



Janis A. Barlow & Associates

Research, Planning and Management Consultants
Specializing in Theatre since 1981

A THEATRE MANAGER'S GUIDE TO THE ONTARIO BUILDING CODE

Prepared for Theatre Ontario by
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January, 2004

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Table of Contents

1.	PREFACE.....	1
2.	A THEATRE MANAGER’S GUIDE TO THE ONTARIO BUILDING CODE	2
2.1	Purpose.....	2
2.2	What is the Ontario Building Code?	2
2.3	Where do I get a copy of the Ontario Building Code?.....	2
2.4	What does my theatre organization need to know about the Code?.....	3
2.5	How is the OBC administered and enforced?	3
2.6	What are the Other Codes -- The Ontario Fire Code and the Retrofit Code?.....	4
2.7	A Summary of Ontario Building Code Contents	5
2.8	Conforming to the Code – A Critical Checklist	5
3	AN EDITED SUMMARY OF MINIMUM PROVISIONS RESPECTING THE SAFETY OF THEATRE BUILDINGS.....	6
3.1	Assembly Occupancies (OBC, Part 3.1 – 3.15) – Summary of Annotated Notes:.....	6
3.2	General (OBC, Part 3.1.1 – 3.1.15)	7
3.3	Calculation of Occupant Load (OBC, Part 3.1.16).....	7
3.4	Building Fire Safety (OBC, Part 3.2)	8
3.5	Fire Alarm and Detection Systems (OBC, Part 3.2.4)	8
3.6	Other Fire Fighting and High Building Requirements (OBC, Parts 3.2.5 and 3.2.6)	9
3.7	Lighting and Emergency Power Systems (OBC, Part 3.2.7).....	9
3.8	Additional Fire Safety Provisions (OBC, Parts 3.2.8 to 3.2.9.7).....	10
3.9	Safety Within Floor Areas (OBC, Part 3.3).....	10
3.10	Assembly Occupancy (OBC, Part 3.3.2)	11
3.11	Number and Location of Exits from Floor Areas (OBC, Part 3.4.2).....	14
3.12	Width and Height of Exits (OBC, Part 3.4.3).....	14
3.13	Fire Separation of Exits (OBC, Part 3.4.4).....	14
3.14	Exit Signs (OBC, Part 3.4.5).....	14
3.15	Types of Exit Facilities (OBC, Part 3.4.6).....	15
3.16	Fire Escapes (OBC, Part 3.4.7).....	15
3.17	Health (OBC, Part 3.7)	16
4	A NOTE ON THE EVOLUTION OF THE CODE.....	17
4.1	Disabled Access.....	17
4.2	Fire Safety.....	17
4.3	Other Health and Safety Measures	17
4.4	Other Changes.....	17
5	A SHORT GLOSSARY OF TERMS	18

A Note on the Author:

Janis A. Barlow & Associates is a management consulting firm that has specialized in theatre since 1981. The firm provides research, planning and project advice to theatre managers, proprietors, governments, architects and engineers. For further information on the firm, or if you would like to forward comments or questions about this report, please visit our web site at [**www.jabarlow.com**](http://www.jabarlow.com)

1. PREFACE

As a Theatre Manager, you are obligated to have a basic understanding of the Ontario Building Code. You need to know where to draw the line between what your theatre workers **can do** in your theatre and what they **should not** be doing. It is important to understand that:

- Regardless of whether you rent or own a theatre, you have a legal responsibility to comply with the Ontario Building Code (OBC or “the Code”);
- If you intend to build or renovate a theatre or part of a theatre, you must comply with the Code by using the services of an architect and an engineer and obtaining a building permit from your local City or Town building department; and
- If you are attracting an audience to your theatre, you will inevitably attract the attention of your local Fire Chief or Building Inspector.

In the interest of public safety, your local Fire Chief or Building Inspector can visit and inspect your theatre at any time. They may do so on their own initiative or in response to a political directive. They may do so in response to a local Code enforcement policy or a change in Code regulations, or they may make a random visit. Most inspectors will want to work with you to help you understand your obligations under the Code. However, if you do not act to make sure your theatre complies with the letter of the Code, or a reasonable alternative as interpreted by the inspector, the penalties for non-compliance can be fines, building closure and imprisonment.

While we understand that your theatre workers are likely to be skilled set designers and builders, the law requires that any new construction or a “material change” to “a place of public assembly” must be designed and reviewed by a qualified architect and an engineer:

- a “**material change**” can include a change to the seating capacity, the auditorium risers, the washrooms, the elevator system, the fire safety system, the exiting, the plumbing or electrical systems, the usable floor space, the structure of the building or the exterior walls. Repairs to exterior surfaces or interior decorating do not constitute a “material change” provided that materials used (such as carpeting) conform with the Ontario Building Code requirements.
- an “**assembly occupancy**” is a building with a room used or designed to host a public gathering of 30 or more people. In the Code, assembly occupancies include indoor and outdoor theatres for the performing arts (known specifically as “Group A, Division 1 Occupancies”), movie theatres, cafes, libraries, schools and art galleries.

The following document answers key questions about the Ontario Building Code, identifies some relevant theatre provisions in the Code, and provides a short glossary of terms to be found in the Ontario Building Code.

2. A THEATRE MANAGER'S GUIDE TO THE ONTARIO BUILDING CODE

2.1 Purpose

The purpose of this guide is to serve as an introduction to the Ontario Building Code and its implications for theatre groups. This will apply to any group who owns or rents a theatre space and especially those considering the design, construction, demolition or renovation of any building or part of a building for theatre purposes.

The information presented here may help groups to better understand their obligations with respect to public safety and to communicate more knowledgeably with building inspectors and consultants. It must be emphasized, however, that in understanding matters of Code compliance, construction or renovation, there is no substitute for the advice of a qualified building design specialist such as an architect or engineer. This is especially true of theatres.

2.2 What is the Ontario Building Code?

The **Ontario Building Code** is a regulation made under the Building Code Act. It is a set of minimum provisions respecting the *safety of buildings* with reference to *public health, fire protection and structural efficiency*. Its primary purpose is to promote public safety in the design and construction of a building.

It is based, for the most part, on the National Building Code and is a source or companion document for the *Ontario Fire Code* and other public health and safety regulations. It also references some 400 other documents on construction materials, practices and standards. It is an ever-evolving set of regulations, the latest of which came into effect on September 1, 2003.

1.3 Where do I get a copy of the Ontario Building Code?

The Ontario Building Code is available online through the Government of Ontario's "E-Laws" web site (www.e-laws.gov.on.ca) or through the Publications Ontario bookstore for \$100. It is a very long and very dense series of legal and reference documents that is assembled in a 3-inch binder. It is organized into parts, sections, clauses, sub-clauses and sentences and it is full of cross-references that can make it difficult for the layperson to read and understand. It does, however, give the layperson an appreciation of the extent of the regulations governing the building industry in Ontario. And, it can help you understand why an architect or engineer who specializes in places of public assembly might be a prudent and cost-effective choice for a theatre building or renovation project.

All qualified building professionals will have a copy of the Code in their libraries and subscribe to regular updates and bulletins that help them interpret the application of the Code.

1.4 What does my theatre organization need to know about the Code?

You need to know that:

- the Code provides ***standards for every aspect of every kind of building*** in Ontario;
- if you intend to build, renovate or occupy ***a space to host a public gathering of any kind***, your building must comply with the Ontario Building Code;
- if your space ***seats as few as 30 people***, it is classified as an ***assembly occupancy***;
- as an assembly occupancy intended for the production and viewing of the performing arts and film, ***theatres are held to a high standard of building***, higher than a residential, live/work, business or mercantile occupancy;
- the Code(s) are constantly evolving, and ***new regulations may affect you*** regardless of whether your building is new or old; and
- ***whether you own or rent your space***, it is in your organization's interest to have a basic working knowledge of the Code.

1.5 How is the OBC administered and enforced?

The Ontario Building Code is a set of provincial regulations that is assembled, updated and made available through the Ministry of Municipal Affairs. Compliance to the Code is enforced by registered Code enforcement agencies and municipal councils. Councils appoint a chief building official and inspectors to issue building permits. Municipalities also may pass by-laws that enhance these minimum building safety provisions in their community.

Theatre Managers should take note: the Act requires ***every person*** who causes a building to be constructed or renovated to adhere to three basic responsibilities:

- ensure that it is constructed in accordance with the Act, the building code and with the permit issued for the work;
- ensure that construction does not proceed before a permit has been issued by the chief building official; and
- ensure that construction is carried out by persons with qualifications and insurance.

The penalties for non-compliance can be fines, closures and imprisonment. A building owner or tenant can choose to close a building to the public rather than comply, or they can negotiate interim measures while a long term plan is developed. For example, in 1981, Famous Players chose to close the Elgin Theatre in Toronto rather than address outstanding work orders because they were anticipating a sale of the building to the Ontario Government. As the Theatre Consultant to the project, when we wanted to license the Elgin for film location use and, later, for the Canadian premiere of CATS, I contacted both the City Building Department and the Fire Chief. They told us on both occasions what we needed to do in the building to satisfy the interests of public safety.

1.6 What are the Other Codes -- The Ontario Fire Code and the Retrofit Code?

The **Ontario Fire Code** is a regulation made under the Fire Protection and Prevention Act and is a companion document to the Ontario Building Code. *It provides for the safety of occupants in existing buildings.* Its primary purpose is to promote public safety in the management and maintenance of fire safety features in buildings. The OBC stipulates fire protection in the construction or renovation of buildings.

Retrofit is **Part 9 of the Ontario Fire Code**. It stipulates that buildings constructed prior to 1975 (and according to the OBC provisions of that time) must be upgraded to a reasonable level of fire safety standards. *It can trigger an upgrading process that is subject to the renovation stipulations in the Ontario Building Code.*

In the case of historic buildings, the Code does permit some acceptable alternatives to a strict adherence. For example, an assembly building constructed of combustible materials can introduce a sprinkler system to comply with the Code.

The Fire Code specifies requirements related to:

- fire separations (see glossary) and interior finishes;
- elimination or control of fire hazards in and around buildings;
- fire department access;
- theatre seating arrangements and exit door hardware;
- the maintenance of Life Safety Systems in buildings;
- emergency planning and the establishment of a Fire Safety Plan; and
- retrofitting (mandatory compliance to new safety standards) assembly occupancies.

The Ontario Fire Code Retrofit section 9.2 looks at four areas of fire safety:

- **Containment** -- Provisions for fire separations (see glossary).
- **Means of egress** -- Number, location and design of exits and lighting.
- **Fire Alarm and Detection** -- Design and operation of fire alarm systems.
- **Suppression** -- Provisions for fire fighting.

In addition to these areas of **Retrofit**, the **Ontario Fire Code** prescribes the regular maintenance of the Fire Safety Systems built into the building and for the preparation, approval and implementation of a Fire Safety Plan.

The provincial authority is the Office of the Fire Marshal (OFM, and yes, that's how they spell Marshal). The Fire Protection and Prevention Act is administered and amended through the Ministry of Community Safety and Correctional Services and the Ministry of the Solicitor General. Local enforcement is coordinated by the Fire Chief. Penalties for non-compliance can range up to \$50,000 for corporations.

Free resources on safety procedures for existing buildings are available through Theatre Ontario at www.theatresafety.ca

1.7 A Summary of Ontario Building Code Contents

The Ontario Building Code is a prescriptive document that deals with standards for different types of occupancies.

Throughout the Code, assembly occupancies generally follow standards for noncombustible construction and barrier-free accessibility.

The Code is organized into 12 parts:

Part 1: Scope and Definitions

Part 2: General Requirements

Part 3: Use and Occupancy

Part 4: Structural Design

Part 5: Wind, Water and Vapour Protection

Part 6: Heating, Ventilating and Air Conditioning

Part 7: Plumbing

Part 8: Sewage Systems

Part 9: Housing and Small Buildings

Part 10: Change of Use

Part 11: Renovation

Part 12: Transition, Revocation and Commencement

The Code contains a copy of the Building Code Act and a summary of the Code contents, as well as an extensive glossary.

The following document summarizes some aspects of "Part 3: Use and Occupancy," that are specifically relevant to indoor theatres. Part 3 also includes other provisions regarding outdoor theatres.

All other Parts of the Code will have many applications for the design, construction or renovation of theatres, but it is beyond the scope of this paper to describe them further.

1.8 Conforming to the Code – A Critical Checklist

Call a professional – a registered architect or engineer who specializes in theatres and/or Code compliance!

2 AN EDITED SUMMARY OF MINIMUM PROVISIONS RESPECTING THE SAFETY OF THEATRE BUILDINGS

The Code governs every aspect of design and construction from the foundations, walls and roof to the heating, ventilating, air conditioning, plumbing and sewage systems. The following outline is not comprehensive; it is an edited summary, but it does identify some of the provisions specific to theatre construction. All are derived from the OBC, Part 3 – Use and Occupancy. As you are reviewing this material, please note:

- The material has been edited, simplified and annotated. It provides an incomplete picture of the Ontario Building Code and is in no way intended as a substitute for professional advice and interpretation;
- Assembly occupancies intended for the production and viewing of the performing arts are known as **Group A, Division 1 Buildings**;
- If a term is unfamiliar to you, it may be defined in the glossary at the end of the paper; and
- Some of the provisions cited below have exceptions or alternatives depending upon the specific characteristics of the building in question.

2.1 Assembly Occupancies (OBC, Part 3.1 – 3.15) – Summary of Annotated Notes:

Part 3.1.1 – 3.1.15 – General – Fire Separations, Openings and Finishes

Part 3.1.16 -- Calculation of Occupant Load

Part 3.2 – Building Fire Safety

- Fire Alarm and Detection Systems
- Other Fire Fighting Provisions and High Building Requirements
- Lighting and Emergency Power Systems
- Additional Fire Safety Provisions

Part 3.3 -- Safety Within Floor Areas

- Assembly Occupancy
- Fire Separations
- Fixed Seats
- Aisles
- Steps and Risers
- Door Hardware
- Bench Seating
- Guards
- Outdoor Places of Assembly and Telescoping Bleachers
- Stages

Part 3.4 – Exits

- Number and Location of Exits from Floor Areas
- Width and Height of Exits
- Fire Separation of Exits
- Exit Signs
- Types of Exit Facilities
- Fire Escapes

Part 3.7 – Health

2.2 General (OBC, Part 3.1.1 – 3.1.15)

- major occupancies must be separated from adjoining major occupancies by fire separations (for example, two theatres side by side or one over the other, or a theatre adjacent another type of use)
- fire separations should be continuous – where there are openings, the integrity of the separation must be protected by a fire-rated closure such as a fire-door, glass block or a fire-rated window assembly
- the size of an opening in an interior fire separation should be no more than 11 square metres if the fire compartment on either side of the closure is not sprinklered
- the size of an opening in an interior fire separation should be no more than 22 square metres if the fire compartment on either side is sprinklered
- a duct that connects 2 fire compartments or that penetrates a fire separation must be equipped with a fire damper
- every door in a fire separation shall be equipped with a self-closing device to return the door to the closed position after each use
- a hold-open device is permitted on a door in a required fire separation (other than an exit door) provided the device is designed to release the door on a signal from a fire system
- all interior wall, ceiling and flooring finishes including glazing must meet minimum flame-spread rating standards

2.3 Calculation of Occupant Load (OBC, Part 3.1.16)

Many of the provisions of the Code are tied to the “occupant load” of your space. For example, the occupant load dictates how many washrooms are required for each area of your theatre.

- The occupant load of a floor area is based on the number of seats in an assembly area having fixed seats*
- If a floor area or part thereof has been designed for a non-standard, specific occupant load, then that occupant load must be posted in a conspicuous location
- Some standard occupant loads in a floor area without fixed seats are:

• space with non-fixed seats	.75 square metres	(8.07square feet)
• stages for theatrical performances	.75 square metres	(8.07 square feet)
• space with nonfixed seats and tables	.95 square metres	(10.2 square feet)
• standing space	.40 square metres	(4.3 square feet)
• stadia and grandstands	.60 square metres	(6.5 square feet)
• dining and alcoholic beverage space	1.10 square metres	(11.8 square feet)
• offices	9.30 square metres	(100 square feet)
• manufacturing rooms (shops)	4.60 square metres	(49.5 square feet)
• storage spaces (warehouse)	28.0 square metres	(495 square feet)

*For the purposes of calculating occupant load, mezzanine (see glossary), tiers and balconies shall be regarded as part of the floor area

2.4 Building Fire Safety (OBC, Part 3.2)

- every building shall face a street or access route with a clear width of not less than 6 metres (19 foot 8 inch)
- access routes shall be located so the principal entrance is not less than 3 metres (9 foot 10 inch) and not more than 15 metres (49 foot 3 inches) from the closest portion of the access route required for fire department use
- a Group A, Division 1 building of any height, any area should be of noncombustible construction, and
- sprinklered
- have floor assemblies that are fire separations with a fire-resistance rating of not less than 2 hours
- have mezzanines with a fire-resistance rating not less than 1 hour
- load bearing walls, columns and arches shall have a fire-resistance rating not less than that required for the supported assembly
- a Group A, Division 1 building of one storey and noncombustible or heavy timber construction can have less stringent fire-resistant ratings (on some assemblies not less than 45 minutes) and no sprinklers if it has:
 - an occupant load of less than 600
 - less than 40% of the building on two storeys for support functions
 - no occupancy above or below the auditorium
 - it is not more than 600 square metres (6,460 square feet)
- a Group A, Division 1 building of one storey can have combustible construction of 45 minute rated materials if it has:
 - an occupant load of less than 300
 - no more than one storey in height
 - no part of the auditorium is more than 5 metres (16 feet 5 inches) above or below grade
 - no occupancy above or below the auditorium except for support functions

2.5 Fire Alarm and Detection Systems (OBC, Part 3.2.4)

- a fire alarm system must be installed in a building that contains
 - a total occupant load of more than 300, other than open seating areas
 - an occupant load of more than 150 above or below the first storey
- a fire alarm system must be a single or 2 stage system
- a single stage fire alarm system shall, upon the operation of any manual pull station or fire detector, cause an alarm signal to sound on all audible signal devices in the system
- a 2 stage fire alarm system shall:
 - cause an alert signal to sound upon the operation of a manual pull station or fire detector
 - automatically cause an alarm signal to sound if the alert signal is not acknowledged with 5 minutes of its initiation
 - have a manual pull station equipped so that the use of a key (or other device) causes an alarm signal to sound and continue to sound upon the removal of the key
- a 2 stage fire alarm system is permitted to be zone coded
- fire alarm and voice communications systems must be tested to ensure satisfactory operation
- a fire alarm system shall be designed so that when an alarm signal is actuated, it cannot be

- silenced automatically any earlier than 5 minutes
- in a Group A occupancy with an occupancy load of more than 300, the system must be designed to notify the fire department – in the case of a single stage system when an alarm signal has been initiated – in the case of a 2 stage system when an alert signal has been initiated
- in an occupancy that does not require provision to transmit a signal to the fire department (the occupancy load is less than 300 or a local group of sprinklers has been installed), a legible notice is required to be affixed to the wall near every pull station stating that the fire department is to be notified in the event of a fire and including the telephone number to call
- in a 2 stage system, an annunciator panel indicating the zone(s) where an alert signal has been initiated shall be installed in close proximity to the building entrance or access route
- where an automatic sprinkler system is installed, it must be electrically supervised on the building fire alarm system annunciator for a series of conditions
- fire detectors connected to the fire alarm system must be installed in storage rooms, services rooms, janitors' room, elevators and dumbwaiter shafts (if found in a theatre or dinner theatre) and rooms in which hazardous substances (see glossary) are stored
- smoke detectors must be installed in each corridor and in each exit stair shaft in portions of buildings classified as a Group A, Division 1 occupancy
- heat detectors must be installed in every room in portions of buildings classified as Group A, Division 1
- fire detectors and heat detectors are not required in floor areas which are sprinklered and the sprinkler system is electronically supervised
- manual pull stations are required near the principle entrance to the building, and near every required exit
- audible signal devices forming part of a fire alarm or voice communications system shall not be used for playing music or background noise
- signal devices must meet audibility standards
- signals from smoke alarms, patterns of alert signals and signals or patterns of alarm systems should be clearly distinguishable

2.6 Other Fire Fighting and High Building Requirements (OBC, Parts 3.2.5 and 3.2.6)

- direct access for fire fighting purposes must be provided from the outdoors to every storey that is not sprinklered, for every 15 metres of wall facing the street
- there are additional building fire safety requirements for buildings that are 36 metres (118 feet 1 inch) high
- there are additional building fire safety requirements for buildings that are 18 metres (59 feet 1 inch) and have an occupant load of more than 300 above the first storey

2.7 Lighting and Emergency Power Systems (OBC, Part 3.2.7)

- an exit, a public corridor, a corridor providing access to an exit for the public, an electrical equipment room and a transformer vault shall be equipped to provide illumination to an average level of not less than 50 lx (4.6 ft candles) at floor or tread level and at angles and intersections at changes of level where there are stairs or ramps
- every place of assembly intended for the viewing of motion pictures or the performing arts shall be equipped to provide an average level of illumination at floor level in the aisles of not less than 2 lx (0.2 ft candles) during the viewing
- every area where food is intended to be prepared and where equipment or utensils are

intended to be cleaned shall be equipped to provide illumination to a level of not less than 500 lx (46 ft candles) measured at the floor level

- emergency lighting shall be provided to an average level or illumination not less than 10 lx (0.9 ft candles) at floor or tread level
- an automatic, 30 minute emergency power supply must be provided by batteries or generators to maintain the requisite emergency lighting levels in the event of a regular power supply interruption (for a high building, the emergency power supply must be provided for a 2 hour period)
- emergency power must be supplied for fire alarm systems to the same conditions as above

2.8 Additional Fire Safety Provisions (OBC, Parts 3.2.8 to 3.2.9.7)

- there are additional requirements for mezzanines and openings through floor assemblies
- standpipes shall be installed in every building that is more than 3 storeys or more than 14 metres (45 ft 11 in) in height or has a building area exceeding 2,300 square metres (24,200 square feet) if one storey, 2,000 square metres (21,500 square feet) if two storeys, or 1,500 square metres (16,100 square feet) if three storeys.
- hose connections shall be required at every storey of the building

2.9 Safety Within Floor Areas (OBC, Part 3.3)

- each suite of rooms (see glossary) in a building shall be separated from adjoining suites by a fire separation having a fire-rated resistance rating not less than one hour
- a public corridor should be separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than one hour
- at least two separate egress doorways are required for every room, every suite and every mezzanine:
 - intended for an occupant load of more than 60
 - where the floor area is not sprinklered and exceeds 150 square metres (1,610 square feet)
 - where the floor area is not sprinklered and the travel distance to an egress doorway is more than 15 metres (49 feet 3 inch)
 - where the floor area is sprinklered and exceeds 200 square metres (2,150 square feet)
- egress doorways must be designed and positioned so that if one becomes blocked by a fire, the other one may be used by the occupants
- every floor area above or below the first storey that has a barrier-free path of travel shall be served by an elevator
- every floor area above or below the first storey that has a barrier-free path of travel shall be divided into at least 2 zones by fire separations with fire-resistance ratings of at least 1 hour
- the minimum width of a public corridor shall be 1,100 millimetres (3 feet 7 inches)
- a dead end corridor is permitted in an assembly occupancy where there is a second and separate egress doorway from each room or suite not leading into a dead end corridor
- in a room or suite used for an occupant load more than 60, every door that opens into a corridor providing access to an exit shall swing on a vertical axis outward toward the direction of travel to the exit
- exit doors must have a clear opening of at least 800 millimetres (2 feet 7 inches), not open onto a step and be readily operable with one hand with hardware installed not more than 1,200 millimetres (3 feet 11 inches) above the finished floor
- curved or spiral stairs do not qualify as an exit stair

- except for the front of stages and loading docks, a guard of not less than 1,070 millimetres (3 feet 5 inches) high shall be provided
- around each roof to which access is provided for other than maintenance
- at opening to smoke shafts
- at each raised floor, mezzanine, balcony, gallery and other locations where the difference in level is more than 600 metres (23 5/8 inches)
- opening through any required guard shall be of a size which will prevent the passage of a sphere having a diameter more than 100 millimetres (4 inches) unless it can be demonstrated that the location and size of openings do not represent a hazard
- a glass or transparent door must be readily identifiable as a door and shall be constructed of laminated, tempered or wire safety glass
- explosion relief devices, vents or other protective measures shall be provided for in a space in which substances or conditions related to the building use have the potential to create an explosion hazard (applies to wig, janitors' and paint rooms, proscenium stages)
- janitors' rooms (see glossary) shall be separated from the remainder of the building by a fire separation having a fire resistance rating not less than one hour

2.10 Assembly Occupancy (OBC, Part 3.3.2)

Fire Separations

- the seating area of a Group A, Division 1 occupancy of 200 seats or more shall be separated from adjacent occupancies by a fire separation having a fire-resistance rating of not less than 1 hour
- if usable space exists under tiers of seats in arena type buildings, a fire separation with a fire-resistance rating not less than 45 minutes shall be provided between the space and the seats, or the space shall be sprinklered

Fixed Seats

- fixed seats must be:
 - attached or secured to the floor, platform or platform riser
 - provided with arms and back, and
 - arranged in rows having an unobstructed passage not less than 400 millimetres (15 3/4 inches) wide measured horizontally between plumb lines from the backs of the seats in one row and the edges of the furthest forward projection of the seats in the next row in the unoccupied
- for fixed seats with backs and with folding tablet arms, the 400 millimetres (15 3/4 inches) passage shall be measured when the tablet arms are in the use position provided:
 - there are not more than 7 seats between any seat and the nearest aisle
 - the seats are located in a lecture hall or an auditorium used for instructional purposes, and
 - the tablet arm, when raised manually to a vertical position, falls by the force of gravity to the stored position
- aisles shall be located so that there are not more than 7 seats with backs or 20 seats without backs between any seat and the nearest aisle, except in the case of continental type seating where:
 - egress doorways are provided to serve both ends of rows of seats
 - each doorway serves not more than 3 rows of seats
 - each row contains not more than 100 seats
 - each row has an unobstructed passage with minimum width of 400 (15 3/4 inches) plus 6.1 mm (1/4 inches) for each additional seat above 16 seats in a row, and
 - the travel distance is not more than 45 millimetres (147 feet 8 inches) measured along the

- path of travel from any seat to an exit or to an egress doorway
- seating arrangements that do not conform to the above are permitted provided the standard of safety is not reduced and the time required for egress is not increased.

Aisles

- aisles must terminate at a converging aisle, an egress doorway from the seating area or an exit from the seating area
- a converging aisle shall terminate at an egress doorway from the seating area, or an exit from the seating area
- the minimum clear width of aisles shall not be less than 1,100 millimetres (3 feet 7 inches), except that the width is permitted to be reduced to not less than 750 millimetres (2 feet 6 inches) if serving not more than 60 seats and 900 millimetres (2 feet 11 inches) if serving seats on one side only
- the minimum clear width of each aisle shall be measured at the point in the aisle furthest from an egress doorway or an exit
- the minimum clear width of each aisle shall be increased by 25 millimetres for each metre of length of the aisle measured in the direction towards an exit.
- the width of a converging aisle shall not be less than the required width of the widest aisle plus 50% of the total required width of the remaining aisles that it serves
- dead-end aisles that are between 6 metres (19 feet 8 inches) and 10 metres (32 feet 10 inches) long must meet additional provisions
- dead-end aisles that are between 10 metres (32 feet 10 inches) and 13 metres (42 feet 7 inches) long must meet additional provisions
- side aisles shall not be less than 1,100 millimetres (3 feet 7 inches) wide

Steps and Risers

- an aisle with a 1 in 8 slope shall not be stepped; an aisle that slopes more than 1 in 8 shall be stepped
- risers must meet provisions for their position in relation to seats as well as riser and step height, depth of tread, run, illumination and finish

Door Hardware

- any door that is an access to an exit in an assembly occupancy containing an occupancy load of more than 100 must be equipped with exit door hardware that will allow the door to swing wide open in the direction of travel to the exit

Bench Seating

- bench seating without arms must be:
 - fixed to the floor or platform
 - calculated to accommodate one person per 450 millimetres (17 ¾ inches)
 - spaced not less than 760 millimetres (2 feet 6 inches) back to back if back rests are provided, and not less than 550 millimetres (21 5/8 inches) if back rests are not provided
 - spaced so that a clear space of not less than 300 millimetres (11 ¾ inches) shall be provided between the back of each seat and the front of the seat immediately behind it

Guards

- guards shall be installed in outdoor and indoor places of assembly with fixed seats so that:
- at the fascia of every box, balcony or gallery where the seats extend to the edge, the height of the guards is not less than:
 - 760 millimetres (2 feet 6 inches) in front of the seats, and

- 920 millimetres (3 feet) if located at the end of aisles or at the foot of steps
- the height of the guards along every cross aisle other than those above is not less than 660 millimetres (2 feet 2 inches) unless the backs of seats along the front side of the aisle are not less than 600 millimetres (23 5/8 inches) above the floor of the aisle
- where the seating is arranged in successive tiers and the height of rise between platforms is more than 450 millimetres (17 3/4 inches), the heights of the guards is not less than 660 millimetres (2 feet 2 inches) along the entire row of seats at the edge of the platform
- backs and ends of bleacher seats more than 1,200 millimetres (3 feet 11 inches) above the ground or floor that are not adjacent to a wall shall be protected with a guard
- not less than 1,070 millimetres (3 feet 6 inches) high above an adjacent aisle surface or foot rest, and
- not less than 920 millimetres (3 feet) high above the centre of an adjacent seat board
- if the front of a bleacher is more than 600 millimetres (2 feet 5/8 inches) above the ground or floor, it shall be protected with a guard
- openings through these guards shall be of a size which will prevent the passage of a sphere having a diameter more than 300 millimetres (11 3/4 inches)

Outdoor Places of Assembly and Telescoping Bleachers

- there are special provisions for outdoor places of assembly (see OBC, Part 3.3.2.9) and telescoping bleachers (see OBC, Part 3.3.2.10)

Stages

- a stage for theatrical performances and ancillary spaces, including workshops, dressing rooms and storage areas, shall be sprinklered
- a fire separation with a fire-resistance rating not less than 1 hour shall be provided between a stage for theatrical performances and ancillary spaces, including workshops, dressing rooms and storage areas
- a fire separation with a fire-resistance rating not less than 1 hour shall be provided between a stage for theatrical performances and a seating area
- a stage with a proscenium opening in a one hour-rated wall shall be separated from the seating area by a fire separation comprised of either
 - a sprinkler deluge system
 - an unframed fire curtain if the opening is not more than 20 metres (65 feet 7 inches) wide, or
 - a semi-rigid fire curtain if the opening is more than 20 metres (65 feet 7 inches) wide
- a fire curtain shall be designed to:
 - automatically close upon the actuation of the sprinkler system
 - automatically upon the actuation of the fire alarm system
 - manually by remote control devices located at the curtain control panel and at each side of the stage, and
 - automatically by heat-actuated devices
- at least 2 vents for the purpose of venting fire and smoke to the outside of a building shall be provided above a stage designed for theatrical purposes and shall:
 - have an aggregate area not less than one eighth of the area of the stage behind the proscenium opening and
 - be arranged to open automatically upon actuation of the sprinkler system
 - a sprinkler deluge system installed at the boundary between a sprinklered stage and a sprinklered seating area is a substitute for a one hour fire separation

2.11 Number and Location of Exits from Floor Areas (OBC, Part 3.4.2)

- number of exits required are calculated on the basis of occupancy load, size of the room and travel distance – the distance from any point in the floor area to an exit measured along the path of travel to the exit
- every floor area intended for occupancy shall have at least 2 exits when one of the following conditions exists:
 - the occupancy load exceeds 60 people
 - the floor area is not sprinklered and the maximum travel distance is more than 15 metres (49 feet 3 inches)
 - the floor area is not sprinklered and the maximum floor area is more than 150 square metres (1,601 square feet)
 - the floor area is sprinklered and the maximum travel distance is more than 25 metres (82 feet)
 - the floor area is sprinklered and the maximum floor area is more than 200 square metres (2,150 square feet)
- a mezzanine shall be provided with the exits on the same basis as a floor area
- the distance between the exits should be one half the maximum diagonal dimension of the floor area

2.12 Width and Height of Exits (OBC, Part 3.4.3)

- the width of an exit shall be not less than 1,100 millimetres (3 feet 7 inches)
- the aggregate required width of exits shall be determined by multiplying the occupant load by 6.1 millimetres (1/4 inch) per person for ramps, doorways and corridors and 8 millimetres (5/16 inch) per person for a stair
- every exit should have a headroom clearance of not less than 2,100 millimetres (6 feet 11 inches); every stair, a clearance of 2,050 millimetres (6 feet 9 inches); every doorway, a clearance of 2,030 millimetres (6 ft 8 inches) and; every door with a door closer, a clearance of 1,980 millimetres (6 ft 6 inches)

2.13 Fire Separation of Exits (OBC, Part 3.4.4)

- every exit shall be separated from the remainder of the building by a fire separation
- no exit from a floor area above or below the first storey should lead through a lobby
- under certain conditions one exit from a floor area may be permitted to lead through a lobby
- the integrity of an exit must be maintained for egress and access only

2.14 Exit Signs (OBC, Part 3.4.5)

- every exit door other than the main entrance to a room or building shall have an exit sign placed over or adjacent the exit if the exit serves:
 - a building more than 2 storeys in height
 - a building having an occupant load more than 150 or
 - a room or floor area that has a fire escape as part of a required means of egress
 - every exit sign should be visible from the exit approach and be illuminated continuously while the building is occupied

- have the words EXIT or EXIT/SORTIE in red letters to specifications as noted in the OBC
- every room with an occupant load of more than 60 that, when occupied, has lighting levels below that which would provide easy identification of the egress doorway, must have an illuminated exit sign

2.15 Types of Exit Facilities (OBC, Part 3.4.6)

- the surfaces of ramps, landings and treads must have a finish that
 - is slip resistant
 - demarcate by colour or distinctive pattern contrast the leading edge of the tread and the leading edge of the landing, as well as the beginning and end of a ramp
- treads and landings of exterior exit stairs shall be designed to be free of ice and snow accumulations if the stairs are more than 10 metres (32 feet 10 inches) high
- no flight of stairs shall have a vertical rise of more than 3.7 metres (12 feet 2 inches) between floors or landings
- the length and width of a landing shall be at least the width of the stairway in which it occurs, except in a straight run where the length of the landing need not be more than 1 100 millimetres (3 feet 7 inches)
- handrails and guards must be installed according to a series of specifications regarding location, heights and openings
- ramp slopes and treads and risers must meet a range of specifications
- if a door is equipped with a latching mechanism, a device that will release the latch and allow the door to swing wide open is required on:
 - every exit door from a floor area containing an assembly occupancy of 100
 - every door leading to an exit lobby from an exit stair shaft, and every exterior door leading from an exit stair shaft in a building having an occupant load of more than 100
- electromagnetic locks are permitted under certain conditions

2.16 Fire Escapes (OBC, Part 3.4.7)

- where it is impractical to provide one or more exit facilities, fire escapes can added to an existing building provided it is not more than 5 storeys in height

2.17 Health (OBC, Part 3.7)

- the height of every room and space shall be sufficient that adequate light and air are provided for the intended occupancy
- water closets will be provided for each sex assuming that the occupant load is equally divided between males and females, unless the proportion of each sex expected in the building can be determined with reasonable accuracy
- if two water closets are required for males, one urinal is permitted to be substituted for one of the water closets; for larger occupancies two thirds of the required water closets may be replaced by urinals
- one lavatory is required for one or two water closets and thereafter at least one additional lavatory must be provided to each additional 2 water closets
- the water closet formula is 1 for less than 25 persons of each sex, 2 for 26 to 50 persons of each sex, 3 for 50 persons and 1 for each additional increment of 50 persons of each sex in excess of 50
- except for motion picture theatres, the minimum water closet formula for assembly occupancies are noted below:

Occupancy Load	Number of Persons of Each Sex	Male	Female
100	1 to 50	1	2
101-150	51 to 75	2	3
151-200	76 to 100	2	4
201-250	101 to 125	3	5
251-300	126 to 150	3	6
301-350	151 to 175	4	7
351-400	176 to 200	4	8
401-500	201 to 250	5	9
501-600	251 to 300	5	10
601-700	301 to 350	6	11
701-800	351 to 400	6	12
801	over 400	7 plus 1 for each additional increment of 200 males in excess of 400	13 plus 1 for each additional increment of 100 females in excess of 400

3 A NOTE ON THE EVOLUTION OF THE CODE

The Ontario Building Code is an evolving document. Several of the requirements to be activated in July, 2005 include the following changes:

3.1 Disabled Access

- In larger buildings, that half the building entrances are barrier-free.
- Warning strips and barriers or construction under stairs
- That all building controls are operable with one hand
- Access to all areas of an accessible floor

3.2 Fire Safety

- that theatres or theatre complexes with over 600 seats are sprinklered

3.3 Other Health and Safety Measures

- that shower valves have anti-scalding measures
- safety barriers for doors that have a 2 foot drop or more
- safety barriers for windows which open to less than 18 inches above the floor and there is a six foot drop or more
- increasing the number of women's washrooms

3.4 Other Changes

- a minimum level of energy efficiency in large buildings
- transference of responsibilities from the Environmental Protection Act to the Building Code Act

4 A SHORT GLOSSARY OF TERMS

The Code contains an extensive glossary of terms, some of which are defined as:

Access to exit is that part of a *means of egress*, such as an aisle, hallways or corridor, which occupants must use to reach an exit.

Alarm Signal is an audible signal transmitted throughout a building to advise occupants that a fire emergency exists.

Alert Signal is an audible signal to advise designated persons of a fire emergency.

Alternatives are those provisions that are employed in lieu of a strict adherence to the Code which are deemed acceptable by the chief building inspector.

Annunciator Panel is the lighted panel that provides information about the location of an activated fire alarm in a building.

Assembly occupancy is the use or occupancy of a building, or part thereof, by a gathering of persons.

Barrier-free is a building and its facilities can be approached, entered, and used by persons with physical or sensory disabilities.

Chief Building Official is the local enforcer of the Code. The City or Town Council of each municipality shall appoint a chief building official and such inspectors as are necessary for the enforcement of Building Code.

Canopy is a roof-like structure projecting more than 300 millimeters or 11 ¾ inches from the exterior face of the building.

Closure is a device for closing an opening through a fire separation or an exterior wall, such as a door, a shutter, wired glass or glass block.

Containment is the provision of fire separations between different kinds of occupancies (such as a non-combustible wall between a theatre and a neighbouring building) and the protection of openings in fire separations (such as a fire curtain between a stage and an auditorium, or wire-glass in a window).

Construct has to do anything in the erection, installation, extension or material alteration or repair of a building.

Corridor is a narrow hallway, passageway, or gallery, often with rooms or apartments opening onto it.

Dead load is the weight of all permanent structural and nonstructural components of a building.

Dumb Waiter Shaft is an elevator used for transporting food from one level to another.

Exit is that part of a *means of egress*, such as a door, stair or ramp that leads from the floor it serves through a continuous, enclosed passage to the outside at ground level or a separate building.

Exposing building face is that part of the exterior wall of a building which faces one direction and is located between ground level and the ceiling of the top story.

Fire damper is a closure that is installed in a duct, floor or wall and is normally open, but in the event of a fire closes automatically to maintain the integrity of the fire separation.

Fire detector is a device that detects a fire condition and automatically sends an electrical signal to initiate an alert or alarm signal. A combination of heat and smoke detectors are usually used in theatre spaces.

Fire-protection rating is the time in hours that a *closure* will withstand the passage of flame when exposed to fire.

Fire-resistance rating is the time in hours that a material or assembly of materials will withstand the passage of flame and the transmission of heat when exposed to fire.

Fire separation is a wall or floor assembly that acts as a barrier against the spread of fire.

Firewall is a type of fire separation that subdivides a building or separates adjoining buildings to resist the spread of fire.

Flame-spread rating is a comparative index indicating the speed at which flame spreads along the surface of a material. The higher the index, the faster the flame will spread.

Floor area is the space on any storey of a building between exterior walls and required firewalls including the space occupied by interior walls and partitions, but not including exits, vertical service spaces, and their enclosing assemblies.

Guard is a protective barrier used to prevent accidental falls from one level to another. Some examples of places that a guard would be used include, open sides of stairs, landings, balconies, *mezzanines* etc.

Hazardous room is a room containing sufficient quantities of a substance that, because of its chemical nature, may create an atmosphere or condition of imminent hazard to human health.

Hazardous substances are potentially volatile or combustible solids, liquids or gases that represent a hazard to human health (cited in the OBC, Appendix A 3.3.1.2. (1). Hazardous substances may not be stored in basements or rooms other than those designed to accommodate them.

Heritage building is a building that is certified to be of significant architectural or historical value by a recognized, non-profit public organization. Certification for these organizations must be accepted by the *chief building official*.

Janitors' room is a room that is likely to have hazardous materials such as cleaning solvents stored within.

Lavatory is a wash basin.

Life safety study is a report prepared by a Code specialist (usually an engineer) that proposes alternative safety measures to a strict adherence to the letter of the Code in an existing building.

Live load is the load other than the **dead load**. It includes the loads resulting from snow, rain, wind, earthquake and those resulting from occupancy.

Load bearing as applied to a building element means that the element is subjected to or designed to carry loads in addition to its own dead load.

Major occupancy is the principal occupancy for which a building is used or intended to be used.

Marquee is a canopy over an entrance to a building.

Means of egress is a continuous path of travel provided for the escape of persons from any point in a building or contained open space. This includes exits and access to exits.

Mezzanine is an intermediate floor assembly between the floor and ceiling of any room. This includes an interior balcony.

Noncombustible is the condition of a material that can not be readily burned and has met the criteria of the "Standard method of Test for Determination of Non-Combustibility in Building Materials" (CAN4-S114).

Noncombustible construction is that type of construction in which a degree of fire safety is attained by using noncombustible materials.

Occupancy is the use or intended use of a building or part thereof for the shelter of persons, animals or property.

Occupant Load is the number of persons for which the building or part thereof is designed.

Plumb Line is a line (as of cord) that has at one end a weight (as a plumb bob) and is used especially to determine verticality.

Public Corridor is a **corridor** that provides access to exit from more than one **suite**.

Room is an area separated by walls or partitions from other similar parts of the structure or building in which it is located.

Stage is a space designed primarily for theatrical performances that is traditionally, but not necessarily, separated from the audience by a proscenium wall.

Standpipe is a vertical pipe for the conveyance of water, gas, etc. to a higher level.

Suite is a single room or a series of rooms of complementary use, operated under a single tenancy.

Theatre is a place of public assembly intended for production and viewing of the performing arts or the screening and viewing of motion pictures, as well as an auditorium with permanently fixed

seats intended solely for a viewing audience.

Unprotected opening is a doorway, window or any other opening on the exposing building face other than the one equipped with the required ***fire-protection rating***.

Walkway is a covered or roofed pedestrian thoroughfare used to connect two or more buildings.

Water Closet is a private stall that houses a flush toilet.