

**GOVERNMENT OF WEST BENGAL
OFFICE OF THE DIRECTOR GENERAL
WEST BENGAL FIRE & EMERGENCY SERVICES
13-D Mirza Ghalib Street, Kolkata- 700 016**

Memo No : IND/WB/FES/20182019/22730

DATE: 03/01/2019

From :

**The Director
Fire Prevention Wing,
West Bengal Fire & Emergency Services.**

To :

**Happy Niketan Private Limited
449/A, G. T. Road.
Serampur F.S., Sreerampur,
Hooghly - 712202 .**

Sub :Fire Safety Recommendation for proposed B+LG+UG+IX+M storied Mercantile Building, G+VIII storied Educational Building, B+G+II storied 33 KVA Electrical Sub-station, G+II storied 11KVA Electrical Sub-station & Six Level Mechanical Car Parking at premises no.- 449A, G. T. Road, Mouza- Mahesh, PS- Serampore, Dist- Hooghly.

This is in reference to your Application No. IND/WB/FES/20182019/22730,dated 03/01/2019, regarding the Fire Safety Measure for proposed B+LG+UG+IX+M storied Mercantile Building, G+VIII storied Educational Building, B+G+II storied 33 KVA Electrical Sub-station, G+II storied 11KVA Electrical Sub-station & Six Level Mechanical Car Parking at premises no.- 449A, G. T. Road, Mouza- Mahesh, PS- Serampore, Dist- Hooghly..

The plan 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 is issuing Fire Safety Recommendation in favour of the aforesaid building subject to the compliance of the following fire safety measure.

Recommendation:

1. A.CONSTRUCTION:

1.The whole construction of the existing building shall be carried out as per approved plan

drawings conforming the relevant building rules of local Municipality Body.

2. The floor area of the basement exceeds 3000 m² shall be suitably compartmented by separation walls up to ceiling level having two hours fire resisting capacity.
3. The interior finish decoration of the building shall be made low flame spread materials conforming I.S. specifications.
4. Provision of ventilation at the crown of the central core-duct of the building shall be provided.
5. Arrangement shall have to be made for sealing all the vertical and horizontal ducts by the materials of adequate fire resisting capacity.

B.OPEN SPACE AND APPROACH:

1. The open spaces surrounding the building shall conform the relevant building rules as well as permit the accessibility and maneuverability of Fire Appliances with turning facility.
2. The approach roads shall be sufficiently strong to withstand the load of Fire Engine weighting 45M.T.
3. The width and height of the access gate into the premises shall not be less than 5.0 mts. and 5.0 mts. respecting the abutting road.
4. Drive way should be free from any type of obstruction. No parking will be allowed on the drive way.
5. All the Passage way should be kept clear for free access.

C.STAIRCASE:

1. The staircase of the building shall be enclosed type. Entire construction shall be made of bricks/R.C.C. type having Fire Resisting capacity not less than 4 hours.
2. The staircase of the building shall have permanent vents at the top and openable sashes at each floor level in the external walls of the building.
3. The width of the staircase shall be made as marked in the plan. Corridors and the exit doors shall conform the relevant Building Rules with up to date amendment.
4. All the staircase shall be extended up to terrace of the building and shall be negotiated to each floor.
5. Fire and smoke doors at the entrances of all the staircase enclosures as 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 openable in the direction of escape.

D.LIFT:

1. The walls of the lift enclosure shall be at least two hours Fire Resisting type.
2. Collapsible gate shall not be permitted.
3. One of the lift shall be designed for Fire Lift. The word "FIRE LIFT" shall conspicuously written at ground floor.
4. Lift and Lift Lobby shall be communicated to the basement and shall have to be

pressurized as per guide line of N.B.C. part-IV, Annexure 'C'.

E. REFUGE AREA:

1. Refuge area is not less than 50 sq. m. and shall be provided on the external wall with cantilever projection or other suitable means at above 24.0 mtr. and 39.0 mtr. levels of the building as shown in the drawings.
2. The refuge areas 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 areas shall be such so that they are negotiable by the Fire Service Ladder from the ground level.

F. AUDITORIUM, CINEMA AND VIDEO HALL & HALL:

1. The doors/aisles/gangways/cross gangways/seating arrangements/corridors in hall etc. shall be made as per good practices of National Building Code, Part-IV, Fire Protection as well as conforming norms of Cinematography Act with up to date amendment.
2. N.O.C. in connection to the Cinema, Video, Restaurant etc. shall be obtained from appropriate Authority.
3. The safety arrangement for the projection rooms shall be complied with as specified in the Cinematography Act with up to date amendment.

G. EXIT:

1. The auditorium shall have exits sufficient to provide for the total capacity thereof as determined in accordance with 8.
2. Clean aisle not less than 1.5 M in width shall be formed at right angles to the line of seating in such number and manner that no seat shall be more than seven seats away from the aisle. Row of seats opening on to an aisles at one end only shall have not more than seven seats.
3. The fascia of boxes, balconies and galleries shall have substantial railings not less than 65 cm. high above the floor. The railing at the end of aisles extending to the fascia shall be not less than 75 cm. high for the width of the aisle or 90 cm. high at the foot of the steps.
4. Cross aisles except where the back of seats on the front of the aisles project 60 cm. or more above the floor of the side, shall be provided with railing not less than 90 cm. high.
5. No display of exhibit shall be installed or operated as to interfere in any way with access to any required exits or with any required exit sign.
6. All displays of exhibits of combustible material or construction and all booths and temporary construction in connection with there shall be so limited in combustibility or protected as to avoid any undue hazard of fire which might endanger occupants before they have opportunity to use the available exits as determined by the authority.
7. All exits shall be either lead to final exits or must be a points of entry to protected route.
8. At least half of the exits from an auditorium should be remove from any stage or platform.

H. SEATING ARRANGEMENTS AND GANGWAYS:

All seats in balconies and galleries shall be securely fastened to the floor except that in nailed in enclosures, boxes with level floors.

I. BASEMENT:

1. The basement shall be adequately ventilated.
2. Additional staircase from the open air as shown in the drawing shall be constructed beside the ramps conforming relevant I.S. specification.
3. The basement shall be protected with auto sprinklers system/hose reel system etc.
4. Mechanical extractors for smoke venting system from basement levels shall also be provided. The system shall be of such design as to operate on actuation of heat/smoke sensitive detector or sprinkler. It shall also have an arrangement to start it manually.
5. Mechanical extractors shall have an alternative source of supply.

J. FIRE FIGHTING WATER:

Underground water reservoir having water capacity of 200000 ltrs. and overhead water reservoir having capacity of 50000 ltrs. exclusively for fire-fighting purpose with replenishing arrangements @ 1000 ltrs/min. preferably from two different sources of water supply shall be provided. The water reservoirs shall have overflow arrangement with the domestic water reservoir as well as to avoid stagnancy of water. The water reservoir shall be kept full at all time.

K. HYDRANT SYSTEM:

1. The building shall be provided with Wet Riser of 150 mm. internal diameter pipe line with provision of landing valves at the staircase landings/half landings at the rate of one such riser for 1000 sqm. of floor area. The system shall be so designed that shall be kept charged with water all the time under pressure and capable to discharge 2850 ltrs /min. at the ground level outlet and minimum 900 ltrs/min. at the top most outlet. In both cases the running pressure shall not be less than 3.5 kgs/sq.cm. All other requirements shall conforming I.S. specifications.
2. Provision for Hose Reel in conjunction with Wet Riser shall be made at each floor level and conforming the relevant I.S. Specifications.
3. Ring Main Hydrant with provision of adequate numbers hydrant with one number of Fire Service Inlet shall be installed surrounding the building in accordance with relevant I.S. specifications.

L. SPRINKLER INSTALLATION:

The automatic sprinkler installation shall be provided in basement and in all commercial floor areas of the building as per I.S. specifications. Alarm Gong to be incorporated along with the

sprinkler system.

M.FIRE PUMP:

- 1.Provision of the Fire Pump shall have to be made to supply water at the rate-designed pressure and discharge into to the Water based system, which shall be installed in the building. One such pump shall always be kept on stand-by preferably be of diesel driven type.
- 2.A Separate Fire Pump shall preferably be made for the total Sprinkler Installation of the building.
- 3.Provision of the Jockey Pump shall also have to be made to keep the water based system under pressurized condition at all the time. 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.

N.ELECTRICAL INSTALLATION AND DISTRIBUTION:

- 1.The electrical installation including Transformers, Switch Gear, Main & Meters etc. and the distribution system of the premises shall be made satisfying the code of practice for Fire Safety in general building as laid down in I.S. specification.
- 2.The vertical and horizontal electrical ducts shall be sealed at each floor level by fire resisting materials.
- 3.The electrical installation shall be adequately protected with CO2/D.C.P. Fire Extinguishers conforming I.S. specification.
- 4.Transformer to be protected by High Velocity Water Spray Projection System as per relevant I.S. specification.
- 5.Arrangement for alternative power supply shall have to be made to supply power with the help of a generator to operate at least the Fire Pump, Deep Tube-Well Pump, Fire Alarm System etc. and also for illuminating the Staircase, Corridors, Lobbies etc. and other places of assembly of the building in case of normal power failure.

O.DETECTION AND ALARM SYSTEM(For school building):

- 1.Manually operated Electrical Fire Alarm System with at least two numbers of break glass type call boxes fitted with Hooters along with Public Address System at each floor connecting with visual panel board shall be made in Control Room. The Control Room shall be located at entrance of ground floor of the building, other requirements of the system shall be made conforming I.S. specifications.
- 2.The suppression system shall be made with Fire Extinguishers particularly in Computer, Electrical processing and Data Room and in all rooms of irreplaceable articles.
- 3.Hooters will be sounded in such a manner so that an operation of a Detectors or Manual Call Point. Hooters will be sounded on the same floor and immediate alternate floor.

4. Public Address System linked between all floors and Control Room shall have to be established.

P. INTELLIGENCE ANALOGUE SYSTEM(For Mercantile Building):

1. Auto Fire Alarm System with Analogue Addressable Smoke /Heat Detectors 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 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 having direct dialing facility to the local Fire services unit.
3. 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.
4. All the installations shall also be satisfy the I.S. specifications (as amended) and the code of practice as laid down in the N.B.C. Part- IV.

Q. MULTI LAYER AUTOMATED MECHANIZED CAR PARKING SYSTEM:

1. Structural design:- The MLCP shall be constructed of structural steel construction.
2. Vertical Deck Separation:- For MLCP 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 CI 4.4 .
5. Natural Ventilation:- Each Car Parking deck shall be provided with at least 50% external ventilation opening of the perimeter wall areas and uniformly distributed.
6. Sprinkler & Detection System: - Open Modular Type Sprinkler along with Detectors shall be provided in all MLCP areas as per relevant I.S. Specification. Cross zone wise Sprinkler system shall have to be implemented.
7. Fire Pump:- Separate Jockey and Sprinkler pump of suitable capacity shall have to be installed for the MLCP areas.
8. Operating System:- Both Mechanical and Manual type operating system shall have to be provided.

R. KITCHEN PROTECTION:

1. Kitchen using open flames or fat fryers should be compartmented from rest of the floor areas with fire separation wall of minimum 60 minutes fire resistance capacity.
2. Fire Doors should be implemented with 60 minutes fire resistance capacity with automatic

self closing device.

3. The kitchen should be adequately ventilated.
4. The entire kitchen areas should be protected with automatic water sprinklers extended from the existing water base system in the building. However, no sprinklers should be provided within 3 m of cooking equipment and kitchen hood. Temperature rating of sprinklers should be 30°C above the anticipated maximum temperature within the kitchen. Sprinklers installed inside exhaust ducts should be of temperature rating of 141°C.
5. Kitchen hoods and areas of cooking equipment should be protected with Ansul R-102 nozzles.
6. The entire kitchen areas should be installed with automatic thermal detectors of approved rating. The installed thermal detectors should be connected to the existing fire detection alarm panel of the building.
7. First aid fire-fighting equipment of approved class should be installed as per provisions of IS: 2190-2010.
8. Cleaning of kitchen exhaust ducts should be done periodically to ensure that carbon soot does not accumulate in the duct to avoid chances of outbreak of fire.
9. Installed detectors and sprinklers should be checked periodically to ensure that the sensors detecting equipment are not coated with grease and other suspended particular matter and thus their sensing capabilities are desensitized.
10. Grease strip should be available for efficient and regular cleaning of concrete or paved floors of kitchen and also drainage areas.
11. The hood or portion of the primary collection means designed for collection of cooking vapors and residues shall be constructed and supported by steel of not less than 18 SWG thickness.
12. The exhaust should terminate outside the building with a fan or duct with a minimum horizontal clearance of 3 m from the outlet.
13. Haphazard storage of items should be strictly prohibited. Storage should be made in non combustible metal racks with proper aisle width, without encroachment of egress routes of the kitchen.
14. All other safety measures should be in compliance to the existing provisions of Clause 6 Annex G of National Building Code of India, 2016, Part 4.

S. OTHER IMPORTANT RECOMMENDATION:

1. If gas use in the chemistry Laboratory shall be provided with an approved outside gas shut off valve conspicuously marker.
2. Storage of volatile flammable liquids shall be prohibited the handling of such liquids shall be restricted into a specific Laboratory only mentioning outside of the entrance and exit door.

T. CENTRALLY AIR CONDITIONING SYSTEM: (Where applicable)

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 Air Conditioning system.
3. The system of auto shut down of A.H.U shall be incorporated with the auto detection and alarm systems.
4. Escape routes like staircases, common corridors, lift lobbies etc. shall not be used as return air passage.
5. Wherever the ducts pass through Fire Wall of the floors, the opening ground the ducts shall be sealed with Fire resisting materials as such as asbestos rope vermiculite concrete etc.
6. As far as possible metallic ducts shall be used even for the return air instead of space above the false ceiling.
7. The material used for insulating the ducts system (inside or outside) shall be of non combustible materials glass wool shall not be wrapped or secured by any materials of combustible nature.
8. Area more than 750m² on individual floor shall be segregated by a Fire wall and automatic Fire Dampers for isolation shall be provided.
9. Air ducts serving main floor area, corridors etc. shall not pass through the staircase enclosure.
10. The Air handling units shall be separated for each floor and air ducts for every floor shall be separate and in no way interconnected with the ducting of any other floor.
11. If the air handling units serve more than one 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 fusible links for insulating 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 be switched off.
12. The vertical shaft for treated fresh air shall be of masonry construction.
13. The Air filters for air handling units shall be of non combustible materials.
14. The air handling unit room shall not be used for storage of any combustible materials.
15. 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.
16. No combustible materials shall be kept nearer than 15 cm to any duct unless such duct is properly enclosed and protected with non combustible materials (glass wool or spun wool with neoprene facing enclosed and wrapped with Aluminum sheeting) at least 3.2 mm thick and which would not readily conduct heat.

17. FIRE DAMPERS:

- 1) There shall be located in conditioned are ducts and return ducts / passages at the following points:
 - a) At the Fire Separation wall.

- b)Where ducts / passages enter the central vertical shaft.
- c)Where the ducts pass through floors
- d)At the inlet of supply air duct the return air duct of compartment on every floor.

II)The dampers shall operate automatically and shall simultaneously switch off the air handling fans. Manual operation facilities shall also be provided.

III)Automatic Fire Dampers shall be so arranged so as to close by gravity in the direction of air movement and to remain tightly closed on operation of a fusible link / smoke detector.

U.TRANSFORMER PROTECTION:

- 1.Transformer to be protected H.V. Water projector system / Modular (DCP) base should be filled up by stone , the flow of oil.
- 2.Entry of unauthorized person should be restricted inside the transformer area.
- 3.Dykes to be provided to contained the oil of the transformer in case of leakage.

- 4.It is strongly recommended that any oil – insulated outdoor type transformer containing 2250 ltrs. or more oil is to be separated from nearby structure by two hours rated fire wall or by specific spatial separation in accordance with NFPA-850 recommendations.
- 5.Wherever a firewall is installed between transformer it should be extended at least 300 mm above the top the transformer shall and oil tank at least 600 mm. beyond the width of the transformer and cooling radiator.
- 6.Dry type transformer is strongly preferred for use inside factory. In case however an oil insulated transformer is installed indoors, then it is oil content exceeds 450 ltrs. than it should be separated from nearby areas by a fire barrier of three hours fire resistance rating. In resistance of the fire barrier reduced to one hour.

V.GENERAL RECOMMENDATIONS:

- 1.Fire License shall have to be obtained for proposed storing and processing with L.P.G. and other highly combustible articles.
- 2.Fire Notice for Fire Fighting and evacuation from the building shall be prepared and be displayed at all vulnerable places of the building.
- 3.Floor numbers and directional sign of escape route shall be displayed prominently.
- 4.The employees and security staffs shall be conversant with installed Fire Fighting Equipments of the building and to operate in the event of Fire and Testing.
- 5.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.
- 6.A crew of trained Fireman under the experienced Fire Officer shall be maintained round the

clock for safety of the building.

7. Mock Fire practice and Evacuation Drill shall be performed periodically with participation of all occupants of the building.

8. 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 Life and Fire Safety arrangements installation of the building.

On compliance of all the above Life and Fire Safety Recommendation, the Director General, West Bengal Fire & Emergency Services shall be approved for necessary inspection and testing of all the installation, Fire Safety Certificate in favour 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.

Director
West Bengal Fire & Emergency Services

Signature Not Verified
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