CAD Instructor Designs Eco-Friendly Shed

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FOR many years, I wanted a garden shed in my yard so that I could get my lawn tractor and related garden tools out of the garage. The shed models I saw at the big box stores were nothing I could imagine myself looking at sitting in my yard for the next 10 to 20 years. The quality of materials used also gave me cause for concern regarding durability.

Then, two years ago, I was driving down the highway when I noticed a variety of more upscale shed models for sale at a local used car dealership. One in particular caught my eye and it was love at first site. It was a little gambrel-roofed barn design complete with a front porch! (See photo above.) I just had to stop and get the specifics.

It turned out the one I wanted, a 12' × 16' model, ran about $5,000 delivered. "Delivered?!", I asked. The salesman explained it would be delivered already built on a special collapsible trailer and then they would move it into place with a large forklift. It could be placed in my yard wherever I wanted it. This presented two problems: the price tag and the fact that I wanted it placed in the midst of some mature trees

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that I did not want to cut down.

As a CAD teacher who has always been heavy into design, I realized this was a teachable moment—for myself! I reasoned I could do a pretty good knockoff of the design I so admired, which I could then build on the spot where I wanted it at a much lower price tag (my goal: $3,000). I'd be saving money, saving trees, learning something, and getting some valuable hands-on practice that would sharpen the skills that I teach my students.

Building Green

I began thinking on how having saving my trees as a first concern made me in some ways a "green designer." I decided I would take this new image of myself further by designing the entire shed obeying the concept of modular design to keep wood scrap to a minimum.

In modular design, concern goes first to size of stock materials available before taking pencil to paper. My goal became to design the shed from the top down such that I could design a truss to take eight sheets of plywood with no cuts and have

no scrap whatsoever (Photo 1). In fact, the truss I designed with the lumber I used allowed me to hold the resulting scrap in my cupped hands. Modular design is a major objective of green building.

Knowing that the windows,

Photo 1—Trusses designed to accept standard size sheets of roof sheathing reduce waste in both the truss itself and the roof deck.

doors, and hardware could balloon the cost of the project rapidly, my next goal—which also happened to be the "green" approach—was to use recycled items whenever I could. The first thing I bought was a transom window for the back side of my barn at a cost of $15 from a local lumberyard that was going out of business (Photo 3).

That purchase was made a year

before I had finished plans in hand to apply for a building permit. Adding the transom window was also the first design improvement I made on the model I had seen at the car dealership. I thought a transom window would add authentic old-style beauty to the shed while giving me natural light in the attic space above. All the other doors, windows, and hardware, like the hooks to hang garden tools from, followed. I purchased my "green" solid oak front door from a Habitat for Humanity thrift store.

I'm very pleased with the results of working with my own design, reducing waste, and ferreting out recycled materials. After many years of thinking about it, I now have a very functional and attractive shed that I'd be proud to show off to my students!

Sharing the Shed

As a side note to the design process, I found very little sharing on the Internet when it comes to shed designs. I looked to see what free plans and bills of materials might be available but found next to nothing. This, too, struck me as another teachable moment opportunity. I decided I would share both plan and bill of materials so that others could replicate my project with much less effort. Other technology educators and their students are most welcome to use both the plan and the bill of materials in PDF format. To access them, go to my personal website: www.CADProblems.us. ⏹

Photo 2 (above)—Interior view of the green design shed

Photo 3—Backside of the completed shed, showing the transom window