Check Dam - CD

DEFINITION

Small temporary barrier, grade control structure, or dam constructed across a swale, drainage ditch, or area of concentrated flow.

PURPOSE

To minimize the erosion rate by reducing the velocity of storm water in areas of concentrated flow, and to capture larger soil particles.

CONDITIONS

This practice is applicable for use in small open channels and **is not to be used in a stream**. Specific applications include:

- Temporary or permanent swales or ditches in need of protection during establishment of grass linings.
- Temporary or permanent swales or ditches that, due to their short length of service or for other reasons, cannot receive a permanent non-erodible lining for an extended period of time.
- Other locations where small localized erosion and sedimentation problems exist.

DESIGN CRITERIA

Formal design is not required. The following standards should be used:

Drainage Area: For stone check dams, the drainage area should not exceed one acre. For rock check dams, the drainage area should not exceed five acres.

Spacing: Two or more check dams in series should be used for drainage areas greater than one acre. Maximum spacing between dams should be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam. (See Figure 1)

Height: The center of the check dam should be at least 9 inches lower than outer edges. Dam height should be 2 feet maximum measured to the center of the check dam. (See Figure 2)

Side Slopes: Side slopes should be 2:l or less.

Geotextiles: A geotextile should be used as a separator between the graded stone and the soil base and abutments. The geotextile will prevent the migration of soil particles from the subgrade into the graded stone. Geotextiles should be "set" into the subgrade soils. The geotextile should be placed immediately adjacent to the subgrade without any voids and extend five feet beyond the down stream toe of the dam to prevent scour. Refer to specification **Geotextile – GE**.

CONSTRUCTION SPECIFICATIONS

The following types of check dams are used for this standard:

Stone Check Dams - CD-S: Stone check dams are constructed from large aggregate (clean of fines) such as TDOT #1 or #2 with a minimum stone size of 1.5 inch. These structures are used **for small drainage areas up to 1 acre**.

Rock Check Dam - CD-R: Rock check dams are constructed from small riprap such as TDOT Class A-1 (clean of fines) with stone sizes from 2 to 15 inches. These structures are used **for drainage areas up to 5 acres**. An upstream layer of smaller aggregate may be used for filtering. Rock can be placed by hand or by mechanical methods (no dumping of rock) to achieve complete ditch or swale coverage. Refer to **Riprap - RR** for riprap and aggregate specifications.

Rock check dams should be keyed into the swale or channel bottom at, typically, a depth of 6 inches. Advantages of keying into the swale or channel bottom are that the check dam will be more stable and less likely to wash out. A disadvantage of keying into the swale or channel bottom is that the channel will have to be repaired and reshaped whenever the rock check dam is removed.

Sandbag Check Dam - CD-SB: Sandbags filled with either aggregate or sand may also be used as a check dam. Sandbags should be staked and tied together, after being placed in a staggered fashion. Provide an overflow weir in the center of the channel similar to the check dam in Figure 2.

INSPECTION

Inspections of erosion control measures should be made before anticipated storm events (or series of storm events such as intermittent showers over one or more days) and within 24 hours after the end of a storm event of 0.5 inches or greater, and at least once every fourteen calendar days. Where sites have been finally or temporarily stabilized, such inspection may be conducted only once per month.

MAINTENANCE

Sediment should be removed before it reaches a depth of one-half the original dam height. Maintenance needs identified in inspections or by other means should be accomplished before the next storm event if possible, but in no case more than seven days after the need is identified.

If the area is to be mowed, check dams should be removed once final stabilization has occurred. Otherwise, check dams may remain in place permanently. After removal, the disturbed area should be seeded and mulched immediately.

Spacing Between Check Dams

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

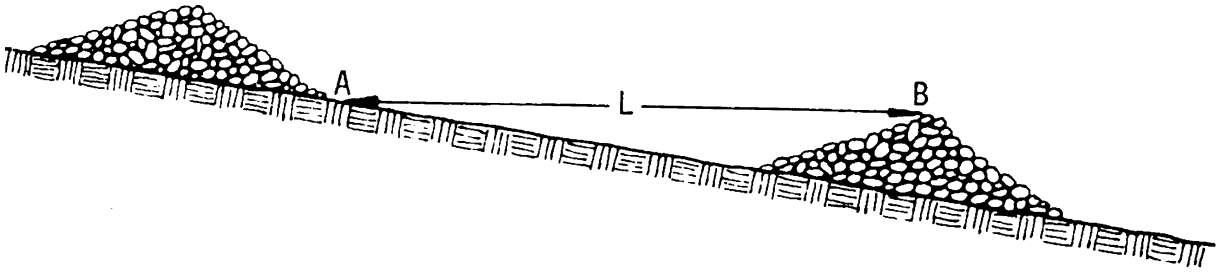
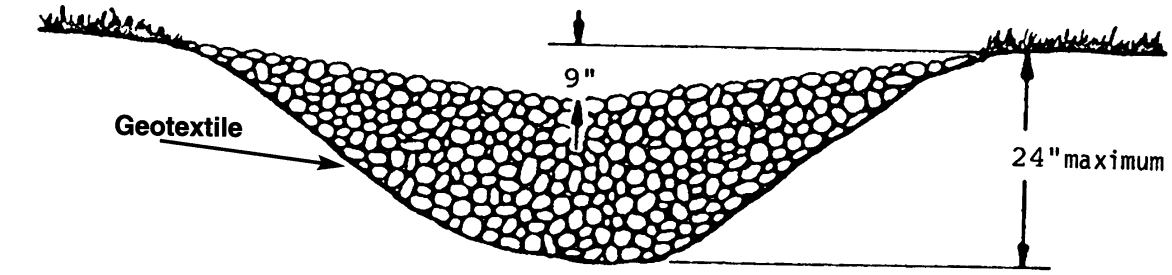
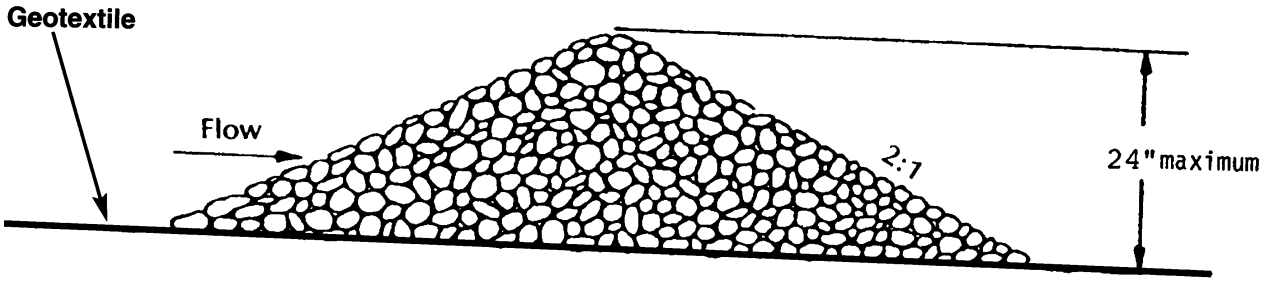


Figure 1

Height Of Check Dams





Source: GA SWCCC

Figure 2