

March 15, 2017

Bulletin 2017-002-FI

Occupant Load Calculations For Assembly Occupancies and Licensed Beverage Establishments

This bulletin provides guidance to Vancouver Fire Bylaw Division B Sentence 2.7.1.3 on determining occupant loads for assembly occupancies and licensed beverage establishments.

Any assembly space more than 60 persons will be required to comply with the following procedure. The B.C. Liquor Control Branch also requires that an assembly occupancy (regardless of size) applying for a liquor license submit a reduced floor plan with a current occupant load stamp from the fire department as part of the application for a liquor license.

Prior to submitting an application to Vancouver Fire and Rescue Services for an occupant load determination, ensure the space has all the required permits and approvals from the City of Vancouver for occupancy. New construction, renovations that alter an existing space, change of use, and all patios on private property must be reviewed by the Building Department. Patios on public property must be reviewed by the Engineering Department, Street Activities Division. Applications for new Liquor Primary Establishments (e.g. bars and clubs) or requests for an increase in capacity of an existing Liquor Primary Establishment must also get prior approval from the Licensing Department. Call 3-1-1 for more information from applicable departments.

Applicants requiring an occupant load determination can apply at:
Fire Prevention Office - Unit 306, 456 West Broadway, Vancouver, BC V5Y 1R3 (604-871-6261)

Applicants are required to make their first determination of the maximum occupant load with the procedure described in this bulletin. The submission must include:

- Scaled drawings (1 full size + 1 reduced copy) to the Fire Department for verification of accuracy, and a stamp of acceptance. Where applicable, the drawings must show the seating layout of the floor area or room in question. If the room is on a floor other than the ground floor, other drawings must be submitted to indicate where the discharge locations of the exits are from that floor area. The drawings must be dimensioned and include the building's fire safety system such as locations of exit signs, manual stations, fire alarm panel and emergency lighting.
- A cheque made out to "City of Vancouver" for **\$300** for an occupant load of 150 or less, and **\$500** for an occupant load of 151 or more.
- Worksheet (Form 1) of this package. Please return the work sheet with your plans to our office and you will be contacted when they have been completed. Please allow for a minimum five working days for processing.

Upon acceptance and inspection, an occupant load permit, placard, and stamped copy of the reduced size scaled drawings of the floor plans indicating the maximum capacity will be issued by the Fire Department where applicable.

The occupant load permit or the placard, together with the stamped drawings accepted by the fire department, must be displayed in a conspicuous location in your establishment.

A site visit will take place sometime before or after the permit is issued. If the Plans and Form 1 submitted are not accurate, the Permit and Stamped Plans may be revoked, with no refund of costs.

PLAN VERIFICATION INFORMATION FORM
FOR MAXIMUM OCCUPANT LOAD DETERMINATION

A. DETERMINING NET FLOOR AREA

Net Floor Area is defined in the Fire By-law as: the floor area of a room intended for occupancy, excluding ancillary areas such as kitchens, washrooms, service rooms, janitor closets, cloakrooms, vestibules adjacent to designated entry or exit doors, structural elements and partitions, and fixtures permanently attached to the floor.

In general, "net floor area" in an assembly space is where the public is expected to or can assemble. Areas that are generally deducted from the gross floor area of a room include:

- circulation spaces in front of the washrooms or exits;
- areas behind the bar and including the bar fixtures;
- structural elements;
- fixtures, either permanently attached to the floor, or deemed by their nature to be not easily moved (e.g. pool and gaming tables);
- music booths, stages and platforms which, are intended for performances and fixed counter tops; and
- hallways to exits.

Do not deduct seating, either fixed or unattached, or tables incidental to such seating.

B. DETERMINING TOTAL EXIT WIDTH

Measure the actual opening size of each designated exit and express the combined total in mm, to determine the total exit width. The exits must comply with the Vancouver Building By-law Division B. Here are a few Building By-law requirements that are applicable:

1. Where there is only one (1) exit, the maximum occupant load for the room is limited to 60 persons. [VBBL 3.4.2.1.(2)]
2. If there is more than one (1) exit, every exit shall be considered as contributing not more than ½ the required exit width, i.e. the exit capacity is limited to 2 x the capacity as determined by the more restricted exit. [VBBL 3.4.3.2.(7)]

Also Note:

1. Doors must open in the direction of exit travel to be considered exit doors.
2. Access through an open kitchen cannot be deemed as public access to exit.
3. All exits, particularly for existing buildings, must comply with all requirements in the Building By-law for exits (e.g. flame spread rating, emergency lights, exit lights, door hardware, etc.) in order to be considered as contributing in exit widths.

MAXIMUM OCCUPANT LOAD CALCULATION

The maximum occupant load of a room or floor area for an assembly occupancy, or licensed beverage establishment, shall be the least number derived by:

- (a) Dividing the net floor area by the pertinent factor in Table A,
- (b) Determining the number of persons for whom there is sufficient exit capacity using the factors in Table B. and
- (c) Whether the building has a fire alarm system.

The number of persons permitted to occupy a room shall not exceed the maximum occupant load calculated.

**TABLE A
DENSITY**

TYPE OF USE OF ROOM OR FLOOR AREA	AREA PER PERSON m ²
Assembly uses:	
Space with non-fixed seats	0.75
Stages for theatrical performances	0.75
Space with non-fixed seats and tables	0.95
Standing space	0.40
Stadium and grandstands	0.60
Bowling alleys, pool and billiard rooms	9.30
Classrooms	1.85
School shops and vocational rooms	9.30
Reading or writing rooms or lounges	1.85
Laboratories in schools	4.60
Dining and cafeteria space	1.20
Licensed beverage establishment	1.20
Behind Kitchen/Bar Area	9.30

**TABLE B
EXIT CAPACITY**

VBBL 3.4.3.2.(1) [...]The aggregate required width of exits serving floor areas intended for assembly occupancies [...]shall be determined by multiplying the occupant load of the area served by:

- a) 6.1 mm per person for ramps with a slope not more than 1 in 8, doorways, corridors and passageways,
- b) 8 mm per person for a stair consisting of steps whose rise is not more than 180 mm and whose run is not less than 280 mm, or
- c) 9.2 mm per person for:
 - i) ramps with a slope more than 1 in 8, or
 - ii) stairs, other than stairs conforming to Clause (b).

**TABLE C
FIRE ALARM CAPACITY**

VFBL 2.7.1.3.(7) The occupant load, in a building that is not provided with a fire alarm system [...] shall not exceed

- a) 300 persons in the building, other than in open air seating areas,
- b) 150 persons in a storey above or below the first storey of the building, other than in open air seating areas
- c) 40 persons in a school, college, child care facility, or day care facility located in the building, and
- d) 150 persons in a licensed beverage establishment or a restaurant located in the building.

MAXIMUM OCCUPANT LOAD CALCULATION:

#1 Net floor area (m²) = number of persons _____
Appropriate figure from Table A

#2 Total exit width (mm) = number of persons _____
Appropriate figure from Table B

#3 Fire Alarm System provided Yes No - max number of persons = _____

The maximum occupant load capacity will be the lowest number of persons calculated above. Place this figure on Form 1.

FORM 1

MAXIMUM OCCUPANT LOAD DETERMINATION

Office Use Only
 1 set of drawings back to applicant for LCB process

Building Address: _____
 Business Name: _____ Business Phone: _____
 Previously Known As: _____
 Occupancy type (restaurant, pub, etc.): _____

<u>Applicant</u>	<u>Business Owner Contact</u>
Name: _____	Name: _____
Title: _____	Address: _____
Address: _____	City: _____ Postal Code: _____
City: _____ Postal Code: _____	Phone: _____
Phone: (day) _____	
Cell: _____	
Email: _____	

Associated Permits: DE _____ BU _____
 Previously Approved Occupant Load: Yes ____ No ____

Room/Area #1 (name) _____ Gross Floor Area: _____ m ² Net Floor Area: _____ m ² @ _____ m ² /person = _____ # of Exits: _____ Total Exit Width: _____ * mm @ _____ mm/person = _____ Fire Alarm System provided <input type="checkbox"/> Yes <input type="checkbox"/> No - max number of persons = _____ <p style="text-align: center;">Occupant Load = _____</p>
Room/Area #2 (name) _____ Gross Floor Area: _____ m ² Net Floor Area: _____ m ² @ _____ m ² /person = _____ # of Exits: _____ Total Exit Width: _____ * mm @ _____ mm/person = _____ Fire Alarm System provided <input type="checkbox"/> Yes <input type="checkbox"/> No - max number of persons = _____ <p style="text-align: center;">Occupant Load = _____</p>

* No exit can take more than 1/2 the occupant load

I hereby certify that the figures entered above represent a true and accurate calculation of the premises in question. I acknowledge that re-inspections for work not completed in conformance with accepted drawings will require an additional fee at the approved hourly rate.

Applicant Signature: _____ Date: _____

Return completed form, scale drawings of the specific areas, and a cheque made payable to the City of Vancouver, in the amount of \$300 (up to 150) or \$500 (151 and over) to the Fire Prevention Office - Unit 306, 456 West Broadway, Vancouver, BC V5Y 1R3 (604-871-6261)

Vancouver Fire and Rescue Services
 Fire Prevention Office
 #306, 456 W. Broadway
 Vancouver, British Columbia V5Y 1R3
 Phone: 3-1-1