

# International BUILDING CODE® & FIRE CODE® 2018 EDITION



## PHOTOLUMINESCENT EXIT PATH MARKINGS & SIGNS

The International Code Council published the 2009, 2012, 2015 and 2018 Editions of the International Fire Code (IFC, addresses primarily existing occupancies) and International Building Code (IBC, addresses primarily new construction and renovations) to specify requirements for Luminous Egress Path Markings in the exit stairs of high rise buildings. Non-electrical Luminous Egress Path Markings include signs & markings using photoluminescent (glow in the dark) and self-luminous (radioluminescent, contains radioactive tritium which excites a photoluminescent pigment) technologies. If these model codes are adopted by the various local jurisdictions around the United States in this current form, owners of most existing and new high rise buildings will be required to install NON-ELECTRICAL markings and signs. Many of these signs and markings will be photoluminescent.

**EverGlow (non-electrical) photoluminescent luminous egress path markings and signs meet or exceed the performance requirements specified in these model codes- UL1994 and ASTM E2072. Additionally, EverGlow signs and markings contain ZERO radioactive, toxic or vinyl components; aluminum signs and markings contain a minimum of 60% post consumer recycled aluminum; our acrylic tapes contain ZERO vinyl or oily plasticizers; our epoxy coatings are low VOC.**

Following is language excerpted from these model codes. Highlighted code language indicates the new requirements for photoluminescent exit path markings in existing and new high rise buildings. Refer to the IFC and IBC for the complete model code language and requirements; refer to the local Authority Having Jurisdiction for specific requirements for your building located in your local or state jurisdiction.

## IBC & IFC CHAPTER 10: MEANS OF EGRESS

### IBC & IFC SECTION 1025: LUMINOUS EGRESS PATH MARKINGS

**1025.1 General.** *Approved* luminous egress path markings delineating the exit path shall be provided in *high-rise* buildings of Groups A, B, E, I-1, M or R-1 occupancies in accordance with this section.

#### Exception:

1. Luminous egress path markings shall not be required on the *level of exit discharge* in lobbies that serve as part of the exit path in accordance with Section 1028.1, Exception 1.

### IFC SECTION 1104: MEANS OF EGRESS FOR EXISTING BUILDINGS

**1104.1 General.** *Means of egress* in existing buildings shall comply with the minimum egress requirements when specified in Table 1103.1 as further enumerated in Sections 1104.2 through 1104.25, and the building code that applied at the time of construction. Where the provisions of this chapter conflict with the building code that applied at the time of construction, the most restrictive provision shall apply. Existing buildings that were not required to comply with a building code at the time of construction shall comply with the minimum egress requirements when specified in Table 1103.1 as further enumerated in Sections 1104.2 through 1104.25.

## IBC & IFC CHAPTER 2: DEFINITIONS

### SECTION 201: GENERAL

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code (typically in Chapter 2), have the meanings shown herein.

### SECTION 202: DEFINITIONS

**[BE] AISLE.** An unenclosed *exit access* component that defines and provides a path of egress travel.

**[BE] AISLE ACCESSWAY.** That portion of an *exit access* that leads to an *aisle*.

**[BE] CORRIDOR.** An enclosed *exit access* component that defines and provides a path of egress travel to an *exit*.

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**[BE] EXIT.** That portion of a *means of egress* system between the exit access and the exit discharge or public way. Exit components include exterior exit doors at the *level of exit discharge*, *interior exit stairways and ramps*, *exit passageways*, *exterior exit stairways and ramps* and *ramps and horizontal exits*.

**[BE] EXIT ACCESS.** That portion of a *means of egress* system that leads from any occupied portion of a building or structure to an *exit*.

**[BE] EXIT ACCESS DOORWAY.** A door or access point along the path of egress travel from an occupied room, area or space where the path of egress enters an intervening room, corridor, *exit access stairway* or *ramp*.

**[BE] EXIT DISCHARGE.** That portion of a *means of egress* system between the termination of an *exit* and a *public way*.

**[BE] EXIT PASSAGEWAY.** An *exit* component that is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives, and provides for a protected path of egress travel in a horizontal direction to an *exit* or the *exit discharge*.

**[BF] FIRE EXIT HARDWARE.** *Panic hardware* that is *listed* for use on *fire door assemblies*.

**[BF] HIGH-RISE BUILDING.** A building with an occupied floor located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access.

**[BE] HORIZONTAL EXIT.** An *exit* component consisting of fire-resistance-rated construction and opening protectives intended to compartmentalize portions of a building thereby creating refuge areas that afford safety from the fire and smoke from the area of fire origin.

**[BE] MEANS OF EGRESS.** A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a *public way*. A means of egress consists of three separate and distinct parts: the *exit access*, the *exit* and the *exit discharge*.

**[BE] NOSING.** The leading edge of treads of *stairs* and of landings at the top of *stairway flights*.

**[BE] PANIC HARDWARE.** A door-latching assembly incorporating a device that releases the latch upon the application of a force in the direction of egress travel.

**[BE] PHOTOLUMINESCENT.** Having the property of emitting light that continues for a length of time after excitation by visible or invisible light has been removed.

**[BE] SELF-LUMINOUS.** Illuminated by a self-contained power source, other than batteries, and operated independently of external power sources.

**[BE] STAIRWAY.** One or more *flights* of *stairs*, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another.

## IBC CHAPTER 3: OCCUPANCY CLASSIFICATION AND USE

### SECTION 302: OCCUPANCY CLASSIFICATION AND USE DESIGNATION

**302.1 Occupancy classification.** ... Structures shall be classified into one or more of the occupancy groups listed in this section based on the nature of the hazards and risks to building occupants generally associated the intended purpose of the building or structure. ... Structures containing multiple occupancy groups shall comply with Section 508. ... Occupied roofs shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard, and shall comply with Section 503.1.4.

1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5
2. Business (see Section 304): Group B
3. Educational (see Section 305): Group E
4. Factory and Industrial (see Section 306): Groups F-1 and F-2
5. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-5
6. Institutional (see Section 308): Groups I-1, I-2, I-3 and I-4 **{I-1 is treatment centers & group homes for more than 16 persons, excluding staff, who reside on a 24 hour basis in a supervised environment.}**
7. Mercantile (see Section 309): Group M
8. Residential (see Section 310): Groups R-1, R-2, R-3 and R-4 **{R-1 is transient residential: hotels & motels.}**
9. Storage (see Section 311): Groups S-1 and S-2

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10. Utility and Miscellaneous (see Section 312): Group U

### IBC CHAPTER 4: SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE

#### SECTION 403: HIGH-RISE BUILDINGS

**403.1 Applicability.** *High-rise buildings* shall comply with Sections 403.2 through 403.6.

**Exception:** The provisions of Sections 403.2 through 403.6 shall not apply to the following buildings and structures:

1. Airport traffic control towers in accordance with Section 412.2.
2. *Open parking garages* in accordance with Section 406.5.
3. The portion of a building containing a Group A-5 occupancy in accordance with Section 303.6.
4. Special industrial occupancies in accordance with Section 503.1.1.
5. Buildings containing any one of the following:
  - 5.1. A Group H-1 occupancy.
  - 5.2. A Group H-2 occupancy in accordance with Section 415.8, 415.9.2, 415.9.3 or 426.1.
  - 5.3. A Group H-3 occupancy in accordance with Section 415.8.

**403.5.5 Luminous egress path markings.** Luminous egress path markings shall be provided in accordance with Section 1025.

### IBC & IFC CHAPTER 10: MEANS OF EGRESS

#### SECTION 1001: ADMINISTRATION

**1001.1 General.** Buildings or portions thereof shall be provided with a *means of egress* system as required by this chapter. The provisions of this chapter shall control the design, construction and arrangement of *means of egress* components required to provide an *approved means of egress* from structures and portions thereof.

#### [F] SECTION 1002: MAINTENANCE AND PLANS

**[F] 1002.1 Maintenance.** *Means of egress* shall be maintained in accordance with the *International Fire Code*.

#### SECTION 1003: GENERAL MEANS OF EGRESS

**1003.1 Applicability.** The general requirements specified in Sections 1003 through 1013 shall apply to all three elements of the *means of egress* system, in addition to those specific requirements for the *exit access*, the *exit* and the *exit discharge* detailed elsewhere in this chapter.

**1003.4 Slip-resistant surface.** Walking surfaces of the *means of egress* shall have a slip-resistant surface and be securely attached.

**1003.6 Means of egress continuity.** The path of egress travel along a *means of egress* shall not be interrupted by any building element other than a *means of egress* component as specified in this chapter. Obstructions shall not be placed in the minimum width or required capacity of a *means of egress* except projections permitted by this chapter. The required capacity of a *means of egress* system shall not be diminished along the path of egress travel.

#### SECTION 1008: MEANS OF EGRESS ILLUMINATION

**1008.1 Means of Egress Illumination.** The *means of egress* in accordance with Section 1008.2. Under emergency power, means of egress illumination shall comply with Section 1008.3.

**1008.2 Illumination required.** The *means of egress* serving a room or space shall be illuminated at all times that the room or space is occupied. (See Exceptions for certain occupancies.)

**1008.2.1 Illumination level under normal power.** The *means of egress* illumination level shall be not less than 1 footcandle (11 lux) at the walking surface. (See Exception for performance occupancies.)

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**1008.3 Emergency power for illumination.** The power supply for *means of egress* illumination shall normally be provided by the premises' electrical supply.

**1008.3.1 General.** In the event of power supply failure in rooms and spaces that require two or more means of egress, an emergency electrical system shall automatically illuminate all of the following areas:

1. *Aisles.*
2. *Corridors.*
3. *Exit access stair ways and ramps.*

**1008.3.4 Duration.** The emergency power system shall provide power for a duration of not less than 90 minutes and shall consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702.

**1008.3.5. Illumination level under emergency power.** Emergency lighting facilities shall be arranged to provide initial illumination that is not less than an average of 1 foot-candle (11 lux) and a minimum at any point of 0.1 foot-candle (1 lux) measured along the path of egress at floor level. Illumination levels shall be permitted to decline to 0.6 foot-candle (6 lux) average and a minimum at any point of 0.06 foot-candle (0.6 lux) at the end of the emergency lighting time duration. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.

### SECTION 1011: STAIRWAYS

**1011.2 Width and Capacity.** The required capacity of *stairways* shall be determined as specified in Section 1005.1, but the minimum width shall not be less than 44 inches (1118 mm). See Section 1009.3 for accessible *means of egress stairways*.

**1011.7.1 Stairway walking surface.** ... *Stairway* treads and landings shall have a solid surface. Finish floor surfaces shall be securely attached.

### SECTION 1023: INTERIOR EXIT STAIRWAYS AND RAMPS

**1023.9 Stairway identification signs.** A sign shall be provided at each floor landing in *interior exit stairway* and *ramp* connecting more than three stories designating the floor level, the terminus of the top and bottom of the *exit enclosure* and the identification of the *stair* or *ramp*. The signage shall also state the *story* of and the direction to the *exit discharge* and the availability of roof access from the *interior exit stairway* and *ramp* for the fire department. The sign shall be located 5 feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions. In addition to the *stairway* identification sign, a floor-level sign in visual characters, raised characters and braille complying with ICC A117.1 shall be located at each floor level landing adjacent to the door leading from the *interior exit stairway* and *ramp* into the *corridor* to identify the floor level.

**1023.9.1 Signage requirements.** *Stairway* identification signs shall comply with all of the following requirements:

1. The signs shall be a minimum size of 18 inches (457 mm) by 12 inches (305 mm).
2. The letters designating the identification of the *interior exit stairway* shall be a minimum of 1 1/2 inches (38 mm) in height.
3. The number designating the floor level shall be not less than 5 inches (127 mm) in height and located in the center of the sign.
4. All other lettering and numbers shall be not less than 1 inch (25 mm) in height.
5. Characters and their background shall have a nonglare finish. Characters shall contrast with their background, with either light characters on a dark background or dark characters on a light background.
6. When signs required by Section 1023.9 are installed in *interior exit stairways* and *ramps* of buildings subject to Section 1025, the signs shall be made of the same materials as required by Section 1025.4.

### SECTION 1025: LUMINOUS EGRESS PATH MARKINGS

**1025.1 General.** *Approved* luminous egress path markings delineating the exit path shall be provided in buildings of Groups A, B, E, I-1, M or R-1 having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access in accordance with this section.

**Exception:**

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1. Luminous egress path markings shall not be required on the *level of exit discharge* in lobbies that serve as part of the exit path in accordance with Section 1028.1, Exception 1.

**1025.2 Markings within exit components.** Egress path markings shall be provided in *interior exit stairways, interior exit ramps* and *exit passageways*, in accordance with Sections 1025.2.1 through 1025.2.6.

**1025.2.1 Steps.** A solid and continuous stripe shall be applied to the horizontal leading edge of each step and shall extend for the full length of the step. Outlining stripes shall have a minimum horizontal width of 1 inch (25 mm) and a maximum width of 2 inches (51 mm). The leading edge of the stripe shall be placed at a maximum of 1/2 inch (12.7 mm) from the leading edge of the step and the stripe shall overlap the leading edge of the step by not more than 1/2 inch (12.7 mm) down the vertical face of the step.

**Exception:** The minimum width of 1 inch (25 mm) shall not apply to outlining stripes *listed* in accordance with UL1994.

**1025.2.2 Landings.** The leading edge of landings shall be marked with a stripe consistent with the dimensional requirements for steps.

**1025.2.3 Handrails.** All *handrails* and *handrail* extensions shall be marked with a solid and continuous stripe having a minimum width of 1 inch (25 mm). The stripe shall be placed on the top surface of the *handrail* for the entire length of the *handrail*, including extensions and newel post caps. Where *handrails* or *handrail* extensions bend or turn corners, the stripe shall not have a gap of more than 4 inches (102 mm).

**Exception:** The minimum width of 1 inch (25 mm) shall not apply to outlining stripes *listed* in accordance with UL1994.

**1025.2.4 Perimeter demarcation lines.** *Stair* landings and other floor areas within *interior exit stairways, interior exit ramps* and *exit passageways*, with the exception of the sides of steps, shall be provided with solid and continuous demarcation lines on the floor or on the walls or a combination of both. The stripes shall be 1 to 2 inches (25mm to 51 mm) wide with interruptions not exceeding 4 inches (102 mm).

**Exception:** The minimum width of 1 inch (25 mm) shall not apply to outlining stripes *listed* in accordance with UL1994.

**1025.2.4.1 Floor-mounted demarcation lines.** Perimeter demarcation lines shall be placed within 4 inches (102 mm) of the wall and shall extend to within 2 inches (51 mm) of the markings on the leading edge of landings. The demarcation lines shall continue across the floor in front of all doors.

**Exception:** Demarcation lines shall not extend in front of *exit discharge* doors that lead out of an *exit* and through which occupants must travel to complete the exit path.

**1025.2.4.2 Wall-mounted demarcation lines.** Perimeter demarcation lines shall be placed on the wall with the bottom edge of the stripe no more than 4 inches (102 mm) above the finished floor. At the top or bottom of the *stairs*, demarcation lines shall drop vertically to the floor within 2 inches (51 mm) of the step or landing edge. Demarcation lines on walls shall transition vertically to the floor and then extend across the floor where a line on the floor is the only practical method of outlining the path. Where the wall line is broken by a door, demarcation lines on walls shall continue across the face of the door or transition to the floor and extend across the floor in front of such door.

**Exception:** Demarcation lines shall not extend in front of *exit discharge* doors that lead out of an *exit* and through which occupants must travel to complete the exit path.

**1025.2.4.3 Transition.** Where a wall-mounted demarcation line transitions to a floor-mounted demarcation line, or vice versa, the wall-mounted demarcation line shall drop vertically to the floor to meet a complementary extension of the floor-mounted demarcation line, thus forming a continuous marking.

**1025.2.5 Obstacles.** Obstacles at or below 6 feet 6 inches (1981 mm) in height and projecting more than 4 inches (102 mm) into the egress path shall be outlined with markings no less than 1 inch (25 mm) in width comprised of a pattern of alternating equal bands, of luminescent luminous material and black, with the alternating bands no more than 2 inches (51 mm) thick and angled at 45 degrees (0.79 rad). Obstacles shall include, but are not limited to, standpipes, hose cabinets, wall projections and restricted height areas. However, such markings shall not conceal any required information or indicators including, but not limited to, instructions to occupants for the use of standpipes.

**1025.2.6 Doors within the exit path.** Doors through which occupants must pass in order to complete the exit path shall be provided with markings complying with Sections 1025.2.6.1 through 1025.2.6.3.

**1025.2.6.1 Emergency exit symbol.** The doors shall be identified by a low-location luminous emergency exit symbol complying with NFPA 170. The exit symbol shall be a minimum of 4 inches (102 mm) in height and shall be mounted

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on the door, centered horizontally, with the top of the symbol no higher than 18 inches (457 mm) above the finished floor.

**1025.2.6.2 Door hardware markings.** Door hardware shall be marked with no less than 16 square inches (406 mm<sup>2</sup>) of luminous material. This marking shall be located behind, immediately adjacent to or on the door handle and/or escutcheon. Where a panic bar is installed, such material shall be no less than 1 inch (25 mm) wide for the entire length of the actuating bar or touchpad.

**1025.2.6.3 Door frame markings.** The top and sides of the door frame shall be marked with a solid and continuous 1 inch to 2 inch (25 mm to 51 mm) wide stripe. Where the door molding does not provide sufficient flat surface on which to locate the stripe, the stripe shall be permitted to be located on the wall surrounding the frame.

**1025.3 Uniformity.** Placement and dimensions of markings shall be consistent and uniform throughout the same enclosure.

**1025.4 Self-luminous and photoluminescent.** Luminous egress path markings shall be permitted to be made of any material, including paint, provided that an electrical charge is not required to maintain the required luminance. Such materials shall include, but are not limited to, *self-luminous* materials and *photoluminescent* materials. Materials shall comply with either:

1. UL 1994; or
2. ASTM E 2072, except that the charging source shall be 1 foot-candle (11 lux) of fluorescent illumination for 60 minutes, and the minimum luminance shall be 30 millicandelas per square meter at 10 minutes and 5 millicandelas per square meter after 90 minutes.

**1025.5 Illumination.** *Exit enclosures* where photoluminescent exit path markings are installed shall be provided with the minimum *means of egress* illumination required by Section 1006 for at least 60 minutes prior to periods when the building is occupied.

### SECTION 1029: ASSEMBLY

**1029.14.2.3 Tread contrasting marking stripe.** A contrasting marking stripe shall be provided on each tread at the *nosing* or leading edge such that the location of each tread is readily apparent when viewed in descent. Such stripe shall be a minimum of 1 inch (25 mm), and a maximum of 2 inches (51 mm), wide.