A Rain "Barrel" That Fits

The function and value of a rain barrel to deter or defer stormwater runoff has been broadly acknowledged. I recognized the need to control runoff at my home, but to locate a barrel at the primary offending downspout would encroach on my patio in a way that was unacceptable. I tried using a sealed garbage can placed horizontally under my porch, but the seal would not hold, and it was unstable. (photo 1) I decided to build my own container, or box, to permit a custom fit. The following outlines the steps to that end.

Photo 1 Failed version

Photo 2 Assembled materials

The precise measurements I derived are not germane, because it is assumed the reader will develop unique dimensions. Factors I considered were (primarily) the space in which it would be located, the availability of materials on hand, and the desired size. I had odd pieces of wood and I wanted the container to be larger than the standard 50 gal barrel. The materials needed (photo 2) and rough cost estimates are:

Lumber for the sides (2" x (10 or 12") x 12 ft.	$10
Particle board or plywood for the bottom and top	$15-20
Shower pan liner, 40 mil polyethylene, 5' x 6' (depending on box size)	$35
Metal reinforcing corners (optional) and screws	$6-7
Faucet and pipe to reach through the box wall (note: both plumbing and electrical supply sections of my Home Improvement store had some useful parts.)	$5-8

Unless the lumber is treated, coat the wooden parts with the water-proofing treatment and allow to dry. Assemble the sides by drilling and installing screws, at least 2.5 in long. (photo 3) Nails may also be used, but screws provide more strength. For the same reason, I reinforced the box with metal corners. (photo 4) Add the bottom with screws and again, an optional set of corners on the long sides. (photos 5 and 6)

Photo 3 Fastening box sides

Photo 4 Reinforcing braces

Photo 5 Bottom attachment

Photo 6 Drain opening and reinforcements

Photo 7 Faucet assembly

Drill a hole horizontally in the end, as low as possible above the bottom. A common faucet size will take ½ in. pipe, but given I used a coupling, a 1-in. hole was just right. Assembling the right components for the outlet will be specific to the design, but there needs to be an ability to a) clamp the faucet to the outer box, and b) clamp the liner membrane on both sides with both stiff and soft washers and an independent nut. See photo 7 for a mock-up of my assembly. Drill a separate hole about a half-in in dia. for allowing any water that might get between the box and liner to drain.

Next, place the membrane into the box <u>without cutting</u>. The length of the liner should be the floor length + 2x the height, and the width should the floor width + 2x the height. Fold the corners hospital style, and staple around the top of the liner. Carefully identify and mark the drain location, then cut a hole only large enough to pass the pipe coupling through. Clamp the liner on both sides separate from the nut that attaches the faucet to the box. (photos 8 & 9)

Photo 8 Foled liner corner

Photo 9 Liner installed

It may be possible to apply a liquid-type membrane material, or even tar, in lieu of the shower membrane, but I did not explore that option. While I allowed the excess water to flow out of the entry hole once the container is full, it may be advisable to include an overflow pipe, especially if directing the flow is important. That would call for a notch at the top of one side and to extend inside the membrane, which should be sealed around the pipe. Silicone caulk would work well for that purpose.

Cut a top to size from the available material, which could be something lightweight such as plywood. I had a piece of Plexiglas that worked for me. Estimate the location of the water entry, such as from a downspout, and make a hole to accept it. Drill and screw in place. (photo 10)

Photo 10 Top cover and water entry

Since this box was built to fit under my porch, I had to raise it somewhat to permit draining. I placed some scrap 6 x 6 timbers and leveled them at a height that would allow the box to fit in the remaining space. (photos 11 and 12) If designed differently, such a box could be placed vertically and/or on a platform at a higher level to provide better pressure for watering.

Photo 11 Support blocks are leveled

Photo 12 Final installation under porch

I estimate this box holds about 75 gal of rainwater, and it is performing quite well in all aspects.

Roger Diedrich, past Friends of Accotink Creek Board member
Aug. 2014

Friends of Accotink Creek

www.accotink.org