

City of North Little Rock

STORMWATER BEST MANAGEMENT PRACTICES



Soil, Erosion, and Stormwater Runoff Control

A practical guide to protecting North Little Rock's water ways. This manual provides clear, actionable Best Management Practices (BMPs) for erosion, sediment, and stormwater control during construction activities as mandated by the City's Municipal Separate Storm Sewer System (MS4) permit.

Designed for developers, contractors, field workers, inspectors, and city staff, it offers step-by-step guidance to maintain compliance, protect water quality, and support sustainable development.



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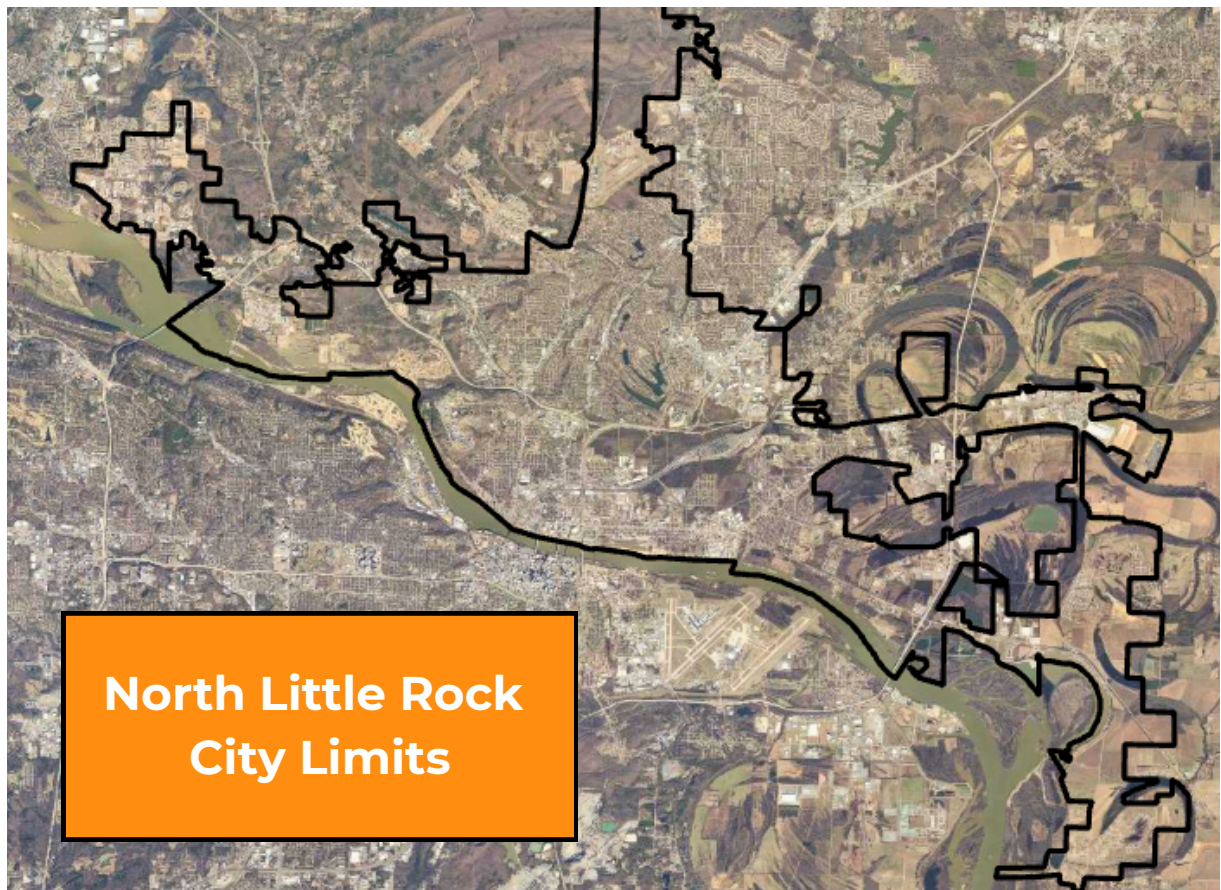
1. Introduction

1.1 Purpose of the BMP Manual

This Stormwater Best Management Practices (BMP) Manual serves as a guide for the planning, design, installation, and maintenance of erosion and sediment control measures in the City of North Little Rock. Proper stormwater management is essential to protecting public health, water quality, and infrastructure in a growing urban environment.

This manual establishes standard procedures and performance expectations for construction-related stormwater control and provides guidance to developers, engineers, contractors, and property owners. It applies to both new development and redevelopment projects.

The manual outlines a consistent, locally-adapted set of BMPs that can be implemented cost-effectively, with a focus on practical techniques suitable for a wide range of site types and project scales. It supports compliance with federal and state stormwater requirements while promoting straightforward, achievable site practices that reduce sediment, debris, and other pollutants from entering the City's drainage system and waterways.



1.2 Legal Authority & Applicability

This manual is issued under the authority of the City of North Little Rock's Stormwater Ordinance (Chapter 14 of municipal code) and supports the City's responsibilities as a regulated Municipal Separate Storm Sewer System (MS4) under the Arkansas Department of Environmental Quality's General Permit for Small MS4s.

A Stormwater Permit is required for any land disturbance exceeding 4,000 square feet within the City's jurisdiction, unless otherwise exempted by City ordinance. Disturbed area includes grading, clearing, excavation, filling, or any other activity that exposes soil to stormwater runoff. Permit applications must include an erosion and sediment control plan or Stormwater Pollution Prevention Plan (SWPPP). The plans must demonstrate the use of appropriate BMPs outlined in this manual

City inspectors are authorized to enforce the provisions of this manual through permit conditions, site inspections, stop-work orders, and other measures deemed necessary to ensure compliance. While this edition of the BMP Manual focuses primarily on construction-phase controls, the principles and practices described here also support long-term site planning and post-construction stormwater management

2. Stormwater Management Overview

2.1 The Urban Water Cycle

In natural environments, rainfall is absorbed by soil, filtered through vegetation, and slowly released into groundwater and streams. In urban areas, however, large areas of impervious surfaces—such as streets, rooftops, and parking lots—prevent water from soaking into the ground. Instead, rainfall becomes stormwater runoff, which flows rapidly across these surfaces, picking up pollutants and discharging directly into the storm drainage system and local waterways.



Photo Source: City of Pine Bluff

An altered water cycle can lead to:

- Increased erosion and sedimentation
- Localized flooding
- Streambank instability
- Degraded water quality

Effective stormwater management helps reduce these impacts by controlling the volume, rate, and quality of runoff through strategic site design and the use of Best Management Practices (BMPs).

2.2 Pollutants of Concern

Stormwater runoff has been found to carry a range of pollutants commonly associated with construction, land development, and urban activities. These pollutants can affect local streams, lakes, and wetlands, especially when carried untreated through the storm drainage system.

Common pollutants include:

- **Sediment:** Soil particles from exposed areas or unstabilized slopes
- **Nutrients:** Fertilizers, yard waste, and organics that fuel algae growth

- **Oil, grease, and hydrocarbons:** Leaks from vehicles and construction equipment
- **Heavy metals:** Roofing materials, tires, and industrial activity
- **Trash and debris:** Improperly managed waste or wind-blown litter
- **Concrete washout:** High-pH water from cement and concrete operations

Sediment is considered the most widespread and preventable pollutant from construction activities and is a key focus of this manual.



Photo Source: North Little Rock Engineering

2.3 Development Impacts on Water Quality

Without proper planning and BMPs, construction can have major impacts on water quality. These impacts are often most severe during the land disturbance phase, when vegetation is removed and soils are exposed to rainfall.

Unmanaged runoff from construction sites can:

- Clog storm drains and downstream pipes
- Fill ditches and creeks with sediment
- Smother aquatic habitats
- Increase water treatment costs
- Contribute to regulatory violations and enforcement actions

BMPs help protect water quality by:

- Minimizing disturbed areas
- Stabilizing exposed soils quickly
- Containing sediment on-site
- Preventing pollutants from leaving the site

3. Construction-Phase BMPs

3.1 Introduction to Construction BMPs

Construction activities can result in significant soil disturbance, creating a high potential for erosion and the discharge of dirt and pollutants into nearby drainage systems and waterways. Construction-phase BMPs are temporary but are essential measures used to minimize these impacts during the active phase of land disturbance.

This section outlines a range of erosion control, sediment control, and runoff management practices that are required for all permitted sites disturbing more than 4,000 square feet within North Little Rock. The BMPs selected for a site should be appropriate to the site's size, slope, soil type, and proximity to water resources.

Erosion Control

Erosion control practices protect the soil surface against erosion caused by rainfall, stormwater runoff, and wind. These measures typically involve soil stabilization techniques such as mulch, blankets, or vegetation. The primary goal of erosion control is to keep dirt in place at its original location.

Sediment Control

Sediment control practices capture and contain soil particles after they have been displaced, preventing their movement off-site through stormwater discharge. **These practices are the secondary line of defense, used in combination with erosion control.**

Good Housekeeping and Waste Management

Good housekeeping practices prevent pollutant runoff from construction-related activities and materials. These include measures for proper vehicle and equipment cleaning and fueling; material and stockpile storage; paving and grinding operations; and management of solid waste, hazardous waste, concrete washout, and liquids. The goal is to keep potential pollutants from entering into municipal infrastructure or waterways.

3.2 Erosion Control Practices

3.2.1 Mulch & Straw Cover

Description: Involves the application of a layer of suitable organic material to the soil surface through mechanical means (drill or studded roller) or spraying. Sprayed applications use water and a glue-like chemicals to adhere the material to the soil surface. Mulching can be used alone to temporarily stabilize areas not ready to be seeded, or as part of the final prepared grade to protect the surface during seed establishment. Mulching provides immediate temporary protection of bare soil from rain impact or wind erosion. It also enhances plant growth by conserving moisture and moderating soil temperatures. The roughened surface created through mulching also reduces runoff velocity.



Photo Source: Hawaii Department of Transportation

Notes:

- Apply mulch at a minimum rate of two tons per acre.
- Spray chemicals need 24 hours to dry to be effective.
- Surface mulch should not be applied on slopes to be broadcast seeded, because the mulch will prevent soil/seed contact
- Mulch cannot be applied in areas of concentrated flows.
- Mulch can be blown or washed away if not adequately crimped or paired with adhesives.

Installation:

1. Apply straw mulch under low wind conditions.
2. Apply with a mulch spreader/straw blower.
3. Secure straw mulch to the slopes with a non-asphalt based tackifier containing either plant derived hydrocolloid or polymeric materials.
 - a. Do not apply during or immediately before rainfall
4. For slopes 3:1 or flatter, tuck (punch or crimp) straw mulch into the soil to a 3- to 5- inch depth.

3.2 Erosion Control Practices

3.2.2 Rolled Erosion Control Practices (RECP)

Description: RECPs include mats, blankets, and turf reinforcement mats that are installed on slopes to provide surface protection and improve soil contact for seeding. RECPs are used when disturbed soils may be particularly difficult to stabilize. They reduce rainfall impact and improve infiltration; reduce erosion caused by concentrated flows; and hold mulch, seed, fertilizer, and topsoil in place.

Notes:

- Choose biodegradable materials based on site conditions.
- Install according to manufacturer instructions, with overlaps and anchor trenches.
- Proper site preparation is essential for complete contact of the blanket or matting with the soil.
- The use of plastic sheeting can increase runoff and risk of erosion problems in the areas subject to increased flow.
- Some products have the potential to trap wildlife.
- Plastic covers are limited to covering stockpiles or very small graded areas for short periods of time.



Installation:

1. Remove all rocks, clods, vegetation, or other obstructions so that the installed blankets or mats will have complete, direct contact with the soil.
2. Seed the area before erosion control blanket installation. All trenches and other areas disturbed during installation of the blanket or mat must be re-seeded.
3. For slopes, unroll vertically downslope. Overlap end of blanket 6" over downslope blanket. Overlap blanket 4" over the adjacent blanket.
4. For channels and ditches, unroll parallel to the channel or ditch. Overlap end of blanket 6" over downstream blanket. Overlap blanket 4" over adjacent blanket.
5. If using plastic covers, anchor using sandbags or other materials capable of preventing infiltration of surface waters under the blanket. Provide overlap of all seams and either tape all seams or weigh down entire length of seam.

3.2 Erosion Control Practices

3.2.3 Wetting

Description: Keeping bare soil wetted prevents wind transport of dust onto roadways, drainage ways, and surface waters. The regular dispatch of water trucks or application of dust palliative (glue-like adhesive) is required during dry weather conditions.

Notes:

- Vegetate or mulch areas that will not receive vehicle traffic.
- Limit dust by clearing only those areas where activity will take place soon, leaving the remaining area(s) in the original condition, maintain the original ground cover as long as practical.
- Must be used in conjunction with a stabilized construction entrance/exit.
- Lower speed limits within job boundary.
- Apply chemical dust suppressants using the admix method, blending the product with the top few inches of surface material.
- Limit work on windy days.



Photo Source: Applied Polymer Systems

Installation:

1. Sprinkle and spray unpaved areas with water or other approved liquids until surface is wet. Repeat as needed.
2. Follow the manufacturer's instructions and cautions regarding handling and application. Used oil is prohibited from use as a dust suppressant. Local governments may approve other dust palliatives such as calcium chloride or PAM (poly-acryl amide).
3. PAM (BMP 226) added to water and applied from a water truck can increase the infiltration of water into the soil and reduce evaporation. In addition, small soil particles are bonded together and are not as easily transported by wind. Adding PAM may actually reduce the quantity of water needed for dust control. Since the wholesale cost is relatively inexpensive, this is an extremely cost-effective dust control method.

3.3 Sediment Control Practices

3.3.1 Outlet Protection

Description: Protection used at pipe outlets and culverts that are subject to runoff from construction activities. The purpose is to prevent scour, reduce flow capacity, so that potential erosion downstream is prevented. Protection is required at all outlets of ponds, pipes, ditches, or other conveyances and where runoff is directed to a natural or manmade drainage feature such as a stream, wetland, lake, or ditch.

Notes:

- Do not use for high-flow areas unless reinforced.
- For drainage areas larger than one acre, route runoff to a sediment trapping device designed for larger flows.
- Sediment removal may be difficult in high-flow conditions or if runoff is heavily sediment laden. If high-flow conditions are expected, use other on-site sediment trapping techniques in conjunction with inlet protection.
- Frequent maintenance is required.
- Abut fiber rolls/compost socks tightly together with no gaps.
- Clean or replace filters when sediment reaches one-third the height.

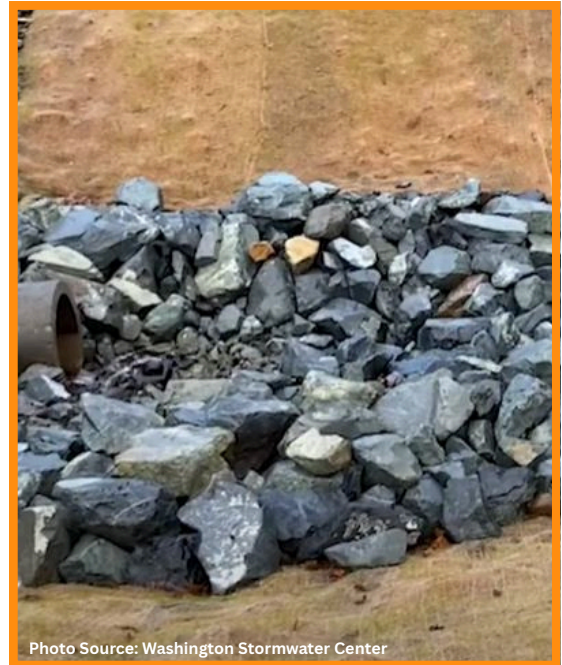


Photo Source: Washington Stormwater Center

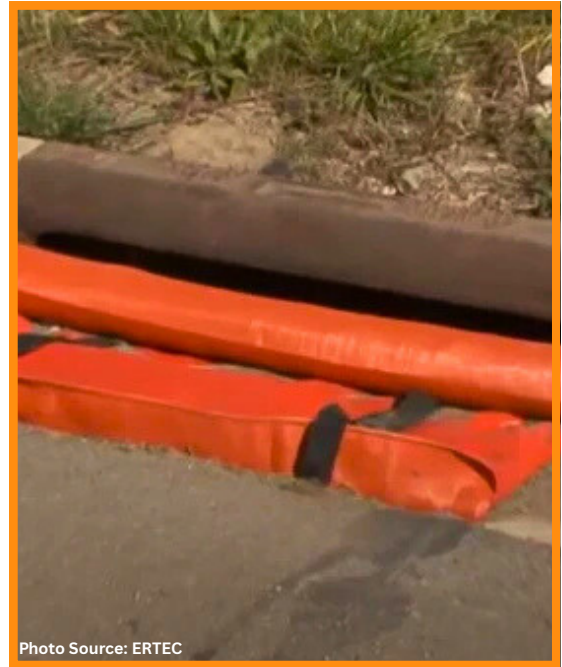
Installation:

1. The receiving channel at the outlet of a culvert shall be protected from erosion for a minimum of 6' downstream and extending up the channel sides a minimum of 12" above the maximum tail-water elevation.
 - a. For large pipes (larger than 18" in diameter), the outlet lining of the channel is lengthened to four times the diameter of the culvert. A rock lining or other design element can be used to achieve the same result in an equivalent area
2. Tapered outlets and paved channels should also be considered when appropriate for permanent culvert outlet protection.
3. **Filter fabric or erosion control blankets should always be used under stone to prevent scour and channel erosion.**
4. Size stone outlet protection by slope
 - a. 1% slope, use 2"-8" stone
 - b. 3% slope, use 8"-24" stone
 - c. Four outlets at the base of a steep slope (more than 10%), an engineered energy dissipater will be required

3.3 Sediment Control Practices

3.3.2 Inlet Protection

Description: Protection used at storm inlet boxes required to prevent sediment and other attached pollutants (i.e. oil, grease, trash, debris, herbicides, and pesticides) from entering drainage systems. Protection should be provided for all storm drain inlets within 200' of site.



Notes:

- Do not use for high-flow areas unless reinforced.
- For drainage areas larger than one acre, route runoff to a sediment trapping device built for heavy rain.
- Sediment removal may be difficult in high-flow conditions or if runoff is muddy. If high-flow conditions are expected, use other on-site sediment trapping techniques along with inlet protection.
- Frequent maintenance is required.
- Connect compost socks tightly together with no gaps.
- Clean or replace filters when track off reaches one-third the height.

Installation:

1. Calculate anticipated flow volumes and velocities to determine method.
2. **Silt Fence** fabric may be used on unpaved surfaces if used in conjunction with wire mesh backing and fence posts or wood framing capable of withstanding higher flow velocities.
 - a. Use 14 gauge wire mesh as backing for the fabric
 - b. Wood framing consists of 2" x 4" lumber that is driven into the ground
 - c. Entrench fabric and wire mesh a minimum 6" below the ground surface
3. **Compost socks** for unpaved or paved surfaces that are not located directly upstream from impaired water bodies.
 - a. They do not need to be trenched but do need to be staked for unpaved surfaces

3.3 Sediment Control Practices

3.3.3 Silt Fence

Description: Silt fences allow loose dirt to settle from runoff before water leaves the construction site. Use silt fence between the edge of construction disturbance and a critical resource of ROW line that is adjacent to the construction activity. Most successful when placed behind curbline.



Photo Source: City of Fairmont MN

Notes:

- Slope of areas draining to fence should generally be no steeper than 2:1 H:V (horizontal:vertical). For slopes steeper than 2:1, consider alternative soil stabilization BMPs.
- Do not dig trenches wider and deeper than necessary for proper installation.
- Construct the silt fence with a setback from the toe of a slope, where practicable, to allow for storm water ponding and sediment storage.
- Do not place the barrier across live streams or where concentrated flows may occur, woven wire backing is required for heavier flow velocities and sediment.
- Inspect frequently, especially after rain.

Installation:

1. Follow slope of the site as closely as possible. Place the fence so that water cannot run off and around the end of the fence.
2. Distances between silt fence
 - a. from 2% to 3% slope - place silt fence at 500'
 - b. From 3% to 4% slope - place silt fence at 300'
 - c. From 4% + slope - place silt fence at 150'
3. Trench-in at least 6" deep to prevent undermining.
4. Compact trench with the excavated material.
5. Securely fasten the silt fence textile to the uphill side.
6. Remove silt fence when area has been stabilized, when replaced with an alternative BMP, or upon completion of the work.
7. Either grade and seed, or remove sediment deposits behind silt fence prior to removal.
8. Fill and compact post and anchorage trench alignment to blend with adjacent ground.

3.3 Sediment Control Practices

3.3.4 Compost Socks

Description: A mesh sock filled with composed material that provide a greater surface area contact with the ground than fiber rolls. Socks are used to intercept runoff, reduce flow velocities, capture sediment, and promote infiltration. Least effective when flattened by traffic or overwhelmed with sediment, regular maintenance is required.



Notes:

- Provide socks with a minimum diameter of 8".
- Remove accumulated dirt when it reaches $\frac{1}{3}$ of the height of the sock
- Proper staking is critical to sock effectiveness and to reduce potential movement of sock by high velocity flows
- Not for use in live streams
- Not as effective in very sandy soils
-

Installation:

1. Place socks so they run level with the slope.
2. Stake sock to the ground using a minimum $\frac{3}{4}$ " by $\frac{3}{4}$ " wood stake. Extend the stake 12" below the ground surface. Space stakes 4' apart.
3. If more than sock is placed in a row, overlap, and butt them tightly together. Provide a minimum of 12" of overlap.
4. Turn terminal ends of roll upslope approx. 45 degrees to prevent flow around the ends.
5. For toe of slope application, install sock with a setback from toe of slope, where practicable, to allow for stormwater ponding.
6. When removed, collect and dispose of any sediment accumulation. Dispose of materials according to law.
7. Remove all compost socks once the adjacent area or slope has been stabilized, when no longer required, or upon completion of the work.

3.3 Sediment Control Practices

3.3.5 Sediment Basins

Description: A **temporary basin** with a controlled release structure, formed by constructing an earthen embankment across a waterway or low drainage area.



Notes:

- Not appropriate for drainage areas greater than five acres.
- Provide a design which accommodates maintenance requirements, such as mowing and mucking.
- Construct sediment traps prior to rainy season and construction activities.
- Use rock or vegetation to protect the trap outlets against erosion. Large woody vegetation provides root systems to anchor banks.
- Chain link fencing around large sediment traps may be installed to prevent unauthorized entry or if safety is a concern.

Installation:

1. Size traps to accommodate both a settling and storage zone with minimum volumes of 70 CY/acre and 53 CY/acre of contributing drainage area, respectively, based on $\frac{1}{2}$ " of runoff volume over a 24-hour period. Multiple traps and/or additional volume may be required to accommodate site-specific rainfall and soil conditions.
2. To dewater, construct a crushed stone outlet section of the embankment at the low point of the trap. The stone section serves as a armored spillway outlet for flood flows and the bottom section provides a means for dewatering the trap between rainfall events.
3. When removed, fill in, regrade, and stabilize trap locations. Incorporate any remaining captured sediment into the project, or dispose of it in accordance with all laws, rules, and applicable applications.

3.3 Sediment Control Practices

3.3.6 Construction Entrance

Description: A defined point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles. The BMP alone may not remove all soil from vehicle tires; street sweeping and vacuuming should be deployed on a **daily schedule**.

Notes:

- Select material based on endurance, required performance, and site conditions. DO not use asphalt millings for stabilized construction access/roadway.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it. Provide a minimum pad width of 12', and a minimum length of 50ft. Place stabilization material to a minimum thickness of 12".
- Limit the points of entrance/exit to the construction site through use of fencing
- Limit speed of vehicles to control dust.



Photo Source: Washinton Stormwater Center

Installation:

1. Construct stabilized construction entrances/exits using material consisting of gravel with 100% passing the 3" screen and maximum of 10% passing 2/8" sieve.
2. Install nonwoven, high strength fabric between stabilization material and existing ground surface.
3. Consider use of constructed/manufactured steel plates with ribs or cattle guard to serve as rumble pad at entrance/exit access points in combination with stabilized access pads.



Photo Source: Start Safety US

3.4 Good Housekeeping Measures

3.4.1 Runoff Control – Ditches and Dams

Description: To redirect runoff around disturbed areas and reduce the water flowing through active construction zones. Small berms or swales are constructed upslope or along the perimeter to divert clean water away from exposed soil. Within those structures, small **temporary** structures (typically made of rock, wattles, or sandbags) placed across flow to reduce erosion and promote sediment deposition.



Photo Source: Western Environmental Liner

Notes:

- Earth dikes, swales and lined ditches can be constructed at the top/bottom of slopes, to direct run-on and runoff around stockpiles and other storage areas.
- For unlined ditches and swales, provide a gradual grade, as steep grades are subject to erosion and gully formation.
- Do not construct diversion ditches and swales using loose or uncompacted fill.
- Seed and stabilize immediately.
- A minimum height of 18 inches is recommended for earthen dikes.

Installation:

1. Construct check dams to include a spillway at the center of the dam that is at least 6" lower than the existing ground at the outer edges of the check dam.
2. If placing check dams after an outfall device, install the first one approximately 15' away and at regular distances after that.
3. As a general rule, the maximum spacing between dams should be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.
4. Design check dams so high flows safely flow over the check dam without an increase in upstream flooding or damage to the check dam.
5. Inspect dams routinely, particularly after each storm event
 - a. Inspect for erosion along the edges, washouts, undermining, and clogging
 - b. Remove sediments when depth reaches $\frac{1}{2}$ of the check dam height

3.4 Good Housekeeping Measures

3.4.2 Concrete Washouts

Description: Procedures to prevent used wastewater from construction activities from entering the storm drain system or waterways. Designated washout areas lined with plastic or pre-fabricated containers to collect wash water from concrete trucks and equipment.

Notes:

- Locate concrete washout facility near the pour site whenever practical for convenient truck access.
- Facility may be constructed above grade or below grade, but must be constructed and maintained in an acceptable size to contain all liquid and concrete waste generated.
- Concrete mixing operations are prohibited in driving lanes.
- Facility should be cleaned or replaced once washout is 75% full.
- Straw wattles should not be used to contain washout materials



Installation:

1. Required onsite signage.
2. Locate temporary concrete washout facilities a minimum of 50' from storm drain inlets, open drainage facilities, and waterbodies.
3. Provide polyethylene lining material with a minimum of 60 mils and is free of holes, tears, or other defects that could compromise the impermeability of the material.
4. Construct temporary concrete washout facilities with a recommended minimum length and width of 10'.
5. Perform washout of concrete trucks in designated areas only.
6. Dispose of harden waste properly.

3.4 Good Housekeeping Measures

3.4.3 Spill Prevention

Description: Procedures implemented to prevent and control the discharge of spilled material to the drainage system or streams. Spill pollution and prevention control applies to: fertilizers, deicing chemicals, fuels, hydraulic fluids, lubricants, other petroleum distillates; blasting materials; and portable toilets.

Notes:

- Inspect containers weekly for leaks.
- Train crews on spill response procedures.
- Immediately clean and report any spills.
- Use absorbent materials on small spills. Never hose down or bury the spill.
- Secondary containment must be in place for any potentially hazardous materials.
- Do not place any temporary restrooms on top of storm infrastructure.
- All temporary restrooms must be staked down.
- For potentially hazardous spills, call 911.
- Dispose of materials lawfully.



Notes (cont.):

- Required onsite signage.
- At all times, post proper storage, clean-up, and spill reporting instructions for hazardous materials stored or used on the project site in an open, accessible location.
- If a significant spill occurs on a paved surface, contain the spill by trapping with absorbent materials and clean it up using dry methods (e.g., absorbent materials, cat litter, rags).
- If the spill occurs on unpaved dirt areas, immediately contain the spill by constructing an earthen dike.



3.4 Good Housekeeping Measures

3.4.4 Stockpile Management

Description: Procedures to reduce or eliminate pollution of stormwater from stockpiles of soil and paving materials, such as rubble, asphalt concrete, aggregate base, aggregate sub-base or pre-mixed aggregate, and asphalt binder. Most successful when located away from established flows, drainage courses, inlets, and when properly protected with perimeter sediment barriers and covered.

Notes:

- Minimum of 50' away from regular or any drainage infrastructure
- Protect with temporary perimeter sediment barrier such as berms, dikes, silt fences, compost socks, or sandbag barriers.
- Cover or protect if rain is predicted.
- Place stockpiles of any asphalt material on and covered with durable plastic or comparable material prior to onset of precipitation.
- Inspect regularly.
- Provide a stabilized designated access point on the higher side of the stockpile for those in active use.
- Soils stockpiled for an extended period (more than 60 days) should be seeded and mulched with a temporary grass cover once the stockpile is placed.
 - The use of mulch only or a soil binder is acceptable if the stockpile will be in place for a more limited time period.
- For paved areas, rock socks must be used for perimeter control and all inlets with the potential to receive sediment from the stockpile must be protected.

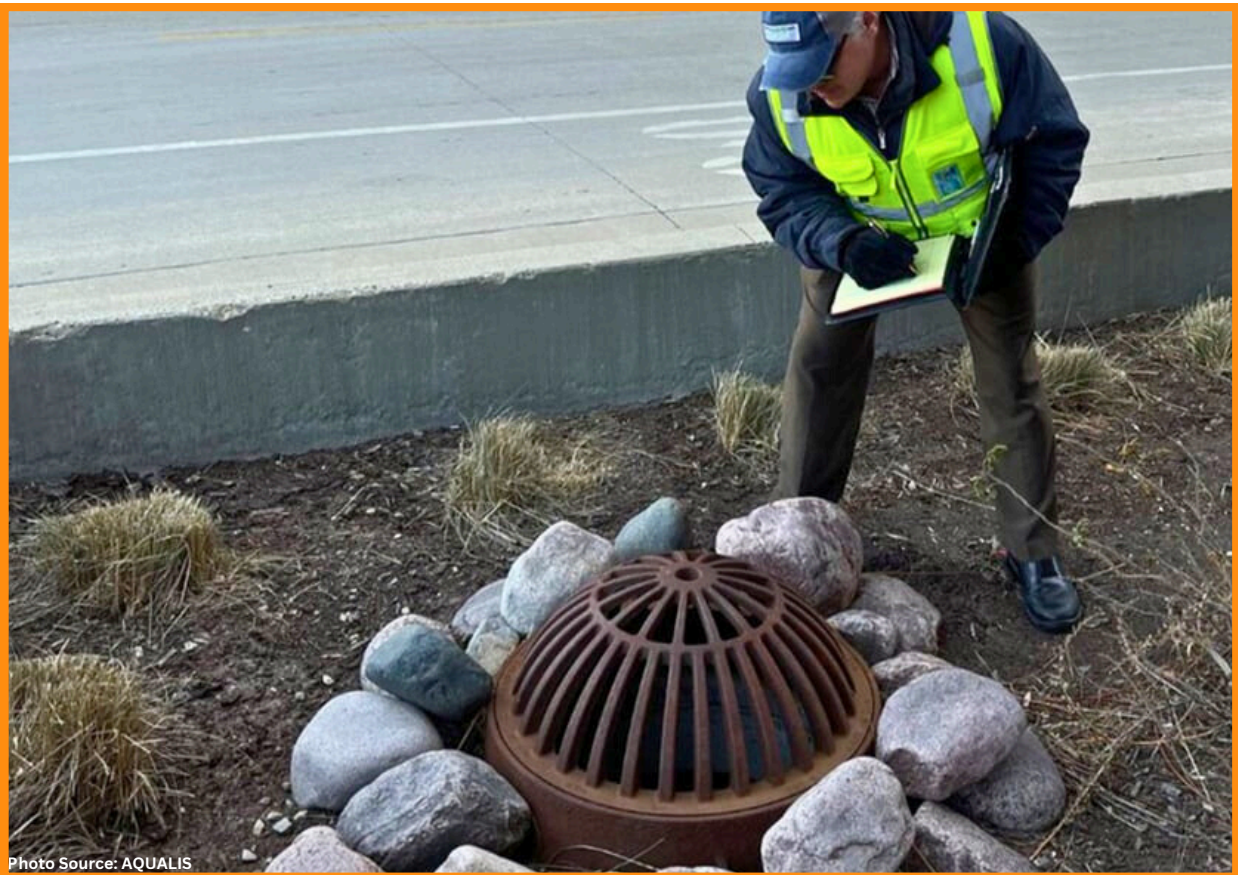


Photo Source: Stormwater Hawaii

3.5 Inspection and Maintenance Guidelines

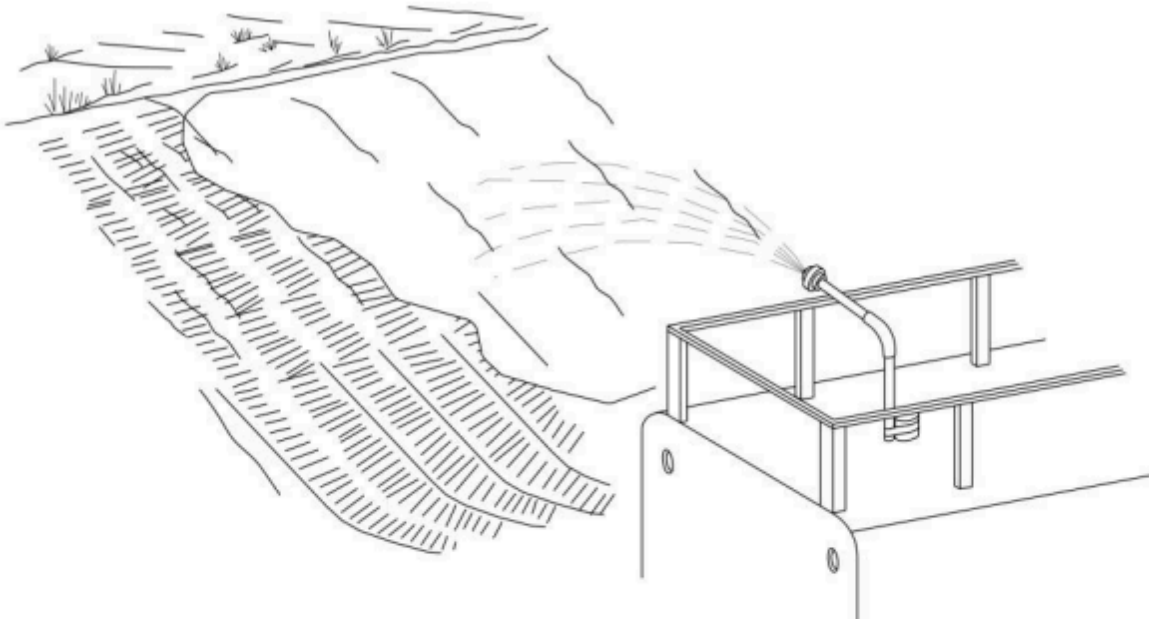
BMPs require regular inspection and maintenance to remain functional. A permittee's failure to maintain BMPs is a common cause of violations and water quality impacts.

- Sites must be inspected every seven calendar days and within 24 hours of a rainfall event of .5 inches or greater.
- Inspections should be conducted by a qualified person familiar BMPs.
- All BMPs must be inspected for damage, clogging displacement, and general performance.
- Repair or replace any damaged BMPs immediately or within 24 hours if effectiveness is compromised.
- Remove accumulated sediment from silt fences, inlet protection, or basins when it reaches one-third of the height.
- Update Engineering office and site plan to reflect any field modifications to BMPs.
- Maintain inspection logs on-site and submit to the City as requested.

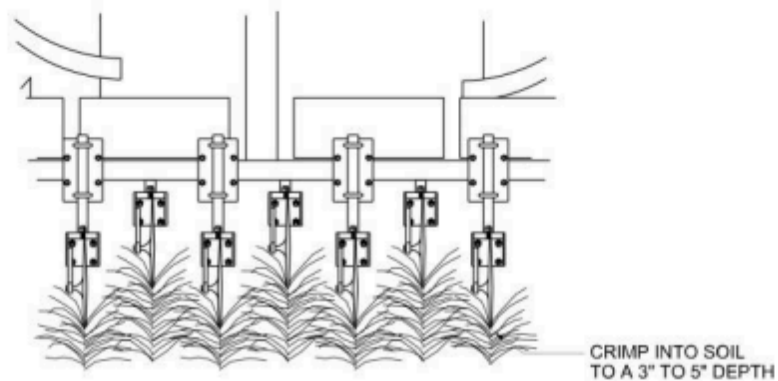


4. BMP Design Details and Specifications

4.1 Soil Stabilization



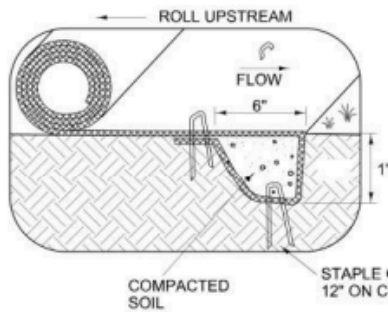
HYDRO-MULCHING



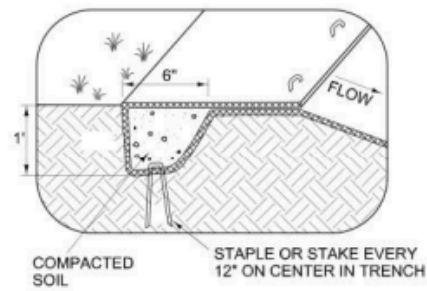
STRAW CRIMPING

4. BMP Design Details and Specifications

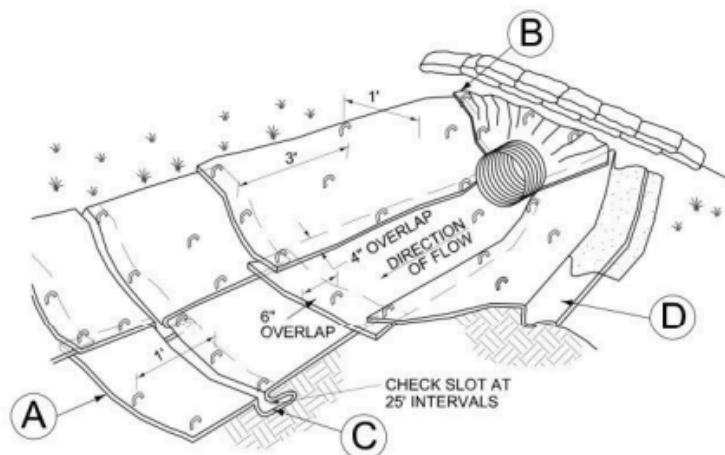
4.2 Rolled Erosion Control



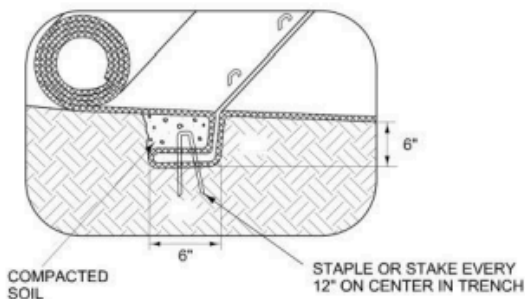
A INITIAL CHANNEL ANCHOR TRENCH



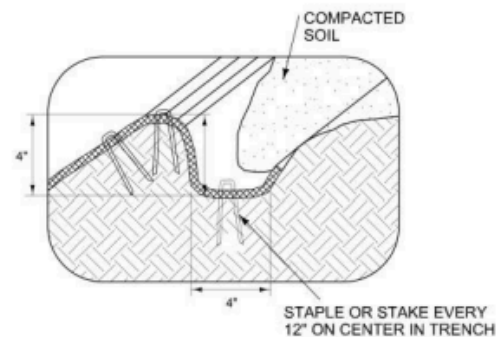
B TERMINAL SLOPE & CHANNEL ANCHOR TRENCH



TYPICAL CHANNEL DETAIL



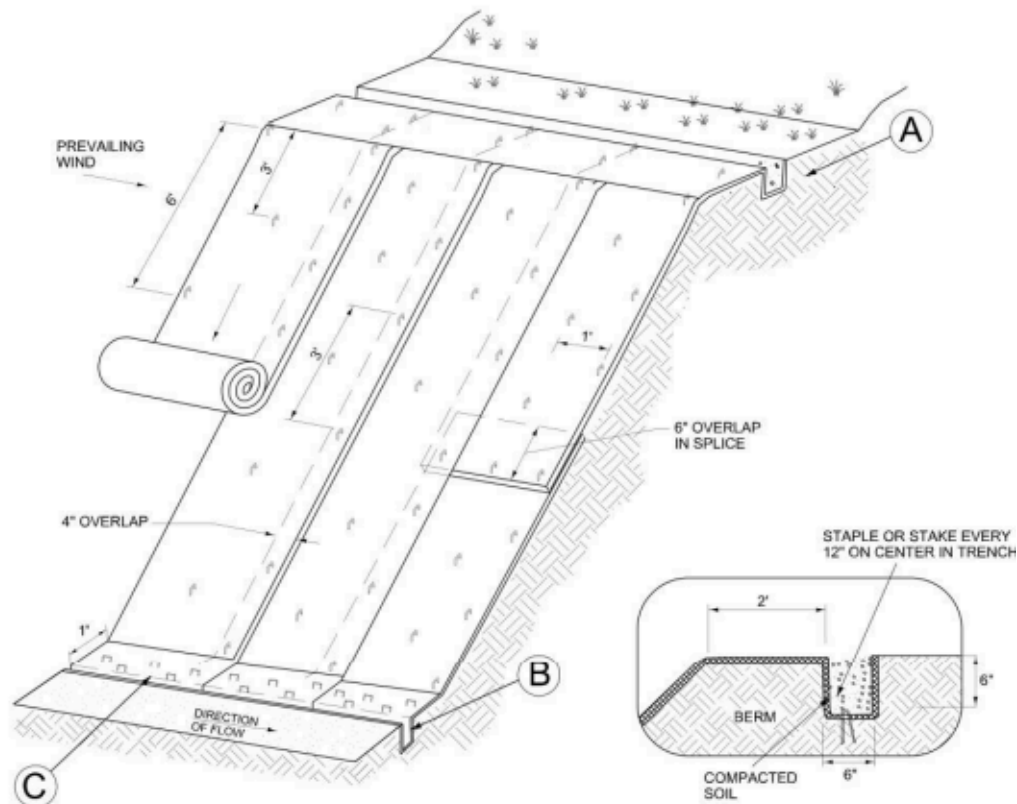
C INTERMITTENT CHECK SLOT



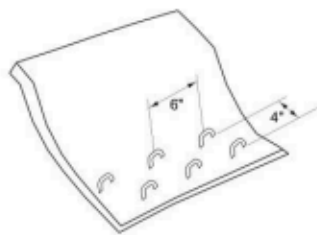
D LONGITUDINAL ANCHOR TRENCH

4. BMP Design Details and Specifications

4.2 Rolled Erosion Control (cont.)



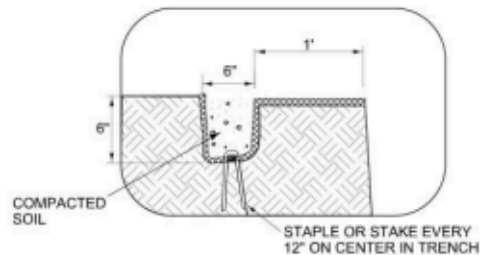
TYPICAL SLOPE DETAIL



TO BE USED WHEN SLOPE RUNS INTO A RECEIVING WATER AND CANNOT BE EXTENDED 1 FOOT BEYOND SLOPE AS SHOWN IN (B)

(C) DOWNSLOPE END STAPLE CHECK

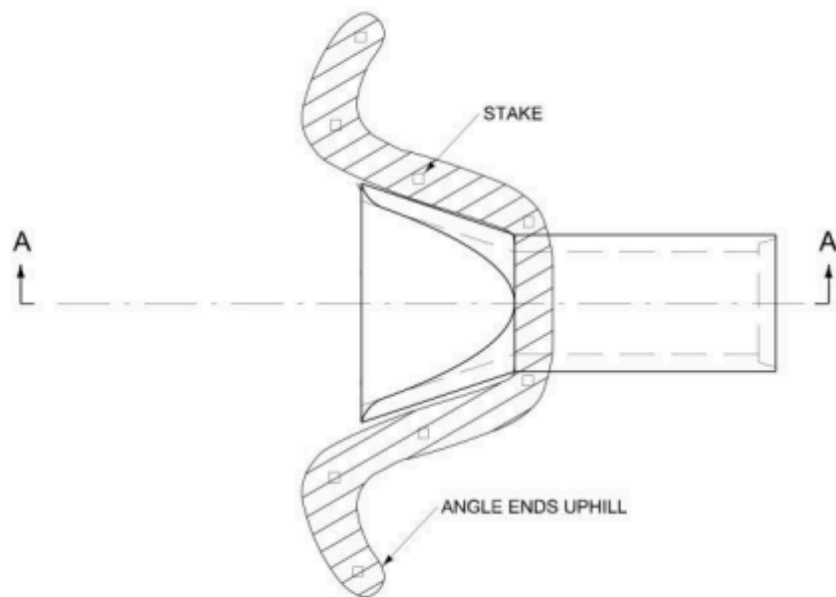
(A) TOP ANCHOR TRENCH



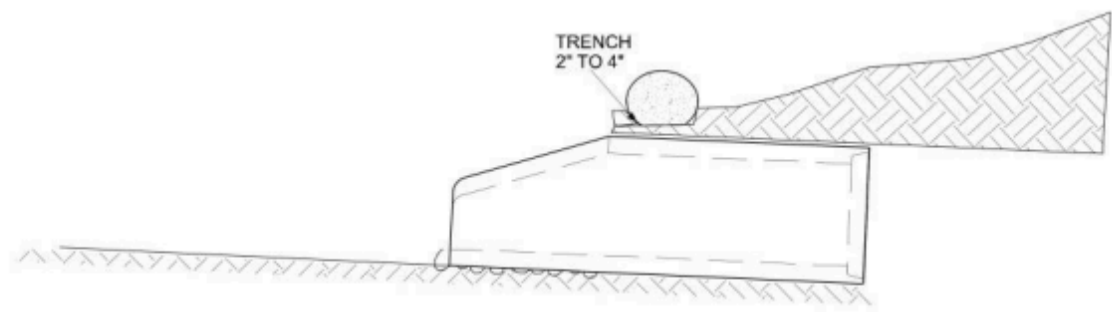
(B) BOTTOM ANCHOR TRENCH

4. BMP Design Details and Specifications

4.3 Outlet Protection



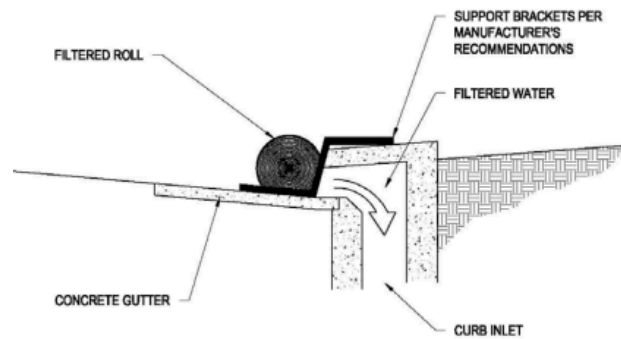
CULVERT OUTLET AND INLET PLAN VIEW



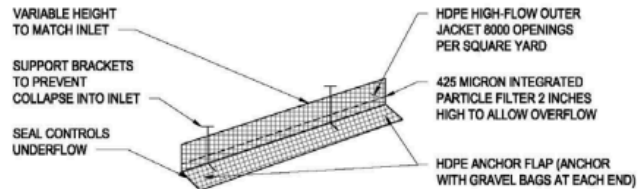
CULVERT OUTLET AND INLET SECTION A-A

4. BMP Design Details and Specifications

4.4 Inlet Protection

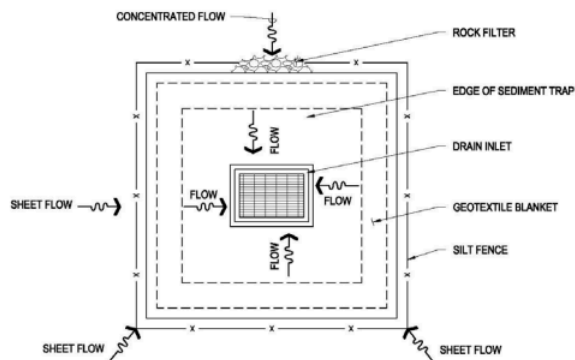


FILTER ROLL WITH SUPPORTS FOR CURB INLET
NOT TO SCALE

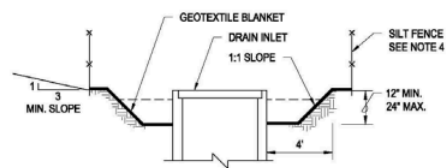


NOTES:
1. ADD GRAVEL BAGS AT ENDS AND EACH OVERLAP.

GEOTEXTILE INSERT WITH SUPPORTS FOR CURB INLET
NOT TO SCALE



PLAN
NOT TO SCALE

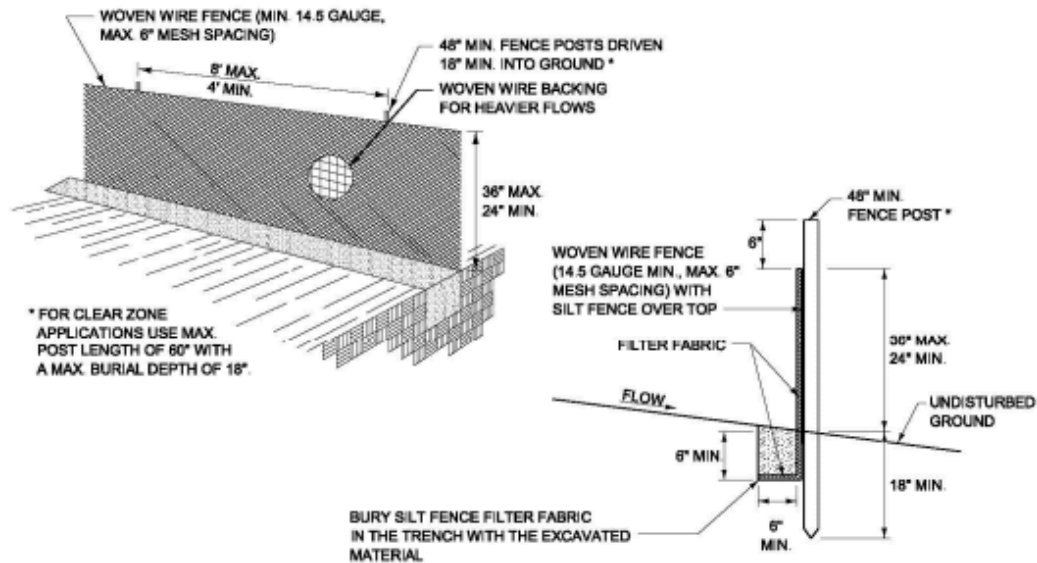


SECTION
NOT TO SCALE

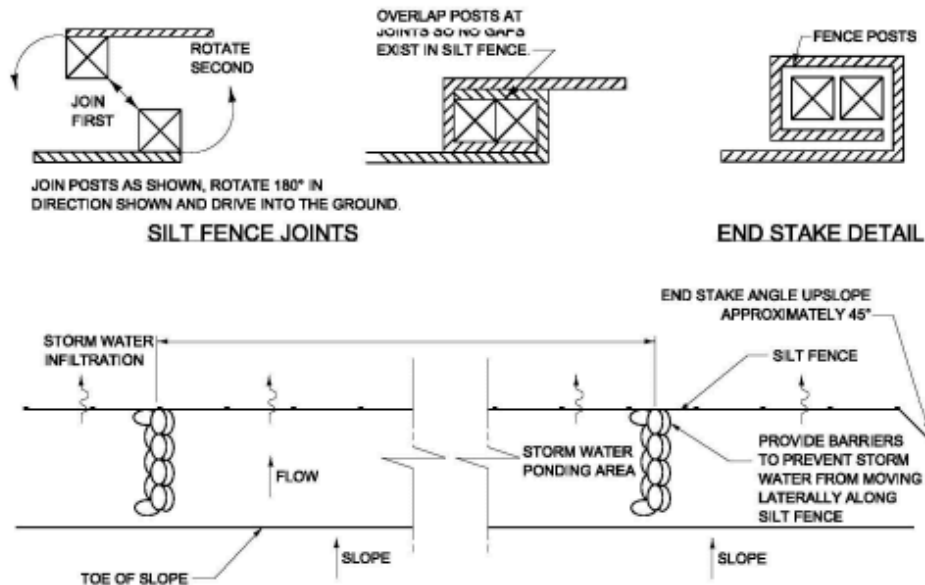
DROP INLET

4. BMP Design Details and Specifications

4.5 Silt Fence



STABILIZED SILT FENCE - CROSS SECTION



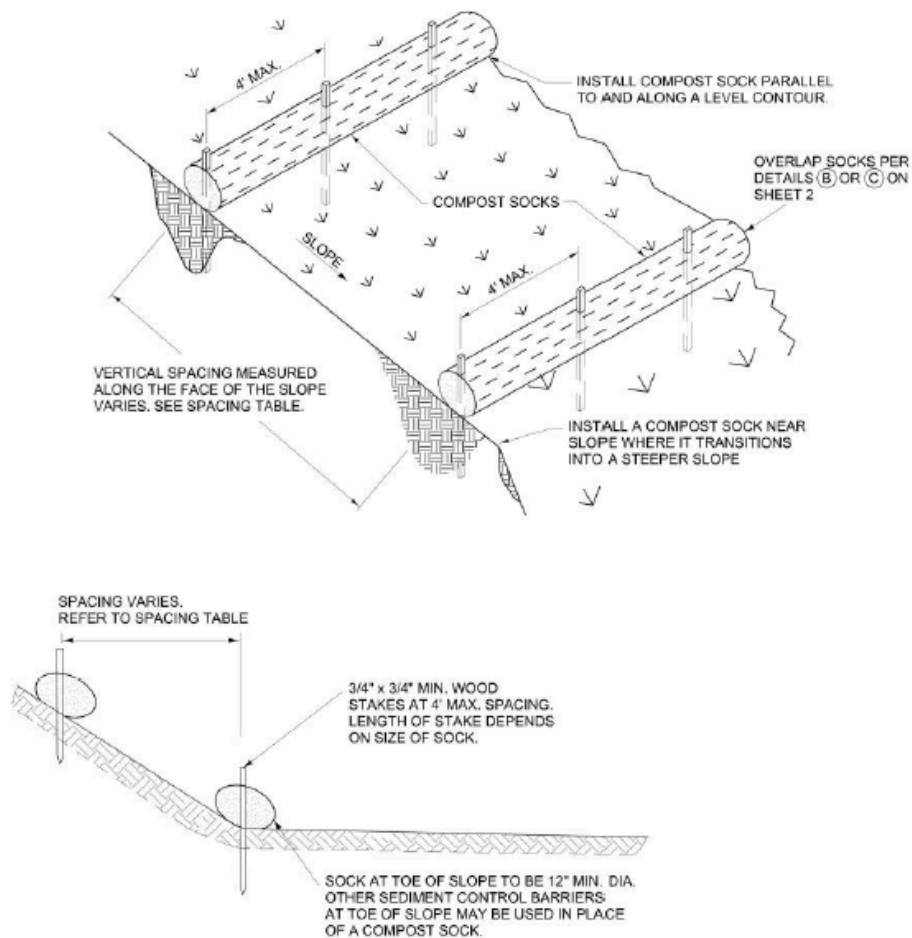
SILT FENCE - PLAN VIEW

DISTANCES BETWEEN SILT FENCE WHEN USED FOR SEDIMENT RETENTION ARE AS FOLLOWS:

- * FROM 2% TO 3% SLOPE - PLACE SILT FENCE AT 500 FT. SPACING
- * FROM 3% TO 4% SLOPE - PLACE SILT FENCE AT 300 FT. SPACING
- * FROM 4% + SLOPE - PLACE SILT FENCE AT 150 FT. SPACING

4. BMP Design Details and Specifications

4.6 Compost Socks



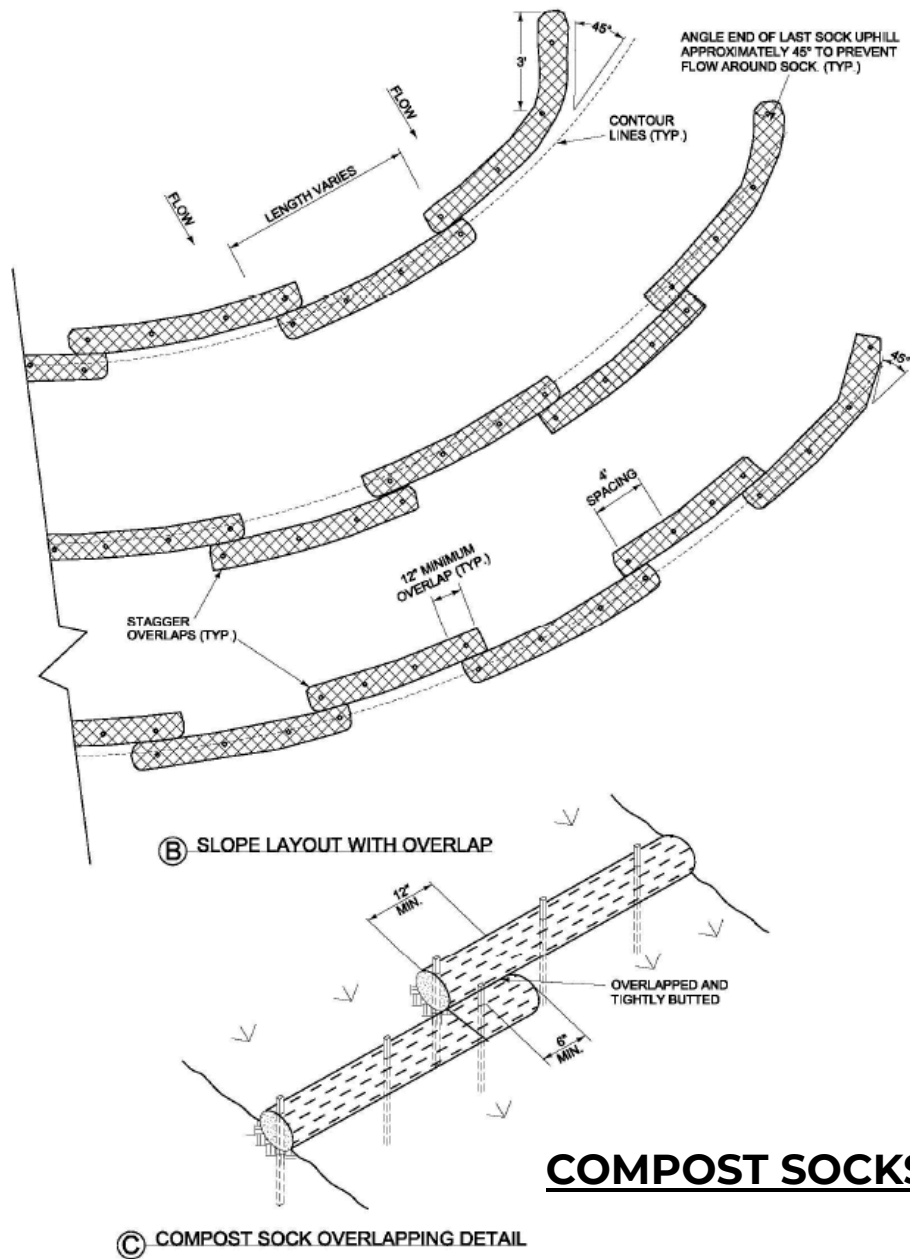
SPACING INTERVALS		
SLOPE	SOCK SIZE	
	8"	12"
1:1	10 FT.	15 FT.
2:1	20 FT.	30 FT.
3:1	30 FT.	45 FT.
4:1 OR FLATTER	40 FT.	60 FT.

SPACING TABLE

COMPOST SOCKS

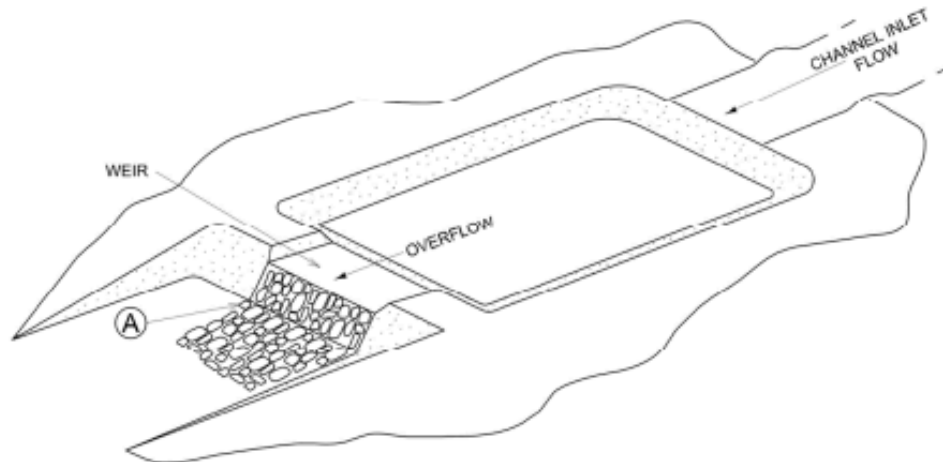
4. BMP Design Details and Specifications

4.6 Compost Socks (cont.)

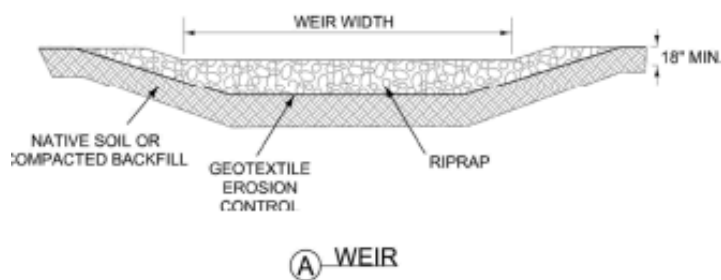
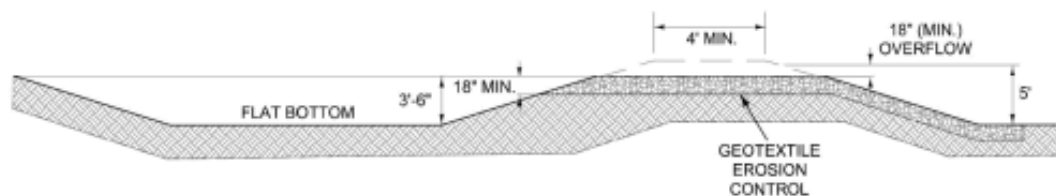


4. BMP Design Details and Specifications

4.7 Sediment Trap



TYPICAL SEDIMENT TRAP WITH SPILL WAY

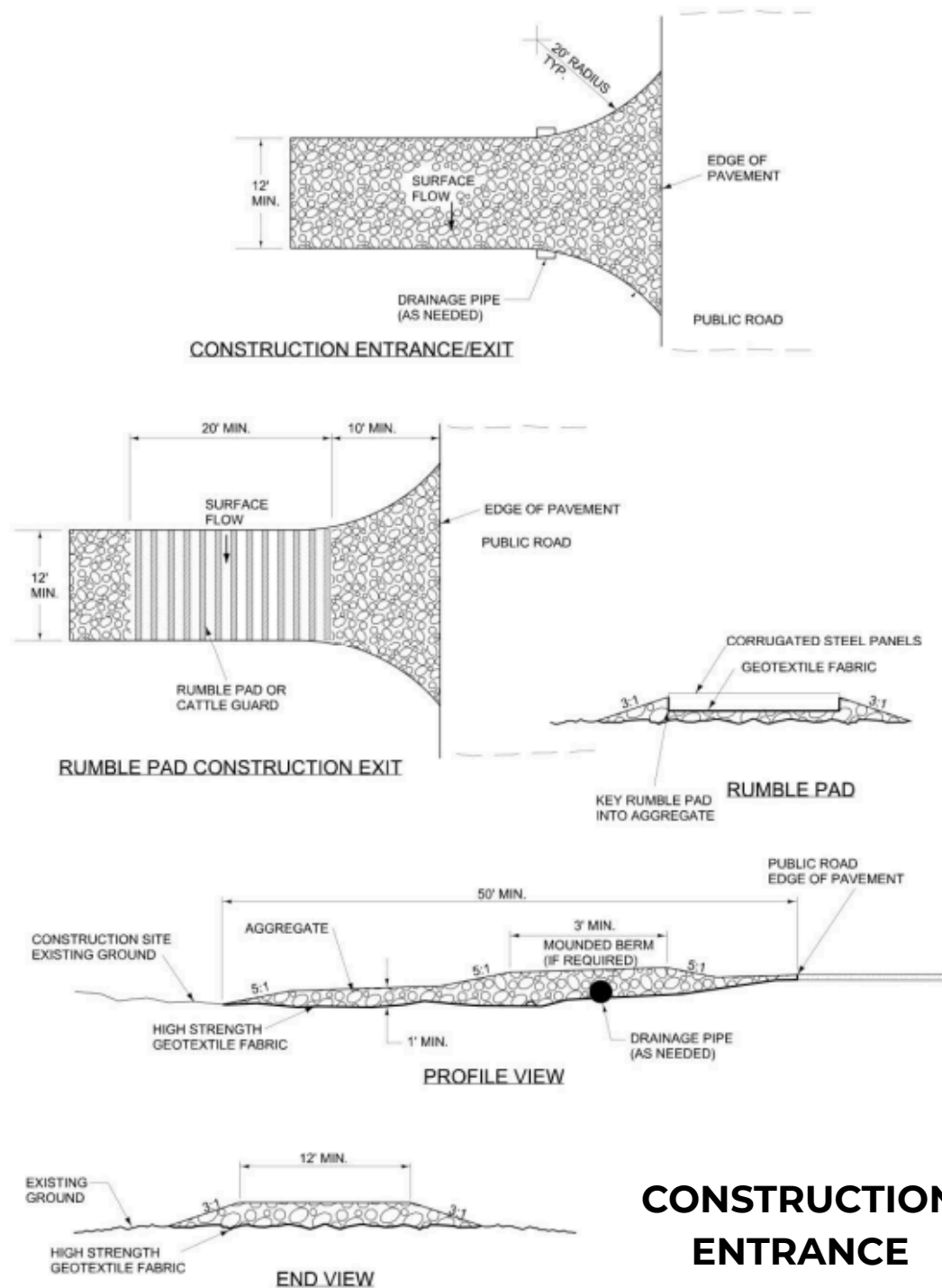


DRAINAGE AREA (ACRES)	WEIR WIDTH (FEET)
1	4
2	6
3	8
4	10
5	12

WEIR WIDTH TABLE

4. BMP Design Details and Specifications

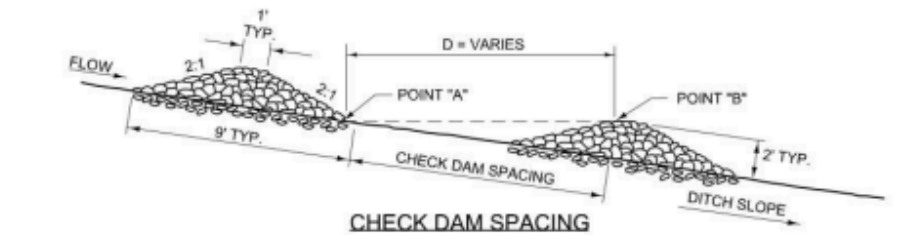
4.8 Construction Entrance/Exit



CONSTRUCTION ENTRANCE

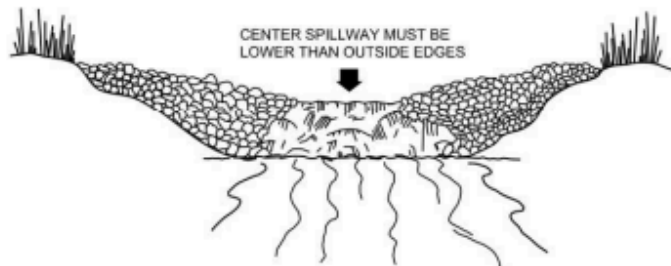
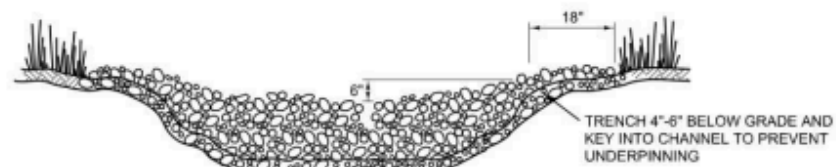
4. BMP Design Details and Specifications

4.9 Check Dams – Volume Control

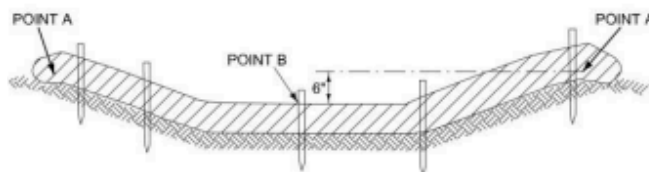
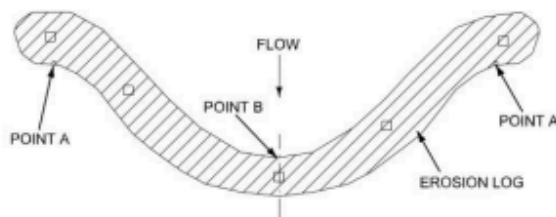


CHECK DAM SPACING = THE DISTANCE "D" SUCH THAT POINTS "A" AND "B" ARE OF EQUAL ELEVATION, OR APPROXIMATE SPACING (FEET) =

$$D = \frac{\text{CHECK DAM HEIGHT (FEET)}}{\% \text{ CHANNEL SLOPE}} \times 100$$



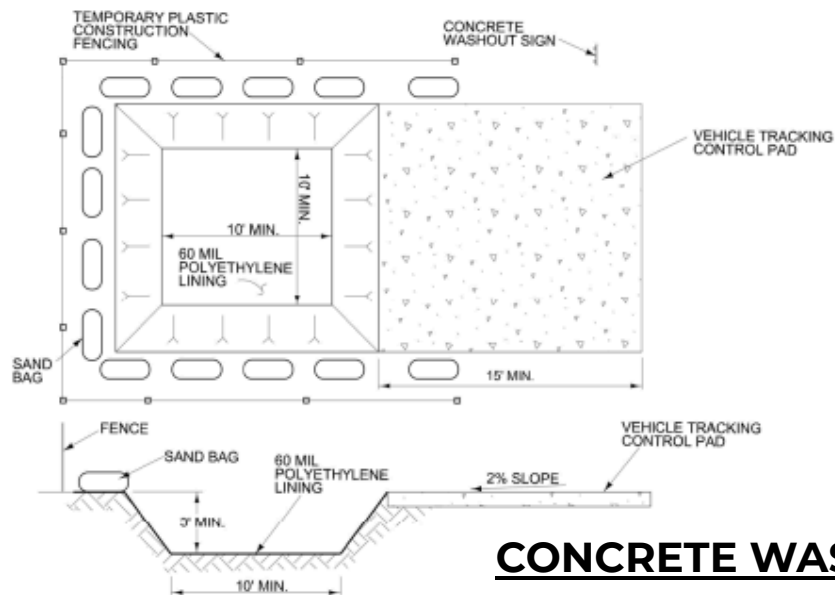
CHECK DAMS



ELEVATION AT POINT 'A' IS 6" HIGHER THAN ELEVATION AT POINT 'B'

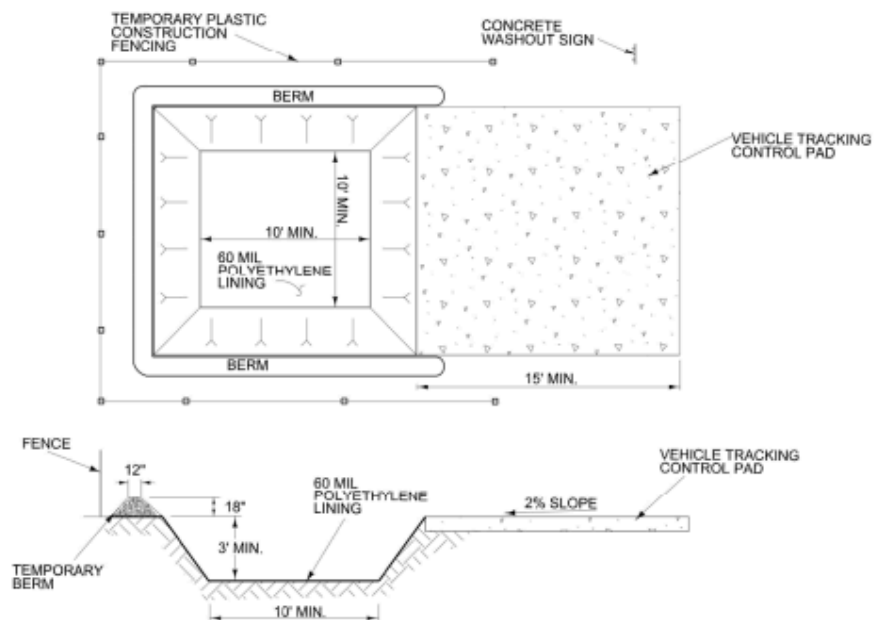
4. BMP Design Details and Specifications

4.10 Concrete Washout



CONCRETE WASHOUT

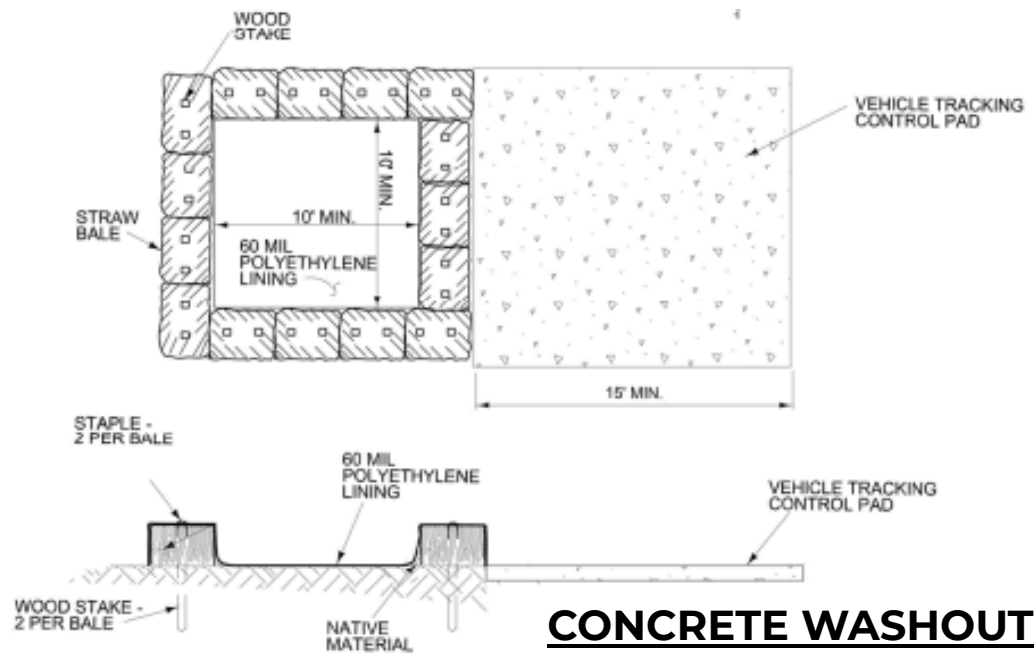
BELOW GROUND WITH SANDBAGS



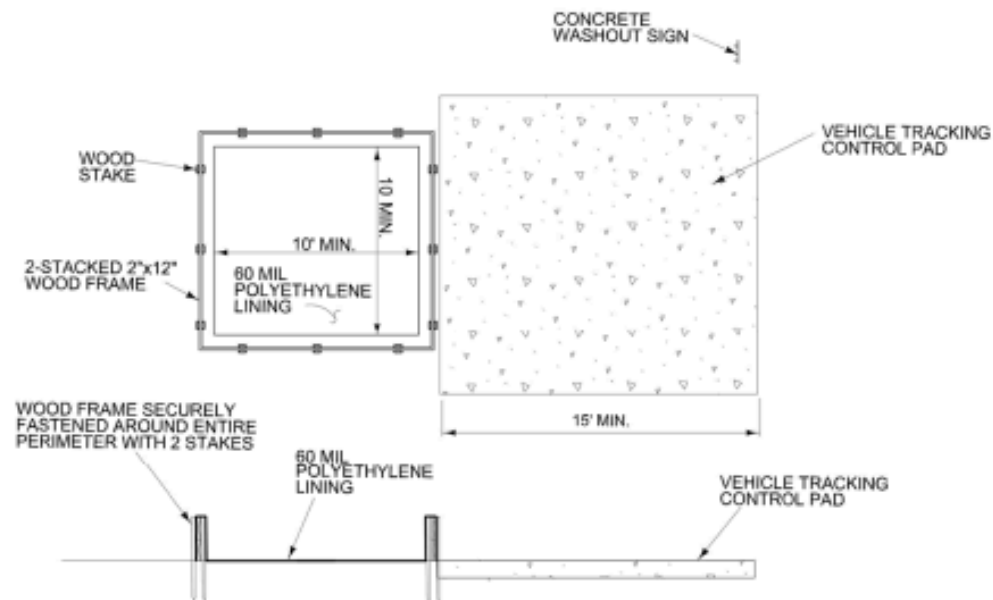
BELOW GROUND WITH BERMS

4. BMP Design Details and Specifications

4.10 Concrete Washout (cont.)



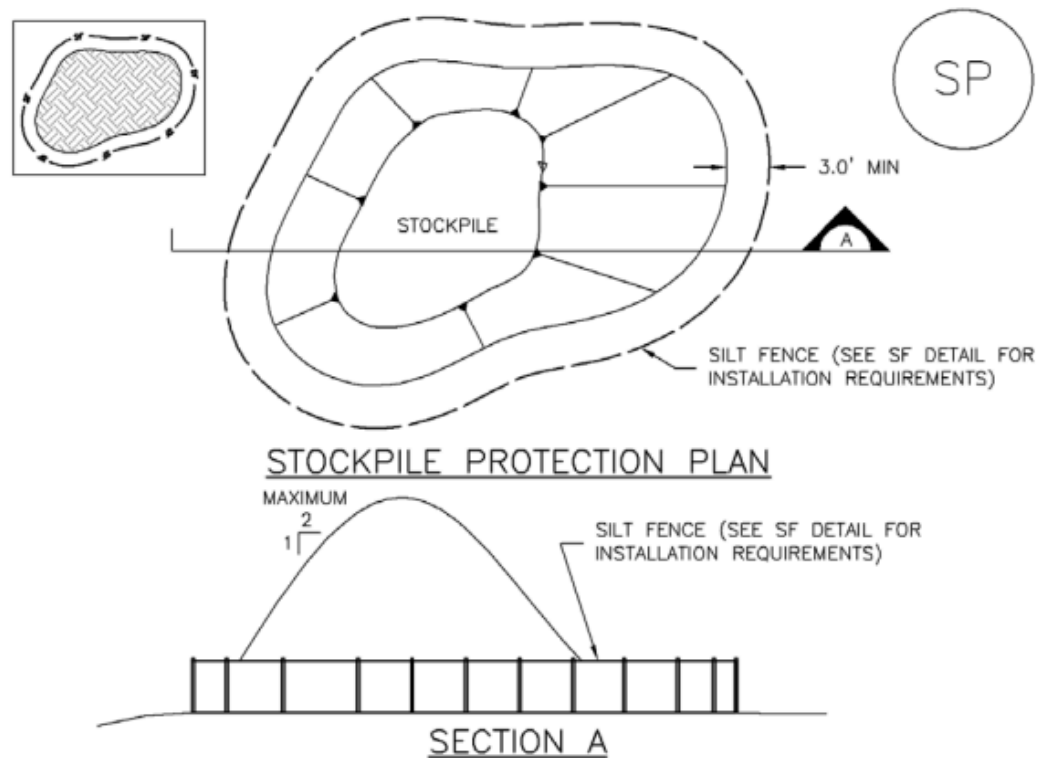
ABOVE GROUND WITH STRAW BALES



ABOVE GROUND WITH WOOD PLANKS

4. BMP Design Details and Specifications

4.11 Stockpiles



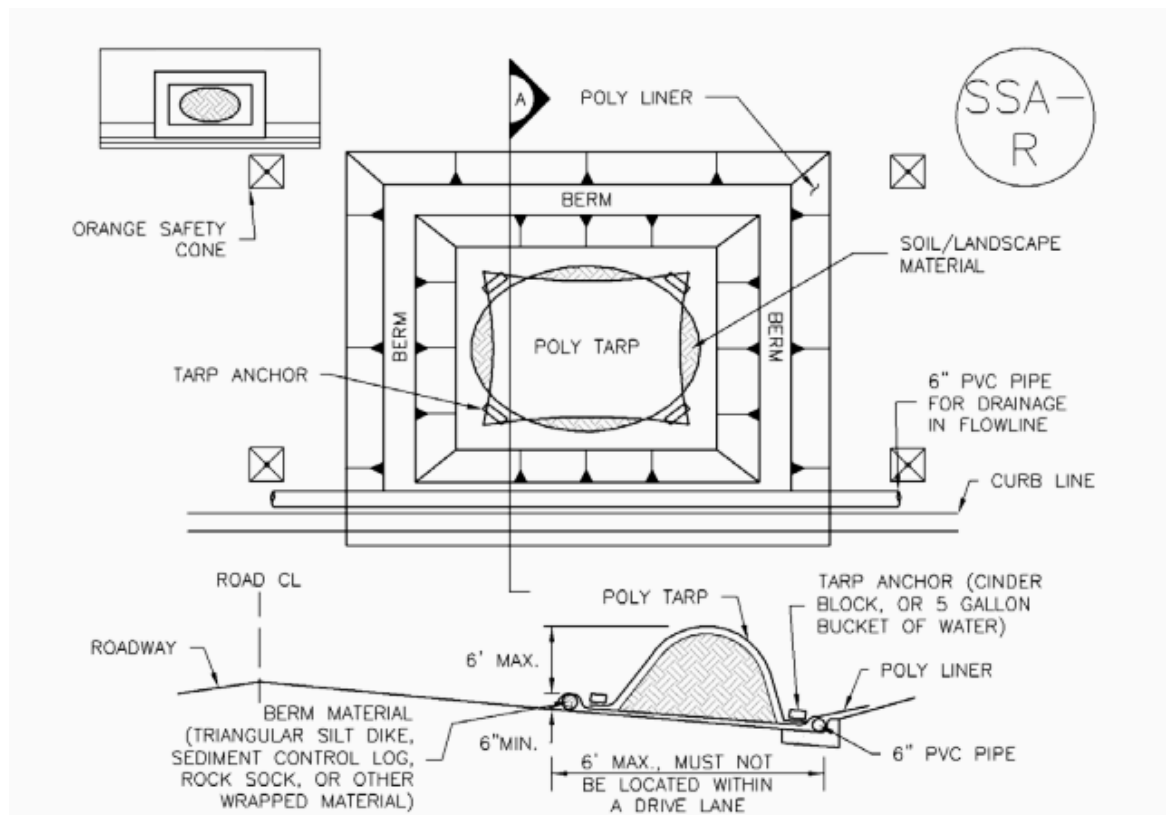
SP-1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATION OF STOCKPILES.
 - TYPE OF STOCKPILE PROTECTION.
2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.
3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).
4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRAIDENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

4. BMP Design Details and Specifications

4.11 Stockpiles (cont.)



SP-2. MATERIALS STAGING IN ROADWAY

MATERIALS STAGING IN ROADWAYS INSTALLATION NOTES

1. SEE PLAN VIEW FOR
 - LOCATION OF MATERIAL STAGING AREA(S).
 - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. FEATURE MUST BE INSTALLED PRIOR TO EXCAVATION, EARTHWORK OR DELIVERY OF MATERIALS.
3. MATERIALS MUST BE STATIONED ON THE POLY LINER. ANY INCIDENTAL MATERIALS DEPOSITED ON PAVED SECTION OR ALONG CURB LINE MUST BE CLEANED UP PROMPTLY.
4. POLY LINER AND TARP COVER SHOULD BE OF SIGNIFICANT THICKNESS TO PREVENT DAMAGE OR LOSS OF INTEGRITY.
5. SAND BAGS MAY BE SUBSTITUTED TO ANCHOR THE COVER TARP OR PROVIDE BERMING UNDER THE BASE LINER.
6. FEATURE IS NOT INTENDED FOR USE WITH WET MATERIAL THAT WILL BE DRAINING AND/OR SPREADING OUT ON THE POLY LINER OR FOR DEMOLITION MATERIALS.
7. THIS FEATURE CAN BE USED FOR:
 - UTILITY REPAIRS.
 - WHEN OTHER STAGING LOCATIONS AND OPTIONS ARE LIMITED.
 - OTHER LIMITED APPLICATION AND SHORT DURATION STAGING.

5. Site Plan and Stormwater Permit Requirements

5.1 Required Elements of the BMP Site Plan

The BMP Site Plan must clearly show how erosion, sediment, and pollutant controls will be installed, maintained, and removed once construction is complete. The plan should be to scale, legible, and include at least the following information:

Project Information

- o Project name and location
- o Owner/developer contact information
- o Total disturbed area (in square feet or acres)
- o Project start and end dates

Site Description

- o Location of all storm drain inlets, ditches, streams, ponds, wetlands, and other drainage features
- o Areas of soil disturbance and areas to be preserved
- o Limits of disturbance (clearly marked)

BMP Locations and Details

- o Existing and proposed topography
- o Erosion control measures (e.g., mulch, blankets, seeding)
- o Sediment control measures (e.g., silt fence, inlet protection)
- o Runoff controls (e.g., berms, check dams)
- o Good housekeeping features (e.g., concrete washout, material storage)

Construction Sequencing

- o Installation schedule for BMPs
- o Sequence of grading, utilities, paving, and stabilization
- o Dates for temporary and permanent stabilization

5. Site Plans and Stormwater Permit Requirements

5.2 Residential Stormwater Permits

For residential lots or small construction sites (disturbing between 4,000 square feet and 1 acre), a simplified Stormwater Pollution Prevention Plan (SWPPP) may be submitted instead of a full engineering plan, provided it includes:

- A site sketch showing disturbance limits and BMP locations
- Basic erosion and sediment controls
- Good housekeeping measures
- Inspection and maintenance schedule



Photo Source: North Little Rock Engineering

5. Site Plans and Stormwater Permit Requirements

5.3 Commercial Stormwater Permits

Commercial or large construction sites are projects that are equal or greater than five acres. Stormwater permits are valid for one year. Applicant must reapply before expiration date.

- A site sketch showing disturbance limits and BMP locations
- Basic erosion and sediment controls
- Good housekeeping measures
- Inspection and maintenance schedule



Photo Source: Arkansas Department of Transportation

Exhibits



Erosion Control Site Plan Checklist

Date: _____

Project Name: _____

Address: _____ Zip Code: _____

Project Area (square feet): _____ Disturbance Area (square feet): _____

Owner Name: _____ Phone Number: _____

Owner Address: _____

Disturbance Area is any area that is subject to clearing, excavating, grading, and/or placement/removal of earth materials.

In compliance with the Clean Water Act and the National Pollutant Discharge and Elimination System permit program—administered by the Arkansas Department of Environmental Quality as authorized by the U.S. Environmental Protection Agency—the City of North Little rock is required to regulate runoff and the treatment of stormwater into drainage systems and water bodies, including the Arkansas River. The regulation of stormwater includes construction stormwater from project sites (Chapter 14 of city code). Projects that involve 4,000 square feet or more of land disturbance are required to demonstrate coverage with an issued municipal permit.

Clearly show each item below on the Erosion Control Site Plan and fill in the corresponding check box.

Best management practices (BMPs) are structural, vegetative, or managerial practices used to treat, prevent, or reduce water pollution. Help us protect our waterways and sole-source aquifer with BMPs. For additional guidance, please refer to the City's BMP Manual or stormwater ordinance.

Project Area	
☐	All areas of construction, including but not limited to: areas to be graded as shown on a grading plan, areas to be cleared, as well as structures, retaining walls, roads, drives, utilities, trenches, scaffolds, catch basins, etc. These areas should be consolidated and located outside steep or sensitive areas.
☐	Location of all existing buildings, structures, easements, or underground utilities.
☐	Accurate contours showing the topography OR drainage arrows showing existing drainage patterns and direction of flow
☐	Surface water location(s) within 200 feet of the project boundary
☐	Inlet locations within 200 feet of the project boundary and protection measure details
☐	Perimeter controls (e.g., vegetative buffer , compacted berm, silt fencing, and/or fiber rolls). On slopes greater than 10%, the measures must be installed along contour lines.
☐	All areas that will be used for stockpiling earth and storing construction materials
☐	For slopes less than 3:1, provide sediment control along contour lines. For slopes greater than 3:1, slope stabilization BMPs are required.

Construction Access	
☐	Stabilized, designated access points for entrance onto the property. If using an existing paved driveway, identify it.
☐	Designated area(s) for parking of construction vehicles.
Construction Materials and Waste	
☐	Location, installation, and maintenance of a concrete mixer, washout, and pits. No concrete, mortar, or stucco washout shall be placed directly on the soil/ground. Specify the method used to contain the washout.
☐	Location(s) of portable toilets away from surface water locations and storm drain inlets.
☐	Show storage location and containment of construction materials or stockpiles during work, as well as afterhours/weekends. No materials shall be stored or stockpiled on the street.
Add these Standard Comments on the Site Plan	
☐	Locations of temporary stockpiles must be covered when not being actively worked in dry weather. Alternatively, in wet weather, or for longer storage, use seeding and mulching, soil blankets, or mats.
☐	Perform clearing and earth-moving activities only during dry weather; when necessary, use dust control measures to comply with air quality ordinances. Measures to ensure adequate erosion prevention and sediment control shall be installed prior to earth-moving activities and construction.
☐	Measures to ensure adequate erosion prevention and sediment control are required year-round. Stabilize all disturbed areas and maintain erosion prevention measures continuously.
☐	Maximize and protect areas to be undisturbed (including sensitive areas and buffer zones), using a vegetative buffer or 6-foot fence/barrier. Do not disturb riparian areas.
☐	Inlet protection shall be cleaned out after each rain event, or as needed, to function properly. Do not use sand bags, as these tear and can result in sand entering the storm drains.
☐	Store, handle, and dispose of construction materials and wastes properly, to prevent their contact with storm water. No materials shall be stored or stockpiled on the street.
☐	Stockpiles must be covered when left overnight; if not being worked within 14 days, they must be stabilized with seed, covered with mulch, soil blankets, or mats.
☐	Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water, or sediments, and non-storm water discharges to storm drains and watercourses.
☐	Avoid cleaning, fueling, or maintaining vehicles on site, except in a designated area where wash water is contained and treated. Limit and time applications of pesticides and fertilizers to prevent polluted runoff.
☐	Limit construction access routes to stabilized, designated access points.
☐	Avoid tracking dirt or other materials off site; clean off-site paved areas and sidewalks using dry sweeping methods.
☐	The areas delineated on the plans for parking, grubbing, storage, etc., shall not be enlarged or "run over."
☐	Erosion prevention and sediment control materials shall be stored on site.
☐	Tree protection shall be in place before any demolition, grading, excavating, or grubbing is started.



A copy of this permit is required to be at the job site at all times

**City of North Little Rock
Engineering Department
Stormwater Permit Application # _____**

Applicant's Name: _____ Phone: _____

Address: _____

Contractor's Name: _____ Phone: _____

Address: _____

Permit Address: _____

Project Description and **Commercial Business Name:** _____

- | | |
|--|-------------------------------------|
| ☐ Level Lot | ☐ Sloped Lot |
| ☐ Drainage Channels near Site | |
| ☐ Drainage Easements Near | |
| ☐ Site in Flood Plain | |

All Commercial Projects must submit plans for City Engineer's review and approval

Permit Type	Fee
☐ Single Family Dwelling	\$35.00
☐ Multi-Family Dwelling (2 or more units)	\$50.00
☐ Commercial and Industrial Buildings (less than a 1/4 acre)	\$125.00
☐ Commercial and Industrial Buildings (1/4 to 1 acre)	\$150.00
☐ Commercial and Industrial Buildings (more than 1 acre)	\$200.00
☐ Commercial and Industrial Building Additions (less than 1 acre)	\$75.00
☐ Commercial and Industrial Building Additions (1 acre or more)	\$150.00
☐ Parking Lots (less than 1/4 acre)	\$35.00
☐ Parking Lots (1/4 to 1 acre)	\$75.00
☐ Parking Lots (more than 1 acre)	\$100.00
☐ Subdivisions (up to 5 lots)	\$75.00
☐ Subdivisions (6 – 20 lots)	\$125.00
☐ Subdivisions (21 lots or more)	\$150.00
☐ Other Activities that disturb less than or equal to 3 acres	\$75.00
☐ Other Activities that disturb more than 3 acres	\$125.00

Non-Compliance <u>per day</u> after Notice of Violation	\$100.00
Program Administrator Processing Fee per hour	\$50.00
Emergency Response for manpower and equipment cost	\$100.00 min.

Estimated Construction Duration: _____

Area of Disturbance _____

Applicant's Signature _____

Approving Official's Signature _____

Dated Signed _____

Permit Expiration Date _____



City of North Little Rock

Storm Water Site Inspection Report

INSPECTOR NAME: _____
WEATHER CONDITIONS: _____

DATE: _____
RAINFALL: _____

Construction Site Access Conditions

Access 1	Good	Fair	Bad
Access 2	Good	Fair	Bad
Off Site Tracking	Good	Fair	Bad

Site Documentation

ADEQ Permit		SWPPP	
Inspection Reports		Site Map	
NLR SW Permit		Rain Gauge	

Site Map Up to Date?

Y	N
---	---

Concrete Truck Washout Condition:

Good	Fair	Bad
------	------	-----

SEDIMENT & EROSION CONTROLS

BMP	LOCATION	DEPTH OF SEDIMENT	CONDITION OF BMP		
			GOOD	FAIR	BAD
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Corrections Required:

NOTE: ALL REPAIRS AND CORRECTIONS ARE TO BE MADE WITHIN 48 HOURS FROM INSEPECTION OR SO AS REQUIRED BY THE CITY OF NORTH LITTLE ROCK ENGINEERING DEPARTMENT

"The information submitted is, to the best of my knowledge and belief, true, accurate, and complete."

SIGNED: _____

LEGEND OF TYPICAL STORM WATER EROSION CONTROL ABBREVIATIONS

SILT FENCE (SF)	CHECK DAM (CD)	INLET PROTECTION (IP)	HAY BALES (HY)
FILER BAG (FB)	DIVERSION POND (DP)	DIVERSION BERM (DB)	SLOPE BARRIERS (SB)
VEGETATION (VG)	VEGETATED BUFFER (VB)	EROSION CONTROL BLANKET (ECB)	RIP RAP (RR)