FireWise
CONSULTING
LEARNING ACADEMY

Fire Inspector

CHAPTER SEVEN

OCCUPANCY SAFETY AND EMERGENCY PLANS

Part 1

Slide 1

Welcome to Chapter 7 Occupancy Safety and Emergency Plans.
This Chapter is divided into three Parts. In part one, we will discuss:

- Occupant loads: how to calculate them and factors affecting them
- Two types of occupant load calculations -Design Occupant loads and Maximum Occupant Loads
- Calculating occupant loads based on Gross floor area and Net floor area
- Means of Egress
- Travel distance to an exit
- Exit width
  And
- Dead end corridors

Slide 2

If you are following us in Jones and Bartlett's Fire Inspector Principals and Practices, First Edition Revised, you will note that the introduction deals with the adoption and use of building and fire codes and other fire safety documents.

Slide 3

One of the functions of the model codes is to help building designers, building officials, plans examiners and fire inspectors determine the number of people who can safely occupy the building or area. The term occupant load refers to the total number of people the means of egress of a building or portion thereof is designed for. Many code requirements are dependent upon the occupant load of the room or space in question. For example, the building code requires exit doors from a room or suite of assembly occupancy to be equipped with panic hardware if the occupant load is more than 100 people.

The occupant load is normally established by the designer and verified by the plans examiner based on the floor area or part of the floor area based on:
- the number of fixed seats in an assembly occupancy
- two persons per sleeping room or sleeping area in a dwelling unit or suite, or
- the number of persons for which the area is designed,
- or from a table in the applicable building code.

Reference
NBC 3.4.6.16 (panic hardware)

Slide 4

There are two types of occupant loads; design occupant load, and maximum permissible occupant load.
Design occupant loads are addressed in subsection 3.1.17 of the Building Code and are intended to indicate the approximate number of people which can be expected to occupy the space. Based on that number, the designer can determine further code requirements that may be applicable such as:

- the minimum number of exits required
- fire safety systems that are required, such as sprinkler systems or fire alarms
  and
- other things like the number of sanitary facilities required

The design occupant load is considered a **minimum** occupant load but is not intended to limit the number of people that can safely occupy a room or building. If the designer designs the building or room for an occupant load different than that shown in the building code table, a sign indicating the occupant load must be posted in a conspicuous location.

During the plan review process, the design occupant loads should be checked for accuracy as designers can make mistakes. This occupant load is critical in determining the egress requirements, distribution of exits, and travel distances. Along with other life safety equipment.

Slide 5

The Building Code use gross floor area to calculate the minimum design of the building versus the Fire Code that uses net floor area to calculate the maximum occupant load permitted based on .4 square meters per person.

Gross and Net floor area definitions may vary depending on the defining agency so fire inspectors should be familiar with the definitions used by their agency.

Slide 6

Gross floor area is usually identified as the floor area contained within the building measured from the internal face of the external walls. In other words, everything inside the exterior walls contributes to the gross floor area.

Net floor area is the space inside the building that is normally occupied by people. The *net floor area* is the *gross floor area* minus unoccupied accessory areas such as lobbies, corridors, stairways, washrooms, mechanical, electrical, closets, storage rooms, and furniture and fittings. In this case the gross floor area of the room is 20m X 30m for a total gross floor area of $600m^2$. Designers would use that figure to calculate the minimum occupant load based on table 3.1.17.1 in the building code. Fire inspectors on the other hand would calculate the area based on net floor area and deduct the area taken up by the washrooms so the net floor area would be $600m^2$ minus $25m^2$ for a net floor area of $575m^2$.

Slide 7

If this same building was calculated for maximum occupant load under the fire code, net floor area would have to be established.

The formula for calculating the maximum permissible occupant load under the fire code is Gross Floor Area minus the occupied floor space which equals the Net Floor Area. The net floor area is divided by $.4m^2$ to determine the maximum permissible occupant load.

We know that the gross floor area is 600 square meters. There are 2 washrooms that measure 3 meters by 3 meters and a staff room that is 5 meters by 6 meters. There are electrical and mechanical rooms that measure 2.5meters by 3.75meters each. The retail area has 21 shelving units that measure 2 meters X 10 meters each, and a sales counter that measures 2 meters X 8 meters.

The net floor area would be the gross floor area of $600m^2$ minus the area taken up by the washrooms, mechanical and electrical rooms, the shelving units, and the sales counter. The calculation would be 600 minus 502.75 for a net floor area of $97.25m^2$. This figure would then be divided by .4 square meters per person and arrive at an occupant load of 243 people.

Slide 8

This is a simple example of how a designer would calculate an occupant load for a single use mercantile occupancy based on the building code table . This 600m^2 building has 500m^2 used for retail and 100m^2 used for warehousing merchandise. The Occupant Load Table in the building code shows that the required area per person for mercantile occupancies is 3.7m^2 per person. So the area of 500m^2 is divided by 3.7m^2 per person for a design occupant load of 135 people.

The warehouse area is calculated at 28m^2 per person, so the occupant load is 100m^2 ÷ 28 = 3.57. Occupant load calculations do not allow for fractions of people, so the number of people allowed in the warehouse is rounded down to 3 people. The total occupant load for the building is 135 + 3 for a total occupant load of 138 people.

Slide 9

Article 2.7.1.3 of the fire code addresses the **maximum** number of people that are permitted to enter a room or area. This number is based on either .4m^2 per person or the capacity of the means of egress that is provided. The lowest figure (fewest people) calculated is used to establish the maximum occupant load.

The maximum permissible occupant load using the .4m^2 fire code calculation cannot exceed the number of people that can safely be accommodated by the means of egress.

For example:

A room has an area of 200m^2. The maximum occupant load permitted by the fire code would be 200m^2 ÷ .4m^2 per person which equals 500 people. However, the available exiting, which is calculated using article 3.4.3.2 of the building code, only provides for 258 people. So, the maximum occupant load for the room would be the lessor of the two figures or 258 people.

In the majority of cases, the exit width will be the maximum occupant load limiting factor when using the calculations provided in the fire code.

Slide 10

Now that we have established the maximum occupant load of 243 based on the net floor area, we need to calculate the exit capacity to make sure it will accommodate the maximum number of people. Exit capacity is determined by the building code. It says that the minimum aggregate required width of exits serving mercantile occupancies is determined by multiplying the occupant load of the area served by:

- 6.1 mm per person for ramps with a slope of not more than 1 in 8, doorways, corridors, and passageways,
- 8 mm per person for a stair consisting of steps whose rise is not more than 180mm and whose run is not less than 280mm, or
- 9.2 mm per person for other stairs and ramps with a slope of more than 1 in 8,

In this case there are no stairs or ramps so 6.1mm per person is multiplied by 243 people which determines that 1,482.3 mm is the required exit width. The building is equipped with 2 exits that are 914mm each. The aggregate width of the exits is 1828mm so adequate exiting is provided for the maximum occupant load of the building.

Slide 11

We have talked about occupant loads based on the building design, under the building code, and maximum occupant loads based on the fire code. In most cases, the maximum occupant load of the building will be greater than the design occupant load if there is sufficient means of egress provided for the occupants. Means of egress is defined in the building code, but in simple terms, it means the continuous path of travel for the escape of people from any point in a building to a separate building or an exterior open space.

Slide 12

Now let's look at determining the maximum occupant load of a two-storey assembly occupancy building with a restaurant on the first floor and a dance studio on the second floor.

The building is 20m X 20m for a Gross Floor Area of 400m².

The restaurant has a design occupant load based on the building code for non-fixed seats and tables of 145 people.

The net floor area after deducting the tables and chairs, kitchen, washrooms, and storage, mechanical and electrical rooms is 85m². To determine the maximum occupant load under the fire code 85m² is divided by .4m² which equals 212 people.

The required exit width is determined by multiplying the occupant load of 212 by 6.1 which equals 1293.2mm.

The available exit capacity is determined by adding the exit widths together. In this case there are two exits. There is a double set of doors that are 800mm each which provides 1600mm of exit capacity. The second exit is 900mm, so it provides another 900mm capacity. So the ground floor has an exit capacity of 2500mm which exceed. he required exit width of 1293.2mm.

Slide 13

The dance studio on the second floor has a gross floor area of 400m². The design occupant load is 145 people based on the building code for non-fixed seats and tables.

The net floor area after deducting the tables and chairs, washrooms, and storage area is 121m². To determine the maximum occupant load under the Fire Code the net floor area (121m²) is divided by .4m² which provides for a maximum occupant load of 302 people. But now the exit capacity has to be calculated.

The required exit capacity is determined by multiplying the occupant load of 302 times 8mm which equals 2416mm.

There are 2 exits from the upper floor that are 950mm each, providing1900mm total exit capacity. The exit capacity of 1900mm is then divided by 8mm per person which equals 237 people. So, the existing exiting provided from the second floor will accommodate a maximum occupant load of 237 people.

An alternative to limiting the occupant load to 237 would be to increase the exiting from the second floor.

Slide 14

2.7.1.3 of the fire code has an appendix note that says in part:
"Assuming that the exit capacity is sufficient, the value of .4m² per person ensures that a crowd of people will be able to move steadily toward the exits."

This note goes on to say:

“Table 3.1.17.1 of Division B of the building code should **not** be used to determine the maximum permissible occupant load for rooms or spaces in existing buildings. Table 3.1.17.1 is intended to allow the building designer to calculate a **minimum** occupant load for the purposes of designing certain building features, such as means of egress and fire alarm systems.”

In all likelihood, the fire code calculation of maximum occupant load will be much higher than the design occupant load.

Slide 15

As we have talked about before, the National Fire and Building Codes are model codes, and the adopting jurisdiction can make changes as they see appropriate. When it comes to occupant load calculations some jurisdictions have made significant changes that fire inspectors working in that jurisdiction must be aware of.

Slide 16

In some cases, it is possible to have multiple occupant loads for the same space based on the use at the time. Often two occupant load signs may be posted depending on the configuration of the room. For example, a banquet room with non-fixed seats and tables will accommodate less people than the same space with non-fixed seats but without the tables. The designer or building official may have provided several occupant load signs.

During site visits and inspections, the fire inspector should verify the maximum occupant load. This is especially important when there is an occupancy classification change, or the room or area has been altered in a way that may affect exiting. A change in occupancy classification or alteration to the room or area should initiate a plan review. Any increase in occupant load should be verified as a change in exiting may also be required.

Slide 17

If you are asked to provide an occupant load calculation make sure you do so in conformance with your organizations policies.

Many Provincial organizations provide guidance on occupant load calculations, some of which can be found in the Additional Materials section of this Chapter.

Changing the maximum occupant load may require the owner to install a fire alarm system or other fire protection measures that were not required in the original design. For example, you are asked to calculate the occupant load for a church hall. Under the design calculation in the building code, the space for non fixed seats and tables was used, and the occupant load was established at 166 people based on a floor area of 150m^2.

They would like to accommodate more people and think they have the room to do it. Using the fire code, you calculate the maximum occupant based on net floor area. After deducting the space taken up by tables and chairs, you determine the net floor area to be 125m^2. Dividing 125m^2 by .4m^2 per person, you determine the maximum occupant load to be 312 people. If the occupant load is increased above 300 a fire alarm system will be required by the building code which could be a costly installation for the church and may be beyond their means.

Reference:
NBC A-2..7.1.3.(1)

Slide 18

When the occupant load is determined, occupant load signs may be required. If the floor area is designed for an occupant load other than that determined by Table 3.1.17.1 of the building code, a permanent sign indicating that occupant load must be posted in a conspicuous location.

The fire code requires occupant load signs to be posted when the occupant load of an assembly occupancy exceeds 60 people. This sign is intended to indicate the maximum permissible occupant load determined under article 2.7.1.3. While it is the owner's responsibility to post the required signs, it is recommended that the posting of the sign be done in consultation with the local fire authority.

In cases where the layout of an establishment periodically changes, it is possible to have multiple occupant load signs. It is also recommended that the different layouts are documented as part of the fire safety plan's ongoing review and development process. This will help to ensure that the periodic change in layout is compliant with the requirements of the Fire Code.

Reference
NFC 2.7.1.4

Slide 19

Now let's look at means of egress based on the occupant load of the building.

Obviously, we need enough egress facilities to accommodate the number of people using the exits without the need for them to que up or being slowed down by others. Exits must also be within a reasonable travel distance and be sized to accommodate all the people occupying the area. This means the doors, corridors, and stairways must also be large enough to accommodate the occupant load.

The geometry of the building, its occupancy classification, occupant load, and travel distance to an exit determine the number and capacity of the means of egress required.

Slide 20

First, let's review what a means of egress is, and what it is made up of.

A Means of Egress consists of three parts:

- Access to Exit – is the portion of an exit route from a room or area that leads to an exit.
- Exit – is the portion of an exit route that is usually fire separated from other areas to provide a protected way of travel to the exit discharge. This could be a stair tower or a corridor.
- Exit discharge - is the part of the exit route that leads directly outside or to a street, walkway, refuge area or open space with access to the outside.

Slide 21

There are limits for which occupants can safely travel to reach an exit, so the building code establishes maximum travel distances to exits based on the size and use of the building and the number of exits. For example, in a non-sprinklered building that has one exit, the maximum travel distance to the exit in an assembly occupancy is 15m and in a business and personal service occupancy travel distance increases to 25m.

The travel distance is usually increased significantly if the building is sprinkler protected.

If, during an inspection the travel distance to the exit seems to far, it should be checked for compliance which may necessitate a review of the approved building plans. Compliance may be as simple as rearranging the layout of the contents of the room. If compliance cannot be obtained remodeling or alterations to the building may be required.

References
NBC Table 3.4.2.1

Slide 22

The path of exit travel can be increased by the contents of a room. Take for example a used furniture store, the display area is often full of merchandize with the path of travel to the exit obstructed by the often-changing contents in the room. The path of travel should be measure from the most remote point, along the route to the exit, including stairs and ramps to where the exit begins. The exit is the exterior door or an enclosed corridor or stairway that is fire separated from the furniture showroom.

If the path of travel includes stairs they should be measured along the stair nosing as shown in this diagram.

The building code says that the travel distance to the exit can be measured from the room or suite door provide that the room or suite is fire separated from the remainder of the floor area. Certain provisions apply so the fire inspector should check the applicable code.

Reference
NBC 3.4.2.4

Slide 23

Take for example a theatre like the one in this diagram. There are normally fixed seats with aisles to accommodate exit access. The aisles lead to an exit which can be made up of corridors and/or a lobby that leads to the exit discharge. The exit is usually required by the building code to be fire separated from the rest of the building. The exit discharge must provide a continuous unobstructed path of travel to an exterior open space.

Slide 24

The building code states if more than one exit is required every exit should be considered as contributing not more than one half of the required exit width. It is also a fact that the majority of people will try to exit the way they came into the building, so it is good engineering practice to have a large entrance/exit to the assembly area.

To determine the exiting requirements let’s first calculate the occupant load for the theatre. The building code establishes the occupant load based on the number of fixed seats, which is 454. Now let's look at available exiting from the theatre. There are single leaf exit doors on either side of the stage, each with a width of 915 mm or 36 inches. The capacity of each of these doors is 915/6.1mm per person, which equals 150 people so exiting is provided from 300 people at the front of the theatre.

Reference
NBC 3.4.3.2.

Slide 25

The main entrance is also an exit with double leaf doors also measuring 915 mm each, so each leaf in this door can accommodate 150 people for a total of 300, so the total exiting from the theatre can accommodate 600 people. The access to exit aisles between the seats is 1100 mm each so they can easily accommodate the occupants.

The theatre is sloped but ramps are used rather than stairs. The building code requires 6.1 mm per person for ramps with a slope of not more than 1 in 8 doorways, corridors and passageways. The corridor outside the theatre entrance must be at least as wide as the exits so that it does not create a bottleneck of people leaving the building, in this case it is 2200 mm and has no obstructions.

Reference
NBC 3.4.3.2.

Slide 26

The fundamental principle for the safety of the building occupants is that free unobstructed access to exit be provided from every area in the building. If the access to exit access passes through a room that can be locked or there is a higher fire hazard presented along the path of travel than would normally be found in the area, the principle of free unobstructed travel has not been met. A good example is a restaurant. People seated in the dining area should not have to travel through the kitchen to get to an exit because the kitchen presents a higher hazard than the sitting area. The kitchen exit does provide a viable exit for the kitchen staff as they are already in the higher hazard zone not entering it to get to the exit.

Slide 27

The width of the exit must be of sufficient size to accommodate the number of people it will serve. Widths are regulated by the building code based on the occupancy classification and occupant load being served. For example, the minimum width of an exit corridor for most occupancy classifications is 1100mm (43.31”) and doorways must be at least 800mm (31.5”).

In some cases, the width of access to exit is governed by the activity taking place. For example, in a hospital serving patients sleeping rooms, the minimum width of exit corridors, doors, ramps and stairs is increased to allow for a bed to be wheeled out of a room.

References:
NBC 3.4.3.2 Minimum width table

Slide 28

The building code defines “Exit” as “*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.”* So, the exit is that portion of the means of egress that is between the exit access and the exit discharge. For example, entering an exit stair tower from a multi-floor building like the one shown in this diagram from each floor area would mean leaving the access to exit and entering the exit even though there may still be some distance to travel to reach the exit discharge.

The location of exits is normally done in the building design phase considering the use and occupancy of the building.

Slide 29

The exit discharge refers to that portion of the means of exit that allows occupants access to a safe area normally outside the building on a public thoroughfare. Fire inspectors should check the exit discharge to be sure that it is not obstructed in any way. If it is possible to block the exit discharge with a vehicle or other obstruction, bollards or jersey barriers should be strategically placed.

Slide 30

The building code also requires exits to be spaced apart from one another. The minimum distance between 2 exits from a floor area must be one half the diagonal dimension of the floor area but need not be more than 9m. Spatial separation between exits is required to minimize the chance that a fire could block both exits from a floor area.

Remembering way back to school days, the formula for determining the diagonal distance of a rectangle is $A^2 + B^2 = C^2$.

Slide 31

So, in this case, you multiple 6.1m X 6.1m which gives you 37.21. You then multiply 12.2 times 12.2 which gives you 148.84. You then add the two together, 37.21 + 148.84 for a total of 186.05. The diagonal dimension of the room is the square root of186.05 which can be calculated using a scientific calculator, but we used an online version. The answer provides a diagonal distance of 13.64m which you divide by **2** to determine the minimum separation between exits. The answer is **6.82 meters** or approximately **22 feet.**

References:
NBC 3.3.1.5.5.2)
BCBC3.3.1.5 (1)(b)]. & OFC Occupant load bulletin
BCBC 3.4.2.1 Minimum number of exits

Slide 32

When an egress serves multiple storeys the occupant load of every room or floor area must be determined for the purpose of determining the aggregate width of exits required. The occupant load and the exit capacity are two different things. The occupant load is the number of people allowed, while the egress capacity is the number of people who could exit through any point in the means of egress such as doors, corridors, and stairs. To determine the minimum egress capacity required it is necessary to calculate the occupant load for each floor and then determine the exit capacity using the factor determined by the building code.

For example, the minimum required width of exits serving floor areas intended for assembly, residential, business, and personal services, mercantile, and industrial occupancies is determined by multiplying the occupant load of the area served by 6.1 mm per person for most ramps, doorways, corridors, and 8mm per person for most stairs.

Reference
BCBC 3.4.3.2.1)

Slide 33

The capacity of the means of egress required from any story of a building should not be reduced along the path of egress travel until arrival at the public thoroughfare. With a few exceptions identified in the building code, the required exit width need not be cumulative in an exit serving 2 or more floor areas located one above the other as they are considered separately when determining the stair width. The width of the stair need only accommodate the portion of the floor's occupant load assigned to that exit.

However, the floor requiring the greatest egress capacity dictates the width of the stairs from that floor to the exit discharge. So, for example, in this drawing of a five-storey building the OL for the 5th floor is 100 people, and the 4th floor is 100, 3rd floor is 200, the second floor is 100 and the first floor is 100 people.

The occupant load from the third floor of 200 is the greatest, so the exit width from that floor must be sized to accommodate all 200 people and that width must be maintained to the exit discharge. The exit with for the 4th and 5th floors must only be wide enough to accommodate 100 people. So, the required exit width from the second floor is 200 X 8mm per person for a total minimum exit width of 1600mm or 63 " which would necessitate double exit doors and a staircase of at least 1600mm at the narrowest point. However, in reality there would be two stair towers for the egress capacity would be divided between the two.

Slide 34

Egress convergence occurs where the means of egress from stories above and below converge at an intermediate level, with occupants from multiple floors discharging through an egress component simultaneously. In this drawing the occupants from the basement converge with the occupants from the floors above at the exit discharge on the first floor. For example, if 100 people on the second floor move down and 100 people from the basement move up the exit discharge must be large enough for 200 people.

Where egress convergence occurs, the capacity of the means of egress following the convergence is required to be the larger of (1) not less than the largest minimum width, or (2) the sum of the required capacities for the stairways or ramps serving the two adjacent stories.

Slide 35

Convergence does not occur when multiple floors above each other enter the stairwell going in the same direction. For example, if there were a three-story building and each floor had an OL of 100, with the exit discharge on the first floor the exit width would only have to accommodate 100 people. This is based on the premise that, when evacuation begins, not everyone will be at the same point at the same time.

Egress convergence can result in drastically reduced egress capacities and allowable occupant loads from floors unless accounted for during the design phase of the building. When calculated, egress convergence may result in an increase in exit discharge door width, or the need for a double door at the exit discharge instead of a single door.

Slide 36

As we have talked about before, the building code establishes the minimum width of Exit Corridors, Passageways, Ramps, Stairs, and Doorways based on the occupancy classification of the building. In most cases, it is 1100mm (43.5") for corridors and ramps, 900mm (35.5") for stairs, and 800mm (31.5") for doorways. No fixtures, turnstiles or construction is allowed to project into, or be fixed within, the required width of an exit with the exception of handrails. The building code requires handrails in most stairs and if the stairway is less than 1100mm wide one handrail is required but if the stairway is 1100mm or more, handrails must be provided on both sides.

Handrails and their supports must not project more than 100 mm (4") into the required width of a means of egress and must be installed between 865mm (34") and 1070mm (42") above floor level. Handrail height limits are based on the body normally being wider at the shoulders and narrower at the hips. In addition, the body sway while walking is greater at the shoulders than at the hips, particularly on stairs.

Reference
BCBC Table 3.4.3.2

Slide 37

The building code requires most buildings to have at least two means of egress. Buildings not more than 2 storeys in height, can be served by only one exit as long as the total occupant load served by the exit is not more than 60, and the travel distance to the exit, and maximum floor area, is not more than what is shown in this building code table. If the floor area is sprinklered throughout the maximum floor area and travel distance to the exit can be increase. Refer to your building code for more information.

In most cases the occupant load and the travel distance to the exits will dictate how many egress facilities are required.

Reference
BCBC Table 3.4.2.1.-A,

Slide 38

In case of fire, it's good to have 2 means of exit so the building code limits dead-end corridors to a maximum of 6 m in length. An exception to this is that the building code allows dead-end corridors that are entirely within a suite to be more than 6 meters in length. In this example, the two–storey building is occupied by a variety of Group D Business and Personal Service businesses. The doctor's office has two dead end corridors; one serving the washrooms and two offices and the other serving the patient examination rooms. These dead-end corridors are permissible because they are contained inside the suite.

A suite is a defined term in the building code and means *"a single room or series of rooms of complementary use, operated under a single tenancy, and includes dwelling units, individual guest rooms in motels, hotels, boarding houses, rooming houses and dormitories as well as individual stores and individual or complementary rooms for business and personal services occupancies.* So, in this example the doctor's office, law office, and accounting firm are all separate suites.

References:
NBC 3.3.1.9.7) & BCBC 3.3.1.7 Exception is for dead-end corridors entirely within a suite, or as permitted in Group B care, treatment , detention occupancies and dwelling units.

Slide 39

That is the end of part one.
In this Part we discussed:
Occupant loads and:

- How to calculate the maximum number of people for a given area or room
- Two types of occupant loads, design loads per the building code and maximum occupant load per the fire code
- That design occupant load is considered the minimum occupant load used by designer to estimate the number of people that will normally be using the space
- That plan reviewers should check the accuracy of the designer's occupant load calculations
- The maximum occupant load is calculated on .4 m² per person or on the exiting provided whichever is less.

Slide 40

- That design occupant loads identified in the building code should not be used to calculate the maximum occupant load
- That based on the use of the space there may be more than one occupant load posted.
- Changing the design occupant load to the maximum occupant load may require the installation of fire protection systems like fire alarms.
- Occupant loads are calculated on gross floor area or net floor area.
- Gross floor area is basically the inside perimeter of the outside walls
- Net floor area is the gross floor area minus unoccupied area such as lobbies, stairways, washrooms, service rooms etc.
- Egress requirements are based on occupant load, exit capacity, and travel distance
- The minimum distance between 2 exits must be **one-half the** maximum diagonal dimension of the floor area

And

- We concluded this part with a discussion about dead-end corridors.