PROPOSED HIGH RISE RESIDENTIAL DEVELOPMENT FOR BAJRANG URBAN INFRA, AT GUNTUR GREEN GRACE

DESIGN BRIEF REPORT AND SUGGESTIONS AND SYSTEMS INCORPORATED AS PER

MEETING HELD WITH AP-DG FIRE

FIRE FIGHTING WORKS

We may upload
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FIRE PROTECTION SYSTEM

1. OBJECTIVE

- The proposed Residential Development Project site is located at Guntur. The building has divided into Residential + Amenities. The Total Area of the Site: 21,367.86 sqmts (or) 25,555.74 Sqyds (5.28 Acres).
- Common Basement 2no of Basements for Parking and Stilt level parking For all Towers & Amenities
- Rose Tower / Tower -T1 - Stilt floor + 15 floors and Terrace
- Jasmine Tower / T2- Stilt floor + 15 floors and Terrace
- **Lotus Tower** /T3 - Stilt floor + 15 floors and Terrace
- Amenities/ Club House – Ground + 06 floors and Terrace

The main objective of fire fighting system shall be to protect loss of life and property duly complying to statutory provisions & norms. For complying to the stipulated norms, various systems/ measures have been adopted. They are,

- Automatic Smoke detection System for Parking floors – Basements & Stilt floor .
- Electronic Fire Alarm System
- Fire Extinguisher at every 100m2 of builtup area , pressureless Aerosol system Kitchen area
- Signage's
- Emergency Assembly point.
- Automatic Detection System.

OCCUPANT LOAD

As per NBC 2016, (Table 3) Occupant Load as follows:

Sl. No.	Type of Building	Population Requirement
1	Residential	12.5 Sqm / Person
2.	DEPARTMENTS STORES	20 Sqm / Person
3.	ASSEMBLY	1.4 Sqm / Person

Staircase Aggregate Calculation

ROSE TOWER – TOWER01						
NO. OF FLOORS	AREA		Occupancy Type	Occupant Load	Required Staircase Aggregate	Proposed Staircase Aggregate
1,2,3,6,7,9,11,13,14	12.5	2,195.80	A	175.7	1.76	5.5
4,8 & 12th Floor	12.5	2,223.70	A	177.9	1.78	
(5,10 & 15th Floor)	12.5	2,248.69	A	179.9	1.80	

JASMINE TOWER – TOWER 02						
NO. OF FLOORS	AREA		Occupancy Type	Occupant Load	Required Staircase Aggregate	Proposed Staircase Aggregate
1ST,2ND,3RD,6TH,7TH,9TH,11TH,13TH,14TH	12.5	2,446.34	A	195.7	1.96	5.5
(4TH,8TH&12TH FLOOR)	12.5	2,549.54	A	204.0	2.04	
(5TH,10TH&15TH FLOOR)	12.5	2,549.54	A	204.0	2.04	

LOTUS TOWER – TOWER 03						
NO. OF FLOORS	AREA		Occupancy Type	Occupant Load	Required Staircase Aggregate	Proposed Staircase Aggregate
TYPICAL FLOOR(1ST TO 15TH FLOOR	12.5	1,179.28	A	94.3	0.94	2.75

Amenities						
NO. OF FLOORS	AREA		Occupancy Type	Occupant Load	Required Staircase Aggregate	Proposed Staircase Aggregate
GROUND FLOOR	20	360.00	F1	18.0	0.18	3.5
1ST FLOOR	1.4	408.82	F1	292.0	2.92	
TYPICAL (2ND TO 6 TH) FLOOR	1.4	486.17	D	347.3	3.47	

STAIR CASE

Staircases shall be either internal or external type. Staircases shall be located occupant shall not travel more than 45meters to reach an exit and clear width of stairs shall be minimum 1500mm wide for external stair and 1250 mm for internal staircase . Minimum width of tread shall be 300 mm and Riser 150mm.

All staircases shall fit with self closing type fire rated doors. No. of staircase shall be depends on the travel distance and occupant load calculation as per NBC 12.5mm width of staircase required per person.

PRESSURISATION OF STAIRCASES

As for as possible staircases shall be constructed as a self contained unit and in such a way that one of its wall shall be external wall of the building.

- Stair cases have to be pressurized for positive pressure as per NBC, to avoid entry of smoke / toxic gases in to stair wells.

- Also staircase should have natural ventilation by means of windows / louvers on the external wall of the staircase.

2. FIRE WATER SUPPLY PIPE SYSTEM

This building is provided with dedicated plumbing 2 hour rated pipe with Gravity Line connected with 5HP Plunger Pump (N+1) configuration connecting to 2 consecutive floors as a standby with fire rated flexible pipe on all floors near each staircase .

2. LPG Cylinders outside /utility area AND SMOKE DETECTION SYSTEM CONNECTED TO BMS /FIRE PANEL

- Tapping is taken from the Down take gravity pipe line to connect with 5HP Plunger pump and then further connected to Flexible pipe (with fire rated) for the water extinguishing
- Isolation valve is considered at the tap off points, from maintenance point of view.
- Minimum pressure of 3.5 kg/cm2 will be ensured at the remotest point of the each node .
- Parking /Cellars smoke detection to trigger smoke ventilation fans
- Heat detection system should be installed in Parking areas to trigger fire alarm system

3. OTHERS

- fire suppression 100 KG foam –Co2 extingusher is provided on each compartment to prevent the fire from propagating into adjacent cars and areas in case of a fire incident. The system will encapsulate the fire between the water curtain sections in order to make the evaluation of people who may be trapped inside.
- Considered 3000sqm each fire compartmentization for the parking area as per the NBC 2016
- Considered building with type-2 construction as per NBC guidelines which caters 2 hours fire rating

4. TWO WAY TALK BACK SYSTEM

Two way P.A. systems comprise speakers located on all landing of every staircase on each floor and connected to floor selector-switching console and amplifiers.

The each speaker is considering as zone for easy identification and announcement, the speakers are dual type i.e., work as speaker and microphone for talk back to the reception /security room. The console / amplifier and microphone are installed in suitable Rack close to the fire alarm control panel.

In the event of actuation of any manual call point on a particular floor, the fire marshal / security shall made announcements / listen to the talk back from the speakers and shall guide the occupants for evacuation

5. PORTABLE FIRE EXTINGUISHERS

There deferent types of Extinguishers for special fires, such as carbon-di-oxide, dry chemical powder, water and Foam type etc.

Portable fire extinguishers are provided at locations mentioned below,

Sl.no	Type & Capacity of Fire Extinguisher	Location
1	ABC powder 6kg	Floor areas, kitchens, main switch boardroom transformers
2	CO2 4.5	Electrical panel room and lift machine room
3	AFFF foam type 9 ltrs	D. G rooms and Fire Pump room
4	BASEMENT AREAS -EACH FIRE ZONE – 100KG FIRE SUPRESSION SYSTEM	

6. SIGNAGES.

Signages are provided on all exit routes which will direct occupants to move towards exits in case of

any emergencies. These help in avoiding any panic/ chaos & smooth movement of men & material during emergency. These help in locating the potable extinguishers which are used as the primary source of fire suppression. Signages also help in understanding the DO's & DON'T's in case of fire leading to better functioning of the system. The signages are placed such that at least 2 exit signages are visible when a person is standing at any location inside the building. Some of the common Fire Signages that are proposed are as follows.

- Fire Order Board
- Fire Exit Signages
- Floor Identification markers
- Signages near Elevators/ lifts
- Fire Extinguisher identification

As per guidelines all the exit signs shall be located at a min ht of 2.0m & max of 2.5m. The exit signs shall be provided in such a way that no point in the escape route is more than 30m from the visible exit sign. At exit sign indicating the direction to an exit shall be provided at all change in direction such as in corridors where the Exit locations are not clear.

7. EMERGENCY ASSEMBLY POINT.

In case of any emergencies, safe evacuation of people is the primary criteria. For the same proper exit routes are planned leading to common assembly point. These Emergency assembly points are located in the premises at strategic locations such that it is easily accessible & safe from the affected area. It is used to plan the further course of action to be taken to prevent spread of fire & also used to check for headcounts. With the above, a comprehensive check on the loss of life can be as certained, further course of action can be initiated.

8. SYSTEM DESCRIPTION

The fire protection/fire fighting system is proposed through high pressure Plunger Pump system , Fire Detection System and fire extinguishers as per submitted documents .

Reference to DG Fire meeting held on 13.08.2024 at Vijayawada office below listed points to be accommodated /as listed below

- Each floor Fire plunger pump of capacity 5HP provided to provided sufficient water head using with terrace level Gravity system for the down take pipe for all the Typical floors
- Stand by connection from the upper level pump is provided in case of any maintenance for all electro- mechanical system
- Basement 1 , Basement 2and Stilt levels with car parking areas provided with 15 HP pump with 30mtrs head to accommodate remotest POINT pressure is min 3.5 bar
- Transfer pumps provided from UG -Fire tank to OHT fire pump with 15HP pump and 75mtrs head
- Signages providing as per NBC part-4 /NBC 2016
- Fire suppression using liquid C02 for electrical panels, record rooms , Fire Command centre are providing as per NBC Part4
- Dry Chemical powder on wheels is provided with 50KG capacity for the easy movement
- Fire proof paint is providing for all the electrical rooms /etc
- Fire tanks at the Terrace level Bottom mandate with Fire storage tank is connected with fire outlet pipe using GI class C and upper level of the same tank above mandage level connected with Domestic water supply pipe line using GI /CPVC relavent NBC classification using flush /clean /NRV system
- All Kitchen area provided with fire ball system for the self extinguishing in case of emergency .
- Fire awareness mockup to be conducted to households once in 3 months to understand the sensitivity and easy operational perspective to fight localised fire within each floor /tower a lesser response time of 4min to 15min max .
- Considering Water electrical conductivity for the Parking areas with EV Cars/etc , we provided with Smoke & Head detection system integrated with automatic Fire alarm system/ BMS .
- Car parking area for EV cars should have powder type sprinkler (Auto Modular) 5KG capacity

(a) Residential Building

FIRE WATER STORAGE TANKS

The tank capacities are proposed as per NBC 2016 (Residential building)

S.No's	Description	Remarks
1	Terrace tank capacity (for each Towers & Amenities)	10Cum
3	Water Sump	210Cum
4	Fire Sump capacity	300Cum

Pump Head:

As per NBC Table 07 the minimum running pressure shall be 3.5 bar at the farthest node point.

Pump capacity and Head is listed below:

- **Transfer Pumps 15HP -75mtrs head from Fire Pump room to Fire OHT**
- **Parking area 15HP – 30mtrs head in each fire zone movable type pumps N+1**
- **Each Floor 5HP Plunger Pump at every staircase area**

9. FIRE PROTECTION SYSTEM SCHEME – AS ATTACHED IN THE DRAWINGS