

# BERMS & TRENCH DRAINS

## ► USES: DRIVEWAYS, UNPAVED ROADS



Add a berm or trench drain to **SLOW** water down and divert it to an area it can infiltrate.



Driveway berms act like a speed bump to redirect runoff and can be made of concrete, asphalt or recycled rubber.

Berms and trench drains are used to divert water and break up the impermeable surface area into smaller sections. Smaller sections help reduce volumes directed to any one area, **SPREAD** water out to a larger area, and increase potential infiltration. The techniques described here can be installed on existing driveways and private roads, both paved and unpaved. Berms and trench drains work well when used in combination with other rainscaping solutions such as energy dissipators, amended soils or rain gardens. For additional guidance on driveway berms and trench drain design, refer to Chapter 5 (BMP T5.11) of the [Snohomish County Drainage Manual](#).

## BERMS

A berm is essentially a speed bump that is used for redirecting runoff and for breaking up runoff into small volumes so that it does not have enough energy to erode soils. Berms also divert water away from streets and allow it to infiltrate.

For paved surfaces, berms can be made of concrete or asphalt, or pre-fabricated of recycled rubber or plastic, and fastened to concrete or asphalt with epoxy, large nails, or bolts. An option for unpaved driveways is to partially bury a rubber “conveyor belt” that collapses when driven across. Berms can be small in size so they can easily be driven over. Typical sizes are 6 inches to 1 foot wide and 1 to 3 inches high depending on the steepness of slope.

Berms should be installed at a 30 to 45 degree angle relative to a level line across the sloping driveway. A 45 degree angle is halfway between the level line and the run of the slope. A 30 degree angle is about a third of the way from the level line. This will prevent water from ponding behind the berm. In most cases, the outlet of berms should be protected with energy dissipation measures like rocks or stable vegetation to **SLOW** and **SPREAD** the flow of runoff (see Drainage Outlet Protection).

## ✓ Maintenance

Keep the outlets clear of debris and sediment so water drains freely. Inspect annually and make necessary repairs to berms and ensure there is no erosion over time.

### DO

- ✓ Install energy dissipation measures at all outlets (see Drainage Outlet Protection).
- ✓ Install at 30 to 45 degree angles relative to a level line across the sloping driveway.

### DO NOT

- ✗ Direct runoff to erodible surfaces.
- ✗ Outlet water onto steep slopes.
- ✗ Direct water to a drinking water well, septic system or neighbor’s property.



Photo: Iron Age Designs

Trench drains also **SLOW** and re-direct water but are built flush with the driveway.



Keep trench drains clear of debris and leaf litter and make sure the outlet is protected from erosion.

## TRENCH DRAINS

A trench drain (also known as a slotted drain) installed across the width of your driveway is another option to handle surface runoff. It consists of a metal-grated pipe-like structure that transports runoff to a safe location. Decorative grates that cover the trench are available. Trench drains are installed flush with the driveway surface, making them more aesthetically appealing than berms. The drain should be sloped no less than 3/4 inch per 10 feet to reduce clogging from sediment and debris. It may also be angled at 30 to 45 degrees relative to the driveway. Although trench drains may be installed on any driveway, they are not recommended for driveways with slopes greater than 5 percent.

### ✓ Maintenance

Ensure that the grate is clear of debris and leaf litter before and during storm events. Check that the outlet is protected, non-eroding, and clear of debris and sediment so water drains freely.

### DO

- ✓ Ensure the drain is sufficiently sized to receive most runoff in an average storm.
- ✓ Install energy dissipation measures at all outlets (see Drainage Outlet Protection).
- ✓ Install at 30 to 45 degree angles relative to the driveway.

### DO NOT

- ✗ Install trench drains in areas with large amounts of leaf debris.
- ✗ Outlet water onto steep slopes.
- ✗ Direct water to a drinking water well, septic system or neighbor's property.