

Irrigation Design Tip: Eight-step Process Starts with Obtaining Site Information

You can follow this eight-step process to ensure a complete and proper irrigation system design. Following every step of this process reduces the chances of overlooking important factors.

The steps are:

1. Obtaining site information
2. Determining the irrigation requirement
3. Determining water and power supply
4. Selecting sprinklers and other equipment
5. Lateral layout (or “circuiting” sprinklers), locating valves and main lines
6. Sizing pipe and valves and calculating total system pressure loss
7. Locating controllers and sizing wire
8. Preparing the final irrigation plan

In this irrigation design tip, we’ll review all of the site information you need to obtain and document to create an accurate irrigation plan and ultimately, an efficient irrigation system. When your site plan is completed it should represent an accurate picture of the site with all known conditions noted. This information is necessary to begin the irrigation plan.

Utilities

It is best to minimize the crossing of utilities with the irrigation system piping and, further, to avoid locating any equipment on top of utilities. Before beginning any site plan development, be sure to check with the local utility companies for the location of any buried lines on the site. A little pre-planning can prevent costly problems in the field!

Does an existing site plan exist?

A site plan is a scaled drawing of the areas that are impacted by the irrigation system. Before going through the effort of creating a site plan yourself,



check to see if a plan already exists. If the site being designed falls within a city boundary, there may be a site plan or survey on record at the city or county planning/zoning department. Even if the plan does not have all the details necessary, it could provide a solid base to start the site plan. Newer homes may even have a computer-generated drawing available. Almost all large sites have some sort of existing site plans, especially since there are so many trades involved in the site design process.

Creating a site plan

If an existing drawing cannot be obtained, a scaled drawing on graph paper is a good alternative for small sites. When this cannot be done at the site, a drawing with all the appropriate measurements should be made so a scaled drawing can be created. A convenient scale should be selected that best fits the area onto a plan with good readable details. A residential site might fit well on a plan with a scale of 1 in = 10 ft (1 cm = 1 m). A 100 ft (30 m) wide lot would only be 10 in (30 cm) wide on the drawing.

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Larger areas call for smaller scales to accommodate manageable plan sizes. 1 in = 20, 30 or 40 ft (1 cm = 6, 10 or 15 m) are all common plan sizes for commercial projects. A 200-acre (81 ha) golf course might be drawn up with a scale of 1 in = 100 ft (1 cm = 30 m).

The shape of the area should be drawn on the site plan with all sides and dimensions accurately measured and represented on the drawing. You might need to take additional measurements to assist in drawing any curves and odd angled borders.



Buildings, walkways, driveways, parking

Locate all buildings, walkways, driveways, parking areas, light or utility poles, retaining walls, stairways, and any other features of the site. Indicate where there are slopes and in which direction and how steeply the ground slopes. Also make note of areas where water drift or overspray cannot be tolerated, such as windows close to the lawn areas.

Plantings - Existing

Locate all trees and shrubs and pinpoint the plant material on the drawing. Indicate any particularly dense shrubs or hedges or low trees that could hinder sprinkler coverage. Note everything you see that could possibly impact the irrigation system, or be impacted by having water sprayed on it. Take sufficient measurements to ensure accuracy.

Plantings - New

New planting areas and the types of vegetation that these areas will contain should be included on the plan. Indications of the soil type (sandy, clay like or a mixture) and the wind direction are also very helpful. It is particularly important to note site features that will significantly affect how the irrigation system will be designed or managed. Examples are areas of high or constant wind, daily shade, heavy clay soil, or coarse sandy soil.

Hydraulic information

The hydraulic data should always be noted. The location of the water source, such as the water meter, as well as the size of the water meter and the size, length and material of the service line should be indicated on the site plan. The static water pressure should be ascertained, preferably by a direct reading with a pressure gauge. When using a gauge, hook it up to a hose bib or garden valve. Turn the valve on to take the pressure reading when no other water outlet on the site is open.

Pump information

If the water source for the project includes a pump, obtain the model, horsepower and electrical characteristics of the pump. The pump manufacturer will be able to provide the performance curve for the pump. Further, a pressure and flow test of the pump is advisable in case the performance has changed with wear. Should a pond or lake serve as the water source and no pumping plant currently exists, make note of the desired location and source of power for the pump. If electrical power is available, the rating (voltage and amperage) needs to be noted.

Finally, any special considerations of the site, such as watering restrictions should be noted on your plan. In the next irrigation design tip, we'll review how to determine the irrigation requirements for your project.