

# Build Strong and Stylish Porches



by Bobby Parks

**Designing the structure to complement a home's architecture leads to add-on sales that will push up profits.**

Unlike decks, porches provide shelter from rain and relief from sun. Screened, they keep out insects. The roof that makes it all possible raises the level of difficulty of the build, whether you're talking about engineering footings to handle extra loads, trimming out the walls and ceiling, or framing and shingling the roof itself. Even so, most of the skills required to build a porch you already use when you build a deck.

The covered space also provides opportunities for you to make profitable add-on sales, such as fireplaces, lighting, ceiling fans, and custom trim-out. Porches account for at least half my annual sales dollars.

#### **Architectural Limits**

A porch addition should look like it was part of the home's original plan. When I visit a house to sell a job, I measure carefully and pay attention

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to architectural details such as wall features and trim, roof pitches, windows, doors, and fireplaces. For example, if there's a 12-on-12 gable near the planned porch, I'll mirror that pitch with the porch roof, if possible (**Figure 1**). I might also need to account for existing skylights, vent pipes, and level changes within the house.

Outside, I match up the porch overhangs with those on the house. Inside a new porch, I remove the house's cornice overhangs so you see nothing but new ceiling. If the second floor cantilevers out into what will be the new porch, I incorporate the cantilever in the ceiling finish (**Figure 2**).

Beyond style considerations, the location of existing windows and doors can physically limit where the porch can be attached to the house. Upper-story windows near the intersection of the porch roof and the house wall may affect the roof pitch or height.

### Porches vs. Decks

I generally design both porches and decks to be wider than they are deep, for stability. Unless it's a simple front entry, a porch should extend 12 feet or more out from the house because a shallower porch doesn't allow enough room to walk around furniture. An acceptable minimum size is 12 feet by 16 feet.

Floor framing and footings are somewhat different for porches than they are for decks. Roof loads need to be factored in, which means the footings will probably be larger than they would be for a deck. Unless you run continuous columns from the roof to the footings all along the side of a porch, side joists under the eaves



**Figure 1.** Matching the roof pitch is one way of grafting a new porch onto an existing house.



**Figure 2.** Covering a house's second-story cantilever with the same material that's on the porch ceiling helps to blend it in.

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of a gable roof have to be designed as beams to support the columns that carry the roof (**Figure 3**). To attach these beams to the house, I use an approved inside-corner bracket at the ledger. As the 2009 IRC comes into force, we may no longer be able to hang beams from ledgers — then the end of a beam would require its own footing. Check with your local inspector.

Positive footing-to-column, column-to-beam, and beam-to-joist attachments are even more important on porches than on decks because of the increased wind-lift potential cre-

ated by the roof. On decks, I commonly cantilever joists past the outer beam, whereas on porches, I place outer beams below the very end of the joists. This lets me place columns at the outer corners of the structure, simplifying the roof support and tie down, and allowing downspouts to run straight to the ground.

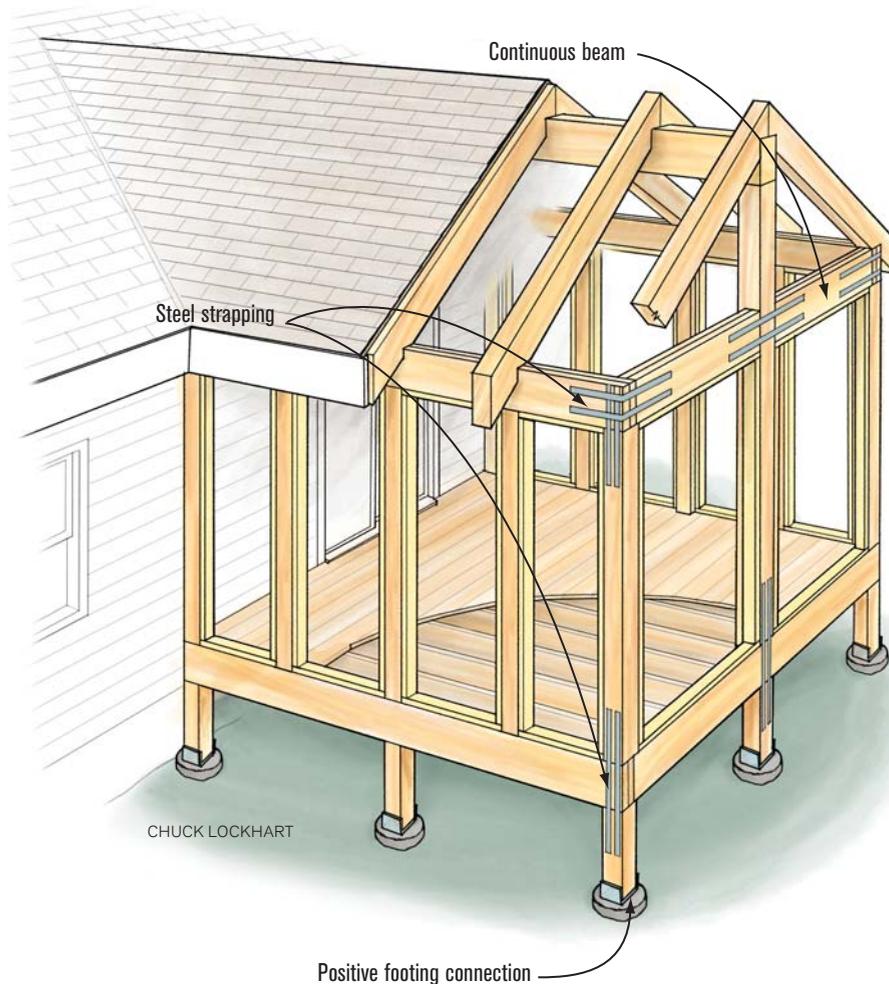
If the porch is to be screened, I do a couple of things. I stretch screening across the top of the joists before installing the decking, to keep insects from entering through the joints (**Figure 4, page 4**). Locating the

screen on top of the joists rather than underneath performs better and is less visible. Also, when there's an adjoining deck, I bump up the floor of the screened porch 1½ to 2 inches to keep rain water from running off the deck into the porch. As long as there's a door to alert occupants to the floor elevation change, it's not a trip hazard (**Figure 5, page 4**).

### Support Walls

On walled porches, I always use pressure-treated material for the bottom plate. As with a deck, porches more

### Framing That Resists Wind and Gravity



**Figure 3.** Steel strapping at the corners and at post connections helps keep a porch tied to the ground in severe winds. Gravity loads from the roof are carried to the posts through a continuous perimeter beam, and then to the ground.

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than 30 inches above the ground (even those with screens) require a railing (**Figure 6**). Solid kneewalls can satisfy that requirement and at the same time provide privacy and a place to install electrical outlets (**Figure 7, page 5**). To keep the walls dry and avoid rot, use water-resistant materials such as fiber-cement siding or Azek, especially for the knee-

wall cap. Lap siding that matches the home's exterior often works well on both sides of the kneewall.

My preference for wall posts is cedar 4x4 or 6x6. Although more expensive than treated lumber, cedar has a finer grain that looks better painted. I lay out 4x4 posts about 36 inches on center, which works well with my favorite roof construction — timber rafters

stacked directly above the posts and capped with 2x6 tongue-and-groove roof decking (**Figure 8, page 5**). With 6x6 posts, screened openings can be larger, but the downside is that wind loading may in time cause the screen to sag.

To provide bearing for the rafters, I double 2x8s or 2x10s and build a continuous beam that runs along all three walls. Continuing the beam across the front of the gable helps brace the ridge support column, keeping the gable wall from shaking. If the walls will be 9 feet or higher, I offer the option of transom inserts (**Figure 9, page 6**). They add a design element, and the additional horizontal members stiffen the wall posts.

I take a different approach with open-air porches. Because there are usually fewer posts than on a screened porch, I use 6x6 posts for a more substantial structure. The posts should be located where the side wall beams meet the house, at the two outer corners, and mid-span as needed. I often incorporate column and beam wraps to achieve a more custom look (**Figure 10, page 6**). Using fewer posts may require the beam they support to be upsized, depending on roof loads. Tables in the IRC are useful for sizing beams, but when in doubt, have the design engineered.

### Cathedral Ceiling

Gable roof framing must be designed to keep the ridge from sagging and the rafters from pushing out the side walls. Accomplishing either of those ends automatically takes care of the other, and there are several ways to go about it.

Traditionally, ceiling joists within the lower third of the rafter span tie the bottoms of the rafters together in a stable triangle. Though many people think that's the purpose of collar ties (the horizontal members found



**Figure 4. Screening under the decking helps prevent bug invasions from below.**



**Figure 5. Porch flooring raised slightly above an abutting deck helps keep out water. This detail should only be done where traffic enters through a door, so that occupants are clued in to the elevation change.**



**Figure 6. Elevated porches — even when screened — require guards to prevent falls.**

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**Figure 7. Knee-walls provide guards, privacy, and a place for electrical outlets.**



**Figure 8. Timber rafters that stack atop the posts provide a clear load path. Tongue-and-groove 2-bys above provide both a finished ceiling and a roof deck.**

between rafters near the top of the roof), it's not. Collar ties help keep the top of the two sides of the roof together under wind loads and do little or nothing to prevent the bottom of the rafters from spreading. Trusses are a more modern version of this framing. Either method is fine for houses, where the busy framing is concealed in an attic.

On a porch, though, I prefer an open ceiling. Vaulted ceilings make even small porches seem bigger. So instead of focusing on the rafter bottoms, I use a beefy ridge beam to span be-

tween the gable ends and support the tops of the rafters (**Figure 11, page 6**). If the tops of the rafters don't sag, the bottoms won't push out the walls.

The key is to adequately size the beam. I'm often able to use a 4x12 ridge beam, depending on the pitch of the roof and the distance out from the house. The span may call for an LVL or glulam, which can be wrapped to blend with the rest of the ceiling. Most beam suppliers will handle the engineering for you.

I prefer not to extend porches more than 16 feet from a house — that's

about the maximum distance a reasonably sized ridge beam can span without either a post in the center or intermediate ties between the bottoms of the rafters.

Each end of the ridge beam must be well supported. A post at the outer end is part of a continuous load path to a footing. At the house end, you'll need to cut a pocket in the siding to provide access for running vertical framing members down to the foundation. If there's a window or door below this post, verify that its header can take the additional load. And be careful when sliding the beam into the pocket or you'll find yourself repairing drywall inside the house. Depending on the other loads the wall carries, it may be possible to bring the ridge support post down onto a header that sits above the wall and transfers the loads down through several wall studs.

When the ridge beam intersects the house roof rather than a wall, I extend a post up from the wall plate to support the ridge beam. Usually, the ridge beam can then cantilever back to the existing roof. In any case, go inside the attic to verify what framing is there to tie the ridge to.

I do a number of things that combined tie the porch together. When possible, I lag through the rafters into the second-floor band joist of the house, and I do the same with the 4x4 posts at the house wall. On a single-story house, I tie the top plate of the porch walls into the house framing with steel strapping. The outer porch-wall corners get reinforced with 1½-inch strapping.

### Roof Options

Of gable, shed, and hip roofs, the least expensive are sheds and low-sloped gables. Sheds are a good option between two established gable roofs, or when you are limited by the

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Figure 9. Transoms placed low must be made of tempered glass. They provide a clear view and aren't prone to tears and dings, as screens in the same spot would be.



Figure 10. Open porches have fewer posts than screened porches. To maintain the look of adequate support, the author wraps such posts with trim to increase their width.



Figure 11. Cathedral ceilings rely on stout ridge beams, rather than a rafter-joint triangle, to prevent sagging.

location of second-story windows or can't match an existing gable roof pitch. Low-sloped gables are efficient to build and fit in many situations — for instance, where second-story windows limit height — and they can have a cozy feel compared with a steep roof.

Steep-pitched gable roofs can project a grand or dramatic effect (**Figure 12, page 7**) — and can have a similar effect on a customer's pocketbook, due to the increased materials and labor. For a roof with a steep pitch, say 12 on 12, materials can cost 20 percent or more than for a shallow roof, such as a 5 on 12. Framing, ceiling-finish, and roofing materials add up quickly, along with costs associated with toe boards, roof jacks, scaffolding, and safety harnesses.

Hip roofs are more challenging than gables and sheds, especially with exposed rafters and what's involved to stabilize them. They require a lot more rafter cutting and often will have a level ceiling, which adds labor and materials. And you'll likely have to close in the overhang with fascia, soffit, and trim, and vent the ridge — compared with open-rafter finishes, which can be left exposed with the use of fascia only.

### Finishing Touches

Most of the porches my company builds have exposed rafters with 2-by tongue-and-groove roof decking that doubles as the ceiling. For a brighter, more traditional look, painted beadboard may be installed on a level ceiling, or attached below the rafters for a vaulted ceiling (**Figure 13, page 7**).

If you're attaching a ceiling below the rafters, it's important to ventilate the rafters with soffit and ridge venting to preserve shingle warranties. Many people believe that adding insulation to a ceiling moderates the temperature below. It's my opinion

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that any difference is marginal. What does help, even during the heat of a Georgia summer, is a ceiling fan.

Crown molding is a great finishing touch. Thought should be put into materials and climate issues that affect long-term performance. As long as quality stains or paints

are used, finishes should perform as normal exterior finishes would.

It used to be common, when screening a porch, to stretch screen over the wall posts, staple it, and cover the staples with lattice strips. Today, I prefer to custom order fiberglass screen inserts with aluminum frames from a local storm-window supplier. They're fairly cost-effective and you can order frame colors to match almost any trim paint color. The screens mount from the inside of the porch, providing a nice look overall and easy access for replacing an insert.

For doors, I've had good luck with high-grade aluminum storm doors with screen panels. Low-grade products don't perform well long-term, and wood doors tend to bow, sag, and rot — in that order. The doors mount from the outside and need to swing out over a code-required minimum 36-inch-square landing or deck area. I prefer to locate doors along the sides of a porch rather than the front. It looks better and has less impact on how the porch will be furnished or used.

### Skylights

Many quality options are available, but I use Velux skylights and the



**Figure 12. Steep roofs lend a grand feel but consume a lot of material and labor.**



**Figure 13. Painted beadboard ceilings provide a great finished look and brighten the space more than stained wood.**

### The Bird Factor

**N**ever install screens unless you can install every single one, including the door, before you leave the site. Birds have a way of finding the one opening you did not cover. But they find it only one time — on their way in. When they try to find the opening to get out, they'll find every screen you've installed instead. This will probably eventually kill the bird, and you'll have a lot of beak-damaged screens to replace.

flashing kits that can be purchased with them ([veluxusa.com](http://veluxusa.com)). They're well made, reasonably priced, and easy to install. And they don't leak.

Some customers want a porch to avoid the sun but don't want to shade the inside of the house. Others want shade but still need a ray or two of sunshine. To funnel light into the house, locate skylights close to the house to target the windows. For extra sun on the porch, center skylights in the porch ceiling midway between the house and the outer porch wall. If you're building a gable, place one on each side of the ridge for balance.

I've had a number of customers who thought they wanted skylights but came to realize the main reason they wanted a porch was to escape the sun, so spending extra money for skylights made no sense. One gentleman went back and forth, finally deciding he wanted two skylights. When I spoke to him later, he said, "You know, I love my porch, but I constantly have to move my chair around to get out of the damn sun." ❖

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