HOW TO BUILD A STORMWATER PLANTER

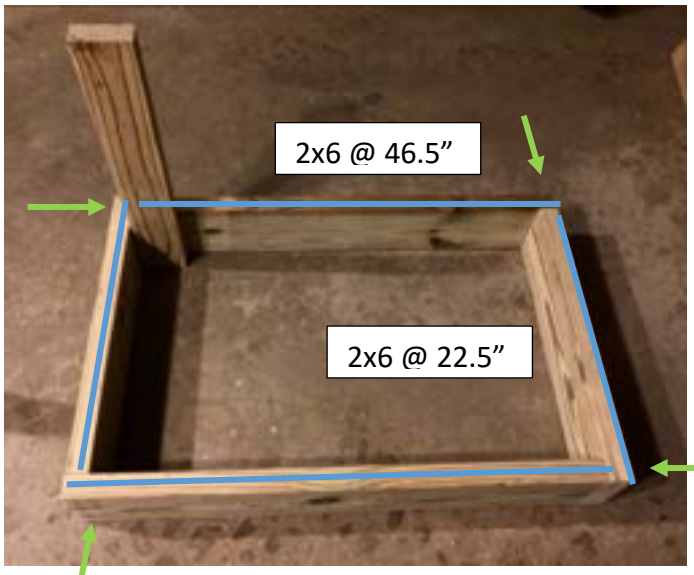
The following instructions describe how to build a stormwater planter that is 4’ long, 2’ wide, and 2’ high; however, they could be easily adapted to any size. Assumptions include working knowledge of drills and PVC cementing, as explained in the addendum.

1. CONSTRUCT THE WOODEN BOX

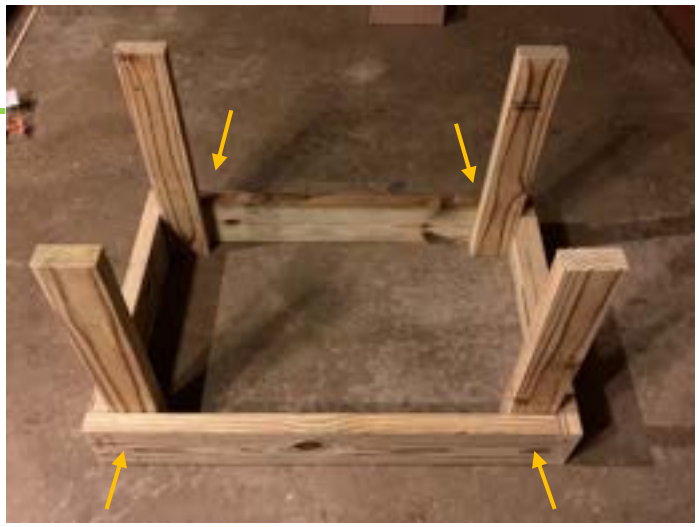
Obtain and cut wood as specified:

- Plywood: pressure-treated, ¾” thick
  - 1 @ 4’ x 2’ (for the bottom)
- Lumber: 2” x 6” pressure-treated
  - 8 @ 46.5” (for the side walls)
  - 8 @ 22.5” (for the other side walls)
- Lumber: 2” x 4” pressure-treated
  - 4 @ 22.5” (for the vertical supports)
  - 2 @ 49” with 45 miter cuts (for the top trim)
  - 2 @ 25” with 45 miter cuts (for the top trim)

Using a drill and 3” deck screws, affix boards together as follows:



First, line up 4 – 2” x6” boards on a flat surface as shown. Take care to ensure right angles on this first step. Note alternating corners as indicated by blue lines. Drill pilot holes and use two screws to affix each corner, as indicated by green arrows.



Second, affix 4 vertical supports (2x4 @ 22.5”) inside each corner. Use one screw to attach each vertical beam to the long-side panel at the corner, as indicated by yellow arrows.

Continue stacking and using two screws to affix 2x6 ends to each other, alternating the position of the end boards as shown in the picture to the left.

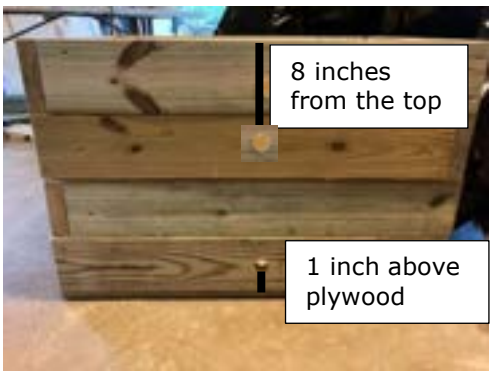
Once the box has 4 rows of 2x6 boards, attach the vertical beams to each row, using the same position as the first row.

Place the plywood on top. Use the drill and six screws to affix it to the box, as indicated by the green circles. Be sure that the screws go into the frame below, and nothing pops into the interior of the box.

2. CONSTRUCT THE DRAINAGE APPARATUS

Obtain the following items:

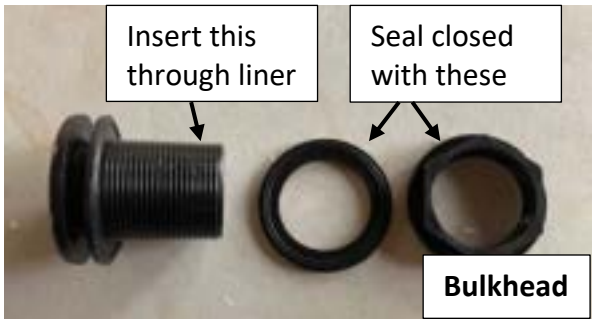
- 1 @ 6.5’ x 7.5’ of LDPE Pond Liner, 20 mil
- 1” PVC Schedule 40 pipe cut as follows:
  - 2 @ 7” (for outside of box)
  - 2 @ 8” (for inside box)
  - 2 @ 19” (for underdrain)
  - 1 @ 22” (for underdrain cleanout)
  - 1 @ 5” (for overflow)
- 3 @ 90-degree 1” elbows
- 3 @ 1” end caps
- 1 @ 1” T-square
- 2 @ 1” bulkhead slip x slip



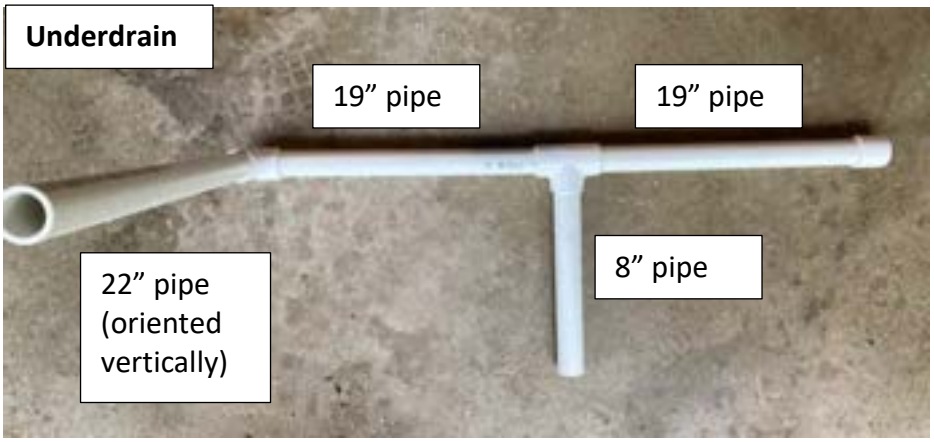
Use 1 3/8” spade bit to drill two holes in the side of the box. Drill one hole 8 inches from the top and the other 1 inch from the bottom.

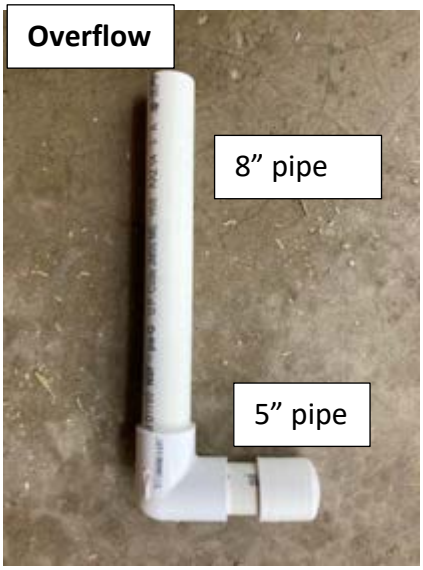
Turn the box over and insert the liner. Ensure that the bottom corners are fully lined by gently standing in the box. Flatten the edges of the liner as best as you can around the top rim.

Using a utility knife, cut two holes in the liner that match the holes' size and location in the planter. Reaching in between the liner and the planter box, insert the bulkhead through the bottom hole of the liner and seal it tight on the other side of the liner by screwing the remaining pieces of the bulkhead. Repeat for the above hole.



Gather PCV pipe pieces and refer to the following photos to note the eventual orientation and connections of the interior components.





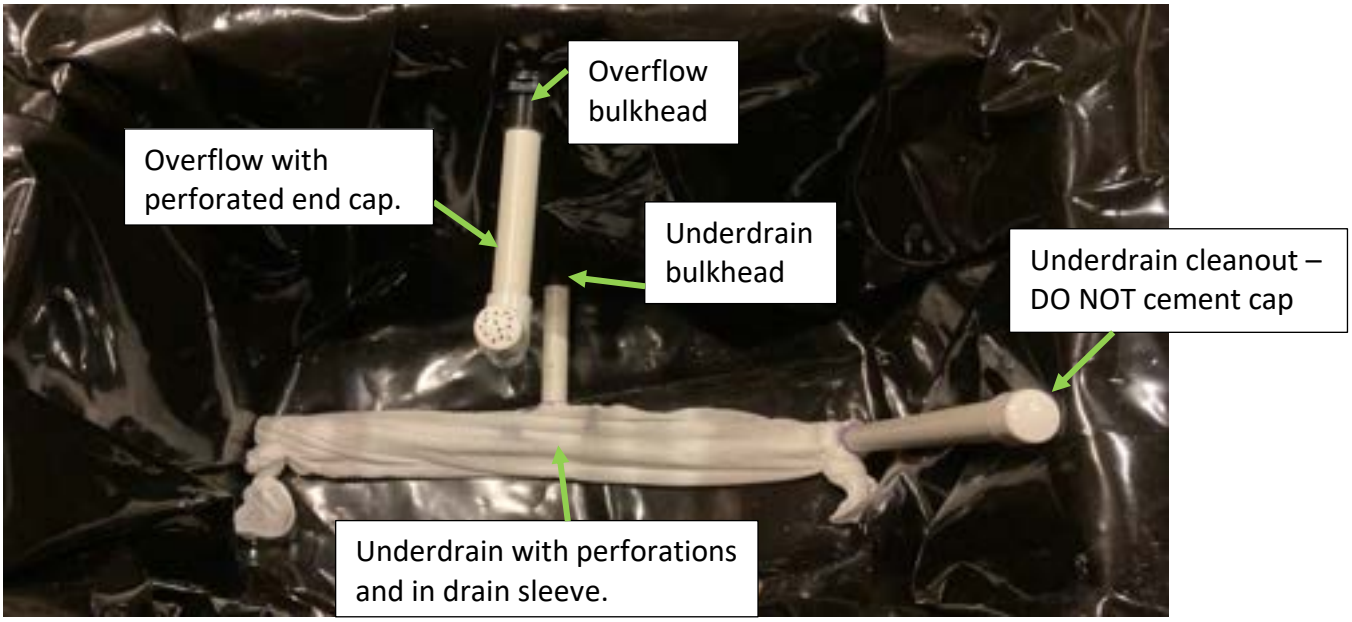
Use a drill to make perforations in the two 19” pipes for the underdrain. Prime and cement these pipes to the T-square. On one end of the underdrain, cement an end cap. On the other end, cement an elbow and ensure it is oriented up while the T-square is flat.

Place this part of the underdrain in a drain sleeve. Tie the sleeve off at the end cap and again around the elbow opening. Then cut a small hole at the T-square fitting and squeeze the opening through. Refer to the photos.

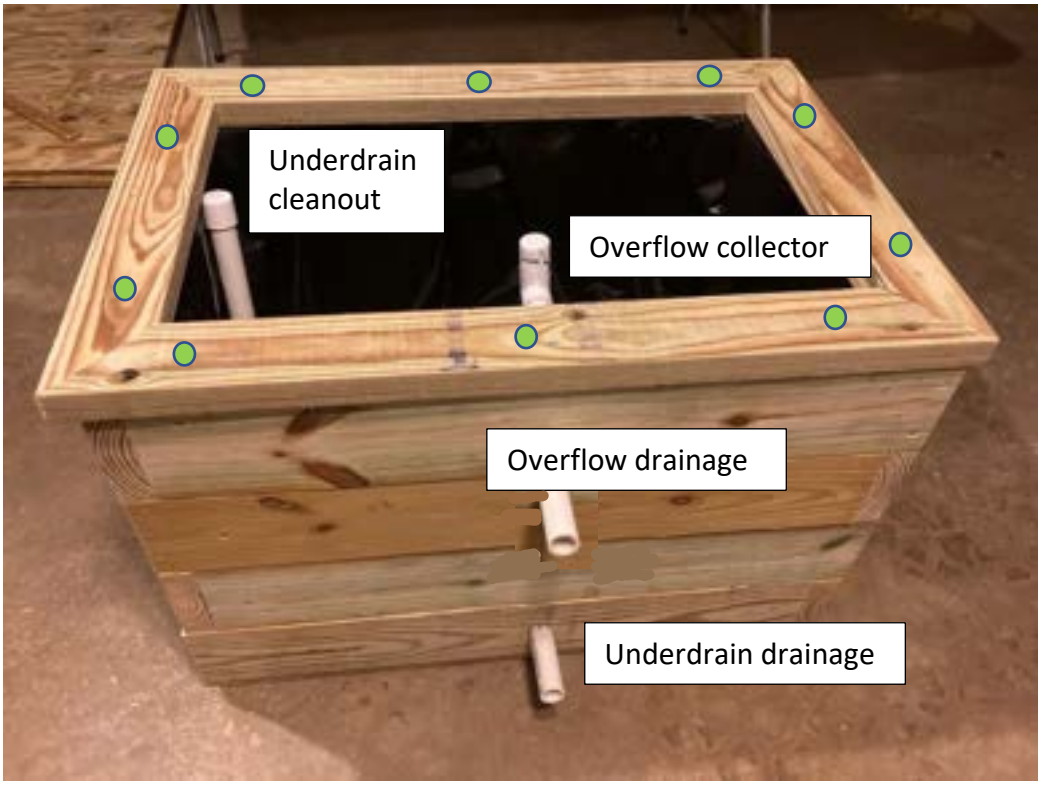
Cement one 8” pipe to the T and the 22” pipe to the elbow. Cover the other end of the 22” pipe with a cap but DO NOT CEMENT this cap to the pipe.

Install the underdrain into the planter box by cementing it to the lower bulkhead.

Use the drill to perforate one end cap and cement it to a 5” pipe. Cement an elbow to the other end of the 5” pipe. On the other end of the elbow, cement an 8” pipe to create the overflow. Cement the overflow into the top bulkhead, ensuring the correct orientation. The following photo shows all pieces once fully assembled within the planter box.



3. FINISH UP



Cement two 7” pipes to each bulkhead and through the planter holes to act as drainage for the underdrain and overflow.

Fold and flatten the liner and use staples to secure it to the rim of the planter. Trim the excess liner with scissors. Use screws to attach the mitered trim to the top ½-inch overhang around the box to hide the liner excess.

ADDENDUM: TOOL USE AND SAFETY CONCERNS

Drilling with wood

Anytime you use a drill to insert a screw, be sure to pre-drill a pilot hole using an appropriate size drill bit. By pre-drilling the wood, not only will the long screws drive more effortlessly, but this will reduce the chances of the wood splitting. For the 3" deck screws, a 1/8" drill bit is suggested.

To change drill bits, open the chuck by twisting and inserting the appropriate drill bit. Use a screwdriver bit for driving screws and a drill bit for drilling holes. Make sure the drill bit is centered and not angled as you tighten the chuck around the drill bit. Assure your drill bit is snugly held before using the drill.

Caution: If you've just used your power drill, the bit will be hot from friction. Let it cool, or use work gloves to remove it.

Working with pipe cement

It is important to wear gloves when dealing with PVC primer and cement. Work with primer and cement over newspaper and hold items horizontal because the primer tends to drip. Ensure pipe ends are clear of debris, then apply primer to the interior of one pipe and the exterior of the other (figure 1).

Working quickly, apply cement to the same locations (figure 2). Push pipes together and hold tight for 30 seconds (figure 3).