



**Government Of West Bengal  
Office Of The Director General  
West Bengal Fire & Emergency Services  
13D, Mirza Ghalib Street, Kolkata - 16**

Memo no.:FSR/0125186231200372

Date: 07-09-2023

**From:**  
**Director**  
**Fire Prevention Wing,**  
**West Bengal Fire & Emergency Services**

**To: M/S SWAN ENGINEERING COMPANY**  
**HOLDING NO - D5/177(NEW) WARD NO-20,UNDER MAHESHTALA MUNICIPALITY,P.S.-MAHESHTALA,MOUZA-**  
**KRISHNANAGAR,J.L.NO- 1,LR DAG NO- 382,383,419,429,LR KHATIAN NO-3930,24PGS (SOUTH),KOLKATA-700140**

**Sub: Fire Safety Recommendation for proposed construction of Residential Complex of M/S Swan Engineering Company, containing 25 nos G+2 Storied (Height- 9.6 mt.) row houses, 14 nos G+5 Storied ( Height- 20 mt.) town houses and 4 nos G+5P+25 Storied (Height- 97.55 mt.) tower building under group Residential Building for ROYAL GANGES- 2 at the premises:- HOLDING NO- D5-177/(NEW) GANGA BANDH ROAD, MOUZA- KRISHNANAGAR, J.L. NO- 1, L.R. KHATIAN NO-3930, L.R. DAG NOS- 382,383,419,429 UNDER MAHESHTALA MUNICIPALITY, WARD NO- 20, P.S.- MAHESHTALA, P.O.- BATANAGAR, 24 PGS(SOUTH), KOL- 700140.**

This is in reference to your application no. 0125186231200372 dated 20-07-2023 regarding the Fire Safety Recommendation for proposed construction of Residential Complex of M/S Swan Engineering Company, containing 25 nos G+2 Storied (Height- 9.6 mt.) row houses, 14 nos G+5 Storied ( Height- 20 mt.) town houses and 4 nos G+5P+25 Storied (Height- 97.55 mt.) tower building under group Residential Building for ROYAL GANGES- 2 at the premises:- HOLDING NO- D5-177/(NEW) GANGA BANDH ROAD, MOUZA- KRISHNANAGAR, J.L. NO- 1, L.R. KHATIAN NO-3930, L.R. DAG NOS- 382,383,419,429 UNDER MAHESHTALA MUNICIPALITY, WARD NO- 20, P.S.- MAHESHTALA, P.O.- BATANAGAR, 24 PGS(SOUTH), KOL- 700140.

**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 favor of the aforesaid building subject to the compliance of the following fire safety measure.**

**Recommendation:**

**A.CONSTRUCTION (FOR G+2, G+5 & TOWER BUILDING - G+5P+25):**

- 1.Whole Construction of the building shall be carried out as per approve plan of local building authority.
- 2.Materials for rapid flame spread categories including untreated wood fibre board etc. shall be not use.
- 3.The doors and windows preferably shall be made of metal.
- 4.The whole construction of the building shall be carried out as per approved plan drawings conforming the relevant

building rules of local Municipal Body.

- 5.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.
- 6.Arrangement shall have made for sealing all the vertical service ducts by the materials of adequate Fire resisting capacity.
- 7.Fire rating test certificate of all interior finish decoration should be submitted to this office before taking occupancy.
- 8.Service Ducts and shafts should be enclosed by walls of 2 hours and doors of one hour fire rating.
9. All such ducts shall be properly sealed and fire stopped at all floor level.

#### B.OPEN SPACE & APPROACH:

- 1.The open space surrounding the building shall be kept clear open to sky and shall confirm the relevant building rules as well as permit the easy accessibility and manoeuvrability of the Fire appliances with turning facility.
- 2.The approach road and roads surrounding the building shall be sufficiently strong to withstand the load of Fire Engine weighting up to 45 M.T.
- 3.The width and height of the entry gates to the premises shall not be less than 5m and 6m respectively.
- 4.Driveway should be free of any type obstruction. No parking will be allowed on the Drive Way.

#### C.I)STAIRCASE(FOR G+5 & TOWER BUILDING- G+5P+25):

- 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 staircase's 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.
- 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 up to respective terrace.
- 4.The roof of the wall shall be 1MT. above the surrounding roof area.
- 5.The width of the staircases and corridors and travel distance of different categories of occupancies shall have to conform the relevant building rules.
- 6.Fire and Smoke check doors at the entrances OF the Staircase enclosures at each floor level shall be provided AS PER SUITABLE.
- 7.The F.C.D. shall be at least two hour Fire resisting wire glass window fitted with self-closing type open able in the direction of escape.
- 8.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 regard.
- 9.All principal stair & stair Lobby shall be pressurized ( FOR TOWER BUILDING).

#### FOR TOWER BUILDING:

Refuge balcony: Shall be provided with cantilever projection having area not less than 15.0 sqm from pressurized fire fighting shaft enclosed with FCD at height shown/marked in the plan.

#### II) PRESSURIZATION OF STAIRCASE(FOR TOWER BUILDING-G+5P+25):

- 1.The pressurization system shall be interconnected with the automatic/ manual fire alarm system for actuation.
- 2.The combination of pressurised & naturally ventilated staircases in the same building may be permissible, if they are segregated by suitable compartmentation.

3. Where ever pressurized staircases is to be connected to unpressurised areas, the two areas shall be segregated.

**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> and collapsible gate shall not be permitted.
2. The lift of the building shall be designed at high speed "Fire lift" and conspicuously indicated marked in the plan.
3. One of the lift cars 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 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 supply.
5. Exit doors of the lift lobby shall be through a self-closing smoke stop door of 1 hour fire resistance. Collapsible gate shall not be permitted.
6. The speed of the fire lifts in the building shall be such that it can reach the top from the ground floor within 1 minute in visual indications of floor numbers shall incorporated in the lift cars.
7. All other requirements shall confirm the I.S. specification including the communication facility in the lift cars connecting go the Fire Control Room of the building.
8. Lift car door shall have a fire resistance rating of half an hour.
9. The words fire lift shall be conspicuously displayed in florescent paint on the lift landing doors at each floor level.
10. A positive pressure of 25-30 pa. Shall be maintained inside the lift lobby. Pressurization shall be maintained round the clock and staircase 50 pa.

**F.FIRE FIGHTING WATER:**

1. UGWR having total water capacity FOR HOLE RESIDENTIAL COMPLEX not less than 400000 Ltrs for fire fighting as shown in the plan drawing.
2. a) OHWR for EACH TOWER BUILDING of not less than 20000 Ltrs shown in the plan drawings for firefighting purpose shall be kept full at all time.  
b) OHWR for G+5 storied EACH BUILDING of not less than 5000 Ltrs for firefighting purpose shall be kept full at all time.
3. The water reservoirs manhole shall have overflow arrangement with the domestic water reservoirs as well as to avoid stagnancy of water.
4. Provision of necessary manhole shall be made on the top of these reservoirs as per specification.
5. Provision of replenishment at the rate of at least 2000 ltrs/min. from two separate sources of water supply shall be made.
6. The deep tube wells for the replenishment of the reservoir shall be incorporated with auto starting facility with actuation of auto detection and suppression arrangement of the premises and shall also be connected with dual power supply units.
7. Provision of placing Fire Appliances near the underground water reservoir to be made to draw water in case of emergency.

**G.WATER LAYOUT SYSTEM:**

**a. Ring main Hydrant System(Hole Residential Complex):**

1. 150 mm dia. Ring main water layout arrangement converting the entire premises(hole Residential Complex) of the project with provision of pillar type yard hydrants with door Hose boxes, containing 2 lengths of 63mm delivery hose and short

branch shall be provided at all strategic location and surrounding the buildings conforming I.S. 3844-1989 (up to date amendment).

2.The system shall be so designed that shall always be kept charged with water under pressure and capable to discharge min. 2850ltrs. /min. at the pressure 3.5kg/sq.cm. at any point.

b.Wet Riser & Hose Reels System (for G+V & Tower Building):

1.The building shall be provided with separate Wet Riser for sprinkler (Only Tower Building)& Hydrant Riser 150 mm(for G+V & Tower building) internal diameter pipe line (preferably zone wise for tower building)each with provision of landing valves at the staircase landings/ half landings at the rate of one such rises for 1000 sq. mt. of floor area.

2.The system shall be so designed that shall be kept charged with water all the time under pressure and capable to discharge 2850ltrs/min. at the ground floor level outlet and minimum 900 ltrs/min. at the top most and furthest outlet. In both cases the running pressure shall not be less than 3.5 kgs/sq. cm.

3.Provision for Hose Reel units on swivelling drum in conjunction with Wet Riser shall be made near each landing valves.

4.Hose Reel unit with provision of outlets in each floor at the staircase landing/half landing as per suitable at the rate of one such unit of Wet Riser and Hose Reel per 1000sq.m. of floor area.

5.Yard Hydrant/ Ring Main Hydrant with provision of adequate number of Pillar type hydrant shall be installed surrounding the buildings in accordance with relevant I .S. specifications.

6.Provision of adequate number of suitable Fire Service inlet shall be made as per relevant I. S. specification.

7. All other requirements of the water base Fire Protection System shall be made surrounding the residential complex as per I.S. Specification 3844-1989 (with up to date amendment).

c.Automatic Sprinkler Installation(For Tower Building):

The automatic Sprinkler installation shall be provided in all floor areas including residential part as per provision of NBC part- IV, 2016 and relevant I. S. 9972. Alarm gong to be incorporated along with the sprinkler system.

d.Water projector Protection:

The Electrical installation viz. transformer, HT, LT switch gear etc. shall be protected by high medium velocity water projector system as per suitability.

H.FIRE PUMP( For hole Residential Complex):

1.Provision of the Multi stageand multi outlet Fire Pump of 2850 LPM shall have to be made to supply water at the rate designed pressure and discharge into the water-based system which shall be installed in the respective pump room.

2.One such pump of same capacity shall always be kept on stand-by of diesel driven type.

3.Provision of separate pump 2850 LPM for sprinkler system to be made to keep the water base system under pressurized condition at all the time and shall be installed.

4.Provision of separate Jockey Pumps of 180 LPM shall also have to be made to keep the water-based suppression systems i.e. hydrant and sprinkler system separately under pressurized condition at all the time.

5.All the pumps shall be incorporated with both manual and auto starting facilities.

6.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.

7.The fire pumps shall be multi stage and multi outletcreating pressure zones for tower building.

8.One set of pumps shall be provided for each 100 hydrants or part thereof, with a maximum of two sets. In case of more than one pump set installation, both pump sets shall be interconnected at their delivery headers.

I. a) ELECTRICAL DISTRIBUTION SYSTEM:

1. Electrical distribution system of all the building shall be made in the form of concealed wiring or in heavy gauge M.S. conducted continuously bonded to earth cables shall be I.S. marked and preferably be F.R.L.S. categories.

2. Electrical distribution system shall conform all the requirement laid down in I.S. 1946-1982.

3. For every 23V wiring above false ceiling 660 grade insulated cable shall be used. Transformer switch gear H.T., L.T. and other electrical rooms shall be at the ground floor level and other electric rooms shall be at least 4 hrs. Fire resisting capacity, adequate ventilation arrangement shall have to be made in all the rooms, Dry and explosion proof type shall preferably be installed.

4. All electrical installation viz. Transformers, Switch Gears, L.T., H.T. rooms shall be protected with both auto detection and suppression system as per suitability.

b) Alternative Power Supply:

Arrangement shall be made to supply power with the help of a generator to operate at least the Fire pump, Pump for the deep tube well, Fire Alarm system, etc. and also for illuminating the staircase, corridors etc. and other place of assembly of the building in case of normal power failure.

J. Public Address System: -

Public address system shall have to be provided and linked between all floors and control room with talk back facility.

K. Intelligence Analogue System: -

1. Auto Fire Alarm System with analogue addressable smoke/ Heat detector as per suitability shall be installed in each floor (FOR G+5 & TOWER BUILDING).

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 distance shall not be more than 22.5 mtrs in order to reach any of the call point (FOR G+2, G+5 & TOWER BUILDING).

3. 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 facility to the local fire service unit.

4. All the installation shall also be satisfying the I. S. specifications 2189(a amended) and the code of practice as laid down in the 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 Duct for individual floors and in no way interconnected with the ducting of any other 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 unit 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. Whenever the ducts pass through Fire wall of floors, the opening rounding 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 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.
9. Area more than 750 sq. Mtr on individual floors shall be segregated by a Fire wall and automatic fire damper for isolation shall be provided.
10. If the air handling unit serve more than one floor, the recommendation shall give above shall be comply with in addition to the condition given below:
- a. Proper arrangement by way of automatic fire dampers working on fuse able link for isolating all ducting at every floor from the main riser shall be made.
- b. When the automatic fire alarm operates, the respective air handling unit of the air conditioning system shall automatically be switched off.
11. The vertical shaft for treated fresh air shall be of masonry construction.
12. Inspection panel shall be provided in the main trucking to facilitate the cleaning of ducts of the accumulated dust and to obtain access for maintenance of fire dampers.
13. No combustible materials shall be fixed nearer than 150 mm of any duct unless such duct is properly enclosed and protected with non-combustible materials ( glass wool or spun glass with neoprene facing, enclosed and wrapped with aluminium sheeting ) at least 3.2 mm thick would not readily conduct heat.
14. The ducting shall be constructed of substantial gauge metal in accordance with good practice.

O. FIRE DAMPERS(if any):

1. These shall be located in conditioned air ducts and return air ducts/ passages at the following points:
- a) At the fire separation wall,
- b) Where ducts pass through floors and,
- c) At the inlet of supply air duct and return air duct of each compartment on every floor.
2. The dampers shall operate automatically and shall simultaneously switch of the air handling fans. Manual operation facilities shall also be provided.
- NOTE: - For blowers where extraction system and duct accumulators are used, dampers shall be provided.
3. Fire/smoke dampers for building more than 24 meter in height:
- For apartment house - In non-ventilated lobbies/corridors operated by fusible link/smoke detector with manual control.
- For other building – On operation of smoke detection system and with manual control.
4. Automatic Fire dampers shall be so arranged as to close by gravity in the direction of air movement and to remain tightly closed on operation of a fusible link/smoke detector.



**P.a)OTHER PROTECTING MEASURES:**

- 1.Special rescue equipment like Smoke hood, self-contained B.A. set, portable lights at least two pairs(4 sets) shall be made available in the main fire control room with facilities of C.C.T.V. system.
- 2.Light protection Red light warning system etc shall be provided at the top of the building as recommended in N.B.C. part-VIII (building service section-2, electrical installation.
3. Lighting arrester arrangement to be provided at highest altitude of the building.

**b) MLCP (For G+5P+25 -Tower Buildings Ground floor to 5th floor):**

1. Fire engine access way shall have to be provided for the fire engine to gain access to the car parking entrance & exit.
2. Fire hydrant are to be provided in accordance with clause- 4.4 of N.B.C. Part- 4. Hose Reel Hose shall have to be provided
3. Each car parking Deck shall be provided with atleast 50% external ventilation opening of the perimeter of the wall areas an uniformly distributed.
4. Auto detection system, MCP with Hooter and Automatic water sprinkler along with detection system shall be provided at parking areas as per relevant I.S. specification. Cross zone wise sprinkler shall be implemented.
- 5.Water curtain shall be provided as per relevant I.S. Specification.

**Q.FIRST AID FIRE FIGHTING SYSTEM (FOR G+2, G+5 & TOWER BUILDING):**

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

**R.Emergency & Escape Lighting(FOR G+5 & TOWER BUILDING G+5P+25):**

Emergency lighting shall be powered from a source independent of that supplying the normal lighting. Escape lighting shall be capable of :-

- 1.Indicating clearly and unambiguously the escape routes .
- 2.Providing adequate illumination along such routes. To allow safe movement of persons towards and through the exits.
- 3.Ensuring that fire alarm call points and firefighting equipment provided along the escape route can be readily located.
- 4.The emergency lighting should automatically activate with in one second of the failure of the normal lighting supply.
- 5.The emergency lighting system shall be capable of continuous operation for a minimum duration of 1 hour and 30 minutes even for the smallest premises.

**S.Service Duct/Shafts(FOR G+2, G+5 & TOWER BUILDING G+5P+25):**

- 1.Service ducts & shafts shall be enclosed by walls of 2 hours & doors of 1-hour fire rating.
- 2.All such ducts shall be properly sealed & fire stopped at all floor level.

3.A vent opening at the top of the service shaft shall be provided having between one fourth & one half of the area of the shaft.

T.Electrical Service(FOR G+2, G+5 & TOWER BUILDING -G+5P+25):

1.The electric distribution cable/wiring shall be laid in a separate duct. The duct shall be sealed at every floor with non-combustible materials having the same fire resistance that of the duct. Low & medium voltage wiring running in shaft an in false ceiling shall run in separate conduits.

2.Water mains, telephone lines, intercom lines, gas pipes or any other service line shall not be laid in the duct for electrical cable, use of bus ducts/ solid rising mains instead of cables is preferred. i

U.Separate Circuit(for G+V & Tower Building- G+5P+25):

1.Separate circuits for firefighting pumps, lifts, staircases, corridor lighting & blowers for pressuring system shall be provided directly from the main switch gear panel & this circuits shall be laid in separate conduit pipes, so that fire in one circuit will not affect the others.

2.Such circuits shall be protecting at origin in an automatic circuit breaker.

3.Master switches controlling essentials service circuits shall be cleared labelled.

V.Stand by Electric Generator (for Tower Building- G+5P+25):

1.A stand by electric generator shall be installed to supply power to stair case & corridor lighting circuit, fire lifts the stand by fire pumps, pressurization & damper system in case of failure of normal electric supply.

2.The Generator shall be capable of taking starting current of all the machines & circuits stated above simultaneously.

3.If the stand by pump is driven by diesel engine, the generator supply need not be connected to the main electrical pump were parallel HV/LV supply from a separate substation is provided with appropriate transformer for emergency, the provision of generator may be waived in consolation with authority.

W. Transformer:-

Transformer shall conform to the following:

1.A substation or a switched station with oil filled equipment shall not be located in the building.

2.The substation structure shall have separate fire resisting wall/ surroundings and necessarily be located at the periphery of the floor having separate access from the fire escape stair case.

3.The outside walls ceiling, floor, opening including doors & windows to the substation area shall be provided with a fire resisting door of 2 hours fire rating.

4. Direct access to the transformer room shall be provided, preferably from outside the fire escape stair case.

5.Sub-Station Building to be protected by VESDA fire Detection system and suitable Suppression System.

6.Oil field Transformer shall be protected by High Velocity Water Projection System/ Deluge valve.

X. Fire Control Room:-(for whole Residential complex)

1.For all building 15 m in height and above, and apartment buildings with a height of 30 m and above, there shall be a control room on the entrance floor of the building with communication system to all floors and facilities for receiving the



messages from different floors.

2.Details of all floors plans along with the details of firefighting equipment and installations shall be displayed in the fire control room.

3.The fire control room shall also have facilities to detect the fire on any floor through indicator board's connection, fire detection and alarm system on all floors.

4.The fire staff in charge of the fire control room shall be responsible for maintenance of the various services and the firefighting equipment & installations in co-ordination with security electrical & civil staff of the building.

**Y. Firefighting Shaft(Fire Tower)(for Tower Building):**

1.An enclosed shaft having protected area of 120 min 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.

2.These shall also serve the purpose of exit requirement/strategy for the occupants.

3.The respective floors shall be approachable from firefighting shaft enabling the firefighter to access the floor and also enabling the firefighters to assist in evacuation through fireman's lift.

4.The firefighting shaft shall be equipped with 120 min fire doors.

5.The firefighting shaft shall be equipped with fireman talk back, wet riser and landing valve in its lobby, to fight fire by firefighters.

6.Fire fighting Shaft will have to be provided as per NBC Part-4 Fire & Life Safety 2016 Clause 2.24.

**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.Disposable Type B.A. Mask to be kept always for emergency fire situation.

4.Floor numbers and directional sign, showing the nearest exit, refuge area, and fire points etc. shall have photo luminescent signals at each floor of the building shall be made available conforming I.S. specification.

5.The employees and security staff shall be conversant with installed Fire Fighting equipment 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 equipment installed in the building to keep them in perfectly good working conditions at all times.

7.A crew of trained Fireman under an Officer shall be maintained round the clock for safety of the building, CCTV shall be provided.

8.Mock Fire practice and evacuation drill shall be performed periodically with participation of all occupants of building.

9.Fire License shall have to be obtained from this Department after compliance of the above Safety Recommendations before commissioning of the Gas Bank.

10.The 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 and installation of the building.

On compliance of all the above Fire 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 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

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