

Prevention of Fire in Tall Buildings

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Abstract

Fire outbreak in a building will, obviously, create panic and confusion in people occupying it. Fire causes slight to full damage to properties, persons and also in worst cases, leads to collapse of structures. If the fire intensity is more, there are chances that it may affect the neighbouring structures. Fire resistance of different building materials will not be the same, and their behavior during fire will be a major issue, once fire outbreaks. This paper highlights some of the aspects of fire safety in a building, and also some of the precautions we can take during such fires.

Keywords: Buildings, Fire Safety, Fire Control

1. Introduction

With advances in technology many tall buildings are being planned worldwide. One of the major issues coming in tall buildings is managing the larger number of people who will be using the building at a given period of time. Every building should have its own safe guarding measures, present to combat fire outbreaks, if any. This paper gives some of the fire control systems that can be used.

2. Objectives of Fire Safety¹

Any fire safety measure should satisfy the following aspects:

1. Safety to persons and other living beings
2. Prevention of damage to property
3. Management of fire
4. Fire prevention or fire protective measures

Building components which can be affected by fire are:

1. Furniture, especially those made of materials like timber, soft wood, bamboo etc

2. Electrical items like fittings, fans, wires, tube lights etc, and also water supply mains like pipes etc
3. Claddings and covering materials which catch fire easily
4. Important structural members like beams, columns etc
5. Other materials which has low fire resistance

Fire may also reach the neighbouring buildings and cause damage there also, if a conduction path available. The effects of wind also plays a major role in the outbreak of fire.

3. Strategy for Fighting Fire¹

A fire is often caused by the combined action of a fuel, heat and the presence of air namely oxygen. When these components mix together a fire is produced and due to addition of new materials, getting affected by the fire, the fire may turn into a major one and can cause intense damage.

The strategy to be adopted in any fire safety programme is to isolate the fuel sources away from the ignition sources.

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4. Some Fire Control Measures

These indicate also the precautions, which can be adopted to control fire. They are:

1. To reduce use of combustible materials
2. Careful use of heat producing units like stove, power units, exhaust systems etc
3. Properly designing electrical circuits and properly insulating them.
4. Good quality exhaust systems to maintain the optimum temperature inside the building
5. Use of fire alarms and other precautionary equipments like sprinklers which give indication of fire onset
6. Encasement to materials which are easily combustible
7. Installation of fire fighting provisions like risers both wet and dry

8. Storage of fire inhibiting agents like sand, water, or canisters containing fire fighting foam etc
9. Use of flame detectors
10. Proper planning of building such that the units which handle fire are made available

5. Conclusion

The effects of fire on a building are serious, and if left unchecked may cause severe damage to life and property. It may also render the building unfit for future use. Therefore, by adopting suitable fire safety measures, we can fight fire in buildings.

6. References

1. Tall buildings. [Unpublished Lecture notes]. SRM University, Chennai.