

Standard Erosion and Sediment Control Plan Requirements

a) Required Best Management Practices (BMPs). The following BMPs for soil erosi sediment control shall be used, as applicable, in a Standard Erosion Control Plan. Install these BMPs shall conform to the requirements found in the documents and/or websites | Section 4 of this policy.

Gravel Construction Entrance. A gravel construction entrance is generally required where traffic is anticipated off of existing paved or graveled roads. If there is more than one vehicle point, a gravel construction entrance should be installed at each entrance. The responsibility design to meet site conditions, and maintenance of the construction entrances remains v property owner or construction contractor. The owner/contractor shall remain responsible clean-up of any mud or dirt that is tracked onto streets or paved areas, even with the install gravel construction entrances.

Vehicles or equipment shall not enter a property adjacent to a creek, watercourse, or storr facility unless adequate measures are installed to prevent physical erosion into the water.

Catch Basin Protection. A filter system shall be used on catch basins (drop inlets) in put private streets, and parking areas as a means of sediment control. Alternate methods will require the approval of the City.

Sediment Filters/Barriers. For all projects, a silt fence or straw wattle dike shall be installed along the down slope edge of the disturbed area, prior to the commencement of grading. The sediment filter structures will be located so that all runoff from the construction site is filtered, or passes through a sediment detention basin prior to crossing a property line, entering a creek, or entering the City storm drain system. Sediment shall be removed when the depth of sediment exceeds one half of the height of the structure. Silt fences and straw wattles shall be installed according to the standard references cited.

Straw wattles can be used as dikes to stabilize temporary channel flow lines or as a perimeter filter barrier. Straw wattles must be installed in a trench, staked and backfilled if they are to be effective in reducing flow velocity and filtering sediment from runoff.

Straw wattles should not remain in place more than 12 months after installation unless it can be determining significant deterioration has not occurred. When used as a perimeter filter, sediment should be removed when material is within 3 inches of the top of any wattle.

Silt fences should be installed where sediment from sheet flow or rill and gully erosion will enter directly onto adjacent property. When installing, it is important the fabric material be anchored into a trench and backfilled.

Maintenance of filter fences is similar to that of straw wattles in that the fabric must be inspected and needed repairs implemented after every storm event. Sediment deposits shall be removed when material reaches a depth of more than one-half of the fence height.

Plastic Sheeting Plastic sheeting shall generally not be used as an erosion control measure over large areas. Plastic sheeting may be used to protect small, highly erodible areas, or to protect temporary stockpiles of material. If plastic sheeting is used, all resulting concentrated water flow from the plastic must be directed to a properly designed or existing drainage system able to handle the runoff without causing additional erosion.

Existing Vegetation and Revegetation. As far as is practicable, existing vegetation shall be protected and left in place, in accordance with the clearing limits shown on the approved Building Permit or Grading Permit and the approved Erosion Control Plans. The exception is where exotic plant materials are to be removed, or fire fuels reduced in accordance with an approved Plan. Work areas shall be carefully located and marked to reduce unnecessary damage to existing vegetation.

Slope Protection: Hydro-seeding alone will normally not be considered satisfactory erosion protection for disturbed slopes steeper than 4H:1V. Disturbed slopes steeper than 4H:1V shall be protected using straw and tackifier. The installation of erosion control blankets shall be required for all disturbed slopes steeper than 2.5H:1V and greater than 20 feet in slope length. Installation of straw wattles staked on contour shall be required for all slopes steeper than 4H:1V with slope lengths greater than 30 feet. Straw wattles or silt fencing shall be installed at the toe of all slopes steeper than 4H:1V, and along (just below) top of bank along all creeks.

Wet Weather Measures. On sites where vegetation and ground cover have been removed from more than 0.5 acre of land, vegetative ground cover shall be planted on or before **September 15** with the ground cover established by **October 15**. As an alternative, if a protective ground cover is not established by **October 15**, the open areas shall be protected through the winter with straw mulch, erosion blankets, the installation of additional straw wattles, or other method(s) approved by the City.

Seeding. Seeding shall be as follows, or as recommended by a California Licensed Landscape Architect or a Certified Professional Soil Erosion and Sediment Control Specialist.

SEED MIX ONE		SEED MIX TWO	
(Application rate = 40 kg/ha or 35 lb/ac)		Application rate=40 kg/ha or 35 lbs/acre)	
blando brome	40%	blando brome	35%
zorro annual fescue	8%	rose clover	20%
iana vetch	12%	annual ryegrass	15%
rose clover	15%	crimson clover	10%
crimson clover	15%	creeping red fescue	5%
sub clover	10%	zorro annual fescue	5%
TOTAL	100%	TOTAL	100%

Fertilizer

12-12-12 450 kg/ha (400 lb/ac), or 15-15-15 340 kg/ha (300 lb/ac), or 16-20-0 340 kg/ha (300 lb/ac).

Mulch

Straw 3,400 kg/ha (3,000 lb/ac), or wood fiber (if hydroseeded) 2,300 kg/ha (2,000 lb/ac)

b) Additional Erosion Control Measures. In addition to the required best management practices, the following erosion control measures shall be implemented as part of the standard erosion control plan when applicable.

• During any clearing, earth moving and/or grading phases of the project, water trucks or sprinkler systems shall be used in sufficient quantities to prevent dust from leaving the site. In addition, the entire area of disturbed soils shall be wetted down during the early morning hours and at the end of each day in such a manner as to create a crust.

• During the construction phase of the project, water trucks or sprinkler systems shall be used to keep all areas of vehicular movement damp enough to prevent dust raised from leaving the site. As a minimum, this will include the wetting down of such areas in the late morning hours and at the close of each day's activities.

• All trucks hauling soil materials to and from the site shall be covered with a tarp to prevent dust from blowing off the truck.

• All alleyways, circulation routes, haul routes, streets and sidewalks shall be kept clean and clear of dirt, dust and debris in a manner acceptable to the City of Santa Barbara's Public Works Department as outlined in their "Procedures for the Control of Runoff into Storm Drains and Watercourses". At a minimum, said areas shall be cleaned at the end of each working day or more often if directed by City personnel. The flushing of dirt or debris to storm drain or sanitary sewer facilities shall not be permitted. Failure to keep these areas clean will result in the issuance of a "Stop Work" order, which will not be released until such time as the area is cleaned in a manner acceptable to the City. Earth moving and grading activities shall be limited to the hours between 7:00 A.M. and 6:00 P.M. or as specified in the approved Erosion Control Plan or the project conditions of approval.

• After the completion of the clearing, grading, or excavation phase, the entire area of disturbed soil shall be treated to prevent wind pick up of the soil. Any one of the following methods may accomplish this:

- The seeding and or watering of the site until such time as the ground cover has taken root.
- The spreading of soil binders.
- The wetting down of the area in such a manner as to create a crust on the surface and the repeated soaking of the area, as necessary, to maintain the crust and prevent soil blowing.

• The contractor or builder shall designate a person or persons to monitor the storm water pollution prevention and dust control programs, and to order increased watering as necessary to prevent the transport of dust off-site, and additional BMPs to prevent storm water pollutants from entering public right-of-way. This person's duty shall include holiday and weekend periods when work may not be in progress. The name and telephone number of such person or persons shall be provided to the City of Santa Barbara Community Development Department and be placed on the plans.

c) Protection Measure Removal

The erosion prevention and sediment control measures shall remain in place and be maintained in good condition until all disturbed soil areas are permanently stabilized by installation and establishment of landscaping, grass, mulching, or are otherwise covered and protected from erosion.

d) Standard Erosion Control Measures Submittal Requirements

The plans sheets for a **Standard Erosion Control Plan** shall include the following information:

- Specific measures to be installed
- Specific locations where measures will be installed.
- Installation details.

Detailed Erosion Control Plan Requirements

The Detailed Erosion Control Plan submittal must comply with all of the requirements for the Standard Erosion Control Measures and also include a written narrative and detailed site plan and typical drawings and details.

a) Narrative

Written narrative (to be included with Plan) on letterhead or signed plan sheet of person responsible for Plan preparation shall include:

- Proposed schedule of grading activities and infrastructure milestones in a chronological format, including dates for beginning of phased grading areas and dates that areas will be stabilized. For example, easterly slope rough grading complete, streets graded, storm sewers and inlets installed, paving complete on Street X, creek outfall structure complete, etc.
- Description of potentially affected areas adjacent to site.
- Description of soils, geology, vegetation and nearby creeks.
- Description of critical areas of high erosion potential; unstable slopes.
- Description of erosion control measures on slopes, lots, streets, etc.
- Description of sediment detention basins, including design assumption and calculations.
- Description of emergency erosion and sediment control measures to be implemented for storms within 48 hours.
- Name and 24 hour telephone number of person responsible for erosion and sediment control.

b) Site Plan

The site plan shall include the following information:

- Scale, north arrow and legend.
- Vicinity map.
- Watershed boundaries within project.
- Contours and spot elevations indicating runoff patterns before and after grading.
- Critical areas within or near the project (creeks, wetlands, landslides, steep slopes, etc.).
- Limits of clearing and grading.
- Creek top of bank, delineation of any Creek Buffer Areas and existing vegetation and any special trees/wetlands to be fenced and protected.
- Location and types of temporary and permanent erosion and sediment control measures.
- Site access locations.
- Signature block for plan preparer.
- Additional plans that may be needed to illustrate narrative addressing stages of construction such as street graded-no storm drains; storm system installed; streets paved; etc.

BMP Maintenance Requirements.

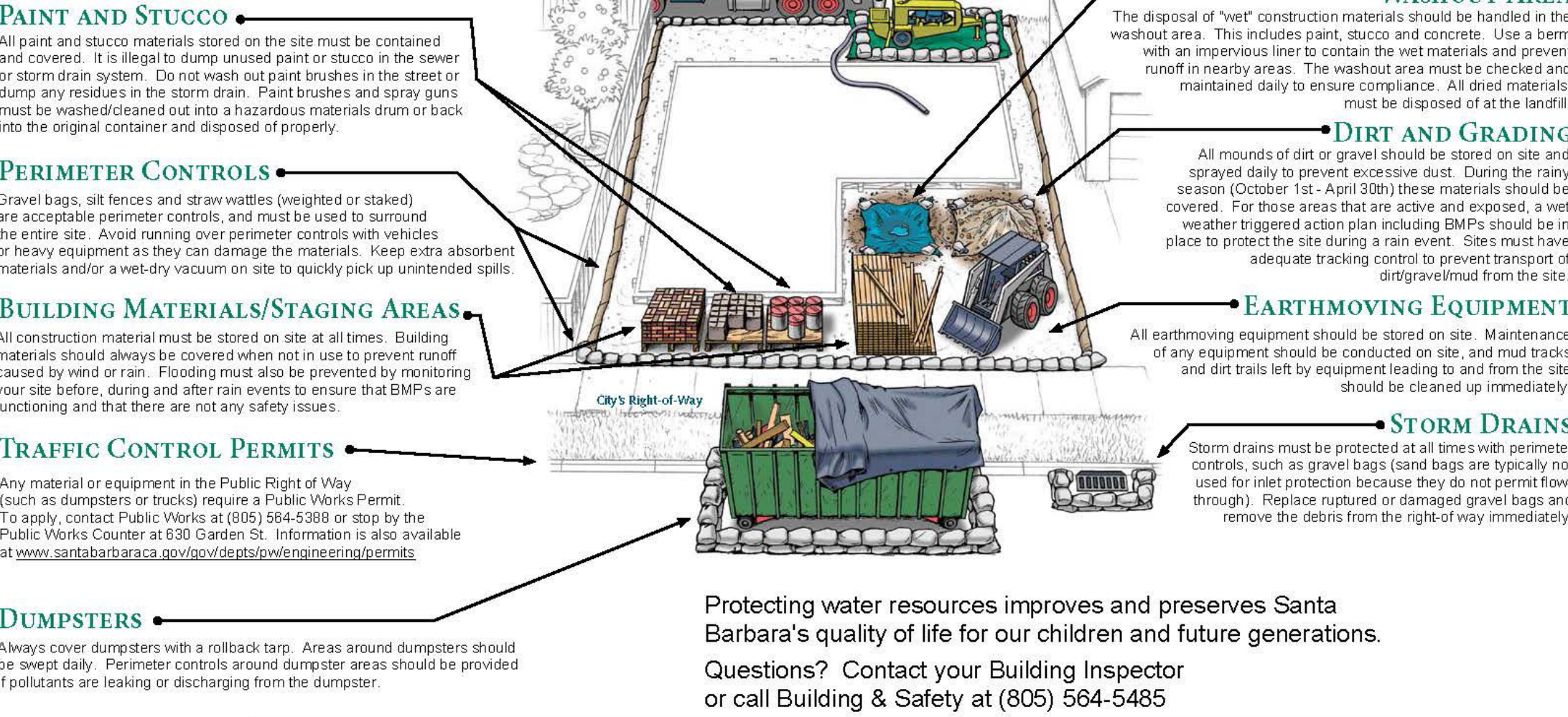
The permittee shall maintain the facilities and erosion control measures prescribed in the approved *Erosion Control Plan (Standard or Detailed)* so as to continue to be effective throughout the construction and establishment of permanent vegetation phases of the project. If the facilities and techniques approved in the Erosion Control Plans are not effective or sufficient, as determined by a City site inspection, the permittee shall submit a revised Plan within three working days of written notification by the City of unacceptable site erosion conditions. Upon approval of the revised plan by the City, the permittee shall immediately implement the additional facilities and measures included in the revised plan. In cases where significant erosion is likely to occur, the City may require that the applicant install interim control measures prior to submittal of the revised Erosion Control Plan

CONSTRUCTION SITE BEST MANAGEMENT PRACTICES

THE FOLLOWING BMPs MUST BE PROPERLY USED AT ALL CONSTRUCTION SITES IN THE CITY TO PROTECT STORM DRAINS AND MINIMIZE POLLUTION

The City of Santa Barbara Building & Safety Division Erosion/Sedimentation Control Program SBMC 22.85.020 and SBMC 16.15.010 prohibit pollutant discharges at work sites from flowing into storm drains and polluting local creeks, water courses and the ocean.

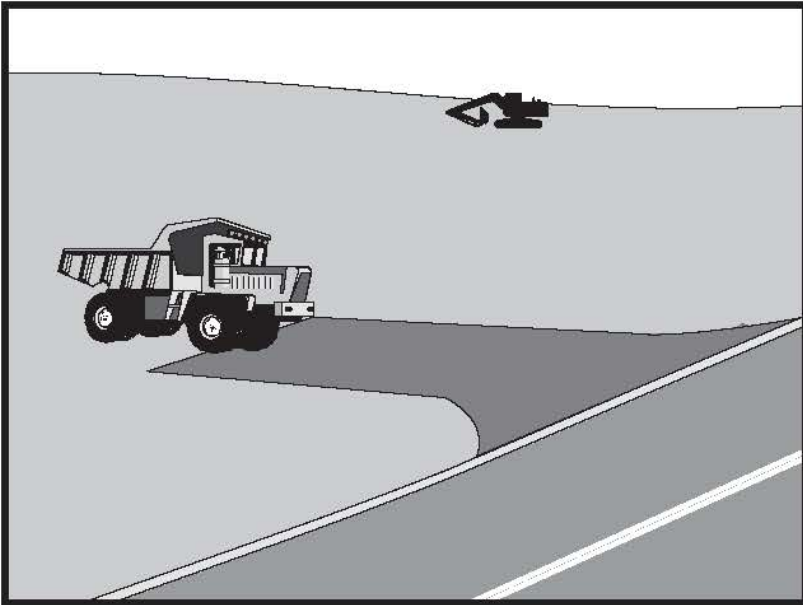
To stay in compliance and keep your project on schedule, make sure BMPs are in place and functioning. Sites must be checked and maintained daily.



City of Santa Barbara
EROSION / SEDIMENTATION CONTROL AND
STORMWATER QUALITY MANAGEMENT PROGRAM

Detailed
BMP-1

Stabilized Construction Entrance/Exit TC-1



Description and Purpose
A stabilized construction access is defined by a 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.

- Suitable Applications**
Use at construction sites:
- Where dirt or mud can be tracked onto public roads.
 - Adjacent to water bodies.
 - Where poor soils are encountered.
 - Where dust is a problem during dry weather conditions.

- Limitations**
- Entrances and exits require periodic top dressing with additional stones.
 - This BMP should be used in conjunction with street sweeping on adjacent public right of way.
 - Entrances and exits should be constructed on level ground only.
 - Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water

Categories	
EC	Erosion Control <input checked="" type="checkbox"/>
SE	Sediment Control <input checked="" type="checkbox"/>
TC	Tracking Control <input checked="" type="checkbox"/>
WE	Wind Erosion Control
NS	Non-Stormwater Management Control
WM	Waste Management and Materials Pollution Control
Legend:	
<input checked="" type="checkbox"/>	Primary Objective
<input checked="" type="checkbox"/>	Secondary Objective

Targeted Constituents	
Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	
Potential Alternatives	
None	



Stabilized Construction Entrance/Exit TC-1

runoff.

Implementation General
A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

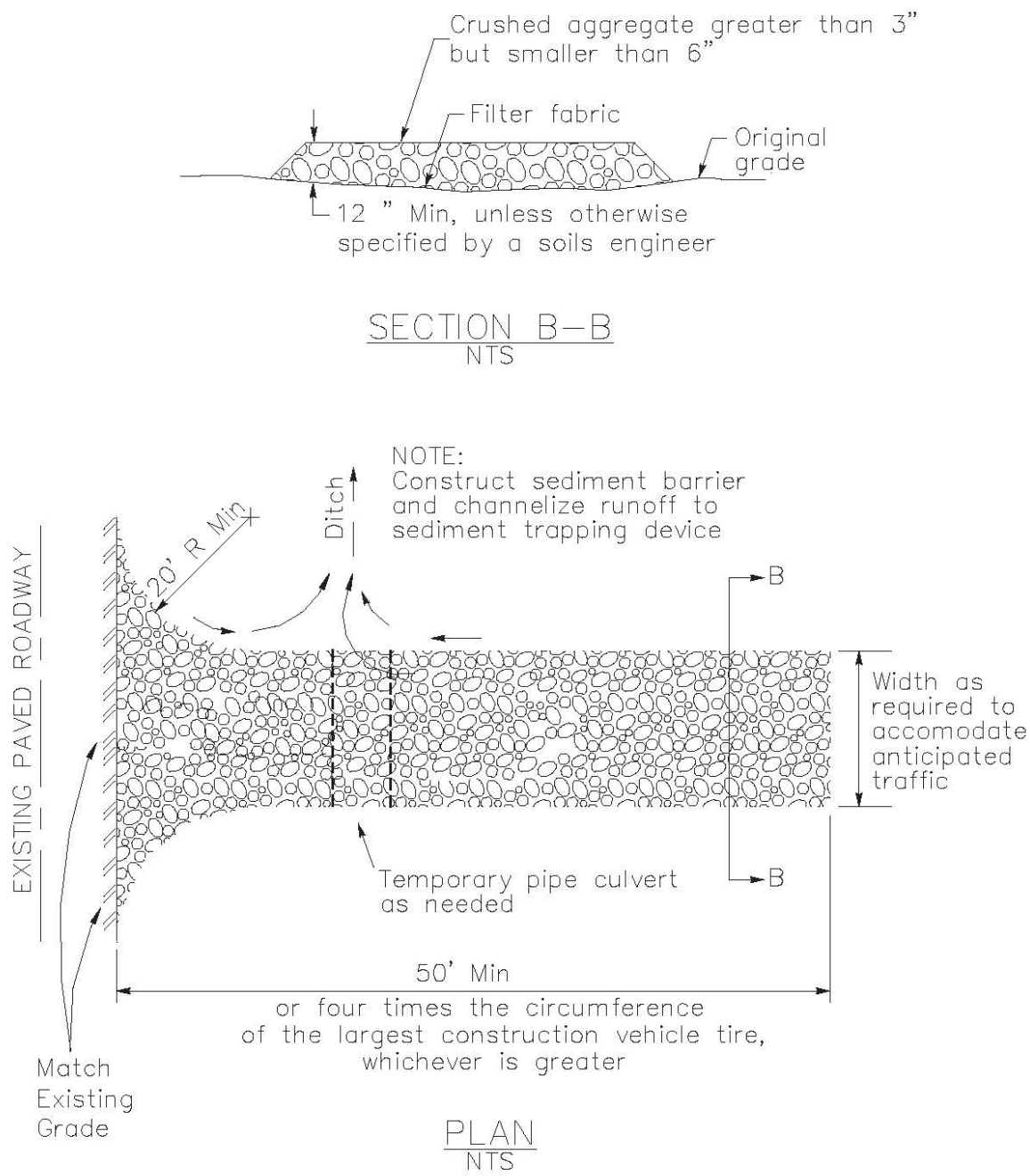
Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

- Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.
- Design and Layout**
- Construct on level ground where possible.
 - Select 3 to 6 in. diameter stones.
 - Use minimum depth of stones of 12 in. or as recommended by soils engineer.
 - Construct length of 50 ft minimum, and 30 ft minimum width.
 - Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
 - Provide ample turning radii as part of the entrance.
 - Limit the points of entrance/exit to the construction site.
 - Limit speed of vehicles to control dust.
 - Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
 - Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
 - Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.

Stabilized Construction Entrance/Exit TC-1

- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.
 - If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.
 - Designate combination or single purpose entrances and exits to the construction site.
 - Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
 - Implement SE-7, Street Sweeping and Vacuuming, as needed.
 - All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.
- Inspection and Maintenance**
- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
 - Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
 - Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
 - Keep all temporary roadway ditches clear.
 - Check for damage and repair as needed.
 - Replace gravel material when surface voids are visible.
 - Remove all sediment deposited on paved roadways within 24 hours.
 - Remove gravel and filter fabric at completion of construction

Stabilized Construction Entrance/Exit TC-1



Stabilized Construction Entrance/Exit TC-1

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

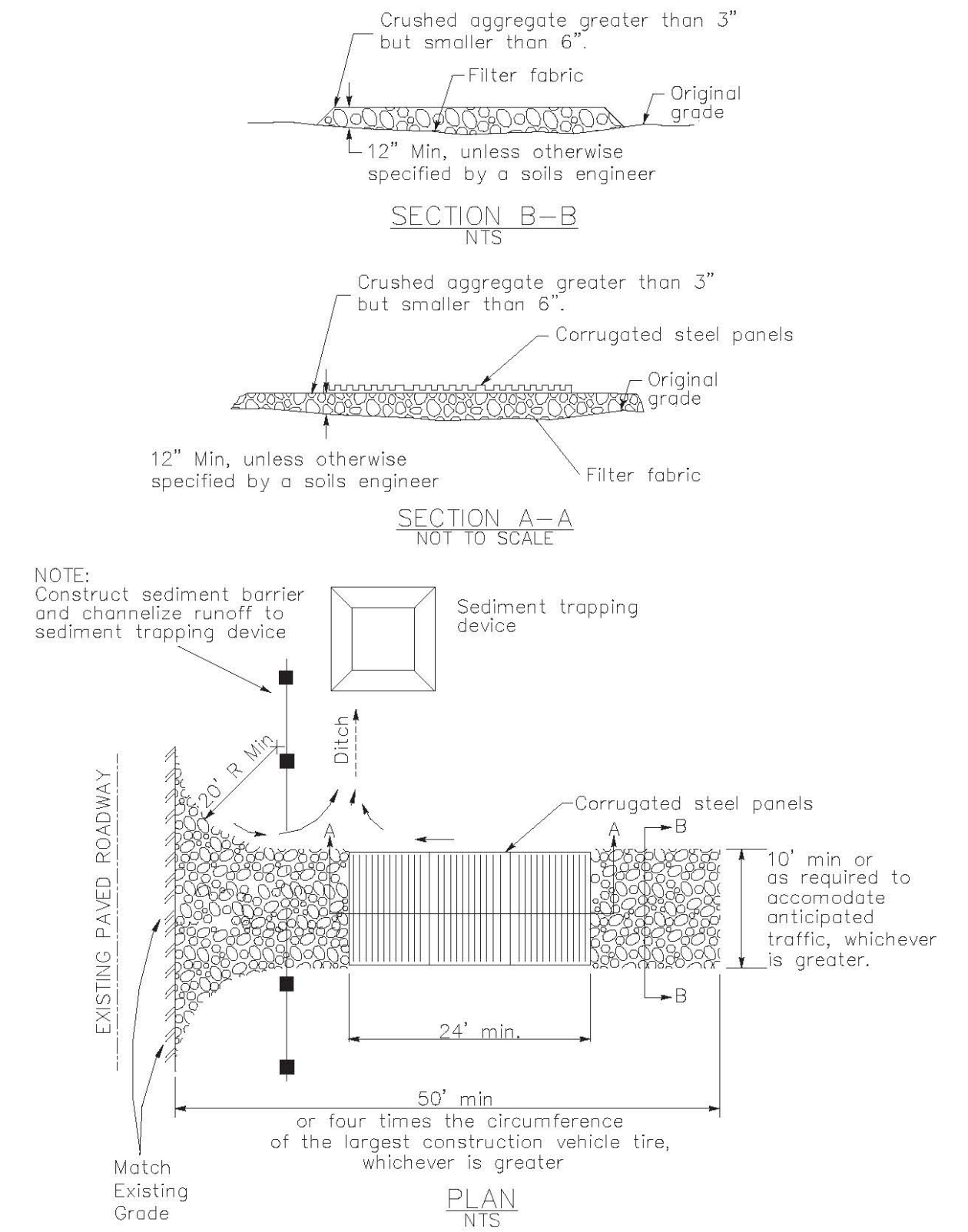
Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Stabilized Construction Entrance/Exit TC-1

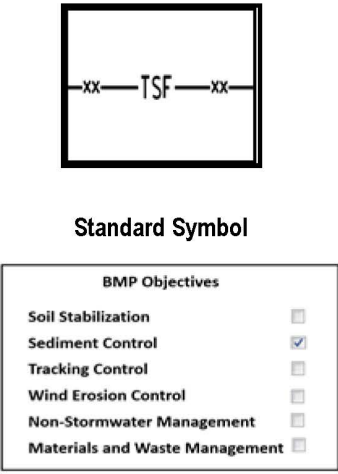


City of Santa Barbara
EROSION / SEDIMENTATION CONTROL AND
STORMWATER QUALITY MANAGEMENT PROGRAM

Detailed
BMP-2

Temporary Silt Fence

SC-1



Definition and Purpose

A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

- Below the toe of exposed and erodible slopes.
- Down-slope of exposed soil areas.
- Around temporary stockpiles.
- Along streams and channels.
- Along the perimeter of a project.

Limitations

- Not effective unless trenched and keyed in.
- Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
- Must be maintained.
- Must be removed and disposed of.
- Don't use below slopes subject to creep, slumping, or landslides.

Temporary Silt Fence

SC-1

- Don't use in streams, channels, drain inlets, or anywhere flow is concentrated.
- Don't use silt fences to divert flow.
- Don't use in locations where ponded water may cause a flooding hazard.

Standards and Specifications

Design and Layout

The drainage area above any fence should not exceed a quarter of an acre, (100-feet of silt fence per 10,000 square feet of DSA).

Slope of area draining to silt fence should be less than 1:1 (H:V).

Silt fences must be placed parallel to the slope contour.

Silt fences rely on temporary ponding to encourage sediment deposition and achieve water quality benefits. Limit application to areas where ponding and deposition may occur on the uphill side of the silt fence.

Temporary silt fence fabrics generally have life spans ranging between five and eight months. Projects with longer durations may require replacing silt fence fabric.

Silt fences constructed across concentrated flows are susceptible to washout. Silt fences shall not be installed across concentrated flows.

For slopes adjacent to water bodies or Environmentally Sensitive Areas (ESAs), additional temporary soil stabilization BMPs should be used.

For any 50 foot section of silt fence, the elevation of the base of the fence may not vary by more than 1/3 of the fence height.

Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.

Join separate sections to form reaches not more than 500 feet without openings. Ensure there are no gaps between posts.

Reinforced Silt Fence

Temporary reinforced silt fence is typically used in areas affected by high winds. They are also often used on slopes steeper than 2:1 (H:V) that contain a high number of rocks or large dirt clods that tend to dislodge, or where area draining fence contains moderate sediment loads.

Temporary reinforced silt fence (type 2) may also be used to provide sediment control and delineate ESAs.

Temporary Silt Fence

SC-1

Materials

Silt fence fabric should be a woven or unwoven geosynthetic textile that complies with Section 96-1.02E of the Standard Specifications. The Contractor must submit a certificate of compliance for silt fence fabric in accordance with Standard Specifications Section 6-2.03C.

Wood posts should be untreated fir, redwood, cedar, or pine lumber. Each silt fence post should be at least 4 feet long, except reinforced silt fence posts should be at least 6 feet for Type 1 and 5 feet for Type 2 installations. Posts should be free from decay, splits or cracks longer than the thickness of the post or other defects that would weaken the posts and cause the posts to be structurally unsuitable. Steel posts may be used as well. Posts should comply with the requirements in Standard Specifications sections 16-2.03B and 13-10.02C.

Anchors may be used. Anchors consist of a number 4 steel reinforcing bar. End protection shall be provided for any exposed bar reinforcement.

Staples used to fasten the fence fabric to the posts and to join adjacent silt fence sections shall be U-shaped and have 1/2-inch legs and a 1-inch crown. Staples should be 1/16-inch in diameter. At least four staples should be installed on each silt fence post for adequate fastening, with a maximum of 8-inches between each staple.

Installation

Install in accordance with Pages 5 and 6 of this BMP (Standard Plans T51 "Temporary Silt Fence" and T60 "Temporary Reinforced Silt Fence").

Generally, silt fences should be used in conjunction with soil stabilization source controls up slope to provide effective erosion and sediment control.

Excavate a trench that is 6-inches deep and 6-inches wide with a length consistent with the project design plans. Place the bottom of the silt fence fabric in the trench. Backfill the trench with soil over the base of the silt fence fabric. Compact the backfill soil by hand or mechanical methods.

Construct the length of each reach so that the change in base elevation along any 50-foot reach does not exceed 1/3 the height of the barrier; in no case should any reach of temporary silt fence exceed 500 feet in length.

Construct silt fences with a set-back of at least 3 feet from the toe of a slope. Where a silt fence is determined to be not practical with a 3 foot set-back from the toe due to specific site conditions, the silt fence may be constructed at the toe of the slope, but should be constructed as far from the toe of the slope as practical.

Temporary Silt Fence

SC-1

Maintenance and Inspection

Repair undercut silt fences.

Repair or replace split, torn, slumping, or weathered fabric.

Inspect silt fence when rain is forecast. Perform necessary maintenance, or maintenance required by the Engineer.

Inspect silt fence following rain events. Perform maintenance as necessary, or as required by the Engineer.

Maintain silt fences to provide an adequate sediment holding capacity. Sediment should be removed when the sediment accumulation reaches one-third (1/3) of the barrier height.

Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed of outside the highway right of way in conformance with the Standard Specifications, and replaced with new silt fence barriers.

Holes, depressions or other ground disturbance caused by the removal of the temporary silt fences should be backfilled and repaired in conformance with the Standard Specifications.

Remove silt fence when no longer needed. Fill and compact post holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground.

Silt Fence placement is to be shown in the WPCDs along with other BMPs.

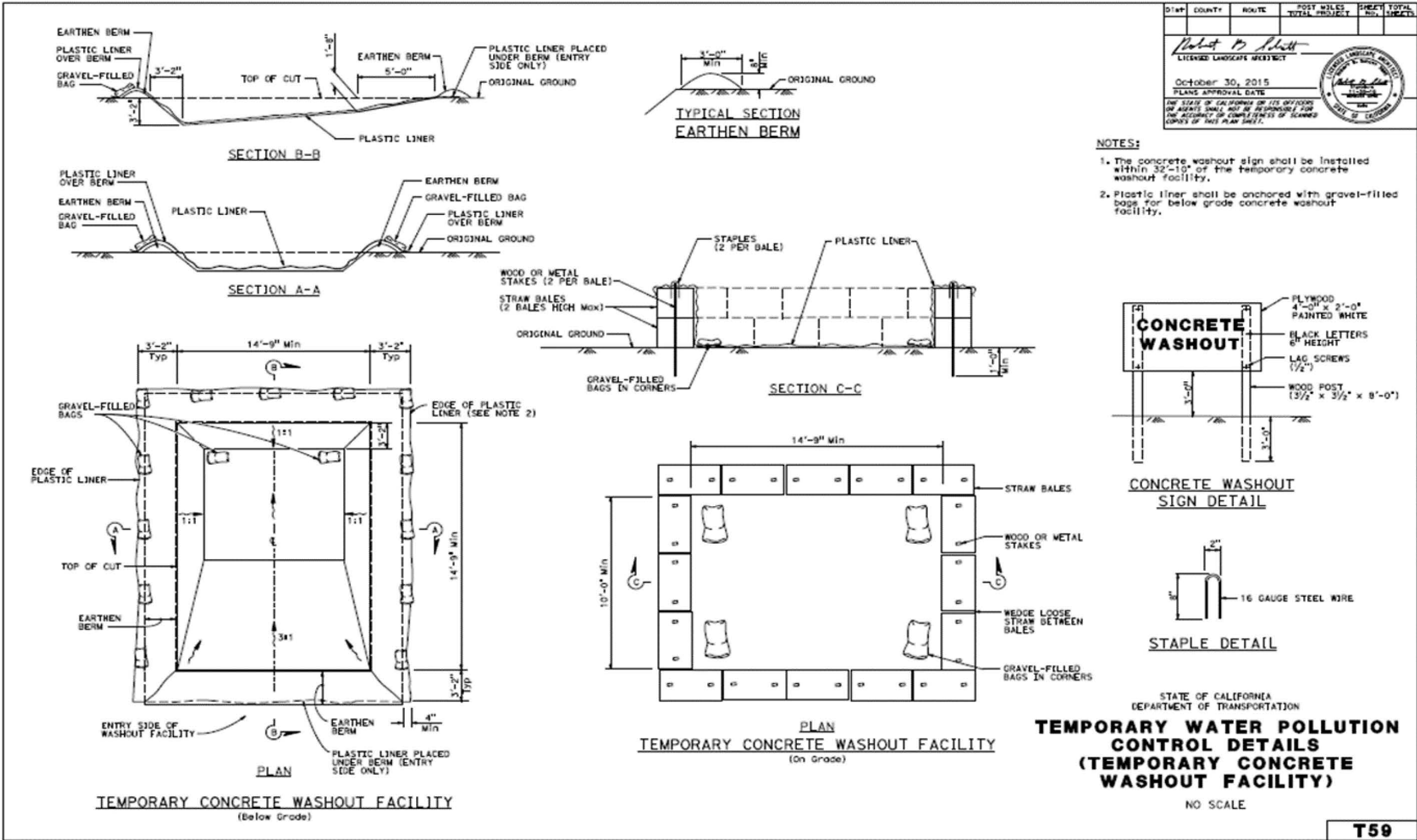
SWPPP or WPCP

Temporary Silt Fence or Reinforced Silt Fence must be discussed in Section 500.3.3 of the SWPPP or Section 30.2.2 of the WPCP.

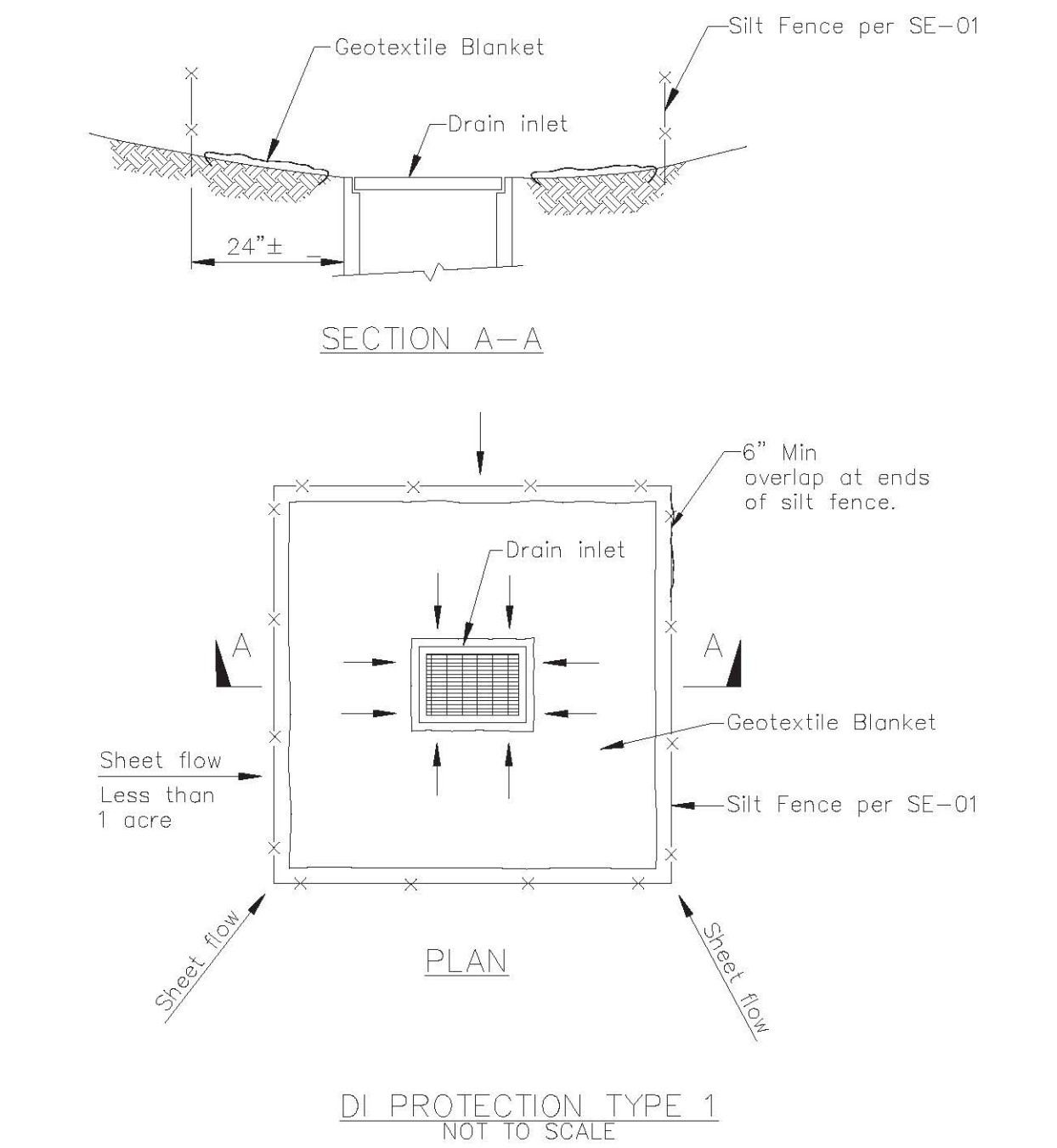


Concrete Waste Management

WM-8



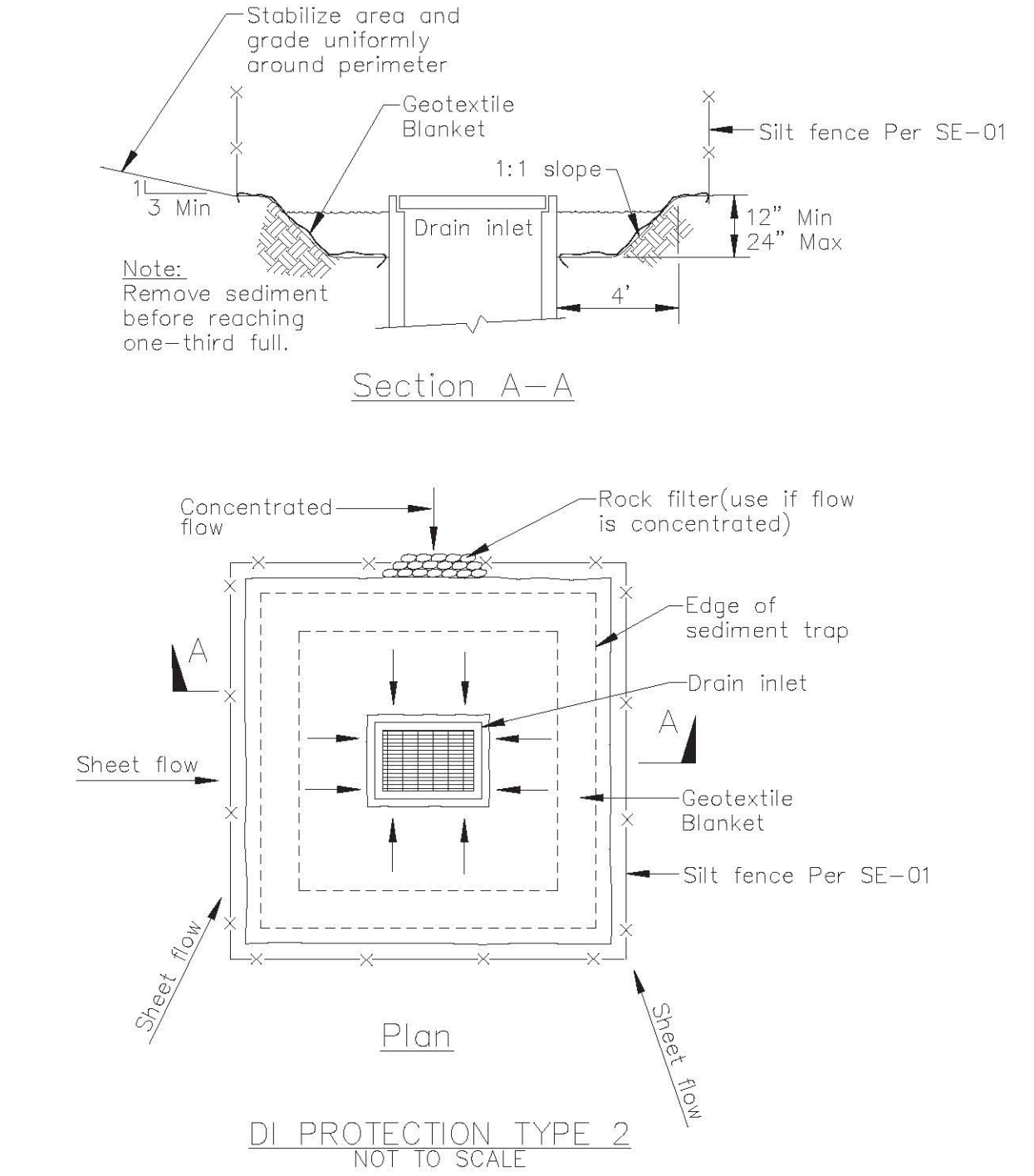
Storm Drain Inlet Protection SE-10



NOTES:

1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3. Not applicable with concentrated flows.

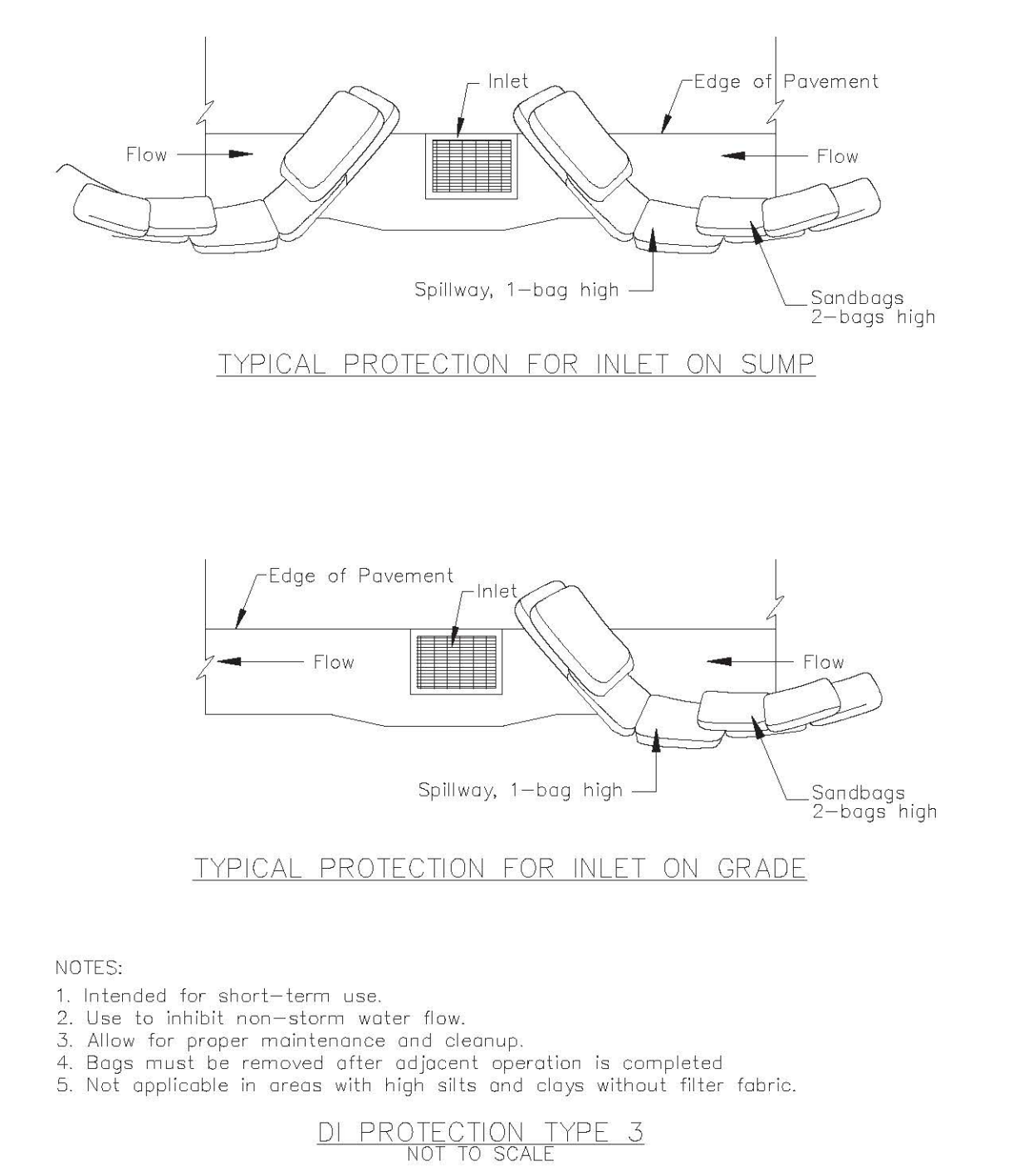
Storm Drain Inlet Protection SE-10



Notes

1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.

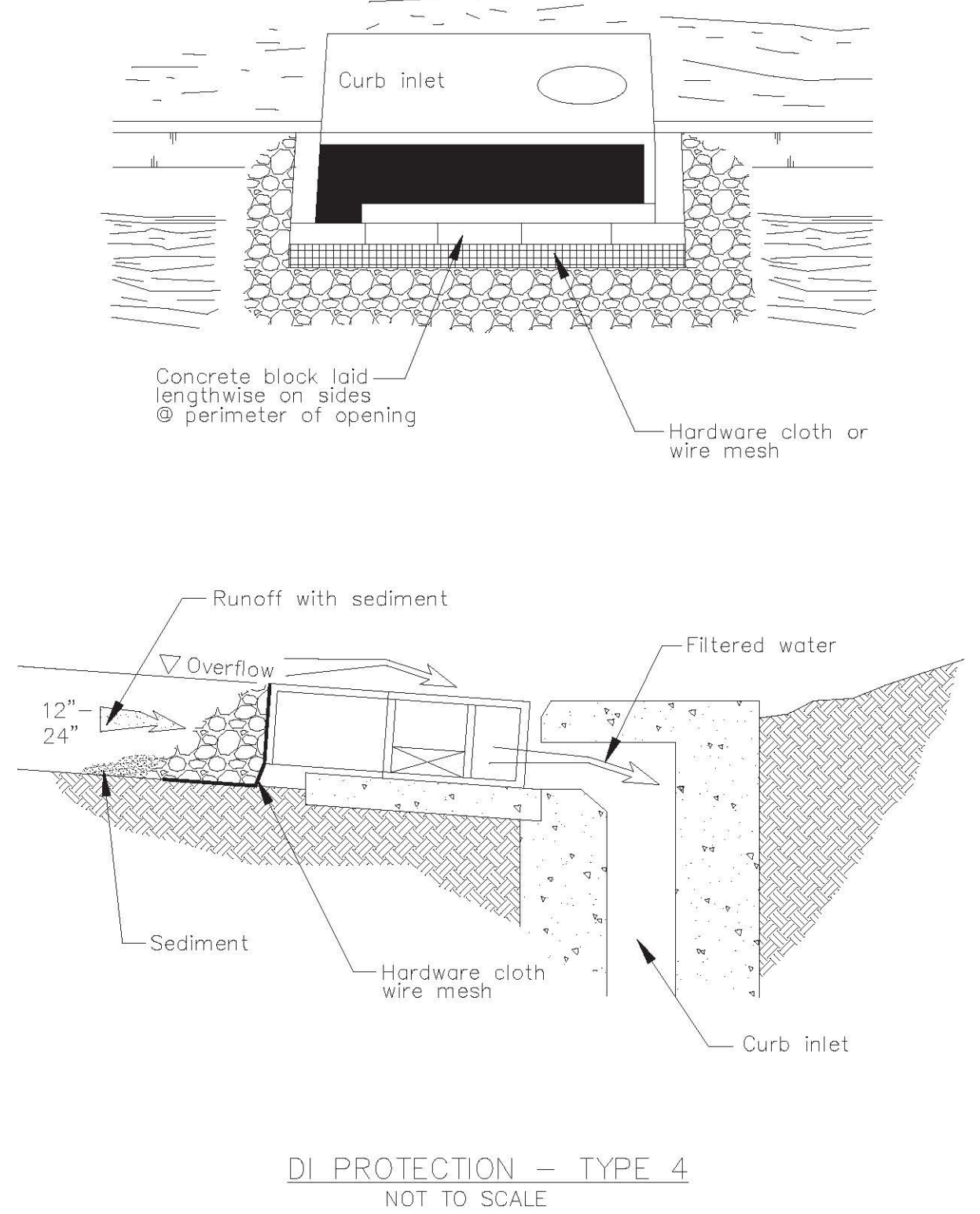
Storm Drain Inlet Protection SE-10



NOTES:

1. Intended for short-term use.
2. Use to inhibit non-storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.

Storm Drain Inlet Protection SE-10



NOTES:

1. Intended for short-term use.
2. Use to inhibit non-storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.

Concrete Waste Management WM-8



Definition and Purpose

These are procedures and practices that are designed to minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses.

Appropriate Applications

Concrete waste management procedures and practices are implemented on construction projects where concrete is used as a construction material or where concrete dust and debris result from demolition activities.

Where slurries containing portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from sawcutting, coring, grinding, grooving, and hydro-concrete demolition.

Where concrete trucks and other concrete-coated equipment are washed on site, when approved by the Resident Engineer (RE). See also NS-8, "Vehicle and Equipment Cleaning."

Where mortar-mixing stations exist.

Limitations

None identified.

Standards and Specifications

Education

Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.

The WPC Manager shall oversee and enforce concrete waste management procedures.

Concrete Waste Management WM-8

Concrete Demolition Wastes

Stockpile concrete demolition wastes in accordance with BMP WM-3, "Stockpile Management."

Disposal of hardened PCC and AC waste shall be in conformance with Standard Specifications Section 14-10 Solid Waste Disposal and Recycling.

Concrete Slurry Waste Management and Disposal

PCC and AC waste shall not be allowed to enter storm drainage systems or watercourses.

A sign shall be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

The WPCM must ensure that onsite concrete working tasks are being monitored, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.

Residue from saw cutting, coring and grinding operations shall be picked up by means of a vacuum device. Residue shall not be allowed to flow across the pavement and shall not be left on the surface of the pavement. See also NS-3, "Paving and Grinding Operations."

Vacuumed slurry residue shall be disposed in accordance with WM-5, "Solid Waste Management" and Standard Specifications Section 7-1.13. Slurry residue shall be temporarily stored in a facility as described in "Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures" below), or within an impermeable containment vessel or bin.

Collect and dispose of all residues from grooving and grinding operations in accordance with Standard Specifications Section 14-10 Solid Waste Disposal and Recycling and Standard Specifications 14-11 Hazardous Waste and Contamination.

Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures

Temporary concrete washout facilities shall be located a minimum of 50 ft. from storm drain inlets, open drainage facilities, and watercourses, unless determined infeasible by the RE. Each facility shall be located away from construction traffic or access areas to prevent disturbance or tracking.

A sign shall be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities. The sign shall be installed as shown on the plans and in conformance with the provisions in Standard Specifications Section 56 2, Overhead Sign Structure.

Temporary concrete washout facilities shall be constructed above grade or below grade at the option of the Contractor. Temporary concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

Temporary washout facilities shall have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.

Perform washout of concrete mixers, delivery trucks, and other delivery systems in designated areas only.

Wash concrete only from mixer chutes into approved concrete washout facility. Washout may be collected in an impermeable bag or other impermeable containment devices for disposal.

Concrete Waste Management WM-8

Pump excess concrete in concrete pump bin back into concrete mixer truck.

Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed offsite.

Once concrete wastes are washed into the designated area and allowed to harden, the concrete shall be broken up, removed, and disposed of in conformance with the provisions in Standard Specifications Section 7-1.13 or 15 3.02.

Temporary Concrete Washout Facility Type "Above Grade"

Temporary concrete washout facility Type "Above Grade" shall be constructed as shown on Page 6 or 7, with a recommended minimum length and minimum width of 10 ft, but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. The length and width of a facility may be increased, at the Contractor's expense, upon approval from the RE.

Straw bales, wood stakes, and sandbag materials shall conform to the provisions in SC-9, "Straw Bale Barrier."

Plastic lining material shall be a minimum of 10-mil polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material. Liner seams shall be installed in accordance with manufacturers' recommendations.

Portable delineators shall conform to the provisions in Standard Specifications Section 12 3.04, "Portable Delineators." The delineator bases shall be cemented to the pavement in the same manner as provided for cementing pavement markers to pavement. Portable delineators shall be applied only to a clean, dry surface.

Temporary Concrete Washout Facility (Type Below Grade)

Temporary concrete washout facility Type "Below Grade" shall be constructed as shown on page 6, with a recommended minimum length and minimum width of 10 ft. The quantity and volume shall be sufficient to contain all liquid and concrete waste generated by washout operations. The length and width of a facility may be increased, at the Contractor's expense, upon approval of the RE. Lath and flagging shall be commercial type.

Plastic lining material shall be a minimum of 10-mil polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material. Liner seams shall be installed in accordance with manufacturers' recommendations.

The soil base shall be prepared free of rocks or other debris that may cause tears or holes in the plastic lining material.

Temporary washout facilities shall implement BMPs to prevent run-on and run-off from the facility.

Removal of Temporary Concrete Washout Facilities

When temporary concrete washout facilities are no longer required for the work, as determined by the RE, the hardened concrete shall be removed and disposed of. Disposal of PCC dried residues, slurries or liquid waste shall be disposed of outside the highway right-of-way in conformance with provisions of Standard Specifications Section 7-1-13. Materials used to construct temporary concrete washout facilities shall become

Concrete Waste Management WM-8

the property of the Contractor, shall be removed from the site of the work, and shall be disposed of outside the highway right-of-way.

Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled and repaired in conformance with the provisions in Standard Specifications Section 15 1.02, "Preservation of Property."

Maintenance and Inspection

Inspect Concrete Waste Management areas before, during and after rainfall events, and at least weekly during other times.

The WPC Manager shall monitor concrete working tasks, such as sawcutting, coring, grinding and grooving daily to ensure proper methods are employed or as directed by the RE.

Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 4 inches for above grade facilities and 12 inches for below grade facilities.

Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition.

Hardened concrete materials shall be removed and disposed of in conformance with the provisions in Standard Specifications Section 7-1.13 or 15 3.02.

Existing facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

Temporary concrete washout facilities shall be inspected for damage (i.e. tears in polyethylene liner, missing sandbags, etc.). Damaged facilities shall be repaired.

Inspection and Maintenance of these areas must be properly documented and ensure no potential for discharges occur from these areas as part of the non-visible monitoring requirements.

SWPPP or WPCP

Concrete Waste Management must be discussed in Section 500.4.2 of the SWPPP or Section 30.3.2 of the WPCP.

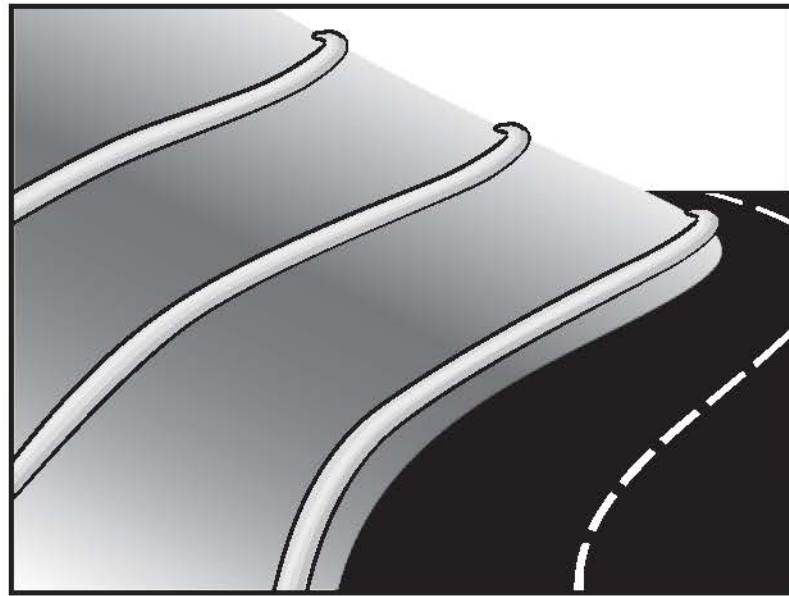


City of Santa Barbara
EROSION / SEDIMENTATION CONTROL AND
STORMWATER QUALITY MANAGEMENT PROGRAM

Detailed
BMP-4

Fiber Rolls

SE-5



Categories	
EC	Erosion Control <input checked="" type="checkbox"/>
SE	Sediment Control <input checked="" type="checkbox"/>
TC	Tracking Control
WE	Wind Erosion Control
NS	Non-Stormwater Management Control
WM	Waste Management and Materials Pollution Control

Legend:
☒ Primary Category
☒ Secondary Category

Description and Purpose

A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll wrapped by netting, which can be photodegradable or natural. Additionally, gravel core fiber rolls are available, which contain an imbedded ballast material such as gravel or sand for additional weight when staking the rolls are not feasible (such as use as inlet protection). When fiber rolls are placed at the toe and on the face of slopes along the contours, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- As check dams in unlined ditches with minimal grade.
- Down-slope of exposed soil areas.
- At operational storm drains as a form of inlet protection.

Targeted Constituents	
Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives	
SE-1 Silt Fence	
SE-6 Gravel Bag Berm	
SE-8 Sandbag Barrier	
SE-14 Biofilter Bags	



Fiber Rolls

SE-5

- Around temporary stockpiles.
- Limitations**
 - Fiber rolls are not effective unless trenched in and staked.
 - Not intended for use in high flow situations.
 - Difficult to move once saturated.
 - If not properly staked and trenched in, fiber rolls could be transported by high flows.
 - Fiber rolls have a very limited sediment capture zone.
 - Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.
 - Rolls typically function for 12-24 months depending upon local conditions.

Implementation

Fiber Roll Materials

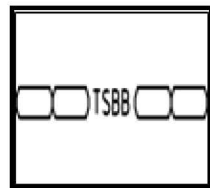
- Fiber rolls should be prefabricated.
- Fiber rolls may come manufactured containing polyacrylamide (PAM), a flocculating agent within the roll. Fiber rolls impregnated with PAM provide additional sediment removal capabilities and should be used in areas with fine, clayey or silty soils to provide additional sediment removal capabilities. Monitoring may be required for these installations.
- Fiber rolls are made from weed free rice straw, flax, or a similar agricultural material bound into a tight tubular roll by netting.
- Typical fiber rolls vary in diameter from 9 in. to 20 in. Larger diameter rolls are available as well.

Installation

- Locate fiber rolls on level contours spaced as follows:
 - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
 - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
 - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Prepare the slope before beginning installation.
- Dig small trenches across the slope on the contour. The trench depth should be ¼ to 1/3 of the thickness of the roll, and the width should equal the roll diameter, in order to provide area to backfill the trench.

Straw Bale Barrier

SC-9



Standard Symbol

BMP Objectives	
Soil Stabilization	<input type="checkbox"/>
Sediment Control	<input checked="" type="checkbox"/>
Tracking Control	<input type="checkbox"/>
Wind Erosion Control	<input type="checkbox"/>
Non-Stormwater Management	<input type="checkbox"/>
Materials and Waste Management	<input type="checkbox"/>

Definition and Purpose

A straw bale barrier is a temporary linear sediment barrier consisting of straw bales, designed to intercept and slow sediment-laden sheet flow runoff. Straw bale barriers allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

- Along the perimeter of a site.
- Along streams and channels.
- Below the toe of exposed and erodible slopes.
- Down slope of exposed soil areas.
- Around stockpiles.
- Across minor swales or ditches with small catchments.
- Around above grade type temporary concrete washouts (see WM-8, "Concrete Waste Management").
- Parallel to a roadway to keep sediment off paved areas.

Limitations

Installation can be labor intensive.
Straw bale barriers are maintenance intensive.



Fiber Rolls

SE-5

- It is critical that rolls are installed perpendicular to water movement, and parallel to the slope contour.
- Start building trenches and installing rolls from the bottom of the slope and work up.
- It is recommended that pilot holes be driven through the fiber roll. Use a straight bar to drive holes through the roll and into the soil for the wooden stakes.
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into the trench.
 - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
 - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.
- See typical fiber roll installation details at the end of this fact sheet.

Removal

- Fiber rolls can be left in place or removed depending on the type of fiber roll and application (temporary vs. permanent installation). Typically, fiber rolls encased with plastic netting are used for a temporary application because the netting does not biodegrade. Fiber rolls used in a permanent application are typically encased with a biodegradable material and are left in place. Removal of a fiber roll used in a permanent application can result in greater disturbance.
- Temporary installations should only be removed when up gradient areas are stabilized per General Permit requirements, and/or pollutant sources no longer present a hazard. But, they should also be removed before vegetation becomes too mature so that the removal process does not disturb more soil and vegetation than is necessary.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP should be periodically removed

Fiber Rolls

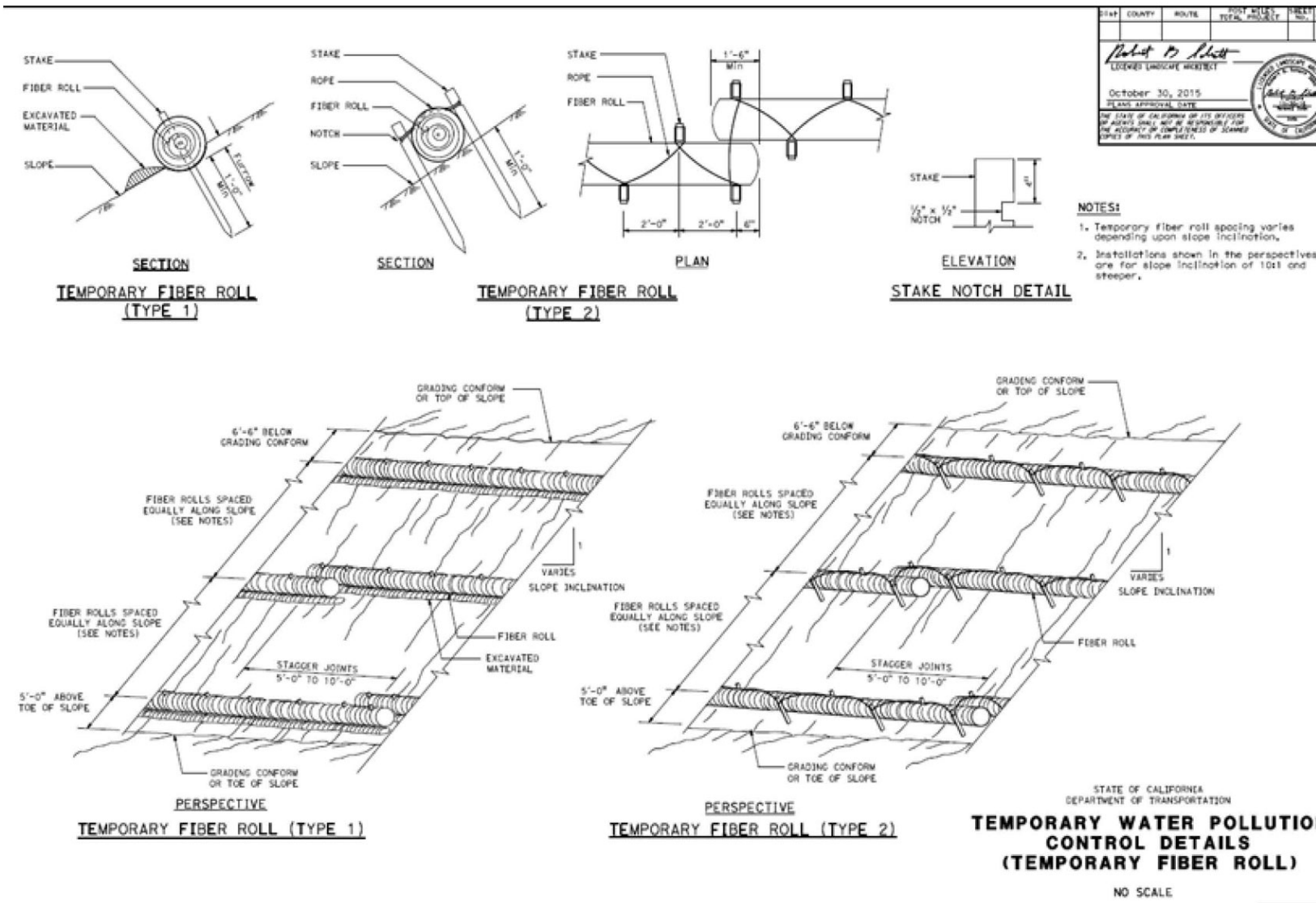
SE-5

- in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-third the designated sediment storage depth.
- If fiber rolls are used for erosion control, such as in a check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.
- Repair any rills or gullies promptly.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



Straw Bale Barrier

SC-9

Other Considerations

Construct straw bale barriers with a set-back of at least 3 ft from the toe of a slope. Where it is determined to be not practical due to specific site conditions, the straw bale barrier may be constructed at the toe of the slope, but be constructed as far from the toe of the slope as practical.

This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the RE.

Straw bale barriers may be used in combination with a silt fence (see SC-2 "Silt Fence") for additional sediment control.

Maintenance and Inspection

At a minimum, BMPs must be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

Inspect straw bale barriers for sediment accumulations and remove sediment when depth reaches one-third the barrier height. Removed sediment should be disposed of outside the highway right-of-way in conformance with the Standard Specifications.

Replace or repair damaged bales as needed or as directed by the RE.

Repair washouts or other damages as needed or as directed by the RE.

Remove straw bales when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilized the area.

Straw Bale Barrier placement must be shown on the WPCDs and reflect current site conditions.

SWPPP or WPCP

Straw Bale Barrier must be discussed in Section 500.3 of the SWPPP or Section 30.2 of the WPCP.

