

Safe Stairs ● ● ● **General Information**

BLACKSBURG, VIRGINIA

Stairs and their associated components are the major contributors to accidents in the home, according to all surveys and research data compiled on the subject to date. Although many home stair accidents are the result of human error, including poor judgement, and impulsive action, poor design and construction characteristics also contribute to the comparatively high incidence of stair-related accidents. For example, would the impatient individual have fallen if the stair treads had been wider or the stairs not so steep? Could this individual have successfully arrested his fall had the handrail been more conveniently located and more substantially secured? (see Chart).

The primary function of stairs is to provide a means for moving from one elevation to another. The safety and

ease of negotiation of stairs for persons of all physiological capabilities too often give way to considerations of rapid construction, low cost, meeting minimum building code requirements, and particularly, the conservation of floor space.

Intensive engineering and human factors research indicate the true complexity of interrelated factors which may contribute to the design and construction of safer stairs. These studies have led to the formulation of recommendations and alternatives which will improve safety features of stairs for interior and exterior residential use. This manual presents these recommendations and alternatives as safety guidelines to be used in the design, fabrication, and installation of residential stairs.

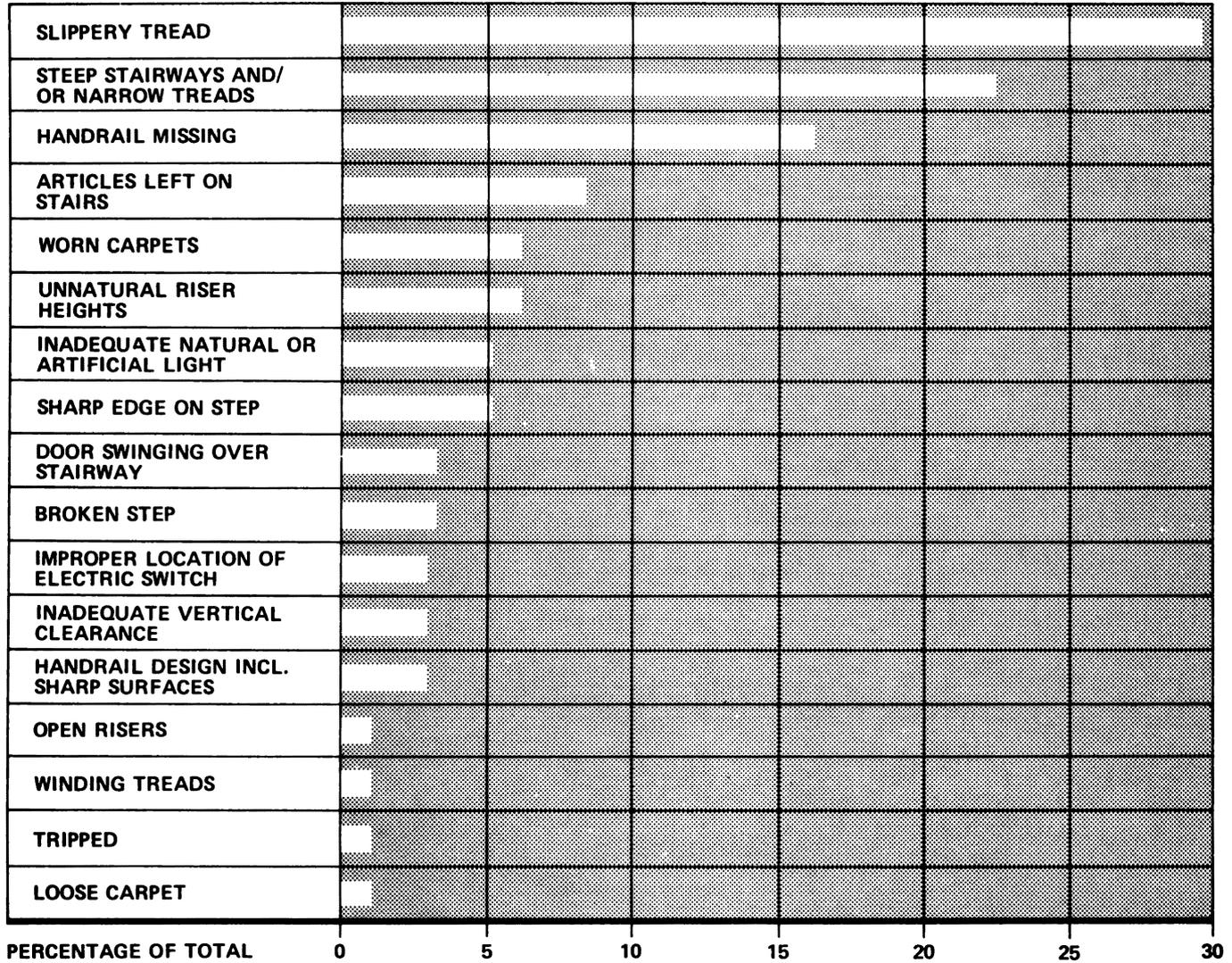


Safety hazards in stairs may result from

- slippery treads
- improper dimensioning or installation of run, rise and/or tread
- small elevation changes
- lack of or improperly designed handrails and railings
- improperly designed ramps
- lack of improperly designed landings, platforms and porches

- lack of improperly designed railings for balconies, porches, stair landings and platforms
- improperly designed winders
- improperly placed stairs
- open risers
- improperly designed interior service stairs
- too-narrow stairs
- improperly lighted stairs
- presence of extraneous objects on stairs

**CAUSES IDENTIFIED WITH STAIR ACCIDENTS, EXPRESSED AS
A PERCENT OF ALL STAIR ACCIDENTS REPORTED**



Source: Based on 1969 Survey, Department of Housing and Urban Development

Before building, consult the BOCA code.

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Terminology

Stair - A series of steps, or flights of steps connected by landings, for passing from one level to another.

Stair Case - Stair; also sometimes used to designate the entire assemblage, including railing, balusters, etc.

Stairway - Often used as synonymous with stairwell and/or stair.

Stairwell - The space in the building occupied by the stair.

Flight - A series of steps without an intervening platform.

Step - A single unit of level change in a stair consisting of one rise and one run.

Landing - The floor at the top (or bottom) of a stair, or a platform between flights of a stair.

Starting Step - The bottom step of a stair.

Rise - The vertical distance from the top of one tread to the top of the next tread.

Run - The net horizontal dimension, from riser to riser, of an individual step, i.e., tread less the nosing or overhang. (See also Total Run.)

Total Run - The horizontal distance covered by a flight of steps including intermediate platforms.

Handrail - An inclined structural member paralleling the slope of the stair, intended for grasping by the hand during ascent and descent of the stair.

Baluster - A small spindle which, in series, supports a handrail. Balusters are fastened a) between the handrail and the treads, or b) between the handrail and a bottom rail.

Baluster Railing - A railing which is formed by a handrail supported by balusters.

Balustrade - An assembly of balusters with attached handrail and supporting rail, if any.

Newel or Newel Post - A main post supporting the handrail of a stair at the top, bottom, or on a landing.

Tread - The horizontal top surface of a step (upon which the foot is placed), or the member forming the surface.

Nosing - The projection of the tread beyond the face of the riser.

Overhang - The projection of the tread beyond the back edge of the tread below.

Riser - The vertical face of a step, or the member forming this surface.

Open Riser - A step without a riser member.

Floor-to-Floor Height - The total distance from finish floor to finish floor.

Headroom - The vertical distance from the underside of another flight of stairs or a ceiling above a stair to an inclined line that is tangent to the nosings of the steps of the stair.

Slope - The inclined plane of the stairs established by the relationship of the rise to run of the steps of the stair.

Soffit - The finished underside of the stair.

Railing - A barrier at one or both sides of the stair, constructed so as to prevent individuals from falling off the side of the stair.

Closed Railing - A railing which is formed by a short wall extending above the stair.