How to Build a Lined Garden Pond

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& one of our advisors will be pleased to help.

This page is here to help you when planning the construction of & subsequently building, a lined garden pond.

The steps below will show you the basic construction techniques plus illustrate how to create a number of additional & slightly more advanced features. (See also "How to design a lined ornamental pond").

Step 1. Marking out. In the position chosen, using a length of string, cord or hosepipe, lay out the desired pond profile. Try to avoid acute angles, gently curving shapes look better and allow easier lying of the lining material.

Step 2. Excavation. Dig out the first level to a depth of approximately 8 to 11 inches (20 – 28cm) ensuring that the sides of the excavation slope inwards at approximately 15 to 29 degrees which is 3 inches (7.6cm) in for every 9 inches (23cm) down. This is to allow ice forming in the winter to rise up rather than digging into the liner which may cause damage to it. This will be the first level, part of which will become the Marginal planting area.

Using a spirit level resting on a long, straight piece of wood or a plank, check to make sure that the excavation is level in all directions.

Next, mark out the size & shape of the marginal planting area or areas. The Marginal planting areas should be at least 9 to 15 inches wide (23 – 38cm) & although they do not need to extend all the way around the pond, you should allow a generous area for the most pleasing results when planted.

Now dig down a further 9 to 12 inches (23 – 30cm) for the next level. This will provide a planting area for Water Lilies, deep water marginal's & deep water plants such as Water Hawthorn. If the ground allows you can dig down a further level to provide a deep water area which will increase the pond volume (the greater the volume the greater the stability of the pond environment) & provide Winter quarters for the fish.

Finally, to allow for finishing off the outside pond perimeter with paving, stone or other landscaping materials, remove approximately 2 to 3 inches (5 – 7.6cm) of soil by the required width & shape all the way around the outside of your excavation. The Marginal shelf depth, you will note, will now have been reduced to the correct depth of approximately 6 to 9 inches (15 – 23cm). Make sure that the pool surround is slightly higher than the garden beyond to reduce run off entering the pond during rainfall.

Note that all the above dimensions can be altered to suit the thickness of the material that is chosen to finish off the external pond perimeter, for example if decking were to be used then all dimensions would increase significantly because of the overall depth of the decking construction.

Step 3. Preparation for Lining. When you are happy with the shape & contours of the excavation carefully check for & remove roots, sharp objects, stones & anything else that may possibly damage the liner. For best, long term results then lay pond liner underlay over the entire interior of the excavation. Pond Liner Underlay is available either in pre-packs or off the roll & is essential to protect the liner. It is also possible to use sand as an underlay, held in position with damp newspapers, although this method is messy, heavy work & much more time consuming. Old carpet can also be used but they may decay & break up leaving the liner vulnerable to stone & root damage. Pond Liner Underlay will not rot & provides permanent protection.

Step 4. Laying the Liner. After carefully checking to ensure the liner is the right size for the excavation, loosely drape it over the contours of the pond excavation. Using a hosepipe, begin to fill. As the water level rises, pull, tuck & smooth the liner to shape as required. Do not worry if the liner appears to be folded & creased as when the pool is full of water, the pressure of water compresses the folds into tight lines that will not be visible once the pond is planted up.

Step 5. Finishing off. Lay paving or alternative surround to pool perimeter. If using paving, lay on mortar bed overlaying the pond edge by approximately 2 inches (5cm). Point up between paving & liner. The mortar will resist weathering better if a waterproofing agent is added to it when mixing. Waterproofing agents are available in powder, liquid & polypropylene or glass fibre form. Additionally the surface of any exposed mortar can be treated (after leaving for at least 28 days to allow mortar to cure) with G4 Pond Sealant which will seal in toxic lime & provide further anti-weathering protection.

Drain the pond & carefully wipe down the liner to remove any construction materials that may have inadvertently dropped in. Re-fill & add water conditioner in preparation for adding plants.

Plants should be added as soon as possible after filling so that they may quickly become established & assist in managing the pond water quality. Ensure the pond has been fully planted before introducing fish.

You may decide to add other items to the pond, for example Filtration to maintain water quality and clarity, lighting for pleasing aesthetic effect or a Fountain Pump which is both decorative & functional. These items are best added before planting & should be considered well before the construction stage in order to determine if their inclusion will influence the construction process, for example laying of exterior electrical facility or providing a suitable Filter housing or base.

Additional & advanced features to consider. These features will need to be incorporated into the initial construction & cannot be added afterwards. (See also “How to design a Lined pond”)

1. Cobbled Beach. A Cobbled Beach effect should take up the whole of one end of the pond with a broad, wide start from the top of the pond across a large area of the perimeter, narrowing & tapering inwards towards a deeper area. Make the decent to the deeper area gradual & not too acute.

Start a gradual slope inwards about 2 to 3 inches (5 - 7.6cm) from the planned water surface to a deeper area of the pond. Using natural stone, bricks or cobbles, set into mortar at the lowest point so as to create a retaining wall for the beach cobbles.

Working backwards from this point to the surface level, mix & lay a mortar layer approximately ½ to ¾ inch thick (12 – 19mm). Only spread as much mortar as you are able to reach across at any one time. Using river or sea cobbles (sizes 3 to 6 inch (7.6 – 15cm) provide the best effect for medium sized ponds & larger Icelandic cobbles look better in the larger pond). Press these firmly into the mortar layer & smooth off surplus mortar.

After the entire area has been covered, leave until mortar is partially set (from 4 to 8 hours depending upon air temperature and strength of mix) & then brush off any remaining mortar with a stiff brush. Don’t forget to add a waterproofing agent to the mortar & for best results, 28 days after laying paint over with three coats of clear G4 pool sealant.

2. Bog Area. In an area adjacent to the pond, excavate to a depth of 10 to 15 inches (25 – 38cm) over an area which is complimentary in size & shape to the profile of the pond & the general garden scheme. Line the excavation with pond liner & trim off at the surrounding ground level.

Using a garden fork, pierce the liner about 2 inches (5cm) from the bottom in a pattern approximately 18 to 24 inches (45 - 60cm) apart to allow for a minimal amount of drainage. Using Inert Pea Gravel or other lime free decorative gravel, fill the entire area. Bog & some Pond Marginal plants can be placed directly into the gravel. Do not use additional soil, fertiliser or other planting mediums as this may sour in the damp Bog Garden environment. If, over time there is a foul smell evident, increase the number of drainage holes. The area will need watering in spells of dry, hot weather. With careful, considered planting in both the pond & bog area a seamless interface of plant material from pond to bog area can be achieved to dramatic effect. A bog area such as this can also be added to a Rigid Pond Liner installation.

3. Natural Stone Surround. The creation of a Natural Stone Surround is ideal for informal ponds of a more naturalistic design & can also totally conceal the liner material irrespective of the water level, unlike a paving finish where liner will be visible if the water level drops in hot weather.

To fit a Natural Stone Surround you will need to make the pond excavation 9 to 15 inches wider (23 – 45cm) around the whole of the perimeter than the required, finished, Marginal shelf width. Do not slope the sides of the excavation at the perimeter but keep the cut straight. Natural stone of the appropriate size can be placed on a mortar layer on top of the pond liner. The pond is then essentially lined with stone all the way around with the Marginal shelf directly in front of the stone layer. Point up & treat all exposed mortar with G4 as described previously.

4. Gravel Filled Planting Areas. Again, primarily to achieve a natural look but also to provide an environment that will benefit the Pond Plants & increase foraging area for Amphibians, gravel filled planting areas may be considered.

To construct a gravel filled Marginal planting area, build a stone retaining wall on the edge of the proposed Marginal Shelf, set in mortar on top of the pond liner. Fill this area with inert Pea Gravel or Lime free decorative gravel. The width of the pond excavation and Marginal shelf, as for the Natural Stone Surround above, will need to be extended by the thickness of the material used to construct the retaining wall.

Marginal Plants can be planted directly into the gravel. It is advisable that plants with penetrating root systems such as Bulrushes & many Reeds & Grasses are planted still contained within a plastic or flexible pond planter. The plant, in its basket can then be lifted & roots trimmed to advise damage to the pond liner.

To construct a gravel filled planting area for Water Lilies, build a retaining wall as large in size as possible on the bottom of the pond in the same way as above. It should be about 10 to 12 inches deep (25 – 30cm). When filled with gravel the Lily corms can be planted directly into the gravel. These will need feeding each Spring & again when flowers are produced to keep the corms in good condition.