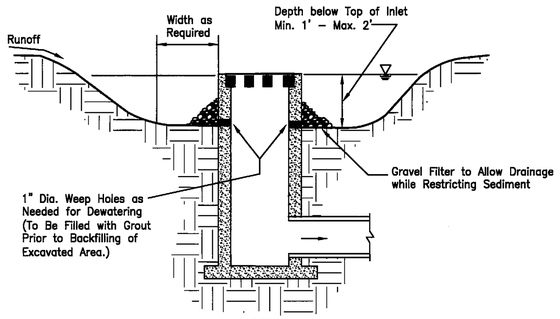
Storm Drain Inlet Protection (IP)

Description

Storm drain inlet protection devices remove sediment from storm water before it enters storm sewers and downstream areas. Inlet protection devices are sediment barriers that may be constructed of washed gravel or crushed stone, geotextile fabrics and other materials that are supported around or across storm drain inlets.

Inlet protection is installed to capture some sediment and reduce the maintenance of storm sewers and other underground piping systems prior to the site being stabilized. Due to their poorer effectiveness, inlet protection is considered a secondary sediment control to be used in conjunction with other more effective controls.

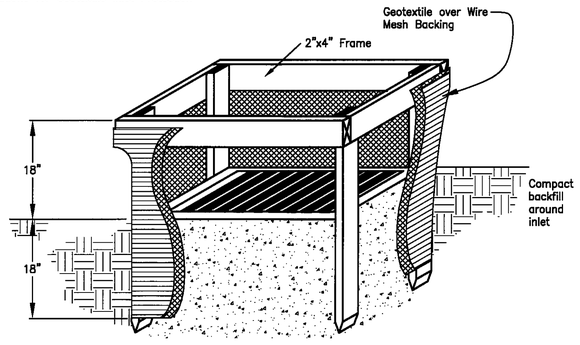
Specifications for Excavated Drop Inlet Sediment Protection



SECTION

1. The excavated trap should sized to proved a minimum storage capacity calculated at the rate of 135 cubic yards for one (1) acre of drainage area. A trap should be no more than one (1) foot, nor more than two (2) feet deep measured from the top of the inlet structure. Side slopes should not be steeper than 2:1.
2. The slopes of the trap may vary to fit the drainage are and terrain.
3. Where the area receives concentrated flows, such as in the highway median, provide the trap with a shape having a 2:1 ratio of length to width, with the length oriented in the direction of flow.
4. Sediment should be removed and the trap restored to the original depth when the sediment has accumulated to 40% the design depth of the trap. Removed sediment should be spread in a suitable area and stabilized so it will not erode.
5. During final grading, the inlet should be protected with geotextile–stone inlet protection. Once final grading is achieved, sod or a suitable temporary erosion control material shall be implemented to protect the area until permanent vegetation is established.

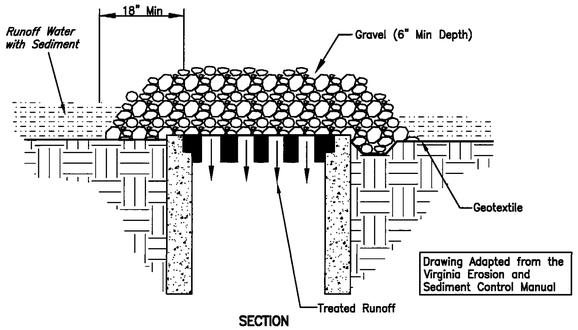
Specifications for Geotextile Inlet Protection



SECTION

1. Inlet protection shall be constructed either before upslope land disturbance begins or before the inlet becomes functional.
2. The earth around the inlet shall be excavated completely to a depth at least 18 inches.
3. The wooden frame shall be constructed of 2–inch by 4–inch construction–grade lumber. The 2 inch by 4–inch posts shall be driven one (1) f.t into the ground at four corners of the inlet and the top portion of 2–inch by 4–inch frame assembled using the overlap joint shown. The top of the frame shall be at least 6 inches below adjacent roads if ponded water will pose a safety hazard to traffic.
4. Wire mesh shall be of sufficient strength to support fabric with water fully impounded against it. It shall be stretched tightly around the frame and fastened securely to the frame.
5. Geotextile material shall have an equivalent opening size of 20–40 sieve and be resistant to sunlight. It shall be stretched tightly around the frame and fastened securely. It shall extend from the top of the frame to 18 inches below the inlet notch elevation. The geotextile shall overlap across one side of the inlet so the ends of the cloth are not fastened to the same post.
6. Backfill shall be placed around the inlet in compacted 6 inch layers until the earth is even with notch elevation on ends and top elevation on sides.
7. A compacted earth dike or a check dam shall be constructed in the ditch line below the inlet if the inlet is not in a depression. The top of the dike shall be at least 6 inches higher than the top of the frame.

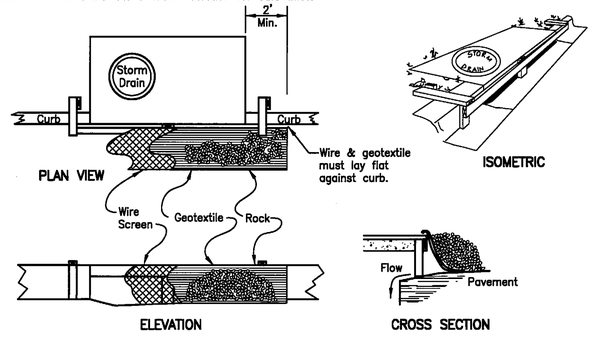
Specifications for Geotextile–Stone Inlet Protection



SECTION

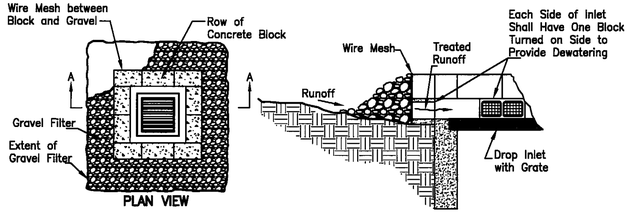
1. Inlet protection shall be constructed either before upslope land disturbance begins or before the inlet becomes functional.
2. Geotextile and/or wire material shall be placed over the top of the storm sewer and approximately six (6) inches of 2–inch or smaller clean aggregate placed on top. Extra support for geotextile is provided by placing hardware cloth or wire mesh across the inlet cover. The wire should be no larger than ½" mesh and should extend an extra 12 inches across the top and sides of the inlet cover.
3. Maintenance must be preformed regularly, especially after storm events. When clogging of the stone or geotextile occurs, the material must be removed and replaced.

Specifications for Geotextile–Stone Inlet Protection for Curb Inlets



1. Inlet protection shall be constructed either before upslope land disturbance begins or before the inlet becomes functional
2. Construct a wooden frame of 2–by–4–in. construction–grade lumber. The end spacers shall be a minimum of 1 ft. beyond both ends of the throat opening. The anchors shall be nailed to 2–by–4–in. stakes driven on the opposite side of the curb.
3. The wire mesh shall be of sufficient strength to support fabric and stone. It shall be a continuous piece with a minimum width of 30 in. and 4 ft. longer than the throat length of the inlet, 2 ft. on each side.
4. Geotextile cloth shall have an equivalent opening size (EOS) of 20–40 sieve and be resistant to sunlight. It shall be at least the same size as the wire mesh.
5. The wire mesh and geotextile cloth shall be formed to the concrete gutter and against the face of the curb on both sides of the inlet and securely fastened to the 2–by–4–in. frame.
6. Two–inch stone shall be placed over the wire mesh and geotextile in such a manner as to prevent water from entering the inlet under or around the geotextile cloth.
7. This type of protection must be inspected frequently and stone and/or geotextile replaced when clogged with sediment.

Specifications for Block and Gravel Drop Inlet Filter



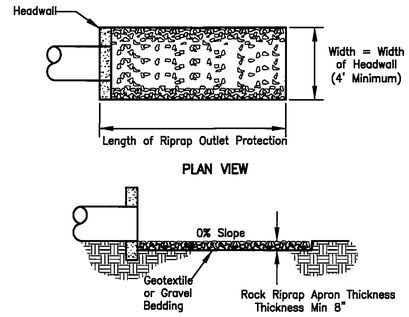
1. Place 4–inch by 8–inch by 12–inch concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, with the ends of adjacent blocks abutting. The height of the barrier can be varied, depending upon the design needs, by stacking combinations of the same size blocks. The barrier of blocks should be at least 12–inches high but no greater than 24–iches high.
2. Wire mesh should be placed over the outside vertical face (webbing) of the concrete blocks to prevent stone from being washed through the block cores. Hardware cloth or comparable wire mesh with ½–inch openings should be used.
3. Two–inch stone should be piled against the wire to the top of the block barrier, as shown above.
4. If the stone filter becomes clogged with sediment so that it no longer adequately performs its function, pull stone away from the blocks, clean and/or replace.

Rock Outlet Protection (OP)

Description

A rock or riprap apron typically needed at the outlet of storm drains, culverts, or open channels. Rock Outlet Protection provides an erosion resistant transition area where concentrated or high velocity flows enters less modified channels or natural streams.

Specifications for Outlet Protection



Type of Rock or Riprap (ODOT)	"n" value	Size of Rock	
		50% by weight	85% by weight
Type D	0.036	> 6 in.	3 – 12 in.
Type C	0.040	> 12 in.	6 – 18 in.
Type B	0.043	> 18 in.	12 – 24 in.
Type A	0.045	> 24 in.	18 – 30 in.

1. Subgrade for the filter or bedding and riprap shall be prepared to the required lines and grades as shown on the plan. The subgrade shall be cleared of all trees, stumps, roots, sod, loose rock, or other material.
2. Riprap shall conform to the grading limits as shown on the plan.
3. Geotextile shall be securely anchored according to the manufactures' recommendations.
4. Geotextile shall be laid with the long dimension parallel to the direction of flow and shall be laid loosely but without wrinkles and creases. Where joints are necessary, strips shall be placed to provide a 12–in. minimum overlap, with the upstream strip overlapping the downstream strip.
5. Gravel bedding shall be ODOT no. 67's or 57's unless shown differently on the drawings.
6. Riprap may be placed by equipment but shall be placed in a manner to prevent slippage or damage to the geotextile.
7. Riprap shall be placed by a method that does not cause segregation of sizes. Extensive pushing with a dozer causes segregation and shall be avoided by delivering riprap near its final location within the channel.
8. Construction shall be sequenced so that outlet protection is placed and functional when the storm drain, culvert, or open channel above it becomes operational.
9. All disturbed areas will be vegetated as soon a practical.

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SCALE	NO SCALE
DRAWN BY	MJD
CHK'D BY	CJO
DWG NAME	12269F-da3p
DATE	SEPTEMBER, 2014

HILLSIDE ESTATES - PHASE 4

STORMWATER POLLUTION PREVENTION DETAILS

TOWNSHIP OF COPLEY, COUNTY OF SUMMIT, STATE OF OHIO

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REV NO	DATE	DESCRIPTION	BY
1	09/15/14	ORIGINAL SUBMITTAL	CJO

SHEET NO. C2.7