by Lee McGinley

# Fast Framing with Panels

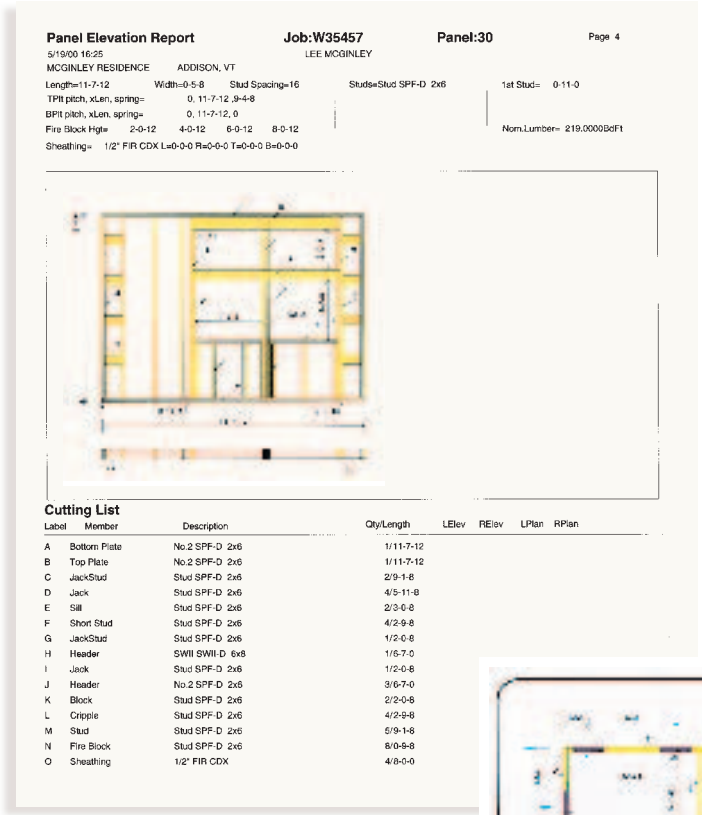
Save time and reduce labor costs using premanufactured panels and a crane

Finding good help has always been tough, and the current boom economy has made it tougher. I tackled a recent labor problem by hiring a company to panelize a 2,400-square-foot house. By shifting the labor burden to the panelizer, I only had to hire an inexperienced helper and pay for some crane time, rather than assembling an entire crew. We erected the shell in four weeks, or about the same amount of time it would have taken an experienced four-person crew to stick-frame the same structure.

## Planning and Design

I shopped around among several panel manufacturers before settling on Sprowl Building Components in Searsmont, Me. — a relatively small shop that was willing to work with my custom design, rather than trying to steer me to a preset package. The company will also modify its framing details to suit customer preferences, as long as the details conform to code. For example, double rough window sills could be substituted for Sprowl's single-sill detail.

***Drawing the plans.*** I hired a residential designer to draw a set of floor plans and elevations for the 1 1/2-story house, which has a shed dormer on the south and a gable dormer over the stairway on



**Panel Elevation Report** **Job:W35457** **Panel:30** Page 4

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MCGINLEY RESIDENCE ADDISON, VT

Length=11-7-12 Width=0-5-8 Stud Spacing=16 Studs=Stud SPF-D 2x6 1st Stud= 0-11-0

TPlt pitch, xLen, spring= 0, 11-7-12 ,9-4-8

BPlt pitch, xLen, spring= 0, 11-7-12, 0

Fire Block Hgt= 2-0-12 4-0-12 6-0-12 8-0-12 Nom.Lumber= 219.0000BdFt

Sheathing= 1/2" FIR CDX L=0-0-0 R=0-0-0 T=0-0-0 B=0-0-0

**Cutting List**

| Label | Member | Description | Qty/Length | LElev | RElev | LPlan | RPlan |
|---|---|---|---|---|---|---|---|
| A | Bottom Plate | No.2 SPF-D 2x6 | 1/11-7-12 | | | | |
| B | Top Plate | No.2 SPF-D 2x6 | 1/11-7-12 | | | | |
| C | JackStud | Stud SPF-D 2x6 | 2/9-1-8 | | | | |
| D | Jack | Stud SPF-D 2x6 | 4/5-11-8 | | | | |
| E | Sill | Stud SPF-D 2x6 | 2/3-0-8 | | | | |
| F | Short Stud | Stud SPF-D 2x6 | 4/2-9-8 | | | | |
| G | JackStud | Stud SPF-D 2x6 | 1/2-0-8 | | | | |
| H | Header | SWII SWII-D 6x8 | 1/6-7-0 | | | | |
| I | Jack | Stud SPF-D 2x6 | 1/2-0-8 | | | | |
| J | Header | No.2 SPF-D 2x6 | 3/6-7-0 | | | | |
| K | Block | Stud SPF-D 2x6 | 2/2-0-8 | | | | |
| L | Cripple | Stud SPF-D 2x6 | 4/2-9-8 | | | | |
| M | Stud | Stud SPF-D 2x6 | 5/9-1-8 | | | | |
| N | Fire Block | Stud SPF-D 2x6 | 8/0-9-8 | | | | |
| O | Sheathing | 1/2" FIR CDX | 4/8-0-0 | | | | |

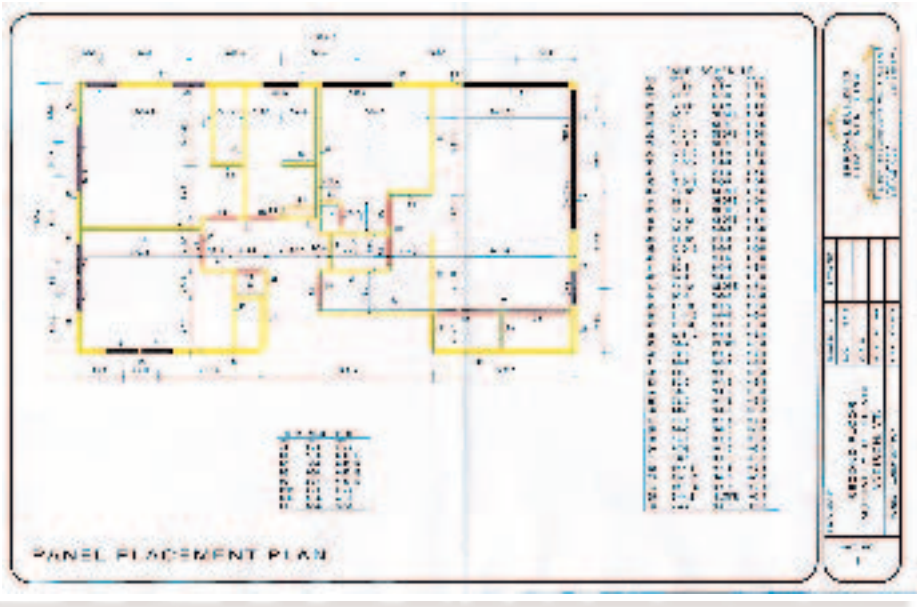


**Figure 1.** The panelizer's schematics detail each panel (left) and its place in the floorplan (below). The wall panel drawing labels components and provides a cut list. Similar information is given for truss layout and construction. Booklets shipped with the panels contain the final schematics for all components as well as bracing patterns for the roof and floor trusses.

the north. The first floor has an open floor plan with a step down to the living room; bedrooms and two bathrooms are on the second floor.

Unlike some panelizers, Sprowl doesn't preinstall windows. I planned to use Eagle windows and doors, so the drawings noted the center-to-center distances between rough openings. Each opening was identified by a letter, and a separate window schedule gave rough opening dimensions.

I specified 2x6 exterior and plumbing walls, 2x4 framed interior walls, and 5-ply fir plywood sheathing, which I prefer to OSB. The floors and roof were framed with trusses.

Sprowl redrew the plans with their proprietary software (which will import AutoCad files, if you have your plans on disc), then printed out about 35 pages that detailed each panel and truss (see Figure 1).

***Proofing makes perfect.*** Because the panel manufacturer works out all the details of the framing, you never have to do a takeoff. But another important responsibility takes its place: The necessity of going over each sheet, comparing it to the original plans, and making any necessary corrections. Once you've signed off on the manufacturer's plans, any inconsistencies are your problem.

I proofed the plans carefully, but I failed to catch one minor glitch. The original plans included a step down to the living room, and this should have been taken into account in the framing of the exterior walls. Because it wasn't — and because I didn't notice the omission in the proofs — I had to deal with it on the job site, by stick-framing a low wall to fill the gap. I'll be more careful next time.

## Assembling the House

About two weeks after I signed off on the plans, the panels and trusses were ready to ship. As luck would have it, the two flatbed trucks arrived at the site during pouring rain. We piled everything on the ground and called it a day.

When the weather cleared, we called the crane back to set the first-floor girder and floor trusses on the foundation, then stacked the subfloor sheathing on top. (Given better weather, we could have done this as part of the initial unloading and saved an hour or two of crane time.)

***Wall connections.*** After spending a

couple of days gluing and screwing down the subfloor, I scheduled an afternoon session with the crane to set, line, and brace the first-floor exterior wall panels (see the photo on page 61). The exterior wall corners were framed with 12-inch-wide "ladders" at the end of one panel, to which the end stud of the adjoining panel is toe-nailed.

The next morning, I positioned and nailed the first-floor interior wall partition, while my helper readied the second-floor trusses and subflooring to be lifted into place (Figure 2). As with the exterior wall panels, partition walls were joined at "ladders" built into the framing. This worked very well and made it easy to align the walls while providing some flexibility in the floor plan (Figure 3). If it doesn't cause problems elsewhere, nonbearing partitions can easily be shoved one way or the other by a few inches to alter the size of a room or closet.

**Figure 2.** Bundled second-floor trusses are set atop the first-floor walls. The lumberyard strapped together several sheets of plywood subfloor before delivering it to the job site. The 20-foot-high stairwell panels are visible in the background.

***Fasteners.*** To avoid having to drag an air hose around while setting the panels, I'd planned to tack things together with a few fasteners from a Paslode Impulse nailer, then go back and finish up with a regular air nailer. As things worked out, though, we relied on the Impulse nailer almost completely. The absence of air hoses running over the deck made it easier to jockey the panels around.

***Finishing up.*** It took two more return visits from the crane to get the structure closed in. The first came after we'd finished gluing and screwing the second-floor deck, when we set the second-floor walls (Figure 4, next page). Once the two of us had finished setting the exterior walls, we had the crane place the interior walls in the center, then sent the operator home.

The second session came after we'd finished setting the second-floor partitions and were ready to begin on the roof trusses. The crane lifted the bottom halves of the piggyback trusses into place one at a time as we nailed them off (Figure 5, next page). We braced the trusses as directed by the manufacturer, loaded the roof sheathing on top, and raised the top halves of the piggyback trusses into place. That was it for the crane. At that point, we just had to slide the top sections into place, nail them off, and apply the sheathing.

Finally, I hired a three-man framing crew for a day to set the windows and exterior doors and run the plywood band between the first and second floors.

## The Bottom Line

Overall, panel quality was very good. All the pieces were cut to exact measurements, and the panels fit perfectly as drawn, except for the one I should have corrected at the proof stage. In a few cases, the panel sheathing overhung the end of a panel by a quarter inch or so, but this was easily corrected with a power plane. One minor annoyance was the quality of the factory nailing at the partition backers. The toe-nails were left protruding and had to be hammered down by hand. I was very happy with the quality of the finished shell, which was comparable to one put up by a custom framing crew.

***No crane, no crew.*** Panelizing cuts your labor requirements to the bone, but it increases your reliance on a crane and operator. I hired a crane service that had several machines available and

**Figure 3.** Partition-wall intersections are simplified by the presence of framing "ladders." The end stud of the adjoining wall is nailed to the ladder, as shown here, making it easy to adjust the final position of nonbearing partitions as needed.

was willing to give my job first priority in scheduling. In return, I agreed to give several days' notice when I needed the crane. Although the company was about 20 minutes away, the $65 hourly rate covered only the time on site, not travel time.

Even so, there was some unproductive crane time. At one point, we had to spend an hour or so straightening walls while the crane and operator sat and waited, because it didn't make sense to have them leave and come back. Next time, I might try to tighten up the crane schedule by adding another experienced carpenter, for a total crew of three.

***Costs and savings.*** In all, the bill for the crane and operator came to just under $2,000. The panelized walls, floor trusses, and roof trusses came to just under $15,000, including $1,000 for trucking. (Sprowl makes local shipments with its own trucks, but because my site was a six-hour drive from the factory, I had to pay for shipment by common carrier.) The complete materials package — with me supplying the $1\frac{1}{8}$-inch plywood subflooring, $\frac{5}{8}$-inch plywood roof sheathing, and 2x bracing — came to less than $8 per square foot of floor area, or about what it would have cost for the materials to stick-frame a comparable structure.

Because I had to pay only myself and a low-priced helper, though, labor costs were far lower. Our combined wages for the four-week job came to less than $5,500. If I'd been asked to bid on stick-framing an identical structure, I would have charged $10 per square foot for labor, or about $24,000.

***Fringe benefits.*** I figure that going with panels saved me a good $18,000 in labor. I saved another $500 by doing away with the usual job-site dumpster, since panels generate virtually no waste. By not having piles of framing material on site, I also simplified material handling and pilferage. I wouldn't hesitate to go with panels again.

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**Figure 4.** Second-floor exterior wall panels were lifted individually into place from the ground. The gable wall panels were framed floor to roof as single units to avoid a potential hinge effect that might arise with separate wall and gable panels.

**Figure 5.** The top half of the piggyback trusses went up next (above). The shed dormer houses the master and guest bathrooms. At left, the nearly finished house.