



# Erosion Control Methods

BY TRAVIS GODEAUX, NRCS ENGINEER

## Five Basic Rules for Preventing Common Erosion Problems<sup>1</sup>

1. **Protect bare soil surfaces.**
2. **Don't concentrate water flow unless absolutely necessary**
3. **Limit livestock and human use of vulnerable areas.**
4. **Disturb existing vegetation as little as possible.**
5. **Encourage infiltration.**

1. Marin County Resource Conservation District, Groundwork A Handbook for Small Scale Erosion Control in Coastal California, pg. 3



# Sheet and Rill Erosion























# Gully Erosion















# Streambank Erosion















# Roadway Erosion









2011/10/15



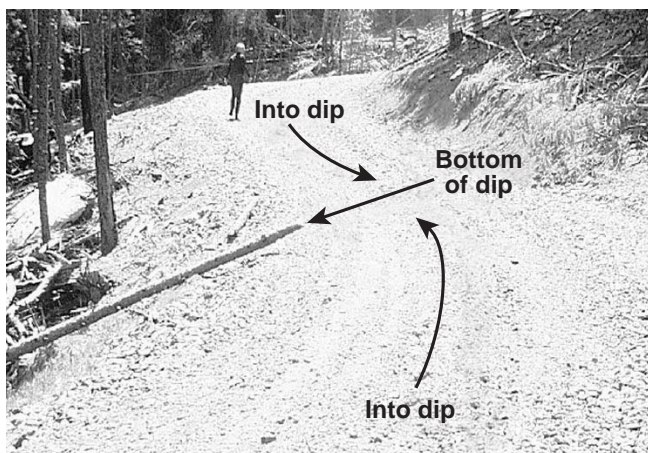


Figure 3-6. A well-constructed drain dip.

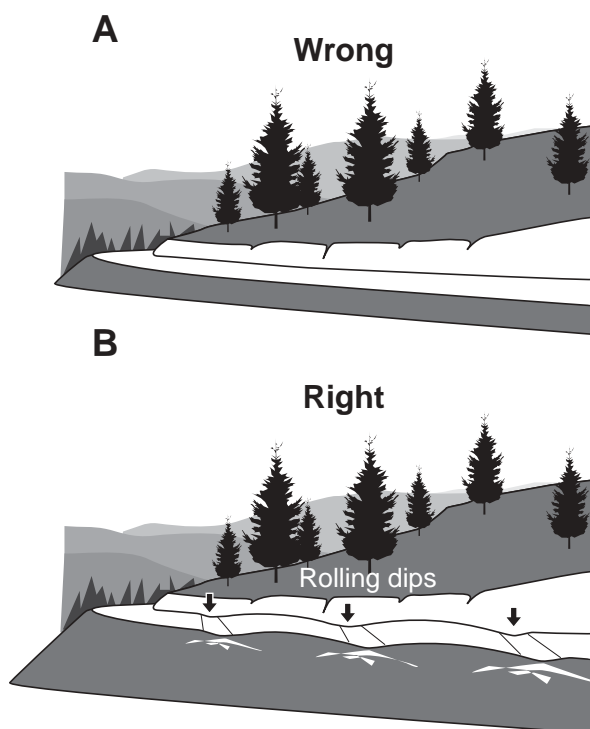


Figure 3-7. Drain dip location, wrong (A) and right (B).

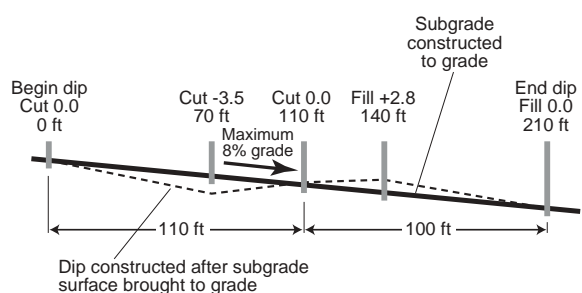
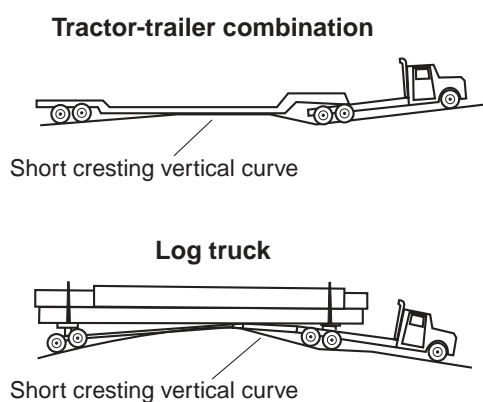


Figure 3-9. Example of drain dip construction staking.

landscape that naturally lend themselves to drain dips. On some terrain, however, it is easier to construct a dip than it is to roll the grade.

Drain dips should be carefully constructed to allow truck passage. If they are too abrupt in their total length, log trucks will broach or semi trailers will bottom out (Figure 3-8). The road grade into and out of the dip should be level and not outsloped. The level grade prevents truck frames from flexing, which can damage the truck's undercarriage and frame. When the distance between the beginning and end of the drain dip must be shorter than 210 feet, care should be taken to limit log truck and tractor-trailer passage.

If an area is harvested in the dry season, shorter drain dips are often constructed after harvest operations are completed, when only light pickup truck-type traffic will use the road for some period of time.



The design data in Figure 3-9 and Table 3-1

below have been successfully applied to forest roads to permit passage of log trucks and tractor-trailer trucks. The drain dip standards in Table 2 can be applied on a straight section of road that is a minimum of 210 feet long. The dips shown in Table 2 can be staked out and constructed after the subgrade is already at its final elevation.

Table 3-1. Drain dip construction staking data.

Road grade (%)	Drain dip construction stake data (ft)				
	0 Cut	70 Cut	110 Cut	140 Fill	210 Fill
2-3	0.0	-1.3	0.0	+1.0	0.0
4	0.0	-2.0	0.0	+1.4	0.0
5	0.0	-2.3	0.0	+1.8	0.0
6	0.0	-2.7	0.0	+2.0	0.0
7	0.0	-3.0	0.0	+2.3	0.0
8	0.0	-3.5	0.0	+2.8	0.0



# Livestock Erosion















# Landslides

















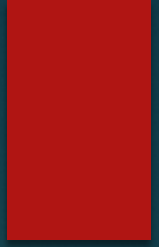


















# Resources



## Smaller General Publications:

- OSU College of Forestry, *Forest Road Contracting, Construction, and Maintenance for Small Forest Woodland Owners*, 2001
  - OSU Extension Service *Managing, Small-acreage Horse Farms for Green Pastures, Clean Water, and Healthy Horses*, 2003
  - Marin County Resource Conservation District, *Groundwork A Handbook for Small Scale Erosion Control in Coastal California* 2 ed., 1987
  - Portland State University, *Homeowner's Guide to Landslides Recognition, Prevention , Control and Mitigation*
- 
- Larger Technical Publications:
  - Sustainable Agricultural Network, *Managing Cover Crops Profitably* 3<sup>rd</sup> ed., 2007
  - USDA NRCS, *National Catalog of Erosion and Sediment Control and Stormwater Management Guidelines for Community Assistance*, 1997

You can email me if you can't find any of these publications online  
[Travis.Godeaux@or.usda.gov](mailto:Travis.Godeaux@or.usda.gov)



## Publications Continued...

- USDA NRCS, *Engineering Field Handbook Chapter 18 Soil Bioengineering for Upland Slope Protection and Erosion Reduction*, 1992
- USDA NRCS, *National Engineering Handbook Part 654 Stream Restoration Design*, 2007
  - And Technical Supplement 14P to NEH 654, *Gullies and Their Control*

See USDA NRCS website "edirectives" @  
<https://directives.sc.egov.usda.gov/default.aspx>

For a wide variety of conservation webinars see  
<http://www.conservationwebinars.net/previous-webinars>