



Rob and Jaki Roy built this cordwood home several years ago and now run a school teaching cordwood construction.



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Cordwood Construction: Cheap, Strong, And Energy Efficient

When Rob and Jaki Roy moved to the U.S. from Scotland 25 years ago, they wanted a place of their own but had little money to pay for it.

A firm believer in avoiding debt as much as possible, the couple decided to build their own home with low-cost materials.

"We saw a photo of a cordwood building in the April 1974 issue of National Geographic. As soon as we saw the picture, it instantly made sense to us and we decided this was how we would build our house," Roy says.

They looked around for a cordwood home to inspect but they couldn't find one in their part of upstate New York.

They finally found some to look at not far away in Canada.

They built their first house, which they dubbed "Log End Cottage" over a couple of years, completing it in 1976. It took awhile because they wanted to get it right.

"Cordwood masonry has been used for thousands of years, but we couldn't find anything written on how to do it. It's sort of a folk skill, passed on from generation to generation," Roy says.

They asked a lot of questions, though, and



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have since become experts at it. They've written a number of do-it-yourself books and articles and they now run a school teaching cordwood construction and other low-cost and energy efficient building methods.

Roy says cordwood construction has several advantages over other building methods. "First, you can use logs that are undesirable for sawing into lumber or for log home construction," he says. Logs of any diameter can be combined together and split wood can be used as well. The logs can be arranged to make artistic patterns in the building wall, or just laid together with no pattern or planning.

He says wood for cordwood construction should be dry, but not too dry. If it's not dry

enough, it shrinks away from the mortar, leaving a gap that has to be filled. "Too dry can be a worse problem, though," he explains. "If wood is too dry, it will soak up moisture during wet weather and may expand enough to crack the mortar."

You can make the walls any thickness you want. The Roys' cordwood home has 16-in. walls, but walls that are 2 ft. thick are common and they've even heard of people building 3-ft. walls."

Roy says a cordwood wall is much easier to build than a log wall, especially for one person working alone, since the logs are so much smaller.

The method they teach calls for 6 in. of insulation between 5-in. layers of mortar at the outer and inner ends of the logs. "This gives 16-in. walls an insulation value of about R19," he says.

He uses sawdust for insulation, adding that since the inner and outer layers of mortar aren't physically connected, the inner layer becomes a heat repository, making the building even more energy efficient.

He recommends a mortar mix made of nine parts sand, three parts soaked softwood sawdust (pine, hemlock, white cedar, etc.), three parts Type S lime, and two parts Portland cement, either Type I or Type II.

Adding the soaked sawdust retards the setting time of the mortar, so it dries with less shrinking and cracking. Roy says the sawdust must soak at least overnight. Using dry sawdust will cause the mortar to dry more rapidly, resulting in more cracking and shrinking. He adds that he has not been able to achieve good results from using hardwood sawdust, such as oak or maple.

Roy says cordwood masonry can be used for just about any type of building, adding that his home, office, sauna and other out-buildings are all constructed this way.

Contact: FARM SHOW Followup, Rob and Jaki Roy, Earthwood Building School, 336 Murtagh Hill Road, West Chazy, N.Y. 12992 (ph 518 493-7744; E-mail: robandjaki@yahoo.com; Website: www.cordwoodmasonry.com).

Air-Power Shovel Digs Fast With Air

If you've ever pointed a jet nozzle on an air hose at the ground, then you've got the basic idea behind the new AIR-SPADE® from Concept Engineering Group, Inc. (CEG), Verona, Pennsylvania.

The air-powered shovel uses a supersonic air jet nozzle to dig holes. It's based on the design of nozzles used in rocket propulsion. The focused air stream is like a laser beam that extends several inches from the end of the nozzle. The supersonic air stream moves at between 1,200 and 1,500 mph, or approximately twice the speed of sound.

The AIR-SPADE can dig trees or any type of plant roots in minutes, or safely excavate for pouring or repairing a foundation without disturbing valuable landscape plants. Because there are no sharp edges and moving air won't harm solid surfaces, it'll dig safely around buried power cables or gas lines. With the right attachments, it can excavate under foundations or roadways or even clean clogged sewers. By using different nozzles, airflow can be adjusted to achieve a desired digging rate. Multiple nozzles can be mounted together to make a larger digger.



Unit requires an air compressor that can supply 175 to 185 cfm of air at 100 psi.

It comes with an engine, compressor, and a vacuum pump and removes loosened soil.

The AIR-SPADE requires an air compressor that can supply 175 to 185 cfm of air at 100 psi. Nozzles to fit 25, 60, or 225-cfm compressors are also available.

Prices start at under \$1,200, plus shipping. Commercial, skid-mounted excavation pack-



Air-powered shovel uses an air jet nozzle to move dirt. Because there are no sharp edges, it can be used to dig safely around buried power lines and tree roots.

ages start at around \$12,000.

Contact: FARM SHOW Followup, Concept Engineering Group, Inc., 15 Plum Street, Verona, Pennsylvania 15147-2100 (ph 888

557-2339 or 412 826-8800; fax 412 826-8601; E-mail: ceg@air-spade.com; Website: www.air-spade.com).