

Installing a Water Feature

BY BILL JOHNSON

Photos courtesy: Firestone Specialty Products



There are many things one must consider when preparing to install a water feature, whether for a backyard focal point, a golf course test of play, a commercial waterscape, or a myriad of other applications. Utilizing proven, sound practices for ultimate performance, efficiency and aesthetics is the key to a successful water feature project.

While it's easy to envision the finished product—how beautiful it will be, how much it will be enjoyed by others—there are many steps that must be taken before the finished product is everything it is designed to be.

Pre-design considerations

Before starting the design phase of the project, one needs to consider what purpose the water feature will serve. Should it create a focal point or oasis? Will it create soothing background sounds of rippling or cascading water? Will people swim in it, or will it be adjacent to a swimming pool? Answering questions such as these will determine whether to install a waterfall, pond, stream, or a combination thereof. The answers also can take the design in many different directions.

Another important note is to take a hard look at the site to determine what type of water feature would be best served by the

surrounding real estate. For example, a property with a formal English garden may look best accompanied by a formal water feature, whereas most natural settings are best served by a more free-formed, natural-looking water feature.

Depending on geographical location, the design also may be impacted by the threat of evaporation. In the arid Southwest, for example, rolling or falling water promotes evaporation, whereas calmer waters evaporate at a slower rate.

Oftentimes, the lay of the land dictates the design parameters including location, size, shape and type of water feature to be constructed. In this regard, other

important things to keep in mind during the pre-design phase are sight lines or viewing angles, and general drainage characteristics of the site. It is important for water to drain away from the water feature and not into it. It's also best to keep water features away from deciduous trees because leaves falling into the water can create maintenance issues.

One final word of advice before getting underway with the design is to check with local government agencies regarding building and electrical codes, as well as possible design restrictions. Regulations concerning water features run the gamut from state to state and even down to local compliance issues.

A major pitfall of not understanding local regulations is that an owner may be required to put up a fence around their new water feature for the same reasons swimming pools have to be fenced. Avoiding this scenario by conducting some research in advance of starting your project may turn out to be the best decision of all.

Design and excavation

Regardless of the type of water feature being installed—a stream, pond, waterfall or other design—many of the same steps are required. Following are general guidelines for constructing a simple pond that mimics nature.

Once the location and type of water feature have been deter-

mined, it is time to enter the design phase. The best place to start is by laying out a hose or using paint or chalk to mark the outline of the pond on the ground. This provides a visual preview of the area to be excavated.

One of the most common mistakes made during this stage is to design the pond too small resulting in an underappreciated expense. A

placing them opposite from each other in the pond to facilitate proper water circulation and surface skimming action. Getting the elevations correct on these units is essential for proper operation. Next, excavate the rest of the pond to the desired depth and compact the soil. Once the soil is sufficiently compacted—a step that minimizes shifting of the soil—form 6-



well-designed water feature should command attention and draw people to it. Likewise, a shape that avoids symmetry will result in a more natural-looking pond and, therefore, add to the aesthetic value. The exception to this rule would occur when designing a formal water feature.

Once the size and shape of the pond have been determined, it's time to excavate. Begin by excavating the outline of the pond and the holes for the appropriate number of skimmers and waterfall units needed for the design selected. Next, using a level or transit, set the pond edge and water elevations for proper viewing. Then set the skimmers and waterfall units level,

inch to 10-inch level shelving, and form planting pockets for aquatic plants as desired.

Once the pond has been excavated, remove all rocks, roots and other debris from the pond bed. Protrusions of any kind in the soil can puncture the pond lining material.

Installing a liner

Once the bed of the pond has been excavated and cleared of all debris, it is time to install a lining material. It is highly recommended that all water features incorporate a top quality lining product of adequate thickness such as PondGard EPDM Geomembrane from Firestone Specialty Products.

Best practices call for the liner to be used in conjunction with a 4.5-oz. or 6-oz. non-woven, needle punched, polypropylene geotextile underlayment to ensure the integrity of the water feature. The underlayment reinforces the puncture-resistant characteristics of the EPDM geomembrane, which serves many functions in a water feature such as protection of water levels, algae control and design flexibility.

The allowance for artistic creativity and design flexibility is crucial when designing water features, and EPDM liners provide this desired versatility. For example, if the owner desires to expand the size of the water feature down the line, an EPDM geomembrane accommodates changes in size and shape far easier than masonry or concrete, and offers greater performance benefits than HDPE and PVC liners. PondGard EPDM Geomembrane, in particular, doesn't pollute the environment in which it's used, and the product fits extremely well into green design and integrated, sustainable design requirements.

Some owners and installers choose to rely on clay as the lining material if there is high clay content in the soil. Take caution with this option for a couple of reasons. First, and most importantly, a properly constructed clay-lined water feature can lose as much as two gallons of water per square foot of surface area per day. An improperly constructed clay-lined feature would likely exceed that figure. Secondly, clay-lined water features can facilitate soil-borne diseases that may adversely affect the health of fish and other aquatic life. Installing a lining material provides a more controllable and often healthier aquatic environment.

The first step in the lining process is to lay down the under-

layment and place the geomembrane liner over it leaving any excess lining material overhanging the perimeter of the pond. During this process, many pond designs require that the geomembrane be folded in order to make it fit properly. Due to its flexibility, EPDM geomembranes can be shaped to fit any design imaginable. It is critical that all folds in the lining material run perpendicular to the water line and not parallel in order to maximize the water level. If the folds run parallel, you will lower the holding level of the pond to the lowest part of the fold.

Once the underlayment and geomembrane are in place, connect a rigid PVC pipe or flexible PVC hose from the skimmer to the waterfall (if applicable); install the check valve, auto fill valve and pump; and assemble the plumbing and electrical wiring making sure that all connections are watertight and secure. Finally, seal the liner securely to the skimmer's face plate using sealant and compression to ensure proper functioning of the unit.

Landscaping and finish work

Once the liner and all operating systems are in place and secure, landscaping may begin. Using a variety of natural materials is best—such as a combination of decorative or distinctive rocks, mulch and plants—in order to avoid an unnatural appearance. A mistake people often make when landscaping the perimeter of their water feature is to construct a “string of pearls.” This means that they use one size and/or shape of rock around the entire perimeter giving it a very odd, unnatural look. To create more visual interest and a natural-looking pond, place larger rocks first varying the size, shape and color. Next, cover the exposed liner with small rock or gravel.

Then fill in around the larger rocks with mulch and plants.

In the bed of the water feature, place the aquatic plants in the planting pockets and cover the roots with coarse soil, calcine clay or cat litter. These materials help hold the plants in place, and they work far better than regular soil.

If installing a waterfall, use cap stones to cover the waterfall; mortar or urethane foam will adhere to and seal these stones into place.

Once the landscaping is complete, wash off the rocks and conduct test flows over the rock weirs. Be sure to pump out the dirty water—with a separate debris pump—and refill with clean water. Leaving dirty water in the pond can damage the water feature's pump. The final pond construction steps are to install landscape lighting, if desired, and to connect the electricity. Once everything is up and running, fish or other aquatic life can be safely added.

Repercussions of a poor installation

As with any type of installation, potential problems lurk everywhere. Water leaks, in particular, may cause a variety of problems with water features including killing surrounding plant life and washing out or destabilizing soil. Additionally, the owner can experience excessive operating costs due to inefficient pumps, poor plumbing design or constant algae growth that can occur when a liner is not used or is improperly installed.

For the designer and installer, these problems can lead to a tainted reputation. Following these best practices for installing water features will minimize issues arising from inferior installation or design, and can help the designer/installer build a strong reputation for projects that offer beauty and enjoyment for many years to come. 🌱



Firestone

SPECIALTY PRODUCTS

THE LEADER IN LINING

To ensure the life and longevity of your water feature project, choose a name you can trust.

Specializing in:

Commercial & Residential
Water Features

Golf Course Ponds & Lakes

Streams & Waterfalls

Reservoirs & Canals

Constructed Wetlands

Stormwater Management Solutions

