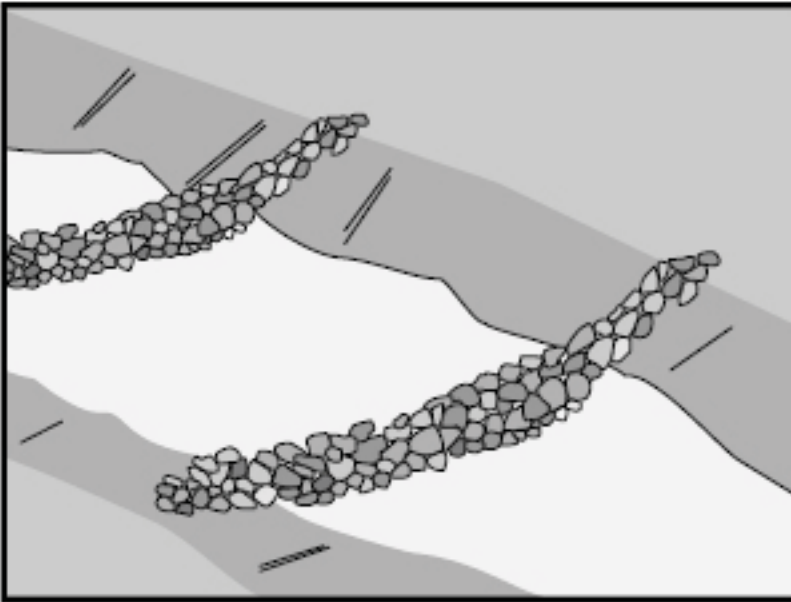


# Check Dam



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Check dams are small structures designed to slow the speed of concentrated stormwater flows, control erosion, and allow suspended sediment to settle out. Check dams may be constructed of rock, gravel bags, sandbags, fiber rolls, or other reusable products. Straw bales and silt fences are not appropriate materials, since they have a history of failure when used for this purpose. Mulch is also not an appropriate material. Check dams may be temporary or permanent structures, and should be used in conjunction with other soil surface stabilization techniques.

## Usage

Check dams should be used in the following areas:

- small open channels or swales that drain areas of 10 ac or less
- steeply sloped swales or channels
- swales or channels where adequate vegetation cannot or has not become established

Check dams should not be used in:

- live streams
- large channels

## Benefits

- inexpensive and easy to construct
- may be used as permanent stormwater control devices if properly designed
- can slow stormwater runoff velocities
- may be used where it is not feasible to redirect water flows or otherwise stabilize water channels

## Estimated Cost

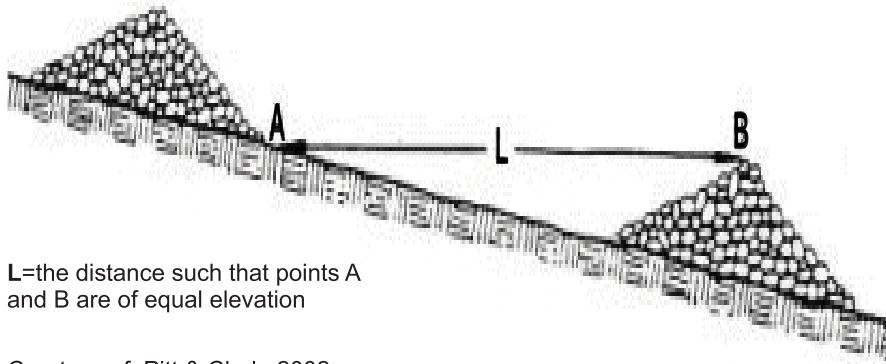
\$100 for rock-constructed check dam

(relatively inexpensive if materials are readily available; primary cost is the labor required for installation)

## Alternatives

- Fiber roll (p. 3-5)
- Gravel bag berm (p. 3-7)
- Sandbag barrier (p. 3-9)

## Notes:



L=the distance such that points A and B are of equal elevation

Courtesy of: Pitt & Clark, 2002

## Limitations

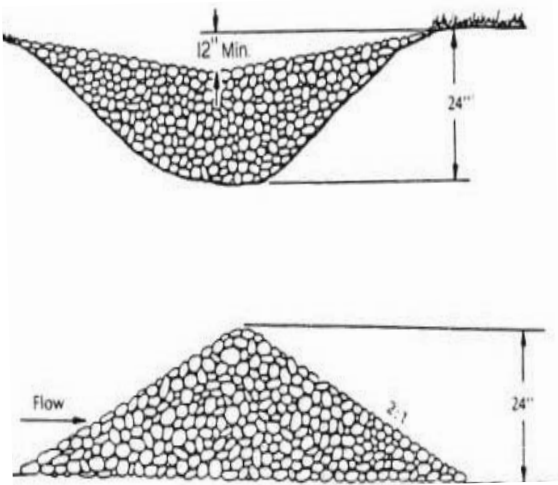
- can kill grass linings in channels if water levels remain high for extended periods or if there is significant sedimentation
- damage existing vegetation during installation
- are inappropriate in channels that drain areas greater than 10 ac
- require extensive maintenance following high velocity water flow events
- may fail during intense storm events/high water flows

## Vendors

See Appendix pages F2-F3

## Installation Tips

- the center of the check dam should be lower than the edges to allow water to flow over the dam
- must completely span the channel or swale to prevent washout
- materials should be large enough and anchored so they do not wash away in heavier flows
- may be constructed from a variety of materials, including logs and lumber; logs and lumber have a longer lifespan than when compared to sandbags or fiber rolls, and may be removed and reused elsewhere
- compose rock check dams of 8-12 in rock
- construct log check dams of 4-6 in diameter logs; logs should be embedded in the soil to at least 18 in and may be further secured to vertical support logs that have been driven or buried into the soil
- place material of choice in the channel either by hand or mechanical methods, never simply dump it into the channel
- install check dams at a distance and height allowing small pools to form between each dam
- check that the backwater from downstream check dams reach the toes of upstream dams
- excavate a sediment retention basin upstream of the check dam if additional sediment removal is desired
- detailed installation tips can be found in the ODNR Rainwater and Land Development manual



Courtesy of: Pitt & Clark, 2002

## Maintenance

- inspect check dams for deficiencies prior to forecasted rain events, daily during extended periods of rain events, after rain events, and at two week intervals at all other times
- repair damage to edges of check dam as these may lead to dam failure
- replace any structural material that appears to be degraded or missing
- remove captured sediments from behind check dams when the sediment depth reaches 50% of check dam height
- remove all accumulated sediment prior to seeding or other soil stabilization techniques
- remove check dam and captured sediment when erosion control is no longer necessary
- dispose of removed sediment properly; if dams are removed during the construction process, they may be reincorporated into the site

## References

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- Pitt, Robert and Shirley Clark. 2002. Construction Site Erosion Control for Highway Projects. Module 8.
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