Considerations for Pond Construction: Safety, Costs, Location, Design & More

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A pond is a beautiful and restful addition to your backyard or garden. Whether or not you choose to add fish or other pond animals, a pond can provide hours of entertainment and become a favorite area of focus. To get the most enjoyment from your pond, however, you will want to invest time in careful planning. The location, shape, depth and materials used in constructing a pond are critical to its health. A trip to the library or bookstore or viewing a catalog or website for pertinent books is highly recommended. You will also wish to consider the following things as you begin to plan your project:

1. Safety and local regulations

Ponds represent a major change of the landscaping in your yard, and depending on the size pond you want and the area that you live in, you may need to make modifications to your property or obtain permits from local agencies. Most areas will require you to have the pond fenced in, though a fence around the property should suffice. If you or your close neighbors have children, you should plan on taking added precautions. Supervision is a must, and a fence around the pond with self-closing and latching gates (like a swimming pool would have) is a good idea. Also ensure that any animals (and children) who might accidentally fall in will have a way to get out; consider a sloping bank or an anchored mat that allows them to ease themselves out gradually. You will want to examine the liability aspect on your homeowner's insurance, and inquire about any insurance requirements for your pond.

2. Start-up costs

Like all large-scale ventures, the initial cost can be a bit daunting. Proper initial set-up will ensure success and save money in the long run and make maintenance more manageable. Since set-up will involve determining how and where to dig the pond, what type of liner to use, and what filters and plumbing will be required, make sure you are aware of all the costs involved before you start. If using contractors, be sure to get firm quotes, and if using a pond maintenance contractor, be sure to outline what and when maintenance will be done. The only surprise we want is the enjoyment we will get from the completed pond!

3. Maintenance time

In addition to reducing maintenance cost, you can greatly reduce your maintenance time through proper planning. In order to keep your pond healthy, you must keep track of chemical levels in the water and keep the pond and filters clean. Once the pond is set up the way you want it, less time is needed to keep it going regularly, but the pond will still require attention. Depending on where you place the pond, more or less time may be involved in removing excess leaves or algae, and this time should be factored into your decision about where to place your pond.

4. Pond location

Choosing the right spot for your pond may be as simple as selecting the only spot available. In an ideal world, you will be able to provide a spot where you can enjoy the view of your new pond, and where it will have five to six hours of sunshine every day. You may need to add tall grasses, shrubs, or bushes to provide shade, or to add a cover of water lilies to keep algae from taking over. Trees, while lovely for shade and attractive to look at near a pond, can increase maintenance time dramatically. Before placing your pond near or under a bank of trees, weigh the pros and cons very carefully.

5. Pond size and purpose

Your next consideration is size and purpose. Do you want to look at your pond? Do you want to keep fish? Do you want to swim in your pond? Do you want to create a water garden with exotic plants? Because a biological balance is easier to create and maintain in a larger pond than a smaller pond, it is generally a good idea to make your pond as large as possible within the space allowed. Be aware that the majority of pond owners wish their pond were bigger by the end of the first summer. To allow your fish to "over-winter," at least a portion of the pond will need to be a minimum of two feet deep, or one foot below the "frost line" in your area. A local nursery should be able to give you this depth.

While you can have a perfectly beautiful pond without them, you may want frogs, snails, newts, salamanders, or turtles in your pond. Plants and goldfish are usually safe together, but check out some good resource books when you want to combine other plants and animals to make sure they are compatible. For example, Koi (another common pond fish) can destroy many underwater plants. If plants are more important to you than fish, you may want to consider establishing a water garden with little animal life.

6. Pond depth and climatic considerations

Your pond will likely contain three different areas, a marshy zone around the perimeter, a shallow zone, and a deep-water area. Setting up a pond in a dry, arid environment will require more planning and more equipment than the same pond would

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require in a tropical or temperate environment. Observe other local ponds and take a peek at your local golf course to see how they are set up.

Seasonal weather variations should be planned for ahead of time. There are guidelines available for each climatic zone, and these should be followed carefully. For example, if you intend to keep fish in a cold-winter climate, you will need at least ten square feet of deep-water space two to three feet deep where they can hide from the freezing temperatures. As a rule, the colder your winters, the deeper you will want to make this area of your pond. If you live in a seasonal climate, you may also want to add evergreen hedges as a windscreen to a pond that is exposed to weather on the north or northwest side.

7. Pond shape and design

Shape as well as size drives construction costs. Whether you choose a natural-looking pond lined with clay, or opt for the solution offered by preformed shells or flexible liners, you should be aware that simple round or oval shapes are least expensive, and excavation with creative curves and convoluted designs quickly adds to your startup cost.

Waterfalls or streams add aesthetic value and help to circulate the water, which increases the health of the overall environment. Some of the loose dirt from the excavation of your pond can be used in waterfall designs. Waterfalls will require more space to set up, and do cost extra money to construct.

8. Water and drainage

Even the most natural of ponds will occasionally require water maintenance or even a water change. When it does, you will need water nearby. Similarly, depending on the area in which you live, you will want to allow for proper drainage during overflow caused by heavy rain.

9. Biological filtration and the nitrogen cycle

Fish wastes and decaying plant materials create ammonia, which is also produced as a byproduct in a fish's respiratory process. This ammonia is toxic, and if left unchecked, can kill both plants and animals in your pond. But nature has developed a way to cope. As the ammonia level in the pond increases, special bacteria will develop to feed on ammonia and break it down into nitrites. These nitrites are also harmful, but once the nitrite level in the pond begins to build up, the nitrites are in turn converted to harmless nitrates by another type of bacteria. The bacterial colonies are what make up your pond's biological filtration system. Once established, a biological filter will handle much of your pond's filtration needs. However, changes in temperature, pH, and even feeding can cause temporary spikes or surges in ammonia or nitrite that may stress your fish. Monitor carefully.

10. Electrical equipment

A large pond can accommodate more fluctuation, but a small pond will require back up filtration systems for survival. You will also need an air pump to maintain adequate oxygen levels in your pond, and a water pump for emptying the pond as occasion demands. This, of course, means that you will need to plan for an electrical source near your pond, ideally with a GFI (Ground Fault Interrupt) receptacle to prevent unnecessary shocks.

11. Testing and maintenance

You may need to make adjustments to your pond conditions depending on the condition of the water. You will want to test the water regularly for ammonia or nitrite spikes, and clean the surface and filters once a week or so. You will need to buy a few test kits in order to maintain good water quality. A few essential test kits are:

Ammonia test kits measure ammonia levels in the water. The results obtained from some kits will estimate the amount of ammonia present; others may just give a "safe" or "not safe" reading.

Nitrite test kits measure nitrite levels. Like ammonia kits, these may estimate the nitrites present or only indicate the levels are above the "safe" zone.

Nitrate test kits measure nitrate levels. You can use these readings to ensure that your biological filtration system is working properly. A sudden change in nitrate levels can be indicative of a problem in the pond.

pH test kits measure the pH of your pond water. Each species of fish and some plants will have certain pH requirements. You can purchase additives to modify the pH of the water to make it compatible with the needs of the pond inhabitants.

A properly planned and designed pond will provide countless hours of enjoyment. In addition, a little time spent in planning and preparation will save hours of maintenance and will help prevent many of the common problems that plague many less-experienced pond owners. So do your homework now and you will be enjoying a beautiful and healthy pond or water garden in no time.

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