
USACE / NAVFAC / AFCEA / NASA UFGS-01 57 23 (April 2008)

Preparing Activity: USACE (CW) Superseding
UFGS-01 57 23 (January 2008)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated October 2010

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04/08

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SECTION 01 57 23

TEMPORARY STORM WATER POLLUTION CONTROL
04/08

NOTES: This specification covers the requirements for temporary construction measures most used in complying with the Best Management Practices of the storm water pollution prevention plan as required by a NPDES Permit.

Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

PART 1 GENERAL

NOTE: This guide specification must be tailored to meet the requirements of the job and of the permitting authority. Individual states may require prevention measures that differ from the ones specified in this section and, in that case, this guide specification will be tailored to meet those State requirements. This guide specification is required for all construction projects that include disturbing over 2 hectares (5 acres) of land surface area that could be a source for erosion and sediment pollution due to storm water runoff.

(1) A Notice of Intent (NOI) will be prepared and sent to the appropriate state licensing office or USEPA Regional Office. At this time, it has not been determined when to send in the NOI, but it will be done after preparation of a storm water pollution

prevention plan, and perhaps after award of the contract because the names of the Contractors must be give on the NOI.

(2) After construction is completed, a Notice of Termination (NOT) will be sent to the state office or Regional USEPA Regional Office.

1.1 REFERENCES

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 4439	(2004) Geosynthetics
ASTM D 4491	(1999a; R 2009) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(2004; R 2009) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(2008) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(2004) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(2002; R 2009) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 832-R-92-005	(1992) Storm Water Management for
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Construction Activities Developing
Pollution Preventions and Plans and Best
Management Practices

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 122.26

Storm Water Discharges (Applicable to
State NPDES Programs, see section 123.25)

1.2 SYSTEM DESCRIPTION

NOTE: Current studies indicate contaminants bind to soil particles and can be carried with the eroded soils into streams. The intent of this specification is to prevent sediment from entering streams or water bodies adjacent to construction sites. The Contracting Officer, when necessary, should provide information to the Contractor emphasizing the need for source and sediment controls.

The work consists of implementing the storm water pollution prevention measures to prevent sediment from entering streams or water bodies as specified in this Section in conformance with the requirements of Section 01 57 20.00 10 ENVIRONMENTAL PROTECTION, and the requirements of the National Pollution Discharge Elimination System (NPDES) permit attached to that Section.

1.3 EROSION AND SEDIMENT CONTROLS

The controls and measures required of the Contractor are described below.

1.3.1 Stabilization Practices

NOTE: Describe interim stabilization practices, including site-specific scheduling of the implementation of the practices. Plans should ensure that existing vegetation is preserved where attainable and disturbed areas are stabilized. Show locations for stabilization practices on the drawings.

The stabilization practices to be implemented include [temporary seeding,] [mulching,] [geotextiles,] [sod stabilization,] [vegetative buffer strips,] [erosion control matts,] [protection of trees,] [preservation of mature vegetation,] [etc]. On the daily CQC Report, record the dates when the major grading activities occur, (e.g., [clearing] [and grubbing,] [excavation,] [embankment,] [and] [grading]); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, initiate stabilization practices as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have [temporarily or] permanently ceased.

1.3.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity [temporarily or] permanently ceases or is precluded by unsuitable conditions caused by the weather, initiate stabilization practices as soon as practicable after conditions become suitable.

1.3.1.2 No Activity for Less Than 21 Days

When the total time period in which construction activity is temporarily ceased on a portion of the site is [21] [_____] days minimum, stabilization practices do not have to be initiated on that portion of the site until 14 days have elapsed after construction activity temporarily ceased.

1.3.1.3 Burnoff

Burnoff of the ground cover is not permitted.

1.3.1.4 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified, and protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

1.3.2 Erosion, Sediment and Stormwater Control

**NOTE: For projects located in Virginia where 10,000
or more square feet of land area are disturbed,
choose the paragraph below.**

a. [Submit "Erosion and Sediment Controls" (E&S) (form provided at the pre-construction conference) [and [Storm Water Inspection Reports for General Permit](#)] to the Contracting Officer once every 7 calendar days and within 24 hours of a storm event that produces **12 mm 0.5 inch** or more of rain.]

**NOTE: For projects located in North Carolina where
1 or more acres (0.4 hectares) of land area are
disturbed, choose the paragraph below and delete
paragraph, Storm Water Notice of Intent for
Construction Activities.**

b. [Submit "Erosion and Sediment Control Reports" (E&S) (form provided at the pre-construction conference) and "Stormwater Inspections for General Permit NCG010000 - Land Disturbing Activities" (form provided at http://h2o.enr.state.nc.us/su/PDF_Files/SW_General_Permits/NCG01_Inspect_log.pdf) to the Contracting Officer once every 7 days and within 24 hours of a storm event that produces 0.5 inch or more of rain.]

c. [Comply with NCG010000, North Carolina Permit to Discharge Storm Water under the National Pollutant Discharge Elimination System. The existing permit may be obtained from: http://h2o.enr.state.nc.us/su/PDF_Files/SW_General_Permits/NCG01_Inspect_log.pdf.]

d. Storm Water Notice of Intent for Construction Activities

NOTE: Use paragraph "e" when 0.4 or more hectares (1 or more acres) of total land area are to be disturbed during the construction. This requirement is the Federal EPA standard. Some States are more stringent; e.g., South Carolina EPA standards invoke these requirements for construction sites disturbing any land area within 0.8 kilometer (1/2 mile) of a receiving water body in the Coastal Zone. Verify if the requirements of this paragraph are applicable for land area less than the Federal EPA standard by checking with the EPA of the State where the project is located. Edit the text accordingly.

e. Submit a [Storm Water Notice of Intent](#) for NPDES coverage under the general permit for construction activities and a [Storm Water Pollution Prevention Plan](#) (SWPPP) for the project to the Contracting Officer prior to the commencement of work. The SWPPP shall meet the requirements of the [EPA][State of [____]] general permit for storm water discharges from construction sites. Submit the SWPPP along with any required Notice of Intent, Notice of Termination, and appropriate permit fees, via the Contracting Officer, to the appropriate [Federal][State] agency for approval, a minimum of 14 calendar days prior to the start of any land disturbing activities. Maintain an approved copy of the SWPPP at the construction on-site office, and continually update as regulations require, to reflect current site conditions. Include within the SWPPP:

- (1) Identify potential sources of pollution which may be reasonably expected to affect the quality of storm water discharge from the site.
- (2) Describe and ensure implementation of practices which will be used to reduce the pollutants in storm water discharge from the site.
- (3) Ensure compliance with terms of the [EPA][State of [____]] general permit for storm water discharge.
- (4) Select applicable best management practices from EPA 832-R-92-005.
- (5) Include a completed copy of the Registration Statement, BMP Inspection Report Template and Notice of Termination except for the effective date.
- [(6) Storm Water Pollution Prevention Measures and Notice of Intent [40 CFR 122.26](#), [EPA 832-R-92-005](#). Provide a "Storm Water Pollution Prevention Plan" (SWPPP) for the project. The SWPPP will meet the requirements of the [EPA][State of [____]] general permit for storm water discharges from construction sites. Submit the SWPPP along with any required Notice of Intent, Notice of Termination, and appropriate permit fees, via the Contracting Officer, to the appropriate [Federal][State] agency for approval, a minimum of 14 calendar days prior to the start of construction.

A copy of the approved SWPPP will be kept at the construction on-site office, and continually updated as regulations require to reflect current site conditions.]

NOTE: For projects located in Virginia where 1 or more acres (0.4 hectares) of land area are disturbed during construction, use the following paragraph instead of the above item in addition to items (a) thorough (e).

[(7) Storm Water Pollution Prevention Measures and Notice of Intent 40 CFR 122.26, EPA 832-R-92-005. Provide a "Storm Water Pollution Prevention Plan" (SWPPP) for the project. The SWPPP will meet the requirements of the State of Virginia general permit for storm water discharges from construction activities. Submit the SWPPP to the Contracting Officer for review, approval and signature a minimum of 15 days prior to the start of any land disturbing activities. Maintain an approved copy of the SWPPP at the construction on-site office, and continually update as regulations require, to reflect current site conditions.]

(8) Following SWPPP approval, submit Registration Statement and appropriate permit fees to the Virginia Department of Conservation and Recreation (DCR) before any land disturbing activities begin. Coverage under the permit begins on the day the Registration Statement and fee are: (1) post marked by mail, (2) registered online at the DCR's website, or (3) hand delivered to the DCR office. The Contractor is responsible for all associated fees; contact DCR to determine applicable fees.

(9) Install, inspect, and maintain best management practices (BMPs) as required by the general permit. Prepare and submit to DCR, BMP Inspection Reports as required by the general permit.

(10) Once construction is complete and the site has been stabilized with a final, sustainable cover, submit the Notice of Termination to DCR within 30 days after all land disturbing activities end.

(11) At the time of submittal to DCR, concurrently forward copies of the SWPPP, Registration Statement, BMP Inspection Reports, and Notice of Termination to the Contracting Officer, and to Mid-Atlantic Environmental at: Commander, Naval Facilities Engineering Command, MIDLANT, Code: EV2, 9742 Maryland Avenue, Norfolk, VA 23511-3095.

(12) Information on the permit application, SWPPP requirements, Registration Statement, BMP Inspection Reports, and Notice of Termination can be found in the Virginia Permit Regulation 9 VAC 25-180. The Registration Statement, Notice of Termination, and permit fee forms can be found on the DCR website <http://www.dcr.state.va.us/sw/vsmp.htm>. This website also contains the permit regulations and information on how to obtain coverage online.

(13) Once construction is complete and the site has been stabilized with a final, sustainable cover, submit the Notice of

Termination to DCR within 30 days after all land disturbing activities end.

1.3.3 Stormwater Drainage

NOTE: Use this paragraph for Norfolk Naval Shipyard projects.

There will be no discharge of excavation ground water to the sanitary sewer, storm drains, or to the river without prior specific authorization of the Environmental Programs Division in writing. Discharge of hazardous substances will not be permitted under any circumstances. Construction site runoff will be prevented from entering any storm drain or the river directly by the use of straw bales or other method suitable to the Environmental Programs Division of the Shipyard. Provide erosion protection of the surrounding soils.

1.3.4 Structural Practices

NOTES: Describe structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable. A permit under Section 404 of the Clean Water Act may be required for certain structural practices. Check with Permits Branch.

For common drainage locations that serve a disturbed area of 4 or more hectares (10 or more acres) at one time, provide a temporary or permanent detention basin providing 252 cubic meters of storage per hectare (3,600 cubic feet of storage per acre) drained, or equivalent control measures, where attainable until stabilization of the site. The 252 cubic meters of storage per hectare (3,600 cubic feet of storage per acre) drained does not apply to flows from offsite areas and flows from onsite areas that are either undisturbed or have undergone final stabilization where such flows are diverted around the sediment basin. For drainage locations which serve a disturbed area of 4 or more hectares (10 or more acres) at one time and where a temporary sediment basin providing 252 cubic meters of storage per hectare (3,600 cubic feet of storage per acre) drained, or equivalent sediment controls, is not attainable, sediment controls are required for all sideslope and downslope boundaries of the construction area.

For drainage locations serving less than 4 hectares (10 acres), sediment traps, silt fences, or equivalent sediment controls are required for all sideslope and downslope boundaries of the construction area unless a sediment basin providing storage for 252 cubic meters of storage per hectare (3,600 cubic feet of storage per acre) drained is

provided.

Listed are examples of typical structural devices. Requirements for Silt Fences, Straw Bales, and Diversion Dikes are contained within this Guide Specification. Add specifications for other structural practices used in the project to this section.

- a. Silt fences.
- b. Straw bales.
- c. Diversion dikes.
- d. Drainage swales.
- e. Check dams.
- f. Subsurface drains.
- g. Pipe Slope drains.
- h. Level spreaders.
- i. Storm drain inlet protection.
- j. Rock outlet protection.
- k. Sediment traps.
- l. Reinforced soil retaining systems.
- m. Gabions.
- n. Sediment basins.

The permanent stabilization practices which are to be installed under the contract should be specified in other section of the specifications. These are measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. Structural measures should be placed on upland soils to the degree attainable. The installation of these devices may be subject to Section 404 of the Clean Water Act.

A goal of 80 percent removal of total suspended solids from these flows which exceed predevelopment levels should be used in designing and installing storm water management controls (where practicable). Where this goal is not met, the permittee must provide justification for rejecting each practice listed above based on site conditions.

Place velocity dissipation devices at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected.

Implement structural practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Implement structural practices in a timely manner, during the construction process, to minimize erosion and sediment runoff. Include the following devices; [Location and details of installation and construction are shown on the drawings.]

[1.3.4.1 Silt Fences

Provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Properly install silt fences to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Install silt fences in the locations indicated on the drawings. Obtain approval from the Contracting Officer prior to final removal of silt fence barriers.

] [1.3.4.2 Straw Bales

NOTE: EPA may not recommend the use of straw bales in certain rugged locations because bales do not easily conform to the ground contours. Other materials like fiber or coier rolls should be investigated.

For item d. below, space rows a maximum of 60 meters (200 feet) apart in drains with slopes equal to or less than 5 percent and 30 meters (100 feet) apart in drains with slopes steeper than 5 percent. If drainage ditches have slopes above and below the 5 percent limit the spacing should be shown on the drawings.

Provide [bales of straw] [_____] as a temporary structural practice to minimize erosion and sediment runoff. If bales are used, properly place the bales to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g., after clearing and grubbing in a area between a ridge and drain, place the bales as work progresses, remove/replace/relocate the bales as needed for work to progress in the drainage area). Show on the drawings areas where straw bales are to be used. The Contracting Officer will approve the final removal of straw bale barriers. Provide rows of bales of straw as follows:

- a. Along the downhill perimeter edge of all areas disturbed.
- b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc. that traverse disturbed areas.
- c. Along the toe of all cut slopes and fill slopes of the construction areas.
- d. Perpendicular to the flow in the bottom of existing drainage ditches, channels, swales, etc. that traverse disturbed areas or carry runoff from disturbed areas. Space the rows [a maximum of [_____] meters feet apart] [as shown on the drawings].
- e. Perpendicular to the flow in the bottom of new drainage ditches, channels, and swales. Space the rows [a maximum of [_____] m feet apart] [as shown on the drawings].
- f. At the entrance to culverts that receive runoff from disturbed areas.

g. [____].

] 1.3.4.3 Diversion Dikes

Build diversion dikes with a maximum channel slope of 2 percent and adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel shall be 0.5 m 18 inches. The minimum base width shall be 1.8 m 6 feet and the minimum top width shall be 0.6 m 2 feet. Ensure that the diversion dikes are not damaged by construction operations or traffic. Locate diversion dikes where shown on the drawings.

] 1.3.5 Sediment Basins

NOTE: The appropriate design-year storm is determined by the downstream environment to be protected. In the event permanent sediment basins are necessary for the particular project, these permanent facilities will be included in the project design and included as part of the contract documents. If permanent basins are not required, delete reference thereto. For natural environments, the following general guidelines should be followed:

<u>Downstream Environment</u>	<u>Design-Year Storm</u>
Dry wash or areas without significant vegetation	0-1
Seasonal creek or highly vegetative areas	10
Stream, river, estuary, or other open waters	25
Lake, reservoir, harbor, bay, or other closed waters	50

Trap sediment in [temporary] [permanent] sediment basins. Select a basin size to accommodate the runoff of a local [____]-year storm. Pump dry and remove the accumulated sediment, after each storm. Use a paved weir or vertical overflow pipe for overflow. Remove collected sediment from the site. Institute effluent quality monitoring programs. Install, inspect, and maintain best management practices (BMPs) as required by the general permit. Prepare BMP Inspection Reports as required by the general permit. If required by the permit, include those inspection reports.

1.3.6 Vegetation and Mulch

a. Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

NOTE: Indicate section number and title in blank
below using proper format per UFC 1-300-02.

b. Seeding: Provide new seeding where ground is disturbed. Include topsoil or nutriment during the seeding operation necessary to [establish] [reestablish] a suitable stand of grass. [The seeding operation will be as specified in Section 32 92 19 SEEDING.]

1.4 SUBMITTALS

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for [Contractor Quality Control approval.] [information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Storm Water Pollution Prevention Plan
Storm Water Notice of Intent

Pollution prevention plan and Notice of intent for NPDES

coverage under the general permit for construction activities

SD-06 Test Reports

Storm Water Inspection Reports for General Permit
Erosion and Sediment Controls

SD-07 Certificates

Mill Certificate or Affidavit

Certificate attesting that the Contractor has met all specified requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

Identify, store and handle filter fabric in accordance with [ASTM D 4873](#).

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

Provide geotextile that complies with the requirements of [ASTM D 4439](#), and consists of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and contains stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. Provide synthetic filter fabric that contains ultraviolet ray inhibitors and stabilizers to assure a minimum of six months of expected usable construction life at a temperature range of -18 to plus 49 degrees C 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	445 N min.
Elongation (percent)		30 percent max.
Trapezoid Tear	ASTM D 4533	245 N min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (percent)		30 percent max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1

2.1.2 Silt Fence Stakes and Posts

Use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 50 by 50 mm 2 by 2 inches when oak is used and 100 by 100 mm 4 by 4 inches when pine is used, and have a minimum length of 1.5 m 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum mass of 1.98 kg/linear meter weight of 1.33 pounds/linear foot and a minimum length of 1.5 m 5 feet.

2.1.3 Mill Certificate or Affidavit

Provide a mill certificate or affidavit attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. Specify in the mill certificate or affidavit the actual Minimum Average Roll Values and identify the fabric supplied by roll identification numbers. Submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

2.2 COMPONENTS FOR STRAW BALES

The straw in the bales shall be stalks from oats, wheat, rye, barley, rice, or from grasses such as byhalia, bermuda, etc., furnished in air dry condition. Provide bales with a standard cross section of 350 by 450 mm 14 by 18 inches. Wire-bound or string-tie all bales. Use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have a minimum dimensions of 50 by 50 mm 2 by 2 inches in cross section and have a minimum length of 1 m 3 feet. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum mass of 1.98 kg/linear meter weight of 1.33 pounds/linear foot and a minimum length of 1 m 3 feet.

PART 3 EXECUTION

NOTE: Additional execution topics such as the requirements for a contractor to take rain gage measurements; detail record keeping on the contractors inspection of its BMPs and repairs; the ability to allow the DPW to get the COE to assess fines using liquidated damages, etc. may be added when necessary.

3.1 INSTALLATION OF SILT FENCES

Extend silt fences a minimum of 400 mm 16 inches above the ground surface without exceeding 860 mm 34 inches above the ground surface. Provide filter fabric from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, splice together filter fabric at a support post, with a minimum 150 mm 6 inch overlap, and securely sealed. Excavate trench approximately 100 mm 4 inches wide and 100 mm 4 inches deep on the upslope side of the location of the silt fence. The 100 by 100 mm 4 by 4 inch trench shall be backfilled and the soil compacted over the filter fabric. Remove silt fences upon approval by

the Contracting Officer.

3.2 INSTALLATION OF STRAW BALES

Place the straw bales in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. Install straw bales so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. Entrench and backfill the barrier. Excavate a trench the width of a bale and the length of the proposed barrier to a minimum depth of 100 mm 4 inches. After the bales are staked and chinked (gaps filled by wedging with straw), backfill the excavated soil against the barrier. Conform the backfill soil with the ground level on the downhill side and build up to 100 mm 4 inches against the uphill side of the barrier. Scatter loose straw over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Securely anchor each bale by at least two stakes driven through the bale. Drive the first stake or steel post in each bale toward the previously laid bale to force the bales together. Drive stakes or steel pickets a minimum 450 mm 18 inches deep into the ground to securely anchor the bales.

3.3 FIELD QUALITY CONTROL

NOTE: Describe the procedures to be followed during construction to maintain the vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition.

Maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. Use the following procedures to maintain the protective measures.

3.3.1 Silt Fence Maintenance

Inspect the silt fences in accordance with paragraph, titled "Inspections," of this section. Any required repairs shall be made promptly. Pay close attention to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, replace the fabric promptly. Remove sediment deposits when deposits reach one-third of the height of the barrier. Remove a silt fence when it is no longer required. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall [receive erosion control] [be seeded in accordance with Section 32 05 33 LANDSCAPE ESTABLISHMENT, except that the coverage requirements in paragraph, titled "Establishment" of this section do not apply].

3.3.2 Straw Bale Maintenance

Inspect straw bale barriers in accordance with paragraph, titled "Inspections". Pay close attention to the repair of damaged bales, end runs and undercutting beneath bales. Accomplish necessary repairs to barriers or replacement of bales in a promptly manner. Remove sediment deposits when deposits reach one-half of the height of the barrier. At the

each end of each row turn bales uphill when used to retain sediment. Remove a straw bale barrier when it is no longer required. The immediate area occupied by the bales and any sediment deposits shall be shaped to an acceptable grade. Seed the areas disturbed by this shaping in accordance with Section 32 92 19 SEEDING.

3.3.3 Diversion Dike Maintenance

Inspect diversion dikes in accordance with paragraph, titled "Inspections," of this section. Pay close attention to the repair of damaged diversion dikes and accomplish necessary repairs promptly. When diversion dikes are no longer required, shape to an acceptable grade. Seed the areas disturbed by this shaping in accordance with Section 32 92 19 SEEDING.

3.4 INSPECTIONS

NOTE: Currently some of the installations are assigned small MS4 permits which require them to develop, implement and enforce construction site inspections allowing enforcement on the Contractor for CWA violations.

In some cases it may be desirable to require the Contractor to inspect the BMPs before, during, and after a storm event. By inspecting during a storm event, the Contractor can determine if the BMPs are actually working or whether they are being breached.

3.4.1 General

Inspect disturbed areas of the construction site, areas that have not been finally stabilized used for storage of materials exposed to precipitation, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 13 mm 0.5 inches or more rainfall at the site. Conduct inspections at least once every month where sites have been finally stabilized.

3.4.2 Inspections Details

Inspect disturbed areas [and areas used for material storage that are exposed to precipitation] for evidence of, or the potential for, pollutants entering the drainage system. Observe erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan to ensure that they are operating correctly. Inspect discharge locations or points to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Inspect locations where vehicles exit the site for evidence of offsite sediment tracking.

3.4.3 Inspection Reports

For each inspection conducted, prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. Furnish the report to the Contracting Officer within 24 hours of the inspection as a part of the

Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

3.4.4 [Monthly Inspection Report and Certification Form

NOTE: Some States require submittal of inspection reports to their respective agency. If this is required in the state where the proposed project is located, the following example should be appropriately edited and included in the project specifications. The designer should attach the appropriate state forms at the end of this section.

Complete, sign, and submit the original form, on the first working day of each month, to the State of [____], [Office of Pollution Control (OPC)] at the following address:

Chief, [____]

[____]

[____]

[____]

A copy of the State of [____]'s [Monthly Inspection Report and Certification Form for Erosion and Sediment Controls] is attached to the end of this section. Also furnish, on the first working day of each month, one copy of the form submitted to the [OPC] to the Contracting Officer as part of the Contractor's daily CQC Report and attach a copy of the completed form to the Plan. Unless otherwise notified by the [OPC], submit the [Monthly Inspection Report and Certification Forms] for an additional two months after the final completion of all storm water pollution prevention measures required in this contract have been implemented.]

-- End of Section --