

Study Session

3

A117.1 Chapter 3 Building Blocks

OBJECTIVE: To obtain an understanding of the fundamental accessibility requirements related to floor surfaces, changes in level, turning space, clear floor space, knee and toe clearance, protruding objects, reach ranges and operable parts.

REFERENCE: Chapter 3, ICC A117.1-2009, *Accessible and Usable Buildings and Facilities*

KEY POINTS:

- How must carpet be installed? What types of carpet texture are acceptable?
- What is the maximum permitted pile thickness?
- How must the exposed edges of carpet be addressed?
- What is the maximum size opening permitted in a floor surface? How must elongated openings be oriented?
- What is the maximum height permitted for a vertical change in level?
- Under what limitations is a beveled change in level permitted?
- At what change in level is a ramp required?
- What is the maximum permitted slope for the floor surface of a turning space?
- What are the two options for providing a complying turning space? What is the minimum floor area required for each of the options?
- What encroachments are permitted to extend into the turning space?
- Are doors permitted to swing into a required turning space?
- What is the maximum slope permitted for the floor surface of a clear floor space?
- What is the minimum required size of a complying clear floor space?
- What are the two types of approach to a clear floor space? Can either type of approach be provided under all conditions?
- What maneuvering clearance must be provided to gain access to an alcove from a parallel approach? From a forward approach?
- What space beneath an element is considered to be toe clearance?
- What is the maximum depth permitted for toe clearance?
- What is the minimum depth for toe clearance where it is required as a part of a clear floor space?

- KEY POINTS:**
- What is the minimum width required for toe clearance?
- (Cont'd)**
- What space beneath an element is considered to be knee clearance?
 - Where knee clearance is necessary as part of a clear floor space, what is the minimum required depth?
 - In what manner may knee clearance be reduced?
 - What is the minimum required width for knee clearance?
 - At what heights are protruding objects limited in their projection into the circulation path? What is the maximum projection permitted?
 - As protruding objects, what are the limitations for objects mounted on posts or pylons?
 - Where are guardrails or other barriers required to be adjacent to protruding objects?
 - What is the maximum reach range for an unobstructed forward reach? The minimum reach?
 - What depth of obstruction requires a reduced high forward reach? At what depth of obstruction is a high forward reach not possible?
 - What is the maximum reach range for an obstructed side reach? The minimum reach?
 - What depth of obstruction requires a reduced high side reach? At what depth of obstruction is a high side reach not possible?
 - How are operable parts regulated for clear floor space? Height? Operation?

Topic: Carpet

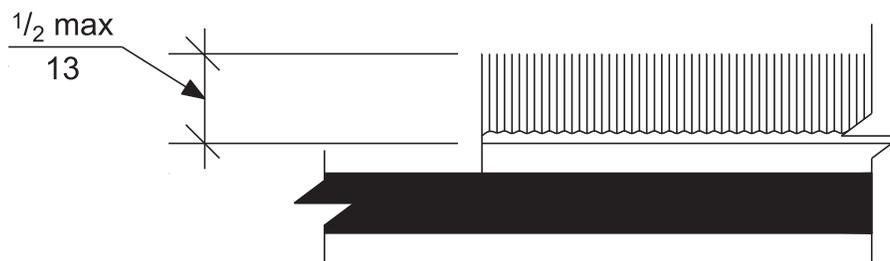
Category: Building Blocks

Reference: A117.1, 302.2

Subject: Floor Surfaces

Code Text: *Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. The pile shall be $\frac{1}{2}$ inch (13 mm) maximum in height. Exposed edges of carpet shall be fastened to the floor and shall have trim along the entire length of the exposed edge. Carpet edge trim shall comply with Section 303 (changes in level).*

Discussion and Commentary: Where both carpet and padding are used, minimum movement (preferably none) between the floor and the pad, and the pad and the carpet, is desired. Otherwise, over time the carpet could hump or warp. A thick, plush pad, particularly in combination with long carpet pile, makes it difficult for individuals in wheelchairs and those with other ambulatory disabilities to move about. Firm carpeting is achieved through proper selection and installation of both the carpet and padding.

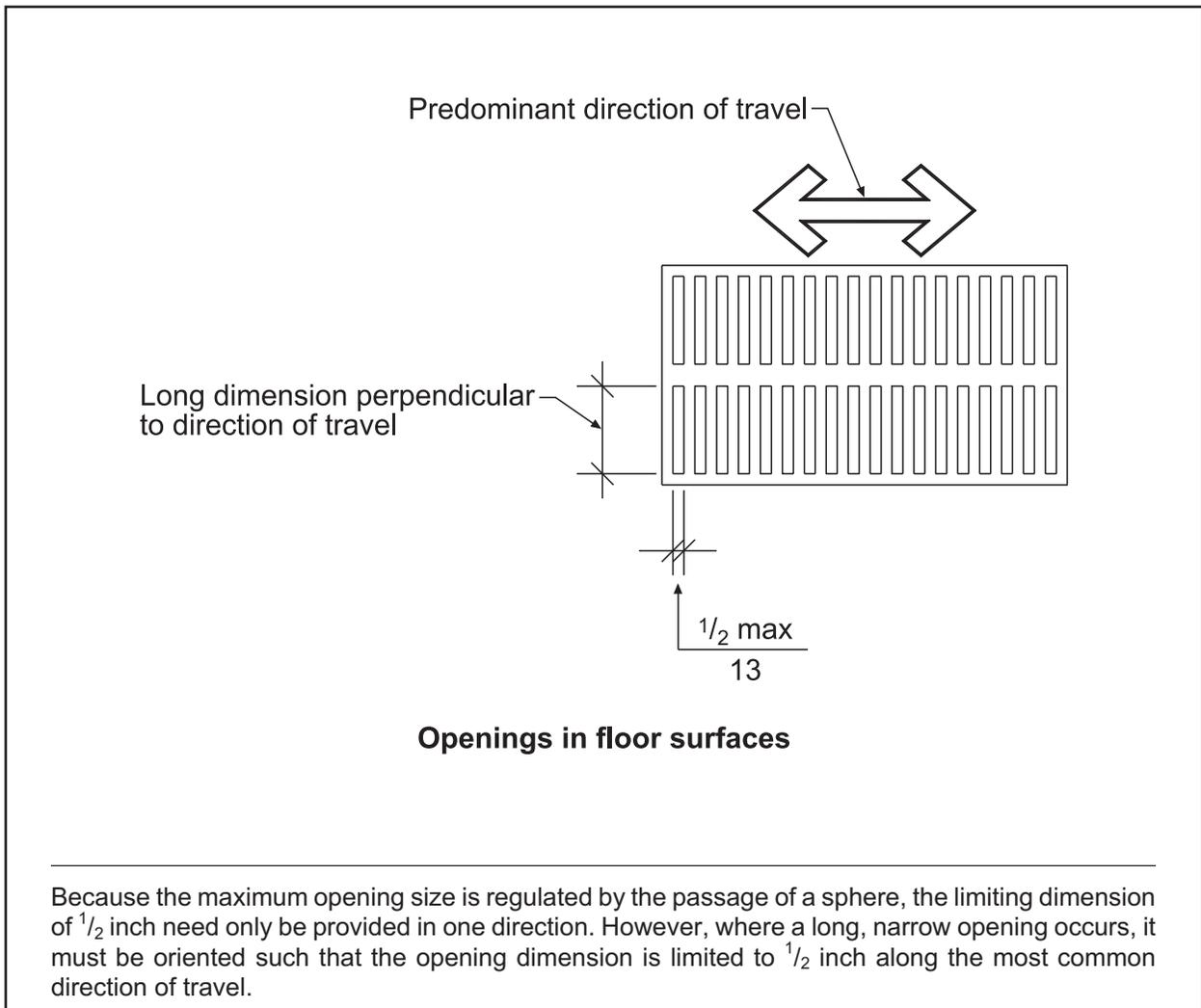


Carpet on floor surfaces

Where edge trim is used in making the transition from a carpeted surface to some other flooring material, it must comply with the limitations for vertical changes in level. If vertical, a maximum $\frac{1}{4}$ -inch elevation change is permitted. If the change is more than $\frac{1}{4}$ inch but does not exceed $\frac{1}{2}$ inch, a bevel is required with a maximum slope of 1:2.

Code Text: *Openings in floor surfaces shall be of a size that does not permit the passage of a 1/2 inch (13 mm) diameter sphere, except as allowed (at elevators, platform lifts and track crossings) in Sections 407.4.3, 408.4.3, 409.4.3, 410.4, and 805.10. Elongated openings shall be placed so that the long dimension is perpendicular to the predominant direction of travel.*

Discussion and Commentary: Where openings in a floor surface are too large in dimension, they can become a hazard to individuals utilizing crutches and similar walking aids. In addition, the wheels of a wheelchair could fall into the opening and limit free movement of the chair. Therefore, the size and direction of any openings that occur in floor surfaces are strictly regulated.



Code Text: Changes in level of $\frac{1}{4}$ inch (6.4 mm) maximum in height shall be permitted to be vertical. Changes in level greater than $\frac{1}{4}$ inch (6.4 mm) in height and not more than $\frac{1}{2}$ inch (13 mm) maximum in height shall be beveled with a slope not steeper than 1:2. Changes in level greater than $\frac{1}{2}$ inch (13 mm) in height shall be ramped and shall comply with Section 405 (ramps) or 406 (curb ramps).

Discussion and Commentary: Where the elevation of the floor surface changes abruptly along the path of travel, even if the elevation change is slight, it creates a hazard for users of the path. For individuals using a wheelchair, such an elevation difference can make it difficult to transition to the adjacent floor level. A maximum difference of $\frac{1}{4}$ inch is permitted without the need for a beveled transition. This allows for a slight variation in elevation at the point where there is a change in floor coverings. Such a small variation does not create an unreasonable tripping hazard, and the transition can easily be made by a person using a wheelchair.

