

PROFITING FROM PANELIZED CONSTRUCTION

C. BATES



by Bill Sahlman

Factory-built floor, wall, and roof panels can lower the cost and increase the speed of framing



With a panelized package, the author can dry in a custom house in a day — at a predictable cost. The technique has boosted his company's size and profitability.

Most people who build houses consider themselves carpenters. A smaller number call themselves builders. Fewer still would say they are businessmen.

I've been all three. But succeeding as a businessman has been the most rewarding path for me, and modular and panelized building has been the key to my business success. In this article, I'll explain why panelized building makes good business sense for a builder, and I'll take a look at how we handle panelized packages on site.

Selling the Job

When you're talking to a customer about a custom home, costs can be hard to estimate. But with modular and panelized homes, the basic house package comes with a known cost, so most of the time and guesswork are eliminated from the estimating process.

Prequalification easy. This simplicity is a big help in qualifying customers. If a modular house will suit a family's needs, I can prepare a price in less than 15 minutes and find out right away if it fits my customer's budget.

Pricing a panelized home takes a little longer, but not much. Very few customers come into my office looking for fancy designs. Everybody wants custom touches, but their dream house usually isn't too different from one of our model homes. So I can go through the numbers that I have on file for one of our model homes, plug in any changes, and typically land within 10% of what their final cost will be when all is said and done.

I don't waste time on this process. I give the customers the numbers and get them out of there. If they're going to come back, they're going to come back. Another builder might take all day to work up an estimate, but he probably can't beat my price.

Quality control. Though I say it myself, most builders can't beat my quality, either. My panelized packages are built under controlled conditions, in a factory, by people who build a hundred homes a year. The lumber never has to lie around in the rain and snow. The panels are tough enough to ride on a truck and get lifted by a crane, so they're plenty strong and stable when they're sitting on a foundation.

Also, I'm backed up by the factory's

engineering. Usually customers start by looking at a model home they like, then make whatever changes they want. The factory redraws the plans with a computer, and the plans are always reviewed by an engineer. If the modifications have changed the load conditions, the engineer corrects the structure as needed. On a house I built last year, moving one wall changed nine bearing points. Many builders wouldn't catch those problems, but the factory engineer did.

The clincher usually comes when I take the customers for a ride around town, show them the houses I've built, and tell them what they cost. By the time we get back to my office, they've often made up their mind that I'm their builder — they can see for themselves that I'm selling quality homes at attractive prices.

Warranty. My reputation also benefits from the service I provide. Any defect in the home packages is covered by the factory guarantee. And since I save so much labor time on framing, I can afford to budget a little extra for attending to finish details.

I give every customer a one-year punch list: If they find anything wrong for a year after we build the home, we'll fix it free. When the year is almost up, I make a point of calling back and asking them if there's any problem. Usually there's not, and the call wins me a good reference.

Accurate Estimating

The key to profit on any job is accurate estimating. The only way to be sure of making money is to know your costs before you set your price. But the time it takes to figure costs is a cost in itself, and mistakes can be disastrous.

With panelized homes, everything is simplified. I can reduce my entire estimating paperwork to one page. The biggest line item is the home package, which includes almost all the materials. The second-biggest item is usually carpentry labor, which is based on the size of the house. And almost everything else can be handled as a unit price.

Fixed-price subcontracts. Where possible, I've gotten my subs to agree on a fixed price per job regardless of the details. For instance, my well driller charges me \$3,500 per well, whether we go down 300 feet or 700 — it simplifies both of our lives, and both of us make a profit in the long run. I have a similar arrangement with my electrician and my heating sub. With other subs, like drywall and flooring, I can usually estimate quickly by the square foot.

On some items, like cabinetry and appliances, I usually give the customer an allowance. I still make sure I get my markup, and the customers get the best that they can afford.

If you look down the list on my one-page estimating form, you'll see that almost every item can be figured as a unit cost, a lump sum, or an allowance.



Figure 1. With sills and girders in place, the foundation is ready for the house package. Everything from housewrap to skylights arrives on the boom trucks.



Figure 2. The author's crew lays down an entire floor deck in about an hour. The first panel is set as straight as possible (top), then a carpenter lays a bead of construction adhesive on the exposed edge of the last joist (left center). The next panel is set alongside (right center), and the two panels are pulled tightly together with come-alongs. A carpenter nails the panels together at the plywood joint (left).

The only variable is my employees' labor, and even that is much more predictable because I don't have to stick-frame. It takes us just one or two days to dry in the shell, including all windows and doors. I estimate labor by the week, and try to be a little generous. That way, we'll either leave the job ahead of schedule, or spend the leftover time on extras for the customer (a great way to win friends and influence people).

Production and Profit

I've already explained how overhead items like selling and estimating are reduced by panelizing. But panelized construction also cuts down on production time — dramatically. Our time on site runs from about eight weeks for a small house to about sixteen weeks for a sprawling custom job. A couple of years ago we built a colonial house in five weeks, from the day we set the package to the day the family moved in.

That production efficiency means that my total profits are much higher than in stick-framed custom work. I take the same markup on a panelized house that you would on a stick-framed custom home. The markup goes on a line at the bottom of my estimating form; I generally set it at anywhere from 18% to 22%. I mark up the house package, the subs, my labor — everything.

But the key is that I can produce the same or higher gross profit in a much shorter time, because we are on and off the job so fast. All the delays that can bog down a house project during the framing phase never happen to us.

The chart, "Comparing the Cost of Panelized" gives some examples, using real numbers from my own business. Column A is a stick-framed house I built a few years ago. Column B is a comparable modular package. Column C is a large custom home using a panelized shell.

As you can see, house A gave us what many builders would consider an adequate gross profit over several months. House B, the modular, gave us almost twice the gross profit — in just a few weeks. House C, the big custom panelized, gave us a much higher gross profit percentage than house A in about half the time. If you can follow these numbers, you'll understand why I say that panelized and modular homes have made my business a success.



Figure 3. Once the floor system is assembled, it may need to be shifted slightly on the foundation. The author uses his excavator to push or pull the floor into place, but come-alongs chained to a tree will get the job done.

On Site with Panelized

Here's the part the carpenters want to know: How do you put the things together? The truth is, it's a piece of cake. A decent panelizing factory will send experienced crane operators who can — and do — guide homeowners in assembling packages. A homeowner might take several days to finish the job, but any competent framing crew could do it in a single summer's day.

Before the crane trucks arrive with your panelized package, make sure everything's ready. Sills, girders, and supporting framing (like a walk-out basement wall) have to be in place (see Figure 1). A crew of three or four is plenty to set a house. For tools, you'll need about what you use to stick-frame, plus a couple of good come-alongs. We use a compressor and air nailers, though you could get by without them. A generator is usually on site, but it's rarely running. And because the panels are designed to fit together right off the truck, we use a power saw only occasionally, if at all.

Floor Systems

Not many companies panelize the floors, but my panelizer, Harvest Homes (185 Railroad Ave., Delanson, NY 12053; 518/895-2341), has been doing it for 20 years. The deck plywood hangs over the edge of each

panel, so it can be glued and nailed to the end joist of the previous panel (Figure 2).

The key thing to remember is to connect all the panels to one another before you nail the floor system to the sill. If your first panel is a little off kilter, you might be off by a couple of inches when you get to the other end of the house — not good if everything's nailed down. We usually get things lined up as well as we can, then shift the whole floor around with the excavator if it needs it (Figure 3). I have my own excavator, but you don't need one — come-alongs hitched to a tree or to the crane trucks will also do the job. Including last-minute adjustments, an average floor system should go down in an hour or two.

Walls

Once the deck is set, your lead man has to get the exterior walls laid out with a chalk line. Then he can lay out the interior walls while the rest of the crew sets the outside wall panels in place (Figure 4). The interior wall panels aren't sheathed, so they're light enough to be lifted in as a bundle and hand-carried into place one by one.

If your first-floor walls aren't in place by noon, you must be running a poker game, too. Just remember to get every-

thing plumbed, lined, and braced before you move on to the second-floor deck.

Upper Stories

The second-floor deck is just like the first floor, but you may have to stick in an occasional header or beam as you go. In an hour or so, you'll be ready for second-floor walls.

Stick-framers often lift materials up to the second floor by hand. With the truck crane, we get the wall panels up and nailed together in less time than they would take just getting the studs and plywood up.

Complicated details like gable ends and dormers go together just as easily as straight walls (Figure 5). You should be ready for rafters or trusses by mid-afternoon.

Roof Systems

The panelizer I use is also a truss company. Whether the roof is trusses or rafters, though, it all arrives precut and ready to go. If it's a truss roof, the crane stays and lifts each truss into place for us. If we're using rafters, we have the drivers drop the bundle and leave. They can put the bundle on the second floor if we want, but we generally find it's easier to handle the rafters from the ground — it's the framer's choice.

Comparing the Cost of Panelized

	A. Stick (2,750 sq. ft.)	B. Modular (2,750 sq. ft.)	C. Panelized (7,200 sq. ft.)
House Package	None	\$ 93,629.70	\$ 85,476.37
Additional Materials	\$111,807.60	17,306.12	61,637.37
Total Materials	111,807.60	110,935.82	147,113.74
Labor	29,746.85	13,310.86	38,980.10
Subcontractors	38,063.27	23,766.77	72,591.48
Total Costs	179,617.72	148,013.45	258,685.62
Total Revenues	199,051.94	184,048.60	311,314.00
Job Profit	19,434.22	36,035.16	52,828.38
Job Duration	5.3 Months	1.6 months	4 months
Percent Gross Profit	10%	20%	17%

Note: The chart compares gross profit margins for conventionally framed, modular, and panelized homes built by the author in recent years. The author realized a substantially higher net profit on the panelized and modular homes, in a shorter time. Note that while the panelized house is more than twice as large as the modular or stick-built, using panels allowed the house to be priced well under \$50 per square



Figure 4. Exterior walls drop into place as the lead man lays out the interior (left). Interior walls are boomed into the house in bundles and hand-carried into place (right).

Finish Details

Once the frame is done, the rest of the materials we need (housewrap, flashing, trim, and so on) are all set to go — they arrive on the truck with the house package. You can have roofing delivered on the truck, too, but I have the roofer bring his own. We do our own insulation and siding, so we supply those materials, but you can also have those delivered as part of the package. In general, I find it cheaper and more convenient to have materials for the house delivered at one time this way — no waiting around for deliveries, and no sending someone out for a forgotten item. If the panelizers forget and leave something off the load, I back-charge them. It rarely happens.

Take Your Time

If I could give a crew one piece of advice, it would be this: Slow down. Carpenters who have spent their lives stick-framing have a hard time getting used to the idea that you can dry in a house in one or two days without breaking a sweat — but you can. Any time you gain by rushing will be completely blown if you nail something in the wrong place.

The smartest thing to do is to take your time, and pay attention to the layout. Get all the walls in the right place, and make sure everything is plumb, straight, and square. When it's time to do finish work, you'll thank yourself for getting the framing just right.

Adding Panelized to Your Business

What a contractor gets out of panelized and modular construction depends on what he or she wants. If you're the kind of builder who likes being on site and banging nails, panelized will give you plenty of chances to swing your hammer — and you can boost your volume and profits. You can stay small and focus on custom finish, or grow bigger and build 10 or 20 houses a year.

On the other hand, if you're a remodeler, panelized homes can enable you to break into new construction. Believe it or not, I run a remodeling company as well as being a custom builder — we do basement remodels, kitchen additions, anything. With panelized, you can run a full-time remodeling business and build custom homes as a sideline.

I invite any builder to make the comparison himself. Build a nice custom home, stick-framing the whole thing. Then build a similar house using a panelized package from a good factory. Compare the time you spend on estimating, chasing after materials, trying to keep on schedule, and supervising, and notice how accurate (or inaccurate) your estimates turned out to be on each job. Compare the quality of the product. Then compare your monthly gross profit. In short: Try it — you'll like it. ■

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Figure 5. Gable walls go as quickly as any other element of the package. With his remote control, the crane operator has a clear view of the job.