2 hrs fire resistant smoke check door placed in the walls of these staircases at landing.

3. Openable sashes or RCC grills with clear opening of not less than of 0.5 Sq. Mtrs. per landing on the external wall of the staircase shall be provided.
4. All staircase/lift lobby shall be connected through fire escape passage.

4) Fire Resistance Door:-

1. The every dwelling shall be provided with 2 hours fire resistance door adhering to IS:3614 part II, 1992 (Reaffirmed 2002).
2. Staircase and refuge area doors shall also be provided with 2 hours fire resistance doors adhering to IS:3614 part II, 1992 (Reaffirmed 2002)
3. The test certification must be from CBRI or from any institute/laboratory recognized by Central Govt./State Govt./Govt. undertaking which specifically states that these fire doors are tested in accordance to IS:3614 (Part II), 1992.

5) Canopy:-

Shall be constructed at a distance 6.00 meters from raised ground level so that it will not make any hindrance to smooth movement of the fire & other vehicles.

6) Escape Route:-

1. Lift lobby/common corridor at each floor level shall be ventilated directly to the outside air, Permanent ventilation in the form of openable sashes provided to the common corridor/lift lobby.
2. Escape route lighting (i.e. staircase and corridor lighting) shall be on independent circuits as per rules.
3. Combustible material/lining which involves toxic gases when heated or burning shall not be permitted in common corridors, staircase and all the escape routes.

7) Electrical Cables Shaft/Electrical Room:-

1. Electric cable shafts shall be exclusively used for electric cables and should not open in the staircase enclosure.
2. Inspection door for the shaft shall have two hours fire resistance.
4. Electric meter room shall be provided at ground floor level at the location marked on the enclosed plans. It shall be adequately ventilated.
5. Electrical cable shafts shall be sealed at each floor level with non-combustible material such as vermiculite concrete etc.
6. Electric cables shall be of halon free fire resistant type, low smoke, non- toxic & non-black smoke type with copper core is advisable to use **bus bar** system for electric installation.
7. Electric wiring shall have fire resistant copper core and low smoke hazards cables for the entire building with the provision of ELCB/MCB.

Fire Escape: (Enclosed Type) Shall Comply Following: -

1. **Travel Distance should be maintained 22.50 M as per the guidelines given in UDCPR and NBC 2016. Exits and staircase guidelines should be followed as per UDCPR and National Building Code-2016**
2. **Fire escape constructed of M. S. angels, wood or glass is not permitted.**
3. **Opening of the Fire Escape Staircase should be from outside.**
4. Fire Escape staircase should be enclosed type. These should always be kept in sound operable condition.
5. Exits door shall open outwards, that is away from the room, but shall not obstruct the travel along any exit.
6. Fire Escape Staircase shall be directly connected to the ground.
7. Entrance to the Fire Staircase shall be separate and remote from the internal staircase.
8. Care shall be taken to ensure that no wall opening or window opens on to or close to Fire Escape Stairs.
9. The route to the external staircase shall be free of obstructions at all times.
10. The Fire Escape stairs shall be constructed of non-combustible materials, and any doorway leading to it shall have the required fire resistance.
11. No Staircase, used as a fire escape, shall be inclined at an angel greater than 45^{0} from the horizontal.
12. **The width of the staircase should as given in UDCPR. The other detailed provision for exits in accordance with National building code - 2016.**

13. Fire Staircase shall have straight flight not less than 125 cm wide with 20 cm treads and risers not more than 19 cm. The number of risers shall be limited to 15 per flight.
14. Handrails shall be of a height not less than 100 cm and not exceeding 120 cm

Fire Lift:

1. To enable fire services personnel to reach the upper floors with the minimum delay, one fire lift per **1200 Sq. Mtrs.** of floor area shall be provided and shall be available for the exclusive use of the fireman in an emergency.
2. The lift shall have a floor area of not less than **1.4 Sq. Mtrs.** It shall have loading capacity of not less than **545 Kg. (8 persons)** with automatic closing doors of minimum **0.8 Mtrs.** width.
3. The electric supply shall be on a separate service from electric supply mains in a building and the cables run in a safe route safe from fire, that is, within the lift shaft. Lights and fans in the elevators having wooden paneling or sheet steel construction shall be operated on 24 Volt supply.
4. Fire fighting lift should be provided with a ceiling hatch for use in case of emergency, so that when the car gets stuck up, it shall be easily open able.
5. In case normal electric supply fails, it shall automatically trip over to alternate supply. Alternatively, the lift shall be so wired that in case of power failure it will come down to the ground level and stand still with door open.
6. The operation of a fire lift is by a simple toggle or two button switch situated in a glass fronted box adjacent to the lift at the entrance level. When the switch is on landing call points should become inoperative and the lift will be on car control only or on a priority device. When the switch is off, the lift will return to normal working.
7. The words **"Fire Lift"** shall be conspicuously displayed in fluorescent paint on the lift landing doors at each floor level. The speed of the fire lift shall be such that it can reach the top floor from ground level within **1 Min.**

Lift Enclosures: -

1. The walls enclosing lift shafts shall have a fire resistance of not less than **two** hours.
2. Shafts shall have permanent vents at the top not less than 1800 mm (0.2 Sq. Mtrs.) in clear area.
3. Lift motor room shall be preferably be sited at the top of the shaft and shall be separate from lift shafts by the enclosing wall of the shaft or by the floor of the motor room.
4. Landing doors in lift enclosures shall open in the ventilated corridor/lobby & shall have fire resistance of not less than one hour.
5. The number of lifts in one lift bank **shall not exceed four.** Lift car doors shall have fire resistance of not less than one hour. A wall of two hours fire rating shall separate individual shafts in banks. Minimum one lift in every lift bank must be a **"Fire Lift".**
6. For the buildings 15 Mtrs and above in height, collapsible gates shall not be permitted for lifts and shall have solid doors with fire resistance of at least one hour.
7. If the lift shaft and lobby is in the core of the building a positive pressure between 25 and 30 pa shall be maintained in the lobby and a possible pressure of 50 pa shall be maintained in the lift shaft. The mechanism for the pressurization shall act automatically with the fire alarm / sprinkler system and it shall be possible to operate this mechanically also.
8. Exit from the lift lobby, if located in the core of the building shall be through a self-closing smoke top door of half hour fire resistance.
9. Lift shall not normally communicate with the basement. If however, lifts are in communication, the lift lobby of the basement shall be pressurized as mentioned above with self closing doors.
10. The lift machine room shall be separate and no other machinery shall be installed therein.
11. Grounding switch/switches at ground floor level to enable the fire service personnel to ground the lift car/cars in emergency shall be provided.
12. Telephone or other communication facilities shall be provided in the lift cars which shall be connected to fire control room of the building.
13. Suitable arrangements such as providing slope in the floor of the lift lobby shall be made to prevent water used during fire fighting etc. at landing from entering the lift shaft.
14. A sign shall be posted & maintained on every floor at or near the lift indicating that in case of fire occupants shall use the stairs unless instructed by otherwise. The sign shall also contain a plan for each floor showing the locations of the stairway.

15. Alternate source of supply shall be provided for all the lifts through a manually operated change over switch.

8) Lift & Others Lift:

1. Walls enclosing lift shafts shall have a fire resistance of not less than two hours.
2. Shafts shall have permanent vent of not less than 0.2 Sq. Mtrs. in clear area immediately under the machine room.
3. Landing doors & Lift car doors shall be of steel shuttered with two hours fire resistance. The collapsible shutters shall not be provided.
3. Lift opening shall be only in the corridor and not directly in any room.
4. All the lifts shall be installed with **Automatic Rescue device**.
5. One lift each wing shall be converted into fire lift conforming to relevant regulations & togal switch must be provided at ground floor level.
6. There shall be an alternate electric supply of an adequate capacity apart from the electric supply of the building and the cables run in a route safe from fire, i.e. within the lift shaft. In case of failure normal electric supply, it shall automatically trip over to alternate supply.
7. The operation of fire lift should be by a single toggle or two button switch situated in glass-fronted box adjacent to the lift at the entrance level. When the switch is on, landing call points will become inoperative and the lift will be on car control only or on priority control device. When the switch is off, the lift will return to normal working. This lift can be used by the occupants in normal times.
8. The words "FIRE LIFT" shall be conspicuously displayed in florescent paint on the lift landing door at each floor level.
9. The speed of the fire lift shall be such that it can reach the top floor from ground level with in one minute.

9) Service Duct/Electrical Duct:-

All the service /electrical ducts shall be sealed at each floor level with non-combustible material such as vermiculite/ intumescent material.

Guidelines For Internal Stairways as per NBC 2016

a) Stairways shall be constructed of non-combustible materials throughout. Hollow combustible construction shall not be permitted. Width of Staircase should be 1.5 M.
b) No Gas piping shall be laid down in the stairway.
c) Internal staircase shall be constructed as a self-contained unit with at least one side adjacent to an external wall and shall be completely enclosed.
d) Internal staircase shall not be arranged around lift shaft unless the later is entirely enclosed by material of fire resistance rating as that for type of construction itself.
e) The access to main staircase shall be gained through at least half-an-hour fire resisting automatic closing doors, placed in the enclosing walls of the staircase. They shall be swing type doors opening in the direction of the escape.
f) No living space, store or other space, involving fire risk, shall open directly in to staircase.
g) The external exit door of a staircase enclosure at ground level shall open directly to the open space or should be accessible without passing through any door other than a door provided to form a draught lobby.
h) The exit signs with arrows indicating the escape routes shall be provided at a height of 1.5 m. from the floor level on the wall and shall painted with fluorescent paint. All exit signs should be flush with the wall and so designed that no mechanical damage to them can result from the removing furniture, material or any other equipment.
i) Exits shall be so located that it will not be necessary to travel more than 30 m. from any point to reach the nearest exit.

Staircase & Corridor Lightings:

a) The staircase and corridor lighting shall be on separate service and shall be independently connected so as it could be operated by one switch installation on the ground floor easily accessible to fire fighting staff at any time irrespective of the position of the individual control of the light points, if any.
b) Staircase and corridor lighting shall also be connected to alternate source of supply.
c) Suitable arrangements shall be made by installing double throw switches to ensure that the lighting installed in the staircase and the corridor do not get connected to the sources of supply simultaneously. Double throw switch shall be installed in the service room for terminating the stand by supply.

d) Emergency lights shall be provided in the staircase/corridor.
e) Passageway should be provided as per the guidelines given in National Building Code- 2016.

Staircase Design requirement:

1. The minimum headroom in a passage under the landing of a staircase and under the staircases shall be **2.2 Mtrs.**
2. Access to main staircase shall be through a fire / smoke check door of a minimum 2 hours fire resistance rating.
3. No living space, store or other fire risk shall open directly in to the staircases.
4. The main and external staircases shall be continuous from ground floor to the terrace level.
5. No electrical shafts, A/c ducts or gas pipe etc. shall pass through or open in the staircases. Lifts shall not open in staircases.
6. The width of the staircase shall not be less than 1.5 Mtrs.
7. **All the staircases shall be provided with mechanical Pressurization devices which will inject the air in to staircase, lobbies or corridors to raise their pressure slightly above the pressure in adjacent parts of the building so the entry of toxic gases or smoke in to the escape routes is prevented.**

Staircase Enclosures :-

1. The external enclosing walls of the staircase shall be of the brick or the RCC construction having the fire resistance of not less than two hours. All enclosed staircases shall have access through self closing door of one hour fire resistance. These shall be single swing doors opening in the direction of escape. The door shall be fitted with the check action door closers.
2. The staircase enclosures on the external wall of the building shall be ventilated to the atmosphere at each landing.
3. Permanent vent at the top equal to the 5% of the cross section area of the enclosure and openable sashes at each floor level with area equal to 1 to 15 % of the cross sectional area of the enclosure on external shall be provided. The roof of the shaft shall be at least 1 meter above the surrounding roof. There shall be no glazing or the glass bricks in any internal closing wall of staircase. If the staircase is in the core of the building and cannot be ventilated at each landing a positive pressure of 5 mm w.g. by an electrically operated blower/ blowers shall be maintained.
4. The mechanism for pressurizing the staircase shaft shall be so installed that the same shall operate automatically on fire alarm system/ sprinkler system and be provided with manual operation facilities.

Exit Requirement:

a. An exit may be doorway, corridor, Passageway(s) to an internal staircase, or external staircase, or to a verandah or terrace(s), which have access to the street, or to the roof of a building or a refuge area. An exit may also include a horizontal exit landing to an adjoining building at the same level.
b. Every exit, exit access or exit discharge shall be continuously maintained free of all obstructions or impediments to full use in the case of fire or other emergency.
c. 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 electric circuit on an alternative source of supply.
d. To prevent spread of fire and smoke, fire doors with 2 hours fire resistance shall be provided at appropriate places along the escape routes and particularly at the entrance to lift lobby and stair well where a 'funnel or flue effect' may be created inducing an upward spread of fire.
e. All exits shall provide continuous means of egress to the exterior of a building or to an exterior open spaces leading to the street.
f. Exits shall be so arranged that they may be reached without passing through another occupied unit.

Illumination of Means of Exit:-

Staircase and corridor lights shall confirm to the following:-

a) The staircase and corridor lighting shall be on separate circuit and shall be independently connected so that it could be operated by one switch installation on the ground floor easily accessible to fire fighting staff at any time irrespective of the position

of the individual control of the light points, if any. It should be of miniature circuit breaker type of switch so as to avoid replacement of fuse in case of crises.

b) Staircase and corridor lighting shall also be connected to alternative supply. The alternative source of supply may be provided by battery continuously trickle charged from the electric mains; and

c) 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 sand by supply.

Emergency and Escape Lighting:-

1. Emergency lighting shall be powered from a source independent of that supplying the normal lighting.
2. Escape lighting shall be capable of
   A) Indicating clearly and unambiguously the escape routes.
   B) Providing adequate illumination along such routes to allow safe movement of persons towards and through the exits.
   C) Ensuring that fire alarm call points and fire fighting equipments provided along the escape routes can be readily located.
3. The horizontal luminance at floor level on the centerline of an escape route shall be not less than 10 lux. In addition, for escape routes up to 2 m wide, 50 percent of the route width shall be lit to a minimum of 5 lux.
4. The emergency lighting shall be provided to be put on within 1 s of the failure of the normal lighting supply.
5. Escape lighting luminaries should be sited to cover the following locations
   a) Near each intersection of corridors
   b) At each exit door
   c) Near each change of direction in the escape rout
   d) Near each staircase so that each flight of staircase receives direct light.
   e) Near any other change of floor level.
   f) Outside each final exit and close to it.
   g) Near each fire alarm call point.
   h) Near firefighting equipment, and
   i) To illuminate exit and safety signs as required by the fire department.
6. Emergency lighting systems shall be designed to ensure that a fault or failure in any one luminary does not further reduce the effectiveness of the system.
7. The luminaries shall be mounted as low as possible but at least 2 m above the floor level.
8. Signs are required at all exits, emergency exits and escape routs, which should comply with the graphic requirements of the relevant Indian Standard.
9. Emergency lighting luminaries and their fittings shall be of non flammable type.
10. It is essential that the wiring and installation of the emergency lighting system are of high quality so as to ensure their perfect serviceability at all times.
11. The emergency lighting system shall be capable of continuous operation for a minimum duration of 1 hour and 30 minutes even for the smallest premises.
12. The emergency lighting system shall be well maintained by periodical inspections and tests so as to ensure their perfect serviceability at all times.

10) Staircase & Corridor Lighting:-

1. The Staircase and corridor lighting shall be separate circuits and shall and shall be independently connected so that it could be operated by one switch installation on the ground floor easily accessible to fire fighting staff at any time irrespective of the position of the individual control of the light points if any.
2. The staircase and corridor lighting shall also be connected to alternate supply the alternative source of supply may be provided by battery continuously trickle charged the electric mains.
3. Suitable arrangements shall be made by installation double throw switches to ensure that the lighting installed in the staircase and the corridor do not get connected to two source of supply simultaneously. Double throw switch shall be installed in the service room for terminating the standby supply.

12) Guidelines for Refuge Area :-

1. **Refuge Area**: For buildings more than **24 Mtrs.** in height, refuge area of **15 Sq. Mtrs.** or an area equivalent to **0.3 Sq. Mtrs.** per person to accommodate the occupants of two consecutive floors, whichever is higher shall be provided. The refuge area shall be provided on the periphery of the floor or **preferably on a cantilever projection & open to air at least on one side protected with suitable railings.**
2. **For floors above 24 Mtrs. & up to 39 Mtrs. One refuge area on the floor immediately above 24 Mtrs.**
3. **For floors above 39 Mtrs. one refuge area on the floor immediately above 39 Mtrs. and so on after every 15 Mtrs. shall be provided.**
4. **As per Note of point No. 4.12.3 we may approve the provision of Residential flats in multi storied building with balcony, need not be provided with refuge area. However the flats without balcony shall provide refuge area given above.**
5. The layout of refuge area shall not be changed/modified at any time in future.
6. Refuge area shall be provided with railing/parapet of 1.10 meters height on external sides and shall be of R.C.C. construction.
7. Refuge area shall be segregated by brick masonry partition wall of 9" thickness and access to refuge area shall be gained through half an hour fire resistance self closing door.
8. There shall not be any opening into the refuge area from any portion of the occupied premises.
9. Clear height of refuge area below the beam/drop pardi shall not be less than 1.8 meters.
10. Refuge areas shall be earmarked exclusively used for the use of occupants as temporary shelter and for the use of Fire Brigade Department or any other organization dealing with fire or other emergencies when that occurs in the building and also for exercises/drills, if conducted by Fire Brigade Department.
11. Refuge area/evacuation area shall not be allowed to be used for any other purpose and it shall be the responsibility of the owner/occupiers to maintain the same clean and free of permanent encumbrances and encroachments at all times.
12. Entrance door to the refuge area shall be painted or fixed with a sign painted in luminous paint mentioning **"REFUGE AREA IN CASE OF EMERGENCY"**
13. Adequate drinking water facilities, emergency lighting facility connected to electric circuits of staircase/corridor lighting shall be provided in refuge area.

B) **Terrace floor level shall also be treated as refuge area and shall be provided with as under:-**

1. The entrance door to the refuge area shall be painted or fixed with a sign painted in luminous paint mentioning **"REFUGE AREA IN CASE OF EMERGENCY"**.
2. Adequate drinking water facilities shall be provided in the refuge areas.
3. Adequate emergency lighting facility connected to electric circuits of staircase/corridor lighting shall be provided in refuge area.

13) Panel

Boards of Firefighting System:

Fire alarm system, public address system, alternate supply, etc. panels shall be installed in a fire control room on ground floor.

Car Parking Facilities:- General

1. Where both parking and repair operations are conducted in the same building, the entire building shall comply with the requirements for group G occupancies, unless the parking and repair sections are effectively separated by separation walls of 120 min.
2. Floor surface shall be non-combustible, sloping towards drains to remove accumulation of water.
3. Those parts of parking structures located within, immediately above or below, attached to, or less than 3 m away from a building used for any other purpose shall be separated by fire resistant walls and floors having fire resistance rating not less than 120 min. This shall exclude those incidental spaces which are occupied by cashier, attendant booth or those spaces used for toilets, with a total area not exceeding 200 m^2.
4. Vehicle ramps shall not be considered as exists unless pedestrian facilities provided.
5. Other occupancies like fuel dispensing, shall not be allowed in the building. Car repair facilities, if provided, shall be separated by 120 min fire resistance construction.
6. In addition to fire protection requirements as per table 7, appropriate fire detection and suppressions systems shall be provided for the protection of hydraulic oil tank and

pumps located below ground level for operation of car lifts.

7. Means of egress shall meet the requirements specified

Open Parking Structures (Including Multi-Level Parking & Stilt Parking)

a. The term of open parking structure specifies the degree to which the structures exterior walls must have openings. Parking structures that meet the definition of the term open parking structure provide sufficient area in exterior walls to vent the products of combustion to a greater degree than enclosed parking structure.
b. A parking structure having each parking level wall openings open to the atmosphere, for an area of not less than 0.4 m^2 for each linear meter of its exterior perimeter shall be constructed as open parking structure. Such openings shall be distributed over 40 percent of the building perimeter or uniformly over two opposing sides. Interior wall lines shall be at least 20 percent open, with openings distributed to provide ventilation, else, the structure shall be deemed as enclosed parking structures.
NOTE :- A car park located at the stilt level of a building (not open to sky) can be considered an open or an unenclosed car park if any part of the car park is within 30 m of a permanent natural ventilation opening and any one of the following is complied with towards the permanent natural ventilation requirement :-
c. 50 percent of the car park perimeter shall be open to permanent natural ventilation.
d. At least 75 percent of car park perimeter is having the 50 percent natural ventilation opening.

8. All stilt parking are required to be provided with sprinkler system where such buildings are required to be sprinklered.
9. Open parking structures are not required to be provided with compartmentation.
10. Open car parking (open to sky) within building complex having fire hydrant systems shall also need to be protected with yard hydrant installation system in accordance with good practice.

Enclosed Parking Structures:-

1. Those car parking structures which are enclosed on all sides & on top, not falling within the definition of open car parking {see H-3(b) } & also those situated in the basements shall be known as enclosed car parking structures.
2. All sprinklers in car parking shall be standard response type with minimum K - factor of 80, area coverage of 9 m2 & designed as per good practice {4 (20)} .
3. For basement car parking, compartmentation can be achieved, with fire barrier or with water curtain nozzle (K-23) or 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's perimeter out of all compartments.
4. The water supply for the water curtain nozzles shall be through independent electric pump of adequate capacity (flow & head) with piping/riser for the water supply to the nozzles.
5. The water curtain shall be operated by the actuation of flow switch actuating sprinkler system.
6. For smoke ventilation requirement of car parking see 4.6.2.
7. All fire exit doors from the car parking to exit shall be painted green & shall display exit signage.

Automated Car Parking Utilizing Mechanical or Computerized/Robotic Means:-

1. Automated car parking structure can be of open parking type or enclosed types.
2. Automated car parking facilities pose more hazards compared to manual parking due to following reasons.
   a) High density of cars due to close stacking- one over another.
   b) Lack of provision on fire separation/compartmentation-horizontal or vertical leading to rapid fire spread.
   c) Non-availability of any person to notice/control the fire in initial stages.
   d) Limited access to fire fighting personnel.
   e) Extensive height & depth involved with highly combustible load.
3. Fire escape staircases, at least 1 250 mm wide shall be provided at appropriate locations so that no place is more than 45 m from the nearest staircase. Horizontal

walkways, at least 1 000 mm wide for access to all the areas shall be provided at every parking level.

4. Travel distance & means of egress shall be governed by the respective sections of this code.
5. The hazardous areas like DG sets, transformers, HT/LT panels for the parking lot shall be suitably segregated from other areas as per requirements given in this code and all such areas shall be protected by suitable automatic fire suppressions systems.

Pressurization of Staircases (Protected Escape Routes):

1. Though in normal building design compartmentation plays a vital part in limiting the spread of fire, smoke will readily spread to adjacent spaces through the vertical leakages opening in the compartment enclosure such as cracks, opening around pipes ducts, airflow grills and doors, as perfect sealing of all these openings is not possible. It is smoke and toxic gases, rather than flame, that will initially obstruct the free movement of occupants of the building through the means of escape (Escape Routes) Hence the exclusion of smoke and toxic gases from the protected routs is of great importance.
2. Pressurization is method adopted for protected escape routes against ingress of smoke, especially in high rise buildings. In pressurization, air is injected into the staircases, lobbies or corridors, to raise their pressures slightly above the pressure in adjacent parts of the building. As a result, ingress of smoke or toxic gases into the escape routes will be prevented. The pressurization of staircases shall be adopted for high rise buildings and building having mixed occupancy.

3. The pressure difference for staircases shall be as under

Building Height	**Pressure Difference**	
	Reduced Operation (Stage 1 of a 2 Stage System)	Emergency Operations (Stage 2 of a 2 Stage System or Single Stage System)
15 m or Above	15 Pa	50 Pa

If possible, the same levels shall be used for lobbies and corridors, but levels slightly lower may be used for these if desired. The difference in pressurization levels between staircase and lobbies (or corridors) shall not be greater than 5 Pa.

4. Pressurization system may be of two types :-
   a. Single Stage, designed for operation only in event of an emergency, and
   b. Two stages; where normally a level of pressurization is maintained in the protected escape routes and an increases level of pressurization can be brought into operation in an emergency.

NOTE:- The natural ventilation requirement of the staircase shall be, achieved through opening of each landing of an area 0.5 m2 in the external wall. A cross ventilated staircase shall have two such openings in opposite/adjacent walls and shall be cross ventilated through the corridor.

C) The Entire Firefighting Requirements shall be summarized as follows:-

Sr. No.	**Fire Fighting Installation**	**Requirements**	**Provision**	**Remarks**
1.	**Portable Fire Extinguishers**	Required		**IS: 15683**
2.	Hose Reel	Required at prominent places.	In all staircase	On each floor in the staircase landing for Fire Fighting. The first aid hose reel shall be connected directly to riser/down comer main and diameter of the hose reel shall not be less than 19mm **confirming to IS 884:1985**
3.	Wet Risers cum Down comer	**Required**	In all staircase	Required to provide in the Staircase and Fire Escape Staircase. Landing of Valve should be installed **confirming to IS:5290.**
4.	Yard Hydrant	**Required**	At Various	Fire Brigade Inlet connection

Sr. No.	Fire Fighting Installation	Requirements	Provision	Remarks
	or Ring hydrant around the building		Locations.	should be provided. Hydrant points should be provided with 2 Nos. of Delivery Hose confirming to **IS-14933-2001** along with Standard Branch (Universal) confirming to IS-2871. **The distance between 2 Hydrants should not be more than 45 Mtrs. <u>The guidelines should be followed as per IS 3844:1989.</u>**
5.	Manually Operated Electronic Fire Alarm System	**Required**	At Various location	Manually Operated Fire Alarm should be provided; it should be connected to alternate power supply in case of emergency.
6.	Underground Static Storage Tank	**Required 2,00,000 liters**		This water storage should be used exclusively for Fire Fighting.
7.	Terrace Level Tank	**Required 20, 000 liters**		On Terrace
8.	Fire Pump (Submersible pumps cannot be allowed)	**1 No. 2850 lpm electrical driven main pump for Hydrant & 1 No. 2850 lpm electrical driven for Sprinkler System 1 No. 2850 lpm Diesel driven 2 No. 180 lpm electric driven 1 Nos. 450 lpm electric driven (Booster Pump)**		Fire Fighting pumps shall be well maintained. Booster pump should be provided on each terrace. Provide centrifugal type pumps only. Multi stage Multi outlet pumps should be provided.
9.	Fire Brigade Connection- For Static Water Tank and For Hydrant System	Required at the Main Gate		
10.	Sign Indicators for all fire safety, safe evacuation of occupants in case of emergency signs	Required at Prominent Places.		Sign indicators should provided at prominent places as per the guidelines given in **IS:9457 for Safety colour and Safety IS:12349 for Fire Protection Safety Signs IS:12407 for Graphics symbols for Fire Protection Plan.**
11.	**Fire Doors**	Required on each floor		Fire Doors of **2 hrs. Fire Resistance Rating** should be provided at the entrance of the staircase. **Certification from the Competent Authority.**
12.	**Automatic Detection System**	Required on each floor		**Automatic Detection system should be provided. Standards and guidelines given in IS-11360-1985 specification for Smoke Detectors for use in Automatic Electrical Fire Alarm system. <u>Detection system for Cable Trench should be provided.</u> Heat Detectors should be provided for Canteen Area as per the standards and guidelines given IS-2175-1988 specification for Heat sensitive Fire Detectors for use in Automatic Fire Alarm System.**

Sr. No.	Fire Fighting Installation	Requirements	Provision	Remarks
13.	**Automatic Sprinkler System**	Required on each floor	**Sprinkler system should be provided on each floor. Separate pumping arrangement should be given if basement is provided. Guidelines are given in IS 15105 Design and installation of Fixed Automatic sprinkler fire Extinguishing system**	
14.	**Fire Lift**	Required	One lift in each lift bank should be a fire lift. The Detailed guidelines should be followed as given National Building Code – 2016	
15.	**Manual Call Point**		Manual Call Point should be provided at prominent places.	
16.	**Emergency Lights**	**Required**		
17.	**PA System with Talk Back Facility**	**Required**		
18.	**Auto D.G. Backup**	**Required**	**Required for all fire safety systems**	

Please note that the entire pipe used for the fire fighting installation shall be of G.I. pipes and C class heavy duty and the material used shall be of standard material only. This shall be responsibility of the licensing agency executing the work

Remark/General Conditions:-

1. Please go through the provisional NOC issued and provide all the active & passive fire protection system to the structure.
2. Inflammable goods/explosives shall not be allowed to store in the premises.
3. The entire fire protection system must be painted in red colour.

The undersigned reserves the right to amend any additional recommendations deemed fit during the final inspection due to the statutory provisions amended from time to time and the interest of the protection of structure. In case of any change of activity or future expansion made in the said project No-Objection Certificate is essential.

Jadhav

Divisional Fire Officer
Navi Mumbai Municipal Corporation

Note:- Fire Fighting work has to be carried out by licensing fire contractor authorized by Director of Maharashtra Fire Services only.

The NOC is issued in view of fire & life safety point of view only. The legality of plot & construction shall be confirmed with concerned department of NMMC.