

ISSUE E

ITEM 17: Stairway width and the use of elevators for building evacuation need to be evaluated.

Item 18: Remoteness and fire resistance of exits

403.13 Smokeproof exit enclosures. Every required stairway serving a high rise building shall comply with Sections 909.20 and 1019.1.8.

403.15 Minimum number of exits. For buildings more than 420 feet in height, one additional stairway shall be provided in addition to the minimum number of exits required by Section 1018.1.

403.16. Exit path markings. Exit path markings shall be provided in accordance with Section 1011.6

403.17 Minimum distance between stair enclosures. Stair enclosures shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between the nearest portion of the stair enclosure. In buildings with three or more stair enclosures, the stair enclosures shall be placed a distance apart equal to not less than one-third of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between the nearest portion of the stair enclosure. Scissor stairs shall be counted as one exit stairway.

403.18 Structural integrity of stair enclosures. Stair enclosures, including but not limited to, connections and supporting members, shall be capable of resisting a uniform pressure of not less than 2 pounds per square inch (psi) applied perpendicular to both the interior and the exterior face of the enclosure .

1011.6 Photoluminescent exit path markings: Photoluminescent exit path markings (signs and outlining stripes) shall be provided in buildings of Group B, E, and R-1 with occupied floors greater than 75 feet above the lowest level of fire department vehicle access and shall be internally illuminated in accordance with Section 1011.4 or shall be of an approved photoluminescent material.

1011.6.1 Door signs and directional signs: Door signs and directional signs shall have "EXIT" printed in sans serif letters at least 4 inches (102 mm) in height with strokes that are not less than ½ inch (13 mm) wide. Where directional signage is required in accordance with Section 1011.6.1.1, the directional arrows shall be at least 2 ¾ inches (70 mm) in height. Door signs and directional signs shall be installed in accordance with Section 1011.6.1.1 and Section 1011.6.1.2.

1011.6.1.1 Signs for exit doors: Door signs shall be installed with the top of the signs not higher than 18 inches (457 mm) above the finished floor on the center of the door, on the half of the door that contains the latch, or on the wall surface directly adjacent to the latch side of the door. Door mounted and wall mounted signs shall have directional signage if the exit signs required by the building code have directional signage.

1011.6.1.2 Directional signage: Directional signage shall be placed in the stairwell or exit at every entrance such that they are visible upon entering the door into the stairwell or exit. Such signs shall include an arrow indicating the direction of travel and shall be installed with the top edge of the sign within 18 inches (457 mm) of the finished floor. Directional signs shall be installed on the wall where egress direction is not clear.

1011.6.2 Markings (outlining stripes) within vertical exits: Markings within vertical exits shall comply with Section 1011.6.2.1 through Section 1011.6.2.5.

1011.6.2.1 Steps: Outlining stripes 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 ½ inch (13 mm) from the leading edge of the step and the stripe shall not overlap the leading edge of the step by not more than ½ inch (13 mm) down the vertical face of the step.

1011.6.2.2 Landings: The leading edge of landings in exits shall be marked with outlining stripes consistent with the dimensional requirements for steps and shall be the same length as and consistent with the stripes on the steps or shall extend the full length of the leading edge of the landing.

1011.6.2.3 Handrails: All handrails and handrail extensions shall be marked with a 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).

1011.6.2.4 Floor perimeter demarcation stripes: Stair landings and other parts of the egress path, with the exception of the sides of steps, shall be provided with demarcation lines on the floor or on the walls or a combination of both. The stripes shall be 1 (25 mm) to 2 inches (51 mm) wide with interruptions not exceeding 4 inches (102 mm).

1011.6.2.4.1 Floor mounted demarcation lines: Perimeter demarcation lines shall be placed within 4 inches 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.

1011.6.2.4.2 Wall mounted demarcation lines: Perimeter demarcation lines shall be placed on the bottom edge of the wall 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. Demarcation lines on walls shall continue across the face of all doors or may transition to the floor and extend across the floor in front of such doors.

1011.6.2.5 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 stripes not less than 1 inch (25 mm) in width comprised of a pattern of alternating equal bands of material and black with the alternating bands not more than 2 inches (51 mm) thick and angled at 45 degrees.

1018.1 Minimum number of exits. All rooms and spaces within each story shall be provided with and have access to the minimum number of approved independent exits as required by Table 1018.1 based on the occupant load, except as modified in Sections 403.15, 1014.1 or 1018.2. For the purposes of this chapter, occupied roofs shall be provided with exits as required for stories. The required number of exits from any story, basement or individual space shall be maintained until arrival at grade or the public way.

1019.1 Enclosures required. Interior exit stairways and interior exit ramps shall be enclosed with fire barriers. Exit enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the shaft enclosure shall include any basements but not any mezzanines. An exit enclosure shall not be used for any purpose other than means of egress. Exit stair enclosures shall be continuous from the highest story served by the enclosure to the level of exit discharge and shall not include horizontal transfer corridors other than at the level of exit discharge. Enclosures shall be constructed as fire barriers in accordance with Section 706.

SUBSTANTIATION:

403.15 During incidents involving high-rises, fire departments typically identify, **upon arrival**, the stairways that will be used for firefighting vs. evacuation of occupants. The codes, as existing, do not account for the lessening of stairwell access for evacuation due to this decision. Counter-flow by firefighters is an issue that prevents evacuation of occupants in an organized manner in some of the stairwells.

This proposal resolves the need to get additional capacity based on the fact the built capacity will not be available for the use of occupants. It is assumed that stairwell use still requires training on the part of occupants, the building management staff and firefighters to affect a coordinated response to the incident.

It should not be misunderstood that this additional stairway has to be the firefighting stairway. In effect, stairways would be assigned to evacuation or firefighting access based on conditions present in the building. This proposal does allow further choices and will have the affect of an additional stairway available for fire and other operations which may be remote from others. It is also not a retroactive proposal and can be designed into new buildings.

403.16 – Exit path markings can allow occupants to better identify the paths to safety.