

### 3.1 General

#### 3.1.1 Classification by Type of Construction

For the purpose of this Code, every room or space of a building or a building itself hereafter altered or erected shall be classified in one specific type of construction as grouped as follows:

GROUP I- Noncombustible , subdivided as follows :
Type I-A: 4 hour fire protected
Type I-B: 3 hour fire protected
Type I-C: 2 hour fire protected
Type I-D: 1 hour fire protected
Type I-E: Unprotected
GROUP II- Combustible , subdivided as follows :
Type II-A: Heavy timber
Type II-B: Protected wood joist
Type II-C: Unprotected wood joist
Type II-D: Protected wood frame
Type II-E: Unprotected wood frame

The fire resistance ratings of various types of construction for structural and nonstructural members are specified in Table 3.3.1 (a) and (b). For hazardous Occupancies involving an exceptionally high degree of fire risk or an exceptionally high concentration of combustible or flammable content, the Authority may increase the requirement of Table 3.3.1 (a).

Buildings having a height of more than 20 m shall be constructed with noncombustible materials.

The fire resistance ratings of various building components shall conform to ASTM standards.

No building or portion thereof shall be designated a given construction type unless it fully conforms to the minimum requirements for that Construction type.

When a type of construction is utilized which is superior than the type of construction required by this Code, there shall be no requirement to upgrade the rest of the construction to comply to that higher type of construction and the designated construction type shall be that of the lesser classification, unless all of the requirements for the higher classification are met.

### **3.1.2 Group I. Non-combustible Construction**

Buildings or portion thereof in Non-combustible Construction Group I are those in which the walls, exit-ways, shafts, structural members, floors, and roofs are constructed of non-combustible materials and assemblies having fire-resistance ratings specified in Table 3.3.1 (a). The Non-combustible group consists of Construction Type I-A, I-B, I-C, I-D and I-E.

#### **3.1.2.1 Construction Type I-A**

This construction type includes buildings in which the bearing walls and other major structural elements are generally of four-hour-fire-resistance rating.

#### **3.1.2.2 Construction Type I-B**

This construction type includes buildings in which the bearing walls and other major structural elements are generally of three-hour-fire-resistance rating.

#### **3.1.2.3 Construction Type I-C**

This construction type includes buildings in which the bearing walls and other major structural elements are generally of two-hour-fire-resistance rating.

#### **3.1.2.4 Construction Type I-D**

This construction type includes buildings in which the bearing walls and other major structural elements are generally of one-hour-fire-resistance rating.

#### **3.1.2.5 Construction Type I-E**

This construction type includes buildings in which the bearing walls and other major structural elements generally have no fire-resistance rating.

### **3.1.3 Group II. Combustible Construction**

Buildings or portion thereof in Combustible Construction Group II are those in which the walls, exit-ways, shafts, structural members, floors, and roofs are constructed wholly or partly of combustible materials having fire-resistance ratings specified in Table 3.3.1 (b). The Non-combustible group consists of Construction Type II-A, II-B, II-C, II-D and II-E.

#### **3.1.3.1 Construction Type II-A**

This Construction type includes heavy timber construction in which fire-resistance is attained by-

- i. Limiting the minimum sizes of wood structural members and the minimum thickness and composition of wood floors and roofs;
- ii. Avoiding concealed spaces under floors and roofs or by providing fire-stopping protection for these spaces; and
- iii. Using fastening, construction details, and adhesives for structural members as required by this chapter and Part 4.
- iv. The minimum dimensions for framing members shall be prescribed in this chapter and Part 4, except that members are protected to provide a fire-resistance rating of at least one hour need not comply with this requirement.

#### **3.1.3.2 Construction Type II-B**

This Construction type includes buildings and portion thereof in which-

- i. Exterior walls, fire walls, exit-ways, and shaft enclosures are of non-combustible materials having the required fire-resistance ratings; and
- ii. The floors, roofs and interior framing are wholly or partly of wood of smaller dimensions than required for type II-A construction, or are of other combustible or non-combustible materials, having the required fire-resistance rating.

#### **3.1.3.3 Construction Type II-C**

This Construction type includes buildings and portion thereof in which

- i. Exterior walls, fire walls, exit ways, and shaft enclosures are of non-combustible materials having the required fire-resistance ratings; and
- ii. The floors, roofs and interior framing are wholly or partly of wood of smaller dimensions than required for type II-A construction, or are of other combustible or non-combustible materials, having no required fire-resistance rating.

#### **3.1.3.4 Construction Type II-D**

This Construction type includes buildings and portion thereof in which exterior walls, bearing walls, floors, roofs, and interior framings are generally of wood or other combustible materials having the required fire-resistance ratings.

#### **3.1.3.5 Construction Type II-E**

This Construction type includes buildings and portion thereof in which

- i. The exterior walls are generally of wood or other combustible materials having the required fire-resistance ratings, and
- ii. In which the bearing walls, floors, roofs, and interior framing are of wood or other combustible materials, generally having no fire-resistance ratings.

Table 3.3.1 (b)  
CONSTRUCTION GROUP II- COMBUSTIBLE

Noncombustible material      N.P. Not Permitted      N.L. No Limit

Exterior wall with Fire separation distance of	Construction ELEMENT	TYPE -II-A		TYPE -II-B		TYPE -II-C		TYPE -II-D		TYPE -II-E	
		Ratings in Hours	Exterior opening <sup>a,b</sup>	Ratings in Hours	Exterior opening <sup>a,b</sup>	Ratings in Hours	Exterior opening <sup>a,b</sup>	Ratings in Hours	Exterior opening <sup>a,b</sup>	Ratings in Hours	Exterior opening <sup>a,b</sup>
0.9m or less	Bearing	2		2		2		2		2	
	Non-bearing	2	N.P.	2	N.P.	2	N.P.	2	N.P.	2	N.P.
More than 0.9m but less than 4.5m	Bearing	2	as per provisions of this code	2	as per provisions of this code	2	as per provisions of this code	1	as per provisions of this code	1	as per provisions of this code
	Non-bearing	2		2		2		1		1	
4.5m or more but less than 9.0m	Bearing	2		2		2		1		0	
	Non-bearing	2		2		2		1	N.L.	0	N.L.
9.0m or more	Bearing	1	N.L.	1½	N.L.	1½	N.L.	1	N.L.	0	N.L.
	Non-bearing	0		0		0		0		0	
Interior bearing walls and bearing partitions		2		1		0		1		0	
Enclosure of vertical exits <sup>c</sup> , exit passageways, hoistways <sup>m</sup> and shafts		2		2		1 <sup>i</sup>		1 <sup>i</sup>		1	
Fire divisions and fire barrier Walls or partitions or ceiling slab.		See: table 3.2.1 and provisions of this code									
Columns <sup>d</sup> , girders, trusses (other than roof trusses) and framing	Supporting one floor	As per provisions of this code		1		0 or 1 <sup>i</sup>		1		0	
	Supporting more than one floor <sup>l</sup>	As per provisions of this code		1		0 or 1 <sup>i</sup>		1		0	
<b>Structural members supporting walls</b>		3		2½		2		1½		1	
Floor construction including beams		As per provisions of this code		1		0 or 1 <sup>i</sup>		1		0	
Roof construction, including beams, trusses and framing including arches, domes, shells, cablesupported roofs and roof decks	4.5m or less in height above floor to lowest member of ceiling	As per provisions of this code		¾		0		¾		0	
	4.5m to 6m in height above floor to lowest member of ceiling	As per provisions of this code		¾		0		¾		0	
	6m or more in height above floor to lowest member of ceiling	As per provisions of this code		¾		0		¾		0	
<b>Shafts (other than exits) and elevator hoistways</b>		2		2		2		2		2	
<b>Fire separation wall and party wall</b>		4		2		2		2		2	
<b>Access corridor leading to fire exits</b>		1		1		1		1		1	

Notes:

<sup>a</sup> Requirements of protected exterior openings shall not apply to religious assembly. (Protected openings within an exterior separation of 0.9m or less are permitted for buildings classified in Occupancy Groups A provided, however said openings do not exceed in total area of 25% of the facade of the storey in which they are located. The openings however, may not be credited towards meeting any of the mandatory natural light and ventilation as per provisions of this code. Protection of openings with an exterior separation of 0.9m to 9m shall not be required for A-1, A-2 and A-3 Occupancy groups)\*\* or to buildings classified in Occupancy groups J \*\*\* additional requirements for exterior walls and exterior wall openings as per provisions of this code.

<sup>b</sup> Upon special application, the area development authorities may permit exterior wall openings to be constructed in excess of the permitted area established by table 3-4 if such openings at the time of their construction are located at least 18m in a direct line from any neighbouring building except as otherwise permitted in footnote f. Such additional openings may not however be credited toward meeting any of the mandatory natural light and ventilation requirements of subchapter twelve of chapter on this title. If any neighboring building is later altered or constructed to come within the above distance limitation, the affected exterior openings shall immediately be closed with construction meeting the fire-resistance rating requirements for exterior wall construction of the building in which they are located.

<sup>c</sup> Applies to occupancy groups J, G and H

<sup>d</sup> Applies to occupancy groups J, G and H

<sup>l</sup> See Provisions of this code for additional impact resistance requirements applicable to certain stair enclosures and for certain exceptions to stair enclosure requirements.

<sup>f</sup> When two or more buildings are constructed on the Plot and the combined floor area of the buildings does not exceed the limits established by this code for any of the buildings, no fire-resistance rating shall be required for non-bearing portions of the exterior walls of those buildings facing each other, and there shall be no limitation on the permitted amount of exterior openings.

<sup>g</sup> Fire retardant treated wood complying with the requirements of this code may be used.

<sup>h</sup> Tabulated ratings apply to buildings over one storey in height. In one storey buildings roof construction may be of material having zero hour fire-resistance rating.

<sup>i</sup> Materials which are not non-combustible as defined in this code may be used in nonbearing construction elements as per provisions of this code.

1. Materials having a structural base of non-combustible materials as defined in this code, and having a surface not over 3.2mm thick which when tested in accordance with the provisions of this code has a flame spread rating not higher than fifty.

2. Materials which when tested in accordance with the provisions of this code have a surface flame spread rating not higher than twenty five without evidence of continued progressive combustion, and which are of such composition that surfaces which would be exposed by cutting through the material in any way would not have a flame spread ratings higher than twenty-five without evidence of continued progressive combustion.

Table 3.3.1 (b)  
CONSTRUCTION GROUP II- COMBUSTIBLE

		Noncombustible material		N.P. Not Permitted		N.L. No Limit					
Exterior wall with Fire separation distance of	Construction Element	TYPE -II-A		TYPE -II-B		TYPE -II-C		TYPE -II-D		TYPE -II-E	
		Ratings In Hours	Exterior opening <sup>a,b</sup>	Ratings In Hours	Exterior opening <sup>a,b</sup>	Ratings In Hours	Exterior opening <sup>a,b</sup>	Ratings In Hours	Exterior opening <sup>a,b</sup>	Ratings In Hours	Exterior opening <sup>a,b</sup>
	<b>exterior wall</b>										
0.9m or less	Bearing	2		2		2		2		2	
	Non-bearing	2	N.P.	2	N.P.	2	N.P.	2	N.P.	2	N.P.
More than 0.9m but less than 4.5m	Bearing	2	as per provisions of this code	2	as per provisions of this code	2	as per provisions of this code	1	as per provisions of this code	1	as per provisions of this code
	Non-bearing	2		2		2		1		1	
4.5m or more but less than 9.0m	Bearing	2		2		2		1		0	
	Non-bearing	2		2		2		1		0	
9.0m or more	Bearing	1	N.L.	1½	N.L.	1½	N.L.	1	N.L.	0	N.L.
	Non-bearing	0		0		0		0		0	
Interior bearing walls and bearing partitions		2		1		0		1		0	
** Enclosure of vertical exits <sup>c</sup> , exit passageways, hoistways <sup>d</sup> and shafts		2		2		1 <sup>e</sup>		1 <sup>e</sup>		1	
Fire divisions and fire barrier Walls or partitions or ceiling slab.		See: table 3.2.1 and provisions of this code									
Columns <sup>f</sup> , girders, trusses (other than roof trusses) and framing	Supporting one floor <sup>g</sup>	As per provisions of this code		1		0 or 1 <sup>h</sup>		1		0	
	Supporting more than one floor <sup>i</sup>	As per provisions of this code		1		0 or 1 <sup>h</sup>		1		0	
<b>Structural members supporting walls</b>		3		2½		2		1½		1	
Floor construction including beams		As per provisions of this code		1		0 or 1 <sup>h</sup>		1		0	
Roof construction, including beams, trusses and framing including arches, domes, shells, cablesupported roofs and roof decks	4.5m or less in height above floor to lowest member of ceiling	As per provisions of this code		3/4		0		3/4		0	
	4.5m to 6m in height above floor to lowest member of ceiling	As per provisions of this code		3/4		0		3/4		0	
	6m or more in height above floor to lowest member of ceiling	As per provisions of this code		3/4		0		3/4		0	
<b>Shafts (other than exits) and elevator hoistways</b>		2		2		2		2		2	
<b>Fire separation wall and party wall</b>		4		2		2		2		2	
<b>Access corridor leading to fire exits</b>		1		1		1		1		1	

Notes:

<sup>a</sup> Requirements of protected exterior openings shall not apply to religious assembly. [Protected openings within an exterior separation of 0.9m or less are permitted for buildings classified in Occupancy Groups A provided, however said openings do not exceed in total area of 25% of the facade of the storey in which they are located. The openings however, may not be credited towards meeting any of the mandatory natural light and ventilation as per provisions of this code. Protection of openings with an exterior separation of 0.9m to 9m shall not be required for A-1, A-2 and A-3 Occupancy groups]\*\* or to buildings classified in Occupancy groups J \*\*\* additional requirements for exterior walls and exterior wall openings as per provisions of this code.

<sup>b</sup> Upon special application, the area development authorities may permit exterior wall openings to be constructed in excess of the permitted area established by table 3-4 if such openings at the time of their construction are located at least 18m in a direct line from any neighbouring building except as otherwise permitted in footnote f. Such additional openings may not however be credited toward meeting any of the mandatory natural light and ventilation requirements of subchapter twelve of chapter on this title. If any neighboring building is later altered or constructed to come within the above distance limitation, the affected exterior openings shall immediately be closed with construction meeting the fire-resistance rating requirements for exterior wall construction of the building in which they are located.

<sup>c</sup> Applies to occupancy groups J, G and H

<sup>d</sup> Applies to occupancy groups J, G and H

<sup>e</sup> See Provisions of this code for additional impact resistance requirements applicable to certain stair enclosures and for certain exceptions to stair enclosure requirements.

<sup>f</sup> When two or more buildings are constructed on the Plot and the combined floor area of the buildings does not exceed the limits established by this code for any of the buildings, no fire-resistance rating shall be required for non-bearing portions of the exterior walls of those buildings facing each other, and there shall be no limitation on the permitted amount of exterior openings.

<sup>g</sup> Fire retardant treated wood complying with the requirements of this code may be used.

<sup>h</sup> Tabulated ratings apply to buildings over one storey in height. In one storey buildings roof construction may be of material having zero hour fire-resistance rating.

<sup>i</sup> Materials which are not non-combustible as defined in this code may be used in nonbearing construction elements as per provisions of this code.

1. Materials having a structural base of non-combustible materials as defined in this code, and having a surface not over 3.2mm thick which when tested in accordance with the provisions of this code has a flame spread rating not higher than fifty.

2. Materials which when tested in accordance with the provisions of this code have a surface flame spread rating not higher than twenty five without evidence of continued progressive combustion, and which are of such composition that surfaces which would be exposed by cutting through the material in any way would not have a flame spread ratings higher than twenty-five without evidence of continued progressive combustion.

### 3.1.4 Separated Occupancy and Construction

When two or more occupancies accommodated in a building, each such occupancy shall be separated according to the provisions specified in Sec 2.3 of Chapter 2 of Part 3 and Table 3.2.1.

When two or more types of construction used within a building, the entire building shall be subject to the most restrictive construction type and shall comply with FAR restrictions as per provisions of this code.

However if the Occupancies within the different Types of Construction are completely separated by construction that meets the fire-resistance rating

requirements for fire separation listed in Table 3.2.1 of Chapter 1, Part 3 then each Occupancy so separated may, for the purpose of this Code, be considered as separate building section.

#### **3.1.4.1 Restriction for mixed construction**

In buildings of mixed construction, no structural element shall be supported by construction having a lower fire-resistance rating than that required for the element being supported.

#### **3.1.5 Fire Zones**

The planning and development authority of the city, township, municipality or region where this Code is intended to be implemented shall divide the area under their jurisdiction into distinct fire zones. The basis for this zoning shall be the fire hazard inherent in the buildings and the degree of safety desired for the occupancy accommodated therein. The number of zones in an area shall depend on its size and the strategies undertaken for its development.

##### **3.1.5.1 Fire Zone 1**

The following occupancy groups shall comprise this zone:

Occupancy A: Residential

Occupancy B: Educational

Occupancy C: Institutional for Care

Occupancy D: Health Care

Occupancy E: Offices

Occupancy F: Mercantile

Occupancy H: Livestock Storage Building

Occupancy I: Assembly

Occupancy K:K1 & K2 Parking

Occupancy M: Miscellaneous Buildings

##### **3.1.5.2 Fire Zone 2**

The following occupancy groups shall comprise this zone:

Occupancy G: Industrial Buildings

Occupancy H: Storage Buildings

Occupancy K: K3 Parking

##### **3.1.5.3 Fire Zone 3**

The only occupancy falling in this zone shall be Occupancy J, Hazardous Buildings

#### **3.1.5.4 Change in Fire Zone Boundaries**

The demarcations of fire zones may be changed or new occupancies may be included in any fire zone through the same procedure as for promulgating new rules or ordinances or both.

#### **3.1.5.5 Buildings on Overlapping Fire Zones**

Buildings falling on more than one fire zones shall be considered to be situated on the zone in which the major portion of the building falls. If a building is divided equally between more than one fire zones, it shall be considered as falling in the fire zone having more hazardous occupancy buildings.

#### **3.1.5.6 Restrictions on Temporary Constructions**

Permission may be granted by the Authority for temporary constructions only in fire zones 1 and 2 and not in fire zone 3. Such temporary constructions shall adhere to the conditions of the permission and shall be demolished and removed completely after the expiry of the duration of the permission unless it is extended by the Authority or a new permission is obtained.

### **3.1.6 Permissible Types of Construction for Various Occupancies**

#### **3.1.6.1 New Buildings**

Types of constructions permitted for various buildings on the basis of fire zones are specified in Table 3.2.4.

#### **3.1.6.2 Existing Buildings**

Existing buildings in any fire zone need not comply with the provision of this Code for type of construction unless they are altered or in the opinion of the Authority they constitute a hazard to the safety to the occupants of the buildings or the adjacent properties.

#### **3.1.7 Exterior Walls**

The fire resistance rating of the exterior walls shall conform to the provisions set forth in Table 3.2.2 and 3.2.3.

#### **3.1.8 Basement Floor**

Basement floor of a building shall be enclosed with a one hour fire resistive construction. Doors in such constructions shall be made of noncombustible materials.

#### **3.1.9 Restricting Horizontal and Vertical Spread of Fire**

Generally Walls restrict horizontal movement and slabs restrict Vertical movement of fire

##### **3.1.9.1 Interior or Barrier or enclosure wall**

Propagation of fire, smoke, gas or fume through the openings or shafts or penetrations of fire resistive floors and walls shall be restricted by sealing with an approved material which shall have a fire resistance rating of at least equal to that of

the floor-wall assembly. The sealing material shall be capable of preventing passage of flame and hot gases sufficient to ignite cotton waste when tested in accordance with ASTM E119-8.

### 3.1.9.2 Exterior Walls

Permitted unprotected openings in the exterior wall in two consecutive floors lying within 1.5 m laterally or vertically shall be separated with flame barriers as similar as sunshades or cornices or projected wall at least 750mm from the external face of the exterior wall. The flame barrier shall have a fire resistance rating of not less than three-fourths hour.

### 3.1.10 Exceptions to Fire Resistance Requirements

The provisions of this section are exceptions to the occupation separation requirements of Table 3.2.1.

#### 3.1.10.1 Fixed Partitions

- a. **Stores and Offices:** In such cases where offices, stores and similar places occupied by one tenant are separated by non-load bearing walls that do not form a corridor serving an occupant load, the partition walls may be constructed of any one of the following:
  - i. Noncombustible materials;
  - ii. Fire retardant treated wood;
  - iii. One hour fire resistive construction;
  - iv. Wood panels or similar light construction up to three fourths the height of the room in which placed; and
  - v. Wood panels or similar light construction more than three-fourths the height of the room in which placed with not less than upper one fourth of the partition constructed of glass.
- b. **Hotels and Apartments:** In such cases where non-load bearing walls act as interior partitions in individual dwelling units in apartment houses and guest rooms or suites in hotels when such dwelling units, guest rooms or suites are separated from each other and from corridors by not less than one-hour fire-resistive construction, the partition walls may be constructed of any one of the following:
  - i. Noncombustible materials of fire retardant treated wood in buildings of any type of construction; or
  - ii. Combustible framing with noncombustible materials applied to the framing in buildings of Type II construction.
- c. **Folding, Portable or Movable Partitions:** Folding, portable or movable partitions need not have a fire resistance rating if the following conditions are satisfied:
  - i. Required exits are not blocked without providing alternative conforming exits;



- ii. Tracks, guides or other approved methods are used to restrict their locations; and
- iii. Flammability shall be limited to materials having a flame-spread classification as set forth in Tables 3.3.2 and 3.3.3 for rooms or areas.

**Table 3.3.2  
Flame Spread Classification**

Class	Flame spread Index
I	0-25
II	26-75
III	76-200

- d. **Walls Fronting on Streets or Yards:** For walls fronting on a street or yard having a width of at least 12 m, certain elements of the wall may be constructed as follows regardless of their fire-resistive requirements:
  - i. Bulkheads below show windows, show window frames, aprons and show-cases may be of combustible materials provided the height of such construction does not exceed 5 m above grade.
  - ii. Wood veneer of boards not less than 25 mm in nominal thickness or exterior type panels not less than 10 mm in nominal thickness may be used in walls provided:
    - a. the veneer does not extend beyond 5 m above grade; and
    - b. The veneer is placed either directly against noncombustible surface or furred out from such surfaces not to exceed 40 mm with all concealed spaces fire blocked.
  - e. **Trim:** Wood may be used to construct trim, picture moulds, chair rails, baseboards, handrails and show window backing. If there is no requirement for using fire protected construction, unprotected wood doors and windows may be used.
  - f. **Loading Platform:** Noncombustible construction of heavy timber may be used for exterior loading platforms with wood floors not less than 50 mm in nominal thickness. Such wood construction shall not be carried through the exterior walls.
  - g. **Insulating Boards:** Combustible finished boards may be used under finished flooring.

### 3.1.11 Shaft Enclosures

#### 3.1.11.1 General

Construction requirement for shafts through floors shall conform to the provisions of Table 3.3.1 (a) and (b).

### 3.1.11.2 Extent of Enclosures

Shaft enclosures shall extend from the lowest floor opening through successive floor openings and shall be enclosed at the top and bottom.

#### Exceptions:

- i. Shafts need not be enclosed at the top if it extends through or to the underside of the roof sheathing, deck or slab.
- ii. Noncombustible ducts carrying vapours, dusts or combustion products may penetrate the enclosure at the bottom.
- iii. Shafts need not be enclosed at the bottom when protected by fire dampers conforming to "Test Methods for Fire Dampers and Ceiling Dampers" ,installed at the lowest floor level within the shaft enclosure.

### 3.1.11.3 Special Provision

In groups other than Occupancies C and D, openings which penetrate only one floor and are not connected with any other floor or basement and which are not concealed within building construction assemblies need not be enclosed.

### 3.1.11.4 Protection of Openings

Openings in shaft enclosures shall be protected with a self-closing or an automatic-closing fire assembly having a fire resistance rating of

- i. one hour for one hour fire resistive walls
- ii. one and one-half hours for two hour fire resistive walls

### 3.1.11.5 Rubbish and Linen Chute Termination Rooms:

Rubbish and linen chute shall terminate in rooms separate from the remaining of the building having the same fire resistance as required for shafts in Table 3.3.1 (a) and (b) but not less than one hour.

### 3.1.12 Expansion and Contraction Joints

Expansion and contraction joints provided to accommodate expansion, contraction, wind or seismic movement shall be protected with an approved material having the same degree of fire resistance as that of the wall or floor in which it is installed.

### 3.1.13 Weather Protection

#### 3.1.13.1 Weather Resistive Barrier:

All weather exposed surfaces shall have a weather barrier to protect the interior wall from dampening. Such weather barriers shall have a fire resistance rating of at least equal to that of the wall or floor on which it is applied. Weather resistive barrier need not be used in the following cases:

- When exterior covering is of approved waterproof panels
- In back plastered construction
- When there is no human occupancy
- Over water repellent panel sheathing

Under approved paper backed metal or wire fabric lath  
Behind lath and Portland cement plaster applied to the underside of roof and eave projections.

#### **3.1.13.2 Flashing and Counter Flashing**

Exterior openings exposed to the weather shall be flashed to make them weather proof. There shall be copings with all parapets. Corrosion resistant metals shall be used for flashing, counter flashing and coping.

#### **3.1.13.3 Waterproofing Weather-exposed Areas**

Waterproofing shall be applied to exposed surfaces like balconies, external stairways and landings.

#### **3.1.13.4 Damp-proofing Foundation Walls**

Outside of foundation walls enclosing a basement floor below finished grade shall be damp-proofed from outside.

#### **3.1.14 Members Carrying Walls**

All members carrying masonry or concrete walls shall be fire protected as specified in Table 3.3.1 (a) and (b).

#### **3.1.15 Parapets**

Parapets constructed on exterior wall of a building shall have the same degree of fire resistance required for the wall upon which they are erected and there shall be noncombustible faces on the side adjacent to the roof surface for the uppermost 405 mm including counter flashing and coping materials. The height of the parapet shall be at least 750 mm from the upper surface of the roof.

#### **3.1.16 Projections**

Sunshades, cornices, projected balconies and overhanging beyond walls of Type I construction shall be of noncombustible materials. Projections from walls of Type II may be of combustible or noncombustible materials.

#### **3.1.17 Guards and Stoppers**

##### **3.1.17.1 Guards**

Guards or Guardrails shall be provided to protect edges of floor, roof, roof openings, stairways, landings and ramps, balconies or terraces and certain wall, which are elevated more than 750 mm above the grade and as per provisions of this code.

##### **3.1.17.2 Stoppers**

Stopper shall be provided in open parking garages located more than 450mm above the adjacent grade or back to back parking stall. The height of the stopper shall be at least 300 mm and it shall be positioned at outer edges of a car parking stall.

### 3.1.18 Insulation

The provisions of this section are applicable to thermal and acoustical insulations located on or within floor-ceiling and roof ceiling assemblies, crawl spaces, walls, partitions and insulation on pipes and tubing.

Materials used for such insulation and covering shall have a flame spread rating not more than 25 and a smoke density not more than 450.

### 3.1.19 Atrium

#### 3.1.19.1 General

Atrium may be provided in all groups other than Occupancy J (Hazardous Buildings). Such atrium shall have a minimum opening and are as specified in Table 3.3.4.

**Table 3.3.4  
Atrium Opening and Area**

Height in stories	Minimum Clear	Minimum Area
	Opening <sup>1</sup>	
	m	m <sup>2</sup>
2-4	6	40
5-7	9	90
8 or more	12	160

<sup>1</sup> The specified dimensions are the diameters of inscribed circles whose centers fall on a common axis for the full height of the atrium.

#### 3.1.19.2 Smoke Control System

A mechanically operated air-handling system shall be installed to exhaust the smoke either entering or developed within the atrium.

- a. **Exhaust Openings:** The location of the exhaust openings shall be in the ceiling or in a smoke trap area immediately adjacent to the ceiling of the atrium above the top of the highest portion of door openings into the atrium.
- b. **Supply Openings:** Supply openings designed for a minimum of 50 per cent of the exhaust volume shall be located at the lowest level of the atrium. Supply air may be introduced by gravity provided the height of the atrium is not more than 18 m and smoke control is established. For atria having height greater than 18 m, supply air shall be introduced mechanically from the floor of the atrium and directed vertically toward the exhaust outlets. Supplemental air supply may be introduced at upper levels in atrium over six storeys in height or when tenant spaces above the second storey are open to the atrium.
- c. **Automatic Operation:** The smoke control system for the atrium shall be activated automatically by the automatic sprinkler system or smoke detectors installed within the atrium or areas open to the atrium.
- d. **Manual Operation:** The smoke control system shall also be manually operable for use by the fire department. The smoke control system may be

separate from or integrated with other air handling systems. Air handling systems interfering with the smoke control system shall be shut down automatically when the smoke control system is activated.

- e. **Smoke Detector Location:** Smoke detectors which will automatically operate the smoke control system of the atrium shall be accessible for maintenance, testing and servicing. Their locations shall be as follows:
  - i. At the atrium ceiling, spaced in accordance with the manufacturer's instructions.
  - ii. On the underside of projections into the atrium, in accordance with the manufacturer's instructions.
  - iii. Around the perimeter of the atrium opening on all floors open to the atrium. These detectors shall be spaced no more than 9 m on centre and shall be located within 5 m of the atrium opening.
  - iv. If projected beam type smoke detectors are used, they shall be installed in accordance with manufacturer's instructions.
- f. **Enclosure of Atrium:** Atrium shall be separated from the adjacent spaces with fire resistive separation of at least one hour.

Fire windows may be provided in fixed glazed openings when the window has a fire resistive rating of at least three-fourths hour and the area of the opening does not exceed 25 per cent of the wall common to the atrium and the room into which the opening is provided.

### 3.1.20 Mezzanine Floors

Construction of a mezzanine floor shall conform to the requirements of the main floor in which it is constructed but the fire resistance rating need not exceed one hour for unenclosed mezzanines.