

## **Chapter 4 - BEST MANAGEMENT PRACTICE STANDARDS**

### **STORM DRAIN INLET PROTECTION**

(Temporary Practice)

#### **Definition**

A sediment filter or an excavated impounding area around a storm drain drop inlet or curb inlet.

#### **Purpose**

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

#### **Condition Where Practice Applies**

Where storm drain inlets are to be made operational before permanent stabilization of the disturbed drainage area. Different types of structures are applicable to different conditions.

#### **Planning Considerations**

Storm sewers which are made operational before their drainage area is stabilized can convey large amounts of sediment to natural drainageways. In case of extreme sediment loading, the storm sewer itself may clog and lose a major portion of its capacity. To avoid these problems, it is necessary to prevent sediment from entering the system at the inlets.

This practice contains several types of inlet filters and traps which have different applications dependent upon site conditions and type of inlet. Other innovative techniques for accomplishing the same purpose are encouraged, but only after specific plans and details are submitted to and approved by the permitting agency.

Note that these various inlet protection devices are for drainage areas of less than one acre. Runoff from large disturbed areas should be routed through a temporary sediment basin.

#### **Design Criteria**

General:

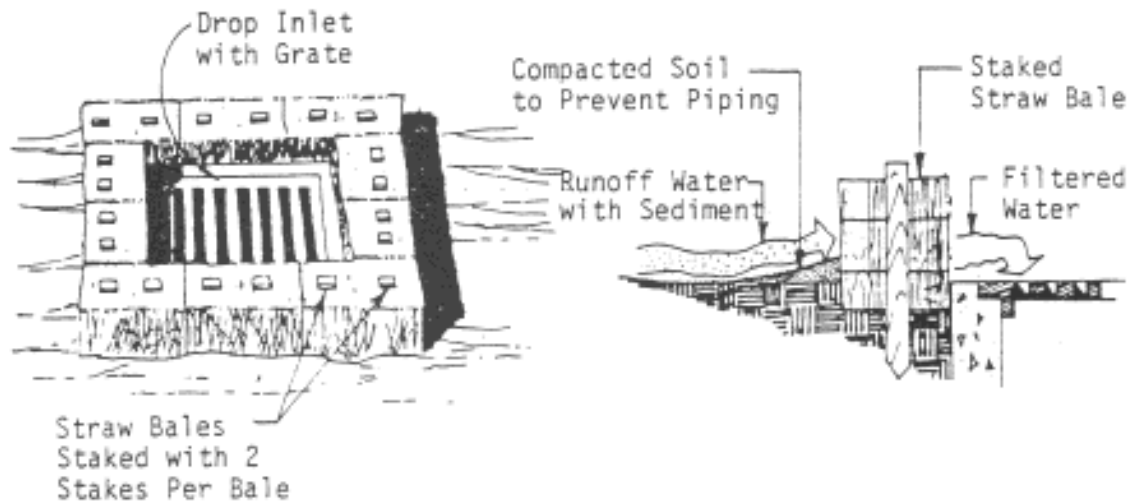
The drainage area shall be no greater than 1 acre.

The inlet protection device shall be constructed in such a manner that will facilitate cleanout and disposal of trapped sediment and minimize interference with construction activities.

The inlet protection devices shall be constructed in such a manner that any resultant ponding or stormwater will not cause excessive inconvenience or damage to adjacent areas or structures.

## 1. STRAW BALE DROP INLET STRUCTURE

- a. Bales shall be either wire-bound or string-tied with the bindings oriented around the sides rather than over and under the bales.
- b. Bales shall be placed lengthwise in a single row surrounding the inlet with the ends of adjacent bales pressed together.
- c. The filter barrier shall be entrenched and backfilled. A trench shall be excavated around the inlet the width of a bale to a minimum depth of 4 inches. After the bales are staked, the excavated soil shall be backfilled and compacted against the filter barrier.
- d. Each bale shall be securely anchored and held in place by at least two stakes or rebars driven through the bale.
- e. Loose straw should be wedged between bales to prevent water from entering between bales.



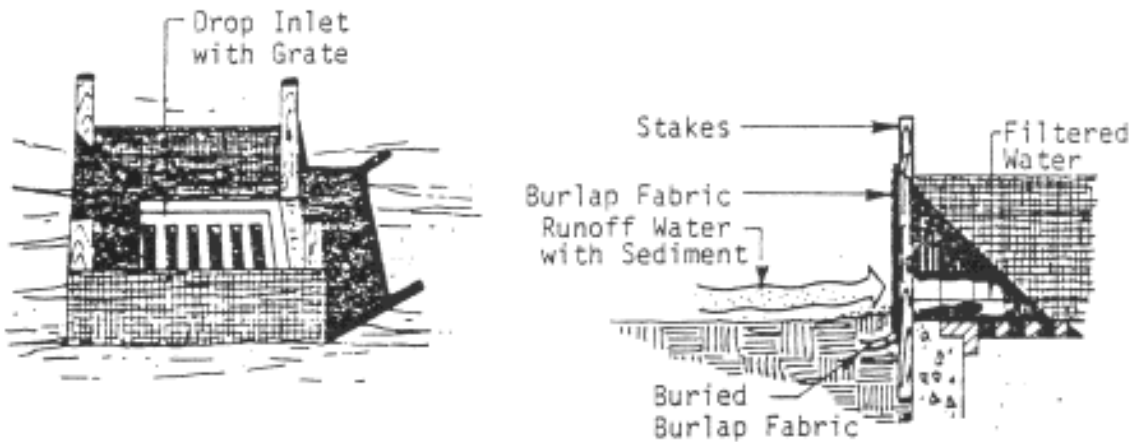
### Specific Application

This method of inlet protection is applicable where the inlet drains a relatively flat area (slopes no greater than 5 percent) where sheet or overland flows (not exceeding 0.5 cfs) are typical. The method shall not apply to inlets receiving concentrated flows, such as in street or highway medians.

### STRAW BALE DROP INLET SEDIMENT FILTER

## 2. SILT FENCE DROP INLET SEDIMENT FILTER

- a. Fence shall be 10 ounce per square yard and shall be cut from a continuous roll to avoid joints.
- b. Stakes shall be 1 1/2 x 2 1/4 wood (preferred) or equivalent metal with a minimum length of 3 feet.
- c. Staples shall be of heavy duty wire at least 1/2-inch long.
- d. Stakes shall be spaced around the perimeter of the inlet a maximum of 3 feet apart and securely driven into the ground (minimum of 8 inches).
- e. A trench shall be excavated approximately 4 inches wide and 4 inches deep around the outside perimeter of the stakes.
- f. The fabric shall be stapled to the wooden stakes, and 8 inches of the fabric shall be extended into the trench. The height of the filter barrier shall be a minimum of 15 inches and shall not exceed 18 inches.
- g. The trench shall be backfilled and the soil compacted over the fabric.
- h. Silt fence fabric may be used in lieu of burlap fabric if installed in accordance to the specifications listed in this manual for "Silt Fence."



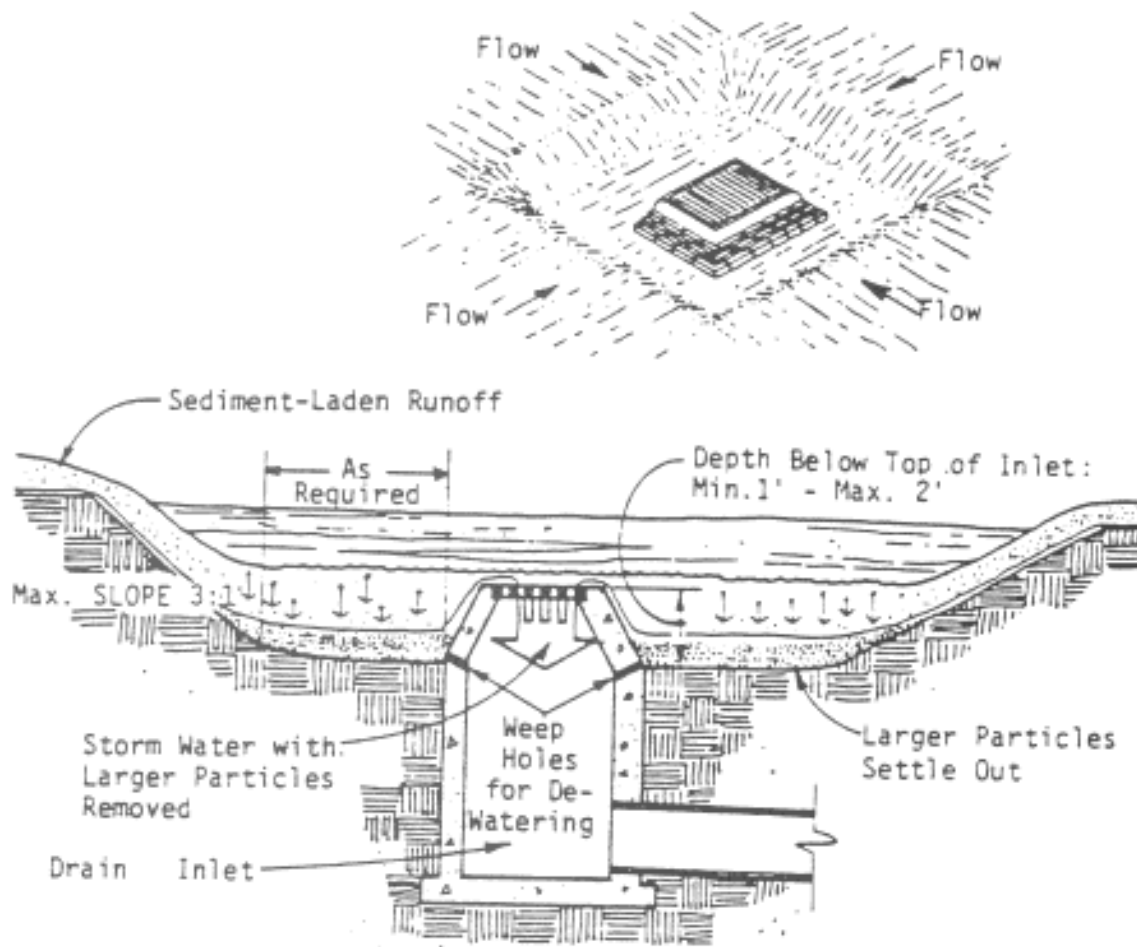
### Specific Application

This method of inlet protection is applicable where the inlet drains a relatively flat area (slopes no greater than 5 percent) where sheet or overland flows (not exceeding 0.5 cfs) are typical. The method shall not apply to inlets receiving Concentrated flows, such as in street or highway medians.

### BURLAP DROP INLET SEDIMENT FILTER

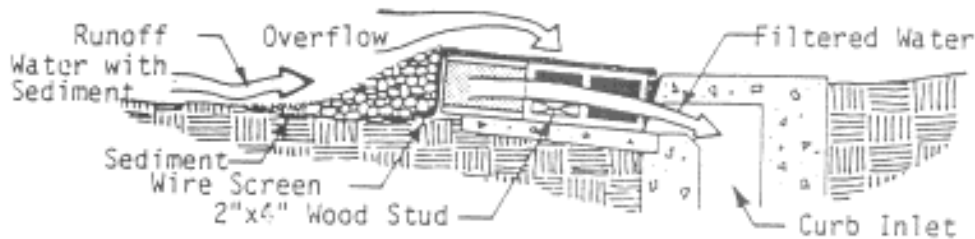
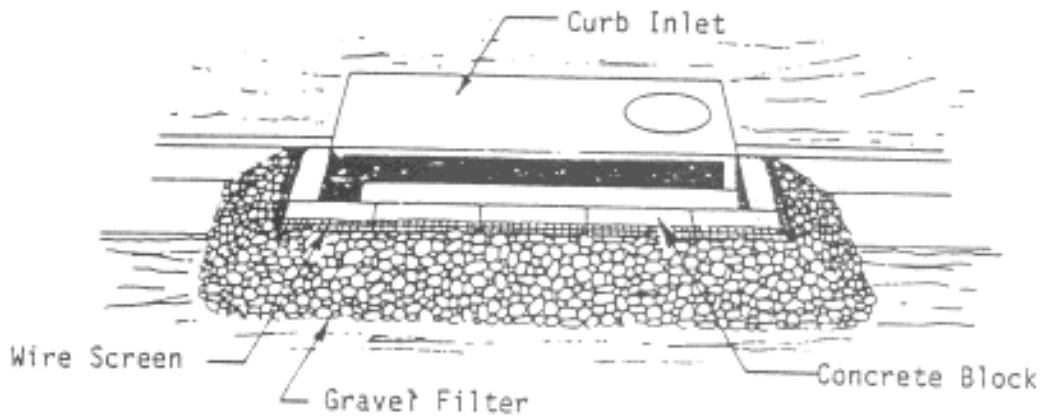
### 3. EXCAVATED DROP INLET SEDIMENT TRAP

- a. The excavated trap shall be sized to provide a minimum storage capacity calculated at the rate of 67 cubic yards for 1 acre of drainage area. A trap shall be no less than 1 foot nor more than 2 feet deep measured from the top of the inlet structure. Side slopes shall not be steeper than 3:1.
- b. The slope of the basin may vary to fit the drainage area and terrain. Observations must be made to check trap efficiency and modifications shall be made as necessary to insure satisfactory trapping of sediment. Where an inlet is located so as to receive concentrated flows, such as in a highway median, it is recommended that the basin have a rectangular shape in 2:1 ratio, with the length oriented in the direction of the flow.
- c. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to half the design depth of the trap. Removed sediment shall be deposited in a suitable area and in a manner such that it will not erode.



#### 4. BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER

- a. Two concrete blocks shall be placed on their sides abutting the curb at either side of the inlet opening.
- b. A 2-inch by 4-inch stud shall be cut and placed through the outer holes of each spacer block to help keep the front blocks in place.
- c. Concrete blocks shall be placed on their sides across the front of the inlet and abutting the spacer blocks as illustrated.
- d. Wire mesh shall be placed over the outside vertical face (webbing) of the concrete blocks to prevent stone from being washed through the holes in the blocks. Chicken wire or hardware cloth with 1/2-inch openings may be used also.
- e. DOT No. 1 Coarse Aggregate shall be filed against the wire to the top of the barrier as shown.
- f. If the stone filter becomes clogged with sediment so that it no longer adequately performs its function, the stone must be pulled away from the block, cleaned and replaced.



#### Specific Application

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.

## Maintenance

1. The structure shall be inspected after each rain and repairs made as needed.
2. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to half the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
3. Structures shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.