

GOVERNMENT OF WEST BENGAL
OFFICE OF THE DIRECTOR GENERAL
WEST BENGAL FIRE & EMERGENCY SERVICES
13-D, MIRZA GHALIB STREET, KOLKATA - 700 016.

Memo. No. : WBSES/6172/15 /Kol-RB/751/14(751/14) Date : 12.08.15

From : The Director in charge
Fire Prevention Wing
West Bengal Fire & Emergency Services

To : Harsh Sanon
Sanon Sen and Associates (P) Ltd.,
5, Russel Street, Ground Floor,
Kolkata - 700 071.



Sub: Revised Fire Safety Recommendation for a proposed B+G+XXIII storied Residential Building at 177, Manicktala Main Road, Ward No. 31, Kolkata - 700 054, according to the KMC Building Rules 65 A and 74 vide notification no. 480/MA/O/C-4/3R-13/2012 dated 21.10.2014.

This is in reference to your letter No. nil, received on dated 25/02/2015 regarding Fire Safety measure for a proposed B+G+XXIII storied Residential Building at 177, Manicktala Main Road, Ward No. 31, Kolkata - 700 054, according to the KMC Building Rules 65 A and 74 vide notification no. 480/MA/O/C-4/3R-13/2012 dated 21.10.2014.

The revised plan drawings submitted by you were scrutinized and marked as found necessary from Fire safety point of view. In returning one set of plan with recommendation, this office is issuing Revised Fire Safety Recommendation in favour of the aforesaid building subject to the compliance of the following fire safety measure. However necessary sanction and approval must be obtained from competent authorities.

Encl:

1. One set of plan.
2. Recommendation.



Director
Fire Prevention Wing
West Bengal Fire & Emergency Services

RECOMMENDATION

For B+G+XXIII Residential Building at 177, Manicktala Main Road, Ward No. 31, Kolkata - 700 054, under KMC Building Rules 65 A and 74 vide notification no. 480/MA/O/C-4/3R-13/2012 dated 21.10.2014.

A. CONSTRUCTION:

1. Materials for rapid flame spread categories including untreated wood fibre board etc. shall be not use. The doors and windows preferably shall be made of metal.
2. The floor area exceeds 750m² shall be suitably compartmented having four hours fire resisting capacity, sprinkler system should be provided as per N.B.C. Part IV.
3. The interior finish decoration of the building shall be made with the materials with low flame spread and low smoke and toxic gas generating categories conforming I.S. Specification.
4. All principal staircases shall not be permitted from the Basement.
5. Arrangement shall have to be made for sealing all the vertical ducts by the materials of adequate Fire resisting capacity.
6. Fire rating test certificate of all interior finish decoration should be submitted to this office before taking occupancy.
7. Service Ducts and shafts should be enclosed by a wall of 2 hours and doors of one hour fire rating. All such ducts shall be properly sealed and Fire stopped at all floor levels.

B. OPEN SPACE & APPROACH:

1. The open space surrounding the building shall be kept clear open to sky and shall conform the relevant building rules as well as permit the easy accessibility and maneuverability of the Fire appliances with turning facility.
2. The approach road and roads surrounding the building i.e. Driveway shall be sufficiently strong to withstand the load of Fire Engine weighing up to 45 M.T.
3. The width of the entry gates to the premises shall not be less than 9 m and open to sky abutting the road.
4. Drive way shall be free of any type of obstruction. No Parking will be allowed on the Drive Way.

C. STAIRCASE:

1. Both the staircases from ground to top floor shall be pressurized as marked in the plan. A positive pressure of 25-30 pa shall be maintained inside the staircases. Pressurization shall be maintained round the clock.
2. Both the staircase of the Residential building shall be enclosed type, entire construction shall be made of brick / R.C.C. type having Fire resisting capacity not less than 4 hours respectively marked in the plan.
3. The staircase of the building shall have permanent vents at the top and operable sashes at each floor level in the external wall of building.



4. The staircase of the building shall have permanent vents at the top equal to 5% of the cross sectional area of the staircase enclosures and open able sashes at each floor level equal to 15% of the said cross section are shall have to be provided in the external wall of the building.
5. All the staircase of the building shall be negotiable to each other in each floor without entering into any room and shall be extended upto respective terrace. The roof of the stair wall shall be 1M above the surrounding roof area.
6. Fire and Smoke doors at the entrances of all the Staircase enclosures marked in the plan at each floor level shall be provided. The F.C.D. shall be of at least one hour Fire resisting wire glass window fitted with self closing type open able in the direction of escape.
7. Considering the staircases are only means of evacuation, emergency lighting arrangement directional, exit, sign etc. shall be made conforming the relevant I.S. Code in this regards.

D. LIFT:

1. The walls of the lift enclosure of the building shall be at least two hours FIRE resisting type respectively marked in the plan with the event at top of area not less than 0.2m².
2. All the lifts of the building shall be designed at high speed "Fire Lift" and conspicuously indicated as marked in the plan.
3. One of the lift cars of the building shall be large enough to accommodate standard Ambulance Stretcher and Medical Attendants.
4. The Electric power shall be from separate supply mains in the building and cables run within the lift shafts, light and fans in the lift cars shall be operated from 24 volts supply. On emergency, in case of failure of normal power supply, lift shall automatically trip over alternate power supply.
5. Arrangement shall be provided for extraction of smoke in all the lift shaft by incorporation of smoke venting system designed to permit 30 Air changes per hour in case of Fire and shall be of such designed as to operate on actuation of Sprinkler or Fire Alarm. In case of failure of normal electric supply, it shall automatically trip to alternate supply.
6. Exit doors of the lift lobby shall be through a self-closing F.C.D of 2 hours fire resistance.
7. The speed of the fire lifts in the building shall be such that it can reach the top from the ground floor within 1 minute. Visual indications of floor numbers shall be incorporated in the lift cars.
8. All other requirements shall conform the I.S. specification including the communication facility in the lift cars connecting with the Fire Control Room of the building.
9. In case of failure of normal electric supply, it shall automatically trip over to alternate supply. This changeover of supply could be done through manually operated change over switch. Alternatively, the lift shall be so wired that in case of



power failure, it comes down at the ground level and remain stand still with door open.

10. Exit from the lift lobby if located in the core of the building, shall be through a self-closing F.C.D of 2 hours fire resistance.
11. All Lifts & lobbies from Ground to top floor shall be pressurized as marked in plan drawing. A positive pressure of 25-30 Pa shall be maintained inside the lift well and lobby. Pressurization shall be maintained round the clock.

E. REFUGE AREA:

1. The Refuge area on calculating the area at the rate of $0.3 \text{ m}^2/\text{person}$ on the basis of floors area shall be provided and shall never be less than 15 m^2 on the external wall as cantilever projection or any other suitable means at level of 25.1 m, 39.1 m, 53.1 m, 67.1 m & 81.1 m.
2. The refuge areas shall be of Fire resisting construction and protected with self closing F.C.D. at the entrance.
3. The position of refuge areas shall be such that they shall be negotiable by the Fire Service Aerial Ladders from the Ground floor.

F. BASEMENT :

1. Basement shall never be used other than car parking and fire pump room.
2. Staircase of the basement shall be made enclosed type as shown in plan.
3. The basement shall be adequately ventilated as per relevant and as specified in NBC Part IV
4. The basement shall be protected with Auto Sprinklers system and hose reel system etc.
5. Mechanical extractor for Smoke Venting system from lower/upper basement levels shall also be provided. The system shall be of such design as to operate on actuation of heat/smoke sensitive detector or sprinkling. It shall also have an arrangement to start it manually.
6. Mechanical extractors shall have an alternative source of Power supply.

G. MULTI LAYER AUTOMATED MECHANIZED CAR PARKING SYSTEM:

1. **Structural design:-** The M.L.C.P. shall be constructed of structural steel construction.
2. **Vertical Deck Separation:-** For M.L.C.P. having Multi Car Parking level, vertical Fire separation between the upper and lower decks by using a non-perforated and non-combustible materials (Structural Steel Plate) shall be provided. This is to minimize direct impingement of flame to the Car in the upper deck and also to prevent dripping of any possible leaking fuel to the lower deck. Proper drainage system shall have to be provided for accidental leaking of oil from the Car and sand bed shall be provided at the Ground level.

3. **Fire Engine Access way:-** Access way shall be provided for the Fire Engine to gain access to the car park entrance and exit.
4. **Fire Hydrant:-** Fire hydrants are to be provided in accordance with Cl. 4.4.
5. **Natural Ventilation:-** Each car parking deck shall be provided with at least 50% external ventilation openings of the perimeter wall areas and uniformly distributed.
6. **Sprinkler & Detection System:-** Open Modular Type Sprinkler along with detectors shall be provided in all M.L.C.P. areas as per relevant I. S. Specification.
7. Cross zone wise Sprinkler system shall have to be implemented.
8. **Fire Pump:-** Separate Jockey and Sprinkler pump of suitable capacity shall have to be installed for the M.L.C.P.
9. **Operating System:-** Both Mechanical and Manual type operating system shall have to be provided.

H. FIRE FIGHTING WATER:

1. Underground Water reservoir exclusively for Fire Fighting operation shall be made ensure minimum 1,00,000 ltrs. overhead water tank capacity 30,000 ltrs. shall be provided for fire fighting.
2. The Fire water reservoir shall be have overflow arrangement with the domestic reservoir to avert stagnancy of water.
3. Provision of necessary manhole shall be made on the top of the reservoir as per specification.
4. Provision of replenishment at the rate of at least 2000 ltrs./min. from two separate source of water supplies shall be made.
5. The deep tube wells for the replenishment of the reservoir shall be incorporated with the auto starting facility with the actuation of auto detection and suppression arrangement of the premises and shall also be connected with dual power supply units.
7. Provision of placing Fire Appliances on the underground water reservoir to be made to draw water in case of emergency.

I. WATER LAYOUT SYSTEM :

a) Ring Main Hydrant System:

- i. 150 mm dia Ring Main water layout arrangement, covering the entire premises of the project with provision of pillar type yard hydrants without door hose boxes, containing 2 lengths of 63 mm delivery hose and short branch pipe shall be provided at all the strategic location and surrounding the building conforming I.S. 3844-1989 (up to date amendment).
- ii. The system shall be so designed that shall always be kept charged with water under pressure and capable to discharge min. 2850 ltrs./min. at the pressure 3.5 kg/sq. cm. at any point.



b) Wet Riser & Hose Reels System:-

- i. The building shall be provided with Wet Riser and Hose Reel unit with provision of outlets in each floor at the staircases landings/half landings as per suitable at the rate of one such unit of Wet Riser and Hose Reel per 1000 sq. m. of floor area.
- ii. The Wet Riser installation shall be made in reference to the height of the building in stage wise distributions.

1st Stage Ground floor to 13th floor 200 mm dia. Twin Hydrant outlet.

2nd Stage 14th Floor to Top Floor 150 mm. dia. Twin Hydrant outlet.

- iii. **Hose Reel Unit:-** Provision of hose reel units on swiveling drum in conjunction with wet riser near each landing valves shall be made at each floor level of the building.
- iv. All other requirements of the water base Fire Protection System shall be made as per I.S. Specification 3844-1989 (with up-to-date amendment).

J. Automatic Sprinkler Installation :

- i. All the floor areas of the building including stair case, lift lobby and corridor areas shall be suitable protected by automatic Sprinkler installation conforming relevant I.S. Specification 9972. Alarm gong to be incorporated along with the sprinkler.
- ii. The Sprinkler arrangement shall be laid out in Zone wise distribution preferably:
Zone 1 – 1st Stage Ground floor to 13th floor 200 mm dia riser.
Zone 2 – 2nd Stage 14th Floor to Top Floor 150 mm. dia riser.

iii) Water Projector Protection.

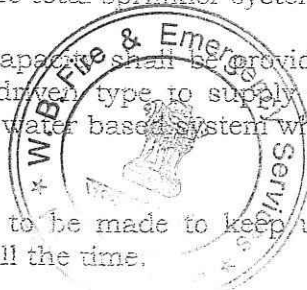
The Electrical installations viz. transformer, HT, LT switch gear etc. shall be protected by high velocity Water Spray Projector System and as per relevant I.S. as per suitability.

K. FIRE PUMP :

1. Fire pump room shall be constructed at the basement.
2. A fire pump of capacity 2850 Lts. per min. giving a pressure not less than 3.5 kgs/sq.cm at the top most and furthest outlet shall be installed.
3. A separate sprinkler pump for the total sprinkler system of the whole building.
4. A standby fire Pump of equal capacity shall be provided on alternative source of supply preferably be of diesel driven type to supply water at the rate designed pressure and discharge into the water based system which shall be installed in the building.
5. Provision of jockey Pump have to be made to keep up the water based system under pressurized condition at all the time.

L. ELECTRICAL INSTALLATION & DISTRIBUTION SYSTEM:

1. Electrical distribution system of all the building shall be made in the form of concealed wiring or in heavy gauge M.S. conduit continuously bonded to earth. Cables shall be I.S. marked and preferably be of P.R.L.S. categories.



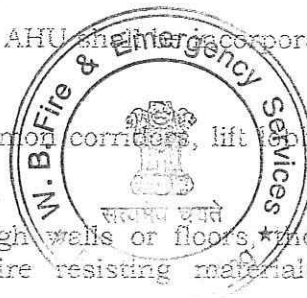
2. Electrical distribution System shall conform all the requirements laid in I.S. 1646-1982.
3. For every 230V wiring above false ceiling 660 grade insulated cable shall be used. Transformer Switch Gear H.T.,L.T. and other electrical rooms shall be at the ground floor level and the other electric rooms shall be at least 4hrs. fire resisting capacity, adequate ventilation arrangement shall have to be made in all the rooms. Dry and explosion proof type transformer shall be installed.
4. All electrical installation viz. Transformer Switch Gear L.T.,HT rooms shall be protected with both auto detection and suppression systems as per suitability and as per relevant I.S specification.

M. AUTO DETECTION AND ALARM SYSTEM :

1. Auto Fire Alarm System which analogue addressable smoke heat detectors as per suitability shall be installed in all floor area of the building except Car parking area.
2. Addressable analogue manual call boxes incorporating with sounders shall be installed in all the floor area of the building in such a manner that maximum travel distance shall not be more than 22.5m in order to reach any of the call point.
3. Both way Public address system linked between all floors and Control Room shall have to be established.
4. All the installation shall also satisfy the I.S. Specification 2189 as amended and the code of practice as laid down in N.B.C. part IV.

N. AIR CONDITIONING SYSTEM (If Any) :

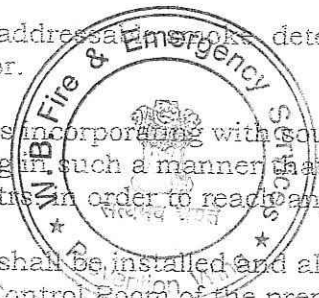
1. The A.H.U. shall be separated for each floor with the system Air Ducts for individual floors.
2. Arrangement shall be made for isolation at the strategic locations by incorporating auto dampers in the Air Conditioning system.
3. The system of auto shut down of A.H.U. shall be incorporated with the auto detection and alarm system.
4. The Air Handling Units room shall not be used for storage of any combustible materials.
5. Arrangement shall be made for isolation at the strategic locations by incorporating auto dampers in the Air Conditioning System.
6. The system of auto shut down of AHU shall be incorporated with the auto detection and alarm system.
7. Escape route like staircase, common corridors, lift lobby etc. shall not be used as return air passage.
8. Wherever the ducts pass through walls or floors, the opening surrounding the ducts shall be sealed with Fire resisting materials such as asbestos rope vermiculite concrete etc.



9. The metallic ducts shall be used even for the return air instead of space above the false ceiling.
10. The materials used for insulating the duct system (inside or outside) shall be of non-combustible materials glass wool shall not be wrapped or secured by any materials of combustible nature.
11. Air duct services main floor area, corridors etc. shall not pass through the staircase enclosures.
12. The Air Handling Units shall be separation for each floor, and air ducts for every floor shall be separated and in no way interconnected with the ducting of any other floor.
13. If the Air Handling Units serve more than 1 floor, the recommendation given above shall be complied with in addition to the conditions given below:-
 - a. Proper arrangements by way of automatic Fire dampers working on fuseable link for isolating all ducting at every floor from the main riser shall be made.
 - b. When the automatic Fire alarm operates the respective Air Handling Units of the air conditioning system shall automatically switched off.
14. The vertical shaft for treated fresh air shall be of masonry construction.
15. The air filters for Air Handling Units shall be of non-combustible materials.
16. The Air Handling Units room shall not be used for storage of any combustible materials.
17. Inspection panel shall be provided in the main trucking to facilitate the cleaning of ducts of accumulated dust and to obtain access for maintenance of fire dampers.
18. No combustible materials shall be fixed nearer than 15cm to any duct unless such duct properly enclosed and protected with non-combustible materials (glass wool or Spun wool with neoprene facing enclosed and wrapped with aluminum sheeting) at least 3.2m thick. And which would not readily conduct heat.

O. INTELLIGENCE ANALOGUE SYSTEM :

1. Auto Fire Alarm System with analogue addressable smoke detector as per suitability shall be installed in each floor.
2. Addressable analogue manual call boxes incorporating with sounders shall be installed in all floors area of the building in such a manner that maximum travel distance shall not be more than 22.5 Mtrs in order to reach any of the call point.
3. Micro Processor based fire alarm panel shall be installed and all shall also be connected with main panel at the Fire Control Room of the premises .
4. Both way public address systems shall be made available in all floors of the building. The system shall be connected to the Main Control Room.
5. All the installations shall also be satisfy the I.S. specifications 2189 (as amended) and the code of practice as laid down in the N.B.C. Part-IV.



P. FIRE DAMPER :

1. Fire damper shall be located in conditional air ducts and return air duct/passages at the following points:-
 - a) At the fire separation wall.
 - b) Where ducts/passage enter the central vertical shaft.
 - c) Where the ducts pass through floors.
 - d) At the inlet of supply Air Duct and the return air duct of each compartment on every floor.
2. The dampers shall operate automatically and shall simultaneously switch off the air handling fans. Manual operation facilities shall also be provided.
3. Automatic Fire Dampers shall be so arranged so as to close by gravity in the direction of Air movement and to remain tightly closed open operation of a fusible link.

Q. FIRST AID FIRE FIGHTING SYSTEM :

1. First Aid Fire fighting arrangement in the style of placing suitable type of portable Fire Extinguishers, Fire Buckets etc. in all floors and vulnerable locations of the premises shall be made in accordance with I.S. 2190-1992.

R. OTHER PROTECTION MEASURES :

1. Aerial Ladder of a height to reach upto terrace with proper operational and maintenance team shall be provided in the building.
2. Special rescue equipment like Smoke Hood, self contained B.A set portable lights at least two pairs (4 sets) shall be made available in the main fire Control Room of the premises.
3. CCTV surveillance system shall be incorporated throughout the whole building.
4. Light protection Red light warning system etc. shall be provided at the top of the building as recommended in NBC Part VIII building service section - 2 electrical installations.
5. Lighting arrester arrangement to be provided at lightening agency outside of the Building.

S. GENERAL RECOMMENDATIONS :


1. Fire license shall have to be obtained for proposed storage and processing with L.P.G. and other highly combustible articles.
2. Necessary clearance of Revised Proposed height of the building including lift machine room and water tank on the roof top shall be obtained from Microwave & other competent departments / authorities.
3. Floor numbers and directional sign, showing the nearest exit Refuge Area. Fire Points etc. shall have photo luminescent signals at each floor of all blocks of building including shall be made available conforming the relevant I.S. Specification.



4. Provision of emergency illuminating exit shall be made at all floor levels of all blocks of building conforming the I.S. Specification.
5. If diesel oil is stored beyond the specified quantity license shall be accorded from the appropriate authority.
6. The occupants, employees and security staff shall be conversant with installed First aid Fire Fighting equipments of the building and to operate in the event of Fire and Testing.
7. Arrangement shall be made for regular checking, testing and proper maintenance of all the Fire Safety installation and equipments installed in the building to keep them in perfectly good working conditions at all times.
8. A crew of trained fireman under the experienced Officer shall be maintained round the clock for safety of the building.
9. Mock Fire practice and evacuation drill shall be performed periodically with participation of all occupants of building.
10. Each year a certificate is to be obtained from the **Director General, West Bengal Fire & Emergency Services** certifying about the satisfactory services, performance of all the Lift and Fire Safety arrangements and installation of the building.

This shall be treated as Revised Fire Safety Recommendation. On compliance of all the above Fire Safety Recommendations, the **Director General, West Bengal Fire & Emergency Services** shall be approached for necessary inspection and testing of the installation, Fire Safety Certificate in favor of the occupancy shall be issued on being satisfied with the tests and performances of safety aspects of installation of the building.

N.B.: Any deviation and changes the nature of use of the building in respect of the approved plan drawing, without obtaining prior permission from this office, this Revised Fire Safety Recommendation shall be treated as cancelled.


DIRECTOR
FIRE PREVENTION WING
West Bengal Fire & Emergency Services