

Building Use



Buildings are used in different ways. There are different hazards in each type of building. Some buildings may have very limited hazards and others may have very serious hazards. The IBC divides the uses into different basic occupancy classifications based on the hazards in the building. There are ten different occupancy classifications in the code. The inherent hazards in buildings can create different problems for the occupants. They may create a problem with providing a safe way to get out of a building or there may be materials used or stored in the building that are dangerous to the occupants. It is important to determine the occupancy classification of the building right away. Most of the requirements in the IBC are based on the occupancy classification of the building. Without an occupancy classification, the code cannot be used.

The IBC provides regulations on the design of the building based on these inherent conditions and hazards. It regulates the types of materials used in the construction of the building. It regulates the size and height of the building based on the use and the type of materials used in the construction. The exit, or means of egress, system in the building is designed based on the hazards in the building. Fire protection systems are also based on the use of the building.

BASIC OCCUPANCIES

As noted in the introductory paragraph, there are ten different basic *occupancies* in the IBC. Many of those occupancies are then divided into separate subcategories (Table 3-1). The majority of the subcategories are generally listed from the most hazardous use to the least hazardous within the major occupancy classification. For example, a Group F-1 occupancy housing a moderate-hazard factory has more potential hazards than a Group F-2 occupancy that contains a low-hazard factory. It can be noted though that a Group I-1 occupancy is not the most hazardous occupancy in the Institution category. To assist in determining the classification of a building, many of the sections outlining the occupancies have a list of examples. Many buildings have multiple occupancies in them. When this happens, each individual area must be classified into the appropriate occupancy classification. Chapter 6 discusses how these multiple occupancy buildings are addressed. [Ref. 302]

TABLE 3-1 Occupancy classifications

| Occupancy group | Description |
|-----------------|---|
| A-1 | Assembly uses, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures |
| A-2 | Assembly uses intended for food and/or drink consumption |
| A-3 | Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A |
| A-4 | Assembly uses intended for viewing of indoor sporting events and activities with spectator seating |
| A-5 | Assembly uses intended for participation in or viewing outdoor activities |
| B | The use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts |
| E | The use of a building or structure, or a portion thereof, by six or more persons at any one time for educational purposes through the 12th grade and child care facilities |
| F-1 | Factory industrial uses that are not classified as Factory Industrial F-2 Low Hazard |
| F-2 | Factory industrial uses that involve the fabrication or manufacturing of noncombustible materials that during finishing, packing or processing do not involve a significant fire hazard |
| H-1 | Buildings and structures containing materials that pose a detonation hazard |
| H-2 | Buildings and structures containing materials that pose a deflagration hazard or a hazard from accelerated burning |
| H-3 | Buildings and structures containing materials that readily support combustion or that pose a physical hazard |

(continues)

TABLE 3-1 Occupancy classifications (continued)

| Occupancy group | Description |
|-----------------|--|
| H-4 | Buildings and structures that contain materials that are health hazards |
| H-5 | Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used |
| I-1 | Buildings, structures or portions thereof for more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised environment and receive custodial care |
| | Condition 1. Buildings in which all persons receiving custodial care who, without any assistance, are capable of responding to an emergency situation to complete building evacuation Condition 2. Buildings in which there are any persons receiving custodial care who require limited verbal or physical assistance while responding to an emergency situation to complete building evacuation |
| I-2 | Buildings and structures used for medical care on a 24-hour basis for more than five persons who are incapable of self-preservation |
| | Condition 1. Facilities that provide nursing and medical care but do not provide emergency care, surgery, obstetrics or in-patient stabilization units for psychiatric or detoxification, including but not limited to nursing homes and foster care facilities Condition 2. Facilities that provide nursing and medical care and could provide emergency care, surgery, obstetrics or in-patient stabilization units for psychiatric or detoxification, including but not limited to hospitals |
| I-3 | Buildings and structures that are inhabited by more than five persons who are under restraint or security. An I-3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control |
| I-4 | Buildings and structures occupied by persons of any age who receive custodial care for less than 24 hours by individuals other than parents or guardians; relatives by blood, marriage or adoption; and in a place other than the home of the person cared for |
| M | Buildings and structures or a portion thereof for the display and sale of merchandise involving stocks of goods, wares or merchandise incidental to such purposes and accessible to the public |
| R-1 | Residential occupancies containing sleeping units where the occupants are primarily transient in nature |
| R-2 | Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature |
| R-3 | Residential occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I and are not covered in the <i>International Residential Code</i> |
| R-4 | Buildings, structures or portions thereof for more than five but not more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised residential environment and receive custodial care. |
| | Condition 1. Buildings in which all persons receiving custodial care who, without any assistance, are capable of responding to an emergency situation to complete building evacuation Condition 2. Buildings in which there are any persons receiving custodial care who require limited verbal or physical assistance while responding to an emergency situation to complete building evacuation |
| S-1 | Buildings occupied for storage uses that are not classified as Group S-2 |
| S-2 | Buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic trim, such as knobs, handles or film wrapping |
| U | Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy |

Assembly occupancies

When a building is used by a large number of people for a purpose such as a civic, social or religious function, it is classified as a Group A occupancy. People in a crowd tend to panic when a fire or some other type of dangerous event occurs. When there are a large number of people in the building and these events occur, it is very important to protect them and provide a safe and efficient way for them to get out of the building. Assembly occupancies include movie theaters, restaurants, nightclubs, places of worship, community and recreation centers, sports arenas and stadiums (Figure 3-1). [Ref. 303]

Many buildings have rooms for small-assembly uses such as conference rooms and small break rooms. If the room or space is less than 750 square feet in area or it has an occupant load less than fifty and it is accessory to a different occupancy, the room is classified as a Group B occupancy or as part of the main occupancy. Buildings or tenant spaces such as small restaurants with an occupant load less than fifty are also classified as Group B occupancies. [Ref. 303.1]

Business occupancies

Buildings or spaces that include personal service operations and offices are classified as Group B occupancies. These occupancies are often considered as among the safest occupancies in the code. People that are in Group B occupancies are generally alert and aware of their surroundings. The number of people is relatively low compared to Group A occupancy. If a fire or some other type of event occurs, the occupants can usually reach a safe place in a reasonable time and effort. Examples of Group B occupancies include professional offices, banks, post offices and colleges (Figure 3-2). [Ref. 304]



FIGURE 3-1 Grand Plaza in Kansas City Union Station is an example of an assembly occupancy.



FIGURE 3-2 An office building is classified as a Group B occupancy.



FIGURE 3-3 An elementary school is classified as a Group E occupancy.

Educational occupancies

Schools providing education for children up to and including those in the twelfth grade are called Group E occupancies. This classification also includes child care facilities for children older than 2½ years of age. These occupancies have inherent problems that limit the level of safety for the users of the building. The first problem is the age of the occupants. Children require direction to evacuate a building when a catastrophic event occurs. Many schools practice this during their scheduled fire drills. Examples of Group E occupancies include day care facilities and elementary, middle, and high schools (Figure 3-3). [\[Ref. 305\]](#)

Many schools have gymnasiums and theaters associated with the occupancy. These types of uses would normally be classified as a Group A occupancy. However, the code considers these areas to an extension of the educational function. Therefore, these assembly areas are permitted to be classified as a Group E occupancy with the rest of the building. The means of egress is still required to be designed as if it is an assembly occupancy though. [\[Ref. 303.1.3\]](#)

Factory/Industrial occupancies

Buildings used to assemble, manufacture, package, or process products are classified as Group F occupancies. Group F occupancies are separated into two very different subcategories based on the combustibility of the materials that are manufactured in the building. These uses may have inherent risks due to the materials used, as well as the overall large size of these uses. Factory/industrial occupancies include factories, bakeries, book publishers, woodworking establishments and foundries. [\[Ref. 306\]](#)

Hazardous occupancies

When a building contains reasonably large amounts of hazardous materials, it falls within the Group H occupancy classification. Hazardous materials are classified as either physical or health hazards. Physical hazard materials are materials that burn, have accelerated burning or produce an explosion. Health hazard materials can cause death or injury or can incapacitate a person after a single, brief exposure. These occupancies are obviously in the most hazardous group in the IBC. Some hazardous materials are permitted in other occupancy groups

as long as they do not exceed a specific amount. However, when those amounts exceed a maximum allowable quantity of materials, the building receives the hazardous occupancy classification. There are five different levels of hazardous occupancies based on the level of hazard. This occupancy includes buildings where hazardous materials are stored, used or manufactured. [\[Ref. 307\]](#)

Institutional occupancies

Whenever a building houses people who cannot help themselves in case of an emergency, it is classified as a Group I occupancy. This classification has four sub-categories of uses. This group includes assisted living facilities in which people are older or disabled and may need some direction to egress but are capable of getting out on their own. It also includes hospitals in which people may be unconscious or sick or injured enough that they cannot get out of a building on their own. Jails and prisons are also included in institutional occupancies (Figure 3-4). The last type of Group I occupancies are adult care facilities and child care facilities for children less than 2½ years of age. The classification is based on the amount of time that occupants spend in the building and the level of assistance they may need to respond to an emergency. The classification is also based on the number of people that are housed in the building. If the building houses less than seventeen care recipients, it would be considered a Residential occupancy. Group I-1 and Group I-2 Occupancies are separated into different conditions based on the capability of the occupants to respond to an emergency. Group I-3 Occupancies have five conditions depending on the level of security in the building. [\[Ref. 308\]](#)



FIGURE 3-4 A county jail falls within the Group I-3 occupancy classification.

Mercantile occupancies

Group M occupancies include uses wherein merchandise is displayed and sold to the public. These occupancies include retail stores, wholesale stores, shopping centers, and gas stations where no vehicle repairs are conducted. Group M occupancies are relatively safe depending on the types of products being sold. People are generally alert and aware of their surroundings and, therefore, can egress the building on their own (Figure 3-5). [\[Ref. 309\]](#)



FIGURE 3-5 Retail stores in a mall are classified as Group M occupancies.

Residential occupancies

Buildings in which people live and sleep are designated as Group R occupancies. There are four subcategories of Group R occupancies, depending on the number of dwelling units in a building and whether or not people are familiar with their surroundings. Any time people are asleep in a building, their reaction time to an emergency is delayed. There are also inherent hazards when people are cooking or just living in a dwelling unit. This occupancy group also includes buildings that have one or two housing units and cannot be constructed under the *International Residential Code* (Figure 3-6). Group R-4 Occupancies have two conditions based on the capability of the occupants to respond to an emergency. [Ref. 310]



FIGURE 3-6 An apartment building is classified as a Group R-2 occupancy.

Storage occupancies

When a building is used to store materials or products that do not exceed the hazardous materials limits outlined in previous occupancy descriptions, it is classified as a Group S occupancy. There are two separate subcategories of Group S occupancies depending on the combustibility of the materials being stored, similar to Group F, factory/industrial occupancies. Examples of storage occupancies include warehouses, motor vehicle repair garages and automobile parking garages. [Ref. 311]

Utility occupancies

Group U occupancies include buildings or areas that are accessory in nature to a main occupancy. These buildings are generally low-hazard occupancies. They include miscellaneous structures such as fences and retaining walls. Group U occupancies include private garages, barns, sheds and agricultural buildings (Figure 3-7). [\[Ref. 312\]](#)



FIGURE 3-7 A private garage is classified as a Group U occupancy.