

The Side-by-Side Comparison

Photo by Bob Thomas

Stairway

By BRUCE BARKER, ASHI Certified Inspector

Falls involving stairways cause many injuries every year. You don't want to be the inspector who failed to call a stairway deficiency.

ONCE AGAIN, The Word invites you to travel into the dark realm of terms that are often misused or misunderstood in home inspection reports. The Word hopes you will find this trip informative and maybe a little entertaining.

The Word's term today is stairway. The Word finds this term interesting because stairways and their related components are one of the most dangerous systems we inspect. Falls involving stairways cause many injuries every year. You don't want to be the inspector who failed to call a stairway deficiency.

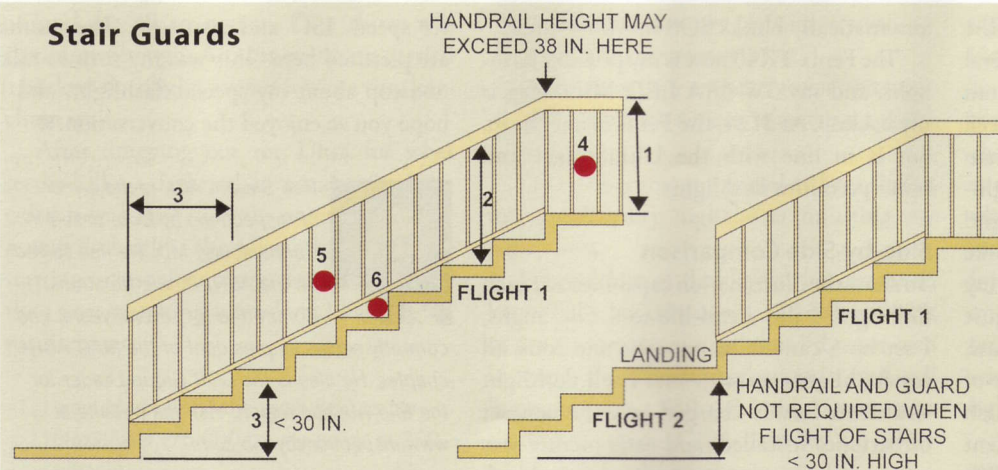
The following standards are based on the 2009 International Residential Code (IRC). Stairways built using legacy codes need not comply with these standards; however, ASHI Standards of Practice (2.2.C.1) require you to report stairways that you believe are unsafe. Compliance with legacy codes does not excuse conditions that you believe are unsafe.

STAIRWAY PARTS: A stairway consists of at least two landings (at the top and the bottom), at least two risers and at least one tread. A flight of stairs includes two landings and the treads between them. A stairway with two landings is one flight. A stairway with three landings is two flights. This definition is important because riser and tread height difference requirements are based on a flight of stairs, not on all risers and treads in a stairway.

Every stairway with four or more risers must have a handrail on at least one side. Stairways with open sides that are more than 30 inches above the surrounding area must have a guard on each open side. The guard may include the handrail, in which case it becomes what often is called a guardrail. The guard also may be a full or partial height wall.

Standards for stairways and their handrails and guards are the same for interior

Stair Guards



1. Guard height ≥ 36 in.
2. Stair guard height ≥ 34 in. and ≤ 38 in.
3. Stair guard continues for stairs < 30 in. above floor because stairs are one flight with no landing.
4. Guard openings must not pass 4 in. diameter sphere.
5. Stair guard opening must not pass $4\frac{3}{8}$ in. diameter sphere.
6. Opening under guard bottom rail must not pass 6 in. diameter sphere.

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and exterior stairways. Stairways serving stoops and decks are no different from interior stairways. The following standards apply to straight stairways. Winder stairways have different tread standards, but all other standards are the same as for straight stairways. Spiral stairway standards are completely different, and we will not discuss them here.

STAIRWAY WIDTH and HEIGHT: Stairways should be at least 36 inches wide, measured above the handrail, and at least 31½ inches wide at a single handrail. Stairway height should be at least 80 inches, measured to a sloping line connecting the leading edges of the treads. Look for height problems at the top and bottom landings.

LANDINGS: Each landing should be as wide as the stairway it serves. This makes the minimum landing width 36 inches because the minimum stairway width is 36 inches. The minimum landing depth is 36 inches measured in the direction of travel. Measure between the leading edge of the last tread and the end of the landing.

A landing is required at the top and bottom of most interior and exterior stairways. An intermediate landing is required if the stairway exceeds 12 feet of vertical rise. A separate landing is not required at the top of an interior stairway that terminates directly into a door if the door does not swing over the stairs. Interior stairways include those in a garage. A landing is not required at the exterior side of an exterior door if there are two or fewer exterior risers and if the door does not swing over the exterior risers.

RISERS: Riser height should not be more than 7¾ inches. Look for problems at landings and when different floor covering materials cover adjacent treads or treads and landings. The maximum height difference between all risers is ¾ inch in each flight of stairs.

Risers may be open or closed. If open, the opening must be restricted so that it will not pass a 4-inch diameter sphere

TREADS: Treads should be at least 10 inches deep. Measure between the leading edges of adjacent treads. The maximum depth dif-

ference between all treads is ¾ inch in each flight of stairs.

The nosing is the part of the tread that projects beyond a solid riser. A nosing between ¾ and 1¼ inches deep is required on treads less than 11 inches deep.

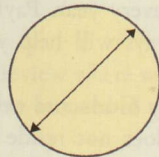
HANDRAILS: Handrail height should be between 34 and 38 inches above the treads. The handrail should be continuous between the top and bottom risers of each flight of

stairs. It should terminate in a grasping surface such as a return or a newel post.

Handrails should have a shape and dimension that allows grasping. A circular handrail diameter should be between 1¼ and 2 inches. A non-circular handrail should have a perimeter dimension between 4 and 6¼ inches, with a cross-section dimension not more than 2¼ inches. The traditional 2x4 cap on a deck stairway does not comply with this requirement. ▶▶

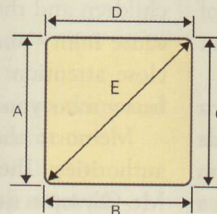
Handrail Shapes

TYPE 1
CIRCULAR HANDRAIL



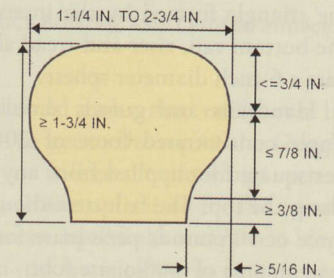
DIAMETER BETWEEN
1 1/4 IN. AND 2 IN.

TYPE 1
NON-CIRCULAR HANDRAIL



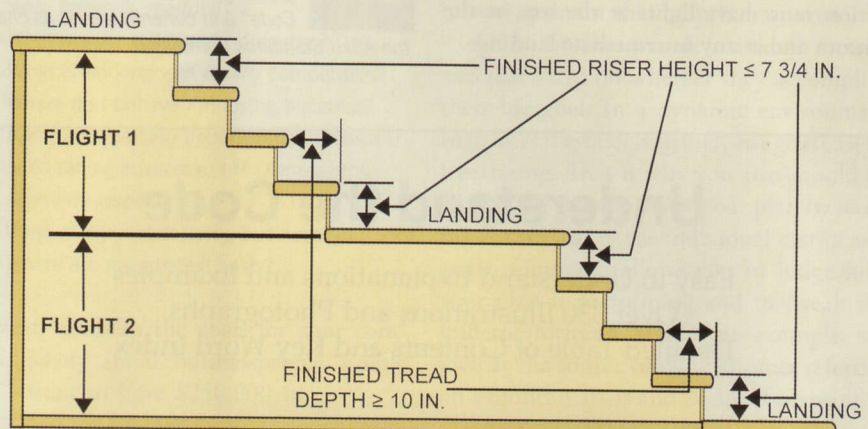
A+B+C+D BETWEEN
4 IN. AND 6 1/4 IN.
E ≤ 2 1/4 IN.

TYPE 2 HANDRAIL
FINGER RECESS ON BOTH SIDES



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Riser and Tread Dimensions



FINISHED DEPTH DIFFERENCE BETWEEN TREADS IN A FLIGHT ≤ 3/8 IN.

FINISHED HEIGHT DIFFERENCE BETWEEN RISERS IN A FLIGHT ≤ 3/8 IN.

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GUARDS: Stairway guard (guardrail) height is the same as for handrails. Open balusters in stairway guards should not pass a 4-3/8-inch diameter sphere. Note that this is different from the 4-inch diameter standard for guards not located on a stairway.

If the stairway guard has a bottom rail, the triangle formed by the intersection of the bottom rail, riser and tread should not pass a 6-inch diameter sphere.

Handrails and guards should resist a single concentrated force of 200 pounds per square foot applied from any direction along the top. The balusters should resist a force of 50 pounds per square foot applied over an area of one square foot.

LIGHTING: Stairway lighting is important for safety and is a frequent stairway deficiency. Lights may be located at each landing or at each flight of stairs. Remember that landings include the top and bottom landings, so stairways lit using the landings option must have lights at the top, at the bottom and at any intermediate landings.

Stairways with six or more risers should have light switches at the top and bottom landings. Stairways with fewer than six risers may have one switch at either landing.

THE BOTTOM LINE

Stairways are dangerous, particularly for children and the elderly. Falls on stairways cause injury and death every year. Paying close attention to stairways will help you better serve your client.

Memo to the stairway Gods and other authorities: The Word does not reside on Mt. Olympus (just at its base) and welcomes other viewpoints. Send your lightning bolts or e-mails to inspectorbruce@cox.net. The thoughts contained herein are those of The Word. They are not ASHI standards or policies. ■



Bruce Barker, Dream Home Consultants, Peoria, Ariz., has been building and inspecting homes since 1987. He is the author of "Everybody's Building Code" and currently serves as chair of the ASHI Standards Committee.

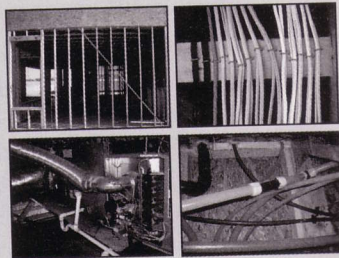
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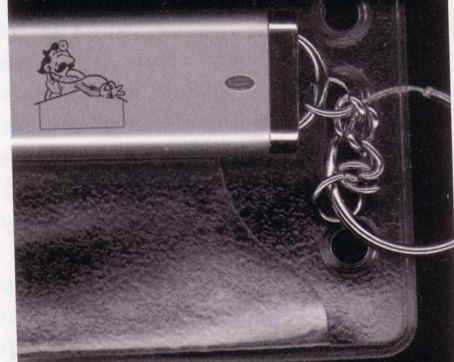
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