



Downspout Planter

LINER & PLUMBING INSTALLATION GUIDE



phillywatersheds.org/raincheck

Tool List

- Power drill
- Measuring tape
- Power saw (Chop saw or miter saw)
- Hole saws (1-1/4", 3-1/2", 3-5/8")
- Wood spade drill bit (1-3/8")
- 1/4" drill bit
- Hand clamps
- T50 staple gun w/ staples (1/2" or larger)
- Utility knife
- Hammer
- Chalk line
- Level
- Caulking gun
- Safety glasses
- Dust mask
- Work gloves

Material List

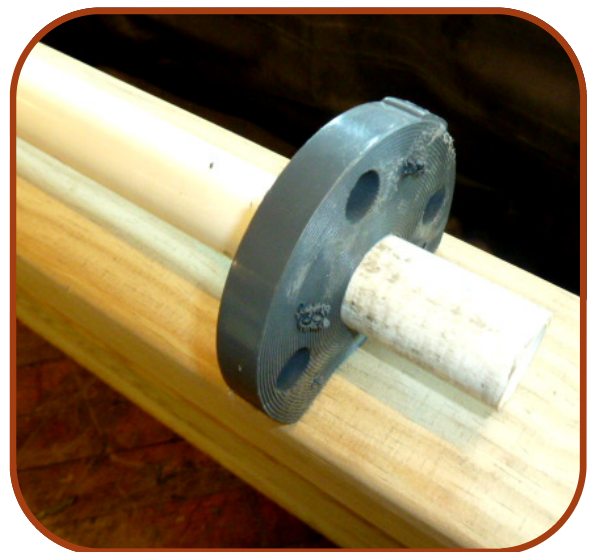
- Pre-fabricated downspout planter box w/ trim, cleats, and skirt
- EPDM pond liner (16'6" x 100' roll) (40 mil minimum)
- 1" x 10' PVC
- 1" PVC "EL" 90°
- 1" PVC slip cap
- 1" x 5/8" PVC threaded male adapter
- 1" PVC socket flange
- 3" x 10' PVC
- 3" PVC "EL" 90°
- 3" x 4" PVC closet flange (toilet flange)
- 4" plastic atrium grate
- Drain sleeve (filter sock), cut to length
- WeedBlock filter fabric
- Galvanized or stainless steel screws (decking screws) (1-1/4", 1-5/8", 2", 2-1/2")
- Waterproof silicone sealant
- PVC primer
- PVC cement
- Latex gloves
- Asphalt roofing cement
- Zip ties
- 6' garden hose



The Rain Check Program is funded by the Philadelphia Water Department and managed by the Pennsylvania Horticultural Society in partnership with the Sustainable Business Network.

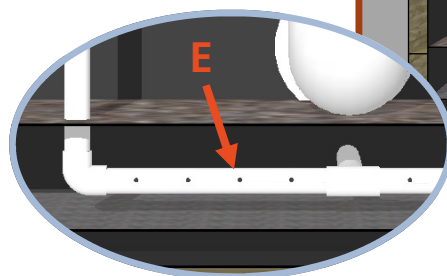
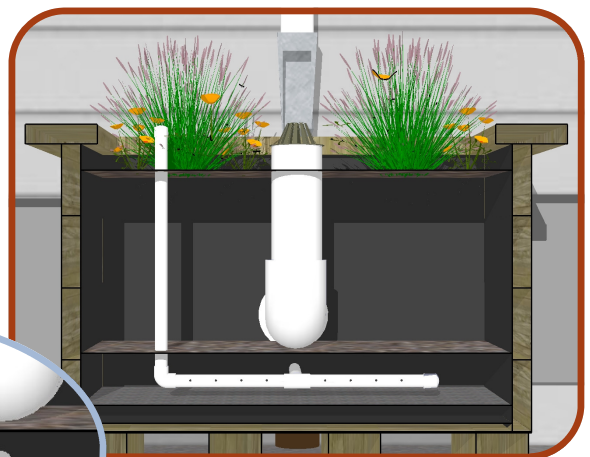
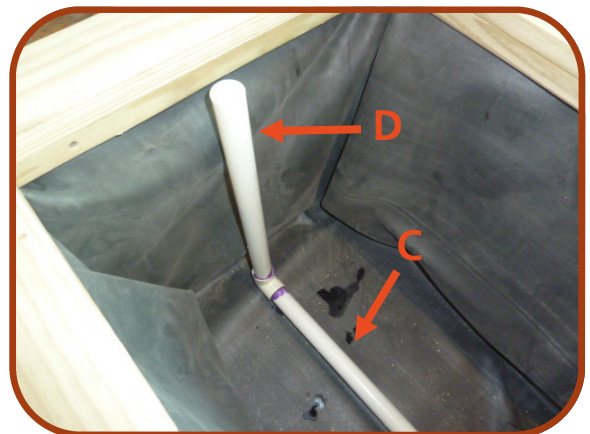
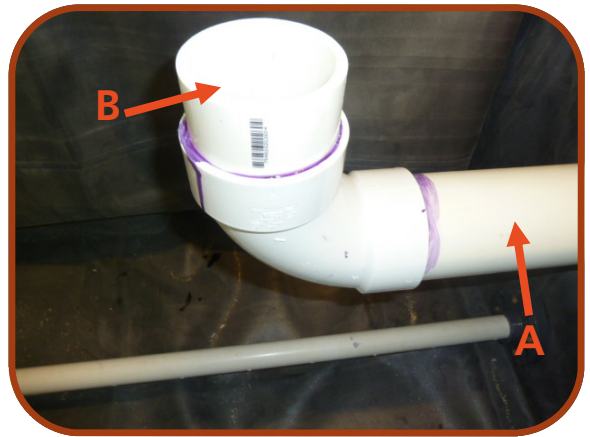
Material Preparation

1. **Pre-cut EPDM liner.** Using chalk line and measuring tape, mark EPDM liner into 8'3" x 6'3" sections (down the middle of the 16'6" side). Cut liner using level (or straight edge) and utility knife. Full roll should yield 32 pre-cut pieces of liner. Replace knife blades frequently; sharp blades result in clean cuts.
2. **Drill out 3" x 4" flange.** Using hand clamp, work table, 3-1/2" hole saw, and power drill, drill through flange so the "lip" on the inside of the flange socket is removed. 3" straight PVC should be able to fully penetrate flange after drilling.
3. **Drill out and cut 1" flange.** Using hand clamp, work table, 1-1/4" hole saw (or wood spade drill bit), and power drill, drill through flange so the "lip" on the inside of the flange is removed. 1" straight PVC should be able to fully penetrate flange after drilling.
4. **Using power saw, cut straight line from "5 o'clock" to "7 o'clock" position on the flange.** The flange will now take the shape of a truncated circle. Drill pilot holes through flange for decking screws to be inserted later.



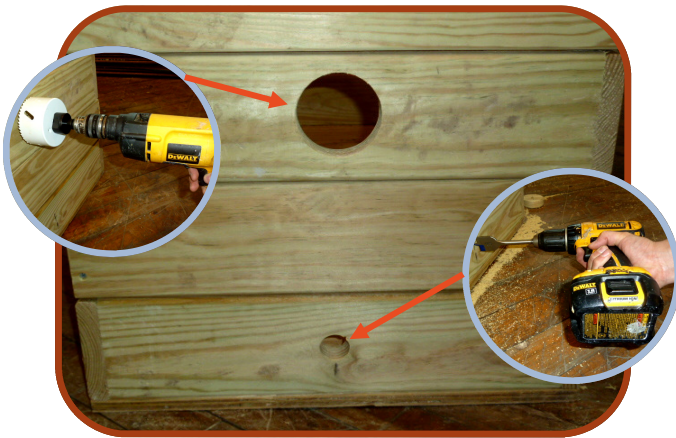
Material Preparation (continued)

5. **Pre-cut PVC for horizontal piece of overflow drain (A).** Using power saw, cut 3" PVC to length of approximately 14" (precise measurement not required).
6. **Pre-cut PVC for vertical piece of overflow drain (B).** Using power saw, cut 3" PVC to length of 4-1/4".
7. **Pre-cut PVC for horizontal piece of underdrain (C).** Using power saw, cut 1" PVC to 20", 32", or 44" (for 2', 3', and 4' planters, respectively).
8. **Pre-cut PVC for vertical piece of underdrain (D).** Using power saw, cut 1" PVC to length of 18".
9. **Drill drainage holes in horizontal piece of underdrain (E).** Using 1/4" drill bit and power drill, drill holes through both sides of the pipe at spacing of approximately 3". Leave approximately 6" undrilled at one end of pipe.



Fabrication

- 1. Drill hole for overflow.** Using power drill and 3-5/8" hole-saw, drill hole with the center point at 15" from the bottom of the planter, centered horizontally on short side. (For planters with custom drainage configurations, hole must be drilled at alternate location on planter).



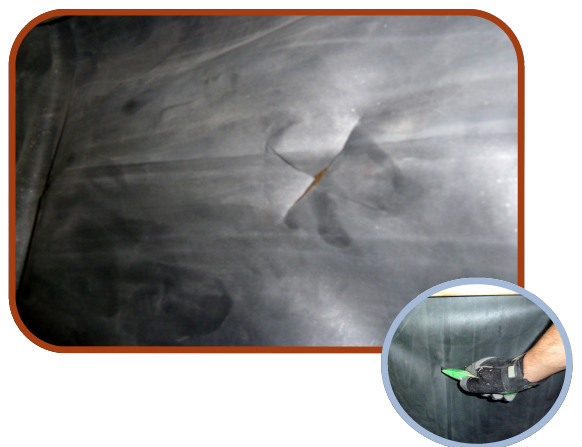
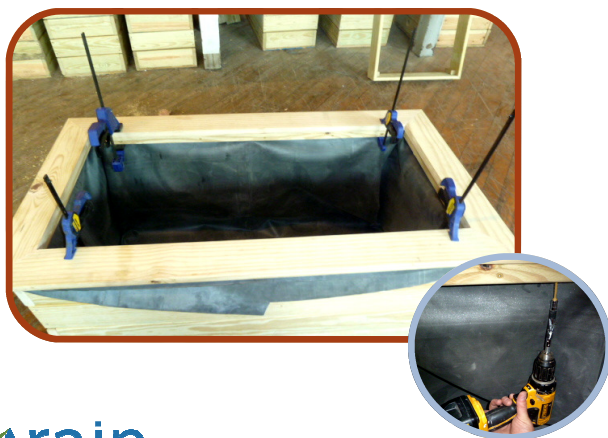
- 2. Drill hole for underdrain.** Using 1-3/8" wood spade drill bit, drill hole with the center point at 3-1/2" from the bottom of the planter, centered horizontally on the short side. (For planters with custom drainage configurations, hole must be drilled at alternate location on planter).

- 3. Install liner.** Place entire pre-cut EPDM liner inside of planter box (long sides of liner at long sides of planter). Fold 3"- 4" of liner material over the top of one of the short sides and staple to fasten, creating a single flat layer of liner. Repeat for other short side. Starting from the center of the long sides, fold liner material towards corners and then back towards center of long sides. The edges of the liner should be positioned at the top of the planter, preventing the possibility of leakage. Staple liner as needed. Create long folds (as few as possible) to ensure a flat even layer of liner.



Fabrication (continued)

- 4. Install the trim.** Pre-drill pilot holes in 2" x 2" trim cleats. Attach four trim cleats at the top interior of the planter, over the liner, using 2-½" decking screws. Using hand clamps, position trim assembly on top of planter, leaving a 1-½" overhang on all sides. Attach the trim assembly by screwing from underneath the trim cleats up vertically (so that no screws are visible on top) using 2" decking screws. Cut away excess liner material at planter exterior using a utility knife.
- 5. Cut holes in liner.** Using the pre-drilled holes on the planter box wall as guides, use the utility knife to cut an "X" in the liner for the underdrain and overflow drains. The flaps created by the cuts will help create a snug fit when the pipes penetrate the planter.



Fabrication (continued)

6. **Install Underdrain.** Install the horizontal piece of underdrain by inserting the 6" long non-perforated end underdrain through the pre-drilled 1" flange so that 2" is protruding from the flat side of the flange. Use a hammer if the fit is tight. With the cut side of the flange facing down, the perforations in the pipe should be on the left and right sides of the pipe after insertion. Apply a bead of silicon to the bottom of the flange. Insert the 2" length of PVC through the underdrain hole in the planter so that flat side of flange is up against liner and the cut side of the flange facing down. The pipe should protrude 1" from the exterior of the planter. Using 1-5/8" decking screws, fasten the flange to the inside of the planter.

7. **Install Underdrain (continued).** Using PVC primer and cement, attach 1" 90 degree elbow to the other end of the PVC. Then, attach an 18" length of 1" PVC to the other part of the elbow for the vertical portion of the underdrain. Place 1" PVC slip cap on top of the vertical piece – do not glue – leave it removable for future cleanout. Attach 1" to 3/4" threaded PVC adapter to the outlet end of the underdrain using primer and cement.



Fabrication (continued)

8. **Install overflow.** Insert approximate 14" horizontal length of 3" PVC through the pre-drilled 3"x 4" flange so that approximately 2"-3" is protruding from flat side of flange. Insert this end through the overflow hole in the planter. Using 1-1/4" decking screws, fasten the flange to the inside of the planter. Using PVC primer and cement, attach 3" 90 degree elbow to the other end of the PVC. Then, glue a 4-1/4" piece into the other end of the elbow for the vertical part of the overflow. Place the 4" atrium grate on top of the vertical piece. Do not glue. The point of entry for the overflow should be approximately 1" below the underside of the trim assembly – **MUST NOT BE HIGHER OR PLANTER WILL NOT DRAIN PROPERLY.**



9. **Seal flanges.** Using latex gloves and roofing cement, cover both the underdrain and overflow flanges, creating a water barrier. Be careful not to get any roof cement on the outside of the planter or the trim. If you do, use paint thinner immediately to clean it. Seal penetrations at exterior using waterproof silicone and caulking gun.



10. **Install fabric components.** Cut filter sock at correct length to cover horizontal portion of the underdrain. Attach on both ends using zip ties. Cut landscaping fabric to correct size (2', 3', or 4'). Fold it and leave it in the bottom of the planter. Leave garden hose in the bottom of the planter.

