

Government of West Bengal  
Office of the Director General  
West Bengal Fire & Emergency Services  
13D MirzaGhalib Street, Kolkata-700016

Memo No : WBFES/7774/2017 /Kol/RB/537/14(537/14)

Date : 11 / 10 / 2017

From: Divisional Fire Officer  
Fire Prevention Wing  
West Bengal Fire & Emergency Services

To: Mr. Ayush Jalan, Director  
DTC Projects Pvt. Ltd & Others,  
1, N.S. Road,  
Kolkata-700001.



Sub: Revised Fire Safety Recommendation for Proposed construction of B+G+XIV, G+XIV, and G+XII storied Residential complex Along with proposed G+II Storied Club building at premises no. - Diamond Harbour Road, Joka, Mouza- Daulatpur, Block- Bishnupur, J.L. No. - 79, Dist.- South 24 Parganas.

This in reference to your letter no. Nil Dated 17.03.2017 regarding Revised Fire Safety Recommendation for Proposed construction of B+G+XIV, G+XIV, and G+XII storied Residential complex Along with proposed G+II Storied Club building at premises no. - Diamond Harbour Road, Joka, Mouza- Daulatpur, Block- Bishnupur, J.L. No. - 79, Dist.-South 24 Parganas.

The plan drawing 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 Fire Safety Recommendation in favour of the aforesaid building, subject to the compliance of the following Fire Safety Measures.

- Encl: 1) One set of plan.  
2) Fire Safety Recommendation.

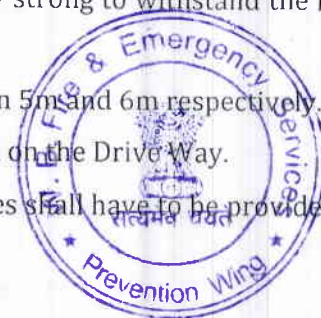
  
Divisional Fire Officer  
Fire Prevention Wing  
West Bengal Fire & Emergency Services

**RECOMMENDATION****A. CONSTRUCTION:**

1. Materials of rapid flame spread categories including untreated wood fibre board etc. shall not be used. The doors and windows preferably shall be made of metal.
2. The floor area exceeds 750 m<sup>2</sup> shall be suitably compartmented having four hours fire resisting capacity and 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 made for sealing all the vertical service 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 walls of 2 hours and doors of one hour fire rating. All such ducts shall be properly sealed with Fire Barriers at all floor level.

**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 promises shall not be less than 5m and 6m respectively.
4. Driveway should be free of any type obstruction. No parking will be allowed on the Drive Way.
5. Sufficient turning radius/facilities for fire service vehicles/special appliances shall have to be provided in all turns and bends of the internal driveways or roads.

**C. STAIRCASE:**

1. 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
2. The staircases shall have permanent vents at the top equal to 5% of the cross sectional area of the staircases enclosures and openable 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.
3. 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.

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4. The width of the staircases and corridors and travel distance of different categories of occupancies shall have to conform the relevant building rules.
5. Fire Doors Assembly (Fire & Smoke Check doors, frame, hardware & other accessories) at the entrances of all the Staircase enclosures at each floor level shall be provided. The Fire Doors Assembly shall be at least one hour Fire resisting wire glass window fitted with self closing type openable in the direction of escape.
6. Fire Exit Hardware shall be provided on exit and Fire Door Assembly.
7. Considering the staircases as the only means of evacuation, emergency lighting arrangement directional & exit, signage floor marking 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 0.2m<sup>2</sup>.
2. All lifts of the building shall be designed at high speed "Fire Lift"
3. One of the lift car 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 with in 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 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 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. Lifts & Lobbies from basement to top floor shall be pressurized as marked in the plan. 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. The Refuge area is not less than 15sqm. area shall be provided on the external wall as cantilever projection or any other suitable means immediately above 24.0m., 34.0m stair landing and additionally shown/marked in the plan.



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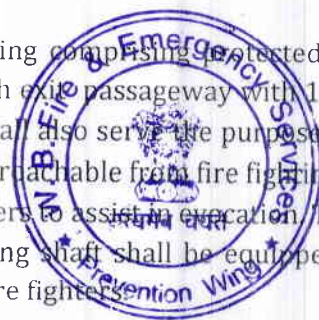
2. The refuge areas shall be of Fire resisting construction and shall be protected with self - closing Fire Door Assembly of 120 min fire rating including Fire Exit Hardware at the entrance from the corridors and staircase lobbies.
3. The position of refuge areas shall be such so that they are negotiable by the Fire Service Ladder from the Ground.
4. The approach road to the bottom of refuge area shall be sufficiently wide to provide enough space for operation of high rise ladder with sufficient turning radius.

#### F. BASEMENT:

1. The Basement shall be adequately ventilated with aggregate cross sectional area of not less than 2.5% of the area spread evenly round the perimeter of the basement shall be provided in the form of grills.
2. Ramps from basement shall be protected by auto sprinkler system.
3. Mechanical smoke extraction arrangements shall be provided to all the basements conforming the I.S. Specification.
4. The exit from the basement shall be at open Air and from any points the travel distance shall not exceeds 22.5M to reach any exit.
5. All the basement shall be protected with Automatic Sprinkler System conforming to I.S. 3844-1989.
6. Mechanical extractors shall have an alternative source of supply with auto changeover facilities.
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.
9. Fire Doors Assembly at the entrances of all the Staircase enclosures at basement level shall be provided. The Fire Doors Assembly shall be at least one hour Fire resisting wire glass window fitted with self closing type openable in the direction of escape.

#### G. Firefighting Shaft

An enclosed shaft having protected area of 120 mm fire resistance rating comprising protected lobby, staircase and fireman's lift, connected directly to exit discharge or through exit passageway with 120 min fire resistant wall at the level of exit discharge to exit discharge. These shall also serve the purpose of exit requirement/strategy for the occupants. The respective floors shall be approachable from fire fighting shaft enabling the fire fighters to assess the floor and also enabling the fire fighters to assist in evacuation. The fire fighting shaft shall be equipped with 120 min fire doors. The fire fighting shaft shall be equipped with firemen talk back, wet riser and landing valve in its lobby, to fight fire by fire fighters.



#### H. Service ducts and shafts

1. Opening in walls or floors which are necessary to be provided to allow passages of all building services like cable, electrical wirings, telephone cables, plumbing pipes, etc, shall be protected by enclosure in the form of ducts/shafts having a fire resistance not less than 120 min.

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2. The inspection door for electrical shafts/ducts shall be not less than 120 min. Medium and low voltage wiring running in shafts/ducts, shall either be armoured type or run through metal conduits.
3. The space between the electrical cables/conduits and the walls/slabs shall be filled in by a fire stop material having fire resistance rating of not less than 120 min. This shall exclude requirement of fire stop sealing for low voltage services shaft.
4. For plumbing shafts in the core of the building, with shaft door opening inside the building, the shafts shall have inspection doors having fire resistance rating not less than 30 min.
5. For plumbing shafts doors which open in wet areas or in naturally ventilated areas or on external wall of the building, the shafts may not require doors having any specified fire rating.

#### I. Electrical Installation

1. For requirements regarding electrical installations from the point of view of fire safety, reference may be made to good practice [4(6)] and Part 8 'Building Services, Section 2 Electrical and Allied Installations' of the Code.
2. In general, it is desirable that the wiring and cabling are with flame retardant property. Medium and low voltage wiring running in shafts and within false ceiling shall run in metal conduit. Any 230 V wiring for lighting or other services, above false ceiling, shall have 660 V grade insulation.
3. The electric distribution cables/wiring shall be laid in a separate shaft. The shaft shall be sealed at every floor with fire stop materials having the same fire resistance as that of the floor. High, medium and low voltage wiring running in shaft and in false ceiling shall run in separate shaft/conduits.
4. Water mains, gas pipes, telephone lines, intercom lines or any other service lines shall not be laid in the duct for electrical cables; use of bus ducts/solid rising mains instead of cables is preferred.
5. All metallic items like steel structural members, etc, shall be bonded properly to the earthing system.

#### Alternate Power Supply:

Arrangements shall have to be made to supply power with the help of a generator to operate at least the Fire Pump, Pump for deep Tube-well, Fire Alarm System, etc. and also for illuminating the Staircase, corridors etc. and other places of assembly of the building in case of normal power failure.



#### J. FIRE FIGHTING WATER:

1. Underground water reservoir having water capacity of 500000 ltrs. and overhead water reservoir of 30000 ltrs. capacity exclusively for Fire Fighting shall be provided. The water reservoirs shall be kept full at all time.
2. The Fire water reservoirs shall have overflow arrangement with the domestic water reservoir to prevent stagnancy of water.

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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 2000lts./min. from two separate sources 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.

#### K. WATER LAYOUT SYSTEM:

##### a. RingMain Hydrant System:

1. 150 mm dia Ringmain water layout arrangement covering the entire premises of the project with provision of pillar type yard hydrants with 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).
2. The system shall be so designed that shall always be kept charged with water under pressure and capable to discharge min. 2850 ltrs.lmin. at the pressure 7kg/sq.cm. at any point.

##### b. Wet Riser & Hose Reels System (4nos.) :-

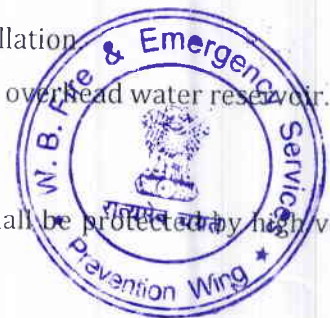
1. The building shall be provided with Wet Riser of 150 dia with provision of outlets Hose Reel unit in each floor at the staircases landings/half landings as per suitability at the rate of one such unit of Wet Riser and Hose Reel per 1000sq.m. of floor area.
2. Hose Reel Unit:- Provision of hose reel units on swiveling drum in conjunction with wet riser near each landing valves shall be made at each floor level of the building. as per I.S. Specification.

##### c. Automatic Sprinkler Installation:

1. All the basement area and all the assembly area in the residential' section as well as in the entire club area shall be suitably protected by automatic Sprinkler installation conforming the grade as per I.S. Specification.
2. Alarm gang shall be provided with automatic Sprinkler system.
3. Separate Sprinkler Riser shall be provided for the entire sprinkler installation
4. Sprinkler shall be fed water from the Underground water reservoir and overhead water reservoir.

##### d. Water Projector Protection System.

1. The Electrical installations viz. transformer, HT, LT, switch gear etc. shall be protected by high velocity Water Projector System as per suitability.
2. All other requirements of the water base Fire Protection System shall be made as per I.S. Specification 3844-1989



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**L. FIRE PUMP:**

1. Jockey Pump (180 lpm) shall also have to be made to keep the Water based system under pressurized condition at all the time.
2. Fire Pump (2850 lpm) shall have to made to supply water at the rate-designed pressure and discharge into the Water based system, which shall be installed in the building.
3. Sprinkler pump (2850 lpm) with a separate jockey pump shall have to be installed for the sprinkler installation.
4. Diesel driven standby pump of equal capacity shall be provided.

One set of pump provided for each 100 hydrants or part. thereof, with a minimum of two sets. Both pump sets shall be interconnected at their delivery header.

All the pumps shall be incorporated with both manual and auto starting facilities. The suction of pumps shall preferably of positive type or in case of negative suction the system shall be wet riser-cum-down comer with suitable terrace pump with overhead tank.

**M. DETECTION AND ALARM SYSTEM:**

1. Addressable analogue system with 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.
2. Both way Public address system linked between all floors and Control Room shall have to be established.
3. All the installation shall also satisfy the I.S. Specification 2189:2008 as amended and the code of practice as laid down in N.B.C. part IV.
4. Addressable analogue type Fire Detection alarm compiled with Heat and smoke detector and hooter shall be installed at basement, club house & other place of assembly conforming I.S. Specification.
5. Public Address System:- Both way

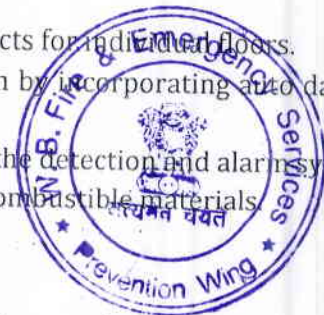
Public address system linked between all floors and Control Room shall have to be established

**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. Arrangements shall be made for isolation at the strategic location by incorporating auto dampers in the air conditioning system.
3. The system of auto shutdown of A.H.U shall be incorporated with the detection and alarm system.
4. The air handling unit's room shall not be used for storage of any combustible materials.

**O. OTHER PROTECTION MEASURES:**

Close circuit T.V. compiled with building management system (BMS) shall have to be provided.



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**P. FIRST AID FIRE FIGHTING SYSTEM:**

1. First Aid Fire fighting arrangement in the style of placing suitable type of portable Fire Extinguishers- I.S.I. mark, 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 pairs (4sets) shall be made available in the main fire Control Room of the premises.

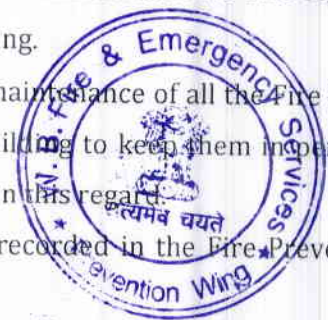
**Q. Protection Measures during Building Construction**

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

1. Dry riser of minimum 100 mm diameter pipe with hydrant outlets on the floors constructed with a fire service inlet to boost the water in the dry riser and maintenance should be in accordance with good practice.
2. Drums of 2000 litre capacity filled with water with two fire buckets on each floor;
3. A water storage tank of minimum 20 000 liters capacity, which may be used for other construction purposes also.

**R. GENERAL RECOMMENDATIONS:**

1. Floor numbers and directional sign, showing the nearest exit or 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 IS. Specification.
2. Provision of emergency battery backup illuminating exit signage shall be made at all floor levels of all blocks of building conforming the I.S. Specification.
3. Fire license have to be obtained for proposed storing and processing with highly combustible articles like L.P.G., H.S.D. etc.
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 and means of escapes installed in the building to keep them in perfectly good. working conditions at all times by authorized competent agency in this regard.
7. The Fire Safety audit to be conducted at regular interval and to be recorded in the Fire Prevention maintenance register.
8. Practice of evacuation drill shall be arranged at regular interval of time involving all the occupants and security staff shall be recorded in specific resister.
9. Trained and experienced Fire Fighting staff under a qualified and experienced fire officer shall be maintained round the clock.



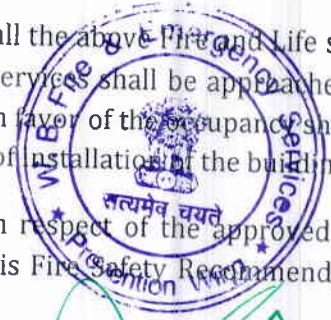
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10. Each year a certificate is to be obtained from the Director General, West Bengal Fire & Emergency Services certifying about the satisfactory services, performance of all the Lift and Fire Safety arrangements and installation of the building.

This shall be tested as Fire Safety Recommendation 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, 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 Fire Safety Recommendation will be treated as cancelled.



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