



BIG, SIMPLE Root Cellar

How to use a new septic tank to make an effective walk-in root cellar

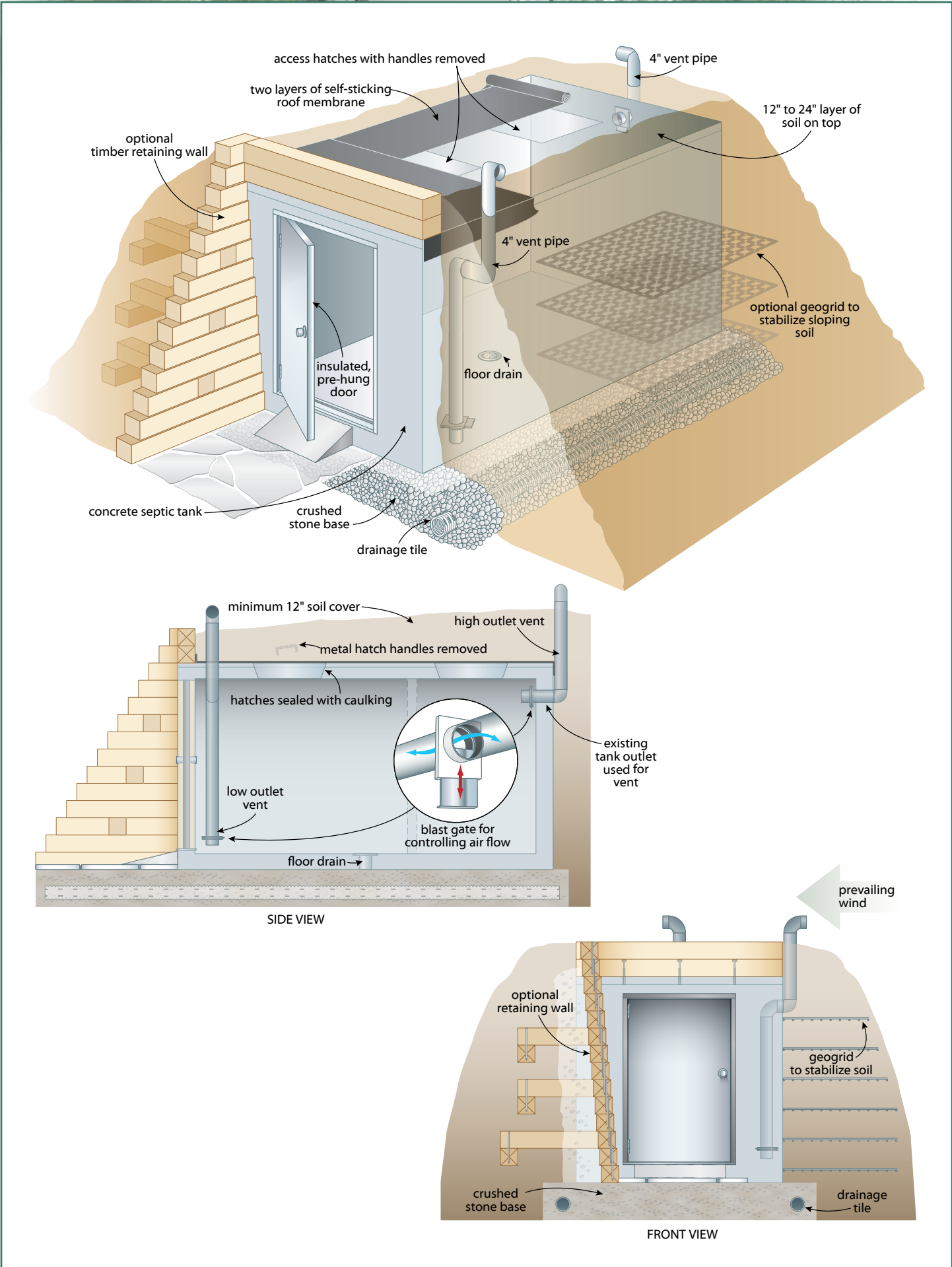
Cool, moist and dark. These are the conditions that let root cellars keep fruits and vegetables crisp and delicious for weeks or even months of storage. And while there are very different ways to create a root cellar space, a new, clean septic tank makes a great starting point for one of those classic, walk-in root cellars. Create a door opening, install a door, add a pair of vent pipes, then cover the tank with soil. The septic tank approach delivers one of the fastest and most durable ways of getting a big old fashion cellar into your life.

Choosing the Tank

There are three reasons concrete tanks make the best root cellars. First, they're better than plastic at conducting the temperature-moderating influence of surrounding soil into the cellar space. Concrete

is also free of the kind of hormone-mimicking chemicals that some plastics give off. You're also much more likely to find a bargain on concrete septic tanks than plastic ones.

While it goes without saying that you'll always want to choose an unused septic tank for a root cellar, that certainly doesn't mean you've got to pay full price for one. Concrete septic tanks are made in molds, and the manufacturing process has a certain risk to it. That's why a percentage of all concrete tanks end up with small defects that mean they can't be used for sewage treatment. That's great news since septic tank suppliers happily offer discounts on tanks like these. As long as the tank is solid and sound, a broken corner, a chipped edge or a patchable hole is fine when it comes to root cellar use. Also, you won't have any use for the kind of plastic fittings or effluent filter found inside most septic tanks. Get the tank supplier to





remove these before delivery and you could save even more money.

Tank size is another detail you need to understand before shopping. Septic tanks are measured in gallons, with different models being proportionally taller or shorter. While you might be tempted to use a 1000 or 1200 gallon tank because they're so common, you'll get more storage space and more head room with a 1500 gallon tank. They're worth holding out for. Standard 1500 gallon tanks typically measure about 5 1/2' wide x 5 1/2' tall x 10' long, and while most people will still have to bend down to go inside, it's doable. Just don't choose a low-profile tank, no matter how cheap you can find one. At much less than 5' tall, they're just too short.

One last thing when choosing a tank is the internal design. Most septic tanks have a partition that you'll need to open up or remove for root cellar use. You'll save time if you find a tank made with no internal partition, or if you can get your tank supplier to remove it before delivery. You can also remove the partition later, on your own, as part of the doorway cutting process.

Site Choice and Preparation

Septic tank suppliers usually offer a delivery service using a boom truck that sets the tank down wherever you want. Before that happens you'll need to have your site prepared and this begins with planning.

The ideal location for a root cellar is nestled into an existing bank of soil in a well drained location that's 10 or 20 yards from your house. Ideally the door should face north as well, to better keep the sun's heat out. You'd certainly be fortunate indeed to have all three the conditions available in one place, and that's why you shouldn't feel badly if you need to modify your site to make it work. Most people do.

Got a level location with no banks to dig into? Soil can be hauled and spread around the sides and top of your root cellar tank after installation on a flat site. You should also consider setting the tank into an excavation sloped downwards 12" to 18" below grade to reduce the need for additional fill.

Regardless of whether you've got a natural bank or need to create one, spread a 12"-thick bed of 3/4" diameter clean, crushed stone underneath the tank and in front of it. There are two reasons why. There will be lots of foot and wheelbarrow traffic going to and from your root cellar over the decades, and things will get muddy in the fall without the help of crushed stone to walk on. Also, crushed stone is easy to make level and flat to properly support the septic tank. Have the boom truck driver set the tank in place, then use a 48" level to see how it's sitting. If it's not right, have the delivery guy



Using Your Root Cellar

Most fruits and vegetables that cellar well keep best with 85% to 95% relative humidity and a temperature just a few degrees above freezing. That said, no electricity-free root cellar can maintain these conditions perfectly year round. In practice ideal humidity and temperature figures are targets only, and it's up to you to manage your cellar to get as close as possible to them. This means monitoring temperature and humidity, allowing more or less ventilation as needed. Open vents to reduce humidity or sprinkle water on the cellar floor to raise it. You can also allow more ventilation to lower cellar temperatures whenever outdoor conditions are below freezing.

lift the tank enough to get a rake underneath for moving crushed stone from the high side. Keep setting, checking, adjusting and replacing the tank until it sits level.

Making a Door and Vents

Your tank should be in final position before cutting the door opening, since removing that much concrete might weaken the tank enough to allow damage if the tank was moved by a boom truck afterwards.

A concrete cutoff saw is the tool of choice for making a door opening. See Cutting and Boring Concrete for tips on choosing a rental saw. Mark the end of the tank opposite the one with the effluent pipe hole using a level and pencil for the rough opening your door requires. Make the bottom of the door opening 4" above the floor inside the tank to keep dirt and rainwater from coming in. Don't eye and ear protection before cutting through the concrete with multiple passes. Start with the two vertical cuts, then tackle the horizontal one on the bottom. It's heavy work holding a masonry saw for these cuts, and it's especially challenging when working horizontally. Set up a large, safe work platform to a couple of feet lower than the top cut for the doorway. A second pair of hands holding the saw from above the cut will prove helpful as you move along the cut line. Leave a small amount of concrete uncut in the upper corners to hold



the slab in place, then stand well clear while using a sledge hammer to bust it inwards, into the tank. Repeat the process for removing the inner partition of the tank, if yours has one.

Every root cellar requires two 4" diameter vent pipes to allow excess moisture and gases to escape. Both vents are the same above the ground; one pipe extends to the floor inside while the other ends near the ceiling. This difference in height encourages air circulation throughout the cellar. All septic tanks have one hole for a 4" pipe at one end, and this works for the vent pipe that ends at the ceiling of your cellar. You'll need to bore a hole somewhere else for a second vent that ends near the floor of the cellar. Plans show how a location on the left or right side, just back from the door works best. While you're at it, bore a 4" hole in the floor to act as a drain as the tank sits over the crushed stone. This way you can hose out your cellar at the end of the season and the water will drain away.

Roof, Entrance and Backfilling

Although every septic tank is made from waterproof concrete, the roof of your cellar needs help to keep water out because of the access hatches. Start by applying a generous bead of polyurethane caulking around the perimeter of the access hatch openings, then nestle the hatches back down in place for the final time. Next, use a grinder to cut off the metal handles cast into these hatches. With a flat surface ready on top, apply two layers of the heaviest and stickiest ice and water shield you can find, extending over the top in overlapping layers and folding down the sides 4" lower than the joint between the top of the tank and sides. Now you're almost ready to backfill, but there's one more thing to do.

Since your cellar will be nestled into the earth, you need to build a heavy retaining wall on either side of the entrance to hold back soil from the walkway and door. The plans show how to use 6x6 timbers to create walls that slope slightly outwards, plus and a lintel across the top of the opening to stop backfilled soil from falling down over the door.

Sandy, light soil is the best for backfilling of all kinds, and it's especially important for your root cellar. Besides reducing soil pressure on the sides and top of the tank, light soil drains better and is easier to shape and contour properly. Aim for 12" to 36" soil above the roof, depending on how col winters get where you live. It's the soil that makes your root cellar work, so make sure you've got complete coverage.

Plant grass on the backfilled soil, build shelves and bins inside your cellar, then load them full of great food you can count on. Money can't buy the feeling of security and satisfaction you'll get from a winter's worth of good eating in your own root cellar.



Choosing a Door

There are many ways to get a door for a walk-in root cellar. You can make your own out of wood, but the challenge is getting it to seal well. Keeping outdoor air outdoors is an important part of root cellar performance, and that's why you might consider an insulated residential door prehung in a frame. Though not as romantic as a 2"-thick solid oak masterpiece, prehung exterior steel doors seal exceptionally well. Choose one without window since darkness is essential for maximizing storage life of produce.

Cutting and Boring Concrete

You'll need to rent or borrow a gas-powered masonry cutoff saw spinning a 14" diameter diamond wheel to make the door opening, and an electric rotary hammer with a 4" carbide coring bit to bore a vent hole in the wall. These sound like serious tools and they are, though every decent rental outlet carries them. With everything set up and ready ahead of time, you'll only need these tools for one afternoon's work. When you choose your saw, be sure to get one that accepts a garden hose for injecting water into the cut. Masonry saws and blades can cut concrete dry, but that creates massive mushroom clouds of dust. Water injection tames the process, turning all that dust into harmless slurry that washes away. The rotary hammer and coring bit removes a disk of concrete and the process needs no water. One more thing: Since all masonry septic tanks have reinforcing rod embedded in the concrete, ask for a coring bit and masonry blade that can handle metal as it cuts.



Steve Maxwell is a cabinetmaker and lives on a 90 acre rural island homestead he began building in 1985 after growing up in the city. His house sits on a limestone foundation he built on bedrock – in ideal root cellar. Visit Steve online at SteveMaxwell.ca