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.

Manufacturer Information

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PORTABLE CONCRETE WASHOUT CONTAINER

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**).

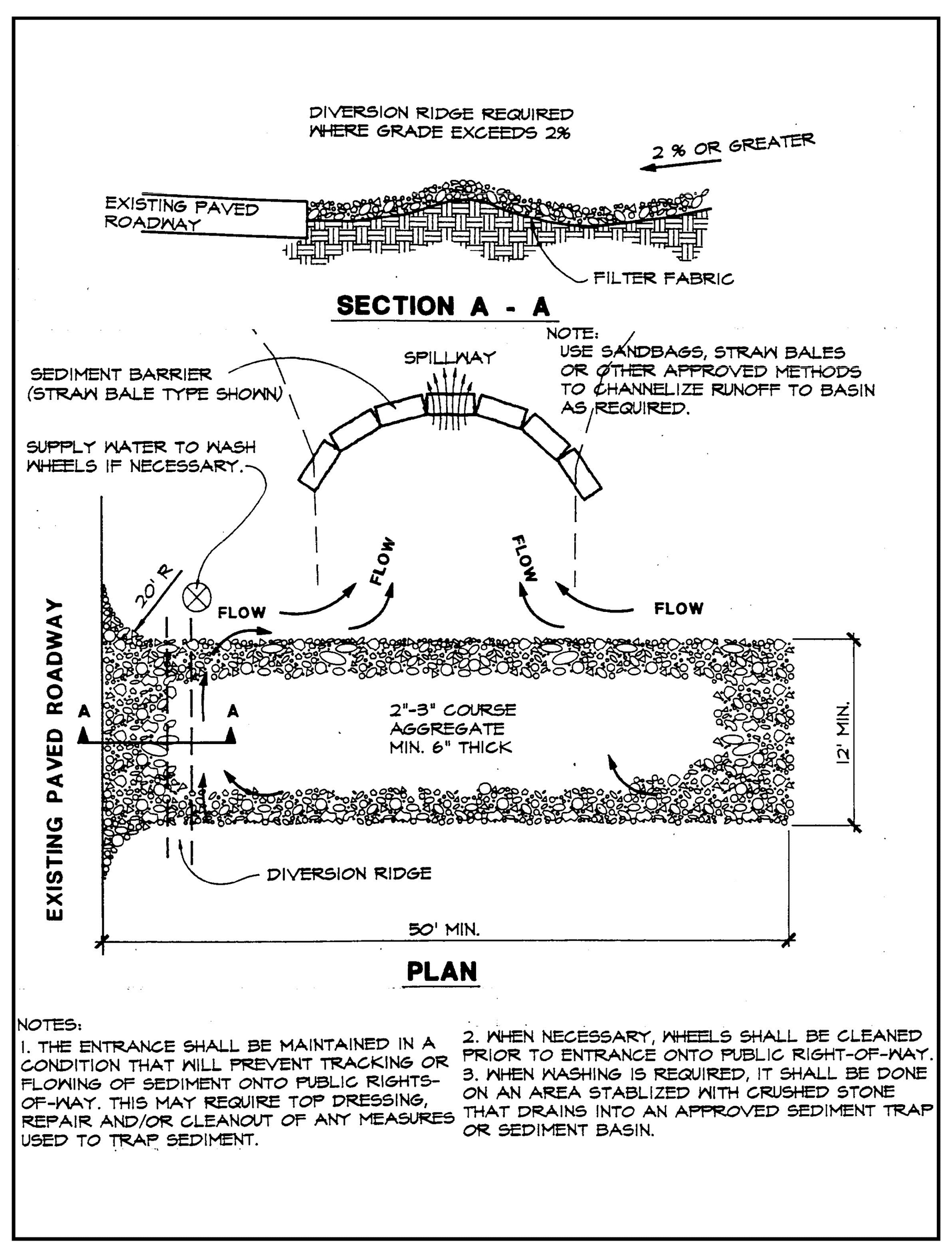

Figure 4.3a. Temporary Gravel Construction Entrance
Source: Erosion Draw

4.4.1 Silt Fence

Definition

A temporary sediment barrier consisting of a filter fabric stretched across and attached to supporting posts and entrenched. Some silt fence is wire reinforced for support.

Purpose

The purpose of a silt fence is to slow the velocity of water and retain sediment onsite.

Conditions Where Practice Applies

A silt fence should only be installed for sediment capture under sheetflow conditions. It should not be installed for channel flow conditions or in live streams or waterways.

Planning Considerations

Silt fences can trap a much higher percentage of suspended sediments than straw bales and are preferable to straw barriers in many cases. The most effective application is to install two parallel silt fences spaced a minimum of three feet apart. The installation and maintenance methods outlined here can improve performance.

Silt fences composed of a wire support fence with attached synthetic filter fabric slow the flow rate significantly and have high filtering efficiency. Both woven and nonwoven synthetic fabrics are commercially available. The woven fabrics are generally stronger than the nonwoven fabrics. When tested under acid and alkaline water conditions, most of the woven fabrics increase in strength. There is a variety of reactions among the nonwoven fabrics. The same is true of testing under extensive ultraviolet radiation. Permeability rates vary regardless of fabric type. While all of the fabrics demonstrate high filtering efficiencies for sandy sediments, there is considerable variation among both woven and nonwoven fabrics when filtering finer silt and clay particles.

Design Criteria

1. *No formal design is required for many small projects and for minor and incidental applications.*
2. *Silt fences shall have an expected usable life of six months. They are applicable around perimeters and stockpiles, and at temporary locations where continuous construction changes the earth contour and runoff characteristics.*
3. *Silt fences have limited applicability to situations in which only sheet or overland flows are expected. They normally cannot filter the volumes of water generated by channel flows, and many fabrics do not have sufficient structural strength to support the weight of water ponded behind the fence line.*

Construction Specifications

Materials

1. *Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester, or polyethylene yarn. It shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0°F. to 120°F. (-17°C. to 49°C.).*
2. *The stakes for a silt fence shall be 1 x 2 inches (2.5 x 5 cm) wood (preferred), or equivalent metal with a minimum length of 3 feet (90 cm).*
3. *Wire fence reinforcement for silt fences using standard-strength filter cloth shall be a minimum of 36 inches (90 cm) in height, shall be a minimum of 14 gauge, and shall have a maximum mesh spacing of 6 inches (15 cm).*

Sheetflow Application: Silt Fence

This sediment barrier uses standard-strength or extra-strength synthetic filter fabrics. It is designed for situations in which only sheet or overland flows are expected (see **Figures 4.4a** and **4.4b**):

1. *The height of a silt fence shall not exceed 36 inches (90 cm). Higher fences may impound volumes of water sufficient to cause failure of the structure.*
2. *The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are necessary, filter cloth shall be spliced as described in Item 8 below.*
3. *Posts shall be spaced a maximum of 10 feet (3 m) apart at the barrier location and driven securely into the ground a minimum of 12 inches (30 cm). When extra-strength fabric is used without the wire support fence, post spacing shall not exceed 6 feet (1.8 m).*
4. *A trench shall be excavated approximately 4 inches (10 cm) wide and 4 inches (10 cm) deep along the line of posts and upslope from the barrier.*
5. *When standard-strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy-duty wire staples at least 1 inch (25 mm) long, tie wires, or hog rings. The wire shall extend into the trench a minimum of 2 inches (5 cm) and shall not extend more than 36 inches (90 cm) above the original ground surface.*
6. *The standard-strength filter fabric shall be stapled or wired to the fence, and 8 inches (20 cm) of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches (90 cm) above the original ground surface.*
7. *When extra-strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In this case, the filter fabric is stapled or wired directly to the posts with all other provisions of Item 6 applying.*

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COOPER'S HAWK WINERY & RESTAURANT AT THE PROMENADE AT COCONUT CREEK
JURSIDICTION: CITY OF COCONUT CREEK
LANDLOT: SECTION 18, TOWNSHIP 48 SOUTH, RANGE 42 EAST, BROWARD COUNTY
LOCATION: PROMENADE AT COCONUT CREEK
4473 LYONS ROAD
COCONUT CREEK, FL 33073

EROSION CONTROL DETAILS

JOB NO: 15-187
DATE: 02/16/16
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