

Filter Ring - FR



DEFINITION

A temporary stone barrier constructed at storm drain inlets.

PURPOSE

This structure is used to reduce flow velocities and prevent the failure of other sediment control devices. It also prevents sediment from leaving the site or entering drainage systems, prior to permanent stabilization of the disturbed area.

CONDITIONS

Filter rings should be used in combination with other sediment control measures. They can be installed at or around devices such as storm drain inlets or slope drain inlets.

DESIGN CRITERIA

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

Location: The filter ring should surround all sides of the structure receiving runoff from disturbed areas. See Figure 1 for a typical stone filter ring. It should be placed a minimum of four feet from the structure. The ring should be constructed so that it does not substantially impound water, causing flooding or damage to adjacent areas.

Stone Size: When utilized at inlets/outlets with diameters less than 12 inches, the filter ring should be constructed of small riprap such as TDOT Class A-3 (clean from fines) with stone sizes from 2 to 6 inches. Refer to **Riprap - RR** for riprap and aggregate specifications.

When utilized at inlets with diameters greater than 12 inches, the filter ring should be constructed of small riprap such as TDOT Class A-1 (clean from fines) with stone sizes from 2 to 15 inches.

For added sediment filtering capabilities, the upstream side of the riprap can be faced with smaller coarse aggregate, such as TDOT #57 (clean of fines) with a minimum stone size of $\frac{3}{4}$ inch.

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 to beneath the inlet to prevent scour within the filter ring. Refer to specification **Geotextile – GE**.

Height: The filter ring should be constructed at a height no less than two feet from grade.

CONSTRUCTION SPECIFICATIONS

Mechanical or hand placement of stone should be utilized to uniformly surround the structure to be supplemented. The filter ring may be constructed on natural ground surface, on an excavated surface, or on machine compacted fill. A common failure of filter rings is caused by their placement too

close or too high above the structure to be enhanced.

INSPECTION

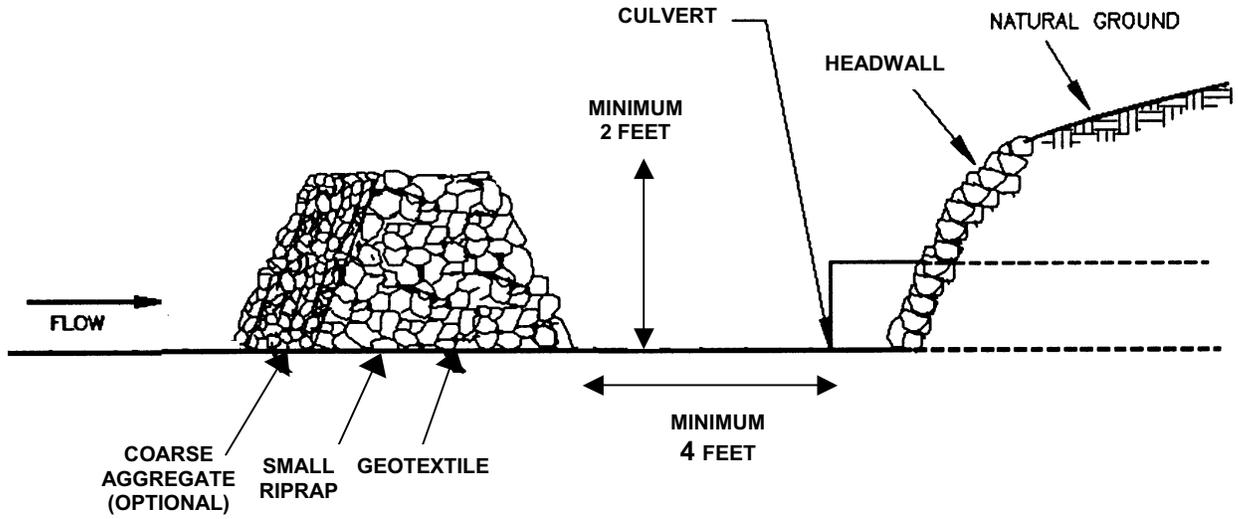
Inspections of the filter ring should be made before anticipated storm events (or series of storm events such as intermittent showers over one or more days) and within 24 hours after the end of a storm event of 0.5 inches or greater, and at least once every fourteen calendar days. Where sites have been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

MAINTENANCE

The filter ring must be kept clear of trash and debris. Sediment should be removed when the level reaches one-half the height of the filter ring. These structures are temporary and should be removed when the land-disturbing project has been stabilized.

Stone Filter Ring

Cross-Section



Perspective View

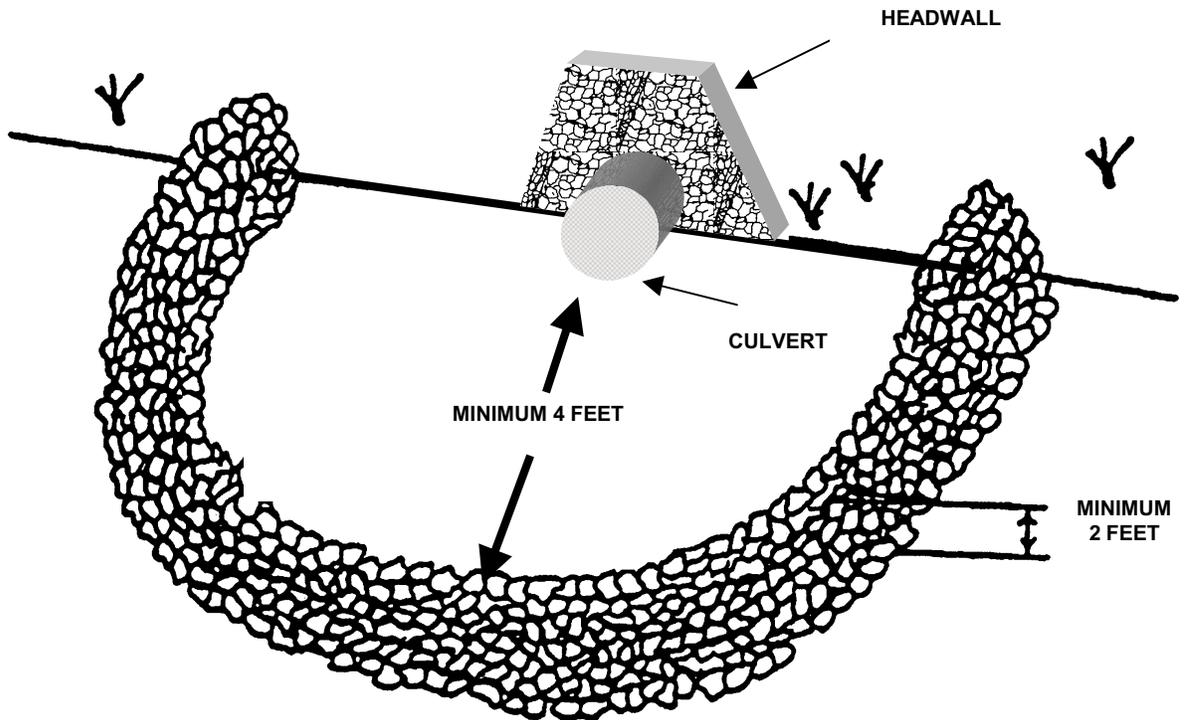


Figure 1

Source: GA SWCC