by Gary Rowland

Making Room at the Top

Storage trusses create usable attic space — for less than a dollar a square foot

Roof trusses have a lot going for them. They save time, which means they save contractors money, and they eliminate the need for interior columns or bearing walls. The downside is that the attic space becomes a web-filled jungle, unsuitable for storage. But it doesn't have to be that way. Storage trusses can provide usable space in the attic at a very reasonable cost.

Case in Point

During the initial design of a three-story addition we built earlier this year, the clients requested that several large rooms on the top floor be free of posts. Trusses were the natural choice to clear-span the 24-foot-wide addition, so I put together an order for standard "W" trusses and set up a delivery with my truss supplier. A few days later, however, the homeowner changed the scope of work to include finishing off part of the basement in the new addition, which meant losing a large storage area.

Since my order hadn't been fabricated yet, I suggested using storage trusses instead, to make up for the lost storage space. Storage trusses provide the same clear-spanning ability, but reconfigure the interior webbing to provide an open area in the middle of the truss (see "Storage Truss Design"). The homeowner liked the idea, so I called the truss manufacturer to find out the details.

To provide enough headroom within the storage truss, the original roof pitch needed to be changed from a 6/12 pitch to an 8/12 pitch. This provided a storage area 6 feet high by 10 feet wide (see Figure1). A standard truss would have come with a 2x4 bottom chord, but because of the additional weight these storage trusses would be carrying, a 2x6 bottom chord was used.

Figure 1. *These storage trusses span 24 feet and provide a usable attic space 10 feet wide by 6 feet high.*

Bring in the Sky Hook

Deciding to use a crane to set these trusses was easy: The top wall plate on the third floor of this addition was more than 30 feet off the ground! The cost of renting the crane was $80 per hour with a four-hour minimum billing. Billable time included round-trip travel time, setup time, and shut-down time.

To minimize crane time, we lifted the trusses in bundles of three and stacked all the trusses on top of the third-floor walls (Figure 2). While the crane was set up, we also lifted all the plywood sheathing onto the third-floor deck. The total crane time on site was two hours. After the crane had unloaded all of the trusses, we tilted the trusses up one at a time with a push stick (Figure 3). We used Truslocks to maintain spacing and as temporary bracing (see "Spacing and Bracing").

Had this been a one- or two-story addition, we would have unloaded the trusses by hand. Be sure to line up a crew of four sturdy people before you try this. The storage trusses we used were slightly heavier than conventional trusses, but what made them especially difficult to handle was the higher center of gravity created by the increased roof pitch.

Weathering In

Once the trusses were set and temporarily braced, we applied the plywood sheathing just as we do with conventional trusses. Our local code allows us to use 1/2-inch CDX plywood

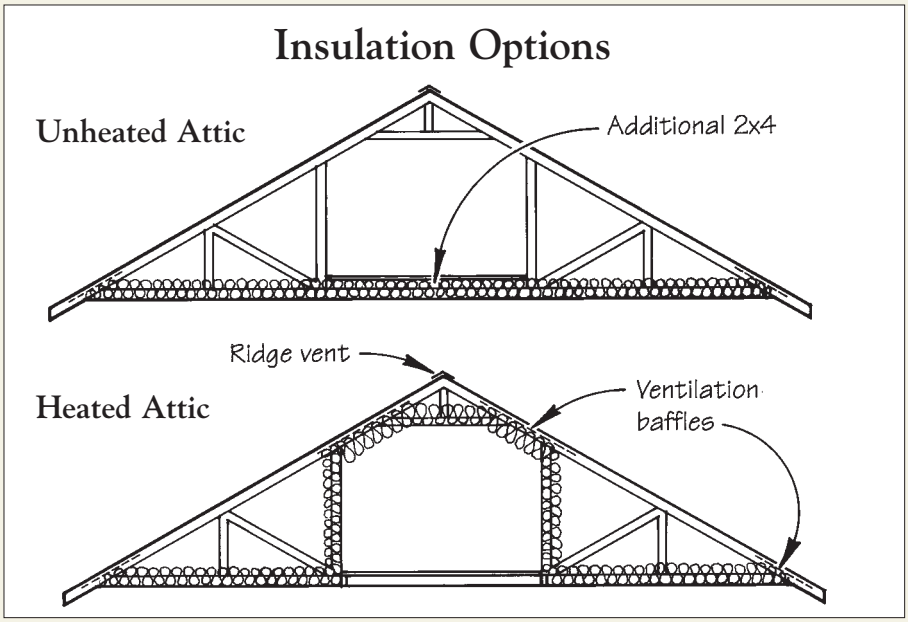
Storage Truss Design

Probably the most familiar truss design is the Fink truss, named after the engineer who designed it. This style of truss uses minimal material to perform its task, but the W-shaped web design discourages any use of what would normally be attic space. A storage truss reconfigures the web to leave the center open.

Extra Loads

Most attic space is quickly and completely filled by the homeowners, so storage trusses must be engineered for heavier loads. Our truss manufacturer allowed for an additional 20 pounds per square-foot storage when designing the trusses, which required a 2x6 bottom chord. When the open area is used as living space, storage trusses are designed to support 40-pound live loads, and often require a 2x8 bottom chord.

Bracing requirements for storage trusses depend on how the truss is configured, and what the end use of the functional area is. In our case, the building inspector required double catwalk bracing on the bottom chord, just outside the storage area. Be sure the truss manufacturer supplies you with bracing information for your particular truss design and loading situation.



For an unheated storage area (top), the truss maker can add a 2x4 to the bottom chord to accommodate the required insulation. For heated storage (bottom), remember to use ventilation baffles to allow air circulation to the ridge vent.

Insulation

It's a little more difficult to insulate storage trusses than conventional trusses. If the storage area is unheated, you may need to raise the floor in the storage area to provide enough room for insulation (see illustration). If heated, then the walls and ceiling of the storage area will require insulation. With a vented ridge, be careful to maintain a ventilation space where the storage wall meets the top chord of the truss.

— G.R.

Figure 2. *To minimize crane time, the trusses were lifted in bundles of three and placed on the third-floor wall plates.*

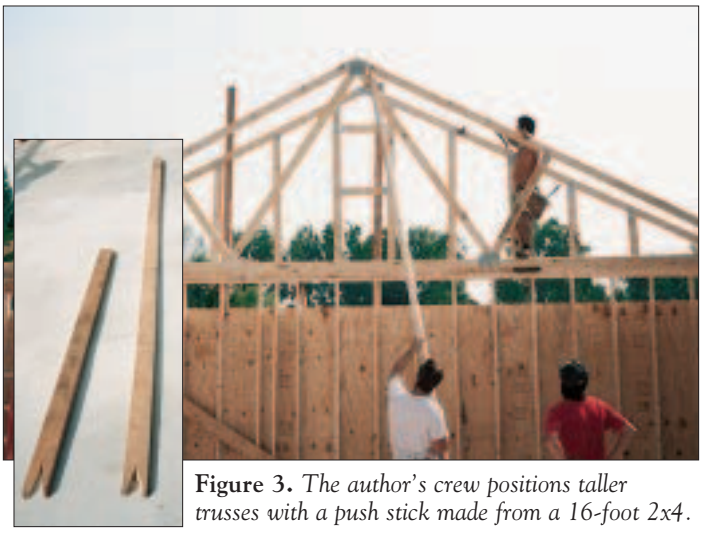


Figure 3. *The author's crew positions taller trusses with a push stick made from a 16-foot 2x4.*

or 7/16-inch OSB on trusses spaced 24 inches on-center. For a stronger roof and a more substantial nail base, however, we use 5/8-inch CDX for 24-inch-on-center roof framing. The thicker plywood costs more, but I've seen the edges of thinner sheathing telegraph through the shingles on a finished roof.

To quickly "weather in" the addition, we covered the roof with 6-mil polyethylene. Roofing felt installed at this stage will ripple and not lie flat for the installation of shingles, so the roofer ends up tearing it off and applying new felt anyway. Installing the plastic is quicker and, in this case, allowed us to frame interior partitions during a stretch of wet weather.

Extra Dollars Make Sense

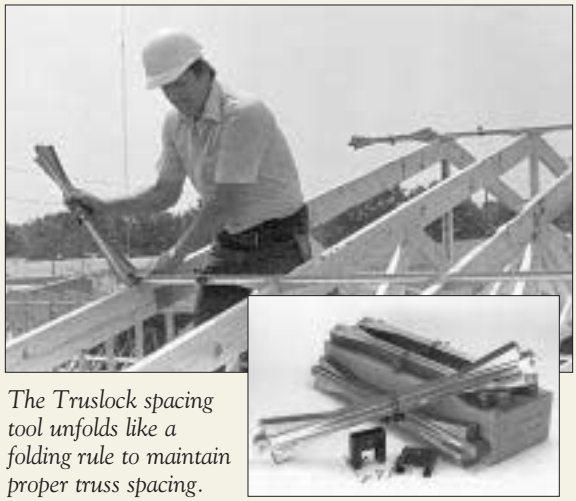
The additional costs associated with the storage trusses were surprisingly low. The truss manufacturer charged an extra $8 per truss ($4 for the storage web configuration and $4 to increase the bottom chord to a 2x6). My roofing subcontractor added $2 per square (a dollar per square for each unit rise in roof pitch). So the total additional cost for upgrading to storage trusses was $160. That's a great buy when you consider that using the trusses added 300 square feet of storage space.

In looking back over the job, I would use the storage trusses again, even if the customer was unwilling to pay the difference. Providing storage space at no additional charge will make a great impression on the customer and might yield some referral business. I was lucky on this job to be able to change the truss design late in the game. Next time, I'll decide on storage trusses early in the process. ■

Gary Rowland is a general contractor in the Atlanta area.

Spacing and Bracing With Truslock Tools

Truss fever: If the crew catches it, they think about one thing — staying ahead of the crane. Accuracy suffers, and mistakes are discovered when the plywood sheathing joints don't fall on the middle of the truss's top chord.



The Truslock spacing tool unfolds like a folding rule to maintain proper truss spacing.

To help control the fever, I decided to purchase a set of Truslock spacing tools (Truslock, 2176 Old Calvert City Rd., Calvert City, KY 42029; 800/334-9689). The advertising claimed that these spacing tools automatically braced and spaced trusses during installation, saving time and improving safety. Knowing that my crew and I were going to be 30 feet above the ground, the idea of improved safety was very appealing.

Truslock tools work like a folding rule. After the first truss is installed and braced, the tool is fastened to the braced truss and "unfolded" as each subsequent truss is installed, rigidly clamping the trusses in place at their proper spacing. As trusses are set and the permanent bracing is nailed off, the tool can be folded up and moved ahead for the next series of trusses.

This tool eliminated the need for most of the temporary lateral bracing we used in the past to support and space the trusses until the sheathing was applied. The "guaranteed" spacing (within 1/8 inch per 100 feet, according to the manufacturer) allowed us to confidently nail off permanent bracing as the installation progressed.

Since the Truslock tools took care of the spacing and bracing, my crew was able to focus on the crane, avoiding any symptoms of truss fever.

— G.R.