



Familiarize Yourself with Common Fire and Life Safety Issues: Means of Egress – Understanding and Calculating Occupant Load



From time to time, the Fire Marshal's Office receives questions regarding the occupant load for a room or area. Occupant load as defined by the Fire Code is the number of persons for which the means of egress of a building or portion thereof is designed. In order to help you understand occupant loads and how to calculate an occupant load, consideration must be given to the function of the space, the size of the area or room, and the means of egress for the area or room which includes means of egress components (exit signs and panic hardware) as well as the number and placement of the exits provided for the area or room. The occupant load for rooms or areas is regulated by Section 1004 of the Building and Fire Codes.

Calculating Occupant Loads:

Table 1004.5 identifies different functions that may be used for areas or rooms such as Assembly without fixed seats, Business areas, Educational, Laboratories and Libraries. Each of the functions listed in Table 1004.5 has a prescribed Occupant Load Factor which is the floor area in square feet per occupant. The occupant load for rooms or areas in a building are established during the building design and review process. This ensures that adequate means of egress is provided for the designed occupant load.

Most questions we receive regarding the occupant load are regarding Assembly Areas without Fixed Seating. Three occupant load factors are listed for Assembly Areas without Fixed Seating: Concentrated (chairs only—not fixed) - 7 square feet; Standing space – 5 square feet; and Unconcentrated (tables and chairs) – 15 square feet.

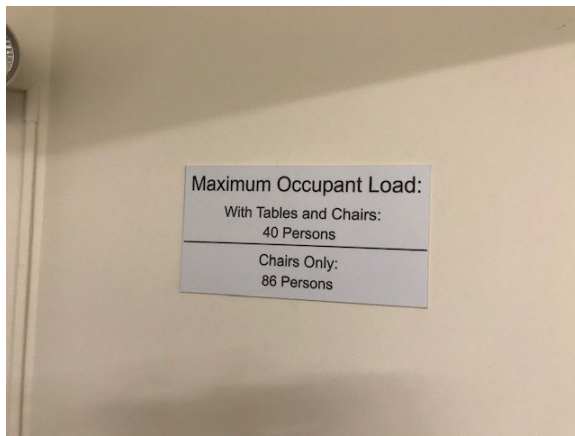
To calculate the occupant load for a room or area, you divide the area (square footage) of the room by the occupant load factor. For example, a conference room that has an area 300 square feet since the conference room will be furnished with a table and chairs we divide the area by 15 therefore the occupant load will be 20 persons.

Considerations when the Calculated Occupant Load Exceed 49 Persons:

When the calculated occupant load exceeds 49 persons and does not exceed 500, a minimum of two (2) "legal" exits will be required from the room or area. For occupant loads between 501 and 1,000 persons, three (3) "legal" exits will be required from the room or area. For occupant loads more than 1,000 persons four (4) "legal" exits will be required from the room or area. Of course, the number of exits increase as the occupant load and size of the room or area grows. A "legal" exit must be equipped with panic hardware, posted illuminated exit sign(s) and the doors must swing open in the direction of egress travel. If doors are required to be fire-rated, door hardware must be

“Fire Exit” hardware which is panic hardware listed specifically for installation on fire rated doors.

Additionally, for occupant loads greater than 300 persons consideration must be given to the Means of Egress Sizing which is regulated by Section 1005 of the Building and Fire Codes. Section 1005 regulates the required capacity in inches and shall not be less than that determined by Section 1005.3.1 Stairways and 1005.3.2 Other Egress Components. For Stairways, a factor of .3 inches is multiplied by the calculated occupant load to determine the total width of all stairs used for egress, if applicable. For all other egress components, a factor of .2 inches is multiplied by the calculated occupant load to determine the total width of all egress components such as doors. For example, an occupant load of 700 persons ($700 \times .2 = 140$ inches) would require 3 exits with at total width of at least 140 inches (11 feet, 8 inches). In order to comply with the required exit width two-36 inch (3 Foot) single doors and one set of 72 inch (6 Foot) double doors would be required.



Posting of Occupant Load Signs:

Section 1004.9 requires every room or space that is an assembly occupancy (Occupant Load greater than 49 persons) such as lecture halls, libraries, meeting rooms, etc. shall have the occupant load posted in a conspicuous location (by the main exit). The occupant load sign shall include the occupant load for each intended room configuration. For example, a 600 square foot meeting room that is used for lectures and meetings would be required to have an occupant load sign that states: 86

persons with Chairs only and 40 persons with Tables and Chairs.

If you should have any questions regarding occupant loads in your building, please feel free to contact me. If you have any subject matter that you would like to be covered, please let me know.

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