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OFM Guideline

Office of the Fire Marshal



OFM-TG-03-2007 Outdoor Patio Fire Safety

September 2007

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September 2007

OFM Section: Applied Research at (416) 325-3100

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Abstract

This guideline was developed to assist fire officials in assessing fire safety issues associated with outdoor patios at restaurants, pubs, bars and other similar assembly occupancies. The guideline provides suggestions for enhanced communication and coordination with other agencies and discusses fire safety enforcement strategies. This guideline is intended for guidance only and is not to be considered a statement of law in this area.

1.0 INTRODUCTION

At the first sign of warm weather in the spring, people begin to congregate at outdoor patios associated with restaurants or pubs. After being cooped up through the winter months, we like to leave the confines of a building and sit outdoors at a patio to take in the sun and fresh air, and share a meal, drink or conversation with others.

This can pose some challenges for property owners and the fire service when it comes time to consider the fire safety of these spaces, particularly in light of their seasonal nature. Numerous factors can impact on fire safety in these outdoor patios, as well as on the fire safety of the adjacent indoor spaces.

Often the fire service only becomes aware of these premises when asked by a building owner or manager to determine the allowable occupant load. This is one facet that an owner must address when applying to the Alcohol and Gaming Commission of Ontario (AGCO) for a licence to serve liquor at an outdoor patio.

Although the fire service is not mandated to determine occupant load, they can have an important role to play to ensure fire safety in these spaces where the public congregates. This guideline addresses many of the fire safety concerns associated with outdoor patios. Unless otherwise noted in this guideline, references to the Fire Code relate to Division B of the Ontario Fire Code.

2.0 DEFINITIONS

The words and phrases used in this guideline and in Division A of the Fire Code have the following meanings:

- Access to exit means that part of a means of egress within a floor area that provides access to an exit serving the floor area.

- Assembly occupancy means the occupancy or the use of a building, or part thereof, by a gathering of persons for civic, political, travel, religious social, educational, recreational or like purposes or for the consumption of food or drink.
- Building means any structure used or intended for supporting or sheltering any use or occupancy.
- Exit means that part of a means of egress, including doorways, that leads from the floor area it serves to a separate building, an open public thoroughfare or an exterior open space protected from fire exposure from the building and having access to an open public thoroughfare.
- Floor area means the space on any storey of a building between exterior walls and required firewalls and includes the space occupied by interior walls and partitions, but does not include exits and vertical service spaces that pierce the storey.
- Means of egress means a continuous path of travel provided for the escape of persons from any point in a building or contained open space to a separate building, an open public thoroughfare or an exterior open space protected from fire exposure from the building and having access to an open public thoroughfare. Means of egress includes both exits and access to exits.
- Occupant load means the number of persons for which a building or part thereof is designed.
- Owner means any person, firm or corporation having control over any portion of the building or property under consideration and includes the persons in the building or property.

3.0 OWNER/OPERATOR OBLIGATIONS

Outdoor patios may pose a significant fire risk to the public. Building owners and operators have an obligation to ensure the adequacy of fire safety precautions and compliance with the Fire Protection and Prevention Act and the Fire Code at their premises, and to ensure that appropriate measures are implemented to mitigate any fire safety risk. Factors for consideration and issues to be addressed may include the following:

- Provision of adequate emergency egress routes to facilitate evacuation of the maximum anticipated occupant load for the patio area and any impacted inside area. Egress considerations include having the appropriate number, size and placement, clearly identified with signage and lighting, as warranted.
- Control of potential ignition sources in the patio area and along the emergency egress route, such as smokers' articles, candles and other open flames, temporary wiring, improper or insecure lighting components, and heating and cooking appliances.
- Availability of fire protection equipment for the outdoor patio, such as fire extinguishers, water hose, fire alarm devices, etc.

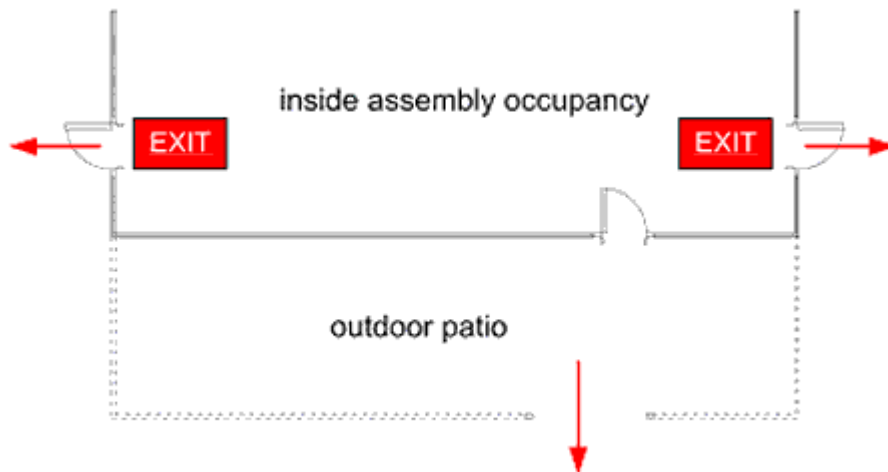
Fire departments may want to identify facilities within their jurisdictions that incorporate outdoor patios, and conduct inspections to ensure the adequacy of fire safety precautions. Fire departments may also want to use public education tools and community media contacts to alert operators and the public to potential fire hazards associated with outdoor

patios. The public should be provided with local contact information and encouraged to report any fire safety concerns to the municipal fire department.

4.0 FACTORS THAT AFFECT FIRE SAFETY AT OUTDOOR PATIOS

Outdoor patios associated with assembly occupancies take many forms. Some configurations are of lower risk from a fire safety perspective, while others may present a wide range of fire safety concerns for patrons both inside and outside a building. Three basic configurations are provided to illustrate various fire safety challenges. The primary distinction between these configurations relates to egress arrangements.

Scenario One:



Identifying Features:

- Connecting access between the interior of the building and the patio may be provided for convenience for servers.
- The means of egress from the building is not through the outdoor patio.
- The exit path from the patio is not through the building.
- The perimeter of the patio may or may not have any physical barriers (e.g. fencing or roping).

Fire Safety Factors:

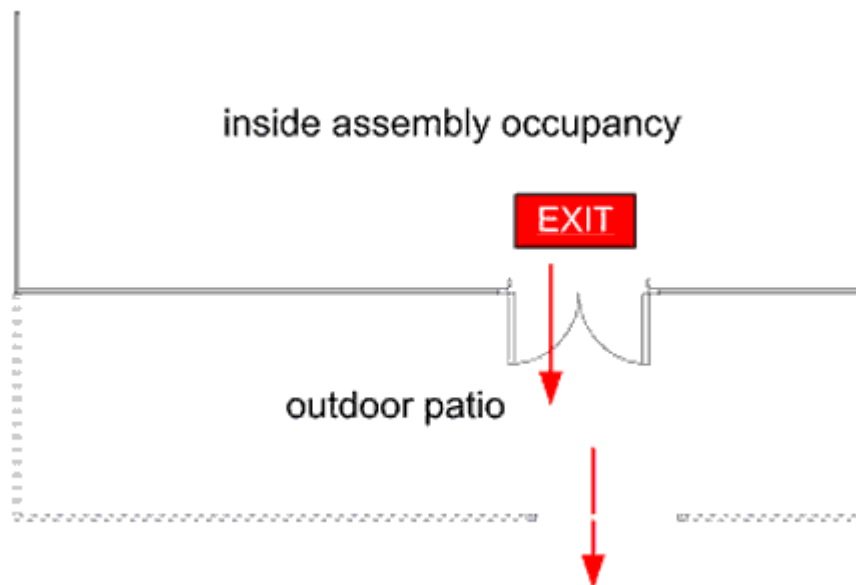
In this configuration, the patio occupants are able to move quickly away from the patio in the event of an emergency, provided the patio is located at or close to grade. Their ability to safely exit the patio may be affected by outdoor furniture arrangements, steps, local grade variations, patio enclosures, etc. The patio has no impact on safe egress of the building's occupants. A building permit may be required because of the fence or patio construction, the potential exposure of the patio occupancy on the building, or the egress arrangements from the patio.

Determination of an occupant load for this space may not be warranted, and some fire departments may choose to not be involved in this situation.

A fire department may choose to comment on fire safety issues such as portable heaters,

barbeques etc., particularly in the vicinity of the exit path. There may also be exposure issues in cases where the exterior wall has multiple openings (e.g. windows). More details are included in Section 5.0 Fire Safety Issues.

Scenario Two:



Identifying Features:

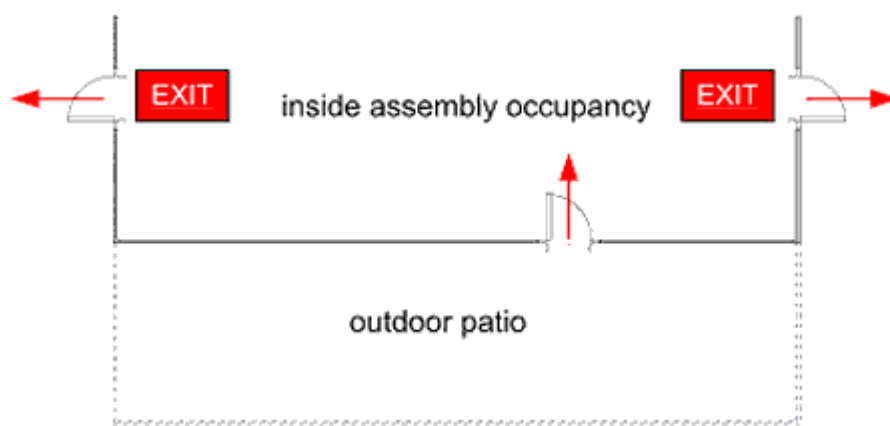
- There is connecting access between the interior of the building and the patio.
- One required means of egress for the building is through the patio.
- The exit path from the outdoor patio is not through the building.
- The perimeter of the patio may or may not have any physical barriers (e.g. fencing or roping).

Fire Safety Factors:

In this configuration, one of the required egress routes from the building is through the patio, which introduces the possibility of prolonged evacuation times. As a result, determination of occupant load for the patio may be appropriate to prevent this from occurring. The ability of building and patio occupants to safely exit the patio area may be affected by outdoor furniture arrangements, steps, local grade variations, visibility of the exit path, etc.

Other potential fire safety issues should be considered for the safe egress of patrons, such as portable heaters, barbeques, etc., particularly in the vicinity of the egress route. Clearly this scenario may pose some additional fire safety concerns. More details are included in Section 5.0, Fire Safety Issues.

Scenario Three:



Identifying Features:

- There is connecting access between the interior of the building and the patio.
- The means of egress from the building is not through the patio.
- The means of egress for the patio is through the building.
- The perimeter of the patio is provided with physical barriers.

Note: This scenario could also apply to a rooftop patio, which is accessed through the building.

In this configuration, the required egress route from the patio area is through the building, which introduces the possibility of extended evacuation times unless the building exits have been sized to accommodate both inside and outside occupancies. As a result, the occupant load for the patio may need to be restricted, the interior occupant load may need to be restricted and/or the interior exits may need to be increased. The ability of building and patio occupants to safely exit through the building may be affected by interior and exterior furniture arrangements, steps, etc.

Other potential fire safety issues should be considered for the safe egress of patrons, such as portable heaters, barbeques etc., particularly in the vicinity of the egress route.

Clearly this scenario may pose some additional fire safety concerns. More details are included in Section 5.0, Fire Safety Issues.

5.0 FIRE SAFETY ISSUES

5.1 Occupant Load Concerns

The Fire Code specifies criteria for determining occupant load in a building that contains an assembly occupancy. It does not specify such criteria for outdoor spaces of assembly.

However, as illustrated in the scenarios, there are instances where the occupants on the outdoor patio may affect the safety of the indoor occupants. As well, the designated indoor egress routes provided for them might also affect the safety of the outdoor occupants.

Where patio occupants enter the building, either for reasons of convenience or comfort (i.e.

to use restrooms or access interior services) or for the purposes of exiting the premises, consideration needs to be given to the maximum allowable interior occupant load. For instance, the influx of patio occupants in the event of inclement weather needs to be considered. The Fire Code does not permit an operator of an establishment to increase the occupant load beyond the capacity of the exits.

The owner must anticipate this situation, and ensure that the allowable occupant load is not exceeded. The owner might choose to limit the combined indoor and outdoor occupant load, based on the indoor exit capacity, and allow the people to migrate between the interior and exterior. Another approach is to advise the occupants located on the outdoor patio could be advised that in the event of inclement weather they would be asked to leave, as they could not be safely accommodated inside. The owner's means of ensuring that the premises will not exceed the maximum allowable load should be documented. This information could be maintained as part of the building Fire Safety Plan. As well, the maximum allowable occupant load for the interior space should be posted in a conspicuous location. There may also be merit in posting a separate occupant load sign for the patio adjacent to the patio access.

5.2 Determining Maximum Allowable Occupant Load

Although the Fire Code does not identify a method for calculating occupant load for outdoor space, the same criteria that are used for interior occupant load calculations could be used. Occupant load is calculated on the basis of use of the space and available exit widths. When determining the occupant load based on use, general use or design use calculations may be involved. The maximum allowable occupant load is the lesser of the calculations based on use and available exit widths.

Calculation of occupant load on the basis of use generally involves dividing the floor area, or part of the floor area, measured in square metres, by the applicable "area per person" factors identified in Table 2.7.1.A of the Fire Code. (Applicable Fire Code wording is stated in Appendix A.)

Depending on the situation, the floor area may be the area of the room, group of rooms, suite, portion of the floor or the total floor area. The factors listed in Table 2.7.1.A of the Fire Code give due consideration to the typical furnishings and fixtures associated with a specific use. The floor area generally considers the space that is occupied, and does not include the ancillary spaces designed and provided to support the useable space, such as closets, cloak rooms, washrooms, corridors, exits etc.

As an alternate to using the "area per person" factors previously described, an occupant load may also be determined on the basis of a specific layout or designed use of the space. For instance, a restaurant patio space may have a fixed seating arrangement that would accommodate an occupant load that differs from that determined by using the general use factor.

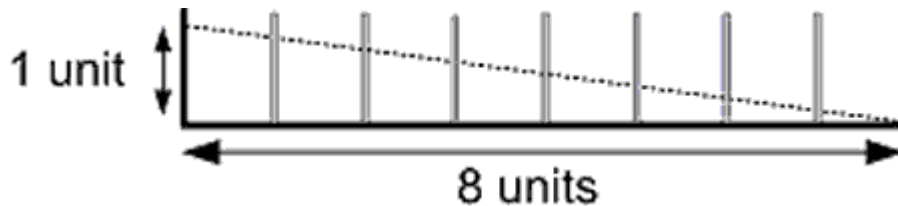
A professional engineer or architect usually conducts this type of calculation, but "design" is not a defined term in the Fire Code.

Calculation of the occupant load on the basis of available exit widths involves dividing the aggregate width of access to exit or exit door openings (measured in millimetres) by the applicable "width per person" factors that are stated for access to exits and exits in Articles

3.3.1.16. and 3.4.3.2. of Division B of the Ontario Building Code. (Applicable Building Code requirements are stated in Appendix B.)

Where a room or floor area has more than one egress or exit door, the door widths are added together, or aggregated, prior to dividing by the "width per person" factor.

Where the "width per person" factor refers to a slope with a gradient of 1 in 8, this means that the horizontal distance is 8 times the vertical dimension. In other words, the gradient rises 1 vertical unit for every 8 units of horizontal distance.



The maximum allowable occupant load of a floor space or room is the **lesser** of the calculations based on use of the space and available exit widths from that space.

To ensure that emergency egress is not impeded, the Fire Code also places an overall "cap" on the occupant load. In the case of dining, alcoholic beverage and cafeteria space, at no time can the occupant load exceed the number calculated on the basis of 0.60 m² of floor space per person, and 0.40 m² of floor space per person for all other uses.

These caps are intended to prevent situations where the occupants are unable to get to the means of egress because the placement of furnishings/occupants, even though the means of egress themselves are adequate.

In addition, there may be other requirements imposed by other agencies such as the Alcohol Gaming Commission of Ontario (AGCO) that will affect the allowable occupant load. These requirements should never permit an occupant load that exceeds that allowed by the Fire Code or Building Code (see Section 7.3, Other Agencies and Legislation).

5.3 Sources of Ignition

A wide variety of ignition sources may exist on outdoor patios, including candles or similar open flames, temporary wiring and cooking and heating appliances. Careful placement and use of these products, particularly barbeques and patio heaters, are required to ensure the safety to occupants both inside and outside the building. Aspects to consider include the following:

Appliances:

- Provide adequate ventilation, away from building openings, to allow products of combustion to escape.

- Ensure safe appliance use, outdoors only on a stable level surface in a location not subject to damage or tampering.
- Have appropriate handling and storage of gas (propane and natural gas) cylinders.
- Provide separation from any other combustibles, such as wooden fences or walls, roof overhang, trees with low branches, tablecloths and decorations.
- Maintain sufficient clearance from egress pathways so that a fire at the appliance will not prohibit using the egress pathway.
- Use only appliances that bear an approval agency mark, such as the CSA Blue Flame mark, to indicate compliance with recognized safety standards. Ensure that the use is consistent with the listing.

Other Ignition Sources:

- Avoid the use of decorative or festive-type lighting with extension cords or other temporary wiring.
- Ensure that electrical devices, lighting and wiring are listed for exterior use.
- Provide separation of open flames from any combustibles, such as wooden fences or walls, roof overhang, trees with low branches, tablecloths and decorations.

5.4 Fencing and/or Barriers

Enclosures can take many forms for outdoor patios. Patio demarcation may be limited to floor markings only, or may be comprised of some kind of physical barrier that may restrict visibility, such as privacy fencing. This may include a swinging gate with latching hardware in the enclosure. Assessment of each situation may be required to ensure that building occupants are able to move out of the building, through the patio, along with the patio occupants, through openings that open in the direction of exit travel with appropriate release hardware, to a safe location during a fire emergency.

Other agencies may have additional requirements that need to be considered. For instance, AGCO requires outdoor patios to have a fence or other vertical barrier to delineate the perimeter of the patio where alcohol is being served. The required height of a fence facing the street is 1.06 metres (3.5 feet). Side screens may be up to 2.0 metres (6.5 feet) above the grade or platform level, and should not be entirely opaque. There may also be requirements that address needs of visually impaired persons, to meet barrier free design, or to meet planning and zoning requirements (See Section 7.3, Other Agencies and Legislation).

5.5 Draperies, Awnings, and Enclosures

The use of canopies, awnings, curtains, or rain screens may present a fire hazard, depending upon the extent of the enclosure and the materials used. Enclosures can impede the dissipation of combustion products, which can be very hot, and increases the risk of

carbon monoxide poisoning. Further, they can obstruct the movement of people away from the patio in the event of an emergency. They may also present an exposure hazard to the building when there are openings in the adjacent building wall. The Building Code would typically not require provision of sprinklers.

Outdoor patio enclosures can also “evolve” over time. Table umbrellas may be replaced with awnings or full overhead protection, to which side panels may be added to block wind or rain. At some point the outdoor space takes on the appearance of an indoor space, requiring similar fire safety considerations.

In addition, these add-ons may be subject to requirements of other agencies such as building, property standards and by-law enforcement departments, and provisions of the Smoke Free Ontario Act, and the associated regulation may apply (see Section 7.3, Other Agencies and Legislation).

5.6 Means of Egress

To ensure the safe egress of people from an outdoor patio, a clear path must be maintained. This is particularly critical where required exit doors from a building open into/through the outdoor patio space. The outdoor patio arrangements must allow indoor patrons to evacuate through the patio space to a safe place way from the building, without restrictions or delay (e.g. such as a gate that does not swing in the direction of exit travel or should have release hardware).

5.7 Fire Protection Equipment

Generally, an outdoor patio does not have the same need for fire protection features required inside buildings. The need to provide fire and life safety devices, such as emergency lighting, fire extinguishers, and fire alarm devices such as bells and manual pull stations requires case by case assessment. As well, an occupant load increase may have impact on the safety features of the adjacent building, as related to exiting provisions, fire alarm systems, fire alarm signals to the fire department, etc., that requires case by case assessment.

5.8 Off Season Use of Outdoor Patios

The storage of stacked patio furniture, umbrellas, planters, etc. during the off-season may pose an exposure hazard to the adjacent building or occupants. Assessment should consider the type, amount and area of storage, and the exterior wall construction. Generally, outdoor furnishings may be safely located against an exterior masonry wall that has no windows or overhang. The Building Code would typically not require provision of sprinklers.

5.9 Fire Safety Planning

The building fire safety plan is an appropriate document in which to record fire safety details associated with outdoor patios. As with assembly occupancies in buildings, records should be retained for acceptable table and chair/furnishing arrangements, egress markings, clearances to appliances and combustibles etc. Where an allowable occupant load

for the patio has been determined, it may be worthwhile to document any associated terms and conditions. For instance, the methods by which the owner will control interior/exterior movement of people during inclement weather to ensure that the occupant load is not exceeded should be described. Related to this, clarification of staff training to deal with outdoor patio evacuation in the event of an emergency is warranted.

6.0 COMMUNICATIONS AND COORDINATION

There may be any number of conditions set by other agencies. The interests of the municipal building, property standards, and/or zoning departments may be involved, beyond the scope of fire safety, for such aspects as the size of a patio, setbacks from street, proximity to residential areas, permanence of fencing, fencing materials, allowable signage, accessibility and lighting, number of washrooms, control of noise issues, etc. Consequently, it is important to liaise with other officials within the municipality to ensure that there is consistency in dealing with areas of mutual interest.

A co-ordinated approach to deal with outdoor patios has numerous benefits, including:

- Improved identification of outdoor patios
- Streamlined process for applicants
- Increased awareness and use of other resources within the community
- Improved communications and networking between agencies
- Increased referrals about problems, or potential problem situations
- Efficient use of available resources
- Enhanced use of collective legislative powers and authorities, and reduced limitations
- Increased opportunities to educate the public on safety issues
- Consistent and coordinated delivery of safety messages
- Identification of previously unrecognized safety concerns
- Avoids perception of ad hoc enforcement

7.0 FIRE SAFETY ENFORCEMENT

7.1 Ontario Fire Code

While Part 2 of the Fire Code does not specifically address outdoor occupancies, it can be used to address many hazardous activities in and around buildings. For example, the circumstances may create a hazard that was not allowed for in the original design of the building (Article 2.1.2.2.), or the accumulation of combustible materials may create a fire hazard to the building or its occupants [Sentence 2.4.1.1.(4)].

Division A, Section 1.2 Compliance describes how to achieve compliance with Division B of the Fire Code. Two primary compliance options are now offered in the 2007 Code:

1. Comply with the applicable acceptable solutions of Division B, or
2. Propose an alternative solution that will achieve at least the minimum level of performance required by the applicable acceptable solution.

7.2 Inspection Order

As previously noted, outdoor patios are not specifically addressed in the Fire Code. There are many factors that impact on the fire safety of these outdoor spaces and each situation should be assessed on the specific circumstances.

It is appropriate to consider the principles contained in the Fire Code as part of this assessment, even though the specific requirements may not directly apply. For instance, the Fire Code includes requirements for buildings that can provide guidance for fire safety concerns such as textile flammability, accumulation of combustible materials, control of ignition sources, electrical hazards, safe use of appliances and provision of fire protection. Similarly, occupant load calculations for an outdoor space could consider the same criteria that are used for occupant load calculations in buildings.

Sections 19 and 21 of the Fire Protection and Prevention Act, 1997 (FPPA) provide authority for an assistant to the Fire Marshal or fire chief to inspect land and premises and take measures to ensure fire safety. This may include issuing an Inspection Order.

Where a specific situation poses a risk to the public and is not directly addressed by the provisions contained in the Fire Code, sections 15 and 21 of the FPPA, 1997 may be used to effect remedial work.

7.3 Other Agencies and Legislation

While this guideline specifically addresses Fire Code requirements, it is important to note that other regulatory bodies/agencies may also have requirements applicable to outdoor patios.

The Alcohol and Gaming Commission of Ontario (AGCO) has mandated requirements under the Liquor Licence Act and its regulations that related to various facets of licensing, including the preparations of floor plans and determination of occupant load for indoor and outdoor areas of establishments.

The Building Code Act and the Building Code apply to buildings where construction or a change of use occurs. A building permit may be required for the construction of an outdoor patio that is connected to or otherwise has an impact on the health and safety features of an existing building. An occupant load increase may result in the need for additional safety

features related to exiting provisions, fire alarms systems, fire alarm signals to the fire department, etc.

The Smoke Free Ontario Act, S. O. 1994 c.10, and associated regulation O.Reg. 48/06 may also have an impact on outdoor patios, depending upon the extent of enclosure.

In some municipalities a coordinated licensing process to deal with outdoor patio space exists, which allows zoning, property standards, building, fire and/or health officials to have an opportunity for input.

8.0 OTHER RESOURCES

The Office of the Fire Marshal website can be found at www.ofm.gov.on.ca. It contains a variety of useful technical guidelines for fire safety planning and other safety related materials.

For Smoke-Free Ontario information, please link with

http://www.mhp.gov.on.ca/english/health/smoke_free/legislation.asp

For information about the Alcohol and Gaming Commission, please link with

www.agco.on.ca. From the home page, go to the "Alcohol" heading to find information about liquor licences, and associated application forms and floor plan guide.

The Ministry of Municipal Affairs and Housing Ontario Buildings Branch website can be accessed at <http://www.ontario.ca/buildingcode> for related materials, including Building Code Commission rulings related to patios.

Appendix A (Extract from Ontario Fire Code O. Reg. 213/07, Division B)

Occupant load

2.7.1.4. (1) The number of persons occupying a room or floor space in an assembly occupancy shall not exceed the occupant load for the intended use as determined in Sentence (2).

(2) The occupant load for any room or floor space shall be the lower of

- (a) the occupant load as calculated in accordance with Sentences (3) to (7), or
- (b) the occupant load for which means of egress are provided as determined by the Building Code.

(3) The occupant load of a floor area or part of a floor area in an assembly occupancy shall be based on

- (a) the number of fixed seats, or
- (b) the number of persons

- (i) for which the area is designed, or
- (ii) determined from Table 2.7.1.A. for occupancies other than those described in Clause (a).

(4) For the purposes of this Article, mezzanines, tiers and balconies shall be regarded as part of the floor area.

(5) Where fixed bench-type seats without arms are provided, the occupant load shall be based on a seat width of 450 mm per person.

(6) The occupant load of a room in which a dance floor is situated shall be based on that portion of the room that is not occupied by the dance floor except where the occupant load is determined using Subclause (3)(b)(i).

(7) At no time shall the maximum occupant load determined in Sentences (2) to (6) exceed the occupant load calculated on the basis of

- (a) 0.60 m² of floor space per person in dining, alcoholic beverage and cafeteria space, and
- (b) 0.40 m² of floor space per person for all other uses.

TABLE 2.7.1.A. Forming Part of Article 2.7.1.4.	
Type of Use of Building or Floor Area or Part Thereof	Area per Person in m²
Space with fixed seats	See Clause (3) (a)
Space with nonfixed seats	0.75
Stages for theatrical performances	0.75
Space with nonfixed seats and tables	0.95
Standing space	0.40
Stadia 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
Dining, alcoholic beverage and cafeteria space	1.10
Laboratories in schools	4.60

Exhibition halls other than those classified in mercantile occupancy	2.80
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Posting occupant load

2.7.1.5. (1) When the occupant load as determined in Article 2.7.1.4. is more than 60 persons, the occupant load shall be posted in a conspicuous location.

(2) When the occupant load has been determined using Subclause 2.7.1.4.(3)(b)(i), a permanent sign indicating the occupant load shall be posted in a conspicuous location.

Appendix B (Extracts from Ontario Building Code O. Reg. 350/06, Division B)

3.3.1.16. Capacity of Access to Exits

(1) The capacity of an access to exit shall be based on the occupant load of the portion of the floor area served.

(2) In an access to exit the required width of ramps with a slope not more than 1 in 8, doorways, and corridors shall be based on not less than 6.1 mm per person.

(3) In an access to exit the required width of a ramp with a slope more than 1 in 8 shall be based on not less than 9.2 mm per person.

(4) In an access to exit from a floor area used or intended to be used for patients or residents in a Group B, Division 2 or Division 3 occupancy, the required width of corridors, doorways, and ramps shall be based on not less than 18.4 mm per person.

(5) The capacity of stairs in an access to exit shall conform to the requirements for stairs in Article 3.4.3.2.(1) to (3).

3.4.3.2. Exit Width

3.4.3.2. Exit Width

(1) Except as permitted by Sentence (3), the minimum aggregate required width of exits serving floor areas intended for assembly occupancies, residential occupancies, business and personal services occupancies, mercantile occupancies, and industrial 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).

(2) The minimum aggregate required width of exits serving floor areas intended for care or detention occupancy shall be determined by multiplying the occupant load of the area served by 18.4 mm per person.

(3) The minimum required width of means of egress serving a Group A, Division 4 occupancy shall be determined by multiplying the occupant load of the area served by

(a) 1.8 mm per person for

(i) aisles,

(ii) stairs other than exit stairs, and

(iii) ramps and passageways in vomitories and exits, and

(b) 2.4 mm per person for exit stairs.
