

Homebuilding By the Numbers

An F.O.B. kit for D-I-Y owners.

By A.J. Lapinsky

When we started planning our home together ten years ago, my fiancée, Karen, and I had a fairly clear idea of what we wanted: a *real* house with room for a family, enough land for a garden and a few animals, a place where we could pursue our goal of a cozy, self-reliant lifestyle.

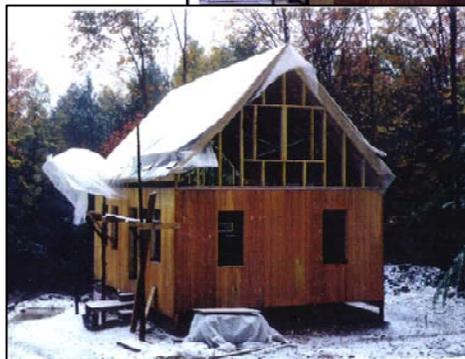
But when we started house-hunting, we found that home prices, even in our fairly remote corner of western Massachusetts, were well beyond the means of what would soon be a one-income family with two small children.

Meanwhile, at the start of 1987, I bought a 30-acre lot in a mixed hardwood forest on the westerly slope of a small mountain near our little town of Chesterfield. The father of one of my friends was an old Yankee who knew this area before cars were common, and he offered me some advice: "Nestle your house in the trees, and you'll keep warm in the winter and cool in the summer."

That spring I cleared a small section beside our dirt road, about 80' wide by 100' deep, in a spot where we'd still get some sun yet be protected from the north and west winds by a good number of mature maples and birches and more than a few evergreens. I planned to have the house face south, about 85' back from the road and parallel to it.

In the meantime, the housing situation hadn't improved. (Nor had our finances, after closing on the land!) But I'd been reading in some of the do-it-yourself magazines about kit houses—pre-designed, pre-cut structures delivered to the customer's site from a manufacturer elsewhere—and the idea began to click. Sears Roebuck & Company had sold homes that way many years ago and had been quite successful at it.

I suppose I was looking for something like a Cape Cod cottage—simple, sturdy, and affordable in steps . . . a basic core that could be added onto as we grew. During the three years that



our plans were taking shape, I'd sent away for information on at least 15 different types of kit houses, which we eventually narrowed to three. Finally, with a mixture of excitement and trepidation, we ordered a 1,056-square-foot "Lofthouse" from a company called Shelter-Kit in nearby New Hampshire.

I chose a 20' x 32' plan, which seemed to be as much as I could realistically handle. This actually consisted of a one of Shelter-Kit's standard 20' x 24' designs, enlarged with a 20' x 8' addition. To upgrade for more insulation, we chose 2" x 10" roof rafters over the standard 2" x 8"s, and wider 2" x 6" framing for walls rather than the standard 2" x 4"s. The larger pieces would also provide a sturdier framework, which gave me greater confidence that our new home would really be built to last.

The layout is basic and functional.

The first floor is divided roughly in half, with the kitchen and bathroom partitioned off to the western side and the living room on the east. The chimney is in the center, protected from cold and wind. A central stairway goes up to the bedrooms in the 416-square-foot loft.

We decided to buy from Shelter-Kit because the Lofthouse fit our situation almost perfectly. First, the substantial size and affordable price would allow us to get a roof over our heads in a matter

of weeks without a crippling mortgage burden—due in part to the fact that we, as owner-builders, would be doing nearly all the labor. Second, the Lofthouse design was strong, simple and adaptable, with a post-and-beam structural system that was already code-approved. Finally, I was told that the company had gotten its start in 1970 by making pre-kitted shelters for remote sites, and I

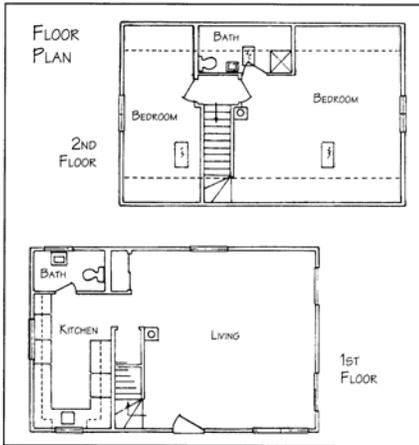
Shelter-Kit Incorporated

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figured they'd be well-versed in preparing and shipping an entire house without a glitch.

A Smooth Start

Shelter-Kit advertises that their homes are specifically designed to be erected by people with no previous construction experience,



using only hand tools, so you don't even need electricity. Everything comes pre-cut from the factory, and each piece is labeled in accordance with steps in a construction manual so the structure fits together easily, like a kind of three-dimensional puzzle.

Even so, that spring was a

whirlwind of activity. Besides clearing the land, we had to apply for our building permit, get a 260' well drilled, and have the septic field surveyed—all before July, when the foundation had to go in. To save money, I had planned to build the house on concrete piers, but Karen convinced me that a full cellar would be worth the extra expense. She called around town to get the best price, and we hired two experienced masons, Don and Gene, and they set to work putting in a cement-block foundation with a poured floor.

Working mostly weekends and evenings, and usually on my own (though family members and church friends pitched in at critical moments) I managed to get the shell up in just 12 weeks through the rest of the summer and fall. We started on the interior the following spring, and by September, right after our wedding, we moved in. The process never ends, though, and as I write this, Karen and I and our kids are hard at work on an addition.

Assembling the Kit

In case you're wondering (and I sure was, at first!) the kits come in numbered bundles, none weighing more than 100 pounds. Five of us—me, my dad and brother, and our neighbor Jay Maple and his son—offloaded the lumber and supplies from the delivery truck, and I began construction almost immediately.

Once the foundation and anchor bolts are in place, there are about a dozen phases to the construction process. The first-floor frame and posts go in first, then 3/4" tongue-and-groove plywood is glued and nailed in place to create the first-floor deck. The loft (second-floor) frame and deck go up next.

Then come the first-floor walls—shoes, studs, door and windows frames, and sheathing—followed by the roof frame, gable studs, and roof sheathing, flashing, and shingles. The final steps are to put in the gable sheathing, install the doors and windows, and nail on the trim.

In these Shelter-Kit houses, the posts carry all the weight of the building and its contents. They're made of structural-grade

Douglas fir, and each one is cut and drilled to exact dimensions and marked for its location and orientation. The floor beams are actually double-chord trusses, specially manufactured to Shelter-Kit's specifications. These trusses are a unique feature and give the structure much of its strength. The header trusses are connected to the posts along the side walls using bolts and special collar hardware. By ordering additional pairs of header trusses, as I did, you can increase the length of the house in 8' increments. The joist trusses span the width of the house and connect pairs of posts on opposite sides of the building, using the same special connectors as the header trusses. There is also additional bracing (ledgers and strongbacks) to help support and stabilize the floor trusses.

Following the instructions, I started by making up several sub-assemblies, each one consisting of two posts, a floor truss, and two floor-header trusses. These are put in position on the foundation and bolted to anchor bolts that were previously cast into the concrete.

We put the four post-and-truss assemblies in place, bolting each new assembly to the previous one, to make up the basis of the first-floor frame. Once the whole assembly was squared, we tightened down the bolts and then installed another 12 joist trusses and glued and nailed the plywood flooring in place.

At that point I could already see our house taking shape: a solid 20' x 32' floor with ten posts extending upward to the top of the second floor. Assembling the loft-floor frame seemed much

easier. The two floors are identical, and since I had already assembled one, and I had the brand-new first floor to work from, it more or less seemed to assemble itself.

With one or two helpers working from stepladders, the trusses were easier to handle, and they locked quickly into the pre-drilled holes. Seeing the rafters and joists against the summer sky was a real thrill, and I realized that something I had dreamed about for years was really happening.

Not that it was all easy. Some tasks, like installing the studs and nailing on sheathing, were repetitive and tiring. The job of measuring and marking the locations for 36 rafters, and installing four steel framing angles for each one, seemed endless at first. But as the procedure became familiar it also seemed to go faster.

Completing the roof was probably the hardest part of the job, what with having to climb up and down ladders and staging to bring up the shingles and other materials, but there is a wonderful "mission accomplished" feeling about standing under a roof you've just built yourself.

I did some of the heavy work alone, but surely was thankful for the friends and family who pitched in when they had time. Some days I had a volunteer crew of one to seven people helping out. Even so, I'd have to say that building the house took up pretty much all my available time and energy for about three months. I was able to take a week of vacation from my full-time job in July and another two weeks in August so I could work all-out on the house. But most days I had to put in eight or nine hours at the



plant and then come “home” to start work on the house at around four in the afternoon.

By mid-October we had the weathertight shell up: roof, windows, siding, and doors. The masonry chimney and shingles were finished last, and by then I was finished too—or at least ready for a little time off!

Interior work

Karen and I were anxious to get our occupancy permit by the end of the following summer, so after a break of a month or so, right after the holiday season, we got back to work. I moved our Blaze King woodstove into the basement so I could heat up the house a few hours before starting to work on the inside. I put in the insulation myself, but contracted out the plasterboard as well as the electricity and plumbing work, which of course required licensed professionals.

Karen took a lot of care to sit down and plan out exactly what kind of fixtures she wanted and where she wanted them, well before the electrician and plumber started work in February. She also made a point of driving out to monitor their work and make certain they were following the game plan.

Moving In

By the end of August, the house was ready. Karen and I got married September 4, 1988, and we moved in right away. There was still a lot to do, and eight years later there still is. The siding, for one thing, is the original Texture 1-11 plywood, which is serviceable but not attractive. We’ve decided to replace it with rough-cut lumber (fortunately, Karen has relatives at several sawmills nearby).

We also haven’t completely finished the inside, but we’ve decided to hold off until some additions are in place. In fact I still don’t have the window trim up, because some of the existing walls will be moved when we decide on our additions. Then we’ll know where all the windows and doors are going to stay. Try *that* with a conventional house!

Our ultimate plan is to make this a small working farm and raise more of our own food as time goes on. We’ve put in an orchard and a small garden, and Karen is experimenting to see what vegetables grow best here in the Berkshires. As of now, we’ve got four geese, three ducks, and eight or nine chickens. Next year we’ll add a few young pigs. We’re getting a little more acreage logged this year, so next year the pigs will root out saplings, and that will make nice pastureland for a few cows.

We’ve already acquired an antique Glenwood cookstove that’s destined to go into an enlarged kitchen. In fact, we’ve already designed and built out first addition, a 16’ x 20’ ell at the northwest corner of the house. The Lofthouse design is flexible enough to allow for many kinds of modifications, and this time we bought locally and stick-built, using lumber from a supply yard that was going out of business.



Looking Back

One of our important goals from the start had been to keep our long-term monthly expenses under \$400, and we’ve been able to do it.

The cost for the entire project came to about \$43,000. Luckily for us we began in the late 1890s, when the lending rates were down below 7 percent, so it was a good time to borrow and a great time to build. I took out a \$60,000 loan at first, and used \$29,000 of it to buy the land. The house kit itself, with all the extras, taxes and so on, was just under \$24,000. The full basement added \$5,000, and by the time we were finished we had to borrow \$12,000 more to cover the well (about \$1,000), septic system (almost \$3,000), plumbing, wiring, and unforeseen expenses.

For anyone who wants to try this approach, I have several suggestions. First, talk to people who have done it before to get a real idea of the challenges involved. On the other hand, don’t be overwhelmed by the idea of building it yourself.

For the work that has to be hired out, such as excavation for the foundation, installing the septic system, putting up plasterboard,

and so on, use local help. You’ll get a good price, a few helpful tips, and you’re likely to make some good friends. At the same time, don’t let your contractors go unsupervised.

I would also say you should consider a full basement rather than concrete piers and a crawl space. It added to our costs, but it’s given us space for the kids’ playroom and the laundry room, and a convenient place for a woodstove that keeps the entire first floor comfortable without creating a mess.

Finally, there were benefits that aren’t as easy to put into words. Through the long process, I think we’ve learned to depend on each other and make things work. Not only have we become closer as a family, but we also got a real house in the bargain. 

For more information on the Lofthouse and other kit structures, contact Shelter-Kit Inc., 22 W. Mill Street, Tilton, NH 03276, 603-286-7611, questions@shelter-kit.com.