GOVERNMENT OF WEST BENGAL
OFFICE OF THE DIVISIONAL FIRE OFFICER
WEST BENGAL FIRE & EMERGENCY SERVICES
Raiganj, College Para, Pin - 733134

Memo No : IND/WB/FES/20192020/54152

DATE: 26/06/2019

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

To :
RAINBOW VALLEY INFRADEV PVT. LTD.
Plot no-R.S-829,830,831,832,833,L.R-1972 Street Ukilpara(M.G Road), Raiganj, Uttar Dinajpur
Dalkhola F.S., Raiganj,
North Dinajpur - 733134 .

Sub :Fire Safety Recommendation for a proposed construction of B + G + 5 storied building under group Business at the premises no.- Plot no-R.S-829,830,831,832,833,L.R-1972 Street Ukilpara(M.G Road), Raiganj, Uttar Dinajpur, Raiganj, North Dinajpur - 733134

This is in reference to your Application No. IND/WB/FES/20192020/54152,dated 26/06/2019, regarding the Fire Safety Measure for a proposed construction of B + G + 5 storied building under group Business at the premises no.- Plot no-R.S-829,830,831,832,833,L.R-1972 Street Ukilpara(M.G Road), Raiganj, Uttar Dinajpur, Raiganj, North Dinajpur - 733134.

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. Recommendations:-

A)Construction Part:-

i)The whole construction of the proposed building shall be carried out as per approved plan drawings and conforming all the relevant building rules of local authority.

ii)No addition / alteration of the building shall be allowed without the concurrence of this department except the construction works of the means of escape.

iii)The interior finish decoration of the building shall be made of low flame spread materials conforming I.S. specification.

iv)The complete construction of the hospitals and similar establishment should be done in such a way that all the high fire risk areas are segregated from the high life risk areas. The safety of patients could be assured by segregating them from high hazard areas through at least two hours fire rating construction. No hazardous articles/Inflammable articles shall be allowed in the building other than official goods.

v)All floors area not exceeding 500sq. miter and shall be suitably compartmented by separation walls up to ceiling level having at least two hours Fire resisting capacity. All hazardous areas, such as boiler rooms, heater rooms, laundries, storage room, linen room, repair shops, electrical rooms, etc. should be separated by at least two hours fire rated constriction with opening protected by fire doors. Alternatively the area should be protected by automatic sprinklers and if the hazard is judged severe, at least two hours fire separation shall also be provided.

vi)No building constructed in whole or part of combustible materials shall be used to confine inmates in cells or sleeping accommodation of the patients unless automatic sprinkler protection is provided.

vii)All opening of vertical and horizontal service ducts, void gap, and joints should be sealed with Fire resting materials.

B)Ventilation:-

i)Sufficient ventilation will be provided at every place of the building. It should be designed as auto opening system in case of emergency.

ii)Provision of ventilation at the crown of the central core-duct of the building shall be provided.

iii)Mechanical extractor for smoke venting system shall also be provided. The design operating mechanism of the system shall be such that the system shall operate on actuation of heat / smoke sensitive detector and sprinklers. It shall also have an arrangement to start it automatically or manually. It shall have an interlocking arrangement, so that the extractors shall continue to operate and supply fans shall stop automatically with the actuation of fire detectors. This Ventilation system designed 30 air changes per hour than that of the scheduled air changes for normal operation shall be ensured in the system in case of fire or distress call. Mechanical extractors shall have an alternative source of power supply.

iv)Smoke venting facilities for safe use of escape routes shall be automatic in action with manual control in addition in the windowless (sealed box type) buildings.

v)It is recommended that smoke exhaust equipment should have a minimum capacity of 12 air changes per hour.
vi)Roof vents and vents in walls at or near the ceiling level work satisfactorily as natural draft smoke venting which shall be open normally. If closed, system shall be designed for automatic opening in case of fire, by release of smoke sensitive devices.
vii)The discharge apparatus (opening) of all natural draft smoke vents shall be so arranged as to be
readily accessible for opening by fire service people.
viii)Natural draft smoke venting can only be substituted by power operated smoke exhausting systems subject to specific permission from fire authority.
ix)Ventilation in the staircases at each landing and at the top shall be provided at the rate of minimum 0.5 sq. meters per vent opening. The pressurizing mechanism shall operate automatically with the fire alarm.
2. C)Open Space & approach:-
i)The open space surrounding the building shall be conforming the relevant building rules as well as to permit the accessibility and maneuverability of fire appliance to turning facility. The minimum open space surrounded the building should be at least 4.5miters and it should be free from any obstruction at all times.
ii)The approach roads shall be sufficiently strong to withstand the load of fire engine weighting up to 45 Metric Ton.
iii)The width and height of the access gates into the premises shall not be less than 4.5miters and 5miters respectively abutting the roads.
iv)The open space surrounding the building should be kept free from any obstruction.

D)Means of escape: -
i)All the staircases should be from the terrace to the ground floor of the building and shall be negotiable to each other entering into any floor and in no way the travel distance from the dead end of a corridor of the building shall not exceeds the l inn it of 6.000 meters. Time of evacuation should be as per IS 1 644: 1988 (i.e. l minute).
ii)The staircases of the building will be enclosed type & construction to be made of briefed or RCC type and the head of stairs shall be ventilated to prevent mushrooming.
iii)The staircases of the building shall have permanent vent at the top and open able sashes at each floor level in the external wall of the building and the treads, flights and risers of the staircases shall be made as per W. B. Municipal (Building) Rules, 2007. Corridor of the building and the exit doors should be conform the relevant building rules.
iv)There should be a separate entrance and escape routes from the every floor of the building. Horizontal exits should be given priority. All the staircases shall be extended up to terrace of the building and shall be negotiable to each floor.
v)In buildings or sections occupied by the bed ridden patients, where the floor area exceeds 280 sq. meters, facilities should be provided to move patients in hospital beds to the other

side of a smoke barrier from any part of such building or section not directly served by approved horizontal exits or exits from the first floor of building to the outside

vi)The staircases, corridors & all the means of escape should be free from any obstruction.

vii)Ramps shall be counted as one of the Means or escape and It should be protected with automatic sprinkler system. Ramps shall comply with all the applicable requirements for stairways regarding enclosure and limiting dimensions. The slope of a ramp shall not exceed I in 10. In certain cases steeper slopes may be permitted but in no case greater than 1 in 8 as laid down in the NBC.

viii)Wherever any inmates are confined in any locked rooms or spaces, adequate guards or other personnel shall be continuously on duty or immediately available to provide for release or inmates or for such other action as may be indicated in case of fire or other emergency.

ix)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 open able in the direction of escape.

x)All required exits including patient bedroom doors shall be at least 2meters in width to facilitate transportation of patients on beds, litters, or mattresses. The minimum width of corridor serving patients bed rooms in the buildings shall be 2.4 meters.

xi)At least two exits or more in the form of doors leading directly outside the building, or stairways or ramps, or horizontal exits, or fire tower shall be provided for every floor of the buildings.

xii)Double swing, single / double leaf type doors shall be installed in the fire resistant walls which shall normally be kept open position, but will close automatically on actuation of the detectors. Corridor door openings in smoke barriers shall be not less than 2 meters in width.

xiii)Doors in horizontal exits are required to swing in the direction to escape. An approved Vision panel should be provided in each horizontal exit.

3. E)In case of Lift:-

i)The walls of the lifts enclosures shall be at least two hour fire resisting type and collapsible gate shall not be permitted. The lifts materials should be 4 hours fire resisting type, the door of the lifts should be I hour fire resisting type, the landing door should be ½ an hour fire resisting type & Area or the lift car should be minimum I .4 sq. meters.

ii)The load bearing capacity of the lifts should be minimum 534 kg each.

iii)In case of failure of normal power supply it shall automatically trip over to alternate power supply. This change over of supply could be done through auto-change over switch alternatively; the lift shall be so designed that in case of any power failure, it comes down at the ground level and comes to stand still with door open.

iv)A sign shall be posted and maintained on every floor at or near the lifts indicating that incase of fire, occupants shall use the stairs unless instructed otherwise. The sign shall also contain a plan for each floor showing the locations of the stairways.

v)Elevators constitute a desirable supplementary facility, but are not counted as required exits. Patient lifts shall also be provided with enough room for transporting a stretcher trolley.

vi)One of the lift shall be designed for Fire Lift. The word 'FIRE LIFT' shall conspicuously write at ground floor.

F)In case of Air Condition (IS - 659:1991):- It shall conform to the Following:-
i)Escape routes like staircases, common corridors, lift lobbies etc. shall not be used as return air

passages.

ii)Regular checkup or all split type window machine to prevent dust, foreign materials in the air

inlet should maintained to prevent spontaneous combustion.
iii)In case of central A.C. system, the same shall be incorporated with automatic dampers with fusible link with a view to shut down the system automatically in case of any fire in A.C system.
iv)Regular checking, testing, cleaning the Air inlet is must.
v)Arrangements shall be made for isolation at the strategic locations by incorporating auto dampers in the Air Conditioning system.
vi)Wherever the ducts pass through fire walls of floors, the opening around the ducts shall be sealed with fire resisting materials such as asbestos rope, vermiculite concrete etc.
vii)As far as possible metallic ducts shall be used even for the return air instead of space above the false ceiling.
viii)The materials 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 or combustible nature.
ix)Area more than 750 square meter on individual floor shall be segregated by a fire wall and automatic fire dampers for isolation shall be provided.
x)Air ducts serving main floor area, corridors etc. shall not pass through the staircase enclosure.
xi)The vertical shaft for treated fresh air shall be of masonry construction.
xii)The Air Handling Unit room shall not be used for storage of any combustible materials.
xiii)The Air Handling Units shall be separated for each floor with the system of air ducts for every individual floors shall be separate and in no way interconnected with the ducting of any other floor.
xiv)The air filters for Air Handling Units shall be of non-combustible materials.
xv)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 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 be switched off.
xvi)The system of auto shut down of Air Handling Units shall be incorporated with the auto detection and alarm system.
4. xvii) Inspection panel shall be provided in the main tracking to facilitate the cleaning of ducts or accumulated dust and to obtain access for maintenance or fire dampers.
xviii) No combustible materials shall be fixed nearer than I S cm. to any duct unless such duct is properly enclosed and protected with non-combustible material (glass wool or spun wool with neoprene
racing enclosed and wrapped with aluminum sheeting) at least 3.2 mm. thick and which would not readily conduct he8t.
xix) All A.C. machines should be incorporated with 2 hrs. timer in lieu of 4hrs. duration timer.

G)Fire Dampers:-
i)There shall be located in conditioned are ducts and return air 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 and the return air duct of each 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 rightly closed open operation of a fusible link.

H)Electrical Installation (IS - 694:1946-1982):-
i)All electrical installation should be done in accordance with National Electrical Code & Part —VI II "Building Service" Section -2 "Electrical installation" good practice.[4(10)).
ii)The electrical installation including transformers, switch gears, main and miter 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.
iii)The vertical and horizontal electrical ducts shall be sealed at each floor level by fire resisting

material and the electrical installation shall be adequately protected with ABC & CO2 type extinguisher.

iv)All cable should be of FRLS type & all wiring should be done by the copper wire along with appropriate gauge such as 1.2 mm. for light, fan, bulbs etc., 2.5 mm. for television, freeze & washing machine etc., 4 mm. for geezer, air condition machine etc.

I)Alternate power supply:-

Arrangement shall 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, Fire Lift , illumination of stairs, corridors, means of escape etc. in case of normal power failure.

J) Fire Fighting Water:-

i)A satisfactory supply of water for the purpose of firefighting shall always be available in the form of underground reservoirs with 1,50,000 liters capacity of stored water with replenishing arrangement @ 1000 liters of water per minutes preferably from two different sources. When this is not practicable, the capacity of the static storage tank shall be increased proportionately. The height of the reservoir should not be exceeding 30 cm from the ground level. Static fire water reservoir shall have overflow and connected with the domestic water reservoir as well as to avoid stagnancy of water. The water reservoir shall be kept full at all times.

ii)Suitable number of manholes shall be made available in the static tanks for inspection, repair, cleaning and insertion of suction hose, etc.

iii)The covering slab shall be strong enough to withstand the total vehicular load of 45 MT. equally divided as a four point load when the slab forms a part of pathway / driveway.

iv)The location of the underground reservoir should be such so that the Fire Service vehicle may get access to the site of the reservoir with a view to drawn the water from said reservoir.

5. v) If the static water storage tank is in the basement or in a location not approachable for fire engines, provision of fire brigade collecting head with Four number 63mm. diameter (Two number 63mm. diameter for pump with capacity 1400 liters per minute) instantaneous male inlets arranged in a valve box at a suitable point at street level connected to the tank by suitable fixed pipe not less than 130 mm in diameter shall be made to discharge water into the tank when required at the rate of 2250 liters per minute from fire engines.

K)Terrace Tank:-

One Terrace Tank of capacity Minimum 25,000 liter should be installed in the buildings along with suitable terrace pump & Wet Riser cum Down comer system. Proper replenishing arrangement shall have to be made to keep the Over Head Water Reservoir full at all time.

L)Pumps for firefighting Installation (IS — 12469: 1988):-

i)The standard code of practice recommended that all water based fixed firefighting installations should be fed by two separate automatic pumps, one of which should act as stand by. Each pump should be designed to deliver water at required pressure and

discharge, taking into account the height and volume of the building.
ii)The Fire pumps should be provided near the underground static water storage tank with minimum pressure of 3.5 kg. / sq. cm. at terrace level or farthest point.
iii)One electric and one diesel pump of capacity 2280 LPM and One electric pump or capacity 180
LPM should be install.
iv)The pumps should be installed and arranged in such manner so that it will start automatically due to fall in pressure as prefixed in the installation by installing a Jockey pump. Provision of Jockey pump shall also be made to keep the water-based system under pressurized condition at all times.
v)All the pumps shall be so designed as to supply water at the designed pressure and discharge into
the water-based system which shall be installed in the buildings.
vi)An independent identical pump for the purpose of sprinkler installation shall be made available. A11 such arrangement shall be done as per above code of practice.
vii)All the pumps shall be incorporated with both manual and auto starting facilities , the suction of the pump shall preferably of positive type or in case of negative suction the system shall be wet riser- cum- down comers with suitable terrace pump fitted with over head tank.

M)Internal Hydrant System (IS - 3844:1989):-
The building should be provided with pressurized wet risers of 100 mm. internal diameter pipe line at each staircase with provision of single outlet landing and half landing valves @_, one such riser for each 1000 sq. miter of floor area or as per the vulnerability of the area. This system shall be designed in such a manner that it should be kept charged with water at all times and capable or discharge 2850 liters of water per minute at the ground level and 900 liters per minutes at the top mist outlets of the building. In both the cases, the running pressure at the ground level shall be 3.5 kg. / sq. cm. and 2.5 kg. / sq. cm. at the top most landing valves should be ensured.

N)External Hydrant System (IS - 13039:1991):-
The surrounding of the buildings should be protected by adequate no. of pillar type yard hydrants system as per the IS code of practice. i.e. @ one pillar hydrant per 1000 sq. meters of floor area or as per the vulnerability of the area,

O)Hose Reel System (IS - 884:1985):-
i)Provision for Hose Reel in conjunction with wet riser shall be made at each floor of the building level from the overhead or underground reservoir through Booster pump conforming the relevant I.S. specification,
6. ii) The Hose reel hose system should be provided at each floor of the buildings. The internal dia. of the said hose reel shall be 19 mm to 32 mm and the discharge capacity not

less than 22.5 LPM. While the

length of the hose reel not more than 36.50 miters. The distance of such installation should be in such a way that no part of the floor is more than 6 miters distance from a hose nozzle when fully extended.

P)Sprinkler Installation (IS - 9972:2002):-

The fast response sprinkler installation shall be provided for the entire building as per the I.S Code or practice where Fire defenses are to be based upon automatic sprinkler systems. As minimum, fast response sprinklers should .be used throughout compartments having sleeping accommodations, because this type has been shown in most instances to maintain survivable atmosphere within the room of fire origin. Alarm gang to be incorporated along with the sprinkler system.

Q)First aid firefighting system (IS - 2190: 1992):-

i)Sufficient Nos. of Portable fire extinguishers of ABC type, CO2 / FM - 200 type and Sand and water bucket should be provided at different places or the buildings and it should be within the reach of all concern as stated in the IS Code i.e. one no.@ 1000 sq. meters floor area or as per the vulnerability of the area.

ii)The suppression system shall be made by total flooding system with CO2 / FM-200 particularly in computer and electric processing and data room and in a room of irreplaceable articles.

R)Small gears (IS — 903:1993):-

Hose box, 15 miters permoline delivery hose & gun metal short branch half inch dia. @ one set each at or near the entire pillar hydrant, landing valve on all floors of the building should be installed.

S)Intelligence Analogue System:-

i)Automatic fire detection system with the help of analogue addressable smoke & heat detectors shall be installed at all places of below and preferably above false ceiling of the buildings. This system shall also be made available in places of rooms where valuables have been kept. Other requirements shall be made in accordance with the IS code of practice. The buildings should be installed & connecting with audio visual panel board and close circuit T.V. shall be made in Control Room. The control room shall be located at the entrance of ground floor of the building, other requirements of the system shall be made as per the IS Code of practice.

ii)Addressable analogue manual call boxes incorporating with sounders shall be installed in all floors area or the building in such manner that maximum travel distance shall not be more than 22.5 miters in order to reach any of the call point.

iii)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 service unit.

iv) 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.

v)The fire alarm system in hospitals, etc. shall be so designed that, when actuated, the system should sound alarms in non-patient areas that can be heard above ambient noise levels but only visible alarm indicating devices should be installed in the critical and patient areas in lieu of audible alarm systems to avoid panic amongst the patients.

vi)A the installations shall also be satisfy the I.S. specifications 2189 (as amended) and the code of practice as laid down in the N.BC. part — IV.

T)Lighting Protection of the Building: -

This protection for buildings shall be provided as given in Part-VIII Building Services, Section-2 Electrical installation.

7.

U) Gas Bank (IS - 6044:2000):-

In case of any cooking gas bank, the same should be installed conforming serial no. 4.1.5 and 4.I.6 of the aforesaid IS code of practice.

V)General recommendations: -

i)A resistor for the recording of mock fire drill, evacuation drill, testing and checking of whole firefighting installation, electrical installation should be maintained & shall be liable to produce the same to the authorized Officer of this department on demand.

ii)Fire notice for firefighting and evacuation from the building should be provided and shall be displayed at all places of the building as per clause 5.5 of N.B C.

iii)Floor No. and Directional Sign of escape route should be displayed prominently as per clause

5.5 of the N.B Code. (Auto glow type)

iv)All the occupants and other peoples shall be conversant with the installed firefighting equipment

of the building so that they can operate the same in case of exigency.

v)Arrangement shall be made for regular checking, testing and proper maintenance of all firefighting equipment and keep them in good working condition at all time it should be written in the Register.

vi)Close Circuit camera should be provided in the entire building (especially at the landing area of

the staircases).

vii)In case there are any Balcony and also Terrace both should be used as refuge area.

viii)Corridor, Passages should not be blocked by any kind of gate or door. If there is any gates or doors are available in such corridors or passages, which should not be under lock

and key or adequate guards or other security personnel shall be continuously on duty.
ix)Disposable type Breathing Apparatus Musk to be kept always for emergency Fire situation.
x)No storage or use of combustible materials of any kind shall be allowed in any such building or section thereof except as necessary for day to day work.
xi)Bare minimum quantities of flammable materials such as chloroform, ethyl alcohol, spirit, etc.
shall be allowed to be stored and handled in the building. The handling of such liquids shall not be permitted by un-authorized persons. Bulk storage of these items, will be governed by relevant rules and safe practices.
xii)Laboratories that contain flammable, combustible, or hazardous materials should be separated
and suitably protected from other building spaces.
xiii)Nitrous oxide and oxygen are usually piped through hospital spaces from central distribution point. Although these gases do not bum, they do significantly accelerate combustion. Special attention and precautions are necessary for them.
xiv)To eliminate the risk of Fire Hazards, good housekeeping tor both insides and outsides of the
premises will be strictly maintaining.
xv)Mock fire drill and evacuation drill should be done periodically with participation of all occupants.

Note: -

i)After issuing the work orders of the above mentioned recommendations to say authorized agency from your side for the installations of the same, and on compliance of the same up to the satisfactions of this department & as per the scale as advised from this end, Final Fire Safety Certificate (NOC) shall be issued.
ii)Fire license to be obtained from this end for any hazardous articles (If any, e.g. L.P.G., Oxygen, etc) which attracts Sec-12 of Fire Service Act. after getting the Final Fire safety certificate.
iii)The Fire Service recommendations are issue subject to the free from any Court Case or legal re- encumbrances.

Signature valid
Digitally signed by PRABIR KUMAR RAY
Date: 2019.06.26 14:45:08 IST

Divisional Fire Officer
West Bengal Fire & Emergency Services