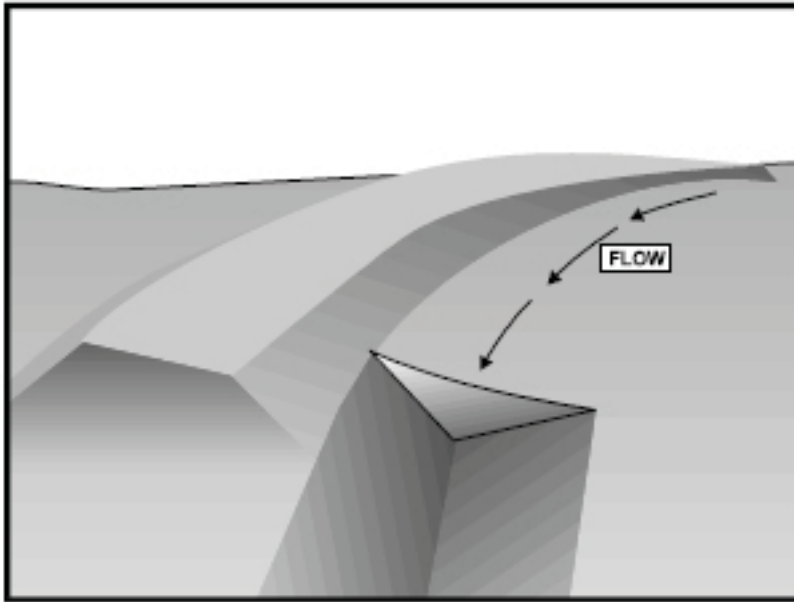


Earth Dikes & Drainage Swales



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Earth dikes and drainage swales are used to divert off-site stormwater runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps without allowing channel erosion. Earth dikes are temporary berms or ridges of compacted soil used to divert runoff or channel water to a desired location. Often, the channel will be lined with riprap, stone, geotextiles, or vegetation. A drainage swale has the same function as an earth dike, but is a shaped and sloped depression in the soil surface.

Usage

- diverts and directs runoff toward a stabilized watercourse, drainage pipe, retention basin, or channel
- intercepts runoff from paved surfaces
- reduces the length of long, unprotected slopes
- can be placed below steep grades where runoff begins to concentrate
- can be placed along roadways subject to flood drainage

Benefits

- controls the direction and velocity of stormwater runoff flows
- increases water transport away from the site through infiltration, evaporation, and transpiration
- increases filtering of sediment from stormwater, thus improving the quality of stormwater flows
- reduces the need for expensive roadside drainage and gullies

Limitations

- may create more disturbed areas on site and become barriers to construction equipment
- may cause downstream flood damage if stormwater is improperly diverted

Estimated Cost

\$15-\$55/ft for earthwork & stabilization

Small dikes: \$2.50-\$6.50/linear ft

Large dikes: \$2.50/yd

(cost increases with drainage area and slope)

Alternatives

- None

Notes:

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Installation Tips

- measure swale bottom width to at least 2 ft, depth to at least 18 in, and side slopes at 2:1 or flatter
- construct at grades of no more than 20%; grades over 10% may require an approval by a registered engineer
- limit area drained to a temporary drainage swale to less than 10 ac
- place drainage swales above or below a cut or fill slope
- compact any fill material along the path of the swale
- a swale/dike should be constructed to handle water from a 10 yr storm event
- do not construct drainage swales out of soils that are easily eroded
- soil must be stabilized when construction of the swale/dike is complete
- detailed installation tips can be found in the ODNR Rainwater and Land Development manual

Maintenance

- inspect prior to forecast rain, daily during extended rain events, and after rain events
- inspect ditches and berms for washouts and make repairs as needed
- inspect channel linings, embankments, and beds of ditches and berms for erosion
- remove debris and sediment and repair linings and embankments as needed
- remove all temporary swales and dikes as soon as the surrounding drainage area has been stabilized or at the completion of construction

Vendors

See Appendix pages F4-F5

References

California Stormwater Quality Association (CASQA). 2003. California stormwater best management practices handbook for construction.

Idaho Department of Environmental Quality. Stormwater: Catalog of Stormwater BMPs for Idaho Cities and Counties. In Idaho Department of Environmental Quality.

Mecklenburg, Dan. 1996. Rainwater and Land Development, Second Edition. ODNR. Columbus, Ohio.