

Frame a Classic Shed Dormer



If you start with a full-scale layout on the subfloor and plan for the finished details, the framing is relatively painless

BY JOHN SPIER

Of all the ways to bump out a roof, I think shed dormers offer the most bang for the buck. They're easy to build, are simple to finish, and provide lots of usable interior space. So why aren't all dormers sheds? Compared to doghouse, eyebrow, or A-frame dormers, shed dormers aren't always the prettiest option. On the back side of a house, though, beauty sometimes needs to take a backseat to utility. Besides, with some attention to size, shape, and proportion, a shed dormer can actually look pretty good.

Unfortunately, many builders don't take the time to think about the details before they get started working on a shed-dormer project. Many years of building have taught me that if I spend a little extra time planning a shed dormer, then I spend a lot less time trying to

Safety note

Although John feels comfortable working on the scaffolding shown above, in this situation OSHA guidelines call for the use of guardrails, a safety net, or a personal fall-arrest system.

make a bunch of mistakes look good later.

The subfloor becomes a big set of blueprints

There are as many ways to frame shed dormers as there are ways to design them. The dormer featured here doesn't peak at the ridge the way that many shed dormers do, but the lessons here can be applied to shed dormers of all kinds, new construction or remodel.

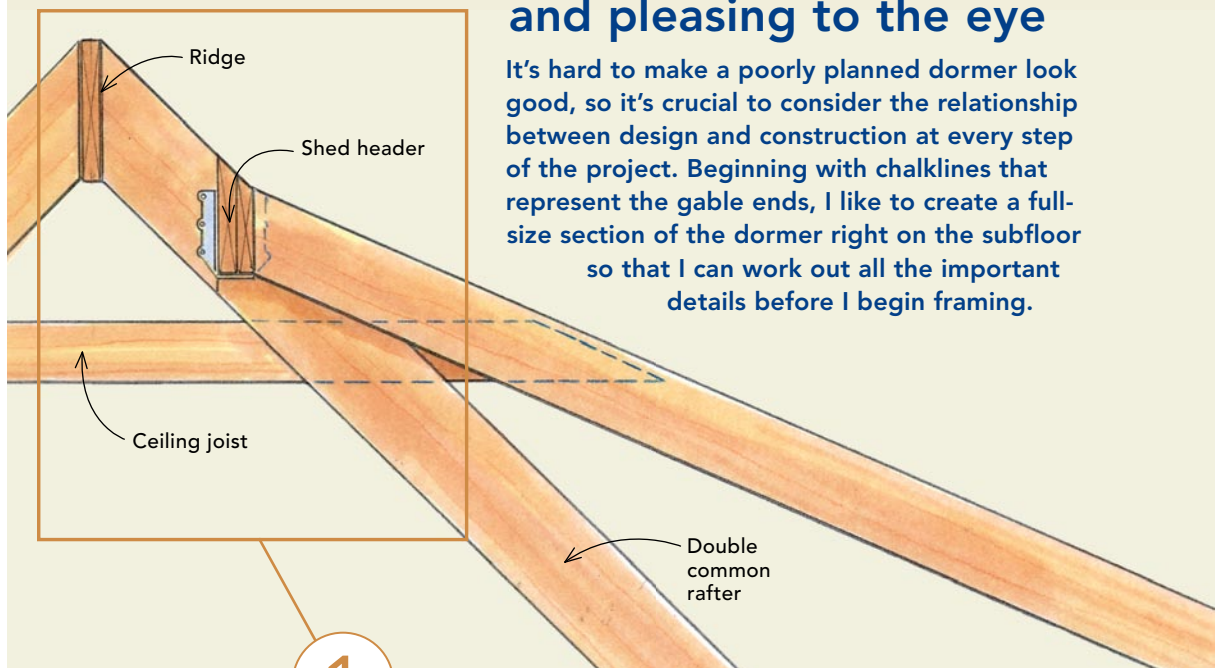
Whenever possible, I take details from the framing plans and re-create them full size on the subfloor. I start by snapping chalklines on the subfloor to represent the gable end. (To learn how John frames gable-end walls, see *FHB* #122, or online at FineHomebuilding.com.) After building and standing these walls, I snap more chalklines to complete the full-scale section drawing of the rest of the roof.

Next, I draw the ridge, and if there will be a header for the dormer, I draw that, too. At this point, I can lay out the dormer rafters and then snap the lines for them. This part of the drawing can be worked in either direction: If I have a specified or desired pitch, I get out my calculator and then figure out where to draw the rafter. Otherwise, I follow some rules of thumb for shed-dormer rafters and then use the calculator to figure out what the roof pitch really is (see "Dormer design," right). Either way, this method allows me to tweak the dormer design before any of the nails are driven.

At this point, I also go as far as to sketch in the thicknesses of the sheathing, the roofing, and the flashing. I draw all the trim details full scale so that I know they will fit and look right. Sometimes I play around with the drawing until I'm satisfied, then draw a clean version on the other end of the floor for refer-

Dormer design should be practical and pleasing to the eye

It's hard to make a poorly planned dormer look good, so it's crucial to consider the relationship between design and construction at every step of the project. Beginning with chalklines that represent the gable ends, I like to create a full-size section of the dormer right on the subfloor so that I can work out all the important details before I begin framing.



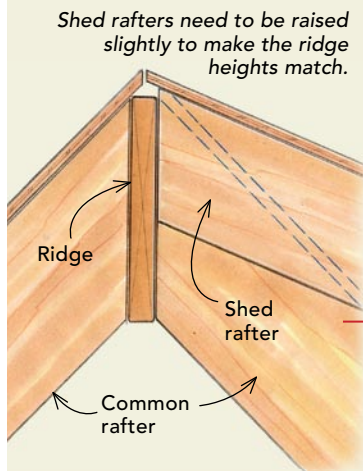
ROOF PITCH

1

First and foremost, it's important—both functionally and visually—to maintain adequate roof pitch on a shed dormer. Steeper almost always looks better, and the steeper the main roof, the steeper the dormer should be. I regard a pitch of 4-in-12 as a minimum, not least because this is the practical minimum for installing conventional roofing materials such as asphalt or cedar shingles. Keep in mind, though, that a 4-in-12 dormer might look good on an 8-in-12 roof, but a 10-in-12 or 12-in-12 roof needs a steeper shed to look right.



When it comes time to build, you can meet a specific pitch by using a calculator, or you can use the full-size subfloor drawing to decide on the appropriate pitch. Either way you work it, the pitch could need some tweaking to look right. The two most important things to consider are the height of the front wall and the location where the tops of the rafters meet the main roof. Shed dormers that share the ridge with the main roof (see below) are the easiest to build, but smaller dormers look better with their roofs intersecting lower. Keep in mind that close to the ridge but not connected isn't good. If the dormer doesn't peak at the ridge, you need to leave adequate room for roof vents and flashing.



Alternative: Dormers that peak at the ridge

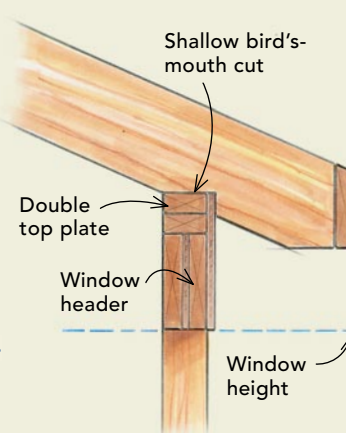
Shed dormers that peak at the ridge are easier to frame, but be careful of the intersection of the two differing roof pitches. If you align the tops of the dormer rafters with the tops of the common rafters, the difference in roof pitches will lead to finished ridge heights that don't match. Raising the shed rafter slightly solves the problem.

OVERHANGS AND HEADER HEIGHT

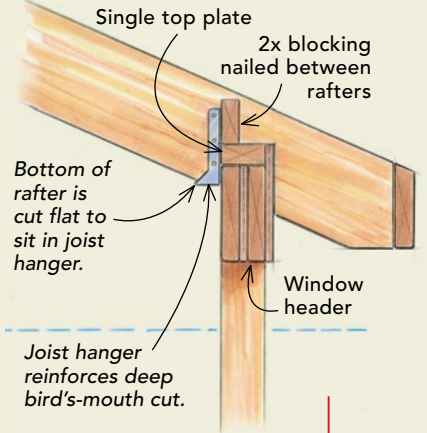
Dormer-roof trim and eave overhangs typically mimic the main roof, though scaling down the sizes is usually appropriate. Whatever the desired look, the details should be worked out at the framing stage. I draw in the window headers, figure the overhang, and draw out every layer from subfascia to finished trim. In conventional 8-ft.-high walls, window heads are typically between 80 in. to 84 in. from the floor. This height provides comfortable viewing for most people in a standing position and also aligns window tops with door tops. In a shed dormer, though, ceiling heights are often reduced, so it's acceptable to lower the window heights as well. Whenever possible, I raise the window headers a bit (drawing right). This gives me the option of increasing the size of the windows if the design dictates.

2

Conventional approach



Better approach



A better look: Raise the height of windows

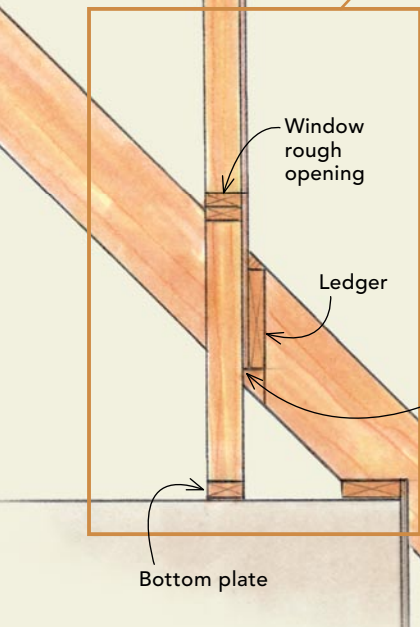
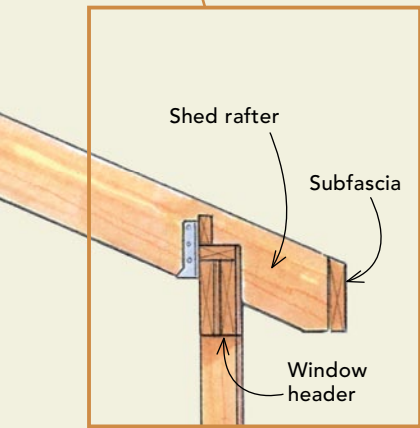
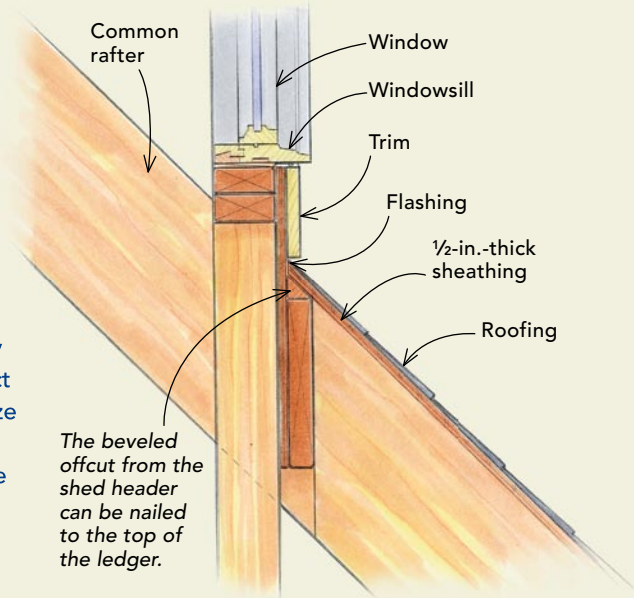
This often-seen and, in my opinion, always ugly detail (above, left) has become the conventional approach to building the front edge of the dormer roof. It's easy to frame, but it forces you to lower the windows to accommodate the header. But by cutting a deep bird's mouth in the shed rafter and capping the wall with a single top plate, I can move up the header and raise the window height.

WINDOWS AND TRIM

Just as the proportions of the dormer should relate to the main roof, so should the proportions of the windows relate to the front wall of the dormer. It's often helpful to use horizontally proportioned windows, which in many cases actually complement a well-designed shed dormer. But take extra time planning the trim details below the windows; this is a notorious trouble spot and is difficult to correct without seeming like an afterthought. The only sure way I've found to get the spacing correct is to draw the trim components on the full-size subfloor plans. Ideally, the windowsills either should land just above the roofing or should be raised up the height of one course of siding or trim. Anywhere between leaves an awkward course of siding or affects the trim proportions.

3

Stop the sheathing at the roof ledger; otherwise the space under the short front roof is impossible to insulate properly.



Raise the wall, but not quite plumb. Unless ceiling joists will bear directly on the top plate of the front wall, I like to lean the wall in about 1/8 in. before bracing it; the rafter loads will push the wall out as the building settles and the crowns on the rafters flatten.

Solid planning

ence. The process might sound time-consuming, but it pays big dividends later.

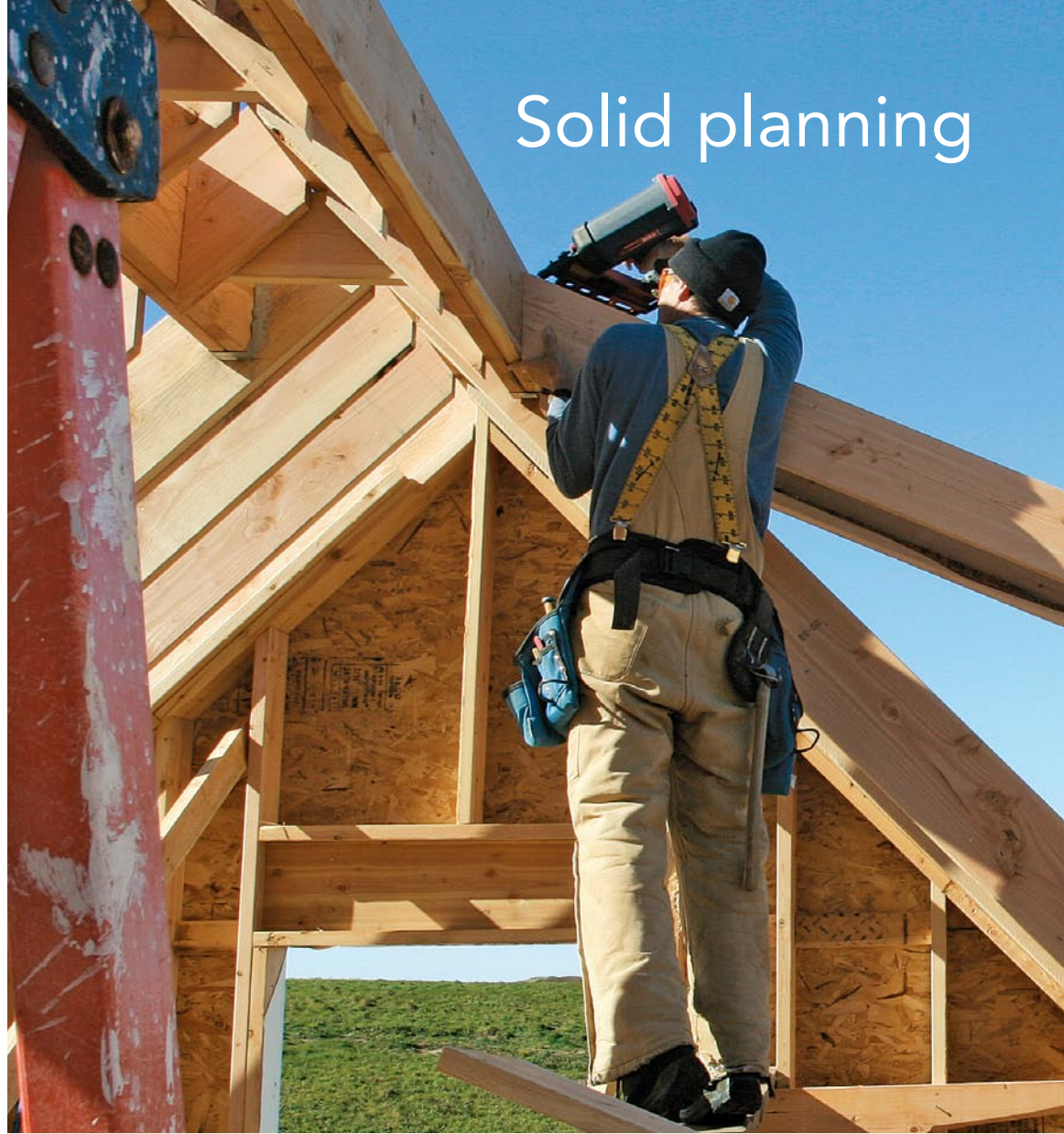
Building is the easy part

Once all the thinking and figuring are done, building a shed dormer is easy. I start with the front wall of the dormer. I build it flat on the subfloor, sheathe it, apply housewrap, and stand it like any other wall. When the front wall is stood, I brace the ends, run a stringline, and straighten it with some intermediate braces. Next, I build the short roof in front of the dormer, though this step can just as easily be done later if you prefer.

The layout for the dormer rafters can be taken from the drawing on the subfloor, but I often cheat by making the plumb cut at the top and holding the rafter in place to mark the bird's mouth and tail cuts. Whichever way you do it, make a pattern rafter, and test it at both ends of the front wall and in the middle before you cut and hang the rafters.

Cheek walls on each end of the shed dormer can be done three ways: framed in place and extending all the way up, framed flat to the ceiling and crippled in above, or framed only from the common rafter to the dormer roof for an open plan. Always sheathe these walls before the roof, though; it's easier to trace these oddly shaped pieces than it is to measure and fit them. Just remember to cut the sheathing $\frac{1}{4}$ in. shy to allow for rafter shrinkage. I finish by building the rake overhangs and adding the subfascia, the blocking, the hardware, and the sheathing. □

John Spier is a builder on Block Island, R.I. Photos by Justin Fink.



Cheek walls are framed in place

Start the cheek walls by nailing a top plate along the underside of the outermost shed rafter. Next, cut the bottom plate to the desired length, slide it against a previously framed wall to lay out the stud spacing quickly (1), and nail the plate to the subfloor. Use a level to plumb up from each stud mark on the bottom plate, then measure the length, cut the studs with the appropriate top angle, and toenail in place (2). Finish the cheek walls by nailing angled blocking to the doubled rafters at each stud bay (3). The blocking should extend past the top of the rafter to provide solid nailing for the cheek-wall sheathing.

pays off at the building stage



With a little extra planning, all the dormer components fit together nicely on the first try. For instance, the full-size drawing made it obvious that to ensure a smooth transition between the two different planes of roof sheathing, the dormer rafters (photo left) should be cut so that they sit just below the beveled dormer header.



Short rafters from the common-rafter template

The short rafters that make up the small piece of roof in front of the shed dormer can be traced from the same template used to make the common rafters; you just need to adjust the location of the plumb cut. Don't forget to subtract the thickness of the beveled ledger from the rafter length before making the cuts. Toenail these rafters to the bottom plate running along the outside edge of the subfloor; then nail them to the ledger on the face of the wall.



Sheathe the cheek walls before the roof

Always sheathe the cheek walls before you sheathe the roof; it's a lot easier to trace these oddly shaped pieces than it is to measure and fit them. Just remember to cut the wall sheathing $\frac{1}{4}$ in. short. If scribed to the top and cut exactly, the wall sheathing will push up on the roof sheathing as the rafters dry and shrink.



A chalkline guides ceiling-joint placement

If the ceiling will flatten at the peak, it's crucial to keep the joists in plane with each other so that the joint between the ceiling and the dormer roof is straight, and so that the ceiling remains flat. I start by measuring the ceiling height up from the subfloor at all four corners of the room; then I snap a chalkline between the points and install the joists with their bottom edge on the chalkline.