

PART IV
Chapter 1
General Provisions

1.1 Scope

This Part of the Code prescribes regulations for safeguarding life and property in the use or occupancy of buildings or premises from the hazards of smoke and fire, and explosions. The provisions of this Part include general requirements of fire protection, precautionary requirements, means of egress, equipment and in-built facilities standard installations required for firefighting, and firefighting arrangements required for all occupancy groups.

1.2 Terminology

This Section provides an alphabetical list of the terms used in and applicable to this Part of the Code. In case of any conflict or contradiction between a definition given in this Section and that in Part 1, the meaning specified in this Part shall govern for interpretation of the provisions of this Part.

ALARM CONTROL UNIT	It consists of a circuit, controls, relays, switches and associated system which receive signals from alarm initiating devices and transmit to alarm signaling devices.
ALARM INITIATING DEVICE	An equipment operated manually or automatically which, when activated, initiates an alarm through an alarm signaling device.
ALARM SIGNAL	Signals of audible or visual in nature, indicating the existence of a fire and/or smoke condition. Audible devices may be bells, horns, chimes, speakers or similar devices. Visual Alarms is a strobe light emitting bright white light with approved intensity.
ALARM SIGNAL DEVICE	The equipment that produces the alarm signal.
ALARM SYSTEM	It is a combination of compatible devices, which when activated with necessary electrical energy can produce an alarm in the event of fire.
ALARM ZONE	It describes a defined area of the building or buildings for alarm initiating locations.

ANNUNCIATOR	Equipment capable of indicating the zone or area of a building from which an alarm has been initiated or the location of such devices and the operational condition of alarm circuit of the system.
AUTOMATIC FIRE DETECTING AND ALARM SYSTEM	These include all types of fire detecting and alarm signaling devices which activate themselves during a fire without manual intervention. The equipment/devices include temperature sensitive fuses, thermostat, fluid filled tubes and electronic devices which can detect a fire and transmit automatic alarm signals.
AUTOMATIC SPRINKLER SYSTEM	The system consists of an array of pipe-works fitted with fusible solder or glass bulb. This system shall activate at a predetermined temperature and the required water shall be fed to the system from any source. In the event of fire or smoke the system shall activate automatically by sensing the temperature of fire and discharge water to extinguish. These devices also actuate an audible alarm automatically.
AUTOMATIC HIGH VELOCITY WATER SPRAY SYSTEM	This system applies water in the form of a conical spray consisting of droplets of water discharged at high velocity through specially designed projectors to extinguish fire by emulsification, cooling and smothering.
BUILDING	Any structure used or intended for supporting or sheltering any use or occupancy.
BUILDING, EXISTING	A building erected or officially authorized prior to the effective date of the adoption of this edition of the Code by the agency of jurisdiction.
CARBON DIOXIDE EXTINGUISHING SYSTEM	This installation consists of a group of one or more cylinders of carbon dioxide, interconnected by a manifold and feeding into a system of high pressure distribution pipe work fitted with special discharge nozzles.
COMBUSTIBLE MATERIAL	Any material which burns and enhances the magnitude of fire.
DRY-CHEMICAL EXTINGUISHING SYSTEM	This system consists of specially designed pipe works and discharge nozzles linked to the dry powder containers and gaseous cylinders which are automatically/manually operated in case of fire.

DRY RISER	A riser or standpipe system is normally kept empty of water, but is capable to discharge water within 45 seconds and its installation is equivalent to wet-riser system.
ELEVATOR EVACUATION SYSTEM	A system, including a vertical series of elevator lobbies and associated elevator lobby doors, an elevator shaft(s), and a machine room(s), that provides protection from fire effects for elevator passengers, people waiting to use elevators, and elevator equipment so that elevators can be used safely for egress.
ELEVATOR LOBBY	A space from which people directly enter an elevator car(s) and to which people directly leave an elevator car(s).
EXTERIOR STAIRWAY	A stairway in which at least one side have openings more than 50% in an Exterior wall in such a way that there shall be no accumulation of smoke during fire.
FIRE BARRIER	A fire-resistance-rated wall inside a building, designed to restrict the spread of smoke and fire. Opening in that wall, shall be protected by fire protected doors or windows.
FIRE COMPARTMENT	A space within a building that is enclosed by fire barriers on all sides, including the top and the bottom to limit the transfer of fire.
FIRE DAMPER	A device installed in air ducts or air transfer openings or any openings designed to close automatically upon detection of fire or smoke.
FIRE DOOR	See Fire door assembly.
FIRE DOOR ASSEMBLY	Any combination of door leaf, frame, hardware and all other accessories that together provide a specific degree of fire and smoke protection to the opening where it is placed.
FIRE RESISTANCE RATING	It expressed as a period of time and denotes the property of a building construction material or elements and/or construction as a whole during which the materials or elements or constructions are (a) resistant to collapse due to fire, (b) resistant to flame penetration and (c) resistant to excessive temperature rise to the unexposed surface.
FIRE SEPARATION	Refers to a fire-resistance-wall or slab between two buildings or two spaces to protect spread of smokes or fire vertically and horizontally.

FIRE TOWER	Refers to a stairway open or enclosed, detached and isolated from any building by a distance and can be approached from various floors of a building or buildings by connecting passage only.
FLOOR AREA, GROSS	The floor area within the inside perimeter of the outside or exterior walls of the building under consideration with no deduction for hallways, stairs, closets, thickness of interior walls, columns, or other features. Gross floor area of a building means summation of gross floor areas of all the floors of a building.
FLOOR AREA, NET	The floor area within the inside perimeter of the outside or exterior walls of the building under consideration with deduction for hallways, stairs, closets, thickness of interior walls, columns, or other features or spaces not used for human occupancy.
FOAM EXTINGUISHING SYSTEM	This system discharge foam to extinguish special fires.
HORIZONTAL EXIT	Crossing a fire barrier of a building or connecting building in the same level shall be treated as horizontal exit.
INTERIOR STAIRWAY	A designated area on ground or on water or on a portion of a building for helicopter landing or takeoff without servicing, repairing and refueling facilities.
INTERIOR STAIRWAY	A stairway within a building envelope.
PARTY WALL	A fire resistance rated wall where openings are protected, which is constructed from the ground level and continued up to at least 1m above the roof of a building to restrict the spread of a fire.
PUBLIC WAY	A Street, alley, or other similar parcel of land essentially open to the outside air deeded, dedicated, or otherwise permanently appropriated for building users or for public use or a single loaded corridor that is one lateral side opened to outer air, designed in such a way that there shall be no accumulation of smoke in case of fire. This corridor may be placed at any level of a building having a clear width and height of not less than 3 meter having guards and connected to the exit termination or refuge areas by exterior or enclosed stairs shall be treated as public way.

ROOF REFUGE AREA	When occupants are relocated at the flat roof of a building which are not connected with any means of exit shall be treated as isolated refuge area and must have provisions for placing of leaders of fire department excess vehicles.
SMOKE DETECTOR	A devise capable of sensing visible or invisible particles produced during combustion.
TRAVEL DISTANCE	Straight line distance between the remotest point of a space of a floor and the exit access door placed thereof.
TRAVEL PATH	Length of a passage from the remotest point of a space up to the exit access door placed thereof.
VENTILATION	Natural or mechanical intake of fresh air from outside and removal of inside air of an enclosed space.
VESTIBULE	A compartment provided with two or more doors with smoke lock system where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door at a time.
VENT, FIRE	A system which activates itself automatically or manually during a fire or can be activated manually to release the heat and smoke generated by the fire and smoke.
RAMP	A walking surface that has a slope steeper than 1 in 20 and accessible ramps are not steeper than 1 in 12.
WET-CHEMICAL EXTINGUISHING SYSTEM	A system where a solution of water and potassium carbonate and/or potassium acetate based chemical forms the extinguishing agent.
WET RISER STAND PIPE SYSTEM	A vertical pipe or consists of an array of pipes installed vertically in a building having landing valves with appropriate outlets at various levels of a building containing charged water at a specified pressure for fire extinguishing purposes.

1.3 General Requirements

The provisions of this Section shall specify the general requirements in respect of height and area limitations, open space requirements and access facilities for the fire service, which are to be provided for a building to protect it from potential fire hazards.

1.3.1 Height and Area Limitations

The height and area limitations of all buildings and structures shall be governed by the occupancy group classification, floor area ratio and type of construction, which are specified in Part 3 of this Code.

1.3.2 Open Space or Fire Separation Requirement

For the purpose of applying the provisions of open space or fire separation requirements of a building at its side, rear and frontages in Part 3 of this Code shall be followed.

1.3.3 Access Facilities for Fire Service

The access facilities for fire service vehicles and engines shall meet provisions provided in Part 3 of this Code.

1.4 Fire Drill

Fire drills based on fire order shall be arranged to train the occupants of a building in first-aid firefighting, relocation and orderly evacuation. The occupants shall be made thoroughly conversant with fire order, firefighting, and relocation and evacuation procedures in the event of an emergency. The guidelines of fire drill, relocation and evacuation procedure are given in Appendix A.

1.5 Fire Tests and Fire Resistance Rating

The fire resistance rating of individual building construction components shall be determined by standard materials testing procedure as detailed below.

- (a) The fire resistance ratings of building assemblies and structural elements shall be determined in accordance with ASCE 29 or ASTM E 119.
- (b) The construction materials which are intended to be classified as non-combustible shall be tested in accordance with ASTM E 136.
- (c) Flame resistance rating of all materials used for interior finish and trim shall be tested in accordance with ASTM E 84.
- (d) The fire door assemblies shall conform to the test requirements of ASTM E 152.

- (e) The fire windows and fire shutters shall meet the test requirements of ASTM E 163.
- (f) The fire resistances rating of structural elements are provided in Table 4.1.1. For details refer to ASCE 29.

Table 4.1.1: Fire Resistance of Structures

Concrete Aggregate Type	Minimum Equivalent Thickness of Concrete Walls, Floors, and Roofs for Fire Resistance Rating									
	1 hr		1.5 hr		2 hr		3 hr		4 hr	
	in	mm	in	mm	in	mm	in	mm	In	mm
Siliceous	3.5	89	4.3	109	5.0	127	6.2	157	7.0	178
Carbonate	3.2	81	4.0	102	4.6	117	5.7	145	6.6	168
Sand-light weight	2.7	69	3.3	84	3.8	97	4.6	117	5.4	137
Lightweight	2.5	64	3.1	79	3.6	91	4.4	112	5.1	130

Concrete Aggregate Type	Minimum Column Dimension for Fire Resistance Rating									
	1 hr		1.5 hr		2 hr		3 hr		4 hr	
	In	mm	in	mm	in	mm	in	mm	in	mm
Siliceous	8	203	9	229	10	254	12	305	14	356
Carbonate	8	203	9	229	10	254	11	279	12	305
Sand-light weight	8	203	8.5	216	9	229	10.5	267	12	305

Clay Masonry Unit	Minimum Required Equivalent Thickness of Masonry for Fire Resistance Rating													
	0.5 hr		0.75 hr		1 hr		1.5 hr		2 hr		3 hr		4 hr	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
Brick of clay or shale, unfilled	1.7	43	2.0	51	2.3	58	2.85	72	3.4	86	4.3	109	5.0	127
Brick of clay or shale, grouted or filled with perlite, vermiculite, or expanded shale aggregate	2.3	58	2.65	67	3.0	76	3.7	94	4.4	112	5.5	140	6.6	168

1.6 Related Appendix

Appendix A Fire Drill and Evacuation Procedure

PART IV
Chapter 2
Precautionary Requirements

2.1 Occupancy Classification

All buildings shall be classified according to their use or by considering the character of their occupancy. For the purpose of this Code, the occupancy classification groups shall be as follows:

Occupancy A:	Residential
Occupancy B:	Educational
Occupancy C:	Institution for care
Occupancy D:	Health Care
Occupancy E:	Business
Occupancy F:	Mercantile
Occupancy G:	Industrial
Occupancy H:	Storage
Occupancy I:	Assembly
Occupancy J:	Hazardous
Occupancy K:	Garages
Occupancy L:	Utilities
Occupancy M:	Miscellaneous

The details of occupancy classification of buildings are provided in Part 3 of this Code.

2.2 Classification of Construction Types

For the purpose of this Code, every room or control area 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- Non-combustible, subdivided as follows:

Type- I A	4 hour protected
Type- I B	3 hour protected
Type- I C	2 hour protected
Type- I D	1 hour protected
Type- I E	Unprotected