Building X Risk Analysis

# Introduction

The report covers the risk analysis of the building. It covers the fire scenarios that can happen during the normal operation of the building. Building X is a high-rise building that is planned and built for apartments and a shopping centre. Thus, the building is divided into three sections: the residential part, the shopping part and the garage part. Therefore, the analysis is divided as follows:

1. General building risk analysis
2. The risk analysis of the residential part of the building
3. The risk analysis of the shopping part of the building
4. The risk analysis of the garage part of the building

The building is located at the location of ABC. It is a 10-floor building, of which 8 floors are above ground level and two are below ground level. The floors below ground level are garages. Residential and shopping parts are above ground level. The building is 25 meters high, 30 meters long, and 5 meters wide.

# General risk overview

## Number of people

The number of people varies in different parts. Thus, details are presented in corresponding sections for each part.

## Materials

The materials that can contribute to the fire vary in different parts of the building. Thus, details are presented in corresponding sections for each part.

## Emergency Access Roads

The building is located approximately 1300 m from the firefighting brigade. Consequently, emergency units in the case of a fire need approximately 10 minutes to reach the location of the building. An area for the emergency vehicles to stop is provided in front of the building.

## Evacuation paths

General building emergency paths are provided in the building by:

* The main vertical staircases are from the lowest floor to the highest floor.
* Each floor has an evacuation path. Thus, details are presented in corresponding sections for each part.

## Safety measures

Detailed safety systems for each part of the building are described in subsequent sections. In general, the following is provided for the entire building:

* The network of hydrants is provided across the entire building.

# The analysis of the residential part

## Number of people

The density of the occupants is 0.01 person/m2.

## Materials

Materials present in this part of the building can significantly contribute to the firepower. The material fire risk level is 3.

## Emergency Access Roads

Access to the emergency units from the residential part is provided by walkways on each floor and vertical staircases.

The length of the walkway for the emergency unit is 55 m, which is the walkway from the location where firefighters stop their vehicles and continue on foot to the location of the fire.

## Evacuation paths

General building emergency paths are provided in the building by:

• The main vertical staircases are from the lowest floor to the highest floor.

• Each floor has an evacuation path. Thus, details are presented in corresponding sections for each part.

## Safety measures

According to the conditions relevant for this part, the following safety systems are to be provided:

* Fire detection
* Hand Fire extinguishers
* Hydrants for firefighters
* Emergency path is 1 m wide

# The analysis of the shopping part

## Number of people

The density of the occupants is 0.1 person/m2.

## Materials

Materials present in this part of the building can significantly contribute to the firepower. The material fire risk level is 5.

## Emergency Access Roads

Access to the emergency units from the residential part is provided by walkways on each floor and vertical staircases.

The length of the walkway for the emergency unit is 35 m, which is the walkway from the location where firefighters stop their vehicles and continue on foot to the location of the fire.

## Evacuation paths

General building emergency paths are provided in the building by:

• The main vertical staircases are from the lowest floor to the highest floor.

• Each floor has an evacuation path. Thus, details are presented in corresponding sections for each part.

## Safety measures

According to the conditions relevant for this part, the following safety systems are to be provided:

* Fire detection
* Hand Fire extinguishers
* Fixed active Fire extinguishers
* Hydrants for firefighters
* Emergency path is 2 m wide

# The analysis of the garage part

## Number of people

The density of the occupants is 0.05 person/m2.

## Materials

Materials present in this part of the building can significantly contribute to the firepower. The material fire risk level is 4.

## Emergency Access Roads

Access to the emergency units from the residential part is provided by walkways on each floor and vertical staircases.

The length of the walkway for the emergency unit is 45 m, which is the walkway from the location where firefighters stop their vehicles and continue on foot to the location of the fire.

## Evacuation paths

General building emergency paths are provided in the building by:

• The main vertical staircases are from the lowest floor to the highest floor.

• Each floor has an evacuation path. Thus, details are presented in corresponding sections for each part.

## Safety measures

According to the conditions relevant for this part, the following safety measures are to be provided:

* Fire detection
* Hand Fire extinguishers
* Fixed active Fire extinguishers
* Hydrants for firefighters
* Mechanical ventilation
* Emergency path is 1.5 m wide

# Conclusion

We conclude that:

* The building infrastructure provided is compliant with safety requirements
* The safety measures are such that in the case of fire scenarios, the fire can be detected and the occupants can safely leave the building
* The safety measures are such that in the case of fire scenarios, the emergency units can quickly access the location and distinguish the fire.