

Good Casting Practices for Concrete Garden Bed Panels

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This is a summary of the equipment and the process. See all the detailed concrete blog posts and videos at: <https://manabouttools.com>

1. Site Preparation

You will need a strong table or workbench that is level side-to-side and lengthwise. I use a spirit level and thin wood shims to keep my workbench level. Your work area should be an undisturbed location away from other activities. The wet concrete will need to be left undisturbed while it's solidifying and beginning to cure. A temperature controlled garage or shop at 70 degrees F is ideal. Or, a few days of warm, dry weather.

2. Tool Preparation

Have everything ready before mixing any concrete. Have all the required tools and supplies close by. Safety Gear: glasses, ear protection, gloves, P100 respirator or dust mask. Concrete Mixing: Wheel Barrow, shovel, small trowel, concrete mix, pail, cold water, rubber mallet, tool to vibrate (optional), plastic sheets, water spray bottle, concrete rub brick or angle grinder with concrete cutting disc.

3. Mold Preparation

Wax the cavity, let dry, buff to a shine. Make wire coils to go around the pipes for extra strength from 9 gauge galvanized wire. Cut some 4 gauge galvanized wire grid. Apply petroleum jelly to pipes, slide pipes in while threading wire coils, flip ends of coils up. Check that hole in pipe extends past the mold flange edge. You

will need some wire cutters, pliers, and a 1" diameter pipe or doweling. The thick wire grid is easier to cut into sections with small bolt cutters.

4. Concrete Mixing

Wear your safety gear, concrete dust and wet mix are corrosive. Have cold water in a bucket in an adequate amount for the size mix you need. I recommend using a high strength blend concrete blend such as a 5000 psi or 6000 psi — usually will have a water reduction additive so less water will be required. Open bag and empty most into the wheelbarrow. Hold some back, maybe two or three pounds. Add water while mixing with a shovel. Slowly add water until all mix is wet and smooth. The mixture should be on the dry-side, not soupy where it settles by itself like water. If too wet, add some more dry mixture. The mix should hold its peaks and shape in the wheelbarrow.

5. Filling the mold - first half

With a small trowel, add some wet concrete mix around the pipes and wire coils. This will also hold the coil in the middle of the overlapping concrete panel tab area. Add a few shovels in the main cavity and spread around to corners with the small trowel. We are trying to get the form half full at this point. Settle the concrete by tapping bench with a rubber mallet. Or, use a power tool like a reciprocating saw without a blade.

6. Filling the mold - second half

Rotate the coil ends down and press gently into the wet concrete. Lay in the wire grid, centered in the space. Gently press the grid into the concrete. Continue to fill the mold with a few more shovels, spread with trowel, then settle. Try to slightly under-fill the mold. Remove extra concrete if needed. Settle again, trowel smooth.

7. Wait 8 hours

If the concrete mix was not too wet then there will be no excess water forming on the top. Leave the filled mold as is and open to the air for the first 2-4 hours. As it dries, cover with plastic sheets.

8. Remove pipes

After 8 hours at 70 degrees the concrete should be solidified. Gently press the concrete to see that it is firm. Wearing gloves, inset a nail into the hole in the pipe, pull and rotate to remove pipe. Wipe excess petroleum jelly with a cloth or paper towel. Repeat for all pipes.

9. Cover and wait some more

If dry to the touch, spray water over concrete then cover with plastic sheets. I like a thick vapour barrier as it's very durable and reusable. For the next three days spray a mist over water under the plastic to keep the concrete wet. Once or twice a day is enough.

10. Remove castings from the molds

After 3 days at 70 degrees the concrete castings should be ready to be demolded. The concrete should look grey and not a wet greenish colour. With gloves on, gently pull and press down on the plastic flange to free the sides from the concrete. Then lift under each end of the mold and push it against the bench while rotating over. Lift on the end while gently pressing on the back. Alternate side-to-side until the mold is free of the concrete. The cavity of the mold should be dry and clean(ish).

11. Alternative Technique

While upside down on the bench, warm the mold with a hair dryer or heat gun. Only apply gentle heat. Too much heat may melt or distort the mold. Keep the heat gun moving all around the mold for a minute or two. Then gently lift the mold off the casting.

12. Curing

Allow to cure for a few weeks. I wrap my castings in plastic on my shop floor. I occasionally spray them with water. The concrete is curing and becoming stronger. A slow-dry is what is needed. Alternatively, bury the castings in wet sand for three weeks for the best results.

13. Clean Molds

I hose off the molds outside and use a scrub brush to remove any concrete bits. I focus on removing anything inside the cavity, not very worried about bits on the top edge or in the lettering depressions. Then I use a soft cloth to wipe all inside surfaces. A final rinse then set them aside to dry.

14. Dress the edges

When the castings have cured I need to dress any sharp edges near the top of the fill line. I want to take these down and round them off a bit. I can use a rub brick that is designed specifically for dressing concrete. And this works well and takes a few minutes per piece. Alternatively I can use a diamond embedded disc on my angle grinder. This is a much faster way to do this. The downside is it creates a lot of dust. A mask, goggles, and hearing protection are a must.

15. Assemble the Garden Bed

I use epoxy coated lengths of 1/2" diameter rebar to pin my panels together with while assembling the garden bed. I start by creating a level spot in the garden and laying down some fine crushed rock or sand. This is then compacted and checked for level. I then set my panels in, checking that they are square and level. I use longer rebar on any end-to-end straight connections. There are usually 2 feet in length and pounded into the ground to help keep the wall straight and true.

16. Repeat Castings

I often get asked "How many panels can I cast from one plastic mold?" That can be difficult to answer with a number as it depends on how you handle the mold. Although the mold is made from thick ABS plastic that is very tough, it can be broken with hard impacts or rough handling. I have had customers cast dozens of panels from a mold, and also I have had a few who have broken the mold. If you follow my videos and instructions they should last a long time.

17. Take your time

If you are new to working with concrete then my advice is to take your time and don't stress. Learning good mixing and casting techniques will take some practice. Over time, your results will get better and better.

Molds available at <https://manabouttools.com/store-plastic-concrete-molds/>