

GOVERNMENT OF WEST BENGAL
OFFICE OF THE DIRECTOR GENERAL
WEST BENGAL FIRE & EMERGENCY SERVICES
13-D, Mirza Galib Street, Kolkata - 700 01 6.

Memo No. WBFES/2078/12

Kol BB/645.12(645/12)

Date 7/8/12

From Director,
West Bengal Fire & Emergency Services.

To The General Manager,
NBCC Ltd.,
NBCC Bhawan, Lodi Road,
New Delhi-110003.

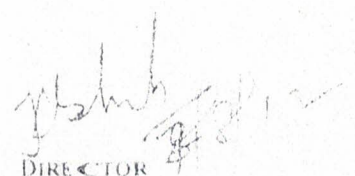
Sub: Fire safety recommendation for Proposed construction of LB+UB+G+XXI storied Business Building at premises No.-NBCC SQUARE, Plot No.-III/2 Action Area-III, New Town, Rajarhat, Kolkata.

This is in reference to your letter No.-NBCC/GM/RE/NBCC SQUARE/2012 dated 04.05.2012 regarding Fire safety recommendation for Proposed construction of LB+UB+G+XXI storied Business Building at premises No.-NBCC SQUARE, Plot No.-III/2 Action Area-III, New Town, Rajarhat, Kolkata

The plan drawings submitted by you was scrutinized and marked as found necessary from fire safety point of view. In returning one set of plan with recommendation, this office is issuing Fire safety recommendation in favour of the aforesaid building subject to the compliance of the following fire safety measure.

Encl. :

1. One set of plan.
2. Recommendation.


DIRECTOR
WEST BENGAL FIRE & EMERGENCY SERVICES



RECOMMENDATION

A. CONSTRUCTION:

1. Materials for rapid flame spread categories including untreated wood fire 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 walls 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 shall be sufficiently strong to withstand the load of Fire Engine weighting up to 45 M.T.
3. The width and height of the entry gates to the premises shall not be less than 4.5m and 5m respectively abutting the road.
4. Drive way should be free of any type obstruction. No Parking will be allowed on the Drive Way

C. STAIRCASE:

1. All principal 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. The staircase of the 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 shall have permanent vents at the top equal to 5% of the cross sectional area of the staircases 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
4. 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.
5. The width of the staircases and corridor and travel distance of different categories of occupancies shall have to conform the relevant building rules.
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 one hour FRR, resisting type respectively marked in the plan with the event at top of area not less than 0.2m².
2. The lift of the building shall be designed at high speed "Fire Lift" and conspicuously indicated marked in the plan.
3. One of the lift car of the building shall be large enough to accommodate standard Ambulance Stretcher and Medical Attendants.
4. In case of failure of normal electric supply, it shall automatically trip over to alternate supply. For apartment houses these change over 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 comes to stand still with door open.
5. Arrangement shall be provided for extraction of smoke in all the lift shaft by incorporation smoke venting system designed to permit 30 Air changes per hour in case of Fire and shall be of such design 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 from the lift lobby if located in the core of the building, shall be through a self-closing smoke stop door of 1 hour 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 in visual indications of floor numbers shall 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. 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 wall and lobby. Pressurization shall be maintained round the clock.

E. REFUGE AREA:

1. Refuge area i.e. open type Balcony shall be provided on the external wall with cantilever projection of the building as shown in the drawings.
2. The refuge Balcony shall be of Fire resisting construction and protected with self-closing F.C.D. at the entrance from the corridors at staircase lobbies.
3. The position of refuge Balcony shall be such so that they are negotiable by the Fire Service Ladder from the Ground.

F. BASEMENT:

1. The Basement shall be adequately ventilated with aggregate cross sectional area of not less than 2% of the area spread evenly round the perimeter of the basement shall be provided in the form of grills.
2. Mechanical smoke venting arrangements shall be provided to all the basements conforming the I.S. Specification.
3. The exit from the basement shall be form open Air and from any points the travel distance shall not exceeds 18.5 M to reach any exit. Continuation of staircase from the basement to upper floor will not be allowed i.e. all staircases shall be segregated on the ground floor level.
4. The basement shall be protected with Auto Sprinkler System conforming to I.S. 1811-1981.
5. The staircase of basement shall be of enclosed type having Fire resistance of not less than 4 hours. It shall be situated at the periphery of the basement to be entered at ground level only from the open air and to



such position that smoke from any Fire in the basement shall not obstruct any exit having the ground upper floor of the building.

- C. Mechanical extractors shall have an alternative source of supply
7. Mechanical extractor shall have an internal locking arrangement so that extracting shall continue to operate and supply fans shall stop automatically with the actuation of Fire Detectors.
8. Mechanical extractors shall be designed to permit 30 Air changes per hour in case of Fire or distress call.

G. FIRE FIGHTING WATER:

1. Water exclusively for Fire Fighting operation shall be ensure minimum 500000 ltrs. at the time.
2. The Fire water reservoir shall be having 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 3000lts./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.
6. Provision of placing Fire Appliances on the underground water reservoir to be made to draw water in case of emergency.

H. WATER LAYOUT SYSTEM :

a. Ring Main Hydrant System:

- i. 200 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 63mm delivery hose and short branch pipe shall be provided at all the strategic location and surrounding the building conforming I.S. 3844-1989 (upto 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 3.5kg/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 1000sq.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 Basement to 7th floor 200mm dia twin Hydrant outlet
2nd Stage 7th Floor to Top Floor 150mm 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 upto date amendment)

c. Automatic Sprinkler Installation

- i. All floor of the building and basement area shall be suitable protected by automatic Sprinkler installation conforming the grade as per I.S. Specification 9972



- i. The Sprinkler arrangement shall be laid out in Zonewise distribution preferably:
Zone 1 - Basement to 7th floor
Zone 2 - 7th floor to Top floor

c. **Water Projector Protection.**

The Electrical installations viz. transformer, H.T.L.T switch gear etc. shall be protected by a Water Projector System as per suitability.

I. **FIRE PUMP:**

1. 2850 Lts. per min giving a pressure not less than 3m²/hr. Fire pump shall have to be made to supply water at the rate designed pressure and discharge into the Master based system which shall be installed in the building.
2. A standby Pump of equal capacity shall be provided on alternative source of supply preferably be of diesel driven type. Provision of jockey Pump have to be made to keep up the water based system under pressurized condition at all the time.

J. **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. conducted continuously bonded to earth cables shall be I.S. marked and preferably be of F.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 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.

K. **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. pt. IV.

L. **AIR CONDITIONING SYSTEM :**

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 Fire wall of 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. Area more than 750 sq. m. on individual floor shall be segregated by a Fire wall and automatic fire damper for isolation shall be provided.
12. Air duct services main floor area, corridors etc shall not pass through the staircase enclosures.
13. The air handling units shall be separation for each floor, and air ducts for every floor shall be separate and in no way interconnected with the ducting of any other floor.
14. 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.
15. The vertical shaft for treated fresh air shall be of masonry construction.
16. The air filters for air handling units shall be of non combustible materials.
17. The air handling units room shall not be used for storage of any combustible materials.
18. 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.
19. 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.

M. 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. There 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 rightly closed open operation of a fusible link.



FIRST AID FIRE FIGHTING SYSTEM :

1. First Aid Fire fighting arrangement in the shape of having 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
2. Special rescue equipment like Smoke Hood, self contained B.A. set portable lights at least two nos. (4sets) shall be made available in the main fire Control Room of the premises.

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. 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.
3. Provision of emergency illuminating exit shall be made at all floor levels of all blocks of building conforming the I.S. Specification.
4. If diesel oil is stored beyond the specified quantity license shall be accorded from the appropriate authority.
5. 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.
6. 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.
7. A crew of trained fireman under the experienced Officer shall be maintained round the clock for safety of the building.
8. Mock Fire practice and evacuation drill shall be performed periodically with participation of all occupants of building.
9. 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 tested as provisional N.O.C. on compliance of all the above Fire and Life safety recommendations, the **Director General, West Bengal Fire & Emergency Services** shall be approached for necessary inspection and testing of the installation, Final N.O.C. 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 provisional N.O.C. will be treated as cancelled.


DIRECTOR

WEST BENGAL FIRE & EMERGENCY SERVICES

