

Commanding Officer, Marine Safety Center.

(5) The Commanding Officer, Marine Safety Center may accept other means of escape in combination with a stairtower provided the exits open directly to weather or through a main vertical zone bulkhead.

(6) For vessels in which a stairtower is not required, a stairway must provide a means of escape for each deck of the main vertical zone.

(n) The minimum tread width of a stairway or stairtower must be 8.4 millimeters (0.333 inches) for each person served, but must not be less than 910 millimeters (36 inches). However, in stairways accessing spaces utilized solely by crew members, the minimum tread width must be 8.4 millimeters (0.333 inches) for each person served, but not less than 710 millimeters (28 inches).

(1) The minimum tread width of a stairway or stairtower must be determined for each deck considering only those persons on that deck, except as provided in paragraph (n)(3) of this section. Once a minimum tread width has been established at any deck, it must not be decreased in the direction of escape.

(2) In determining the number of persons served, a space must be considered to contain at least the number of persons as follows:

(i) Passenger overnight accommodation spaces: Designed capacity;

(ii) Accommodation spaces having fixed seating for passengers: Maximum seating capacity;

(iii) Public spaces, including spaces such as casinos, restaurants, club rooms, and cinemas, and public accommodation spaces as defined in § 114.400 of this subchapter, except overnight accommodation spaces: One person for each 0.9 square meters (10 square feet) of deck area. In computing such deck area, the following areas must be excluded:

(A) Areas for which the number of persons permitted is determined using the fixed seating criterion;

(B) Obstructions, including stairway and elevator enclosures, elevated stages, bars, and cashier stands, but not including slot machines, tables, or other room furnishings;

(C) Toilets and washrooms;

(D) Interior passageways less than 850 millimeters (34 inches) wide and passageways on open deck less than 710 millimeters (28 inches) wide;

(E) Spaces necessary for handling lifesaving equipment, anchor handling equipment, or line handling gear, or in way of sail booms or running rigging; and

(F) Bow pulpits, swimming platforms, and areas that do not have a solid deck, such as netting on multi hull vessels;

(iv) Crew overnight accommodation spaces: Two-thirds designed capacity; and

(v) Work spaces: Occupancy under normal operating conditions.

(3) If a stairway forms part of a normal embarkation or debarkation route, or egress route to an area of refuge, the number of persons using the stairway for that purpose must be used in determining the minimum tread width. The Commanding Officer, Marine Safety Center, may approve a narrower stairway width if a narrower stairway will not unreasonably impede the flow of persons out of the space requiring egress or from an area of refuge to an embarkation station. Specific consideration can be given by the Marine Safety Center to the arrangement of landing area in excess of that required by paragraph (i) of this section when considering the approval of a narrower stairway width. However, the stairway width must be at least 910 millimeters (36 inches) unless the stairway is utilized solely by crew members, in which case the minimum tread width must be at least 710 millimeters (28 inches).

(4) If more than one stairtower serves a main vertical zone, the number of persons in that main vertical zone may be distributed among the stairtowers.

[CGD 85-080, 61 FR 900, Jan. 10, 1996; 61 FR 20556, May 7, 1996, as amended at 62 FR 51350, Sept. 30, 1997; USCG 1998-4442, 63 FR 52191, Sept. 30, 1998; USCG-2002-13058, 67 FR 61729, Sept. 30, 2002; USCG-2004-18884, 69 FR 58348, Sept. 30, 2004]

#### § 116.439 Balconies.

(a) An accommodation space containing a balcony must meet the requirements of this section.

## § 116.440

(b) Each level of a space containing a balcony must have two independent means of escape that meet the requirements of § 116.500 of this part.

(c) For the purpose of main vertical zone bulkhead spacing requirements, the length of the space to which the balcony opens is considered to be increased by an amount equal to the gross area of the balcony divided by the average width of the space. If this equivalent main vertical zone length exceeds 40 meters (131 feet), the space must meet the requirements of paragraph (d) of this section. The actual length of the space may not exceed 40 meters (131 feet).

(d) If the equivalent main vertical zone length under paragraph (c) of this section exceeds 40 meters (131 feet), both decks connected by the balcony must be protected with an automatic sprinkler system meeting NFPA 13.

(e) If the unobstructed balcony opening area is less than 93 square meters (1,000 square feet), the opening must be protected in accordance with NFPA 13 or other standard specified by the Commandant. The horizontal projection area of stairs, escalators, statues, or other obstructions must be subtracted from the total balcony opening area for purposes of computation of unobstructed balcony opening area.

[CGD 85-080, 61 FR 900, Jan. 10, 1996, as amended at 62 FR 51350, Sept. 30, 1997; 62 FR 64305, Dec. 5, 1997]

## § 116.440 Atriums.

(a) The atrium opening area must be a minimum of 93 square meters (1000 square feet) or 20% of the gross deck area of the largest deck within the accommodation space containing the atrium, whichever is smaller.

(1) Each side of an atrium opening must be a minimum of 6.1 meters (20 feet) in length. If the opening is circular or ellipsoid, it must measure at least 6.1 meters (20 feet) across in any direction.

(2) Any deck opening within an atrium must fit wholly within the horizontal projection of any deck opening of an upper deck.

(3) The horizontal projection area of stairs, escalators, statues, etc. within the atrium shall not be included for

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purposes of computation of atrium opening area.

(b) The entire main vertical zone containing an atrium must be protected throughout with a smoke detection system of an approved type which is installed in accordance with § 76.33 in subchapter H of this chapter. However, on vessels with no overnight passenger accommodations, smoke detectors may be omitted from the accommodation space containing the atrium.

(c) The entire main vertical zone containing an atrium must be protected with an automatic sprinkler system meeting NFPA 13.

(d) The atrium must be provided with a smoke extraction system that complies with either:

(1) The smoke extraction system must be capable of exhausting the entire volume of the space within 10 minutes. The smoke extraction system must be capable of being activated by both the smoke detection system and by manual control, and designed with sufficient plenum air openings to prevent excessive negative air pressure in the atrium; or,

(2) The smoke extraction system may be designed in accordance with the principles of NFPA 92B "Smoke Management Systems in Malls, Atria, and Large Areas."

(e) Each level within the atrium must have two independent means of escape that comply with § 116.500 of this part. At least one of the means of escape must be a stairtower.

[CGD 85-080, 61 FR 900, Jan. 10, 1996, as amended at 62 FR 51350, Sept. 30, 1997]

## Subpart E—Escape and Embarkation Station Requirements

### § 116.500 Means of escape.

(a) Except as otherwise provided in this section, each space accessible to passengers or used by the crew on a regular basis, must have at least two means of escape, one of which must not be a watertight door.

(b) The two required means of escape must be widely separated and, if possible, at opposite ends or sides of the space to minimize the possibility of one incident blocking both escapes.