

Getting Started:

# Irrigation Design Essentials<sup>©</sup>

The first step in the design process of an irrigation system is obtaining site information. The following paragraphs explain the most important factors and describe simple ways to gather accurate data.

Sketch a plan of your house and yard indicating areas of lawn, ground cover, flowerbeds, patios, and decks. (Use graph paper on back.) Note on your drawing the location of hedges, shrubs, large trees, and any other plant material, fences, or structures that may block the spray of sprinklers. Include dimensions showing the length and width of areas to be watered. Also indicate the location and width of concrete, brick, or stone walkways. You may have to cross the walkway with piping, so take a good look at the thickness of the walkway, and what type of soil or subsurface is under the walkway. Is the soil sandy, rocky, or clay? Soil type and how quickly water percolates through it are especially important in drip irrigation systems.

Take a good look at the area to be watered as a whole. Notice if the area slopes, how steeply it slopes and in which direction. This information can be shown on a drawing with arrows indicating direction of slopes. It is helpful to do this drawing on graph paper, making each square equal 1, 4, or 5 feet, depending on the scale of your drawing. Keep the drawing simple. Be careful to take accurate measurements and keep the components of the drawing reasonably to scale.

### Find the water source

For most systems, the source of water is a hose faucet. The greater the volume (flow) of water from the faucet, the easier and often cheaper the system will be. It is worth testing all hose faucets around your house that could be used as a source of water. Don't assume that flow rates will be equal (or even close) from all faucets. Often there is a large difference between front yard and back yard faucets. The size and material (usually galvanized or copper) of the pipe behind the faucet and the height of the faucet from the ground affect flow rates. See the sizing chart below for help in determining pipe diameter.

### Test your flow rate—important!

To test your flow rate, fully open the faucet, place a large bucket of known volume under the faucet, and time how long it takes to fill. For example it may take 30 seconds to fill a 5-gallon bucket. The flow rate of the faucet would be 10 gallons per minute (gpm) with 70 to 75% "usable" (7 to 7.5 gpm).

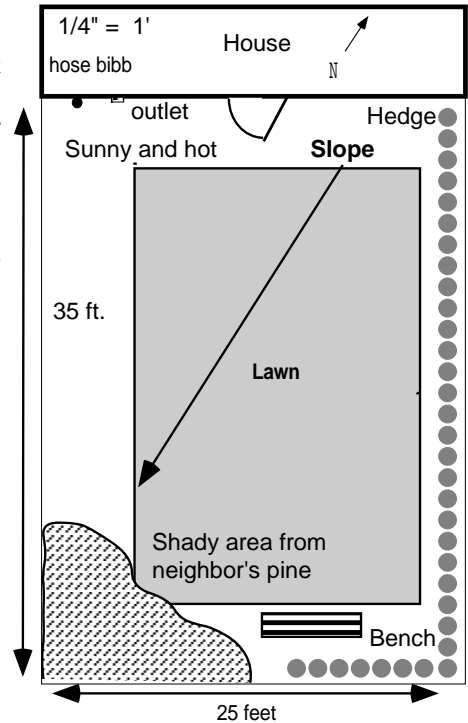
Many different types of automatic irrigation valves are available. A typical brass combination valve with a "valve adapter" is shown in the illustration. This provides both the backflow prevention required by the state plumbing code and a simple, compact assembly.

### A timer?

If you are considering automating your system either now or in the future, you will want to pick out some possible locations for the controller. The garage, basement, laundry room, and utility room are all good choices. Keep in mind you want it to be in a well-lighted, easily accessible spot, to make installation and reprogramming easy. The simplest controller can run at least four valves. Eighteen-gauge electrical wire runs between the controller and the solenoids of the valves. This wire is a coated underground wire and is approved for direct burial.

Indoor controllers must be installed inside and usually within 6' of an electrical outlet. Outdoor controllers are constructed to withstand precipitation and fluctuation in temperature and humidity. They can be installed anywhere outdoors (or indoors), but must be hard wired, and do not plug in.

### Important things to note in your drawing:



*We will be happy to help you with any questions about planning and installing your irrigation system. A plan and the following information will give us what we need to design an efficient system tailored to your garden.*

**Pipe Material** \_\_\_\_\_  
**Pipe Diameter** \_\_\_\_\_

**Flow @location 1** \_\_\_\_\_  
 Volume of bucket \_\_\_\_\_  
 Time to fill in seconds \_\_\_\_\_

**Flow @location 2** \_\_\_\_\_  
 Volume of bucket \_\_\_\_\_  
 Time to fill in seconds \_\_\_\_\_

*It will often be necessary to take a flow reading at more than one location. Please note location of each source clearly on your drawing.*

Pipe Sizing Chart		
<i>Measure the circumference of the pipe with a tape measure, or with a piece of string, and look up the corresponding diameter on this chart.</i>		
Circumference (inches)	Copper	Galvanized or PVC
2 1/4	1/2"	
3 1/8	3/4"	1/2"
3 3/4	1"	3/4"
4 3/4		1"



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# Sketch your yard plan

