














Patio or Pool Deck Water Drainage System

List of Tools Needed, Shopping List, and Installation Instructions

Medium Capacity
 16-18 Hours Total Man Hours
 \$245-\$295 Material Costs
 11 Tools Needed

TOOLS NEEDED

 Concrete Saw
 Saw
 Level
 Measuring Tape
 Pick
 PVC Glue
 Shovel
 Plastic or Tarp
 Trenching Machine (Optional)
 Clear Waterproof Silicone
 Concrete

SHOPPING LIST

Quantity needed of each part will vary based on several factors specific to your project including system length, rainfall intensity, and number of problem areas. Pipe and fittings are offered in two sizes: 3" and 4". Size availability will vary based on region and store. Ensure that component sizes are consistent throughout your drainage system. Refer to drainage calculators on NDSPRO.com for pipe & system sizing.

NDS Part Number	Description
321 or 421	3" or 4" Pop-up Emitter with Elbow
FWAS24	Flo-Well
FWSD69	Flo-Well Surface Drain
8471	Micro Channel End Cap
8001	Micro Channel Drain
8501	Micro Channel Bottom Drain
Generic	3" or 4" SDR35 Drain Pipe
Generic	1-1/2" Schedule 40 Elbow
Generic	1-1/2" Schedule 40 pipe

INSTALLATION INSTRUCTIONS



Note Before You Dig

Prior to installation, have your local utility companies locate and mark the location of existing utilities. Layout your drainage system and mark the location of trenches and individual parts to be installed with marking paint before digging. Carefully remove grass or plants that are located where the trench will be dug so they can be replanted after installation. Trenches should be dug such that they slope a minimum of 1% away from your house. Place all excavated dirt on a tarp so that it can be used later to backfill.

To speed up installation, a trenching machine can be used to dig all trenches, especially in areas with particularly hard soil. NDS drainage products have been designed to be installed in any soil type. Due to the variety of pipe types and sizes, double check that all pipe connection points are the correct size. Please follow all installation directions included with the individual parts of your drainage system. To create watertight connections between products, apply a bead of waterproof silicone to both parts and connect.

This system requires that the elevation of the Pop-Up Emitter be lower than the elevation of the area drain or the system will not drain.

Step 1:

Lay out system, dig trenches and holes

Dig trench for drain pipe, and Micro Channel Drain and Flo-Well. Dry fit (no glue) the entire drainage system from the Micro Channel Drain to the pop-up emitter. The Flo-Well should be installed at least 10' away from any existing structure. Measure and cut all pipe to necessary lengths. After completing each step, glue parts together.



TIP: If installing the drain in an existing concrete area, a wet concrete saw will be required to cut the concrete prior to installation.

Step 2:

Install Micro Channel Drain

Compact the soil where the Micro Channel Drain will be installed to prevent settling. The Micro Channel Drain should be installed a minimum of 1/8" below the finished grade of the surrounding surface. Connect the required number of Micro Channel Sections together using Micro Channel Drain Couplers. Place Micro Channel Drain End Caps at the end of the runs.



Step 3:

Install Bottom Drain and connect elbow

Install the Micro Channel Drain Bottom Outlet where the channel will be drained and connect the 1-1/2" schedule 40 elbow. If you require the drain pipe to be lower, connect a 1-1/2" schedule 40 coupler to the bottom drain outlet. Glue and connect elbows as needed. Continue drain pipe in the direction of where the Flo-Well will be installed.



Step 4:

Install Flo-Well and drain pipe

Run drain pipe from the Micro Channel Drain to the Flo-Well. Knock out the appropriate holes in the side panels of the Flo-Well where the drain pipe will be installed. Assemble the Flo-Well using the interlocking side panels. Slide the drain pipe through the hole in the Flo-Well side panels.



TIP: Lay the Flo-Well panels on bricks or other hard surfaces and use a hammer to knock out the holes in the side panels.

Step 5:

Connect Flo-Well Surface Inlet

Knock out the center hole of the Flo-Well lid. Place the lid on the Flo-Well side panels then place the Flo-Well Surface Inlet onto the Flo-Well lid.



Step 6:

Install Pop-Up Emitter

Connect the drain pipe exiting the Flo-Well to an elbow with a weep hole. The elbow should be installed with the weep hole on the horizontal side of the elbow. Slide the Pop-up Emitter onto the elbow. An additional length of pipe can be used between the elbow and Pop-Up Emitter to bring the Pop-up emitter to the surface. The Pop-Up Emitter fits on the “bell” or “hub” end of the pipe or a pipe coupler.



TIP: To avoid damaging your Pop-Up Emitter with your lawnmower, raise the cutting level of the blades or avoid passing the mower over the Pop-Up Emitter.

Step 7:

Backfill and Replant

Cover the Micro Channel Drain grate with tape and cement or grout the channel in place. Remove tape after concrete or grout is dry. Backfill trenches and replace any grass or plants that were removed.

