

Stairs & Handrails

2012 Edition NFPA 101

2010 ADA Standards

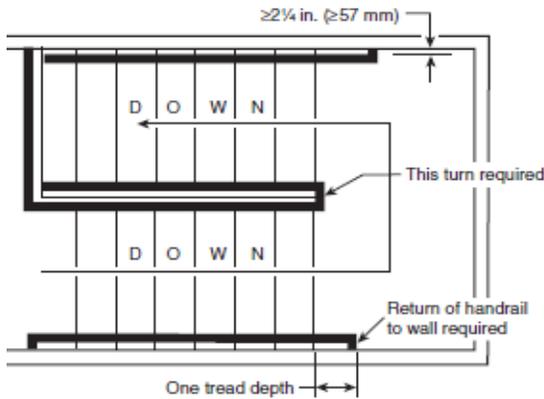
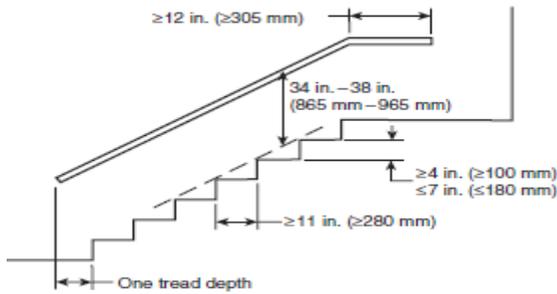


FIGURE A.7.2.2.3.5(a) Riser Measurement with Tread Slope to Front.

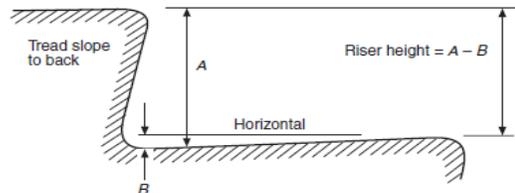
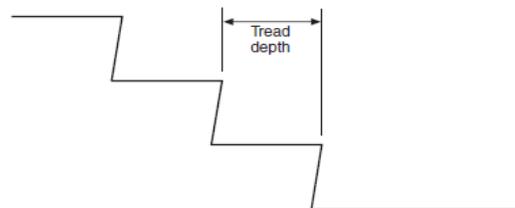
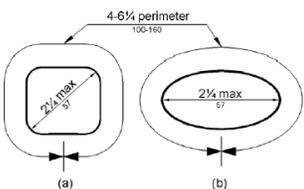


FIGURE A.7.2.2.3.5(b) Riser Measurement with Tread Slope to Back.



Non-Circular Cross Sections



2.25 in. minimum clearance



Tread depth shall be not less than 13 in. for elevation changes of 21 in. or less. The presence and location of each step shall be readily apparent. **Section 7.1.7**

Guards in accordance with 7.2.2.4 shall be provided at the open sides of means of egress that exceed 30 in. above the floor or finished ground level below. **Section 7.1.8**

Stair treads and landings shall be solid, without perforations. Stair treads and landings shall be free of projections or lips that could trip stair users. **Section 7.2.2.3.3**

The tread and landing slope shall not exceed 1/4 in./ft. **Section 7.2.2.3.4**

Variations in excess of 3/16 in. in the sizes of adjacent treads depths or in the height of adjacent risers shall be prohibited. **Section 7.2.2.3.6.1**

The variations between the sizes of the largest and smallest riser or between the largest and smallest tread depths shall not exceed 3/8 in. in any flight. **Section 7.2.2.3.6.2**

Open risers are not permitted. **ADA 504.3; NFPA 101 Section 7.2.2.3.3.2**

Stairs and ramps shall have handrails on both sides. **Section 7.2.2.4.1.1**

Required guards and handrails shall continue for the full length of each flight of stairs. At turns of new stairs, inside rails shall be continuous between flights at landing. **Section 7.2.2.4.2**

The design of guards and handrails and the hardware for attaching handrails to guards, balusters, or walls shall be such that there are no projections that might engage loose clothing. **Section 7.2.2.4.3**

New handrails on stairs shall not be less than 34 in., and not more than 38 in., above the surface of the tread, measured vertically to the top of the rail from the leading edge of the tread. **Section 7.2.2.4.4.1**

New handrails shall be installed to provide a clearance of not less than 2 1/4 in. between the handrail and the wall to which it is fastened. **Section 7.2.2.4.4.5**

New handrails shall be continuously graspable along their entire length. **Section 7.2.2.4.4.7**

New handrail ends shall return to the wall or floor or shall terminate at newel posts. **Section 7.2.2.4.4.9**

Guards shall not be less than 42 in. high. **Section 7.2.2.4.5.2**

Open guards shall have intermediate rails (vertical intermediate rails are preferred) such that a sphere 4 in. in diameter is not able to pass through any opening up to a height of 34 in. **Section 7.2.2.4.5.3**

Handrails shall have a circular cross section with an outside diameter of not less than 1 1/4 in. and not more than 2 in. Shape other than circular shall meet requirements of Section 7.2.2.4.4.6 (2). **Section 7.2.2.4.4.6 (1)**

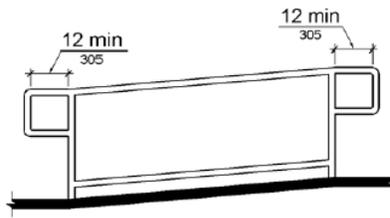
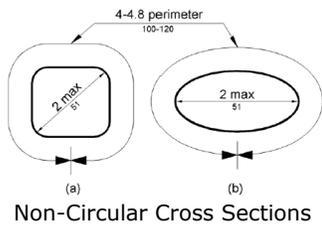
Table 7.2.2.2.1.1(a) New Stairs

Minimum Width	See 7.2.2.2.1.2
Maximum height of risers	7 inches
Minimum height of risers	4 inches
Minimum tread depth	11 inches
Minimum headroom	6 feet 8 inches
Maximum height between landings	12 feet

Ramps & Handrails

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Changes in level in means of egress not in excess of 21 in. shall be achieved by a ramp complying with the requirements of 7.2.5. The presence and location of ramped portions of walkways shall be readily apparent. **Section 7.1.7**

Changes in level greater than 1/2 inch (13 mm) high shall be ramped, and shall comply with 405 or 406. **ADA 303.4**

The rise for any ramp run shall be 30 inches maximum. **ADA 405.6; NFPA 101 Section 7.2.5.2(1)**

Ramps shall have handrails on both sides. **Section 7.2.2.4.1**

Ramps shall have a minimum clear width of 44 in. **Section 7.2.5.2(1)**

Ramps shall have landings located at the top, at the bottom, and at door leaves opening onto ramps. Every landing shall have a width not less than the width of the ramp. Every landing shall not be less than 60 in. long in the direction of travel. Changes in travel direction shall be made only at landings. **Section 7.2.5.3.2**

Ramps that change direction between runs at landings shall have a clear landing 60 in. minimal by 60 in. minimal. **ADA 405.7.4**

Changes in level between 1/4 inch (6.4 mm) high minimum and 1/2 inch (13 mm) high maximum shall be beveled with a slope not steeper than 1:2. **ADA 303.3**

Ramp runs with a rise greater than 6 inches (150 mm) shall have handrails complying with 505. **ADA 405.8**

Edge protection complying with 405.9.1 or 405.9.2 shall be provided on each side of ramp runs and at each side of ramp landings. (See exceptions) **ADA 405.9**

Ramps and landings with drop-offs require curbs or barriers not less than 4" in height. **Section 7.2.5.3.3**

The slope of a landing shall not be steeper than 1 in 48. **Section 7.2.5.3.2(2)**

Handrails shall have a circular cross section with an outside diameter of not less than 1 1/4 in. and not more than 2 in. Shape other than circular shall meet requirements of Section 7.2.2.4.4.6 (2). **Section 7.2.2.4.4.6 (1)**

New handrails shall be installed to provide a clearance of not less than 2 1/4 in. between the handrail and the wall to which it is fastened. **Section 7.2.2.4.4.5**

New handrails shall be continuously graspable along their entire length. **Section 7.2.2.4.4.7**

New handrail ends shall return to the wall or floor or shall terminate at newel posts. **Section 7.2.2.4.4.9**

Guards complying with Section 7.2.2.4 (NFPA 101) shall be provided for ramps, unless otherwise provided in 7.2.5.4.4. **Section 7.2.5.4.1**

The height of handrails and guards shall be measured vertically to the top of the guard or rail from the walking surface adjacent thereto. **Section 7.2.5.4.3**

