8(a)

Government of West Bengal
Office of the Director General
West Bengal Fire & Emergency Services
13-D, Mirza Galib Street, Kolkata-700 016

Memo No. : WBFES/ 3776/15 /Kol-RB/1088/14 (1088/14) Date : 14.09.15

From : The Director
West Bengal Fire & Emergency Services

To The Designated Partner
M/S. Landmark Consortium LLP
[illegible] J.C. Bose Road
1st Floor
Kolkata-700 017

W. B. Fire & Emergency Services * Prevention

Sub: Revised Fire Safety Recommendation for a proposed B+G+XXXVIII storied Residential Building at premises no.- 992, E.M.Bypass, Ward No.-58, Borough- VII, Kolkata-700105.

This is in reference to your letter dated on 11.08.2015 regarding the Revised Fire Safety measure for above mentioned proposed B+G+XXXVIII storied Residential Building at premises no.- 992, E.M.Bypass, Ward No.-58, Borough- VII, Kolkata-700105.

The plan drawing 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 Revised Fire Safety Recommendation in favour of the aforesaid building subject to the compliance of the same.

Enclo:
1. Revised Fire Safety Recommendation
2. One set of Plan Drawing

14/9/15

Director
West Bengal Fire & Emergency Services

REVISED RECOMMENDATIONS

(for a proposed B+G+XXXVIII storied Residential Building at premises no. 992, E.M.Bypass, Kolkata-700105, Ward No.- 58, Borough-VII)

A. CONSTRUCTION:

1. The whole construction of the proposed building shall be carried out as per approved plan drawings conforming the relevant building rules of local Municipal Body (Kolkata Municipal Corporation) and shall remain same as per approved plan of this Department.
2. Any deviation with regard to the construction shall be verified by the concerned building sanctioning authority.
3. The floor area exceeds 750 Sq.m. shall be suitably compartmented having four hours Fire Resisting capacity.
4. Materials for rapid flame spread categories including untreated wood fiber board etc. shall be not use. The doors and windows preferably shall be made of metal.
5. The interior finish decoration of the building shall be made with the materials with low flame spread and low smoke/non-toxic gas generating categories conforming I.S. Specification.
6. Arrangement shall have to be made for sealing all the vertical ducts by the materials of adequate Fire resisting capacity.
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.
8. Garbage Chute openings at each floor level shall be covered with self-closing door.
9. Provision of ventilation at the crown of the central core-duct of the building shall be provided.
10. Fire rating test certificate of all interior finish decoration should be submitted to this office before taking occupancy.

B. OPEN SPACE AND APPROACH:

1. The abutting road shall permit the accessibility and maneuverability of fire appliances.
2. 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.
3. The approach road surrounding the building (drive way) and open car parking area shall be sufficiently strong to withstand the load of Fire Engine weighting up to 45 M.T.
4. The width and height of the entry gates to the premises shall not be less than 4.5m and 5m (as marked in the plan drawing) respecting the abutting road.
5. Drive way (7m.) all around the building should be free of any type of obstruction. No parking will be allowed on the Drive-Way. The surface of open car parking area shall be so strong that it shall withstand the load of Fire Tender weighting upto 45M.T.
6. Necessary open space on the Ground level (drive way) shall be so arranged that in case of any emergency Fire Service High Rise Ladder shall be easily placed near Refuge area (in this case drive-way required near Refuge area minimum 10.0m).

C. STAIRCASE:

1. All principal staircases from ground to top floor shall be pressurized. A positive pressure of 25-30 PA shall be maintained inside the staircases. Pressurization shall be maintained round the clock.
2. The staircases 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.
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. Fire and Smoke check doors at the entrances of all the staircase enclosures as shown/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.
5. 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. All the staircase of the buildings shall be negotiable to each other in each floor without entering into any room and shall be extended up to respective terrace. The roof of the stair wall shall be 1m.

above the surrounding roof area.

6. The position of the staircases shall be made as shown in the plan. Width of the staircases, corridors and the exit doors shall conform the relevant building rules with up-to-date amendments.
7. Corridors of all buildings shall be kept un-obstructed all the time.

D. LIFT :

1. The walls of the lift enclosure of all buildings shall be at least two hours Fire resisting type. Collapsible gate shall not be permitted.
2. In case of failure of normal electric supply, it shall automatically trip over to alternate supply. The lift shall be so wired that in case of power failure, it comes down at the ground level landing to stand still with door open.
3. Arrangement shall be provided for pressurize all the lift shaft from ground to top floor as marked in the plan. A positive pressure of 25-30 PA shall be maintained inside the lift shaft. Pressurization 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.
4. All other requirements shall conform the I.S. specification including the communication facility in the lift cars connecting to the Fire Control Room of the building.
5. At least one no. lift of each block shall be designed as high speed "Fire Lift" and conspicuously indicated. The speed of the fire lift in the buildings 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.

E. 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. Mechanical smoke venting arrangements shall be provided to the basement with auto and manual start facility conforming the I.S. Specification.
3. Mechanical extractors shall have an alternative source of supply.
4. 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.
5. Mechanical extractors shall be designed to permit 30 Air changes per hour in case of Fire or distress call.
6. 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.
7. The entire basement shall be protected with Auto Sprinkler system, Hose reel system, Hydrant system and suitable type of Detector conforming to I.S. Specification 3844-1989.
8. The staircase of basement shall be of enclosed type having Fire resistance of not less than 4 hrs. and shall be situated at the periphery of the basement to be entered at ground level only from the open air and in such position that smoke from any Fire in the basement shall not obstruct any exit having in the ground floor of the building.

F. REFUGE AREA:

1. The measurement of all Refuge Areas shall be constructed as per requirement of occupancy load/floor areas (at the rate 0.3Sq.M./person).
2. One Fire Refuge Area shall be provided on the northern side block of the building on the 22.76m, 36.36m, 49.96m, 63.56m, 77.16m, 90.76m, 104.36m & 117.96m level which will be negotiable from one staircase half landing and one Fire Refuge Area shall be provided on the southern block of the building on the 22.93m, 36.53m, 50.13m, 63.73m, 77.33m, 90.93m, 104.53m & 118.13m level which will be negotiable from one staircase half landing as shown in the plan.
3. Refuge areas shall be provided on the external wall with cantilever projection or other suitable means as shown in the drawings.
4. The refuge areas shall be of Fire resisting construction and protected with self closing F.C.D. at the entrance from the half landing of staircase.
5. The position of refuge area shall be in such manner so that it shall be negotiable by the Fire

Service Ladder from the Ground level. Necessary open space on the Ground level (drive way) shall be so arranged that in case of any emergency Fire Service High Rise Ladder shall be easily placed near Refuge area (in this case drive-way required minimum 10.0m near each Fire Refuge Area).

G. **ELECTRICAL INSTALLATION & DISTRIBUTION:**

1. The electrical installation including transformers (if any, shall be of dry and explosion proof), Switch Gears, 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 1946-1982.
2. The vertical supply ducts shall be sealed at each floor level.
3. The electrical installation shall be adequately protected with CO2 / D.C.P.
4. Electrical distribution system of the all buildings shall be made in the form of concealed wiring or in heavy gauge M.S. conduit continuously bonded to the earth. Cables shall be I.S. marked and preferably be of F.R.L.S. categories. M.C.B. shall be installed in electrical circuit to avoid electrical fire hazards.
5. All electrical installation viz. transformer, Switch Gear L.T, H.T rooms shall be protected with both auto detection and suppression system as per suitability.
6. Adequate ventilation of Electrical Room of all buildings shall be made.
7. Alternative Power Supply : Arrangement 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 Detection & Fire alarm System, Lifts, Mechanical smoke venting system etc. and also illuminating the staircase, corridors etc. and other assembly places of the building incase of normal power failure.
8. Lightening Arrestor arrangement to be provided at highest altitude of the building.

H. **FIRE FIGHTING WATER:**

1. One Underground Water Reservoir having water capacity of 150000Lts. (shown/marked in the plan) exclusively for fire fighting purpose. The replenishment arrangements @ 2000 Lts./min. preferably from two different sources of water supply shall be provided for Fire Water Reservoir.
2. One no. Over Head Water Reservoir of capacity 15000Lts. shall be provided, which to be interconnected with both wet riser (sprinkler & hydrant) system of both block of the building.
3. The Fire Water Reservoirs shall have overflow arrangement with the domestic Water Reservoir as well as to avoid stagnancy of water. The fire fighting water reservoir shall be kept full at all time.
4. The deep tube well for the replenishment of the reservoirs 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.
5. Provision of placing Fire Appliances on the underground water reservoir to be made to draw water in case of emergency. Provision of necessary manhole shall be made on the top of the reservoir as per specification.
6. Provision of Fire Service inlet shall be installed at suitable place.

I. **WATER LAYOUT SYSTEM :**

A) Ringmain Hydrant System:-

i) 200 mm diameter Ring Main water layout arrangement covering the entire premises of the project with provision of piller type yard hydrants with 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 2850 Ltrs./min. at the pressure 3.5kg/sq.cm. at any point.

B) Wet Riser & Hose Reel 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 suitability 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 Ground Floor to 20th floor- 200mm dia. Twin Hydrant Outlet.

2nd Stage 21st 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 floors of the building shall be suitable protected by automatic Sprinkler installation conforming the grade as per I.S. Specification 9972.

ii) Alarm gang to be incorporated alongwith the sprinkler system.

iii) Sprinkler Annotation Panel shall be installed and incorporated with the system.

J. FIRE PUMP :

1. 2850l ts. per minute giving a pressure not less than 0.3N/Sq.m. The pump provided will be of multi stage type with suction and delivery size not less than 15 cm diameter with low level riser upto 18 th. storied and high level riser delivery for upper floors. A set ball valves to supply the tank with at least 2850 Lts. per minute from the fire pump shall also to be provided.
2. A Sprinkler pump of capacity 2850 L.P.M. shall also to be provided.
3. A stand by pump of equal capacity shall be provided on the alternate source of power supply.
4. Provision of jockey pump shall also have to be installed to keep up the water based system under pressurized condition at all the time. The running pressure shall not be less than 3.5Kgs/Sq.cm. All other requirements shall conform I.S. specification 3844-1989.
5. All the pumps shall be incorporated with both manual and auto starting facility and with alternate power supply.

K. AUTO DETECTION AND ALARM SYATEM:

1. Auto Fire Alarm System with analogue addressable smoke/heat detectors as per suitability shall be installed in all floor areas of the building.
2. Both way Public address system linked between all floors and Control Room shall have to be incorporated. The Control Room shall be located at the entrance of the ground floor.
3. Addressable analogue Manual Call Box incorporating with Hooter shall be installed in all the floor 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 break glass type Call Point. Hooter will be sounded in such a manner so that an operation of a Detector or Manual Call Point, Hooter will sounded on all floors.
4. All other requirements of the system shall be made conforming I.S. 2189 as amended and the code of practice as laid down in N.B.C. Part-IV.

L. 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. Escape route like staircase, common corridors, lift lobby etc. shall not be used as return air passage.
6. 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.
7. The metallic ducts shall be used even for the return air instead of space above the false ceiling.
8. 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.
9. Air duct services main floor area, corridors etc. shall not pass through the staircase enclosures.
10. When the automatic Fire alarm operates the respective air handling units of the air conditioning system shall automatically switched off.
11. The air filters for air handling units shall be of non combustible materials.
12. 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.

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

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

N. **L.P.G. BANK (if any):**

1. L.P.G. (Liquefied Petroleum Gas) Bank shall be constructed as per Gas Cylinder Rules-2004 and I.S. 6044 maintaining adequate safety distance between an installation of same and any building, public place, roadways and other surroundings. Anti static mastic bituminized flooring shall be made inside the L.P.G. bank.
2. Cross ventilation shall be provided at ground level and at the top and the ventilators shall be covered by two layers of non-corrigible metal wire mesh.
3. L.P.G. Bank shall never be used as store room of other articles.
4. Gas Sensor shall be installed inside the L.P.G. Bank while the isolation valve or regulating devices shall be retained outside the Bank for easy operation on any operation.
5. No electrical connection, wirings, fittings shall be installed inside the Gas Bank.
6. The L.P.G. Bank shall be protected either by Auto Modular (D.C.P. type) or by portable D.C.P. fire extinguisher of adequate capacity and sand buckets with dry sand.
7. L.P.G. Bank shall be constructed of brick wall and R.C.C/Asbestos roofing having three sides closed and one side provided with open able C.I/Steel double leaf door which will open outwardly.
8. Checking, testing and proper maintenance of L.P.G. installation, L.P.G. manifold. Pipe lines shall be checked by expert (authorized) agency and a certificate of safety to that effect to be endorsed to this department in due course.

O. **GENERAL RECOMMENDATION:**

1. Fire License shall have to be obtained for proposed storing and processing with L.P.G. and other highly combustible articles.
2. Floor numbers and directional sign of escape route shall be displayed prominently.
3. Provision of illuminating exit shall be made at all floor levels of building conforming the I.S. Specification.
4. Special rescue equipment like Smoke Hood, self contained B.A. set (4 nos.), portable lights at least two pairs (4sets) shall be made available in the main fire Control Room of the premises.
5. Red Light warning shall be provided at the top of the building.
6. The 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. Self closing type cover shall be provided for garbage chute.
9. A crew of trained Fireman shall be maintained round the clock for safety of the housing complex.
10. Mock Fire practice and evacuation drill shall be performed periodically with participation of all occupants of building.
11. Haphazard indoor or outdoor storage shall be avoided. All staircases and corridors shall be kept free from any type of obstructions.
12. Telephone numbers of all Emergency Services and Departments shall be hanged at conspicuous places of all floors and inside Office/Reception Counter.
13. Drill: Must be acquainted with evacuation passage of escape route by practicing as a drill with all occupants as a drill every month as a special duty and records of which must be kept in their custody.

14. Close Circuit T. V. shall have to be provided in the building.

15. The Department of Fire & Emergency Services, Government of West Bengal shall not take any responsibility in respect of any legal dispute if pending or arises about the title of land/property.

16. This Fire Safety Recommendation cannot be treated in any case for regularizations of any unauthorized construction.

On compliance of all the above Fire & Life Safety Recommendations, the Director General, West Bengal Fire & Emergency Services shall be approached for necessary inspection and testing of the installations, 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

8(d)

Government of West Bengal
Office of the Director General
West Bengal Fire & Emergency Services
13-D, Mirza Galib Street, Kolkata-700 016

Memo No. : WBFES/ 6087 /14 **/Kol-RB/1088/14 (1088/14)** **Date :** 08/12/14

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

To : The Designated Partner
AHW Unimark Consortium LLP
204, A.J.C. Bose Road
1 st. Floor
Kolkata-700 017

Sub: Fire Safety Recommendation for a proposed B+G+XXXII storied Residential Building at premises no.- 992, E.M.Bypass, Ward No.-58, Borough- VII, Kolkata-700105.

This is in reference to your letter dated on 31.07.2014 regarding the Fire Safety measure for above mentioned proposed B+G+XXXII storied Residential Building at premises no.- 992, E.M.Bypass, Ward No.-58, Borough- VII, Kolkata-700105.

The plan drawing 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 same.

Enclo:
1. Fire Safety Recommendation
2. One set of Plan Drawing

Director in Charge
Fire Prevention Wing
West Bengal Fire & Emergency Services

RECOMMENDATIONS

(for a proposed B+G+XXXI storied Residential Building at premises no. 992, E.M.Bypass, Kolkata-700105, Ward No.- 58, Borough-VII)

A. CONSTRUCTION:

1. The whole construction of the proposed building shall be carried out as per approved plan drawings conforming the relevant building rules of local Municipal Body (Kolkata Municipal Corporation) and shall remain same as per approved plan of this Department.
2. Any deviation with regard to the construction shall be verified by the concerned building sanctioning authority.
3. The floor area exceeds 750 Sq.m. shall be suitably compartmented having four hours Fire Resisting capacity.
4. Materials for rapid flame spread categories including untreated wood fiber board etc. shall be not use. The doors and windows preferably shall be made of metal.
5. The interior finish decoration of the building shall be made with the materials with low flame spread and low smoke/non-toxic gas generating categories conforming I.S. Specification.
6. Arrangement shall have to be made for sealing all the vertical ducts by the materials of adequate Fire resisting capacity.
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.
8. Provision of ventilation at the crown of the central core-duct of the building shall be provided.
9. Fire rating test certificate of all interior finish decoration should be submitted to this office before taking occupancy.

B. OPEN SPACE AND APPROACH:

1. The abutting road shall permit the accessibility and maneuverability of fire appliances.
2. 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.
3. The approach road surrounding the building (drive way) and open car parking area shall be sufficiently strong to withstand the load of Fire Engine weighting up to 45 M.T.
4. The width and height of the entry gates to the premises shall not be less than 4.5m and 5m (as marked in the plan drawing) respecting the abutting road.
5. Drive way (7m.) all around the building should be free of any type of obstruction. No parking will be allowed on the Drive-Way. The surface of open car parking area shall be so strong that it shall withstand the load of Fire Tender weighting upto 45M.T.
6. 9.0m driveway shall have to be provided near Fire Refuge Areas for Fire Service High Rise Ladder placement and operation in case of any emergency.

C. STAIRCASE:

1. All principal staircases from ground to top floor shall be pressurized as marked in the plan. A positive pressure of 25-30PA shall be maintained inside the staircases. Pressurization shall be maintained round the clock.
2. The staircases 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.
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. Fire and Smoke check doors at the entrances of all the staircase enclosures as shown/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.
5. 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.

All the staircase of the buildings shall be negotiable to each other in each floor without entering into any room and shall be extended up to respective terrace. The roof of the stair wall shall be 1m. above the surrounding roof area.

6. The position of the staircases shall be made as shown in the plan. Width of the staircases, corridors and the exit doors shall conform the relevant building rules with up-to-date amendments.
7. Corridors of all buildings shall be kept un-obstructed all the time.

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1. The walls of the lift enclosure of all buildings shall be at least two hours Fire resisting type. Collapsible gate shall not be permitted.
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2. One Fire Refuge Area shall be provided on the northern side block of the building on the 22.76m, 36.36m, 49.96m, 63.56m, 77.16m, 90.76m & 104.36m level from one staircase half landing and one Fire Refuge Area shall be provided on the southern block of the building on the 22.93m, 36.53m, 50.13m, 63.73m, 77.33m, 90.93m & 104.53m level from one staircase half landing as shown in the plan.
3. Refuge areas shall be provided on the external wall with cantilever projection or other suitable means as shown in the drawings.
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Service Ladder from the Ground level. Necessary open space on the Ground level (drive way) shall be so arranged that in case of any emergency Fire Service High Rise Ladder shall be easily placed near Refuge area (in this case drive-way required near Refuge area minimum 12.0m).

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4. The deep tube well for the replenishment of the reservoirs 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.
5. Provision of placing Fire Appliances on the underground water reservoir to be made to draw water in case of emergency. Provision of necessary manhole shall be made on the top of the reservoir as per specification.
6. Provision of Fire Service inlet shall be installed at suitable place.

I. WATER LAYOUT SYSTEM :

A) Ringmain Hydrant System:-

i) 200 mm diameter Ring Main water layout arrangement covering the entire premises of the project with provision of piller type yard hydrants with 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 2850 Ltrs./min. at the pressure 3.5kg/sq.cm. at any point.

B) Wet Riser & Hose Reel 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 suitability 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 Ground Floor to 20th floor- 200mm dia. Twin Hydrant Outlet.

2nd Stage 21st 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 floors of the building shall be suitable protected by automatic Sprinkler installation conforming the grade as per I.S. Specification 9972.

ii) Alarm gang to be incorporated alongwith the sprinkler system.

iii) Sprinkler Annotation Panel shall be installed and incorporated with the system.

J. FIRE PUMP :

1. 2850Lts. per minute giving a pressure not less than 0.3N/Sq.m. The pump provided will be of multi stage type with suction and delivery size not less than 15 cm diameter with low level riser upto 18 th. storied and high level riser delivery for upper floors. A set ball valves to supply the tank with at least 2850 Lts. per minute from the fire pump shall also to be provided.
2. A Sprinkler pump of capacity 2850 L.P.M. shall also to be provided.
3. A stand by pump of equal capacity shall be provided on the alternate source of power supply.
4. Provision of jockey pump shall also have to be installed to keep up the water based system under pressurized condition at all the time. The running pressure shall not be less than 3.5Kgs/Sq.cm. All other requirements shall conform I.S. specification 3844-1989.
5. All the pumps shall be incorporated with both manual and auto starting facility and with alternate power supply.

K. AUTO DETECTION AND ALARM SYATEM:

1. Auto Fire Alarm System with analogue addressable smoke/heat detectors as per suitability shall be installed in all floor areas of the building.
2. Both way Public address system linked between all floors and Control Room shall have to be incorporated. The Control Room shall be located at the entrance of the ground floor.
3. Addressable analogue Manual Call Box incorporating with Hooter shall be installed in all the floor 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 break glass type Call Point. Hooter will be sounded in such a manner so that an operation of a Detector or Manual Call Point, Hooter will sounded on all floors.
4. All other requirements of the system shall be made conforming I.S. 2189 as amended and the code of practice as laid down in N.B.C. Part-IV.

L. 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. Escape route like staircase, common corridors, lift lobby etc. shall not be used as return air passage.
6. 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.
7. The metallic ducts shall be used even for the return air instead of space above the false ceiling.
8. 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.
9. Air duct services main floor area, corridors etc. shall not pass through the staircase enclosures.
10. When the automatic Fire alarm operates the respective air handling units of the air conditioning system shall automatically switched off.
11. The air filters for air handling units shall be of non combustible materials.
12. 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.

13. No combustible materials shall be fixed nearer than 15cm to any duct unless such duct properlyenclosed 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. FIRST AID FIRE FIGHTING SYSTEM:

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

N. L.P.G. BANK (if any):

1. L.P.G. (Liquefied Petroleum Gas) Bank shall be constructed as per Gas Cylinder Rules-2004 and. I.S. 6044 maintaining adequate safety distance between an installation of same and any building, public place, roadways and other surroundings. Anti static mastic bituminized flooring shall be made inside the L.P.G. bank.
2. Cross ventilation shall be provided at ground level and at the top and the ventilators shall be covered by two layers of non-corrigible metal wire mesh.
3. L.P.G. Bank shall never be used as store room of other articles.
4. Gas Sensor shall be installed inside the L.P.G. Bank while the isolation valve or regulating devices shall be retained outside the Bank for easy operation on any operation.
5. No electrical connection, wirings, fittings shall be installed inside the Gas Bank.
6. The L.P.G. Bank shall be protected either by Auto Modular (D.C.P. type) or by portable D.C.P. fire extinguisher of adequate capacity and sand buckets with dry sand.
7. L.P.G. Bank shall be constructed of brick wall and R.C.C/Asbestos roofing having three sides closed and one side provided with open able C.I/Steel double leaf door which will open outwardly.
8. Checking, testing and proper maintenance of L.P.G. installation, L.P.G. manifold. Pipe lines shall be checked by expert (authorized) agency and a certificate of safety to that effect to be endorsed to this department in due course.

O. GENERAL RECOMMENDATION:

1. Fire License shall have to be obtained for proposed storing and processing with L.P.G. and other highly combustible articles.
2. Floor numbers and directional sign of escape route shall be displayed prominently.
3. Provision of illuminating exit shall be made at all floor levels of building conforming the I.S. Specification.
4. Special rescue equipment like Smoke Hood, self contained B.A. set (4 nos.), portable lights at least two pairs (4sets) shall be made available in the main fire Control Room of the premises.
5. Red Light warning shall be provided at the top of the building.
6. The 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. Self closing type cover shall be provided for garbage chute.
9. A crew of trained Fireman shall be maintained round the clock for safety of the housing complex.
10. Mock Fire practice and evacuation drill shall be performed periodically with participation of all occupants of building.
11. Haphazard indoor or outdoor storage shall be avoided. All staircases and corridors shall be kept free from any type of obstructions.
12. Telephone numbers of all Emergency Services and Departments shall be hanged at conspicuous places of all floors and inside Office/Reception Counter.
13. Drill: Must be acquainted with evacuation passage of escape route by practicing as a drill with all occupants as a drill every month as a special duty and records of which must be kept in their custody.

14. Close Circuit T. V. shall have to be provided in the building.
15. The Department of Fire & Emergency Services, Government of West Bengal shall not take any responsibility in respect of any legal dispute if pending or arises about the title of land/property.
16. This Fire Safety Recommendation cannot be treated in any case for regularizations of any unauthorized construction.

On compliance of all the above Fire & Life Safety Recommendations, the Director General, West Bengal Fire & Emergency Services shall be approached for necessary inspection and testing of the installations. 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 in Charge
Fire Prevention Wing
West Bengal Fire & Emergency Services