

# Capiphon™ Drainage Installation Guidelines

## How to ...

### Protect a Basement or Retaining Wall Using Capiphon

A basement wall and a retaining wall are essentially the same except that the risk and cost of failure is much higher with a basement.

- Basement walls need to be drained properly to protect the building not only from leaks but from moisture (rising damp) seeping through the wall and damaging the interior. The exterior of the wall needs to be properly damp-proofed, starting with keeping water away from the wall itself. Careful construction and appropriate waterproofing materials are essential, but the most important starting point is good drainage.
- Retaining walls need to be drained properly to prevent the build-up of hydrostatic pressure which can lead to distortion of the wall and, perhaps, collapse over time. Again, good drainage is the essential starting point.

As always, Capiphon can be used instead of Ag Pipe and geo-composite drains

(Geo-composite drains are Ag Pipes with sock but are made from rigid HDPE instead of flexible PVC).

Capiphon can be used either

- as strips of belt inserted into a PVC collector pipe (just as in a Capiphon intercept drain – see separate sheet), or
- as Capiphon Pipe (Capiphon belt wrapped around 50mmDWV PVC pipe)

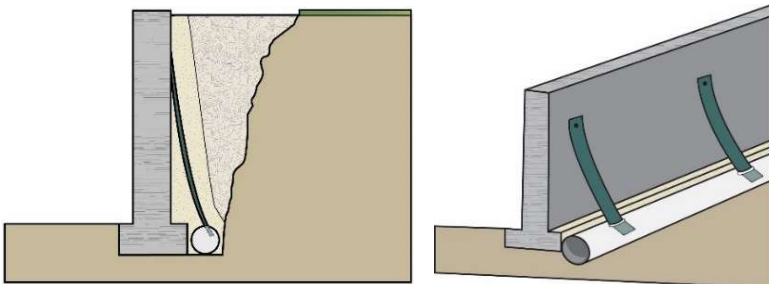
#### USING CAPIPHON INTERCEPT DRAINS

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.

As an alternative, you can fabricate them yourself. See separate brochure: *How to Fabricate Capiphon Intercept Drains*.

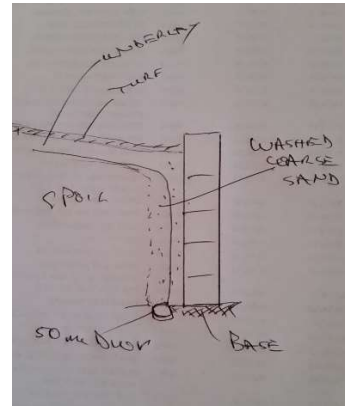


- Make sure that you have a trench about 10cm wide and 10cm deep below the base of the wall or footing.
- Cut sufficient Capiphon™ belt to run vertically from the bottom of the trench to just below the surface or cultivation depth for each slot.
- Insert and secure the belt into the collector pipe, seal 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.



# Capiphon™ Drainage Installation Guidelines

- 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.
- Use ordinary PVC elbow joints to take the collector pipes around corners.
- Connect an appropriate diameter PVC pipe from the top-most Capiphon Intercept pipe up to the surface to provide a flush point if required for a basement.
- Connect the low end of the collector pipe to a sump pit, with a bilge pump and float-valve if necessary.
- Backfill with the washed coarse sand or ...
- Backfill with spoil but with 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. 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.



For very deep trenches, use a front-end loader or other machine to move the form plywood into place.



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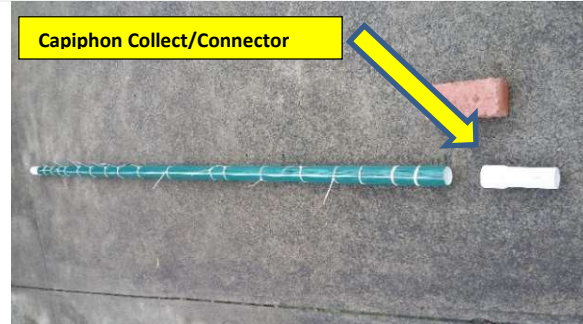
## USING CAPIPHON PIPES

You can buy prefabricated PVC pipes from your nearest Capiphon Distributor. They are available as 54\*mm, 44\*mm or 29\*mm, and in 6m or 3m lengths.

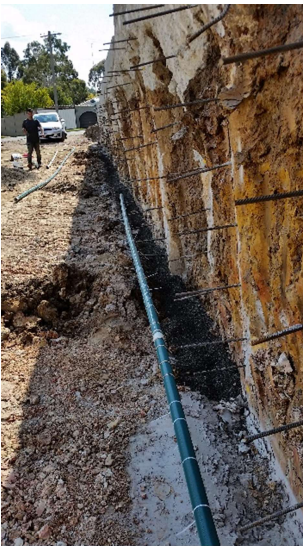
Collector/connectors are also available.

(\* nominal diameter of pipe plus 2\*2mm Capiphon)

Alternatively, you can fabricate them yourself. See separate brochure: **How to Fabricate Capiphon Pipes**.



- Make sure that you have a trench approximately 10cm wide and 10cm deep below the base of the wall or footing.
- Join the Capiphon Pipes together with the appropriate sized collector/connectors. This allows the water that collects in the grooves to pass into the inside of the next Capiphon Pipe.
- Lower the Capiphon Pipes into the trench.
- In the case of a shotcrete wall, place the Capiphon Pipes on a bed of washed coarse sand, then cover with plastic sheeting prior to shooting the concrete.



- If using Capiphon belts and Capiphon Pipes together, fix the tops of the lengths of belt to the wall with the grooves facing towards the wall, being careful not to damage the waterproof seal. Use an adhesive or prop them up using lengths of timber.
- Make sure that the slots in the pipe are at 30-45° to perpendicular, and that the belt is inserted with the grooves facing down.
- Cover the pipe and belts connections with 10-20cm wide “sandwich” of washed coarse sand to the surface, then backfill with the spoil.

## What Sand to Use?

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

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## Remediating Existing Retaining Walls

Relieving hydrostatic pressure from behind retaining walls is straightforward with Capiphon™ Pipe.

- Drill a hole through the wall as close to the base as possible. Use a portable hand-held post-hole auger for small jobs, or a horizontal drill rig for larger.
- Drill up at 5° (about 9%)
- When the wall has been breached, continue drilling for a sufficient length depending on circumstances.
- Remove the drill from the casing, and insert Capiphon™ pipe, making sure that the end of the pipe is capped.
- Withdraw the casing and allow the soil/rock to collapse to come into contact with the Capiphon™ pipe.

