

6.35 Treatment Measures: STORM DRAIN INLET PROTECTION

DESCRIPTION AND PURPOSE

Storm drain inlet protection is a sediment barrier placed around a storm drain drop inlet. This structure is used to trap sediment before it enters a storm sewer. This will keep sediment from being transported to lakes or streams and can also prevent clogging of the storm sewer caused by heavy sediment loads.

EFFECTIVENESS

Storm drain inlet protection provides relatively good removal of coarse and medium-size sediment from runoff. However, most fine silt and clay particles will pass through gravel filters on these structures. The Type A sediment barrier will do a better job of removing fine silt and clay from runoff.

PLANNING CONSIDERATIONS

It is critical that the storm sewer inlet not be completely blocked by inlet protection when public safety is a concern. Blocking an inlet has caused streets to flood and sediment to build up, creating a safety hazard. Erosion-control practices should be used in addition to this practice to limit sediment movement from disturbed areas. The inlet protection should be left in place until the drainage area is stabilized.

DESIGN RECOMMENDATIONS

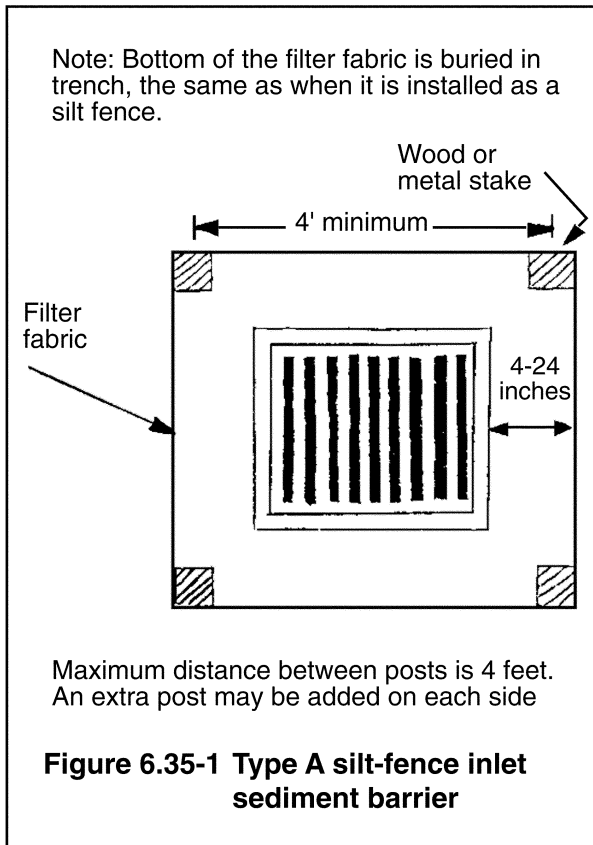
Inlet protection should only be used in locations where sediment can be removed and temporary ponding will not create a safety hazard or cause property damage. Various designs have been adapted for different conditions. These individual types are described beginning on page 6.35-2.

NEW TECHNOLOGIES

Filter baskets and socks (bags) inserted under and around the catch basin grill are applicable where the inlet drains a relatively flat area and concentrated flows are not expected. Inlet drains with filtering devices have also been developed and may be useful in some applications. These devices must be installed, operated and maintained in accordance with manufacturer specifications.

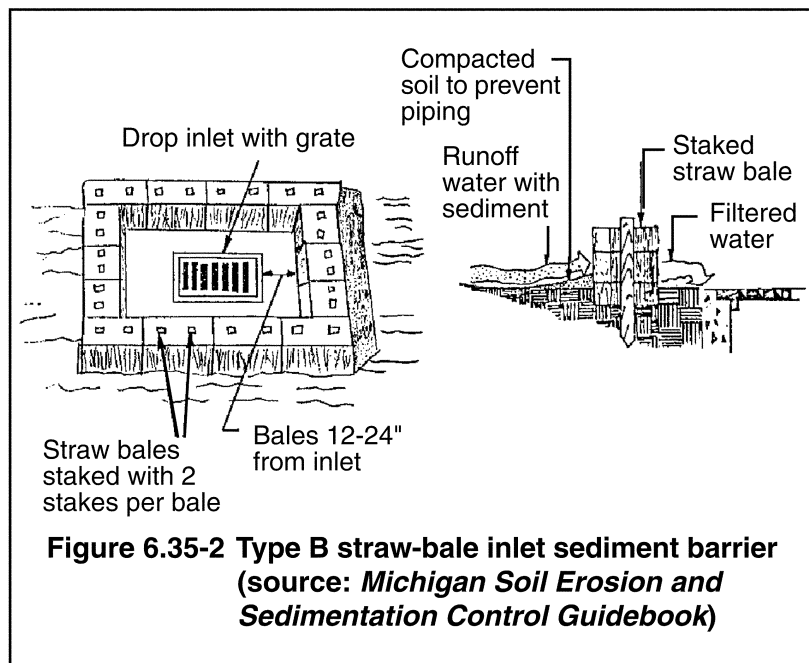
MAINTENANCE

After any significant rainfall, storm sewer inlet protection must be inspected. Sediment should be removed as needed. Excavated sediment should be placed where it will not create an erosion problem, and inlet protection should be removed as soon as the contributing drainage area is stabilized.



TYPE A-SILT-FENCE INLET SEDIMENT BARRIER

1. This method is applicable where the inlet drains a relatively flat area (slopes of less than 3%) where sheet flow is typical. This method is not recommended for inlets receiving concentrated flows, such as in road ditches.
2. The silt fence should be constructed in accordance with Practice 6.31, Silt Fence, except that the posts should be no more than 4 ft apart.
3. Each side of the inlet protection should be at least 4 ft long.

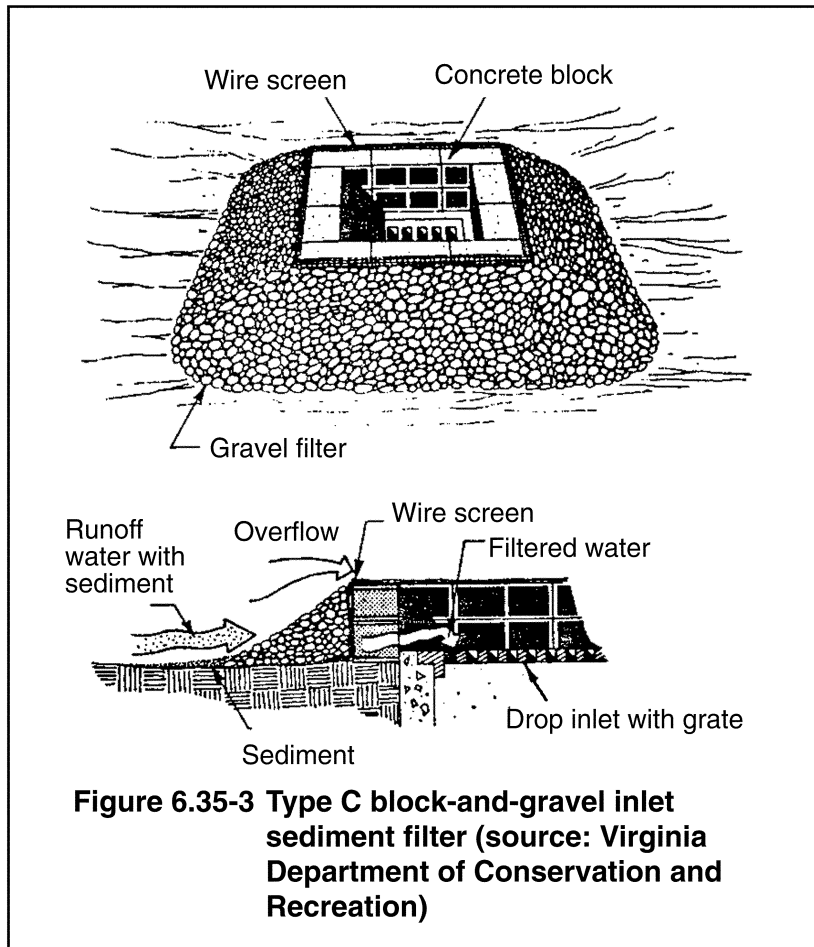


TYPE B - STRAW BALE INLET SEDIMENT BARRIER

1. This method is applicable for the same conditions as Type A. Type A is preferred. Type B should only be used when Type A cannot be readily used, flow velocities are low, and the practice would be of temporary or limited duration.

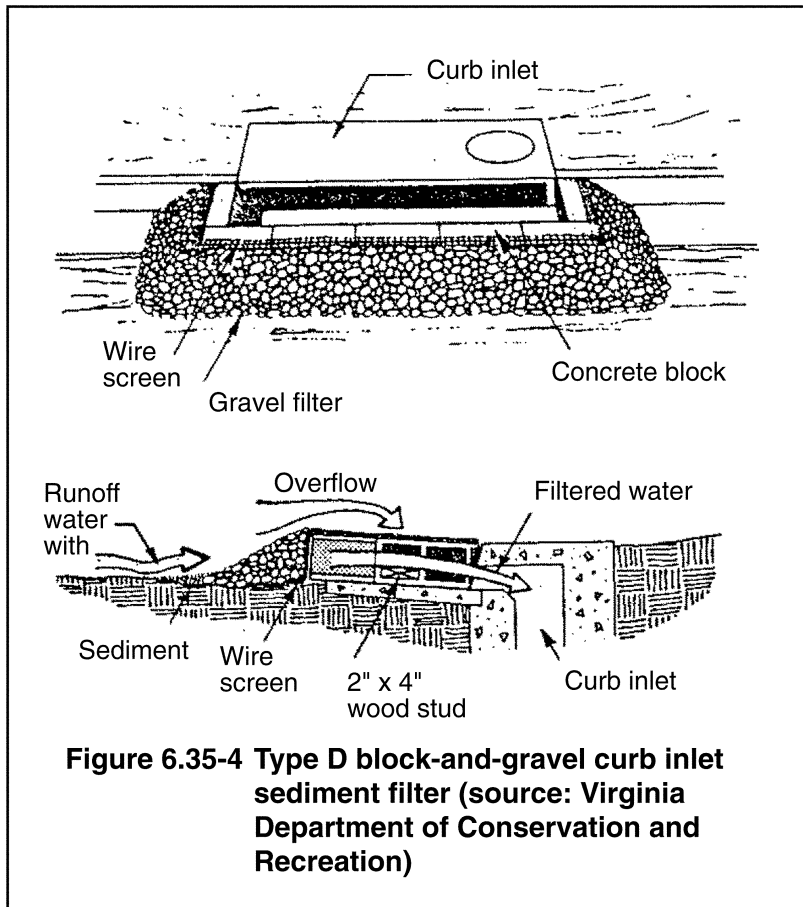
2. The bales should be installed in accordance part 6.41, Sediment Traps. As mentioned in that practice, proper installation is imperative.

3. Straw bales should be set back 12 to 24 inches from the inlet.



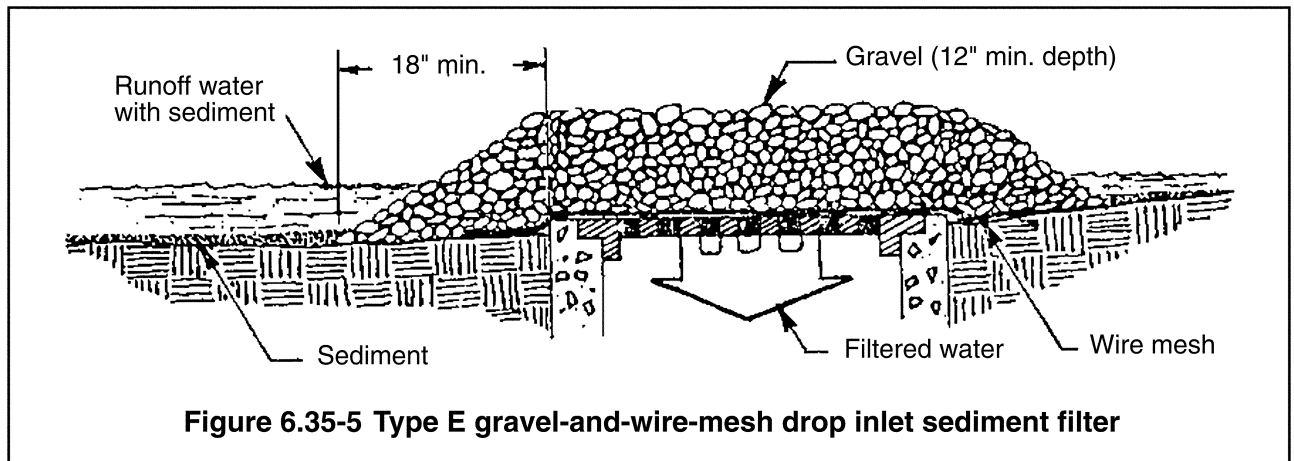
TYPE C – BLOCK-AND-GRAVEL DRAIN INLET SEDIMENT FILTER

1. This method of inlet protection is applicable if heavy flows are expected and when an overflow capacity is needed to prevent excessive ponding around the structure.
2. Place concrete blocks lengthwise on their sides around the inlet as shown in Figure 6.35-3. The height of the barrier can be varied, depending upon needs, by stacking various sizes of block. The blocks should be between 12 and 24 inches high.
3. Wire mesh should be placed over the edges of the block before the rock is placed to prevent rocks from being washed through the block. Hardware cloth with ½-inch mesh should be used.
4. Stone should be placed against the wire mesh to the top of the block. The stone should be 1- to 3-inch washed gravel.



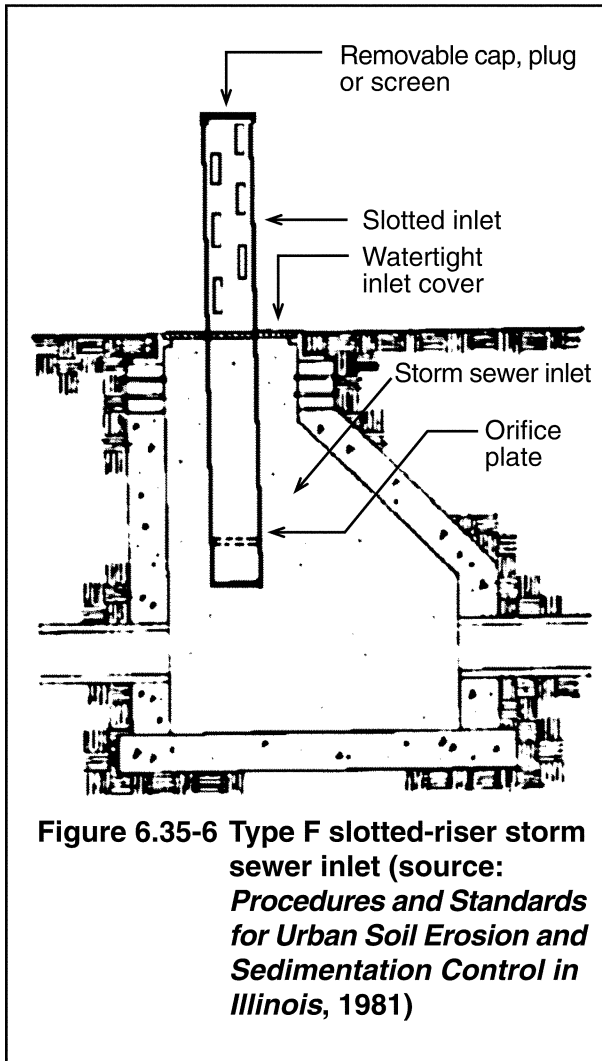
TYPE D – BLOCK-AND-GRAVEL CURB INLET SEDIMENT FILTER

1. This method of inlet protection is applicable at curb inlets where an overflow capability is necessary to prevent excessive ponding in front of the structure. Public safety should be considered when using this practice.
2. Concrete blocks should be placed on the side around the inlet as shown in Figure 6.35-4. A 2x4 should be placed through the outer hole of the two spacer blocks to support the front row of blocks.
3. Wire mesh with 2-inch openings should be placed over the openings in the blocks to prevent gravel from being washed through the blocks.
4. Stone should be placed against the wire mesh to the top of the block. The stone should be 1- to 3-inch washed gravel.



TYPE E – GRAVEL-AND-WIRE-MESH DROP INLET SEDIMENT FILTER

1. This method is applicable where heavy concentrated flows are expected and where ponding around the structure will not be inconvenient or cause damage to adjacent structures.
2. Wire mesh should be placed over the grating as shown in Figure 6.35-5 to prevent gravel from being washed into the storm drain. The wire mesh should have 1/2-inch openings and extend one foot beyond the grating.
3. The stone should be 1-3-inch washed gravel. The stone should be at least 12 inches deep and extend at least 18 inches beyond the grating.



TYPE F – SLOTTED-RISER STORM SEWER INLET

1. This method is applicable where heavy concentrated flows are expected and where ponding around the structure will not cause excessive inconvenience or damage to adjacent structures.
2. The riser may be made of corrugated metal, smooth metal or polyvinyl chloride (PVC) pipe. An orifice plate should be used to restrict flow. A flow velocity through the slots of 2 fps or less is suggested. Inlets constructed according to the standard dimensions table in Figure 6.35-6 will meet this criterion.
3. A prefilter consisting of geotextile or rock should be placed around the slotted riser.