

The Ups and Downs of Stairs Part One -- Codes & Function

Recently, I met with a young couple in their small, two bedroom, one bath home. They had prepared well, with notes and even rough drawings for a second-story addition. After explaining their plan, they peppered me with questions on structural issues. Looking over their sketches, I zeroed in immediately on their proposed stairway: "I don't think the structure is the biggest issue at this point in your planning. It's actually the stair." They both looked at me blankly. "Stair! We have a stair planned. It's right here!"

I tried to be as diplomatic as possible: "I think you've been optimistic on how much space the stair will take." In their plan, they had written the word "stair" over the location of an unused closet. At best, it was less than one-third of the space actually required! In a two-story house, the stair is a key design element. Picture it as the center of a pinwheel with many other design issues revolving around it. Let's take a look at some of the complexities of stairs.

The Code

The building code outlines requirements that make a stair functionally workable. The safety aspect of stair design is high priority, since stairs are the site of a large proportion of home accidents. In the current building code, a home stair must be at least 3 feet wide, have treads of at least 9 inches long, and risers no higher than 8 inches.

Only a few years ago, codes allowed narrower stairs, some as little as 30 inches wide. As you can imagine, these are not comfortable stairs to use, and stairs can be a stumbling block to future expansion plans if they don't meet current code. Another code requirement for stairs is the vertical clearance above the stair. The latest code increased this clearance from 6 feet, 6 inches, to 6 feet, 9 inches. Design for *minimum* code is generally not a

good idea, since even 6 feet, 9 inches is still not great from a design standpoint.

We've touched on the code issues that apply to a simple, straight-run stair--one that runs up and down without any turns, angles, or twisting. Although this type of stair is efficient from a space use standpoint, it may not be the best choice from an aesthetical or a safety standpoint. We have had many clients who have requested "L" or "U" shaped stairs with landings because the landing can serve to break the fall of a child. Code *requires* landings only when a stair's overall height is over twelve feet! Landings, when provided, must be at least as deep as the stair is wide, with a minimum of 36 inches.

Many older homes have landings that are divided on a diagonal into two steps. This is not permitted under current code, since it is classified as a "winder." A "winder" is a step that tapers from one side to another. The code basically says that stair treads can't angle all the way down to a "point."

A set of rules about winders dictate the geometry of stairs that curve or spiral. Although you can buy spiral stairs as small as 3-1/2 feet in diameter, *they don't meet code*. The minimum diameter of a spiral stair to meet code is 5 feet, and even at that diameter, spiral stairs are difficult to negotiate and almost impossible to use for moving furniture.

Sometimes an existing stairway to a basement can interfere with planning a remodel. Occasionally, it makes sense to minimize the amount of space devoted to a stair. After all, you might say, "If we don't use the basement anyway, why should we devote all that valuable square footage to get down there?" In one of our projects, we went so far as to put a hatch in the floor that integrated in with the finished flooring and opened to reveal a

ladder that accessed the basement. The basement was only a place for mechanical equipment, not unlike the crawl space or attic of a typical house. Surprisingly, there is *no middle ground* between a ladder and a code complying stair. A stair that is steeper than code is just not permitted! The likelihood of accidents greatly increase outside of code parameters. Codes can lead to some surprising interpretations, however. For example, in at least two of our projects a City inspector *insisted* on the code required head room for the complete run of the stairs down to the basement, *even though the basement itself did not have code complying head room*. If you don't touch an existing stair, however, you probably won't be required to modify it to meet current code unless you are increasing the number of occupants that would use the stair in the event of an emergency.

There are also code requirements for handrails, doors located at the top and bottom of stairs, fire rated construction underneath any stair, a prohibition against any gas burning appliances under stairs, etc., etc. As a footnote, commercial stairs are much more restrictive than residential stairs. For example, current commercial standards call for risers of not more than 7 inches and treads of at least 11 inches.

Although a stair may meet all code requirements, it may not function well, and code compliance certainly doesn't guarantee a beautiful stair. Join me next time when I'll discuss the beauty and function of stairs.

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