



## Standard Practice for Safe Walking Surfaces<sup>1</sup>

This standard is issued under the fixed designation F1637; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice covers design and construction guidelines and minimum maintenance criteria for new and existing buildings and structures. This practice is intended to provide reasonably safe walking surfaces for pedestrians wearing ordinary footwear. These guidelines may not be adequate for those with certain mobility impairments.

1.2 Conformance with this practice will not alleviate all hazards; however, conformance will reduce certain pedestrian risks.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

[ASTM F1637-21](https://standards.iteh.ai/catalog/standards/sist/9eb93457-5f03-4b76-a9bc-2022/1ee867ed/astm-f1637-21)

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#### 2.1 ASTM Standards:<sup>2</sup>

**F1646 Terminology Relating to Walkway Safety and Footwear**

### 3. Terminology

3.1 See Terminology **F1646** for the following terms used in this practice:

3.1.1 Bollard,

3.1.2 Carpet,

3.1.3 Cross slope,

3.1.4 Element,

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee **F13** on Pedestrian/Walkway Safety and Footwear and is the direct responsibility of Subcommittee **F13.50** on Walkway Surfaces.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- 3.1.5 Fair,
- 3.1.6 Footwear,
- 3.1.7 Foreseeable pedestrian path,
- 3.1.8 Planar,
- 3.1.9 Ramp,
- 3.1.10 Sidewalk,
- 3.1.11 Slip resistance,
- 3.1.12 Slip resistant,
- 3.1.13 Walkway.
- 3.1.14 Walkway surface hardware, and

**4. Significance and Use**

4.1 This practice addresses elements along and in walkways including floors and walkway surfaces, sidewalks, short flight stairs, gratings, wheel stops, and speed bumps. Swimming pools, bath tubs, showers, natural walks, and unimproved paths are beyond the scope of this practice.

**5. Walkway Surfaces**

5.1 *General:*

5.1.1 Walkways shall be stable, planar, flush, and even to the extent possible. Where walkways cannot be made flush and even, they shall conform to the requirements of 5.2 and 5.3.

5.1.2 Walkway surfaces for pedestrians shall be capable of safely sustaining intended loads.

5.1.3 Walkway surfaces shall be slip resistant under expected environmental conditions and use. Painted walkways shall contain an abrasive additive, cross cut grooving, texturing or other appropriate means to render the surface slip resistant where wet conditions may be reasonably foreseeable.

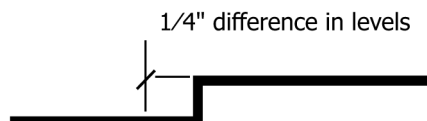
5.1.4 Interior walkways that are not slip resistant when wet shall be maintained dry during periods of pedestrian use.

5.2 *Walkway Changes in Level:*

5.2.1 Adjoining walkway surfaces shall be made flush and fair, whenever possible and for new construction and existing facilities to the extent practicable.

5.2.2 Changes in levels up to 1/4 in. (6 mm) may be vertical and without edge treatment. (See Fig. 1.)

5.2.3 Changes in levels between 1/4 and 1/2 in. (6 and 12 mm) shall be beveled with a slope no greater than 1:2 (rise:run).



**FIG. 1 Changes in Levels up to a Maximum of 1/4 in. (6 mm)**

5.2.4 Changes in levels greater than ½ in. (12 mm) shall be transitioned by means of a ramp or stairway that complies with applicable building codes, regulations, standards, or ordinances, or all of these.

### 5.3 *Carpet:*

5.3.1 Carpet shall be maintained so as not to create pedestrian hazard. Carpet shall be firmly secured and seams tightly maintained. Carpet shall not have loose or frayed edges, unsecured seams, worn areas, holes, wrinkles or other hazards that may cause trip occurrence.

5.3.2 Carpet on floor surfaces shall be routinely inspected. Periodic restretching may become necessary. Periodic inspection is particularly important at step nosing edges.

5.3.3 Carpet and carpet trim (as measured when compressed) shall meet the transition requirements of 5.2.

5.3.4 Shag-type carpet shall not be used on stair treads. Carpeting should be firmly secured onto the tread and around the nosing.

### 5.4 *Mats and Runners:*

5.4.1 Mats, runners, or other means of ensuring that building entrances and interior walkways are kept dry shall be provided, as needed, during inclement weather. Replacement of mats or runners may be necessary when they become saturated.

5.4.2 Building entrances shall be provided with mats or runners, or other means to help remove foreign particles and other contaminants from the bottom of pedestrian footwear. Mats should be provided to minimize foreign particles, that may become dangerous to pedestrians particularly on hard smooth floors, from being tracked on floors.

5.4.3 Mats or runners should be provided at other wet or contaminated locations, particularly at known transitions from dry locations. Mats at building entrances also may be used to control the spread of precipitation onto floor surfaces, reducing the likelihood of the floors becoming slippery.

5.4.4 Mats shall be of sufficient design, area, and placement to control tracking of contaminants into buildings. Safe practice requires that mats be installed and maintained to avoid tracking water off the last mat onto floor surfaces.

5.4.5 Mats, runners, and area rugs shall be provided with safe transition from adjacent surfaces and shall be fixed in place or provided with slip resistant backing.

5.4.6 Mats, runners, and area rugs shall be maintained so as not to create pedestrian hazards. Mats, runners, and area rugs shall not have loose or frayed edges, worn areas, holes, wrinkles, or other hazards that may cause trip occurrences.

### 5.5 *Illumination:*

5.5.1 Minimum walkway illumination shall be governed by the requirements of local codes and ordinances or, in their absence, by the recommendations set forth by the Illuminating Engineering Society of North America (IES) (Application and Reference Volumes).

5.5.2 Illumination shall be designed to be glare free.

5.5.3 Illumination shall be designed to avoid casting of obscuring shadows on walkways, including shadows on stairs that may be cast by users.

5.5.4 Interior and exterior pedestrian use areas, including parking lots, shall be properly illuminated during periods when pedestrians may be present.

### 5.6 *Conditions Above and Alongside Walkways:*

5.6.1 *Headroom*—A minimum headroom clearance of 6 ft 8 in. (2.03 m), measured from the walkway surface, shall be provided

above all parts of the walkway. Where such clearance is not provided in existing structures, the low clearance portions of the walkway shall be safely padded, marked with safety contrast color coding and posted with appropriate warning signs.

5.6.2 *Protrusions*—Objects should not be placed which obstruct or protrude into a walkway in a manner that creates a tripping or contact hazard. Objects in or protruding into walkways that are less than 3 ft high shall be made visually prominent in accordance with Section 11.

5.6.3 *Edges*—When walkways are adjacent to ~~areas that include hazards to safe use, the hazards or hazardous areas, or where the elevation drop adjacent to the edge of the walkway is vertical and exceeds 12 in.,~~ the edges or limits of the walkways shall be made conspicuous or be guarded. ~~Where hazards adjacent to walkways pose a significant risk of harm to pedestrians who may inadvertently fall off a walkway edge, consider eliminating the hazards or providing effective guards along the walkway edge. This would not apply to walkways and curbs adjacent to roadways and parking lots where pedestrians are permitted or expected, or both, to step off the walkway. In areas where pedestrians are permitted or expected, or both, to step off the walkway to a surface at a lower elevation, 5.2 shall apply.~~

NOTE 1—Examples of adjacent hazards posing a significant risk of harm include areas of high vehicle traffic, machinery areas and elevation drops in excess of 12 in.

### 5.7 *Exterior Walkways:*

5.7.1 Exterior walkways shall be maintained so as to provide safe walking conditions.

5.7.1.1 Exterior walkways shall be slip resistant.

5.7.1.2 Exterior walkway conditions that may be considered substandard and in need of repair include conditions in which the pavement is broken, depressed, raised, undermined, slippery, uneven, or cracked to the extent that pieces may be readily removed.

5.7.2 Exterior walkways shall be repaired or replaced where there is an abrupt variation in elevation between surfaces. Vertical displacements in exterior walkways shall be transitioned in accordance with 5.2.

5.7.3 Edges of sidewalk joints shall be rounded.

## 6. Walking Surface Hardware

[ASTM F1637-21](https://standards.iteh.ai/ASTM-F1637-21)

<https://standards.iteh.ai/catalog/standards/sist/9eb93457-5f03-4b76-a9bc-2022/1ee867ed/astm-f1637-21>

6.1 Walking surface hardware within foreseeable pedestrian paths shall be maintained flush with the surrounding surfaces; variances between levels shall be transitioned in accordance with 5.2.

6.2 Walking surface hardware within foreseeable pedestrian paths shall be maintained slip resistant.

6.3 Walking surface hardware shall be installed and maintained so as to be stable under reasonable foreseeable loading.

## 7. Stairs

### 7.1 *General:*

7.1.1 Stairways with “distracting” forward or side views shall be avoided. A “distracting” view is one which can attract the stair user’s attention, (for example, advertisements, store displays), thus distracting the stair user.

7.1.2 Step nosings shall be readily discernible, slip resistant, and adequately demarcated. Random, pictorial, floral, or geometric designs are examples of design elements that can camouflage a step nosing.

7.1.3 Doors shall not open over stairs.

7.1.4 Structure (reserved).

### 7.2 *Short Flight Stairs (Three or Fewer Risers):*