

1.1: Overview

Water Damage

When water runs down a hillside onto a path, or when rain falls on it, puddles form. When the path goes downhill, it provides an easy channel for the water to flow along. As it goes it pulls material out of the path's surface, causing erosion.



We need to get water off the path or, better, keep water away from it.

Getting water off the path – stone waterbar:



A **waterbar** intercepts water which is flowing down the path and turns it away to the side before it can erode the surface.

The **bar stones** turn the water to the side (A).

Paving stones provide a smooth surface to help it to run away fast (B).

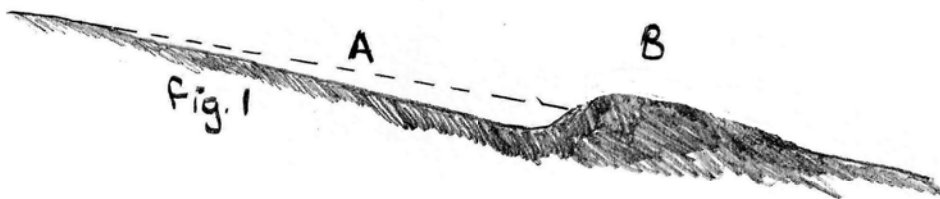
When the ground at the side is flat, a channel is needed to take the water to a slope where it can run away (C).

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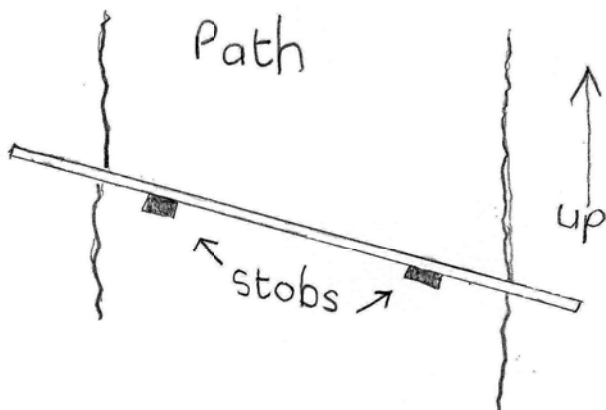
Getting water off the path - alternatives to stone waterbars:

Most often, waterbars are built of stone. In rare cases, due to shortage of material, these alternatives may be considered.

Earth bars: These can be surprisingly effective and they blend well into the landscape. However they require frequent inspection and maintenance. It is only possible to make them where there is good, sticky, material in the path which will consolidate well.

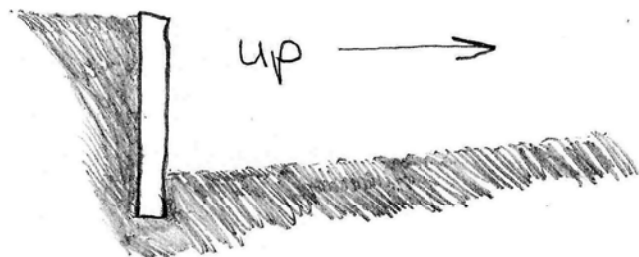


The path is graded down to where the bar stones would be in a stone waterbar (A). The spoil from this is used to raise a hump (B) which serves the same purpose as bar stones.



Wooden bars: These are not often used, and are less robust than stone, but can be appropriate in some situations, for example in woodland. The stonework is replaced with construction timber which is held in place by stobs. They can suffer from undermining, so require frequent maintenance.

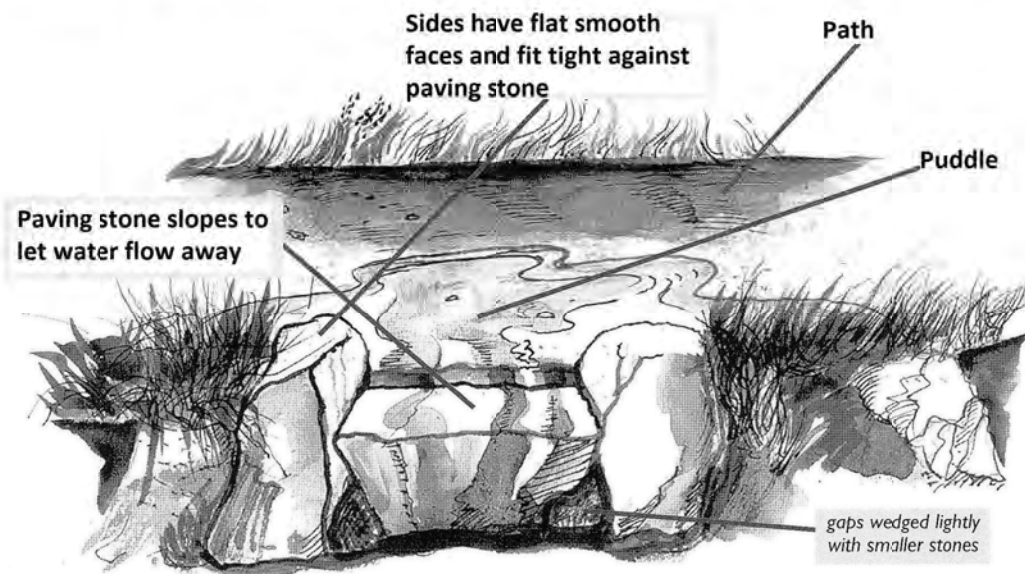
Wooden bar, side view ----->



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Getting water off the path - Letts:

A lett is a simple drainage channel cut through the edge of a path at a place where puddles form. Stone sides and paving help the water to flow away quickly and help to prevent the channel from becoming overgrown.

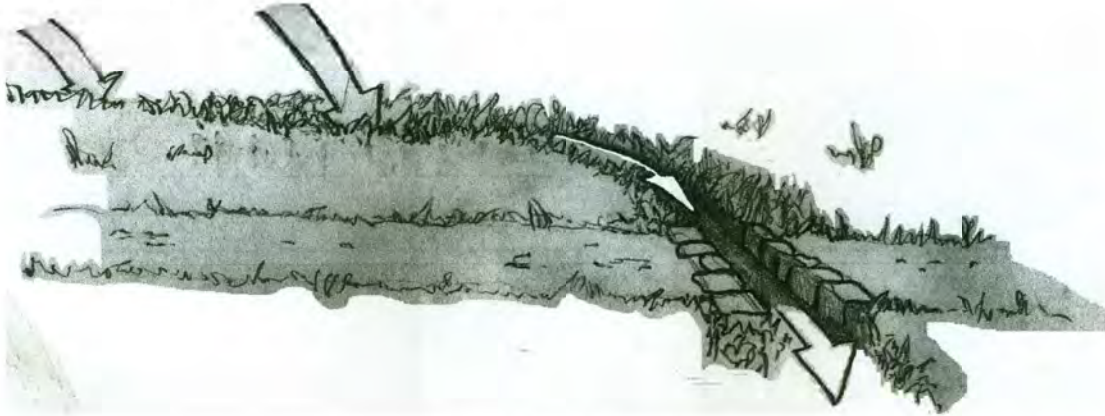


This illustration is reproduced from Upland Path Advisory Group, *Upland Pathwork* (2004), 2.2

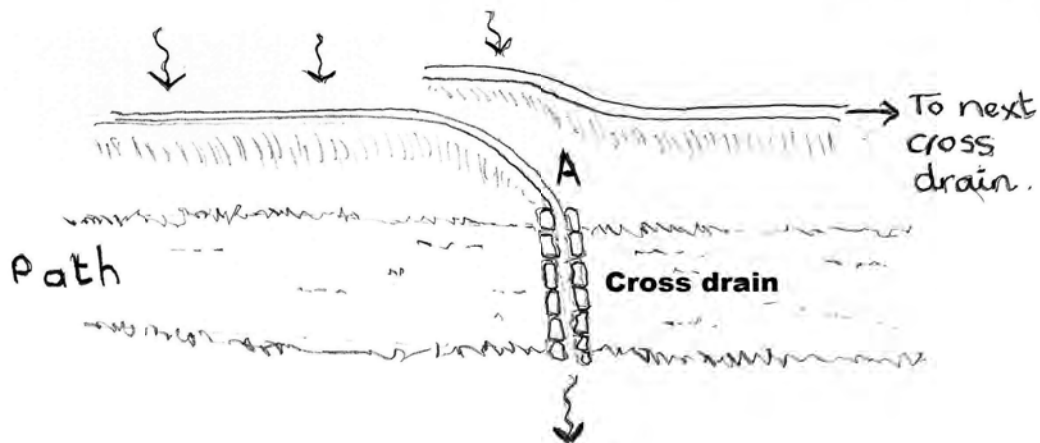
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Keeping water away from the path - Side Drains and Cross Drains:

Water is intercepted by the *side drain*..

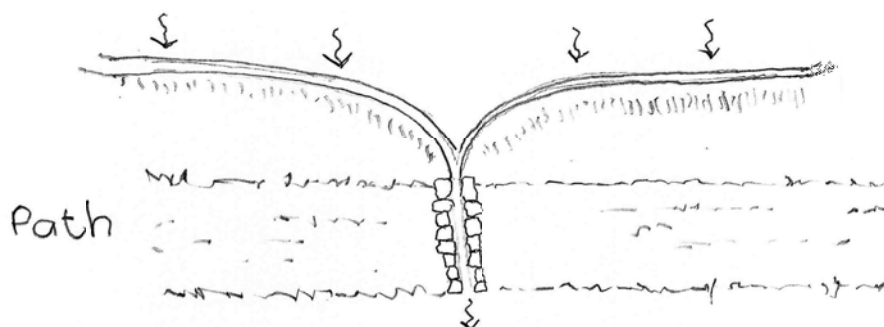


...and taken across the path by the *cross drain*.



When **a second side drain** is constructed it overlaps the first drain so that no water can run between them – see above. The turn made by the side drain into the cross drain is very gradual (A above). A sharp turn, 90 degrees for example, would concentrate the force of the water onto one small place which would soon erode away.

Sometimes, two side drains can be run into one cross drain.



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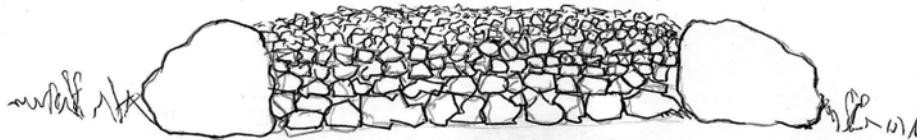
Keeping water away from the path - Hidden Drains:

Sometimes water seeps through the ground, like water in a sponge. When it meets a path it runs out of the ground and onto the surface, creating puddles and erosion. A side drain will be of limited use in such a situation.

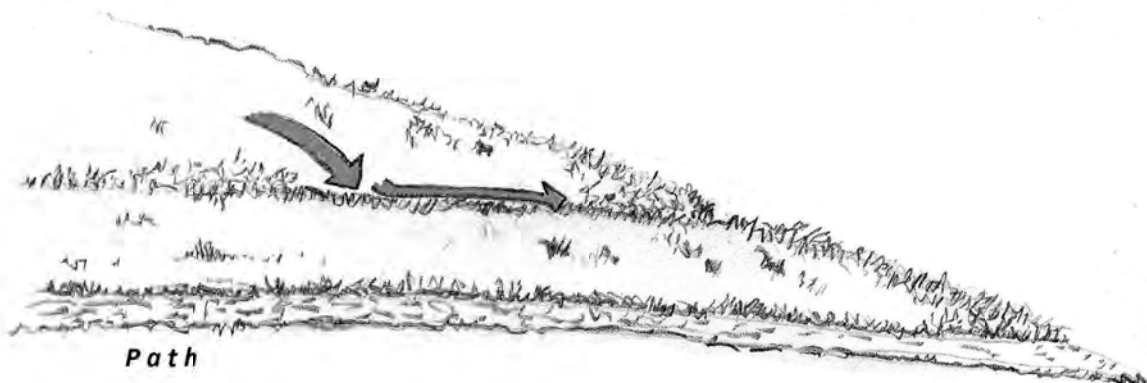
It may be possible to use 'hidden' drainage in addition to a side drain or instead of it. This allows water to pass through the path without collecting on the surface.



If wished, the path can be laid between retaining stones or revetments in order to raise it above standing water:



Keeping water away from the path - Grass-lined Gulley



If there is a slope nearby, a grass-lined lined gulley can be created to collect water and redirect it there, away from the path.