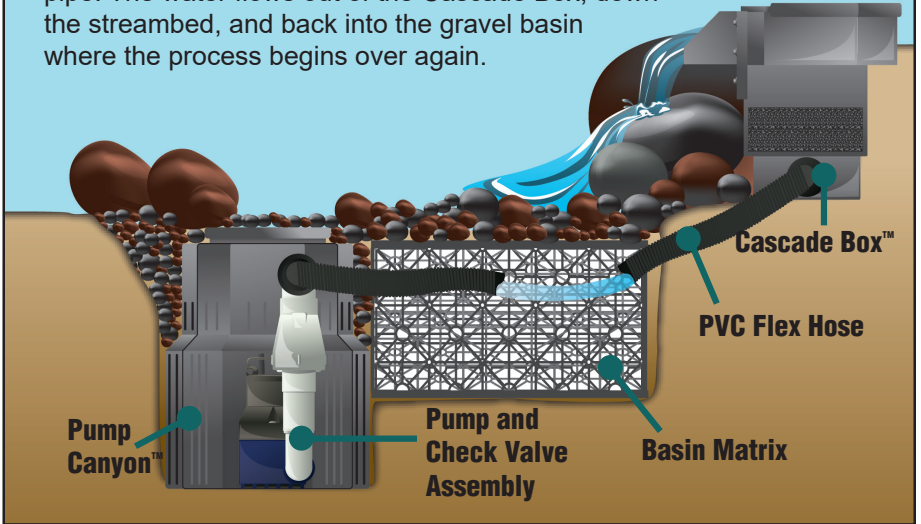


# Cascade Box & Pump Canyon Installation Manual

## How does it work?

A basin area is dug, lined, then filled with a Pump Canyon & Matrix boxes. This area is finished off with gravel. The Pump Canyon holds the pump which sends the water up to the Cascade Box via flex pipe. The water flows out of the Cascade Box, down the streambed, and back into the gravel basin where the process begins over again.



## CASCADE BOX INSTALL



### STEP 1

#### Choose Cascade Box Location

The Cascade box is best positioned so that you can view it from the outdoor and indoor areas where you plan to enjoy your new water feature.



### STEP 2

#### Install Diffuser Mat

Position the black diffuser mat horizontally in the middle of the Cascade Box. It should pinch into place easily.

## STEP 3

### Assemble Cascade Box Plumbing

Your PondBuilder Elite Cascade Box has two spinweld fittings, one on each side of the bottom of the box. Choose which side your feed hose/line will come in and thread the PVC male adapter into that spinweld (use the Teflon Tape included on the threads first). Use silicone if desired.

Thread the PVC plug into the remaining spinweld. Use the Teflon Tape (included) on the threads first. Use silicone if desired.

If desired, you can use the second spinweld for a second pump line.

## STEP 4

### Position Cascade Box

Compact the area where the Cascade box will sit to prevent future settling. The Cascade box should sit level from side to side and should be tilted forward slightly (about  $\frac{1}{4}$  bubble on your level) to ensure that the water flows forward through the spillway.

## STEP 5

### Hook-Up Flexible PVC Pipe

The 14" & 22" Elite Cascades are plumbed to accept 2" Flexible PVC Pipe; the 30" Elite Cascade is plumbed to accept either 2" or 3" Flexible PVC Pipe; and the 40" Elite Cascade is plumbed to accept 3" Flexible PVC Pipe. We recommend using Flexible PVC pipe as it is very flexible and easy to work with.

Using PVC Primer & Cement, glue the flex pipe into the PVC male adapter.

# STEP 6

## Attach Liner to Cascade Box

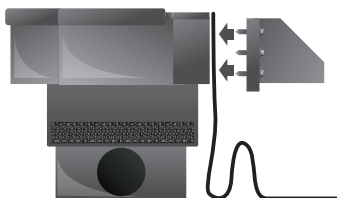
Bring the liner up to the face of the Cascade box and check the positioning of the liner against the Cascade box. Use the liner clips (included) to temporarily hold the liner to the box. The liner should follow the contours of the stream and the face of the Cascade box. It is a good idea to leave a little slack in the liner where it transitions from the stream bottom to the face of the Cascade box. This will ensure that the weight of the rocks used in the falls will not pull down on the liner once it is attached to the Cascade box.

Kneel in front of the Cascade box and have the following within reach: cordless screwdriver, 5/16" nut driver bit, Cascade weir (included), silicone (included), stainless steel screws (included), utility knife (with new blade), and a clean rag.

Kneeling in front of the Cascade box remove the liner clips and fold the liner back toward you leaving it to rest on your lap. Using the clean rag wipe down the face of the Cascade box around the area where silicone will be applied. Also clean the area on the liner that will be coming in contact with the area you cleaned on the Cascade box.

Apply a bead of silicone along the sides and bottom of the opening on the face of the Cascade, keeping the silicone bead centered the entire way.

Bring the liner back up into position against the face of the Cascade box. Hold the liner in place again with the liner clips to help keep it from moving around as we prepare to attach the weir. Gently run your fingers along the liner over the area where you applied the silicone and flatten the bead out slightly. This will help ensure a more even distribution of the silicone as we screw down the weir.



Bring the weir into position. The weir has a return edge that will make it easy to hold it against the Cascade box in the correct position. Once in position begin driving the stainless screws into place. Start with the top screws on the left and right to hold the weir in position. Continue driving screws into the remaining pilot holes on the weir with your third screw going into the middle hole on the underside of the weir.

Carefully trim out the section of liner inside of the waterfall area to open the channel where the water will flow through.

Use the remaining silicone to run an additional bead along the joint where the Cascade box, liner, and weir come together. Smooth out the bead using your finger.

## STEP 7

### Install Landscape Lid

The PondBuilder Landscape Lid allows you to make the open top area of the Cascade box disappear into the landscape. Position the Landscape Lid on the Cascade box. The most popular method of disguising the Cascade box is to plant aquatic plants within the channels of the landscape lid. Add pea gravel to fill the rest of the channel and landscape lid area. There are holes in the bottom of the landscape lid that will allow water to wick up to the root system of the plants. Other options include hiding the Cascade box using mulch or gravel. Adding in some driftwood is a nice touch as well.



## BONUS FEATURES



Use PondBuild 'n Foam to fill in the gaps of the rockwork leading up to the Cascade box. The foam will force the water on top of the rockwork rather than around and behind it where it can't be seen. This will give you a much more dramatic waterfall display!



*View the Cascade Box attachment steps and a complete Cascading Falls installation on the PondBuild 'n Steps DVD.*

## ELITE PUMP CANYON INSTALL



### STEP 1

#### Choose Pump Canyon Location

The Pump Canyon should be located at the bottom of a streambed where a waterfall or stream ends. This will be the ending point for your stream/waterfall and is where your pump will be located for recirculation of the water.



### STEP 2

#### Excavation of Basin Area

Your Pump Canyon should be used within a basin area along with another water storage system, like Water Matrix Boxes. Refer to the Layout Diagrams on the following page for reference.



Excavate your basin area to the necessary size based on the length & width of the stream/waterfall you will be creating. The depth of the basin will be determined by the size of Pump Canyon you are installing. The Mini Pump Canyon requires a depth of 19". The Small Pump Canyon requires a depth of 25". And the Large Pump Canyon requires a depth of 34".

## STEP 3

### Underlayment & Rubber Liner

Once you've completed the excavation you can lay the protective Underliner in the basin. Spread the Underliner evenly.

Next, lay Rubber Liner in the basin on top of the protective Underliner.

After the Underliner and Liner are installed you can add another layer of Underliner on top of the liner for additional puncture resistance.

## STEP 4

### Position Pump Canyon

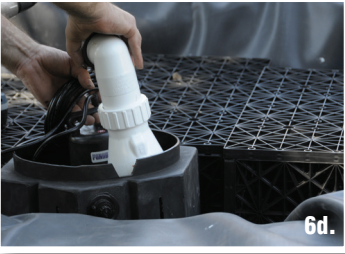
Position the Pump Canyon within the basin in the desired position. It is recommended that you position the Pump Canyon so that it can be easily accessed for future maintenance of your pump.

## STEP 5

### Fill Basin Area

Fill the basin area around the Pump Canyon with Water Matrix Boxes. These will allow you to maximize the volume of water kept in the basin and help to support the weight of the rockwork above. Finish off the tops of the matrix boxes with decorative gravel large enough that it won't fall through the openings of the matrix box.





## STEP 6

### Add in Submersible Pump

The Mini Pump Canyon can handle pumps with volumes up to 2500gph (gallons per hour).

The Small Pump Canyon can handle pumps with volumes up to 7500gph.

The Large Pump Canyon can handle pumps with volumes up to 20,000gph.

Place an appropriately sized pump into the Pump Canyon and connect to the flex pipe running up to Cascade Box.



## STEP 7

### Mark Canyon Location

Set a flat rock over the lid of the Pump Canyon as an identifier so you know where it is located.



## STEP 8

### Optional Automatic Water Fill Kit

Depending on a number of factors up to 1/2" of evaporation is possible per day. You can either fill the basin from a garden hose or install an automatic water fill kit. This kit can be connected to any garden hose connection or irrigation line to automatically replace any evaporated water. See your PondBuilder dealer for additional info.

