

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

**2002 NEW YORK STATE
RESIDENTIAL 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.

This document is provided electronically at no cost to those who wish to print it in whole from www.stairways.org. It is not to be copied or used in part or in any other publication. Printed copies are available to SMA members for the cost of shipping.

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.

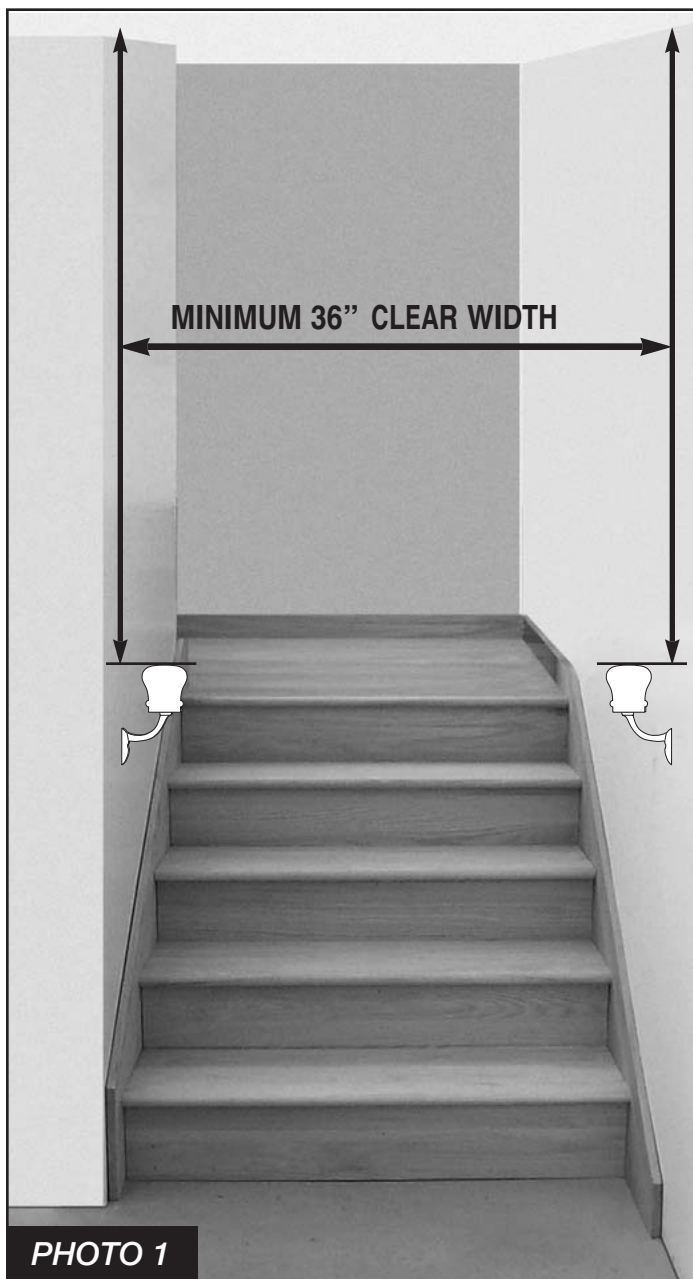
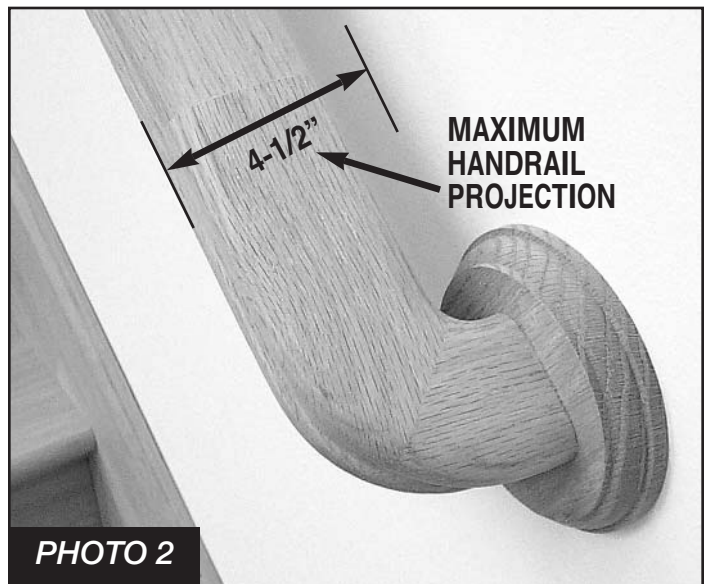
SECTION R314 STAIRWAYS

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.

See **PHOTO 18 PAGE 7.**



R314.2 Treads and risers.

NY The maximum riser height shall be $8\frac{1}{4}$ inches (209 mm) and the minimum tread depth shall be 9 inches (229 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 $\frac{3}{8}$ inch (9.5 mm). **PHOTO 7.** The greatest tread depth within any flight of stairs shall not exceed the smallest by more than $\frac{3}{8}$ inch (9.5 mm). **PHOTO 8.**

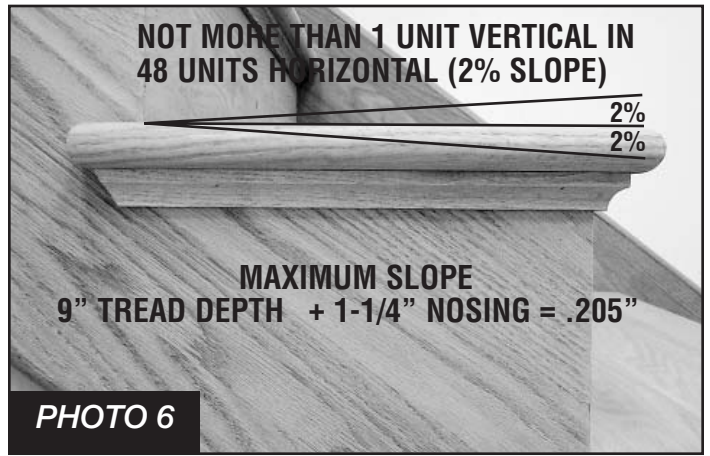


PHOTO 6

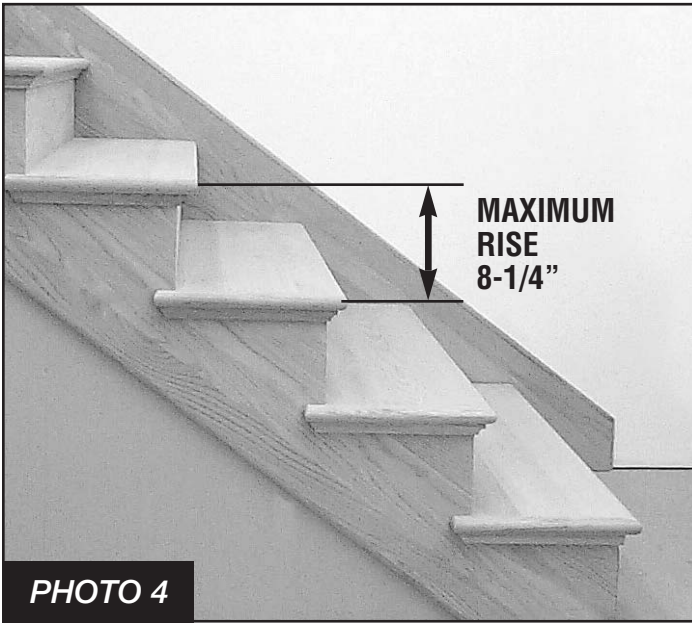


PHOTO 4

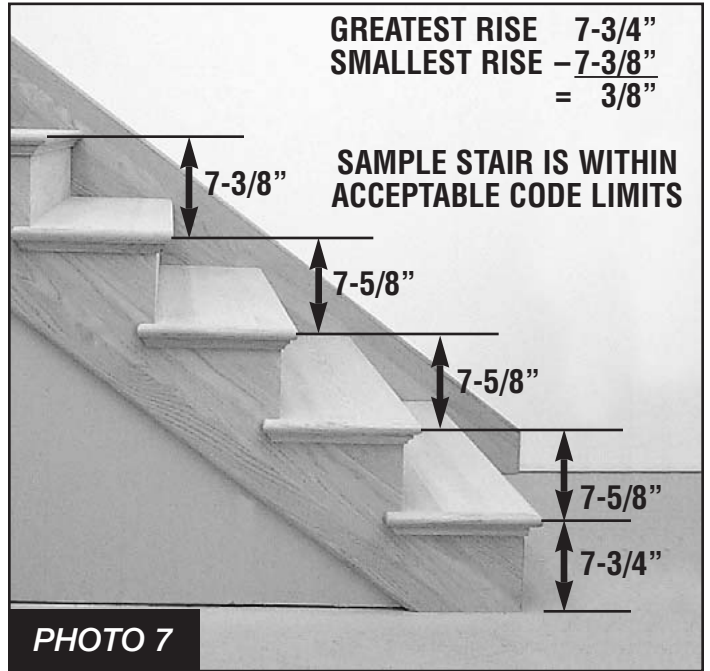


PHOTO 7

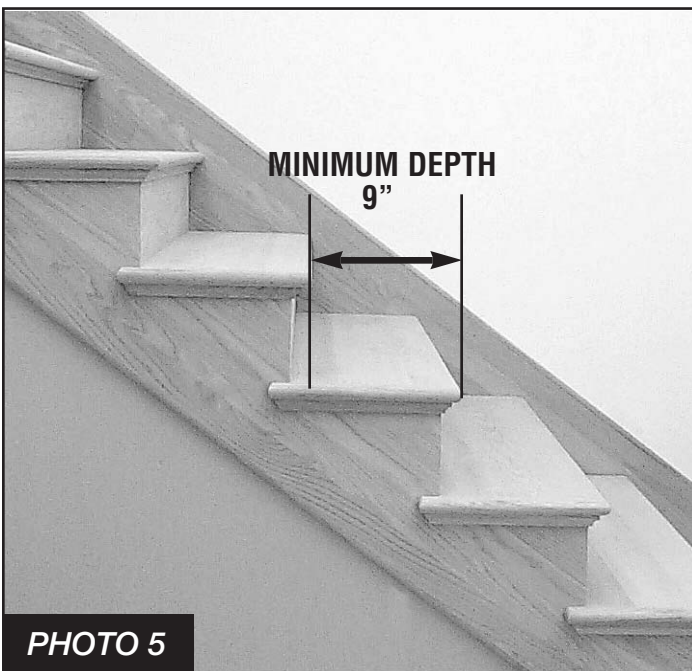


PHOTO 5

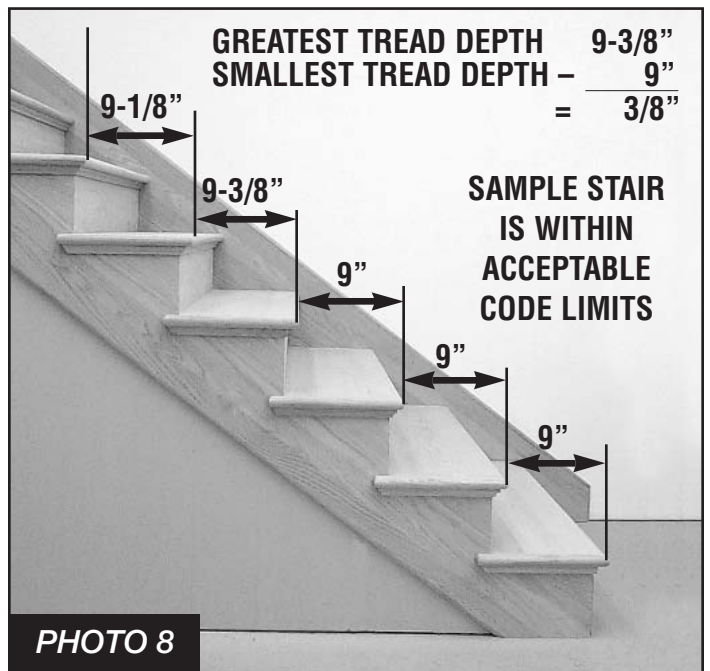


PHOTO 8

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.**

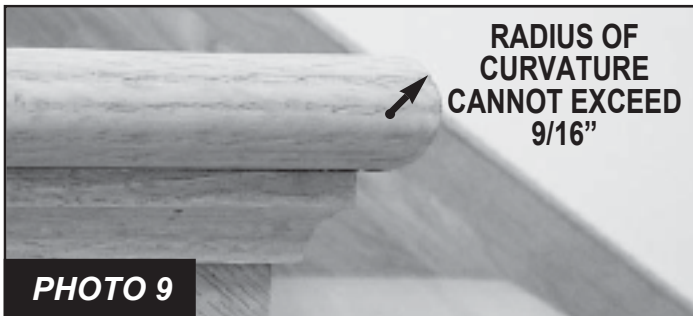


PHOTO 9

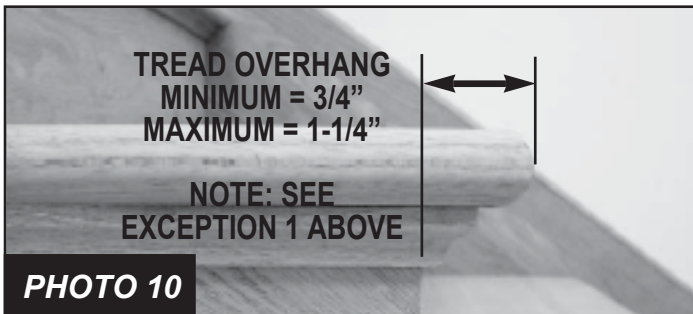


PHOTO 10

NOTE: SEE EXCEPTION 1 ABOVE



PHOTO 11

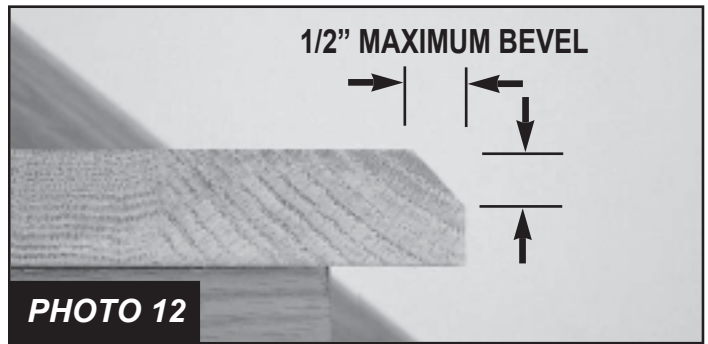


PHOTO 12

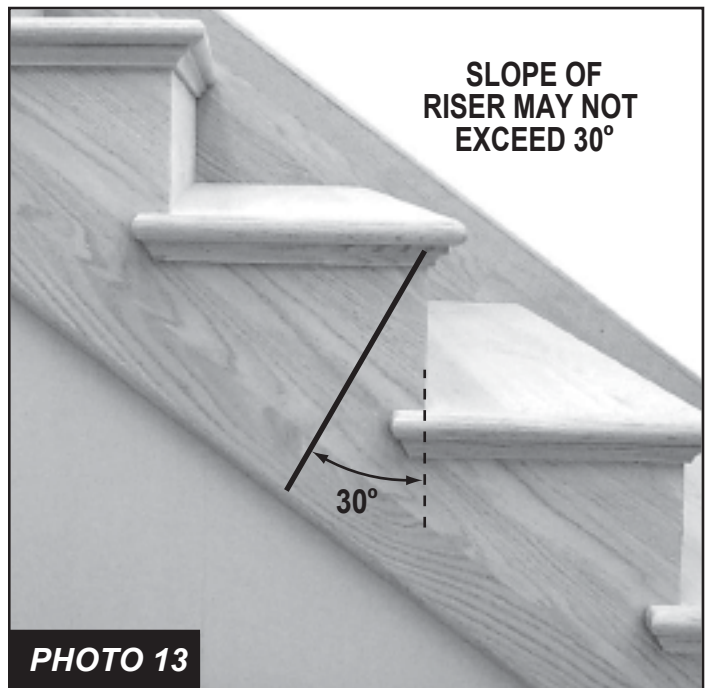


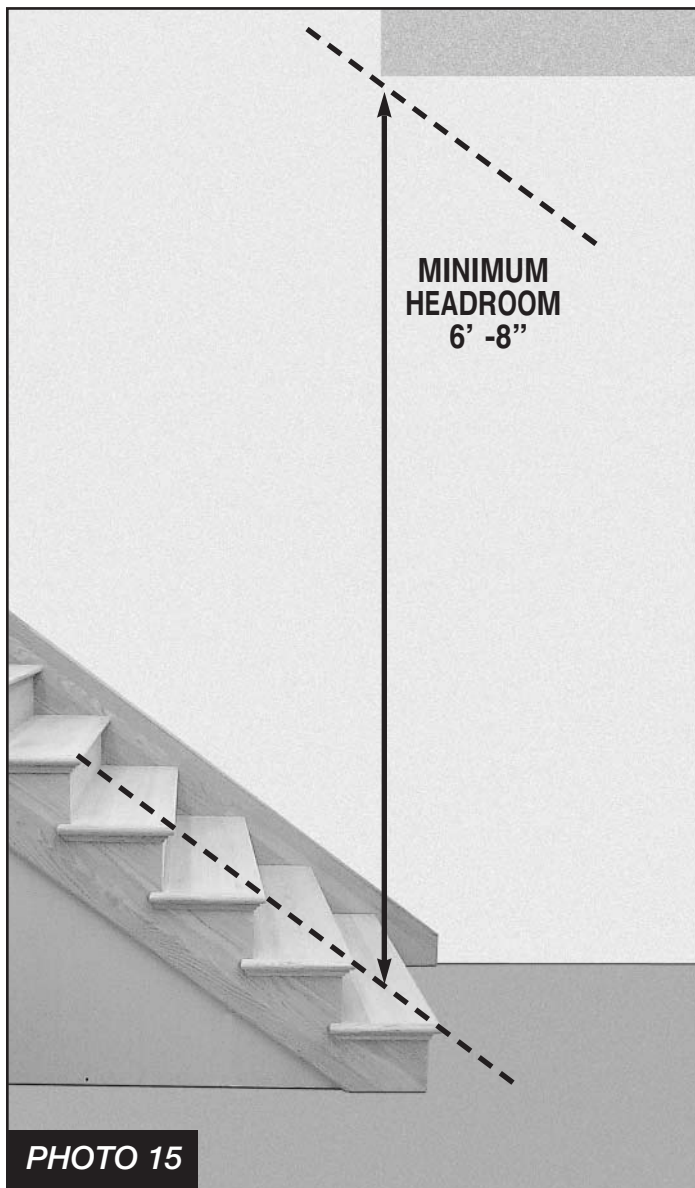
PHOTO 13



PHOTO 14

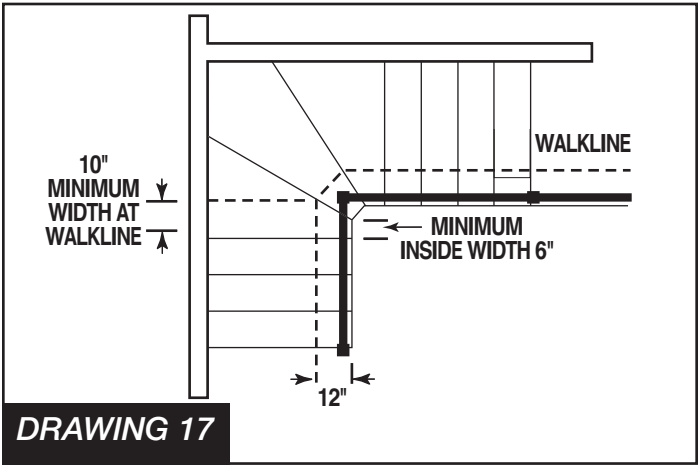
R314.3 Headroom.

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**.

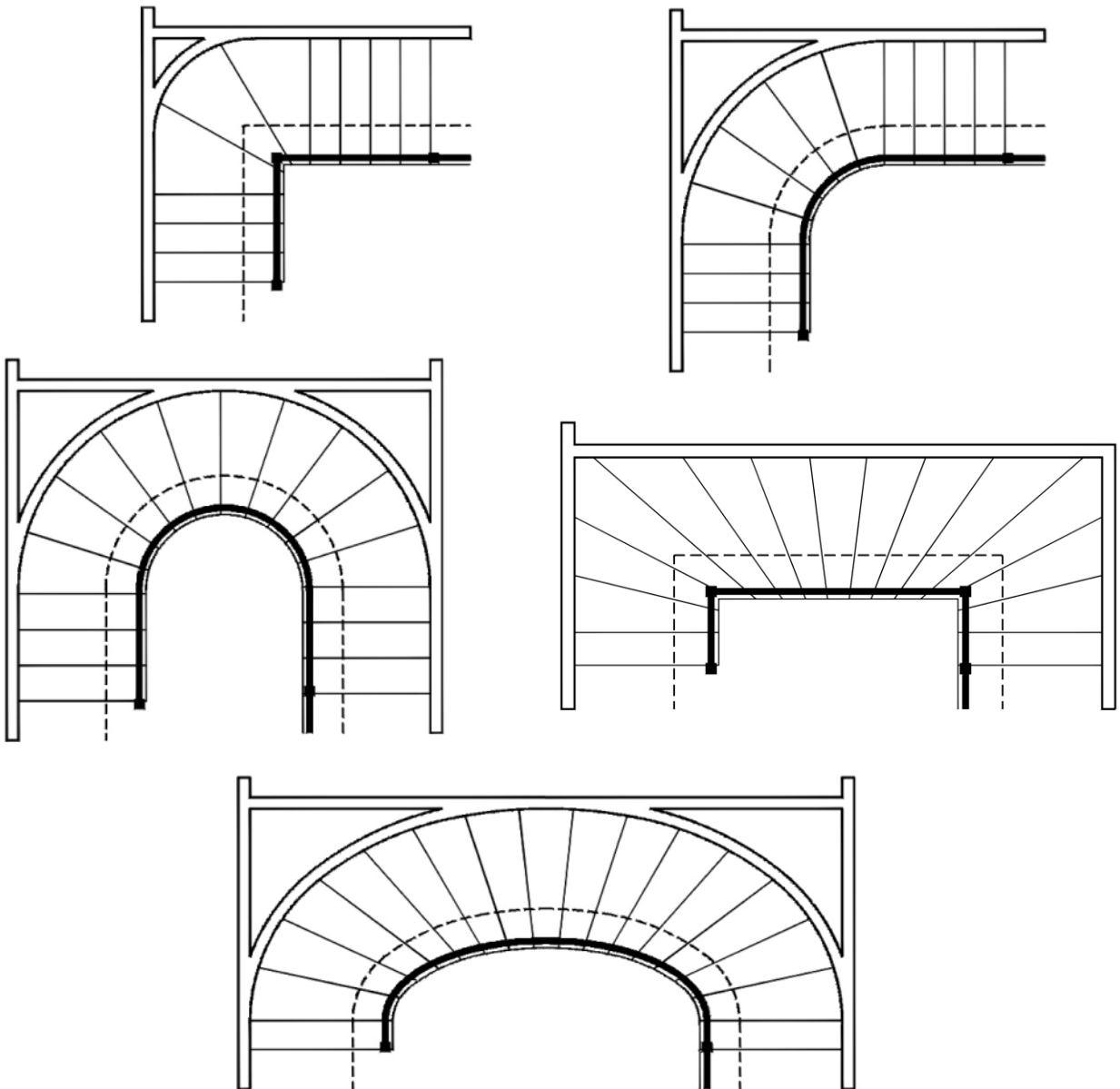


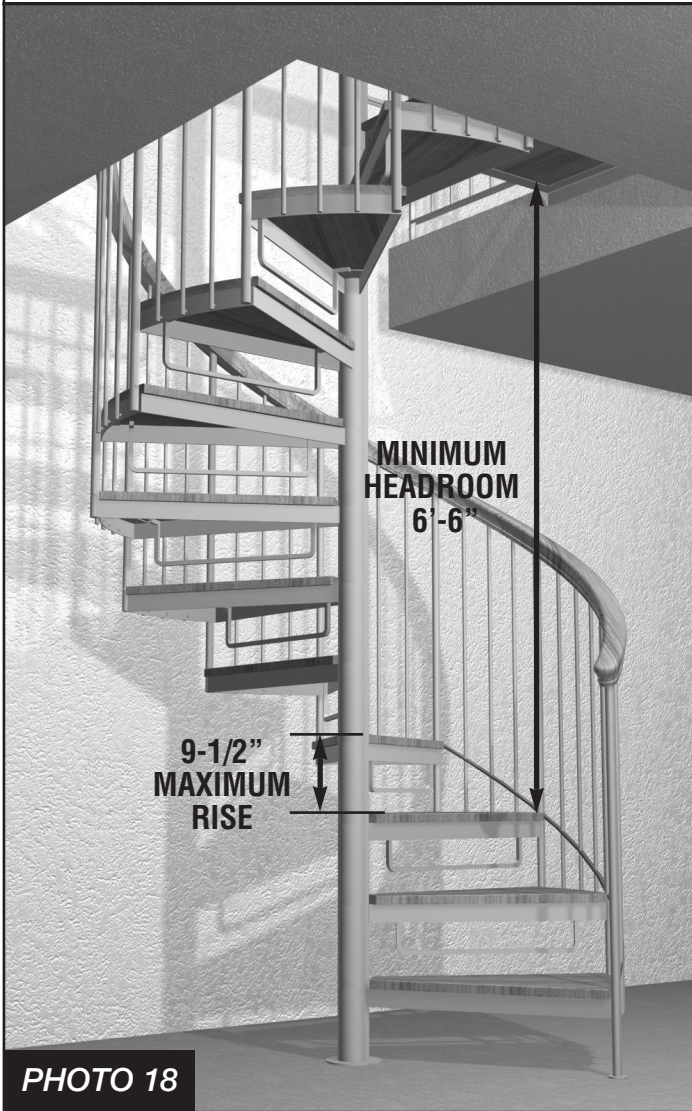
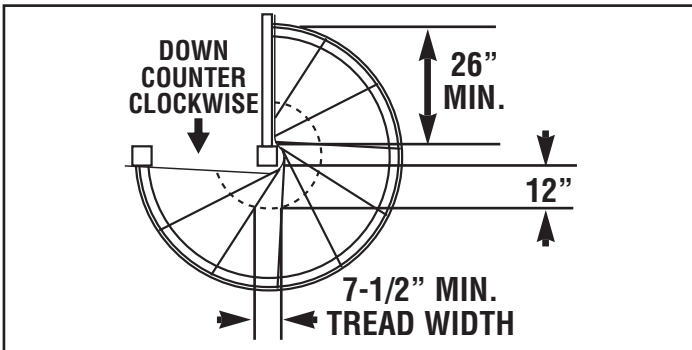
R314.4 Winders.

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





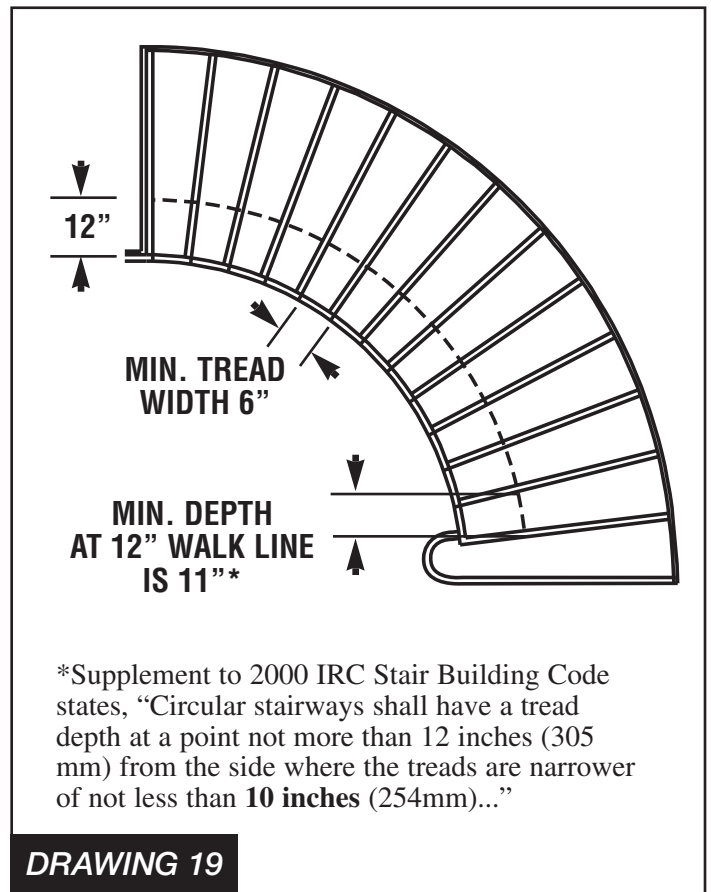
R314.5 Spiral Stairs.

Spiral stairways are permitted for interior use as a component of the means of egress from a habitable room, a basement or an attic, provided the minimum tread width shall be 26 inches (660 mm) with each tread having a 7-1/2 inch (190 mm) minimum tread depth 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. A spiral stair is not permitted to be the only means of egress from a story of a building. **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 R314.2.

DRAWING 19.



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-inch (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.

SECTION R315 HANDRAILS

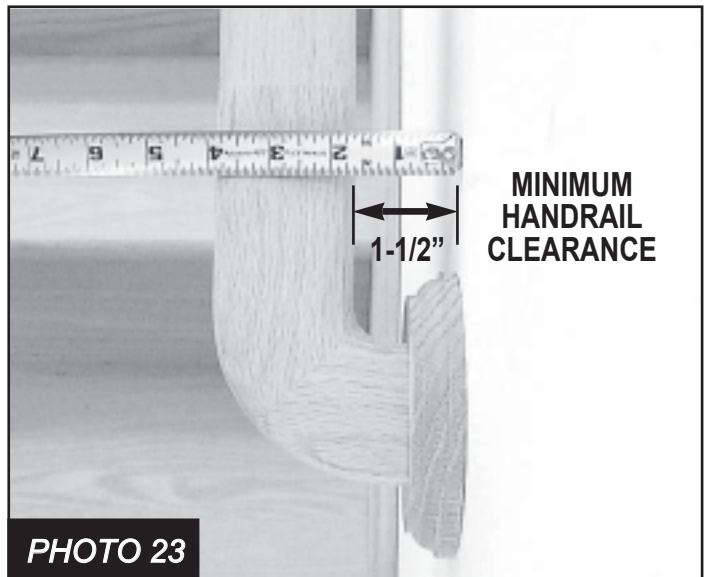
R315.1 Handrails.

Handrails shall be provided on at least one side of each stairway with two or more risers. Handrail height, measured above stair tread nosings, shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm).

PHOTO 20. All required handrails shall be continuous the full length of the stairs 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 1-1/2 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 or starting easing shall be allowed over the lowest tread. **PHOTO 25.**



HANDRAIL MAY BE INTERRUPTED BY A NEWEL

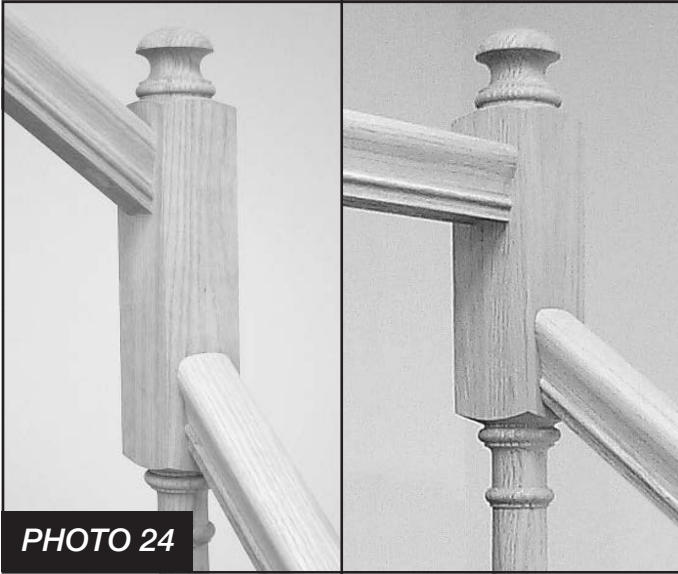


PHOTO 24

R315.2 Handrail grip size.

All required handrails shall be of one of the following types or provide equivalent graspability.

TYPE I.

Handrails with a circular cross section shall have an outside diameter of at least 1-1/4 inches (32 mm) and not greater than 2 inches (51 mm). **PHOTO 26.** If the handrail is not circular it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than 6-1/4 inches (160 mm) with a maximum cross section dimension of 2-1/4 inches (57 mm). **PHOTO 27.**

VOLUTES, TURNOUTS AND STARTING EASINGS ARE ALLOWED OVER THE LOWEST TREAD

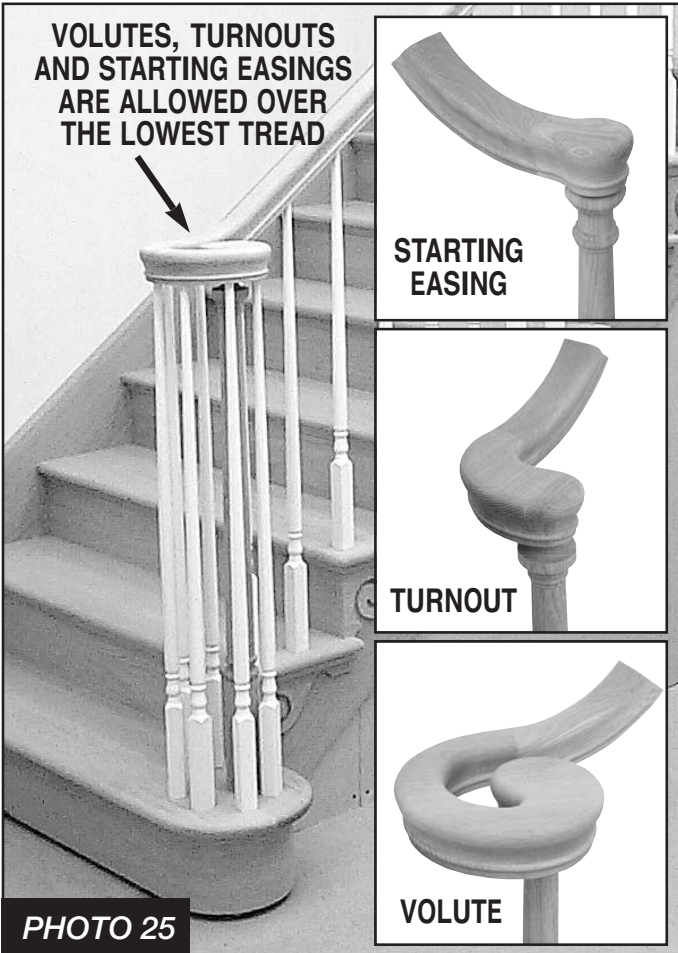


PHOTO 25

STARTING EASING

TURNOUT

VOLUTE

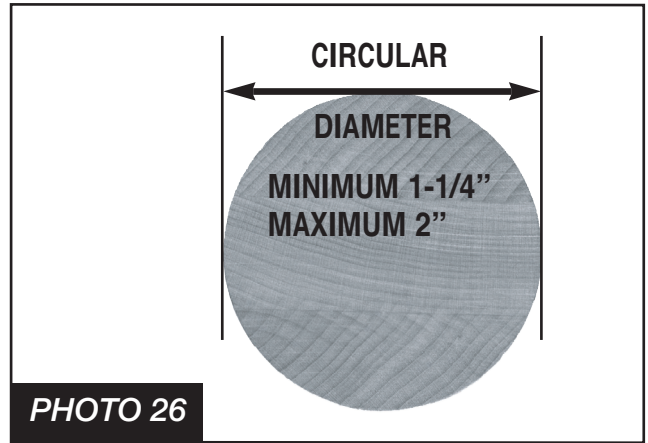


PHOTO 26

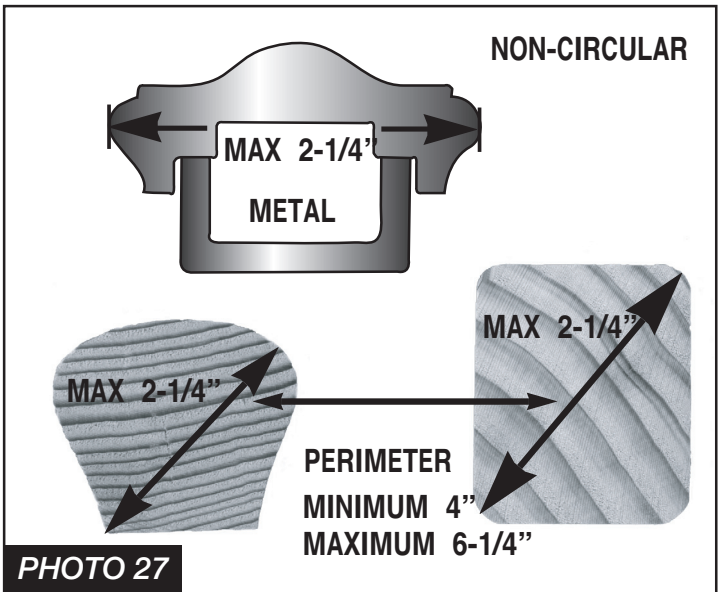
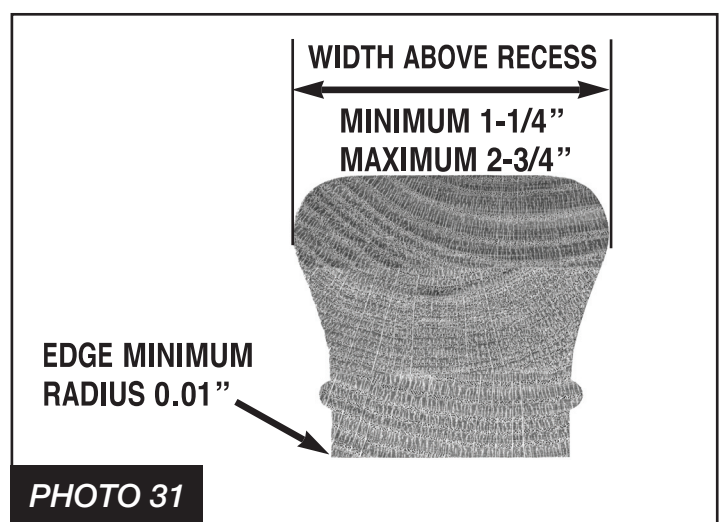
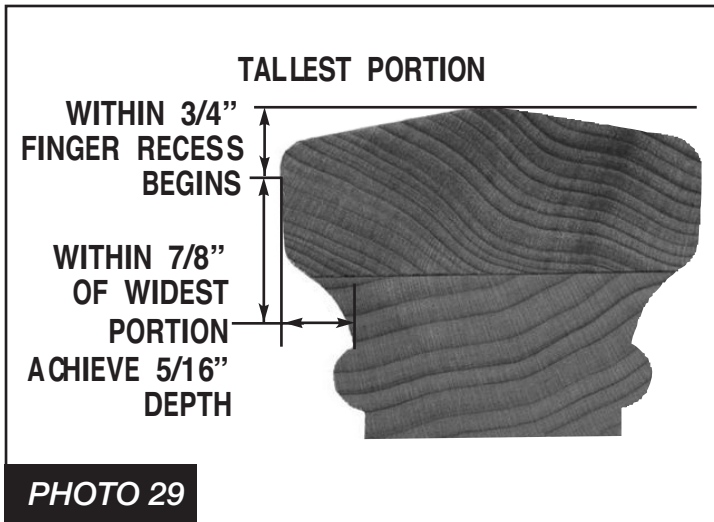
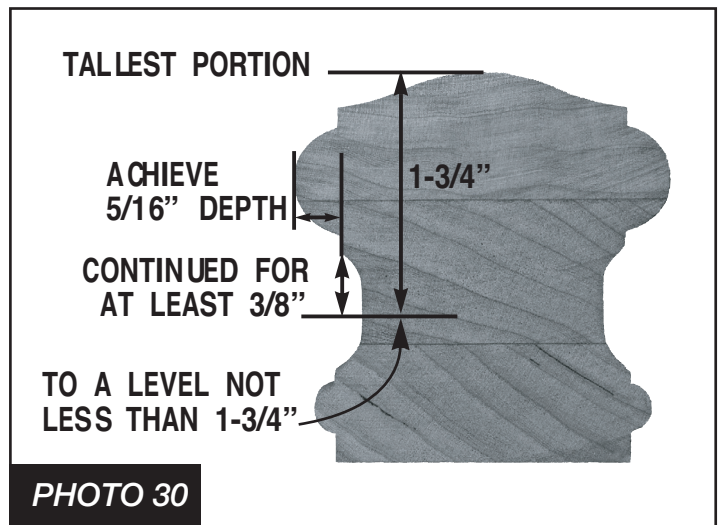
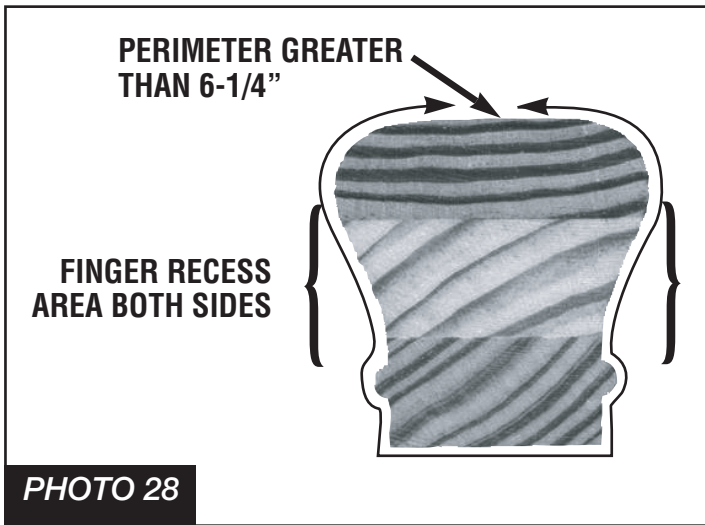


PHOTO 27

TYPE II.

Handrails with a perimeter greater than 6-1/4 inches (160 mm) shall provide a graspable finger recess area on both sides of the profile. **PHOTO 28.** The finger recess shall begin within a distance of 3/4 inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inch (8 mm) within 7/8 inch (22 mm) below the widest portion of the profile. **PHOTO 29.** This required depth shall continue for at least 3/8 inch (10 mm) to a level that is not less than 1-3/4 inches (45 mm) below the tallest portion of the profile. **PHOTO 30.** The minimum width of the handrail above the recess shall be 1-1/4 inches (32 mm) to a maximum of 2-3/4 inches (70 mm). **PHOTO 31.** Edges shall have a minimum radius of 0.01 inch (0.25 mm). **PHOTO 31.**



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 32.

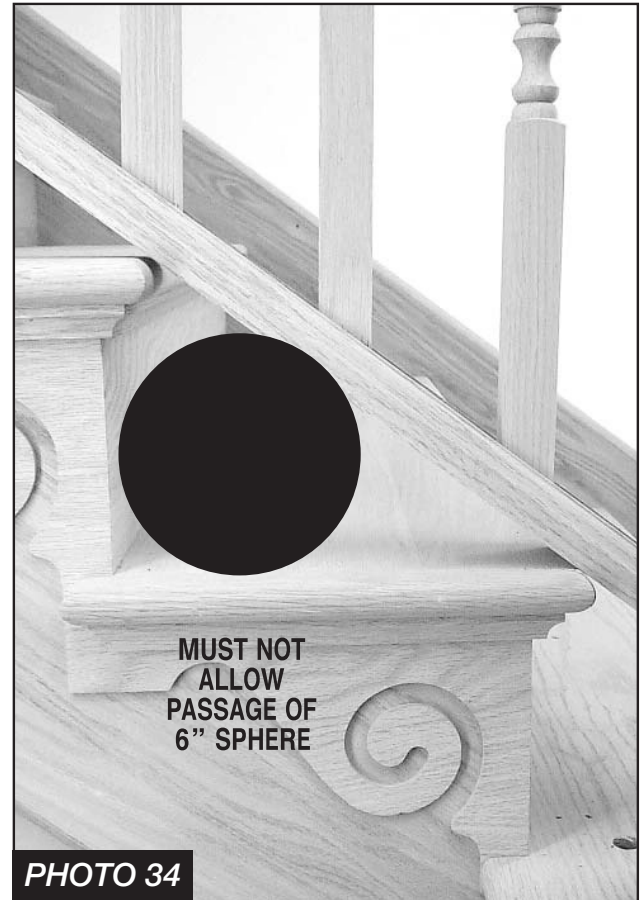
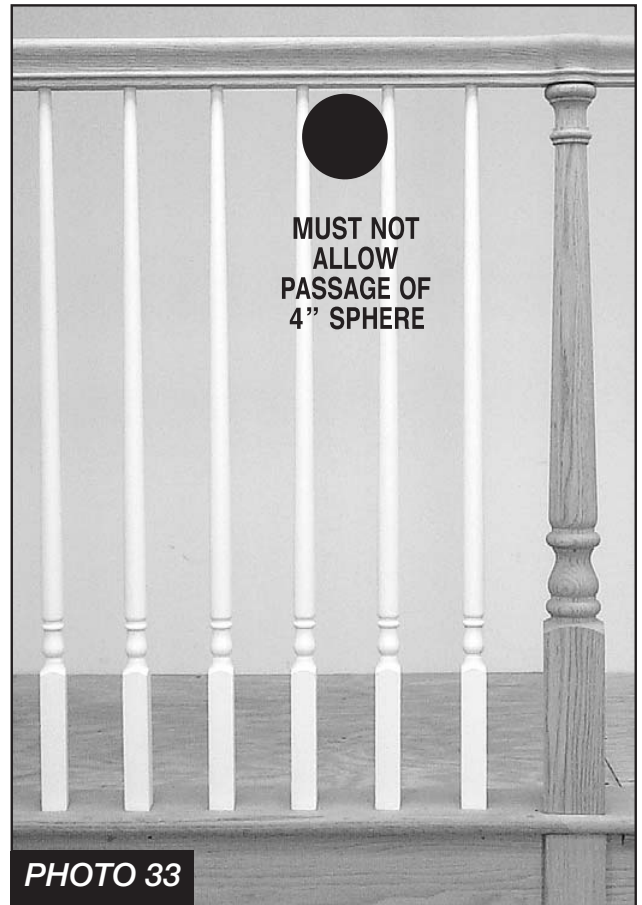


R316.2 Guard opening limitations.

Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures that do not allow passage of a sphere 4 inches (102 mm) or more in diameter. PHOTO 33.

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 34.



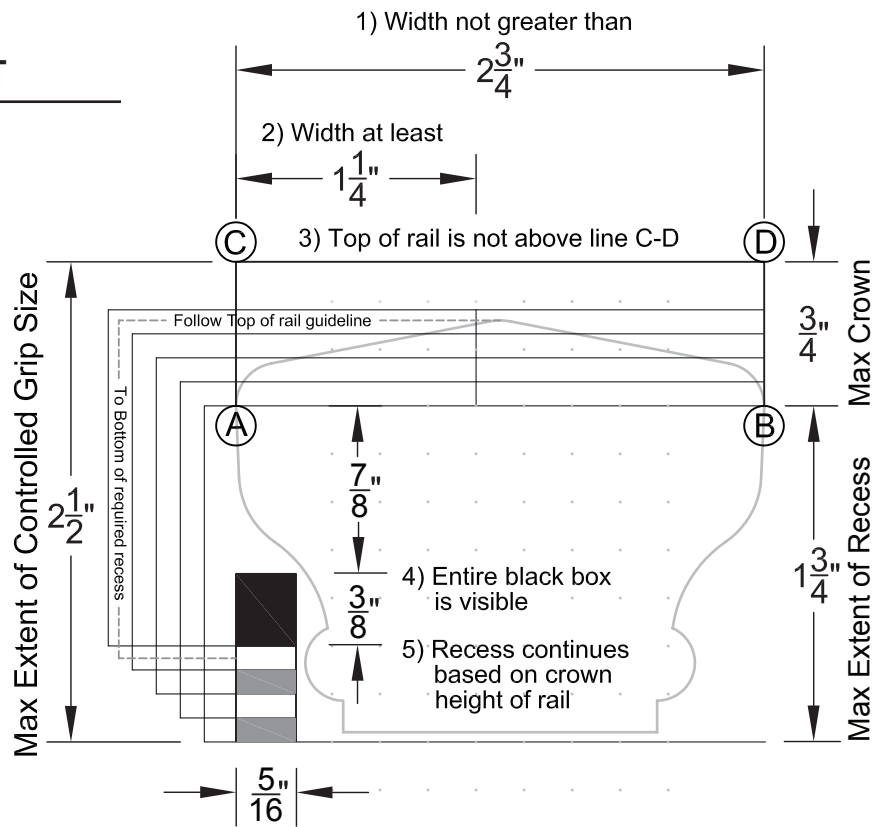
FULL SCALE TYPE II RAIL TEST

Instructions:

Position rail section with widest point of grip at line AB and left edge touching line AC. Keeping horizontal axis of rail parallel to line AB.

With the rail in position, it must pass tests 1) thru 5) to meet the **R315.2 Type II Handrail Grip Size requirements.**

If profile is asymmetrical both sides must pass.



Reproduction check: solid line measures 2.75 in.

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.

The Stairway Manufacturers' Association

175 State Road East

Westminster, MA 01473

Phone Toll Free: (877)-500-5759

Fax: (978) 874-9946

Website: www.stairways.org