

Balustrades

There are two different types of balustrades: the level balustrade at a landing or along an open hallway or game room, and the pitched balustrade that protects the side of the stair. Many stairs have both, and both are opportunities to display some architectural detail while allowing light to filter down the stair.

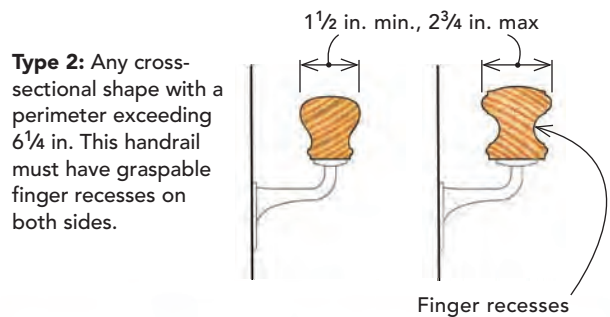
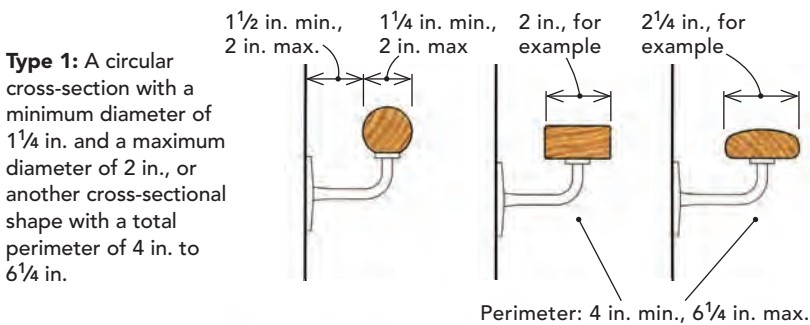
From the designer's perspective, the sloping balustrade is the one that's harder to plan—and no doubt harder to build. The way I see it, if you can solve the geometry, spacing, and proportions of the bal-

ustrade along the rise and run of the stair, then the design for a level balustrade is a piece of cake.

Folks use terms such as *railing* or *guardrail* to mean balustrade, but it's important to know that *handrail* and *balustrade* are two separate things in code parlance. A handrail is the part that you hold onto as you go up a stair. Often it is mounted to the wall with metal brackets. A balustrade is the entire assembly—newels, balusters,

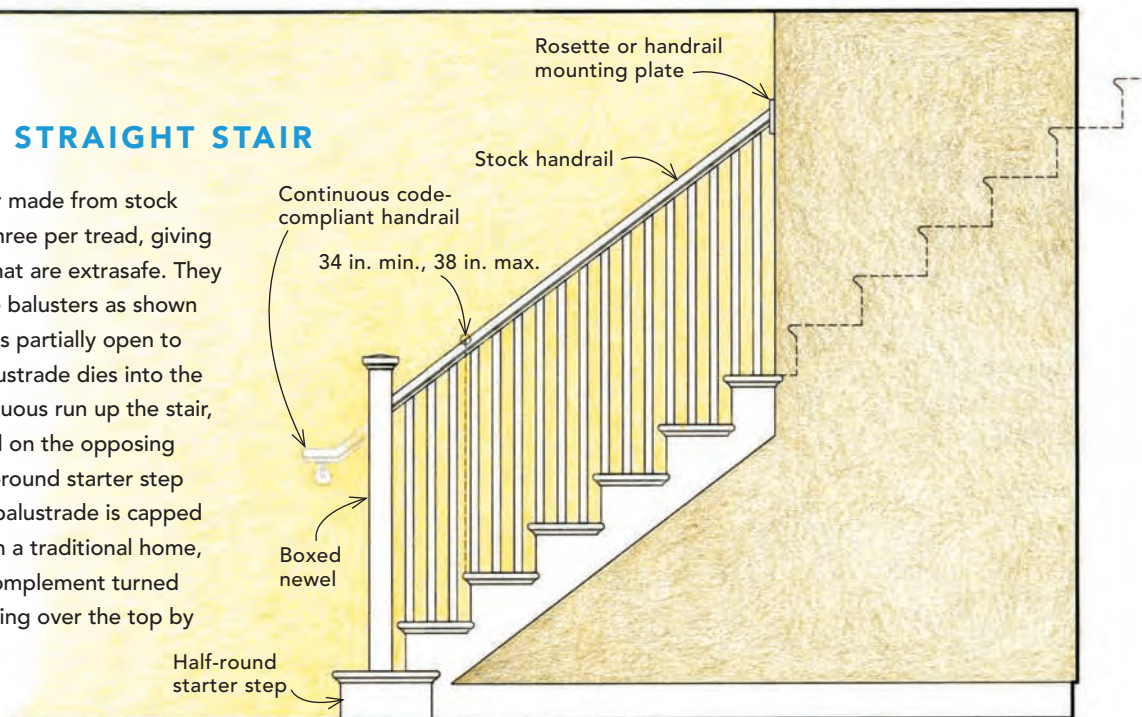
Continued on p. 94

GET A GRIP The IRC groups handrails into "Type 1" and "Type 2." In both cases, the details are all about making the shape easy to grip.



AN OPEN-STRINGER, STRAIGHT STAIR

This balustrade can be custom-built or made from stock stair parts. Slender balusters are set three per tread, giving a dense appearance of narrow gaps that are extrasafe. They can be turned spindles or plain square balusters as shown here. This example shows a stair that is partially open to the room below, so the top of the balustrade dies into the end of a wall. Since this is not a continuous run up the stair, the code-required handrail is mounted on the opposing wall. The newel post is set atop a half-round starter step for a bit of extra design flair, and the balustrade is capped with an off-the-shelf handrail profile. In a traditional home, the newel likely would be turned to complement turned spindles, with the balustrade cap running over the top by way of a volute fitting.



Listen to your passion



Expert, lively
podcasts
devoted to
your craft

FineWoodworking

SHOP TALK LIVESM

Tom McKenna, Mike Pekovich, Matt Kenney and Ben Strano weigh in on reader-submitted topics and talk about their all-time favorite woodworking things.

FineWoodworking.com/shoptalk

FHB
The Fine Homebuilding Podcast

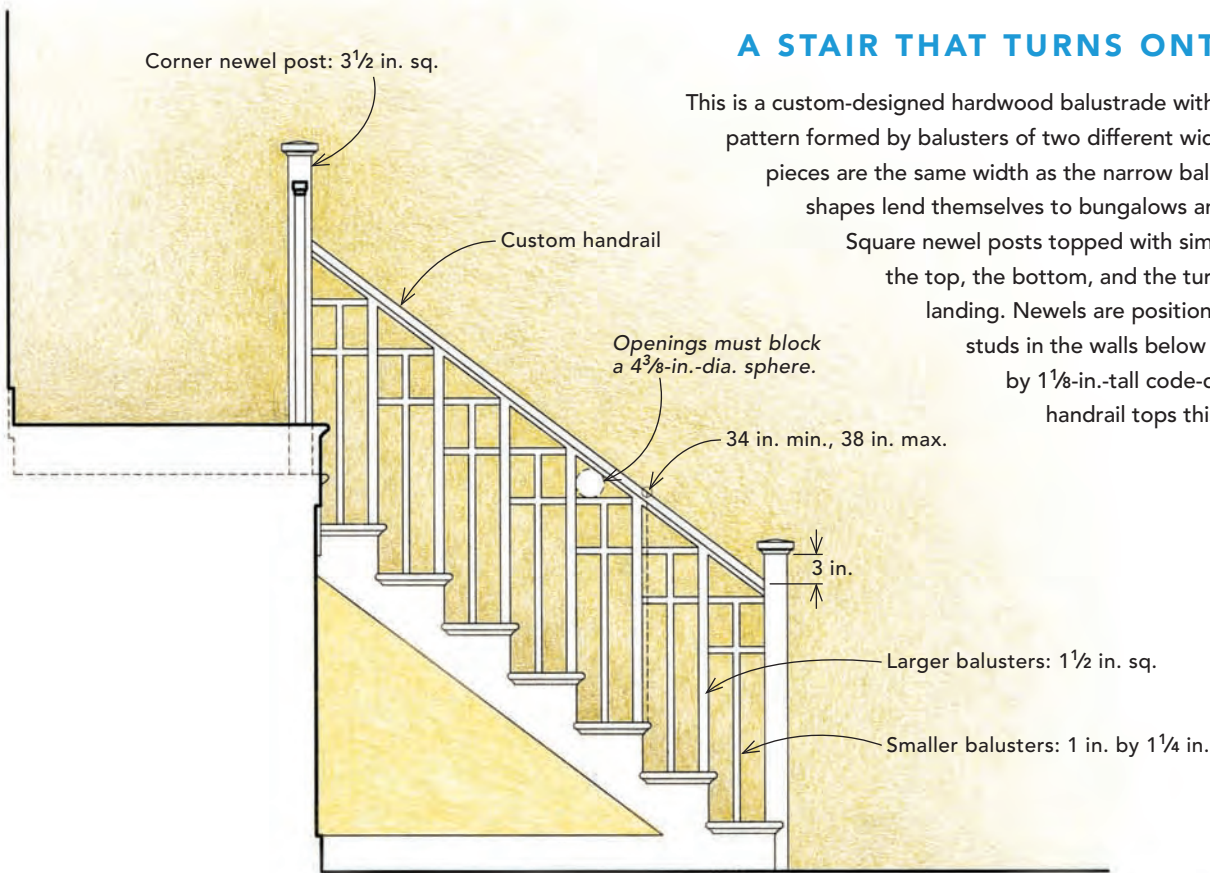
The Fine Homebuilding Podcast digs deep into building topics with Rob Yagid, Brian Pontolilo, Justin Fink, Aaron Fagan, and guest experts.

FineHomebuilding.com/podcast

A STAIR THAT TURNS ONTO A LANDING

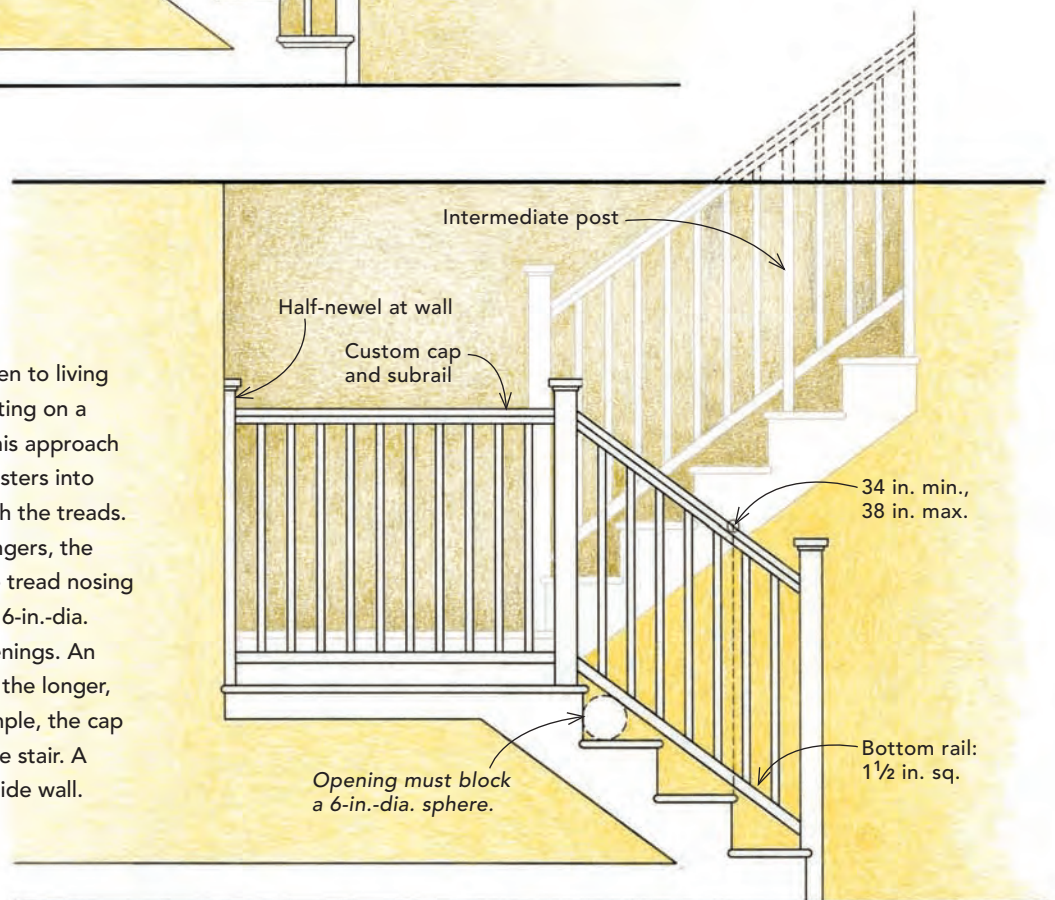
This is a custom-designed hardwood balustrade with a pleasing geometric pattern formed by balusters of two different widths. The horizontal cross pieces are the same width as the narrow balusters. The rectangular shapes lend themselves to bungalows and Craftsman-style homes.

Square newel posts topped with simple cap moldings define the top, the bottom, and the turn in the balustrade at the landing. Newels are positioned to align with the 2x4 studs in the walls below the stair. A 2-in.-wide by 1½-in.-tall code-compliant Type 1 wood handrail tops this balustrade.



AN OPEN-STRINGER, SWITCHBACK STAIR

Designed for a switchback stair that is open to living space, this guardrail features balusters sitting on a bottom rail that follows the stair slope. This approach eliminates the need for doweling the balusters into the treads or for coordinating spacing with the treads. However, because this stair has open stringers, the bottom rail must be located very near the tread nosing in order to meet a code stipulation that a 6-in.-dia. sphere be blocked in these triangular openings. An intermediate post adds extra strength on the longer, second flight of stairs. As in the first example, the cap rail terminates at a wall near the top of the stair. A continuous handrail is mounted on the inside wall.



“This label sealed the deal on our new home.”

NAME: Jesse and Melissa Gallo

THEIR DREAM HOME: Efficient, comfortable, and ENERGY STAR® certified

THEIR SAVINGS: More than \$550 off their energy bills and more than 11,000 lbs. of greenhouse gases each year



EPA's blue ENERGY STAR label on the Gallos' new home means a lot. It means their home was designed and built to standards of quality and durability well beyond most others on the market today. It also means that they will save energy and reduce the greenhouse gases that cause climate change for years to come. Visit energystar.gov.



Continued from p. 90

and rails—that protects the open side of a staircase or a balcony area open to the floor below. Depending on how the handrail code requirements are met on a particular project, a balustrade may or may not have a code-approved handrail attached to it or atop it (see “The minimums and maximums of balustrades,” below).

Accidents occur frequently on stairs, so building codes have strict rules regarding stair design and installation. Ascending and descending a stair safely requires a sure grip on a handrail and a

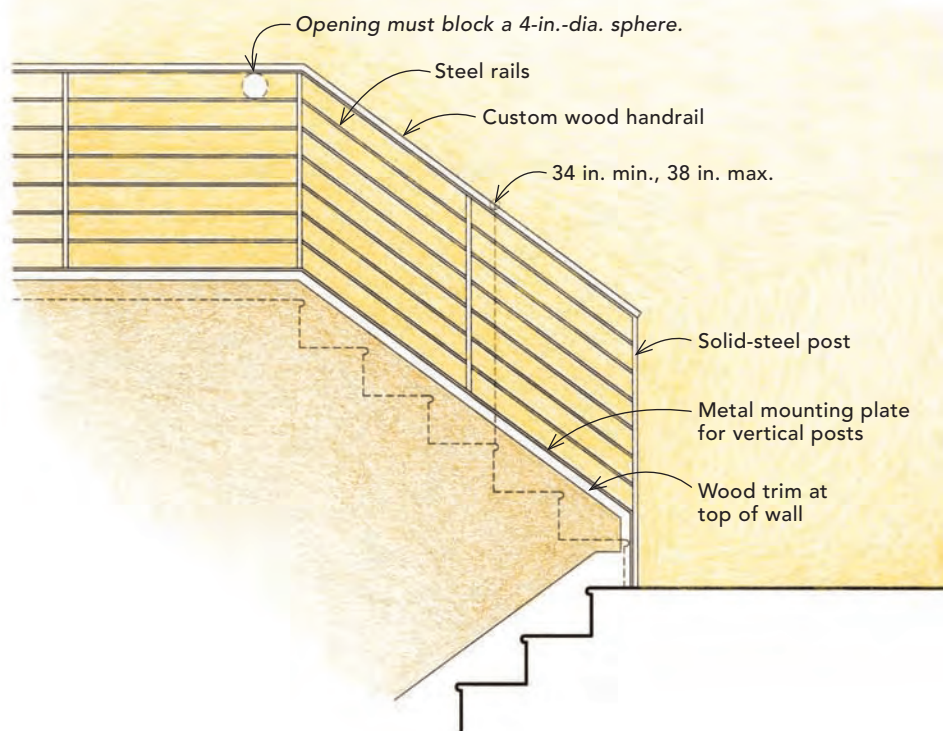
strong balustrade to keep people from falling over the edge. In Austin, Texas, we use the 2012 IRC, so those are the rules I cite here. Your local code may be different, so be sure to talk to your building official if you have any questions about what is safe and acceptable.

Here are some examples of handrails and balustrades that make style statements while keeping safety the first priority.

Paul DeGroot is an architect in Austin, Texas, and a frequent contributor to Fine Homebuilding. Drawings by the author.

A STEEL BALUSTRADE FOR A MODERN HOME

Closed stringers and steel balustrades are fitting for contemporary homes. The thin parallel lines bring a cool, airy, industrial vibe. Welded guardrails comprised of steel bar stock are mounted to the tops of the stair walls. Thick, wide, bottom mounting plates with many pairs of countersunk screws transfer the railing loads to the walls. These mounting plates turn downward at the ends of the stair runs, giving firm welding purchase for the solid-steel posts. A maple rail cap, matching the treads, is screwed to the top of this balustrade from below. Intermediate steel posts help support the rail cap and limit the deflection of the parallel steel rails. In this example, the rails are flat steel bars, but they also can be round steel rods or stainless-steel cables.



The minimums and maximums of balustrades

- Minimum 34-in. height for a balustrade at the open side of a staircase. Height is measured directly above the leading edge of the tread nosing.
- Minimum 36-in. height at level balustrades. Tall folks and those afraid of heights may feel uneasy with a 36-in.-high guardrail, especially if the drop is particularly high. In these cases, go a few inches taller for extra safety.
- Minimum 34-in., maximum 38-in. height if the top of the balustrade

- also serves as the required handrail for the staircase. This might occur when the inside stairwell wall is punctuated with windows or display shelves, making a continuous handrail impractical at this location.
- Baluster (aka spindle) spacing must block the passage of a 4 $\frac{3}{8}$ -in.-dia. sphere at the open side of a stair and a 4-in.-dia. sphere at a level balustrade.
- Handrails at stair flights must be continuous and must extend over

- every riser from top to bottom. Handrails are not required on both sides of the stair. As long as there is a code-compliant handrail along one side, the balustrade may not need a compliant handrail.
- When the top of a balustrade has the code-required continuous handrail, newel posts are allowed at the top and bottom of the stair and at turns. These posts can be taller than the handrail and can therefore interrupt the handrail continuity.

- Traditional balustrades are often topped with continuous handrail profiles that pass over the top of turned newel posts. Various fittings such as volutes, turnouts, and gooseneck transitions allow the handrail to sweep gracefully along the full length of the balustrade. For vertical transitions that are abrupt—at landing turns and winder treads, for example—the code allows for extratall handrail heights in order to maintain continuity.