

# Assignment-2

## Fire Safety Assessment Report (As per NBC 2016 – Part 4)

### Building Services- CIL7690

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# **Problem Statement**

- Visit one residential and academic building on the campus and map out/describe the various firefighting measures used/available in these buildings.
- Referring to the National Building Code of India, calculate the fire safety and fire protection requirements for these two buildings.

## **Introduction**

In this report there is details about the fire fightings measures present in the buildings that were selected to analyze and its comparison with the NBC guidelines. Later there is the recommendations and key observations are also given.

## **Building Descriptions**

In this section the details about the building are given:

### **Y4 – Gulmohar Hostel (Residential Building)**

- **Type:** Residential – Group A, Subdivision A-1 (Hostel)
- **Floors:** G + 3
- **Rooms:** 80–84 per floor, 2 common rooms per floor(except ground floor where there is this open space for bicycles)
- **Staircases:** 4 internal (one at each corner)
- **Lift:** 1
- **Exits:** 4 exits on ground floor (only 1 open, 3 locked)
- **Firefighting Equipment:** 8 fire extinguishers per floor(2 per corner) (CO<sub>2</sub> + DCP), 4 hose reels per floor(1 per corner)
- **Other:** No emergency lighting, or external fire escape

### **Department of Civil & Infrastructure Engineering (Academic Building)**

- **Type:** Educational – Group B, Subdivision B-1
- **Floors:** G + 1 + Terrace
- **Rooms:** Ground floor – Concrete Lab, Classrooms, 13 cabins; First floor – Computational Lab, Cabins
- **Staircases:** 2 (each in opposite corners, 3–4 m(approx) apart)
- **Exits:** 2 exits on ground floor in the back side and 1 in the front side
- **Firefighting Equipment:** 3 types of extinguishers(water+CO<sub>2</sub> + DCP, per floor(ideally but there are only 3 corners where all three are there and in 2 corners there are 2 and in 2 corners there only 1 and in 1 corner there are none), 4 hose reels
- **Other:** Manual Call Points (Bosch MCP) installed; no emergency lighting or external staircases

# NBC 2016 Part 4 Compliance Tables

## Y4 Gulmohar Hostel

Requirement	NBC Provision	Compliance
Min. 2 Ground Floor Exits	Mandatory	Only 1 open
Travel Distance (should be less than or equal to 30 m)	Mandatory	Exceeds upper floors
Min. 2 Staircases	Mandatory	4 Provided
Exit Width (should be greater than or equal to 1.5 m)	Mandatory	2–2.5 m
Emergency Lighting/Signage	Mandatory	Not Installed
Fire Extinguishers	Mandatory	Present in all corners
Hose Reels	Mandatory (greater than 15 m height)	Provided
External Escape Staircase	Recommended (greater than 15 m)	Not Installed

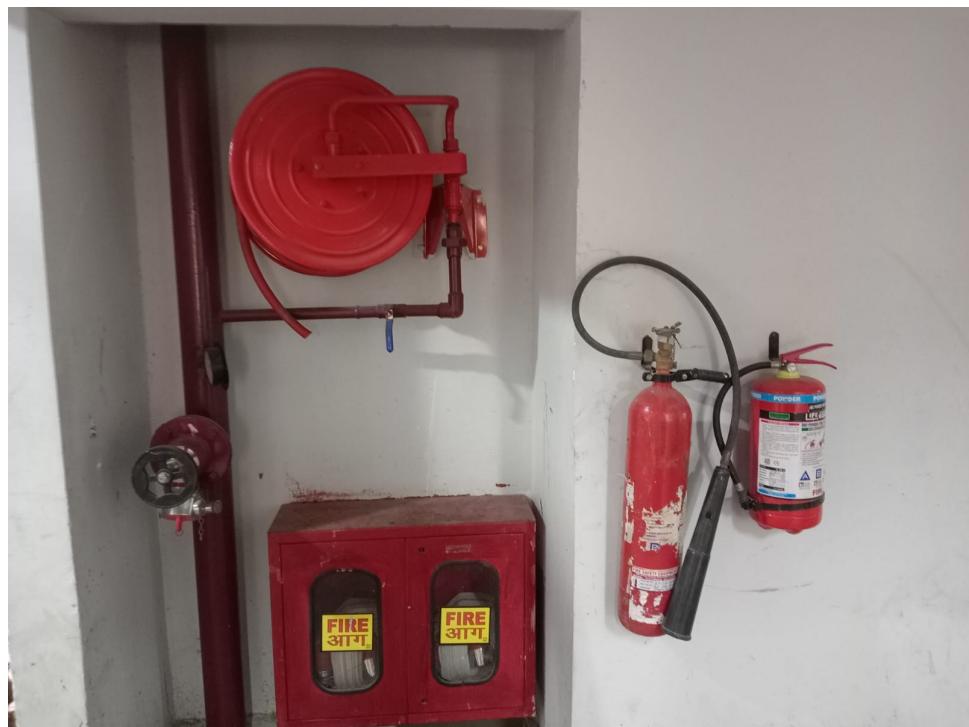


Figure 1: Fire Extinguishers and Hose Reel Present in Y4

## Academic Building – Department of Civil & Infrastructure Engineering

Requirement	NBC Provision	Compliance
Min. 2 Exits per Floor	Mandatory	2 Provided on ground floor
Travel Distance (should be less than or equal to 22.5 m)	Mandatory	approx 20 m
Clearly Separated Staircases	Strongly Recommended	3–4 m apart
Exit Width (should be greater than or equal to 1.5 m)	Mandatory	2–2.5 m
Emergency Lighting/Signage	Mandatory	Not Installed
Fire Extinguishers	Mandatory	Present but Uneven coverage
Hose Reels	Recommended	Unevenly Distributed
Fire Alarm (MCP)	Mandatory	Present
External Escape Staircase	Recommended(for buildings greater than 9 m)	Not Installed



Figure 2: Fire Extinguishers and Hose Reel Present in CIE

## Key Observations

- Both buildings lack emergency lighting.



Figure 3: Fire exit(present in the back side of the CIE Buildings

- Y4 Gulmohar Hostel has locked exits on the ground floor, violating NBC regulations.
- Travel distance to exits on upper floors in the Y4 Hostel exceeds NBC 2016 limits.
- The academic building has unevenly distributed fire extinguishers, with some corners lacking full coverage.
- Neither building has an external fire escape staircase, which is recommended for safety in case of emergency.

## Summary of Observations

- **Y4 Hostel:** Good coverage of fire extinguishers and hose reels. However, emergency signage and lighting are absent. Three out of four exits are locked, and travel distance to stairs exceeds NBC limits.
- **Academic Building:** Complies well with exits, and stair separation. However, it lacks emergency lighting, uniform number of extinguishers and an external escape staircase.

## Recommendations

- Install emergency lighting in both buildings.
- Ensure all exits remain unlocked and accessible at all times.
- Provide an external fire escape staircase in both buildings.

## Conclusion

Both buildings partially comply with NBC 2016. Immediate attention is required in areas like emergency signage, external staircases, and locked exits. With targeted upgrades, compliance and occupant safety can be significantly improved.