

Capiphon™ Drainage Installation Guidelines

How to ... Use Capiphon as an Intercept Drain

The naming of drains is a difficult matter! There are many slight variations and some differences geographically.

An intercept drain is simply a drain designed to intercept water flowing across the surface.

- They are usually shallow and run across the slope, just off level. These can sometimes be called spoon drains if they are open to the surface.
- Wide spoon drains are sometimes called swales.
- Narrow spoon drains with sharp edges can be called Vee drains.
- Sometimes they are lined with concrete, pavers or gravel.
- Sometimes, and especially around buildings and driveways, they are manufactured from plastic or metal.

These are all surface intercept drains.

Sub-surface drains, as their name implies, go down deep into the soil.

- **French Drains** have gravel in them and can sometimes come right up to the surface. The gravel is sometimes called the drainage layer.
- **Ag drains** have slotted pipe at the bottom of the trench which is then filled with gravel.
- **Ag Drains** installed around buildings and roads often have **geotextile sock** over them to prevent silt from entering the pipe and blocking it.
- **Mole drains** are hollow “pipes” created by dragging a bullet-shaped plough head through the soil at depth. The plough head pushes the soil apart so that water can flow through it.
- **Mole drains** are usually intercepted by **Ag drains**.

The Capiphon Intercept Drain is like an Ag drain except that it has strips of Capiphon running vertically from near the surface down into a collector pipe at the bottom of the trench. The trench is backfilled, not with gravel or scoria, but with washed, coarse sand. The drainage layer in this case, is the Capiphon in combination with the washed coarse sand.

You can buy prefabricated Capiphon intercept drain lengths from your nearest Capiphon Distributor. They are available at 3m or 6m lengths with slots spaced at 1m, and with specified lengths of Capiphon. Different lengths and spacings can be requested.

More commonly, though, you can fabricate them yourself.



Installation

- Make sure that you have a trench about 10cm wide
 - The depth depends on the soil, and whether water flows horizontally as well as vertically.
 - In duplex soils, the trench needs to penetrate the clay layer.
 - And, to protect buildings, it needs to be 10cm deep below the base of the wall or footing.
- Cut sufficient Capiphon™ belt to run vertically from the bottom of the trench to just below the surface or cultivation depth for each slot.

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- Insert and secure the belt into the collector pipe, seal with silicone sealant along the smooth side, and in any gaps at the edges. This can be done away from the trench – in a workshop, or alongside the trench.
- Spacing between strips of belt depends on the challenge (how much water is expected in any given time), and the risk cost/benefit involved.
 - For building protection: 0.6m-1m.
 - For agriculture: 1-10m.
- Join the lengths of collector pipe and set them on a thin bed of washed, coarse sand with a 1-2% slope towards the sump. There is no limit to the number of pipes that can be joined together.
- Use ordinary PVC elbow joints to take the collector pipes around corners.
- **Backfill with the washed, coarse sand. (Ω see below)**

The Capiphon Intercept Drain for Building Protection

- Create a flush point if required (especially for a basement) by connecting an appropriate diameter PVC pipe from the top-most Capiphon Intercept pipe up to the surface.
- Connect the low end of the collector pipe to a sump pit exiting to the normal stormwater outlet. (If necessary, use a bilge pump and float-valve to lift the outflow to the stormwater outlet)
- A cheaper alternative to backfilling with washed coarse sand is to backfill with spoil **PLUS a “sandwich” of washed, coarse sand** between the wall and the spoil. This thin vertical layer of sand provides a highly permeable pathway to collect and channel water to the Capiphon and the collector pipe. **(Ω see below)** This will save having to take away the spoil, as well as saving the cost of importing gravel.
 - Place a sheet of form plywood on the outside of the collector pipe.
 - Pour washed, coarse sand down between the wall and the sheet of plywood, and then
 - Push the spoil up against it.
 - Roll the plywood over to repeat the process along the rest of the trench.

Ω Washed, Coarse Sand versus Gravel

“Because aggregates have larger voids than sand. The drainage flow between voids is turbulent so agitates soil particles. That means surrounding fine particles of soil will fill up the void gradually after some periods of time. Causing settlement of the drainage blind trench.

The permeability of sand is always 100 times bigger than the surrounding loam. Good enough for the ground water coming laminary to our system of drainage.”

Hu Ming Chun (Capiphon inventor)

What Sand to Use?

See separate sheet [WHAT SAND TO USE? - A Simple Permeability Test](#)