**How to Build a Pond**

**Pond Building Tools and Equipment**

With common household and garden tools, first-time do-it-yourself pond builders can manage the excavation and construction of ponds ranging from 100 to 800 gallons (379 to 3028 liters).

**To prepare the pond site, you'll need:**

* Rope
* Chalk or spray paint
* Square spade
* Rounded shovel
* Wheelbarrow
* Measuring tape
* Level
* Rake
* Fine sand

**To construct the pond, you'll need:**

* Underlayment
* Pond liner
* Bricks or heavy rocks
* Pump
* Filter
* Tubing, pipes and fittings
* Skimmer (optional)
* Aerator (optional)
* Heater (optional)
* Lighting (optional)
* Water
* Material to finish pond edge

**Building Pond**

**1. Surveying the land**

Clear the land to get line of sight.

Select a reference point for the survey. The standard reference point (bench mark) is sea level

(0 m above sea level). However, in pond construction we use a Temporary Bench Mark (TBM) to help determine elevations and establish slopes. If there is an existing pond use it as the reference point to get the heights of your dykes. If there are no existing ponds, use a fixed point on an inlet or outlet canal as the TBM.

1. Start measuring elevations from the supply canal using a level and twine. Determine slope from dyke top to pond bottom for both Vertical and horizontal dimensions. This helps in understanding how water will flow from the pond to the drain or back to the river.
2. Raise elevation into canals by blocking with timber or sand bags.
3. Survey across water bodies using objects such as bamboo, pipes, etc.

**2. Clearing vegetation**

Vegetation should not be included in the soil used to construct the pond dykes, so should be removed from the site prior to beginning to excavate and move soil.

**3. Removing topsoil from the site**

Topsoil is not good material to use for dyke construction, so it should be removed prior to excavating the pond.

Topsoil can be set aside and spread over the dykes after construction is complete, or it can be moved for use elsewhere on your farm.

**4. Determining Pond, drain pipe, and supply canal elevations**

a. Determine topography (layout) of the land first.

Remember that the elevations of the pond inlet and the outlet to the drain canal determine the elevation at which the pond drain can be placed. Hence the difference in the elevations of the inlet and the outlet determines how deep your pond can be.

1. Canal slopes generally range from 0.25% to 1%.
2. Cross check your levels to correspond with the TBM so as not to lose dyke height.
3. You can also check your pond diagonally, widthwise, and lengthwise.

**Pegging out the dykes and core trenches**

* 1. Decide on the size of the pond and peg the pond area.
  2. Decide on the dyke slope and width.
  3. Place pegs at the inner toes, including the four bottom corners. The toe is the point where the dyke slope meets the pond bottom.

**6. Constructing cores**

If you suspect the dyke or pond bottom soil to be highly permeable, dig a core trench under the dykes around the pond. Pack the core trenches with impermeable clay.

**7. Excavating the pond area**

1. Make a decision on pond depth and calculate the (cut) dig/fill heights
2. Begin excavating the pond bottom.
3. Plan where you take soil from and where you take it to.
4. A two-person stretcher works better in black cotton soil than a wheelbarrow.

**8. Constructing the dykes (levees)**

1. The most important component of a pond is its walls.
2. Use soil excavated from the pond area to construct the dykes.
3. Construct the dykes gradually, in layers about 20 cm thick at a time.
4. Compact each layer before the next layer is put down.

**9. Installing the drainage system**

1. Install the drain after the dyke has been raised at least above the original ground level.
2. Cut a trench for the drain pipe across the dyke at the selected point in the deep end.
3. The top of the drain pipe should be below the deepest part of the pond.
4. Lay the pipe at the proper slope through the dyke; slope should be not less than 1%.