



National Pollution Discharge Elimination System (NPDES)
Construction Site Erosion-Sediment & Waste Control

Introduction: The City of Sweetwater participates in the National Pollution Discharge Elimination System (NPDES) program. The program is aimed at improving storm runoff water quality. The City of Sweetwater must address specified activities and program compliance stated within the Annual Reports and permit conditions. The permit conditions require that the City's Building & Public Works Department enforce the following activities as part of Construction Site Erosion, Sediment and Waste Control:

1. Submission of Erosion & Sediment Control plan: Applicants for new construction projects or substantial improvements (Le., additions, pools, etc.) shall submit as part of the mandatory permit submittal documents an erosion and sediment control plan for the development of the site. The qualifier for the permittee shall attest by his notarized Signature that the erosion and sediment control plan will be maintained for the duration of the permitted construction activities (see below).

2. Best Management Practices (BMPs) for Erosion/ Sediment & Waste Controls: Four (4) mandatory best management practices shall be implemented at each development site. These are:

- a. Temporary Gravel Construction Entrance & Exit (See attachment 4.2 and Plate 4.3a, 4.3b).
- b. Construction Entrance with Wash Rack (See attachment 4.3c)
- c. Storm Drain Inlet Protection (See attachment 4.5 and Plates 4.5a,e,g,h,1 & j)

Note: The preceding two elements of the plan must be implemented at the development site, inspected and approved by the Building Official or designated inspector prior to the acceptance of the first mandatory Florida Building Code inspection request.

- d. Waste disposal practices that prevent discharge of solid materials, measures to minimize offset tracking of sediments by construction vehicles, measures to ensure compliance with state or local waste disposal, sanitary sewer, or septic system regulations.

3. Compliance with Erosion/ Sediment & Waste Control Plans: Mandatory Florida Building Code inspections and inspections for erosion/sediment control and waste controls for building material, concrete truck washout, chemical, litter, and sanitary waste, shall be performed simultaneously with construction inspections. Failure to maintain required control measures during the entire construction phase will result in rejected inspection request and/or Code Enforcement action to be treated as a violation of the City's Code of Ordinances by the Code Enforcement Officer.

I hereby agree to maintain the attached erosion and sediment control plan for the duration of the construction phase, at the property location: _____

General Contractor - Company Name

Notary Public
State of Florida, County of Dade

Name & License of Qualifier

Sworn to and Subscribed before me this ___ Day of
_____ 20__

Signature of Qualifier

___ Personally Known or ___ ID Supplied _____

4.2 Pollution Source Controls on Construction Sites

Definition

Minimizing nonpoint source pollution from construction sites through good management and "housekeeping" techniques.

Purpose

To reduce the availability of construction-related pollutants that can contaminate runoff water, or to retain pollutants and polluted water onsite.

Conditions Where Practice Applies

This practice applies to all construction projects. The level of planning and management necessary to control nonpoint source pollution adequately depends on the size and complexity of the construction site.

Planning Considerations

Construction activities, by their nature, create many sources of potential pollutants that can contaminate runoff and thus affect the quality of downstream receiving waters. Accelerated erosion and sedimentation caused by land-disturbing activities are the major pollution problems caused by construction.

There are, however, many other potential pollutants associated with construction activities, such as gasoline, oils, grease, paints, cements, and solvents, to name only a few. Even relatively nontoxic materials such as paper and cardboard are potential pollutants when they are washed into streams and lakes.

The best way to prevent nonpoint source pollution on construction sites is to use good housekeeping practices, which usually entail simply maintaining the site in a neat and orderly condition. Specific practices should be employed to retain runoff and to deal with toxic substances and materials. An overall plan for the control of nonpoint source pollution is advisable so that control measures can be specified and implemented effectively.

The following elements should be considered in nonpoint source pollution control planning on a construction site:

1. Erosion and Sediment Controls

Practices that minimize erosion and retain sediment onsite are also effective in controlling many other nonpoint source pollutants associated with construction activities. The development and implementation of a good erosion and sediment control plan is a key factor in controlling nonpoint source pollutants other than sediment on a construction site.

2. Vehicle Wash Areas

Vehicles such as dump trucks, concrete trucks, and other construction equipment should **NOT** be washed at locations where the runoff will flow directly into a waterbody or stormwater conveyance system. Special areas should be designated for washing

vehicles. Concrete washout areas should be located where the runoff can be collected and removed from the site or collected for drying and reused on site. Concrete washout areas may be constructed onsite by digging a pit and lining it with plastic. Manufactured products and waste disposal companies also are available.



3. Equipment Maintenance and Repair

The maintenance and repair of construction machinery and equipment should be confined to areas specifically designated for that purpose. Such areas should be located and designed so that oils, gasoline, grease, solvents, and other potential pollutants cannot be washed directly into receiving streams, stormwater conveyance systems, or existing and potential well fields. These areas should have adequate waste disposal receptacles for liquid and solid wastes. Maintenance areas should be inspected and cleaned daily.

On a construction site where designated equipment maintenance areas are not feasible, exceptional care should be taken during each individual repair or maintenance operation to prevent potential pollutants from being washed into streams or conveyance systems. Temporary waste disposal receptacles should be provided and emptied as required.

4. Waste Collection and Disposal

A plan should be formulated for collecting and disposing of waste materials on a construction site. It should designate locations for trash and waste receptacles and establish a specific collection schedule. Methods for the ultimate disposal of waste should be specified and carried out according to applicable local and state health and safety regulations. Special provisions should be made for the collection, storage, and disposal of liquid wastes and toxic or hazardous materials.

Receptacles and other waste collection areas should be kept neat and orderly to the extent possible. Trash cans should have lids and dumpsters should have covers to prevent rainwater from entering. Waste should not be allowed to overflow its container or accumulate for excessively long periods. Trash collection points should be located where they are least likely to be affected by concentrated stormwater runoff.

5. Demolition Areas

Demolition projects usually generate large amounts of dust with significant concentrations of heavy metals and other toxic pollutants. Dust control techniques

should be used to limit the transport of airborne pollutants. However, water or slurry used to control dust should be retained onsite and should not be allowed to run directly into watercourses or stormwater conveyance systems.

6. Storage of Construction Materials, Chemicals, Etc.

Sites where chemicals, cements, solvents, paints, or other potential water pollutants are to be stored should be isolated in areas where they will not cause runoff pollution. Toxic chemicals and materials, such as pesticides, paints, and acids, should be stored according to the manufacturers' guidelines. Overuse should be avoided, and great care should be taken to prevent accidental spillage. Containers should **NEVER** be washed in or near flowing streams or stormwater conveyance systems.



Ground water resources should be protected from leaching by placing a plastic mat, tarpaper, or other impervious materials on any areas where toxic liquids are to be opened and stored. Portable storage units are also commercially available for material storage and can be locked at the end of the day.

7. Stockpiles

Soil stockpiles should be protected or adequately covered from stormwater during construction. Simple protection measures include silt fencing or a trench around the base of the stockpile. A tarp or temporary seeding also can provide adequate cover for a soil stockpile. Stockpiles should not be placed near the perimeter of the site, near a waterbody or storm drain inlet, or within 10 feet of an infiltration/exfiltration system.

4.3 Stabilized Construction Exit



Definition

A stabilized pad located at points where vehicles enter and leave a construction site.

Purpose

To reduce the amount of sediment transported onto public roads by motor vehicles or runoff.

Conditions Where Practice Applies

Wherever traffic will be leaving a construction site and moving directly onto a public road or other paved area.

Planning Considerations

Construction entrances provide an area where mud can be removed from construction vehicle tires before they enter a public road. If the action of the vehicle traveling over the stabilized pad is not sufficient to remove most of the mud, then the tires must be washed before the vehicle enters a public road. If tire washing is provided, provisions must be made to intercept the wash water and trap the sediment before it is carried offsite. Construction entrances should be used in conjunction with the stabilization of construction roads to reduce the amount of mud picked up by construction vehicles.

Design Criteria

Aggregate Size

If stone is utilized, FDOT No. 1 Coarse Aggregate, 1½ to 3½ inch (4 to 9 cm) stone is suggested. Wood chips may be used for single-family residential construction, provided that they can be prevented from floating away during a storm event. Manufactured products also are available to prevent or reduce the amount of sediment tracked onto

roadways. If a stabilized exit is not sufficient, street sweeping can be provided as an additional measure.

Dimensions

If stone is used, then the aggregate layer must be at least 6 inches (15 cm) thick. It must extend the **FULL WIDTH** of the vehicular ingress and egress area. The length of the entrance must be at least 50 feet (20 m). The exit should widen at its connection to the roadway to accommodate the turning radius of large trucks (see **Figure 4.3a**).

Washing

If conditions on the site are such that most of the mud is not removed by the vehicles traveling over the stone, then the vehicle tires must be washed before entering a public road. Wash water must be carried away from the entrance to a settling area to remove sediment (see **Figure 4.3b**). A wash rack may also be used to make washing more convenient and effective (see **Figure 4.3c**).

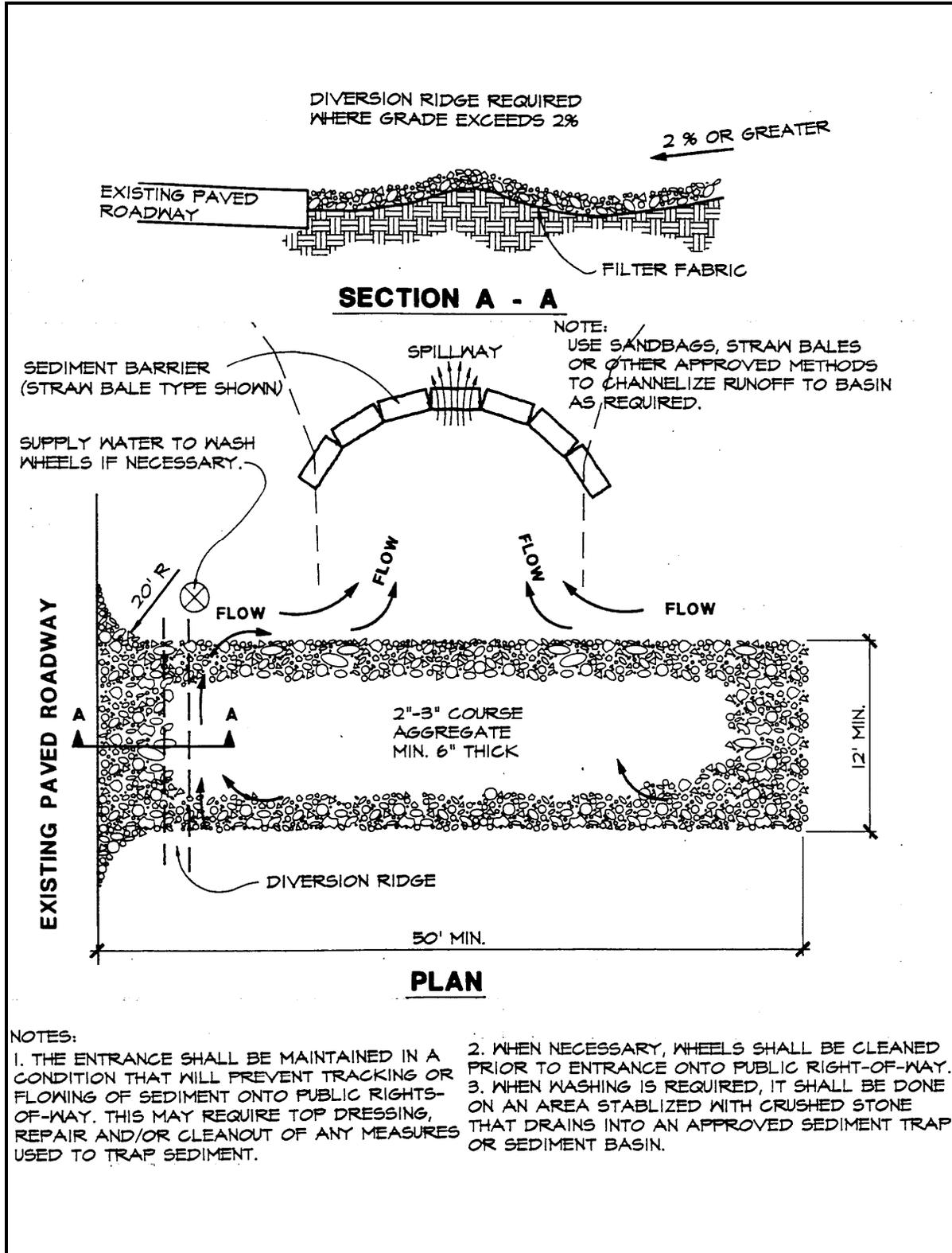


Figure 4.3a. Temporary Gravel Construction Entrance

Source: Erosion Draw

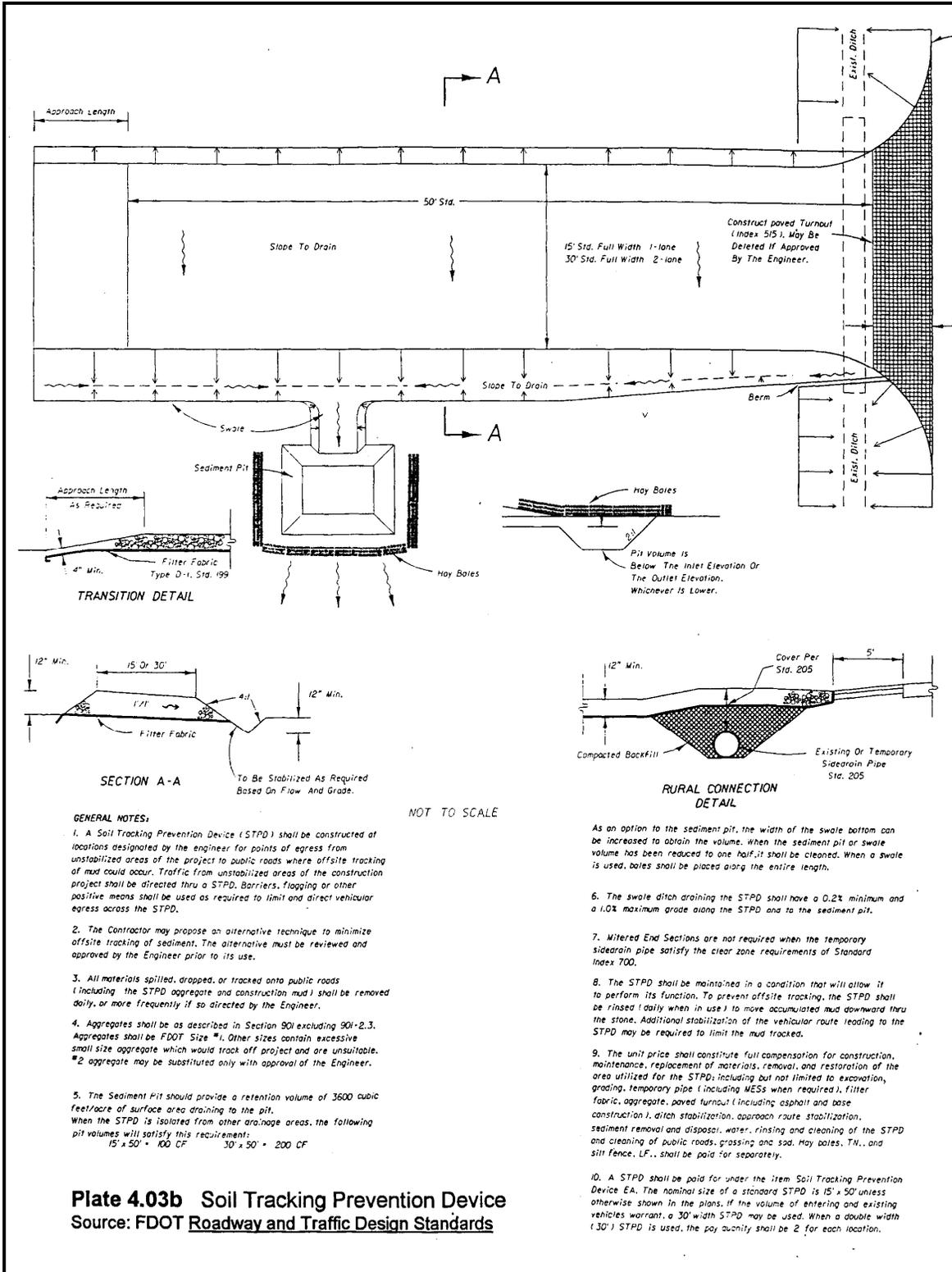


Figure 4.3b. Soil Tracking Prevention Device

Source: FDOT Roadway and Traffic Design Standards

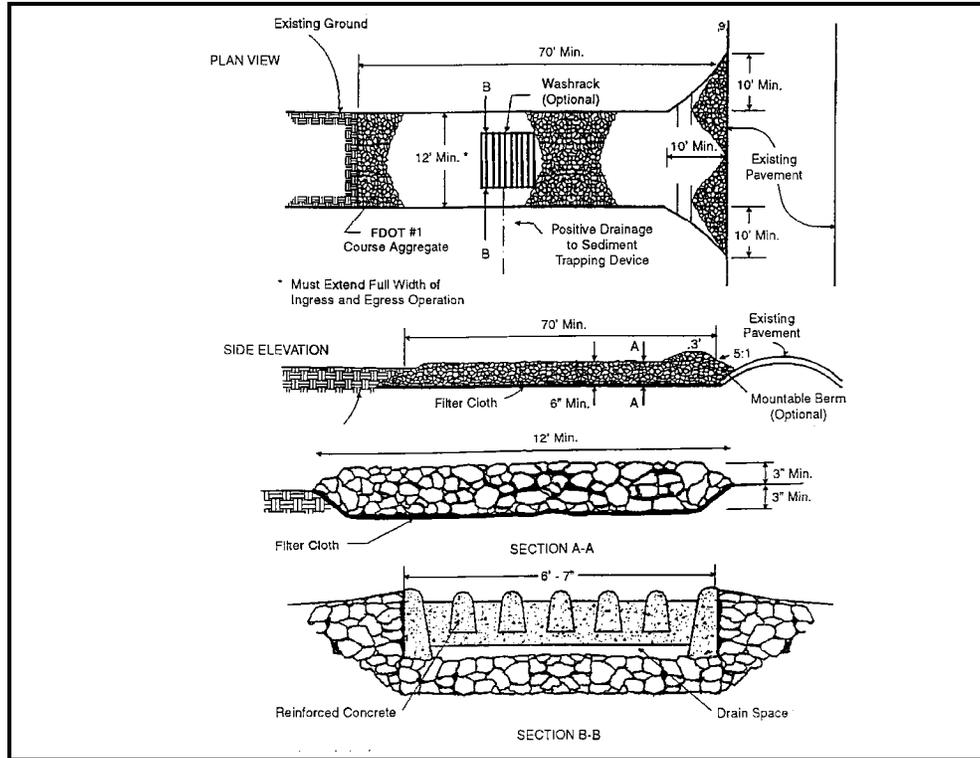


Figure 4.3c. Construction Entrance with Wash Rack

Source: 1983 Maryland Standards for Soil Erosion and Sediment Control

Location

The entrance should be located to provide for maximum utility by all construction vehicles.

Construction Specifications

The entrance area should be cleared of all vegetation, roots, and other objectionable material. A geotextile should be laid down to improve stability and simplify maintenance when gravel is used. The gravel shall then be placed over the geotextile to the specified dimensions.



Maintenance

The stabilized construction exit shall be maintained in a condition that will prevent the tracking or flow of mud onto public rights of way. This may require periodic maintenance as conditions demand, and the repair and/or cleanout of any structures used to trap sediments. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately. Look for signs of trucks and trailered equipment "cutting corners" where the construction exit meets the roadway. Sweep the paved road as needed.

4.5 Storm Drain Inlet Protection

Definition

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

Purpose

To prevent sediment from entering stormwater conveyance 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 (see **Figures 4.5a** through **4.5j**).

Planning Considerations

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

There are several types of inlet filters and traps, which have different applications depending on the 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 stormwater permitting agency.

Note that these various inlet protection devices are for drainage areas of **less than 1 acre (0.4 ha)**. Runoff from large, disturbed areas should be routed through a **TEMPORARY SEDIMENT TRAP (Chapter 4)**.

Design Criteria

- 1. The drainage area shall be no greater than 1 acre (0.4 ha).*
- 2. The inlet protection device shall be constructed to facilitate the cleanout and disposal of trapped sediment and to minimize interference with construction activities.*
- 3. The inlet protection devices shall be constructed so that any resultant ponding or stormwater will not cause excessive inconvenience or damage to adjacent areas or structures.*
- 4. **Figures 4.5a** through **4.5j** provide specific design criteria for each particular inlet protection device.*

Construction Specifications

Fabric Drop Inlet Sediment Filter

1. Fabric shall be cut from a continuous roll to avoid joints.
2. Stakes shall be 2 x 4 inches (5 x 10 cm) wood (preferred) or equivalent metal with a minimum length of 3 feet (90 cm) (see **Figure 4.5a**).
3. Staples shall be of heavy duty wire at least ½ inch (13 mm) long.
4. Stakes shall be spaced around the perimeter of the inlet a maximum of 3 feet (90 cm) apart and securely driven into the ground a minimum of 8 inches (20 cm). A frame of 2 x 4 inches (5 x 10 cm) of wood shall be constructed around the top of the stakes for proper stability.
5. A trench shall be excavated approximately 4 inches (10 cm) wide and 4 inches (10 cm) deep around the outside perimeter of the stakes (see **Figure 4.5b**).
6. The fabric shall be stapled to the wooden stakes, and 8 inches (20 cm) of the fabric shall be extended into the trench. The height of the filter barrier shall be a minimum of 15 inches (38 cm) and shall not exceed 18 inches (45 cm).
7. The trench shall be backfilled and the soil compacted over the fabric.



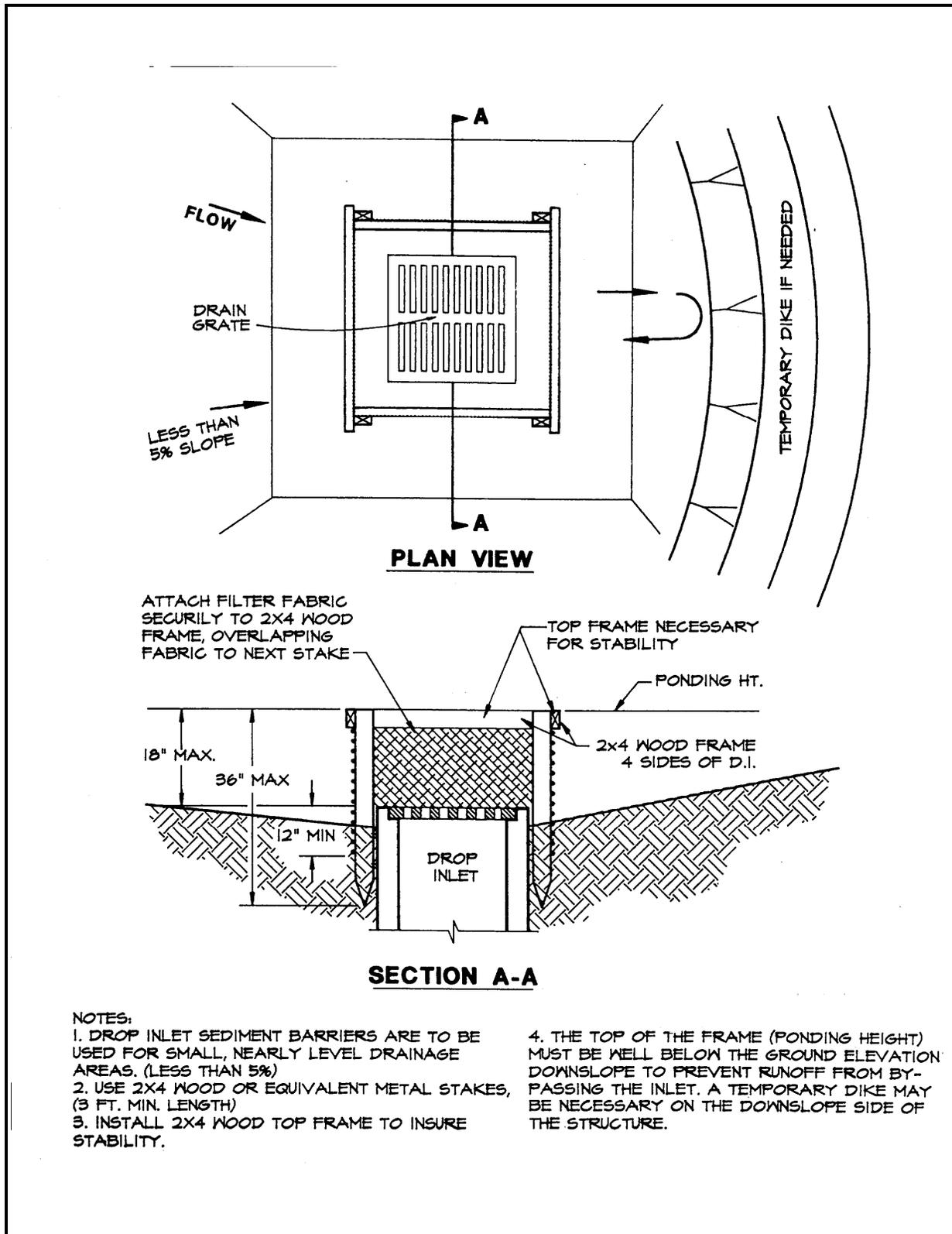


Figure 4.5a. Silt Fence Drop Inlet Sediment Barrier

Source: Erosion Draw

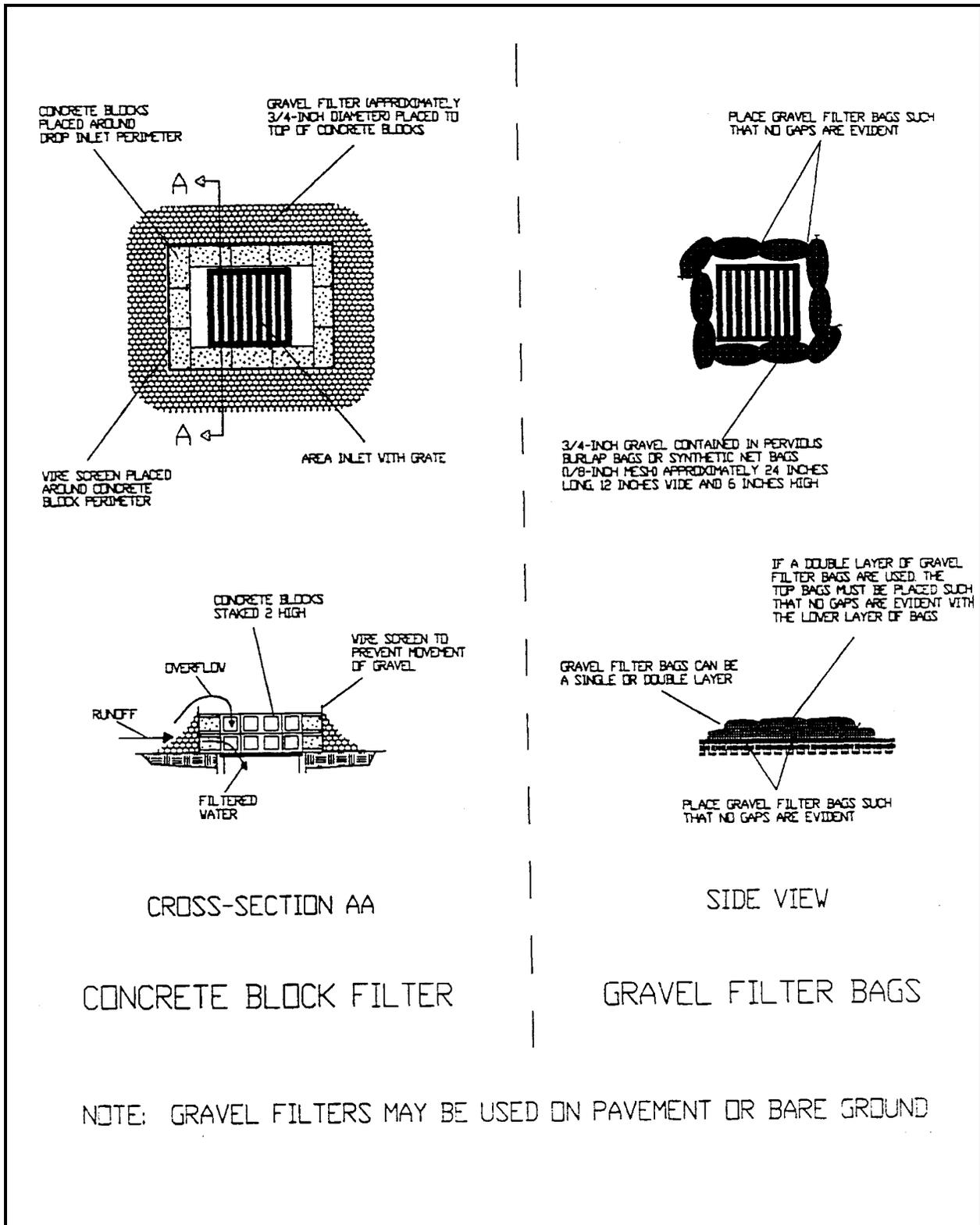


Figure 4.5e. Gravel Filters for Area Inlets

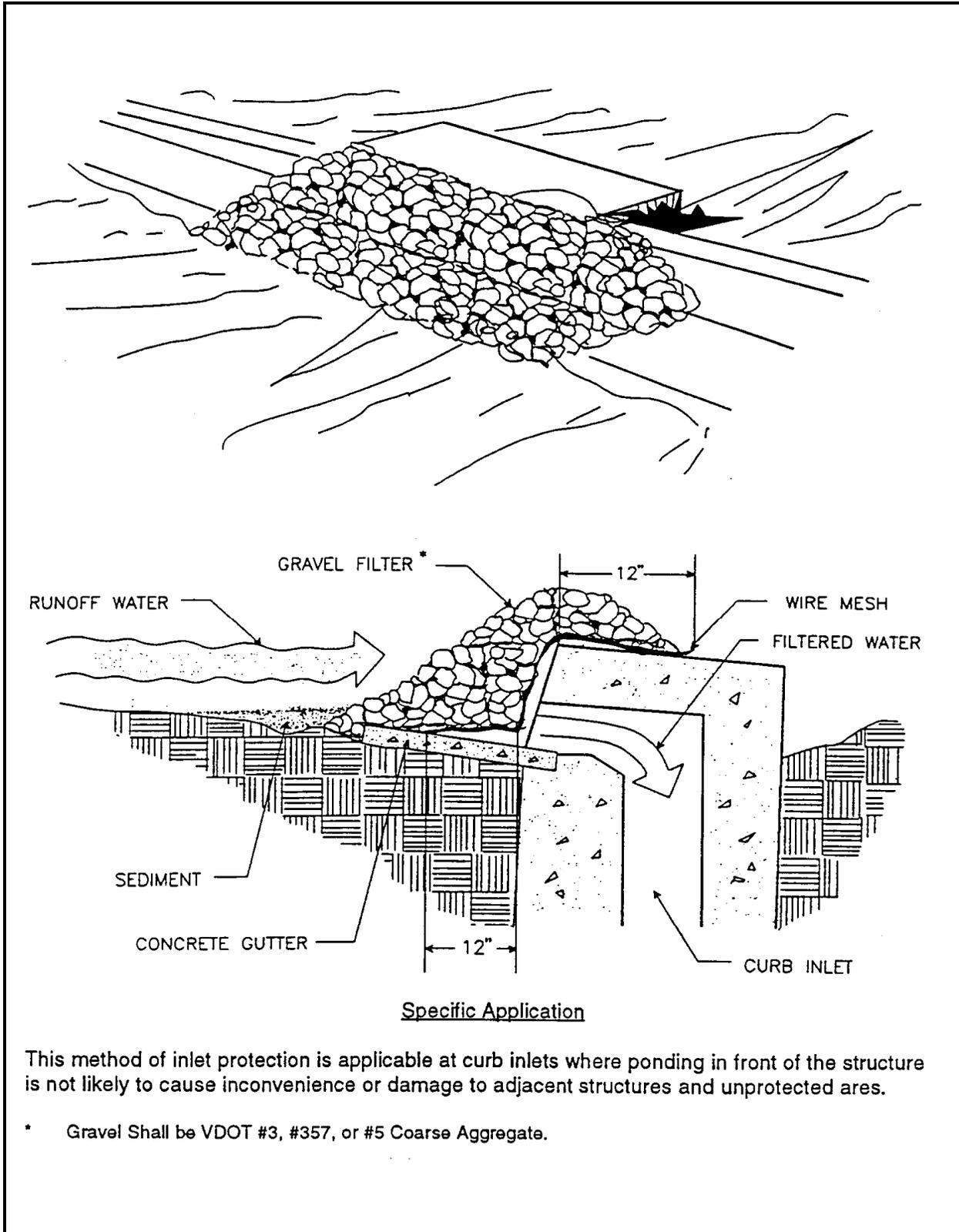
Source: HydroDynamics, Inc.

Gravel Curb Inlet Sediment Filter

1. *Hardware cloth or comparable wire mesh with ½ inch (13 mm) openings shall be placed over the curb inlet opening so that at least 12 inches (30 cm) of wire extends across the top of the inlet cover and at least 12 inches (30 cm) of wire extends across the concrete gutter from the inlet opening (see **Figure 4.5g**).*
2. *Stone shall be piled against the wire so as to anchor it against the gutter and inlet cover and to cover the inlet opening completely. FDOT No. 1 Coarse Aggregate shall be used.*
3. *An overflow weir can be constructed of 2 x 4 inch (5 x 10 cm) boards to lessen ponding from this practice (see **Figure 4.5h**).*
4. *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.*

Block and Gravel Curb Inlet Sediment Filter

1. *Two concrete blocks shall be placed on their sides abutting the curb at either side of the inlet opening (see **Figure 4.5i**).*
2. *A 2 x 4 inch (5 x 10 cm) board shall be cut and placed through the outer holes of each spacer block to help keep the front blocks in place.*
3. *Concrete blocks shall be placed on their sides across the front of the inlet and abutting the spacer blocks (see **Figure 4.5j**).*
4. *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. Hardware cloth with ½ inch (13 mm) openings shall be used.*
5. *FDOT No. 1 Coarse Aggregate shall be piled against the wire to the top of the barrier.*



Specific Application

This method of inlet protection is applicable at curb inlets where ponding in front of the structure is not likely to cause inconvenience or damage to adjacent structures and unprotected areas.

* Gravel Shall be VDOT #3, #357, or #5 Coarse Aggregate.

Figure 4.5g. Gravel Curb Inlet Sediment Filter

Source: Virginia DSWC

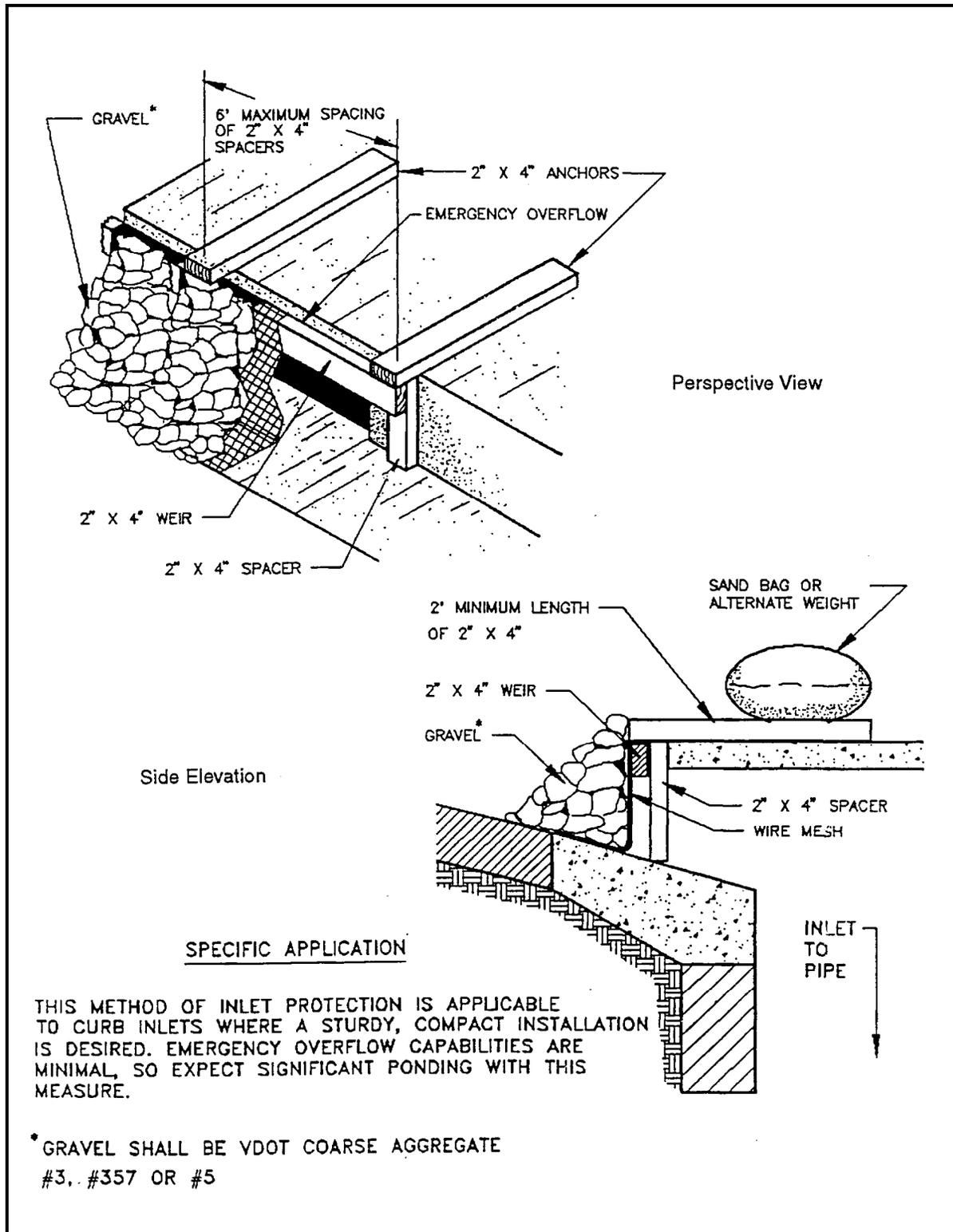


Figure 4.5h. Gravel Curb Inlet Sediment Filter with Overflow Weir

Source: Maryland Standards and Specifications for Soil Erosion and Sediment Control

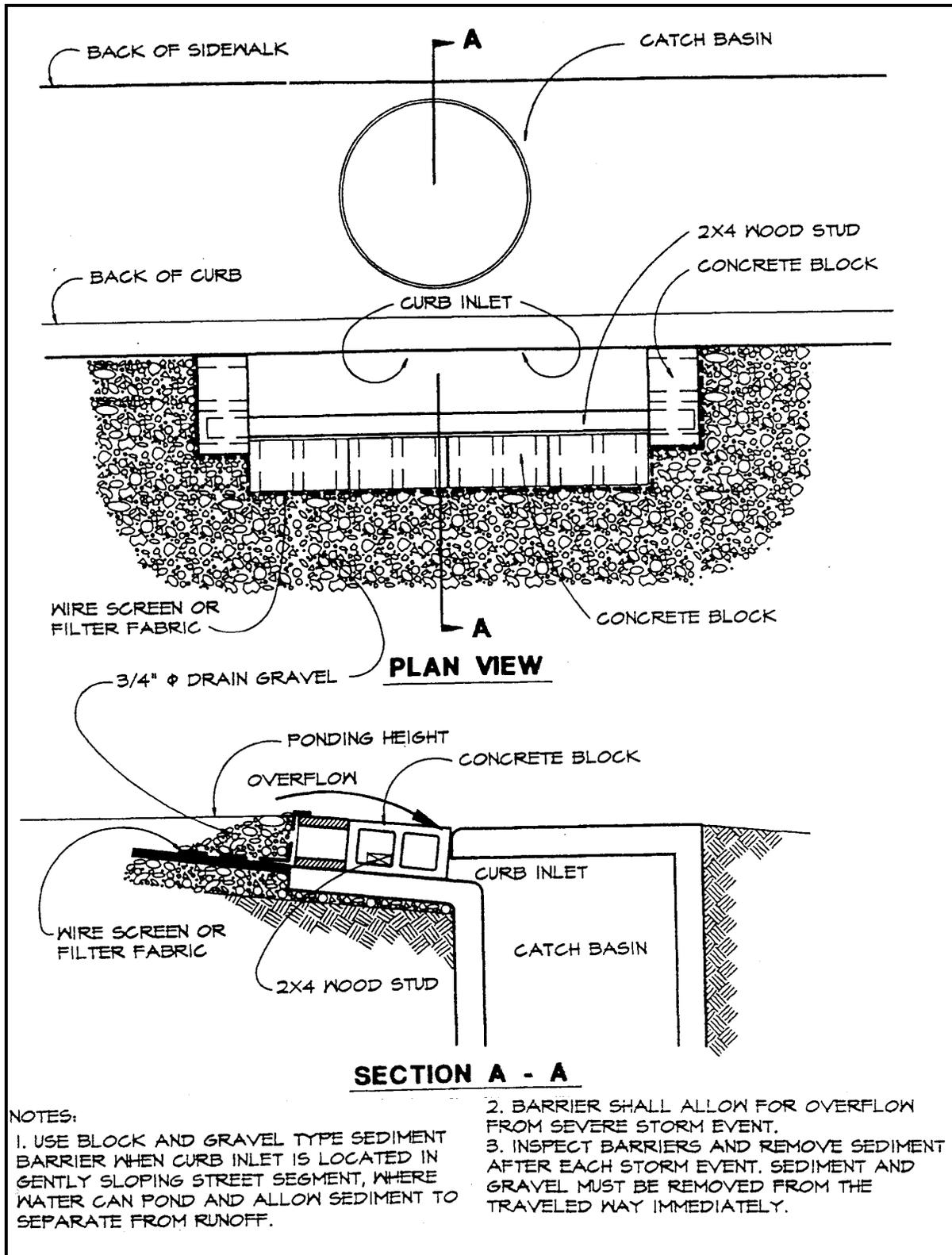


Figure 4.5i. Block and Gravel Curb Inlet Sediment Barrier

Source: Erosion Draw

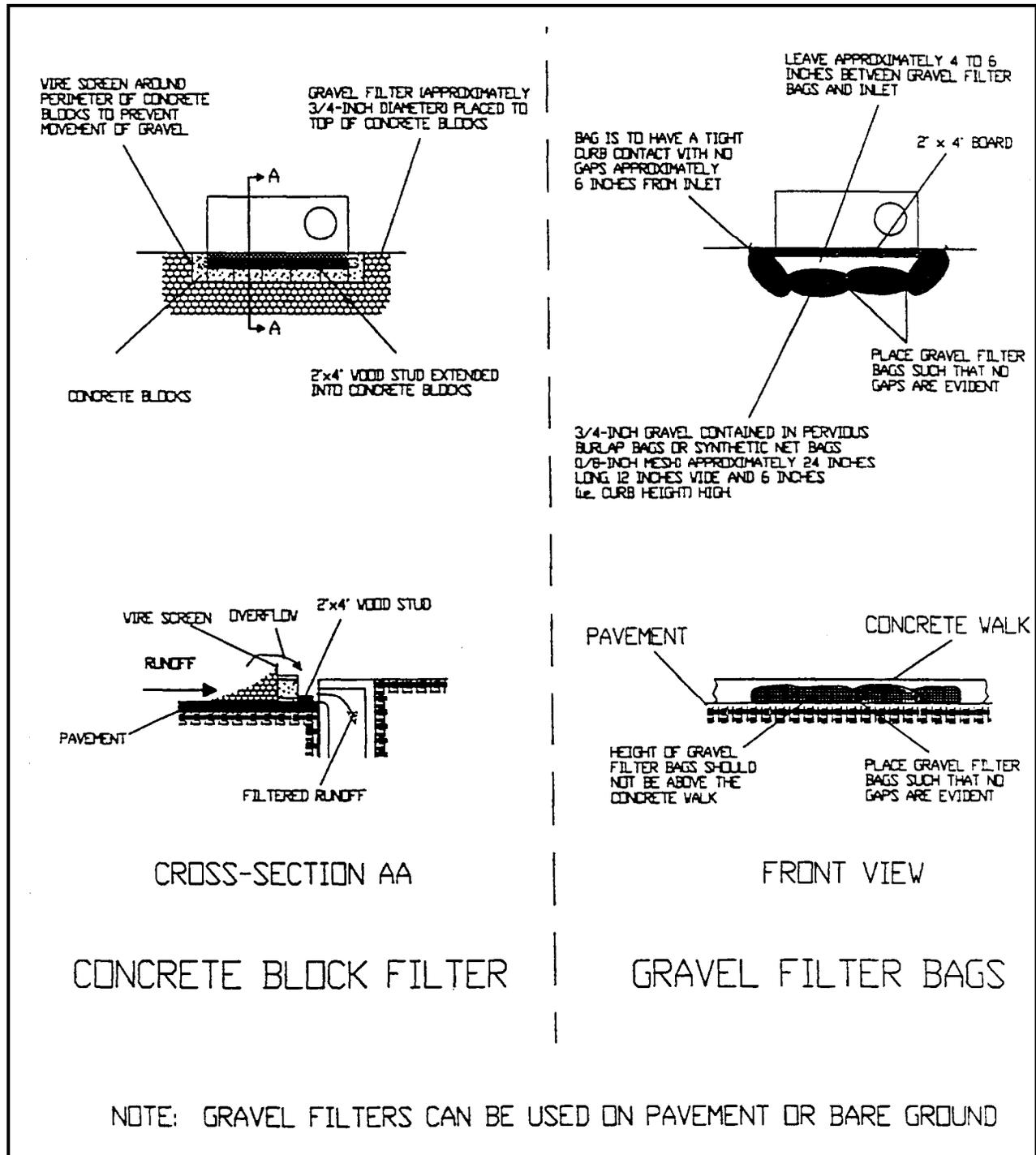


Figure 4.5j. Curb Inlet Gravel Filters

Source: HydroDynamics, Inc.