

Storm Drain Inlet Protection - **IP**



DEFINITION

A temporary protective device formed around a storm drain drop inlet to trap sediment.

PURPOSE

To prevent sediment from entering storm drainage systems, prior to temporary or permanent stabilization of the disturbed area.

CONDITIONS

Storm drain inlet protection should be installed at or around all storm drain drop inlets that receive runoff from disturbed areas.

DESIGN CRITERIA

Many sediment-filtering devices can be designed to serve as storm drain inlet protection. Inlet protection must be self-draining unless otherwise protected in a fashion that will not present a safety hazard. **The drainage area served by the inlet protection should be no greater than one-half acre.** Runoff from larger drainage areas

should be routed to a Sediment Trap or Sediment Basin. Refer to specifications for **Sediment Trap – **ST**** or **Sediment Basin – **SB****.

If runoff may bypass the protected inlet, a berm should be constructed on the down slope side of the structure to prevent undercutting and erosion under the structure. Refer to **Diversion – **DI****. Also, a stone filter ring may be used on the up slope side of the inlet to slow runoff and filter larger soil particles. Refer to **Filter Ring – **FR****.

CONSTRUCTION SPECIFICATIONS

Inlet protection may be constructed on natural ground surface, on an excavated surface, or on machine compacted fill.

Silt Fence Inlet Protection **IP-SF**: This method of inlet protection is applicable where the inlet drains a relatively flat area (slope no greater than 5%) and should not apply to inlets receiving concentrated flows, such as in street or highway medians. As shown in Figure I, Type C silt fence supported by 2x4-inch wood or equivalent steel posts, with a

minimum length of three feet, should be used. The stakes should be spaced evenly around the perimeter of the inlet a maximum of 3 feet apart, and securely driven into the ground, approximately 18 inches deep.

The silt fence should be entrenched 12 inches and backfilled with crushed stone or compacted soil. Silt fence and wire should be securely fastened to the posts, and silt fence ends must be overlapped a minimum of 18 inches or wrapped together around a post to provide a continuous barrier around the inlet. Refer to **Silt Fence – SF** for installation requirements. Sediment should be removed when the sediment has accumulated to one-half the height of the inlet protection.

Baffle Box Inlet Protection IP-BB: This method is applicable for inlets receiving runoff with a higher volume or velocity. As shown in Figure 2, the baffle box should be constructed of 2" x 4" or 4" x 4" boards spaced a maximum of 1 inch apart or of plywood with weep holes 2 inches in diameter. The weep holes should be placed approximately 6 inches on center vertically and horizontally. The entire box is wrapped in Type C filter fabric that should be entrenched 12 inches and backfilled. Refer to **Silt Fence – SF** for installation requirements.

Clean coarse aggregate should be placed outside the box, all around the inlet, to a depth of 2 to 4 inches. Coarse aggregate should be TDOT #3, #357, or #5. If the aggregate filter becomes clogged with sediment so that it no longer adequately performs its function, the aggregate should be pulled away from the structure, cleaned, and replaced. Sediment should be removed when the sediment has accumulated to one-half the height of the inlet protection.

Block and Gravel Inlet Protection IP-BG: This method of inlet protection is applicable where heavy flows are expected and where an overflow capacity is necessary to prevent excessive ponding around the structure. As shown in Figure 3, one block is placed on each side of the structure on its side in the bottom row to allow pool drainage. The foundation should be excavated at least 2 inches below the crest of the storm drain. The bottom rows of blocks are placed against the edge of the storm drain for lateral support

and to avoid washouts when overflow occurs. If needed, lateral support may be given to subsequent rows by placing 2" x 4" wood studs through block openings.

Hardware cloth or comparable wire mesh with 1/2 inch openings should be fitted over all block openings to hold gravel in place. Clean coarse aggregate should be placed up to 2 inches below the top block on a 2:1 slope or flatter and smoothed to an even grade. Coarse aggregate should be TDOT #3, #357, or #5. If the aggregate filter becomes clogged with sediment so that it no longer adequately performs its function, the aggregate should be pulled away from the structure, cleaned, and replaced. Sediment should be removed when the sediment has accumulated to one-half the height of the inlet protection.

Gravel Inlet Protection IP-G: This method of inlet protection is applicable where heavy concentrated flows are expected. As shown in Figure 4, wire mesh should be laid over the drop inlet grate so that the wire extends a minimum of one foot beyond each side of the inlet structure. Wire mesh with 1/2 inch openings should be used. Clean coarse aggregate should be placed over the entire inlet structure, to a total depth of at least 12 inches. The aggregate should extend beyond the inlet structure at least 18 inches on all sides. Coarse aggregate should be TDOT #3, #357, or #5.

Sediment should be removed when the sediment has accumulated to one-half the height of the inlet protection. If the aggregate filter becomes clogged with sediment so that it no longer adequately performs its function, the aggregate should be pulled away from the structure, cleaned, and replaced.

Sod Inlet Protection IP-S: This method of inlet protection is applicable only at the time of permanent seeding, to protect the inlet from sediment and mulch material until permanent seeding has become established. As shown in Figure 5, the sod should be placed to form a turf mat covering the soil for a distance of 4 feet from each side of the inlet structure. Sod strips should be staggered so that adjacent strip ends are not aligned. Refer to **Disturbed Area Stabilization (With Sod) – SO** for soil

preparation, and sod installation and maintenance.

INSPECTIONS

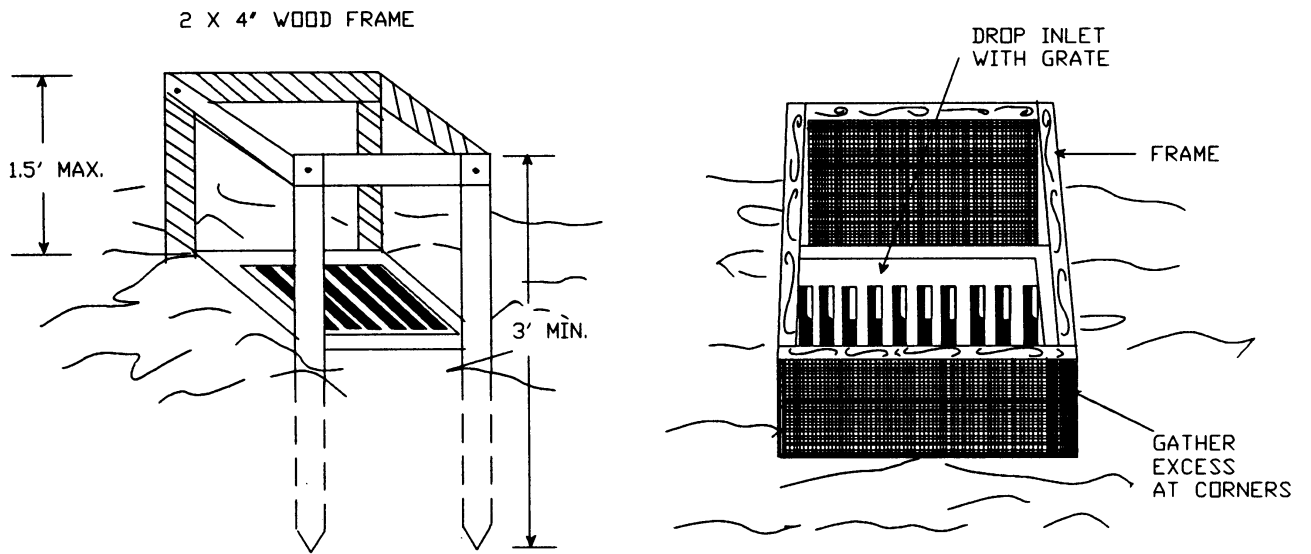
Inspections of storm drain inlet protection methods should be made before anticipated storm events (or series of storm events such as intermittent showers over one or more days) and within 24 hours after the end of a storm event of 0.5 inches or greater, and at least once every fourteen calendar days.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

MAINTENANCE

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.

Sediment should not be allowed to wash into the storm drain inlet. It should be removed from the inlet protection and disposed of and stabilized so that it will not enter the inlet again. When the contributing drainage area has been permanently stabilized, all materials and any sediment should be removed, and either salvaged or disposed of properly. The disturbed area should be brought to proper grade, then smoothed and compacted. Appropriately stabilize all disturbed areas around the inlet.

Silt Fence Inlet Protection – IP-SF



Perspective Views

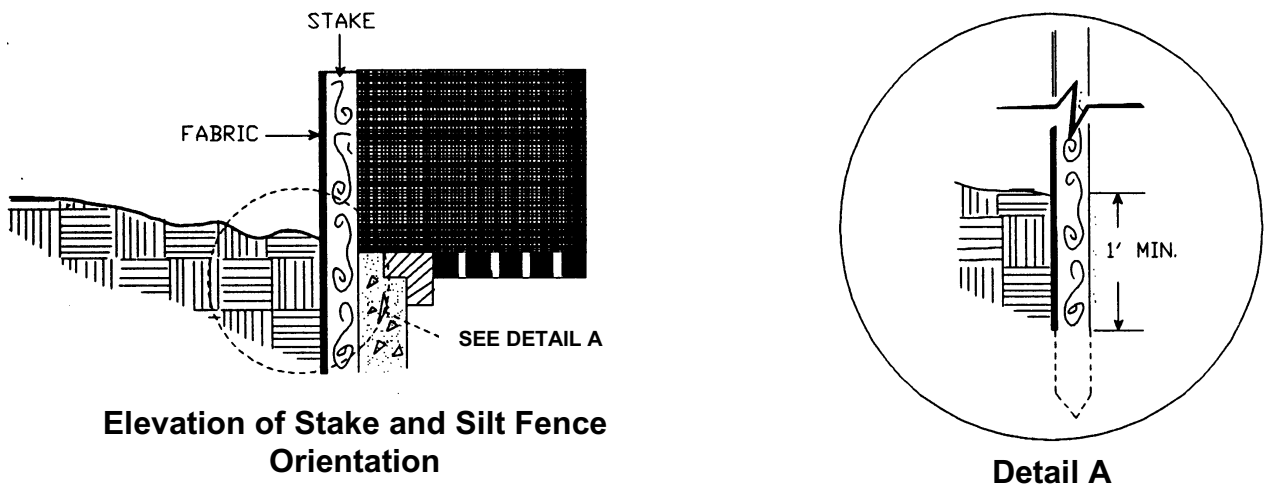


Figure 1

Source: NC SCC

Baffle Box Inlet Protection – IP-BB

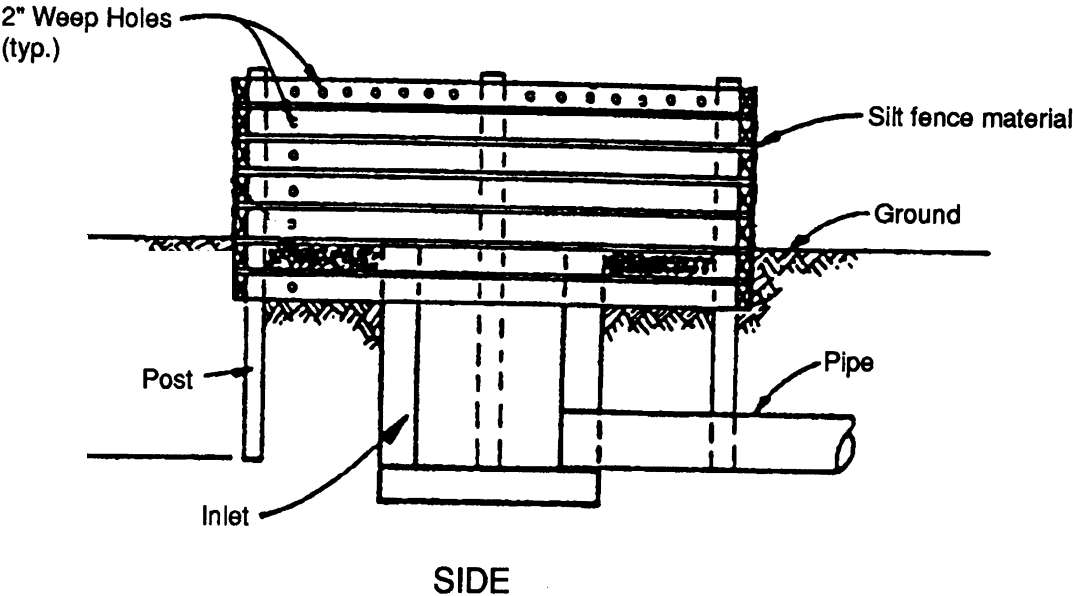
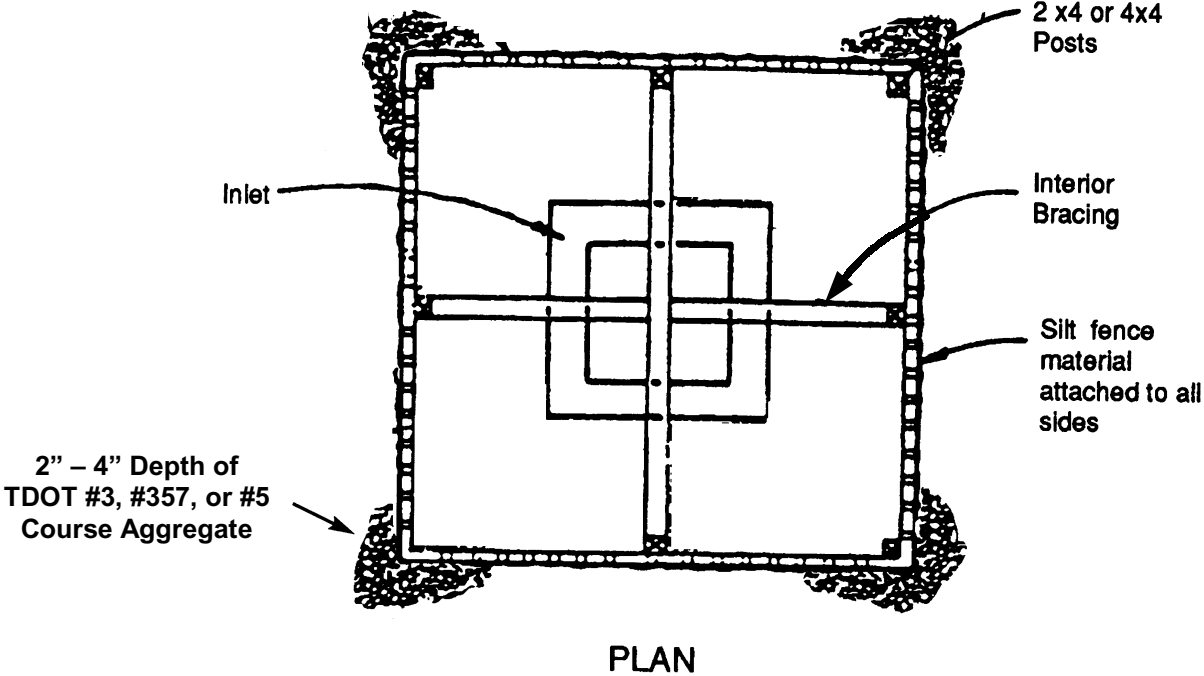


Figure 2

Source: GA SWCC

Block and Gravel Inlet Protection - IP-BG

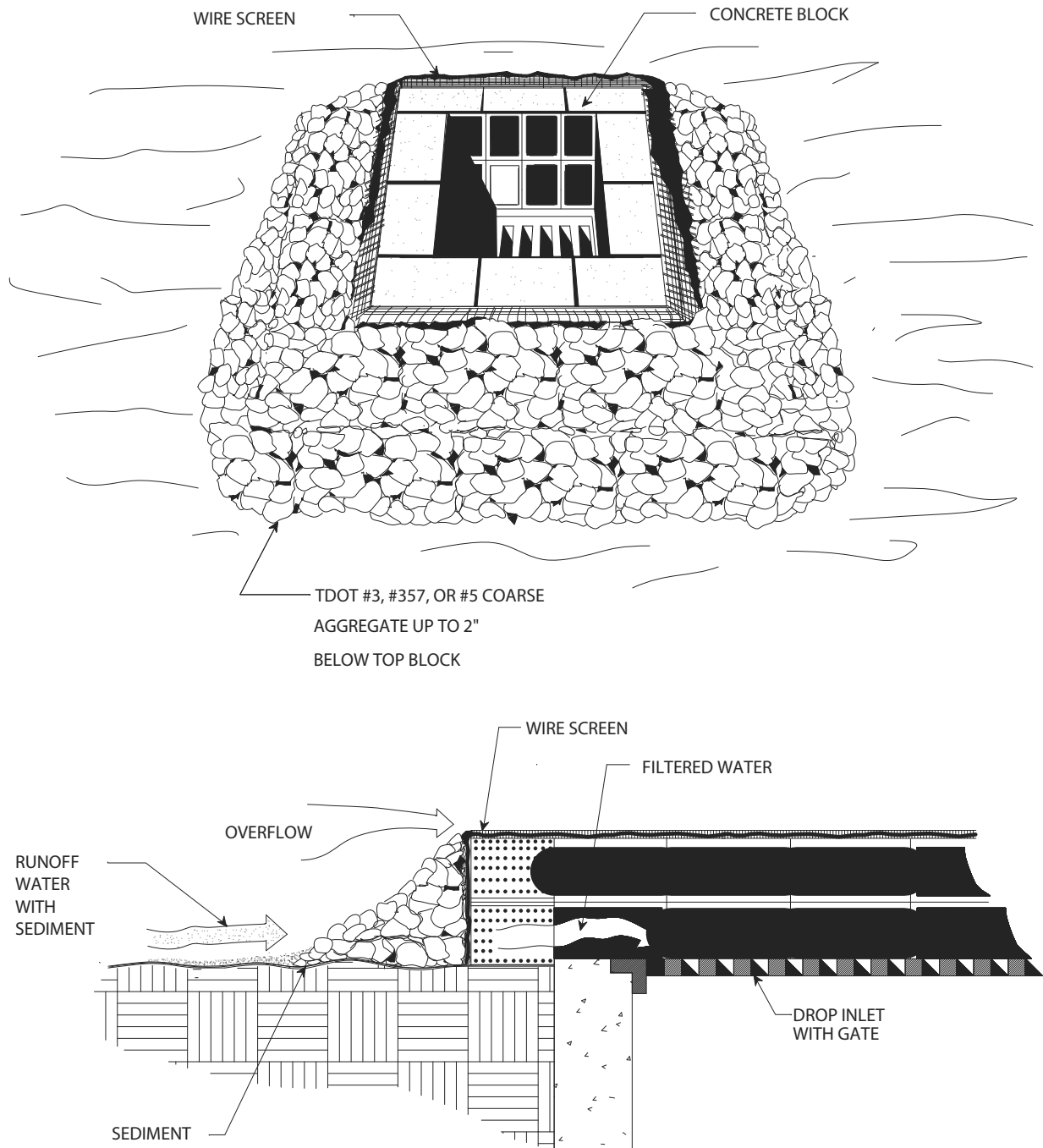
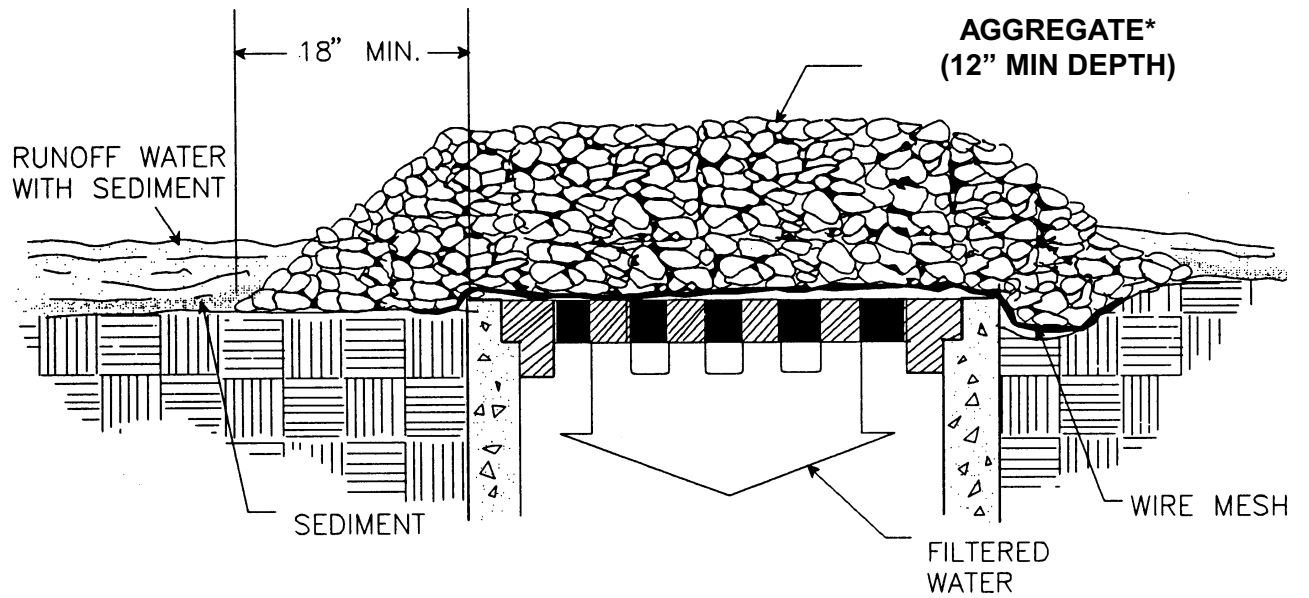


Figure 3

Source: VA DSWC

Gravel Inlet Protection – IP-G



* COARSE AGGREGATE SHOULD BE TDOT #3, #357, OR #5.

Figure 4

Source: VA DSWC

Sod Inlet Protection – IP-S

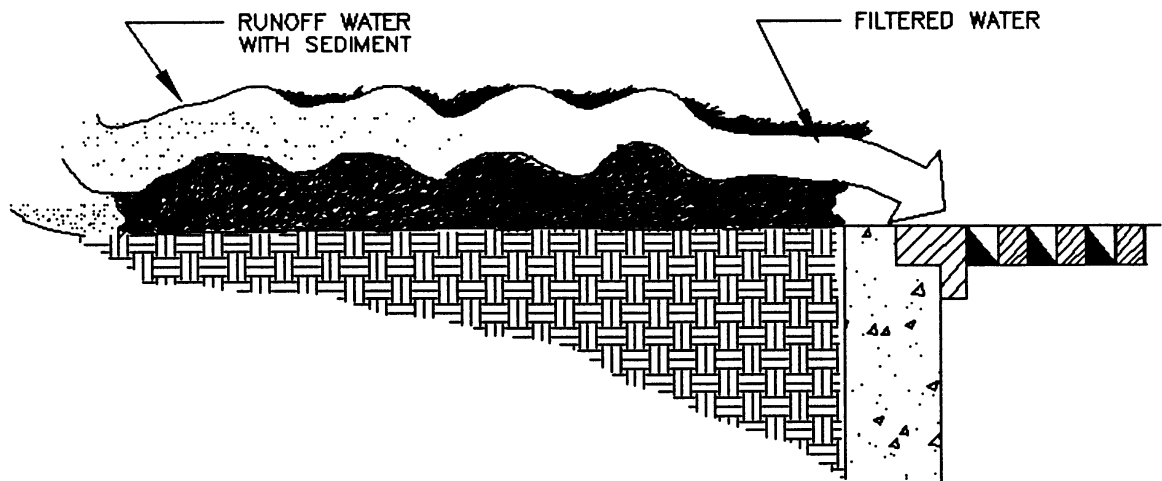
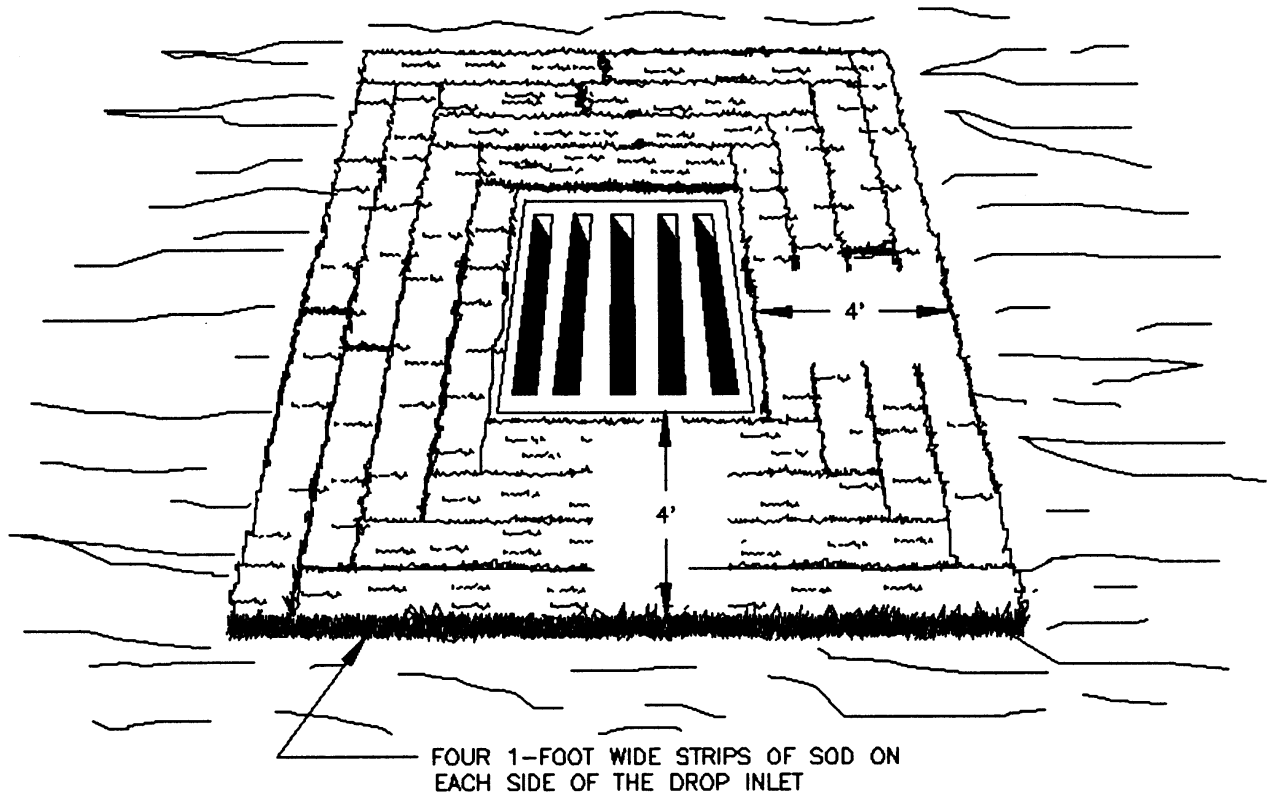


Figure 5

Source: VA DSWC