

## Preventing Driveway Erosion

March 2012

Have you looked at your driveway lately? Recent attention has focused on gravel roads and driveways as sources of sediment and phosphorus to lakes and streams. Every road or driveway can become a conduit for rainwater or snowmelt, eroding the road material and introducing it to nearby streams or lakes. The runoff brings damaging sediment and nutrients into water. It is critical to properly maintain driveways in the shoreland area due to their proximity to the lake. Here are some tips on evaluating your lakeshore driveway or private road to ensure it is not an erosion problem.



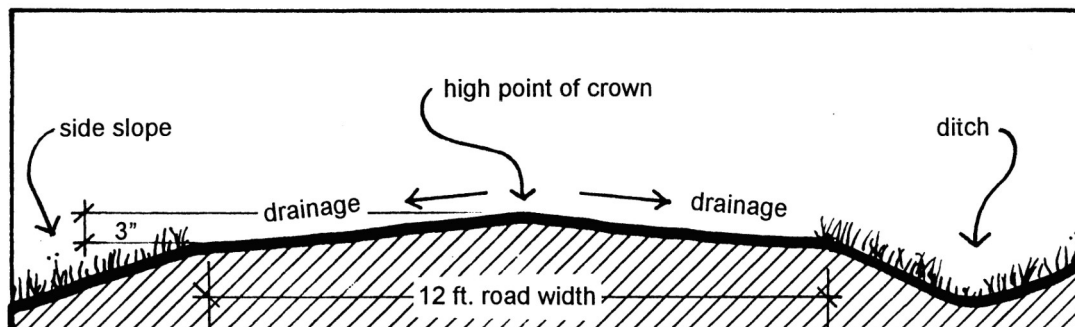
**This driveway is sunken and eroding, running directly downhill toward the lake. Steps are needed to improve this situation to protect the lake from sediment pollution.**

First, walk your driveway or road during a heavy rainfall or during the snowmelt period. Observe the flow of water along the road and its edges and note the following:

- ☞ Does any water run as channelized flow directly into the lake or to an inlet stream? If so, this problem is the highest priority to fix.
- ☞ Examine how the flow becomes channelized and concentrated. As the flow increases in volume it can erode more material.
- ☞ Is the runoff carrying eroded soil or gravel? Is the runoff water turbid during rain events? This situation indicates there are ditches, banks or slopes that need stabilizing, or some other uphill erosion source.
- ☞ Does the driveway or road have eroding gullies down the length of it? Does the water flow down the tire tracks? The driveway surface should not be eroding significantly each rainstorm.

Sketch out your driveway and note the flow of water alongside, onto and off of your driveway. Start at the top and think about the alternative ways to divert water into vegetated areas, improve the crown, and divide up the flow into smaller volumes. Extreme situations may warrant moving the driveway back or redesigning it. There are four basic principles to good road or driveway maintenance:

- 1. Get water off the road as soon as possible.** Maintain a good crown on the road surface so that water runs off the edges of the road, rather than down the length of it. Consider the quality of any new gravel you may add periodically; ask for quality “crusher run” gravel which will pack into a hard surface and resist erosion. Waterbars are a good trick to use on steep slopes (where crowning is not enough on its own) often found in private road or driveway situations. Waterbars keep the volume of flow on the road from increasing and send it off to the side and into a vegetated area for absorption.



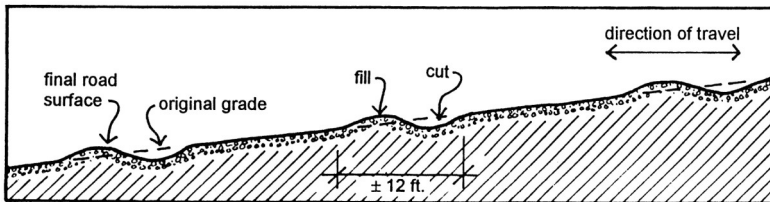
**A properly crowned road or driveway allows water to flow immediately off the road into surrounding vegetation or a stabilized ditch. Water running lengthwise down the road is likely to cause erosion of the road surface.**

**2. Stabilize and revegetate bare areas.** Unstable areas often occur around culverts, in ditches, and along the uphill bank of the road. Simple rock headers can be built by hand on smaller culverts. Ditches should be seeded and mulched. Ditches with slopes greater than 5% should be rock-lined with angular riprap for stability. Banks should be sloped back so they are not too steep to be stabilized with vegetation (no steeper than 2:1, horizontal to vertical).

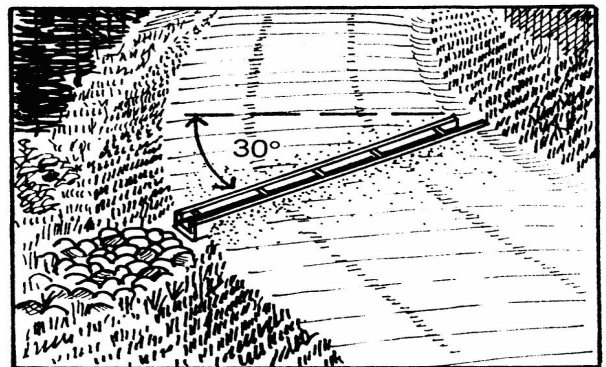
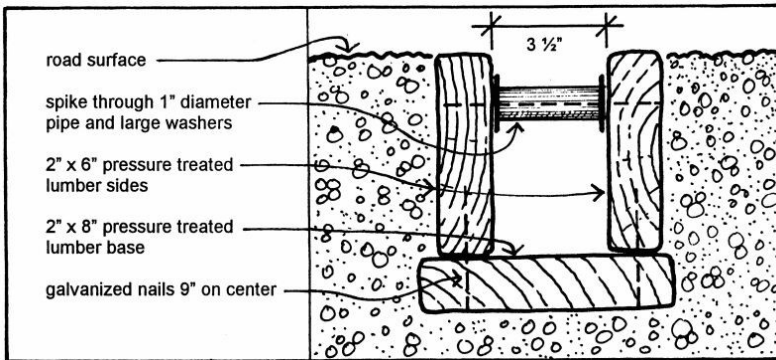


At left, lake association members seed and mulched a newly cleaned ditch. Center, rip rap stabilizes a culvert inlet area, often a site of either road edge erosion, or inlet pool erosion. At right, a steep road that serves several camps has had a rock lining installed to prevent the previous on-going erosion of the ditch.

**3. Divert as much runoff as possible into vegetated areas.** A wooded area can absorb quite a bit of runoff, reducing surface flow and removing sediment. Divert the road runoff as often as possible by using turnouts, waterbars, and culverts. By doing this often, runoff volume can be kept low, increasing the effectiveness of vegetation and duff layers that absorb it. Install “rock aprons” (riprap flow spreaders) to fan out and slow discharge from a culvert or waterbar.



A waterbar (cross-section) intercepts water flowing lengthwise down the road and transfers it off the side into vegetation or a ditch.



An open-top box culvert is an alternative to a waterbar that will hold its shape better. Be sure to make it wide enough to allow periodic cleaning out with a tool you have such as a mattock. Install both waterbars and open-top culverts at a 30° angle to the road width. Note the rock apron at the culvert outlet above to prevent erosion at this location.

**4. Good maintenance saves money over the long run.** Putting adequate money into a road improvement project at the beginning increases its longevity, thereby saving you money in the future. Plus, you will have the satisfaction of knowing you are protecting nearby streams and lakes.

For more information or to obtain other topics in the Lake Protection Series, contact the Lakes and Ponds Section at (802) 828-1535 or visit [www.vtwaterquality.org/lakes.htm](http://www.vtwaterquality.org/lakes.htm).