



Date: December 1, 2023
To: City of Houston HPW-HPC
Attention: CCM
From: Jensen Hughes
Subject: IBC Occupant Load Factors

This technical memo is provided to describe the changes to the Houston Construction Codes with regards to a significant change in the base code related to the requirements for occupant load factors.

Changes occurred in the 2015 to 2018 IBC update and are now being integrated into the city of Houston's Code. The Business areas section of the table has been updated from 100 to 150 square feet per person, and a subsection for concentrated business use areas has been added. This subsection refers to the new Section 1004.8 for its occupant load factor.

In the past, business was viewed as having a density of one person per 100 square feet, this is the result of a National Bureau of Labor statistics study from 1935. This was specified for offices, factories, and work room areas. Occupant load factors were determined by gross floor area per building with no deductions for corridors, closets, bathrooms, or other areas of the building. Since this 1935 study, several more modern studies were conducted that all found the 100 square foot per person to be conservative. Studies from 1966 to 1992 have found load factors from 150 to 278. A recent study by the NFPA Research Foundation WPI underclassmen supported an increase of the occupant load factor in Business occupancies, and 150 square feet per person was deemed an appropriate factor to increase to.

This study also recommended the new subcategory for concentrated business use. The newly added Section 1004.8 lists some examples for these concentrated business use occupancies including telephone centers, trading floors, and electronic data processing centers. This reduced factor is for occupancies with business use where a higher density of people is expected. The actual number must be approved by a building office before use, with a minimum of one occupant per 50 gross square feet.

For both applications of the business area occupant load, gross floor area shall be used, which is defined in Chapter 2.

memo.

2021 Houston Building Code Changes –

**TABLE 1004.5
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT**

FUNCTION OF SPACE	OCCUPANT LOAD FACTOR^a
Accessory storage areas, mechanical equipment room	300 Gross
Agricultural building	300 Gross
Aircraft hangars	500 Gross
Airport terminal	
Baggage claim	20 Gross
Baggage handling	300 Gross
Concourse	100 Gross
Waiting Areas	15 Gross
Assembly	
Gaming floors (keno, slots, etc.)	11 Gross
Exhibit gallery and museum	30 net
Assembly with fixed seats	See Section 1004.6
Assembly without fixed seats	
Concentrated (chairs only—not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas	7 net
Business areas	400150 gross
Concentrated business use areas	See Section 1004.8
Courtrooms—other than fixed seating areas	40 net
Day care	35 net
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Exercise rooms	50 gross
Group H-5 fabrication and manufacturing areas	200 gross
Industrial areas	100 gross
Institutional areas	
Inpatient treatment areas	240 gross
Outpatient areas	100 gross
Sleeping areas	120 gross
Kitchens, commercial	200 gross
Library	
Reading rooms	50 net
Stack area	100 gross



Locker rooms	50 gross
Mall buildings—covered and open	See Section 402.8.2
Mercantile	60 gross
Storage, stock, shipping areas	300 gross
Parking garages	200 gross
Residential	200 gross
Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross
Stages and platforms	15 net
Warehouses	500 gross

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².

a. Floor area in square feet per occupant.

1004.6 Fixed seating. For areas having fixed seats and aisles, the occupant load shall be determined by the number of fixed seats installed therein. The occupant load for areas in which fixed seating is not installed, such as waiting spaces, shall be determined in accordance with Section 1004.5 and added to the number of fixed seats.

The occupant load of wheelchair spaces and the associated companion seat shall be based on one occupant for each wheelchair space and one occupant for the associated companion seat provided in accordance with Section 1109.2.3.

For areas having fixed seating without dividing arms, the occupant load shall be not less than the number of seats based on one person for each 18 inches (457 mm) of seating length.

The occupant load of seating booths shall be based on one person for each 24 inches (610 mm) of booth seat length measured at the backrest of the seating boot.

1004.8 Concentrated Business Use Areas. The occupant load factor for concentrated business use shall be applied to telephone call centers, trading floors, electronic data processing centers and similar business use areas with a higher density of occupants than would normally be expected in a typical business occupancy environment. Where approved by the building official, the occupant load for concentrated business use areas shall be the actual occupant load, but not less than one occupant per 50 square feet (4.65 m²) of gross occupiable floor space.

402.8.2 Determination of Occupant Load. The occupant load permitted in any individual tenant space in a covered or open mall building shall be determined as required by this code. Means of egress requirements for individual tenant spaces shall be based on the occupant load thus determined.