USMS Stormwater Management Plan
(SWMP)

For Construction Activities At:

Steamboat Gondola Relocation
2305 Mt Werner Circle
Steamboat Springs, CO 80487
Routt County

SWMP Prepared For:

Saunders Heath
1212 Riverside Avenue
Suite 130
Fort Collins, CO 80524
970-221-4195

SWMP Prepared By:

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SWMP Preparation Date:

04/10/2021

SWMP Revision Dates:

7/1/2021 Added Greenhorn Ranch and Base Village Haul Route to the SWMP per attached site plan.

Estimated Project Dates:

Project Start Date: 04/16/2021
Project Completion Date: 02/07/2022

Permits:

CDPHE project or permit tracking number:
Other CDPS Permits: A Dewatering Permit will apply to this project - please see the appendices/binder for more information.

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Introduction

This storm water management plan (SWMP) has been prepared for Steamboat Gondola Relocation following a recognized industry standard called the Uniform Stormwater Management System (USMS) methodology. The goal of the USMS SWMP is to identify the major hydrologic phases of the project, identify significant construction activities within those phases that have the potential to introduce pollutant sources to stormwater, and identify control measures that, when implemented effectively, will reduce or eliminate potential negative impacts to surface water quality resulting from this project. Where necessary, this SWMP will be coordinated with other environmental permits obtained by the project.

1) Qualified Stormwater Manager(s)

Company: Saunders Construction, LLC
Name: Justin Tourdot
Title: Safety & Environmenal
Qualifications: CISEC
Contact Information: j.tourdot@saundersinc.com
Role(s): Oversees SWMP Implementation, conducts inspections, control measure installation/maintenance, manages spill response

2) Spill Prevention and Response Plan

CDPHE requires that any hazardous material spill be reported when any of the following conditions occur:

- Over 25 gallons of petroleum
- 5 CCs of mercury
- Any and all raw sewage releases
- Any/all State waters impacted

If any of the above criteria is met or exceeded, the Colorado Department of Public Health and Environment, Local Emergency Planning committee, downstream users and other agencies (MS4s) will be notified. The CDPHE will be notified by telephone within 24 hours. In addition, written notification describing the spill and the clean up procedures used will be sent to the agencies 5 days following the spill. If a spill does not meet the above criteria, reporting is not mandatory.

WQCD Toll Free 24-hour Environmental Emergency Spill Reporting Line: 1-877-518-5608

When any spill occurs:

1) Notify the Qualified Stormwater Manager and controlling operator of the site immediately following a hazardous spill.
2) Documentation of the spill should occur and its clean-up procedures.
3) At a minimum the following should be documented:
   - Nature of spill
   - Quantity of spill
   - Date/time spill occurred
   - Agency notification if necessary
   - Clean-up procedures used
   - Daily monitoring (7 days) after clean-up
   - Photographs
   - Interview(s) with any witnesses of the event

General guidelines for clean-up procedures:

- Immediately control or stop the release/spill
  - Mitigate the spill area as needed with a spill prevention kit
  - Obtain approved secondary containers to store any absorbents used
  - Report the spill to the Qualified Stormwater Manager and Responsible Person on the jobsite for determination if further reporting is required or if emergency notification is appropriate.

General Spill Control Practices:
In addition to the good housekeeping and material management practices discussed in this plan, the following practices will be followed for spill prevention and cleanup:

Equipment and materials necessary for spill cleanup may include but are not be limited to: brooms, dust pans, mops, rags, gloves, goggles, absorbent powder / kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose. The location of spill cleanup materials and equipment will be identified on the site map.

The operator will inform the jobsite personnel that if a spill of any size occurs they are to always notify the Qualified Stormwater Manager and, depending on the nature and severity of the spill, the operator will contact the CDPHE, downstream users and other regulatory agencies.

Refer to the following sections for more information:
- Section "3) Materials Handling" for practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.
- Section "3.d) Equipment Maintenance / Fueling" for practices to minimize the discharge of pollutants from equipment and vehicle fueling and maintenance activities.
- Section "5.i) Concrete Washout Waste" for procedures for properly washing out concrete truck chutes and other equipment.

3) Materials Handling

3.a) Good Housekeeping

Good housekeeping practices:
- An effort will be made to store only enough material required to do the job.
- Building materials and products such as paints, solvents, landscape materials, fertilizers, pesticides or other chemicals, will be stored in a neat, orderly manner in secondary containment or covered as necessary.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used up before disposing of the container.
- Manufacturers' recommendations for proper use will be followed.
- Any remaining chemicals shall be disposed of according to manufacturers' recommendations and in accordance with Federal, State and local regulations.
- A Qualified Stormwater Manager will inspect regularly to ensure proper use and disposal of materials onsite.

3.b) Sanitary Waste

Practices used to minimize the discharge of pollutants from sanitary waste:
Portable toilets will be secured so that they will not be tipped or knocked over and located away from surface waters and stormwater inlets or conveyances.

Refer to the respective control measure and pollution source log sheets for more information.

3.c) Construction and Domestic Wastes

Practices used to minimize the discharge of pollutants from construction and domestic waste:
- On business days, waste will be cleaned up and disposed of in designated waste containers
- If a container overflows, it will be cleaned up immediately

Refer to the respective control measure and pollution source log sheets for more information.

3.d) Equipment Maintenance / Fueling

Practices used to minimize the discharge of pollutants from equipment and vehicle fueling and maintenance activities:
- Equipment and vehicle fueling and maintenance activities will be located away from surface waters and stormwater inlets or conveyances
- Secondary containment and cover will be provided where appropriate
- Drip pans and absorbents will be provided under or around leaky vehicles
- Oil and oily wastes will be disposed of or recycled in accordance with other federal, state, tribal, or local requirements
- A spill kit will be available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill
- Spills or contaminated surfaces will be cleaned up immediately, using dry clean up measures (areas of spills will NOT be hosed down) and the source of the spill wil be eliminated to prevent a discharge or a continuation of an ongoing discharge

If implemented on the project, refer to the respective control measure and pollution source log sheets for more information.

3.e) Hazardous Products

Practices used to reduce the risks associated with hazardous materials:
- Products will be kept in original containers unless they are not re-sealable.
- Original labels and material safety data will be retained.
- Products will be stored under cover or in secondary containment.
- If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal will be followed.

4) Potential Sources of Pollution

Table 4.1

The pollution sources below were evaluated for their impact on this project prior to the start of construction. Refer to Tables 6.b.1 - 6.b.5 in Section "6.b) Phased Control Measure Implementation" for related construction activities.

Pollution Source (PS) Designation	Pollution Source (PS) Description	Control Measures Typically Utilized For This Pollution Source
ACP	Asphalt/Concrete Batch Plant	Not anticipated to be present on site
CC	Construction Chemicals	CNX - Connex GH - Good Housekeeping Practices/Material Management SK - Spill Kit SSA - Stabilized Staging Area
CP	Construction Parking	GH - Good Housekeeping Practices/Material Management SK - Spill Kit SSA - Stabilized Staging Area

Table 4.1 (continued)

Pollution Source (PS) Designation	Pollution Source (PS) Description	Control Measures Typically Utilized For This Pollution Source
CS	Contaminated Soil	Not anticipated to be present on site
CSC	Concrete Saw-Cutting	GH - Good Housekeeping Practices/Material Management
CWW	Concrete Wash Waste	CWA - Concrete Washout Area GH - Good Housekeeping Practices/Material Management
DSF	Disturbed Soil Flat	CD - Check Dam - Loose Rock or Riprap CF - Construction Fence DD - Diversion Ditch ECB - Erosion Control Blankets FLS - Final Landscaping IP-1 - Inlet Protection - Curb - Block & Gravel Bags IP-3 - Inlet Protection - Area Inlet w/ Rock Socks IP-7 - Inlet Protection - Dandy Curb Bag IP-8 - Inlet Protection - Area Inlet - Dandy Bag IP-9 - Inlet Protection - Curb - Rock Bags only IP-10 - Inlet Protection - Culvert LF - Landform LG - Lowered Grade OP - Outlet Protection RRL - Recycled Rubber Log RS - Rock Sock SF - Silt Fence SMP - Seed & Mulch - Permanent SR - Surface Roughening ST - Sediment Trap WD - Wattle Dike / Sediment Control Log / Straw Wattle
DSS	Disturbed Soil Steep	Not anticipated to be present on site
EM	Equipment Cleaning/Fueling/Maint.	GH - Good Housekeeping Practices/Material Management SK - Spill Kit SSA - Stabilized Staging Area
FD	Fugitive Dust	DC - Dust Control
FN	Fertilizers & Nutrients	EB - Earth Berm
GWD	Groundwater Dewatering to Land	DW - Dewatering Operations
HWS	Hand Washing Station	HWSM - Hand Washing Station Management
LUO	Loading & Unloading Operations	GH - Good Housekeeping Practices/Material Management SSA - Stabilized Staging Area
MMO	Masonry Mixing Operations	Not anticipated to be present on site
MS	Material Storage	CNX - Connex GH - Good Housekeeping Practices/Material Management SSA - Stabilized Staging Area

Table 4.1 (continued)

Pollution Source (PS) Designation	Pollution Source (PS) Description	Control Measures Typically Utilized For This Pollution Source
P	Petroleum-based Products	CNX - Connex GH - Good Housekeeping Practices/Material Management SC - Secondary Containment SK - Spill Kit
PT	Portable Toilet	GH - Good Housekeeping Practices/Material Management SWM - Sanitary Waste/Portable Toilet Management
S	Stockpile	CD - Check Dam - Loose Rock or Riprap DD - Diversion Ditch EB - Earth Berm IP-10 - Inlet Protection - Culvert RRL - Recycled Rubber Log RS - Rock Sock SF - Silt Fence ST - Sediment Trap WD - Wattle Dike / Sediment Control Log / Straw Wattle
SEE	Site Entry/Exit	CF - Construction Fence SS - Street Sweeping and Scraping VTC-A - Vehicle Tracking Control
SWD	Stormwater Dewatering	DW - Dewatering Operations
SWT	Solid Waste/Trash	DMP - Dumpster GH - Good Housekeeping Practices/Material Management
TC	Tool Cleaning	GH - Good Housekeeping Practices/Material Management

Table 4.2

The pollution sources below were evaluated for their impact on this project during weekly pre-inspection planning. Refer to Tables 6.b.6 - 6.b.10 in Section "6.b) Phased Control Measure Implementation" for related construction activities.

Pollution Source (PS) Designation	Pollution Source (PS) Description	Control Measures Typically Utilized For This Pollution Source
ACP	Asphalt/Concrete Batch Plant	Not yet present on the site
CC	Construction Chemicals	Not yet present on the site
CS	Contaminated Soil	Not yet present on the site
CSC	Concrete Saw-Cutting	Not yet present on the site
CWW	Concrete Wash Waste	Not yet present on the site
DSF	Disturbed Soil Flat	Not yet present on the site
DSS	Disturbed Soil Steep	Not yet present on the site
EM	Equipment Cleaning/Fueling/Maint.	Not yet present on the site
FD	Fugitive Dust	Not yet present on the site
FN	Fertilizers & Nutrients	Not yet present on the site

Table 4.2 (continued)

Pollution Source (PS) Designation	Pollution Source (PS) Description	Control Measures Typically Utilized For This Pollution Source
LUO	Loading & Unloading Operations	Not yet present on the site
MMO	Masonry Mixing Operations	Not yet present on the site
MS	Material Storage	Not yet present on the site
P	Petroleum-based Products	Not yet present on the site
PT	Portable Toilet	Not yet present on the site
S	Stockpile	Not yet present on the site
SEE	Site Entry/Exit	Not yet present on the site
SWT	Solid Waste/Trash	Not yet present on the site
TC	Tool Cleaning	Not yet present on the site

All anticipated potential pollutants will be addressed with an individual pollution source log sheet. See site map(s) for locations.

5) Implementation of Control Measures

Stormwater runoff from all disturbed areas and soil storage areas will utilize or flow to one or more control measures to minimize erosion or sediment in the discharge. This may be accomplished through filtering, settling, or straining. Control measures will be selected, designed, installed and adequately sized in accordance with good engineering, hydrologic and pollution control practices for the intended application. The control measure(s) will contain or filter flows in order to prevent the bypass of flows without treatment and will be appropriate for stormwater runoff from disturbed areas and for the expected flow rate, duration, and flow conditions (i.e., sheet or concentrated flow).

Selected control measures will prioritize the use of structural and nonstructural control measures that minimize the potential for erosion (i.e. covering materials). Selected control measures will also prioritize phasing construction activities to minimize the amount of soil disturbance at any point in time throughout the duration of construction.

5.a) Table of Control Measures

The control measures in Table 5.a.1 were evaluated prior to the start of construction as being potentially necessary to control/treat the pollution sources evaluated in Section "4) Potential Sources of Pollution".

Table 5.a.1

Control Measure (CM) Designation	Control Measure (CM) Description	Notes
CD	Check Dam - Loose Rock or Riprap	Refer to the respective control measure log sheet for more information
CF	Construction Fence	Refer to the respective control measure log sheet for more information

CNX	Connex	Refer to the respective control measure log sheet for more information
CWA	Concrete Washout Area	Refer to the respective control measure log sheet for more information
DC	Dust Control	Refer to the respective control measure log sheet for more information
DD	Diversion Ditch	Refer to the respective control measure log sheet for more information
DMP	Dumpster	Refer to the respective control measure log sheet for more information
DW	Dewatering Operations	Refer to the respective control measure log sheet for more information
EB	Earth Berm	Refer to the respective control measure log sheet for more information
ECB	Erosion Control Blankets	Refer to the respective control measure log sheet for more information
FLS	Final Landscaping	Refer to the respective control measure log sheet for more information
GH	Good Housekeeping Practices/Material Management	Refer to the respective control measure log sheet for more information
HWSM	Hand Washing Station Management	Refer to the respective control measure log sheet for more information
IP-1	Inlet Protection - Curb - Block & Gravel Bags	Refer to the respective control measure log sheet for more information
IP-3	Inlet Protection - Area Inlet w/ Rock Socks	Refer to the respective control measure log sheet for more information
IP-7	Inlet Protection - Dandy Curb Bag	Refer to the respective control measure log sheet for more information
IP-8	Inlet Protection - Area Inlet - Dandy Bag	Refer to the respective control measure log sheet for more information
IP-9	Inlet Protection - Curb - Rock Bags only	Refer to the respective control measure log sheet for more information
IP-10	Inlet Protection - Culvert	Refer to the respective control measure log sheet for more information
LF	Landform	Refer to the respective control measure log sheet for more information
LG	Lowered Grade	Refer to the respective control measure log sheet for more information
OP	Outlet Protection	Refer to the respective control measure log sheet for more information
RRL	Recycled Rubber Log	Refer to the respective control measure log sheet for more information

RS	Rock Sock	Refer to the respective control measure log sheet for more information
SC	Secondary Containment	Refer to the respective control measure log sheet for more information
SF	Silt Fence	Refer to the respective control measure log sheet for more information
SK	Spill Kit	Refer to the respective control measure log sheet for more information
SMP	Seed & Mulch - Permanent	Refer to the respective control measure log sheet for more information
SR	Surface Roughening	Refer to the respective control measure log sheet for more information
SS	Street Sweeping and Scraping	Refer to the respective control measure log sheet for more information
SSA	Stabilized Staging Area	Refer to the respective control measure log sheet for more information
ST	Sediment Trap	Refer to the respective control measure log sheet for more information
SWM	Sanitary Waste/Portable Toilet Management	Refer to the respective control measure log sheet for more information
VTC-A	Vehicle Tracking Control	Refer to the respective control measure log sheet for more information
WD	Wattle Dike / Sediment Control Log / Straw Wattle	Refer to the respective control measure log sheet for more information

The control measures in Table 5.a.2 were evaluated during weekly pre-inspection planning as being potentially necessary to control/treat the pollution sources evaluated in Section "4) Potential Sources of Pollution".

Table 5.a.2

Control Measure (CM) Designation	Control Measure (CM) Description	Notes
No control measures have been entered		

Control Measure log sheets will provide information about each control measure implemented on the project including narratives on proper installation, inspection and maintenance and installation details, as required.

5.b) Vehicle Tracking Control

Structural and nonstructural vehicle tracking controls shall be implemented to minimize vehicle tracking of sediment from disturbed areas and may include tracking pads, minimizing site access, wash racks, graveled parking areas, maintaining vehicle traffic to paved areas, street sweeping and sediment control measures. Inlet protection cannot be the sole means of treatment.
- Where necessary, additional controls will be used to remove sediment from vehicle tires prior to exit;
- Where sediment has been tracked-out from the site onto the surface of off-site streets, paved areas, or sidewalks, deposited sediment will be removed by the end of the same workday in which it has occurred.

Refer to the respective control measure log sheet for more information.

5.c) Basins / Impoundments

If implemented on the project, refer to the respective pollution source log sheet for more information.

5.d) Natural Buffers / Equivalent Controls

Pre-existing vegetation will be maintained or equivalent control measures will be installed for areas within 50 feet of a state surface water body.

5.e) Minimize Soil Compaction

Where final vegetation stabilization will occur or where infiltration practices will be installed, the site will either restrict vehicle and equipment use in these locations to avoid soil compaction, or use soil conditioning techniques that rehabilitate and condition the soils as necessary prior to seeding or planting of these locations if necessary and feasible.

5.f) Topsoil Preservation

Native topsoil will be preserved at the site by stockpiling.

Refer to the respective pollution source and control measure log sheets for more information.

5.g) Diversion Controls

If implemented on the project, refer to the respective control measure log sheet for more information.

5.h) Bulk Storage Of Chemicals

Practices used to minimize the discharge of pollutants associated with the bulk storage of petroleum products and other liquid chemicals:
Bulk storage, individual containers of 55 gallons or greater, for petroleum products and other liquid chemicals will have secondary containment, or equivalent protection, in order to contain spills and to prevent spilled material from entering state waters.

If implemented on the project, refer to the respective control measure and pollution source log sheets for more information.

5.i) Concrete Washout Waste

Practices used to minimize the discharge of pollutants from concrete washout waste:
Control measures designed for concrete washout waste will be implemented to ensure that washing activities do not contribute pollutants to stormwater runoff, or receiving waters. Discharges that may reach groundwater will flow through soil that has buffering capacity prior to reaching groundwater, as necessary to meet the effluent limits. Concrete washout activities will not be not be performed in an area where shallow groundwater may be present and could result in buffering capacity not being adequate, such as near natural drainages, springs, or wetlands.

If implemented on the project, refer to the respective pollution source log sheet for more information.

5.j) Administrative / Operational Practices

Scheduling / Planning:
Pre-activity planning of stormwater management controls for upcoming construction activities, including forecasting weather is an important step in the proper management of the site. Appropriate adjustments will be made to minimize the amount of soil exposed during construction activity, including the disturbance of steep slopes, and reduce the negative impact of any other pollutants to stormwater quality to the best extent that is practicable.

Training / Meetings:
New employees and contractors will be educated on the contents of the SWMP as it applies to them and the importance of pollution prevention for the project. This will be done informally in the field as necessary and may be discussed in routine meetings held on-site.

5.k) Control Measures Operated By Others

If implemented on the project, the SWMP will contain a documented use agreement, location, installation specifications, design specifications and maintenance requirements for the control measure. A Qualified Stormwater Manager will regularly inspect the control measure to ensure it is properly maintained and in compliance.

6) Site Description

6.a) Nature of Construction Activities

The project involves base improvements of an existing ski resort which will involve demolition of one existing structure and the addition of new
infrastructure for a new Gondola. Grading/excavation operations will occur, foundation/vertical construction activities, and associated hardscapes/landscaping throughout the site.

6.b) Project Location

The project is located at 2305 Mt Werner Circle in Steamboat Springs, CO.

Latitude: 40.457226
Longitude: -106.804367

6.c) Proposed Sequence of Major Activities

Construction for all work associated with the project will begin on or about 04/16/2021 with project completion around 02/07/2022.

Many circumstances that cannot be anticipated, such as weather, material shortages, and many others will change the schedule of activities on a construction project on an ongoing basis until construction is complete. Regardless of these schedule changes, Hydrologic Phases (or sequences) consistently reflect the major changes to the hydrology of a project that will influence the type of control measures effective in controlling pollutants in stormwater runoff. The USMS Hydrologic Phases are:

1. Existing Conditions/Site Mobilization

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

The following Tables 6.b.1 - 6.b.5 were developed prior to the start of construction. The tables outline the major construction activities planned during the major hydrologic phases of the project. The tables also list the pollution sources anticipated to be present during the construction activity and the control measures anticipated to be implemented to control/contain such pollutants.

Table 6.b.1

Estimated Start Date 04/13/2021	**1. Existing Conditions/Site Mobilization**		**Estimated End Date 04/21/2021**
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**
Install Initial Control Measures, Mobilize Equipment	4/13/21 - 4/21/21 8 days	CP, DSF, EM, HWS, LUO, MS, P, PT, SEE, SWT	CF, CNX, DMP, GH, HWSM, IP-1, IP-3, IP-7, IP-8, IP-9, IP-10, RRL, RS, SC, SF, SK, SS, SSA, SWM, VTC-A, WD

Table 6.b.2

Estimated Start Date 04/19/2021	**2. Clearing/Grubbing, Rough/Overlot Grading, Demolition**		**Estimated End Date 08/02/2021**
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**
Demo Gondola Building & Bldg B, Clearing/Grubbing, Mass Excavation, Overlot/Rough Grading	4/19/21 - 8/2/21 105 days	CP, DSF, FD, HWS, LUO, P, PT, S, SEE, SWT	CD, CF, DC, DD, DMP, EB, GH, HWSM, IP-3, IP-7, IP-8, IP-9, IP-10, LF, LG, OP, RRL, RS, SC, SF, SK, SR, SS, SSA, ST, SWM, VTC-A, WD

Table 6.b.3

Estimated Start Date 06/21/2021	**3. Utility Installation**		**Estimated End Date 07/09/2021**
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**
Site Utilities Installation	6/21/21 - 7/9/21 18 days	CP, CSC, DSF, EM, FD, GWD, HWS, LUO, MS, P, PT, S, SEE, SWD, SWT	CD, CF, CNX, DC, DD, DMP, DW, EB, GH, HWSM, IP-3, IP-9, IP-10, LG, OP, RRL, RS, SC, SF, SK, SS, SSA, ST, SWM, VTC-A, WD

Table 6.b.4

Estimated Start Date 08/05/2021	**4. Impervious Surfaces, Vertical/Building Construction**		**Estimated End Date 01/28/2022**
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**

Excavate, Form/Pour Footings, Drill/Pour Caissons, Form/Pour Foundation Walls, Form/Pour Slab-on-Grade	8/5/21 - 10/5/21 61 days	CC, CP, CSC, CWW, DSF, EM, HWS, LUO, MS, P, PT, SEE, SWD, SWT, TC	CD, CF, CNX, CWA, DD, DMP, DW, GH, HWSM, IP-10, LF, LG, RRL, RS, SC, SF, SK, SS, SSA, ST, SWM, VTC-A, WD
Structural Steel, Form/Pour Slab-on-Deck	10/6/21 - 10/14/21 8 days	CC, CP, CSC, CWW, DSF, EM, HWS, LUO, MS, P, PT, SEE, SWD, SWT, TC	CD, CF, CNX, CWA, DD, DMP, DW, GH, HWSM, IP-10, LF, LG, OP, RRL, RS, SC, SK, SS, SSA, ST, SWM, VTC-A, WD
Framing & Rough-ins	10/18/21 - 1/14/22 89 days	CP, EM, HWS, LUO, MS, P, PT, SEE, SWT	CF, CNX, DMP, GH, HWSM, SC, SK, SS, SSA, SWM, VTC-A
Interior Finishes (Core & Shell)	1/10/22 - 1/28/22 18 days	CC, CP, HWS, LUO, MS, PT, SEE, SWT, TC	CF, CNX, DMP, GH, HWSM, SK, SS, SSA, SWM, VTC-A

Table 6.b.5

Estimated Start Date 09/08/2021	**5. Final Grading/Stabilization**		**Estimated End Date 02/07/2022**
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**
Final Grading, Install Irrigation System, Plants/Sod, Permanent Seeding/Mulch	9/8/21 - 2/7/22 153 days	CP, DSF, EM, FN, HWS, LUO, MS, P, PT, S, SEE, SWT	CD, CF, CNX, DD, DMP, EB, ECB, FLS, GH, HWSM, IP-3, IP-9, IP-10, LF, LG, RRL, RS, SC, SF, SK, SMP, SS, SSA, ST, SWM, WD
Temporary control measures will be removed upon Final Stabilization of project			

The following Tables 6.b.6 - 6.b.10 are derived from construction activities described during weekly pre-inspection planning. The tables outline the major construction activities planned during the major hydrologic phases of the project. The tables also list the pollution sources anticipated to be present during the construction activity and the control measures anticipated to be implemented to control/contain such pollutants.

Table 6.b.6

Estimated Start Date	**1. Existing Conditions/Site Mobilization**		**Estimated End Date**
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**
No activities have been entered			

Table 6.b.7

Estimated Start Date	**2. Clearing/Grubbing, Rough/Overlot Grading, Demolition**		**Estimated End Date**
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**
No activities have been entered			

Table 6.b.8

Estimated Start Date	3. Utility Installation		Estimated End Date
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**
No activities have been entered			

Table 6.b.9

Estimated Start Date	4. Impervious Surfaces, Vertical/Building Construction		Estimated End Date
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**
No activities have been entered			

Table 6.b.10

Estimated Start Date	5. Final Grading/Stabilization		Estimated End Date
Construction Activity	**Est. Dates/Duration**	**Potential Pollution Sources (PSs)**	**Control Measures (CMs)**
No activities have been entered			
Temporary control measures will be removed upon Final Stabilization of project			

6.d) Total Site Area & Disturbed Area

Total Site Area: 5.0 acres
Disturbed Area: 3.0 acres

6.e) Soils Information

The predominant soils on this project are Lintim loam which have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted. Soils data was obtained from NEPAssist.

6.f) Existing Vegetation

The existing vegetation on the project consists of primarily native grasses, bushes, and trees, with an approximate coverage of 80%. Determination was made through visual observations of native vegetation in nearby areas.

6.g) Non-Stormwater Discharges

Discharges from the following sources have been evaluated and have the potential for being present on the project during construction:

1) Discharges from uncontaminated springs that do not originate from an area of land disturbance.
2) Discharges to the ground of concrete washout water associated with the washing of concrete tools and concrete mixer chutes. Discharges of concrete washout water must not leave the site as surface runoff or reach receiving waters. Concrete on-site waste disposal is not authorized by this permit.
3) Discharges of landscape irrigation return flow.
4) Discharges from diversions of state waters within the permitted site.
5) Discharges resulting from emergency firefighting activities during the active emergency response are authorized by this permit. After active emergency response is complete, the remaining water containing pollutants must be properly removed and disposed of in order to minimize pollutants from discharging from the site, unless infeasible.

Please refer to the pollution source and control measure log sheets for more information on how they will be managed.

6.h) Drainage Patterns / Receiving Waters

Pre-construction site drainage patterns:
Runoff wll sheet flow from east to west and enter on-site inlets to a man-made conveyance that runs north to south.

Refer to Inspection Records for current descriptions of site drainage patterns.

Receiving waters:
Runoff will discharge to Burgess Creek which is tributary to the Yampa River.

6.i) Stream Crossings

There will be no stream crossings located on the project.

6.j) Alternate Temporary Stabilization Schedule

Refer to site maps and/or the "ATSS - Alternate Temporary Stabilization Schedule" log sheet for a description of any alternate temporary stabilization schedules implemented.

6.k) Alternative Diversion Criteria

Refer to section "5.g) Diversion Controls" for a description of any alternative diversion criteria implemented.

7) Site Map(s)

The SWMP includes a legible site map(s), showing the entire site, identifying:
a) Construction site boundaries;
b) Flow arrows that depict stormwater flow directions on-site and runoff direction;
c) All areas of ground disturbance including areas of borrow and fill;
d) Areas used for storage of soil;
e) Locations of all waste accumulation areas, including areas for liquid, concrete, masonry, and asphalt;
f) Locations of dedicated asphalt, concrete batch plants and masonry mixing stations;

g) Locations of all structural control measures;
h) Locations of all non-structural control measures (e.g. temporary stabilization);
i) Locations of springs, streams, wetlands, diversions and other state waters, including areas that require pre-existing vegetation be maintained within 50 feet of a receiving water, where determined feasible in accordance with Part I.B.1.a.i(e)
j) locations of all stream crossings located within the construction site boundary.
k) Locations where alternative temporary stabilization schedules apply.

8) Stabilization Requirements

Temporary stabilization:

Temporary stabilization must be implemented for earth disturbing activities on any portion of the site where ground disturbing construction activity has permanently ceased, or temporarily ceased for more than 14 calendar days. Temporary stabilization methods may include, but are not limited to, tarps, soil tackifier, and hydroseed. The permittee may exceed the 14-day schedule when either the function of the specific area of the site requires it to remain disturbed or physical characteristics of the terrain and climate prevent stabilization. The SWMP must document the constraints necessitating the alternative schedule, provide the alternate stabilization schedule, and identify all locations where the alternative schedule is applicable on the site map. Minimum inspection frequency and scope, as directed in Part I.D., must be followed for temporarily stabilized areas.

Final stabilization and long term stormwater management:

Final stabilization must be implemented for all construction sites covered under this permit. Final stabilization is reached when (1), (2), and (3) below are complete:
1) All construction activities are complete.
2) Permanent stabilization methods are complete. Permanent stabilization methods include, but are not limited to, permanent pavement or concrete, hardscape, xeriscape, stabilized driving surfaces, vegetative cover, or equivalent permanent alternative stabilization methods. The division may approve alternative final stabilization criteria for specific operations. Vegetative cover must meet the
following criteria:
2.a) Evenly distributed perennial vegetation, and
2.b) Coverage, at a minimum, equal to 70 percent of what would have been provided by native vegetation in a local, undisturbed area or adequate reference site, and
3) The permittee must ensure all temporary control measures are removed from the construction site once final stabilization is achieved, except when the control measure specifications allow the control measure to be left in place (i.e. bio-degradable control measures).

Final stabilization must be designed and installed as a permanent feature. Final stabilization measures for obtaining a vegetative cover or alternative stabilization methods include, but are not limited to, the following as appropriate:
1) Seed mix selection and application methods;
2) Soil preparation and amendments;
3) Soil stabilization methods to provide adequate protection to minimize erosion (e.g., crimped straw, hydro mulch or rolled erosion control products);
4) Appropriate sediment control measures as needed until final stabilization is achieved; or
5) Permanent pavement, hardscape, xeriscape, stabilized driving surfaces, and other alternative stabilization practices as applicable.

9) USMS Inspection Procedures And Site Maintenance

9.a) Person(s) Responsible for Conducting Inspections

Refer to section "1) Qualified Stormwater Manager(s)" for personnel assigned the role of conducting inspections.

9.b) Inspection Frequency

Site inspections will occur every seven calendar days or every fourteen calendar days if post-storm event inspections are conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. Inspections may be conducted more frequently as site conditions warrant. The first site inspection will be performed within seven calendar days of the commencement of construction activities on site.

Refer to the inspection report records for the actual inspection frequency used.

9.c) Reduced Inspection Frequency

When portions of the site meet the following criteria, but final stabilization has not been achieved due to a vegetative cover that has not become established, a thorough inspection of the stormwater management system will be conducted at least every 30 days. Post storm event inspections will not be conducted. This reduced inspection schedule is allowed if all of the following criteria are met:
1) All construction activities that will result in surface ground disturbance are completed;
2) All activities required for final stabilization, in accordance with Part I.B.1.a.iii(b) & (c) and with the SWMP, have been completed, with the exception of the application of seed that has not occurred due to seasonal conditions or the necessity for additional seed application to augment previous efforts; and
3) The SWMP has been amended to indicate those areas that will be inspected in accordance with the reduced schedule allowed for in this paragraph.

Winter Conditions Inspections Exclusion:
Inspections are not required for sites that meet all of the following conditions: construction activities are temporarily halted, snow cover exists over the entire site for an extended period, and melting conditions posing a risk of surface erosion do not exist. This inspection exception is applicable only during the period where melting conditions do not exist, and applies to the routine 7-day, 14-day and monthly inspections, as well as the post-storm-event inspections. When this inspection exclusion is implemented, the following information must be documented in accordance with the requirements in Part I.C.3 and Part I.D.5.c:
1) dates when snow cover existed;
2) date when construction activities ceased; and
3) date melting conditions began.

9.d) Areas to be Inspected

When conducting a site inspection the following areas, if applicable, must be inspected for evidence of, or the potential for, pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters:

1) Construction site perimeter;
2) All disturbed areas;
3) Locations of installed control measures;
4) Designated haul routes;
5) Material and waste storage areas exposed to precipitation;
6) Locations where stormwater has the potential to discharge offsite; and
7) Locations where vehicles exit the site.

All erosion and sediment control practices identified in the SWMP shall be evaluated to ensure that they are maintained and operating correctly.

9.e) Inspection Requirements

When conducting a site inspection:

1) Visually verify whether all implemented control measures are in effective operational condition and are working as designed in their specifications to minimize pollutant discharges.
2) Determine if there are new potential sources of pollutants.
3) Assess the adequacy of control measures at the site to identify areas requiring new or modified control measures to minimize pollutant discharges.
4) Identify all areas of non-compliance with the permit requirements and, if necessary, implement corrective action in accordance with Part I.B.1.c of the Permit.

9.f) Inspection Reports

A record of inspections will be maintained. Inspection reports will identify any incidents of non-compliance with the terms and conditions of the permit. Inspection records will be retained for three years from expiration or inactivation of permit coverage. Inspection reports will include:
1) The inspection date;
2) Name(s) and title(s) of personnel making the inspection;
3) Weather conditions at the time of inspection;
4) Phase(s) of construction at the time of inspection;
5) Estimated acreage of disturbance at the time of inspection;
6) Location(s) and identification of control measures requiring routine maintenance;
7) Location(s) and identification of discharges of sediment or other pollutants from the site;
8) Location(s) and identification of inadequate control measures;
9) Location(s) and identification of additional control measures needed that were not in place at the time of inspection;
10) Description of corrective action(s) for items 7, 8, 9, above, dates corrective action(s) were completed, including requisite changes to the SWMP, as necessary;
11) Description of the minimum inspection frequency utilized;
12) Deviations from the minimum inspection schedule as noted above;
13) After adequate corrective action(s) have been taken, or where a report does not identify any incidents requiring corrective action, the report shall contain a statement as required in Part I.A.3.f.

9.g) Required Actions Following Site Inspections

Maintenance Issues
Where site inspections note the need for control measure maintenance activities, control measures will be maintained in accordance with the SWMP and the permit as soon as possible.

Corrective Action Issues
Repair, replacement, or installation of new control measures when determined necessary during site inspections to address ineffective or inadequate control measures, will be conducted in accordance with the permit. SWMP updates required as a result of deficiencies in the SWMP noted during site inspections shall be made in accordance with the permit. If it is infeasible to install or repair of control measure immediately after discovering the deficiency, the following documentation will be made for the issue:
1) A description of why it is infeasible to initiate the installation or repair immediately; and
2) A schedule for installing or repairing the control measure and returning it to an effective operating condition as soon as possible.

If applicable, the permittee will remove and properly dispose of any unauthorized release or discharge within and from the permitted area (e.g., discharge of non-stormwater, untreated stormwater containing pollutants, spill, or leak not authorized by this permit.) The permittee will also clean up any contaminated surfaces, if feasible, to minimize discharges of the material in subsequent storm events, including water remaining from the response that contains pollutants after active emergency firefighting response is complete.

10) SWMP Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name: Rich Jackson

Title: Environmental Compliance Specialist

Contact Information: rich.jackson@stormwaterrm.com, 303-993-9083 (mobile)

Signature: *Electronically signed by Rich Jackson* **Date:** 04/10/2021 10:06 MST

APPENDICES

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: CD

Name/Description:
Check Dam - Loose Rock or Riprap

Description, Purpose and Applicability:

A check dam is a barrier constructed of rock, gravel bags, sandbags, fiber rolls (wattles), or reusable products, placed across a swale or drainage ditch/channel. Check dams reduce the effective slope of the channel, thereby reducing the velocity of flowing water, reducing the potential for erosion, and may also allow sediment to settle out of the runoff.

During what phase(s) of construction/activity will this control measure be implemented?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

- The ends of the check dam must be higher than the middle, allowing flows to go over the BMP in the center and not go around it, which could cause erosion in the slopes/banks of the channel
- Smaller rock (vs. riprap) may be used as temporary measures during construction to increase the filtration of runoff, as long as it is large enough (or secured if necessary) that it won't erode from the velocity of flows in the channel/swale.
- Missing rock will be replaced as necessary.
- Sediment should be removed when the accumulation reaches one-third of the barrier height.
- The spacing of the check dams depend on the height of the control and the slope severity - the bottom of the upper check dam should be approximately equal to the top of the lower check dam

Instances of this Control Measure (CM)

CD - Check Dam - Loose Rock or Riprap
There are no items to display

Attachments

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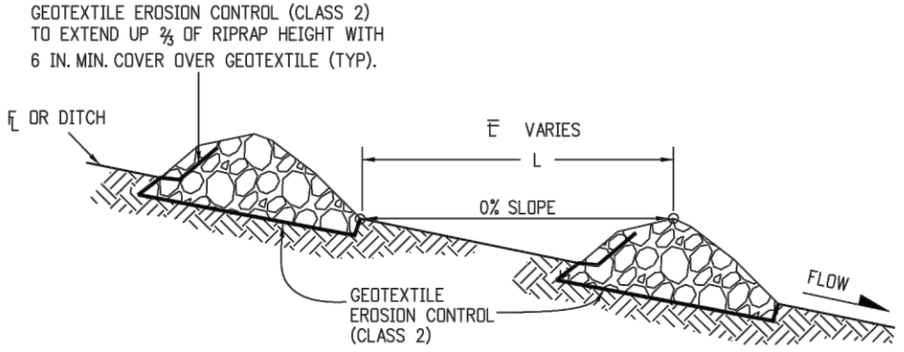
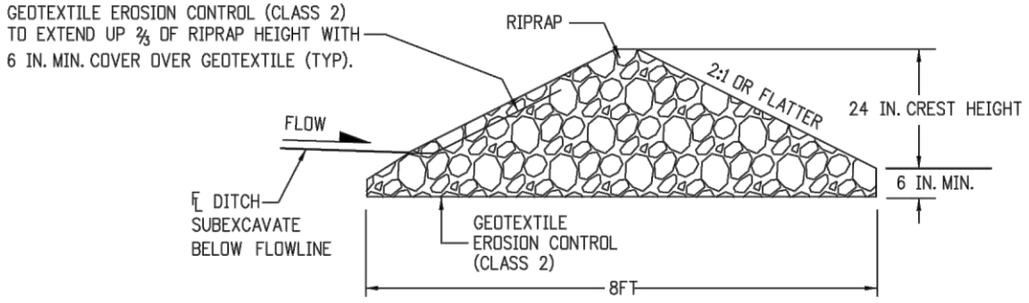
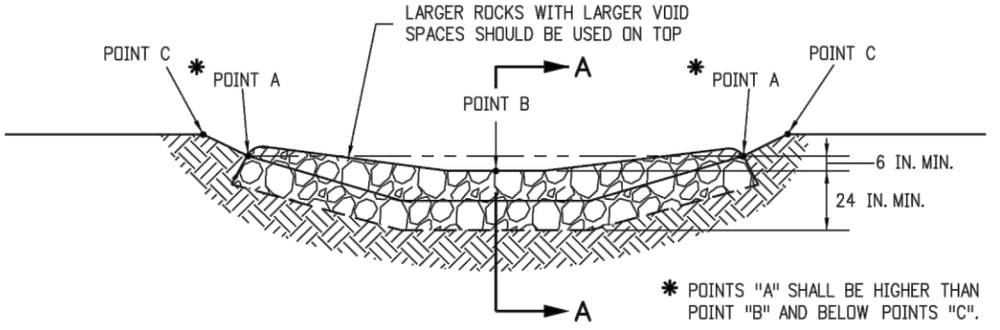


SECTION VIEW ALONG DITCH FLOWLINE



SECTION A-A



TYPICAL SECTION VIEW

NOTES:

1. RIPRAP SIZE D_{50} = 6IN OR AS SHOWN ON THE PLANS.
2. THE GEOTEXTILE EROSION CONTROL SHALL BE CLASS 2 AND CONFORM TO THE REQUIREMENTS OF SUBSECTION 712.08.
3. THE ENDS OF RIPRAP CHECK DAM SHALL BE A MINIMUM OF 6 IN. HIGHER THAN CENTER OF CHECK DAM.
4. FOR USE AS TEMPORARY CHECK DAMS ONLY AND NOT FOR PERMANENT INSTALLATIONS.
5. THE PAY ITEM NUMBER FOR ROCK CHECK DAM (EA) IS 208-00041.

RCD

NOTE: ALL MATERIALS AND LABOR TO COMPLETE THE ROCK CHECK DAM SHALL BE INCLUDED IN THE COST OF WORK.

ROCK CHECK DAM

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: CF

Name/Description:
Construction Fence

Description, Purpose and Applicability:

A construction fence restricts site access to designated entrances and exits, delineates construction site boundaries, and keeps construction out of sensitive areas such as natural areas to be preserved as open space, wetlands and riparian areas.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Construction fencing may be chain link or plastic mesh and should be installed following manufacturer's recommendations. See Detail for typical installations.
- Inspect fences for damage; repair or replace as necessary.
- Fencing should be tight and any areas with slumping or fallen posts should be reinstalled.
- Fencing should be removed once construction is complete.

Instances of this Control Measure (CM)

CF - Construction Fence
There are no items to display

Attachments

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Filename: UDFCD Construction Fence.pdf *(click to download original file)*

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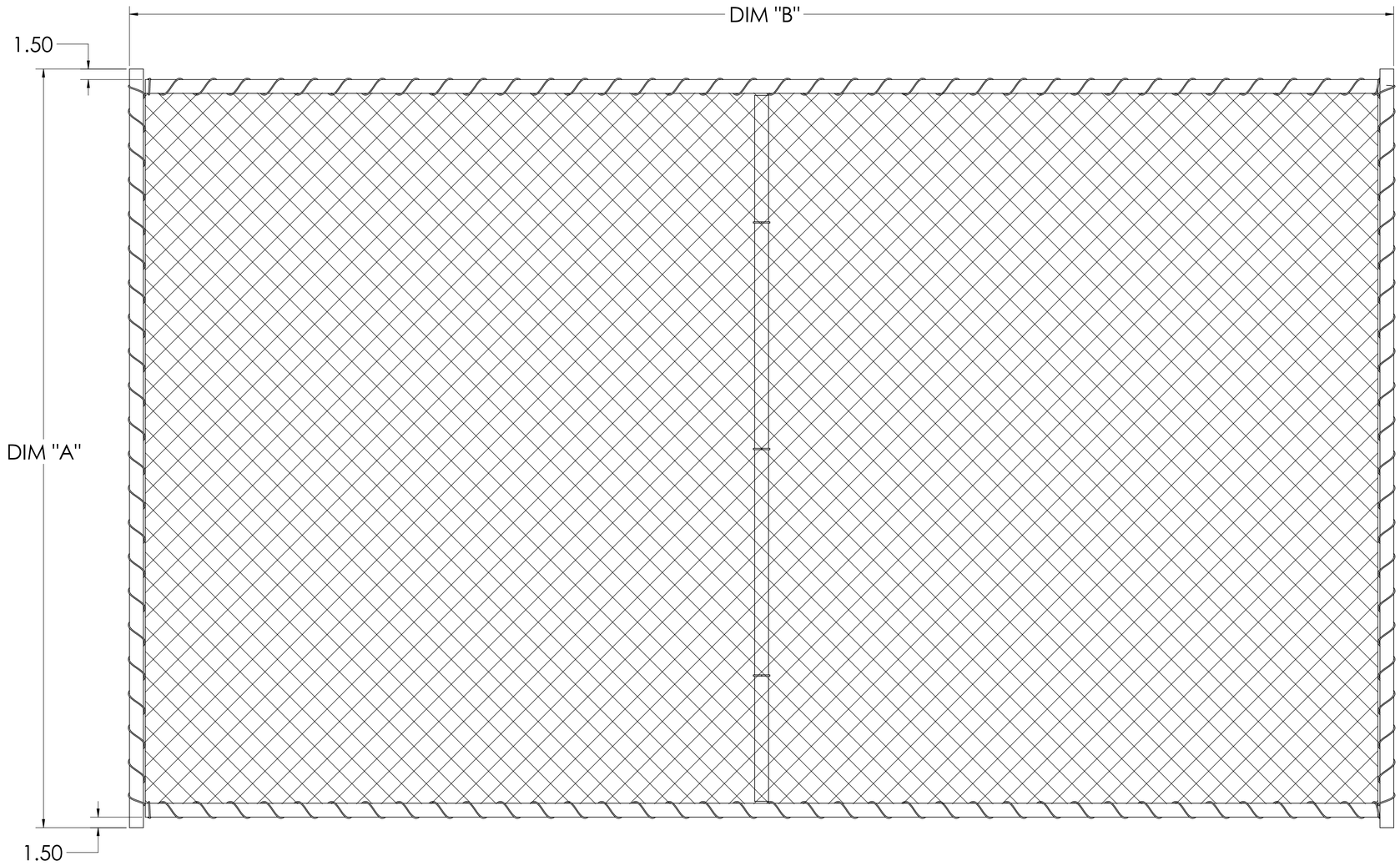


				CHAIN LINK WIRE	
PART NUMBER	DIM. "A"	DIM. "B"	TUBING MATERIAL	GAUGE	DIAMOND SIZE
071070	6'	10'	1-3/8" x 16 Gauge	12.5	2-3/8"
071071	6'	12'	1-3/8" x 16 Gauge	12.5	2-3/8"
071075	6'	10'	1-3/8" x 16 Gauge	11.5	2-3/8"
071076	6'	12'	1-3/8" x 16 Gauge	11.5	2-3/8"
071083	6'	14'	1-3/8" x 16 Gauge	12.5	2-3/8"

RELEASE STAMP - ORIGINAL IN BLUE

MATERIAL

NOTE: DO NOT SCALE DRAWING

ALL DIMENSIONS ARE INCHES UNLESS OTHERWISE NOTED.

Master Halco
One City Blvd. West,
Suite 900 Orange,
CA 92868
PHONE: 1-888-643-3623

DRAWN BY: BDS — DATE: 05/29/09

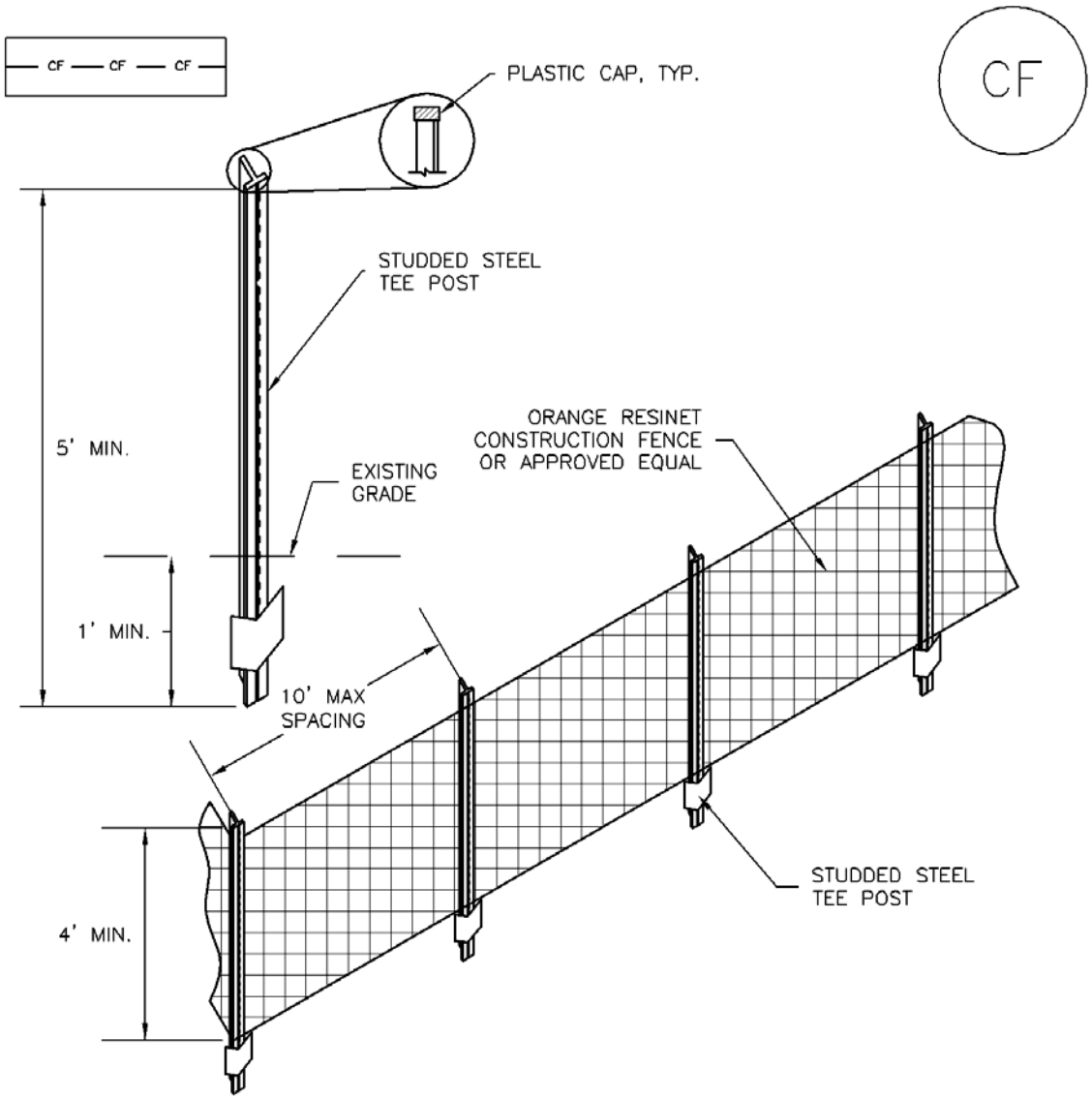
CHECKED BY — DATE

TOLERANCES UNLESS NOTED: DECIMAL .XX ±.031 .XXX ±.005 FRACTIONAL ±1/16 ANGULAR ±1°

MASTER HALCO®

DRAWING TITLE: TEMP PANEL - LACED

SIZE: D — DRAWING NUMBER — SHEET: 1 OF 1 — REV



CF–1. PLASTIC MESH CONSTRUCTION FENCE

CONSTRUCTION FENCE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF CONSTRUCTION FENCE.

2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR–GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.

4. STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.

5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: CNX

Name/Description:
Connex

Description, Purpose and Applicability:

Connex Box self contained, secure units may be deployed around the site to store tool and materials used by contractors throughout construction.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

The containers will be delivered by a sub-contractor, inspected weekly, and damaged containers will be replaced, as necessary.

Instances of this Control Measure (CM)

CNX - Connex
There are no items to display

Attachments

There are no attachments to display

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: CWA

Name/Description:
Concrete Washout Area

Description, Purpose and Applicability:

Concrete waste management involves designating and properly managing a specific area of the construction site as a concrete washout area. A concrete washout area can be created using one of several approaches designed to receive wash water from washing of tools and concrete mixer chutes, liquid concrete waste from dump trucks, mobile batch mixers, or pump trucks. Surface discharges of concrete washout water from construction sites are prohibited.

During what phase(s) of construction/activity will this control measure be implemented?

4. Impervious Surfaces, Vertical/Building Construction

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

- The use of the washout site should be temporary (less than 1 year), and
- The washout site should be not be located in an area where shallow groundwater may be present, such as near natural drainages, springs, or wetlands. Do not locate an unlined washout area within 400 feet of any natural drainage pathway or waterbody or within 1,000 feet of any wells or drinking water sources. Even for lined concrete washouts, it is advisable to locate the facility away from waterbodies and drainage paths.

Remove concrete waste in the washout area, as needed to maintain BMP function (typically when filled to about two-thirds of its capacity). Collect concrete waste and deliver offsite to a designated disposal location. Upon termination of use of the washout site, accumulated solid waste, including concrete waste and any contaminated soils, must be removed from the site to prevent on-site disposal of solid waste. If the wash water is allowed to evaporate and the concrete hardens, it may be recycled.

Instances of this Control Measure (CM)

CWA - Concrete Washout Area
There are no items to display

Attachments

Filename: CWA.pdf *(click to download original file)*

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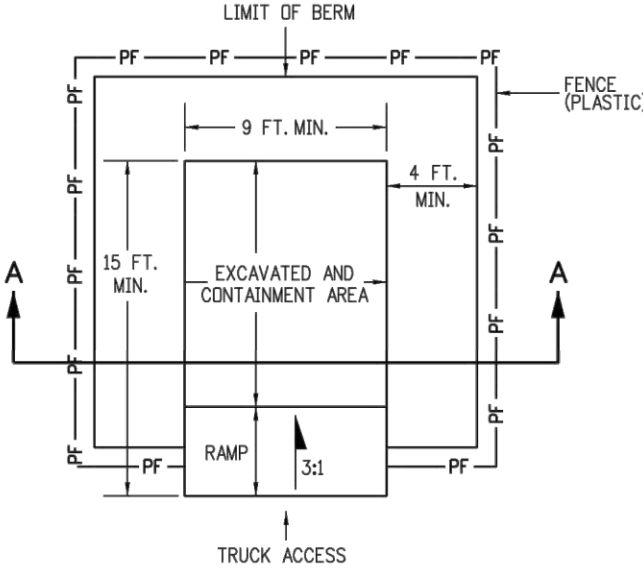
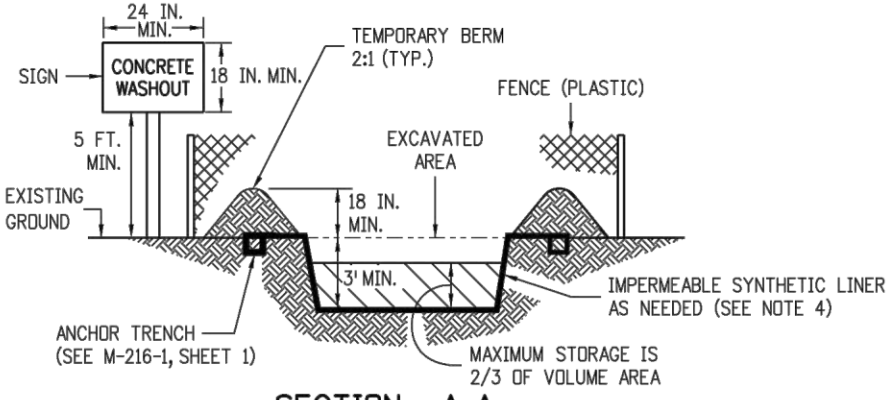


PLAN VIEW



SECTION A-A

NOTES:

1. A FENCE (PLASTIC) CONFORMING TO SECTION 607 SHALL BE INSTALLED AROUND THE CONCRETE WASHOUT AREA, EXCEPT AT THE OPENING.

2. THE CONCRETE WASHOUT SIGN SHALL HAVE LETTERS AT LEAST 3 INCHES HIGH AND CONFORM TO SUBSECTION 630.02.

3. ALL MATERIALS AND LABOR TO COMPLETE THE CONCRETE WASHOUT STRUCTURE SHALL BE INCLUDED IN THE COST OF WORK AND NOT PAID FOR SEPARATELY.

4. THE BOTTOM OF EXCAVATION SHALL BE A MINIMUM OF FIVE FEET ABOVE GROUND WATER. IF NOT, THE BOTTOM OF EXCAVATION SHALL BE IN ACCORDANCE WITH 208.02 (j).

5. THE PAY ITEM NUMBER FOR CONCRETE WASHOUT STRUCTURE (EACH) IS 208-00045.

CONCRETE WASHOUT STRUCTURE

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: DC

Name/Description:
Dust Control

Description, Purpose and Applicability:

Wind erosion and dust control BMPs help to keep soil particles from entering the air as a result of land disturbing construction activities. These BMPs include a variety of practices generally focused on either graded disturbed areas or construction roadways. Dust control measures should be used on any site where dust poses a problem to air quality. Dust control is important to control for the health of construction workers and surrounding waterbodies.

During what phase(s) of construction/activity will this control measure be implemented?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Please see attached BMP Description, Installation and Maintenance Specification Sheet - Urban Drainage and Flood Control District - Urban Storm Drainage Criteria Manual Volume 3.

Instances of this Control Measure (CM)

DC - Dust Control
There are no items to display

Attachments

Description: EC-14 Wind Erosion/Dust Control - Urban Drainage and Flood Control District
Filename: EC-14 Wind Erosion-Dust Control.pdf *(click to download original file)*

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Wind Erosion/Dust Control (DC) EC-14

Description

Wind erosion and dust control BMPs help to keep soil particles from entering the air as a result of land disturbing construction activities. These BMPs include a variety of practices generally focused on either graded disturbed areas or construction roadways. For graded areas, practices such as seeding and mulching, use of soil binders, site watering, or other practices that provide prompt surface cover should be used. For construction roadways, road watering and stabilized surfaces should be considered.

Photograph DC-1. Water truck used for dust suppression. Photo courtesy of Douglas County.

Appropriate Uses

Dust control measures should be used on any site where dust poses a problem to air quality. Dust control is important to control for the health of construction workers and surrounding waterbodies.

Design and Installation

The following construction BMPs can be used for dust control:

- An irrigation/sprinkler system can be used to wet the top layer of disturbed soil to help keep dry soil particles from becoming airborne.
- Seeding and mulching can be used to stabilize disturbed surfaces and reduce dust emissions.
- Protecting existing vegetation can help to slow wind velocities across the ground surface, thereby limiting the likelihood of soil particles to become airborne.
- Spray-on soil binders form a bond between soil particles keeping them grounded. Chemical treatments may require additional permitting requirements. Potential impacts to surrounding waterways and habitat must be considered prior to use.
- Placing rock on construction roadways and entrances will help keep dust to a minimum across the construction site.
- Wind fences can be installed on site to reduce wind speeds. Install fences perpendicular to the prevailing wind direction for maximum effectiveness.

Wind Erosion Control/ Dust Control	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	Moderate

Maintenance and Removal

When using an irrigation/sprinkler control system to aid in dust control, be careful not to overwater. Overwatering will cause construction vehicles to track mud off-site.

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: DD

Name/Description:
Diversion Ditch

Description, Purpose and Applicability:

An earth dike is a berm or ridge of compacted soil used to divert runoff or channel water to a desired location. A drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off site runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

During what phase(s) of construction/activity will this control measure be implemented?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

The ditch(es) will be installed per the installation detail and inspected at the frequency indicated in the Stormwater Management Plan. Accumulated sediment in the ditch will be removed when it impedes the flows in the ditch and damaged sections will be repaired as soon as possible.

Instances of this Control Measure (CM)

DD - Diversion Ditch
There are no items to display

Attachments

Filename: DD-EB Diversion Ditch or Earthen Berm.pdf *(click to download original file)*

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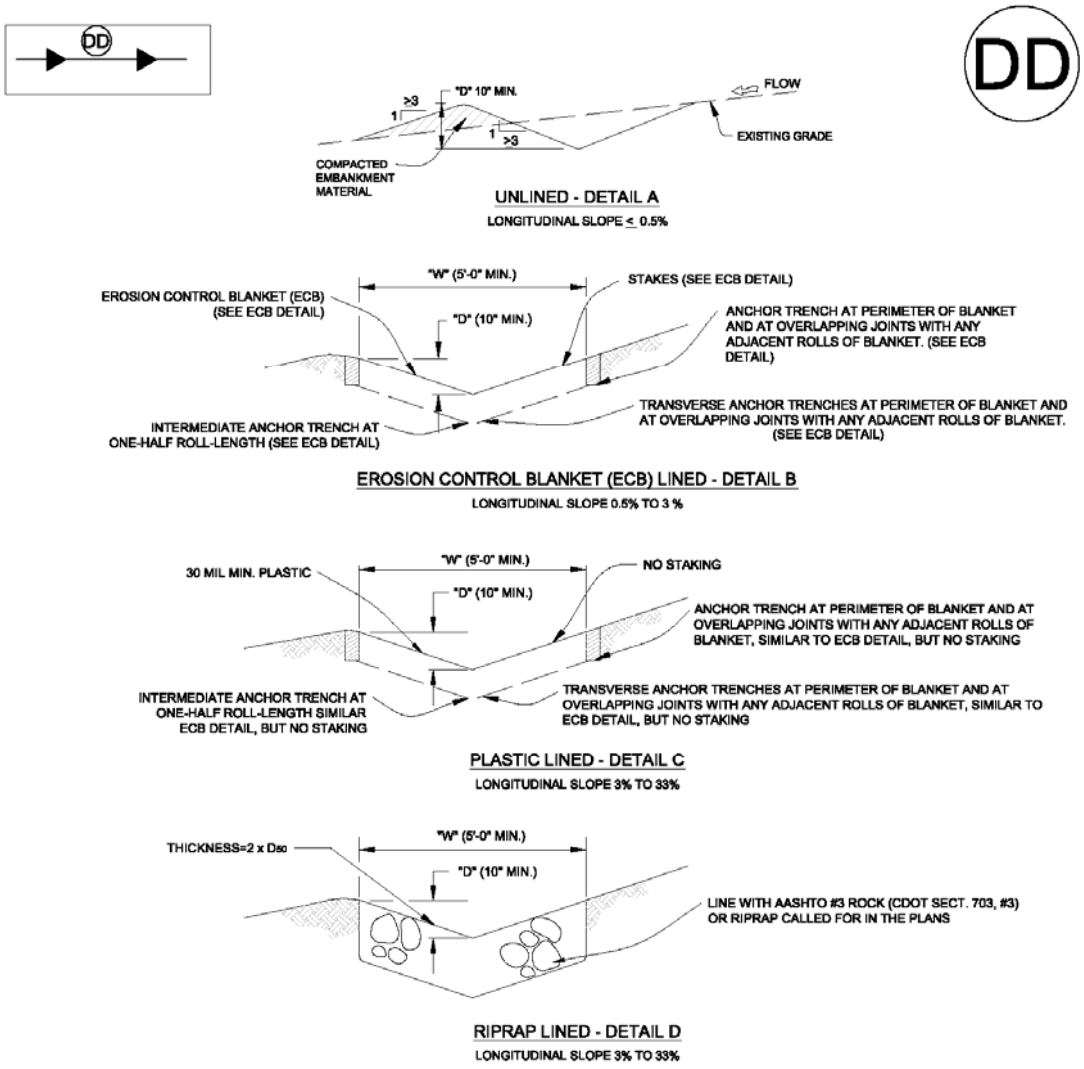


DIVERSION DITCH INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION OF DIVERSION DITCH.
   - TYPE OF DITCH (UNLINED, ECB LINED, PLASTIC LINED OR RIPRAP LINED).
   - LENGTH OF EACH TYPE OF DITCH.
   - DEPTH, "D", AND WIDTH, "W" DIMENSIONS.
   - FOR ECB LINED DITCH, EROSION CONTROL BLANKET TYPE (SEE ECB DETAIL).
   - FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, "D_{50}".
2. SEE DRAINAGE PLANS FOR DETAILS OF ANY PERMANENT CONVEYANCE FACILITIES OR DIVERSION DITCHES EXCEEDING A 2-YEAR FLOW RATE OF 10 CFS.
3. DIVERSION DITCHES INDICATED ON INITIAL SWMP PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.
4. FOR ECB LINED DITCHES, INSTALLATION OF EROSION CONTROL BLANKET SHALL CONFORM TO THE REQUIREMENTS OF THE ECB DETAIL.
5. IN LOCATIONS WHERE CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION DITCH, THE PERMITTEES SHALL INSTALL A TEMPORARY CULVERT WITH A MINIMUM DIAMETER OF 12 INCHES.

DIVERSION DITCH MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT DIVERSION DITCHES WEEKLY AND DURING AND AFTER ANY STORM. MAKE REPAIRS AS NECESSARY.
2. DIVERSION DITCHES ARE TO REMAIN IN PLACE UNTIL THE END OF CONSTRUCTION, OR IF APPROVED BY LOCAL JURISDICTION MAY BE LEFT IN PLACE.
3. IF DIVERSION DITCHES ARE REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, DRILL SEEDED, HAY CRIMPED, MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

DETAIL BASED ON DETAILS PROVIDED BY DOUGLAS COUNTY, COLORADO

Figure C5-3—Temporary Diversion Dike & Ditch

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: DMP

Name/Description:
Dumpster

Description, Purpose and Applicability:

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers and arranging for regular disposal.
Dumpsters will be implemented where the following wastes are generated or stored:
- Packaging materials including wood, paper, and plastic scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces and masonry products.
- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Inspections of the Dumpster will be consistent with the project stated frequency in the narrative and will be called in for service prior to reaching 100% capacity.

Instances of this Control Measure (CM)

DMP - Dumpster
There are no items to display

Attachments

There are no attachments to display

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: DW

Name/Description:
Dewatering Operations

Description, Purpose and Applicability:

The BMPs selected for construction dewatering vary depending on site-specific features such as soils, topography, anticipated discharge quantities, and discharge location. Dewatering typically involves pumping water from an inundated area to a BMP, and then downstream to a receiving waterway, sediment basin, or well-vegetated area. Dewatering typically involves use of several BMPs in sequence.

Dewatering operations are used when an area of the construction site needs to be dewatered as the result of a large storm event, groundwater, or existing ponding conditions. This can occur during deep excavation, utility trenching, and wetland or pond excavation.

During what phase(s) of construction/activity will this control measure be implemented?

3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Please see attached BMP Description, Installation and Maintenance Specification Sheet - Urban Drainage and Flood Control District - Urban Storm Drainage Criteria Manual Volume 3.
Inspections of the operations implemented will occur at least daily, during the dewatering activities and any maintenance will occur as soon as possible to ensure the controls function properly.

Instances of this Control Measure (CM)

DW - Dewatering Operations
There are no items to display

Attachments

Description: SM-09 Dewatering Operations - Urban Drainage and Flood Control District
Filename: SM-09 Dewatering Operations.pdf *(click to download original file)*

File is included after this page

Description

The BMPs selected for construction dewatering vary depending on site-specific features such as soils, topography, anticipated discharge quantities, and discharge location. Dewatering typically involves pumping water from an inundated area to a BMP, and then downstream to a receiving waterway, sediment basin, or well-vegetated area. Dewatering typically involves use of several BMPs in sequence.

Photograph DW-1. A relatively small dewatering operation using straw bales and a dewatering bag.

Appropriate Uses

Dewatering operations are used when an area of the construction site needs to be dewatered as the result of a large storm event, groundwater, or existing ponding conditions. This can occur during deep excavation, utility trenching, and wetland or pond excavation.

Photograph DW-2. Dewatering bags used for a relatively large dewatering operation.

Design and Installation

Dewatering techniques will vary depending on site conditions. However, all dewatering discharges must be treated to remove sediment before discharging from the construction site. Discharging water into a sediment trap or basin is an acceptable treatment option. Water may also be treated using a dewatering filter bag, and a series of straw bales or sediment logs. If these previous options are not feasible due to space or the ability to passively treat the discharge to remove sediment, then a settling tank or an active treatment system may need to be utilized. Settling tanks are manufactured tanks with a series of baffles to promote settling. Flocculants can also be added to the tank to induce more rapid settling. This is an approach sometimes used on highly urbanized construction sites. Contact the state agency for special requirements prior to using flocculents and land application techniques.

Some commonly used methods to handle the pumped water without surface discharge include land application to vegetated areas through a perforated discharge hose (i.e., the "sprinkler method") or dispersal from a water truck for dust control.

Dewatering Operations	
Functions	
Erosion Control	Moderate
Sediment Control	Yes
Site/Material Management	Yes

Dewatering discharges to non-paved areas must minimize the potential for scour at the discharge point either using a velocity dissipation device or dewatering filter bag.

Design Details are provided for these types of dewatering situations:

DW-1. Dewatering for Pond Already Filled with Water

DW-2 Dewatering Sump for Submersed Pump

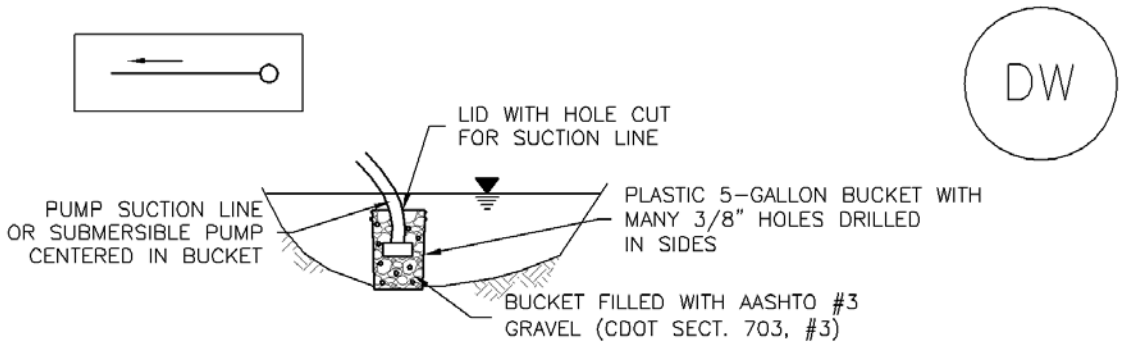
DW-3 Sump Discharge Settling Basin

DW-4 Dewatering Filter Bag

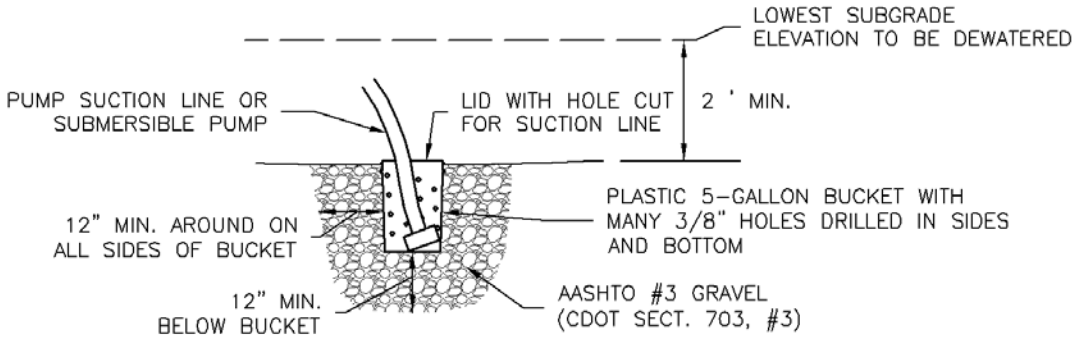
Maintenance and Removal

When a sediment basin or trap is used to enable settling of sediment from construction dewatering discharges, inspect the basin for sediment accumulation. Remove sediment prior to the basin or trap reaching half full. Inspect treatment facilities prior to any dewatering activity. If using a sediment control practice such as a sediment trap or basin, complete all maintenance requirements as described in the fact sheets prior to dewatering.

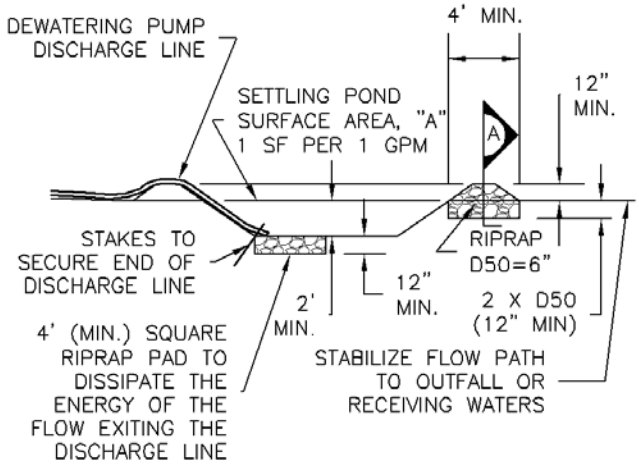
Properly dispose of used dewatering bags, as well as sediment removed from the dewatering BMPs. Depending on the size of the dewatering operation, it may also be necessary to revegetate or otherwise stabilize the area where the dewatering operation was occurring.



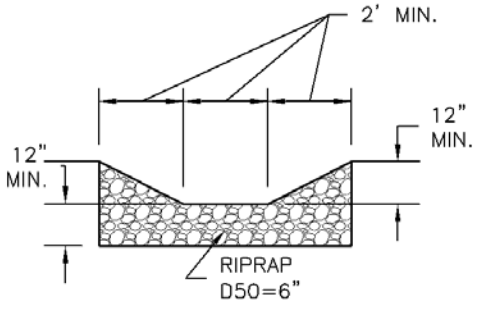
DW-1. DEWATERING POND ALREADY FILLED WITH WATER



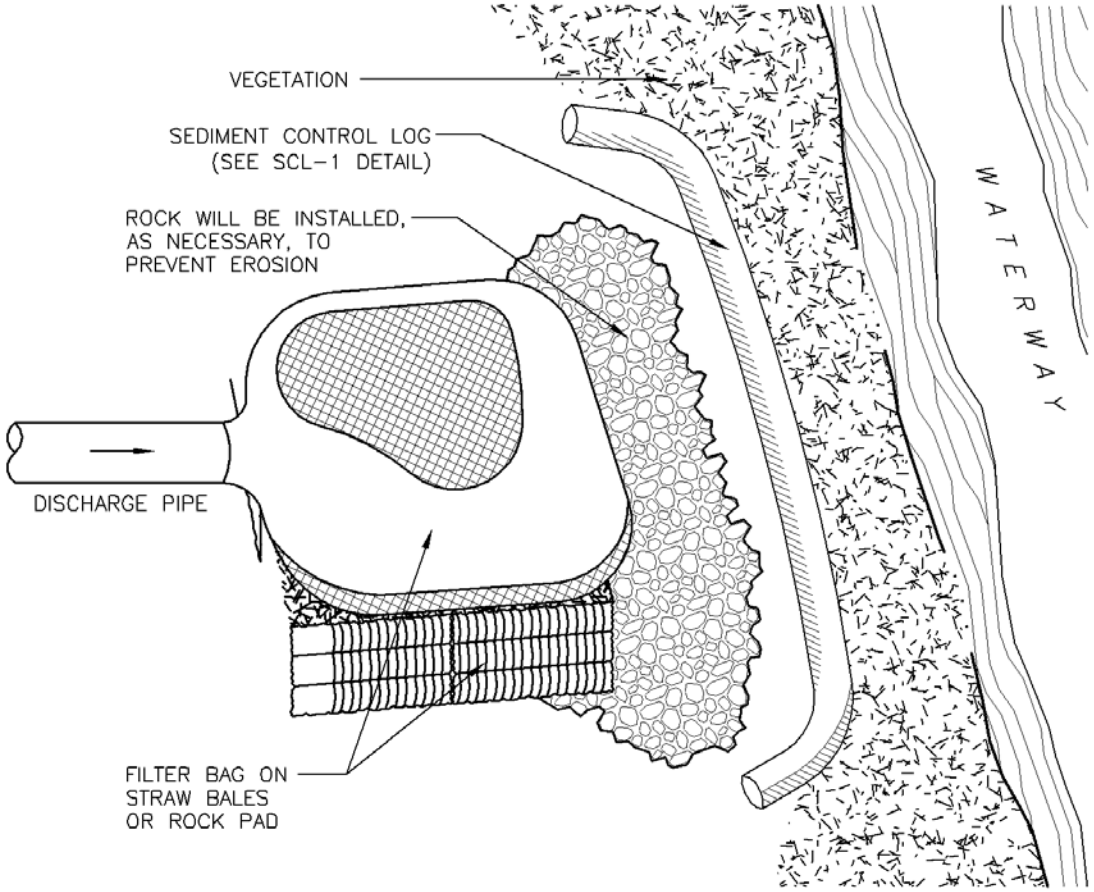
DW-2. DEWATERING SUMP FOR SUBMERSED PUMP



DW-3. SUMP DISCHARGE SETTLING BASIN



SETTLING BASIN SECTION A



DW-4. DEWATERING FILTER BAG

DEWATERING INSTALLATION NOTES

1. SEE PLAN VIEW FOR;
   -LOCATION OF DEWATERING EQUIPMENT.
   -TYPE OF DEWATERING OPERATION (DW-1 TO DW-4).

2. THE OWNER OR CONTRACTOR SHALL OBTAIN A CONSTRUCTION DISCHARGE (DEWATERING) PERMIT FROM THE STATE PRIOR TO ANY DEWATERING OPERATIONS DISCHARGING FROM THE SITE. ALL DEWATERING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE PERMIT.

3. THE OWNER OR OPERATOR SHALL PROVIDE, OPERATE, AND MAINTAIN DEWATERING SYSTEMS OF SUFFICIENT SIZE AND CAPACITY TO PERMIT EXCAVATION AND SUBSEQUENT CONSTRUCTION IN DRY CONDITIONS AND TO LOWER AND MAINTAIN THE GROUNDWATER LEVEL A MINIMUM OF 2-FEET BELOW THE LOWEST POINT OF EXCAVATION AND CONTINUOUSLY MAINTAIN EXCAVATIONS FREE OF WATER UNTIL BACK-FILLED TO FINAL GRADE.

DEWATERING INSTALLATION NOTES

4. DEWATERING OPERATIONS SHALL USE ONE OR MORE OF THE DEWATERING SUMPS SHOWN ABOVE, WELL POINTS, OR OTHER MEANS APPROVED BY THE LOCAL JURISDICTION TO REDUCE THE PUMPING OF SEDIMENT, AND SHALL PROVIDE A TEMPORARY SEDIMENT BASIN OR FILTRATION BMP TO REDUCE SEDIMENT TO ALLOWABLE LEVELS PRIOR TO RELEASE OFF SITE OR TO A RECEIVING WATER. A SEDIMENT BASIN MAY BE USED IN LIEU OF SUMP DISCHARGE SETTLING BASIN SHOWN ABOVE IF A 4-FOOT-SQUARE RIPRAP PAD IS PLACED AT THE DISCHARGE POINT AND THE DISCHARGE END OF THE LINE IS STAKED IN PLACE TO PREVENT MOVEMENT OF THE LINE.

DEWATERING MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. DEWATERING BMPs ARE REQUIRED IN ADDITION TO ALL OTHER PERMIT REQUIREMENTS.

5. TEMPORARY SETTLING BASINS SHALL BE REMOVED WHEN NO LONGER NEEDED FOR DEWATERING OPERATIONS. ANY DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: EB

Name/Description:
Earth Berm

Description, Purpose and Applicability:

An earth berm or ridge of compacted soil with or without a ditch/swale is used to divert stormwater runoff or channel water to a desired location or to contain sediment and other potential pollutants, such as fuel spills, masonry mixing activities, etc.

During what phase(s) of construction/activity will this control measure be implemented?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Inspect berm for voids, failed compaction and significant disfigurement of side slopes, height and width (repair to above specifications where/as necessary). Refer to information/detail sheet included in the SWMP.

Instances of this Control Measure (CM)

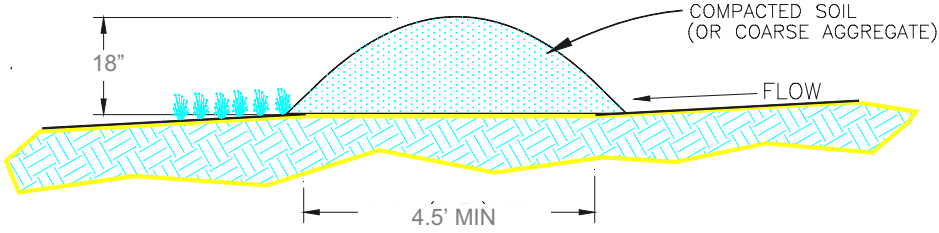
EB - Earth Berm
There are no items to display

Attachments

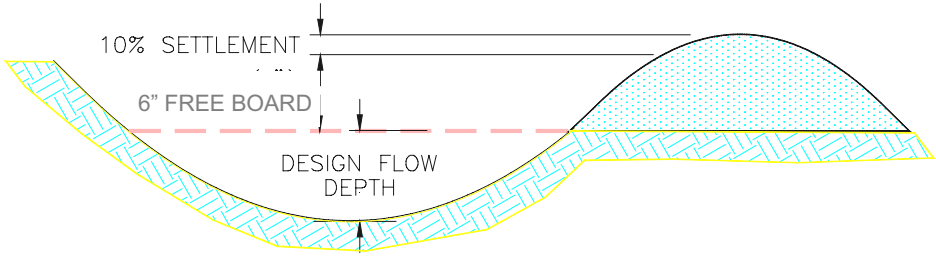
Description: Compacted Earthen Berm Detail
Filename: Berm Detail.pdf *(click to download original file)*

File is included after this page

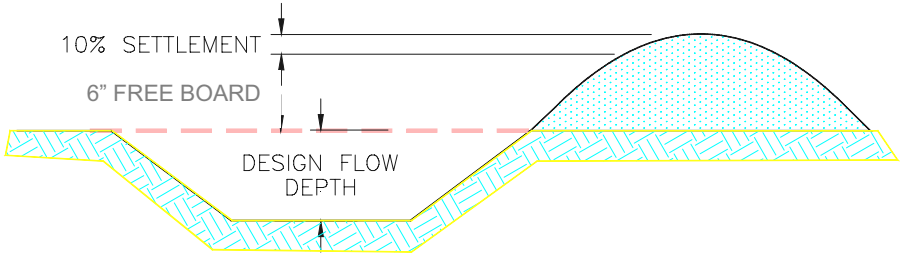
BERM



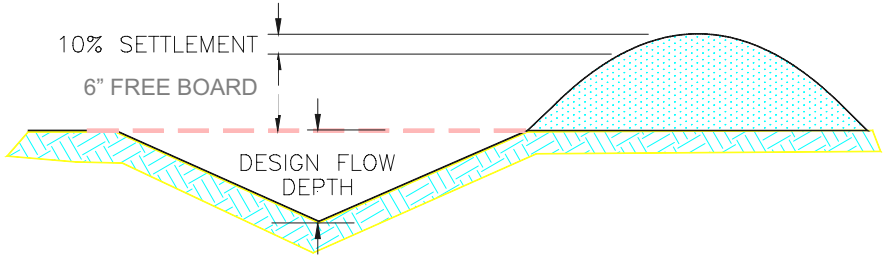
DIVERSIONS



PARABOLIC DIVERSION



TRAPEZOIDAL DIVERSION



V–SHAPED DIVERSION

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: ECB

Name/Description:
Erosion Control Blankets

Description, Purpose and Applicability:

Erosion control blanket is a fibrous blanket of straw, jute, excelsior, or coconut material trenched in and staked down over prepared, seeded soil. The blanket reduces the effects of both wind and water erosion.

During what phase(s) of construction/activity will this control measure be implemented?

5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Inspection of erosion control blankets and other Rolled Erosion Control Products will include:
- Checking for general signs of erosion, including voids beneath the mat. If voids are apparent, fill the void with suitable soil and replace the erosion control blanket, following the appropriate staking pattern.
- Checking for damaged or loose stakes and secure loose portions of the blanket. The end of blankets will be trenched in to prevent runoff from undermining the BMP and damaged blankets will be repaired or replaced as soon as possible.

Instances of this Control Measure (CM)

ECB - Erosion Control Blankets
There are no items to display

Attachments

Filename: ECB Erosion Control Blanket.pdf *(click to download original file)*

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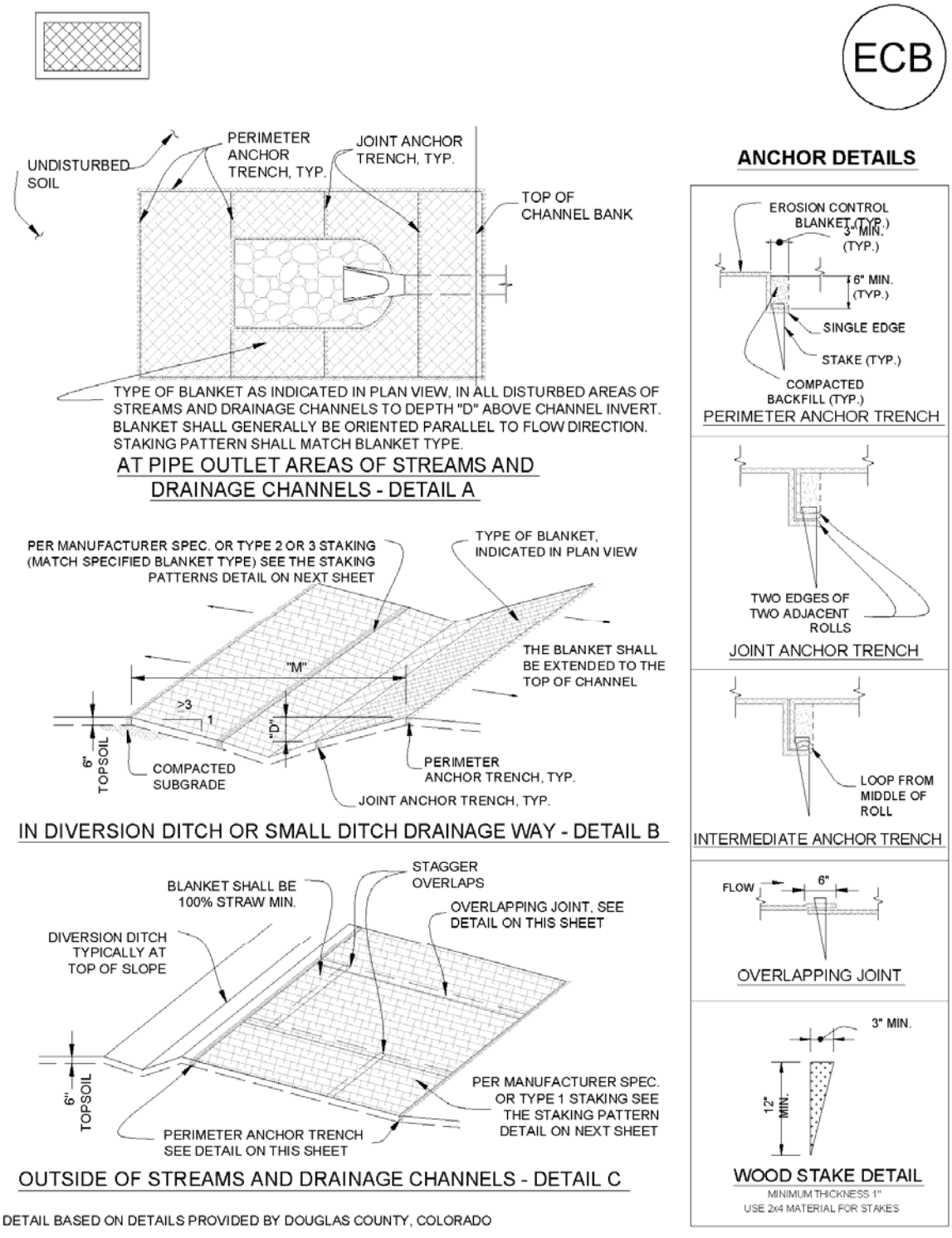
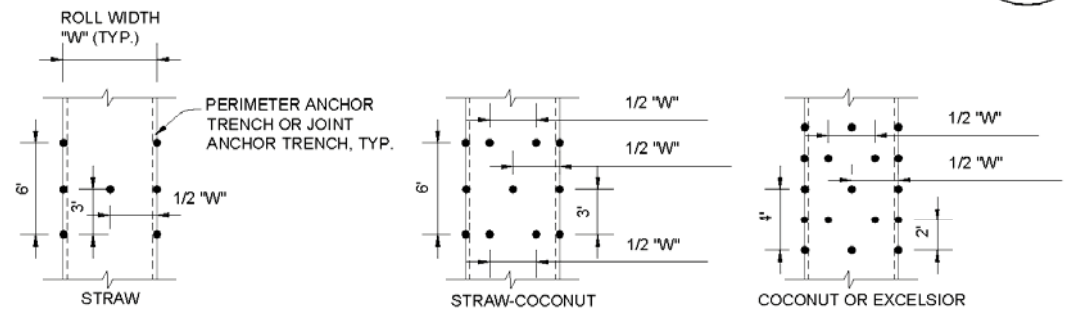


Figure C4-3—Orientation of Erosion Control Blankets, Netting and Matting

EROSION CONTROL BLANKET CONTINUED

ECB



STAKING PATTERNS

SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION. IF NO MANUFACTURER'S SPECIFICATION IS AVAILABLE USE THE ACCEPTABLE STAKING PATTERN (AS SHOWN ABOVE)

EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION OF PERIMETER OF EROSION CONTROL BLANKET.
   - TYPE OF BLANKET (STRAW, STRAW-COCONUT, COCONUT, OR EXCELSIOR).
   - AREA "A" IN SQUARE YARDS OF EACH TYPE OF BLANKET.
2. ALL EROSION CONTROL BLANKETS AND NETTING SHALL BE MADE OF 100% NATURAL AND BIODEGRADABLE MATERIAL; NO PLASTIC OR OTHER SYNTHETIC MATERIAL, EVEN IF PHOTO DEGRADABLE, SHALL BE ALLOWED.
3. IN AREAS WHERE EROSION CONTROL BLANKET IS SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING BELOW THE SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO BLANKET INSTALLATION AND THE BLANKET SHALL BE IN FULL CONTACT WITH SUBGRADE, NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.
4. PERIMETER ANCHOR TRENCH SHALL BE USED AT OUTSIDE PERIMETER OF ALL BLANKET AREAS.
5. JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL BLANKETS EXCEPT STRAW, WHICH MAY USE AN OVERLAPPING JOINT.
6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE-HALF THE ROLL LENGTH FOR COCONUT AND EXCELSIOR BLANKETS.
7. THE OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER FOR BLANKETS ON SLOPES.
8. MATERIAL SPECIFICATIONS OF EROSION CONTROL BLANKET SHALL CONFORM TO TABLE 7.1.
9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING EROSION CONTROL BLANKET SHALL BE RESEEDED AND MULCHED.
10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM ONES SHOWN HERE.

TABLE 7.1 - EROSION CONTROL BLANKET TYPE

TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	NETTING MIN.
STRAW *	–	100%	–	DOUBLE/NATURAL
STRAW-COCONUT	30% MIN	70% MAX	–	DOUBLE/NATURAL
COCONUT	100%	–	–	DOUBLE/NATURAL
EXCELSIOR	–	–	100%	DOUBLE/NATURAL

* FOR OUTSIDE OF STREAMS AND DRAINAGE CHANNELS

EROSION CONTROL BLANKET MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT EROSION CONTROL BLANKETS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS AS NECESSARY.
2. EROSION CONTROL BLANKET IS TO BE LEFT IN PLACE UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.
3. ANY EROSION CONTROL BLANKET PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE RE-INSTALLED. ANY SUBGRADE AREAS BELOW THE BLANKET THAT HAVE ERODED TO CREATE A VOID UNDER THE BLANKET, OR THAT REMAIN DEVOID OF GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE EROSION CONTROL BLANKET REINSTALLED.

DETAIL BASED ON DETAILS PROVIDED BY DOUGLAS COUNTY, COLORADO

Figure C4-3a—Orientation of Erosion Control Blankets, Netting and Matting (con't)

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: FLS

Name/Description:
Final Landscaping

Description, Purpose and Applicability:
Final Landscaping will entail Seed & Mulch, Sod, Mulch, Trees, Shrubs, etc to stabilize disturbed areas.

During what phase(s) of construction/activity will this control measure be implemented?
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*
Refer to Landscape/Civil Plans for locations and methods of final stabilization/landscaping on the project.

Instances of this Control Measure (CM)

FLS - Final Landscaping
There are no items to display

Attachments

There are no attachments to display

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: GH

Name/Description:
Good Housekeeping Practices/Material Management

Description, Purpose and Applicability:

The project will implement construction site good housekeeping practices to prevent pollution associated with solid, liquid and hazardous construction-related materials and wastes. The Stormwater Management Plan clearly specifies BMPs including these good housekeeping practices:
- Providing for waste management.
- Establishing proper building material staging areas.
- Control tool/equipment/vehicle washing and allowable non-stormwater discharges.
- Implement spill prevention and response procedures.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

The following principles and actions will be addressed:
- Providing for Waste Management. Implementing management procedures and practices to prevent or reduce the exposure and transport of pollutants in stormwater from solid, liquid and sanitary wastes that will be generated at the site. Practices such as trash disposal, recycling, proper material handling, and cleanup measures to reduce the potential for stormwater runoff to pick up construction site wastes and discharge them to surface waters. The project will implement a set of waste-management practices for hazardous or toxic materials, such as paints, solvents, petroleum products, pesticides, wood preservatives, acids, roofing tar, and other materials. Practices include storage, handling, inventory, and cleanup procedures, in case of spills.

Also, the spill prevention and response procedures outlined in the stormwater management plan will be implemented for construction equipment and vehicles.

Instances of this Control Measure (CM)

GH - Good Housekeeping Practices/Material Management
There are no items to display

Attachments

There are no attachments to display

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: HWSM

Name/Description:
Hand Washing Station Management

Description, Purpose and Applicability:

Hand washing stations will be present on-site and may be either a self-contained unit or a 'home-made' set-up that will include a sink/basin with water, soap/detergent, and/or hand-sanitizer.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

The unit will be secured from tipping over, if necessary. If it is a self-contained unit, it will be serviced when the portable toilets are cleaned (typically weekly). If it is a custom/'home-made' unit, the handwashing water may also be drained into enclosed equipment such as a bucket with a lid or IBC Tote and then it will be dumped into the sanitary sewer or concrete washout area.

Instances of this Control Measure (CM)

HWSM - Hand Washing Station Management
There are no items to display

Attachments

Filename: hand-wash-stations-1.pdf *(click to download original file)*

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Filename: hand-wash-stations-2.pdf *(click to download original file)*

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LITERS

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: IP-1

Name/Description:
Inlet Protection - Curb - Block & Gravel Bags

Description, Purpose and Applicability:

Inlet protection consists of permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet.
The potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets will be considered when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and will be used in conjunction with other upgradient BMPs.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Protection will be installed at storm sewer inlets that are operable during construction.
To function effectively, inlet protection measures will be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs will also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding.
Sediment accumulated in front of/upstream of the inlet protection shall be removed as necessary to maintain BMP effectiveness and reduce the potential of a discharge of sediment laden runoff.

Instances of this Control Measure (CM)

IP-1 - Inlet Protection - Curb - Block & Gravel Bags
There are no items to display

Attachments

Filename: Inlet Protection Type 1 - Curb - Block & Rock Sock.pdf *(click to download original file)*

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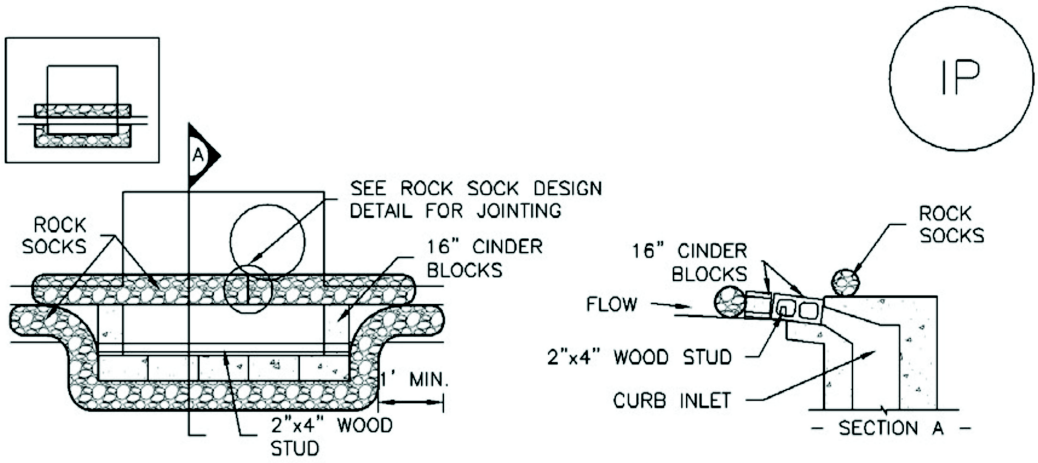

IP-1. BLOCK AND ROCK SOCK SUMP

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: IP-3

Name/Description:
Inlet Protection - Area Inlet w/ Rock Socks

Description, Purpose and Applicability:

Inlet protection consists of permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet.
The potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets will be considered when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and will be used in conjunction with other upgradient BMPs.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Protection will be installed at storm sewer inlets that are operable during construction. Filter Fabric may be utilized as an additional measure to treat runoff prior to discharging into the inlet. The rock socks will be butted tightly together or overlapped 2"+ to adequately treat the runoff prior to reaching the inlet.
To function effectively, inlet protection measures will be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs will also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding.

Instances of this Control Measure (CM)

IP-3 - Inlet Protection - Area Inlet w/ Rock Socks
There are no items to display

Attachments

Filename: Area Inlet Protection - Filter Fabric.pdf *(click to download original file)*

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Filename: Inlet Protection Type 3 - Area Inlet - Rock Socks.pdf *(click to download original file)*

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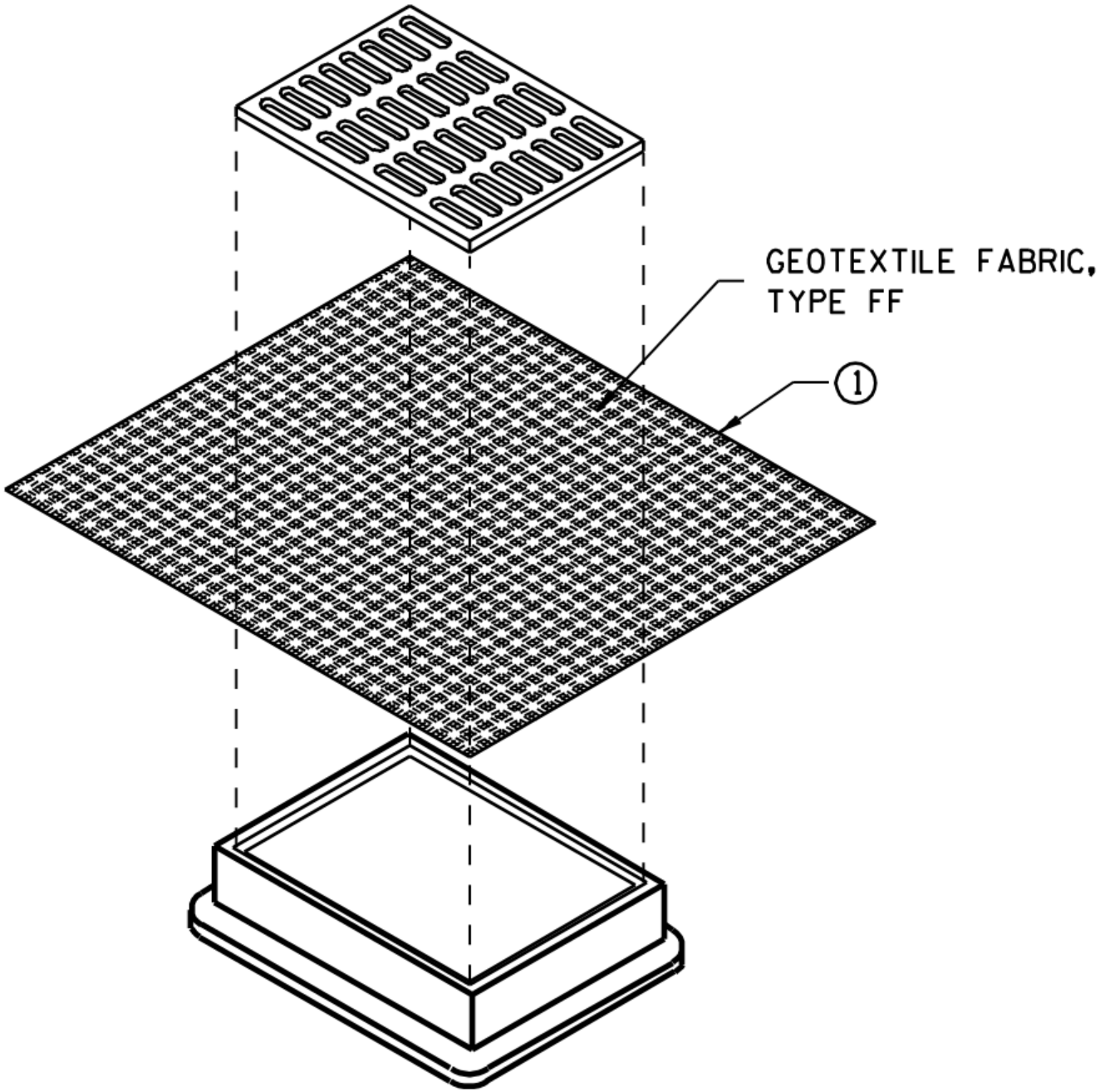
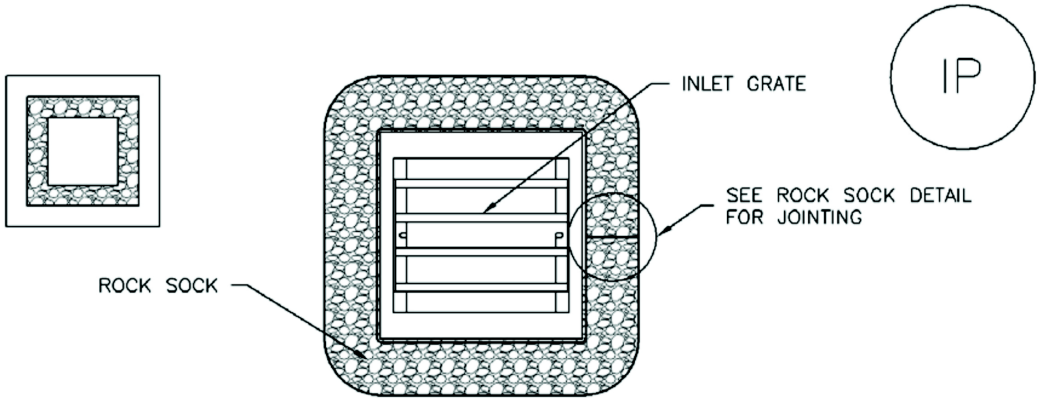


INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



IP–3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: IP-7

Name/Description:
Inlet Protection - Dandy Curb Bag

Description, Purpose and Applicability:

Inlet protection consists of permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet.
The potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets will be considered when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and will be used in conjunction with other upgradient BMPs.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Protection will be installed at storm sewer inlets that are operable during construction.
To function effectively, inlet protection measures will be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs will also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding.
Sediment accumulated in front of/upstream of the inlet protection shall be removed as necessary to maintain BMP effectiveness and reduce the potential of a discharge of sediment laden runoff.

Instances of this Control Measure (CM)

IP-7 - Inlet Protection - Dandy Curb Bag
There are no items to display

Attachments

Filename: D-CURB.pdf *(click to download original file)*

File is included after this page

Description: Dandy Curb Bag Drawing
Filename: Dandy Curb Bag.pdf *(click to download original file)*

File is included after this page

Description: Dandy Curb Bag Spec
Filename: dandy curb bag_spec (1).pdf *(click to download original file)*

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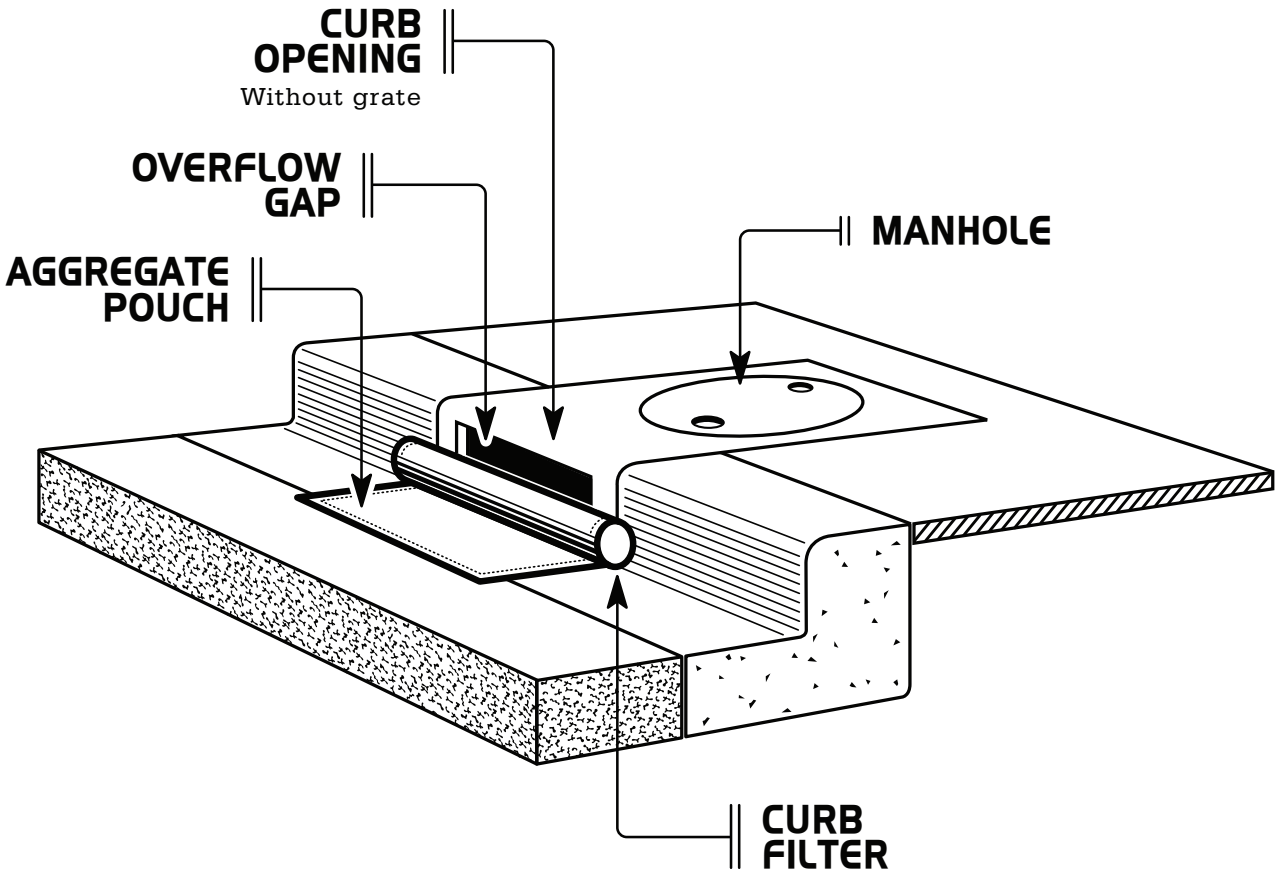
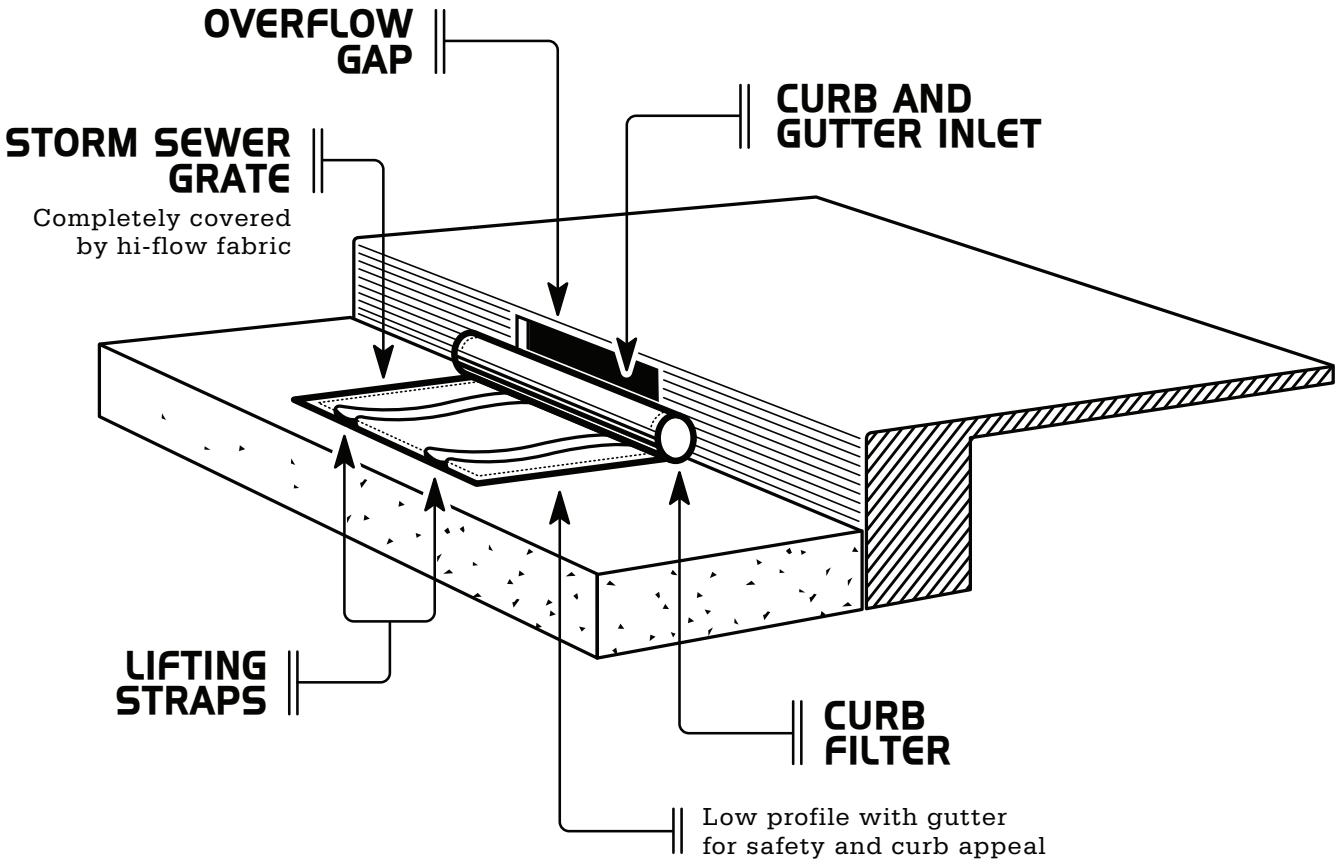
DANDY CURB™


CURB OPENING
Without grate
OVERFLOW GAP
AGGREGATE POUCH
MANHOLE
CURB FILTER

DANDY CURB BAG™



DANDY CURB BAG®
CURB AND GUTTER INLET/GRATE PROTECTION SYSTEM
GUIDE SPECIFICATION

PRODUCT:

DANDY CURB BAG®

MANUFACTURER:

Dandy Products, Inc.
P.O. Box 1980
Westerville, Ohio 43086
Phone: 800-591-2284
Fax: 740-881-2791
E-mail dlc@dandyproducts.com
Web www.dandyproducts.com

1.0 **Description:**

1.1 Work covered under this item consists of installing a Dandy Curb Bag® curb and gutter inlet protection system. The purpose is to keep silt, sediment and construction debris out of the storm water system.

2.0 **Material:**

2.1 The Dandy Curb Bag® curb and gutter inlet protection unit shall be a **sewn in the U.S.A.** geotextile fabric unit enclosing a porous structure in the form of a cylindrical tube placed in front of and extending beyond the inlet opening on both sides and have a geotextile fabric envelope fitted to the individual grate(s)on the street side of the sewn unit for grate(s) to be inserted and to completely enclose the grate(s).

2.2 The Dandy Curb Bag® shall have lifting devices to allow manual inspection of the storm water system.

2.3 The Dandy Curb Bag® unit shall utilize an orange monofilament fabric that is manufactured in the U.S.A. with the following characteristics:

PROPERTY	TEST METHOD	UNITS	TEST RESULTS
Grab Tensile Strength	ASTM D 4632	lbs	450 x 300
Grab Tensile Elongation	ASTM D 4632	%	40 x 25
Puncture Strength	ASTM D 4833	lbs	130
Mullen Burst Strength	ASTM D 3786	psi	600
Trapezoid Tear Strength	ASTM D 4533	lbs	165 x 150
% Open Area (POA)	COE - 22125-86	%	28
Apparent Opening Size	ASTM D 4751	US Std Sieve	30
Permittivity	ASTM D 4491	sec^{1}	3.5

Permeability	ASTM 4491	cm/sec	0.25
Water Flow Rate	ASTM 4491	gal/min/ft^2	250
Ultraviolet Resistance	ASTM D 4355	%	70
Color			Orange[1]

[1]The color orange is a trademark of Dandy Products, Inc.
The property values listed above are effective October 2010 and are subject to change without notice.

3.0 **Installation:**

3.1 Place the empty Dandy Curb Bag® unit over the grate as the grate stands on end.

3.2 *For oil and sediment model; to install or replace absorbent, place absorbent pillow in pouch, on the bottom (below-grade side) of the unit.*

3.3 Tuck the enclosure flap inside to completely enclose the grate.

3.4 Holding the lifting devices, being careful not to damage the sewn fabric unit, insert the grate into its frame, street side edge first, then lower back edge with cylindrical tube into place. The cylindrical tube should be partially blocking the curb hood opening when installed properly.

4.0 **Maintenance:**

4.1 The contractor shall remove all accumulated sediment and debris from surface and vicinity of unit after each rain event or as directed by engineer/inspector. Dispose of unit no longer in use at an appropriate recycling or solid waste facility.

4.2 *For oil and sediment model; remove and replace absorbent when near saturation.*

5.0 **Method of Measurement:**

5.1 The quantity to be paid is for the actual number of Dandy Curb Bag® inlet protection units installed

6.0 **Basis of payment:**

6.1 The unit price shall include labor, equipment, and materials necessary to complete the work and maintain the Dandy Curb Bag® inlet protection units.

6.2 Payment for the completed work will be made at the contract prices for:

ITEM	UNIT	DESCRIPTION
Dandy Curb Bag®	EA	Curb Inlet Protection Unit (#_____Inlet)

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: IP-8

Name/Description:
Inlet Protection - Area Inlet - Dandy Bag

Description, Purpose and Applicability:

Inlet protection consists of permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet.
The potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets will be considered when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and will be used in conjunction with other upgradient BMPs.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Protection will be installed at storm sewer inlets that are operable during construction.
To function effectively, inlet protection measures will be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs will also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding.
Sediment accumulated in front of/upstream of the inlet protection shall be removed as necessary to maintain BMP effectiveness and reduce the potential of a discharge of sediment laden runoff.

Instances of this Control Measure (CM)

IP-8 - Inlet Protection - Area Inlet - Dandy Bag
There are no items to display

Attachments

Description: Dandy Bag Drawing
Filename: Dandy Bag Detail.pdf *(click to download original file)*
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Description: Dandy Bag Specs
Filename: dandybag_spec.pdf *(click to download original file)*
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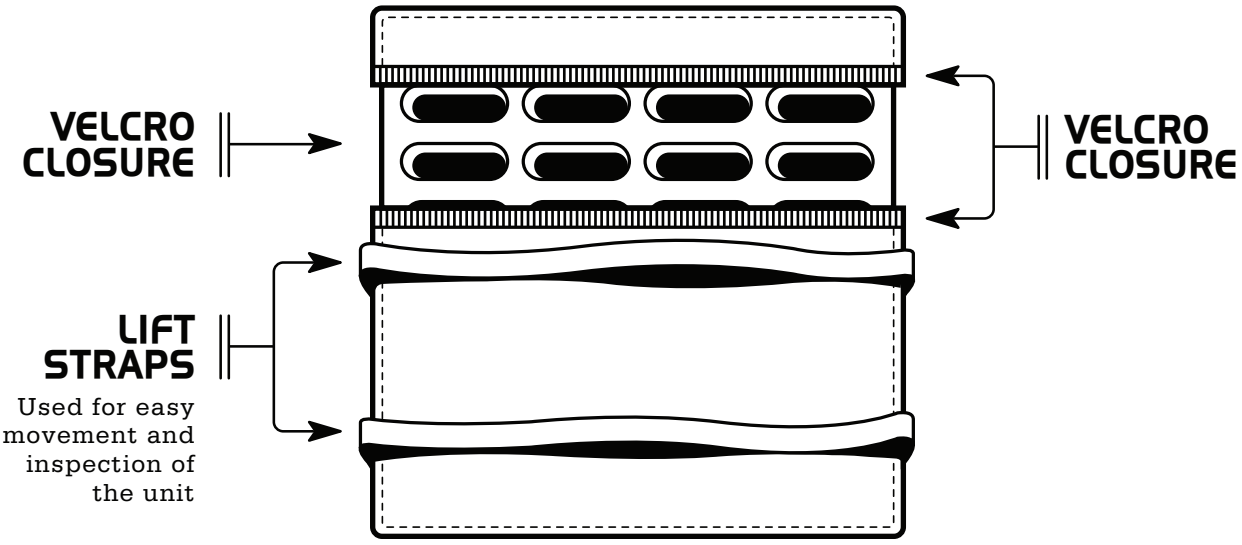
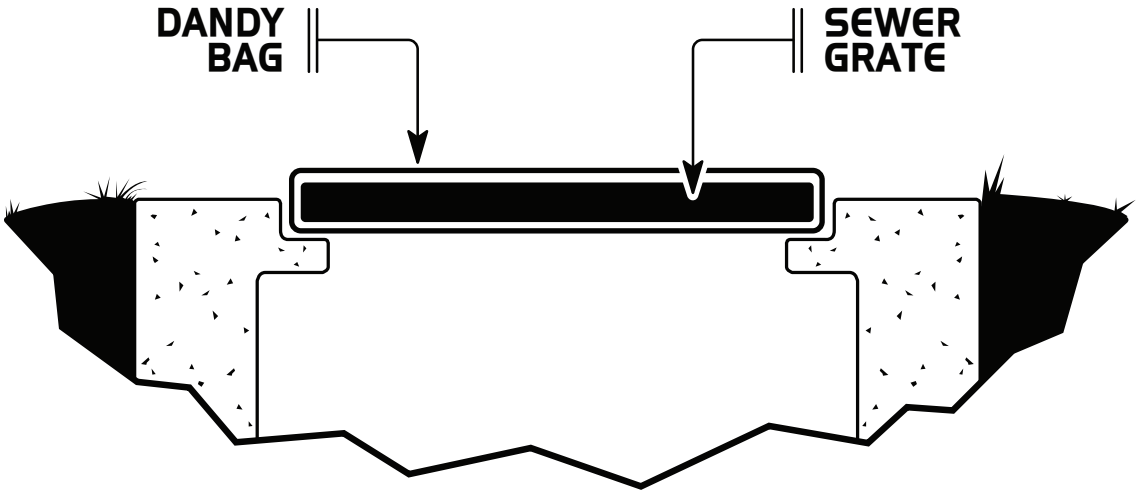
DANDY BAG®


VELCRO CLOSURE
VELCRO CLOSURE
LIFT STRAPS
Used for easy movement and inspection of the unit


DANDY BAG
SEWER GRATE

DANDY BAG®
INLET PROTECTION SYSTEM GUIDE SPECIFICATION

PRODUCT:

DANDY BAG®

MANUFACTURER:

Dandy Products Inc.
P.O. Box 1980
Westerville, Ohio 43086
Phone: 800-591-2284
Fax: 740-881-2791
E mail dlc@dandyproducts.com
Web www.dandyproducts.com

1.0 **Description:**

1.1 Work covered under this item consists of installing a Dandy Bag® inlet protection system. The purpose is to keep silt, sediment and construction debris out of the storm water system.

2.0 **Material:**

2.1 The Dandy Bag® inlet protection unit shall be a **sewn in the U.S.A**. geotextile fabric unit fitted to the individual grate(s) and completely enclosing the grate(s).

2.2 The Dandy Bag® shall have lifting devises to allow manual inspection of the storm water system.

2.3 The Dandy Bag® unit shall utilize an orange monofilament fabric manufactured in the U.S.A. with the following characteristics:

PROPERTY	TEST METHOD	UNITS	TEST RESULTS
Grab Tensile Strength	ASTM D 4632	lbs	450 X 300
Elongation	ASTM D 4632	%	40% X 25%
Puncture Strength	ASTM D 4833	lbs	130
Mullen Burst Strength	ASTM D 3786	psi	600
Trapezoid Tear Strength	ASTM D 4533	lbs	165 x 150
% Open Area (POA)	COE - 22125-86	%	28
Apparent Opening Size	ASTM D 4751	US Std Sieve	30
Permittivity	ASTM D 4491	sec[1]	3.5
Permeability	ASTM 4491	cm/sec	0.25
Water Flow Rate	ASTM 4491	gal/min/ft^2	250
Ultraviolet Resistance	ASTM D 4355	%	70
Color			Orange[1]

[1]The color orange is a trademark of Dandy Products, Inc.
The property values listed above are effective October 2010 and are subject to change without notice.

3.**0 Installation:**

3.1 Place the empty Dandy Bag® over the grate as the grate stands on end.

3.2 For oil and sediment model; to install or replace absorbent, place absorbent pillow in pouch, on the bottom (below-grade side) of the unit.

3.3 Tuck the enclosure flap inside to completely enclose the grate.

3.4 Holding the lifting devises, insert the grate into the inlet being careful not to damage the Dandy Bag® unit.

4.0 **Maintenance:**

4.1 The contractor shall remove all accumulated sediment and debris from surface and vicinity of unit after each rain event or as directed by engineer/inspector. Dispose of unit no longer in use at an appropriate recycling or solid waste facility.

4.2 *For oil and sediment model; remove and replace absorbent when near saturation.*

5.0 **Method of Measurement:**

5.1 The quantity to be paid is for the actual number of Dandy Bag® inlet protection units installed

6.0 **Basis of Payment:**

6.1 The unit price shall include labor, equipment, and materials necessary to complete the work and maintain the Dandy Bag® inlet protection units.

6.2 Payment for the completed work will be made at the contract prices for:

ITEM	UNIT	DESCRIPTION
Dandy Bag®	EA	Inlet Protection Unit (#_____Inlet)

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: IP-9

Name/Description:
Inlet Protection - Curb - Rock Bags only

Description, Purpose and Applicability:

Inlet protection consists of permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet.
The potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets will be considered when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and will be used in conjunction with other upgradient BMPs.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Protection will be installed at storm sewer inlets that are operable during construction.
To function effectively, inlet protection measures will be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs will also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding.
Sediment accumulated in front of/upstream of the inlet protection shall be removed as necessary to maintain BMP effectiveness and reduce the potential of a discharge of sediment laden runoff.

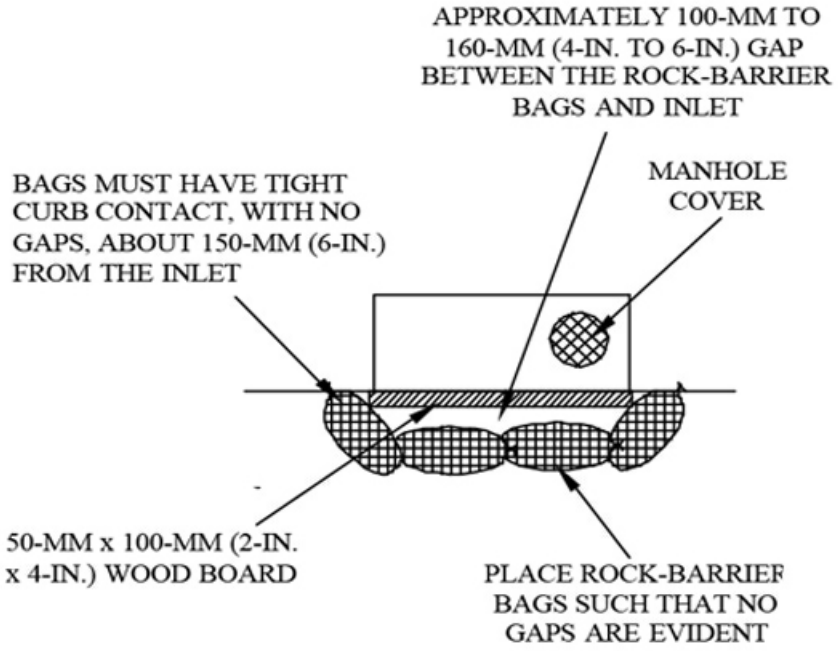
Instances of this Control Measure (CM)

IP-9 - Inlet Protection - Curb - Rock Bags only
There are no items to display

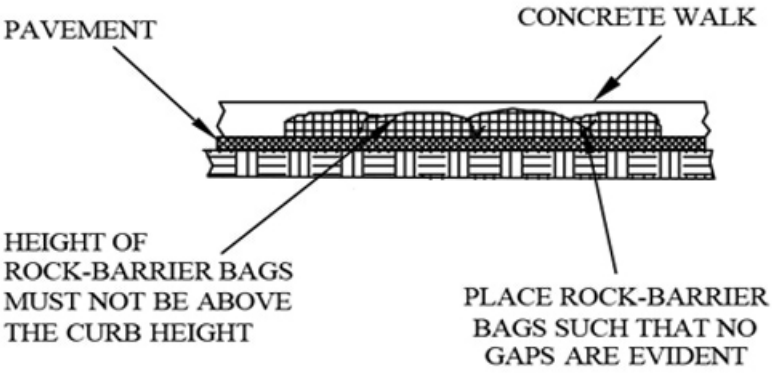
Attachments

Description: Curb Inlet Protection - Rock Bags only
Filename: Curb - Rock Bags only.pdf *(click to download original file)*

File is included after this page



PLAN VIEW



FRONT VIEW

NOTE: 25- TO 50-MM (1- TO 2-IN.) DIAMETER ROCK CONTAINED IN PERVIOUS BURLAP BAGS OR SYNTHETIC NET BAGS (3-MM MESH) AT LEAST 610-MM (24-IN.) LONG AND ABOUT 300-MM (12-IN.) WIDE. HOWEVER, THE BARRIER SHOULD NOT BE HIGHER THAN THE CURB OPENING [ABOUT 150-MM (6-IN.)].

THE BARRIER SHOULD NEVER BLOCK THE CURB OPENING.

1. ROCK BARRIERS CAN BE PLACED ON PAVEMENT OR BARE GROUND.
2. PLACE ROCK BARRIERS IN FRONT OF INLETS ONLY WHEN SUMP CONDITIONS EXIST.
3. THESE STRUCTURES MAY CAUSE ASPHALT DAMAGE DUE TO WATER SEEPAGE OR FREEZE/THAW CONDITIONS.

CURB INLET ROCK BARRIER

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: IP-10

Name/Description:
Inlet Protection - Culvert

Description, Purpose and Applicability:

Inlet protection consists of permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet.
The potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets will be considered when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and will be used in conjunction with other upgradient BMPs.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Protection will be installed at storm sewer inlets that are operable during construction.
To function effectively, inlet protection measures will be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs will also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding.

Instances of this Control Measure (CM)

IP-10 - Inlet Protection - Culvert
There are no items to display

Attachments

Description: Culvert Inlet Protection
Filename: Culvert Inlet Protection.pdf *(click to download original file)*
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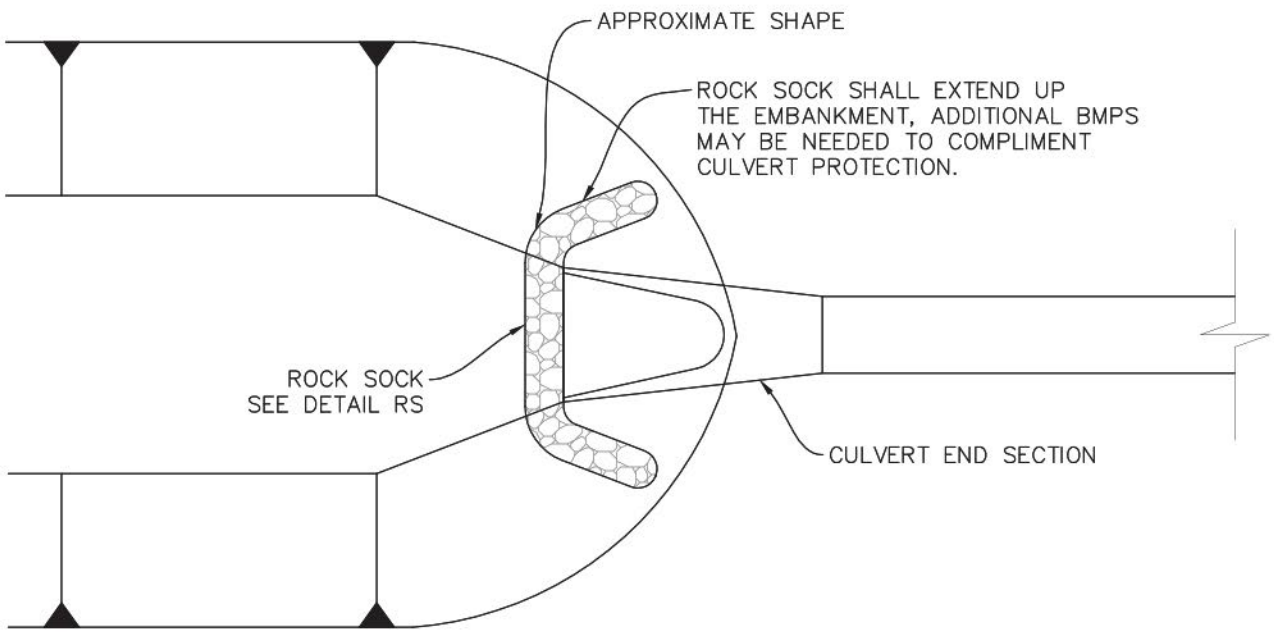
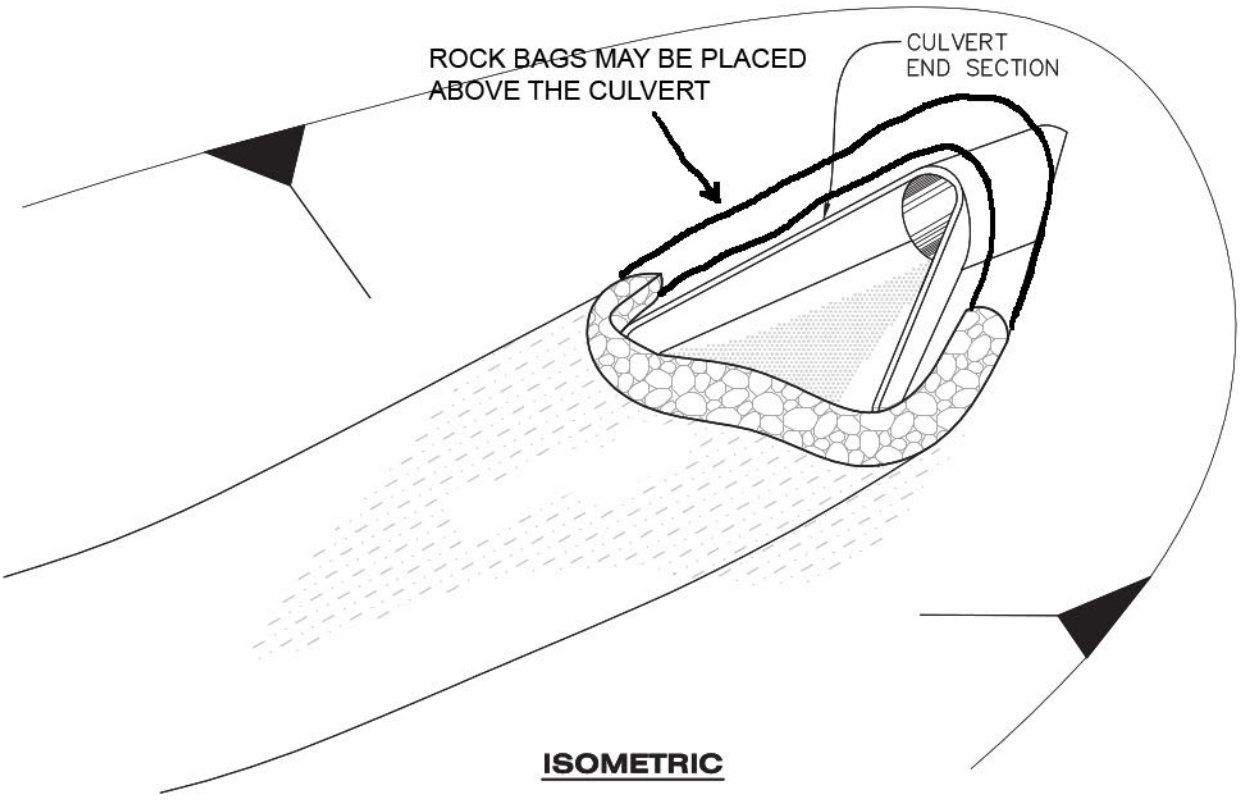


PLAN



ISOMETRIC

CP

CULVERT PROTECTION (INLET)

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: LF

Name/Description:
Landform

Description, Purpose and Applicability:

A landform is defined as any natural feature on the Earth's surface, which includes other minor landforms such as depressions, berms, mounds, hills, ridges, cliffs, valleys, etc. Landforms can be utilized as a control measure when the perimeter of the site is higher than the disturbed area and also can be used to divert, impound, and treat runoff, as long as it has been evaluated (volume of runoff, velocity, etc) to be adequate for the application on the construction site. Additional controls may be necessary to provide additional filtration of runoff.

During what phase(s) of construction/activity will this control measure be implemented?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

In most cases, maintenance will not be necessary, depending on the type of landform utilized on the project, but if the control is impacted by activities, runoff, or other circumstances that reduce its functionality, alternative measures will be implemented, as necessary. Sediment deposits or erosion of the landform will be removed when it impacts its effectiveness.

Instances of this Control Measure (CM)

LF - Landform
There are no items to display

Attachments

There are no attachments to display

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: LG

Name/Description:
Lowered Grade

Description, Purpose and Applicability:

The lowered grade, non-structural sediment control BMP is a trenched, lowered area installed and maintained along the back of curbs, sidewalks, hard surface cuts, or excavations. The purpose of the BMP is to "pond" or "pool" sediment-containing stormwater runoff, allowing the settling of suspended solids.

During what phase(s) of construction/activity will this control measure be implemented?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Typically this BMP will be implemented behind curbs, roads, or concrete paths. The accumulated sediment will be removed as necessary to ensure that the lowered grade functions effectively and it will be inspected at the required interval stated in the SWMP. Refer to the attached specification sheet for installation & maintenance parameters.

Instances of this Control Measure (CM)

LG - Lowered Grade
There are no items to display

Attachments

Description: Lowered Grade BMP - Minimum 4"D x 12"W
Filename: Lowered Grade Description.pdf *(click to download original file)*

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BMP Type:

Lowered Grade

Lowered Grade – Non-structural BMP

The lowered grade, non-structural sediment control BMP is a trenched, lowered area installed and maintained along the back of curbs, sidewalks, hard surface cuts, or excavations. The purpose of the BMP is to "pond" or "pool" sediment-containing stormwater runoff, allowing the settling of suspended solids. The BMP should be installed to a minimum depth of 4" and a minimum width of 12" with maintenance measures taking place once 50% of the BMP capacity is utilized. The lowered grade BMP should only be utilized along areas that have less than a 5% grade and will not be utilized to contain material stockpiles.

Example Photo:

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: OP

Name/Description:
Outlet Protection

Description, Purpose and Applicability:

Outlet protection helps to reduce erosion immediately downstream of a pipe, culvert, slope drain, rundown or other conveyance with concentrated, high-velocity flows.

During what phase(s) of construction/activity will this control measure be implemented?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

When feasible, outlet protection will be used when a conveyance discharges onto a disturbed area where there is potential for accelerated erosion due to concentrated flow. Outlet protection will be provided where the velocity at the culvert outlet exceeds the maximum permissible velocity of the material in the receiving channel.
The rock will be keyed in, around the entire perimeter of the apron, to a minimum depth of 6 inches for stability. The riprap will be extended to the height of the culvert or the normal flow depth of the downstream channel, whichever is less.
Additional erosion control measures such as vegetative lining, turf reinforcement mat and/or other channel lining methods may be required downstream of the outlet protection if the channel is susceptible to erosion.
Inspect apron for damage and displaced rocks. If rocks are missing or significantly displaced, repair or replace as necessary. If rocks are continuously missing or displaced, consider increasing the size of the riprap or deeper keying of the perimeter.
Remove sediment accumulated at the outlet before the outlet protection becomes buried and ineffective. When sediment accumulation is noted, check that upgradient BMPs, including inlet protection, are in effective operating condition.
Outlet protection may be removed once the pipe is no longer draining an upstream area, or once the downstream area has been sufficiently stabilized.

Instances of this Control Measure (CM)

OP - Outlet Protection
There are no items to display

Attachments

Filename: EC-08 Temporary Outlet Protection.pdf *(click to download original file)*

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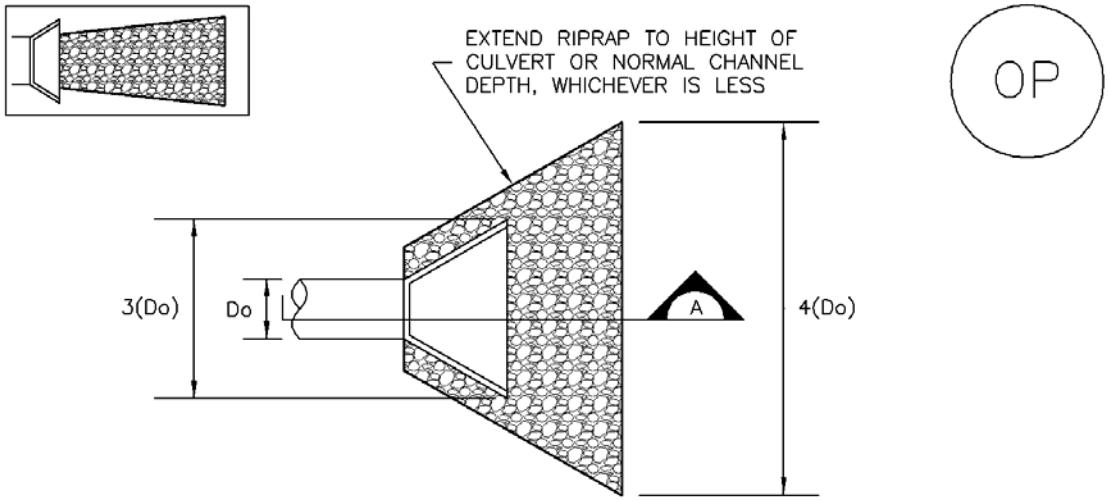
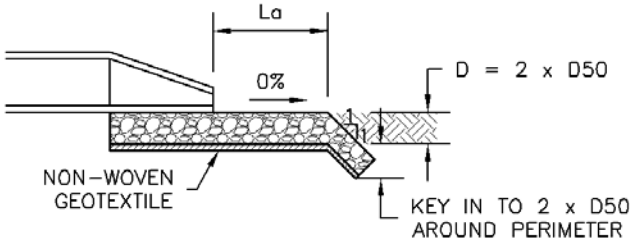


TEMPORARY OUTLET PROTECTION PLAN



SECTION A

TABLE OP-1. TEMPORARY OUTLET PROTECTION SIZING TABLE			
PIPE DIAMETER, Do (INCHES)	DISCHARGE, Q (CFS)	APRON LENGTH, La (FT)	RIPRAP D50 DIAMETER MIN (INCHES)
8	2.5 5	5 10	4 6
12	5 10	10 13	4 6
18	10 20 30 40	10 16 23 26	6 9 12 16
24	30 40 50 60	16 26 26 30	9 9 12 16

OP-1. TEMPORARY OUTLET PROTECTION

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: RRL

Name/Description:
Recycled Rubber Log

Description, Purpose and Applicability:

This BMP is made of shredded recycled tires covered in a geotextile fabric to slow the velocity of stormwater runoff, causing sediment to settle out of the water. It can be placed in front of inlets, in flow lines as curb socks, or in low-flow concentrated channels as check dams.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

When used as inlet protection, it must be placed to ensure no gaps at the curb or between bags. Damaged bags will be repaired or replaced as soon as possible and will be inspected at the stated frequency in the SWMP.

Instances of this Control Measure (CM)

RRL - Recycled Rubber Log
There are no items to display

Attachments

Description: Big Red Log
Filename: Big-Red-Brochure.pdf *(click to download original file)*
File is included after this page

Description: Dandy Recycler
Filename: Recycler Data Sheet.pdf *(click to download original file)*
File is included after this page

SWP-CI "Big Red"

Curb Inlet Protector

By ASP Enterprises and Storm Water Products

Temporary and Reusable Solutions for Sediment Control

A.S.P. ENTERPRISES. INC.
Your GeoSource Distributor

- Reusable Curb Inlet Protection
- Environmentally Friendly
- Drops out sediment by dissipating the water energy

"Big Red" Filter Advantages:

- **Easy to Install**
- **Versatile for a variety of curb inlets**
- **Reusable and Extremely easy to clean**
- **Made from 90% Inert Recycled Materials**

The SWP-CI "Big Red" Filter is a **REUSABLE** inlet protector that keeps out sediment throughout the entire construction project. There are no pockets to fill, no velcro bags, no assembly etc. Simply place in front of the inlet, make sure it lays in the contour, and you are DONE!

Simple installation also translates into simple removal, cleanup and re-use at the next project or phase. Maintenance is simple as well by lifting the unit from the inlet, shaking the mud off of it, removing the sediment on the concrete, and placing the unit back. If it is severely filled with sediment, wash it out in a vegetated area and it is as good as new.

All of these features and benefits combine to make the SWP-CI "Big Red" curb inlet protector the **perfect choice** for all curb inlet applications. It comes in 54" long for single curb inlets and 104" lengths for double curb inlets.

- High Flow Rate
- Made of Durable High-Strength Geotextile
- Fully Reusable
- Made of Recycled Materials

SWP-CI "Big Red"

Curb Inlet Protector

By ASP Enterprises and Storm Water Products

A.S.P. ENTERPRISES. INC.
Your GeoSource Distributor

Specifications:

1. Infill Material: shredded recycled rubber tires
2. Weight: approx. 10 lbs per linear foot
3. Diameter: approx. 8"

Geotextile fabric made of durable high flow fabric with the following properties:

Property	Test Method	Units		Typical Value
Weight	ASTM D5261	oz/sq. yd		9.3
Grab Tensile Strength	ASTM D4632	lb	warp fill	250 290
Tear Strength (Trapezoid)	ASTM D4533	lb	warp fill	60 50
Burst	ASTM D3786	psi		440

(Efforts were made to determine flow rate-the fabric exceeded all capacities of the testing equipment)

SEDIMENT CONTROL SOLUTIONS FOR ALL STORMWATER SYSTEMS & DEWATERING PROJECTS

DANDY RECYCLER

DANDY PRODUCTS

High Strength Filtration Geotextile Filled with 100% Recycled Tire Chips

Available in lengths of 3', 4', 5', 6' & 8'
Seam Stitched inside and away from Stress Points
Durable Proven Dandy Geotextile
Competitively Priced Alternative to Weighted Wattles
Completely Reusable

You Can Depend on Dandy Products to Deliver!

Dandy Products, Inc.
1095 Harcourt Road, Mount Vernon, OH 43050
Customer Service: 800.591.2284 - Fax: 740.397.1946
www.dandyproducts.com

GEOTEXTILE
TYPICAL PROPERTY SHEET
ORANGE DANDY GEOTEXTILE

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Weight, oz/sy	ASTM D 5261	oz/yd^2	6.1	
Grab Tensile Strength	ASTM D 4632	lbs	365	200
Elongation	ASTM D 4632	%	24	10
Mullen Burst Strength	ASTM D 3786	psi	450	
Trapezoid Tear	ASTM D 4533	lbs	115	75
Puncture Strength	ASTM D 4833	lbs	90	
Apparent Opening Size (AOS)	ASTM D 4751	U.S. Sieve	40	
Permittivity	ASTM D 4491	sec^{-1}	2.1	
Permeability	ASTM D 4491	cm/sec	0.14	
Flow Rate	ASTM D 4491	$gal/min/ft^2$	145	

DISCLAIMER: Dandy Products warrants our products to be free from defects in material and workmanship when delivered to Dandy Product's customers and that our products meet our published specifications. you local Dandy Product Representative for detailed products specification and warranty information.

The information contained herein is furnished without charge or obligation and the recipient assumes all responsibility for its use. All properties listed herein are provided as information only and do not create any warranty.

You Can Depend on Dandy Products to Deliver!

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: RS

Name/Description:
Rock Sock

Description, Purpose and Applicability:

A rock sock is constructed of gravel that has been wrapped by wire mesh or a geotextile to form an elongated cylindrical filter. Rock socks are typically used either as a perimeter control or as part of inlet protection. When placed at angles in the curb line, rock socks are typically referred to as curb socks. Rock socks are intended to trap sediment from stormwater runoff that flows onto roadways as a result of construction activities.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Rock socks are susceptible to displacement and breaking due to vehicle traffic. Inspect rock socks for damage and repair or replace as necessary. Remove sediment by sweeping or vacuuming as needed to maintain the functionality of the BMP, typically when sediment has accumulated behind the rock sock to one-half of the sock's height. When placed in the gutter adjacent to a curb, rock socks should protrude no more than two feet from the curb in order for traffic to pass safely. If located in a high traffic area, place construction markers to alert drivers and street maintenance workers of their presence.

Instances of this Control Measure (CM)

RS - Rock Sock
There are no items to display

Attachments

Filename: RS.pdf *(click to download original file)*

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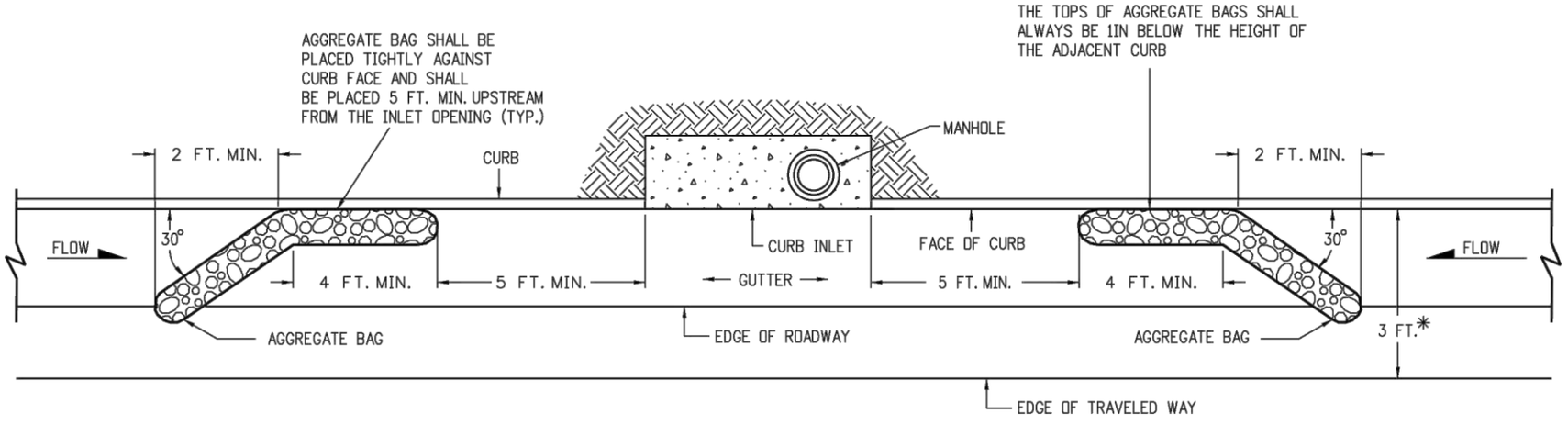
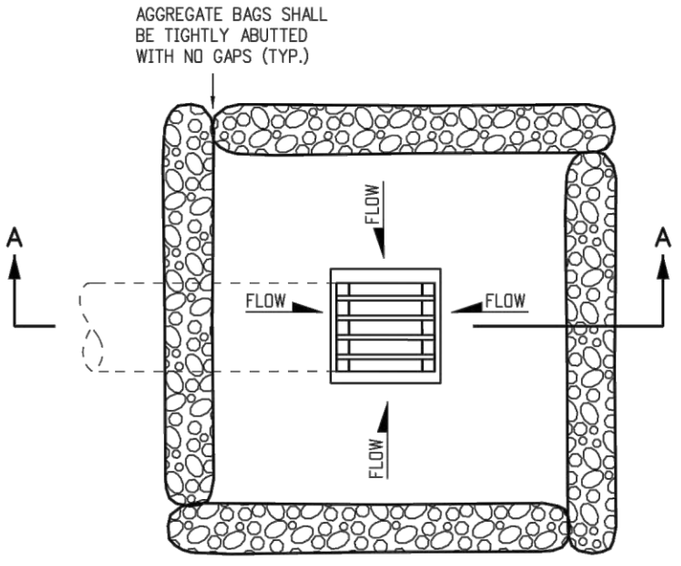


PLAN VIEW

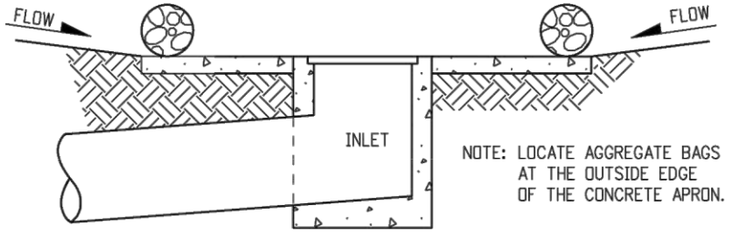
* NOTE: USE AGGREGATE BAGS ONLY WHEN THERE IS A MINIMUM CLEARANCE OF 3 FEET FROM THE EDGE OF THE TRAVELED WAY (INCLUDING CONDITIONS DURING DETOURS) TO THE FACE OF CURB.

LENGTH (L) OF INLET FT.	NUMBER OF AGGREGATE BAGS UPSTREAM OF INLET
0 - 5	1
6 - 10	2
L > 10	3

AGGREGATE BAGS AT STORM DRAIN INLET (TYPE I)



PLAN VIEW



SECTION A-A

AGGREGATE BAGS AT DROP INLET

AGGREGATE BAG APPLICATIONS

NOTE: THE PAY ITEM NUMBER FOR AGGREGATE BAG (LF) IS 208-00035

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: SC

Name/Description:
Secondary Containment

Description, Purpose and Applicability:

Secondary containment will be utilized in the form of a spill pallet, trough unit, mobile pool, or bermed area to capture spills or leaks that may occur from construction chemicals and/or petroleum products.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Inspections will be consistent with the project stated frequency in the narrative and any standing water in the units will be disposed of appropriately.

Instances of this Control Measure (CM)

SC - Secondary Containment
There are no items to display

Attachments

There are no attachments to display

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: SF

Name/Description:
Silt Fence

Description, Purpose and Applicability:

Silt fence is a woven geotextile fabric attached to wooden posts and trenched into the ground. It is designed as a sediment barrier to intercept sheet flow runoff from disturbed areas.
A silt fence can be used where runoff is conveyed from a disturbed area as sheet flow. Silt fence is not designed to receive concentrated flow or to be used as a filter fabric.
- Down slope of a disturbed area to accept sheet flow.
- Along the perimeter of a receiving water such as a stream, pond or wetland.
- At the perimeter of a construction site.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Silt fence can be installed by stapling the fabric to the stakes, wrapping the fabric around the stakes (or having pre-made 'pockets' for the stakes, or for repairs, tie-wiring the fabric to the stake, which should be avoided, if possible, as it may cause tears/rips that may necessitate the fence to be replaced. Lathe may also be installed on the opposite side of the stakes, to 'sandwich' the fabric.

Silt fence should be installed along the contour of slopes so that it intercepts sheet flow. The maximum recommended tributary drainage area per 100 lineal feet of silt fence, installed along the contour, is approximately 0.25 acres with a disturbed slope length of up to 150 feet and a tributary slope gradient no steeper than 3:1. Longer and steeper slopes require additional measures. This recommendation only applies to silt fence installed along the contour. Silt fence installed for other uses, such as perimeter control, should be installed in a way that will not produce concentrated flows. For example, a "J-hook" installation may be appropriate to force runoff to pond and evaporate or infiltrate in multiple areas rather than concentrate and cause erosive conditions parallel to the silt fence.
Inspection of silt fence includes observing the material for tears or holes and checking for slumping fence and undercut areas bypassing flows. Repair of silt fence typically involves replacing the damaged section with a new section. Sediment accumulated behind silt fence should be removed, as needed to maintain BMP effectiveness, typically before it reaches a depth of 6 inches.

Instances of this Control Measure (CM)

SF - Silt Fence
There are no items to display

Attachments

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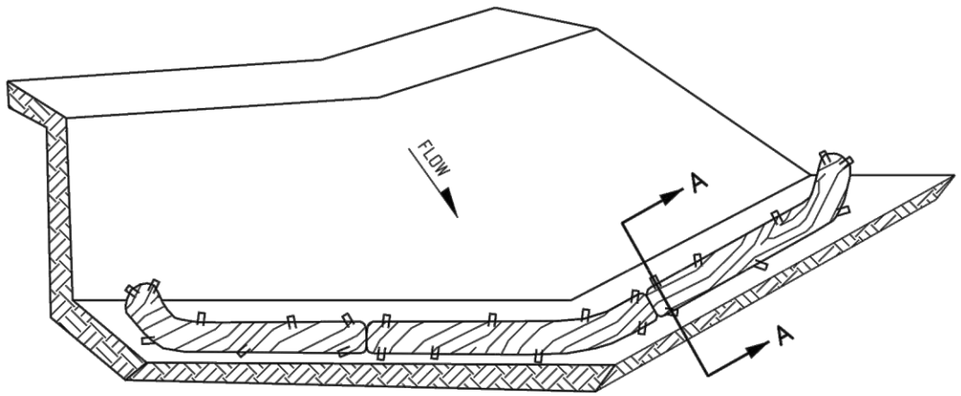
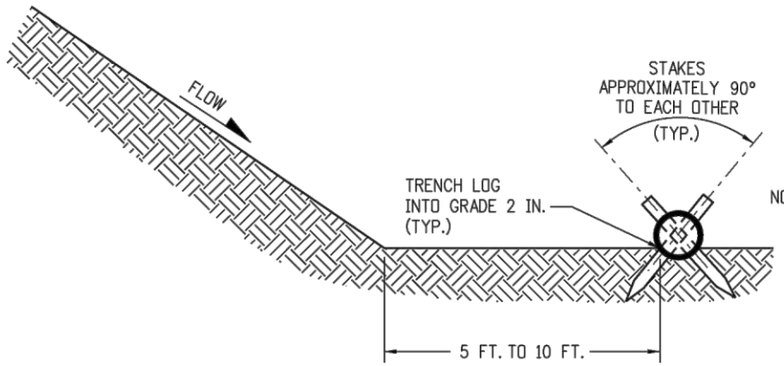


ISOMETRIC VIEW



NOTE: THE TOPS OF ALL STAKES SHALL NOT EXTEND MORE THAN 2 INCHES ABOVE THE TOPS OF EROSION LOGS.

SECTION A-A

NOTES:

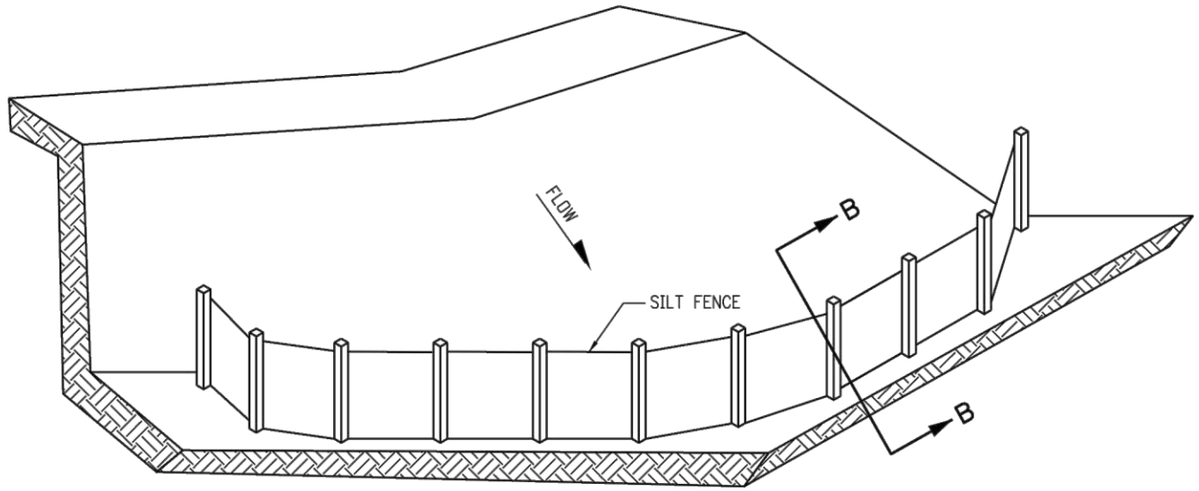
1. EROSION LOGS USED AT TOE OF SLOPE SHALL BE PLACED 5 TO 10 FEET BEYOND TOE OF SLOPE TO PROVIDE STORAGE CAPACITY.
2. EROSION LOGS SHALL BE PLACED ON THE CONTOUR WITH ENDS FLARED UP SLOPE.
3. SEE SHEET 2 OF 11 FOR JOINING LOGS DETAIL.

EROSION LOGS PAY ITEMS	
NUMBER	DESCRIPTION
208-00012	TYPE 1 (9 IN.)
208-00002	TYPE 1 (12 IN.)
208-00013	TYPE 1 (20 IN.)
208-00007	TYPE 2 (8 IN.)
208-00008	TYPE 2 (12 IN.)
208-00009	TYPE 2 (18 IN.)
208-00022	TYPE 3 (9 IN.)
208-00023	TYPE 3 (12 IN.)
208-00024	TYPE 3 (20 IN.)

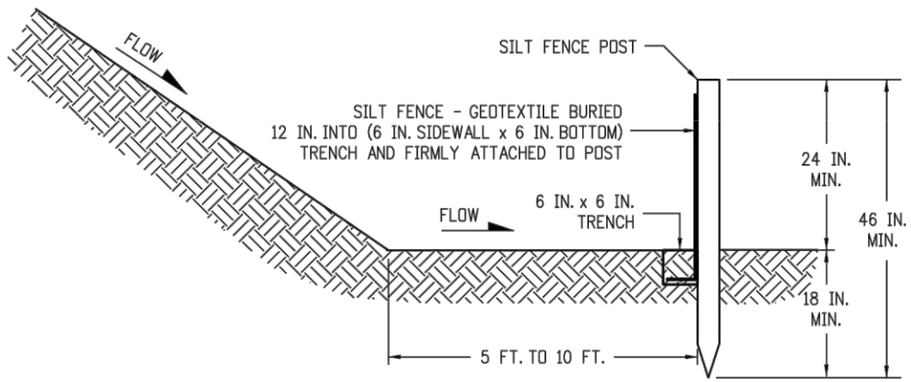
EROSION LOG TOE OF SLOPE PROTECTION

NOTES

1. SILT FENCE SHALL HAVE A MAXIMUM DRAINAGE AREA OF ONE-QUARTER ACRE PER 100 FEET OF SILT FENCE LENGTH; MAXIMUM SLOPE LENGTH BEHIND BARRIER IS 100 FEET.
2. SILT FENCE USED AT TOE OF SLOPE SHALL BE PLACED 5 TO 10 FEET BEYOND TOE OF SLOPE TO PROVIDE STORAGE CAPACITY.
3. SILT FENCE SHALL BE PLACED PARALLEL TO THE CONTOUR WITH ENDS FLARED UP SLOPE.
4. THE MAXIMUM LENGTH OF EROSION LOGS OR SILT FENCES WITHOUT A FLARED END TURNING UPSLOPE IS 150 FEET.



ISOMETRIC VIEW



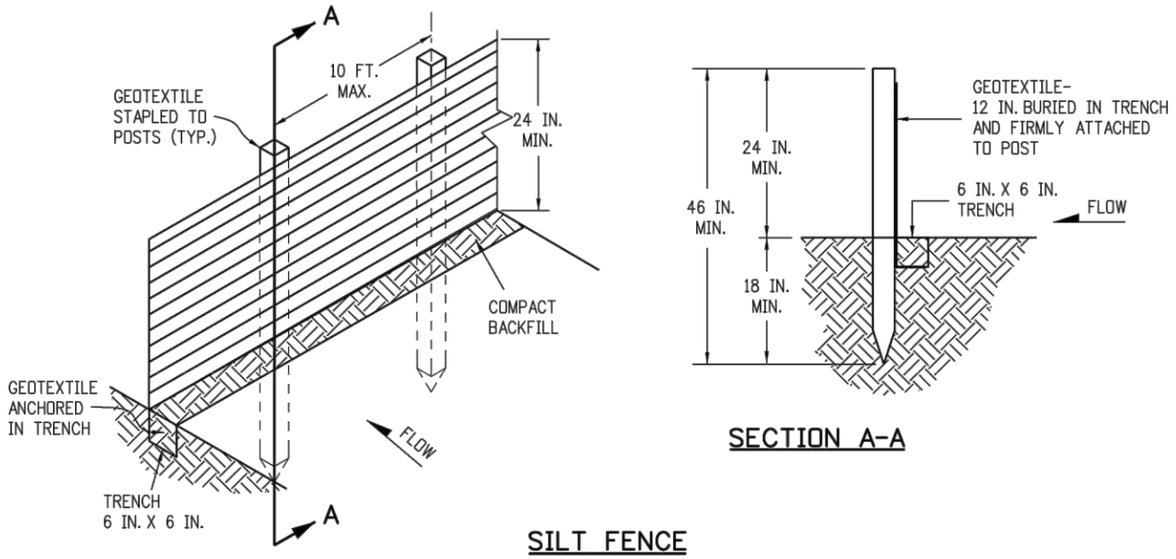
SECTION B-B

SILT FENCE TOE OF SLOPE PROTECTION

NOTE: THE PAY ITEM NUMBER FOR SILT FENCE (LF) IS 208-00020.

SF

TOE OF SLOPE PROTECTION APPLICATIONS

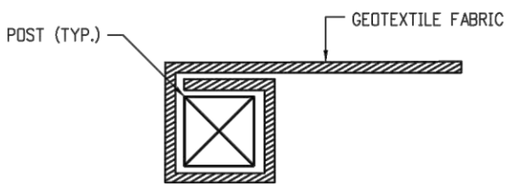


SECTION A-A

SILT FENCE

NOTES:

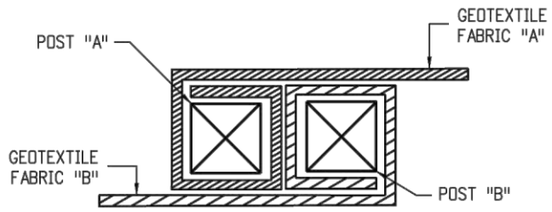
1. GEOTEXTILE SHALL BE ATTACHED TO WOOD POSTS WITH THREE OR MORE STAPLES PER POST. STAPLES SHALL BE HEAVY DUTY WIRE AND AT LEAST 1 INCH LONG.
2. WOOD POST SHALL BE 1 IN. X 1 IN. NOMINAL.
3. THE PAY ITEM NUMBER FOR SILT FENCE (LF) IS 208-00020.
4. THE SILT FENCE SHALL BE PLACED ON THE CONTOUR (AT THE SAME ELEVATION ±6 IN.). THE ENDS SHALL BE FLARED UP SLOPE (MINIMUM ELEVATION GAIN OF 18 IN.).



END SECTION DETAIL (PLAN VIEW)

NOTE:

1. THE END OF THE SILT FENCE FABRIC SHALL BE WRAPPED APPROX. 6 INCHES AROUND A WOODEN POST ONE FULL TURN, THEN SECURED ALONG THE POST WITH 6 HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG.

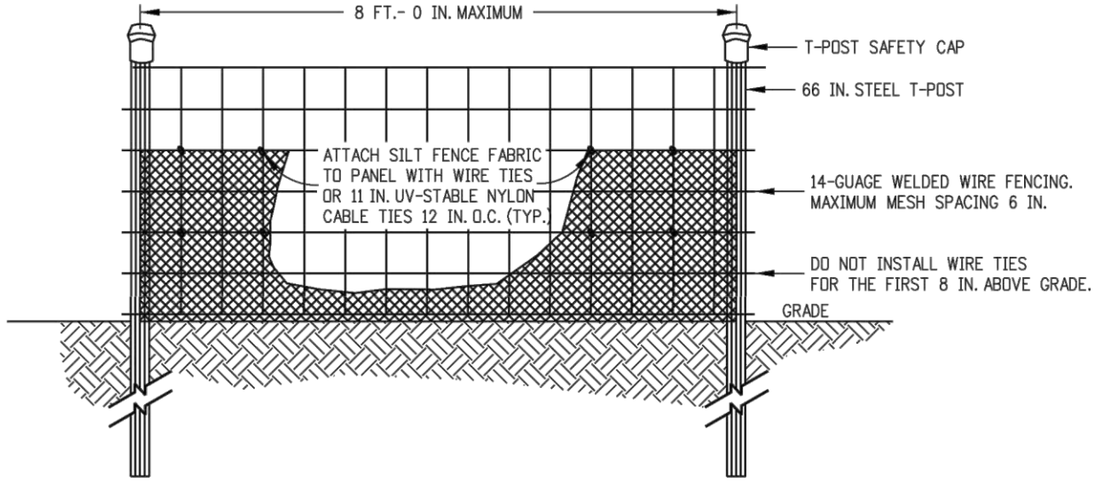


JOINING SECTION DETAIL (PLAN VIEW)

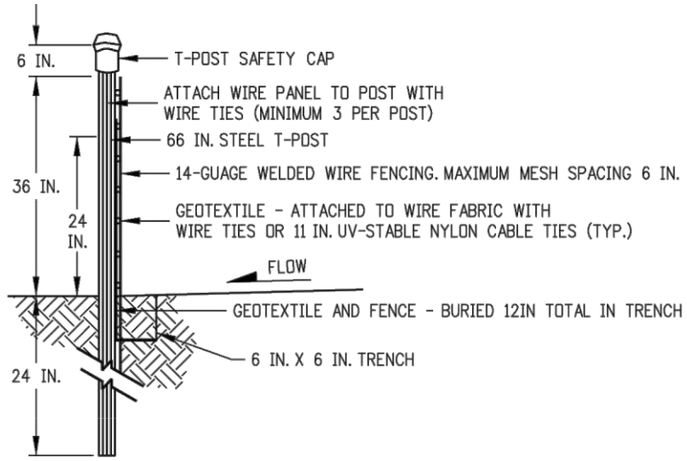
NOTES:

1. THE ENDS OF THE SILT FENCE FABRIC SHALL BE JOINED TOGETHER BY WRAPPING APPROX. 6 INCHES OF EACH END AROUND A WOODEN POST ONE FULL TURN, THEN SECURED ALONG THE POST WITH 6 HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG.
2. POSTS SHALL BE TIGHTLY ABUTTED WITH NO GAPS TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT JOINT.

SF



ELEVATION VIEW



SIDE VIEW

NOTES:

1. THE ENDS OF THE SILT FENCE FABRIC SHALL BE JOINED TOGETHER BY WRAPPING APPROX. 6 INCHES OF EACH END AROUND A STEEL T-POST, THEN SECURED ALONG THE POST WITH WIRE TIES (MINIMUM 3 PER POST).
2. POSTS SHALL BE TIGHTLY ABUTTED WITH NO GAPS TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT JOINT.
3. SILT FENCES SHALL NOT BE USED FOR CHECK DAMS.
4. THE PAY ITEM NUMBER FOR SILT FENCE (REINFORCED) (LF) IS 208-00021.

SILT FENCE (REINFORCED)

SILT FENCE APPLICATIONS

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: SK

Name/Description:
Spill Kit

Description, Purpose and Applicability:

Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials may include some or all of the following, but are not be limited to: brooms, dust pans, mops, rags, gloves, goggles, absorbent powder / kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Inspections of the Spill Kit will be consistent with the project stated frequency in the narrative. Supplies will be replenished as they become depleted.

Instances of this Control Measure (CM)

SK - Spill Kit
There are no items to display

Attachments

There are no attachments to display

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: SMP

Name/Description:
Seed & Mulch - Permanent

Description, Purpose and Applicability:

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.

During what phase(s) of construction/activity will this control measure be implemented?

5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Please see attached BMP Description, Installation and Maintenance Specification Sheet - Urban Drainage and Flood Control District - Urban Storm Drainage Criteria Manual Volume 3.

Instances of this Control Measure (CM)

SMP - Seed & Mulch - Permanent
There are no items to display

Attachments

Description: EC-02 Temporary and Permanent Seeding - Urban Drainage and Flood Control District
Filename: EC-02 Temporary and Permanent Seeding.pdf *(click to download original file)*

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Filename: EC-04-Mulching.pdf *(click to download original file)*

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Temporary and Permanent Seeding (TS/PS) EC-2

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.

Photograph TS/PS -1. Equipment used to drill seed. Photo courtesy of Douglas County.

Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer), proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Seed Mix for Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-1. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Seed Mix for Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Populus spp.*) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Sudangrass	Warm	5–10	½ - ¾
7. Sorghum	Warm	5–10	½ - ¾
8. Winter wheat	Cool	20–35	1 - 2
9. Winter barley	Cool	20–35	1 - 2
10. Winter rye	Cool	20–35	1 - 2
11. Triticale	Cool	25–40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common[a] Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Alakali Soil Seed Mix					
Alkali sacaton	*Sporobolus airoides*	Cool	Bunch	1,750,000	0.25
Basin wildrye	*Elymus cinereus*	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Jose tall wheatgrass	*Agropyron elongatum 'Jose'*	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.75**
Fertile Loamy Soil Seed Mix					
Ephriam crested wheatgrass	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	2.0
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	7.0
Total					**15.5**
High Water Table Soil Seed Mix					
Meadow foxtail	*Alopecurus pratensis*	Cool	Sod	900,000	0.5
Redtop	*Agrostis alba*	Warm	Open sod	5,000,000	0.25
Reed canarygrass	*Phalaris arundinacea*	Cool	Sod	68,000	0.5
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Pathfinder switchgrass	*Panicum virgatum 'Pathfinder'*	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	*Agropyron elongatum 'Alkar'*	Cool	Bunch	79,000	5.5
Total					**10.75**
Transition Turf Seed Mix[c]					
Ruebens Canadian bluegrass	*Poa compressa 'Ruebens'*	Cool	Sod	2,500,000	0.5
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	*Lolium perenne 'Citation'*	Cool	Sod	247,000	3.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Total					**7.5**

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)

Common Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	*Bouteloua gracilis*	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	*Schizachyrium scoparium 'Camper'*	Warm	Bunch	240,000	1.0
Prairie sandreed	*Calamovilfa longifolia*	Warm	Open sod	274,000	1.0
Sand dropseed	*Sporobolus cryptandrus*	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**10.25**
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrass[d]	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	*Agropyron intermedium 'Oahe'*	Cool	Sod	115,000	5.5
Vaughn sideoats grama[e]	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.5**

[a] All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

[b] See Table TS/PS-3 for seeding dates.

[c] If site is to be irrigated, the transition turf seed rates should be doubled.

[d] Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

[e] Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

Description

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

Photograph MU-1. An area that was recently seeded, mulched, and crimped.

Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeding. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.

- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).

- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.

- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.

- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)

- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)

- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

Maintenance and Removal

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: SR

Name/Description:
Surface Roughening

Description, Purpose and Applicability:

Surface roughening is an erosion control practice that involves tracking, scarifying, imprinting, or tilling a disturbed area to provide temporary stabilization of disturbed areas. Surface roughening creates variations in the soil surface that help to minimize wind and water erosion. Depending on the technique used, surface roughening may also help establish conditions favorable to establishment of vegetation.
Surface roughening can be used to provide temporary stabilization of disturbed areas, such as when revegetation cannot be immediately established due to seasonal planting limitations.

During what phase(s) of construction/activity will this control measure be implemented?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Surface roughening should be performed either after final grading or to temporarily stabilize an area during active construction that may be inactive for a short time period. Surface roughening should create depressions 2 to 6 inches deep and approximately 6 inches apart. The surface of exposed soil can be roughened by a number of techniques and equipment. Horizontal grooves (running parallel to the contours of the land) can be made using tracks from equipment treads, stair-step grading, ripping, or tilling.
Care should be taken not to drive vehicles or equipment over areas that have been surface roughened.
Tire tracks will smooth the roughened surface and may cause runoff to collect into rills and gullies.
Because surface roughening is only a temporary control, additional treatments may be necessary to maintain the soil surface in a roughened condition.

Instances of this Control Measure (CM)

SR - Surface Roughening
There are no items to display

Attachments

Description: Surface Roughening Detail
Filename: SR Surface Roughening.pdf *(click to download original file)*

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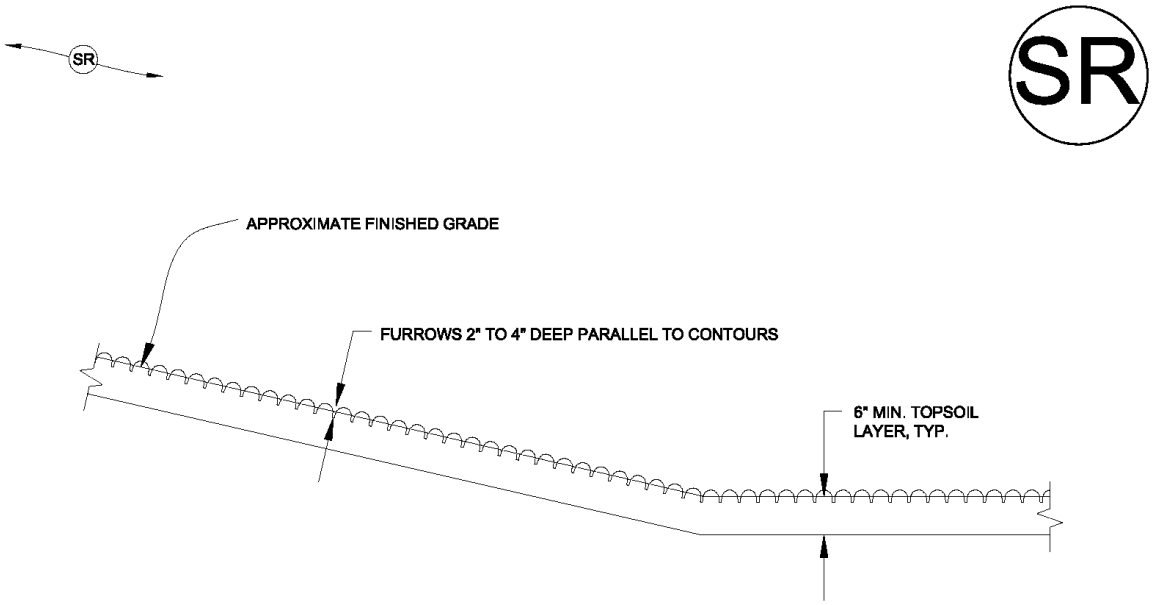

SECTION A

SURFACE ROUGHENING INSTALLATION NOTES

1. SURFACE ROUGHENING SHALL BE PROVIDED ON ALL FINISHED GRADES (SLOPES AND "FLAT" AREAS) WITHIN 2 DAYS OF COMPLETION OF FINISHED GRADE (FOR AREAS NOT RECEIVING TOPSOIL) OR WITHIN 2 DAYS OF TOPSOIL PLACEMENT.
2. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD ARE TO BE PLACED WITHIN 7-DAYS OF FINISHED GRADING DO NOT NEED TO BE SURFACE ROUGHENED.
3. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.

SURFACE ROUGHENING MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT THE SURFACE ROUGHENING WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. VEHICLES AND EQUIPMENT SHALL GENERALLY BE CONFINED TO ACCESS DRIVES AND SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.
3. IN NON-TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.
4. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE RE-ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER ANY RILL EROSION.

DETAIL BASED ON DETAILS PROVIDED BY DOUGLAS COUNTY, COLORADO

Figure C4-1—Surface Roughening

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: SS

Name/Description:
Street Sweeping and Scraping

Description, Purpose and Applicability:

Street sweeping and vacuuming will be implemented, as necessary, to remove sediment that has been tracked onto roadways to reduce sediment transport into storm drain systems or a surface waterway.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Street sweeping/scraping or vacuuming will be conducted when there is noticeable sediment accumulation on roadways adjacent to the construction site. Typically, this will be concentrated at the entrance/exit to the construction site. If there is not a significant amount of sediment on the roadway and a mechanical sweeper is unavailable, sweeping may be conducted manually using a shovel and broom. The project will never wash accumulated sediment on roadways into storm drains.
- The paved roads will be inspected around the perimeter of the construction site on a daily basis and more frequently, as needed.
- Following street sweeping, the inlet protection will be checked that it wasn't during street sweeping.

Instances of this Control Measure (CM)

SS - Street Sweeping and Scraping
There are no items to display

Attachments

There are no attachments to display

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: SSA

Name/Description:
Stabilized Staging Area

Description, Purpose and Applicability:

A stabilized staging area is a clearly designated area where construction equipment and vehicles, stockpiles, waste bins, and other construction-related materials are stored. The contractor office trailer may also be located in this area.
Staging areas located in roadways due to space constraints may require special measures to avoid materials being washed into storm inlets.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

- Appropriate space will be provided to contain storage and provide for loading/unloading operations, as well as parking if necessary.
- A stabilized surface, either paved or covered, with 3-inch diameter aggregate or larger will be utilized and if feasible, will be connected to the VTC or stabilized entrance to the site/disturbed area.

Maintenance of stabilized staging areas includes maintaining the stable surface cover of gravel, repairing perimeter controls, and following good housekeeping practices.
When construction is complete, debris, unused stockpiles and materials will be recycled or properly disposed. In some cases, this will require disposal of contaminated soil from equipment leaks in an appropriate landfill. Staging areas will be permanently stabilized with vegetation or other surface cover planned for the development.

Instances of this Control Measure (CM)

SSA - Stabilized Staging Area
There are no items to display

Attachments

Filename: SM-06 Stabilized Staging Area.pdf *(click to download original file)*

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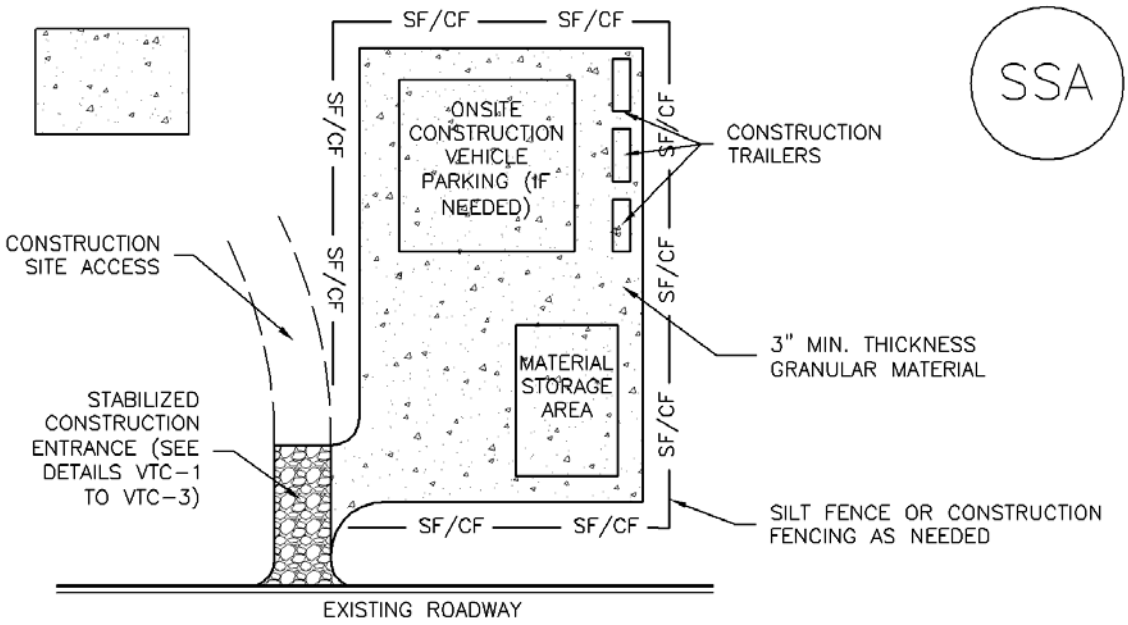

SSA–1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF STAGING AREA(S).
   –CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.

3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.

4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.

5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: ST

Name/Description:
Sediment Trap

Description, Purpose and Applicability:
Please see attached detail.

During what phase(s) of construction/activity will this control measure be implemented?
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*
Please see attached detail.

Instances of this Control Measure (CM)

ST - Sediment Trap
There are no items to display

Attachments

Filename: ST.pdf *(click to download original file)*
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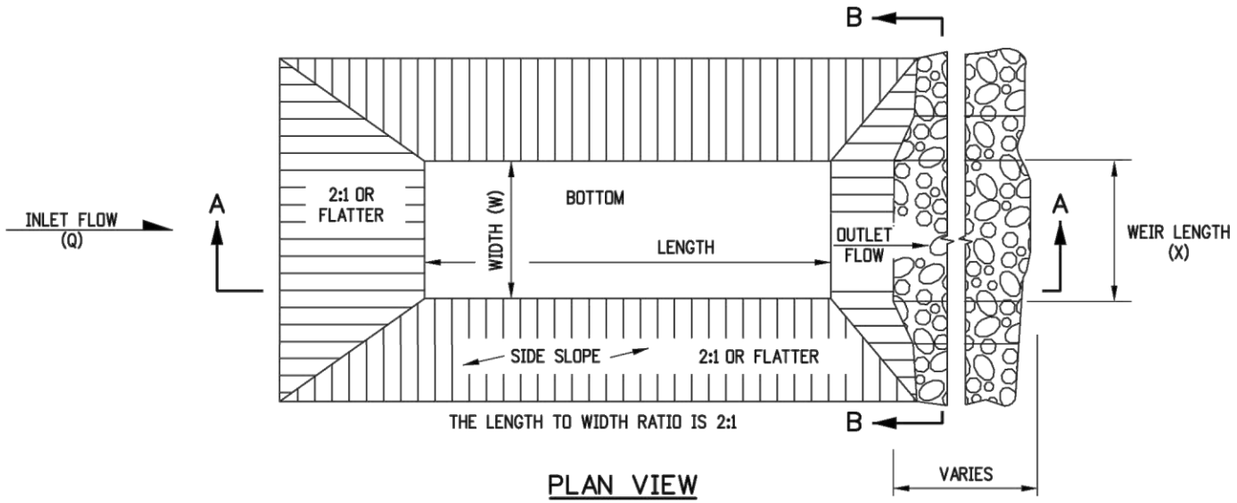
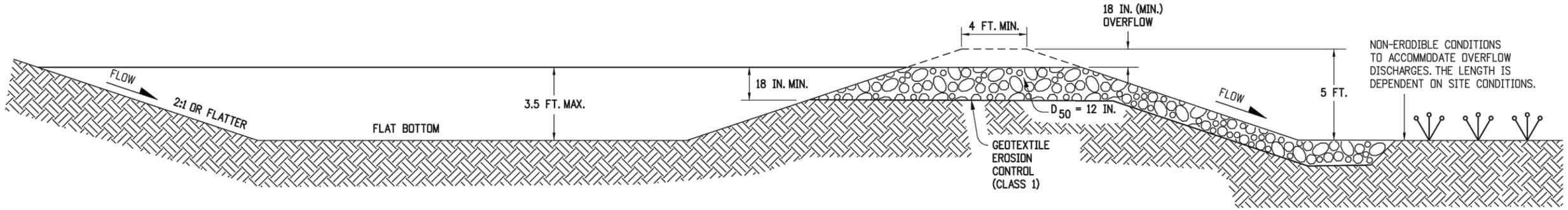


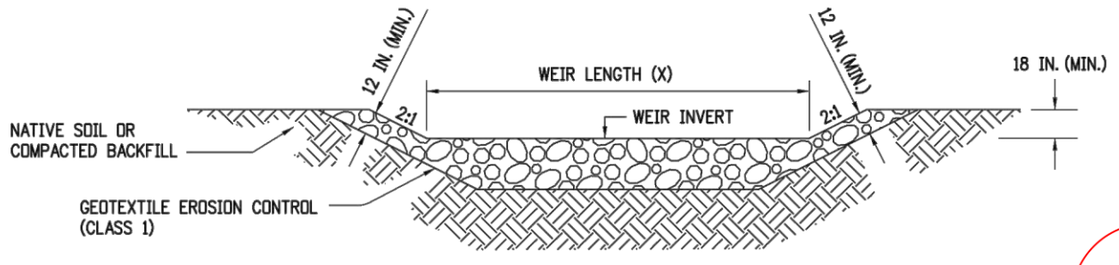
PLAN VIEW

NOTES

1. THE MAXIMUM DRAINAGE AREA IS 5 ACRES.
2. THE MAXIMUM STRUCTURE LIFE IS 2 YEARS.
3. THE STORAGE AREA IS 1800 CUBIC FEET PER ACRE.
4. THE MAXIMUM EMBANKMENT HEIGHT SHALL BE 5 FT. MEASURED ON THE DOWNSTREAM SIDE.
5. THE LENGTH/WIDTH RATIO MAY BE ADJUSTED TO MEET SITE CONDITIONS WHEN APPROVED BY THE ENGINEER.
6. WIDTH (W) OF SEDIMENT TRAP IS APPROXIMATELY EQUAL TO THE WEIR LENGTH (X).
7. SEDIMENT TRAP DESIGN SHALL BE APPROVED BY THE ENGINEER.
8. THE DOWN GRADE FROM WEIR SHALL BE STABLE AND NON-ERODIABLE.
9. THE PAY ITEM NUMBER FOR SEDIMENT TRAP (LF) IS 208-00033.



SECTION A-A



SECTION B-B

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

WEIR LENGTH TABLE

ST

SEDIMENT TRAP

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: SWM

Name/Description:
Sanitary Waste/Portable Toilet Management

Description, Purpose and Applicability:

Portable toilets will be present on the project and administrative and physical measures will be implemented to minimize the potential of septic/sanitary waste discharges from the project and into State waterways or storm sewer systems.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Portable toilets will be serviced on a regular basis, located away from stormwater conveyance systems, inlets and will be secured from tipping over.

Instances of this Control Measure (CM)

SWM - Sanitary Waste/Portable Toilet Management
There are no items to display

Attachments

There are no attachments to display

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: VTC-A

Name/Description:
Vehicle Tracking Control

Description, Purpose and Applicability:

Vehicle tracking controls provide stabilized construction site access where vehicles exit the site onto paved public roads. An effective vehicle tracking control helps remove sediment (mud or dirt) from vehicles, reducing tracking onto the paved surface.
A stabilized construction entrance or vehicle tracking control will be implemented where frequent heavy vehicle traffic exits the construction site onto a paved roadway, unless infeasible. An effective vehicle tracking control is particularly important during the following conditions:
- Wet weather periods when mud is easily tracked off site.
- During dry weather periods where dust is a concern.
- When poorly drained, clayey soils are present on site.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

The area will be inspected for degradation and aggregate or material used for a stabilized entrance/exit will be replaced as needed to ensure it functions effectively. If the area becomes clogged, excess sediment will be removed and disposed of, the rock pad ripped/roughened, or replaced material with a fresh layer of aggregate as necessary.

Sediment that is tracked onto the public right of way will be cleaned up daily or more frequently as needed.

Instances of this Control Measure (CM)

VTC-A - Vehicle Tracking Control
There are no items to display

Attachments

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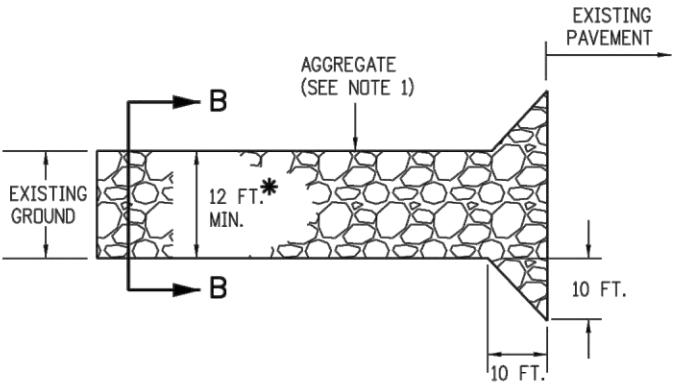
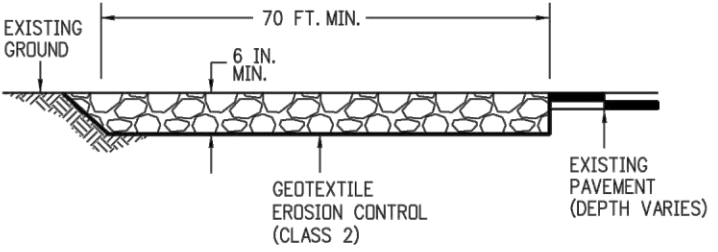
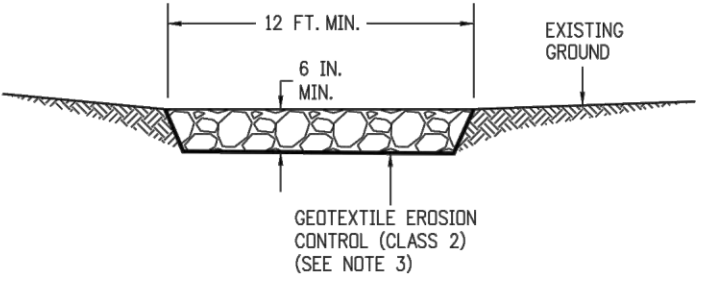


PLAN VIEW

* SHALL EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION.



ELEVATION SECTION



SECTION B-B

NOTES:

1. AGGREGATE SHALL CONFORM TO SUBSECTION 208.02 (I).
2. THE CONTRACTOR SHALL PROTECT CURB AND GUTTER THAT CROSSES THE ENTRANCE FROM DAMAGE, WHILE NOT BLOCKING FLOW OF WATER THRU STRUCTURE. PROTECTION OF THE CURB AND GUTTER SHALL BE INCLUDED IN THE COST OF WORK AND NOT PAID FOR SEPARATELY.
3. GEOTEXTILE SHALL CONFORM TO SUBSECTION 712.08.
4. ALL MATERIALS AND LABOR TO COMPLETE THE VEHICLE TRACKING PAD SHALL BE INCLUDED IN THE COST OF WORK AND NOT PAID FOR SEPARATELY.
5. THE PAY ITEM NUMBER FOR VEHICLE TRACKING PAD (EACH) IS 208-00070.

VEHICLE TRACKING PAD

USMS Control Measure (CM) Log and Site Map Key

Abbreviation: WD

Name/Description:
Wattle Dike / Sediment Control Log / Straw Wattle

Description, Purpose and Applicability:

A sediment control log is a linear roll made of natural materials such as straw, coconut fiber, or other fibrous material trenched into the ground and held with a wooden stake. Sediment control logs are also often referred to as "straw wattles." They are used as a sediment barrier to intercept sheet flow runoff from disturbed areas.
Sediment control logs may be used in the following applications to trap sediment:
- As perimeter control for stockpiles and the site.
- As part of inlet protection designs.
- As check dams in small drainage ditches. (Sediment control logs are not intended for use in channels with high flow velocities.)
- On disturbed slopes to shorten flow lengths (as an erosion control).
- As part of multi-layered perimeter control along a receiving water such as a stream, pond or wetland.

Sediment control logs work well in combination with other layers of erosion and sediment controls.

During what phase(s) of construction/activity will this control measure be implemented?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Inspection & Maintenance Requirements: *(Frequency to be inspected and when/how it will be maintained)*

Wherever feasible, sediment control logs will be installed along the contour to avoid concentrating flows. The maximum allowable tributary drainage area per 100 lineal feet of sediment control log, installed along the contour, is approximately 0.25 acres with a disturbed slope length of up to 150 feet and a tributary slope gradient no steeper than 3:1. Longer and steeper slopes require additional measures. This recommendation only applies to sediment control logs installed along the contour. When installed for other uses, such as perimeter control, it will be installed in a way that will not produce concentrated flows. For example, a "J-hook" installation may be appropriate to force runoff to pond and evaporate or infiltrate in multiple areas rather than concentrate and cause erosive conditions parallel to the BMP.
Sediment control logs will eventually degrade. Accumulated sediment will be removed before the depth is one-half the height of the sediment log and damaged sections will be repaired, if possible, or replaced. Once the upstream area is stabilized, remove and properly dispose of the logs. Areas disturbed beneath the logs may need to be seeded and mulched. Sediment control logs that are biodegradable may occasionally be left in place (e.g., when logs are used in conjunction with erosion control blankets as permanent slope breaks). However, removal of sediment control logs after final stabilization is typically recommended when used in perimeter control, inlet protection and check dam applications.

Instances of this Control Measure (CM)

WD - Wattle Dike / Sediment Control Log / Straw Wattle
There are no items to display

Attachments

Filename: WD.pdf *(click to download original file)*

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Filename: WD2.pdf *(click to download original file)*

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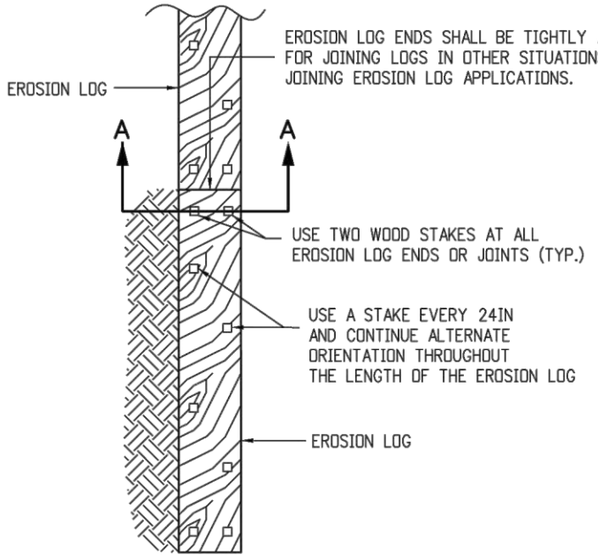
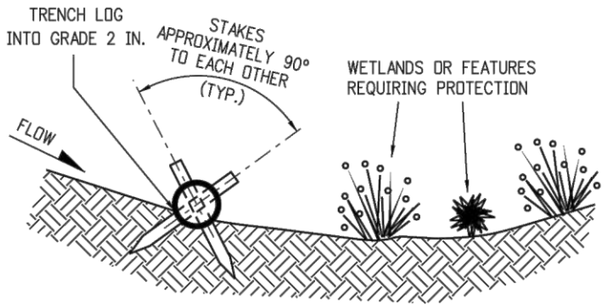


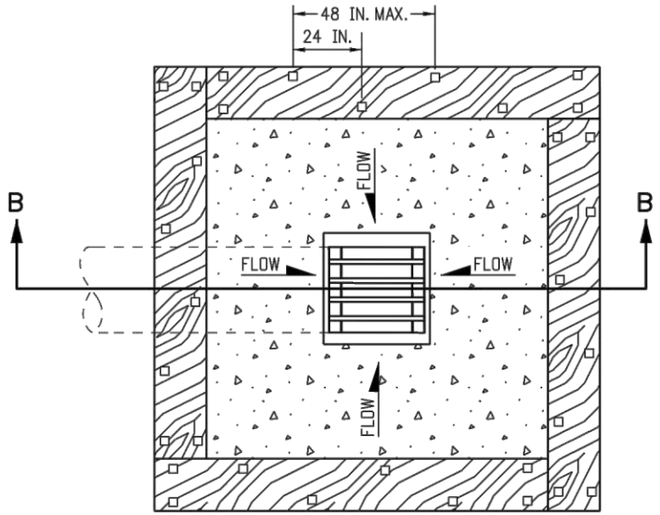
PLAN VIEW



SECTION A-A

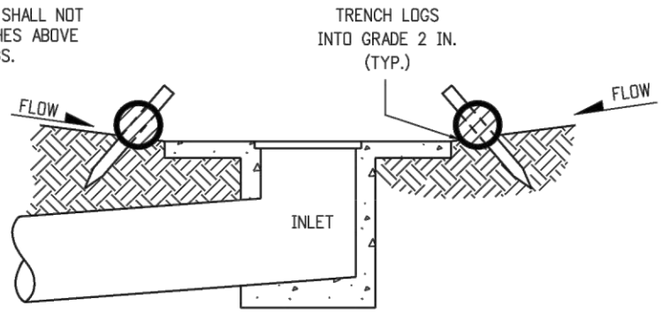
TYPICAL STAKE INSTALLATION

EROSION LOGS PAY ITEMS	
NUMBER	DESCRIPTION
208-00012	TYPE 1 (9 IN.)
208-00002	TYPE 1 (12 IN.)
208-00013	TYPE 1 (20 IN.)
208-00007	TYPE 2 (8 IN.)
208-00008	TYPE 2 (12 IN.)
208-00009	TYPE 2 (18 IN.)
208-00022	TYPE 3 (9 IN.)
208-00023	TYPE 3 (12 IN.)
208-00024	TYPE 3 (20 IN.)



PLAN VIEW

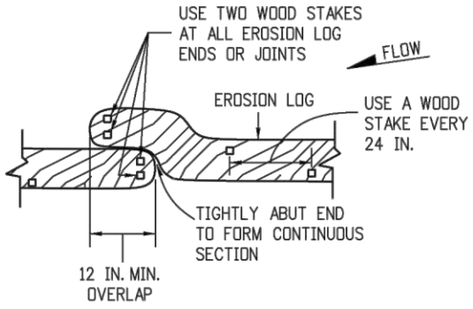
NOTE: THE TOPS OF ALL STAKES SHALL NOT EXTEND MORE THAN 2 INCHES ABOVE THE TOPS OF EROSION LOGS.



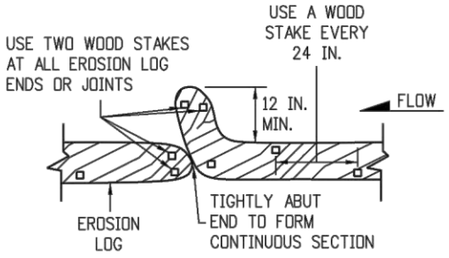
SECTION B-B

NOTE: LOCATE EROSION LOGS AT THE OUTSIDE EDGE OF THE CONCRETE APRON.

EROSION LOG FILTER AT DROP INLET



OVERLAP JOINING DETAIL



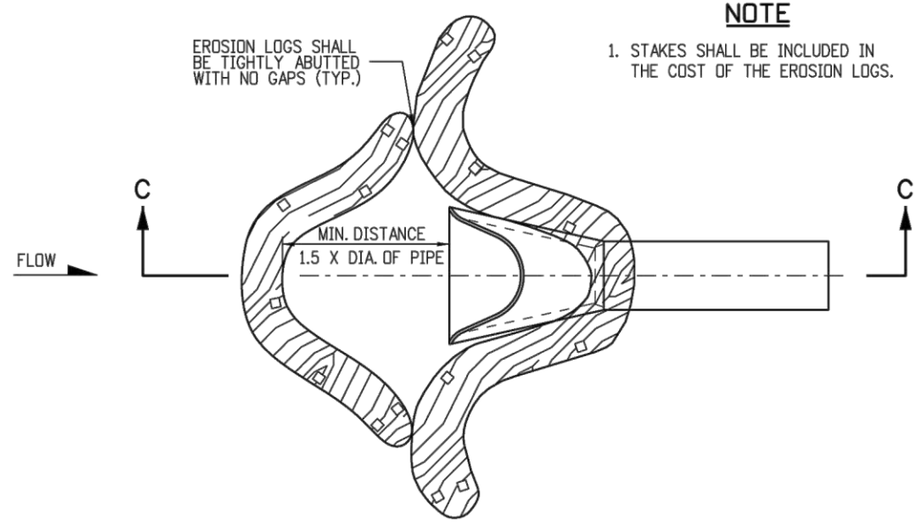
J-HOOK JOINING DETAIL

JOINING EROSION LOG APPLICATIONS

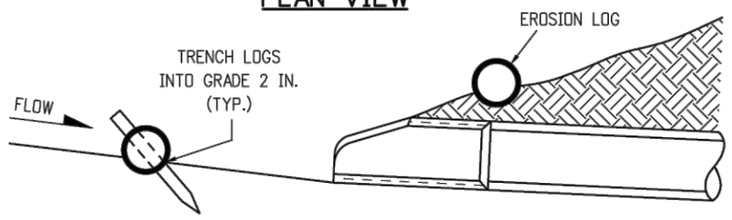
EROSION LOG APPLICATIONS

NOTE

1. STAKES SHALL BE INCLUDED IN THE COST OF THE EROSION LOGS.



PLAN VIEW

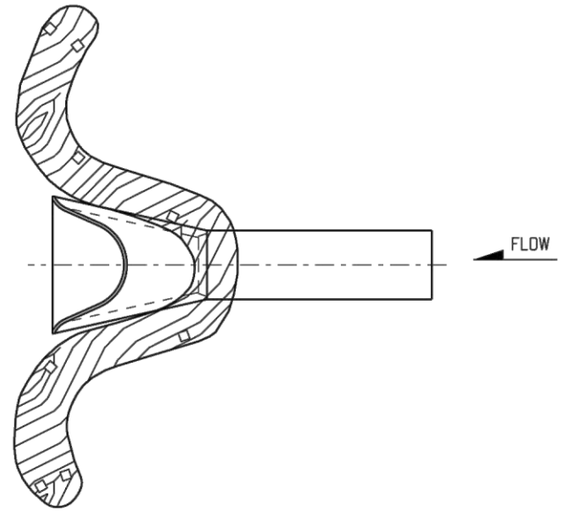


SECTION C-C

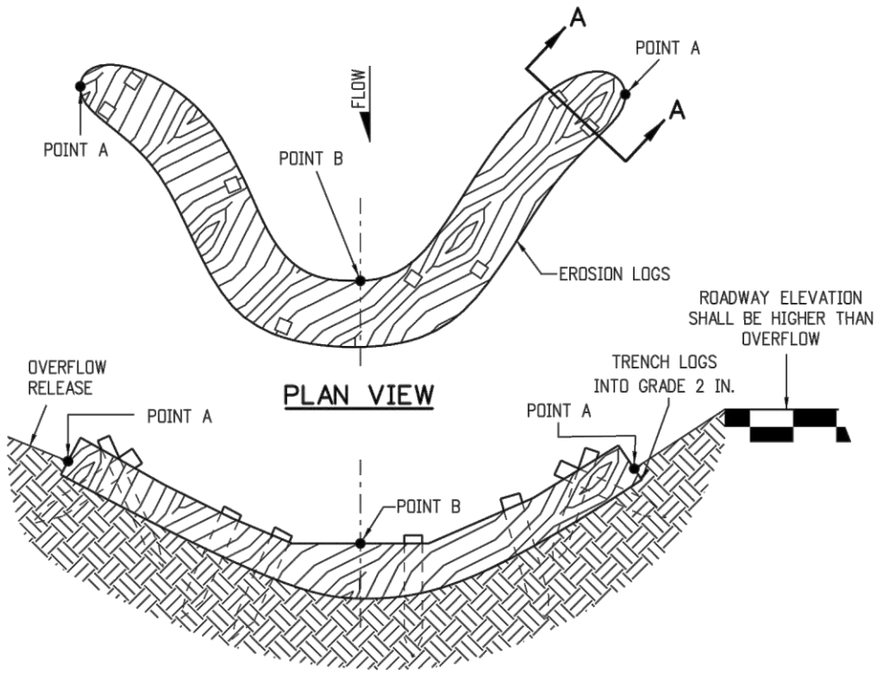
(NOT ALL LOGS SHOWN)

NOTE: TOP OF STAKE SHALL NOT EXTEND PAST TOP OF EROSION LOG MORE THAN 2 IN.

EROSION LOG CULVERT INLET PROTECTION



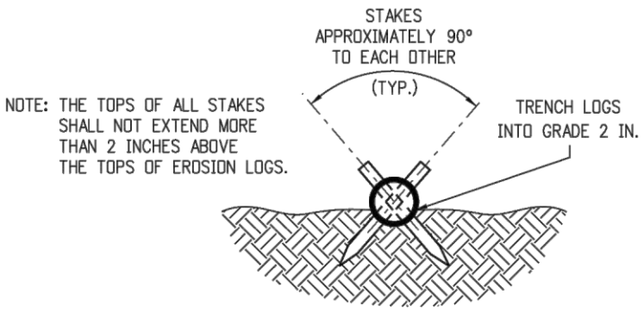
EROSION LOG CULVERT OUTLET PROTECTION



PLAN VIEW

NOTE: POINTS "A" SHALL BE A MINIMUM 4 IN. HIGHER THAN POINT "B".

ELEVATION

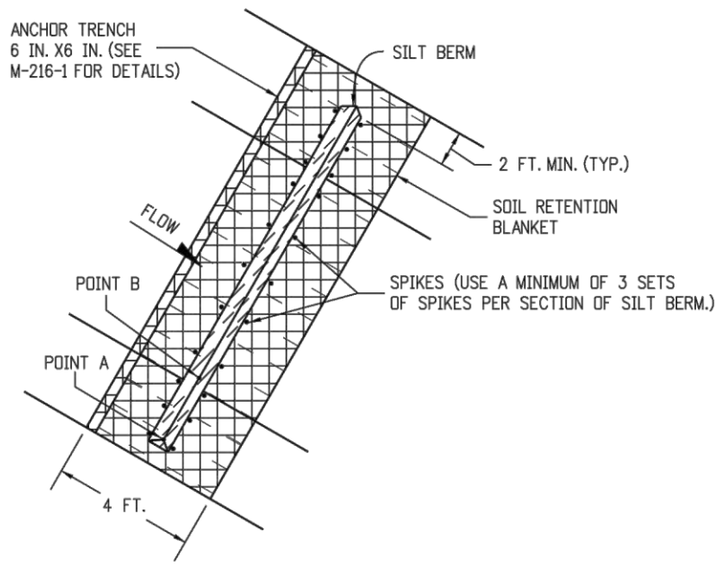


SECTION A-A

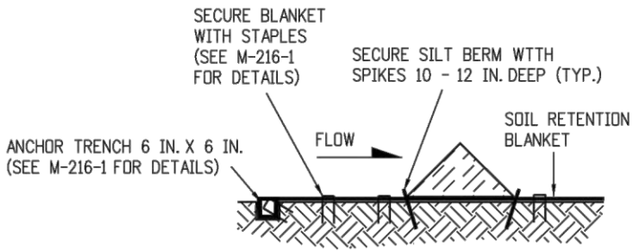
NOTES:

1. EROSION LOGS SHALL BE EMBEDDED 2 INCHES INTO THE SOIL.
2. EROSION LOGS SHALL BE TIGHTLY ABUTTED WITH NO GAPS.
3. V-SHAPED TEMPORARY DITCHES SHALL NOT BE USED. DITCHES SHAL BE GRADED IN A PARABOLIC OR TRAPEZOIDAL SHAPE.

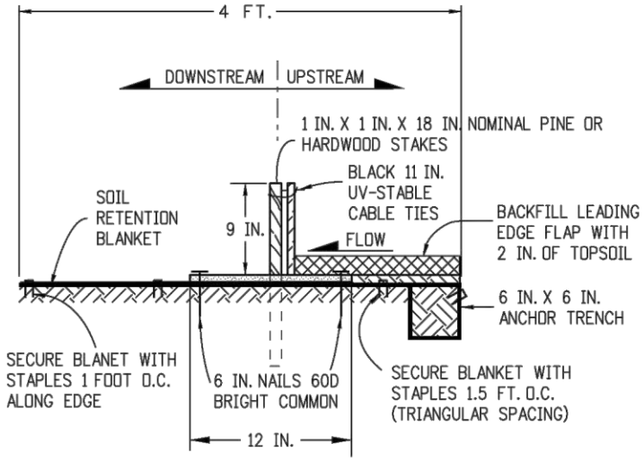
EROSION LOG INSTALLATION



PLAN VIEW



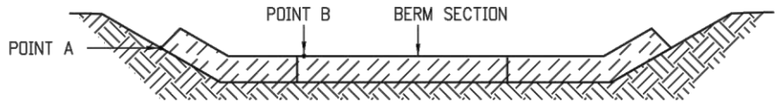
SILT BERM (1) SECTION VIEW



NOTES:

1. MINIMUM 4 NAILS PER SEGMENT (UPSTREAM).
2. MINIMUM 2 NAILS PER SEGMENT (DOWNSTREAM).
3. MINIMUM 2 WOOD STAKES PER SEGMENT.

SILT BERM (2) SECTION VIEW



POINT "A" SHALL BE HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE BERM AND NOT AROUND THE ENDS.

FRONT VIEW

NOTES

1. ANCHOR SOIL RETENTION BLANKET INTO TRENCH WITH 8 INCHES MIN. STAPLES PLACED AT 1 FOOT INTERVALS ALONG EDGE.
2. FILL AND COMPACT TRENCH.
3. SECTIONS OF THE SILT BERM SHALL BE OVERLAPPED WITH NO GAPS.
4. FOR SLOPE AND CHANNEL SPACING SEE THE "SECTION VIEW ALONG DITCH FLOWLINE" DETAIL ON SHEET 11 OF 11.
5. SOIL RETENTION BLANKET SHALL ALWAYS BE REQUIRED.
6. THE PAY ITEM NUMBER FOR SILT BERM (LF) IS 208-00004.

SILT BERM INSTALLATION

WD

DRAINAGE DITCH APPLICATIONS

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: CC

Name/Description:
Construction Chemicals

Description and Evaluation:

Form oil, concrete cure, solvents, paints, damp-proofing compounds, epoxies, drywall taping compound are materials that are expected to be on-site during construction. BMPs including proper location, cover, containment and proper disposal will be employed.

During what phase(s) of construction/activity will this pollution source be expected on the project?

4. Impervious Surfaces, Vertical/Building Construction

Instances of this Pollution Source (PS)

CC - Construction Chemicals
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: CP

Name/Description:
Construction Parking

Description and Evaluation:

Parking of construction equipment and vehicles will occur on the project. Traffic restrictions will be implemented as necessary to keep vehicles in designated, as necessary. Whenever possible, stabilized areas will be provided to park and to minimize tracking sediment from disturbed areas onto pavement. Leaks from vehicles will be addressed immediately or as soon as possible.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

CP - Construction Parking
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: CSC

Name/Description:
Concrete Saw-Cutting

Description and Evaluation:

Concrete saw-cutting operations will occur on the project using both dry & wet methods. Dry saw-cutting will be vacuumed as the activity is taking place and wet-cutting residue will be scraped and disposed of in the concrete washout unit on-site.

During what phase(s) of construction/activity will this pollution source be expected on the project?

3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction

Instances of this Pollution Source (PS)

CSC - Concrete Saw-Cutting
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: CWW

Name/Description:
Concrete Wash Waste

Description and Evaluation:

Concrete is planned for use in paving and building foundation construction. Uncured cement-based materials can be highly caustic and detrimental to water quality if allowed to mix with surface water runoff or other discharges from the site. Structural and non-structural BMPs will be employed as necessary to contain any concrete wash waste in designated and maintained areas on the site. Concrete equipment washing will not be allowed on the site except at designated locations.

During what phase(s) of construction/activity will this pollution source be expected on the project?

4. Impervious Surfaces, Vertical/Building Construction

Instances of this Pollution Source (PS)

CWW - Concrete Wash Waste
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: DSF

Name/Description:
Disturbed Soil Flat

Description and Evaluation:

Disturbed areas will have a sediment and/or an erosion control in place to treat/contain the runoff prior to discharging from the project. Soil erosion control measures for all slopes, channels, ditches, or any disturbed land area shall be completed as soon as phasing allows. Temporary stabilization measures, such as surface roughening may be implemented if there is no other way to reduce the amount of sediment laden runoff discharging from the project.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

DSF - Disturbed Soil Flat
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: EM

Name/Description:
Equipment Cleaning/Fueling/Maint.

Description and Evaluation:

Equipment Maintenance may occur on equipment that need servicing in designated areas or where the piece of equipment has stopped working. Any potential pollutants, such as hydraulic fluid, grease, etc. that are used during the repair process will be kept on a mobile vehicle or in adequate containment when not in use. Fueling operations will be performed by a mobile unit, away from conveyance systems and inlets whenever possible. If any spills or leaks occur during the fueling process, they will be contained until they can be properly be cleaned up, per the spill response procedures outlined in the SWPPP/SWMP.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

EM - Equipment Cleaning/Fueling/Maint.
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: FD

Name/Description:
Fugitive Dust

Description and Evaluation:

Fugitive dust may occur during grading operations and after the existing vegetation has been disturbed. To minimize the transport of fugitive dust, a water hose or similar method will be implemented as necessary.

During what phase(s) of construction/activity will this pollution source be expected on the project?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation

Instances of this Pollution Source (PS)

FD - Fugitive Dust
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: FN

Name/Description:
Fertilizers & Nutrients

Description and Evaluation:

Fertilizers, including soil amendments, are rich in nitrates and other chemicals such as phosphorus that can be detrimental to surface water quality in higher than normal concentrations. Fertilizers will be stored in areas that are physically contained or fully covered, away from stormwater conveyances and where they are protected from accidental discharges. Soil amendment stockpiles will be covered or contained and located away from stormwater conveyances. Soil amendments and other fertilizers will be applied to the soil in quantities that allow for the complete mixing with the soil by the end of each work day.

During what phase(s) of construction/activity will this pollution source be expected on the project?

5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

FN - Fertilizers & Nutrients
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: GWD

Name/Description:
Groundwater Dewatering to Land

Description and Evaluation:
See attachment - Low Risk Discharge Guidance: Discharges Of Uncontaminated Groundwater To Land

During what phase(s) of construction/activity will this pollution source be expected on the project?
3. Utility Installation

Instances of this Pollution Source (PS)

GWD - Groundwater Dewatering to Land
There are no items to display

Attachments

Description: Guidance Policy - Groundwater Discharges to Land
Filename: lrg-groundwater-2017.pdf *(click to download original file)*
File is included after this page

Low Risk Discharge Guidance
Discharges of Uncontaminated Groundwater to Land

Originally Issued September 2009
Revised August 8, 2017

Table of Contents

Scope and Purpose of Modification

This revised guidance document is effective August 4, 2017. In addition to organizational and editorial revisions, the following substantive modifications were made:

- Additional information was added regarding determining if the discharge is uncontaminated. Refer to the Criteria section.
- Removed the reference to solid waste permitting in the background and discussion portion of the document. Uncontaminated groundwater would typically not be regulated as a solid waste, and therefore the discussion was not likely to be applicable to discharges covered by this guidance. However, it remains the responsible parties' obligation to ensure compliance with other applicable laws and regulations, including solid waste requirements.
- The requirement that the discharge be returned to the same aquifer that it was drawn from was added. This is consistent with the intent of the original version, as identified by the examples of covered discharges provided: construction dewatering, subterranean or foundation dewatering, uncontaminated vault dewatering, and utility work.

Background and Discussion

This discharge policy guidance has been developed in accordance with WQP-27, Low Risk Discharges Policy. This guidance is only applicable to discharges meeting the low risk discharge criteria and conditions identified below. **Refer to the Alternative Disposal Options section at the end of this document for additional information for discharges that do not meet the criteria and conditions of this guidance.**

The division has issued general permits for point source discharges of groundwater to land, as identified in the Alternative Disposal Options section. However, for the category of point source discharges that meet the criteria and conditions outlined in this document, the division has determined it is appropriate to manage the discharges through the development of guidance instead of through pursuing permit coverage. When the criteria and provisions of this guidance are met, the division will not actively pursue permitting or enforcement for discharges of groundwater to land, unless on a case-by-case basis, the division finds that a discharge has resulted in an adverse impact to the quality of any state waters receiving the discharge.

Discharges of uncontaminated groundwater to land that are typically associated with short term or intermittent

discharges are not expected to contain pollutants in concentrations that are toxic, or in concentrations that would cause or contribute to a violation of a water quality standard for ground water. A large number of these types of discharges occur state-wide every year, which requires a resource-intensive effort to permit without a resulting general benefit to environmental quality in the vast majority of situations.

Discharges of uncontaminated groundwater to land that may be covered under this guidance document when all the provisions in the document are adhered to may include, but are not limited to: construction dewatering, subterranean or foundation dewatering, uncontaminated vault dewatering, and utility work.

Criteria, Conditions, and Control Measures

- **Definitions**
  - **Control Measures:** are any best management practice or other method used to prevent or reduce the discharge of pollutants to waters of the state.

- **Low Risk Discharge Criteria**

  This guidance is applicable to point source discharges that meet the following criteria and that meet the conditions listed in the next section. Refer to the Alternative Disposal Options section for guidance on addressing water not meeting these criteria.

  - The source of the discharge must solely be uncontaminated groundwater or uncontaminated groundwater combined with stormwater. Refer to the guidance in the Control Measure section below for information on identifying potentially contaminated groundwater.
  - To be considered uncontaminated, the source ground water must not contain pollutants in concentrations that exceed water quality standards for groundwater applicable to the receiving groundwater. For ground water for which standards have not already been assigned in Regulation 42, Site-Specific Water Quality Classifications and Standards for Ground Water (5 CCR 1002-42), pollutants shall not exceed the criteria set forth in Tables 1 through 4 of "The Basic Standards for Ground Water," in Regulation 41, The Basic Standards for Ground Water (5 CCR 1002-41). This guidance does not include consideration of criteria for groundwater based on existing ambient quality as of January 31, 1994, as set forth in Regulation No. 41.5.C.6.b.i(A). Because a site-specific evaluation and determination is necessary for application of such criteria, the division has determined that consideration of this allowance is not appropriate under this guidance. The source groundwater must be from the same aquifer that the water will be returned to. Specifically, this guidance is not applicable to discharges from deep wells that draw water from confined aquifers which will often have substantially different water quality compositions than the shallower unconfined aquifers to which the water will be discharged.
  - The discharge must be to land. Point source discharges to surface waters of the state, storm sewers, or other drainage conveyance systems are not covered by this guidance.

- **Conditions**

  The following conditions must be met by anyone discharging wastewater in accordance with this guidance:

  - **Prohibition of pollutants in the discharge:**
    - No chemicals may be added.
    - If the discharge is from vaults or similar structures, the discharge cannot be contaminated by process materials used, stored, or conveyed in the structures, or by introduced surface water runoff from outside environments that may contain oil, grease, and corrosives.
    - A visible sheen must not be evident in the source water or discharge.
  - **Exclusion of Process Discharges:**
    - The groundwater shall not be used in any additional processes. Processes include, but are not limited to, any type of washing, heat exchange, or manufacturing.
  - **Controlling the discharge:**
    - The groundwater discharge cannot leave the operational control of the entity administering the land application. The owner of the property where the discharge is occurring must have prior knowledge and grant permission for the land application.
    - Land application must be conducted at a rate and location that does not allow for any runoff into state waters or other drainage conveyance systems, including but not limited to streets, curb and

gutter, inlets, borrow ditches, open channels etc. If the land application is to agricultural land, it must not reach or have the potential to reach an agricultural ditch. Discharges to drainage conveyance systems as described above are a discharge to surface water that require a discharge permit and are not covered under this guidance document.

- Land application must be conducted at a rate that does not allow for any ponding of the groundwater on the surface, unless the ponding is a result of implementing control measures that are designed to reduce flow velocity. If the control measures used result in ponding, the land application must be done in an area with a constructed containment, such as an excavation or bermed area with no designed outfall. The constructed containment shall prevent the discharge of the ponding water offsite as runoff.

❖ **Compliance with construction stormwater discharge permits:** If the discharge is located at a facility covered by a CDPS General Permit for Stormwater Discharge Associated with Construction Activities, the requirements in that permit associated with the discharge of groundwater must be complied with, including identification in the Stormwater Management Plan.

❖ **Controlling erosion:** The discharge shall not cause erosion of a land surface that could cause pollution of the receiving water. Signs of visible erosion that have the potential to cause pollution without downstream controls measures implemented include the formation of rills or gullies on the land surface. Energy dissipation devices designed to protect downstream areas from erosion by reducing velocity of flow (such as hose attachments and erosion controls) may be necessary to prevent erosion.

❖ **Controlling pollutant potential of deposited sediment:** Control measures shall be implemented to prevent any sediment deposited during land application from being transported by stormwater runoff to surface waters or other conveyances.

❖ **Additional Requirements and Property Rights:**

- All discharges must comply with the lawful requirements of federal agencies, municipalities, counties, drainage districts, ditch owners, and other local agencies regarding any discharges to storm drain systems, conveyances, ditches or other water courses under their jurisdiction.
- The guidance included in this document in no way reduces the existing authority of the owner of a storm sewer, ditch owner, or other local agency, from prohibiting or placing additional conditions on the discharge.
- The discharge shall not result in flooding of neighboring property, streets, gutters or storm sewers. The discharge must be diverted from building foundations or other areas that may be damaged from ground settling or swelling.

➢ **Implementation of Control Measures**

Control measures should be implemented as necessary to meet the conditions above, by anyone discharging in accordance with this guidance. The following control measures have been developed by the division to help ensure that the discharge will not negatively affect water quality. Refer to the Alternative Disposal Options section for guidance where these control measures cannot be implemented.

❖ **Identifying potentially contaminated groundwater:** It the groundwater is located within 1 mile of a landfill, abandoned landfill, mine or mine tailing area, a Leaking Underground Storage Tank (LUST), Brownfield site, or other area of contamination, there is an increased likelihood that groundwater contamination exists. In those cases additional work is appropriate to determine if your dewatering area is in an area of contamination. The following is a list of contamination and plume resources and is helpful when determining if your dewatering area is in an area of contamination, however the list is not all inclusive and in some cases site-specific characterization of groundwater may be necessary.

CDPHE Environmental Cleanup Web Page (refer to the resources under "sites and facilities"):
https://www.colorado.gov/pacific/cdphe/categories/services-and-information/environment/environmental-cleanup#sites

EPA Cleanups in My Community Maps and Lists:
https://www.epa.gov/cleanups/cleanups-my-community

- ❖ All control measures used to meet the provisions of this guidance document must be selected, installed, implemented and maintained according to good engineering, hydrologic and pollution control practices. These control measures must be adequately designed to provide control for all potential pollutant sources associated with the discharge of uncontaminated groundwater to land.

- ❖ The discharge should be routed in such a way that it will not contact petroleum products/waste, a visible sheen must not be evident in the discharge.

- ❖ To minimize potential for creating stormwater pollution sources, control measures (such as a filter bag or similar filtration device) should be used to remove sediment/solids prior to land application.

Alternative Disposal Options

Water that does not meet the criteria of this guidance or that cannot be discharged in a manner that meets the conditions of this guidance must be either authorized by a Colorado Discharge Permit System (CDPS) discharge permit issued by the division or disposed of through an alternative means.

The Water Quality Control Division has general permits available for discharges to surface water and/or land associated with construction dewatering, subterranean structure/foundation dewatering, and the remediation of groundwater. Obtaining coverage one of these permits will likely be the most efficient solution for discharges that do not meet the criteria and conditions of this guidance.

For discharges associated with construction projects, guidance on determining the appropriate permit and applying in included in the Application Guidance Document for these general permits, available on the division's construction sector permitting page: https://www.colorado.gov/pacific/cdphe/wq-construction-general-permits

Discharges from subterranean structures (basement, foundation, footer drains, etc.) are covered by the Subterranean Dewatering or Well Development general permit. The application and other information for this general permit can be found on the commerce and industry sector permitting page: https://www.colorado.gov/pacific/cdphe/clean-water-commerce-and-industry-permitting

For more information, contact the Water Quality Control Division's Permitting Section or Clean Water Compliance Unit, at (303) 692-3517.

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: HWS

Name/Description:
Hand Washing Station

Description and Evaluation:

Water from handwashing stations will be managed so it does not runoff off the site or into groundwater, as it may contain sediment, chemicals, and detergents. The handwashing water will be drained on-site into contained areas such as a lined pit or approved concrete washout area. If the station is a self-contained unit provided by a supplier, such as the port-a-let company, the unit will be serviced (pumped out) when the toilets are cleaned.

The handwashing water may also be drained into enclosed equipment such as a bucket with a lid or IBC Tote and then it will be dumped into the sanitary sewer or concrete washout area.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

HWS - Hand Washing Station
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: LUO

Name/Description:
Loading & Unloading Operations

Description and Evaluation:

Materials spilled or leaked during loading and unloading can be carried away in stormwater runoff. As a result, many different pollutants can be introduced into the storm drain system, including sediment, nutrients, trash, organic material, trace metals, and an assortment of other pollutants. So, a spill kit will be kept on site for any liquid spills/leaks that may occur and any solid material/trash or sediment that is spilled or leaked will be cleaned up as soon as possible.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

LUO - Loading & Unloading Operations
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: MS

Name/Description:
Material Storage

Description and Evaluation:

Construction materials often have the potential to change the chemical nature of stormwater. They must be properly labeled and stored when not in use in a manner that prevents contact with stormwater. All open containers of said construction materials will be stored away from stormwater conveyances, off the ground and under cover when not in active use and at the end of each work day. All containers, whether open or not, will be stored in designated areas where the likelihood of accidental discharge is minimized.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

MS - Material Storage
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: P

Name/Description:
Petroleum-based Products

Description and Evaluation:

Petroleum products that are present on the site for vehicle and a variety of equipment operation and maintenance will be stored in tightly sealed containers which are clearly labeled and provided secondary cover or secondary containment when not actively managed.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

P - Petroleum-based Products
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: PT

Name/Description:
Portable Toilet

Description and Evaluation:

Sanitary wastes are a source for bacteria and viruses. They will be contained in portable units designed for construction site use. Portable units will be place in areas away from stormwater conveyances and will be secured from accidental tipping. Portable units will be service regularly per the suppliers recommended schedule.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

PT - Portable Toilet
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: S

Name/Description:
Stockpile

Description and Evaluation:

Stockpiling of soil, sand, pea gravel, and other materials during construction is expected to occur throughout construction in various locations. Erodible stockpiles will be protected by perimeter containment controls if in close proximity to stormwater conveyances. Containment methods will be implemented as necessary to ensure that resulting runoff from the piles is adequately treated prior to discharging from the site.

During what phase(s) of construction/activity will this pollution source be expected on the project?

2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

S - Stockpile
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: SEE

Name/Description:
Site Entry/Exit

Description and Evaluation:

Site Entry and/or Exit points have the potential of tracking sediment off of the project and will be limited as much as possible. Controls, such as access restrictions or a BMP, such as a vehicle tracking control pad will be implemented whenever feasible to minimize the potential of tracking sediment onto paved surfaces or off the project.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

SEE - Site Entry/Exit
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: SWD

Name/Description:
Stormwater Dewatering

Description and Evaluation:

Stormwater dewatering may occur during the construction process; however any discharging of accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation, will be effectively managed by appropriate controls. Typically a BMP will be placed on the suction end of the pump, with additional controls placed at the discharge point of the hose, to prevent scour and to remove as much sediment as is practicable that may be in the water, prior to discharging from the project. Visible floating solids and/or foam will not be discharged from the project and an oil-water separator or suitable filtration device (such as a cartridge filter) that is designed to remove oil, grease, or other products, will be utilized if dewatering water is found to contain these materials.

During what phase(s) of construction/activity will this pollution source be expected on the project?

3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction

Instances of this Pollution Source (PS)

SWD - Stormwater Dewatering
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: SWT

Name/Description:
Solid Waste/Trash

Description and Evaluation:

Construction wastes such as litter, debris, and all other solid materials generated during, or as a result of, the construction process will be collected daily and disposed of in metal containers (dumpsters). These containers will be removed from the jobsite at 90% capacity and will be replaced with empty containers as needed. Containers being removed from the project will be covered before transporting. At no time will temporary dumping of construction waste on the ground be allowed unless all materials are then placed in the designated containers by the end of each workday.
Asphalt spoils/debris will be contained and/or cleaned up and disposed of appropriately.

During what phase(s) of construction/activity will this pollution source be expected on the project?

1. Existing Conditions/Site Mobilization
2. Clearing/Grubbing, Rough/Overlot Grading, Demolition
3. Utility Installation
4. Impervious Surfaces, Vertical/Building Construction
5. Final Grading/Stabilization

Instances of this Pollution Source (PS)

SWT - Solid Waste/Trash
There are no items to display

Attachments

There are no attachments to display

USMS Pollution Source (PS) Log and Site Map Key

Abbreviation: TC

Name/Description:
Tool Cleaning

Description and Evaluation:

Cleaning of tools that come into contact with potential pollutants, such as concrete, paint, gypsum products, etc. will be performed in either a designated location, with appropriate containment controls implemented or done off-site. All washwater will be directed into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation; and will be located as far away as possible from surface waters and stormwater inlets or conveyances. Any spills or leaks that may occur as a result of tool cleaning, will be done as soon as possible and the contaminated soil disposed of appropriately.

During what phase(s) of construction/activity will this pollution source be expected on the project?

4. Impervious Surfaces, Vertical/Building Construction

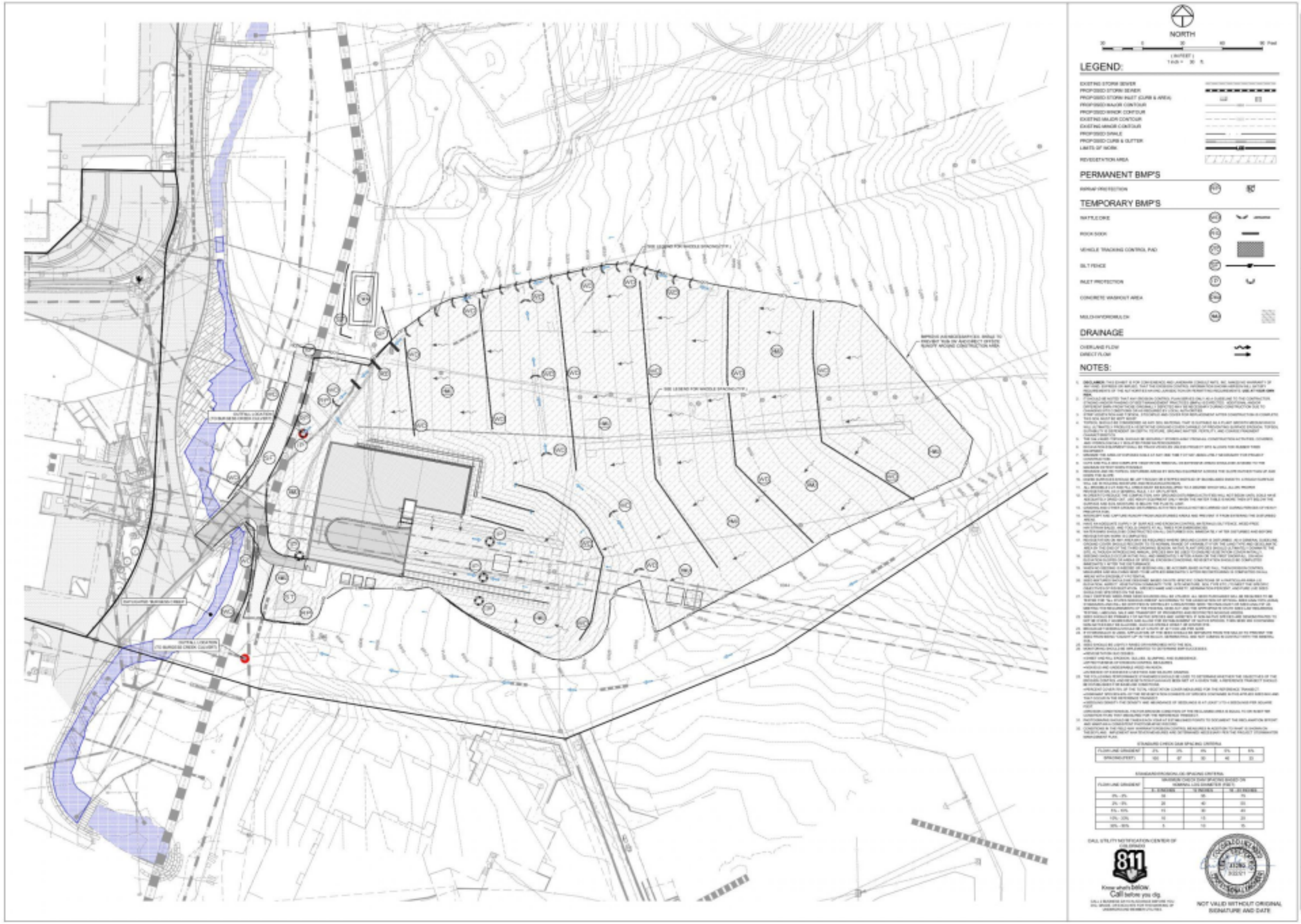
Instances of this Pollution Source (PS)

TC - Tool Cleaning
There are no items to display

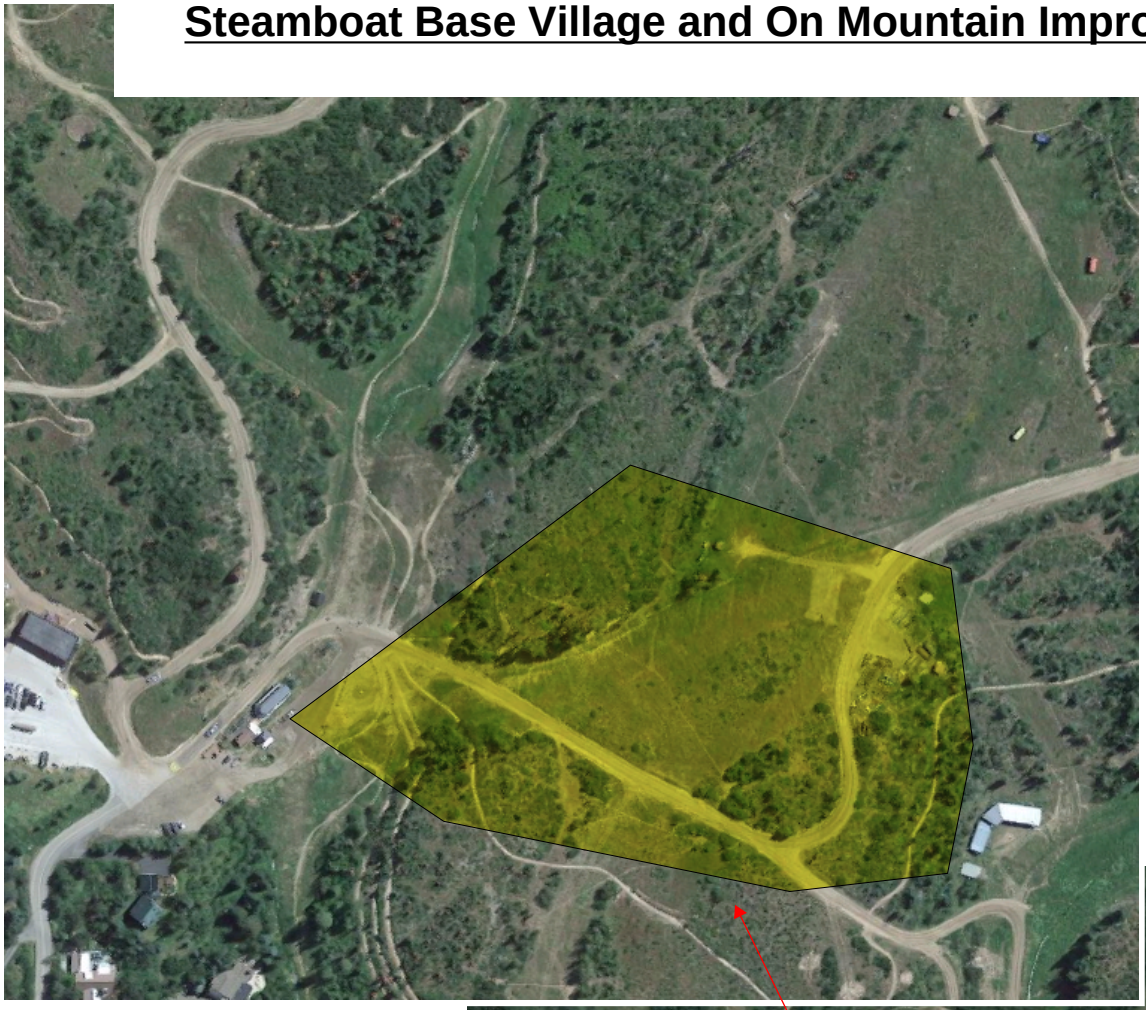
Attachments

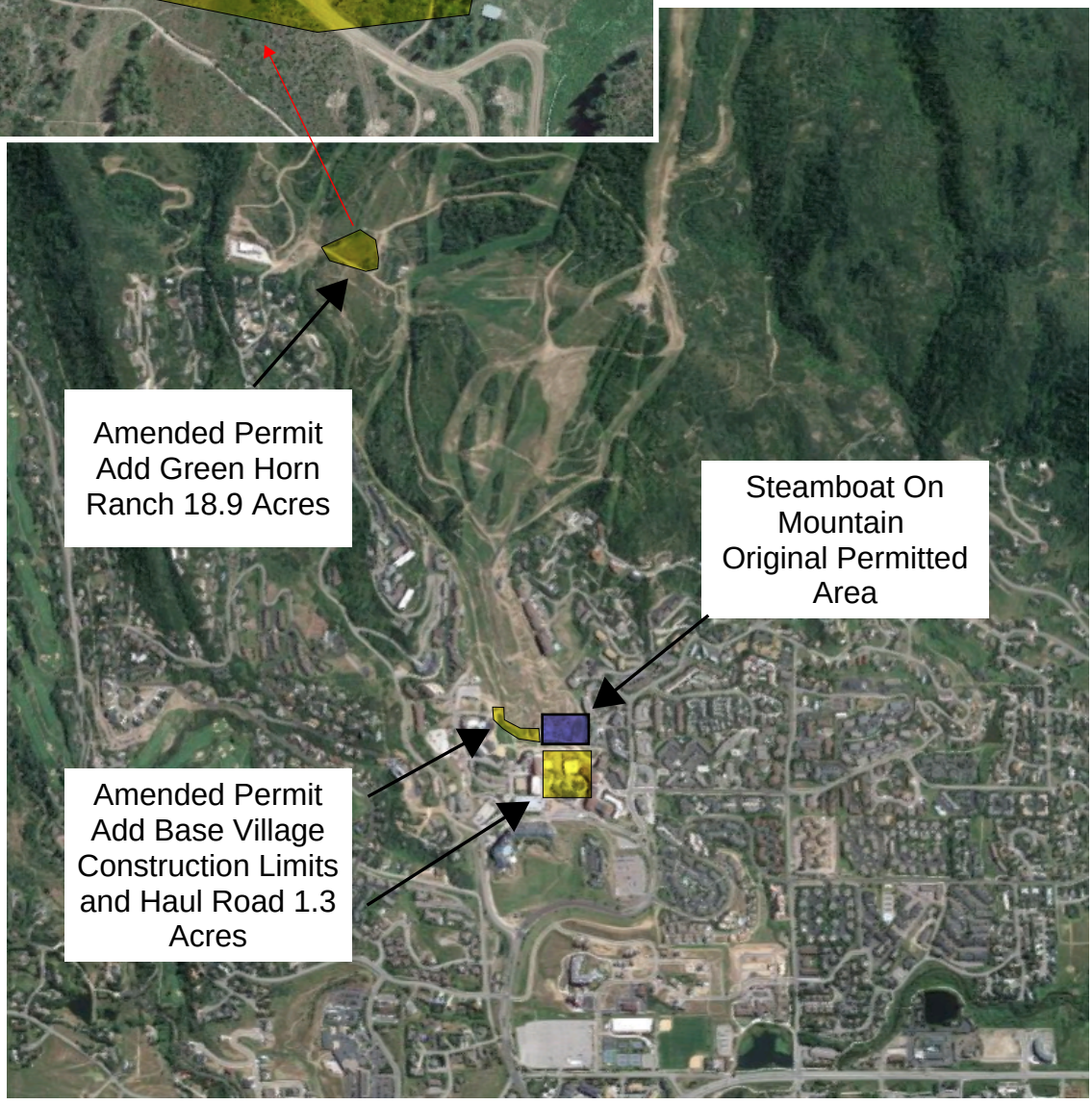
There are no attachments to display

7/1/2021 Added Greenhorn Ranch and Base Village Haul Route to the SWMP per attached site plan.


NORTH
LEGEND:
PERMANENT BMP'S
TEMPORARY BMP'S
DRAINAGE
NOTES:
811
Know what's below
Call before you dig.
NOT VALID WITHOUT ORIGINAL SIGNATURE AND DATE
LANDMARK
CONSULTANTS, INC.
CIVIL ENGINEERS | SURVEYORS
Steamboat Gondola Relocation
Erosion Control Exhibit
SHEET
C.600

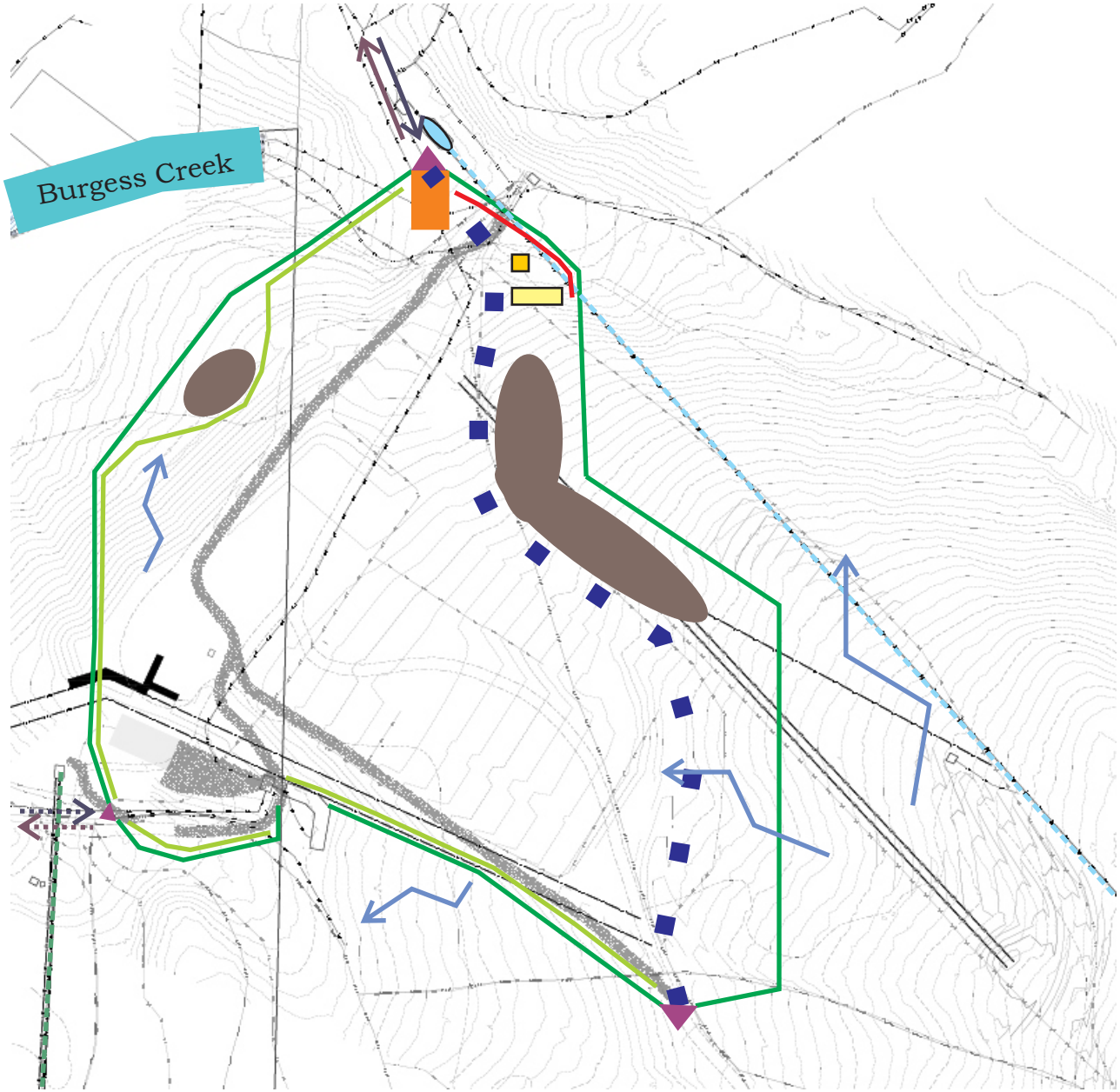
Steamboat Base Village and On Mountain Improvements





Amended Permit Request

Construction Site Management Plan for:
Greenhorn Ranch
Prepared by Betsy Wilbanks



N
W E
S

Not to Scale

Legend:

- Project Boundary and Construction Fence
- Restricted Access Gate
- Vehicle Tracking Control
- Temporary Access Road
- Primary Ingress
- Secondary Ingress
- Primary Egress
- Secondary Egress
- Wattles
- Brush Berm
- Stockpile
- Direction of Overland Flow
- Port-a-let
- Dumpster
- Thunderhead Lift
- Bashor Lift