

Visual Interpretation Of The

I N T E R N A T I O N A L

R E S I D E N T I A L

C O D E

2000 STAIR BUILDING CODE



The Stairway Manufacturers Association publishes visual interpretations of Building Codes to be accurate pictorial descriptive material void of editorial comment to aid in the understanding of the written text. We provide this document as a learning tool to aid designers, builders, homeowners, building officials, stair builders, and others in the shelter industry to accurately and consistently interpret the building code related to stairways.

The SMA has participated in the model code development process since 1988. We support the International Code Council's development process through our membership and are recognized and respected for our responsible efforts at code reform and interpretation in addition to our trade and industry experience that we bring to the table. This experience and reputation is an asset to our continued efforts to provide safe stairways and reduce stairway accidents while allowing freedom of design, and aesthetic properties of preference.

In addition to our experience in the code development process we use the commentaries published by the International Code Council as a resource for each visual interpretation.

The SMA wishes to thank the ICC for their permission to print portions of the IRC and in full recognition of our responsibility to educate and inform we invite your feedback and comments.

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If you find this document to be of significant value, then you will find it equally beneficial to associate with a member of the Stairway Manufacturer's Association (SMA). The members of the SMA have taken on the task of influencing the development of responsible and functional building codes. They are the very individuals effectively communicating consistent interpretation of each stair code. A resulting product of their effort is this Visual Interpretation. SMA members know their craft of Stair Design and Construction and they know Building Codes. You are encouraged to contact a member of the SMA before you begin your next stairway project.



**The Stair Industry
Dedicated to Safety & Quality**

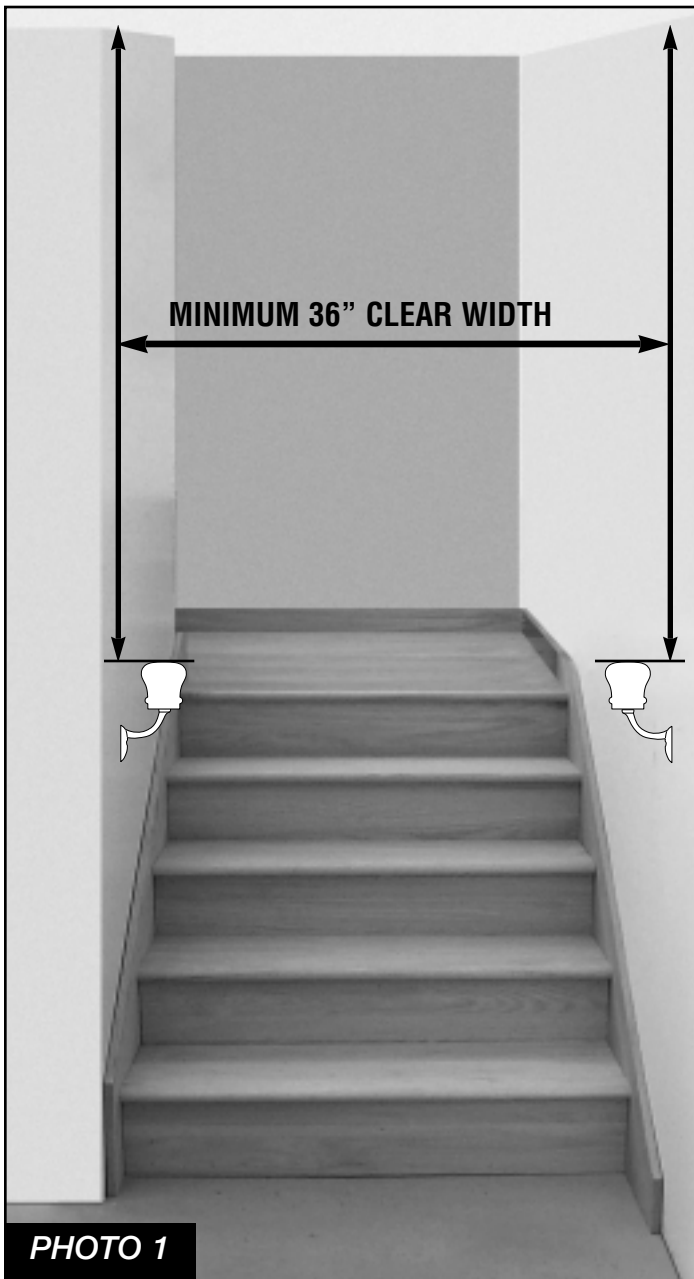
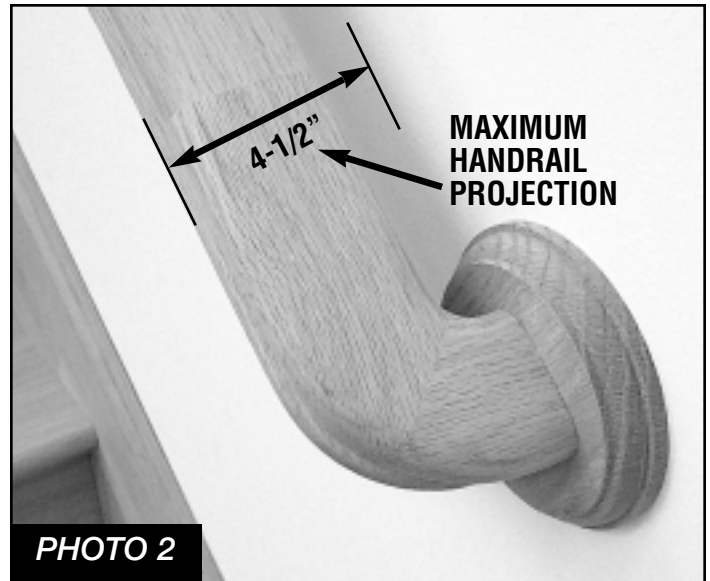
If your work is related to stairs and you can prescribe to the ethics and quality standards of the SMA you may qualify for membership. To learn more about the SMA go to www.stairways.org, or contact us at sma@stairways.org.

SECTION R314 STAIRWAYS

R314.1 Width.

Stairways shall not be less than 36 inches (914 mm) in clear width at all points above the permitted handrail height and below the required headroom height. **PHOTO 1.** Handrails shall not project more than 4.5 inches (114 mm) on either side of the stairway **PHOTO 2.** and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31.5 inches (787 mm) where a handrail is installed on one side and 27 inches (698 mm) where handrails are provided on both sides. **PHOTO 3.**

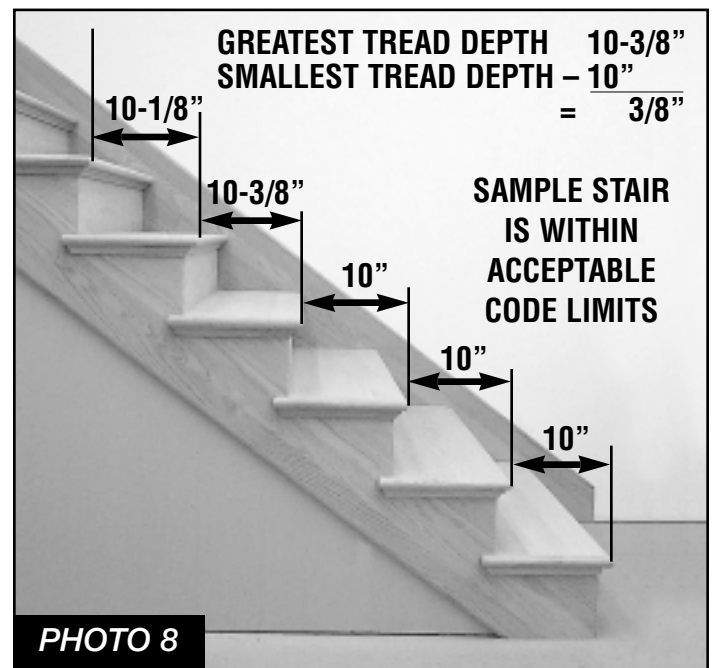
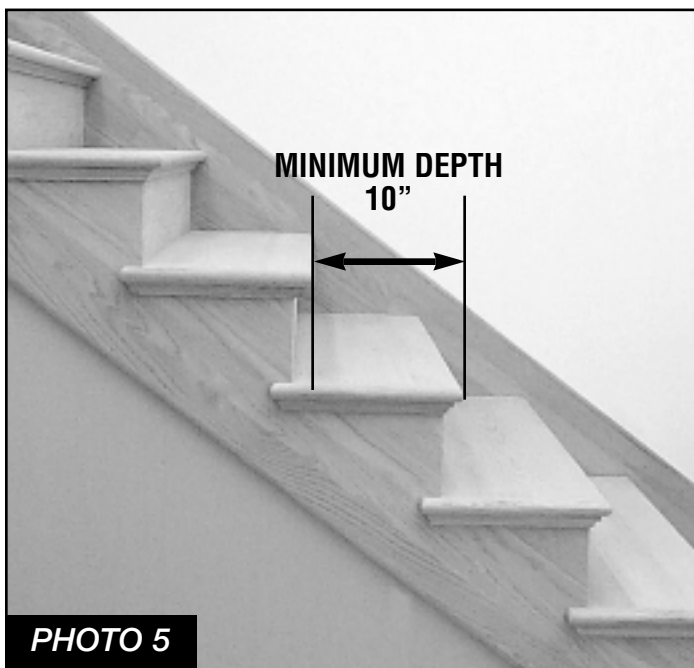
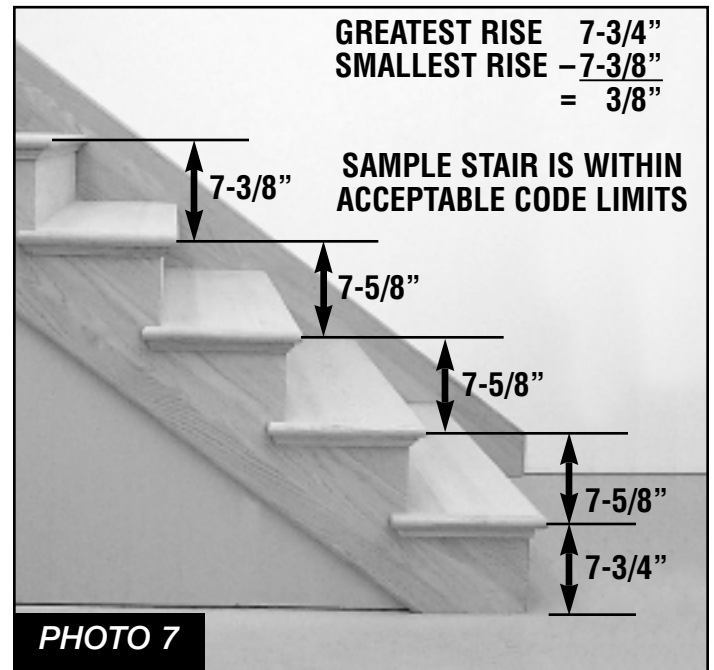
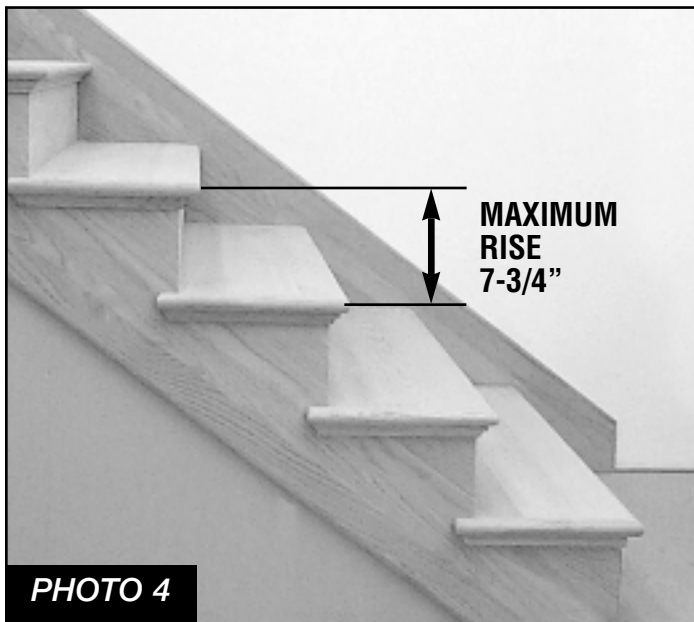
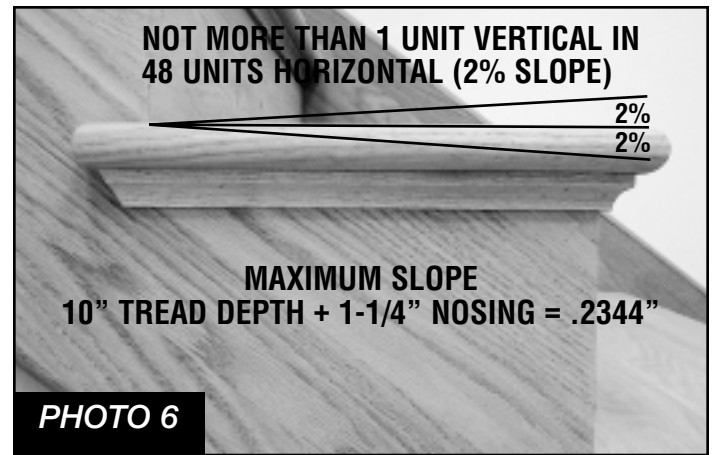
Exception: The width of spiral stairways shall be in accordance with Section R314.5.



R314.2 Treads and risers.

The maximum riser height shall be 7-3/4 inches (196 mm) and the minimum tread depth shall be 10 inches (254 mm). The riser height shall be measured vertically between leading edges of the adjacent treads.

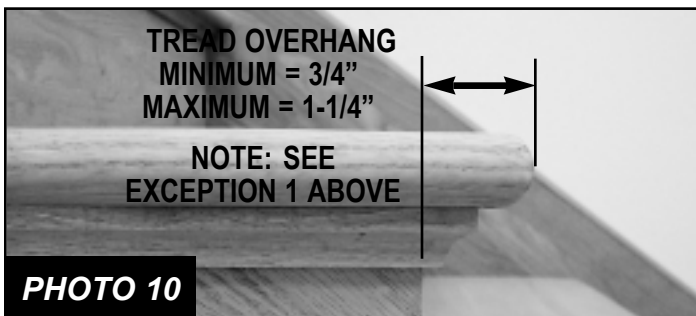
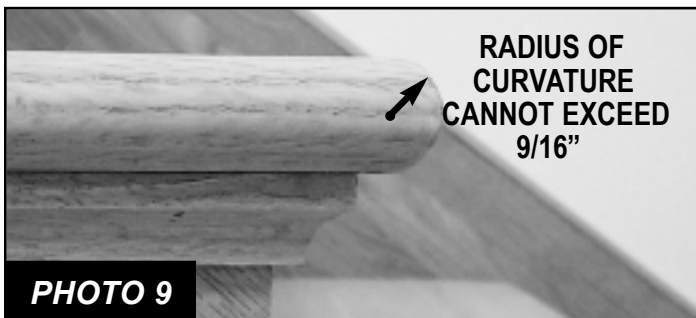
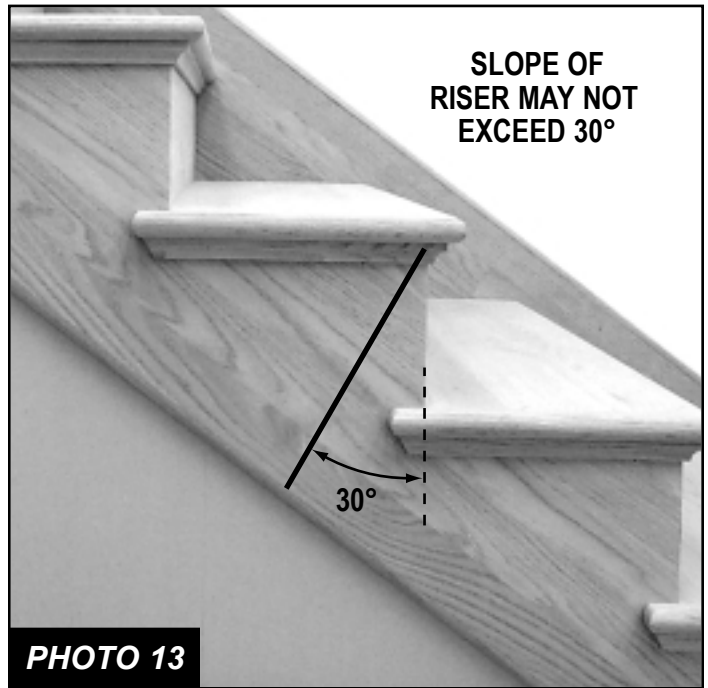
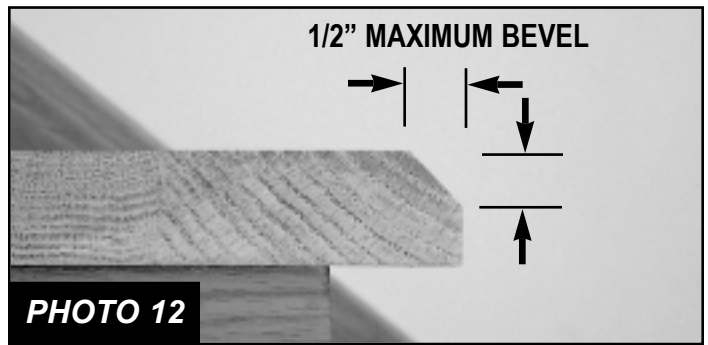
PHOTO 4. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. **PHOTO 5.** The walking surface of treads and landings of a stairway shall be sloped no steeper than one unit vertical in 48 units horizontal (2 percent slope). **PHOTO 6.** The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). **PHOTO 7.** The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). **PHOTO 8.**



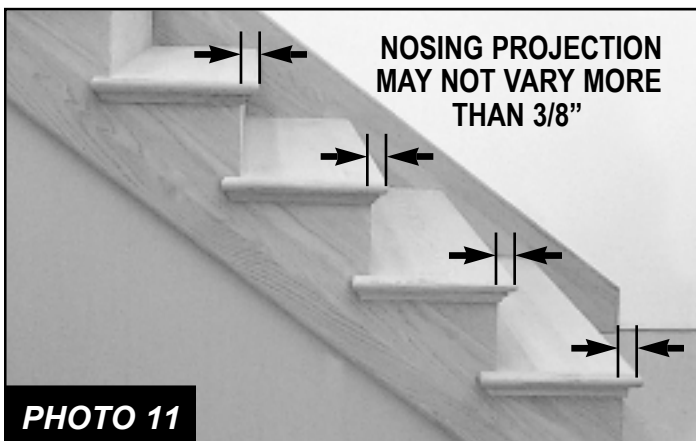
R314.2.1 Profile.

The radius of curvature at the leading edge of the tread shall be no greater than 9/16 inch (14.3 mm). **PHOTO 9.** A nosing not less than 3/4 inch (19.1 mm) but not more than 1-1/4 inches (32 mm) shall be provided on stairways with solid risers. **PHOTO 10.** The greatest nosing projection shall not exceed the smallest nosing projection by more than 3/8 inch (9.5 mm) between two stories, including the nosing at the level of floors and landings. **PHOTO 11.** Beveling of nosing shall not exceed 1/2 inch (12.7 mm). **PHOTO 12.** Risers shall be vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees from the vertical. **PHOTO 13.** Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch-diameter (102 mm) sphere. **PHOTO 14.**

- Exceptions:*
1. A nosing is not required where the tread depth is a minimum of 11 inches (279 mm).
 2. The opening between adjacent treads is not limited on stairs with a total rise of 30 inches (762 mm) or less. **PHOTO 14.**

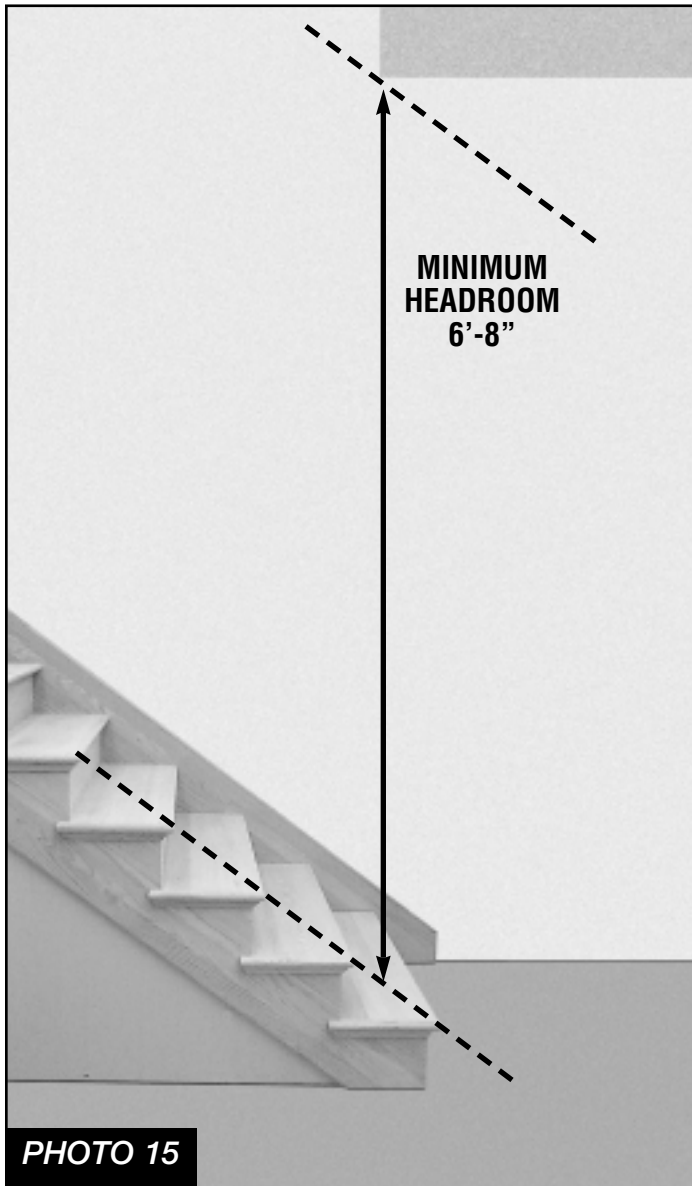


NOTE: SEE EXCEPTION 1 ABOVE



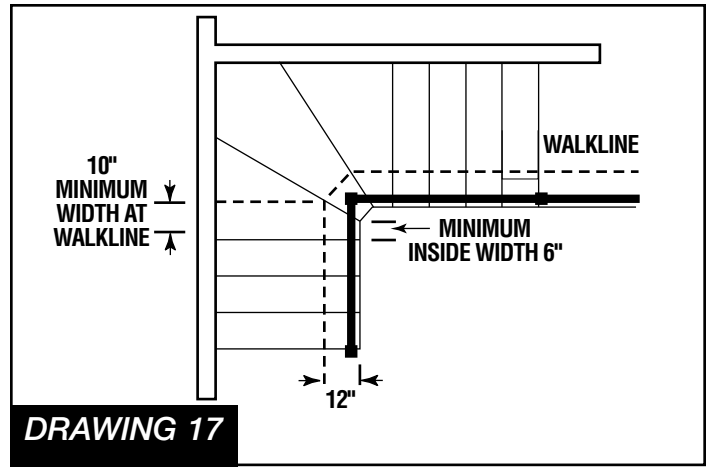
R314.3 Headroom.

The minimum headroom in all parts of the stairway shall not be less than 6 feet, 8 inches (2032 mm) measured vertically from the sloped plane adjoining the tread nosing, **PHOTO 15**, or from the floor surface of the landing or platform. **PHOTO 16**.

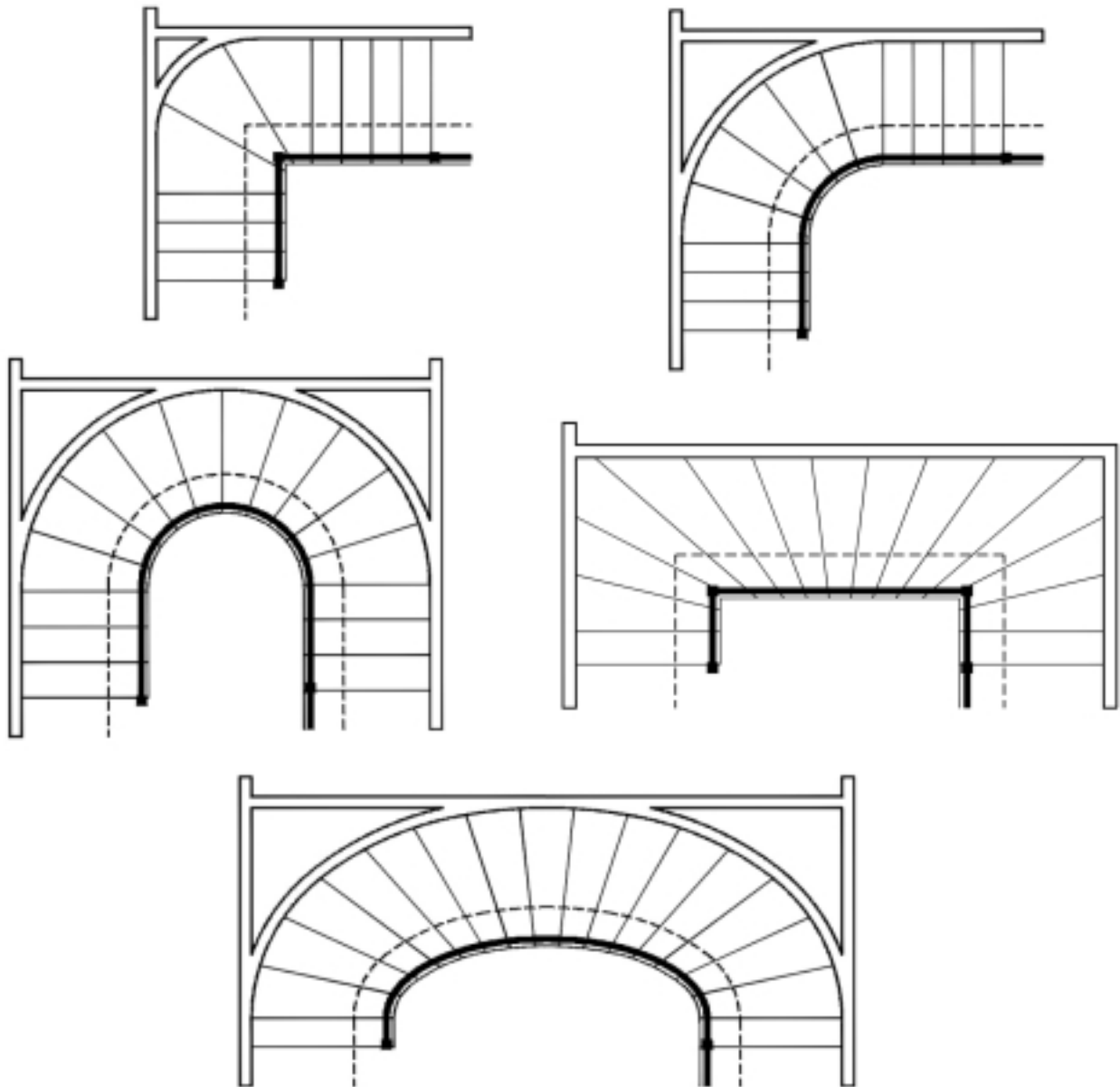


R314.4 Winders.

Winders are permitted, provided that the width of the tread at a point not more than 12 inches (305 mm) from the side where the treads are narrower is not less than 10 inches (254 mm) and the minimum width of any tread is not less than 6 inches (152 mm). The continuous handrail required by Section R315.1 shall be located on the side where the tread is narrower. **DRAWING 17.**



ALTERNATE WINDER DESIGNS



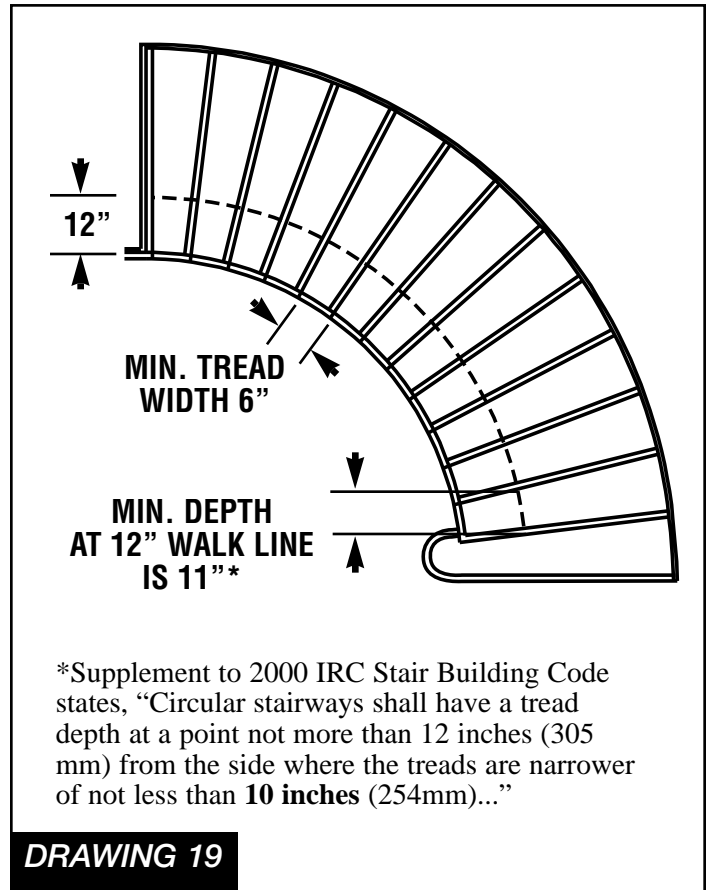
R314.5 Spiral Stairs.

Spiral stairways are permitted, provided the minimum width shall be 26 inches (660 mm) with each tread having a 7-1/2 inch (190 mm) minimum tread width at 12 inches (305 mm) from the narrow edge. All treads shall be identical, and the rise shall be no more than 9-1/2 inches (241 mm). A minimum headroom of 6 feet, 6 inches (1982 mm) shall be provided. **PHOTO 18.**



R314.6 Circular Stairways.

Circular stairways shall have a tread depth at a point not more than 12 inches (305 mm) from the side where the treads are narrower of not less than 11 inches (279 mm) and the minimum depth of any tread shall not be less than 6 inches (152 mm). Tread depth at any walking line, measured a consistent distance from a side of the stairway, shall be uniform as specified in Section 314.2. **DRAWING 19.**



*Supplement to 2000 IRC Stair Building Code states, "Circular stairways shall have a tread depth at a point not more than 12 inches (305 mm) from the side where the treads are narrower of not less than 10 inches (254mm)..."

R314.7 Illumination.

All stairs shall be provided with illumination in accordance with Section R303.4.

R314.8 Under stair protection.

Enclosed accessible space under stairs shall have walls, under stair surface and any soffits protected on the enclosed side with 1/2" (12.7-mm) gypsum board.

R314.9 Bulkhead enclosure stairways.

Stairways serving bulkhead enclosures not part of the required building egress and providing access from the outside grade level to the basement shall be exempt from the requirements of Sections R312, R314 and R315 when the maximum height from the basement finished floor level to grade adjacent to the stairway is covered by a bulkhead enclosure with hinged doors or other approved means.

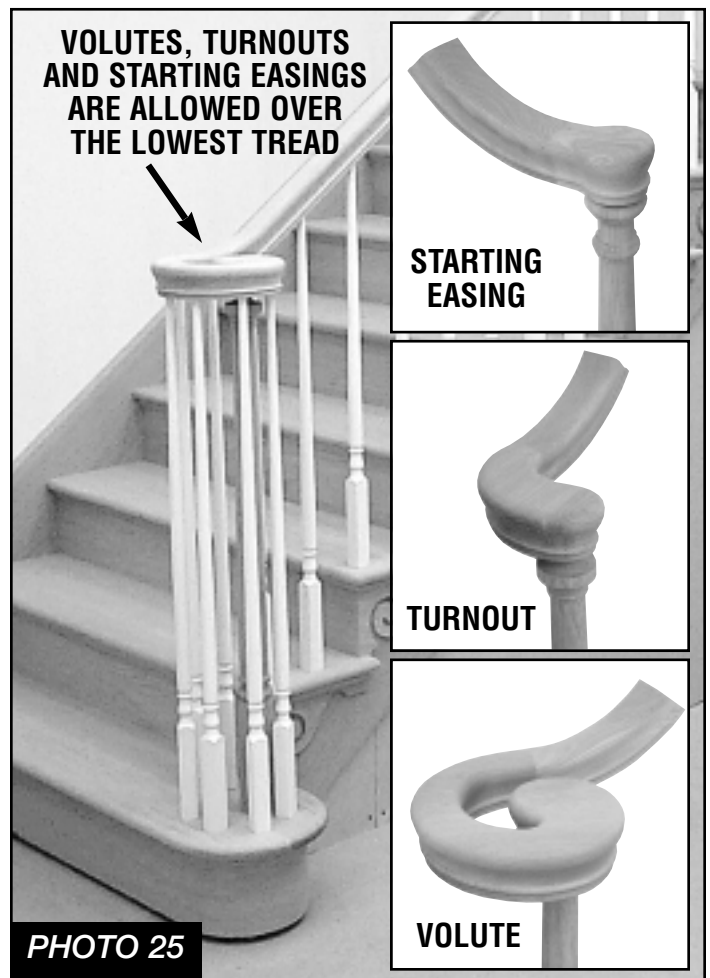
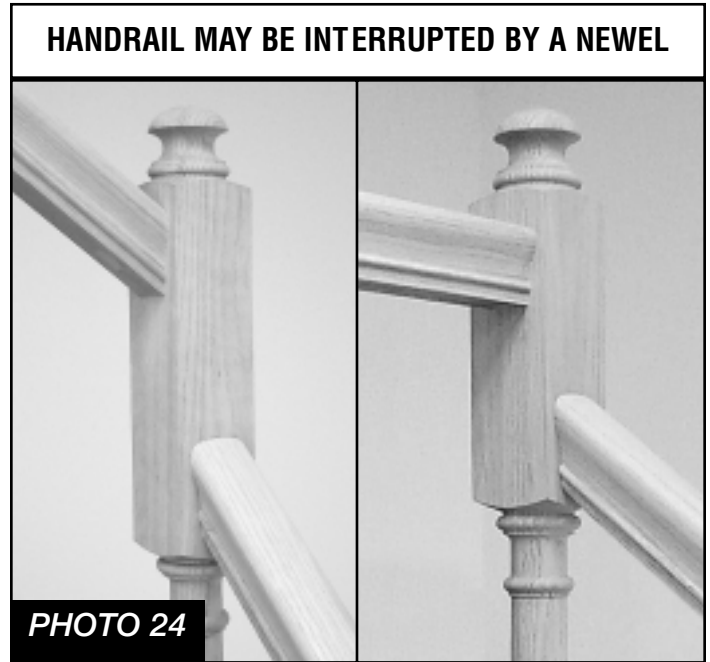
SECTION R315 HANDRAILS

R315.1 Handrails.

Handrails having minimum and maximum heights of 34 inches and 38 inches (864 mm and 965 mm), respectively, measured vertically from the nosing of the treads, shall be provided on at least one side of stairways. **PHOTO 20.** All required handrails shall be continuous the full length of the stairs with two or more risers from a point directly above the top riser of a flight to a point directly above the lowest riser of the flight. **PHOTO 21.** Ends shall be returned or shall terminate in newel posts or safety terminals. **PHOTO 22.** Handrails adjacent to a wall shall have a space of not less than 1.5 inches (38 mm) between the wall and the handrail. **PHOTO 23.**

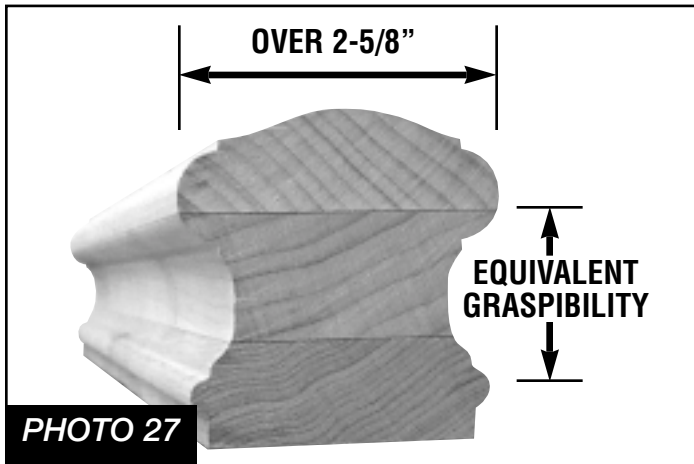
Exceptions: 1. Handrails shall be permitted to be interrupted by a newel post at a turn. **PHOTO 24.**

2. The use of a volute, turnout or starting easing shall be allowed over the lowest tread. **PHOTO 25.**



R315.2 Handrail grip size.

The handgrip portion of handrails shall have a circular cross section of 1-1/4 inches (32 mm) minimum to 2-5/8 inches (67 mm) maximum. **PHOTO 26.** Other handrail shapes that provide an equivalent grasping surface are permissible. **PHOTO 27.** Edges shall have a minimum radius of 1/8 inch (3.2 mm). **PHOTO 28.**

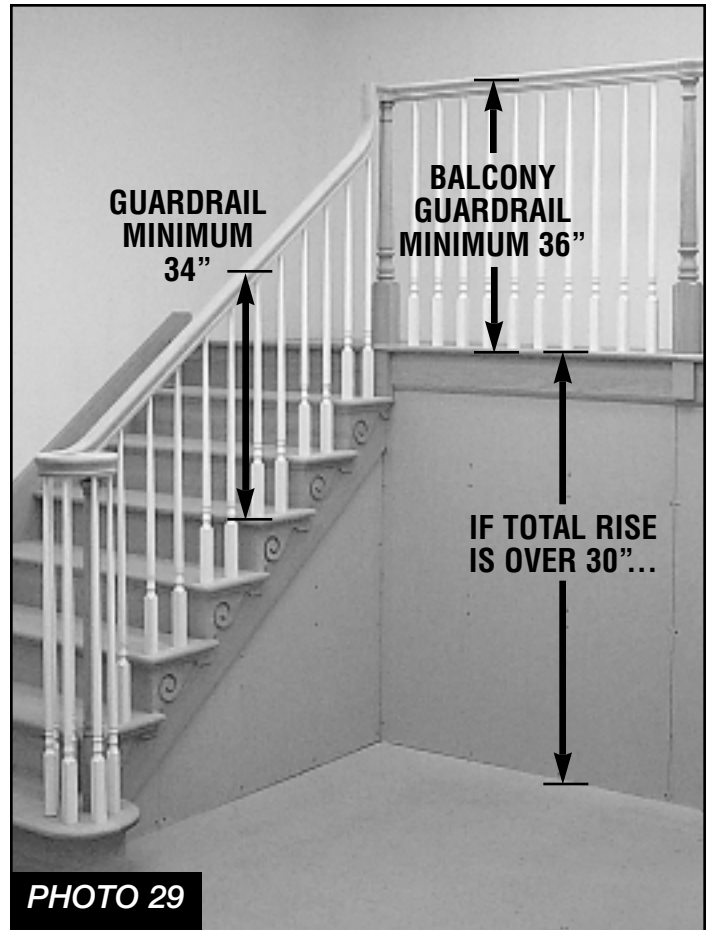


SECTION R316 GUARDS

R316.1 Guards required.

Porches, balconies or raised floor surfaces located more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 36 inches (914 mm) in height. Open sides of stairs with a total rise of more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 34 inches (864 mm) in height measured vertically from the nosing of the treads.

PHOTO 29.

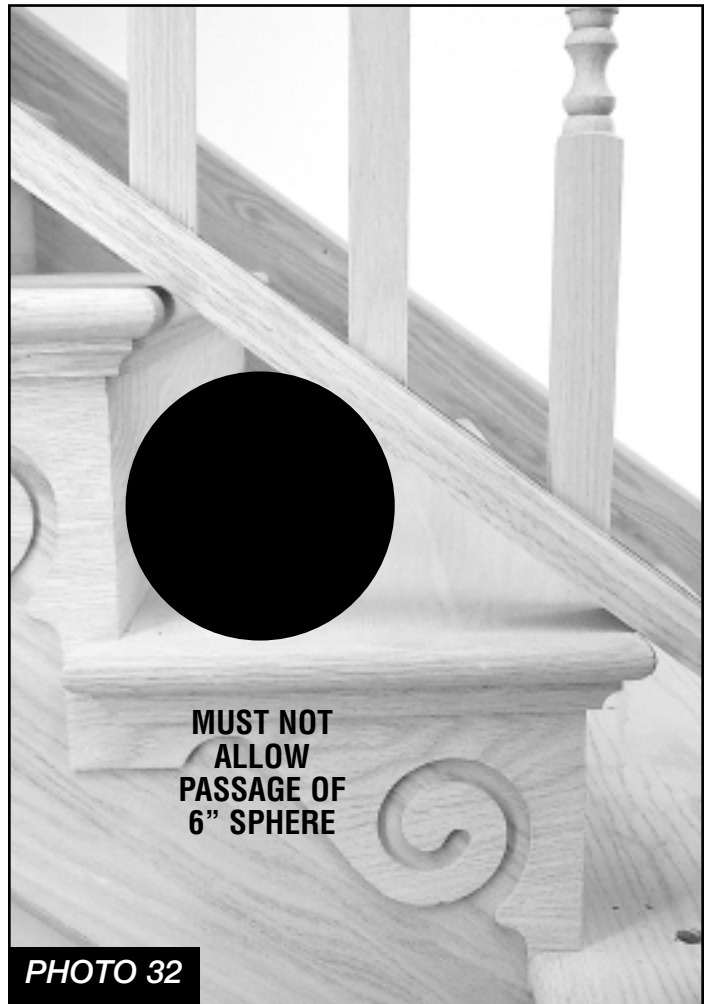
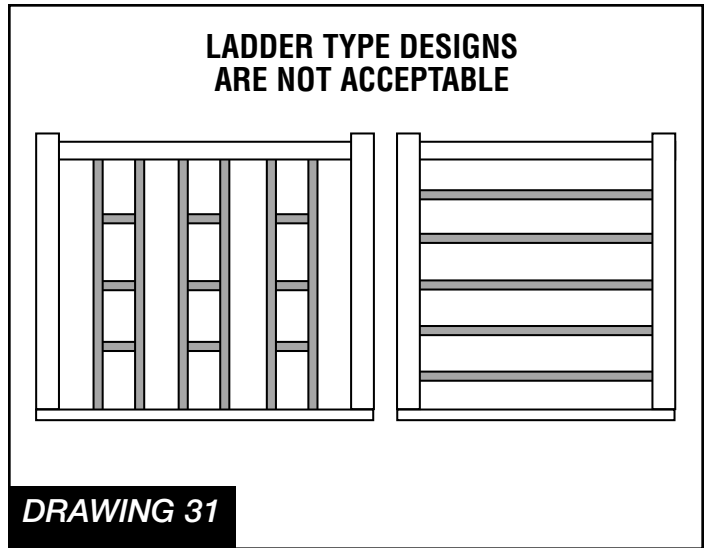
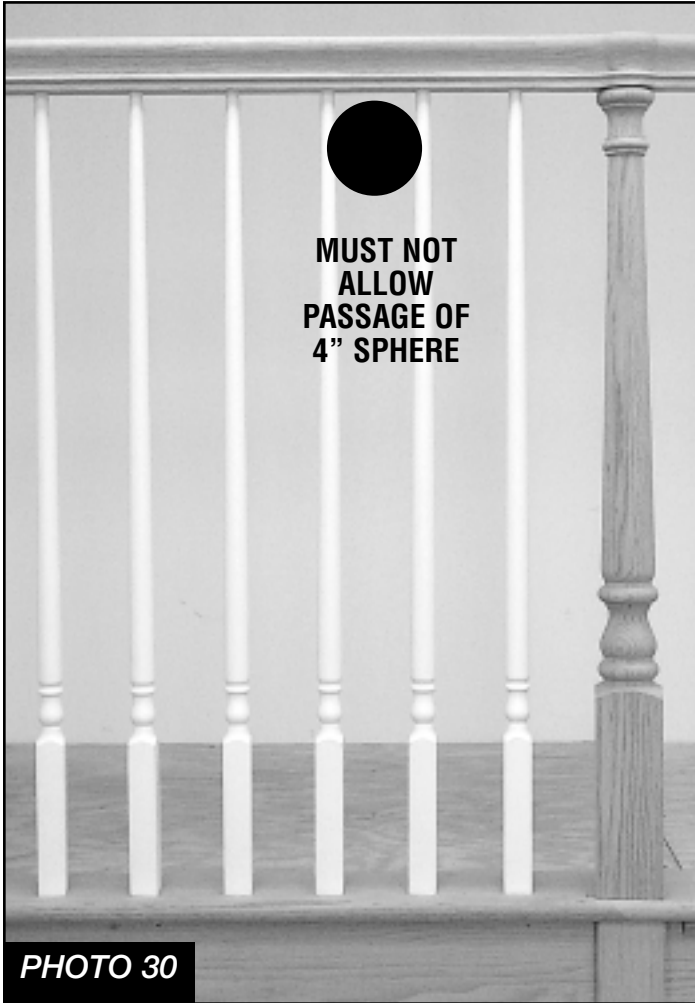


R316.2 Guard opening limitations.

Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures which do not allow passage of a sphere 4 inches (102 mm) in diameter. **PHOTO 30.**

Required guards shall not be constructed with horizontal rails or other ornamental patterns that results in a ladder effect. **DRAWING 31.**

Exception: The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway are permitted to be of such a size that a sphere 6 inches (152 mm) cannot pass through. **PHOTO 32.**



THE MISSION OF THE SMA IS:

- To organize the varied elements of the stair industry into a leader in the code change process by actively participating at all levels.
- To write standards that insure design and installation criteria meet or exceed the minimum standard set forth by the existing code.
- To participate in design and product testing as to learn more about stair dynamics so that safety and aesthetics can coexist while incidences of stair accidents are reduced.
- To establish a central source that will disseminate to the membership current and proposed code information impacting all facets of stair building and millwork usage.
- To protect the rights and interests of both the consumer and the stair industry.

The Stairway Manufacturers' Association is dedicated to the prospect that safety and aesthetics, with respect to stairs, are not mutually exclusive....

The SMA is a broad based industry association founded in 1988. Our members include stair parts manufacturers, stair builders, installers,

millwork distributors, dealers and interested building products professionals. We are an industry organization run by industry people.

Our primary focus is to represent the millwork industry to the building development groups at the local, country, state and national levels.

Because the SMA represents the people who build, install and sell stair parts and stairways in this country, it is our purpose to defend, test, evaluate and promote products and standards that insure safety in conjunction with growth and prosperity of our industry.

For more information about the association or becoming a member either write, call or visit our website.

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