



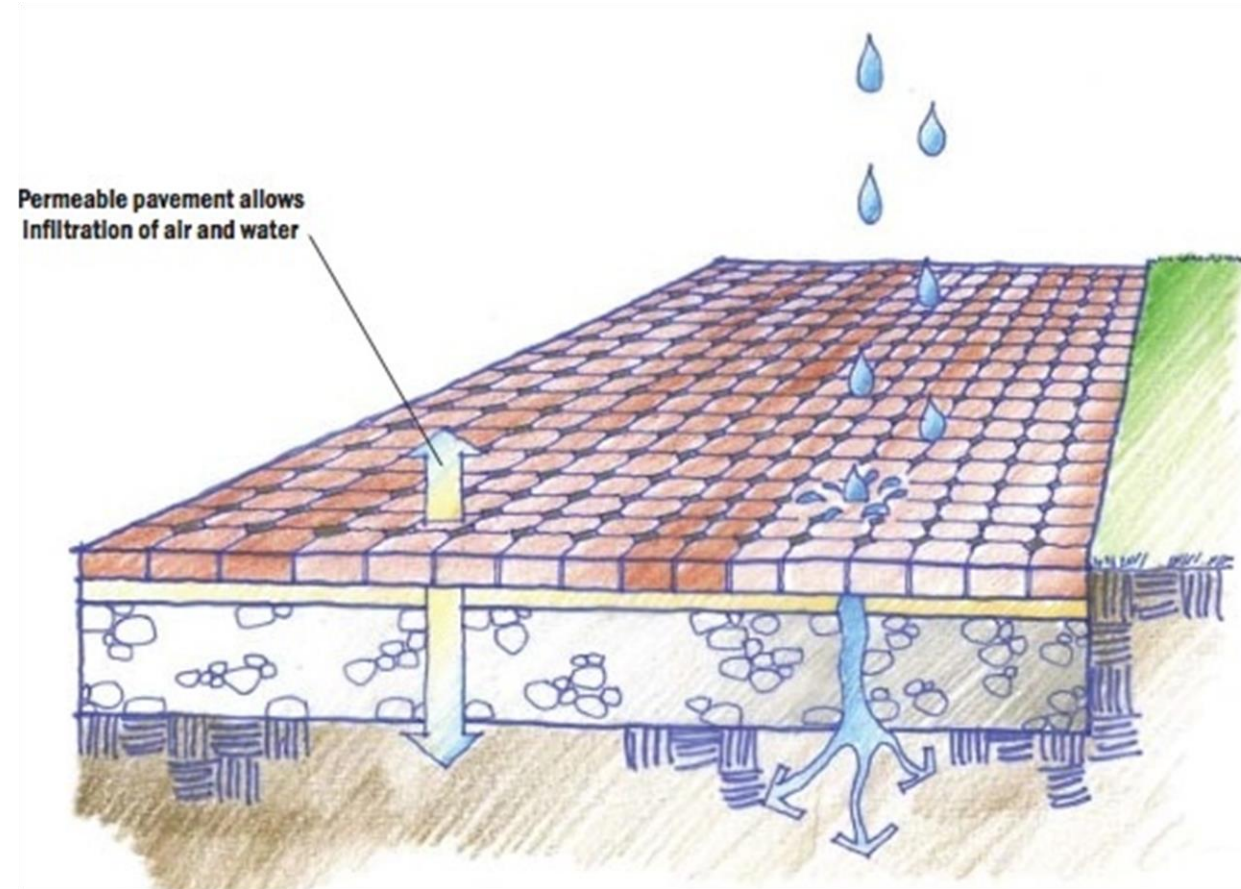
Permeable Pavement

By: Eng.Zmnako Gharib Hama Raza

Permeable Pavement

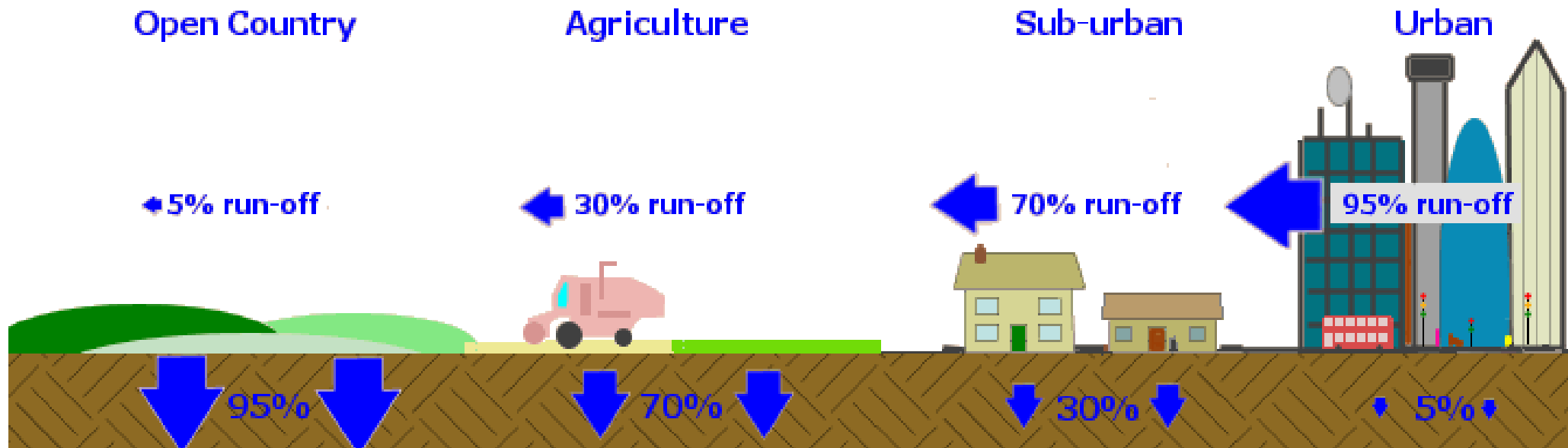
A **Porous pavement** is a hard surface that can support some vehicular activities, such as parking and light traffic, and which can also allow significant amounts of water to pass through.

Porous pavement is widely used in parking lots, and allows water to drain through the pavement surface into a stone recharge bed and infiltrate into the soils below the pavement.



Permeable Pavement

Permeable pavements work by controlling the release of surface water to the natural environment. The aim is to redress the balance, by re-creating **attenuation** and allowing the ground to **absorb**, **store**, and gradually **release** collected water in a more controlled manner, much like a great big huge soak away.



Main types of permeable pavers:

1-Permeable pavers : Allow drainage through the gaps between pavers, such as:(**Pine Hall Brick**)



2-Pervious pavers : Allow drainage through the pavers themselves.
Such as:(**Xeric pave**).



Main types of permeable pavers:

3-Porous pavers : A cellular grid often made of concrete or polyethylene that allows drainage through cells typically filled with soil/grass seed or gravel.

Such as: (**Invisible Structures**)

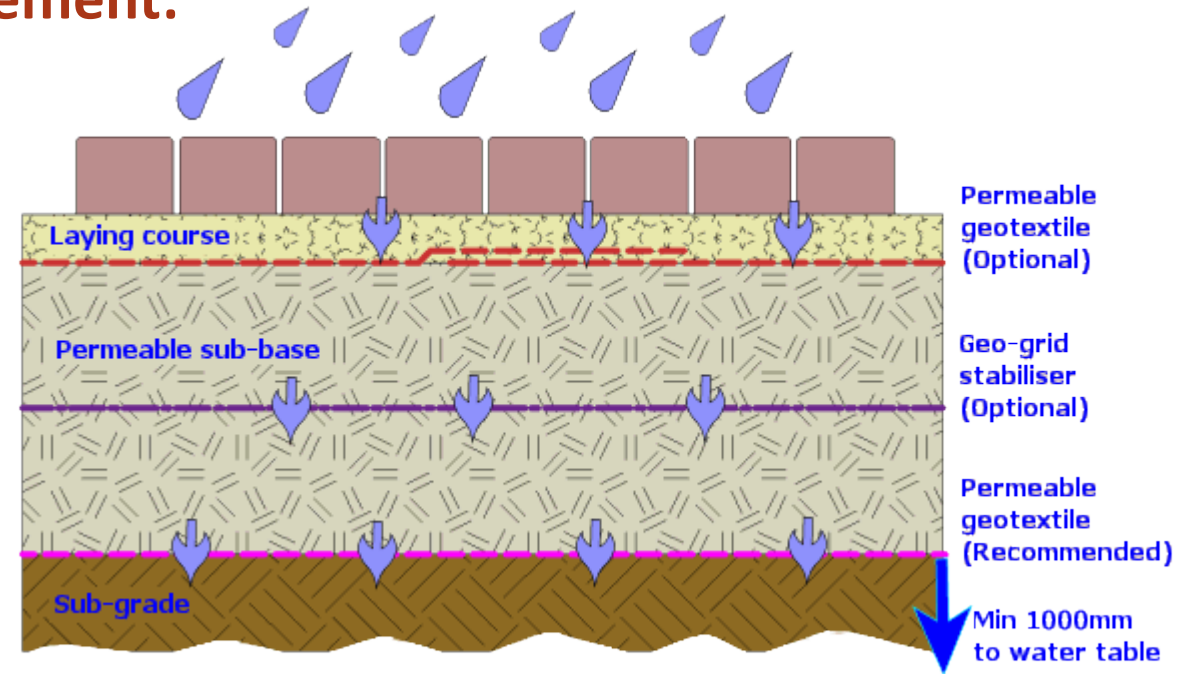


All 3 pavers are placed over a similar drainage aggregate bedding, base and sub-base. is in contact with the atmosphere.

Installation systems of permeable pavers:

System A - Total Infiltration Permeable Pavement:

The simplest model involves water accumulating within the sub-base from where it slowly seeps into the ground beneath.

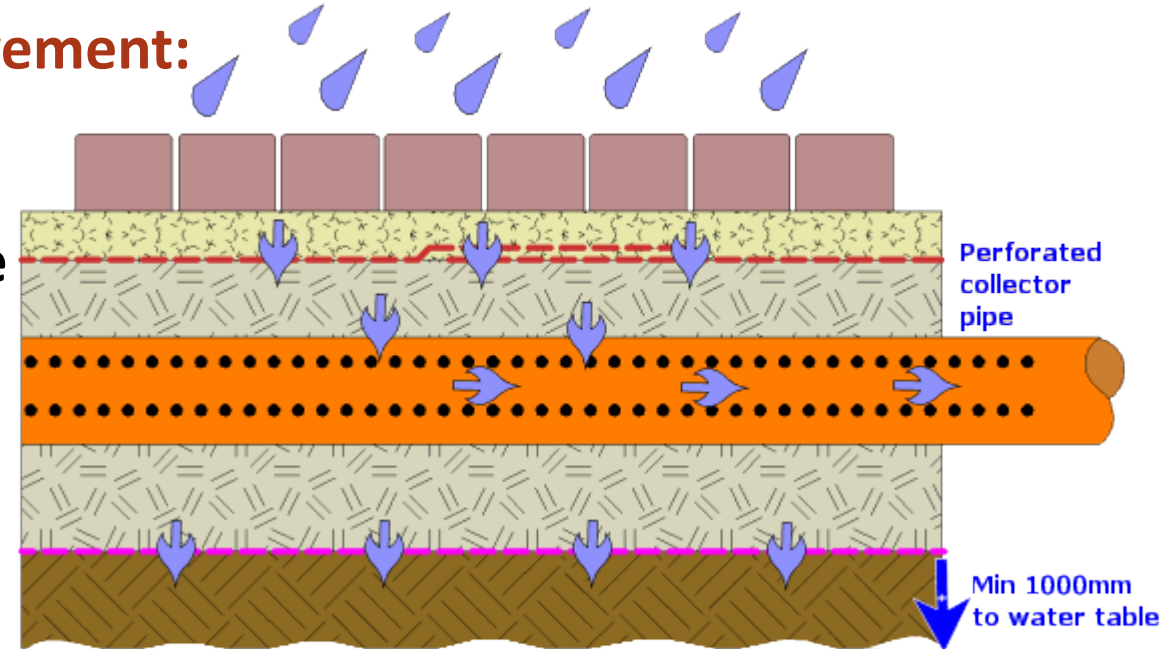


Essentially, the sub-base is designed to have a **storage capacity** greater than that which would be required by a once-in-so-many years storm event.

Installation systems of permeable pavers:

System B - Partial Infiltration Permeable Pavement:

there are situations when simply relying on the storage capacity of the sub-base and the rate of percolation of the ground would not be adequate.



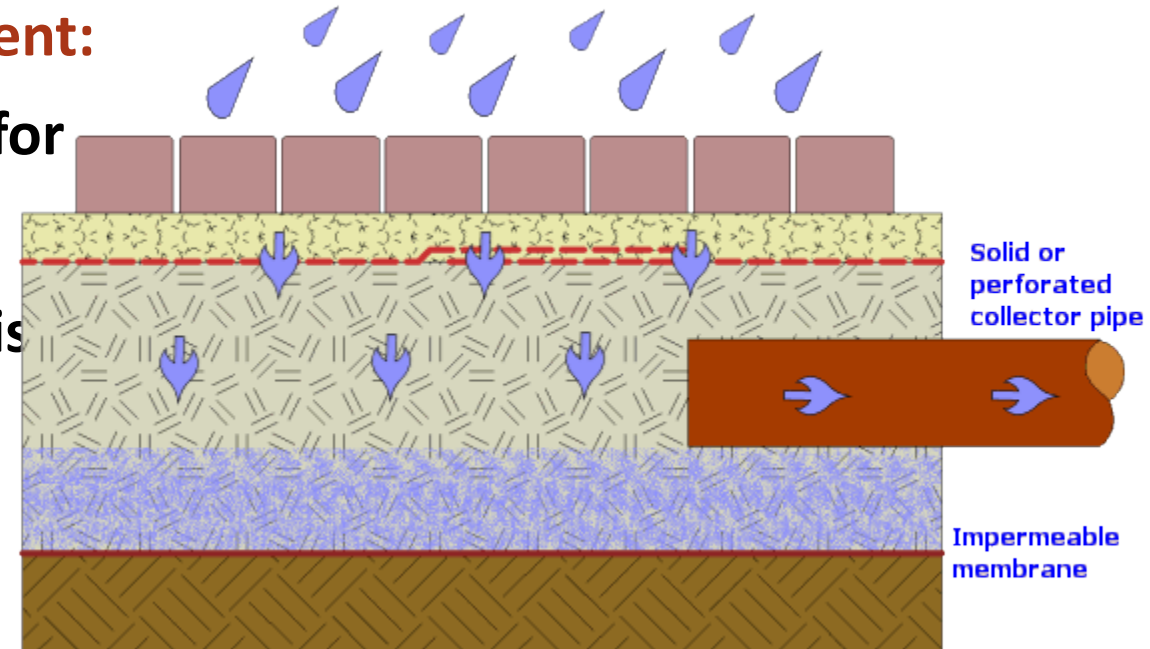
It may be that the ground is clayey and slow-draining, or that the pavement is subject to exceptional events that involve very large quantities of water being sent to the sub-base.

Installation systems of permeable pavers:

System C - No Infiltration Permeable Pavement:

there are instances when it is not desirable for the collected water to go to ground.

The two simplest examples are when there is a risk of pollution and when rainwater harvesting is required.



A good example of such an installation would be a Fire Service training area, where foam and other chemicals are regularly washed over a large open space. The run-off from such a site could be collected by a permeable pavement and stored prior to cleaning.

Installation systems of permeable pavers:

In these No Infiltration systems, a collector pipe penetrates the tanked construction to allow water to be drawn off as required, for re-use (as grey water) or for treatment.

In rainwater harvesting systems, the pipe may also act as an overflow pipe, removing excess water to be transferred to another suds installation, to a storage tank or, as a last resort, to be sent to the local sewer or watercourse.

Installation systems of permeable pavers:

PERMEABLE PAVEMENT
Type B (Partial Infiltration)




Marshall's
Creating Better Landscapes

Advantages and Disadvantages of Porous Pavement :

Advantages:

- Increase groundwater recharge.
- Reduce volume of storm water.
- High void space ratio that drains quickly.

Disadvantages:

- Depending on type used, cost more than dry wells.
- Depending on type used, must be cleaned by using a high pressure washer or industrial vacuum cleaner to remove sediment that may build up over time.
- Used mostly in light traffic areas.
- Limited depending on total weight acceptance.

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