

Concept & Control Measures of



Fire Compartment

1. INTRODUCTION

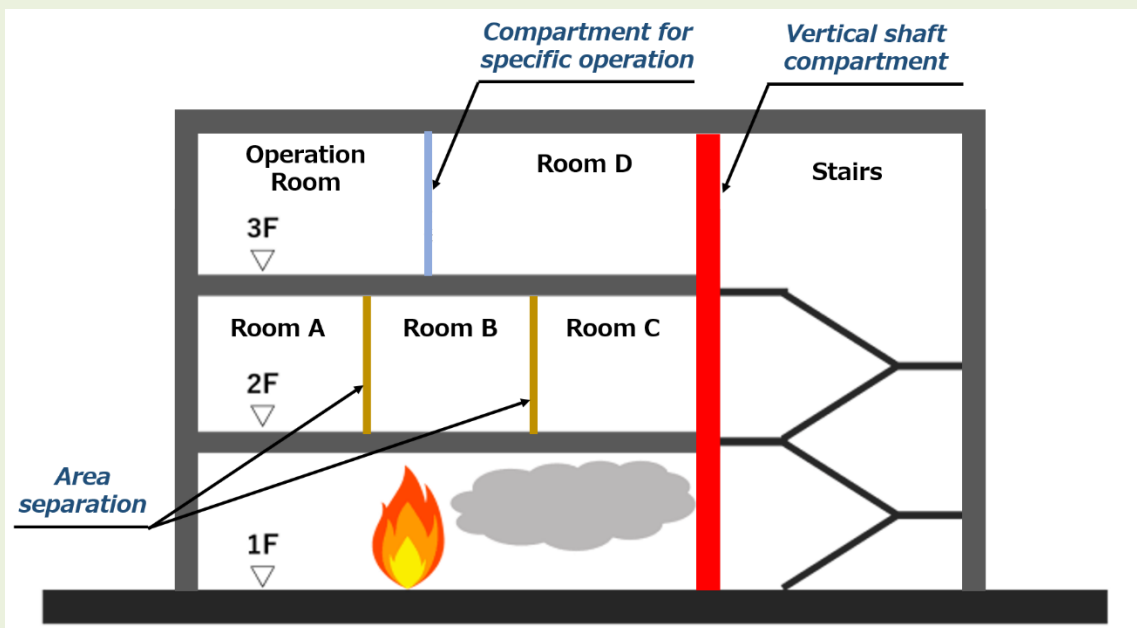
In order to minimize the flame/smoke spread in the event of a fire, buildings must be separated into compartments. By preventing the spread of flames and smoke, fire compartments help 1] minimize the extent of property damage and 2] reduce the risks of human injuries (provide occupants adequate time to safely evacuate the premises). This article provides an overview and required performance of fire compartment.

2. TYPE OF FIRE COMPARTMENT

The fire compartment can be classified into the following three types, depending on its purpose.

Area separation

Separate into a certain area to prevent the spread of fire mainly in the horizontal direction. In general, the floor area to be separated is determined depending on the occupancy hazards, floor area and fire resistance



of the building.

Vertical shaft compartment

Separate where flames and smoke are likely to propagate vertically from the lower to upper floors of a building, such as stairs, atrium, service risers and elevator.

Compartment for each operation

When work areas for different uses are located in one building, these areas should be separated because the condition for fire occurrence might be different and difficult to notice a fire.

3. CAUTIONARY POINTS

Treatment of openings

Fire fighting equipment should be installed in the openings for passage, lighting, and ventilation, depending on type of the compartment. In case of fire doors that are kept open during normal working/operating hours, it is necessary to install automatic closing system linked to smoke/heat detector.

Penetrating area

In areas where building services such as water supply pipe and conduit penetrates the fire compartment, any gap created between the piping and the compartment should be filled/sealed with non-combustible materials (e.g. mortar). When ventilation, heating, or cooling duct penetrate the compartment, fire damper must be installed at/near the penetration.

Small beam and struts

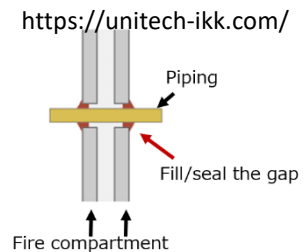
If the beam and struts are integrated with the fire compartment, it should be treated as part of the fire compartment (i.e. fire wall is fitted at the bottom of small beam or fixed with struts). In steel-framed buildings, fireproof coating is required for small beams and struts.

Expansion joint

In order to absorb the deformation of buildings due to vibration by earthquake or thermal expansion by temperature changes, it is necessary to separate walls and floors of the building to cater for such movement. In principle, expansion joint should not be installed in the wall and floor of fire compartment.

Underfloor of raised floor

A double floor structure, also called as raised floor, is adopted to keep a space under the floor for wiring and piping. In this structure, care should be taken not to overlook the installation of fire compartment at the space beneath the raised flooring.



https://en.wikipedia.org/wiki/Raised_floor

