

Installing filters

Rainwater is amongst the purest water one can get distilled as it is by the sun..

However, in a rainwater harvesting system, the water comes in contact with several surfaces, such as the roof or gutters. Its flow becomes possibly mixed with leaves or dust.

To get water fit for use at the end of the harvesting process, apart from keeping clean these surfaces, we can filter the water before storage.

Filtering rainwater before storage is essentially to remove organic material and silt so that the water stays clean longer



Photo: Shree Padre

Traditional method of rainwater harvesting. The catchment cloth is also filtering the water.

Filter types

Different types of filter are available

I. For sump tank



PVC drums



Double drums filter



Ferro cement filters



Stainless steel filter

II. For ground level tank



Integrated sand filters

The PVC drums and ferro cement structure

PVC drums has a light weight, and is easy to transport, easy to install. It is also the cheapest of these filters. But it cannot be kept in sun, and has a limited capacity.

Concerning the ferro cement structure, its size can be made to suit the requirements But it is heavy, and requires skill for construction.

Site Specification

Usually the filter is placed below the vertical down pipe.

It can also be placed adjacent to the sump tank.

A drum of 90 liters can filter the water of a roof area up to 100 m².

Technique

Make the filter using PVC or Ferro cement. Provide an outlet at around 2" from the base.

Tie a nylon or wire mesh to the mouth of outlet for holding back any suspended impurities.

Filtering material

Once the type is chosen, the container is filled with filtering material. It can be coarse gravel, smaller gravel, sand and wire mesh.



Ferro cement filter with sand



Drum filter with filtering cloth

Technique

Place the filtering media in layers. Coarse gravel at the bottom and smaller gravel above it.

The topmost layer must be of sand. All layers are usually 15 cm deep.

Maintenance : remove the mesh on top of the sand after every rain and clean it under a running tap.

Cost : a drum filter will cost around Rs 600, if kept in the shade, it can last over 6 years.

A ferro cement filter will cost around Rs 1700/-.

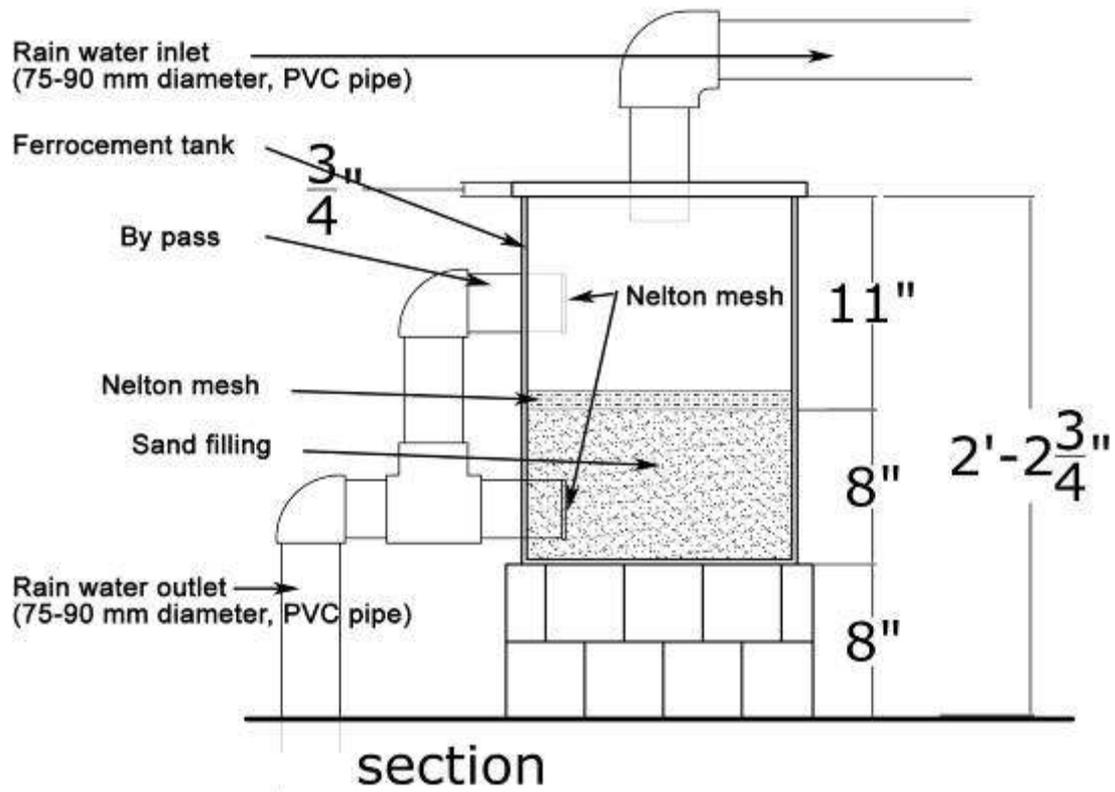
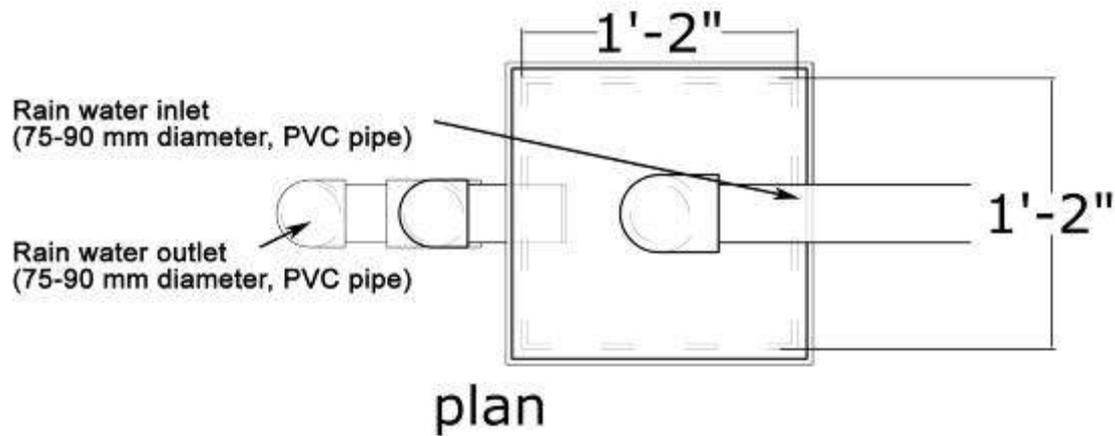


Drum filter filled with sand

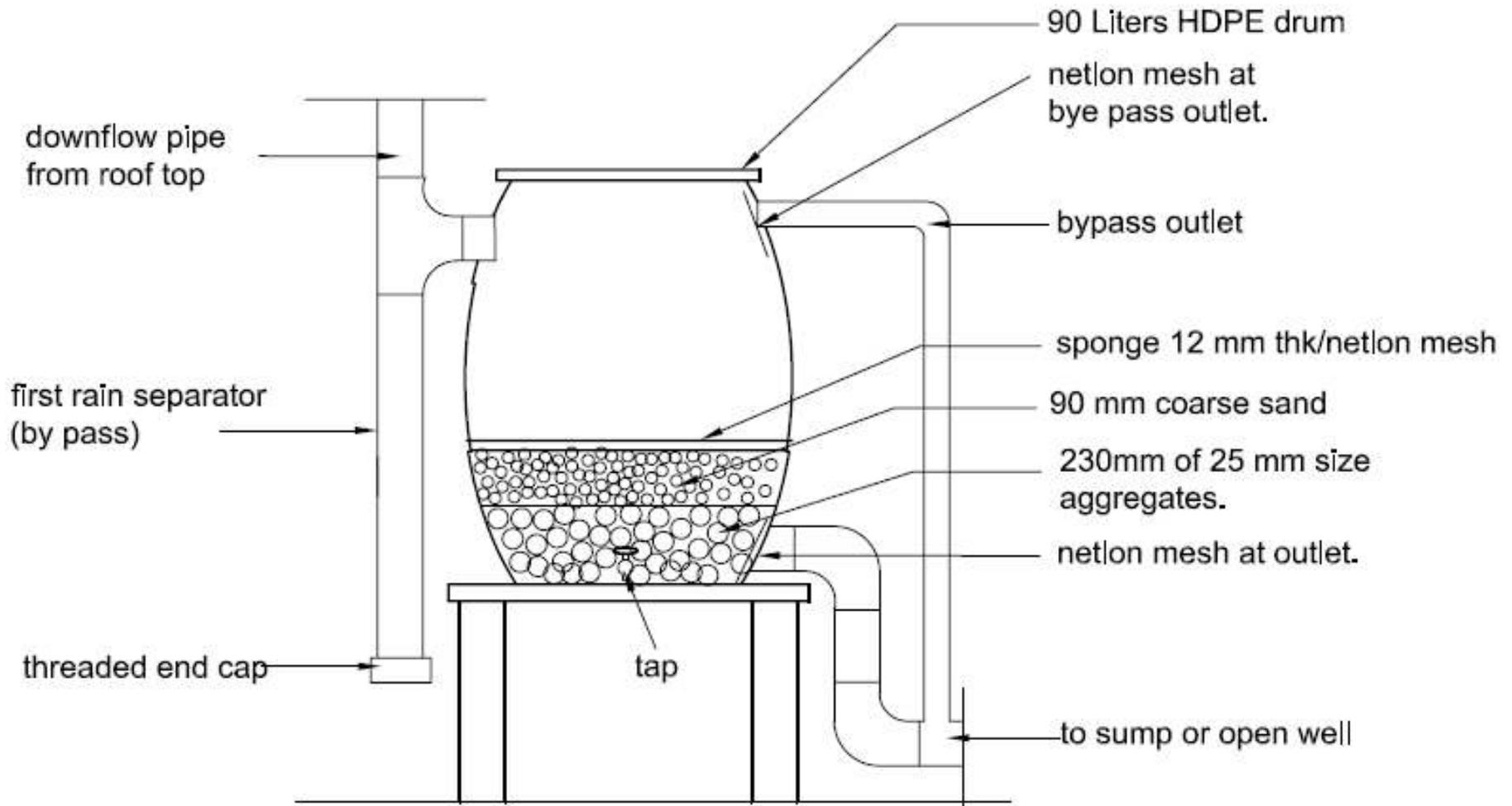


Perforated cap

Ferrocement filter



Drum filter



What else is possible

You can place charcoal on the top of the sand. It eliminates bad odours that could be present in the water. It simply purify the water through a process of adsorbtion (carbon fixation).



Charcoal is used as an odour absorber



Ferro cement filter

The ferro cement filter can be designed as a sitting area or an area where pots can be kept.

Double drums filter

When the roof area is bigger than 100 m², it is possible to use two drums as filter.



Collecting pipes
from the roof

Over flow pipe to
the recharge well

Pipe to the sump
tank

Drum filter for the roof top harvesting system of an apartment

Stainless steel filter



The stainless steel box filter is ready to use.

The water enters in the box from the top and passes through the mesh to the downflow pipe.

Thus, stone and sand filling is not necessary.

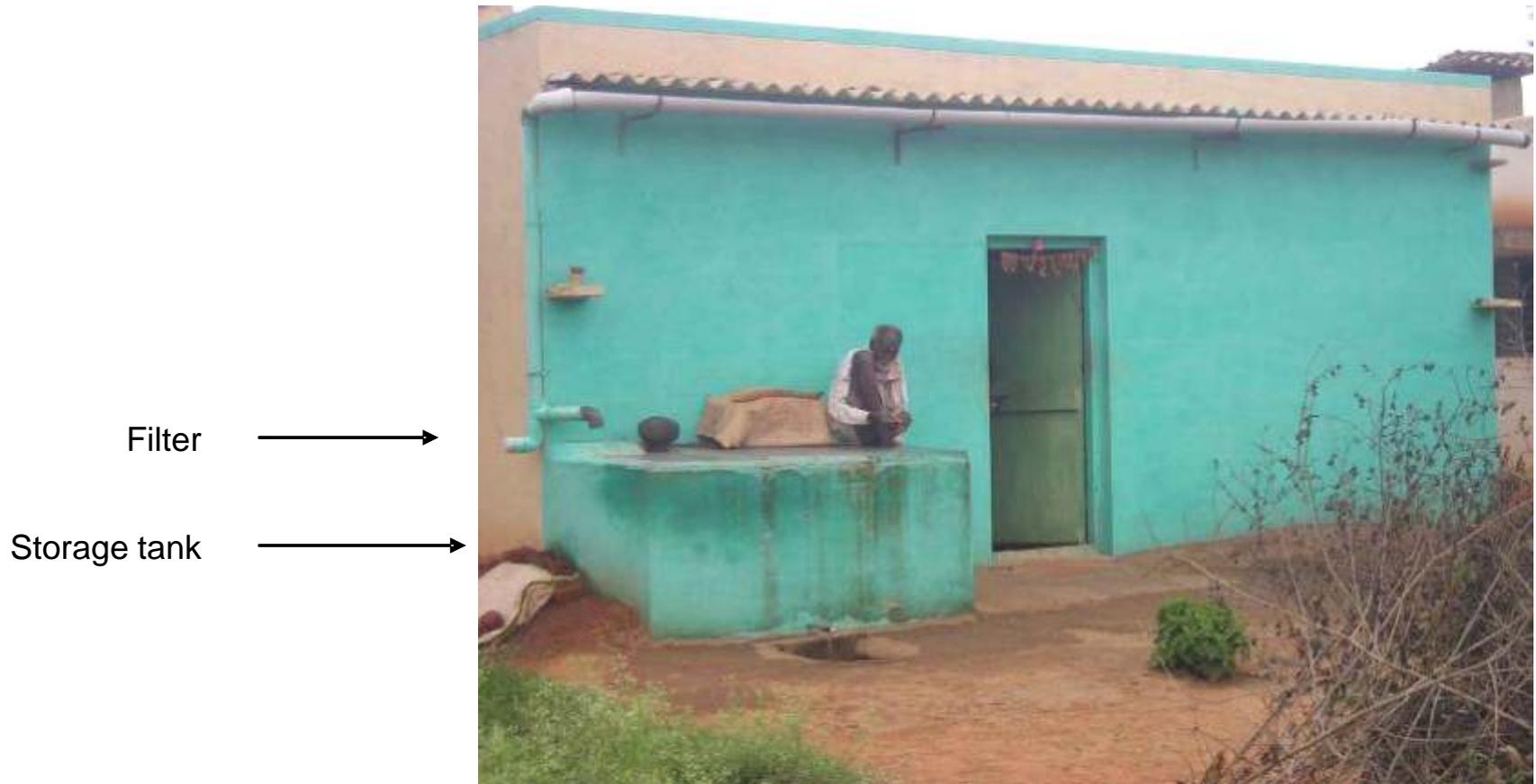
This filter is easy to clean.

A stainless steel filter costs around Rs 6000



Integrated filters

When the rainwater storage tank is on the ground, the filter comes directly on the top of the tank. We find such systems mostly in the rural areas.



House and its owner in Karnalu village
Dodballapur

Filtering material

Placed at the mouth of the rainwater pipe, the filtering material can be very diverse. A combination of perforated aluminium box with mesh and sand or perforated plastic bottle with mesh and gravel are efficient.



jelley



sponge



sand



Perforated cap

Personalization = optimisation !

Often, the owner make her own filter with the material available in her house.



Filter with cloth tied to pipe and gravel in a perforated aluminum vessel



Woman placing a clean cloth filter on the pipe

The cloth is washed whenever dirty usually after every rain