



## From the ground up

GETTING A BASEMENT SPACE TO WORK FOR YOU

BY WILLIAM DUCKWORTH

**N**owadays I make a living with words, not wood, but for the better part of two decades I worked full time as a cabinetmaker. Along the way I had five different shops, two of them in basements. To be kind, I'd characterize those basement shops as less than ideal—there was not much light, not much air circulation, and not much headroom. One had a river running through it every time it rained. So when my wife and I built an addition to our house recently and decided that

the new basement was the place for my shop, I was determined to steer clear of those miseries.

If you are planning to include a basement shop in a new house, an addition, or an existing space, you might benefit from my experience. I found that by attending to a few key design considerations you can make a sweet shop in a subterranean setting. One important note before I begin: Whether or not you are working with an architect, it's best to address all of your concerns before the drawings are done. Making

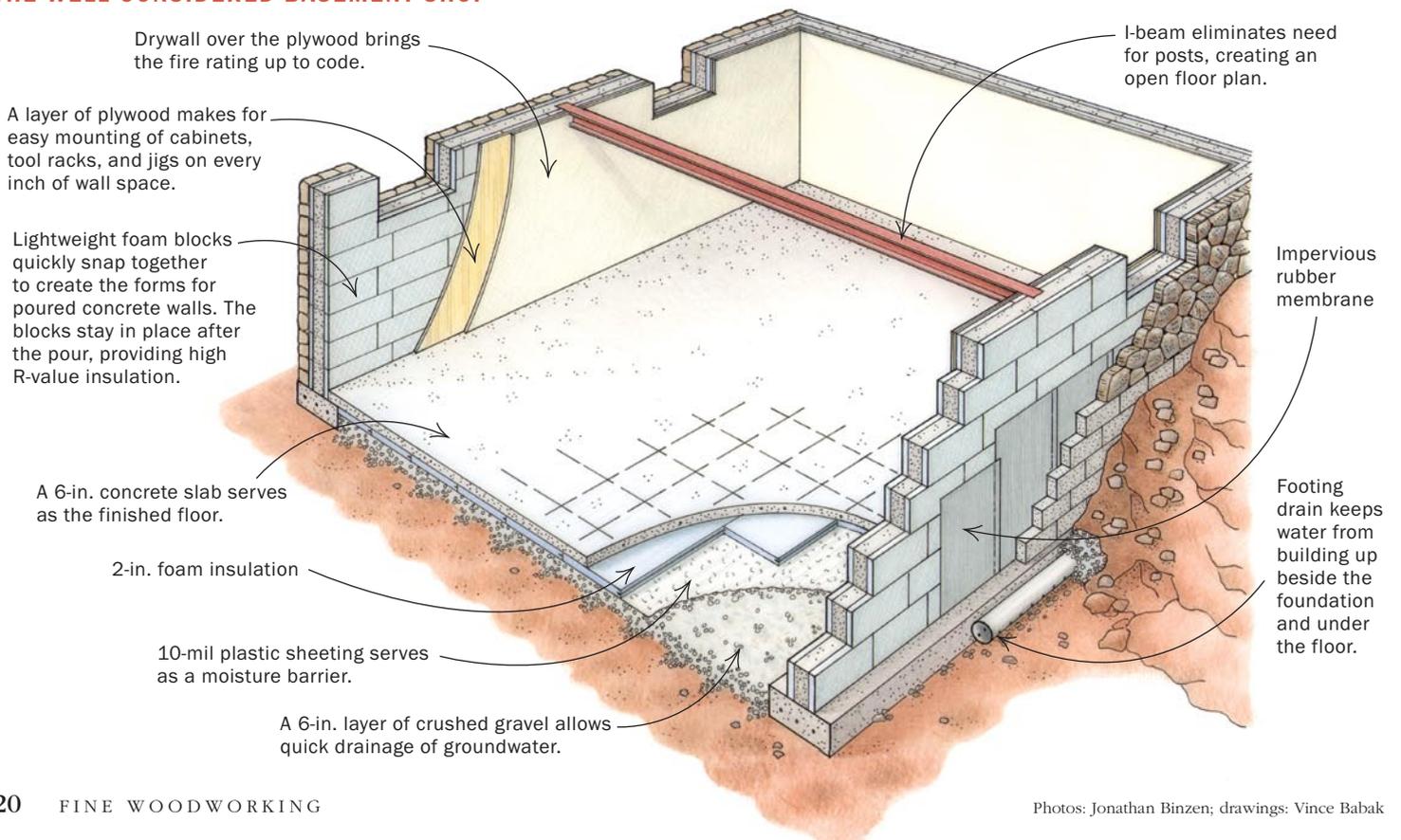
changes after construction begins is needlessly expensive.

### The floor plan: Strive to keep it open

One of my old shops was in a post-and-beam building with a grid of support columns cluttering the floor space every 8 ft. The posts limited the placement of machinery, interfered with work flow, and drove me mad.

When my wife and I designed our addition, we decided to avoid the encumbrance of posts or load-bearing walls by carrying the load from the floor

### THE WELL-CONSIDERED BASEMENT SHOP



**Well lit from without and within.** Glazed doors and a half dozen small windows fill the east-facing basement shop with daylight. High-output fluorescents carry the load at night and help balance the light during the day.



above with a steel I-beam. My wife is an architect, but we consulted an engineer to size the beam. We also had to work out the details of how it should tie into the concrete foundation walls and fabricate the forms accordingly.

The beam was surprisingly affordable, and it provided a convenient mount for a hoist to lift heavy machines.

### **Water is the enemy: Keep the space dry**

Having suffered the indignity of rusted tools in that riverine basement shop, I was determined to guarantee a bone-dry space. After the hole for the new basement was dug, I was taken aback by how much water ran steadily underground. Because our house is on a hill, the solution was a footing drain made from perforated 4-in. PVC pipe bedded in gravel that drains downhill to daylight. For a house on flat terrain, you might need a sump pump.

To keep water from seeping through the foundation walls, I applied a heavy-duty, self-stick rubber membrane on the exterior before the walls were covered with a stone veneer and backfilled. The

39-in.-wide membrane strips are applied vertically with a 3-in. overlap. Each strip begins slightly above grade and runs down to the base of the footing, covering the seam between the wall and the footing. This stuff wasn't cheap, but I'm convinced that it will hold up longer and provide a more impervious moisture barrier than a layer of tar.

Before the floor slab was poured, I put down a 10-mil plastic moisture barrier.

As soon as the concrete was firm enough to walk on, I applied a waterproof treatment. Overkill? Maybe, but it's been several years, and I haven't glimpsed the slightest hint of moisture in the space.

### **Doors: Easy access is critical**

I've accumulated a collection of fairly large woodworking machines, so generous access to my shop was a necessity. Given that our addition was

going on the downhill side of the slope we live on, it was a no-brainer that we'd build a walk-out basement. We installed double doors, which provide an opening that is 68 in. wide. If you're limited to one door, I'd recommend a minimum 36-in.-wide opening.

If your property won't allow a walk-out basement, Bilco doors may be the next best way to avoid dragging equipment and lumber through the house.

**By attending to a few key design considerations, you can make a sweet shop in a subterranean setting.**

### **Light: You need a lot**

The glass doors we chose for the shop do wonders for lighting the space during the day. Even the six small windows I put in help in that regard (and provide cross-ventilation).

I took the advice from Jack Lindsey's article in *FWW* #154 (pp. 56-61) and installed fluorescent fixtures, which provide even lighting at a low cost. I chose standard industrial strips with

8-ft.-long, high-output lamps. I painted the walls and storage cabinets white to enhance the reflected light in the room.

## **Ceilings: Higher is better**

Having worked in basements with 7-ft. ceilings, I'm especially sensitive to the grief low ceilings can cause when handling long planks or sheets of plywood. Our original plan called for a 10-ft. clearance between the finished floor and the underside of the joists to the floor above. But we lost a foot when the excavator hit hardpan. Still, I had a 9-ft. clearance, which is ample. A standard 8-ft. ceiling would have been workable, but the extra foot not only makes material handling easier, it also gives my shop nearly 100 extra square feet of wall space for storage.

## **Electricity: Don't skimp on the power**

I did most of the wiring for my shop myself but hired an electrician to bring in



**Ample access from outdoors.** Double doors on Duckworth's walk-out basement make it easy to move in machines and materials and to carry out finished work.

a 100-amp subpanel, which is more than enough power for what I need. I used the brand-name circuit breakers that the panel manufacturer recommended.

In our area, the electrical code states that receptacles are to be placed so that no point on the wall is more than 6 ft. from an outlet. I installed mine every 5 ft. and put in 20-amp circuits, using

No. 12 wire in metallic-coated cable. In addition to the regular receptacles, I put in one 220v receptacle for my dust collector and another 220v circuit for my three-phase converter.

I wired the lights on two different circuits: In the unlikely event that one of them blows, I won't be fumbling in the dark to see where I'm going. □