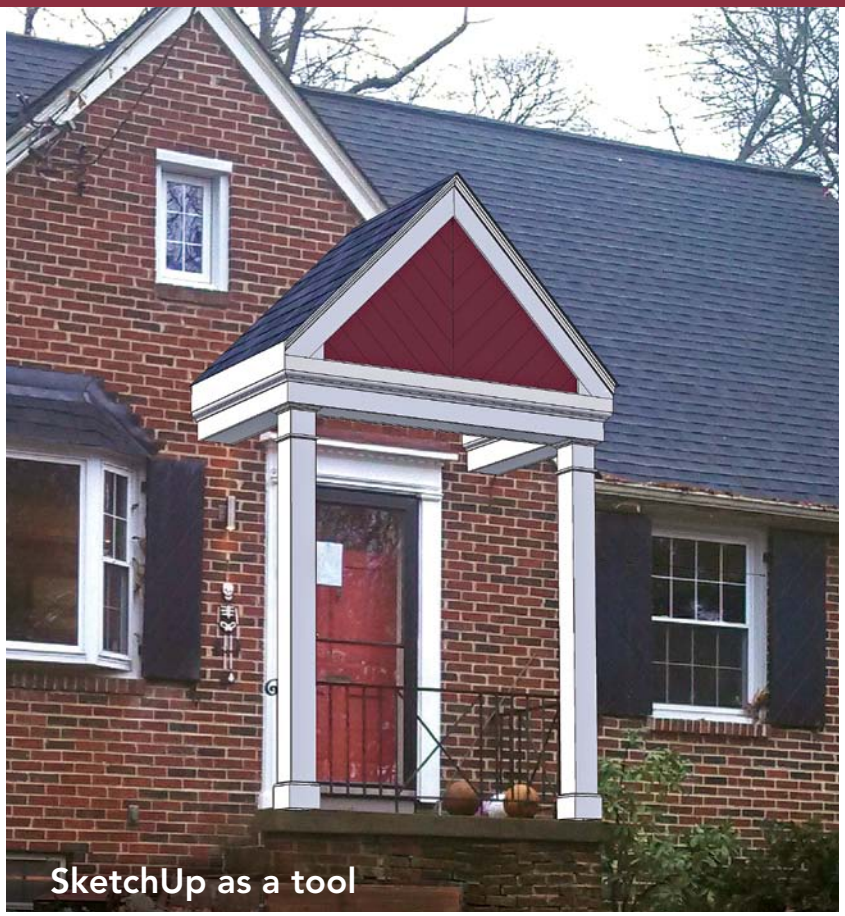
The Precut

The job

It was clear that the existing facade, while nice enough, would benefit both visually and functionally from an entry portico.



SketchUp as a tool

A computer model of the architect's plan was superimposed over a photo to show the homeowner what the final portico would look like.

BY MICHAEL PATTERSON

Make it look like the pretty picture. That's our job as carpenters—to bring someone's ideas to life in three dimensions. Sometimes, though, the carpenter and the customer have different visions, and details get lost in the translation. Avoiding that issue is one reason we have drawings.

There's another reason as well. Good drawings help me to complete the work quickly. A recent project where I built a portico on top of an existing concrete-and-brick stoop provides a good example of how drawings speed my work. Efficiency starts with thinking the details through beforehand. That sounds pretty obvious, if only because every job needs a materials list, a plan for how to proceed, and a time estimate. But in cases such as this small portico, I expand the concept. In the past, I would have estimated the rough dimensions of the parts and pieces to order the material. Once on site, I'd have figured out the exact dimensions of the framing, cutting the pieces to size just before installing them. Next, I'd have measured the installed framing to determine the sizes of the trim pieces, spending a lot of time running up and down a ladder. Complicating matters would be doing all that outside.

A few years ago, I started tackling smaller projects by first developing a detailed drawing and a cutlist with the exact dimensions of nearly every piece in the project. From that detailed list, I cut as much of the project as possible in my shop, right down to the trim. I usually still have to cut a piece or two on-site when existing conditions vary enough to make precutting dicey. Even on those pieces, though, I still do as much dimensioning or shaping as possible in the shop.

The advantages are obvious. The cutting is done with shop tools, which tend to be more

Photo far right, facing page: Greg Hadley

Porch

A detailed SketchUp model and cutlist allow much of this portico's prep work to be done in the shop

Most components were cut, and some were assembled, in the author's shop. Site time was reduced, benefiting both carpenter and client.

The completed portico deviates from the computer model only in the railing and the door treatment, the result of decisions made later in the process.

accurate than job-site tools. Much of the work is done out of the elements, and because the on-site time is minimized, there is less disruption to the client's life. My shop is at my home, so I have no commute, which is nothing to sneeze at in the traffic-clogged Washington, D.C., area. I also find that I can complete the job more quickly, in part because my trips up the ladder are only to install the components, not to measure for them.

Measure, then draw in detail

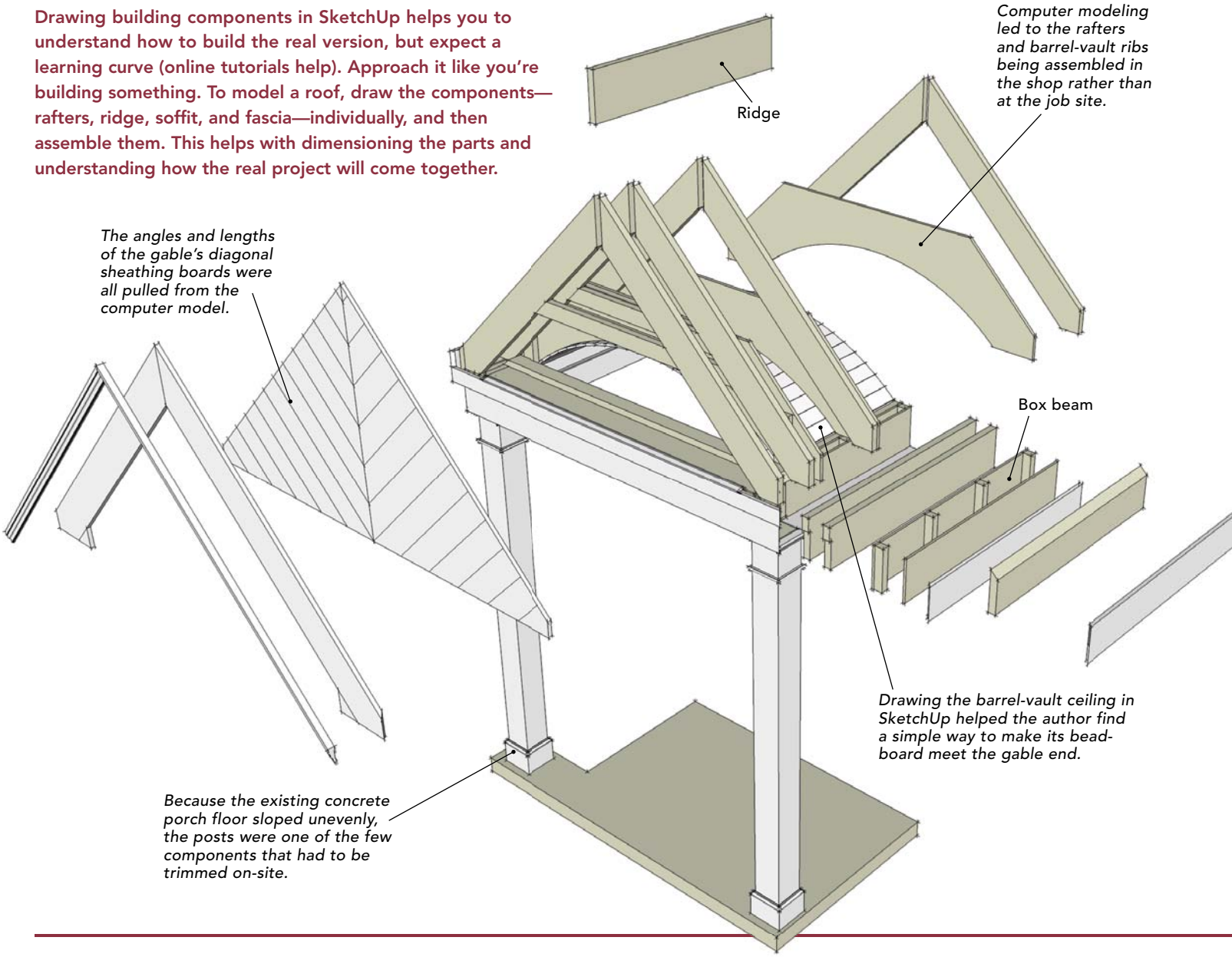
This portico was designed by Amy Stacy, an architect with whom I work regularly. Her drawings were accurate enough for me to estimate from, but to build a computer model and a cutlist with dimensions that were guaranteed to fit, I needed to quantify the site conditions exactly.

Conditions I check include not only dimensions but such things as whether the existing construction is plumb and level. A house wall that leans out far enough could, if not accounted for, leave the new column bases overhanging the edge of the stoop. I did find that this stoop wasn't level, so the posts had to be trimmed on-site. Since the new portico roof had to tuck just beneath and run parallel to the rake board on the existing roof, I verified that the roof pitch was drawn correctly on the plans. I also checked to see if the concrete stoop was centered on the door, or if it was offset. This would affect where the columns could be located.

One aspect I didn't check came back to bite me. I assumed that the house's brick walls were structural, a common detail in this neighborhood that would mean I could cut pockets into the brick and support the insides of the roof beams on the house wall. However, they turned out to be brick veneer, which by code can't be used structurally to support a load. This meant that I had to add structural posts down the face of the wall. Because of how these posts ended up having

"BUILD" IT ON THE COMPUTER FIRST

Drawing building components in SketchUp helps you to understand how to build the real version, but expect a learning curve (online tutorials help). Approach it like you're building something. To model a roof, draw the components—rafters, ridge, soffit, and fascia—individually, and then assemble them. This helps with dimensioning the parts and understanding how the real project will come together.



to be spaced, I had to move a light, which led me to add the paneling around the door. This is a good reminder to make no assumptions and to check everything carefully.

You can draw the parts of the structure underlying that pretty picture a number of different ways. In the past, I often drew things out full scale on a piece of plywood using a construction calculator and a framing square. Then I discovered a free drawing program called SketchUp. While it is not as powerful as a traditional CAD program or design-specific software programs such as Chief Architect or Revit Architecture, it lets me draw on the computer like I had so often drawn on plywood.

To develop the cutlist for this portico, I began by looking at the finished dimensions on the architect's plans. Then thinking from the outside in, I built a model of the portico in SketchUp with exact board-by-board dimensions. First came the trim, whose outside dimensions sprang from the architect's plans, and then the framing members, whose size was determined by the trim's dimensions. Math doesn't lie. Assuming you have accurate measurements, if it fits together on-screen, it will fit on-site. The computer model's dimensions became my cutlist.

Working things out on-screen allowed me to explore the easiest way to build certain details. For example, it became obvious that the barrel-vaulted ceiling would be easier to build if I assembled its arched ribs and straight rafters into trusses in my shop, to be set as units on-site. Another example was a fiber-cement panel on the inside gable face that had to meet the curve of the barrel vault. I wondered how I'd make that curved cut, but when doing the SketchUp drawing, I realized that instead of the difficult task of cutting the fiber-cement panel to fit the ceiling boards, I could frame the roof so that the panel dropped in from above. Then I could butt the ceiling boards to the panel—a simpler, faster, and cleaner approach. Small details like that add up to a real time savings and a better-executed project.

1 Build in the shop

Pocket screws from the back create a hidden connection between the rake boards and the cornice returns. It's a sturdy joint that looks good and can survive transportation to the site.

2 Load on the truck

All the components of the portico fit in one truckload for delivery to the site. Sitting on top are the roof trusses.

3 Assemble at the job site

After the posts were trimmed, erected, and braced, the lightweight box beams were lifted easily into place. Layered on top of the framing, the precut trim was nailed into place quickly and easily.

Make the parts like the drawing

I did everything I could in the shop, including rabbeting the back of the fascia for the soffit panels, cutting the angled gable boards, and assembling the rake returns, box beams, and roof trusses. Of course, there's a limit to the size of such assemblies. They have to be small and light enough to be placed easily.

An advantage to working in the shop is that it keeps the material dry. Using dry stock is particularly important when cutting a project ahead of time, as any dimensional changes can throw the fit off. Expecting the wood to expand a little bit once it's exposed to moisture, I take the layout lines when cutting the framing. On the trim, I cut right to the lines, so it's a little bigger than the framing it will cover. I'd rather have to take a little off a piece of trim than have it be too short.

Once I was on-site for this project, the only measuring and cutting I had to do was on the two outer support posts. The post locations were not level with each other, and it was easier to account for this variance on-site. Because everything else was cut, with some of it built into assemblies in the shop, I just had to install it. I had printouts of my drawings and cutlist, so it was easy to check and cross-check as I went along, making sure that the components went together as planned.

I spent about two hours drawing the portico in SketchUp and making the cutlist. Shop work, delivery, and installation took an additional 59 hours, for a total of 61 hours. If I'd built the portico entirely on-site, I estimate that the job would have taken around 75 hours. The savings of 14 hours is not too shabby, and it doesn't include time saved by avoiding rain delays. Plus, some of that time was spent in a comfortable shop rather than out in the cold scratching my head. □

Michael Patterson is a contractor in Gaithersburg, Md., and the president of the Metro DC chapter of the National Association of the Remodeling Industry (NARI). Drawing and photos by the author, except where noted.