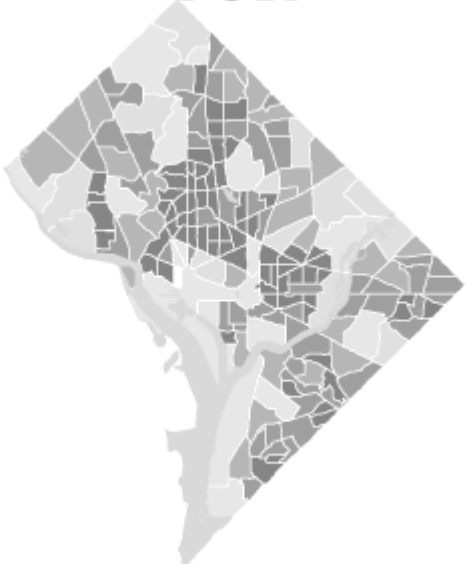
2003 DISTRICT OF COLUMBIA STANDARDS AND SPECIFICATIONS FOR



SOIL EROSION AND SEDIMENT CONTROL

DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH ADMINISTRATION
BUREAU OF ENVIRONMENTAL QUALITY
WATERSHED PROTECTION DIVISION

Government of the
District of Columbia
Anthony A. Williams, Mayor

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF HEALTH
James A. Buford, Director

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A major undertaking such as this requires the dedication and cooperation of many individuals. The technical direction and coordination for this project was provided by Mr. Collin R. Burrell, Chief of the Inspection and Enforcement Branch, Watershed Protection Division (WPD). Special recognition is also extended to the technical review committee for their detailed review and comments on the manuscript. Members of the technical review committee include:

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Mr. Timothy J. Karikari, Chief of the Sediment and Stormwater Technical Services Branch, WPD, DOH
Ms. Leslie Burks, Natural Resources Conservation Service (NRCS), USDA
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Mr. Jim Shabelski, DC Water and Sewer Authority (DCWASA)
Dr. William Kilpatrick, DC Building Industry Association (DCBIA)

Historically the DC Erosion and Sediment Control Standards and Specifications have been based on the Maryland Standards and Specifications with assistance from the Maryland office of the NRCS. This current update is also largely based on the 1994 Maryland Standards and Specifications. The assistance received from Mr. Jim Gary of the Maryland Department of the Environment (MDE) in identifying ongoing changes in the Maryland program is gratefully acknowledged. Also Section H, of this document, the Waterways & Stream Protection Practices is largely reproduced from the recently adopted Maryland Waterways Construction Guidelines with the permission of Mr. Ali Mir, of the Water Management Administration, MDE.

In addition to the Maryland Standards and Specifications, some materials have also been included from the following sources:

Erosion and Sediment Pollution Control Program Manual, Bureau of Water Quality Protection, Division of Waterways, Wetlands and Erosion Control, Office of Water Management, Department of Environmental Protection, Commonwealth of Pennsylvania, March 2000

Virginia Erosion and Sediment Control Handbook, 1992, Division of Soil and Water Conservation, Virginia Department of Conservation and Recreation

Ecosite's contributors on the preparation of the manual included Michael Clar and Marcus Hall.

MAILING LIST

Persons wishing to receive future additions, corrections or information relating to the "District of Columbia's Standards and Specifications for Erosion and Sedimentation Control" may have their names placed on a permanent mailing list being developed from this request.

Please type or print your name and mailing address, including zip code, on this form.

Remove this sheet, fold and mail to the Watershed Protection Division, Department of Health
(NOTE: A postage stamp is required.)

TYPE OR PRINT:

NAME:

TITLE:

AGENCY:

ADDRESS:

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Soil Conservation Service	Engineer	Equipment Manufacturing
Soil Conservation District	Consultant	Materials Manufacturing
County	Contractor	Supplier
Municipality	Architect	Other

Comments:

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PREFACE

The objective of this document is to describe the Standards and Specifications employed in the design, review, approval, installation and maintenance of erosion and sediment control practices on land undergoing clearing, grading and development. This information will allow those responsible for erosion and sediment control plan design, review and approval to evaluate site specific conditions such as soils, drainage, proposed clearing and grading, etc., so that the most effective erosion and sediment controls can be implemented at the lowest cost.

This manual is also intended to be a reference guide for construction personnel who will implement and maintain the controls. A section on the basic principles of erosion and sediment control is included to give these individuals a better understanding of the function of the sediment controls being installed. With this background knowledge, construction supervisors can become a valuable source of innovative ideas or improving erosion and sediment control practices.

All of the controls and specifications included in this manual have been field tested and proven to be effective at controlling erosion and runoff on construction sites. However, many of these practices will represent new applications in the District of Columbia, and caution is recommended the first time one of these new practices is used. The Department of Health (DOH) staff encourages questions related to the use of these practices. Also DOH would appreciate feedback on successful applications or problem areas that arise in the use of these practices.

The control practices have been organized into eleven functional categories:

A. Road Stabilization
B. Sediment Barriers
C. Dikes & Diversions
D. Sediment Traps and Basins
E. Downdrains and Flumes
F. Inlet & Outlet Protection
G. Dewatering Strategy
H. Waterways and Stream Protection
I. Site Preparation
J. Vegetative Stabilization
K. Other Practices

The control practices described above include both temporary and permanent structural practices.

Temporary structural practices are those used for relatively short periods of time (e.g., straw bale dikes, which are effective for three months). These practices should not be used for longer than the periods of time prescribed. Such measures are usually implemented to ensure erosion or sediment control during certain phases of construction.

Permanent structural practices are designed to remain in place and to function, following completion of construction. Such controls include diversions and grassed waterways. Permanent controls require individual designs in order to fit the practice to individual situations.

Structural practices are constructed to control the flow of water and possible resultant erosion, or to trap sediment so that off-site sedimentation does not occur. Vegetative practices are concerned with stabilizing the soil surface to prevent erosion. The retention of natural buffer areas along the periphery of the site may assist in ensuring that grading and construction activities will not adversely affect adjacent property or water resources.

This publication has been compiled to be a user oriented document. Standard drawings and construction specifications have been printed together so they may be easily copied and used by field personnel. Structural practices design material (nomographs, etc.), frequently referred to by the designer have been placed immediately behind the appropriate Standards and Specifications, but may be removed and placed in a “working handbook” for quick reference.

These Standards and Specifications were written to be generally applicable to all development sites within the District of Columbia. However, specific situations or problems may develop where the control practices described in this manual are not appropriate, or where plan designers, contractors, inspectors or plan reviewers determine that a modification of a practice would result in improved erosion and sediment control. A plan approving agency may authorize use of a new or significantly modified practice on a trial basis, but should notify DOH’s Watershed Protection Division so that departmental personnel may evaluate the control's effectiveness. DOH encourages the development of new practices for erosion and sediment control, and will authorize the continued use of the new practice where its suitability is demonstrated. This will allow for proper evaluation of new erosion and sediment control practices and ensure that they are applied, if appropriate, in a uniform manner throughout the District.

INTRODUCTION

Erosion and sedimentation from areas undergoing urban land development represents a serious environmental hazard. Urban land development frequently occurs near streams, rivers, estuaries and oceans. These waterways provide a critical habitat and nursery ground for many aquatic species and migratory waterfowl. The negative impact of large sediment influxes on aquatic organisms is substantial. The initial effect is a drastic reduction in the number and density of species associated with the bottom. Aquatic vegetation is often destroyed as a result of burial or reduction of sunlight essential for growth. Many species of fish, which are dependent on the bottom organisms for food, or plant life for refuge, are therefore excluded from the damaged habitat. The reduction of sunlight by suspended sediment impairs primary production (i.e., the process by which sunlight is utilized by certain organisms to produce carbon and oxygen) and may reduce oxygen levels in the water to a point where aquatic life cannot survive. The habitat destruction associated with rapid sedimentation severely impairs the ability of coastal environments to support commercially important finfish and shellfish populations. Migratory waterfowl also utilize nearshore plant and shellfish communities as a food source during their annual migration. The reduction of waterfowl in recent years has been attributed, in part, to habitat destruction from sediment derived from development activity.

Sedimentation in developing areas may also create terrestrial hazards and damage supply and drainage systems. The sedimentation in these areas is very costly in terms of the expenses involved in terms of correcting the damage. Sediment fills drainage channels and plugs culverts and storm drainage systems, thus necessitating frequent and costly maintenance. Municipal and industrial water supply reservoirs lose storage capacity, navigable channels must continually be dredged, and the cost of filtering muddy water preparatory to domestic or industrial use may be excessive.

Sediment yields in streams flowing from urbanized drainage basins vary from approximately 200 to 500 tons per square mile per year. In contrast, areas undergoing urbanization often have a sediment yield of 1,000 to 100,000 tons. It is easy to comprehend the tremendous quantity of sediment reaching our streams and rivers annually since an estimated 3,000 to 4,000 acres of land in the U.S. are currently undergoing development for housing, industrial site and highway construction every day. For very small areas, where construction activities have drastically altered or destroyed vegetative cover and the soil mantle, sediment derived from one acre of land may exceed 20,000 to 40,000 times that obtained from adjacent undeveloped farm or woodland in an equivalent period of time.

Deposition tends to occur as the velocity of streams transporting sediment decreases. Stream channels and navigable rivers become obstructed by large sediment deposits. As a result, their hydraulic capacity is reduced, causing an increase in subsequent flood crests and flood damage; and the possibility of attendant personal injuries and deaths.

Erosion and sedimentation also impairs recreational uses of waterways. The aesthetic attraction of many streams, lakes and reservoirs used for swimming, boating, fishing, and other related recreational activities is destroyed by excessive erosion and the resultant sedimentation.

There are, therefore, many reasons for establishing erosion and sediment control practices in developing areas. It is necessary to reduce the costs associated with correcting sediment damage, and we are obligated to preserve our environmental heritage for future generations.

DISTRICT OF COLUMBIA EROSION AND SEDIMENT CONTROL PROGRAM

D.C. Law 2-23, cited as the “Soil Erosion and Sedimentation Act of 1977”, was enacted to regulate land disturbing activities to minimize erosion and sedimentation. Additionally, its aim is to prevent sediment deposition in the Potomac River and its tributaries, including the District's sewer system. The law requires developers to adopt erosion and sediment control practices when planning to clear, grade or otherwise disturb the earth's surface. An erosion and sediment control plan must be developed for each project, and must be approved by DOH before grading or building permits can be issued. DOH examines the scope of activities for which permits are required, the building permit application process, plan requirements and approval process, and inspection and enforcement provisions.

The building permit application process is administered by the Department of Consumer and Regulatory Affairs

EROSION AND SEDIMENT CONTROL PLAN APPROVAL

Erosion and sediment control plans for all projects must be approved by the appropriate District agencies. The “Soil Erosion and Sedimentation Control Amendment Act of 1994”, (D.C. Laws 10-166), removed the exemption for permit requirements for land disturbance on premises owned by the Federal Government. DOH is also responsible for approving erosion and sediment control plans for underground utility construction.

For all projects not covered by a Standard Erosion and Sediment Control Plan, a site specific erosion and sediment control plan must be submitted to the appropriate approval authority. The approving authority requires that the plan be prepared by a professional engineer, land surveyor, landscape architect, or architect registered in the District.

EROSION AND SEDIMENT CONTROL INSPECTION AND ENFORCEMENT

Inspection of all projects constructed in the District of Columbia, including federal agencies is the responsibility of DOH. The erosion and sediment control inspector ensures that implementation of the approved control plan is carried out in an effective manner. In addition to this primary function, the inspector must constantly evaluate the adequacy of the plan for preventing sediment pollution. If the inspection reveals that the erosion and sediment control plan has not been implemented or maintained, then appropriate enforcement actions are initiated to correct deficiencies.

EDUCATION PROGRAMS FOR EROSION AND SEDIMENT CONTROL

The Watershed Protection Division provides educational programs and materials to assist the construction industry and governmental construction management agencies with the implementation and maintenance of erosion and sediment controls on developing sites. The program’s materials are designed to enhance the technical capability of supervisors in charge of implementing and maintaining erosion am sediment control measures, and to assist inspectors responsible for erosion and sediment control plan compliance monitoring. These programs are available to any group or person seeking a better understanding of sediment pollution and control.

SOURCES OF ASSISTANCE

Individuals seeking advice on erosion and sediment control should contact officials of the District of Columbia. The Watershed Protection Division has a variety of information available, including local soil maps. The telephone numbers of various organizations and the local permitting agency are listed below.

Office/Administration	Phone No.
Watershed Protection Division	535-2240
Erosion and Sediment Control	535-2240
Storm Water Management	535-2240
DCRA Permit Center	442-4568
District of Columbia Soil and Water Conservation District	535-2240
Flood Insurance Information	535-2240

Please direct all requests to the appropriate section at the:

Department of Health
Watershed Protection Division
51 N Street, NE
Washington, D.C. 20002
Tel. (202) 535-2240
Fax (202) 535-1363

The State Office of the U.S. Department of Agriculture, Natural Resources Conservation Service provides technical assistance to the District of Columbia.

Natural Resources Conservation Service(NRCS)
District of Columbia Field Office
51 N Street, N.E.
Washington, D.C. 20002
(202) 535-2242
Attn: Leslie D. Burks, NRCS Resources Conservationist
Lburks@md.usda.gov

For assistance regarding geological aspect of a particular area within the District of Columbia, contact:

U.S. Geological Survey
8987 Yellow Brick Road
Baltimore. Maryland 21237
(410) – 238-4200

To report erosion and sediment complaints, contact:

Department of Health
Watershed Protection Division
51 N Street, NE
Washington, D.C. 20001
(202) 535-2240

BASIC PRINCIPLES OF EROSION AND SEDIMENT CONTROL

THE EROSION AND SEDIMENTATION PROCESSES

The standards, specifications and planning guidelines presented in this document are intended to be utilized when development activities change the natural topography and vegetative cover of an area. The necessity of formulating and implementing erosion and sediment control plans is due to the accelerating influence that land development has on erosion and sedimentation processes. To fully understand how erosion and sedimentation rates are increased, an understanding of the processes themselves is needed.

Soil erosion is the removal of soil by water, wind, ice, or gravity. This document deals primarily with the types of soil erosion caused by rainfall and surface runoff. Raindrops strike the soil surface at a velocity of approximately 25-30 feet per second and can cause splash erosion. Raindrop erosion causes particles of soil to be detached from the soil mass and splashed into the air. After the soil particles are dislodged, they can be transported by surface runoff, which results when the soil becomes too saturated to absorb falling rain or when the rain falls at an intensity greater than the rate at which the water can enter the soil. Scouring of the exposed soil surface by runoff can cause further erosion. Runoff can become concentrated into rivulets or well defined channels up to several inches deep. This advanced stage is called rill erosion. If rills and grooves are left unrepaired and erosion and sediment controls are not implemented, they may develop into gullies when more concentrated runoff flows downslope.

Sediment deposition takes place when the rate of surface flow is insufficient for the transport of soil particles. The heavier particles, such as sand and gravel, are less readily transported than the lighter silt and clay particles. Previously deposited sediment may be resuspended by runoff from another storm and transported further downslope. In this way, sediment is carried intermittently downstream from it upland point of origin.

FACTORS THAT INFLUENCE EROSION

The erosion potential of a site is principally determined by five factors; the erodibility of the soil, vegetative cover, topography, climate and season. Although the factors are interrelated as determinants of erosion potential, they are discussed separately for ease of understanding.

1. Soil Erodibility

The vulnerability of a soil to erosion is known as erodibility. The soil structure, texture, and percentage of organic matter influence its erodibility.

The most erodible soils generally contain high proportions of silt and very fine sand. The presence of clay or organic matter tends to decrease soil erodibility. Clays are sticky and tend to bind soil particles together. Organic matter helps to maintain stable soil structure (aggregates).

2. Vegetative Cover

There are several ways in which vegetation protects soil from the erosive forces of raindrop impact and runoff scour. Vegetation (top growth) shields the soil surface from raindrop impact while the root mass holds soil particles in place. Grass buffer strips can be used to filter sediment from the surface runoff. Grasses also slow the velocity of runoff, and help maintain the infiltration capacity of a soil. The establishment and maintenance of vegetation are the most important factors in minimizing erosion during development.

3. Topography

Slope length and steepness are key influences on both the volume and velocity of surface runoff. Long slopes deliver more runoff to the base of slopes and steep slopes increase runoff velocity; both conditions enhance the potential for erosion to occur.

4. Climate

Erosion potential is also affected by the climate of the area. Rainfall characteristics, such as frequency, intensity, and duration directly influence the amount of runoff that is generated. As the frequency of rainfall increases, water has less chance to drain through the soil between storms. The soil will remain saturated for longer periods of time and stormwater runoff volume may be potentially greater. Therefore, where rainfall events are frequent, intense, or lengthy, erosion risks are high.

5. Season

Seasonal variation in temperature and rainfall defines periods of high erosion potential during the year. A high erosion potential may exist in the spring when the surface soil first thaws and the ground underneath remains frozen. A low intensity rainfall may cause substantial erosion as infiltration is impossible because of the frozen subsoil. The erosion potential is also high during the summer months because of more frequent, high intensity rainfall.

PROTECTION OF NATURAL HABITATS

Vegetative buffers show how the maintenance of areas of existing vegetation adjacent to wetlands, streams, and other areas of significant natural resource value in connection with sediment control practices noted in this manual can ensure that such areas are not adversely affected by grading and construction or by stormwater runoff once construction is completed. The maintenance of such areas adjacent to streams is particularly important because they lessen the impact of sedimentation on fish and spawning to keep streams at water temperatures favorable to fish and other aquatic species, and provide food such as leaves and twigs for aquatic organisms, particularly in headwater streams.

The width needed for such areas in order to provide adequate protection is dependent on the type of area to be protected, the type of vegetation in the buffer, the slope present, the ability of the soils in the buffer to absorb water, the size distribution of the incoming sediment, and the rate of runoff. However, research studies have shown that the maintenance of a buffer of

100 feet in width in areas with low to moderate slopes should generally provide adequate protection

DEVELOPING AN EROSION AND SEDIMENT CONTROL PLAN

A great deal of information must be assimilated to develop an efficient plan to minimize erosion and control sedimentation at a construction site. An erosion and sediment control plan shows the site's existing topography, and how and when it will be altered. It also shows the erosion and sediment control measures that will be used to minimize the risk of sediment pollution, and how and when they will be implemented and maintained. The coordination of erosion and sediment control practices with construction activities is explained on the plan by a phasing schedule. The following procedure is recommended to develop a plan that will efficiently control erosion and sedimentation throughout the site development process.

1. Plan the development to fit the site

   Assess the physical characteristics of the site to determine how it can be developed with the smallest risk of environmental damage. Minimize grading by utilizing the existing topography wherever possible. Avoid disturbing wetlands or other environmentally sensitive areas. Minimize off-site impacts by maintaining vegetative buffer strips between disturbed and adjacent areas.

2. Determine limits of clearing and grading.

   Decide exactly which areas must be disturbed in order to accommodate the proposed construction. Pay special attention to critical areas (e.g., steep slopes, highly erodible soils, surface water borders), which must be disturbed. Staged clearing and grading should be considered as an alternative to massive clearing and grading.

3. Divide the site into natural drainage areas.

   Determine how runoff will drain from the site. Consider how erosion and sedimentation can be controlled in each small drainage area before looking at the entire site. Remember, it is more advantageous to control erosion at the source and prevent any problem than to design perimeter controls to trap sediment.

4. Select erosion and sediment control practices.

   Erosion and sediment control practices can be divided into vegetative and structural controls. This handbook should be used for the selection and design of vegetative and structural practices. Vegetative and structural controls are outlined below.

   a. Vegetative Controls - The best way to protect the soil surface and limit erosion is to preserve the existing vegetative groundcover. Where land disturbance is necessary, temporary seeding or mulching should be used on areas, which will be exposed for long periods of time prior to construction.

Permanent stabilization should be performed as soon as possible after completion of grading. Erosion and sediment control plans must contain provisions for permanent stabilization of disturbed areas. Seed type, soil amendments, seedbed preparation, and mulching should be described on the plans. Selection of permanent vegetation should include the following considerations for each plant species:

1. Establishment requirements

2. Adaptability to site conditions

3. Aesthetic and natural resource values

4. Maintenance requirements

b. Structural Controls - Structural sediment control practices may be necessary when disturbed areas cannot be promptly stabilized with vegetation. Structural practices shall be constructed and maintained in accordance with these standards and specifications.

An acceptable erosion and sediment control plan includes a map of the existing topography and proposed grading, provisions for erosion and sediment control, and a time schedule of proposed construction activity and erosion and sediment control implementation and maintenance (phasing). The agency responsible for approving sediment control plans may require or waive items for inclusion as deemed necessary by specific site conditions.

Standard Symbols are used to facilitate the understanding and review of plans. The symbols, included in this handbook, are designed to be easy to apply to plans by drafting or by using stick on materials. They should be bold and easily discernible on the plans.

The following scales are recommended for use on erosion and sediment control plans because they facilitate the plan review process: 1" = 20', 1" = 30', 1" 40' or 1" = 50'.

The contour interval for these plans shall be two feet or less. Other scales or contour intervals may be favored for special types of land disturbance projects. Consult the Department of Health prior to finalizing the selection of plan scale.

IMPLEMENTATION OF EROSION AND SEDIMENT CONTROLS

Effective implementation of erosion and sediment controls requires good construction management. Proper management can reduce the need for maintenance of structural controls, regrading of severely eroded areas, and reconstruction of controls that were improperly implemented. Good site management results in efficient use of manpower and financial savings.

Site management for effective implementation of erosion and sediment controls involves the following:

1. Clear only what is required for immediate construction activity. Large projects should be cleared and graded as construction progresses; mass clearing and grading of the entire site should be avoided.
   Restabilize disturbed areas as soon as possible after construction is completed; certain sections of large construction projects may be completed before others and be ready for stabilization before the total project is completed. Waiting until the end of the project to commence all site stabilization may leave areas exposed for an unnecessarily long duration.

2. Divert off-site runoff from highly erodible soils and steep slopes and convey to stable areas.

3. Physically mark off limits of land disturbance on the site with tape, signs or other methods, so the workers can see areas to be protected.

4. Make sure that all workers understand the major provisions of the erosion and sediment control plan.

5. Implement a daily inspection program to determine when erosion and sediment control measures need maintenance or repair. Pay particular attention to the inspection following rainfall events.

STRUCTURAL PRACTICES

Introduction

Structural erosion and sediment control practices have been classified as either temporary or permanent, according to how they are used. Temporary structural practices are used during construction to prevent off-site sedimentation. The length of time that temporary practices are functional varies from project to project, as the sediment control strategy may change as construction activity progresses. Permanent structural practices are used to convey surface water runoff to a safe outlet. Permanent structural practices will remain in place and functional after the completion of construction.

Regardless of whether the practices are temporary or permanent, sediment control measures should be the first items constructed when grading begins, and be completely functional before up slope land disturbance takes place. Earthen structures such as diversions, dikes, and swales should be stabilized before being considered functional. Only after the sediment control structures are operational should clearing and grading the rest of the construction site begin.

While clearing and grading the site, it is important to minimize the amount of sediment that is produced. In general, it is advantageous to clear only as much area as necessary to accommodate construction needs. Grade and stabilize large sites in stages whenever possible. Limiting the amount of disturbed area limits the amount of sediment that is generated, thus decreasing the amount of maintenance required on sediment control measures.

Sediment generated during the construction of cut and fill slopes can also be minimized through design and grading techniques. When designing either a cut or fill slope, factors to consider include slope length and steepness, soil type, and up slope drainage area. In general, it is important to leave soil surfaces on disturbed slopes in a roughened condition and to construct a water diversion practice at the top of slopes. Rough soil surfaces do not erode as easily as smooth soil surfaces.

Although design and grading techniques can reduce soil erosion, they cannot eliminate it entirely. Therefore, practices must be installed prevent off-site sedimentation.

Even though the specific conditions of each site determine precisely what measures are necessary to control sedimentation, some general principles apply to the selection and placement of sediment control measures.

1. Prevent clean water from getting dirty by diverting runoff from undisturbed up slope areas away from disturbed areas. Earth dikes, temporary swales, perimeter dike/swales, or diversions that outlet in stable areas can be used in this capacity.

2. Remove sediment from dirty water before the water leaves the site. The method of sediment removal depends upon how the water drains from the

site. Concentrated flow must be diverted to a trapping device so that suspended sediment can be deposited. Dikes or swales that outlet into traps or basins can accomplish this. A storm drain system may be used to convey concentrated sediment laden water only if the system empties into a trap or basin. Otherwise, all storm drain inlets must be protected so that sediment laden water cannot enter the drainage system before being treated to remove the sediment.

3. Surface runoff draining in sheet flow must be filtered before the water leaves the site. Straw bale dikes, silt fences, or vegetative buffer strips can be used to filter sheet flow.

No matter which practices are selected and implemented, they must be properly maintained in order to remain functional. Sediment accumulated in basins and traps must be removed and disposed of in a manner that minimizes erosion and sedimentation.

STANDARD SYMBOLS

EARTH DIKE	STANDARD SYMBOL A – 2/B – 3
SWALE	STANDARD SYMBOL A – 2/B – 3
PERIMETER DIKE/SWALE	STANDARD SYMBOL PD/S–1
PIPE SLOPE DRAIN	STANDARD SYMBOL PSD – 12
ROCK OUTLET PROTECTION	STANDARD SYMBOL
STONE CHECK DAM	STANDARD SYMBOL
STONE OUTLET STRUCTURE	STANDARD SYMBOL
SILT FENCE	STANDARD SYMBOL SF
SUPER SILT FENCE	STANDARD SYMBOL SSF
STRAW BALE DIKE	STANDARD SYMBOL SBD

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STANDARD SYMBOLS

STANDARD INLET PROTECTION — — — — — — —	STANDARD SYMBOL SIP
AT GRADE INLET PROTECTION — — — — — — —	STANDARD SYMBOL AGIP
CURB INLET PROTECTION — — — — — — — —	STANDARD SYMBOL CIP
STANDARD INLET PROTECTION — — — — — — —	STANDARD SYMBOL MIP
GABION INFLOW PROTECTION — — — — — — —	STANDARD SYMBOL GM
RIP–RAP INFLOW PROTECTION — — — — — — —	STANDARD SYMBOL RRP
SUMP PIT — — — — — — — — — — — —	STANDARD SYMBOL SP
STABILIZED CONSTRUCTION ENTRANCE — — — — —	STANDARD SYMBOL SCE
PORTABLE PUMPING STATION — — — — — — —	STANDARD SYMBOL PST
REMOVABLE PUMPING STATION — — — — — — —	STANDARD SYMBOL RPS

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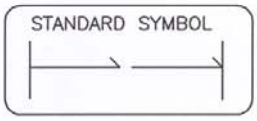
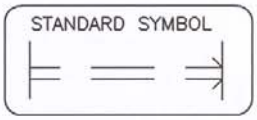
STANDARD SYMBOLS

DIVERSION — — — — — — — — — —



GRASSED SWALE — — — — — — — — —



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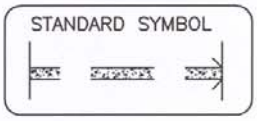
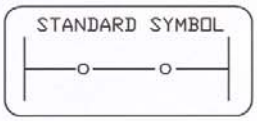


SUBSURFACE DRAIN — — — — — — — —



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