A POP-TOP Shed Dormer

by Bob Dausman

Recently, some customers approached me about improving the upstairs of their modest, 1 1/2-story gable-roof home in upstate New York. Though it was in a beautiful setting with a large pond, the older home had low ceilings and little natural light. Their goal was to add a second-floor bath, get more usable floor space, and have taller, brighter rooms.

Simply installing skylights wouldn't address the headroom issue, and gable dormers, while charming, wouldn't add enough usable floor space. After discussing various options, we decided on a shed dormer that would span about two thirds the width of the house. An existing closet and small bedroom would be converted into a full bath and a home office. The dormer would also allow us to add windows in the new bearing wall.

Waste Not, Want Not

Shortly after the dormer decision was made, I spoke with my dad, also a builder, who recalled that early in his career he'd helped add a shed dormer to a Cape Cod–style house. Instead of tearing off the original roof and building a dormer roof from scratch, they had jacked the existing roof into place. Although he couldn't remember all the details, I was intrigued by the idea. The present roof was less than ten years old;

With proper support and a watchful eye, you can raise a shed dormer roof without exposing the house to the weather

Supporting the Ridge

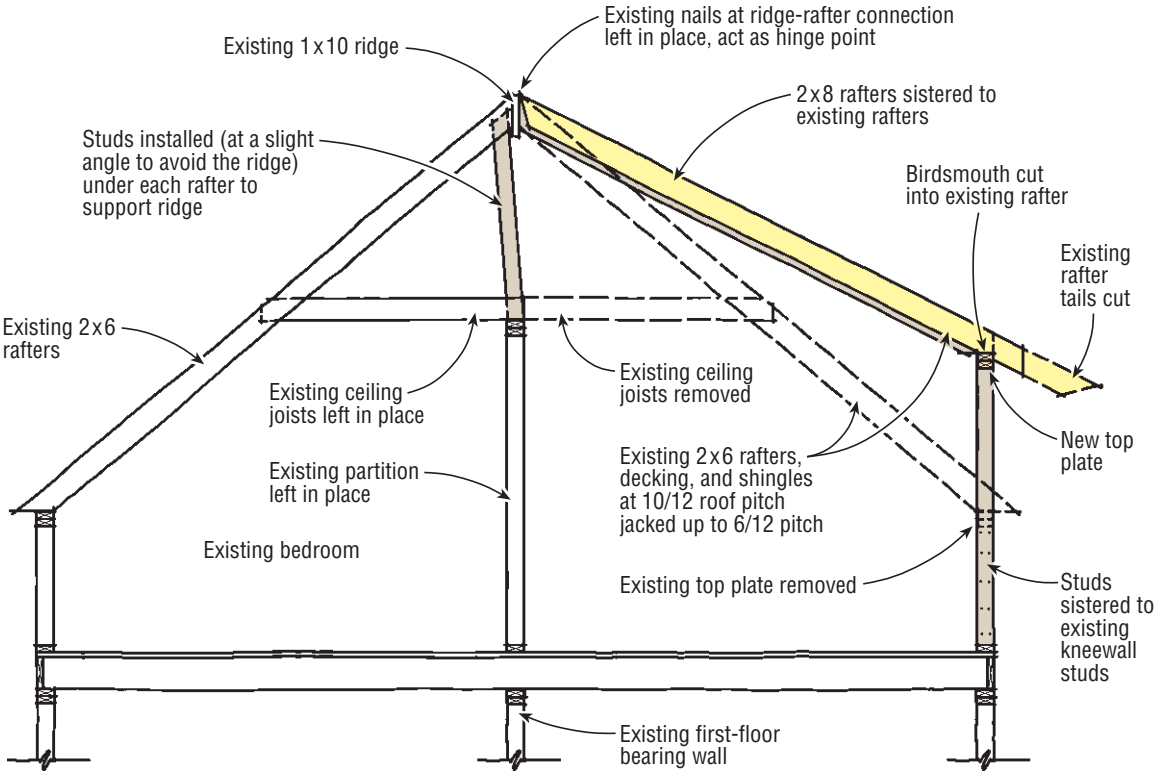

Figure 1. A structural wall, centered under the ridge, shoulders the roof load and eliminates the need for transverse ceiling joists or collar ties.

the original roof had been stripped down to the skip sheathing and new plywood sheathing and shingles had been installed. Those facts, and the idea that the building and its contents could remain under the protective cover of the roof throughout the process, convinced me that jacking was the way to go.

Supporting the structural ridge. One of the biggest concerns when creating a shed dormer is connecting the common rafters across the building by ceiling joists or collar ties in order to keep the ridge from sagging and the walls from bowing outward. Instead, after gutting the interior of the second story, we framed a slightly angled supporting wall, from the top of the first-floor center-bearing wall plate to the underside of the rafters, just to one side of the 1x10 ridge board (see Figure 1). This created a structural ridge that would carry the roof load, allowing us to eliminate the existing ceiling joists and permanently dispense with their replacement. We cut the nails holding the joists to the rafters and took the chimney down to below the roof line, temporarily covering the hole in the roof with plastic. (Since the chimney encroached on the dormer area, its flashing would have tied the roof to the chimney and made it difficult to raise that section. And the rafters on either side were tight to the block and would have bound on the chimney as the roof swung up. We also wanted to take this opportunity to replace the unattractive cinderblock with a better-looking brick chimney.)

Hinge

We first transferred the dimensions of the dormer to the exterior of the roof and snapped the outline onto the shingles, then recipro-sawed through shingles and sheathing from the ridge down to the eaves. Next, we cut all the toe-nails holding the rafters to the top of the kneewall. We left the nails that held the rafters to the ridge on the assumption that they would pull out as

PHOTOS BY MIKE SCHLOSSER

Figure 2. With the rafters cut free of the kneewall plate, hydraulic jacks ease the roof up to its new elevation (left). Even as the roof gapes open, most of the weather is kept outside.

needed but also act as a hinge. I was somewhat concerned that that assumption might be flawed, and that the considerable weight of the roof section might cause it to pull away from the ridge as we jacked it up. If the nails didn't hold, the only thing tying the roof section in place would be the cap shingles.

Way, hay, up she rises. With the roof ready to jack, we started in, using a series of hydraulic jacks under a temporary 2x4 plate, installed flat and nailed to short blocks scabbed onto the rafter sides (Figure 2). We stood the jacks on a length of 2x6 to help distribute the temporary load across the floor. Despite my concern, and the worry expressed by the owner when he stopped by the job, it was soon apparent that the integrity of the "hinge" was intact. The rafters showed no tendency to pull away from the ridge.

However, the arc described by the rising roof caused the plate to gradually swing out beyond the exterior wall (Figure 3). To compensate, we

Figure 3. As the roof swings up, the rafter tails swing out, so the jacking point must be repositioned inward.

Figure 4. New double-hung windows, sidewall shingles, and chimney top complete the exterior of the dormer.

moved the plate in as needed and substituted longer jacking posts. The raising went smoothly, and in several hours the dormer roof was at the proper height.

Next, we plumbed up from the original kneewall, snapped lines across the underside of the rafter tails, and cut new birdsmouths. We nailed a top plate in place, added another plate below that, and then toe-nailed the studs in place, sistering them alongside the kneewall cripple studs. After tarping the ends and the front wall to keep the weather out, we called it a day.

High and Dry

We spent the next several days buttoning up the framing, extending the roof over the end walls, sheathing the dormer, and trimming the rafter tails for a new soffit. The front wall now provided sufficient height to install double-hung windows to match the existing. We extended the existing shingle siding and painted wood trim to complete the exterior and rebuilt the top of the chimney, adding to its original height to maintain proper clearance above the shallower roof slope (Figure 4).

To strengthen the existing rafters, we sistered full-length 2x8s alongside. This also enabled us to restore a proper plumb cut and renail the rafters at the ridgeboard. To complete the interior, we installed polystyrene vent blockers to the underside of the roof sheathing prior to insulating with $5^1/_2$-inch-thick fiberglass batts. The ceiling was finished "cathedral" style, with drywall applied directly to the underside of the rafters.

Let it snow. All in all, the process went without a hitch, saved time, and eliminated a great deal of demolition and waste. One of the biggest advantages was that we kept the interior under continuous cover during what turned out to be a damp and snowy week.

Bob Dausman *is a principal owner of Dausman & Oley Construction, in Syracuse, N.Y.*