

Abhay V Kale

Fire & Life Safety Auditor (MCGM)

Lic No: MCGM / MFB / FLSA /32.

Dy Chief Fire Officer (Retd) Mumbai Fire Brigade

Email- abhayfire@gmail.com

Mobile No: 9930464827

701/702 Om Shiv CHS,
Mogul Lane,
Mahim (West),
Mumbai 400016

No: FLSA/32/AVK22/Dec/8

**RECCOMENDATIONS FOR FIRE SAFETY MEASURES TO BE INCORPORATED
IN PROPOSED LOW RISE RESIDENTIAL BUILDING**

To,

M/s VIIAAN ADITYA ENTERPRISES

C1/4, Sarathi CHSL, Khiranagar CHS,
SV Road,
Santacruz (W), Mumbai 400054.

Sub: Fire protection and fire-fighting requirements for the proposed amendments for the construction of Low- rise residential building on plot bearing C.T.S. No. 146/25 & 146/26 plot nos.41 & 61 of village Chakala at Andheri (E), Mumbai.

Ref: 1. Appointment letter as a FLSA from M/s VIIAAN Aditya Enterprises Pvt. Ltd., dt.12/12/2022
2. Application from Architect Mrs. Sangita Suyog Shet dt.13/12/2022 informing about changes in the earlier approved plan.
3. NOC stipulating fire fighting and fire protection requirements for the building issued by Dy. Chief Fire Officer, Mumbai Fire Brigade vide Online file No.CHE/WS/1899/K/E/337(NEW)-CFO/1/Amend dated 27/12/2019

With reference to appointment letter submitted by M/s VIIAAN Aditya Enterprises Pvt. Ltd., dated 12/12/2022, they have appointed me as Fire & Life Safety auditor with reference to Mumbai Fire Brigade circular BRC No 56 dated 02.09.2022 & Municipal Commissioner sanction No. MGC/F/4775 dated 05/07/2021 to recommend necessary fire protection and fire-fighting requirements for proposed low rise residential building.

In this case, please refer to Mumbai Fire Brigade(CFO) NOC issued vide Online file No.CHE/WS/1899/K/E/337(NEW)-CFO/1/Amend dated 27/12/2019 for the construction of low rise residential building having ground floor part on stilt + 1st to 10th upper residential floors with a total height of 31.95 mtrs. measured from general ground level upto terrace level.

Now the Architect has submitted amended plans as per the letter dated 22/11/2022 and proposed entire change in planning

Now the building, consists of 2 Wings, Wing A comprising of ground floor + 1st floor to 9th upper residential floors with a total height of 31.95 mtrs. measures from general ground level upto terrace level; Wing B comprising of ground floor partly on stilt + 1st to 10th upper residential floors with a total height of 31.95 mtrs measures from general ground level upto terrace level. Also, 14 Level car parking tower is proposed with a total height of 31.95 mtrs. measures from general ground level upto terrace level in between the two wings.

As per the plans submitted by the Architect the floor wise user are as follows:

Wing A

Floor	User
Ground floor	03 Shops + Meter room + Pump Room + Ladies Toilet + Society office + U.G. tank
1 st floor to 3 rd floor	03 Nos. of residential flats on each floor
4 th floor to 9 th floor	02 Nos. of residential flats on each floor.
Terrace	Open to sky (treated as Refuge Area) + OH Water storage Tank + Lift Machine Room + terrace

Wing B

Floor	User
Ground floor	Surface parking + Meter room + Electric Sub-station + Pump room + Entrance Lobby + Gents Toilet + U. G. Tank
1 st floor to 4 th floor	02 Nos. of residential flats on each floor.
5 th floor to 9 th floor	03 Nos. of residential flats on each floor
10 th floor	02 Nos. of residential flats + Society office
Terrace	Open to sky (treated as Refuge Area) + OH Water storage Tank + Lift Machine Room + terrace

The details of staircase for Wing A & B are as follows:

Staircase description	Width of Staircase	Nos. of staircase	Type of staircase
Leading from ground to terrace floor	1.50 mtrs	01 no. in each wing	Open type
The staircase is externally located adequately ventilated to outside air as shown on the plans.			
Car parking tower	01.00 mtrs	01	Open type

DETAILS OF LIFTS for Wing A & B are as follows:

No. of lifts	Type of lifts	Profile
02 Nos.	Passenger lifts in each wing	Each leading from ground floor to top floor level.
One of the passenger lifts in each wing shall be converted into fire lift. The lift lobby/ common corridor at each floor is ventilated to outside air through the open staircase, as shown on the plan by Architect.		

As shown by Architect on the plan, the proposed building is abuts on 13.40 mtrs. wide on Dr. Karanjia road on south side and 09.15 mtrs. wide road on Society layout road on east side.

Open spaces around the Building in Wing A & B as shown on the plans are as follows:

Wing A

Sides	From Bldg. line to CTS plot boundary
North	Attached car parking tower & Wing B
South	4.50 mtrs.
East	4.50 mtrs.
West	3.60 mtrs. including U.G. tank

Wing B

Sides	From Bldg. line to CTS plot boundary
North	3.00 mtrs.
South	Attached car parking tower & Wing A
East	4.50 mtrs.
West	3.60 mtrs.

Taking into the consideration following:-

- i) N.O.C. from Mumbai Fire Brigade department for the above mentioned building is already issued vide Online file FB/LR/R-III/107 dated 28/07/2016 and these Fire protection requirements are for certain amendments only.
- ii) Further N.O.C. from Mumbai Fire Brigade department for the above mentioned building is already issued vide Online file No.CHE/WS/1899/K/E/337(NEW)-CFO/1/Amend dated 27/12/2019.

Hence the revised recommendations for fire safety measures, based on Codified fire safety requirements are as follows :

1. **All the requirements stipulated in Mumbai Fire Brigade NOC vide Online file no. FB/LR/R-III/107 dated 28/07/2016 & CHE/WS/1899/K/E/337(NEW)-CFO/1/Amend dated 27/12/2019 shall be treated as cancelled.**

The terrace of both the wings shall be treated as Refuge area as the total height of building is below 32.00 mtrs.

Considering the above said proposal, fire safety measures recommended (based on codified fire safety requirements by MCGM/MFB) are as follows:

1. ACCESS (Each Wing): -

- a) Entrance gate if provided shall be not less than 4.5 metres
- b) Archways (if provided above entrance gate) height clearance shall be not less than 4.50 metres
- c) Access road to the building shall be as per Regulation No.19 of DCPR-2034.

2. PROTECTION TO STRUCTURAL STEEL(Each Wing): -

- a. All the structural steel members i.e. columns, beams etc. (if any), shall be protected with the 02 hours fire resisting materials and same is to be stipulated as per IS 15103:2002.
- b. A certificate to that effect regarding the fire resistance protection has been provided is to be obtained from the Chartered Structural Engineer at the time of application for occupying the building.

3. CAR PARKING (Wing B):

- a) Surface shall be restricted to the designated area as per shown on the plan.
- b) Drainage of the car parking area shall be laid independent from that of the buildings and it shall be provided with catch pit and fire trap before connecting the building drainage or Municipal drainage.
- c) Dwelling, use of naked light / flame, repairing / maintenance of vehicles shall be strictly prohibited in the parking area.

A)STACK / PUZZLE / ROTARY CAR PARKING TOWER

- i. The design & construction of the stack / puzzle / rotary car parking shall be as per prevailing codes & standards.
- ii. Elements of the car parking structure are 2 hr. fire resistance.
- iii. Parking area shall be accessible by trained staff when carrying out the maintenance work.
- iv. Each car parking shall be protected with medium velocity water spray projector system / automatic sprinkler system as per prevailing codes & standards.
- v. Separate external staircase up to top of the Car Parking Tower is provided along with a platform of width minimum 0.90 mtrs.
- vi. Heat detectors shall be provided as per IS Standards.
- vii. Medium Velocity water spray system / automatic sprinkler / water curtain system shall be provided on the periphery at the top of the car parking tower at the side adjoining the building.
- viii. Dry Riser of dia. 10 cms. is provided to the Car parking tower having hydrant

outlet at each parking level accessible through the platform.

- ix. Brick wall in-between car parking tower and the flat shall have fire resistance of 4 hours.

4. STAIRCASE (Each Wing): -

- a. The layout, flight width etc. of staircase shall be as per Regulation 37(15) & 47 of DCPR- 2034.
- b. Staircase shall be externally located & adequately ventilated to outside air.
- c. Permanent vent provided at the top equal to 5 % of the cross sectional area of the staircase shall be provided.
- d. Openable sashes or R.C.C. grills provided with clear opening of not less than 0.5 sq. meters per landing on the external wall of the staircase shall be provided.

Terrace door (Each Wing): -

- a. The top half portion of the doors shall be provided with louvers.
- b. The latch-lock installed from the terrace side at the height if not more than 1 mtrs.
- c. The glass front of 6 inch diameter with the breakable glass shall be provided just above the latch lock, so as to open the latch in case of an emergency by breaking glass.

5. CORRIDOR / LIFT LOBBY (Each Wing): -

- a. Corridor/lift lobby at each floor level shall be adequately ventilated as per the provisions of DCPR-2034.
- b. The common corridor/lift lobby at each floor level shall be kept free from obstructions at all times.
- c. Proper signage provided for way to staircase, escape routes, staircase, floor nos. etc. at each floor of building.

6. STAIRCASE AND CORRIDOR (ESCAPE ROUTES) LIGHTINGS (Each Wing): -

- a. The staircase and corridor lighting shall be on separate circuits and shall be independently connected so that they could be operated by one switch installation on the ground floor easily accessible to firefighting staff at any time irrespective of the position of the individual control of the light points, if any.
- b. Staircase and corridor lighting shall be connected to alternate supply.
- c. Double throw switches shall be installed to ensure that lighting in the staircase and the corridor do not get connected to two sources of supply simultaneously. A double throw switch is installed in the service room to terminate the standby-supply.
- d. Emergency lights shall be provided in the staircases/corridors.

7. FLATS ENTRANCE DOORS & KITCHEN DOOR (If Provided) (Each Wing): -

- a. Entrance doors for flats/society office/fitness centre shall be of solid core having fire resistance of not less than one hour as per IS Standards.

8. ELECTRIC CABLE CONDUITS, SERVICES & METER PANEL (Each Wing): -

- a. All the electrical cables shall be provided in the sealed casing or shall be concealed type or in the dedicated electrical shafts.
- b. Electric cable conduits shall be sealed at each floor level with non-combustible materials such as vermiculite concrete. No storage of any kind shall be kept in electric shaft.
- c. Electric meter room / panel / box shall be adequately ventilated & easily accessible.
- d. Electric wiring / electrical installation shall be as per prevailing Indian Electricity Act and Rules and the certificate to that effect is obtained from authorized electrical contractor / electrical authority at the time of compliance application.
- e. Electric wiring shall be fire resistance and low smoke hazard cables (FRLS) type.
- f. Low & medium voltage wiring running in shaft & in false ceiling should run in separate conduits.
- g. Water mains, telephone lines, intercom lines, gas pipes or any other service line should not be laid in the duct for electrical cables; use of bus bar / solid rising mains instead of cables is preferred.
- h. Separate circuits for fire-fighting pumps, lifts, staircases & corridor lighting shall be provided directly from the main switch gear panel and these circuits shall be laid in separate conduit pipes, so that fuse in one circuit will not affect the others. Such circuits shall be protected at origin by an automatic circuit breaker with its no-volt coil removed.
- i. Master switches controlling essential service circuits shall be clearly labelled & provided in the lobby for emergency operations.

9. FALSE CEILING (if provided) (Each Wing): -

- a. False ceiling if provided in the building shall be of non-combustible material.
- b. Similarly, the suspenders of the false ceiling shall be of non-combustible materials.

10. MATERIALS FOR INTERIOR DECORATION/FURNISHING (if provided) (Each Wing): -

The use of materials which are combustible in nature and may spread toxic fume/gases should not be used for interior decoration/furnishing.

11. LIFT (Each Wing): -

A. PASSENGER LIFT:

- i. Walls enclosing lift shaft shall have a fire resistance of not less than two hours.
- ii. Shafts shall have permanent vent of not less than 0.2 sq. mtrs in clear area immediately under the machine room.
- iii. Landing doors and lift car doors of the lifts are steel shuttered with fire resistance of one hour. No collapsible shutters are permitted.
- iv. One of the lift is converted into fire lift and shall be as per specifications laid down under the regulations, a toggle switch shall be provided to this lift for the use of Firemen.
- v. Threshold of non-combustible material is provided at the entrance of each landing door.
- vi. The fire resistance rating for lift doors shall be as per NBC provisions.

B. FIRE LIFT:

- i. All materials of constructions in load bearing elements, stairways and corridors and facades shall be non-combustible.
- ii. The fire lift shall have a floor area of minimum 1.43 m². It shall have loading capacity of not less than 544 kg (8 persons lift).
- iii. There shall be at least one fire lift.
- iv. The interior finishing materials shall be of very low flame spread type.
- v. Walls of the lift bank well enclosure for a lift shall have a fire rating of 120 min. The lift well shall have a vent at the top, of area not less than 0.2 m² per lift.
- vi. Landing doors, Lift landing doors shall be imperforate. Collapsible doors shall not be permitted. Lift landing doors provided in the lift enclosure shall have a minimum fire resistance rating of 60 min.
- vii. Lift car doors shall be imperforate. Collapsible car doors shall not be permitted.
- viii. Two ways communication system shall be provided through intercom.
- ix. Photo luminescent safety signs shall be posted and maintained on every floor at or near the lift indicating that in case of fire, occupants shall use the stairs.
- x. All lifts (fire lift/non fire lift) shall be provided with Phase I operation as per NBC-2016, 7.1.1(k)(x) (grounding operation).
- xi. The grounding operation may be initiated by individual switches for lifts or a common switch for a group of lifts or by a signal from fire alarm system of the building if available.
- xii. Reliable alternative source of power supply should be provided for all fire lifts through a manually/automatically operated change-over switch. The route of wiring shall be safe from fire.
- xiii. The words 'Fire Lift' shall be conspicuously displayed in fluorescent paint on the lift landing.
- xiv. The fire lift is provided in a building for the purpose of aiding fire fighters in

evacuating trapped persons in the building and to take the equipment for fighting fire to upper levels with minimum delay.

- xv. The speed of the fire lift shall be such that it can reach the top floor from ground level within one minute.

12. FIRE FIGHTING REQUIREMENTS: -

a. UNDER GROUND WATER STORAGE TANK (tower parking / mechanized puzzle car parking): -

An underground water storage tank of 25,000 liters capacity shall be provided for sprinkler system / water spray projector system for the parking tower at the location marked in the plan, as per the design specified in the rules with baffle wall and fire brigade collecting breaching.

b. OVERHEAD TERRACE WATER STORAGE TANK (Each Wing): -

An overhead tank of 15,000 liters capacity shall be provided on staircase shaft at the terrace level, the layout of which shall be got approved from H. E.'s departments prior to erection. The tank shall be connected to down-comer through a booster pump through a non-return valve with provision of gate valve.

c. DOWN COMER (Each Wing): -

Down Comer of internal dia. of 10 cms. of G.I. 'C' Class pipe shall be provided in the duct adjoining the staircase as shown on the plan with a single hydrant outlet & hose reel at each floor level in such a way as not to reduce the width of the common corridor. Pressure reducing discs or orifices shall be provided at lower level, so as not to exceed the pressure of 5.5 kgs per sq.cms.

d. Automatic Sprinkler System: -

The Automatic sprinkler system with separate sprinkler and jockey pump shall be provided in Car Parking Tower as per the standards laid down by T.A.C. or relevant I.S. specifications.

13. AUTOMATIC SMOKE DETECTION SYSTEM (Each Wing): -

Electric meter room, Lift machine room, society office and shops shall be provided with Automatic smoke detection system with main console panel at ground floor level.

14. FIRE SERVICE INLET (Each Wing): -

- a) A fire service inlet on the external face of the building near the tank directly fronting the courtyards shall be provided to connect the mobile pump of the fire service independently to a) the down comer, b) sprinkler system.
- b) Breeching connection inlet shall be provided to refill U.G. tank.
- c) Operating switches of booster pump shall be provided in glass fronted

boxes at terrace & ground floor level.

15. BOOSTER PUMP (Each Wing) : -

- a) Booster pump of 900 liters/min. capacity giving a pressure of not less than 3.2 kgs./ sq. cms. at the top most hydrant outlet of the down comer shall be provided at the terrace level.
- b) Electric supply (normal) to these pumps is kept on independent circuit.
- c) Operating switches for booster pumps shall be provided in glass fronted boxes at ground floor and on terrace level.
- d) Automatic starting facility with pressure switch for booster pump shall be provided
- e) Fire pumps provided shall be of surface mounted type or vertical turbine mounted type and shall not be of submersible type

16. EMERGENCY ESCAPE ROUTE PLAN (Each Wing): -

Emergency escape route plan framed in glass is displayed in the common corridors, cross passages, staircase/lift lobbies of each floor level.

17. EXTERNAL HYDRANTS (Each Wing): -

Courtyard hydrants shall be provided at distance of 30.00 mtrs on ground floor level within the confines of the site of the down comer as well as in the basement.

18. ALTERNATE SOURCE OF POWER SUPPLY (Each Wing): -

An alternate source of L.V./H.V. supply from a separate substation or D.G. Set with appropriate change over switch is provided for fire lift, booster pump, staircase and corridor lighting circuits and terrace emergency lights, manual fire alarm system, detection system & P.A. system. It shall be housed in a separate cabin / cabinet at least 03 mtrs. Away from Electric Meter panel.

19. FIRE ALARM SYSTEM (Each Wing): -

The entire building is provided with manual fire alarm system with main control panel at ground floor level and pull-boxes and hooters at each upper floor level. The layout of fire alarm system shall be in accordance with I.S. specification.

20. PORTABLE FIRE EXTINGUISHERS (Each Wing): -

- a) Two Dry Chemical Powder (A.B.C.) type fire extinguisher of 06 kgs capacity having B.I.S. certification mark and two buckets filled with dry, clean sand shall be kept each in the electric meter room, Lift Machine room.
- b) Two Dry Chemical Powder (A.B.C.) type fire extinguisher of 06 Kgs. capacity having B.I.S. certification mark shall be kept each at each floor level in the entire building.

- c) One Dry Chemical Powder fire extinguisher ABC type of 6 Kgs. capacity each shall be kept for every 100 Sq. Mtrs. area on ground floor level and in each shop.

21. PUBLIC ADDRESS SYSTEM (Each Wing): -

The entire building shall be provided with the public address system in common areas as per the with main control operator at console panel at ground floor reception area.

22. SIGNAGES (Each Wing): -

Self-glowing/fluorescent exit signs in green colour shall be provided showing the means of escape for entire building as per prevailing IS Standard.

23. HOSE & HOSE BOX (Each Wing): -

One Hose Box with four hoses of 15 mtrs. length of 63 mm dia. along with branch shall be provided near down comer landing valve on ground floor at easily accessible place.

Hose box with two hoses of 15 mtrs. Length of 63 mm diameter alongwith branch shall be provided near landing valves on alternate floors

24. TRAINED SECURITY GUARD (Each Wing): -

Trained security/fire supervisor along with trained staff having basic knowledge of fire-fighting & fix fire-fighting installation shall be provided/posted in the building. They will be responsible for the following;

- a. Maintenance of all the first aid firefighting equipment's, fixed installations & other firefighting equipment's/appliance in good working condition at all times.
- b. Imparting training to the occupants of the building in the use of firefighting equipment provided on the premises & kept them informed about the fire & other emergency evacuation procedures.
- c. To liaise with the City Fire Brigade on regular & continual basis.

25. FIRE & EVACUATION DRILL (Each Wing): -

Fire/evacuation drills shall be conducted regularly & log of it shall be maintained.

26. REFUGE AREA (Each Wing):

Terrace floor of the building shall be treated as Refuge Area & shall be provided as under:

- a. The necessary facilities such as emergency lighting, drinking water etc. are provided.
- b. The access door/s from the staircase/s to the terrace floor shall have louvers at top half portion of the door. The entrance doors to the terrace

is painted or fixed with sign painted in luminous paint "**REFUGE AREA**".

27. Electric Sub-station (Dry Type)

- a. Only dry type transformers shall be installed.
- b. Entire installation of substation including switchgear room, capacitors, transformer etc. shall be confirming to the prevailing Indian Electric Act/Rules in practice.
- c. Cables in the cable trenches shall be coated with fire retardant material.
- d. Automatic built-in circuit breakers shall be provided in the substation /transformer.
- e. The door of the sub-station shall be of two hours fire resistance.
- f. The substation/transformer area shall be kept prohibited and no unauthorized person shall be allowed to enter in the area.
- g. Ventilation shall be provided at the ceiling level.
- h. The area provided for the installation of transformer shall be suitably hardened with RCC and the same shall be covered with sand bed having thickness not less than 15 cms.
- i. HV/LV cable ducts shall be as per Indian Electricity Rules.
- j. The danger signage on the substation fencing along with the electric voltage load.
- k. The pipe/trench connecting the catch pit from each of the transformer shall be of non-combustible construction and shall be provided with flame arrestor.
- l. Cable trenches shall be filled with sand, pebbles or similar non-flammable materials and covered with incombustible slabs. If a number of cables are taken in a trench, it is desirable that cables are taken on the racks. Electrical cable laid in the cable trenches shall be coated with fire retardant material.
- m. Automatic built in circuit breakers shall be provided in the transformers
- n. Four dry chemical power type (ABC stored pressure type) fire extinguishers of 9 kgs. Capacity each with ISI certification mark coupled with four buckets filled with dry clean sand shall be kept on the sub-station.
- o. Transformers shall be suitably insulated and shall be designed for continuous operation at rated KVA at the secondary terminal under the prevailing service condition at a higher rated voltage.
- p. All accessories/parts of the switchgear and transformer shall be inspected frequently and carefully for signs of overheating, tracking etc.
- q. The design, treatment and construction of the transformers and breaking of the winding shall be such as to withstand the heavy, mechanical and thermal stresses, which may be experienced under the condition of daily cycle heating and pulling due to fluctuation in load of dead short circuit on either side of the transformers

- r. Manual call points, exit directional signs shall be provided and maintained in good working condition all the time.
- s. Protective screens made up of non-combustible material shall be installed around each transformer, which will come into operation automatically on actuation of fire detection system.
- t. Smoke detection system shall be installed in the electric substation as per I.S. specifications.
- u. Automatic high pressure water spray system (Emulsifying) shall be provided.
- v. Electric Sub-Station area shall be kept prohibited and no unauthorized person shall be allowed to enter in the area.

Note:

1. **Applicable Fire protection fees / fire service fees shall be paid to MCGM before approval.**
2. **Scrutiny fee as applicable will have to be paid by the builder to MCGM.**
3. Compliance of fire safety measures can be issued only after provision of at least 6.0 M wide Road as per DCPR 2034.
4. The fire-fighting installation shall be carried out by Govt. of Maharashtra approved Licensing Agency.
5. The width of abutting road & open spaces mentioned herein are as per plans submitted by the Architect and these parameters are not verified by the undersigned. It shall be verified by concerned MCGM authorities.
6. This recommendation letter is issued only from Fire Protection & Fire-Fighting requirements point of view. If any matter pertaining to authenticity or legality shall be cleared by concerned Owner/Occupier/Developer/L.S., etc.
7. The plans along with this letter are signed from Fire Risk & Life Safety point of view only for the proposed building. Signing of these plans does not mean in any way mean permission for construction of the building. It is Architect/Developers responsibility to take necessary prior approval from all concerned competent authorities for the proposed construction of the building.

Abhay Kale

Fire & Life Safety Auditor

Lic No: MCGM/MFB/FLSA/32

Copy to:

Architect Sangita S Shet

D-2 Chitrapur CHS Ltd., 27th road

Plot No. 225, Bandra (W), Mumbai - 400050