Raising the Pitch of an Existing Roof

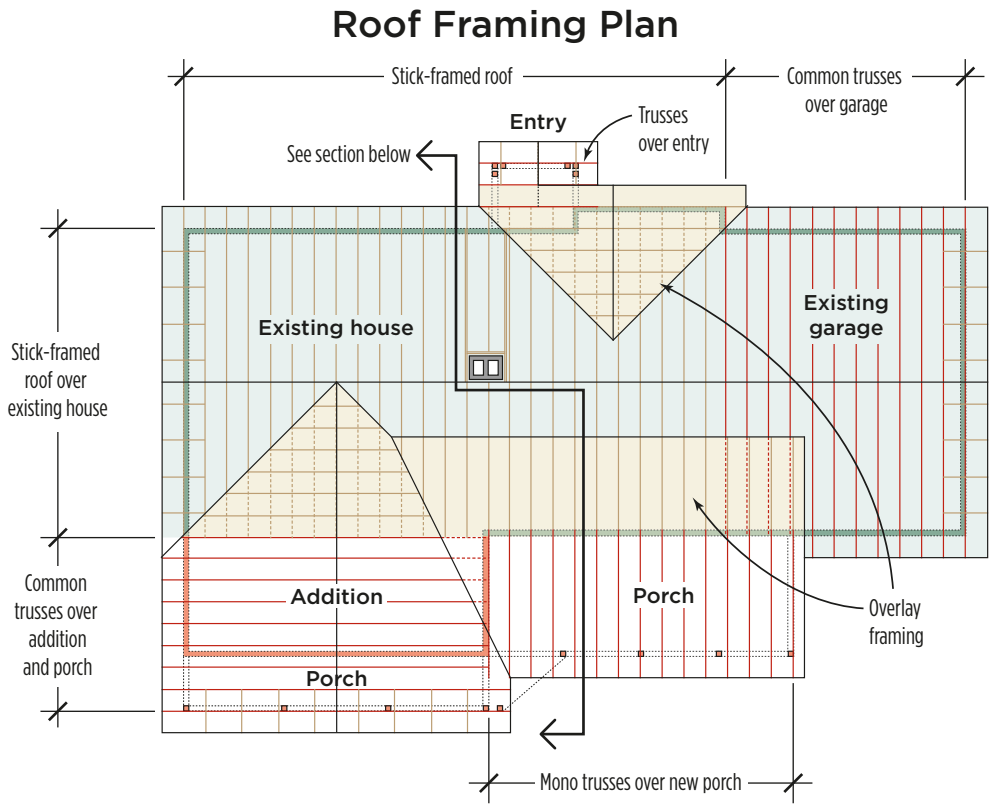
by Elmer Miller

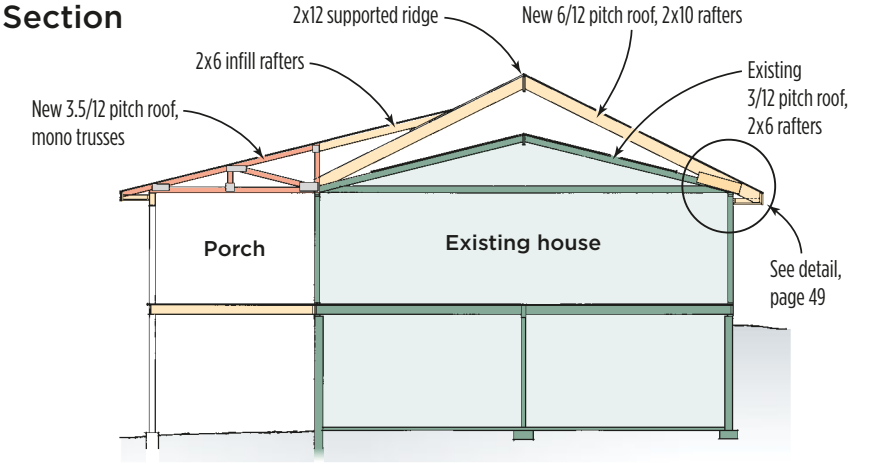
Occasionally you have the opportunity to drastically improve the appearance of a house as part of a living-space upgrade. That was the case on the project shown here — a master suite and porch addition on a home that had a 3/12 main roof and an attached garage with a flat roof. Buildings with low- and no-slope roofs are just asking for trouble in the wet coastal part of Washington state where I work, so we decided to raise the roof to a 6/12 pitch as part of the job. This would reduce the likelihood of future leaks and enhance the house's curb appeal.

By combining trusses with stick framing, the author was able to frame a new roof without damaging the finished rooms below

Plan of Action

Since the budget was limited, I had to come up with a way to do the work





without damaging the finished rooms below. Instead of tearing off and replacing the existing roof structure, we would leave it more or less intact and stick-frame a new, steeper roof over it. We would use trusses on the addition and the porch and for converting the flat garage roof to a gable **(see illustration, page 2)**.

New Truss Roof

To reduce the risk of water damage, we scheduled the project for the driest part of the year. We started by framing the addition, then turned to the garage roof, so that we could leave the main house protected for as long as possible.

The garage roof framing consisted of 22-foot-long 6x12 beams that pitched slightly away from the house, covered with 2x6 T&G decking — a good work platform for staging the new garage roof.

After removing the edge metal, we installed 2x6 top plates along the perimeter of the garage roof deck to create a level surface for the new trusses **(top photo, page 3)**. Using a builder's level to check elevation, I blocked and shimmed the plates level, then used 8-inch lags to fasten them to the 6x12 beams.

The trusses arrived the following day, and with the help of two framers I quickly installed them on the garage and the rear addition.

After adding a level plate, the author transformed the flat garage roof into a gable with trusses (top). The new main roof was stick-framed over existing trusses (center). In back, the cross gable above the addition was framed with gable trusses and the porch's shed roof with mono trusses; infill stick framing bridged the gap to the main roof (above).

New Stick-Framed Roof

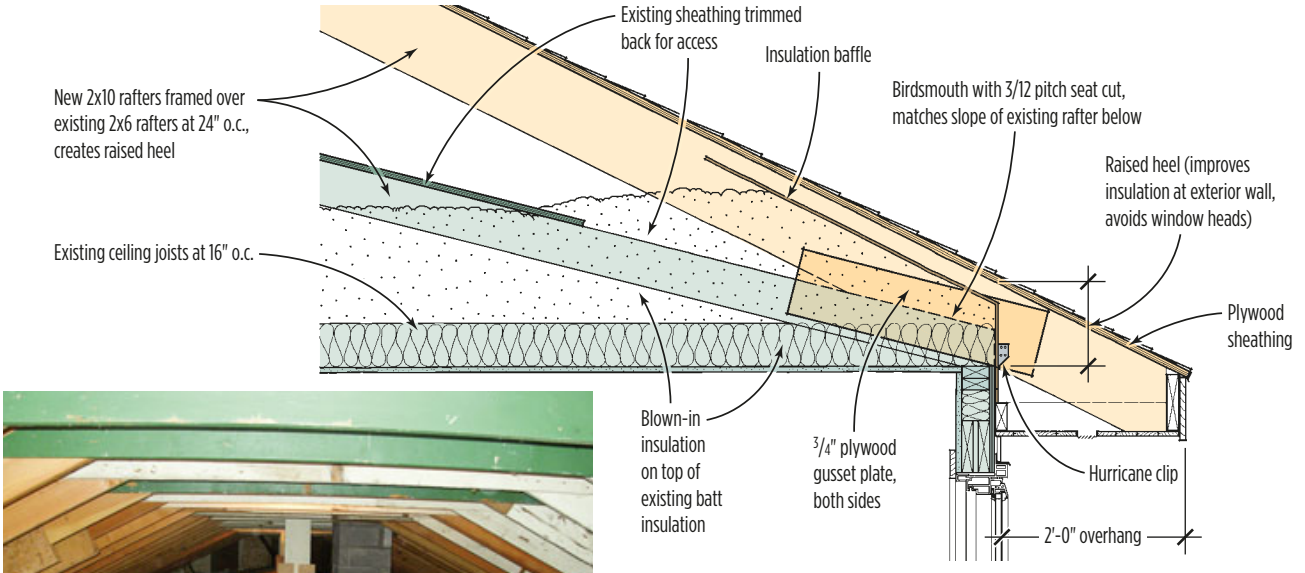
At this point we were ready to begin work on the main gable roof, which would be stick-framed over the existing roof. To avoid the possibility of rain damage, I waited until the forecast called for 10 days of dry weather, then called in the roofing company to strip off the shingles.

We faced a couple of challenges. The existing roof had 24-inch rafter spacing over 16-inch joist spacing, so space would be tight for nailing new rafters alongside the old. I also wanted to maintain the original 2-foot soffit overhang, but without encroaching on the windows below, which steeper rafters would do.

For these reasons, I decided to install the new 2x10 rafters directly on top of the existing 2x6 rafters and connect them together at the plate line. This would make it easier to attach the rafters and allow me to preserve the original wide overhang.

After stripping off the shingles, we removed the lower course of roof sheathing to expose the top plates **(center photo, left)**. We then rolled back the old batt insulation and cut the existing rafter tails and eaves overhangs flush to the wall. Next, we cut a series of large openings through the sheathing for access and venting **(top photo, page 4)** and installed a new 2x12 ridge supported by posts that ran to a bearing wall below.

Fitting the bottom end. We laid out the plumb cut on the new rafters in the usual manner, but made a 3/12 seat cut, to match the slope of the rafter below. We then installed the new rafters on top of the old, connecting them on both sides with 3/4-inch plywood gusset plates fastened with closely spaced 1 3/4-inch medium crown staples. (Although this project was not engineered, the plan checker at the building department, himself an engineer, had no qualms about signing off on it.)



New notched 2x10 rafters sit directly on top of the existing 2x6 rafters, held in place by pairs of plywood gussets (above). Openings in the original sheathing provide access and venting to the area between the old and new roofs (left).

The original rafters had only been toenailed to the top plates, so we reinforced that connection with hurricane ties. We also installed cardboard insulation baffles at the eaves while the area was still accessible from above.

Cross-Gables and Infill

The next step was to tie in the new trusses to the new stick framing. The lower-pitch mono trusses over the back porch stopped at the wall of the house, so we completed the framing by gusseting 2x6 rafters to their top chords and running them back to sheathing on the new stick-framed gable. We also framed a new, steeper gable over the entry and filled in the transition between the addition and the main roof with overlay stick framing.

Finally, we sheathed the rest of the roof, built vented soffits, and called in the roofers. All told, it took three carpenters eight days to reframe the roof.

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The finished remodel adds curb appeal to the front of the house (top) and needed space in back (above).