Adding a Second Story

You can save time and avoid weather worries by building the new roof before tearing off the old one

by Tony Simmonds

It was a wonderful, prematurely warm day at the beginning of March 1994 when I first met Paul and Letizia Myers to discuss adding a second story to their house (photo right). Both of their children were in their teens, and the house was beyond feeling cramped. A second story would give Paul and Letizia a master suite, a room for each child and another bathroom.

That sunny March day had the kind of morning when tearing off the roof seems like the most natural and logical thing in the world. In fact, as Paul and I stood in the warm sun and looked at the roof he had repeatedly patched with elastomeric compounds, it seemed an unreasonable strain on anybody's patience to formulate a program, draw plans and apply for permits.

In reality, the timing should have been perfect. The design could get done, and the plans drawn, in time to begin construction by late summer. August and September are the most reliably dry time of year in Vancouver.

But events foiled us. A strike at City Hall slowed the permitting process, and it was into November by the time we had approval to go ahead. Reluctantly, we shelved the project until spring. Then 1 met contractor Walter Ilg.

It's just too small. Charming in its simplicity and located in a good part of town, this one-story house had been outgrown by its owners. Adding a second story solved the space problem, and using simple construction methods, including prefabricated trusses, kept the total cost to just over $100,000 (Canadian).

Walter makes a specialty of handling what he calls "the hard parts" of any renovation. I watched his crew remove and replace the foundation of my neighbor's house, and I was impressed with the expeditious way he handled the hard part of that one. So I showed him the plans for the Myerses' project. We agreed that the way to do it was to put up the new roof before taking down the old one. But we disagreed about timing. I had in mind the end of April. "Why wait?" he said. "It can rain anytime here."

It could do more than that, as were to find out. But on a warm Monday in March, almost exactly a year after my first visit with the Myerses, Walter and his crew started building scaffolding.

Prefab trusses and minimal walls help the new roof go up quickly—Walter's theory of framing is simple. You do the minimum necessary to get the roof on, throw a party and then back-frame the rest. In this case the minimum was less than it might have been because the existing attic floor framing-2x8s on 16-in, centers—didn't have to be reinforced. Not that the job couldn't have been done the same way even if the existing joists had needed upgrading.

The new roof was also designed with minimums in mind: minimum cost and minimum delay. There would be no stick-framing; instead, factory-supplied trusses would carry the loads down the outside walls. Almost half of the trusses would be scissor trusses for the exposed wood ceiling over the stairs and in the master bedroom. The 12-in-12 pitch apron that forms

Photos this page: Tony Simmonds

Preparing for the new roof. The crew begins construction of the new roof by excavating post holes in the old roof over the wall plate. On the left, a ramp for removing roof debris leads to a curbside Dumpster.

Posts carry a wall beam. Well-braced with diagonal 2x4s, 4x4 posts rise from the holes in the roof to support a doubled 2x10 beam. Note the temporary flashings that are at the base of the posts. At the far end, the wall beam extends beyond the plane of the house to create a staging area for the roof trusses.

The old roof comes down. With the new roof in place, the old one can come down. Next, the missing studs in the perimeter walls will be installed.

the overhang at the gables and at the ground-floor eaves would be framed after the new roof was on and the exterior walls built.

To get the roof on, we needed just two bearing walk But a continuous wall plate couldn't be installed without severing the old roof from its bearing. The solution was to use posts and beams, and to frame in the walls afterward.

Based on the layout of the interior walls, Walter and I decided to use four 4x4 posts along each side of the house. The beams would be doubled 2x10s. In one place, one beam would have to span almost 16 ft., but any deflection could easily be taken out when the permanent wall was framed underneath it. As it turned out, there wasn't any.

So on Tuesday morning, with the scaffolding built, Walter's crew cut four pockets in the appropriate locations along each side of the roof (top photo). Then they secured the 4x4 posts to the existing floor framing and to the top plate of the wall below. They notched the end posts to fit into the corner made by the end joist and the rim joist. We were lucky with the intermediate ones; all of them could be fastened directly to a joist, notching the bottom of the 4x4 as required. None of the four intermediate locations was so critical, though, that the post couldn't have been moved a few inches in one direction or the other if necessary.

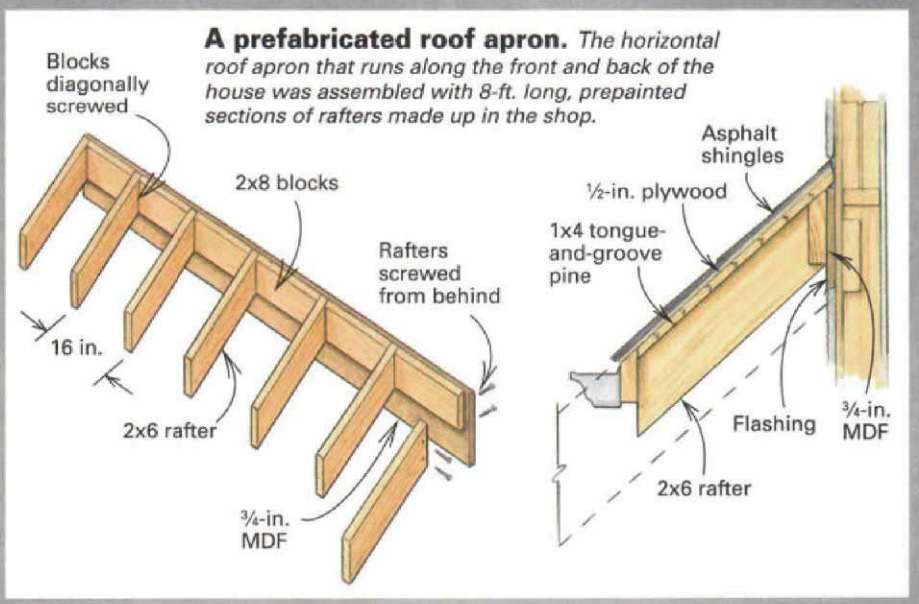
Walter used a builder's level to establish the height of the posts, and by Tuesday afternoon one of the beams was up and braced back to the existing roof (photo bottom left), and the posts were in place for the other one.

At the same time, the rest of the crew was cutting away the ridge of the existing roof to allow the flat bottom chord of the common trusses to pass across (top photo, facing page). They were able to leave the old attic collar ties/ceiling joists in place, though, because the old ceiling had been only 7 ft. 6 in. 1 stopped by at the end of the

Photos this page: Tony Simmonds

A roof apron recalls the original proportions. Strong diagonal lines drawn by the 12-in-12 rake boards at the gable ends help to break up what would otherwise be a top-heavy facade. The lower roof continues across the front and back of the house, sheltering the windows and preserving the original roofline.

Bump-out and fascias support the rake soffit. At the gable end, a bump-out protects the upstairs windows and supports the tops of the 2x10 bargeboards. The 2x10s are borne by 2x6 fascias cantilevered past the roof-apron rafters. Note how a built-up water table makes a clean line between the old stucco and the new.



A prefabricated roof apron. *The horizontal roof apron that runs along the front and back of the house was assembled with 8-ft. long, prepainted sections of rafters made up in the shop.*

Drawings: Bob La Pointe

day to inspect the temporary post flashings the crew had made with poly and duct tape. It had been another sunny day. By afternoon, however, thin clouds had moved in, and it was getting cold. The forecast was for snow.

Snow and rain complicated the job–The order for the trusses had been placed the previous week, with delivery scheduled for Thursday or Friday. But on Monday, while we were overseeing the lumber delivery, Walter let me know that he had called the truss company and promised them a case of beer if they delivered the trusses on Thursday and three cases if they got them here by Wednesday.

On Wednesday morning there was 8 in. of snow on the ground-and on the Myerses' roof. But the weather system had blown right through, and by 8 a.m. the snow was melting fast. Walter called to say he had sent two men to sweep the snow off the roof and that the trusses would be on site if the truck could make it out of the yard. At noon I arrived to see the last bundle of trusses being landed on temporary outrigger beams.

The rest of that day was spent finishing the beam, and setting and bracing the trusses. Plywood laid across where the old ridge had been scalped made it easy for one man to walk down the roof supporting the center of the truss while two others walked it along the scaffolding.

Even though it violated Walter's get-it-done roofing rule, I had the crew install the frieze blocking as the trusses were installed. By cutting the blocks with a chopsaw, you can ensure perfect spacing (even layout becomes unnecessary where framing proceeds on regular centers), and it's much easier to fasten the blocking this way than it is to go back and toe-nail it all afterward. Also, the soffit-venting detail I used with the exposed rafter tails required the screen to be sandwiched between two courses of soffit and stapled to the inside of the frieze block.

On Thursday another front brought wind and rain, which dispatched the last vestiges of snow but made a miserable day for the sheathing crew. Having to install the soffit, the screening and the 2x4 purlins that tie all of the trusses together didn't speed things up. Nor did the four skylights. I didn't want the bargeboards done hurriedly, so to make things easier for the roofers, we temporarily toe-nailed 2x4s on the flat to the trimmed ends of the rake soffits. That way, the roofers could cut their shingles flush to the outside edge of the 2x4, and when the 2x4s were removed and replaced by the permanent 2x10 bargeboard and 1x3 crown, the shingles would overhang by a consistent 1¼-in. margin.

On Friday morning the roofers went to work on one side of the roof while the last nails were pounded into the sheathing on the other side. It didn't take long for them to lay the 12 squares we needed to make everything waterproof. Meanwhile, Walter and his crew were removing the old roof underneath (photo bottom right, p. 65) and carrying it to the Dumpster in 4-ft, by 12-ft, chunks. I usually try to save the old rafters, but in this case I'm afraid I let the momentum of the job dictate the recycling policy.

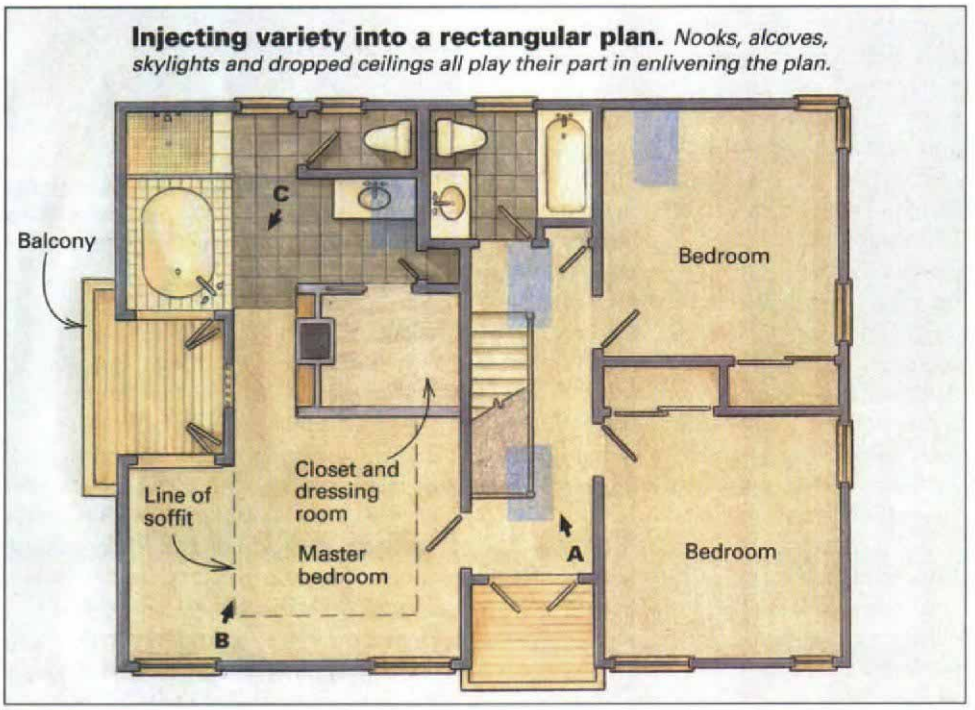
By 1 p. m., true to his word and to long European tradition, Walter was tying an evergreen branch to the ridge, and plates of cheese, bread and sausage were being laid out on a sheet of plywood set up on sawhorses in the 26-ft. by 34-ft. pavilion that now occupied the top floor of the house. It might be a little breezy, as Paul said to me over a glass of wine, but at least it was dry.

A roof apron prevents a boxy look—It took another three weeks to complete the framing and to do all of the picky work that's an inevitable part of tying everything together in a renovation. One detail, and an important element of the design, is the roof apron that encircles the house to break up the height of the building (top photo, facing page). The apron forms an eave along the front and back of the house. At the gable ends, the apron becomes a rake that rises to the peak of the roof, drawing long diagonal lines across what would otherwise be a tall, blank facade. The effect is of a 12-in-12 roof with 4½-in-12 shed dormers.

The apron has practical value, too, particularly at the eave, where it covers the top edge of the existing wall finish, providing an overhang to protect the ground-floor windows. If you're building outside the painting season, it's essential to get a coat of paint on everything before it's applied to the outside of the house, so we built as much as we could of this apron in 8-ft, sections in my shop (drawing facing page). For example, the eaves consist of 2-ft, long 2x6 lookout rafters screwed from the back to a 12-in, wide strip of Medex (Medite Corp., P. 0. Box

Daylight in the center of the house. Skylights over the centrally located hallway light up the stairs, as well as the bathroom, by way of its generous transom. Photo taken at A on floor plan.

Injecting variety into a rectangular plan. *Nooks, alcoves, skylights and dropped ceilings all play their part in enlivening the plan.*



4040, Medford, Ore. 97501; 541-773-2522), an exterior-grade medium-density fiberboard that is gaining popularity for use as exterior trim here. Frieze blocks cut from 2x8s act as pressure blocks between the rafters. We Prepainted these assemblies and the 1x4 tongue-and-groove pine that we nailed to their tops in our shop.

On site, the eave sections were installed and tied together with the Prepainted 1x4s and 2x6 fascia. Then we snapped lines on the gable ends from the ridge to the eave lookouts to establish the line of the rake soffit (bottom photo, p. 66). On this line, we toe-nailed a triangular bump-out, framed out of 2x10s, to the gable-wall framing. From the base of the bump-out, we ran a 2x6 that acts as a rake trim board for most of its length and then becomes the last lookout rafter where it runs into the eave overhang.

We nailed preassembled and Prepainted strips of soffit to the rake trim and to the gable bump-out. Made of tongue-and-groove 1x4s blind-nailed to 18-in. wide strips of ½-in. plywood, the 8-ft, long strips of rake soffit were pretty floppy until the 2x10 bargeboards went on.

Projecting the gable peaks out from the plane of the wall did more than provide solid support for the rake apron with its heavy bargeboard. It also created some visual interest and gave a little protection to the bedroom windows in the east wall. The peaks were finished with lowered vents and 1x4 bevel siding. These peaks make a nice big triangle of painted woodwork to balance the large areas of stucco.

We also ran *a* water table at the second-floor joist level (bottom photo, p. 66). Besides its aesthetic contribution, this band covers the flashing protecting the top edge of the old stucco and makes a practical separation so that new stucco and old don't have to meet. Detailing woodwork so that stucco always has a place to stop and so that no one panel of it is too big makes the plasterer's job a whole lot easier.

Shaun Friedrich, who learned the stucco trade from his father and who can tell without leaving his truck what a particular stucco is, when it was done and quite often who did it, made a beautiful job of approximating the look of the original dry-dash finish. Dry dash is a labor-intensive stucco finish in which a layer of small, sharp stones is embedded in a layer of mortar. Shaun rendered a compatible finish for the upstairs walls by using a drywall-texturing gun to create the random, splattered look of dry dash. This substitution saved us $1,000.

The outdoors is nearby. On the left, folding windows lead to a balcony off the master suite. On the right, a 7-ft. closet wall separates bedroom from lavatory. The sloping ceiling extends beyond the ridge to become part of the skylight well over the closet. Photo taken at B on floor plan.

Allocating the new space—On the inside, Walter's crew was turning the 26-ft. by 34-ft. pavilion into a second floor with three bedrooms and two baths (floor plan, p. 67). The west end contains a master bedroom and bath. In the center of the house, a hallway includes the existing stair, a bathroom at the north end (photo p. 67) and a balcony at the south end. Bedrooms at the east end complete the plan.

The subdivision of the master-bedroom space to accommodate a walk-in closet and the bathroom was the most intriguing part of the design. I wanted the room to feel large and generously proportioned, but at the same time I wanted the different areas within it to be well-defined.

The first division is between north and south. The bathroom, with its requirement for privacy, is on the north side; the bedroom is on the south. What separates them is not a wall but other subsidiary spaces: the walk-in closet and a small balcony (photo facing page).

Then there is the division between the main part of the room and the three 6-ft, deep alcoves along the west wall. Linked by their common ceiling height—7 ft.—the alcoves contain from north to south the shower/tub space; the balcony; and the bedroom-dresser area.

In addition to their common ceiling heights, the alcoves are further linked by large windows that open onto the balcony (photo above). These windows can be folded back against the

A balcony separates the bedroom and the bath. Along the west wall, three alcoves with low ceilings have distinct functions. In the foreground, the shower and tub occupy the first alcove. In the middle, a small balcony overlooks the secluded backyard. In the distance, the third alcove provides space for the bedroom dresser. Photo taken at C on floor plan.

wall so that in nice weather the balcony is really a part of the bedroom.

The transparency of these linked alcoves to one another goes a step farther. On the bathroom side, the shower is separated from the tub by a glass partition; on the bedroom side a window in the south wall lines up with the two windows to the balcony. Standing in the shower, you can look right through four transparent layers to the outside. In a small house, long views such as these foster a sense of spaciousness.

The ceiling in the master bedroom is an example of how to turn a technical problem to practical advantage. The decision to use trusses throughout for the sake of expeditiousness and economy meant that the ceiling could slope only at a pitch of 2-in-12 (the bottom chord of a 4½-in-12 scissor truss), and that skylight wells would necessarily be rather deep. Locating the skylight so that the slope of one side of the ceiling extends into the skylight well to meet the top of the skylight makes for a dramatic light shaft that spills light all along the ceiling as well as down the wall (photo right, facing page). It also didn't leave much room for error in the layout we had to do back on that raw day in March when Walter's crew members were swarming over the roof with snow in their hair and shinglers at their heels.

As for the low slope of the ceiling, we made it seem higher by holding the closet walls to a height of 7 ft. In the end the effect was everything we had hoped it would be. Letizia, who is Swiss and for whom I was trying to echo a wooden chalet ceiling, was not disappointed. □

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